



## SECTION 32 15 43

### POLYMER-BASED DECOMPOSED GRANITE PAVING

**NOTE:** These specifications were current at the time of publication but are subject to change at any time without notice. Please confirm the accuracy of these specifications with the manufacturer and/or distributor prior to installation.

#### PART 1 – GENERAL

##### 1.01 SUMMARY

**Specifier Note:** Retain or delete material(s) below to conform to project requirements.

###### A. Section Includes:

1. Naturally occurring decomposed granite and crushed stone paving mix set in a polymer binder matrix as shown on Drawings and specified herein. **[Include subbase, edging and related accessories.]**

###### B. Related Sections:

1. Section 31 22 00 "Grading".

**Specifier Note:** Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Conditions of the Contract or Section 01 42 19 - Reference Standards may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

##### 1.02 REFERENCES

- A. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ASTM D448 – Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

**Specifier Note:** Article/Paragraphs below includes submittal of relevant data to be furnished by Contractor, either before, during or after construction. Coordinate Article/Paragraphs with Architects and Contractors duties and responsibilities in Conditions of the Contract and Section.

##### 1.03 ACTION SUBMITTALS

- A. Comply with Section 01 33 00.
- B. Shop Drawings: Submit plan layout of all polymer-based decomposed granite paving areas and detail drawings showing the various components of the paving system, **[including subbase, and edging]**.
- C. Product Data: Manufacturer's literature completely describing all components of the polymer-based decomposed granite paving system, including:
  - 1. Preparation instructions and recommendations.
  - 2. Installation methods and application procedures.
- D. Samples for Verification:
  - 1. Submit samples of each of the following:
    - a. Three pound sample of each type and color of polymer-based decomposed granite paving material.

**Specifier Note: Edging material is optional, delete if not required.**

- b. Edging material, each type not less than 12 inches long.

E. Certification:

- 1. Manufacturer and Installer Qualifications.

#### 1.04 LEED REQUIREMENTS

**Specifier Note: SUSTAINABILITY: LEED: Use the following paragraphs when LEED Submittals are required.**

- A. LEED Submittals: In accordance with [LEED] [and] [Section 01 35 21 LEED Requirements] [\_\_\_\_\_].
  - 1. Submit required letters, calculations, spreadsheets and templates prepared by [Engineer] [Consultant] [Architect] [\_\_\_\_\_] for submitting to USGBC for Credit Interpretation Requests.
  - 2. Submit Project Materials and Cost Data: Provide statement for total cost for building materials used for Project.

**Specifier Note: SUSTAINABILITY: LEED v.4**

- 3. Materials and Resources Credit: MRc Building Product Disclosure and Optimization – Sourcing of Raw Materials: Submit product data and certification letter(s)] of proposed materials with recycled content.

**Specifier Note: Article below should include prerequisites, standards, limitations and criteria, which establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 01 Quality Assurance Section.**

#### 1.05 QUALITY ASSURANCE

- A. Comply with Section 01 40 00.
- B. Manufacturer: Company specializing in manufacturing Work of this Section with minimum 25 years documented experience.

- C. Single Source Responsibility: Obtain each type of polymer-based decomposed granite paving from single manufacturer.

**Specifier Note: Include a mock-up, if the project size and/or complexity of the work require installation to be approved by Landscape Architect.**

- D. Mock Up: Provide a mock-up for evaluation of surface preparation, installation techniques and quality of application.
  - 1. Install a 4-foot x 4-foot minimum of polymer-based decomposed granite paving, [**including subbase course and edging,**] at location approved by Landscape Architect.
  - 2. Do not proceed with remaining work until installation of polymer-based decomposed granite paving is approved by Landscape Architect.
  - 3. Approved mock-up may remain as part of completed Work.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 60 00.

**Specifier Note: Retain or delete paragraph(s) below to conform to size and scale of project requirements.**

- B. Bagged Materials: Accept delivery of materials only in unopened and undamaged containers bearing the brand name and manufacturer's identification.
- C. Bulk Materials: Each load of bulk paving materials arriving at the job site shall be accompanied by a delivery ticket containing the following minimum information:
  - 1. Quarry of origin.
  - 2. Amount, weight and type of material.
  - 3. Brand name and manufacturer's identification.
- D. Protect polymer-based decomposed granite paving materials from contamination until ready for installation. Store under cover.

#### 1.07 PROJECT CONDITIONS

- A. Surfaces to receive polymer-based decomposed granite paving shall be frost free and free of oil or any other foreign matter, which may impair the proper installation of the paving system.
- B. Do not install polymer-based decomposed granite paving when subbase course is muddy or saturated with standing water.
- C. Perform work in dry weather when subgrade is sufficiently stable to be properly compacted.

### PART 2 – PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURER

- A. Manufacturer: Provide "Wax Polymer Pathway Mix" polymer-based decomposed granite paving system by the following:

Kafka Granite, LLC  
 550 East Hwy 153  
 Mosinee, WI 54455  
 Tel: (800) 852-7415 (Toll Free)  
 Tel: (715) 687-2423 (Local)  
 Fax: (715) 687-2395  
 Email: [kafka@kafkagranite.com](mailto:kafka@kafkagranite.com)  
 Web: [www.kafkagranite.com](http://www.kafkagranite.com)

**Specifier Note: Delete one of the following two paragraphs.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.02 POLYMER-BASED DECOMPOSED GRANITE PAVING MATERIALS

**Specifier Note: Retain Recycled Content paragraph below if required for LEED. Coordinate with manufacturer to obtain required amount prior to specifying.**

- A. Recycled Content of Decomposed Granite or Crushed Stone Surfacing Materials:  
 [50%][75%][100%][\_\_%]
- B. Decomposed Granite and Crushed Stone Aggregate: Provide high quality materials consisting of sound, angular, durable stone particles, free from clay lumps, organic materials, frozen materials, or other deleterious substances.
  - 1. Gradation: Manufacturer's standard mix of well-graded materials in accordance with ASTM C136. Blends of coarse sand and rock dust are not acceptable.

Wax Polymer Pathway Optimal Gradation		
Sieve	Sieve Size (mm)	Percent Passing
3/8"	9.51	100%
#4	4.76	80-100%
#8	2.36	60-90%
#16	1.18	40-60%
#30	0.6	25-55%
#50	0.3	15-35%
#100	0.149	15-25%
#200	0.074	10-20%

- C. Wax Polymer Binder: Manufacturer's standard engineered paraffinic hydrocarbon wax suitable for waterless, dustless, sealed, non-permeable applications over high-traffic areas and steeply graded hills.
- D. Factory Blended Mix:
  - 1. General: Manufacturer's proprietary mix of decomposed granite aggregate and wax polymer binder in proportional batches suitable for the installation of pedestrian paths and vehicular drives.

2. Mixing and Handling: At the batch plant facility, heat wax polymer binder in accordance with wax manufacturer's recommendations and blend with aggregate at the batch plant facility and shipped to the job site in bulk or super sacks.
3. Pedestrian Paths and Vehicular Drives: Mix 12 – 18 lbs. of wax polymer binder per 2000 lbs. of aggregate. Manufacturer to adjust mix as required for the type of aggregate selected and the application.

**Specifier Note: Subbase course aggregate is generally not required; native soil (subgrade) may be compacted to specified density. If native soil is sand or other unsuitable material, retain paragraph(s) below.**

### 2.03 SUBBASE COURSE MATERIALS

- A. Comply with MTO OPSS 1010 – “Material Specification for Aggregates – Granular A, B, M and Select Subgrade Material” specification for Granular A material.
  1. Road Base Material: Also known as road rock, road gravel, aggregate base, AB, asphalt base and 3/4" minus. In California the standard is set by Cal Trans and most common is 3/4" aggregate base Class 2.

### 2.04 ACCESSORIES

- A. Water: Clean and potable, free from contaminants that would discolor or be deleterious to the polymer-based decomposed granite paving.

**Specifier Note: Edging is optional, but not required; select below paragraph if edging is desired.**

- B. Steel Edging: 3/16-inch thick x 4-inch deep with overlapping joints.
  1. Stakes: 3/16-inch x 16-inch long x 1 3/4-inch wide at top tapering to point at bottom; locate at 36-inch on center maximum.
- C. Herbicide: Commercial chemical for weed control, registered by the EPA, and not classified as "restricted use" for locations and conditions of application. Application of the herbicide shall pose no short or long term health threats to the installer or the general public.

## PART 3 – EXECUTION

**Specifier Note: Paragraph below is an addition to CSI Section Format. Retain or delete paragraph(s) below to conform to project requirements.**

### 3.01 EXAMINATION

- A. Examine areas and conditions under which Work of this Section will be performed. Notify Landscape Architect of unsatisfactory preparation before proceeding.
- B. Correct conditions detrimental to timely and proper completion of Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Lay out work prior to the commencement of installation.

### 3.02 PREPARATION

- A. Excavation: Excavate to depth required so edges of polymer-based decomposed granite paving will match adjacent grades and have a maximum cross-slope of 2 percent. Ensure edges and bottom of excavation are in a smooth and even line.
- B. Subgrade Preparation: Plow, harrow and mix the entire surface of the in-place subgrade to a depth of at least 6-inches. After the material has been thoroughly mixed, the subgrade shall be brought to line and grade and compacted to 95% of the maximum laboratory dry density as determined by the Standard Proctor test.
- C. Herbicide: Apply herbicide per manufacturer's written instructions. Limit the application to the area to receive polymer-based decomposed granite paving.

Specifier Note: Subbase course aggregate is generally not required; native soil (subgrade) may be compacted to specified density. If native soil is sand or other unsuitable material, retain paragraph(s) below.

- D. Subbase Course Preparation: Place the subbase coarse aggregate free from ridges, depressions or hollows. Rake and compact to 95% Standard Proctor Density.

### 3.03 INSTALLATION

- A. Steel Edging: Install edging flush with the top of the polymer-based decomposed granite paving. Provide sufficient stakes to secure edging in place during and after installation of the polymer-based decomposed granite paving.
- B. Subgrade: Proof-roll the subgrade with heavy pneumatic-tired equipment to locate unstable areas and to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive rutting, and replace with compacted backfill as directed by Landscape Architect.
  - 2. The surface of the completed subgrade shall be bladed to a smooth and uniform texture.
  - 3. The finished subgrade shall be uniform and free from deleterious debris such as organic materials, nails, stones and loose soil.
  - 4. Prior to placement of polymer-based decomposed granite paving, presoak all areas of application.

Specifier Note: Subbase course aggregate is generally not required; native soil (subgrade) may be compacted to specified density. If native soil is sand or other unsuitable material, retain paragraph(s) below.

- C. Subbase: Install aggregate subbase to a compacted depth of 4 to 6-inches minimum for pedestrian traffic, and 8 to 12-inches minimum for vehicular traffic in accordance with manufacturer's recommendations. Install the subbase in multiple 3 to 4-inch lifts, and compact to a minimum 95% density.
- D. Compaction: Compact each lift of the subgrade, [**subbase**] and polymer-based decomposed granite paving materials with a one to three-ton roller or compactor. In small areas that are difficult to access with compaction equipment, hand tamping may be performed with multiple passes to achieve the required density.

### 3.04 INSTALLATION OF POLYMER-BASED DECOMPOSED GRANITE PAVING

- A. Spread polymer-based decomposed granite paving material as required to achieve a uniform smooth finish. Spread the pathway mix evenly and smoothly before compacting. Screed if possible. Paving machine optional. In general, to achieve a final depth of 3-inches compacted, place wax polymer-based paving material to a loose depth of 4-inches. Allow for 20-25% compaction.

1. Mist the area lightly with water before compacting to help prevent material from sticking to the roller.
- B. Roll and compact each lift to form a uniform, smooth surface with a cross slope of 1.5% minimum and 2% maximum. Compact each lift to a minimum 95% density.
- C. Grade and smooth to the required elevation; compact final lift with 1-3 ton drum roller or compactor.
- D. Minimum Compacted Thickness:
  1. Pedestrian Paths: 2-inches.
  2. Vehicular Drives and Roadways: 3-inches.
- E. Surface shall follow grades per plans. Crown flat areas for drainage; slope 1.5% minimum to drain away from structures.
- F. Completed surface shall be of consistent quality and shall not have depressions or humps greater than 1/4-inch in 10-feet.

### 3.05 INSTALLATION TOLERANCES

- A. Polymer-Based Decomposed Granite Paving Thickness: Allow for 20-25% compaction:
  1. Subbase Course: Plus or minus 1/2-inch.
  2. Surface Course: Plus 1/4-inch, no minus.
- B. Polymer-Based Decomposed Granite Paving Smoothness
  1. Produce a surface smoothness within 1/4-inch tolerance when measured with a 10-foot straightedge.
  2. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowed variance from template is 1/4-inch.

### 3.06 CLEAN-UP AND PROTECTION

- A. Thoroughly clean all areas where work has occurred. Remove from site excess material, debris and rubbish.
- B. Take all precautions necessary to protect completed work until Substantial Completion of project.

**END OF SECTION**