



Note: The text must be edited to suit specific project requirements. It should be reviewed by a qualified civil or geotechnical engineer, or landscape architect familiar with the site conditions. Edit this specification term as necessary to identify the design professional in the General Conditions of the Contract. Available for download at www.EcoBrickBP.com

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Bella Stone Interlocking Concrete Pavers.
2. Bedding and Joint Sand
3. Edge Restraints
4. [Geotextiles].

B. Related Sections

1. Section: (-) – Curbs and Drains.
2. Section: (-) – Aggregate Base.
3. Section: (-) – Cement Treated Base.
4. Section: (-) – Asphalt Treated Base.
5. Section: (-) – Pavements, Asphalt and Concrete.
6. Section: (-) – Roofing Materials.
7. Section: (-) – Bitumen and Neoprene Setting Bed, Acrylic Fortified Mortar Setting Bed.
8. Section: (-) – Geotextiles.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. C 33, Specification for Concrete Aggregates.
2. C 136, Method for Sieve Analysis for Fine and Coarse Aggregate.
3. C 140, Sampling and Testing Concrete Masonry Units.
4. C 144, Standard Specification for Aggregate for Masonry Mortar.
5. C 936, Specification for Solid Interlocking Concrete Paving Units.
6. C 979, Specification for Pigments for Integrally Colored Concrete.
7. D 698, Test Methods for Moisture Density Relations of Soil and Soil
8. D 1557, Test Methods for Moisture Density Relations of Soil and Soil
9. D 2940, Graded Aggregate Material for Bases or Subbases for Highways or Airports.

B. Interlocking Concrete Pavement Institute (ICPI)

1.03 SUBMITTALS

A. In accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Manufacturer's drawing and details: Indicate perimeter conditions, junction with other materials, expansion and control joints, paver [layout,] [patterns,] [color arrangement,] installation [and setting] details. Indicate layout, pattern, and relationship of paving joints to fixtures and project formed details.

C. Minimum 1 lb samples of subbase, base and bedding aggregate materials.



- D. Sieve analysis of aggregates for subbase, base and bedding materials per ASTM C 136.
- E. Paver Installation Subcontractor:
 - 1. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
 - 2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.
 - 3. Written Method Statement and Quality Control Plan that describes material staging and flow, paving direction and installation procedures, including representative reporting forms that ensure conformance to the project specifications.

1.04 QUALITY ASSURANCE

- A. Paver Installation Subcontractor Qualifications:
 - 1. Utilize an installer having successfully completed concrete paver installation similar in design, material and extent indicated on this project.
 - 2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
 - 3. Utilize an Installer insured for the amount of \$[_____].
- B. Regulatory Requirements and Approvals: [Specify applicable licensing, bonding or other requirements of regulatory agencies.].
- C. Require pre-construction meeting of representatives from the manufacturer, paver installation subcontractor, general contractor, engineer and/or owner's representative.
- D. Installation by a contractor and crew with at least one year of experience in placing Interlocking concrete pavers on projects of similar nature or dollar cost.
- E. Mock-Ups:
 - 1. Install a 3' x 3' paver area.
 - 2. Use this area to determine the bedding layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job.
 - 3. This area will be used as the standard by which the work will be judged.
 - 4. Subject to acceptance by owner, mock-up may be retained as part of finished work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirement Section.
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged container packaging with identification tags intact on each paver bundle.
 - 1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
 - 2. Deliver concrete pavers to the site banded or wrapped cubes capable of



transfer by forklift.

3. Unload pavers at job site in such a manner that no damage occurs to the product or existing construction
- D Storage and Protection: Store materials in protected area such that they are kept free from mud, dirt, and other foreign materials.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install in rain or snow.
- B. Do not install on frozen bedding materials.

1.07 MAINTENANCE

- A. Extra materials: Provide an additional 5% of the selected paver material for use by owner for maintenance and repair.
- B. Pavers shall be from the same production run as installed materials.

PART 2 PRODUCTS

Note: Projects may include a variety of interlocking concrete paver shapes and sizes. Specify each product as required.

2.01

- A. Manufacturer shall be an ICPI member:
 - a. Building Products Corporation
 1. Contact: Aron R Rauls, sales representative: 314-304-1754
- B. Bella Stone Interlocking Concrete Paver Units:
 1. Paver Type: Bella Holland Stone
 - a. Material Standard: Comply with ASTM C 936.
 - b. Color [Specify color from Building Products Corp's full range].
 - c. Size: Nominal 4" x 8" x 2-3/8" {60mm} thick
 2. Paver Type: Bella Cobble Stone
 - a. Material Standard: Comply with ASTM C 936.
 - b. Color [Specify color from Building Products Corp's full range].Size: Nominal 6" x 6" x 2-3/8" {60mm} thick
Size: Nominal 6" x 9" x 2-3/8" {60mm} thick
 3. Paver Type: Bella Vista Stone
 - a. Material Standard: Comply with ASTM C 936.
 - b. Color [Specify color from Building Products Corp's full range].Size: Nominal 6" x 6" x 2-3/8" {60mm} thick
Size: Nominal 6" x 9" x 2-3/8" {60mm} thick
Size: Nominal 6" x 12" x 2-3/8" {60mm} thick
Size: Nominal 12" x 12" x 2-3/8" {60mm} thick

2.02 Units Requirements for Concrete Interlocking Pavers



1. Average compressive strength of 55 MPa (9,000 psi) with no individual unit under 50 MPa (7,500 psi).
2. Average absorption of 5% with no unit greater than 7% when tested in accordance with ASTM C 140.
3. Resistance to 50 freeze-thaw cycles when tested in accordance with ASTM C 67,

--OR--

1. Furnish pavers meeting the following requirements of CSA-A231.2-95, Precast Concrete
2. Minimum average cube or cylinder compressive strength of 50 MPa (7,250 psi).
3. Resistance to 50 freeze thaw cycles while immersed in a 3% saline solution with no loss of material greater than 500 g/m² of surface area.
4. Use pigment conforming to ASTM C 979.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: Permitted, with written approval 20 days prior to original bid date.

2.03 BEDDING AND JOINT SAND

Screenings and stone dust can be unevenly graded and have an excess amount of material passing the 75 um (No. 200) sieve. Bedding sands with these characteristics should not be used.

- A. Clean, non-plastic, free from deleterious or foreign matter and natural or manufactured from crushed rock. Do not use limestone screenings or stone dust that do not conform to the grading requirements in Table 1. When concrete pavers are subject to vehicular traffic, use sands as hard as practically available.
- B. Grading shall be done according to ASTM C 136. Bedding sand shall conform to the grading requirements of ASTM C 33 shown in Table 1.

Table 1
Grading Requirements for Bedding Sand – ASTM C 33
Sieve Size Percent Passing

3/8 in. (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No.16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10

Note: bedding sand may be used for joint sand. However, extra effort in sweeping and compacting the pavers may be required in order to completely fill the joints. If joint sand other



C. The joint sand shall conform to the grading requirements of ASTM C 144 shown in Table 2 below.

Table 2
Grading for Joint Sand – ASTM C 144
Sieve Size Natural Sand
Percent Passing
Manufactured Sand
Percent Passing

No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No.16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 100
No. 50 (0.300 mm)	10 to 35	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075 mm)	0	0 to 10

2.04 ACCESSORIES

A. Provide accessory materials as follows:

1. Edge Restraints Note: cast-in-place curb and gutter, specified in another section.
 - a. Manufacturer: [Specify manufacturer.].
 - b. Material: [Pre-cast concrete] [Cut stone] [Concrete].
 - b. Material Standard: [Specify material standard.].
2. Geotextile Fabric: *Note: See ICPI publication* See ICPI Tech Spec 3
 - a. Material Type and Description: [Specify material type and description.].
 - b. Material Standard: [Specify material standard.].
 - c. Manufacturer: [Acceptable to interlocking concrete paver manufacturer]]

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. Paver installation contractors/subcontractors that meet the requirements set forth in section 1.03-E

3.02 EXAMINATION

A. Acceptance of Site Verification of Conditions:

1. General Contractor shall inspect, accept and certify in writing to the paver installation subcontractor that site conditions meet specifications for the following items prior to installation of interlocking concrete pavers.
 - a. Verify that subgrade preparation, compacted density and elevations



- conform to specified requirements.
 - b. Submit written density test results for soil subgrade to the Owner, General Contractor and paver installation subcontractor.
 - c. Verify location, type, and elevations of edge restraints, [concrete collars around] utility structures, and drainage pipes and inlets.
2. Do not proceed with installation of bedding and interlocking concrete pavers until subgrade soil conditions are approved or corrected by the General Contractor or designated subcontractor.

3.03 PREPARATION

- A. Verify that the soil subgrade is free from standing water.
- B. Stockpile joint/opening filler, base and subbase materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.
- C. Edge Restraint Preparation:
 - 2. Install edge restraints per the drawings [at the indicated elevations].

3.04 INSTALLATION

- A. General
 - 1. Any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities shall be removed before application of the [geotextile] and subbase materials.
 - 2. Do not damage drainpipes, overflow pipes, observation wells, or any inlets and other drainage appurtenances during installation. Report any damage immediately to the project engineer.
- B. Geotextiles [Note: if specified]
 - 1. Place on bottom and sides of soil subgrade. Secure in place to prevent wrinkling from vehicle tires and tracks.
 - 2. Overlap a minimum of [0.3 in (12 in.)] [0.6 m (24 in.)] in the direction of drainage.
- C. Subbase and base
 - 1. Moisten, spread and compact the subbase in 4 to 6 in. (100 to 150 mm) lifts [without wrinkling or folding the geotextile. Place subbase to protect geotextile from wrinkling under equipment tires and tracks.]
 - 2. For each lift, make at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 t (10 T) vibratory roller until there is no visible movement.
 - 3. The surface tolerance of the compacted subbase shall be $\pm 2 \frac{1}{2}$ in. (± 65 mm) over a 10 ft (3 m) straightedge.
 - 4. Moisten, spread and compact base in 100 mm (4 in.) lift over the compacted subbase with a minimum 10 t (10 T) vibratory roller until there is no visible movement.
 - 5. The surface tolerance the compacted base should not deviate more than ± 1 in. (25 mm) over a 10 ft (3 m) straightedge.
 - 6. The owner to arrange for compaction density testing per ASTM D 4254



- D. Bedding layer
 - 1. Moisten, spread and screed the bedding sand.
 - 2. Fill voids left by removed screed rails.
 - 3. The surface tolerance of the screeded bedding layer shall be $\pm 3/8$ in (10 mm) over a 10 ft (3 m) straightedge.
 - a. Do not subject screeded bedding material to any pedestrian or vehicular traffic before paving unit installation begins.

- E. Bella Stone Interlocking concrete pavers and joint/opening fill material
 - 1. Lay the Bella Stone pavers in the {Herringbone} pattern and joint widths shown on the drawings. Maintain straight pattern lines.
 - 2. Fill gaps at the edges of the paved area with cut units. Cut pavers subject to tire traffic shall be no smaller than 1/3 of a whole unit.
 - 3. Cut pavers and place along the edges with a [double-bladed splitter or] masonry saw.
 - 4. Fill the openings and joints with joint sand per ASTM C144.
 - 5. Remove excess aggregate on the surface by sweeping pavers clean.
 - 6. Compact and seat the pavers into the bedding material using a low-amplitude, 75-90 Hz plate compactor capable of at least 4,000 lbs (18 kN) centrifugal compaction force. This will require at least two passes with the plate compactor.
 - 7. Do not compact within 5 ft of the unrestrained edges of the paving units.
 - 8. Apply additional aggregate to the openings and joints, filling them completely. Remove excess aggregate by sweeping then compact the pavers. This will require at least two passes with the plate compactor.
 - 9. All pavers within 5 ft (2 m) of the laying face must be left fully compacted at the completion of each day.
 - 10. The final surface tolerance of compacted pavers shall not deviate more than $\pm 3/8$ (10 mm) under a 10 ft (3 m) long straightedge.
 - 11. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

3.05 FIELD QUALITY CONTROL

- A. After sweeping the surface clean, check final elevations for conformance to the drawings.
- B. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.
- C. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

3.06 PROTECTION

- A. After work in this section is complete, the General Contractor shall be responsible for protecting work from sediment deposition and damage due to subsequent construction activity on the site.

END OF SECTION