SECTION 07760
DECK PEDESTALS

The Bison Screwjack pedestal has a broad footprint that provides stability, is impervious to freeze thaw cycles, and offers a range of heights suited to almost any application. Precise spacer tabs allow for deck drainage, simple accessories adjust for slope, and the screw-to-adjust height setting assures a perfectly straight and level deck.

1.1 The Bison Screwjack pedestal series reaches from 0" – 16" in height. Add bracing and couplers to reach up to 24" in height and the Weight Bearing Design Capacity is 1000 lbs/pedestal FS:2. Made in the USA.
NOTE: Bison Screwjack Pedestals are sold exclusively in the USA through Westile Pavers.

PART 2 GENERAL

2.1 SECTION INCLUDES

Adjustable Deck Pedestals.

2.2 RELATED SECTIONS

Section 04220 - Concrete Unit Masonry.
Section 04400 - Stone Assemblies.
Section 04410 - Dry-Placed Stone.
Section 06150 - Wood Decking.
Section 06500 - Structural Plastic Decking.
Section 06730 - Composite Decking.
Section 07500 - Membrane Roofing.
Section 07720 - Roof Walkways.
Section 07760 - Roof Pavers.
Section 09690 - Access Flooring.
Section 02780 - Unit Pavers.

2.3 REFERENCES

ASTM D 1238-04 – Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
ASTM D 792-00 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
ASTM D 638-03 – Standard Test Method for Tensile Properties of Plastics
ASTM D 256-06 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
ASTM D 648-06 – Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.

2.4 SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.

3. Installation methods.

Shop Drawings: Submit shop drawings detailing the installation methods. Coordinate placement with locations noted on the Contract Drawings.

1.5 QUALITY ASSURANCE

Manufacturer Qualifications:

4. All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.

Installer Qualifications:

5. The deck support system installer must have a minimum of two (2) years proven construction experience, be capable of estimating and building from blueprint plans and details, determine elevations, and properly handle materials. All Work must comply with the Bison installation application procedures for deck support work specified herein.

Special Considerations:

6. The contractor assumes the responsibility for and must take into consideration the structural capability and adequacy of the structure to carry the dead and live load weight(s) involved, and that the density of any insulation is satisfactory to resist crushing and damaging the waterproofing membrane.

Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

7. Finish areas designated by Architect.
8. Do not proceed with remaining work until workmanship is approved by Architect. *.(if applicable)*
9. Refinish mock-up area as required to produce acceptable work.

2.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store Bison Deck Supports and system components with labels intact and legible.

B. Inspect all delivered materials to insure they are undamaged and in good condition.

C. Store and dispose of solvent-based materials such as construction adhesive, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

2.6 PROJECT CONDITIONS

A. There are no pedestal installation temperature restriction guidelines other than the practical considerations of working in any unsafe condition or inclement weather.

B. Deck supports specified are to be for used with pedestrian traffic only.

C. Pedestrian decks must be restrained by perimeter blocking or walls on all sides. Lateral movement greater than 1/8" is unacceptable and will be rejected.

D. **Heavy Roof Top Features.** Flat bottom features such as planters, heavy benches, water features, hot tubs, etc. always require individual support that is in addition to the deck pedestal system.

a. A minimum of one additional pedestal support must be installed for every 500 lbs. (or portion thereof) of static loading. These additional support pedestals must be installed directly under the decking and evenly spaced immediately below the feature locations. One additional pedestal must be placed under corner of any rectangular feature.

b. When installing Bison Cubes, additional support may be needed under the center and corners of the cubes depending on the size and anticipated weight loads.

c. Features supported by legs or feet are not advised or considered unacceptable because of the consequences of point loading.

d. Any feature that creates vibration must be provided for in special consultation and written agreement with Bison. Cell phone towers, heavy planters and other similar features require their own separate curb designed by an architect or engineer.

E. All decks shall be designed to not exceed the design capacity of the pedestal.

F. The substrate immediately below the pedestals shall provide positive drainage.

G. In the case of decks over roofing substrates, roof systems must meet local building code and be in accordance with the NRCA recommended good construction practices. Only roofing manufacturer approved systems shall be used.

H. Decks over roofing and waterproofing:

Bison Pedestal Installation: Bison pedestals must be installed on surfaces with a minimum 40 psi bearing capacity.

Bison Pedestal Installation: Bison pedestals must be supported by a surface that provides a minimum 40 psi bearing capacity. There are alternate ways to accomplish the non- invasive and required support.

Roof top applications : Two basic types of roof systems are commonly found in the US and Canada for retrofit and new roofing. Roof systems that specify insulation below the waterproofing layer, and roof systems that have extruded insulation above the waterproofing membrane.

1) Roof Type 1 – Common Insulation installed below Roof Membranes.

Currently the most typical and common roofing systems specify roofing membranes be installed over common rigid insulation boards that are typically manufactured from poly-isocyanurate, perlite, or wood fiber-board materials. These typical systems incorporate 20 psi density insulations that need additional support to create **an adequate** bearing surface. That is typically accomplished in one of three ways.

a) Incorporate one of the thin Cap Bearing Protective Layer Insulation specifications that call for a very thin protective layer to be installed on top of the common 20 psi insulation. Such a cap type insulation product is commonly formed as a thin dense low-foamed isocyanurate layer, and provides the necessary pedestal support.

b) Bison Model FIB Pedestal Base: Install an enlarged base that supports the pedestal to distribute the anticipated loaded weight of a pedestal over an enlarged area. Bison manufacturers the Floating Insulation Base (Model FIB) for this purpose. Model FIB is specifically designed to be directly installed over Type 1 roof systems that incorporate 20 psi common insulation boards.

c) Insulation above the Membrane: Install a 1.5" thick (min.) layer of dense, closed cell 40 psi (min.) extruded cell poly-styrene insulation board above the common roofing system that has buried insulation to provide support for the pedestal system.

2) Roof Type 2 – Closed Cell **Insulation Protecting** Roof Membrane Systems.

a) Inverted Roof Membrane Systems that incorporate **40 + psi density** closed cell extruded poly-styrene insulation **on top of the roofing membrane are the second type. The dense extruded polystyrene is capable of bearing Bison pedestal weights. Before the ballast rock is installed, deck system pedestals can be installed directly on the insulation.** Varying densities and thicknesses of extruded polystyrene are commonly used, and substantial ballasting is required.

b) Bison pedestals can be installed directly on top of **gravel removed** 40 psi, or greater, extruded closed cell polystyrene insulation with 1.5" thickness or greater.

I. Decks on Grade:

1. Any substrate soil that is to receive pedestals shall be adequately compacted and have positive drainage slope. A "walkway gravel" base (ie: ¼" Minus (breeze) should be installed and compacted at Bison Deck Support locations.
2. Bison Floating Foundation Bases (FFB) must be used beneath all on-grade Bison Deck Support decks. Level the surface and install directly on grade as a base.
3. A wall or perimeter containment on all open sides is required. Install structural perimeter containment that restrains the entire decking system.

2.7 WARRANTY

At project closeout and upon request, Bison Deck Supports can provide to the Owner or Owners Representative, an executed copy of the manufacturer's standard document outlining the terms, conditions and limitations of their limited warranty against manufacturing defect for a period of three (3) years.

The Contractor warrants that his work will remain free from defects of labor and materials used in conjunction with his work in accordance with the General Conditions for this project or a minimum of three (3) years.

It is the responsibility of the Contractor installing the product listed in this section to coordinate warranty requirements with any related sections or adjacent Work. Notify the Architect immediately of any potential lapses or limitations in warranty coverage.

For use with pedestrian traffic only – Never use Bison Deck Supports to support decks that have wheeled, motorized or equipment traffic.

Decks should be restrained on all sides and not have lateral movement in excess of 1/8 inch.

PART 3 PRODUCTS

3.1 MANUFACTURERS

Acceptable Manufacturer: Bison Innovative Products; 1975 W. 13th Ave, P.O. Box 40246, Denver, CO 80204. Toll Free 888-412-4766. Phone 303-628-7950. Fax 303-825-5988. Email: Sales@BisonIP.com. Web: www.BisonIP.com.

Substitutions: Not permitted.

Requests for substitutions will be considered in accordance with provisions of Section 01600.

3.2 APPLICATIONS/SCOPE

Furnish and install a complete adjustable deck support system with a maximum cavity height of up to:

1. Screwjack Pedestals maximum cavity height 16 inches (305 mm) without additional bracing.

Deck supports are not designed for supporting decks that carry vehicular traffic or equipment including but not limited to snow removal equipment, ATV's, forklifts, or any motorized vehicles.

Consult the Manufacturer and the Project Engineer regarding the following:

2. When spacer tab condition or design requires spacing between decking tiles or concrete pavers other than the standard spacing required by the manufacturer.
3. When considering use for other than a raised decks (e.g. interior floors, stairs, etc.).
4. When the required pedestal height exceeds the safe limits as determined by the Manufacturer.
5. When pedestal load capacity exceeds the maximum listed.
6. When anticipating installation of any items with excess weight on top of the deck.
7. When using Bison Deck Supports pedestals on grade (soil).
8. When greater pedestal load capacity is required.

3.3 SCREWJACK DECK PEDESTALS

A. Typical Height Range 0-16 inches
B. Weight Bearing Design Capacity 1000 lbs/pedestal FS:2
C. Integral 4.5 mm (3/16 inch) spacer tabs.
D. Made in the USA

Pedestals:

1. Model B1: 1 1/4 inches to 2 inches (32mm - 51mm).
2. Model B2: 2 inches to 3 inches (51mm - 76mm).
3. Model B3: 3 inches to 4 3/4 inches (76mm - 121mm).
4. Model B4: 4 3/4 inches to 7 3/4 inches (121mm - 197mm).
5. Model B3 + C4: 7 3/4 inches to 9 inches (197mm - 229mm).
6. Model B4 + C4: 9 inches to 12 inches (229mm - 305mm).
7. Model B4 + C4 + C4: 12 inches to 16 inches (305mm – 406mm).
    a. Rotating Base: Size: 7 7/8 inch (200mm) diameter x 3/16 inch (4.75mm) top wall thickness.
    b. Bearing Surface Area: 48 square inches (310 sq. cm.).
    c. Four (4) - 1/4 inch (6mm) diameter holes for drainage and / or mechanical attachment.
    d. Material: Mineral Filled High Density Copolymer Polypropylene. Contains 20% Post industrial recycled material
    e. Top Unit: 5/32 inch (4mm) thick plate
    f. Bearing Surface Area: 29 square inches (187 sq. cm.) nominal
    g. Material: Mineral Filled High Density Copolymer Polypropylene. Contains 20% Post industrial recycled material
8. C4 Coupler: Adds up to 4 inches (102 mm) of height.
    a. Material: Mineral Filled High Density Copolymer Polypropylene. Contains 20% Post industrial recycled material

Low Height Pedestal Supports:

9. Model: VT316 1/8 inch (3.175mm) tall
    a. Integral Spacer Tabs: Specify 3/16 inch
    b. Material: Mineral Filled High Density Copolymer Polypropylene. Contains 20% Post industrial recycled material.
    c. Bearing Surface Area: 17.75" sq inches nominal
10. Model: HD25 Stackable (4 Max) 1/4 inch (6.4mm) tall, with integral Spacer Tabs
11. Model: HD50 Stackable (4 Max) 1/2 inch (13mm) tall, with integral Spacer Tabs
12. Model: HD75 Stackable (4 Max) 3/4 inch (19mm) tall, with integral Spacer Tabs
    a. Integral Spacer Tabs: 3/16 inch.
    b. Material: Mineral Filled High Density Copolymer Polypropylene. Contains 20% Post industrial recycled material.
    c. Bearing Surface Area: 29" sq inches (187 sq. cm.) nominal

Base Leveler Disks:

13. Model: LD4 - Placed beneath pedestals to compensate for slopes up to 1 inch per foot.
    a. Slope: 1/4 inch per foot. Stack up to four LD4's under one pedestal for up to 1 inch of slope compensation.
    b. Dimensions: Center point thickness 3/8 inch (9.5mm).
    c. Material: Mineral Filled High Density Copolymer Polypropylene. Contains 20% Post industrial recycled material.

Shims:

14. Model: B11 Flexible Shim 1/16 inch
    a. Use no more than 4 shims. If using only 1/4 segment, adhere it to the pedestal with construction adhesive.
    b. Material: (1.5mm) Sanaprene.
15. Model: PS1 Rigid Poly Shims 1/8 inch (3.175mm
    a. Use no more than 2 shims. If using only 1/4 segment, adhere it to the pedestal with construction adhesive.
    b. Material: Mineral Filled High Density Copolymer Polypropylene.
        Contains 20% Post-industrial recycled material.
16 Model: BB-Wedge
    a. Spacing Wedge
    b. Material: Mineral Filled High Density Copolymer Polypropylene.
        Contains 20% Post-industrial recycled material.

Base Pads:

16. Model FFB: Pedestal base pad for on grade use, provides a large 12 inch by 12 inch x ¼ inch (305mm x 305mm x 6 mm) base bearing surface for on grade installations.
17. Model FIB: Pedestal base pad for use on roofing and waterproofing installations over low density insulation, provides a large 12 inch by 12 inch x 11/16 inches (305mm x 305mm x 17.5mm) base bearing surface.
18. Material: Mineral Filled High Density Copolymer Polypropylene. FIB also contains galvanized metal pad.

PART 4 EXECUTION

4.1 EXAMINATION

Do not begin installation until substrates have been properly prepared.

If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

Verify all elevations, required pedestal heights and deck dimensions before commencing work.

4.2 PREPARATION

Establish accurate lines, levels and visual pattern.

The substrate surface that will receive the deck supports must be well compacted (on grade) and structurally capable of carrying the dead and live loads anticipated.

The substrate must be clean and free of projections and debris that could impair the performance of the pedestals or the total deck system.

Decks over roofing and waterproofing: verify that installation conforms to section 1.7(H) of this specification.

Decks on Grade: verify that installation conforms to section 1.7(I) of this specification.

Installation requirements vary for each individual project site. Deck materials used, pattern, grid layout, starting point, and finished elevation should be shown on plan view shop drawings which have been prepared and approved by the designer, installing contractor and/or owner.

Once a starting point and the finished elevation of the deck surface have been determined, the support system elevation (finished elevation minus deck material thickness) is established and marked around the perimeter using a transit "torpedo" water level or laser leveling device.

Precise measurements should be taken and deck area should be accurately defined. Mark off and square all outside edges with control lines (chalk lines or spray paint). Install two (2) lines that are perpendicular to each other across the deck area. Continue to mark a grid of lines in both directions marking the location of each pedestal. To assure a square layout, use the control lines as references to periodically check the layout during installation.

INSTALLATION

Install in accordance with Bison and other contributing manufacturer's instructions.

If required, place a Floating Insulation Base (FIB) board or Floating Foundation Base (FFB) in the location on the grid of each pedestal.

Next, a deck support must be placed where each measured grid line meets the perimeter. Remove two (2) spacer tabs in line with one another on top of each deck support placed around the perimeter. Remove all four (4) spacer tabs at corners.

Adjust each deck support to a "top of pedestal" elevation marked around the perimeter. Normally the deck support is positioned as close to the perimeter as possible, with the two remaining spacer tabs aligned with the grid line. Using the "top of pedestal" elevation marked on the perimeter, stretch a mason's line along and slightly ahead of the second row of deck supports. A laser leveling device may also be used for this purpose.

On larger decks, it is recommended that pedestals be pre-sorted and pre-set to the proper elevation and placed in position prior to the installation of pavers or tiles.

As the deck supports located along the grid lines are loaded with pavers or tiles, fine vertical adjustment can be made by rotating the base or bottom of the deck support. Clockwise rotation of the pedestal base will raise the bearing surface and the deck. Counter-clockwise rotation will lower the top bearing surface.

Bison pedestals have built in height limit indicator 'bumps'. When pedestal is fully extended, height limit indicator "bumps" will be felt and heard, indicating the maximum height of the pedestal. Do not extend pedestal beyond the height limit indicators. Do not exceed maximum height listed on pedestal, use the next size pedestal. A C4 coupler must be added to the B4 model to achieve greater heights. Always maintain adequate thread engagement. Never over extend any pedestal.

Slight irregularities in decking panel thickness can be compensated for by using one to two shim segments. Place on top of the pedestal, under the corner(s) of the decking tile or paver. Use no more than two (2) shims on top of the pedestal and always adhere quartered (1/4) wedges with construction adhesive.

Stackable Fixed Height Pedestals: Complete deck and grid layout as instructed above. Stack no more than four (4) fixed height pedestals together and place in lieu of adjustable pedestals where needed. Spacer tabs can be removed to accommodate perimeter and corner support locations.

Slope Compensation:

1. Preferred Method: A base leveler disk should be used to level the pedestal base. Place one to four disks under the pedestal base to compensate for up to 1 inch per foot of slope. Compensate for slope by placing the disks' thickest edge (located on the edge by a small finger tab) at the down slope side of the deck support, one disk compensates for 1/4 inch per foot of slope. Using two to four disks, rotate one in relation to the other to create a level deck support.
2. Shims may be used in multiples, whole or segmented, and placed under the base to level the deck support.
3. Under a pedestal: All shims under a pedestal must be adhered with construction adhesive to each other – never to the membrane. Shim no more than 1/8 inch (3mm) beneath each pedestal.
4. On top of a pedestal: Use no more than 2 shims.

If a specifier requires and desires to install a cavity deck system over the height of 16 inches (406.4mm) maximum of 24 inches (609.6mm) in height, special approval is required prior to commencing the installation. The installing contractor must furnish Bison Deck Supports the proposed design for the extreme height bracing, stamped by a professional,

licensed engineer. Special written approval will then be furnished by Bison Deck Supports to the installing contractor with a copy to the specifier, prior to commencing any pedestal and decking work.

4.3 DECK SUPPORT PLACEMENT AND FINAL ADJUSTMENT

Deck supports and the deck surface panels must be placed as the manufacturer directs in these written instructions. Use of labor saving devices, such as paver lifters, is encouraged, especially on large jobs.

Pedestals are designed to be rotated for final slight adjustment when pedestals are fully loaded. Deck supports should be leveled in each succeeding row as the installation proceeds. Final height adjustment or maintenance is easily made by simply rotating the Screwjack support in a clockwise or counter-clockwise direction to raise or lower the deck surface material.

Additional sections of shims may be used and should be available for regular maintenance. Shims may be used in multiples, whole or segmented, and placed under the base or on top the pedestal to level the deck support.
On top of pedestal: Use construction adhesive to adhere sections of shims. Construction adhesive is not required when using whole shims on top of a pedestal.
Beneath a pedestal: Use a small amount of construction adhesive to adhere sections of shims and/or whole shims to each other or to the pedestal. Unless specified to do so, DO NOT use construction adhesive to adhere pedestal or shims to insulation, roofing or waterproofing membrane..

4.4 PERIMETER CONTAINMENT

Any area of a deck that is not restrained by a parapet or foundation wall must be 'boxed-in' and contained. The deck panels will move if all sides are not adequately restrained. Perimeter framing and edging boards located at the outside of the deck perimeter must be installed to provide restraint. No movement should be allowed at the perimeter of the deck system greater than 1/8 inch.

4.5 FIELD QUALITY CONTROL

Inspect often during installation to assure that grid spacer lines are being maintained in a straight and consistent pattern and that deck panels or pavers are level and not rocking.

Confirm that deck pedestal height does not exceed the specified height of 16 inches (406.4mm).

Unless otherwise specified in writing to allow for expansion, inspect to assure that all paver spacing between tiles and at perimeter containment does not exceed a 1/8 inch. Particular attention should be made to assure that all pedestrian entry or access points to the deck are level and that the deck surface tiles are not randomly raised or uneven creating a tripping or safety hazard.

4.6 PROTECTION

Protect installed products until completion of project.
Touch-up, repair or replace damaged products before Substantial Completion.

4.7 IMMEDIATELY FOLLOWING INSTALLATION

The Owner, or the Owner's Agent, shall carefully inspect the deck system to be positive that:

1. The new deck system is adequately blocked on all sides to contain the surface decking and related components.
2. There is no more than 1/8 inch spacing between any deck panels and at all sides of the deck perimeter.
3. There is no ballasting rock used to fill in any perimeter voids.
4. There is no 'rocking' of deck panels as foot traffic is applied to the surface decking.
5. All required spacer tabs are in place and visible.

4.8 ROUTINE MAINTENANCE AND CARE

Installer and/or Architect has a duty to instruct the deck owner about performing routine maintenance of the deck. Check for rocking pavers and adjust or shim immediately. Pedestals can settle and may have to be realigned. Failure to do so can cause a tripping hazard. Periodically check spacer tabs and immediately replace broken tabs to limit deck movement. Make sure the edge restraint stays intact and structurally sound.

END OF SECTION

Bison Screwjack B Series Product Line

	Model No.	Description	Height Range	Max Height
	B1	Adjustable Pedestal	1 1/4"-2"	2"
	B2	Adjustable Pedestal	2" - 3"	3"
	B3	Adjustable Pedestal	3" - 4 3/4"	4 3/4"
	B4	Adjustable Pedestal	4 3/4" - 7 3/4"	7 3/4"
	C4	Coupler	Adds up to 4" each	Use 3 to reach 16"
	VT316	Use for Ultra Low Support	1/8"	1/8"
	HD25-316 HD50- 316 HD75-316	Fixed Height Stackable Pedestals	1/4" 1/2" 3/4"	Stack up to 4
	B11	Flexible Shim	1/16"	1/16"
	PS1	Rigid Shim	1/8"	1/8"
	LD4	Base Leveler Stack up to 4	0" - 1" per foot slope	3/8"center thickness
	FS1	Wood Tile Fastening Kit	Secure Bison Wood Tiles to pedestal system.	
	BB Wedge	Bison Wedge Spacers	adds 3/16" in width nominal	
	FIB	Floating Insulation Base	12" x 12" x 11/16" For use over roofing systems with less than 40 psi bearing capacity	

Accessories