ADD:

202-4 PERMEABLE INTERLOCKING CONCRETE PAVERS.

202-4.1 General.

1. Permeable interlocking concrete pavers shall consist of the paving unit, joint fill and bedding aggregate, base aggregate, and subbase aggregate.

202-4.2 Materials.

202-4.2.1 Permeable Interlocking Concrete Paver.

1. All paver material shall comply with ASTM C 936. Paver color pigment material shall comply with ASTM C 979. For vehicular applications, the minimum allowable paver thickness shall be 3-1/8 inch (80 mm). For pedestrian applications the minimum allowable paver thickness shall be 2-3/8 inch (60 mm).

202-4.2.2 Crushed Stone Joint Filler and Bedding.

1. The joint filler and bedding material shall conform to 200-1, "Rock Products". The gradation shall conform to Table 200-1.2.1 (A), ASTM No. 8. When the joints are less than ¼ inch, gradation permitted shall conform to Table 200-1.2.1 (A). ASTM No. 89 or ASTM No. 9. All substitutions shall be approved in writing by the Engineer.

202-4.2.3 Base Aggregate.

1. The base aggregate shall conform to 200-1, "Rock Products". The aggregate gradation shall conform to Table 200-1.2.1 (A), ¾" Crushed Rock.

202-4.2.4 Subbase Aggregate.

1. The subbase aggregate shall conform to 200-1, "Rock Products". The aggregate gradation shall conform to Table 200-1.2.1 (A), ASTM No. 2.

202-4.3 Storage.

1. Store materials in protected areas such that they are kept free from mud, dirt, and other foreign materials.

ADD:

303-9 PERMEABLE INTERLOCKING CONCRETE PAVERS.

303-9.1 General.

1. Permeable interlocking concrete pavers shall conform to 202-4, "Permeable Interlocking Concrete Pavers".

2. Work shall be performed by a qualified installer meeting the following requirements:

   a) Submit documentation showing comparable concrete paver installation similar in scope, design material, and extent indicated on the Plans has been successfully installed within the past 5 years or more of documented performance record for the proposed product and has been successfully performed by the installer and its personnel assigned to the concrete paver installation for this project.

   b) Holds a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

303-9.2 Construction Test Section.

1. Construct a test section using the same method and crew performing the installation. The test section shall be a minimum of 100 ft^2 (9.3 m^2). The test section shall be tested to determine the surcharge of the bedding layer, joint sizes, and lines, laying pattern, color, and texture of the job. The test section may be incorporated in the Work if approved by the Engineer. The Engineer shall be notified at least 24 hours in advance of construction of the test section.

303-9.3 Subgrade.

1. The subgrade preparation shall conform to 301-1, "Subgrade Preparation".

303-9.4 Base/Subbase.

1. The base/subbase aggregate installation shall comply with 301-6, "Permeable Pavement Structural Base and Subbase".

303-9.5 Bedding.

1. The bedding aggregate installation shall comply with 301-7, "Permeable Interlocking Concrete Pavers Bedding". Do not subject screeded bedding

material to any pedestrian or vehicular traffic before paving unit installation begins.

303-9.6 Paving Unit Placement.

1. Paving units can be installed by manual methods or with mechanical equipment. The paving units shall be laid in the pattern(s) and joint widths shown in the Plans. The straight pattern lines shall be maintained.

2. Fill gaps at the edges of the paved areas with cut paver units. Cut pavers subject to tire traffic shall be no smaller than 1/3 of a whole unit.

3. Openings and joints shall be filled with fill material identified in the Plans. Excess fill aggregate on the surface shall be removed by sweeping the pavers clean.

4. The pavers shall be compacted and seated into the bedding material using a low-amplitude, 75-90 Hz plate compactor capable of at least 5,000 lbf (22 kN) centrifugal compaction force. At least 2 passes with the plate compactor shall be required. Compaction within 6 feet (1.8 m) of an unrestrained edge shall not be performed.

5. After compaction, additional filling aggregate shall be applied as needed and the cleaning and compaction process repeated.

6. The final surface tolerance of compacted pavers shall not deviate more than ± 3/8 inches over 10 feet (± 9.5 mm over 3 m).

303-9.7 Acceptance.

1. Adjacent pavers shall be no greater than 1/8 inch (3.2 mm) difference in height. Final elevations shall be checked for conformance to the Plans.

ADD:
800-1.2.6 Amended Soil.

Amended soil shall meet all of the requirements of Class "A" Topsoil as well as the following additional Requirements:

a) Minimum organic matter content of 10% dry weight in planting beds, and 5% organic matter content in turf areas.
b) Calculated amendment rates may be met through use of composted materials meeting the standards of Organic Soil Amendment (Type 1 or 3)

The soil quality design guidelines listed above can be met by using one of the methods listed below:

1. Leave undisturbed native vegetation and soil, and protect from compaction during construction. Undisturbed soil may be utilized if it meets the organic matter and depth requirements.
2. Amend existing site topsoil or subsoil either at default "pre-approved" rates, or at custom calculated rates based on tests of the soil and amendment to achieve the organic matter content required.
3. Stockpile existing topsoil during grading, and replace it prior to planting. Stockpiled topsoil must also be amended if needed to meet the organic matter or depth requirements, either at a default "pre-approved" rate or at a custom calculated rate.
4. Import topsoil mix of sufficient organic matter content and depth to meet the requirements.

More than one method may be used on different portions of the same site. Soil that already meets the depth and organic matter quality standards, and is not compacted, does not need to be amended.

ADD:

800-1.6 Bioretention Soil Media Composition, Testing, and Installation

800-1.6.1 General

Bioretention Soil Media (BSM) is intended to filter storm water and support plant growth while minimizing the leaching of potential pollutants. This specification includes requirements that apply to BSM used in stormwater treatment BMPs, including bioretention and biofiltration.

ADD:

800-1.6.2 Blended BSM Criteria and Testing Requirements

800-1.6.2.1 General

Blended BSM shall consist of 60% to 80% by volume sand, up to 20% by volume topsoil, and up to 20% by volume compost. Sand, Topsoil, and Compost used in BSM shall conform to requirements listed in Sections 800-1.2.10, 800-1.2.11, and 800-1.2.12, respectively. For bioretention/biofiltration with outlet-controlled designs, it is likely that topsoil will need to be omitted or reduced to achieve permeability targets.

Alternative mix components and proportions may be utilized, provided that the whole blended mix conforms to whole BSM criteria, detailed in Section 800-1.2.9.3 through 800-1.2.9.5. Alternative mix designs may include alternative proportions and/or alternative organic amendments. Alternative mixes are subject to approval by the reviewing jurisdiction. Alternative mixes that use an alternative organic component (rather than compost) may be necessary when BMPs are installed in areas with nitrogen or phosphorus impaired receiving waters in order to meet more stringent BSM quality requirements as detailed in Section 800-1.2.9.5.

800-1.6.2.2 Testing and Submittals

At least 30 days prior to ordering materials, the Contractor shall submit the following to the local jurisdiction reviewer: source/supplier of BSM, location of source/supplier, a physical sample of the BSM, whole BSM test results from a third party independent laboratory, test results for individual component materials as required, and description of proposed methods and schedule for mixing, delivery, and placement of BSM. The test results shall be no older than 120 days and shall accurately represent the materials and feed stocks that are currently available from the supplier. The Contractor shall submit a written request for approval which shall be accompanied by written analysis results from a written report of a testing agency. The testing agency must be registered by the State for agronomic soil evaluation laboratory test fees shall be paid for by the Contractor.

Test results shall demonstrate conformance to agronomic suitability and hydraulic suitability criteria listed in Sections 800-1.2.9.3 and 800-1.2.9.4, respectively. BSM for use in BMPs in areas with water quality impairments in receiving waters shall also comply with applicable Chemical Suitability criteria in Section 800-1.2.9.5. No delivery, placement, or planting of BSM shall begin until test results confirm the suitability of the BSM soil evaluation.

800-1.6.2.3 Agronomic Suitability

The BSM shall conform to the requirements herein to support plant growth. BSM which requires amending to comply with the below specifications shall be uniformly blended and tested in its blended state prior to testing and delivery.

a) pH range shall be between 6.0-8.5.

b) Salinity shall be between 0.5 and 3.0 millimho/cm (as measure by electrical conductivity)

c) Sodium absorption ratio (SAR) shall be less than 5.0

d) Chloride shall be less than 800 ppm.

e) Cation exchange capacity shall be greater than 10 meq/100 g.

f) Organic matter shall be between 2 and 5%.

g) Carbon: Nitrogen ratio shall be between 12 and 40 (15 to 40 preferred).

Textural class fraction shall adhere to limits below, as determined by ASTM Method D422 or an approved alternative method:

Table 800-1.6.2.3. BSM Textural Class

Textural Class (ASTM D422)	Size Range	Mass Fraction (percent)
Gravel	Larger than 2 mm	0 to 25 of total sample
Clay	Smaller than 0.005 mm	0 to 5 of non-gravel fraction

Test results shall show the following information:

a) Date of testing

b) Project name, contractor name, and source of materials and supplier name

Copies of all testing reports including, at a minimum, analytical results sufficient to confirm compliance with all requirements listed in this section.

800-1.6.2.4 Hydraulic Suitability

BSM shall meet the appropriate hydraulic properties for filtering stormwater. The BSM shall conform to the requirements in Sections 800-1.6.2.4.1 to 800-1.6.2.4.4 to support plant growth. BSM which requires amending, shall be uniformly blended and tested in its blended state prior to testing and delivery.

800-1.6.2.4.1 Testing

The saturated hydraulic conductivity of the whole BSM shall be measured according to the method detailed in the measurement of hydraulic conductivity (USDA Handbook 60, method 34b), commonly available as part of standard agronomic soil evaluation, or ASTM D24234 Permeability of Granular Soils (at approximately 85% relative compaction Standard Proctor, ASTM D698). BSM shall conform to hydraulic criteria associated with the BMP design configuration that best applies to the facility where the BSM will be` installed (Section 800-1.2.9.4.2 or 800-1.2.9.4.3).

800-1.6.2.4.2 Systems with Unrestricted Underdrain System (i.e., media control)

For systems with underdrains that are not restricted, the BSM shall meet the minimum and maximum measured hydraulic conductivity found in the table in Section 800-1.2.9.4.4 to ensure adequate flow rate through the BMP and longevity of the system but reduce excessive velocities through the media. In all cases, an upturned elbow system on the underdrain, measuring 9 to 12 inches above the invert of the underdrain, should be used to control velocities in the underdrain pipe and reduce potential for solid migration through the system.

800-1.6.2.4.3 Systems with Unrestricted Underdrain System (i.e., outlet control)

For systems in which the flow rate of water through the media is controlled via an outlet control device (e.g., orifice or valve) affixed to the outlet of the underdrain system, the hydraulic conductivity of the media should meet the requirements in the table in Section 800-1.2.9.4.4 and the outlet control device should control the flow rate to between 5 and 12 inches per hour. This configuration reduces the sensitivity of system performance to the hydraulic conductivity, compaction, and clogging of the material, reduces the likelihood of preferential flow through media, and allows more precise design and control of system flow rates. <u>For these reasons, outlet control should be considered the preferred design option over unrestricted underdrain systems.</u>

800-1.6.2.4.4 Systems without Underdrains

For systems without underdrains, the BSM shall have a hydraulic conductivity of at least 5 inches per hour, or at least 2 times higher than the design infiltration rate of the underlying soil, whichever is greater.

Table 800-1.6.2.4.4. Hydraulic Conductivity Requirements

	Hydraulic Conductivity Requirements	
Underdrain System	**Minimum (in/hr)**	**Maximum (in/hr)**
Unrestricted (media control)	8	24
Restricted (outlet control) Preferred Design Option.	20	80

800-1.6.2.5 Chemical Suitability for Areas Draining to Impaired Receiving Waters

800-1.6.2.5.1 General

The chemical suitability criteria listed in this section do not apply to systems without underdrains, unless groundwater is impaired or susceptible to nutrient contamination. Limits for a given parameter only apply if that parameter is associated with a water quality impairment, priority water quality condition, and/or TMDL in the receiving water. Limits may be waived at the discretion of the reviewing jurisdiction if it is determined by the jurisdiction that it is unreasonable to meet the specification using locally-available materials (available within 100 miles).

800-1.6.2.5.2 Testing

Potential for pollutant leaching shall be assessed using either the Saturated Media Extract Method (aka, Saturation Extract) that is commonly performed by agronomic laboratories or the Synthetic Precipitation Leaching Procedure (SPLP) (EPA SW-846, Method 1312). If the saturation extract method is used, samples may be rinsed with up to five pore volumes before collecting extract for analysis.

800-1.6.2.5.3 BSM Limits in Areas Draining to Impaired Receiving Waters

The limits in this section are in terms of the concentration of a parameter in water that has been contacted with the BSM.

Table 800-1.6.2.5.3. BSM Limits in Areas Draining to Impaired Receiving Waters

Applicable Pollutant(s)	Saturation Extract or SPLP Criteria
Phosphorus*	< 1 mg/L
Zinc	< 1 mg/L
Copper	< 0.04 mg/L
Lead	< 0.025 mg/L
Arsenic	< 0.02 mg/L
Cadmium	< 0.01 mg/L
Mercury	< 0.01 mg/L
Selenium	< 0.01 mg/L

800-1.6.2.5.4 Alternative BSM for Reduced Phosphorus Leaching

In areas with impaired receiving waters, alternative BSM should be considered, especially if receiving waters are phosphorus impaired. BSM with 20% compost may result in phosphorus leaching and soluble phosphorus test results in excess of the 1 mg/L limit presented in the table in Section 800-1.2.9.5.3 Alternative organic amendments, such as coco coir pith and/or composted wood products, in place of compost should be considered in these areas. Sand and soil components with higher levels of iron and aluminum should also be considered to limit the solubility of phosphorus.

800-1.6.2.5.5 Nitrogen Impaired Receiving Waters

In areas with a downstream water quality impairment or TMDL for nitrogen, a combination of BSM composition and BMP design shall be used to reduce the potential for nitrate leaching from BMPs.

- BSM: The C:N ratio of BSM shall be between 15 and 40 to reduce the potential for nitrate leaching.
- BMP design: BMPs shall be designed to either enhance infiltration into underlying soils or with internal water storage to promote reduction of nitrogen:
    - If a BMP is installed with a liner, the BMP must include an internal saturated zone, consisting of at least an 18-inch thick layer of gravel, to enhance denitrification.
    - If a BMP does not include a liner, it must be installed with a retention zone below the underdrain discharge elevation, consisting of at least an 18-inch thick layer of gravel, to enhance infiltration into underlying soils.

ADD:

800-1.6.3 Sand for BSM

800-1.6.3.1 General

Sand used in BSM should preferably be washed prior to delivery. If sand is not washed it must still meet sieve analysis requirements in Table 800-1.6.3.2.

800-1.6.3.2 Gradation Limits

A sieve analysis shall be performed in accordance with California Test 202, ASTM D 422, or approved equivalent method to demonstrate compliance with the gradation limits shown in the table below. Fines passing the No. 200 sieve shall be non-plastic.

Table 800-1.6.3.2. Sand for BSM Gradation Limits

	Percentage Passing Sieve (by weight)	
Sieve Size (ASTM D422)	**Minimum**	**Maximum**
3/8 inch	100	100
#4	90	100
#8	70	100
#16	40	95
#30	15	70
#40	5	55
#100	0	15
#200	0	5

ADD:

800-1.6.4 Topsoil for BSM

800-1.6.4.1 General

Topsoil shall be free of hazardous materials and shall be consistent with a common definition of topsoil. Decomposed granite and derivatives of decomposed granite are not considered to be topsoil for the purpose of this specification.

800-1.6.4.2 Textural Class

Topsoil shall be classified as a sandy loam or a loamy sand according to the US Department of Agriculture soil classification system. In addition, a textural class analysis shall be performed in accordance with ASTM D422, or an approved alternative method to demonstrate compliance with the gradation limits in the table below.

Table 800-1.6.4.2 Topsoil for BSM Textural Class

Textural Class (ASTM D422)	Size Range	Mass Fraction (percent)
Gravel	Larger than 2 mm	0 to 25 of total sample
Clay	Smaller than 0.005 mm	0 to 15 of non-gravel fraction

ADD:

800-1.6.5 Compost for BSM

800-1.6.5.1 General

Compost Quality: Compost should be a well-decomposed, stable, weed-free organic matter source derived from waste materials including yard debris, wood wastes or other organic materials, **not including manure or biosolids**. Compost shall have a dark brown color and a soil-like odor. Compost that is exhibiting a sour or putrid smell, contains recognizable grass or leaves, or is hot (120 degrees Fahrenheit) upon delivery or rewetting is not acceptable.

Compost shall be produced at a facility inspected and regulated by the local enforcement agency for CalRecycle. Compost should also preferably be certified by the U.S. Composting Council's Seal of Testing Assurance Program (USCC STA) or an approved equivalent program.

800-1.6.5.1.1 Gradation Limits

A sieve analysis shall be performed in accordance with ASTM D 422, or approved equivalent method to demonstrate compliance with the gradation limits show in the table below.

Table 800-1.6.5.1.1 Compost Gradation Limits

Sieve Size (ASTM D422)	Percent Passing Sieve (by weight)
1/2"	97 to 100
#10	40 to 90

800-1.6.5.1.2 Material Content

Compost should comply with the following requirements:

Table 800-1.6.5.1.2. Compost Material Content

Parameter	Method	Requirement	Units
Moisture Content	Gravimetric	25%–60%	dry solids
Organic Matter	ASTM F 1647 Standard Test Methods for Organic Matter Content of Athletic Field Rootzone Mixes or Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, "Loss-On-Ignition Organic Matter Method."	35%–100%	dry weight
pH	Saturation Paste	6.0–8.5	
Carbon:Nitrogen Ratio	-	15:1–40:1	
Maturity/Stability	Solvita®	> 5.5	Index value
Inert Material/Physical Contaminants			
Plastic, Metal, and Glass	-	< 1%	by weight
Sharps (% > 4mm)		0%	by weight

800-1.6.5.2 Compost Testing

Compost shall meet the following requirements as demonstrated through standard agronomic testing methods:

a) Carbon to nitrogen (C:N) ratio. C:N shall be between 15:1 and 40:1, preferably above 20:1 to reduce the potential for nitrogen leaching/washout.

b) pH. pH shall be between 6.0 and 8.5.

c) Soluble Salt Concentration. Soluble Salt Concentration shall be less than 10 dS/m. (Method TMECC 4.10-A, USDA and U.S. Composting Council).

d) Stability. Carbon Dioxide evolution rate shall be less than 3.0 mg CO2-C per g compost organic matter (OM) per day or less than 6 mg CO2-C per g compost carbon per day, whichever unit is reported. (Method TMECC

5.08-B, USDA and U.S. Composting Council). Alternatively a Solvita rating of 5.5 or higher is acceptable.

800-1.6.5.2.1 Pathogens and Pollutant Limits

Select pathogens shall pass US EPA Class A standard, 40 CFR Section 503.32(a). Trace Metals shall pass US EPA Class A standard, 40 CFR Section 503.13, Table 1 for Ceiling Concentrations.

ADD:

800-1.6.6 Delivery, Storage, and Handling

800-1.6.6.1 General

BSM shall be thoroughly mixed prior to delivery using mechanical mixing methods such as a drum mixer. The Contractor shall protect soils and mixes from absorbing excess water and from erosion at all times.

800-1.6.6.2 Delivery

The Contractor shall not deliver or place soils in wet or muddy conditions.

800-1.6.6.3 Storage

The Contractor shall not store materials unprotected during large rainfall events (>0.25 inches). If water is introduced into the material while it is stockpiled, the Contractor shall allow the material to drain to the acceptance of the reviewing jurisdiction before placement.

800-1.6.6.4 Handling and Placement

BSM shall be lightly compacted and placed in loose lifts approximately 12 inches (300 mm) to ensure reasonable settlement without excessive compaction. Compaction within the BSM area should not exceed 85% standard proctor within the BSM. Machinery shall not be used in the bioretention facility to place the BSM. A conveyor or spray system shall be used for media placement in large facilities. Low ground pressure equipment may be authorized for large facilities at the discretion of the reviewing jurisdiction. Placement methods and BSM quantities shall account for approximately 10% loss of volume due to settling. Planting methods and timing shall account for settling of media without exposing plant root systems.

800-1.6.6.5 Quality Control and Acceptance

800-1.6.6.5.1 General

Close adherence to the material quality controls herein are necessary in order to support healthy vegetation, minimize pollutant leaching, and assure sufficient permeability to infiltrate/filter runoff during the life of the facility. Amendments may be included to adjust agronomic properties. Acceptance of the material will be based on test results certified to be representative. Test results shall be conducted no more than 120 days prior to delivery of the blended BSM to the project site. For projects installing more than 100 cubic yards of BSM, batch-specific tests of the blended mix shall be provided to the reviewing jurisdiction for every 100 cubic yards of BSM along with a site plan showing the placement locations of each BSM batch within the facility.

ADD:

800-1.6.7 Aggregate Materials for Bioretention and Biofiltration Drainage Layers

800-1.6.7.1 General

This section provides material specifications for drainage layers below BSM in bioretention BMPs. This consists of a two-layer choker placed below the BSM and above the reservoir layer.

800-1.6.7.2 Rock and Sand Materials for Drainage Layers

800-1.6.7.2.1 General

All sand and stone products used in BSM drainage layers shall be clean and thoroughly washed.

800-1.6.7.2.2 Choker Layer

Graded aggregate material is installed as a choker layer to separate BSM from the drainage rock reservoir layer. The purpose of this layer is to limit migration of sand or other fines from the BSM. The choker material consists of two layers of choking aggregate increasing in particle size. The top layer (closets to the BSM) of the choker shall be constructed of thoroughly washed ASTMC33 Sand material as detailed in Greenbook Table 200-1.5.5. The bottom layer of the choker shall be constructed of thoroughly washed ASTM No. 8 aggregate material conforming to gradation limits contained in Greenbook Table 200-1.2.1.

800-1.6.7.2.3 Reservoir Layer

Reservoir layer material is installed below choker layers to provide additional storm water storage capacity and contain the underdrain pipe(s). This layer shall be constructed of thoroughly washed 3/4-inch crushed rock open graded aggregate material conforming to gradation limits contained in Greenbook Table 200-1.2.1.

800-1.6.7.3 Layer Thickness and Construction

800-1.6.7.3.1 General

Aggregate shall be deposited on underlying layers at a uniform quantity per linear foot (meter), which quantity will provide the required compacted thickness within the tolerances specified herein without resorting to spotting, picking up, or otherwise shifting the aggregate material.

800-1.6.7.3.2 Choker Layers

Each of the two choker layers (top layer of ASTM C33 Choker Sand and bottom layer of ASTM No. 8) shall be installed to a thickness of 3 inches (75 mm). Both layers shall be spread in single layers. Marker stakes should be used to ensure uniform lift thickness.

800-1.6.7.3.3 Reservoir Layer

The thickness of the reservoir layer (3/4” crushed rock) will depend on site specific design and shall be detailed in contract documents.

800-1.6.7.3.4 Spreading

Reservoir layers shall be as delivered as uniform mixtures and each layer shall be spread in one operation. Segregation within each aggregate layer shall be avoided and the layers shall be free from pockets of coarse material.

800-1.6.7.3.5 Compacting

Choker material layers and reservoir layer shall be lightly compacted to approximately 80% standard proctor without the use of vibratory compaction.

ADD:

800-1.6.8 Summary

Summary of BSM specification requirements is shown in the table below.

Table 800-1.6.8. BSM Requirements

Component	Requirement
BSM Material Composition	Sand: 60-80% by volume Topsoil: 0-20% by volume Compost: 0-20% by volume
Alternative Blends Acceptable?	Yes, but they must meet performance-based specifications.
Sand Type	Washed sand conforming to particle size distribution
Topsoil Type	Sandy loam or loamy sand with clay < 15% and gravel < 25%
Compost Type	From a CalRecycle permitted facility. Biosolids derived materials are not acceptable. Must meet gradation and material qualities in Section 800-1.6.5.
BSM Hydraulic Conductivity	8-24 inches/hour for BMPs without outlet control; 20-80 inches/hour for BMPs with outlet control; testing is required to demonstrate.
Agronomic Suitability Requirements	Limits for salts and potential toxins. C:N ratio between 15 and 40.
Water Quality Related Limits?	Requirements related to specific pollutants when water quality of receiving waters is impaired for those pollutants.

ADD:

800-1.7 Structural Soil.

Structural Soil shall be selected from the products as described herein or approved equal. In order to provide adequate soil volume for tree wells, horticulturally appropriate soils must often be placed beneath the adjacent paved surfaces. Acceptable soil systems include suspended pavements, structural cells, and several types of structural soils:

1. Suspended pavements include structural slabs that span between structural supports that allow uncompacted growing soil beneath the sidewalk, and commercially available structural systems. Manufacturer details and certification must be provided for commercial systems. Structural calculations and details must be provided for Suspended Pavement installations.

2. Structural cells such as Silva Cell™ or StrataCell™ are commercially-available structural systems placed subsurface that support the sidewalk and

are filled with amended soil. Manufacturer details and certification must be provided for commercial systems. Amended soil placed within structural cells shall be a minimum of 30 inches.

3. Proprietary structural soil systems, such as CU-Structural Soil™ or Stalite Structural Soil, or equivalent, may be used.