Aluminum, Hybrid Steel, Carbon Fiber and Self Storing Volleyball Systems

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

Section 11 66 23 Athlete Equipment – Volleyball Equipment

SPECIFIER NOTE: *This product guide specification is written according to the Construction Specifications Institute (CSI) Format, including MasterFormat, SectionFormat, and PageFormat, as contained in the CSI Manual of Practice.*

The section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building codes. Coordinate this section with other specification sections and the drawings.

*Notes for review by specifier begin with "*SPECIFIER NOTE.*" Optional text requiring a selection is enclosed within square brackets, e.g., "Color shall be [white] [black]." Items requiring specifier input are indicated by a blank line enclosed within square brackets, e.g., "Color: [_____]." Delete all italicized "*Specifier Notes*" and non-applicable optional text in final specification.*

This section is based on systems manufactured by IPI by Bison, 603 "L" Street, Lincoln, NE, 68508. Toll Free 1-800-637-7968 Fax 1-800-638-0698 Web: http://ipibybison.com Email: sales@IPIbyBison.com. Contact the manufacturer for additional information and for assistance in editing this section for your specific application.

PART 1: GENERAL

1.1 Section Includes

SPECIFIER NOTE*: Coordinate this list with the equipment specified in Part 2 Products.*

A. Complete [Aluminum] [Hybrid Steel] [Carbon Fiber] [Self Storing] volleyball system for gymnasiums and other interior installations.

1.2 Related Sections

SPECIFIER NOTE: *List sections dealing with work directly related to this section such as the following. Delete those notes not required.*

A. Section 03 30 00 Cast-in-Place Concrete: Concrete floor slabs and footings to receive floor sockets.
B. Section 09 64 00 - Wood Flooring: Layout and painting of court lines to be coordinated with installation of floor sockets.
C. Section 09 65 00 - Resilient Flooring: Layout of court lines to be coordinated with installation of floor sockets.

1.3 Submittals

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's published product data, including installation instructions.

C. Shop Drawings: Submit manufacturer's shop drawings showing volleyball court layout and floor socket locations, materials, dimensions and method of installation.

D. Warranty: Submit manufacturer's standard warranty.

1.4 Quality Assurance

A. All volleyball equipment, components, and accessories shall be products of a single manufacturer.

B. Volleyball equipment shall be designed, fabricated, and installed to comply with requirements for competition play of the following associations:

1. Federation Internationale de Volleyball (FIVB).
2. National Collegiate Athletic Association (NCAA).
3. National Federation of State High School Associations (NFHS).
4. USA Volleyball (USAV).

1.5 Delivery, Storage and Handling

A. Comply with manufacturer's recommendations for delivery, storage and handling.

B. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name, manufacturer, and location of installation. Upon delivery, materials shall be inspected for damage. Deficient materials shall not be used.

C. Storage: Store materials in a clean, dry area indoors in accordance with manufacturer's instructions. Keep temporary protective coverings in place to product from damage due to moisture and construction activities.

D. Handling: Protect materials and finish from damage to surface and edges during handling and installation.

PART 2: PRODUCTS

2.1 Manufacturer

A. IPI by Bison, 603 "L" Street, Lincoln, NE, 68508. Toll Free 1-800-637-7968 Fax 1-800-638-0698 Web: http://ipibybison.com Email: sales@IPIbyBison.com.

SPECIFIER NOTE: *Delete one of the following two paragraphs; coordinate with requirements of Division 1 on product options and substitutions.*

A. Substitutions: Not permitted.
B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 Volleyball Systems

SPECIFIER NOTE: *Include the following article for Bison Centerline® Elite Aluminum System. Select model number, either **VB1000** – Bison Centerline Elite Aluminum Volleyball System with floor sockets or **VB1000NS** –Bison Centerline Elite Aluminum Volleyball System without floor sockets. Delete article if not required.*

A. System: Bison Centerline® Elite Aluminum Volleyball System Model No. [**VB1000**] [**VB1000NS**] .

1. Standards shall be special 6063-T6 aluminum extrusions. The telescoping design shall insure that no portion of the standard protrudes above the top of the net at any net height setting.
2. The 3" OD outer tube shall have a .32" minimum wall thickness and have extruded flat surfaces on the inside diameter to eliminate inner pole rotation. The inner pole shall be extruded in a special shape to fit inside the outer pole, have machined markings for men's, women's and juniors playing heights, and have a minimum wall thickness of .4". A pin in the outer tube shall ride in a machined slot in the inner tube to prohibit the inner tube from separating from the outer tube. Inner tube shall have clear anodized finish. Outer tube shall have a silver/gray powder coated finish.
3. Bottom of outer tube shall be fitted with a threaded adjustment assembly with a non-marking rubber footpad to allow for fine tuning pole height, and to eliminate floor damage. Non-winch standards shall weigh a maximum 34 lbs and winch end standard shall weigh a maximum of 39 lbs.
4. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
5. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal fiberglass dowels shall be tensioned by means of no less than two ratchet style rope tensioners.
6. Net height shall be infinitely variable from a minimum of 72" to 98" with a single threaded hand knob per standard and have the capability of being locked into place at men's, women's and junior heights with a detent locking pin.
7. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½ " thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no additional cost.
8. System shall include official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB1000** – Centerline Elite Aluminum Volleyball System with floor sockets. Delete if not required.*

9. *Two (2) floor sockets shall be rust free extruded aluminum. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel lid].*

SPECIFIER NOTE: *Include the following article for Bison Centerline® Side-by-Side Elite Aluminum System. Select model number, either **VB1002** –Bison Centerline Side-by-Side Elite Aluminum Volleyball System with floor sockets or **VB1002NS** –Bison Centerline Side-by-Side Elite Aluminum Volleyball System without floor sockets. Delete article if not required.*

A. System: Bison Centerline® Side-by-Side Elite Aluminum Volleyball System Model No. [**VB1002**] [**VB1002NS**].

1. Systems shall consist of three (3) standards, two (2) with winches and one (1) center standard without a winch suitable for setup as two side-by-side volleyball courts.
2. Standards shall be special 6063-T6 aluminum extrusions. The telescoping design shall insure that no portion of the standard protrudes above the top of the net at any net height setting.
3. The 3" OD outer tube shall have a .32" minimum wall thickness and have extruded flat surfaces on the inside diameter to eliminate inner pole rotation. The inner pole shall be extruded in a special shape to fit inside the outer pole, have machined markings for men's, women's and junior playing heights, and have a minimum wall thickness of .4". A pin in the outer tube shall ride in a machined slot in the inner tube to prohibit the inner tube from separating from the outer tube. Inner tube shall have clear anodized finish. Outer tube shall have a silver/gray powder coated finish.
4. Bottom of outer tube shall be fitted with a threaded adjustment assembly with a nonmarking rubber footpad to allow for fine tuning pole height, and to eliminate floor damage. Non-winch standards shall weigh a maximum 34 lbs and winch end standard shall weigh a maximum of 39 lbs.
5. Two (2) nets shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
6. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal fiberglass dowels shall be tensioned by means of no less than two ratchet style rope tensioners.
7. Net height shall be infinitely variable from a minimum of 72" to 98" with a single threaded hand knob per standard and have the capability of being locked into place at men's and women's height with a detent locking pin.
8. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra charge.
9. System shall include 2 pair of official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB1002** – Centerline Side-by-Side Elite Aluminum Volleyball System with floor sockets. Delete if not required.*

10. Three (3) floor sockets shall be rust free extruded aluminum. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel lid].

SPECIFIER NOTE: *Include the following article for Bison Centerline® Elite Steel Hybrid Volleyball System. Select model number, either **VB2000** - Centerline Elite Steel Hybrid Volleyball System with floor sockets or **VB2000NS** – Centerline Elite Steel Hybrid Volleyball System without floor sockets. Delete article if not required.*

A. System: Bison Centerline® Elite Hybrid Steel Volleyball System Model No. [**VB2000**] [**VB2000NS**].

1. Standards shall be a combination of steel tubing (outer pole) and aluminum tube (inner pole). The telescoping design shall insure that no portion of the standard protrudes above the top of the net at any net height setting.
2. The 3" OD outer tube shall have a minimum wall thickness of .22" and have a silver/gray powder coated finish. The inner pole shall be clear anodized 6061-T6 aluminum tubing and have a 2-½" OD with a .21" wall thickness. Inner tube shall have machined markings for men's, women's and junior heights and have a clear anodized finish. A pin in the outer tube shall ride in a machined slot in the inner tube to eliminate inner pole rotation and prohibit the inner tube from separating from the outer tube.
3. Bottom of outer tube shall be fitted with a threaded adjustment assembly with a non-marking rubber footpad to allow for fine tuning pole height, and to eliminate floor damage. Non-winch standards shall weigh a maximum of 61 lbs and winch end standard shall weigh a maximum of 66 lbs.
4. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
5. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one end. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape shall have internal fiberglass dowels and shall be tensioned by means of no less than two ratchet style rope tensioners per end.
6. Net height shall be infinitely variable from a minimum of 72" to 98" with a single threaded hand knob per standard and have the capability of being locked into place at men's and women's height with a detent locking pin.
7. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra charge.
8. System shall include official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB2000** – Centerline Elite Steel Volleyball System with floor sockets. Delete if not required.*

9. Two (2) floor sockets shall be rust free aluminum extrusions. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison Centerline® Side-by-Side Elite Steel Hybrid Volleyball System. Select model number, either **VB2002** – Bison Centerline Side-by-Side Elite Steel Hybrid Volleyball System with floor sockets or **VB2002NS** –Bison Centerline Side-by-Side Elite Steel Hybrid Volleyball System without floor sockets. Delete article if not required.*

A. System: Bison Centerline® Side-by-Side Elite Steel Hybrid Volleyball System Model No. [**VB2002**] [**VB2002NS**].

1. Systems shall consist of three (3) standards, two (2) with winches and one (1) center standard without a winch suitable for setup as two side-by-side volleyball courts.
2. Standards shall be a combination of steel tubing (outer pole) and aluminum tubing (inner pole). The telescoping design shall insure that no portion of the standard protrudes above the top of the net at any net height setting.
3. The 3" OD outer tube shall have a minimum wall thickness of .22" and have a silver/gray powder coated finish. The inner pole shall be 6061-T6 aluminum tubing and have a 2-½" OD

with a .21" wall thickness. Inner tube shall have machined markings for men's, women's and junior heights and have a clear anodized finish. A pin in the outer tube shall ride in a machined slot in the inner tube to eliminate inner pole rotation and prohibit the inner tube from separating from the outer tube.

4. Bottom of outer tube shall be fitted with a threaded adjustment assembly with a non-marking rubber footpad to allow for fine tuning pole height, and to eliminate floor damage. Nonwinch standards shall weigh a maximum of 61 lbs and winch end standard shall weigh a maximum of 66 lbs.
5. Two (2) nets shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
6. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape shall have internal fiberglass dowels and shall be tensioned by means of no less than two ratchet style rope tensioners per end.
7. Net height shall be infinitely variable from a minimum of 72" to 98" with a single threaded hand knob per standard and have the capability of being locked into place at men's and women's height with a detent locking pin.
8. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra charge.
9. System shall include two pair official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB2002** – Centerline Side-by-Side Elite Steel Volleyball System with floor sockets. Delete if not required.*

10. Three (3) floor sockets shall be rust free aluminum extrusions. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison Match Point™ Aluminum Volleyball System. Select model number, either **VB6000** – Bison Match Point Aluminum Volleyball System with floor sockets or **VB6000NS** – Bison Match Point Aluminum Volleyball System without floor sockets. Delete article if not required.*

A. System: Bison Match Point™ Aluminum Volleyball System Model No. [**VB6000**] [**VB6000NS**].

1. Posts shall be constructed of a special 3½" OD 6063-T6 aluminum extrusion with a net adjusting track running the full length of the pole to facilitate infinite adjustment from tennis height (42") to men's competition volleyball height (7' 11 5/8").
2. Height adjustment shall be accomplished by a single threaded hand knob on each post. Top net rope shall be tensioned using a worm gear style winch with a 2" wide nylon strap. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Aluminum poles shall have a silver/gray powder coated finish and weigh a maximum of 43# on winch end and 39# on non winch end.
3. Top and bottom of pole shall be fitted with plastic floor protective inserts.
4. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope.

5. Net side tapes shall be tightened by means of no less than two (2) ratcheting style tensioners per side.
6. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra charge.
7. System shall include two pair official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB6000** – Match Point Aluminum Volleyball System with floor sockets. Delete if not required.*

8. Two (2) floor sockets shall be rust free aluminum extrusions. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison Match Point Side-by-Side Aluminum Volleyball System. Select model number either **VB6002** Bison Match Point Aluminum Volleyball System with floor sockets or **VB6002NS** Bison Match Point Aluminum Volleyball System without floor sockets. Delete if not required.*

A. System: Bison Match Point Aluminum Side-by-Side Volleyball System [**VB6002**] {**VB6002NS**}.

1. Three (3) standards shall be constructed of a special 3½" OD 6063-T6 aluminum extrusion with a net adjusting track running the full length of each pole to facilitate infinite adjustment from tennis height (42") to men's competition volleyball height (7' 11 5/8"). Two (2) standards shall include winches for net tensioning.
2. Height adjustment shall be accomplished by a single threaded hand knob on each post. Top net rope shall be tightened using a worm gear style winch with a 2" wide nylon strap. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Aluminum poles shall have a silver/gray powder coated finish and weigh a maximum of 43# on winch end and 39# on non winch end.
3. Top and bottom of pole shall be fitted with plastic floor protective inserts.
4. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope.
5. Net side tapes shall be tightened by means of no less than two (2) ratcheting style tensioners per side.
6. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra charge.
7. System shall include two pair official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB6002** – Match Point Side-by-Side Aluminum Volleyball System with floor sockets. Delete if not required.*

8. Three (3) floor sockets shall be rust free aluminum extrusions. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison CarbonMax Composite Volleyball System. Select model number, either **VB7000** – CarbonMax™ Volleyball System with floor sockets or **VB7000NS** – CarbonMax™ Volleyball System without floor sockets. Delete article if not required.*

A. System: CarbonMax™ Composite Volleyball System Model No. [**VB7000**] [**VB7000NS**].

1. Standards shall consist of an outer 3 ½" outside diameter, .25" wall high modulus carbon fiber wound composite tube and a 3" outside diameter 6061-T6 aluminum telescoping clear anodized inner tube.
2. Inner tube shall move freely up and down to adjust net heights between 6' 6" and 8' 2" by means of an internal bevel gear and lead screw mechanism activated by a low-profile, nonremovable winch handle. Net height adjustment shall be possible with net attached and fully tensioned. A heavy wall 3" outside diameter 6061-T6 aluminum extrusion shall be permanently attached and protrude 10" below the outer composite tube to allow installation into any 3" diameter floor socket. Winch end standard shall weigh a maximum of 37# and non winch end shall weigh a maximum of 32#.
3. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in a groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white coated tarpaulin fabric with double stitched hemmed edges.
4. The top of the net shall be tensioned by means of an aluminum machined winch body with a case hardened 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non-removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal rigid dowels shall be tensioned by means of no less than two ratchet style rope tensioners.
5. Height settings for men's, women's and junior shall be clearly marked on the inner telescoping tube.
6. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra cost.
7. System shall include two pair official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB7000** – CarbonMax™ Volleyball System with floor sockets. Delete if not required.*

8. Two (2) floor sockets shall be extruded rust free aluminum. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison Side-by-Side CarbonMax Composite Volleyball System. Specify model number, either **VB7002** – Side-by-Side CarbonMax™ Volleyball System with floor sockets or **VB7002NS** – Side-by-Side CarbonMax™ Volleyball System without floor sockets. Delete article if not required.*

A. System: Side-by-Side CarbonMax™ Composite Volleyball System Model No. [**VB7002**] [**VB7002NS**].

1. Systems shall consist of three (3) standards, two (2) with winches and one (1) center post without a winch suitable for setup as two (2) side-by-side courts, or a single court.
2. Standards shall consist of an outer 3 ½" outside diameter, .25" wall high modulus carbon fiber wound composite tube and a 3" outside diameter 6061-T6 aluminum telescoping clear anodized inner tube.
3. Inner tube shall move freely up and down to adjust net heights between 6' 6" and 8' 2" by means of an internal bevel gear and lead screw mechanism activated by a low-profile,

nonremovable winch handle. Net height adjustment shall be possible with net attached and fully tensioned. A heavy wall 3" outside diameter 6061-T6 aluminum extrusion shall be permanently attached and protrude 10" below the outer composite tube to allow installation into any 3" diameter floor socket. Winch end standard shall weigh a maximum of 37# and non winch end shall weigh a maximum of 32#.

4. The nets shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in a groove of a dome shaped aluminum guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
5. The top of the net shall be tensioned by means of an aluminum body machined winch with a 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non-removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal rigid dowels shall be tensioned by means of no less than two ratchet style rope tensioners.
6. Height settings for men's, women's and junior shall be clearly marked on the inner telescoping tube.
7. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½" thick high-density foam covered with vinyl in your choice of 12 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no extra cost.
8. System shall include official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB7002** Side-by-Side CarbonMax™ Volleyball System with floor sockets. Delete if not required.*

9. Three (3) floor sockets shall be rust free aluminum extrusions. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison Centerline Carbon Fiber Volleyball System. Select model number **VB7777** Bison Centerline Carbon Fiber Volleyball System with floor sockets or **VB7777NS** for Bison Centerline Carbon Fiber Volleyball System without floor sockets. Delete if not required.*

A. System: Bison Centerline Carbon Fiber Volleyball System Model No. [**VB7777**] [**VB7777NS**].

1. Standards shall consist of an outer 3 ½" outside diameter, .25" wall high modulus carbon fiber wound composite tube and a 3" outside diameter 6061-T6 aluminum telescoping clear anodized inner tube.
2. Design shall insure that no portion of the standard protrudes above the top of the net at any net height setting.
3. A heavy wall 3" outside diameter 6061-T6 aluminum extrusion shall be permanently attached and protrude 10' below the outer composite tube to allow installation into any 3" diameter floor socket.
4. Bottom of outer tube shall be fitted with a threaded adjustment assembly with a non-marking rubber footpad to allow for fine tuning pole height and to eliminate floor damage. Non-winch standards shall weight a maximum 27 lbs and winch end standard shall weight a maximum of 32 lbs.
5. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.

6. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal fiberglass dowels shall be tensioned by means of no less than two ratchet style rope tensioners.
7. Net height shall have the capability of being locked into place at men's, women's and junior heights with a detent locking pin. Height setting shall be clearly identified on the inner telescoping tube by machined markings.
8. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½ " thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no additional cost.
9. System shall include official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB7777** – Bison Centerline Carbon Fiber Volleyball System with floor sockets. Delete if not required.*

9. Two (2) floor sockets shall be extruded rust free aluminum. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for Bison Centerline Carbon Fiber Side-by-Side Volleyball System. Select model number, either **VB7702** Bison Centerline Carbon Fiber Side-by-Side Double Court Volleyball System with floor sockets or **VB7702NS** Bison Centerline Carbon Fiber Side-by-Side Double Court Volleyball System without floor sockets. Delete if not required.*

A. System: Bison Centerline Carbon Fiber Side-by-Side Volleyball System Model No. [**VB7702**] [**VB7702NS**].

1. Systems shall consist of three (3) standards, two (2) with winches and one (1) center standard without a winch suitable for setup as two (2) side-by-side volleyball courts.
2. Standards shall consist of an outer 3 ½" outside diameter, .25" wall high modulus carbon fiber wound composite tube and a 3" outside diameter 6061-T6 aluminum telescoping clear anodized inner tube.
3. Design shall insure that no portion of the standard protrudes above the top of the net at any net height setting.
4. A heavy wall 3" outside diameter 6061-T6 aluminum extrusion shall be permanently attached and protrude 10' below the outer composite tube to allow installation into any 3" diameter floor socket.
5. Bottom of outer tube shall be fitted with a threaded adjustment assembly with a non-marking rubber footpad to allow for fine tuning pole height and to eliminate floor damage. Non-winch standards shall weight a maximum 27 lbs and winch end standard shall weight a maximum of 32 lbs.
6. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
7. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate

in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal fiberglass dowels shall be tensioned by means of no less than two ratchet style rope tensioners.

8. Net height shall have the capability of being locked into place at men's, women's and junior heights with a detent locking pin. Height setting shall be clearly identified on the inner telescoping tube by machined markings.
9. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½ " thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no additional cost.
10. System shall include official boundary antennas and a zippered net storage bag.

SPECIFIER NOTE: *Include the following article only for model **VB7702** Centerline Carbon Fiber Side-by-Side Double Court Volleyball System with floor sockets. Delete if not required.*

11. Three (3) floor sockets shall be rust free aluminum extrusions. Floor plates shall be constructed of [machined cast brass with a hinged lid] [chrome plated steel with swivel cover].

SPECIFIER NOTE: *Include the following article for **Model VB4000** Bison Centerline Magic Self Storing Volleyball System. Delete article if not required.*

A. System: Centerline Magic Self Storing Volleyball System Model **VB4000**.

1. System shall be designed so that the pole sections telescope into permanent floor wells that recede no more than 34" below the playing surfaces when not in use, eliminating the need to transport the poles to and from storage for set up and tear down.
2. Each telescoping pole shall be constructed of five 6061-T6 aluminum tubes each machined for a smooth telescoping operation and then hard coated for durability. Each pole section shall have a minimum wall thickness of .25" after machining to insure rigidity and durability.
3. Floor well shall be constructed of 6061-T6 aluminum, have a water tight sealed bottom plate and allow the inner telescoping poles to be removable for service if needed.
4. Each pole section shall telescope with the mating pole section by manually lifting approximately 20" and then rotating approximately 10° to lock in place. The top telescoping section shall be adjustable in 1/2" increments by means of a spring loaded release pin. Additional adjustment in 1/16" increments shall be achieved by 180° rotation of the top rope guide. Design shall incorporate features to control the downward momentum of the pole sections as they are released and lowered.
5. When not in use, the floor well and pole shall be concealed under a hinged brass floor plate permanently attached to the floor.
6. Winch and top rope attachment hook for non winch end shall be removable without tools when telescoping poles are stored in floor.
7. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
8. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall

be tensioned by means of a ratcheting style tensioner. Each net side tape with internal fiberglass dowels shall be tensioned by means of no less than two ratchet style rope tensioners.

9. Net height shall be infinitely variable from 42" to 96".
10. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall be padded to a minimum height of 72" with 1½ " thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no additional cost.
11. System shall include official boundary antennas.
12. Winch, kevlar top rope net, antennae, boundary markers and side tape tensioners shall be stored in a zippered carrying case and all be capable of setup without tools by a single person.

SPECIFIER NOTE: *Include the following article Model **VB4002** for Bison Centerline Magic Self Storing Side-by-Side Volleyball System. Delete if not required.*

A. System: Centerline Magic Self Storing Side-by-Side Volleyball System Model No. **VB4002**

2. System shall consist of three (3) standards, two (2) with winches and one (1) center standard without a winch suitable for setup as two (2) side-by-side courts.
3. System shall be designed so that the pole sections telescope into permanent floor wells that recede no more than 34" below the playing surfaces when not in use, eliminating the need to transport the poles to and from storage for set up and tear down.
4. Each telescoping pole shall be constructed of five 6061-T6 aluminum tubes each machined for a smooth telescoping operation and then hard coated for durability. Each pole section shall have a minimum wall thickness of .25" after machining to insure rigidity and durability.
5. Floor well shall be constructed of 6061-T6 aluminum, have a water tight sealed bottom plate and allow the inner telescoping poles to be removable for service if needed.
6. Each pole section shall telescope with the mating pole section by manually lifting approximately 20" and then rotating approximately 10° to lock in place. The top telescoping section shall be adjustable in 1/2" increments by means of a spring loaded release pin. Additional adjustment in 1/16" increments shall be achieved by 180° rotation of the top rope guide. Design shall incorporate features to control the downward momentum of the pole sections as they are released and lowered.
5. When not in use, the floor well and pole shall be concealed under a hinged brass floor plate permanently attached to the floor.
6. Winch and top rope attachment hook for non winch end shall be removable without tools when telescoping poles are stored in floor.
7. The net shall be one meter high, be constructed of black polypropylene 3.5mm knotless woven webbing, have a Kevlar top rope and polypropylene bottom rope. The top rope shall rest in the groove of a dome shaped aluminum rope guide on the top of each standard. The top, bottom and sides of the net shall be finished with white-coated tarpaulin fabric with double stitched hemmed edges.
8. The top of the net shall be tensioned by means of an aluminum body machined winch with a case hardened steel 26:1 ratio worm gear mounted on one pole. All winch shafts shall rotate in sealed ball bearings. Winch shall be designed to wind a 2" wide nylon webbing strap that is attached to the net top rope and have a non removable folding handle. Net bottom rope shall be tensioned by means of a ratcheting style tensioner. Each net side tape with internal fiberglass dowels shall be tensioned by means of no less than two ratchet style rope tensioners.
9. Net height shall be infinitely variable from 42" to 96".
10. Top and bottom ropes shall be covered for player safety between the standards and the edge of the net by no less than ½" thick foam padding with white vinyl cover. Each standard shall

be padded to a minimum height of 72" with 1½ " thick high-density foam covered with vinyl in your choice of 16 school colors. Padding may, at the option of purchaser, be printed with up to 10 letters per side at no additional cost.

11. System shall include official boundary antennas.
12. Winch, kevlar top rope net, antennae, boundary markers and side tape tensioners shall be stored in a zippered carrying case and all be capable of setup without tools by a single person.

2.3 Official Platform

SPECIFIER NOTE: *Include one of the following if an Official Stand Platform is required. Do not specify* ***VB73*** *to use with* ***VB6000***, ***VB6000NS***, ***VB6002*** *or* ***VB6002NS***. *Delete if not required.*

A. Model: VB73 Bison Clamp-On Official Platform with Padding.

1. Platform shall be constructed of 1" diameter 11 ga. steel tube, be fully welded and have a silver/gray powder coated finish.
2. Platform shall clamp to the volleyball standard approximately 74" above the floor without tools by means of a hand knob tensioner.
3. Platform width shall be no less than 21" and the depth should be no less than 19" with the handrails positioned no less than 33" above the platform.
4. When in use, platform shall rest on non marking anti-skid floor pads.
5. Non marking wheels shall allow easy transport when not in use.
6. All hand surfaces to a height of 72" shall be covered by 1" thick high density foam padding with [gray], [black], [maroon], [navy], [royal], [scarlet], vinyl covering.

B. Model: VB76 Bison Freestanding Folding Volleyball Official's Platform with Padding.

1. Platform shall be constructed of 1" diameter 11 ga. wall steel tubing and be fully welded except as required to allow folding for transport and storage.
2. All components shall have a silver/gray powder coated finish.
3. Platform shall be designed to fold for transport and storage without tools by means of two pull pins.
4. When in use platform shall rest on non marking, anti-skid floor pads.
5. Non marking wheels shall allow easy transport and storage when platform is folded and not in use.
6. Platform shall be no less than 19" in width and 25" in depth and have handrails extending no less than 34" above the platform.
7. All hard surfaces to a height of 72" shall be padded with 1" thick foam covered with gray vinyl.

PART 3: EXECUTION

3.1 Co-ordination

A. Coordinate layout of volleyball courts and location of floor sockets with installation of floor surfacing and application of game lines and boundaries.

SPEICIFER NOTE: *Include the following two paragraphs if floor sleeves are being installed to accommodate telescoping or fixed length standards.*

B. Coordinate location of sleeves and required size of sleeve footing with trade responsible for placing concrete. Provide sleeves in adequate time to allow casting in concrete floor slabs. Ensure that setting of sleeve compensates for type of floor finish to be provided.
C. Ensure that sleeves for each volleyball court are spaced at [37'] [11.28 m] on center.

3.3 Installation

A. Install volleyball system in accordance with approved shop drawings and manufacturer's instructions at locations indicated on drawings.

3.4 Field Quality Control

A. Insert standards into floor socket or extend self storing telescoping poles (if applicable) and attach nets, boundary markers, antennae, judge's platform, protection padding, and other accessories. Verify that all items have been provided and are as required for complete installation.
B. Verify that standards are vertical and rigid. Verify net height settings are accurate.
C. Provide missing items and correct deficiencies.

3.5 Cleaning

A. Remove construction debris from project site in accordance with provisions outlined in Division 1.
B. Remove protective wrappings and labels and wash surfaces.
C. Do not use harsh cleaning materials or methods that would damage finish.
D. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
E. Remove and replace damaged components that cannot be successfully repaired, as determined by Architect.

3.6 Demonstration

A. Demonstrate to Owner's designated representative complete operation and required maintenance of installed volleyballs system.
B. Submit operation and maintenance manuals in accordance with Section 01 77 00 - Closeout Procedures.

END OF SECTION