

SECTION 11 66 23 - GYMNASIUM EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Ceiling Suspended Volleyball System.
 - 2. Control system.
 - 3. Safety pads.
- B. Related Requirements:
 - 1. Section 03 30 00 "Cast-in-Place Concrete" for installation of floor insert sleeves to be cast in concrete slabs and footings.
 - 2. Section 11 66 90 "Wall Pads" for wall-mounted waferboard backed pads.

1.3 DEFINITIONS

- A. FIVB: Federation Internationale de Volleyball (The International Volleyball Federation).
- B. NFHS: National Federation of State High School Associations.
- C. USAV: USA Volleyball.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. If applicable, include assembly, disassembly, and storage instructions for removable equipment.
 - 2. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.
- B. Shop Drawings: For gymnasium equipment.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include details of field assembly for removable equipment, connections, installation, mountings, floor inserts, attachments to other work, and operational clearances.
 - 3. Include transport and storage accessories for removable equipment.
- C. Samples: For each exposed product and for each item and color specified.

- D. Samples for Initial Selection: For each type of gymnasium equipment.
- E. Samples for Verification: For the following products:
 - 1. Volleyball Net: Minimum 12-inch (305-mm) length by full height, including one edge and net accessories.
 - 2. Pad Fabric: Wall padding not less than 3 inches (76 mm) square, and corner and column Samples not less than 3 inches (76 mm) long, with specified treatments applied. Mark face of material.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Court layout plans, drawn to scale, and coordinated with floor inserts, game lines, and markers applied to finished flooring.
- B. Qualification Data: For Installer.
- C. Product Certificates: For each type of gymnasium equipment.
- D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For gymnasium equipment to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install gymnasium equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Verify position and elevation of floor inserts and layout for gymnasium equipment.

1.9 COORDINATION

- A. Coordinate installation of floor inserts with structural floors and finish flooring installation and with court layout and game lines and markers on finish flooring.
- B. Coordinate layout and installation of overhead-supported gymnasium equipment and suspension-system components with other construction including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of volleyball system lift equipment.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS**2.1 MANUFACTURERS, GENERAL**

- A. Source Limitations: Obtain each type of gymnasium equipment from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Volleyball lift mechanisms and anchors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.3 OVERHEAD-SUPPORTED VOLLEYBALL EQUIPMENT

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Performance Sports Systems Model 8001R and specified accessories or comparable products by one of the following:
 - 1. Draper Inc.
 - 2. Jaypro Sports, LLC.
 - 3. Porter Athletic Equipment Company.
- B. Standard Rules: Provide equipment according to the requirements of NFHS's "Volleyball Rules Book."
- C. Overhead-Supported Volleyball System:
 - 1. General: Volleyball system shall include the net, structural frames, post padding, antenna, electric winch, and referee's chair.
 - 2. Framing: System shall be comprised of two vertical frame members hinged at the truss connection point to allow the system to fold as a single unit.
 - a. Provide manufacturer's standard square heavy wall tubing, extended to the floor in the down position, to support tension loads from net and prevent swing loads from play.
 - 3. Laterally brace the frames with sway brace.

4. Frames shall fold to the stored position by means of a 3/4 hp dual drum electric winch. Frames shall provide net attachment rails that have infinite net height adjustment between tennis height and 8'-4" to meet all age group height settings for both men and women
- D. Nets: 32 feet (9.75 m) long; one each system; and as follows:
1. Width and Mesh: Competition volleyball net, 39 inches (990 mm) with 4-inch- (102-mm) square mesh made of black nylon string.
 - a. Hem Band Edges: White, not less than 2-inch- (50-mm-) wide top, bottom, and side bindings; not less than 1-inch- (25-mm-) wide tension straps at top, bottom, and midpoint of each side end of net; end sleeves for dowels; and lines with linkage fittings threaded through top and bottom hems of binding. Provide lengths of lines and linkage fittings as required to properly connect to and set up net for post standard spacing indicated on Drawings.
 2. Dowels: Not less than 1-inch- (25-mm-) diameter wood. Provide two dowels per net threaded through each side hem sleeve for straightening net side edges.
 3. Net Antennas: 3/8-inch- (9.5-mm-) diameter, high-tensile-strength, extruded-fiberglass or plastic rods, 72 inches (1800 mm) long, extending above top hem band of net, with alternating white and red bands according to competition rules. Provide two antennas per net.
 - a. Clamps: Designed to secure antenna to top and bottom of net.
- E. Net-Tensioning System: Designed to adjust and hold tension of net. Fully enclosed, nonslip manufacturer's standard-ratchet type winch with cable length and fittings for connecting to net lines, positive-release mechanism, and removable handle. Mount net tensioner on post standard at side away from court. Provide end post with post top pulley. Provide opposing post with welded-steel loops, hooks, pins, or other devices for net attachment and post top grooved line guide.
- F. Referees' Stands: Provide manufacturer's standard adjustable-height units designed to be attached to and supported by post standard. Fabricate welded-steel tubing units with finish and color to match post standards.
1. Provide safety pads for legs of each stand.
- G. Safety Pads: Comply with NFHS requirements. Provide pads consisting of not less than 1/2-inch- (12.7-mm-) thick, multiple-impact-resistant crosslinked or closed-cell polyethylene foam filler covered by puncture- and tear-resistant fabric cover, not less than 14-oz./sq. yd. (475-g/sq. m) nylon-reinforced PVC. Provide pads with hook-and-loop closure or attachments for the following components:
1. Post Standards: Wraparound style pads with Velcro straps, designed to totally enclose each standard to a minimum height of 72 inches (1830 mm); one per post.
 2. Net Lines: Four per net.
 3. Judges' Stands: Pads designed to totally enclose front and sides.
 4. Fabric Cover Flame-Resistance Ratings: Complies with NFPA 701.
 5. Fabric Color: Match school colors.

2.4 FLOOR PROTECTION COVERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Draper Inc.
 2. Jaypro Sports, LLC.
 3. Performance Sports Systems.
 4. Porter Athletic Equipment Company.
- B. General: Provide fire-resistant athletic floor coverings, including storage cart.
1. Material: 22 oz/sq yd (748 g/sq m) laminated vinyl with polyester scrim reinforcement with additives to resist rot, mildew, fungus, and fading.
 2. Fire Rating: Class A in accordance with NFPA 101.
 3. Dimensions: 10 feet (3.1 m) wide in rolls 120-foot (36.5 m) long.
 4. Color: As selected by the Architect from manufacturer's full range.
- C. Accessories: Provide manufacture's standard storage cart for up to 6 rolls and hand-held power winder.

2.5 EQUIPMENT OPERATORS

- A. Electric Operator: Provide manufacturer's standard operating machine of size and capacity recommended by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.
1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. Operator Type: Cable drum with grooved drum and cable tension device to automatically take up cable slack and retain cable in grooves.
 3. Operator Mounting: Wall-mounted board.
 4. Control System: Touch screen controls with WiFi capability as provided by volleyball system manufacturer.

2.6 MATERIALS

- A. Steel: Comply with the following:
1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 2. Steel Tubing: ASTM A 500/A 500M or ASTM A 513, cold formed.
 3. Steel Sheet: ASTM A 1011/A 1011M.
- B. Support Cable: Manufacturer's standard galvanized-stranded-steel wire rope with a breaking strength of 7000 lb (3175 kg). Provide fittings complying with wire rope manufacturer's written instructions for size, number, and installation method.

- C. Support Chain and Fittings: For chains used for overhead lifting, provide Grade 80 heat-treated alloy steel chains, complying with ASTM A 391/A 391M, with commercial-quality, hot-dip galvanized steel connectors and hangars.
- D. General-Purpose Chain: For chains not used for overhead lifting, provide carbon steel chain, complying with ASTM A 413/A 413M, Grade 30 proof coil chain or other grade recommended by gymnasium equipment manufacturer. Provide coating type, chain size, number, and installation method complying with manufacturer's written instructions.
- E. Castings and Hangers: Malleable iron, complying with ASTM A 47/A 47M; grade required for structural loading.
- F. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard corrosion-resistant or noncorrodible units; concealed; tamperproof, vandal- and theft-resistant design.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for play court layout, alignment of mounting substrates, installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.
 - 1. Verify critical dimensions.
 - 2. Examine overhead supporting structure.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's written installation instructions and competition rules indicated for each type of gymnasium equipment. Complete equipment field assembly where required.
- B. Unless otherwise indicated, install gymnasium equipment after other finishing operations, including painting, are completed.
- C. Cut-out Trim: Limit cuts in face of padding from trim unit's corner-to-corner outside dimensions. Install with ends of cuts concealed behind trim flange.
- D. Anchoring to In-Place Construction: Use anchors and fasteners where necessary to secure built-in and permanently placed gymnasium equipment to structural support and to properly transfer load to in-place construction.
- E. Connections: Connect electric operators to building electrical system.
- F. Removable Gymnasium Equipment and Components: Assemble in place to verify that equipment and components are complete and in proper working order. Instruct Owner's

designated personnel in properly handling, assembling, adjusting, disassembling, transporting, storing, and maintaining units. Disassemble removable gymnasium equipment after assembled configuration is approved by Owner, and store units in location indicated on Drawings.

3.3 ADJUSTING

- A. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.

3.4 CLEANING

- A. After completing gymnasium equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.
- B. Replace gymnasium equipment and finishes that cannot be cleaned and repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

END OF SECTION 11 66 23

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