

SECTION 11481

BASKETBALL EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Ceiling suspended, forward folding, electrically operated basketball backstops with backboard, goal, winch, height adjuster, backboard edge padding, and net.
- B. Related sections:
  - 1. Section 09550 - Wood Flooring: Layout and painting of court lines to be coordinated with installation of basketball backstops.
  - 2. Section 09650 - Resilient Flooring: Layout of court lines to be coordinated with installation of basketball backstops.
  - 2. Section 09900] - Painting: Field painting of backstops.
  - 3. Section 16000 Electrical supply, conduit, and wiring for motorized winch.

1.2 REFERENCES

- A. ANSI A208 - Particleboard, Mat-Formed Wood.
- B. ASTM A500 - Formed Welded Seamless Structural Tubing in Rounds and Shapes.
- C. ASTM B85 - Aluminum-Alloy Die Castings.
- D. ASTM B221 - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 [01330] - Submittal Procedures:
  - 1. List of proposed products and product data.
  - 2. Shop drawings showing layout, elevations, dimensions, fabrication details, method of attachment, requirements for supplemental bracing or structural support members and necessary electrical wiring diagrams.
  - 3. Calculations for actual vertical and horizontal loads to be transmitted to structural [walls] [roof framing] supporting backstop assemblies.
  - 4. Manufacturer to provide calculations and reports for tests performed by an

independent testing laboratory accredited by the American Association of Laboratory Accreditation (A2LA) that demonstrates compliance with minimum safety factors required by these specifications.

5. Copy of warranties required by Paragraph 1.5 for review by Architect.

6. Manufacturer's installation instructions.

#### 1.4 QUALITY ASSURANCE

A. All components including framing, backboard, goals, [electric] winches, [controls,] and accessories for basketball backstop assemblies as well as all other related gymnasium equipment products shall be products of a single manufacturer.

B. Backstops shall be designed, fabricated, and installed to comply with National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFHS) regulations.

#### 1.5 WARRANTY

A. Provide under provisions of Section 01720 – Project Record Documents

1. 25 years warranty for basketball backstop structure.

2. Lifetime warranty against breakage for backboards installed with goal brace.

3. 8 years warranty for bolt-on safety edge padding.

### PARTS 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS

A. Draper, Inc., 411 South Pearl Street, Spiceland, Indiana 47385-0425; 765-987-7999.

B. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitution Procedures.

#### 2.2 MATERIALS

A. Structural steel tubing: Steel, mechanical, round tubing conforming to ASTM A500.

B. Clamps:

1. Beam clamps: Split-A type with [7 square inches] [4516 square mm] minimum beam flange contact area and secured with 2 all thread bolts at each attachment point. Clamps shall be designed to be capable of supporting a minimum of 20,000 Lbs. each. Superstructure shall be designed with a minimum of four attachment clamps to produce a combined minimum attachment point safety factor of 75 to 1. Superstructure tubes shall be reinforced with bridging and/or

bracing when truss centers exceed 10'0"

2. Component attachment clamps: Full surface type fabricated from [1/4 inch] [6 mm] thick steel or saddle style utilizing serrated clamping surface and minimum 5/8" U-Bolt.
  3. Goal brace: Type attaching behind goal mounting plate and directly to backstop main stem transferring load directly to structural frame.
- C. Extruded aluminum: ASTM B221, alloy 6063 Temper T5.
- D. Aluminum castings: ASTM B85.
- E. Particleboard: Solid core, 55 pounds per cubic foot density industrial grade complying with ASTM A208, Type 1, Grade 1-M-3 factory finished with phenolic resin sheet thermally fused to front and back surfaces.
- F. Finish: Factory applied white powder coat for steel parts.

### 2.3 CEILING SUSPENDED FORWARD FOLDING BACKSTOP

- A. Type: Ceiling suspended, forward folding, front braced basketball backstop; Model EZ Fold TF-20 as manufactured by Draper, Inc.
- B. Distance from court floor to backstop attachment at roof structure: As indicated on Drawings.
- C. Main frame: Rigid T design of back-to-back right triangles constructed by welding together steel tubing of the following outside diameters and gauges. Parallelogram frames are not acceptable.
1. Main center stem: [6 inches] [152 mm] diameter, [11 gauge] [3.2 mm thick] of length sufficient to allow backstop height adjustment of plus or minus [6 inches] [152 mm].
  2. Top member of T frame: [4 inches] [102 mm] diameter, [11 gauge] [3.2 mm].
  3. Folding front brace: Jackknife type, fully adjustable, self-locking in down position constructed from [2-1/2 inches] [64 mm] diameter, [13 gauge] [2.4 mm thick] outer tube and [2-1/4 inches] [57 mm] diameter, [14 gauge] [2 mm] inner tube.
  4. Diagonal side braces: [2-1/4 inches] [57 mm] diameter, [14 gauge] [2 mm thick].
- D. Pivot point: [1-1/4 inches] [32 mm] diameter solid steel shaft and [1/2 inch] [13 mm] steel plate hangers.

## 2.4 ELECTRIC WINCH

- E. Provide for each folding basketball backstop separate electric winch mechanism.
- F. Type: Fully enclosed, direct drive, worm gear, electric winch designed to hold backstop at any position during raising and lowering; Model 503285 Motorized Winch as manufactured by Draper, Inc.
  - 1. Motor: 3/4 HP, 11.5 AMP, capacitor type, 60 cycle, 115 volt, single phase with automatic thermal overload protection manufactured in compliance with NEMA specifications.
  - 2. Hoist cable: [1/4 inch] [6 mm] diameter, 7 by 19, galvanized aircraft cable with [7,000 pounds] [3175 kg] ultimate breaking strength.
  - 3. Roller: Spring-load providing tensioning pressure to ensure cable tracks evenly on grooved drum.
  - 4. Limit switches: Rotary counting up and down type, pre-wired to motor as integral part of winch.
- G. Controls: Provide key lock, 3 position, momentary contact wall control switch to lower, raise, and stop backstop.
  - 1. Provide two keys, one controlling up direction and second controlling down direction.
  - 2. Provide with stainless steel cover plate.

## 2.5 SAFETY BELT AND LOCK

- A. Provide each front and rear folding basketball backstop with safety belt and lock test to withstand [1000 pounds] [454 kg] free fall load.
- B. Safety lock: Inertia sensitive to automatically lock backstop in position at any time during storage, raising, or lowering. Sudden increase in either tension or speed shall activate lock.
- C. Safety belt: [2 inches] [51 mm] wide nylon belt rated at [6000 pounds] [2721 kg] breaking strength; Safety Belt [503229] [503230] as manufactured by Draper, Inc.
- D. Belt shall extend ([36 feet] [10.97 m]-503229) ([46 feet] [14.02 m]-503230) and shall be automatically retracted and stored on reel equipped with constant force spring. Operation and locking action shall be activated by centrifugal force to lock backstop before unit travels [12 feet] [3.7 m] of free fall.
- E. Unit shall incorporate automatic reset not requiring poles, ropes, levers, or buttons for resetting.

## 2.6 BACKBOARD

- A. Type: Rectangular, glass, official size backboard to be used with direct attachment goal; Model 503136 as manufactured by Draper, Inc.
- B. Size: [72 inches] [1829 mm] wide by [42 inches] [1067 mm] high.
- C. Construction: [1/2 inch] [13 mm] thick fully tempered glass in extruded aluminum frame with mitered corners. Provide steel gusset type mounting corner brackets with slots for mounting backboard to support structure.
- D. Goal mounting assembly: Steel assembly secured to aluminum frame and equipped with steel sleeves through glass allowing rear structure to be secured to front mounting plate. Provide with holes and studs to secure backboard and goal directly to goal brace. Front plate provided with holes for goal attachment.
- E. Equip frame and goal mounting assembly with neoprene shock absorbing cushions.
- F. Permanently etch official white border and target area on front side of glass.

## 2.7 GOALS

- A. Type: Heavy duty, front mounted goal fabricated from steel rod and steel plate; Model 503572 as manufactured by Draper, Inc.
- B. Goal shall support [800 pounds] [363 kg] at outer edge of ring and shall flex downward [2-3/4 inches] [70 mm] without permanent damage.
- C. Ring: Fabricated from [5/8 inch] [16 mm] diameter high strength, cold drawn alloy steel rod formed into [18 inches] [457 mm] ring. Provide with 12 no-tie net attachment clips welded to ring. Rigidly brace ring with [5/8 inch] [16 mm] diameter high strength steel rod welded to mounting plate.
- D. Mounting plate: [8 gauge] [4.4 mm] steel plate bracket with mounting holes and designed to position inside of ring [6 inches] [152 mm] from backboard.
- E. Finish: Orange enamel.
- F. Anti-whip net: Top half made of durable fibers encased in nylon to prevent net from whipping up on rim. Lower half all nylon. Color white.
- G. Mounting hardware: Zinc plated.

## 2.8 HEIGHT ADJUSTER

- A. Type: Mechanism for [manually] [electrically] adjusting height of [fan shaped]

[rectangular] backboard and goal; Model [503092] [503093] [503094] [503095] [503096] [503097] [503098] [503099] Height Adjuster as manufactured by Draper, Inc.

- B. Adjustment range: Goal position from [8 to 10 feet] [2438 to 3048 mm] above court floor.
- C. Construction: Steel angle frame attaching to backboard, double slip tube guide assembly, clamp type connectors, and other required attachment hardware.
- D. Operation: [Provide [1-1/4 inches] [32 mm] acme threaded rod and nut assembly, Timken bearing, and crank for manual operation.] [Provide electric, reversible, linear actuator with cam style limit switches, [key switch, and cover plate][power wand][group controller as specified in later section of these specifications].]

## 2.9 SAFETY EDGE PADDING

- A. Type: Foam padding for bottom edge and corners of backboard to provide safety protection to meet NCAA and NFHS requirements; Model 503253 Safe-Edge Padding as manufactured by Draper, Inc.
- B. Construction: Adhesive applied, open cell foam, [2 inches] [51 mm] wide and wrapping around edges [3/4 inch] [19 mm]. Padding shall cover bottom edge of backboard and extend [15 inches] [381 mm] up sides.
- C. Color: Scarlet

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## 2.14 ACCESSORIES

- A. Provide backstop with backstop hangers, clamps, brackets, fasteners, and all other hardware required for complete, functional, rigid assembly and installation.

## PART 3 - EXECUTION

### 3.1 COORDINATION

- A. Coordinate provision of basketball backstops with construction of [wall] [roof and ceiling framing] supporting basketball backstop to ensure proper support and method of attachment.
- B. Coordinate support of backstops to ensure proper distribution of loads and adequacy of attachment points. Provide additional structural framing members as required.
- C. Coordinate electrical requirements for electrically operated winch and height adjuster to ensure proper power source, conduit, wiring, and boxes for keyed switches.

D. Prior to installation, verify exact locations of backstops.

### 3.2 INSTALLATION

A. Install folding basketball backstops in accordance with approved shop drawings and manufacturer's instructions.

B. Install backstops, backboards, and goals plumb, level, and rigid. Attach to [wall] [roof] framing with anchors of size and type recommended by manufacturer.

C. Install backboards such that goal is [10 feet] [3048 mm] above court floor. After installing, verify that mounting height is correct.

D. Install electrically operated winches, hoisting cables, safety belt and lock securely to operate properly and smoothly to safely lower and raise folding backstops.

### 3.3 FIELD QUALITY CONTROL

A. Operate each folding basketball backstop a minimum of three times to ensure proper lifting and lowering. Adjust as required to ensure smooth operation and accurate positioning.

B. Operate each backboard and goal height adjuster to ensure proper movement. Adjust [limit switches and] mechanism as required to ensure smooth operation and accurate positioning.

### 3.4 CLEANING

A. Remove protective wrappings, wash surfaces, and attach nets.

### 3.5 DEMONSTRATION

A. Demonstrate to Owner's designated representative complete operation and required maintenance for folding basketball backstops.

B. Submit operation and maintenance manuals in accordance with Section 01720 - Project Record Document.

END OF SECTION