**SECTION 11 66 43**

**NEVCO, INC.**

**INTERIOR ELECTRONIC BASKETBALL-VOLLEYBALL-WRESTLING SCOREBOARD ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**\*\*\*\*\* Edit the following paragraph to indicate if scoreboard is for basketball only or for combination basketball, volleyball, and wrestling and which accessories are required. \*\*\*\*\***

 A. Section includes: Interior, electronic, multi-sport [basketball] [multi-purpose basketball/volleyball/wrestling] scoreboard[s] including control center, and other accessories for complete functional installation.

**\*\*\*\*\* List other specification sections dealing with work directly related to this section such as the following. \*\*\*\*\***

 1. Section 11 66 23 Gymnasium Equipment

 2. Section 26 20 00 Low Voltage Electrical Distribution

 3. Section 27 41 16 Integrated Audio-Video Systems

 4. Section 10 14 63 Electronic Message Signage

**1.2 REFERENCES**

**\*\*\*\* List by number and full title reference standards referred to in remainder of the specification section. \*\*\*\*\***

 A. American Society for Testing and Materials (ASTM) Publications:

 1. ASTM B221 - Aluminum‑Alloy Extruded Bar, Rod, Wire, Shape, and Tube.

1. National Electrical Code.
2. Federal Communications Commission, Part 15 Rules & Regulations.
3. UL and C-UL Standard for Electric Signs

**1.3 SUBMITTALS**

1. Provide in accordance with Section 01 33 00 - Submittal Procedures:
2. To minimize the environmental impact of multiple paper copies, product installation prints, instructions and diagrams of manufacturer will be submitted in a paperless fashion.  The end user shall receive all pertinent hard-copy documentation at delivery.
3. Product data for scoreboards, controls, and accessories shall include descriptions of control functions etc.
4. Installation drawings, face layout, dimensions, construction, electrical wiring diagrams, and method of anchorage.  (Paperless when applicable).
5. Copy of guarantee required by Paragraph 1.5 for review by Architect.  (Paperless when applicable).
6. Manufacturer's installation instructions. (Paperless when applicable).
7. Finish Samples.

**1.4 QUALITY ASSURANCE**

 A. Source limitation: All components including scoreboard, control center, control cable, and other accessories and installation hardware shall be products of a single manufacturer.

 B. Manufacturer qualifications: Company specializing in manufacturing electronic scoreboards with 10 years minimum successful world-wide experience.

 C. Scoreboards and other electrical components shall be certified for use in United States and Canada by Underwriter Laboratories, (UL), Inc. and shall bear either UL or C-UL label only.

 D. Scoreboards and other electrical components shall be electrically grounded in accordance with National Electrical Code (NEC), Article 600.

**1.5 GUARANTEE**

 A. Provide under provisions of Section 01 78 00 - Closeout Submittals: Guarantee to cover defects in materials and workmanship.

 1. 5 years parts and factory labor guarantee for scoreboards, marquees, message centers, video displays, Stadium Pro loudspeaker enclosures and accessories from invoice date.

 2. 2 years part and factory labor guarantee for wireless components, portable scoreboards and solar power kits from invoice date

 3. 1 year part and factory labor guarantee for scorer’s tables, handheld controls and switches from invoice date.

 4.. Lifetime telephone support.

**PART 2 - PRODUCTS**

**2.1 ACCEPTABLE MANUFACTURERS**

 A. Nevco, Inc., 301 East Harris Avenue, Greenville, Illinois 62246; 800-851-4040; www.nevco.com.

 B. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 00 - Product Substitution Procedures.

**2.2 MATERIALS**

 A. Aluminum face and perimeter frame: Fabricated from [0.050] [inch] [1.3] [mm] minimum thickness, ASTM B221 aluminum sheet.

 B. Finish: Acrylic polyurethane paint. Color as selected by Architect from manufacturer's standard range. [Color to be [No. 70 - Desert Tan] [No. 72 - Electronic Blue] [No. 73 - Maroon] [No. 74 - Forest Green] [No. 76 - Print Black] [No. 95 - Silver Gray] [No. 99 - Golden Yellow] [No. 102 - Team Orange] [No. 103 - Cardinal Red] [No. 104 - Medium Purple] [No. 120 - Teal Blue] [No. 121 - Midnight Blue] [No. 140 - Royal Blue] [No. 141 - Navy Blue] [No. 142 - Kelly Green] as provided by Nevco, Inc..] [PMS Color No.\_\_\_\_\_].

 C. Electronics: Low voltage, solid state, 2-wire cable, multiplex system.

 D. Provide galvanically isolated communication interface to reduce threat of damage from electrical storms.

 E. LED (light emitting diode) units: Seven-bar, segmented digits in protective aluminum cover, rated typical life 100,000 hours, and designed to provide excellent visibility from all angles and sides.

 F. Provide location specific universal power cord with plug for world-wide installation.

 G. Control cable where required shall be UL listed, 2-wire, type RG-58/U, coaxial cable, [1/4 inch] [6 mm] diameter.

 H. Junction boxes where required: Sheet metal box and cover, [4-1/2 x 2-1/8 x 2-1/8 inches] [114 x 54 x 54 mm] min. complying with NEMA standards.

**2.3 SCOREBOARDS**

**\*\*\*\*\* Include the following to specify Model 2700-NL a multi-purpose basketball/volleyball/wrestling scoreboard displaying time, scores, period, bonus and double bonus, next possession, number of player fouling with personal fouls, and team fouls. \*\*\*\*\***

A. Type: Interior, multi-purpose basketball/volleyball/wrestling electronic scoreboard with dual integral horns, LED displays for time, scores, period, bonus and double bonus indicators, and next possession arrows; Model 2700-NL (base) as manufactured by Nevco. Rear-lit [RL] caption plates or Electronic Team Names [ETN] optional.

 1. Size: [8 feet long x 3 feet high x 8 inches deep.] [2.4 m long x .9 m high x 203 mm deep.]

 2. Approximate hanging weight: [71 pounds] [32 kg].

 3. Large captions:

 a. [6 inches] [152 mm] high: "Home", "Guests", and "period".

 4. LED displays:

 b. Timing: Red [13 inches] [330 mm] high digits.

 c. Team scores: Orange [13 inches] [330 mm] high digits.

 d. Period: Orange [9 inches] [229 mm] high digits.

 e. Next possession: Orange arrow for each team.

 f. Bonus and double bonus: Red “B”

 5. Rear-lit captions (when specified) shall require zero maintenance.

 6. Provide Advertising /Team logo area 12” x 12” minimum.

 7. Power requirement: All options included: 126 Watts, MAX, 90 to 240 Volts AC w/Power Factor Correction.

**2.4 ACCESSORIES/OPTIONS**

 A. Provide each scoreboard or accessory with control cable of length required. Electrical junction boxes, conduits, mounting hardware, and other accessories as required for installation are to be provided by others.

**\*\*\*\*\* Include the following to specify Electronic Team Names or Rear-lit captions with your Nevco scoreboard. \*\*\*\*\***

 B. Electronic Team Names: “HOME” and “GUEST” caption plates to be replaced with programmable Electronic Team Names as manufactured by Nevco, Inc..

1. Specify changeable team names as ETN. Shall not require controller upgrade, use of additional accessories, or computer.

2. Specify (R)ed or (A)mber ETN LED’s (Example: 27xx ETN-R)

 C. Provide rear-lit caption plate option. Specify [RL]. (Model Example: 27xx-RL)

 D. Provide for optional Team Name in place of “HOME” if NL/RL is selected.

**\*\*\*\*\* Include the following to specify Model 9515 locker room clocks which can be connected to scoreboard control center. \*\*\*\*\***

 E. Locker room clock: Provide LED clocks for locker rooms indicated on Drawings to be interfaced with control center for basketball scoreboard. Model 9715 as manufactured by Nevco, Inc..

 1. Size (length by height by depth): [14.25 x 10.25 x 1.5 inches] [445 x 273 x 41 mm].

 2. Construction: Fabricate with brushed aluminum frame and Acrylic face with imprinted diffusion.

 3. Electrical power: 100-240 Volts AC 18 Watts; powered from the Indoor Accessory Driver (IAD).

 4. Locker room clock shall display same time and timing functions as scoreboard timer.

 5. LED display: Red [4.5 inches] [102 mm] high digits.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* Removable protective screens can be used to protect front of scoreboards. Include the following paragraph for this option. \*\*\*\*\***

 F. Protective screens: Equip each scoreboard face with protective screen.

**\*\*\*\*\* Screens can be manufactured with either wire mesh or fabric net. \*\*\*\*\***

 1. Type: [Wire mesh] [Fabric net] screen installed as protection in front of scoreboard; Model 275-xxxx Protective Screen as manufactured by Nevco, Inc..

 2. Size: Completely cover scoreboard face and allow for installation of top and bottom battens.

 3. [Wire mesh: 14 gauge steel wire] [3 x 3 inches [Net: Black fabric mesh] in [1.75” x 1.75 inches] grid.

 4. Finish battens and wire mesh with non-glare, flat, powder coated paint.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* Red LED light perimeter strips can be installed on rear side of glass basketball backboards to signal end of period. This end of period light system is typically interfaced with scoreboard time control. Include and edit the following to specify optional end of period lights. Model EOP1-42 is for 42 inches (1067 mm) high backboards and EOP1-48 for 48 inches (1219 mm) high backboards. \*\*\*\*\***

 G. End of Period Lights: Pair of perimeter light strip sets installed on rear side of glass basketball backboards to signal end of period; universal fit for 42” or 48” backboard. Model EOP1 as manufactured Nevco, Inc..

 1. Light strips: Self adhesive light strips with Super Bright Red LED displays and end wire connectors to join light strips.

 2. Powered from the Indoor Accessory Driver (IAD).

1. Power requirement per module, (stand alone): 120 volts, 1.5 amps, requires earth ground.
2. Can program to light up horn and/or shot time violation.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* Include the following to specify portable, battery operated next possession indicator, Model PI-1. \*\*\*\*\***

 H. Portable Possession Indicator: Portable, battery operated LED next possession indicator;

 Model PI-1 as manufactured by Nevco, Inc..

 1. Size (length by height by depth): [16-1/4 x 4-1/2 x 5-1/2 inches] [413 x 114 x 140 mm].

 2. Weight: [5 pounds] 2.3 kg].

 3. Power: Requires 6 C batteries.

 4. Construction: Aluminum with black finish with white "poss" and two arrows. Provide selector switch on top.

 5. LED displays: Four red LED clusters of five each LEDs in front and on back show possession for each team.

 I. Scorer’s Table Possession Indicator: LED next possession indicator that mounts to Scorer’s Table with brackets (included). Requires 120v adapter (included). Model PI-1 (Padded) as manufactured by Nevco, Inc..

 1. Size (length by height by depth): [16-1/4 x 4-1/4 x 5-1/2 inches] [413 x 114 x 140 mm].

 2. Weight: [5 pounds] 2.3 kg].

 3. Power: Requires 120v power adapter (included).

 4. Construction: Aluminum with black finish with white "poss" and two arrows. Provide selector switch on back of unit.

 5. LED displays: Four red LED clusters of five each LEDs in front and on back show possession for each team.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* Include the following paragraph to specify pair of shot clocks Model SCD-T5 which can be connected to scoreboard control center. \*\*\*\*\***

 J. Shot clocks: Pair of electronic units displaying main time, shot clock time, with external horn box that can be mounted above or below the clock; Model SSC-T5 as manufactured by Nevco, Inc..

 1. Size: [24 inches] [609.6 mm] x [24 inches] [609.6 mm] x [2 inches] [50.8 mm] deep.

1. Approximate weight each: [50 lbs.] [23kg].

3. LED displays:

 a. Main time: High Intensity Red [5 inches] 127 mm] high digits.

 b. Shot clock time: High Intensity Amber [13 inches] [330 mm] high digits.

 4. Horn: Sounds automatically at 0 shot clock time.

 5. Power requirement: 12vDC low voltage power input from included 120 VAC 1.2A Power Supply; powered from the Indoor Accessory Driver (IAD).

 6. Construction: Shot Clock face made of durable Lexan, encased in an aluminum cabinet.

 K. Shot clocks: Pair of electronic units displaying main time, shot clock time with external horn box that can be mounted above or below the clock; Model SSC-T9 as manufactured by Nevco, Inc..

 1. Size: [36 inches] [914.4 mm] x [30 inches] [762 mm] x [2 inches] [50.8 mm] deep.

1. Approximate weight each: [58 lbs.] [26kg].

3. LED displays:

 a. Main time: High Intensity Red [9 inches] [229 mm] high digits.

 b. Shot clock time: High Intensity Amber [13 inches] [330 mm] high digits.

 c. End of period goal lights: High Intensity Red LED’s.

 4. Horn: Sounds automatically at 0 shot clock time.

 5. Power requirement: 12vDC low voltage power input from included 120 VAC 1.2A Power Supply; powered from the Indoor Accessory Driver (IAD).

 6. Construction: Shot Clock face made of durable Lexan, encased in an aluminum cabinet.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* Include the following paragraph to specify pair of shot clocks Model SCD-5 which can be used portable, suspension mounted, or placed in mounting baskets for wall or backboard mounting. Shot clocks can be connected to scoreboard control center. \*\*\*\*\***

 L. Shot clocks: Pair of portable electronic units displaying shot clock time with external horn box that can be mounted above or below the clock; Model SSC-7 as manufactured by Nevco, Inc..

 1. Size: [20 inches] [508 mm] x [20 inches] [508 mm] x [2 inches] [50.8 mm] deep.

1. Approximate weight each: [40 lbs] [18 kg.].

 3. LED displays:

 a. Shot clock time: High Intensity Red [13 inches] [330 mm] high digits.

 4. Horn: Sounds automatically at 0 shot clock time.

 5. Power requirement: 12vDC low voltage power input from included 120 VAC 1.2A Power Supply; powered from the Indoor Accessory Driver (IAD).

 6. Construction: Shot Clock face made of durable Lexan, encased in an aluminum cabinet. **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* SCD-5 shot clocks can be installed in SBSK-1 shot clock mounting baskets which can be attached to goals or wall mounted. \*\*\*\*\***

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* A set of P12 Player Name Panels and F512 Player Foul Panels can be provided and used with various Nevco basketball scoreboards or added to existing scoreboards. Use the following paragraph to specify this option. Panels accommodate 12 players. \*\*\*\*\***

 M. Player name and foul panel set: Provide set of slide letter player name panels and electronic player foul panels accommodating 12 players and to be mounted on both sides of [existing] scoreboard; Model F712-P12 as manufactured by Nevco, Inc..

 2. Overall size for each name/foul combination panel (width by height by depth): [58-3/4 x 80-1/2 x 8 inches] [1289 x 2045 x 203 mm].

 3. Approximate hanging weight per side: [84 pounds] [38 kg].

 4. Player name panels: Two double-faced panels with slide rows each side to receive 12 player numbers and names; Model P12 as manufactured by Nevco, Inc..

 a. Equip with holder brackets and rope pulley assembly to lower panel for reversing and changing names.

 b. Furnish with set of 456 letters and 156 numbers, [4-3/4 inches] [121 mm] high.

 5. Player foul panels: Two panels of 12 rows each with 6 LED clusters per row; Model F712 as manufactured by Nevco, Inc..

 a. Red LED cluster indicates player foul and orange indicates player is in game.

 b. Panels installed at sides of scoreboard adjacent to player name panels.

 c. Non-illuminated or illuminated caption: [6 inches] [152 mm] "fouls". [NL][RL]

 d. Power requirement: 100-240 volts AC, 30 watts max., requires earth ground.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* A set of P15 Player Name Panels and F515 Player Foul Panels can be provided and used with various Nevco basketball scoreboards or added to existing scoreboards. Use the following paragraph to specify this option. Panels accommodate 15 players. \*\*\*\*\***

 N. Player name and foul panel set: Provide set of slide letter player name panels and electronic player foul panels accommodating 15 players and to be mounted on both sides of scoreboard; Model F715-P15 as manufactured by Nevco, Inc..

 1. Overall size for each name/foul combination panel (width by height by depth): [58-3/4 x 97-1/2 x 8 inches] [1492 x 2477 x 203 mm].

 2. Approximate hanging weight per side: [105 pounds] [48 kg].

 3. Player name panels: Two double-faced panels with slide rows each side to receive 15 player numbers and names; Model P15 as manufactured by Nevco, Inc..

 a. Equip with holder brackets and rope pulley assembly to lower panel for reversing and changing names.

 b. Furnish with set of 456 letters and 156 numbers, [4-3/4 inches] [121 mm] high.

 4. Player foul panels: Two panels of 15 rows each with 6 LED clusters per row; Model F515 as manufactured by Nevco, Inc..

 a. Super Bright Red LED cluster indicates player foul and orange indicates player is in game.

 b. Panels installed at sides of scoreboard adjacent to player name panels.

 c. Non-illuminated or illuminated caption: [6 inches] [152 mm] "fouls". [NL][RL]

 d. Power requirement: 100-240 volts AC, 34 watts max., requires earth ground.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* A set of multi-purpose basketball/volleyball SD7-5 Statistics Panels can be provided and used with various Nevco scoreboards or added to existing scoreboards. Use the following paragraph to specify this option. Panels accommodate 5 basketball players or 6 volleyball players. \*\*\*\*\***

 O. Statistics panels: Pair of electronic, multi-purpose basketball/volleyball panels displaying five basketball or six volleyball player numbers, two statistics per player; Model SD7-5 as manufactured by Nevco, Inc..

 1. Panel size (length by height by depth): [36 x 71-1/4 x 8 inches] [914 x 1810 x 203 mm].

 2. Approximate panel hanging weight: [86 pounds] [39 kg].

 3. Non-illuminated, changeable captions: [5-3/8 inches] [ 137 mm] high letters.

 a. Basketball: "plyr", "pts", and "fls".

**\*\*\*\*\* For volleyball, two statistics selected from digs, kills, and aces can be displayed. \*\*\*\*\***

 b. Volleyball: "plyr", ["digs",] ["kills",] ["aces",].

 c. LED displays:

 1) Player number and second statistic: Super Bright Red [5 inches] [127 mm] high digits.

 2) First statistic: Super Bright Amber [5 inches] [127 mm] high digits.

 4. (Option) Electronic Message Centers [ETN] option to replace caption plates for “points”, “fouls”, “kills”, “digs”, “aces” etc.

 5. Power requirement: 100-240 volts AC, 94 watts max., requires earth ground..

**\*\*\*\*\* Statistics Panel SD7-5 requires an independent control center. \*\*\*\*\***

 6. Provide set with Model MPC microprocessor control unit specified in Paragraph [\_\_\_\_\_], two junction boxes, length of control cable, and mounting hardware as required for complete functional installation.

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**\*\*\*\*\* A set of multi-purpose basketball/volleyball SD7-9 Statistics Panels can be provided and used with various Nevco scoreboards or added to existing scoreboards. Use the following paragraph to specify this option. Panels accommodate 5 basketball players or 6 volleyball players. \*\*\*\*\***

 P. Statistics panels: Pair of electronic, multi-purpose basketball/volleyball panels displaying five basketball or six volleyball player numbers, two statistics per player, and either time outs left or total substitutions; Model SD7-9 as manufactured by Nevco, Inc..

 1. Panel size (length by height by depth): [60 x 95-1/4 x 8 inches] [1524 x 2419 x 203 mm].

 2. Approximate panel hanging weight: [150 pounds] [68 kg].

 3. Non-illuminated, changeable captions: [5-3/8 inches] [ 137 mm] high letters.

 a. Basketball: "player", "points", "fouls", and "t.o.l." for time outs left.

**\*\*\*\*\* For volleyball, two statistics selected from digs, kills, and aces can be displayed. \*\*\*\*\***

 b. Volleyball: "player", ["digs",] ["kills",] ["aces",] and "sub" for total substitutions.

 c. LED displays:

 1) Player number and second statistic: Super Bright Red [9 inches] [229 mm] high digits.

 2) First statistic: Super Bright Amber [9 inches] [229 mm] high digits.

 4. Horns: One per panel to be sounded together manually by control operator.

 5. (Option) Electronic Captions [EC] option to replace caption plates for “points”, “fouls”, “kills”, “digs”, “aces” etc.

 6. Power requirement: 100-240 volts AC, 157 watts max, requires earth ground..

**\*\*\*\*\* Statistics Panel SD7-9 requires an independent control center. \*\*\*\*\***

 7. Provide set with Model MPC microprocessor control unit specified in Paragraph [\_\_\_\_\_]], two junction boxes, length of control cable, and mounting hardware as required for complete functional installation.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* A set of basketball PTF-7 Statistics Panels can be provided and used with various Nevco scoreboards or added to existing scoreboards. Use the following paragraph to specify this option. Panels accommodate 5 basketball players. \*\*\*\*\***

 Q. Statistics panels: Pair of electronic, basketball panels displaying five player numbers, number of points and fouls per player, and time outs left per team; Model PTF-7 as manufactured by Nevco, Inc..

 1. Panel size (length by height by depth): [60 x 80-1/2 x 8 inches] [1524 x 2045 x 203 mm].

 2. Approximate panel hanging weight: [130 pounds] [59 kg].

 3. Back lighted captions: [6 inches] [152 mm] high "player", "points", "fouls", and "t.o.l." for time outs left.

 4. LED displays:

 a. Player number, fouls, and time outs left: Super Bright Red [9 inches] [229 mm] high digits.

 b. Points: Super Bright Amber [9 inches] [229 mm] high digits.

 5. Horns: One per panel to be sounded together manually by control operator.

 6. (Option) Electronic Message Centers [ETN] option to replace caption plates for “points”, “fouls” etc.

 7. Power requirement per panel: 100-240 volts AC, 121 watts max., requires earth ground..

**\*\*\*\*\* Statistics Panel PTF5 requires an independent control center. \*\*\*\*\***

 8. Provide set with Model MPC microprocessor control unit specified in Paragraph [\_\_\_\_\_]], two junction boxes, length of control cable, and mounting hardware as required for complete functional installation.

**2.5 CONTROL CENTER**

**\*\*\*\*\* Nevco manufacturers the following control centers for operating scoreboards and other accessories. Refer to Nevco product literature for appropriate control centers for specific scoreboards and electronic accessories.**

 **MPC - Universal wired control center with extensive control features and capacity to operate both scoreboard and accessories.**

 **MPCW - Universal wireless version of MPC Control Center with receiver unit mounted at scoreboard.**

 **MPCX - Wireless, battery operated control center with receiver unit mounted at scoreboard.**

**\*\*\*\*\* Include the following to specify MPC Control Center. \*\*\*\*\***

 A. **Type: Wired**, microprocessor based operator's control center designed to operate different models of scoreboard by interchange of keyboard overlay; Model MPC as manufactured by Nevco, Inc.. Console will operate earlier scoreboards from Nevco, Inc..

 1. Console: High impact, break-resistant gray plastic [11 x 9-1/2 x 4-1/8 inches] [279 x 241 x 105 mm].

 2. Features:

 a. Provide with LED displays, lithium cell battery backup to maintain scoreboard memory and time of day, self test mode, power on-off switch, alternate time control, and multiple scoreboard operation.

 b. Split and raised 40 key keyboard, internal beeper acknowledging each entry, and bookmark capabilities.

 c. Keyboard overlays for scoreboard or accessory.

 d. Remote hand-held main time switch with integral horn button.

 e. [25 feet] [7.6 m] control cable with connectors.

 f. Timer features: Time of day display, multiple time out timers with warning, interval horn, up-count auto stop with horn, and 1/10th second display during last minute.

 g. Dimmer control for scoreboard.

 3. Power requirements: 120 volts, 12 watts, 50/60 Hz.

 4. Provide option of battery supply for control operation if utility power not available.

 5. Provide carrying case for control center, cable, and hand-held switch; Model CC-3 as manufactured by Nevco, Inc..

 a. Size: [18-1/2 x 14-1/2 x 6 inches] [470 x 368 x 152 mm].

 b. Construction: Double wall, high density black polyethylene with padded interior, mechanical latches, and hinges.

 B. **Type: Wireless**, microprocessor based, operator's control center with receiver unit mounted at scoreboard and designed to operate different models of scoreboard by interchange of keyboard overlay; Model MPCW as manufactured by Nevco, Inc.. Console will operate earlier scoreboards from Nevco, Inc.

 1. Unit shall comply with Part 15 of FCC Rules regarding interference.

 2. Console: High impact, break-resistant gray plastic [11 x 9-1/2 x 4-1/8 inches] [279 x 241 x 105 mm].

 3. Features:

 a. Control can be used to operate both wireless and wired scoreboards.

 b. Power on-off switch.

 c. Split and raised 40 key keyboards, internal beeper acknowledging each entry, and bookmark capabilities.

 d. Keyboard overlays for scoreboard or accessory.

 e. Remote hand-held main time switch with integral horn button.

 f. Provide with LED displays, lithium cell battery backup to maintain scoreboard memory and time of day, self test mode, power on-off switch, alternate time control, and multiple scoreboard operation.

 g. Timer features: Time of day display, multiple time out timers with warning, interval horn, upcount auto stop with horn, and 1/10th second display during last minute.

 h. Dimmer control for scoreboard.

 4. Receiver: Sturdy impact resistant construction, [6 x 4 x 1.5 inches] [152 x 102 x 38 mm] with [4 inch] [102 mm] antenna and mounted at scoreboard.

 5. Maximum range: [1,000 feet] [305 m] from control center to receiver.

 6. Receiver shall require no additional source of power or separate control cable

 6. Power adapters: Provide for each control center.

 a. Input: 120 volts, 0.4 amps, 50/60 Hz.

 b. Output: 9 volts, 1.67 amps, 15 watts.

 7. Provide option of battery supply for control operation if utility power not available.

 8. Provide carrying case for control center and hand-held switch; Model CC-3 as manufactured by Nevco, Inc..

 a. Size: [18-1/2 x 14-1/2 x 6 inches] [470 x 368 x 152 mm].

 b. Construction: Double wall, high density black polyethylene with padded interior, mechanical latches, and hinges.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**\*\*\*\*\* Include the following to specify MPCX Control Center. \*\*\*\*\***

 C. **Type: Handheld** wireless, basic, AA battery operated, sport specific, control center with receiver unit mounted at scoreboard; Model MPCX2 as manufactured by Nevco, Inc.. Control will have operability with earlier scoreboards from Nevco, Inc.

 1. Unit shall comply with Part 15 of FCC Rules and Regulations.

 2. Control unit: High impact, break-resistant black ABS plastic Size: 3-1/4” x 5-1/2” x 7/8” (.08 x .14 x .02 m)

 3. Features:

 a. Wireless operation within [1000 feet] [305 m].

 b. Operate multiple scoreboards simultaneously.

 c. System allows multiple controllers to link to individual scoreboards.

 d. High visibility LCD display with a sealed keyboard.

 e. Long battery life with indicator; include two AA batteries.

 f. Single hand operation with a no slip grip.

 g. Built-in belt clip.

 h. Wireless signal strength meter and internal antenna.

 4. Receiver: Injection molded case, [5-1/2 by 3-3/4 by 2 inches] [140 by 95 by 51 mm] mounted at scoreboard.

 5. Maximum range: [1,000 feet] [305 m] from control center to receiver.

 6. Receiver shall require no additional source of power or separate control cable

 6. Power adapters: Provide for each scoreboard receiver.

 a. Input: 120 volts, 0.4 amps, 50/60 Hz.

 b. Output: 9 volts, 1.67 amps, 15 watts.

 7. Provide carrying case for up to two control centers, Model CC-4 as manufactured by Nevco, Inc..

 a. Size: [18-1/2 x 14-1/2 x 6 inches] [470 x 368 x 152 mm].

 b. Construction: Double wall, high density black polyethylene with padded interior, mechanical latches, and hinges.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

 A. Verify exact scoreboard and control center quantities and junction box locations with Architect.

 B. Coordinate requirements for electrical power, wall blocking, auxiliary framing and supports, suspension cables, and other components to be provided under other Specification Sections to ensure adequate provisions are made for complete, functional installation of scoreboards. [Ensure that building roof structure has been designed for loads of suspended scoreboards.]

 C. Coordinate scoreboard electrical requirements to ensure proper power source, conduit, wiring, and boxes are provided. Prior to installation, verify type and location of power supply.

**3.2 INSTALLATION**

 A. Install scoreboards and accessories in accordance with manufacturer's instructions and approved installation drawings.

 B. Before installation, field test scoreboards and accessories for operating functions. Ensure that scoreboards accurately perform all operations. Correct deficiencies.

 C. Rigidly mount scoreboards and accessories level and plumb with brackets and fasteners.

 D. Clean exposed surfaces.

 E. Protect scoreboards and finishes from other construction operations.

**3.3 DEMONSTRATING AND TRAINING**

 A. In accordance with Section 01 75 00 - Starting, Adjusting, and Demonstrating, provide demonstration and training session for Owner's representative covering operation and maintenance of electronic scoreboard.

 **END OF SECTION**