

**Outdoor LED
Generation III & IV
Rodeo Scoreboards**

Installation and Maintenance Manual

ED-13357

Rev 2 – 14 July 2008

DAKTRONICS

Model		
RO-2002-11/21	RO-2008-11/21	RO-2009-11/21

ED-13357
Product 1192
Rev 2 – 14 July 2008

DAKTRONICS, INC.

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Section 1: Introduction

1.1 How To Use This Manual

This manual ED-13357: **Outdoor LED Generation III & IV Rodeo Scoreboards Installation and Maintenance** explains the installation, operation, maintenance, and troubleshooting of Daktronics outdoor LED rodeo scoreboards. With questions regarding the safety, installation, operation or service of these systems, contact Daktronics. For more information on Daktronics Customer Service refer to **Section: 5.9: Daktronics Exchange and Repair Programs** section of this manual.

Important Safeguards:

1. Read and understand these instructions before installing the scoreboard.
2. Do not drop the control console or allow it to get wet.
3. Be sure the display is properly grounded with an earth-ground electrode at the display location.
4. *Disconnect power to the scoreboard when it is not in use.*
5. *Disconnect power when servicing the scoreboard.*
6. Do not modify the display structure or attach any panels or coverings to the display without the written consent of Daktronics, Inc.

Figure 1 illustrates the Daktronics drawing numbering system. Daktronics identifies individual engineering drawing by their drawing number (7087-P08A-69945 in the example), which is located in the lower right corner of the drawing. This manual refers to drawings by their last set of numbers and the letter preceding them. The example would be **Drawing A-69945**.

DAKTRONICS, INC. BROOKINGS, SD 57006		
PROJ: BASKETBALL		
TITLE: SEGMENTATION, 7 SEG BAR DIGIT		
DES. BY: BPETERSON	DRAWN BY: TNELSON	DATE: 8 JUL 01
APPR. BY: AVB	7087-P08A-69945	
SCALE: 1 = 4		

Figure 1: Daktronics Drawing Label

Reference drawings are grouped and inserted in alphanumeric order in **Appendix A: Reference Drawings**.

Listed below are drawing types commonly used by Daktronics, along with the information that each provides.

- **System riser diagrams:** overall system layout from control room to display, power and phase requirements
- **Shop drawings:** fan locations, transformer locations, mounting information, power and signal entrance points and access method (front or rear)
- **Schematics:** power wiring, signal wiring, panelboard or power termination panel assignments, signal termination panel assignments and transformer assignments

- **Final assembly:** component locations, part numbers, display dimensions and assembly/disassembly instructions

All reference drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as in this example: “Refer to **Drawing A-69945** for the location of the driver enclosure.” Additionally, any drawing referenced within a particular subsection is listed at the beginning of that subsection in the following manner:

Reference Drawings:

Segmentation, 7 Seg Bar Digit..... **Drawing A-69945**

Daktronics identifies manuals by their engineering document (ED) number, which is located on the cover page of the manual. For example, this manual would be referred to as **ED-13357**.

The serial and model numbers of a Daktronics scoreboard can be found on the ID label on the display. The label will be similar to

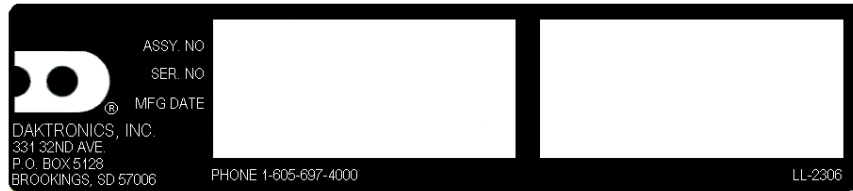


Figure 2: Scoreboard ID Label

the one shown in **Figure 2**. When calling Daktronics Customer Service, please have this information available to ensure quick service. For future reference, note the scoreboard model number, serial number and installation date on the second page of this manual.

Daktronics displays are built for a long life and require little maintenance. However, from time to time, certain display components will have to be replaced. The Replacement Parts List in **Section 5.7** provides the names and part numbers of components that may require replacement during the life of this display.

Following the Replacement Parts List is an explanation of Daktronics Exchange and Repair & Return Programs. Refer to these instructions if replacing or repairing any display component.

1.2 Daktronics Nomenclature

To fully understand Daktronics drawings, it is necessary to know how various components are labeled in drawings. This information is useful when trying to communicate maintenance or troubleshooting efforts. The label “A” on a drawing item typically denotes an assembly. An assembly can be a single circuit board or a collection of components that function together, usually mounted on a single plate or in a single enclosure.

In addition, the following labeling formats might be found on various Daktronics drawings:

- “TB __” denotes a termination block for power or signal cable.
- “F __” denotes a fuse.
- “E __” denotes a grounding point.
- “J __” denotes a power or signal jack.
- “P __” denotes a power or signal plug for the opposite jack.

Finally, Daktronics part numbers are commonly found on drawings. Those part numbers can be used when requesting replacement parts from Daktronics Customer Service. Take note of the following part number formats. (Not all possible formats are listed here.)

- “0P- _____” denotes an individual circuit board, such as a driver board.
- “0A- _____” denotes an assembly, such as a circuit board and the plate or bracket to which it is mounted. A collection of circuit boards working as a single unit may also carry an assembly label.
- “W- _____” denotes a wire or cable. Cables may also carry the assembly numbering format in certain circumstances. This is especially true for ribbon cables.
- “F- _____” denotes a fuse.
- “T- _____” denotes a transformer.
- “PR- _____ - _” denotes a specially ordered part.
- “M- _____” denotes a metal part, and “OS- _____” typically denotes a fabricated metal assembly.

1.3 Manual Overview

Section 1: Provides an overview of the product, product safety information and labeling and numbering descriptions.

Section 2: Contains mechanical installation information for each model.

Section 3: Contains electrical installation information for each model.

Section 4: Contains scoreboard options for each model.

Section 5: Contains scoreboard service information and explains the Daktronics Exchange and Repair & Return Programs.

Appendix A: Contains all drawings referenced in this manual.

Appendix B: Contains [ED-7244](#), a detailed instruction on scoreboard lifting and eyebolts.

1.4 Product Overview

The Daktronics outdoor LED scoreboards are part of a family of scoring and timing displays designed to offer easy installation, readability and reliability. Microprocessor control assures consistent operation and accuracy.

Featuring large, highly visible PanaView® digits 10" to 60" tall, the boards use light emitting diodes, or LEDs, to illuminate the display. LEDs are tiny, solid-state components that use a semiconductor chip to transform electrical current into light; they are high-intensity, low-energy lighting units. Scoreboards in this series typically use red or amber LEDs for optimum outdoor readability.

Because of their LED technology, the scoreboards consume little power – barely more than a single household lamp. Power usage for displays in this series ranges from 150 W to a maximum of 1500 W.

Each of the sections in this manual contains model-specific information, including physical dimensions, digit configuration and power requirements. The scoreboard engineering drawings, located in **Appendix A**, also list dimensions, weight and mounting instructions for each display. Additionally, the scoreboard model number and electrical requirements can be found on a label on the scoreboard entrance panel.

Cabinets for the displays are constructed of heavy-gauge aluminum. Digit and indicator faceplates are black and are set directly into the scoreboard surface. Permanent captions and optional striping are white vinyl.

The outdoor LED scoreboards are designed for use with the All Sport® 5000 series control console. Both consoles use All Sport® keyboard overlays (sport inserts) for game control, and the boards operate without modification on All Sport® 5000 signal protocol. Refer to the following controller manuals for operating instructions:

- [ED-11976](#): All Sport® 5000 Series Control Console Operation Manual

1.5 Model Names

Daktronics scoreboards are differentiated by their model numbers: BA-1518, for example, designates a specific baseball scoreboard. With Model RO-2008-11, for example, the two-letter prefix, *RO*, identifies it as a rodeo display. In this series, the first two numbers following the prefix, *20*, simply identify the scoreboard line, while the next two numbers, *08*, identify the specific model number.

In the outdoor LED display series, the first set of numbers following the prefix typically identifies the series or product line. Most Daktronics scoreboards also carry a two-number suffix that refers to indoor-outdoor status, power supply, and digit color: -11 and -12 are outdoor scoreboards, 120 V and 230 V respectively, and they feature red digits; -21 and -22 are outdoor scoreboards, 120 V and 230 V respectively, and feature amber digits.

The LED scoreboards in this manual carry the -11 or -21 suffix, signifying that they have been designed and manufactured for outdoor use and have a 120 V AC power requirement. Models that operative with 230 V power are also available.

1.6 Product Safety Approval

Daktronics outdoor scoreboards are ETL listed and tested to CSA standard for outdoor use. Contact Daktronics with any questions regarding testing procedures.

1.7 Display Overview

Reference Drawings:

System Riser Diagram	Drawing B-136279
Shop Drawing; RO-2008-11/21 w/ Side Panels, G3	Drawing B-165280
Shop Drawing; RO-2009-11/21, G3	Drawing B-165282
Shop Drawing; RO-2002-11/21, G3	Drawing B-206346

The outdoor rodeo scoreboards are part of a Daktronics family of LED scoring and timing displays designed for easy installation, readability, and reliability. Microprocessor control assures consistent operation and accuracy.

Models detailed in this manual include:

- RO-2002-11
- RO-2008-11 with side ad panels and optional top panel [25' (7620 mm) width]
- RO-2009-11 [18' (5486 mm) width]

Both models use light emitting diodes to power the display. (A light emitting diode, or LED, is a tiny, solid-state component that uses a silicon chip to transform electrical current into light; they are characterized by high intensity and low energy use.) Scoreboards in this series

use red-orange LEDs for best outdoor display. Because of their LED technology, the rodeo scoreboards consume little power – from 265 to 385 watts.

Scoreboard numerals consist of 18" (457 mm) bar digits, with the LEDs arranged in seven separately controlled segments. The rodeo scoreboards display both LEADER and current CONTESTANT numbers, and TIME/SCORE for both. Each scoreboard model displays numbers for the event leader and the "NOW UP" contestant in four digits (to 1999).

Models RO 2008-11/21 and RO-2009-11/21 both feature an additional digit in the TIME/SCORE section, making possible timing to 1/1000th of a second. The two scoreboards also feature 2" (51 mm) circular LED indicators for PENALTY and RERIDE, located in the center of the bottom row. These scoreboards may also include an optional trumpet horn.

Scoreboard captions are white vinyl, 8" (203 mm) high.

RO-2008-11/21 is distinguished from the others in the rodeo scoreboard line by its two advertising panels, one on each side of the display. As an option, the scoreboard display may also include a 25' (7620 mm) x 2' (610 mm) banner-type ad panel. The additional panel, located above the scoreboard, is mounted directly to the scoreboard beams.

The rodeo scoreboards are designed for all-weather use, with internal electronic components housed in separate enclosures. Scoreboard cabinets are constructed of heavy-gauge aluminum.

Refer to **Section 2: Mechanical Installation**, for dimensions and weights of each of the scoreboards.

Refer to **Drawings B-165280, B-165282, and B-206346** in the Appendix of this manual for additional information on each of the models. The system riser drawing, **B-136279**, provides details for setting up the scoreboard with its controller, photocell timing interfaces, and optional results equipment.

Note: Prior to January 1, 2001, Daktronics rodeo displays were typically operated with a Daktronics OmniSport® 1000 Rodeo Timer, and scoreboards manufactured through 2000 continued to use the OmniSport® compatible components. The models in this manual and other rodeo scoreboards currently in production have been designed to operate only with the All Sport® 5100 Rodeo Timer.

Note: The two rodeo displays cannot be interchanged. All Sport® scoreboards (2001 and after) require an All Sport® 5100 controller, and pre-2001 scoreboards required the OmniSport® 1000 controller.

Refer to **Drawing B-136279** for possible All Sport scoreboard/controller system configurations.

Section 2: Mechanical Installation

The installation process involves three procedures:

1. Erecting the structure to which the scoreboard will be mounted.
2. Attaching the scoreboard to the support structure.
3. Routing power and signal wires to the scoreboard and control locations and making the required connections.

2.1 Model Specifications

Reference Drawings:

Shop Drawing; RO-2008-11/21 w/Side Panels, G3.....**Drawing B-165280**
 Shop Drawing; RO-2009-11/21, G3.....**Drawing B-165282**
 Shop Drawing; RO-2002-11/21, G3.....**Drawing B-206346**

Model	Estimated Weight	Dimensions
RO-2002-11/21	350 lbs (159 kg)	Basic display 12'-0" x 6'-6" (3658 mm x 1981 mm)
RO-2008-11/21	Scoreboard w/ side ad panels 500 lbs (227 kg) Optional top panel 65 lbs (30 kg)	Display with side panels 25'-0" x 6'-6" (7620 mm x 1981 mm) Display with side panels and optional top panel 25'-0" x 8'-6" (7620 mm x 2591 mm) Top ad panel (optional, shipped separately) 25'-0" x 2'-0" (7620 mm x 610 mm)
RO-2009-11/21	400 lbs (181 kg)	Basic display 18'-0" x 6'-6" (5486 mm x 1981 mm)

Refer to **Drawings B-165280, B-165282, and B-206346** for further mechanical information on these scoreboards.

2.2 Lifting the Scoreboard

Reference Drawing:

Lifting the Scoreboard..... **Drawing A-44548**

Daktronics scoreboards and message centers are shipped equipped with eyebolts that are used to lift the displays. The eyebolts are located along the top of the cabinet for each scoreboard or scoreboard section.

Note: Daktronics strongly recommends using a spreader bar, or lifting bar, to lift the display.

Using a spreader bar ensures that the force on the eyebolts is straight up, minimizing lifting stress. Lifting methods are shown in the illustration below and in **Drawing A-44548**.

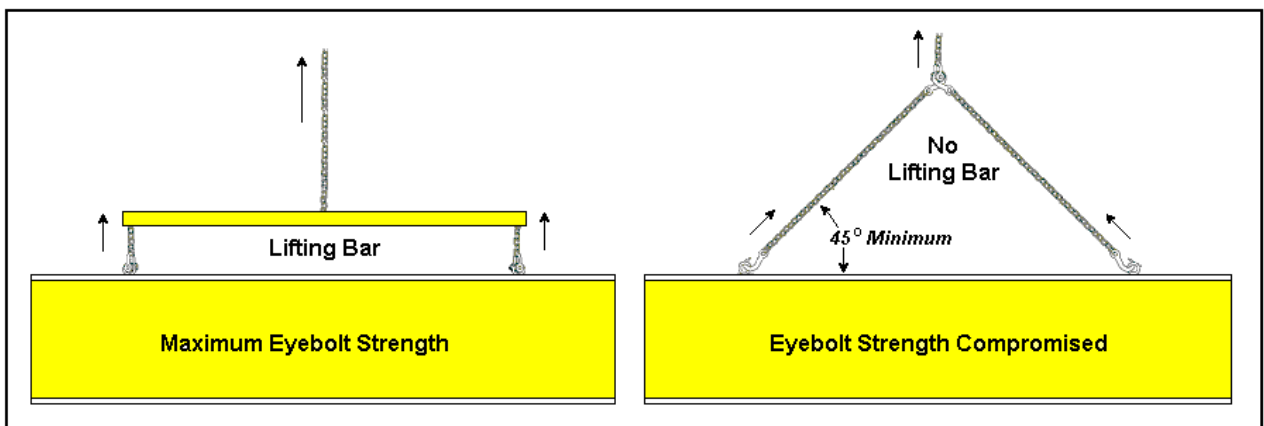


Figure 3: Lifting the Scoreboard

Figure 3 above illustrates both the preferred method (left example) and an alternative method (right example) for lifting a scoreboard. When lifting the display:

- Use a spreader bar.
- Use every lifting point provided.

Take special care to ensure the rated load of the eyebolts is not exceeded. Refer to [ED-7244, Eyebolts](#), to determine allowable loads and load angles for the lifting hardware. [ED-7244](#) is located in **Appendix A** of this manual.

Avoid using other lifting methods. Cables and chains attached to the eyebolts and directly to a center lifting point, as show in the right-hand example in **Figure 3**, can create a dangerous lateral force on the eyebolts and may cause the eyebolts to fail. Daktronics scoreboards use $\frac{1}{2}$ " and $\frac{5}{8}$ " shoulder-type eyebolts mounted to a $\frac{1}{8}$ " aluminum plate or steel nut plate, but exceeding load angles or weight limits could cause the bolts to pull out or the scoreboard cabinet to buckle. In either circumstance, the result would be serious damage to the scoreboard. If you must use this method, ensure a minimum angle between the chain and scoreboard of at least 45 degrees.

Note: Daktronics assumes no liability for scoreboard damage resulting from incorrect setup or incorrect lifting methods.

Eyebolts are intended for lifting only. Do not attempt to permanently support the display by the eyebolts.

In typical multi-section installations, the lower scoreboard section is installed first and secured to the support beams, and then the upper section is placed atop or above the lower section and attached to the beams. There may be cables extending from the top of the lower section. Guide these cables into the hole in the bottom of the upper section for later connection.

If the lift eyebolts are removed, plug the holes with bolts and the rubber sealing washers that were removed with the eyebolts. Apply silicone or another waterproof sealant to the eyebolt openings. Inspect the top and sides of the display for any other holes or openings that may allow moisture to enter the display, and plug and seal those openings as well.

2.3 Scoreboard Installation

Reference Drawings:

Display Mounting	Drawing A-44412
Ad Panel Mounting	Drawing A-52187
Shop Drawing; RO-2008-11/21 w/Side Panels, G3	Drawing B-165280
Shop Drawing; RO-2009-11/21, G3	Drawing B-165282
Shop Drawing; RO-2002-11/21, G3	Drawing B-206346

To install these scoreboards, it is necessary to use steel beam structures reinforced with concrete footings as specified by a qualified engineer.

Note: Daktronics is not responsible for the beams or concrete footings.

The scoreboard is designed to be supported by steel beams spaced as shown in **Drawings B-165280, B-165282, and B-206346**. Beam dimensions and spacing, conduit routing, and other site specifications are shown on each model's engineering drawings.

Mounting hardware is provided by Daktronics. Use the mounting brackets and threaded rods to attach the scoreboard to the vertical beams. For the correct mounting procedure, refer to **Display Mounting, Drawing A-44412**, or to the *Mounting Detail* sections in the lower-right corner of each model's shop drawing.

Note: The long, threaded mounting rods *do not* penetrate the support beam, but rather run along both sides of the beam. No drilling is necessary. Tighten the hardware so that the scoreboard does not slip.

Optional Advertising Panel

A 25' (7620 mm) x 2' (610 mm) advertising panel has been designed for use with model RO-2008-11/21. The ad panel is typically secured to the scoreboard's vertical beams after the base unit has been positioned and mounted. All mounting hardware, including nuts, threaded rods, and mounting angles and channels, is supplied by Daktronics.

Note: The ad panel is located immediately above the main scoreboard but is clamped directly to the beams rather than attached to the scoreboard itself. Refer to **Drawing A-52187** for complete instructions regarding installation of the ad panel.

Section 3: Electrical Installation

Electrical installation consists of the following processes:

1. Providing power and ground to a disconnect near the scoreboard
2. Routing power and ground from the main disconnect to the scoreboard driver/power enclosure
3. Connecting the scoreboard ground to a grounding electrode at the scoreboard location
4. Routing the control signal cable from the control location to the scoreboard location

Note: Only qualified individuals should perform power routing and termination to the display. It is the responsibility of the electrical contractor to ensure that all electrical work meets or exceeds local and national codes.

3.1 Power

Daktronics outdoor LED scoreboards have been designed for easy access to components, and the power and control signal hookup has been simplified. Front panels are removable to allow access to the digits, cabling, and other electronic components.

Correct power installation is imperative for proper display operation. The subsections that follow give details of display power installation. Only qualified individuals should attempt to complete the electrical installation; untrained personnel should not attempt to install these displays or any of the electrical components. Improper installation could result in serious damage to the equipment and could be hazardous to personnel.

The single-section outdoor scoreboards require a dedicated, 120 V circuit for incoming power. The display itself has no breakers or fuses.

WARNING: It is critical that the scoreboard circuit be fused at 15 A and that all conductors used must be designed to pass a 15 A current in normal operation. Failure to meet wiring and overcurrent protection device requirements is a violation of the National Electrical Code® and will void the scoreboard warranty.

All power conductors are 14 AWG, except where 18 AWG wiring is called out on the schematic. All signal conductors are 18 AWG.

Refer to the outdoor scoreboard schematics listed at the beginning of this section and to the tables in **Section 3** to determine circuit specifications and maximum power requirements for the models described in this manual.

Scoreboard power specifications are shown in the following table.

Model	Max Watts	Circuit	Amps
RO-2002-11/-21	300	120 V AC, single phase	2.5 A per line
RO-2008-11/-21	300	120 V AC, single phase	2.5 A per line*
RO-2009-11/-21	300	120 V AC, single phase	2.5 A per line*

* Each scoreboard is capable of drawing approximately 2.2 or 3.2 A per line with all LEDs lit.

Grounding

Reference Drawing:

Schematic; GEN II Outdoor LED, 16 Column DRVR **Drawing A-154330**
 Schematic; GEN III Outdoor LED, 16 Column DRVR **Drawing A-177931**

Use after February 1, 2008

Driver: GEN IV Outdoor LED- 16 COL Master **Drawing A-284920**
 Schematic; GEN IV Outdoor LED, 16 COL Driver **Drawing A-285779**
 Specifications; LED Driver IV, 16 COL **Drawing A-288137**

Note: Displays **MUST** be grounded according to the provisions outlined in Article 250 of the National Electrical Code and according to the specifications in this manual. Daktronics recommends a resistance-to-ground of 10 ohms or less.

The electrical contractor performing the electrical installation can verify ground resistance. Daktronics Sales and Service personnel can also provide this service.

The display system *must* be connected to an earth electrode installed at the display. Proper grounding is necessary for reliable equipment operation. It also protects the equipment from damaging electrical disturbances and lightning.

Note: The display must be properly grounded, or the warranty will be void.

Refer to the schematics listed at the beginning of this section for information about ground wire connection. The connection is illustrated in the "Pwr In" detail on each of the schematics.

The material for an earth-ground electrode differs from region to region and may vary according to conditions present at the site. Consult the National Electrical Code and any local electrical codes that may apply. The support structure of the display cannot be used as an earth-ground electrode. The support is generally embedded in concrete, and if it is in earth, the steel is usually primed or it corrodes, making it a poor ground in either case.

Power Installation

There are two types of power installation: installation with ground and neutral conductors provided, and installation with only a neutral conductor provided. These two power installations differ slightly, as described in the following paragraphs:

Installation with Ground and Neutral Conductors Provided

For this type of installation, the power circuit *must* contain an isolated earth-ground conductor. In this circumstance, *do not* connect neutral to ground at the disconnect or at the display.

Note: This would violate electrical codes and void the warranty. Use a disconnect so that all hot lines are neutral can be disconnected. The National Electrical Code requires the use of a lockable power disconnect within sight of or at the display.

Installation with Only a Neutral Conductor Provided

Installations where no grounding conductor is provided must comply with Article 250-32 of the National Electrical Code. If the installation in question meets all of the requirements of Article 250-32, the following guidelines must be observed:

- Connect the grounding electrode cable at the local disconnect, never at the display driver/power enclosure.
- A disconnect that opens all of the ungrounded phase conductors should be used.

3.2 Power and Signal Connection

Reference Drawings:

Schematic, GEN II Outdoor LED, 16 Column DRVR	Drawing A-154330
Driver; 16 Col Outdoor LED, GEN II	Drawing A-154792
Schematic; GEN III Outdoor LED, 16 Column DRVR	Drawing A-177931

Use after February 1, 2008

Driver; GEN IV Outdoor LED, 16 COL Master	Drawing A-284920
Schematic; GEN IV Outdoor LED, 16 COL Driver	Drawing A-285779
Specifications; LED Driver IV, 16 COL	Drawing A-288137

Route power and signal cables into the scoreboard from the rear. There are two knockouts for conduit connection in the back. All power and signal wiring terminates at the driver enclosure.

Drawing A-154792 illustrates the 16-column driver used in Daktronics single-section LED scoreboards. Use **Drawing A-284920** after February 1, 2008.

To gain access to the driver enclosure, open the access door or digit panel and remove the cover from the enclosure. Refer to the component locations drawings for the access location for your scoreboard.

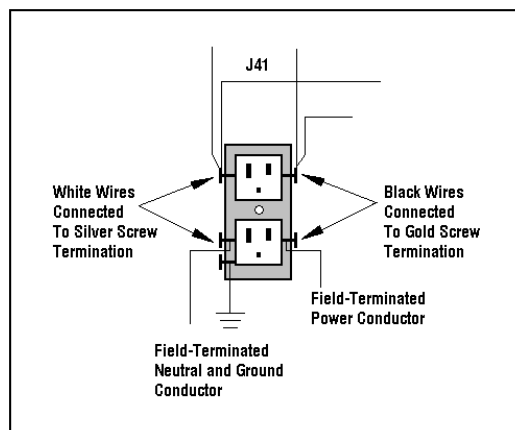


Figure 4: 120 V Power Receptacle in Driver Enclosure

Connect the power and signal cables at the appropriate locations on the driver enclosure panel, shown in **Drawing A-154792**. Use **Drawing A-284920** after February 1, 2008. The conventional power termination panel has been eliminated from Daktronics outdoor scoreboards; the power feeder circuit connects directly to a terminal block in the driver enclosure, as shown in **Figure 5**. The terminal block is located in the lower right corner of the enclosure. Connect the power wires as shown in the illustration. Refer to the driver engineering drawings and to the schematics listed at the beginning of this section for additional wiring details. The schematics include a detailed illustration of the power termination.

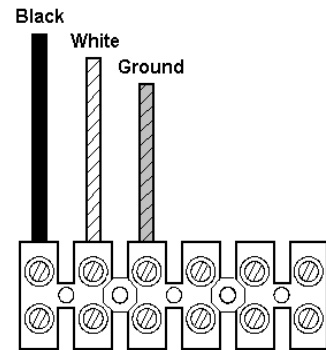


Figure 5: Power Terminal Block

Note: If a power receptacle is needed to operate the control console at the scoreboard for troubleshooting, Daktronics recommends that an installation electrician provides a 120 V outlet close to the disconnect box specifically for this purpose.

Route signal cabling to the signal surge arrestor card in the upper left corner of the driver enclosure. The connections are labeled to permit easy installation. At the Signal In terminal block on the PCB, connect the red signal wire to the positive terminal, the black to the negative terminal, and the shield (silver) wire to the shield terminal.

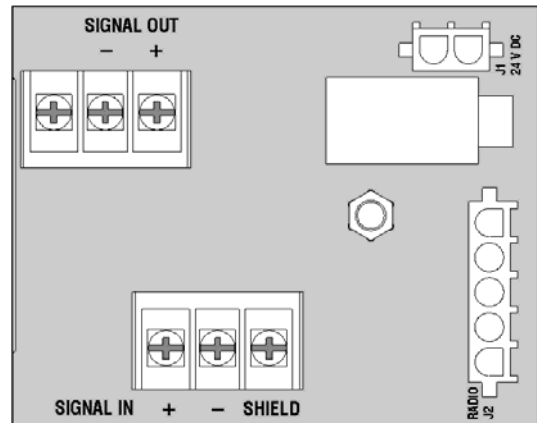


Figure 6: Signal Surge Arrestor Card

Note: It is important that the shield wire is properly connected to the shield terminal on the signal surge arrestor card. **Figure 6** illustrates the signal surge arrestor card and connectors.

For signal cable, Daktronics recommends, as a minimum, single-pair, shielded cable, 22 AWG (Daktronics part number W-1077). Two-pair shielded cable (Daktronics part W-1614) is preferred.

Fiber Optic

Another common signal communication method is using fiber optic cabling. A minimum cabling of multi-mode; 62.5/125 um; and 2-core fiber cable is recommended. (Daktronics part number is W-1242.) See **Figure 7** for the location of fiber connector on the LED driver. (See **Drawing A-288137** for the complete image of the LED driver.)

For additional information on signal connection, refer to the All Sport® 5000 Series control console operation manual, [ED-11976](#).

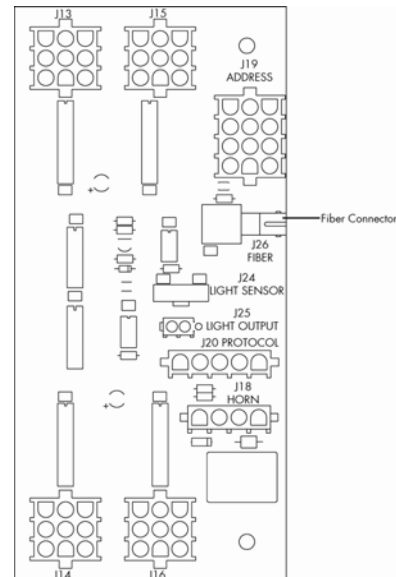


Figure 7: Driver Fiber Connection Location

Section 4: Scoreboard Options

4.1 Top Advertising Panel

Reference Drawing:

Shop Drawing, RO-2008-11/21 w/Side Panels, G3 **Drawing B-165280**

A 25' x 2' advertising panel may be ordered as an addition to Model RO-2008-11/21. The banner-type panel, which mounts above the main scoreboard, typically features custom graphics indicating an event center name or sponsor identification. The ad panel ships separately and is mounted on-site. Refer to **Drawing B-165280** for an illustration of the scoreboard/ad panel configuration.

4.2 Trumpet Horn

Reference Drawings:

Schematic, Outdoor 12VDC Trumpet Horn, AS5K **Drawing A-128938**
Horn Installation; 12 V DC **Drawing A-162102**
Component Locations; RO-2009-11 **Drawing A-165175**
Component Locations; RO-2008-11 **Drawing A-165204**
Schematic; GEN III Outdoor LED, 16 Column DRVR **Drawing A-177931**
Component Location; RO-2002-11/-21 **Drawing A-370437**
Shop Drawing, RO-2002-11/21, G3 **Drawing B-206346**

Use after February 1, 2008

Schematic; GEN IV Outdoor LED, 16 COL Driver **Drawing A-285779**

A 12 V DC trumpet horn is available as optional equipment for use with rodeo scoreboard models RO-2008-11 and RO-2009-11. The trumpet horn is externally mounted, that is, attached to the front exterior of the scoreboard. Holes are provided in the face panel for mounting the horn.

Trumpet horns are shipped as part of a special kit, which consists of:

- One stainless steel horn
- A metal mounting angle
- A relay enclosure with a plate assembly
- Assorted #10 screws, tapping screws, and nuts

DC Trumpet Horn Installation (Externally Mounted)

Caution: Disconnect the power before installing the horn!

Refer to the component location drawings for each of the models, **Drawings A-165204** and **A-165175**, for details on horn placement. Refer to **Drawings A-162102** and **A-128938** for actual horn installation procedure.

1. Locate the horn panel, which is the front access panel, in the scoreboard. Refer to the component location drawings. Note that there is a 2" knockout in this panel.
2. Loosen the screws securing the panel and swing it open.
3. Drill two $\frac{5}{32}$ " holes 4" apart near the entrance enclosure.
4. Attach the horn enclosure to the inside of the scoreboard over the $\frac{5}{32}$ " holes using #10 tapping screws.

5. Attach the plate assembly to the horn enclosure using the #10 hardware provided.
6. Remove the 2" knockout in the horn panel.
7. Drill two $\frac{7}{32}$ " holes on either side of the knockout using the template supplied with the horn kit. If no knockout exists, use the template to drill one $\frac{8}{32}$ " hole and two $\frac{7}{32}$ " holes in the panel.
8. Thread the two gray wires from the horn through the top of the mounting angle.
9. Attach the horn to the mounting angle using the #10 hardware provided.
10. Insert the bushing into the $\frac{3}{8}$ " hole in the mounting angle.
11. Attach the horn/angle assembly to the panel over the 2" knockout and $\frac{7}{32}$ " holes using the #10 hardware provided.
12. Open the panel and remove the cover from the horn enclosure.
13. Use the wire nuts provided to connect one gray wire from the horn to the black wire from the plate assembly. Connect the second gray wire from the horn to the red wire from the plate assembly.
14. Connect the wires with a white plug to the mating jack marked **HORN** on the left side of the entrance enclosure (power and signal termination panel).
15. Close and secure the access panel.
16. Connect to power to the scoreboard.
17. Connect the control console to the scoreboard.
18. Test the horn by pressing the key labeled **HORN** on the control console.

4.3 Radio Control

Radio control, an option with all Daktronics outdoor LED scoreboards, provides scoreboard control via a 2.4 GHz, extra-high frequency FM signal.

The radio transmitter and receiver are not standard equipment. This setup requires a control console such as the All Sport, equipped with radio output. The display receives control signal via a radio receiver mounted internally to the front panel. The receiver plugs into the power receptacle in the driver/power enclosure.

For additional information about this option, contact your Daktronics representative; for complete information on radio communications, refer to the All Sport® 5000 Series Control Console Operation Manuals, [ED-11976](#).

Section 5: Maintenance and Troubleshooting

Important notes:

1. Disconnect power before doing any repair or maintenance work on the scoreboard!
2. Allow only qualified service personnel access to internal display electronics.
3. Disconnect power when not using the scoreboard.

5.1 Component Location and Access

Reference Drawings:

Digit Assembly 18" RES/ORG-AMBER.....	Drawing A-135662
Component Locations; RO-2009-11	Drawing A-165175
Component Locations; RO-2008-11	Drawing A-165204
Component Location; RO-2002-11/-21, G3	Drawing A-206338
Component Location; RO-2009-11/-21, G3	Drawing A-206339
Component Location; RO-2008-11/-21, G3	Drawing A-206344
Digit Assemblies: GEN III LED Digits.....	Drawing B-177679

Use after February 1, 2008

Component Locations: RO-2002-11/-21, G4	Drawing A-370437
---	-------------------------

For front-access scoreboards like the rodeo models, all internal electronic components can be reached by opening the hinged access panel on the front of the display. Digits are removed for service from the front of the display as well.

Digit panels have been simplified on the outdoor LED scoreboards. They are held in place on the scoreboard face by an offset flange across the top and by a single Phillips-type screw at the bottom, as shown in **Figure 8**.

Removing a digit to open the scoreboard must be done carefully. Hold the digit panel in place by putting hand pressure on it while removing the screw, and gently lift the panel from the board,

sliding it down and out. Take care in doing so, because the panel will still be connected by cabling to the inside of the scoreboard. If the digit panel is not held in place, it will drop immediately when the screw is removed, possibly damaging LEDs or the digit harness.

In the rodeo scoreboards, the driver and the power and signal termination panel are located inside the scoreboard cabinet, directly behind the front access panel. They are mounted to the back panel. An optional horn for models RO-2008-11/21 and RO-2009-11/21 is positioned just below the power and signal termination panel.

For all three rodeo scoreboard models, a hinged access panel is located in the lower center of the scoreboard between the CONTESTANT and TIME/SCORE digits. To open the access panel on Model RO-2002-11/21, simply remove the two Phillips-type screws at the bottom and swing the panel upward.

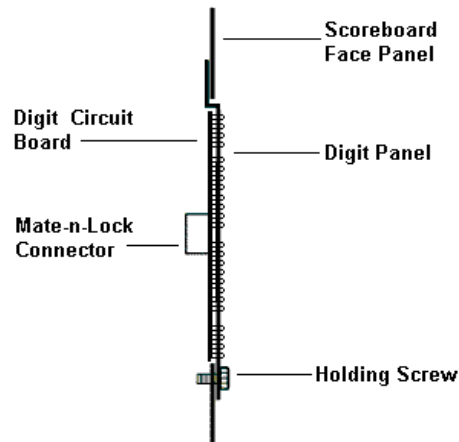


Figure 8: LED Digit Panel (Not to Scale)

The access panel on Models RO-2008-11/21 and RO-2009-11/21 is hinged on the left side. To open the door, remove the two screws on the right-hand side of the panel. Note that the LED PENALTY and RERIDE indicators are mounted directly on the face panel; take care when opening the door so as not to disrupt or damage the cabling to the indicators.

Note: Disconnect power before servicing the display! Disconnect power, too, when the display is not in use. Prolonged power-on may shorten the life of some electronic components.

Replacing a Digit

The digit circuit board, the platform for the LEDs, is mounted to the back of the digit panel. Do not attempt to remove individual LEDs. In the case of a malfunctioning board, replace the entire digit panel. Refer to **Figure 9**.

To remove a scoreboard digit, follow these steps:

1. Open the digit panel as described in **Section 5.1**.
2. Disconnect the power/signal connector from the back of the digit. Release the connector by squeezing the locking tabs while pulling the connector free.
3. The digits are secured to the inside of the panel with screws, standoffs (spacers), and nuts. Remove the #8 nuts and lift the digit off the screws.
4. Position a new digit over the screws and tighten the nuts.
5. Reconnect the power/signal connector.

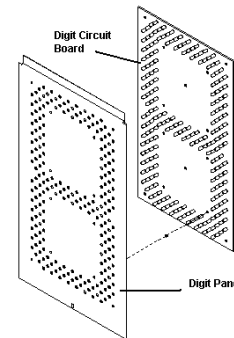


Figure 9: Digit Assembly 18"-24"

Note: This is a keyed connector B it will attach in one way only. Do not attempt to force the connection!

6. Close and secure the digit panel and test the scoreboard.

Refer to **Drawing A-135662** for more digit information.

Replacing a Driver

Refer to **Drawings A-165204** and **A-165175** to determine the exact location of the scoreboard driver. The driver is located in a driver/power enclosure. Before a failed driver can be reached, the enclosure must be opened. Follow these steps:

1. Open the front access panel as described in **Section 5.1**.
2. Remove the cover from the driver enclosure.
3. Disconnect all connectors from the driver. Release each connector by squeezing the locking tabs while pulling the connector free.
4. Remove the wing nuts securing the driver to the inside of the enclosure.
5. Carefully lift the driver from the display and place it on a clean, flat surface.
6. Reverse steps 1 through 5 to install a new driver. **Note:** Connectors are keyed and attach in one way only. Do not attempt to force the connections.

5.2 Schematic

Reference Drawing:

Schematic, GEN II Outdoor LED, 16 Column DRVR **Drawing A-154330**

Drawing A-154330 illustrates the schematic diagram of the power and signal inputs and all wiring for Daktronics LED outdoor rodeo scoreboards.

5.3 LED Drivers

Reference Drawings:

16 Column LED Driver II Specifications..... **Drawing A-134371**
 Driver; 16 COL Outdoor LED, GEN II **Drawing A-154792**
 Driver; GEN III Outdoor LED, 16 COL Master **Drawing A-178197**
 Driver ASSY; GEN III Outdoor LED, 8 COL Master **Drawing A-178235**

The LED driver turns the digits on and off inside the scoreboard. Refer to **Drawings A-134371** and **A-154792**.

The driver has 19 connectors providing power and signal inputs to the circuit, and outputs to the digits and indicators. The connectors function as follows:

Connector No.	Function
1 - 16	Output to digits and indicators
17	Controls signal and power input
18	Control for horn
19	Set address to 12

Output connectors 1 through 16 each have nine pins. Pin 7 provides power (hot) to the digit or indicators wired to that connector. The other eight pins provide switching connections.

5.4 Segmentation and Digit Designation

Reference Drawings:

Segmentation, 7 Segment Bar Digit..... **Drawing A-38532**
 Component Locations; RO-2009-11 **Drawing A-165175**
 Component Locations; RO-2008-11 **Drawing A-165204**
 Component Location; RO-2002-11/-21, G3 **Drawing A-206338**
 Component Location; RO-2009-11/-21, G3 **Drawing A-206339**
 Component Location; RO-2008-11/-21, G3 **Drawing A-206344**

Use after February 1, 2008

Component Locations: RO-2002-11/-21, G4 **Drawing A-370437**

In each digit, certain LEDs always go on and off together. These groupings of LEDs are referred to as *segments*. **Drawing A-38532** illustrates digit segmentation. It also details which

connector pin is wired to each digit segment and the wiring color code used throughout the display.

The component locations drawings for the scoreboards, **A-165175**, **A-165204**, **A-206338**, **A-206339**, **A-206344**, and **A-370437**, specify the driver connectors controlling the digits. Numbers shown in hexagons in the upper half of each digit indicate which connector is wired to that digit.

5.5 Power-On Self-Test

Reference Drawings:

Outdoor LED Power Up Self Test	Drawing A-133350
LED Bar Digit Power Up Self Test	Drawing A-133351

The scoreboard performs a self-test each time that power is turned on and the control console is powered off or not attached to the scoreboard. If the control console is attached and powered on, the self-test does not run, and data from the control console is displayed on the scoreboard after a brief period of time.

The self-test runs in three cycles or phases. Each scoreboard self-test pattern will vary, depending on the scoreboard model, the number of drivers, and types of digits.

- **Drawing A-133350** shows how the test pattern displays in the digits with no protocol pins set on J26 of the LED driver.
- **Drawing A-133351** shows a sample of the test pattern displayed on a scoreboard.

- Cycle 1:** Displays the protocol in the digits that are controlled by LED driver A1. P0 is always displayed when P26 is not installed.
- Cycle 2:** Displays the driver number and address in the digits that are controlled by each driver. A000 is always displayed when P25 is not installed.
- Cycle 3:** Displays a rotating pattern in all digits. The pattern starts in row 1 and rotates through row 8 (refer to **Drawing A-133350**).

5.6 Lightning Protection

The transient voltage surge suppresser (TVSS), located in the power termination panel, reduces the brief surge induced into the power lines when lightning strikes in the vicinity of the scoreboard. A varistor in the power lines to the driver logic also helps to protect this circuit by reducing such surges.

The use of a disconnect near the scoreboard to completely cut all current-carrying lines significantly protects the circuits against lightning damage. It is also required by the National Electrical Code. In order for this component to provide protection, the power *must* be disconnected when the scoreboard is not in use. The control console should also be disconnected from power and from the signal J-box when the system is not in use. The same surges that may damage the scoreboard's driver can also damage the console's circuit.

5.7 Replacement Parts

Refer to the following table for Daktronics scoreboard replacement parts.

Description	Location	Daktronics Part No.
LED driver, 16-column	Scoreboard	0P-1192-0011 *0P-1192-0383
Plug, 1/4" phone	Signal	P-1003
J-box, 1/4" phone, Indoor	Signal	0A-1009-0038
J-box, 1/4" phone, outdoor	Signal	0A-1091-0227
Signal surge arrestor	Power/signal entrance enclosure	0P-1033-0114
Signal cord; 1/4" phone 20'	N/A	W-1236
Signal cord; 1/4" phone 30'	N/A	W-1238
Signal cord; 1/4" phone 50'	N/A	W-1237
Digit, 18", 7-seg outdoor LED, red	Scoreboard	0P-1192-0008
Digit, 18" (Ones), 2-seg outdoor LED, red	Scoreboard	0P-1192-0013
Digit, 18", 7-seg outdoor LED, red	Scoreboard	0P-1192-0202
Digit, 18", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0216
Digits, 18" (Ones), 2-seg outdoor LED, red	Scoreboard	0P-1192-0203
Digits, 18" (Ones), 2-seg outdoor LED, amber	Scoreboard	0P-1192-0217
Power supply, 24 V	Driver enclosure	A-1720
Fan, 3.15" sq., 32cfm, 8.5 watts, 120 V AC	Driver enclosure	B-1030
Trumpet horn assy, 12 V DC	Scoreboard	0A-1091-1213

*Use after February 1, 2008

5.8 Troubleshooting

This section lists potential problems with the scoreboard and indicates possible causes and corrective actions. This list does not include every possible problem, but does represent some of the more common situations that may occur.

Symptom/Condition	Possible Cause
Scoreboard will not light	<ul style="list-style-type: none">▪ Console not connected or poor connection▪ No power to control console▪ No power to the scoreboard
Garbled display	<ul style="list-style-type: none">▪ Internal driver logic malfunction▪ Control console malfunction
Digit will not light	<ul style="list-style-type: none">▪ Black wire to digit broken▪ Poor contact at driver connection.▪ Driver malfunction
Segment will not light	<ul style="list-style-type: none">▪ Broken LED or connection▪ Driver output failure▪ Broken wire between driver and digit▪ Poor contact at driver connector.
Segment stays lit	<ul style="list-style-type: none">▪ Driver shift register failure▪ Short circuit on digit
Data appears in the wrong place on the scoreboard	<ul style="list-style-type: none">▪ Incorrect address settings on drivers (consult tables and set correct addresses)

5.9 Daktronics Exchange and Repair & Return Programs

To serve customers' repair and maintenance needs, Daktronics offers both an Exchange Program and a Repair & Return Program.

Exchange Program

Daktronics unique Exchange Program is a quick service for replacing key parts in need of repair. If a part requires repair or replacement, Daktronics sends the customer a replacement, and the customer sends the defective part to Daktronics. This decreases display downtime.

Before Contacting Daktronics

Identify these important part numbers:

Display Serial Number:

Display Model Number:

Contract Number:

Location of Sign (Mile Marker Number):

Daktronics Customer ID Number:

To participate in the Exchange Program, follow these steps.

1. Call Daktronics Customer Service:

Market Description	Customer Service Number
Schools (primary through community/junior colleges), religious organizations, municipal clubs and community centers	877-605-1115
Universities and professional sporting events, live events for auditoriums and arenas	866-343-6018
Financial institutions, petroleum, sign companies, gaming, wholesale/retail establishments	866-343-3122
Department of Transportation, mass transits, airports, parking facilities	800-833-3157

2. **When the new exchange part is received, mail the old part to Daktronics. If the replacement part fixes the problem, send in the problem part which is being replaced.**
 - a. Package the old part in the same shipping materials in which the replacement part arrived.
 - b. Fill out and attach the enclosed UPS shipping document.
 - c. Ship the part to Daktronics.
3. **A charge will be made for the replacement part immediately, unless a qualifying service agreement is in place.**

In most circumstances, the replacement part will be invoiced at the time it is shipped.
4. **If the replacement part does not solve the problem, return the part within 30 working days or the full purchase price will be charged.**

If, after the exchange is made the equipment is still defective, please contact Customer Service immediately. Daktronics expects *immediate return* of an exchange part if it does not solve the problem. The company also reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

Repair & Return Program

For items not subject to exchange, Daktronics offers a Repair & Return Program. To send a part for repair, follow these steps:

1. **Call or fax Daktronics Customer Service:**

Refer to the appropriate market number in the chart listed on the previous page. Fax: 605-697-4444
2. **Receive a Return Materials Authorization (RMA) number before shipping.**

This expedites repair of the part.
3. **Package and pad the item carefully to prevent damage during shipment.**

Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing. Daktronics does not recommend packing peanuts in packaging.
4. **Enclose:**
 - your name
 - address
 - phone number
 - the RMA number
 - a clear description of symptoms

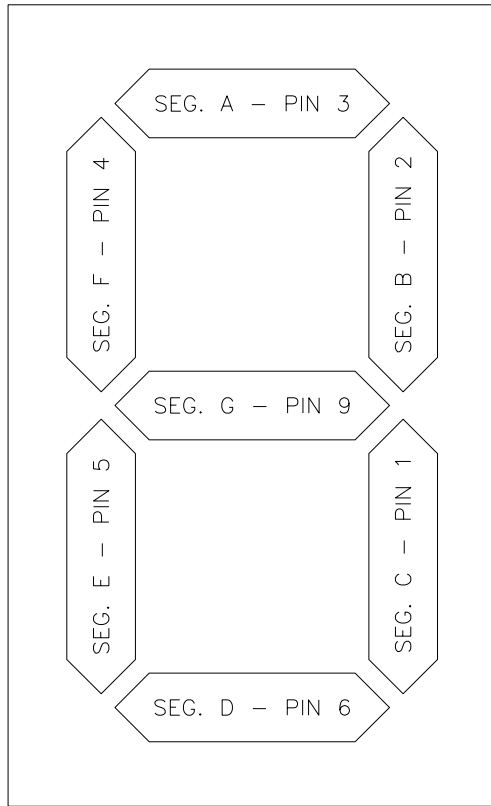
Appendix A: Reference Drawings

A Drawings

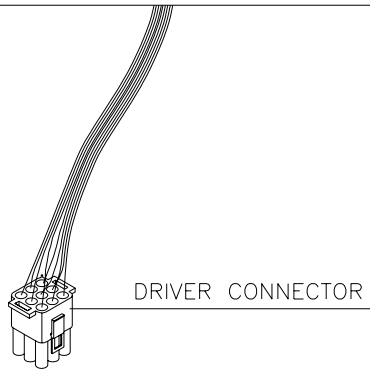
Segmentation, 7 Segment Bar Digit	Drawing A-38532
Display Mounting	Drawing A-44412
Lifting Scoreboard	Drawing A-44548
Ad Panel Mounting	Drawing A-52187
Schematic, Outdoor SCBD 12VDC Trumpet Horn, AS5K	Drawing A-128938
Outdoor LED Power Up Self Test.....	Drawing A-133350
LED Bar Digit Power Up Self Test.....	Drawing A-133351
16 Column LED Driver II Specifications	Drawing A-134371
Digit Assembly 18" RES/ORG-AMBER	Drawing A-135662
Schematic, GEN II Outdoor LED, 16 Column DRVR	Drawing A-154330
Driver; 16 COL Outdoor LED, GEN II.....	Drawing A-154792
Horn Installation; 12V DC	Drawing A-162102
Component Locations; RO-2009-11	Drawing A-165175
Component Locations; RO-2008-11	Drawing A-165204
Schematic; GEN III Outdoor LED, 16 Column DRVR	Drawing A-177931
Driver; GEN III Outdoor LED, 16 COL Master.....	Drawing A-178197
Driver ASSY; GEN III Outdoor LED, 8 Col Master	Drawing A-178235
Component Location; RO-2002-11/-21, G3	Drawing A-206338
Component Location; RO-2009-11/-21, G3	Drawing A-206339
Component Location; RO-2008-11/-21, G3	Drawing A-206344
Driver; GEN IV Outdoor LED, 16 COL Master.....	Drawing A-284920
Schematic; GEN IV Outdoor LED, 16 COL Driver	Drawing A-285779
Specifications; LED Driver IV, 16 COL.....	Drawing A-288137
Component Locations: RO-2002-11/-21, G4	Drawing A-370437

B Drawings

System Riser Diagram.....	Drawing B-136279
Permanently Installed Rodeo Timer System (System Riser Diagram)	Drawing B-148816
Shop Drawing; RO-2008-11/21 w/Side Panels, G3	Drawing B-165280
Shop Drawing; RO-2009-11/21, G3	Drawing B-165282
Digit Assemblies, GEN III LED Digits	Drawing B-177679
Shop Drawing; RO-2002-11/21, G3	Drawing B-206346



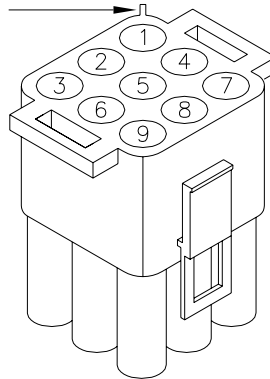
7 SEGMENT BAR DIGIT
FRONT VIEW



COLOR CODE		
PIN NO.	WIRE COLOR	DRIVER SEGMENT
1	ORN	C
2	RED	B
3	BRN	A
4	BLU	F
5	PNK	E
6	TAN	D
7	BLK	COM.
8	GRY	H
9	VIO	G

CONNECTOR PIN NUMBERING

NOTE SPLINE NEAR NO. 1



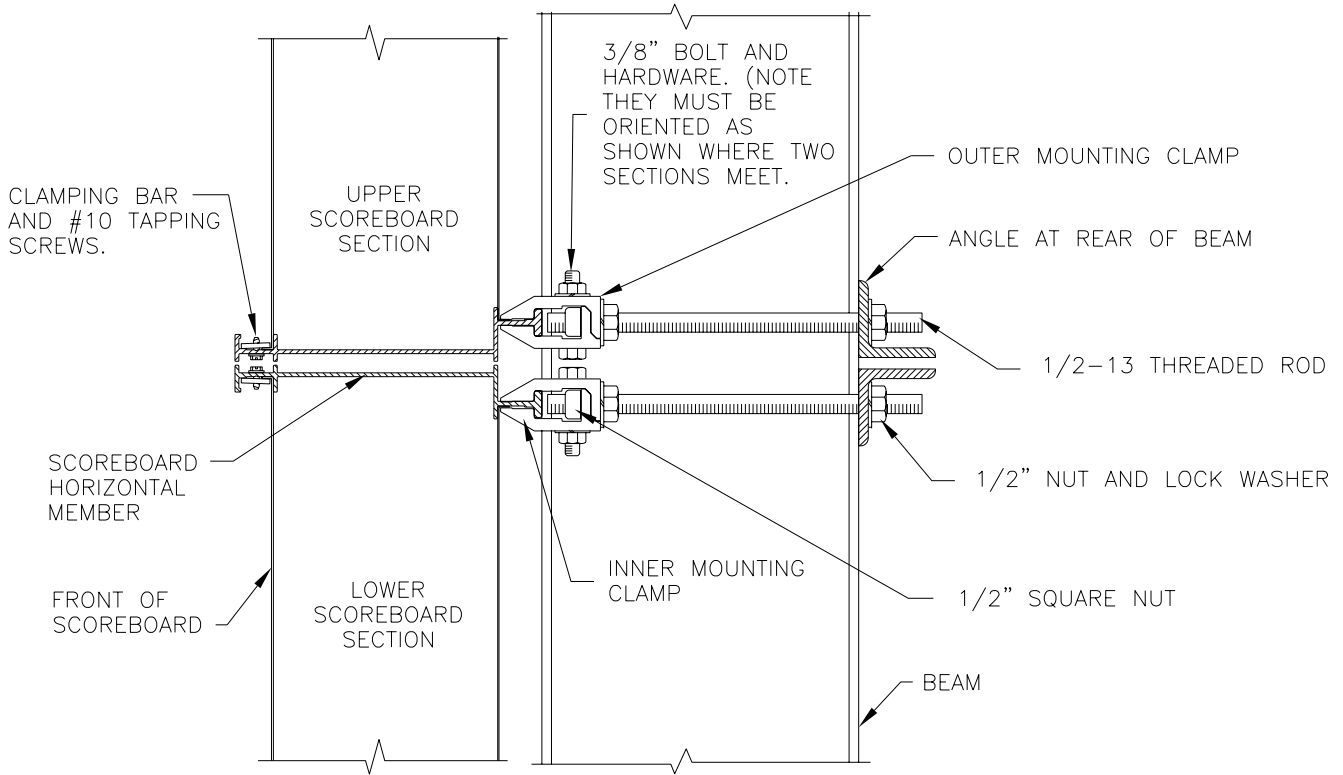
NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

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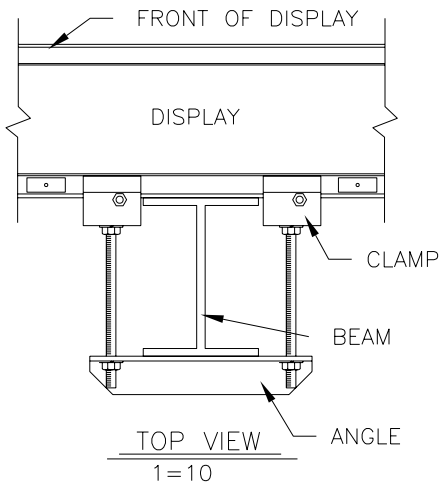
PROJ: BASKETBALL
TITLE: SEGMENTATION, 7 SEGMENT BAR DIGIT
DES. BY: _____ DRAWN BY: HEIDERSCHIEDT DATE: 5 JUN 89
REVISION 02 APPR. BY: AVB SCALE: 1=4
1009-R04A-38532

REV.	DATE	DESCRIPTION	BY	APPR.
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1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	

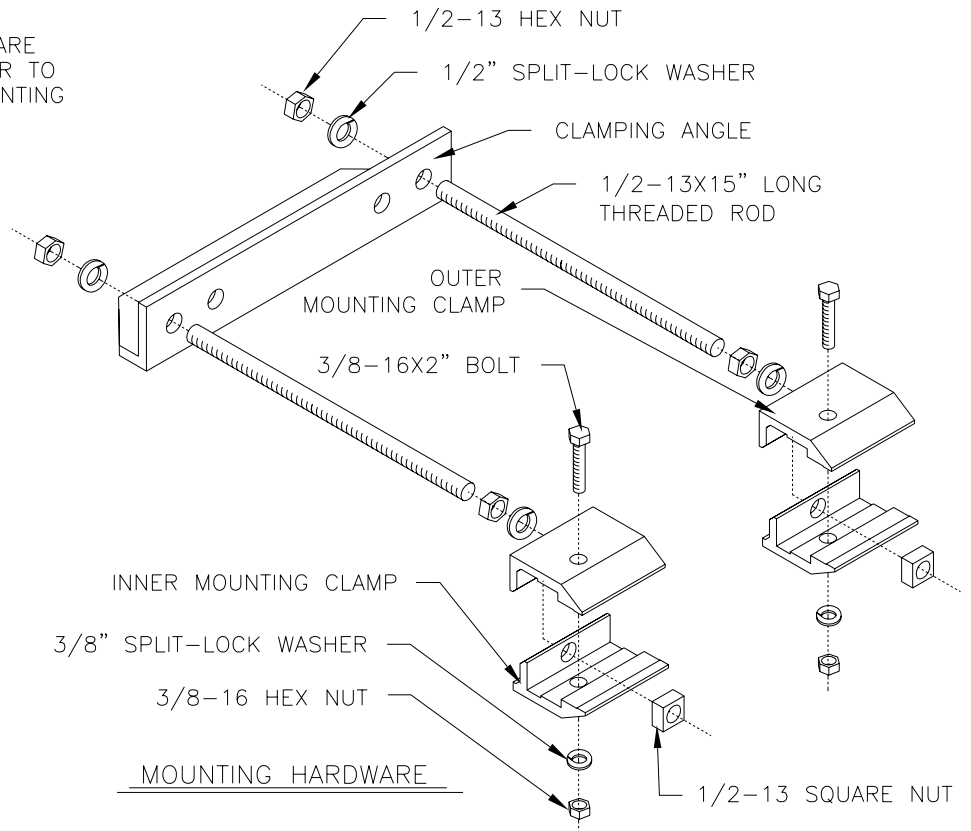


SIDE VIEW

NOTE: CLAMPING BARS AND HARDWARE MAY HAVE TO BE REMOVED IN ORDER TO INSTALL THE INNER AND OUTER MOUNTING CLAMPS.



- THREADED RODS RUN ALONG BOTH SIDES OF BEAM.
- THEY DO NOT PASS THROUGH THE FLANGES OF THE BEAM.
- NO DRILLING IS NECESSARY.



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: DISPLAY MOUNTING

DES. BY: JHEIDER

DRAWN BY: JHEIDER

DATE: 29 AUG 90

REVISION

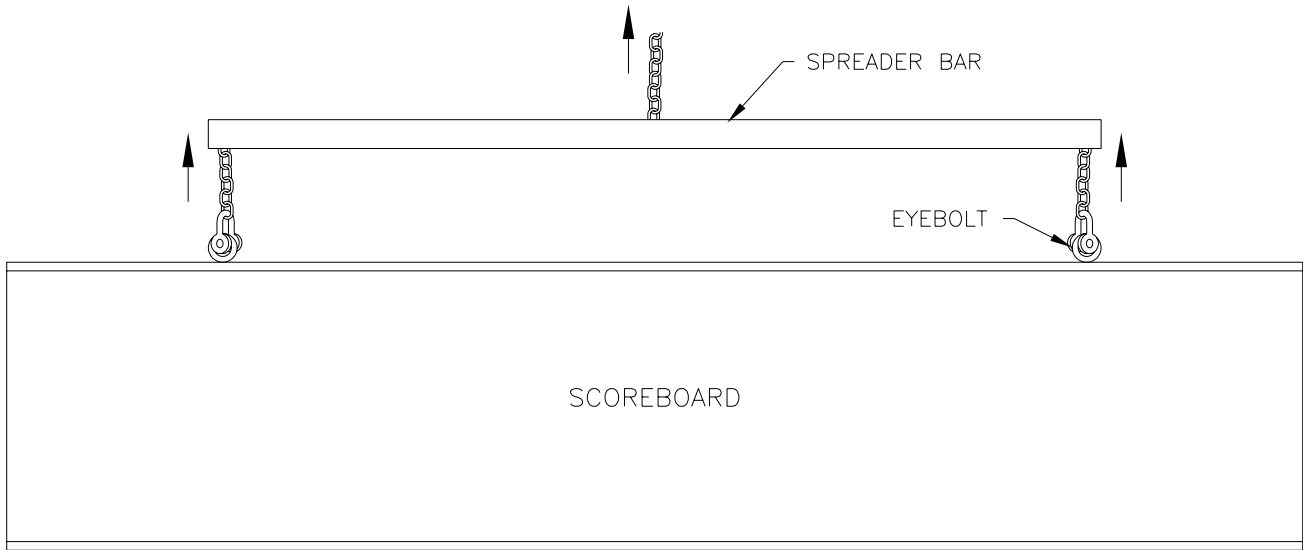
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1091-R10A-44412

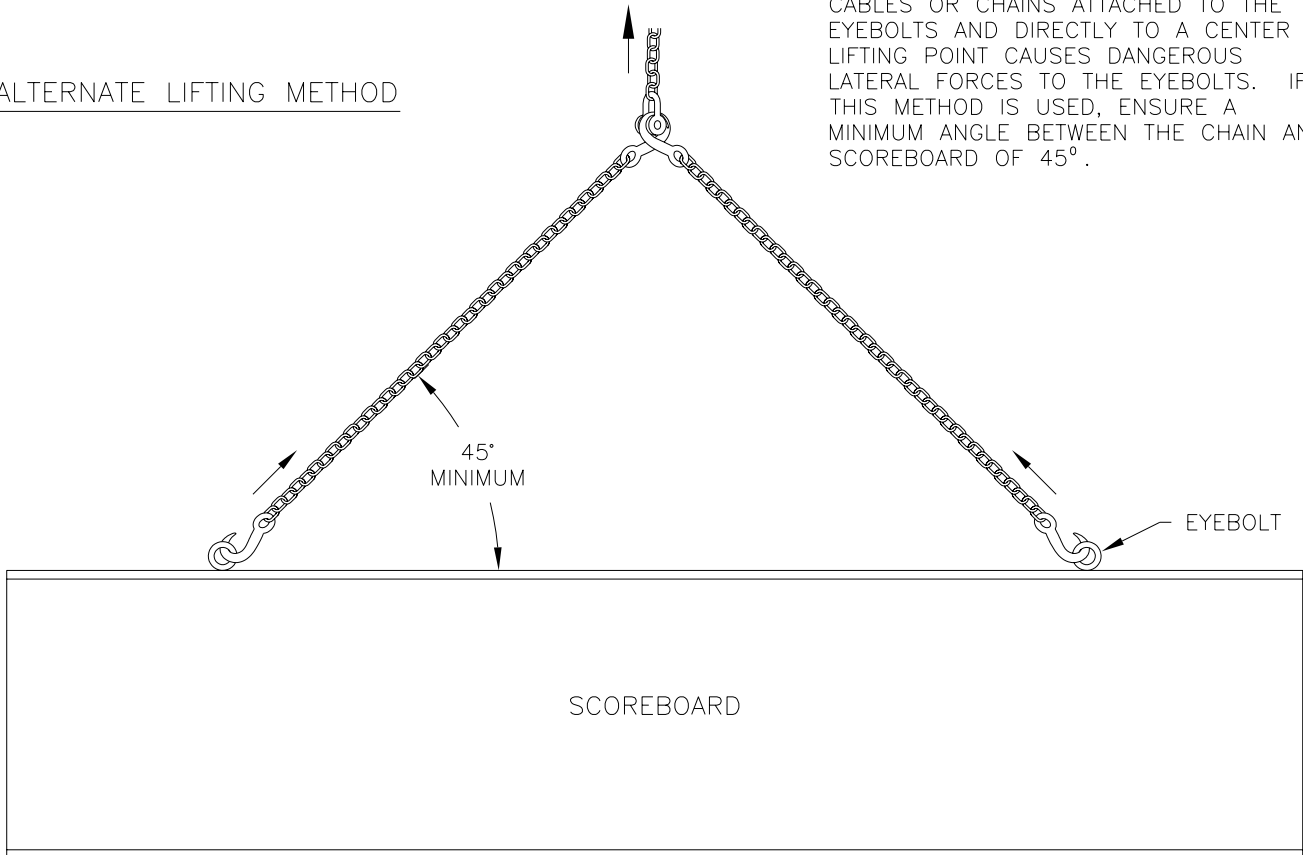
REV.	DATE	DESCRIPTION	BY	APPR.



PREFERRED LIFTING METHOD

USE A SPREADER BAR SO THAT THE FORCE ON THE EYEBOLTS IS STRAIGHT UP.

ALTERNATE LIFTING METHOD



CABLES OR CHAINS ATTACHED TO THE EYEBOLTS AND DIRECTLY TO A CENTER LIFTING POINT CAUSES DANGEROUS LATERAL FORCES TO THE EYEBOLTS. IF THIS METHOD IS USED, ENSURE A MINIMUM ANGLE BETWEEN THE CHAIN AND SCOREBOARD OF 45°.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: LIFTING SCOREBOARD

DES. BY:

DRAWN BY: AVB

DATE: 12SEP90

REVISION

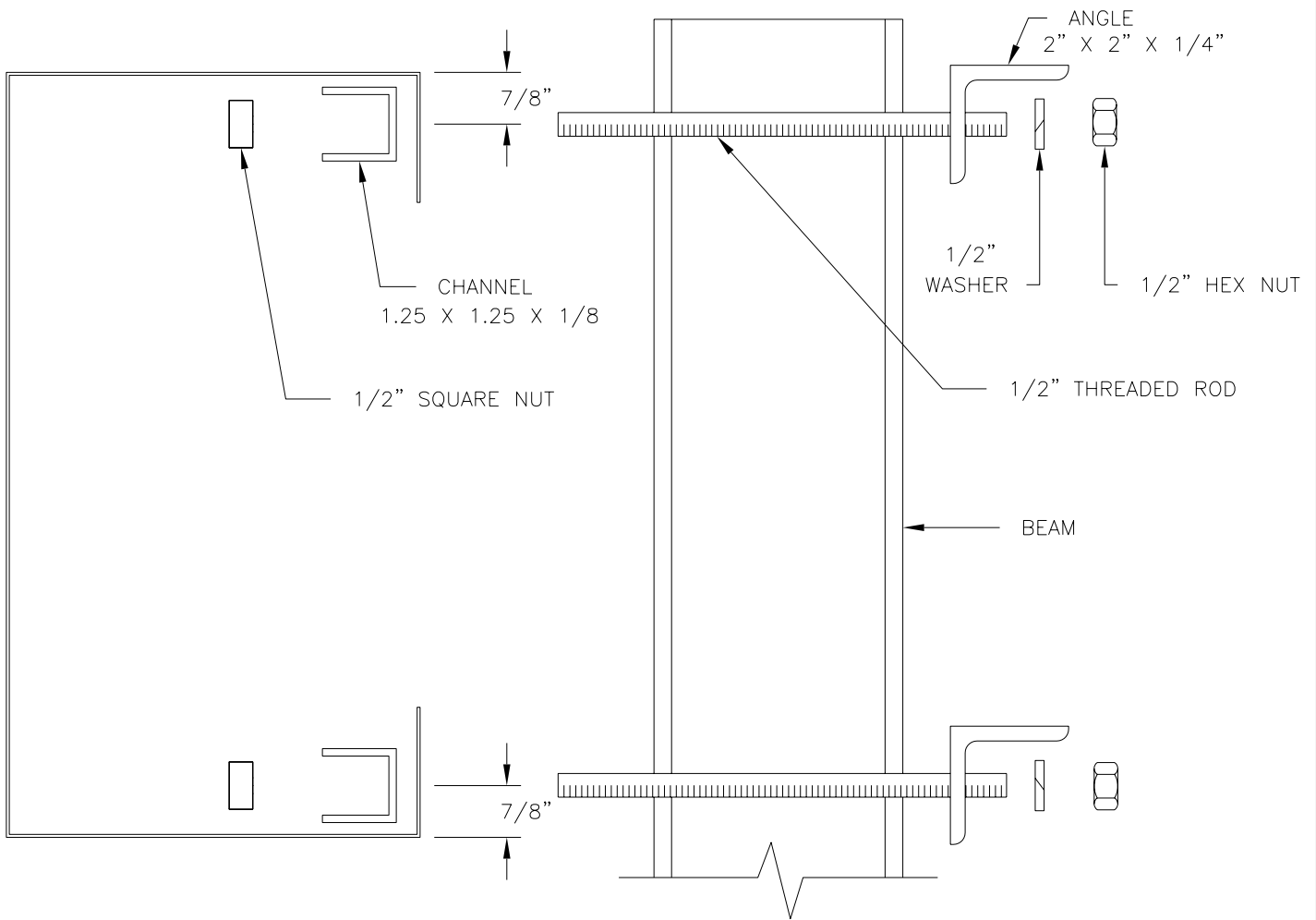
APPR. BY:

01

SCALE: NONE

1091-R10A-44548

REV.	DATE	DESCRIPTION	BY	APPR.
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MOUNTING INSTRUCTIONS:

1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLTS AS CLOSE TO THE BEAM AS POSSIBLE.
2. USING THE MOUNTING CHANNEL AS A TEMPLATE, DRILL 9/16" HOLES IN THE UPPER AND LOWER REAR FLANGE OF AD PANEL WHERE THE SUPPORTS WILL GO.
3. PLACE SQUARE NUTS INSIDE CHANNEL AND THREAD BOLTS THROUGH.
4. LIFT AD PANEL INTO POSITION WITH BOLTS STILL IN PLACE.
5. PLACE MOUNTING ANGLES OVER EACH PAIR OF BOLTS AND SECURE WITH LOCK WASHERS AND HEX NUTS.
6. WHEN PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN HEX NUTS FIRMLY.

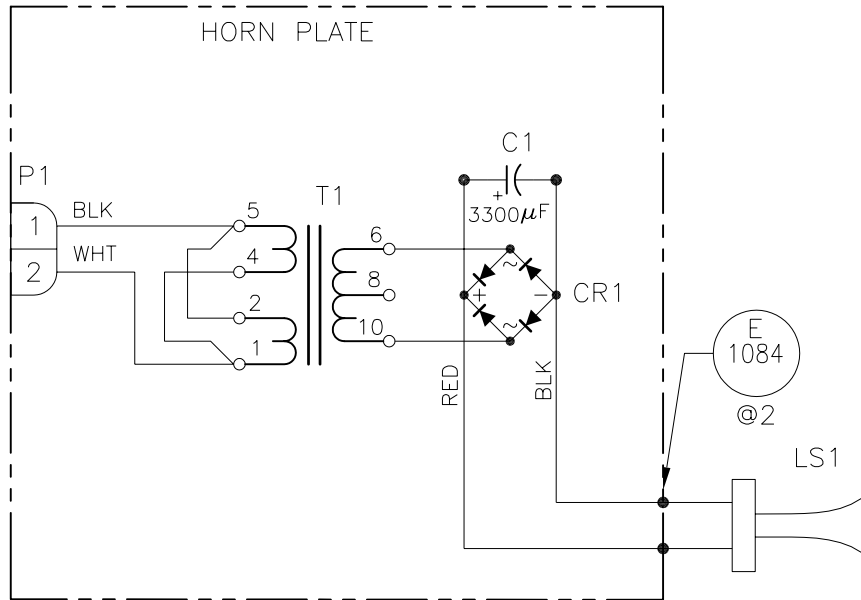
MOUNTING INSTRUCTIONS: FOR AD PANELS WITH BACKSHEETS.

1. USE THE MOUNTING CHANNEL TO DETERMINE WHICH HOLE COMBINATION SHOULD BE USED. BE SURE TO KEEP THE BOLTS AS CLOSE TO THE BEAM AS POSSIBLE.
2. USING THE MOUNTING CHANNEL AS A TEMPLATE, DRILL 9/16" HOLES IN THE UPPER AND LOWER REAR FLANGE OF AD PANEL WHERE THE SUPPORTS WILL GO.
3. REMOVE BACKSHEETS IN AREAS ABOVE AND BELOW HOLES DRILLED IN STEP 2.
4. PLACE SQUARE NUTS INSIDE CHANNEL AND THREAD BOLTS THROUGH.
5. REPLACE BACKSHEETS REMOVED IN STEP 3.
6. LIFT AD PANEL INTO POSITION WITH BOLTS STILL IN PLACE.
7. PLACE MOUNTING ANGLES OVER EACH PAIR OF BOLTS AND SECURE WITH LOCK WASHERS AND HEX NUTS.
8. WHEN PANEL IS ADJUSTED TO FINAL DESIRED POSITION, TIGHTEN HEX NUTS FIRMLY.

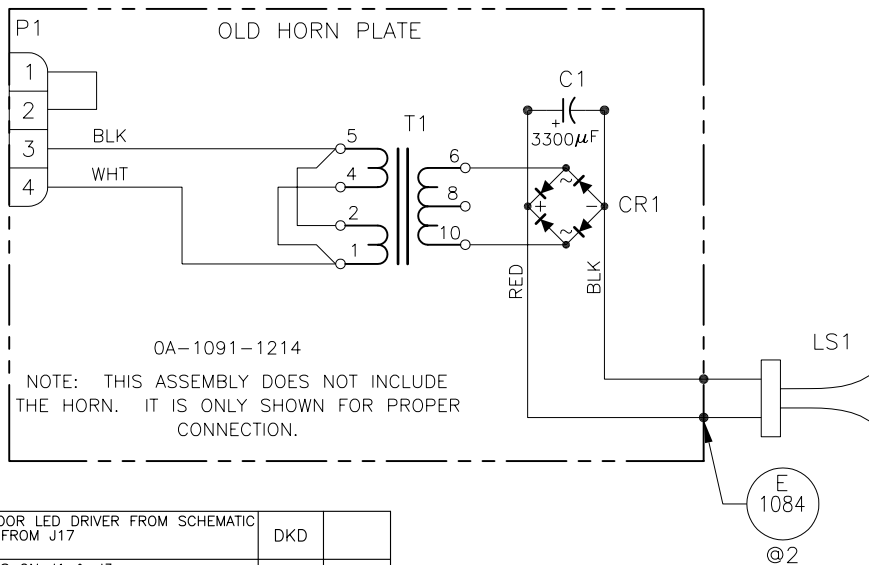
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1	26MAY93	ADDED DESCRIPTION TEXT TO PARTS.	MGG	
REV.	DATE	DESCRIPTION	BY	APPR.

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DES. BY: .	DRAWN BY: MGUNDERSON	DATE: 09JUL92	
REVISION	APPR. BY:	1091-R10A-52187	
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0A-1091-1214
12V TRUMPET HORN PLATE ASSY



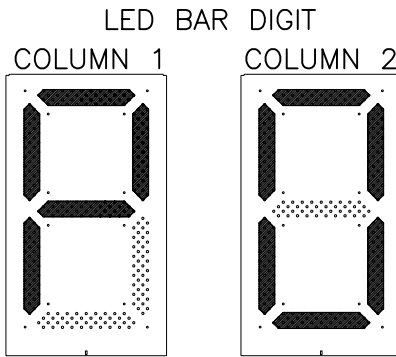
BEFORE APRIL 2006



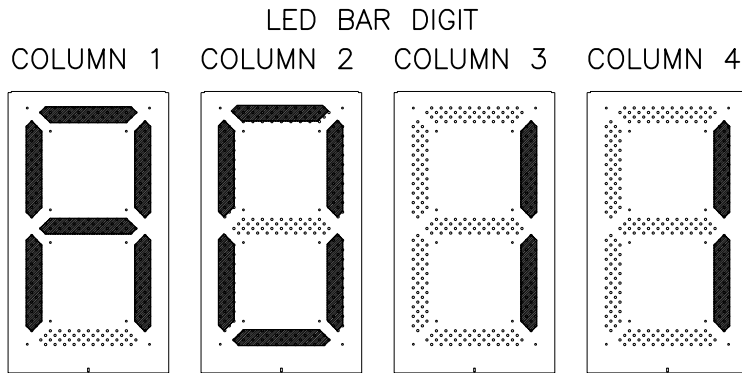
05	13 APR 07	REMOVED OUTDOOR LED DRIVER FROM SCHEMATIC REMOVED WIRE FROM J17	DKD	
04	11 SEPT 06	CHANGED LABELS ON J1 & J3, REMOVED WIRE FROM J17	AMG	
03	5/23/06	CORRECTED CAP LABEL FROM C-1115 TO C-1158	SJC	
02	23 MAR 06	ADDED SOLIDSTATE HORN RELAY ASSY TO -1214.	DMD	
01	18 MAY 01	PART NUMBER WAS CHANGED FROM -1213 TO -1214.	MWM	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	STANDARD SCOREBOARDS
TITLE:	SCHEMATIC, OUTDOOR SCBD 12VDC TRUMPET HORN, AS5K
DES. BY:	DRAWN BY: JCM
	DATE: 06MAR00
REVISION	APPR. BY:
05	NONE
1091-R03A-128938	

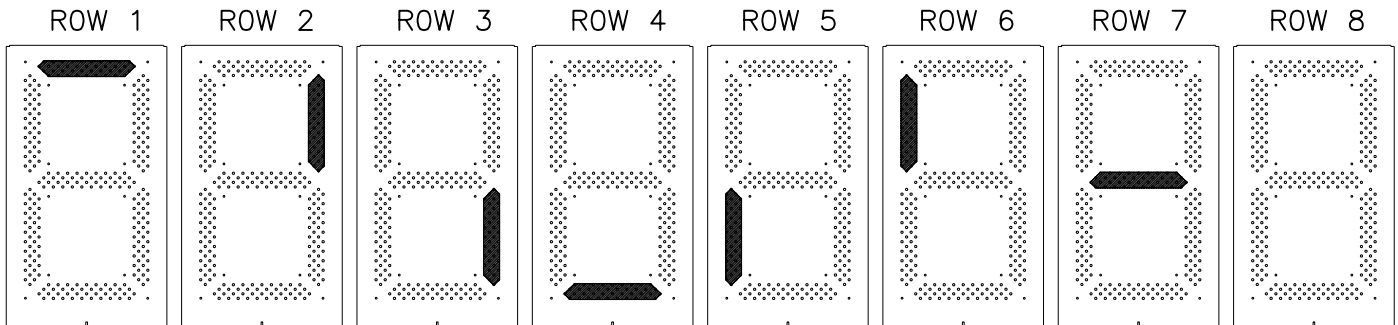
1ST CYCLE OF SELF TEST PATTERN SHOWN WITH NO PROTOCOL PINS SET ON J26



2ND CYCLE OF SELF TEST PATTERN SHOWN SET ON ADDRESS 11



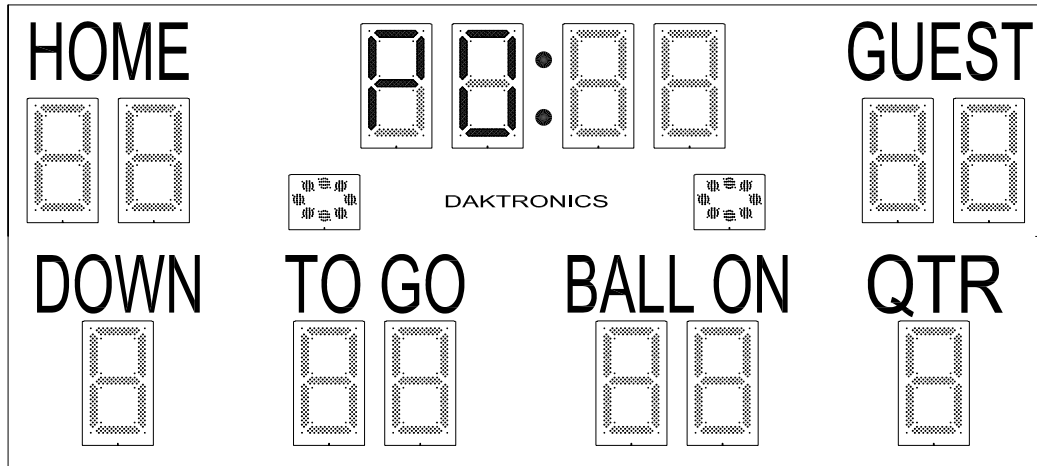
3RD CYCLE OF SELF TEST PATTERN ON LED BAR DIGIT STARTING WITH ROW 1 GOING TO ROW 8



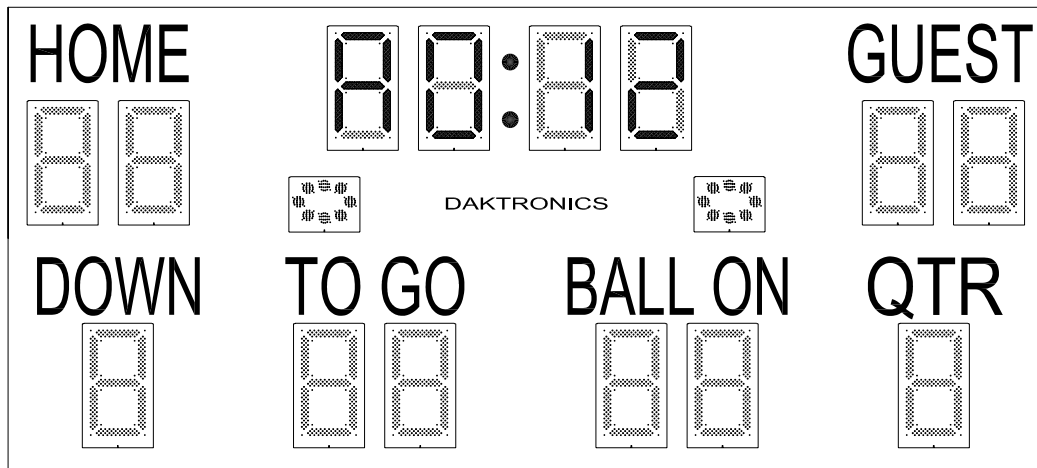
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	
TITLE: OUTDOOR LED POWER UP SELF TEST	
DES. BY:	DRAWN BY: N WRIEDT DATE: 10 JAN 01
REVISION	APPR. BY:
	SCALE: NONE
1192-E07A-133350	

REV.	DATE	DESCRIPTION	BY	APPR.

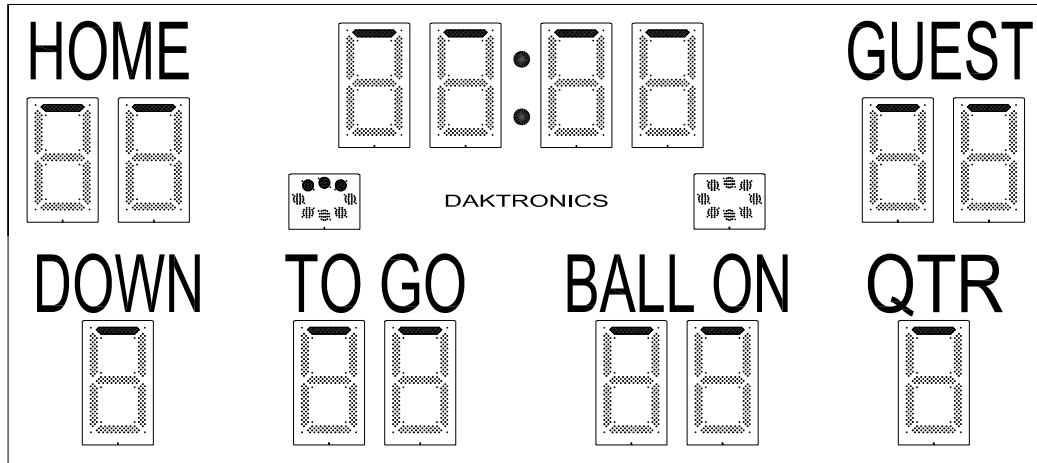
1ST CYCLE OF THE SELF TEST PATTERN WITH THE NO PROTOCOL PINS SET



2ND CYCLE OF THE SELF TEST PATTERN WITH THE ADDRESS PINS SET FOR A FB-1424



3RD CYCLE OF THE SELF TEST PATTERN WITH THE ROW1 TEST ON ONLY



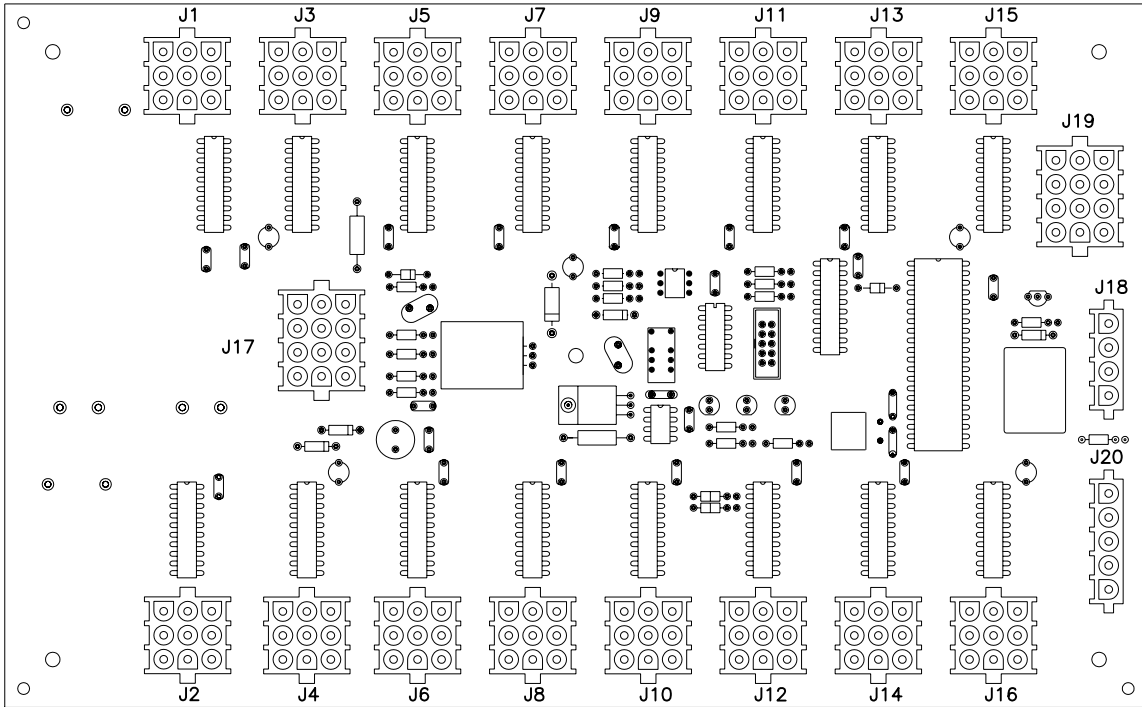
**** NOTE ****

THIS DRAWING SHOWS A SAMPLE OF A SELF TEST PATTERN ON ONE SCOREBOARD MODEL. EACH SCOREBOARDS SELF TEST PATTERN WILL VARY DEPENDING UPON THE SCOREBOARD MODEL, NUMBER OF DRIVERS AND TYPE OF DIGITS.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: LED BAR DIGIT POWER UP SELF TEST			
DES. BY:		DRAWN BY: N WRIEDT	
		DATE: 11 JAN 01	
REVISION	APPR. BY:	1192-E07A-133351	
00	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

OP-1192-0011 16 COLUMN LED DRIVER II



J17 MAIN	
PIN	FUNCTION
1	SIG-P
2	SIG-N
3	SIG2-P
4	CLOUT-P
5	CLOUT-N
6	N/C
7	GND-N
8	EARTH-N
9	N/C
10	GND-N
11	+24A-P
12	+24B-P

J1-16 DIGIT	
PIN	FUNCTION
1	SEGC-N
2	SEGB-N
3	SEGA-N
4	SEGF-N
5	SEGE-N
6	SEGD-N
7	+VCC-P
8	SEGH-N
9	SEGG-N

J19 ADDRESS	
PIN	FUNCTION
1	GND-N
2	ADD0-N
3	ADD1-N
4	GND-N
5	ADD2-N
6	ADD3-N
7	GND-N
8	ADD4-N
9	ADD5-N
10	GND-N
11	ADD6-N
12	ADD7-N

J18 RELAY	
PIN	FUNCTION
1	HORNOUT-N
2	AUXOUT-N
3	120SW-P
4	120SW-N

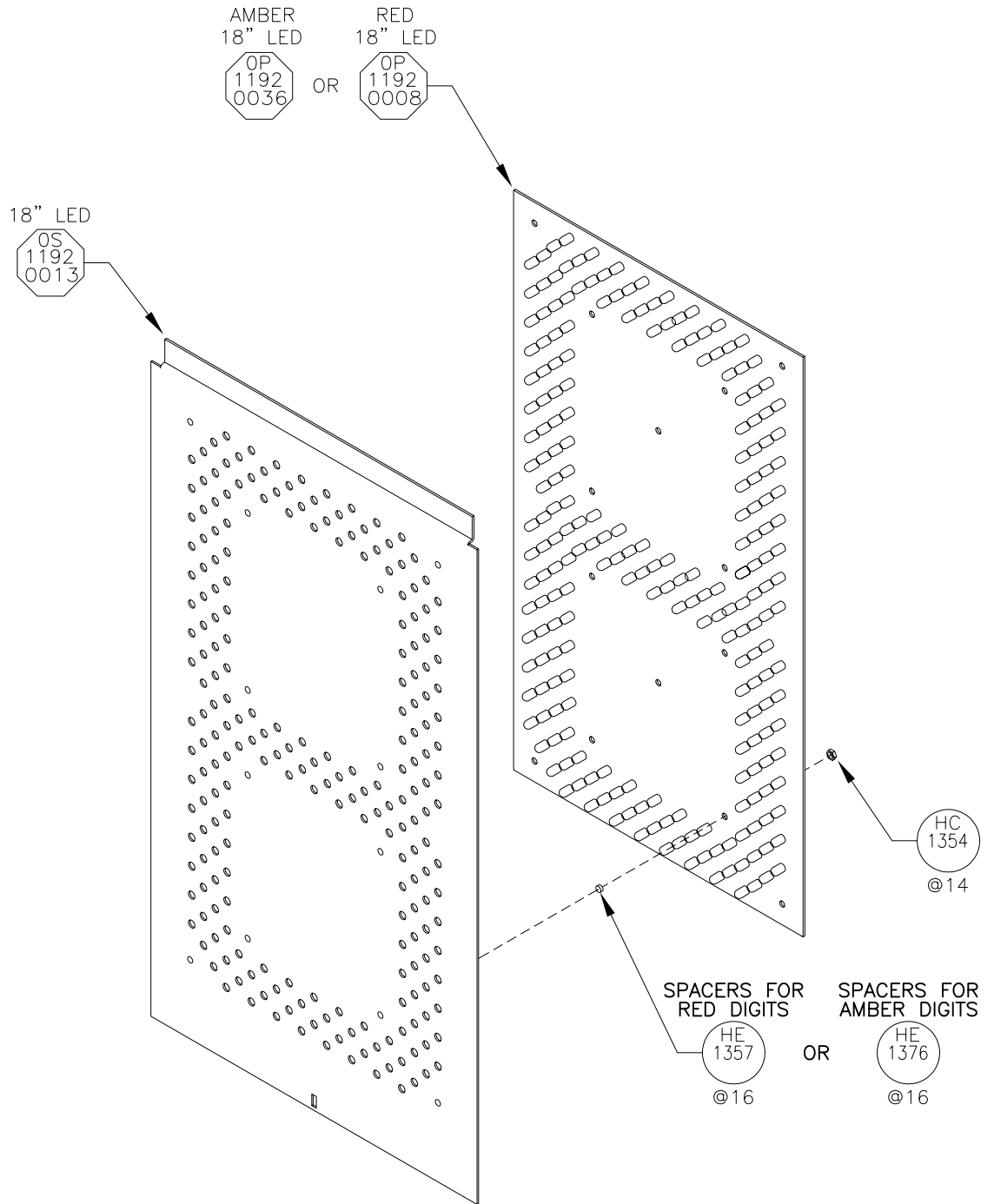
J20 PROTOCOL	
PIN	FUNCTION
1	GND-N
2	PRO-N
3	PR1-N
4	PR2-N
5	TOD-N

NOTE

- WITH NO ADDRESS PINS SELECTED THE DRIVER WILL DEFAULT TO A/S 4000 PROTOCOL
- GREEN LED INDICATES THE DRIVER HAS POWER
- RED LED WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL
- AMBER LED INDICATES LED DRIVER STATUS, LED WILL BE BLINKING TO INDICATE THAT THE DRIVER IS RUNNING, IF THE LED IS OFF OR ON SOLID ALL OF THE TIME, THEN THE DRIVERS CPU IS NOT FUNCTIONING AND MAY NEED TO BE RESET OR REPLACED.
- REFER TO DRAWINGS A-115078 & A-115079 FOR J19 ADDRESS SETTINGS FOR THIS DRIVER.
- REFER TO DRAWING A-115081 FOR J20 PROTOCOL SETTINGS FOR THIS DRIVER.
- REDRIVE CIRCUIT IS PROCESSOR REFRESHED (REFER TO DWG A-128429 FOR FURTHER INFORMATION ON THE CURRENT LOOP REDRIVE CIRCUIT SPECIFICATIONS)

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:			
TITLE: 16 COLUMN LED DRIVER II SPECIFICATIONS			
DES. BY: EB		DRAWN BY: NWRIEDT	
DATE: 11 JAN 01			
REVISION	APPR. BY:	1192-R07A-134371	
00	SCALE: NONE		

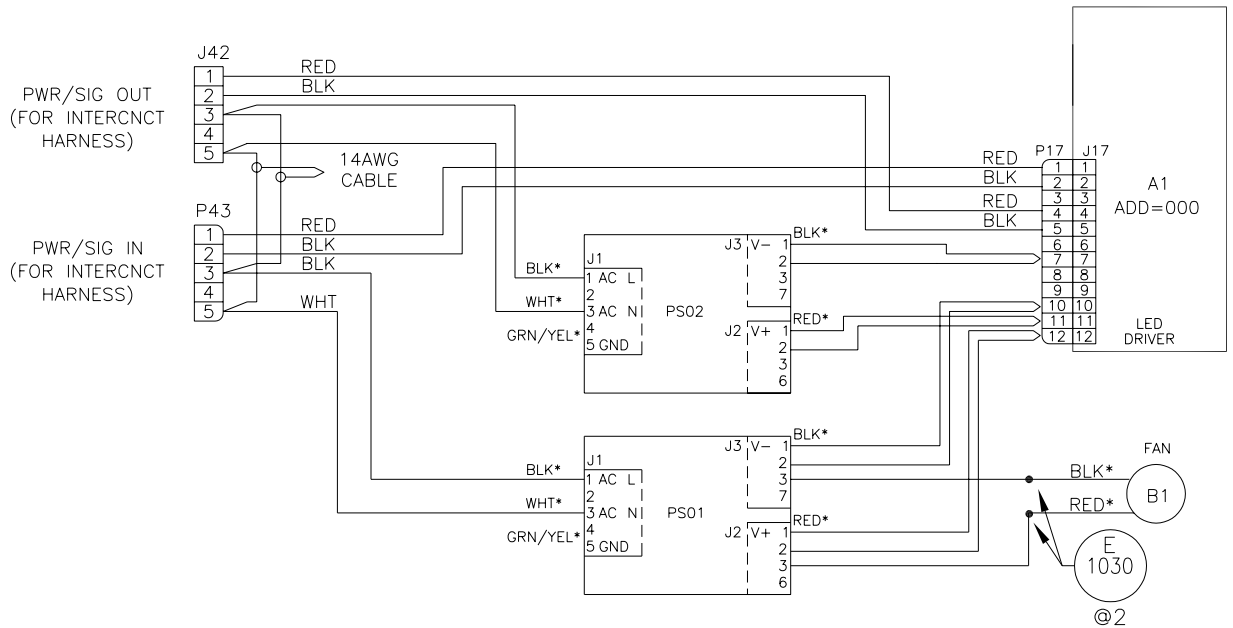
REV.	DATE	DESCRIPTION	BY	APPR.



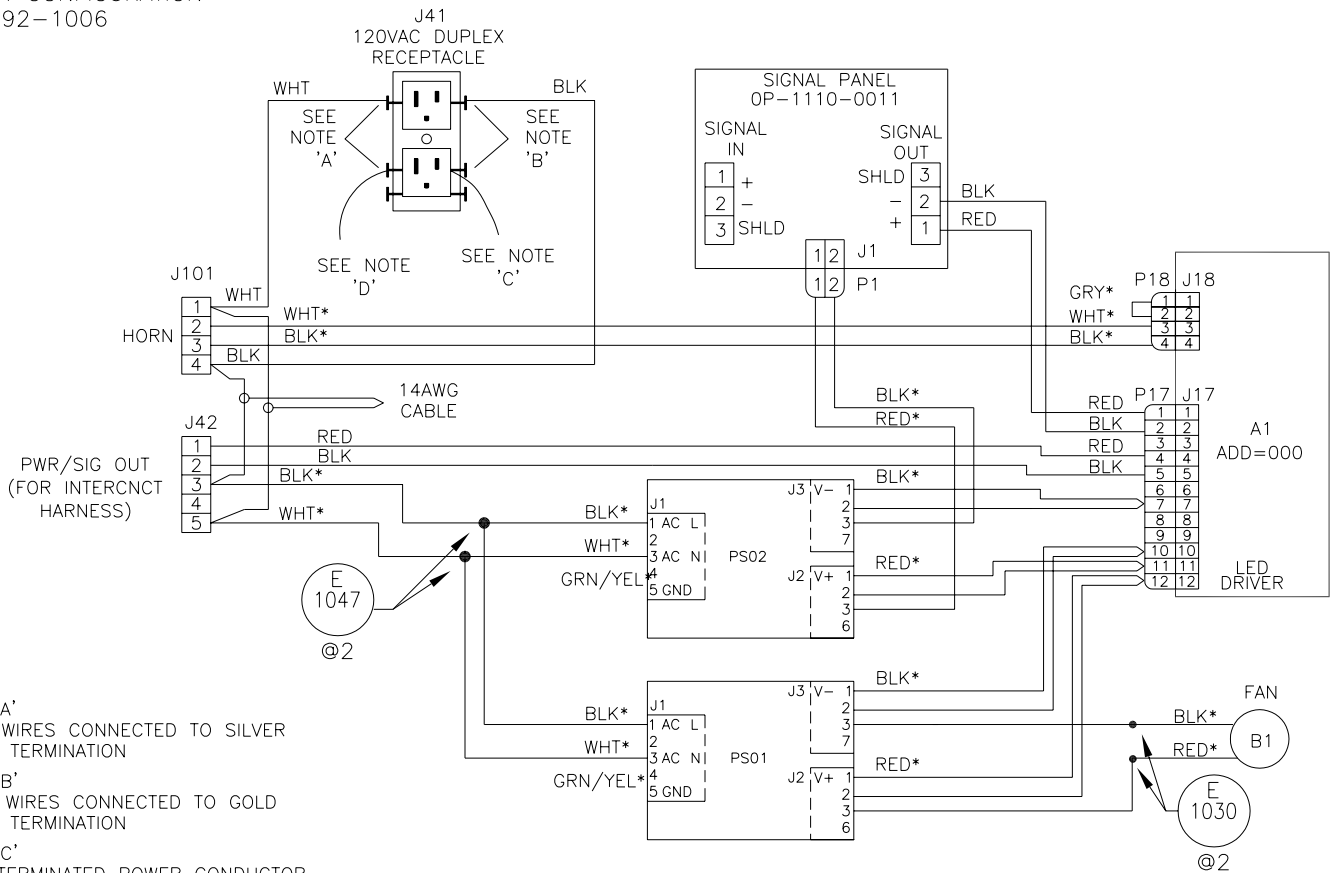
REV.	DATE	DESCRIPTION	BY	APPR.
03	28AUG02	ADDED HE-1376 REMOVED 24" LED DIGIT ASSY NUMBERS	MCOPL	
2	29JUN01	ADDED 18" AND 24" AMBER DIGIT PART NUMBERS	MCOPL	
1	8DEC00	UPDATED ATTACHING TO SHOW PEM STUD AND SPACER	GDB	

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED DIGIT SCOREBOARDS	
TITLE: DIGIT ASSEMBLY 18" RES/ORG-AMBER	
DES. BY: GBREEN	DRAWN BY: GBREEN
DATE: 24JUL00	
REVISION	APPR. BY:
	SCALE: 1=5
1192-E08A-135662	

SLAVE CONFIGURATION
OA-1192-1007



MASTER CONFIGURATION
OA-1192-1006



NOTES:

- NOTE 'A'
WHITE WIRES CONNECTED TO SILVER SCREW TERMINATION
- NOTE 'B'
BLACK WIRES CONNECTED TO GOLD SCREW TERMINATION
- NOTE 'C'
FIELD TERMINATED POWER CONDUCTOR
- NOTE 'D'
FIELD TERMINATED NEUTRAL AND GROUND CONDUCTOR

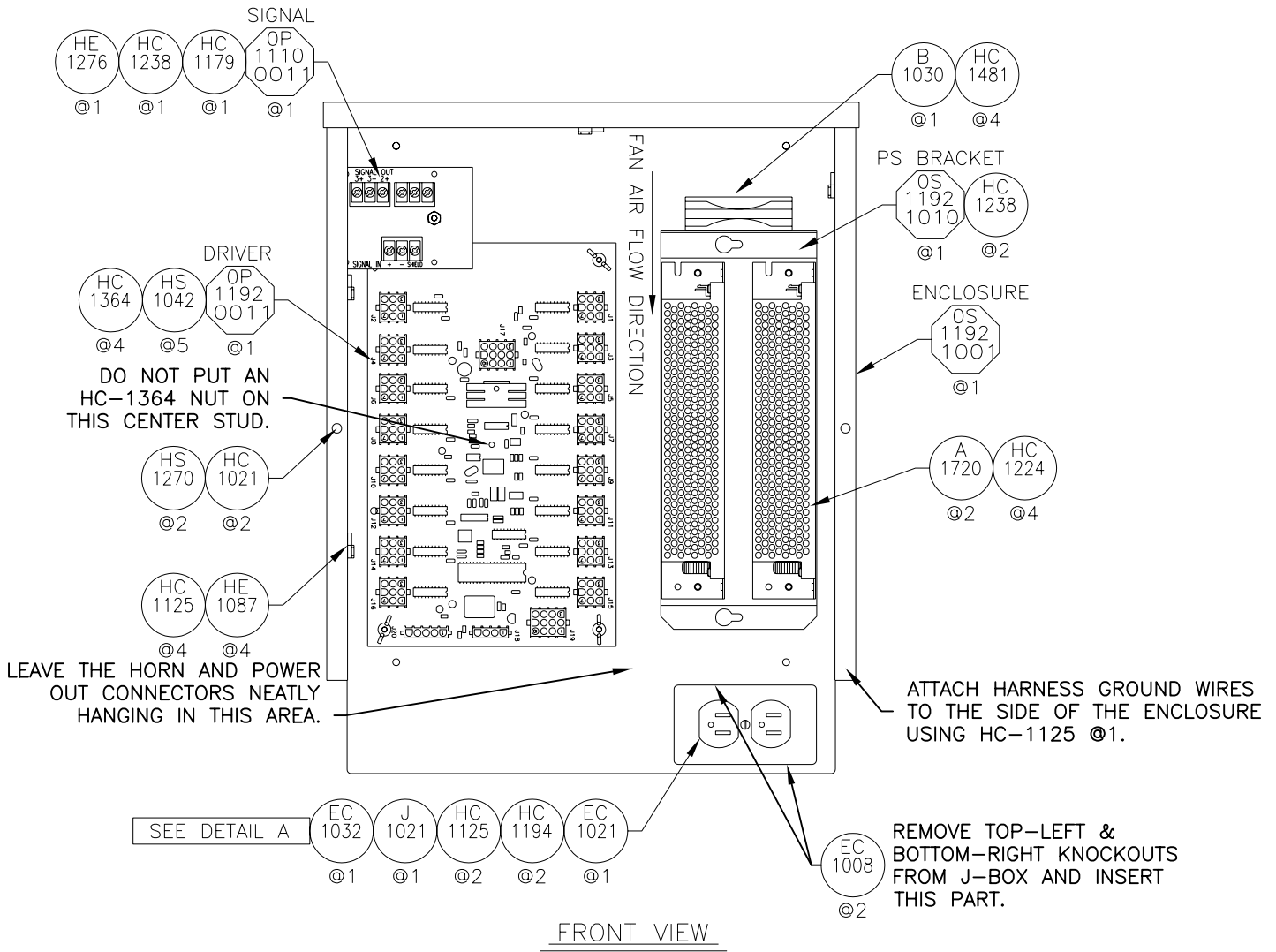
ALL POWER CONDUCTORS ARE 14AWG EXCEPT * INDICATES 18AWG CONDUCTORS.

ALL SIGNAL CONDUCTORS ARE 22AWG CONDUCTORS.

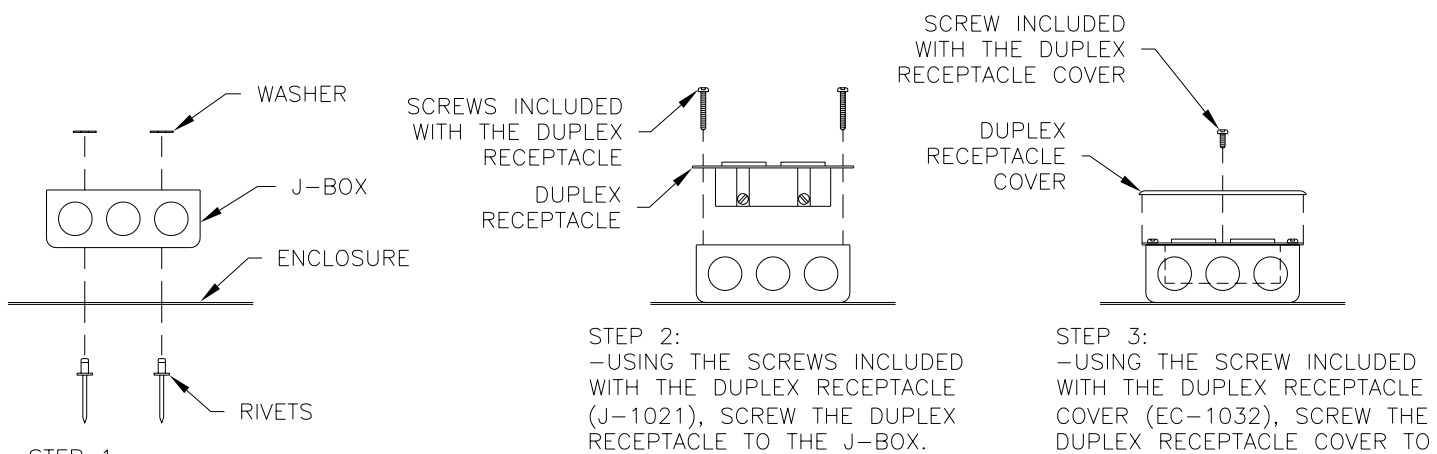
REFERENCE DWG 1192-R06B-152269 FOR DETAILED CABLE ASSEMBLY DIAGRAM.

REV.	DATE	DESCRIPTION	BY	APPR.
4	26 JUN 02	CHANGED SIGNAL CONNECTION FOR CABLE COMING OUT OF J101-1 AND -2	NMB	
03	14 MAY 02	REMOVED P43 PWR/SIG INPUT FROM MASTER ASSY. REMOVED HORN FROM SLAVE ASSY. REDID ALL THE WIRING.	MWM	
02	15 JAN 02	ADDED IWRES COMING FROM PS02 J3-3 AND J2-3 INTO THE SIGNAL PANEL	NMB	
01	17 OCT 01	UPDATED DWG TO SHOW FAN BUTT CONNECTORS. UPDATED PWS CONNECTIONS. UPDATED TITLE. MOVED WHT& BLK TO NEW PINS ON J42 & P43	MWM	

DAKTRONICS, INC. BROOKINGS, SD 57006		
PROJ: OUTDOOR LED SCOREBOARDS		
TITLE: SCHEMATIC; GEN II OUTDOOR LED, 16 COLUMN DRVR		
DES. BY:	DRAWN BY: CMCADAM	DATE: 13AUG01
REVISION	APPR. BY:	1192-R03A-154330
	SCALE: 1=1	



FRONT VIEW



STEP 1:
 -RIVET J-BOX (EC-1110) TO ENCLOSURE USING HC-1125 RIVETS AND HC-1194 WASHERS.

STEP 2:
 -USING THE SCREWS INCLUDED WITH THE DUPLEX RECEPTACLE (J-1021), SCREW THE DUPLEX RECEPTACLE TO THE J-BOX.

STEP 3:
 -USING THE SCREW INCLUDED WITH THE DUPLEX RECEPTACLE COVER (EC-1032), SCREW THE DUPLEX RECEPTACLE COVER TO THE DUPLEX RECEPTACLE.

DETAIL: A
 (ASSEMBLY OF DUPLEX RECEPTACLE)

02	27NOV01	REMOVED HE-1071 @4 AND HS-1088 @1 ADDED HS-1042 @5 AND TEXT FOR CENTER DRIVER STUD, ADDED OS-1192-1010	MCOPL
01	18OCT01	ADDED DETAIL A FOR DUPLEX RECEPTACLE ASSY	MCOPL

05	28 AUG 02	ADDED FAN AIR FLOW DIRECTION	MRB
04	19JUN02	REPLACED EC-1110 WITH EC-1021	MCOPL
03	27 MAR 02	REPLACED OP-1033-0114 W/ OP-1110-0011	CJB
REV.	DATE	DESCRIPTION	BY APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006

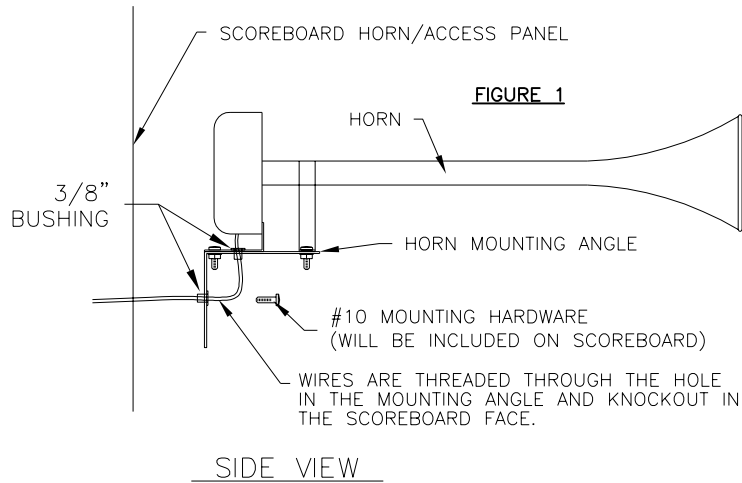
PROJ: OUTDOOR LED SCOREBOARDS

TITLE: DRIVER; 16 COL OUTDOOR LED, GEN II

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 06SEP01

REVISION	APPR. BY:	1192-E10A-154792
05	SCALE: 1=5	

REV.	DATE	DESCRIPTION	BY	APPR.
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- IF A HORN HAS BEEN ORDERED WITH A HORN, FOLLOW THESE INSTRUCTIONS:
 *NOTE THAT THE HORN ACCESS PANEL WILL BE A REMOVEABLE PANEL ON A TWO SECTION SCOREBOARD OR A DOOR ON A SINGLE SECTION SCOREBOARD. BEFORE PROCEEDING, REMOVE THE REMOVEABLE ACCESS PANEL OR OPEN THE DOOR. SEE FIGURE 2 AND 3.
- 1) THE KNOCKOUT ON THE SCOREBOARD HAS BEEN REMOVED AND THE HORN POWER ENCLOSURE ASSEMBLY HAS BEEN INTERNALLY MOUNTED BY DAKTRONICS. THE HORN MOUNTING ANGLE HAS BEEN ATTACHED TO THE HORN BY DAKTRONICS.
 - 2) THE HORN HAS BEEN PACKAGED IN BUBBLE WRAP AND WILL BE LOCATED INSIDE THE SCOREBOARD BEHIND THE DOOR (OR THE MIDDLE-MOST DOOR IF THERE ARE MORE THAN ONE ON THE SCOREBOARD.) REMOVE THE HORN WITH ATTACHED HORN MOUNTING ANGLE FROM THE PACKAGING.
 - 3) TO MOUNT THE HORN MOUNTING ANGLE (WITH ATTACHED HORN), LOCATE THE REMOVED KNOCKOUT AND THE TWO MOUNTING HOLES ON THE SCOREBOARD. REMOVE THE TWO #10 SCREWS FROM THE MOUNTING HOLES AND ATTACH THE HORN MOUNTING ANGLE TO THE SCOREBOARD WHILE FEEDING THE TWO GREY WIRES THROUGH THE KNOCKOUT. SEE FIGURE 2.
 - 4) LOCATE THE TWO RED AND GREY WIRES ATTACHED TO THE HORN POWER ENCLOSURE ASSEMBLY. ATTACH ONE OF THE GREY HORN WIRES TO THE RED WIRE AND ATTACH THE OTHER GREY WIRE TO THE BLACK WIRE. USE INCLUDED WIRE NUTS. SEE FIGURE 3.

- IF THE HORN IS AN ADDITION TO AN EXISTING SCOREBOARD, FOLLOW THESE INSTRUCTIONS:
- 1) THE 2" KNOCKOUT WILL HAVE TO BE REMOVED TO MOUNT THE HORN. LOCATE THE REMOVEABLE HORN ACCESS PANEL WITH THE 2" KNOCKOUT (TWO SECTION SCOREBOARDS) OR LOCATE THE DOOR WITH THE 2" KNOCKOUT (SINGLE SECTION SCOREBOARDS). REMOVE THE KNOCKOUT. SEE FIGURE 2.
 - 2) TO MOUNT THE HORN POWER ENCLOSURE ASSEMBLY, OPEN THE DOOR WITH THE 2" KNOCKOUT (SINGLE SECTION SCOREBOARDS) OR OPEN THE CENTRAL MOST DOOR (TWO SECTION SCOREBOARDS). DRILL TWO 7/32" HOLES 4" APART AND ATTACH THE HORN POWER ENCLOSURE ASSEMBLY USING RIVETS.
 - 3) ATTACH THE HORN TO THE INCLUDED HORN MOUNTING ANGLE WITH THE INCLUDED #10 HARDWARE. SEE FIGURE 1.
 - 4) REFER TO THE STEP 3 AND 4 IN THE PREVIOUS MOUNTING INSTRUCTIONS.

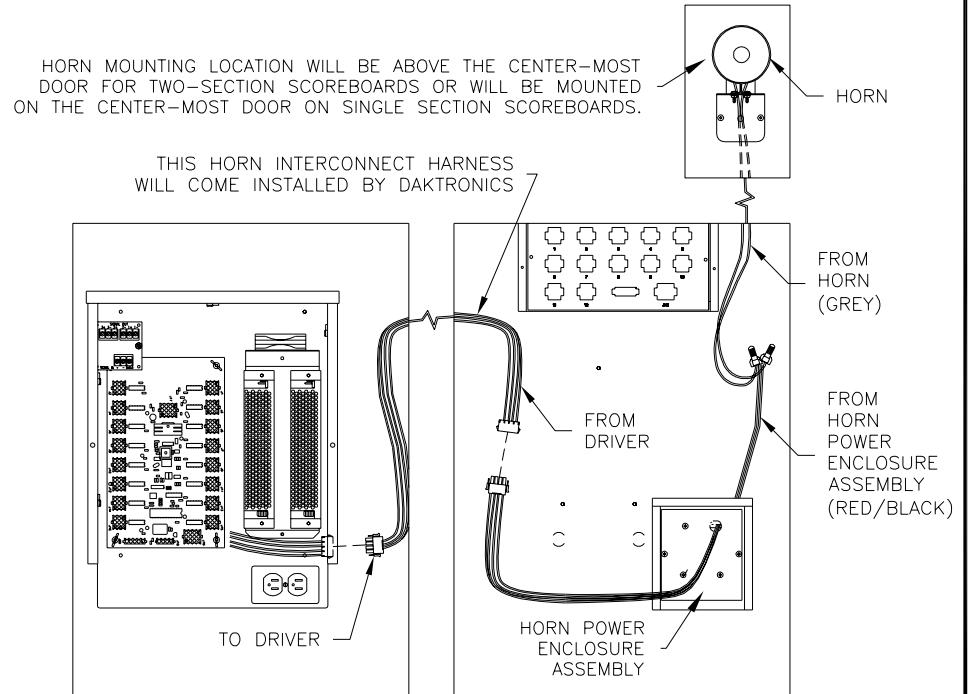
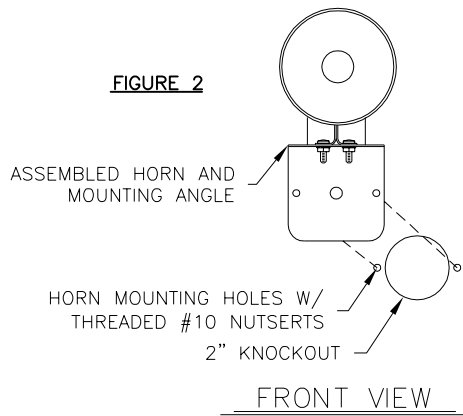
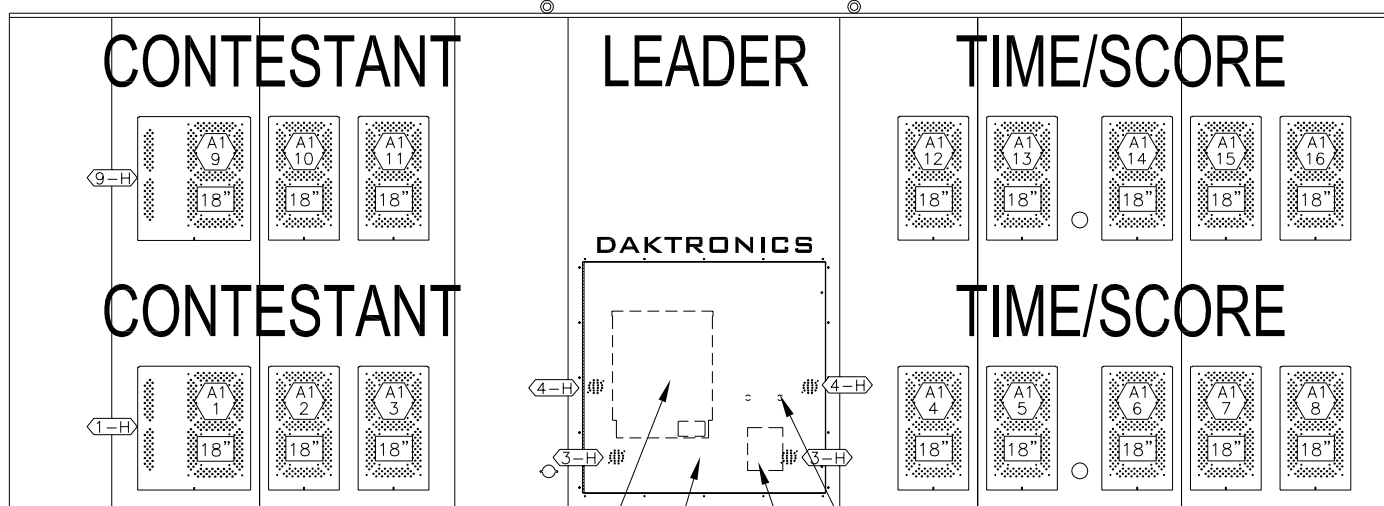


FIGURE 3



PROJ:	OUTDOOR LED SCOREBOARDS
TITLE:	HORN INSTALLATION; 12V DC
DES. BY:	MCOPLAN
DRAWN BY:	MCOPLAN
DATE:	31JAN02
DAKTRONICS, INC. BROOKINGS, SD 57006	
REVISION	00
APPR. BY:	
SCALE:	1=12
1192-E10A-162102	

RO-2009-11






ENCLOSED 16 COLUMN LED DRIVER AND SIGNAL & POWER ENCLOSURE (THE LED DRIVER IS LOCATED BEHIND THE ACCESS DOOR)

NOTE THAT THE CAPTIONS ON THE ACCESS DOOR HAVE BEEN REMOVED TO SHOW DETAIL.

KNOCKOUT FOR 1/2" CONDUIT

HORN (OPTIONAL)

FRONT VIEW

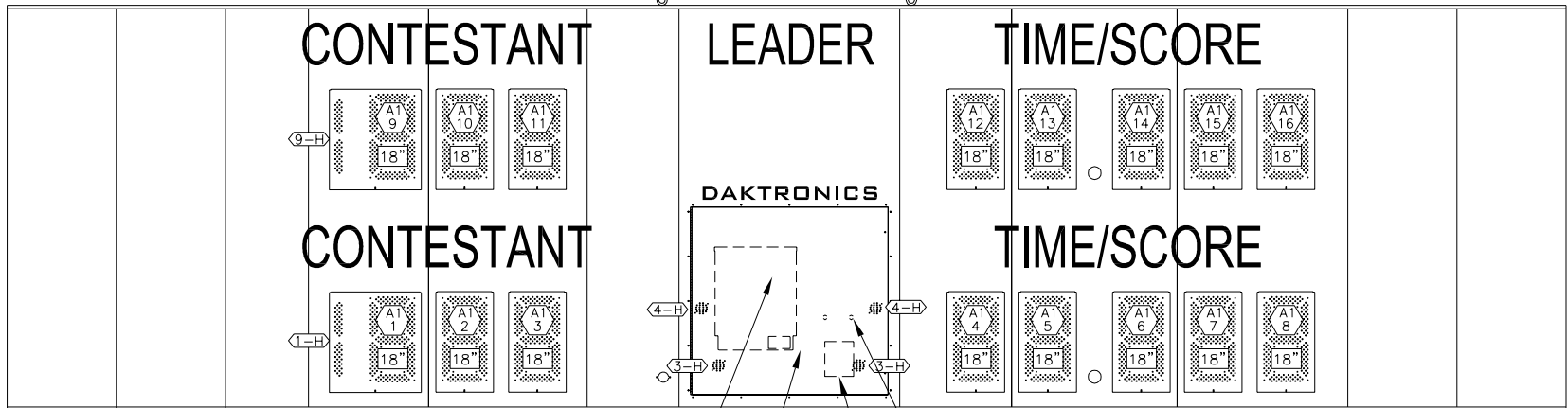
-  = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.
-  = LED DRIVER CONNECTOR AND SEGMENT (PIN) NUMBER WIRED TO THAT DIGIT
-  = DIGIT SIZE

REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006	
Prod.: OUTDOOR RODEO SCOREBOARDS	
TITLE: COMPONENT LOCATIONS; RO-2009-11	
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN
DATE: 09APR02	
REVISION	
APPR. BY:	
SCALE: 1=30	
	1162-E07A-165175

REV.
DATE
DESCRIPTION
BY
APPR.




RO-2008-11



ENCLOSED 16 COLUMN LED DRIVER AND SIGNAL & POWER ENCLOSURE (THE LED DRIVER IS LOCATED BEHIND THE ACCESS DOOR)

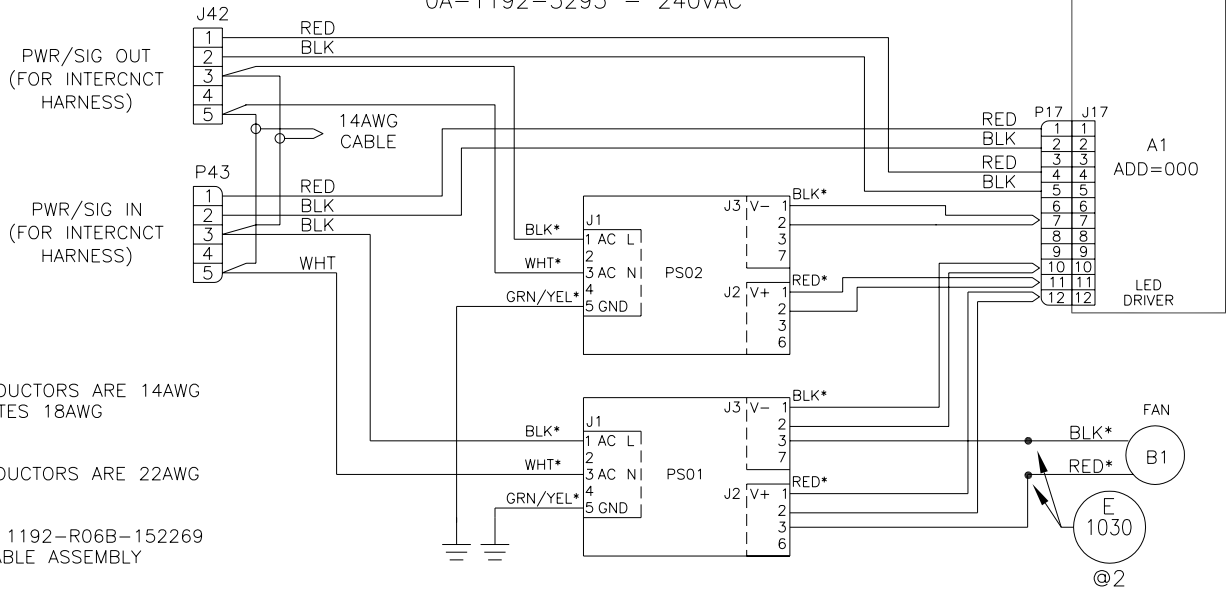
NOTE THAT THE CAPTIONS ON THE ACCESS DOOR HAVE BEEN REMOVED TO SHOW DETAIL.

FRONT VIEW

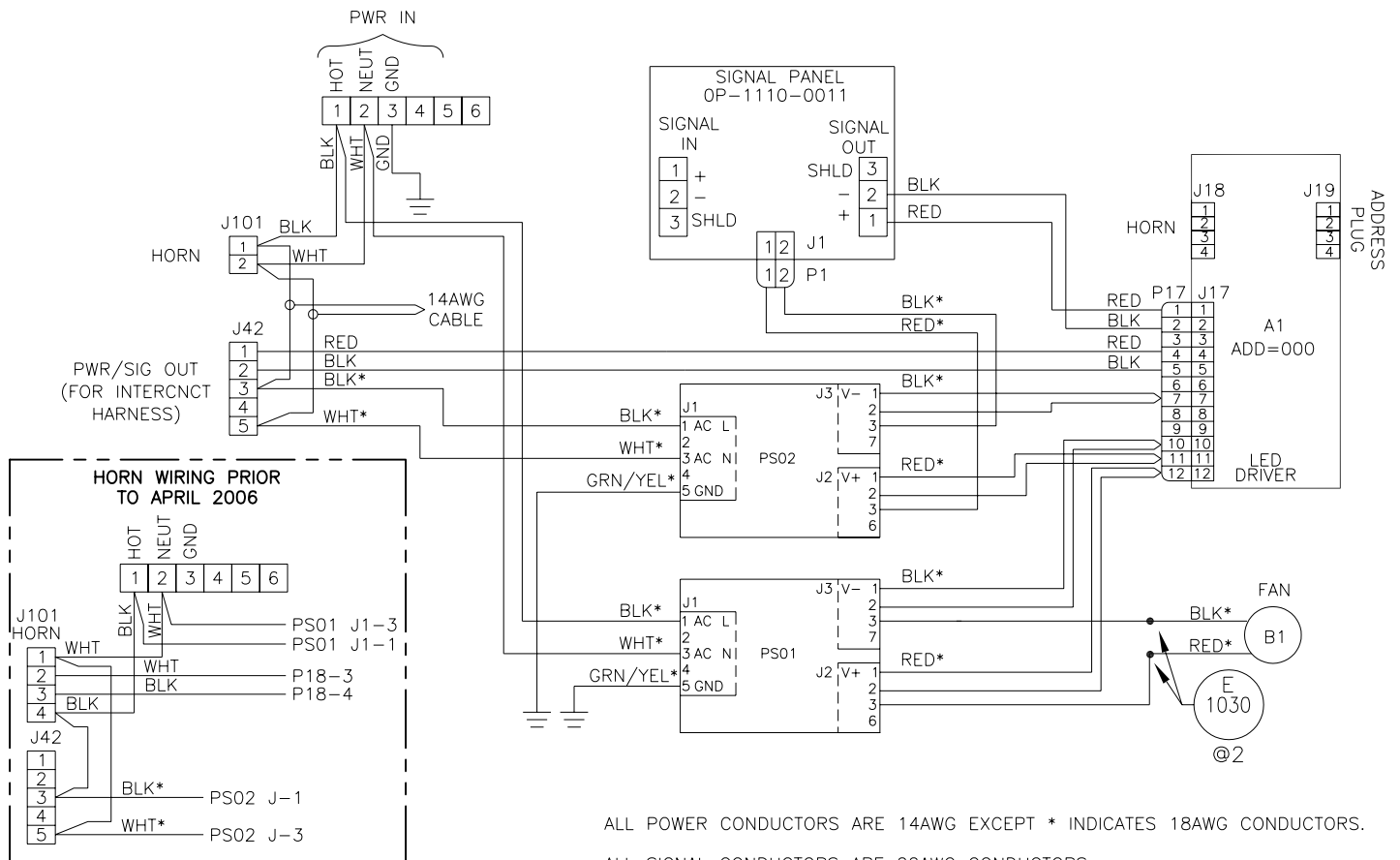
-  = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.
-  = LED DRIVER CONNECTOR AND SEGMENT (PIN) NUMBER WIRED TO THAT DIGIT
-  = DIGIT SIZE

DAKTRONICS, INC. BROOKINGS, SD 57006
 Prod.: OUTDOOR RODEO SCOREBOARDS
 TITLE: COMPONENT LOCATIONS; RO-2008-11
 DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 09APR02
 REVISION
 APPR. BY: SCALE: 1=35
 1162-E07A-165204

SLAVE CONFIGURATION
 0A-1192-2253 - 120VAC
 0A-1192-3293 - 240VAC



MASTER CONFIGURATION
 0A-1192-2252 - 120VAC
 0A-1192-3292 - 240VAC



ALL POWER CONDUCTORS ARE 14AWG EXCEPT * INDICATES 18AWG CONDUCTORS.

ALL SIGNAL CONDUCTORS ARE 22AWG CONDUCTORS.

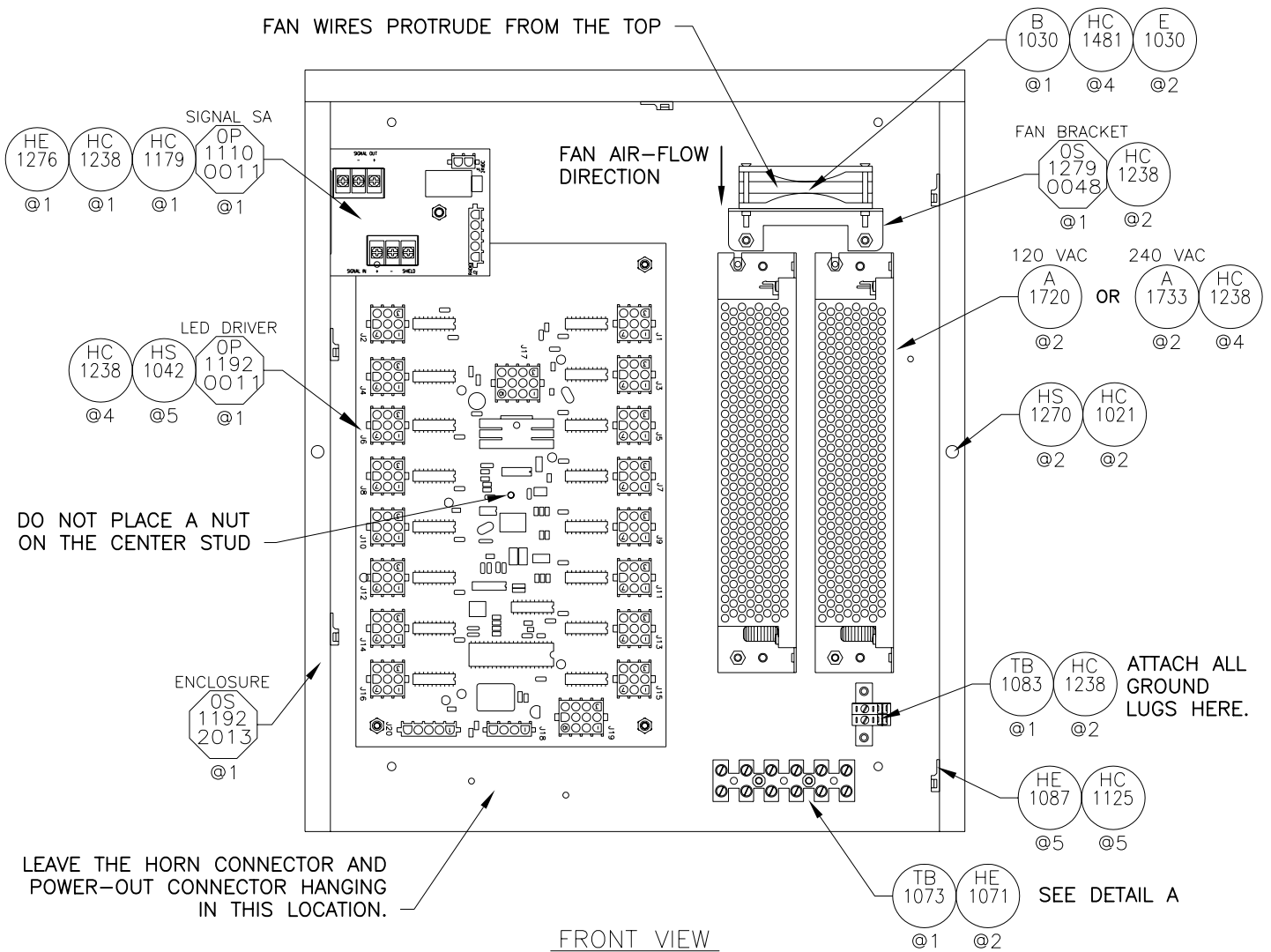
REFERENCE DWG 1192-R06B-178207 FOR DETAILED CABLE ASSEMBLY DIAGRAM.

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REV.	DATE	DESCRIPTION	BY	APPR.
03	15 SEP 06	MODIFIED J101 BLK WIRE TO PIN-1 WHT WIRE TO PIN-2	SJC	MWM
02	20 MAR 06	ADD 240VAC PART NUMBERS ADD NEW HORN CARD	KZB	MWM
01	10 DEC 02	ADDED BLOCKS 5 AND 6 TO PWR IN	AJL	MWM

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED SCOREBOARD	
TITLE: SCHEMATIC; GEN III OUTDOOR LED, 16 COLUMN DRVR	
DES. BY: MMILLER	DRAWN BY: MMILLER
DATE: 05 NOV 02	
REVISION	APPR. BY:
03	SCALE: 1=1
1192-R03A-177931	

FAN WIRES PROTRUDE FROM THE TOP

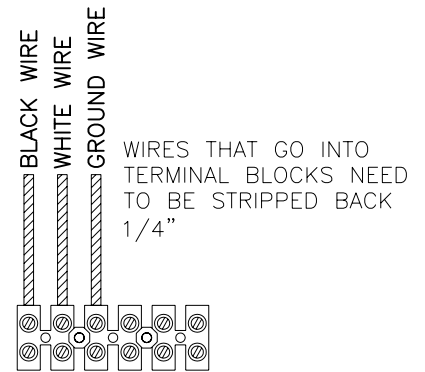


NOTES:

-NOTE THAT WIRES PROTRUDE FROM THE FAN ON ONE OF THE FOUR SIDES. WHEN MOUNTING THE FAN TO THE POWER SUPPLY BRACKET, MAKE SURE THE FAN WIRES PROTRUDE FROM THE TOP.

-THE FAN AIR-FLOW SHOULD BLOW AIR ONTO THE POWER SUPPLIES.

-SEE DRAWING A-178206 FOR LABELING.



REV.	DATE	DESCRIPTION	BY	APPR.
10	09 FEB 06	ADDED .141 HOLES @2 FOR TB-1007	CAC	
09	01AUG05	ADDED 240 VAC POWER SUPPLY	TAJ	
08	24MAY04	ADDED TB-1083 TO DRIVER ASSEMBLY	MCOPL	
07	19 APR 04	CHANGED WIRE STRIP LENGTH FROM 1/8" TO 1/4" PER ECO-40503	RWD	
06	16 SEPT 03	ADDED NOTE TO STRIP WIRE 1/8" PER ECO 41476	RWD	
05	14JUL03	REPLACED OLD BLOCK OF TB-1073 WITH NEW BLOCK OF TB-1073	MCOPL	
04	30JAN03	CHANGED MOUNTING METHODS FOR THE POWER SUPPLIES AND FAN, CHANGED THE MOUNTING HARDWARE ON SEVERAL COMPONENTS	MCOPL	
03	03JAN03	ADDED HC-1202 @1 AND HC-1354 @1	MCOPL	
02	30DEC02	CHANGED BLOCK OF OP-1110-0011	MCOPL	
01	04DEC02	REPLACED TB-1072 WITH TB-1073, ADDED NOTES AND DETAIL A	MCOPL	

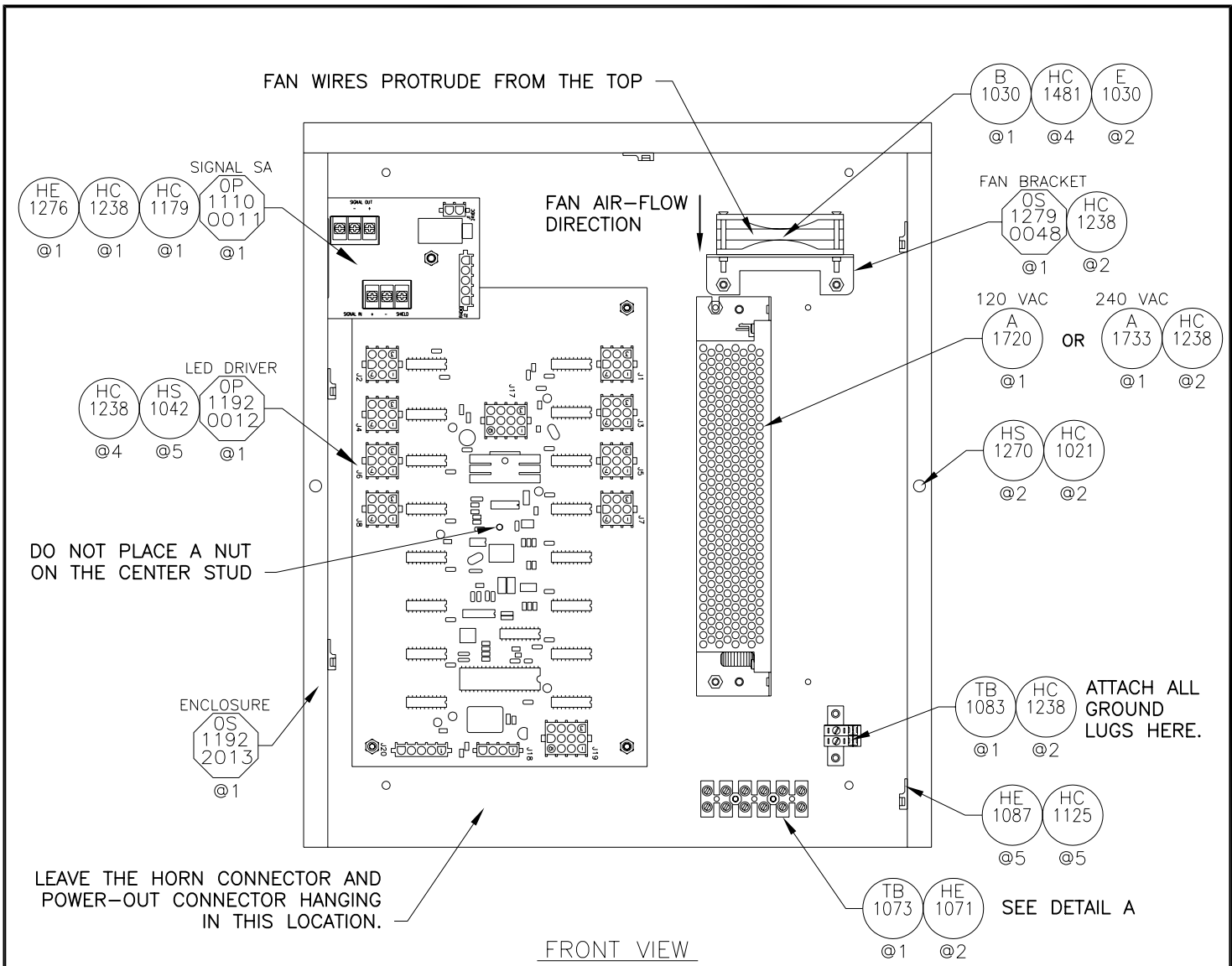
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS
 TITLE: DRIVER; GEN III OUTDOOR LED, 16 COL MASTER
 DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 08NOV02

REVISION 10 APPR. BY: SCALE: 1=4

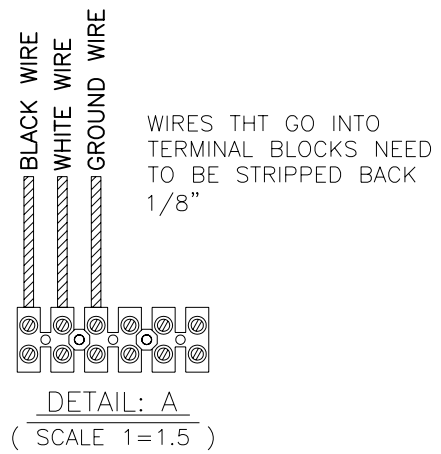
1192-E10A-178197



FRONT VIEW

NOTES:

- NOTE THAT WIRES PROTRUDE FROM THE FAN ON ONE OF THE FOUR SIDES. WHEN MOUNTING THE FAN TO THE POWER SUPPLY BRACKET, MAKE SURE THE FAN WIRES PROTRUDE FROM THE TOP.
- THE FAN AIR-FLOW SHOULD BLOW AIR ONTO THE POWER SUPPLIES.
- SEE DRAWING A-178206 FOR LABELING.



REV.	DATE	DESCRIPTION	BY	APPR.
08	01AUG05	ADDED 240 VAC POWER SUPPLY	TAJ	
07	24MAY04	ADDED TB-1083 TO DRIVER ASSEMBLY	MCOPL	
06	16 SEPT 03	ADDED NOTE TO STRIP WIRE 1/8 " PER ECO 41476	RWD	
05	19FEB03	MOVED POWER SUPPLY TO LEFT SET OF STUDS	MCOPL	
04	30JAN03	CHANGED MOUNTING METHODS FOR THE POWER SUPPLIES AND FAN, CHANGED THE MOUNTING HARDWARE ON SEVERAL COMPONENTS	MCOPL	
03	03JAN03	ADDED HC-1202 @1 AND HC-1354 @1	MCOPL	
02	30DEC02	CHANGED BLOCK OF 0P-1110-0011	MCOPL	
01	04DEC02	REPLACED TB-1072 WITH TB-1073, ADDED NOTES AND DETAIL A	MCOPL	

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

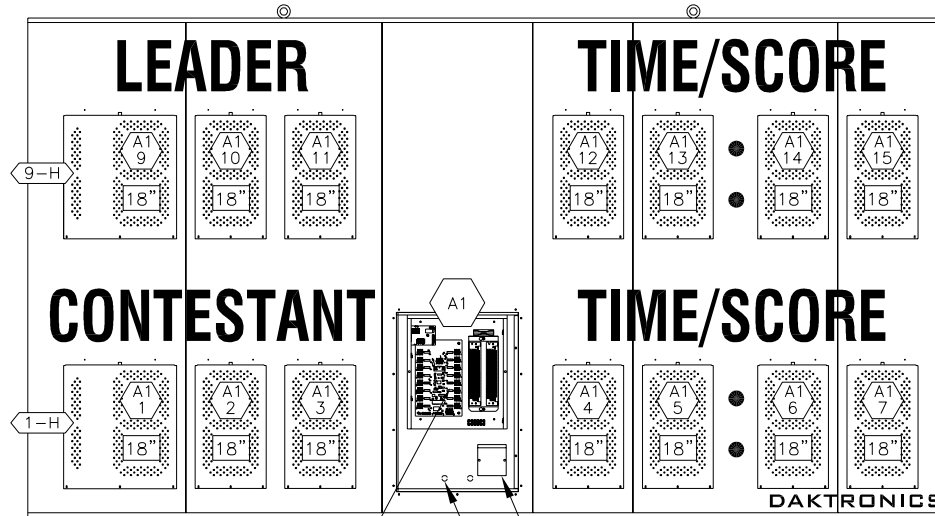
TITLE: DRIVER ASSY; GEN III OUTDOOR LED, 8 COL MASTER

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 11NOV02

REVISION 08 APPR. BY: SCALE: 1=4

1192-E10A-178235

RO-2002-11/-21






ENCLOSED 16 COLUMN LED DRIVER AND POWER/SIGNAL ENCLOSURE. (THE COVER HAS BEEN REMOVED TO SHOW COMPONENT DETAIL)

OPTIONAL 12V DC HORN

KNOCKOUTS FOR CONDUIT

FRONT VIEW

-  = DRIVER CONNECTOR WIRED TO THAT DIGIT
-  = DIGIT SIZE
-  = LED DRIVER CONNECTOR AND SEGMENT (PIN) WIRED TO THAT DIGIT

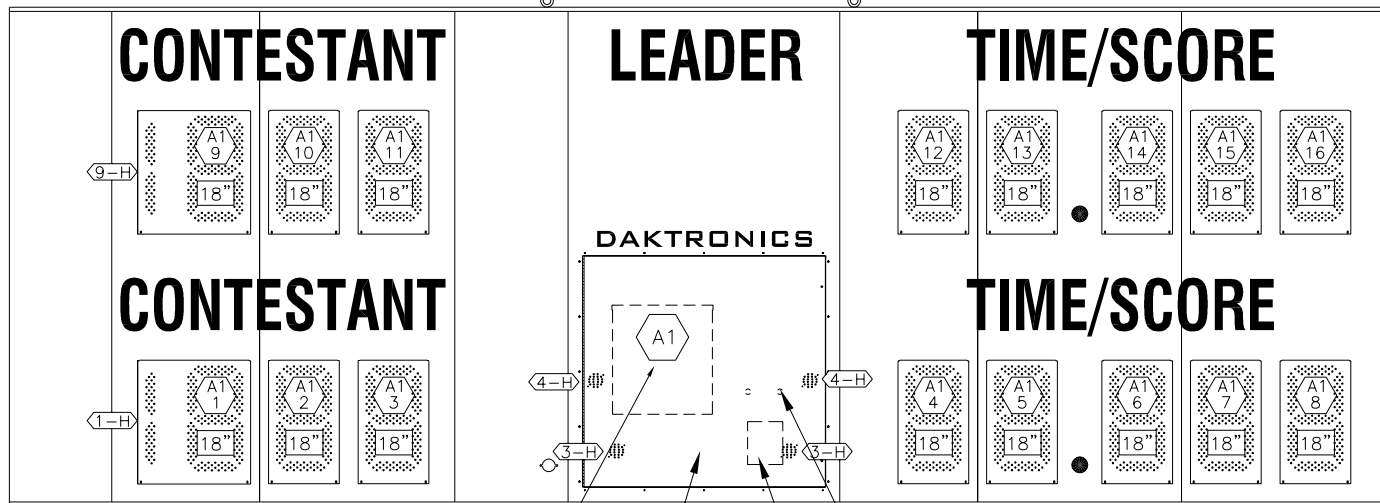
02	02JUN04	REVISED DIGIT DESIGNATION PER CURRENT PROGRAMMING	MOOPL
01	12MAY04	REDREW DISPLAY PER CURRENT DESIGN	MOOPL
REV.	DATE	DESCRIPTION	BY
			APPR.

PROJ: RODEO SCOREBOARDS	
TITLE: COMPONENT LOCATION: RO-2002-11/-21, G3	
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN
APPR. BY: MCOPLAN	DATE: 15MAR04
REVISION	SCALE: 1=30
02	1162-E10A-206338

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DAKTRONICS, INC. BROOKINGS, SD 57006

RO-2009-11/-21




ENCLOSED 16 COLUMN LED DRIVER AND POWER/SIGNAL ENCLOSURE. (THE COVER HAS BEEN REMOVED TO SHOW COMPONENT DETAIL)

NOTE THAT THE CAPTIONS ON THE ACCESS DOOR HAVE BEEN REMOVED TO SHOW DETAIL.

KNOCKOUT FOR 1/2" CONDUIT

HORN (OPTIONAL)

FRONT VIEW

 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

 = LED DRIVER CONNECTOR AND SEGMENT (PIN) NUMBER WIRED TO THAT DIGIT

= DIGIT SIZE

REV.

DATE

DESCRIPTION

BY

APPR.

00

REVISION
SCALE: 1=30

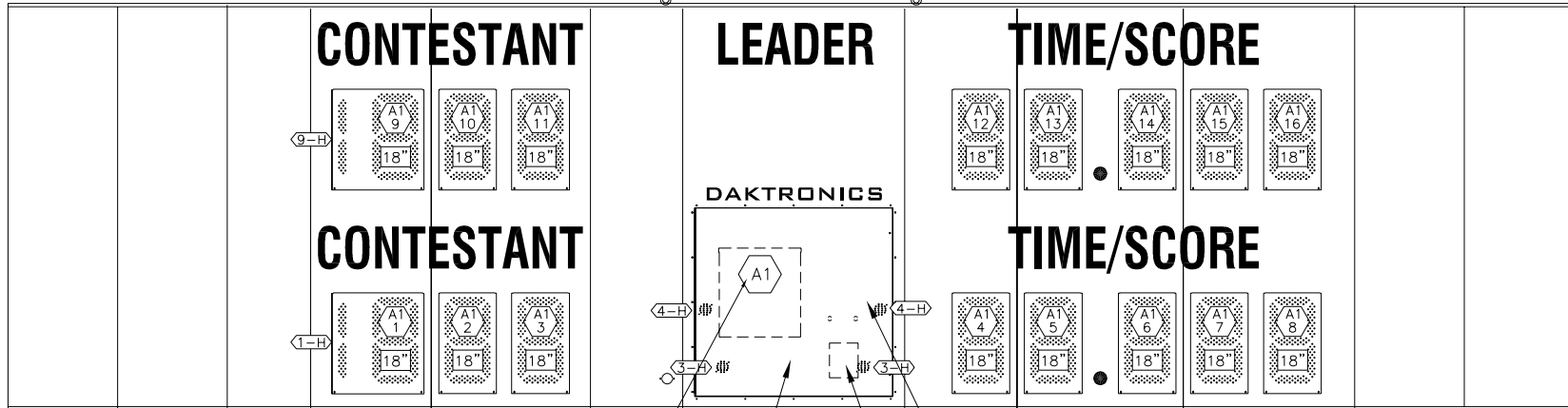
1162-E10A-206339

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PROJ: RODEO SCOREBOARDS
TITLE: COMPONENT LOCATION: RO-2009-11/-21, G3
DES. BY: MCOPLAN
DRAWN BY: MCOPLAN
DATE: 15MAR04

DAKTRONICS, INC. BROOKINGS, SD 57006

RO-2008-11/-21




ENCLOSED 16 COLUMN LED DRIVER AND POWER/SIGNAL ENCLOSURE. (THE COVER HAS BEEN REMOVED TO SHOW COMPONENT DETAIL)

— KNOCKOUT FOR 1/2" CONDUIT

NOTE THAT THE CAPTIONS ON THE ACCESS DOOR HAVE BEEN REMOVED TO SHOW DETAIL.

— HORN (OPTIONAL)

FRONT VIEW

 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

 = LED DRIVER CONNECTOR AND SEGMENT (PIN) NUMBER WIRED TO THAT DIGIT

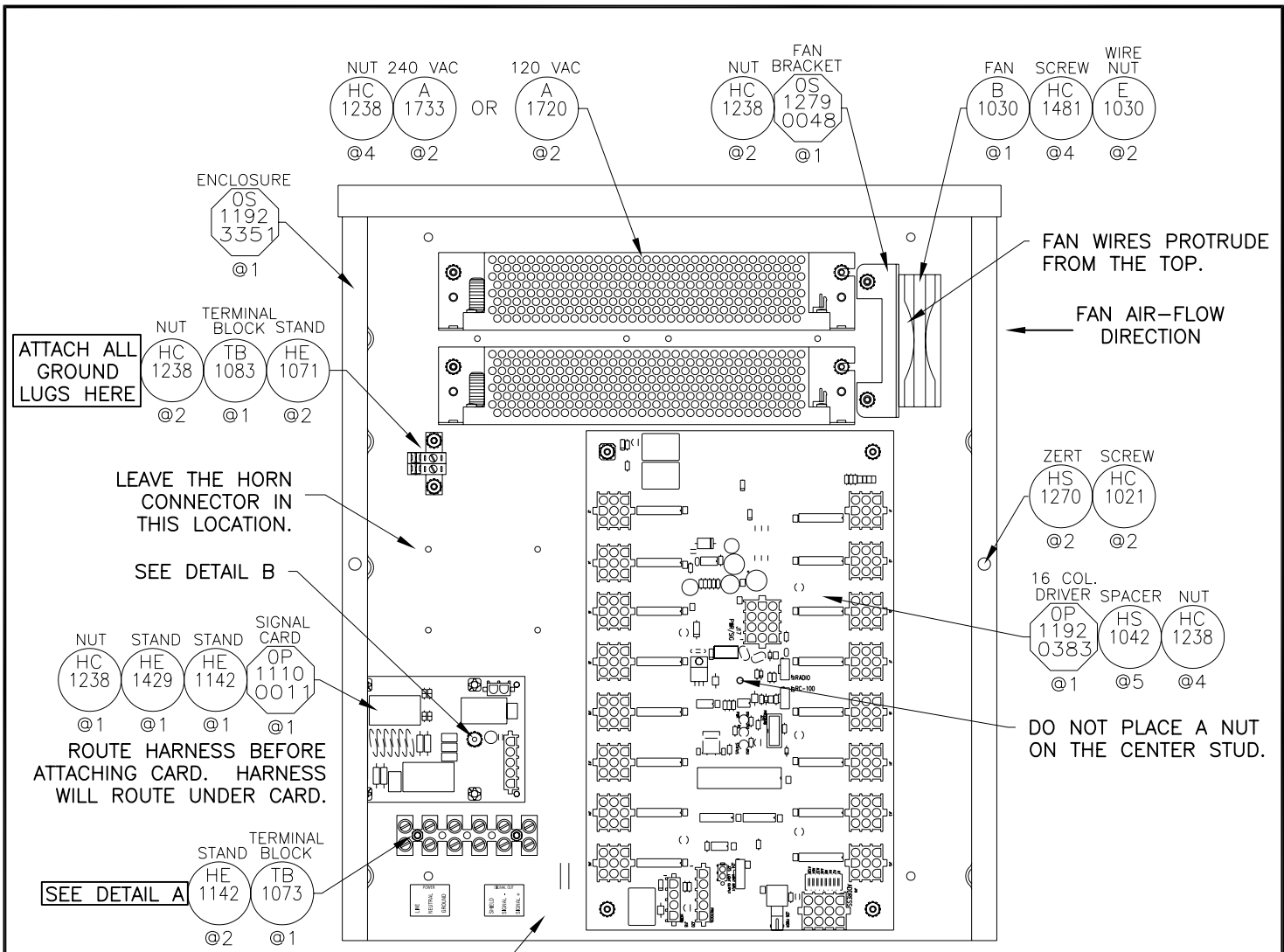
= DIGIT SIZE

REV. DATE DESCRIPTION BY APPR.

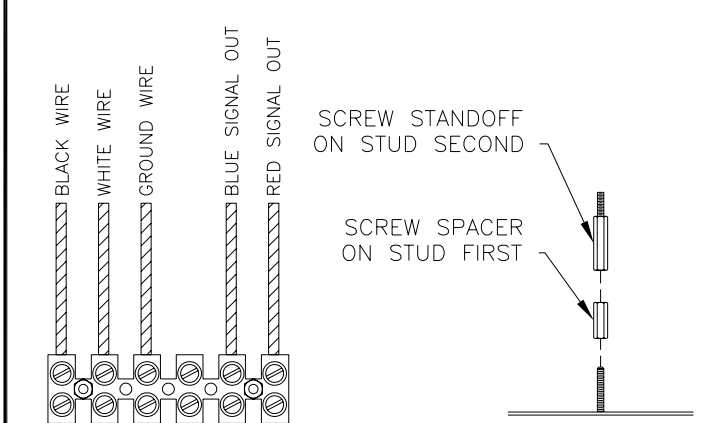
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2004 DAKTRONICS, INC.

PROJ: RODEO SCOREBOARDS
 TITLE: COMPONENT LOCATION: RO-2008-11/-21, G3
 DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 15MAR04
 DAKTRONICS, INC. BROOKINGS, SD 57006

REVISION 00
 APPR. BY: SCALE: 1=30
 1162-E10A-206344



FRONT VIEW



DETAIL: A
(SCALE 1=1.5)

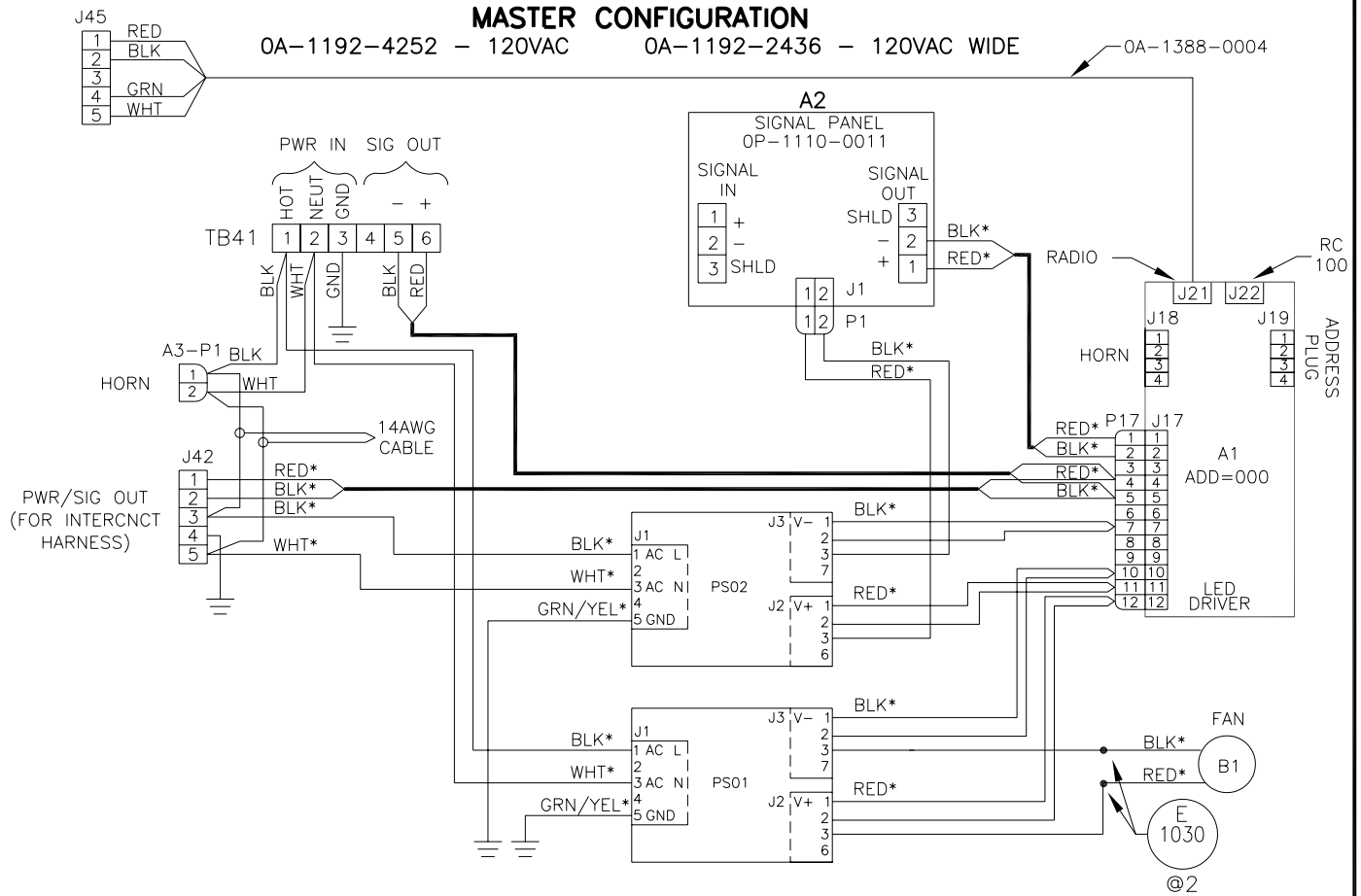
DETAIL: B

- NOTES:
- NOTE THE WIRES PROTRUDE FROM THE FAN ON ONE OF THE FOUR SIDES. WHEN MOUNTING THE FAN TO THE FAN BRACKET, MAKE SURE THE FAN WIRES PROTRUDE FROM THE TOP.
 - THE FAN AIR-FLOW SHOULD BLOW AIR ONTO THE POWER SUPPLIES.
 - SEE DRAWING A-284952 FOR COVER LABELING.

ASSEMBLY PACKETS
 0A-1192-4252...DRIVER; GEN IV OUTDOOR LED, 16 COL MASTER
 .OS-1192-3351...ENCLOSURE; GEN IV OUTDOOR LED DRIVER

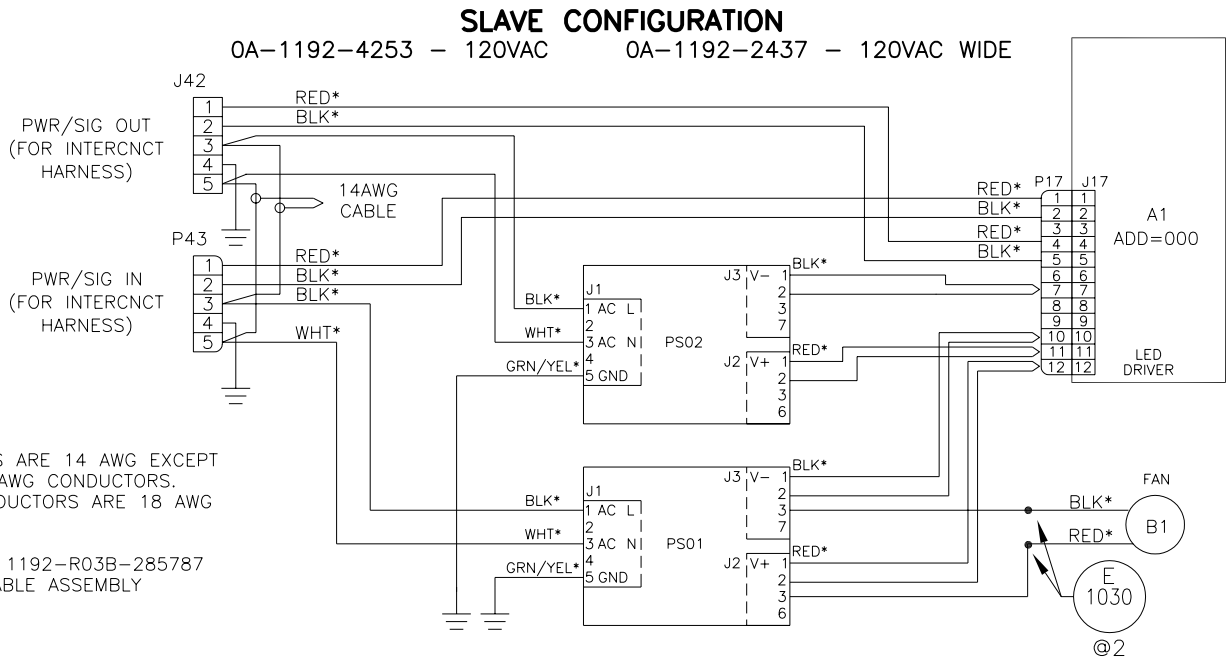
REV.	DATE	DESCRIPTION	BY	APPR.
04	13 JUN 08	ADDED HE-1071 @2 PER ECO 049837	AMG	
03	04 DEC 07	REMOVED CABLE ANCHORS AND RIVETS.	BJC	
02	10 SEP 07	ADDED POWER LABEL BELOW TERMINAL BLOCK.	BJC	
01	12 MAR 07	ADDED SIGNAL OUT LABEL BELOW TERMINAL BLOCK FOR RE-DRIVE CAPABILITY.	BJC	

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: DRIVER: GEN IV OUTDOOR LED- 16 COL MASTER			
DES. BY: BCURTIS		DRAWN BY: BCURTIS	DATE: 14 SEPT 06
REVISION	APPR. BY:	1192-E10A-284920	
06	SCALE: 1=4		



ALL CONDUCTORS ARE 14 AWG EXCEPT * INDICATES 18AWG CONDUCTORS.
ALL SIGNAL CONDUCTORS ARE ALSO 18 AWG CONDUCTORS.

REFERENCE DWG 1192-R03C-285776 FOR DETAILED CABLE ASSEMBLY DIAGRAM.



ALL CONDUCTORS ARE 14 AWG EXCEPT * INDICATES 18 AWG CONDUCTORS.
ALL SIGNAL CONDUCTORS ARE 18 AWG CONDUCTORS.

REFERENCE DWG 1192-R03B-285787 FOR DETAILED CABLE ASSEMBLY DIAGRAM.

REV.	DATE	DESCRIPTION	BY	APPR.
05	05 NOV 07	REMOVED 240V FROM THIS DWG AND MADE NEW 324504 DWG FOR 240V SETUP.	AMG	
04	9 APR 07	ADDED GND WIRES TO P43, & J42	DMD	
03	11 MAR 07	ADDED TB41 FOR SIGNAL RE-DRIVE	DMD	
02	11 JAN 07	UPDATED 240V 0A PACKET INFORMATION	JDD	

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: SCHEMATIC; GEN IV OUTDOOR LED, 16 COL DRIVER			
DES. BY:		DRAWN BY: DDINING	
		DATE: 25 SEP 06	
REVISION	APPR. BY: MMILLER	1192-R03A-285779	
05	SCALE: NONE		

LED DRIVER IV
 OP-1192-0383, 16 COL
 OP-1192-0384, 16 COL, AC

REFER TO DWGS
 A-115078 & A-115079
 FOR ADDRESS SETTINGS

REFER TO DWGS
 A-290261 & A-290689

S1 ADDRESS
 DIP SWITCH PACKAGE

J1-16 DIGIT JACKS

PIN	FUNCTION
1	SEGC-N
2	SEGB-N
3	SEGA-N
4	SEGF-N
5	SEGE-N
6	SEGD-N
7	+VBB-P
8	SEGH-N
9	SEGG-N

J17 PWR/SIG

PIN	FUNCTION
1	SIG-P
2	SIG-N (232-IN)
3	SIG 2-P(232-GND)
4	CLOUT-P
5	CLOUT-N
6	16VAC-N
7	GND-N
8	EARTH-N
9	16VAC-P
10	GND-N
11	+VDD-P
12	+VBB-P

J22 RC-100 RADIO

PIN	FUNCTION
1	+UNREG-P
2	GND-N
3	GND-N
4	RX_INPUT-P

J21 2.4GHz RADIO

PIN	FUNCTION
1	+UNREG-P
2	GND-N
3	GND-N
4	RX_INPUT-P

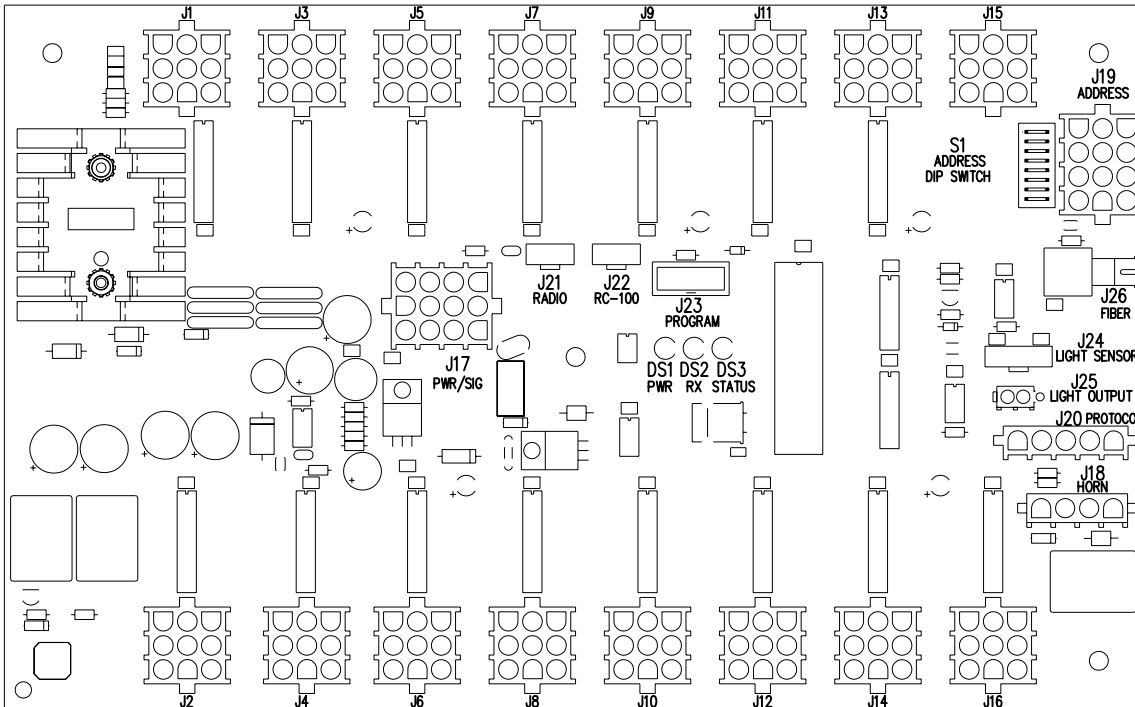
J23 PROGRAM

PIN	FUNCTION
1	DATA
2	/RESET
3	N/C
4	GND-N
5	CLK
6	GND-N
7	N/C
8	+5V-P
9	N/C
10	+5V-P

J19 ADDRESS

PIN	FUNCTION
1	GND-N
2	ADD0-N
3	ADD1-N
4	GND-N
5	ADD2-N
6	ADD3-N
7	GND-N
8	ADD4-N
9	ADD5-N
10	GND-N
11	ADD6-N
12	ADD7-N

SW #	FUNCTION
1	ADD0
2	ADD1
3	ADD2
4	ADD3
5	ADD4
6	ADD5
7	ADD6
8	ADD7



J26 FIBER RX

PIN	FUNCTION
1	N/C
2	+5V-P
3	GND-N
4	N/C
5	N/C
6	RX_INPUT-P
7	GND-N
8	N/C

J24 LIGHT SENSOR

PIN	FUNCTION
1	LIGHT_IN-P
2	LIGHT_IN-N
3	+5V-P
4	GND-N
5	GND-N
6	N/C

J25 LIGHT OUT- NEXT DRIVER

PIN	FUNCTION
1	LIGHT_OUT-P
2	LIGHT_OUT-N

REFER TO DWG A-115081
 FOR PROTOCOL SETTINGS

J20 PROTOCOL

PIN	FUNCTION
1	GND-N
2	PRO-N
3	PR1-N
4	PR2-N
5	PR3-N (TOD)

J18 HORN

PIN	FUNCTION
1	HORNOUT-N
2	AUXOUT-N
3	120SW-P
4	120SW-N

NOTES:

- WITH NO ADDRESS SELECTED, DRIVER WILL DEFAULT TO A/S 4000 PROTOCOL.
- GREEN LED DS1 INDICATES THAT THE DRIVER HAS POWER.
- RED LED DS2 WILL FLICKER WHEN THE DRIVER RECEIVES SIGNAL.
- AMBER LED DS3 WILL BLINK WHEN THE DRIVER IS RUNNING.
- IF DS3 IS ON OR OFF CONTINUOUSLY THE MICROCONTROLLER IS NOT WORKING.
- REFER TO DRAWING A-128429 FOR CURRENT LOOP REDRIVE SPECIFICATIONS.
- REFER TO DRAWING A-115081 FOR J20 PROTOCOL SETTINGS.
- REFER TO DRAWINGS A-115078,115079 FOR J19 ADDRESS SETTINGS.

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:			
TITLE: SPECIFICATIONS; LED DRIVER IV, 16 COL			
DES. BY:		DRAWN BY: DULSCHM	
		DATE: 09 OCT 06	
REVISION	APPR. BY:	1192-R04A-288137	
02	SCALE: 1 = 2		

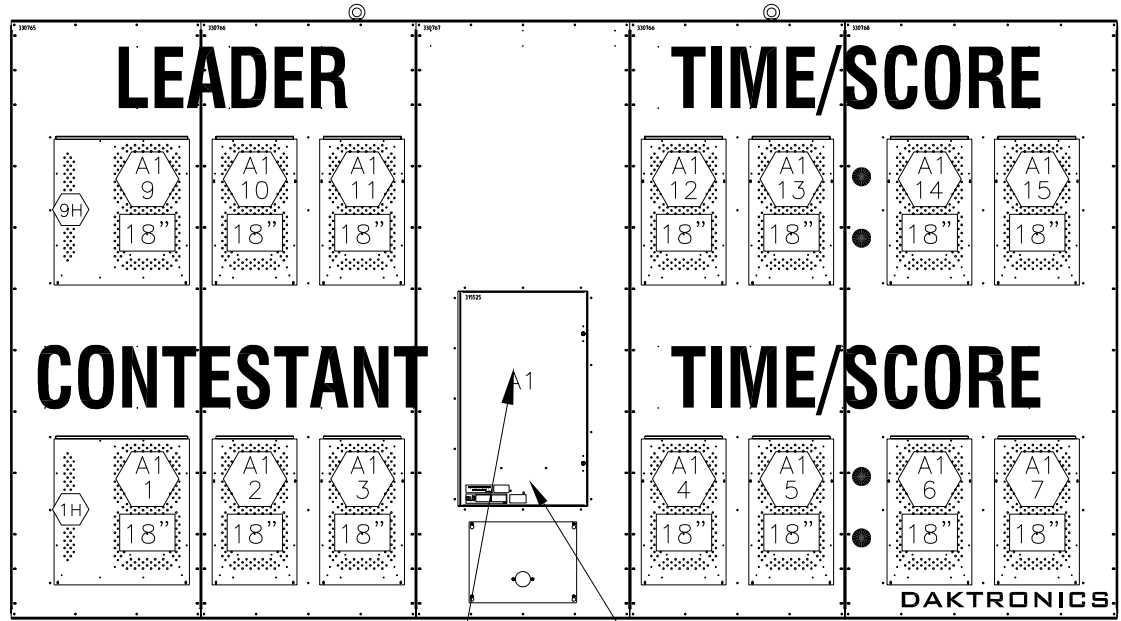
REV.	DATE	DESCRIPTION	BY	APPR.
02	30 NOV 06	ADDED ADDRESS SWITCH S1 TO DRAWING	DJU	
01	26 OCT 06	RESIZED TEXT SO THAT IT WAS EASIER TO READ, AND CLARIFIED FUNCTIONS OF EACH JACK.	AFL	

RO-2002-11/-21, G4

REV. DATE DESCRIPTION BY APPR.

PROJ: OUTDOOR LED SCOREBOARDS
 TITLE: COMPONENT LOCATION; RO-2002-11/-21, G4
 DES. BY: BCURTIS DRAWN BY: JDERANIL DATE: 10 MAR 08
 REVISION APPR. BY: SCALE: 1=25 1162-R08A-370437

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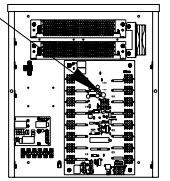


SEE DETAIL A
 (MASTER DRIVER &
 KNOCKOUT FOR 1/2"
 CONDUIT)

OPTIONAL RADIO



FRONT VIEW

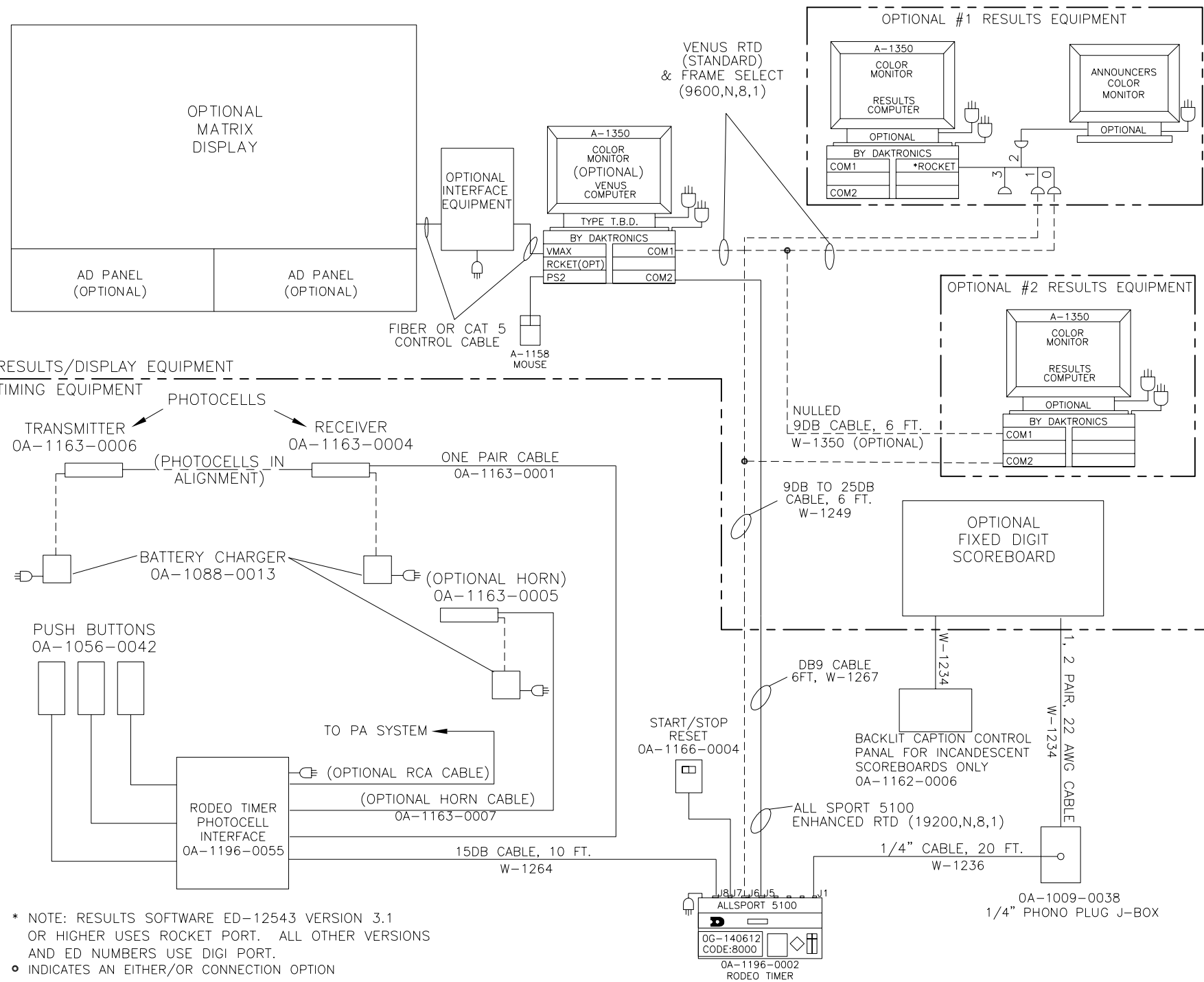
ENCLOSED 16 COLUMN MASTER
 LED DRIVER AND POWER/SIGNAL
 ENCLOSURE @1. (THE COVER
 HAS BEEN REMOVED TO SHOW THE
 ENCLOSURE COMPONENT DETAIL.)



DETAIL: A
 x2 SCALE

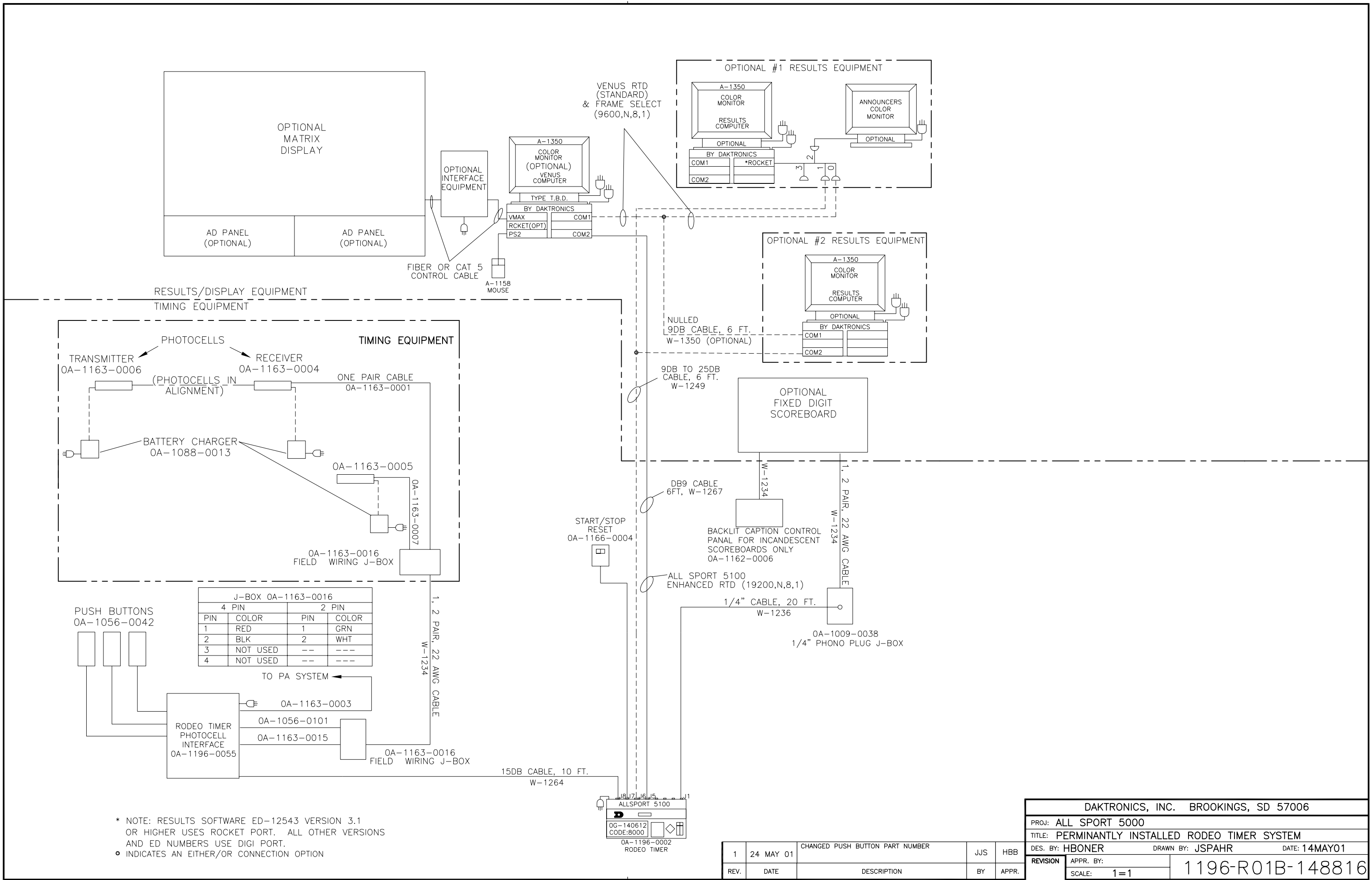
NOTES:

-  = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.
-  = DIGIT SIZE



* NOTE: RESULTS SOFTWARE ED-12543 VERSION 3.1 OR HIGHER USES ROCKET PORT. ALL OTHER VERSIONS AND ED NUMBERS USE DIGI PORT.
 • INDICATES AN EITHER/OR CONNECTION OPTION

REV.	DATE	DESCRIPTION	BY	APPR.	REV.	DATE	DESCRIPTION	BY	APPR.
07	24 MAY 01	CHANGES PUSH BOTTON PART NUMBER	JJS	HBB	02	05 FEB 01	UPDATED SYSTEM RISER TO REFLECT ACTUAL SYSTEM CONFIGURATION. UPDATED COMPONENT VIEWS	HBB	
06	26 APR 01	REVISED DWG FROM A TO B SIZE; REVISED CABLE NOMENCLATURE; BROUGHT IN OUTSIDE REV BLOCKS	ORS	HBB	01	03 AUG 00	ALLSPORT RODEO CONSOLE UPDATE	MWD	
05	12 APR 01	ADDED PROTOCOL INFORMATION FOR THE A/S 5100 AND THE STATS	NW		DAKTRONICS, INC. BROOKINGS, SD 57006				
04	20 MAR 01	ADDED BACKLIT CAPTION CONTROL PANEL FOR INCANDESCENT SCOREBOARDS	JJS		PROJ: ALLSPORT 5100 RODEO EQUIPMENT				
03	06 MAR 01	ADDED NOTE ON ROCKET AND DGI PORTS CONCERNING VERSIONS AND ED NUMBERS	NW		TITLE: SYSTEM RISER DIAGRAM				
					DES. BY: EBRAVEK DRAWN BY: MIKE DURSTON DATE: 03 AUG 00				
					REVISION	APPR. BY: EBRAVEK	1196-R01B-136279		
					SCALE: 1=1				

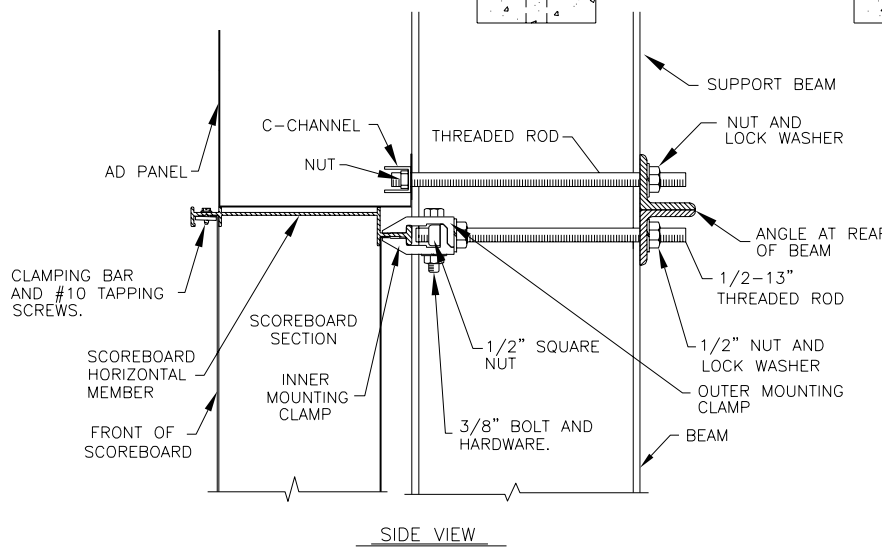
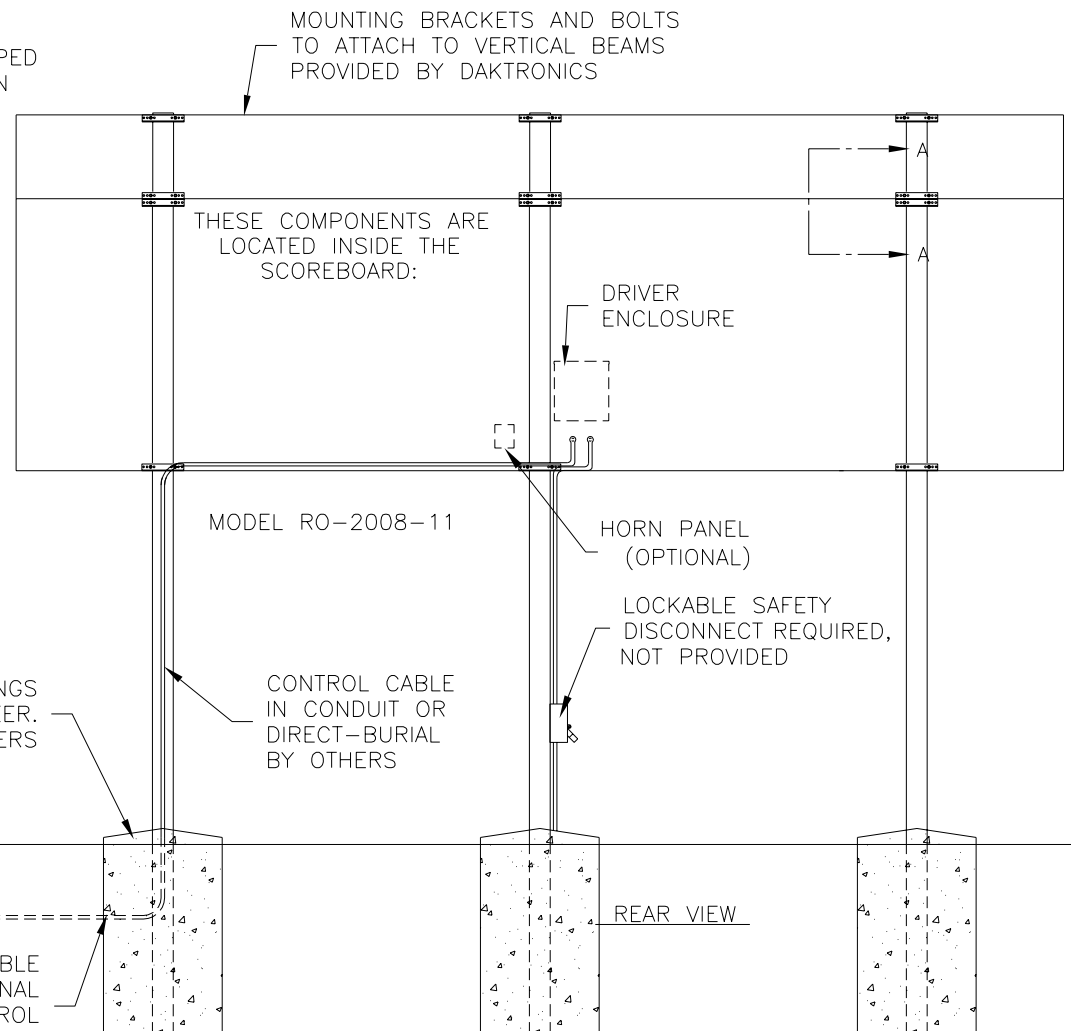
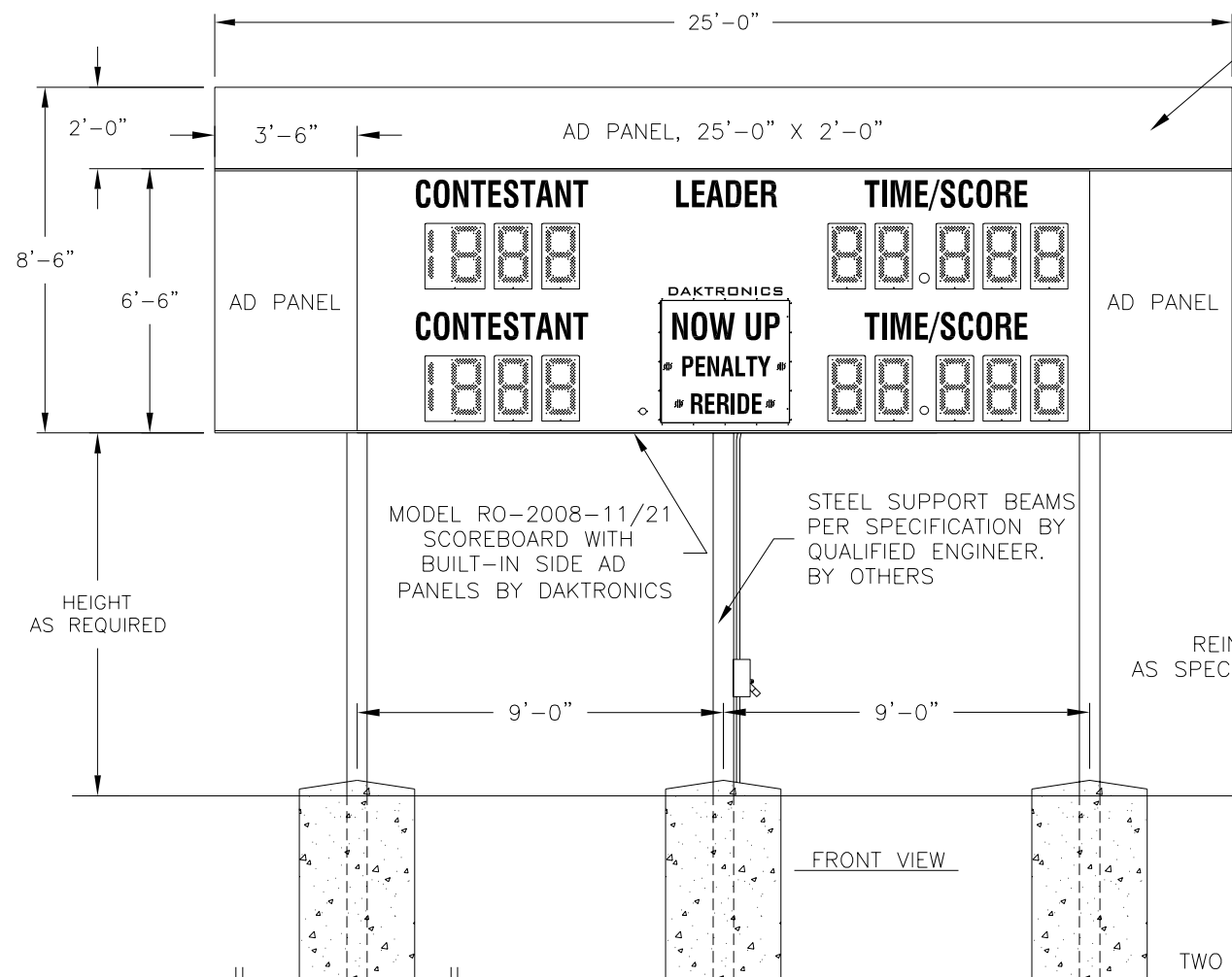


* NOTE: RESULTS SOFTWARE ED-12543 VERSION 3.1 OR HIGHER USES ROCKET PORT. ALL OTHER VERSIONS AND ED NUMBERS USE DIGI PORT.
 ○ INDICATES AN EITHER/OR CONNECTION OPTION

J-BOX OA-1163-0016			
4 PIN		2 PIN	
PIN	COLOR	PIN	COLOR
1	RED	1	GRN
2	BLK	2	WHT
3	NOT USED	--	---
4	NOT USED	--	---

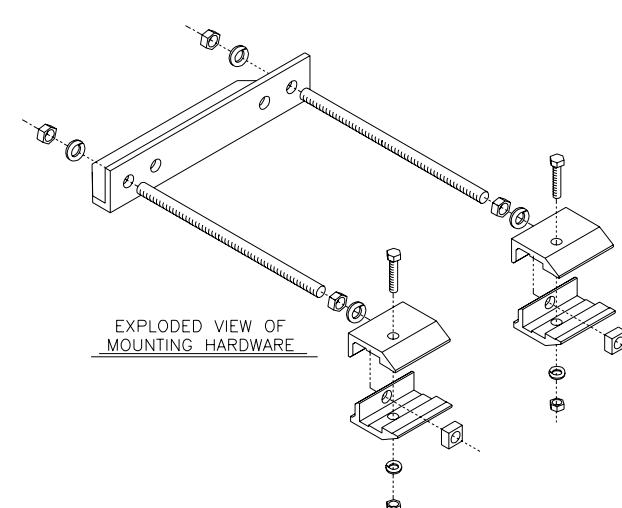
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: ALL SPORT 5000			
TITLE: PERMANENTLY INSTALLED RODEO TIMER SYSTEM			
DES. BY: HBONER	DRAWN BY: JSPAHR		DATE: 14MAY01
REVISION	APPR. BY:	1196-R01B-148816	
1	SCALE: 1=1		

REV.	DATE	DESCRIPTION	BY	APPR.
1	24 MAY 01	CHANGED PUSH BUTTON PART NUMBER	JJS	HBB

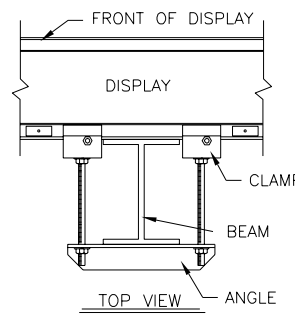


OUTDOOR RODEO SCOREBOARDS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				70 MPH	80 MPH	100 MPH
10'-0"	NONE	6'-6"	BEAM	W8x24	W12x26	W14x30
			FOOTING	3'x6.5'	3'x7.2'	3'x8.5'
12'-0"	2'-0"	8'-6"	BEAM	W14x30	W10x33	W10x39
			FOOTING	3'x7.5'	3'x8.0'	3'x9.5'
14'-0"	NONE	6'-6"	BEAM	W12x26	W14x30	W10x33
			FOOTING	3'x6.8'	3'x7.5'	3'x8.9'
14'-0"	2'-0"	8'-6"	BEAM	W8x31	W10x33	W12x40
			FOOTING	3'x7.6'	3'x8.4'	3'x9.9'
14'-0"	NONE	6'-6"	BEAM	W14x30	W10x33	W10x29
			FOOTING	3'x7.1'	3'x7.8'	3'x9.2'
14'-0"	2'-0"	8'-6"	BEAM	W10x33	W10x39	W12x45
			FOOTING	3'x7.9'	3'x8.7'	3'x10.3'

FOOTING = DIAMETER X DEPTH



CONNECT POWER TO THE LOAD CENTER
 POWER REQUIREMENT: 300 WATTS MAX
 REQUIRES A 120 SINGLE-PHASE CIRCUIT,
 1.3 AMPS PER LINE
 THE SCOREBOARD IS CAPABLE OF DRAWING
 ABOUT 1.3 AMPS ON ONE LINE WITH ALL
 LED LIT.
 CONNECT CAPTION SWITCH BOX (PROVIDED)
 TO TERMINALS IN THE CAPTION HOOKUP BOX.
 CONNECT CONTROL SIGNAL TO THE SIGNAL
 HOOKUP TERMINALS IN THE SCOREBOARD.
 ESTIMATED WEIGHT:
 SCOREBOARD WITH SIDE AD PANELS: 500 LB (225 KG)
 TOP AD PANEL: 65 LB (30 KG)



NOTE: CLAMPING BARS AND HARDWARE
 MAY HAVE TO BE REMOVED IN ORDER TO
 INSTALL THE INNER AND OUTER MOUNTING
 CLAMPS.
 - THREADED RODS RUN ALONG
 BOTH SIDES OF BEAM.
 - THEY DO NOT PASS THROUGH
 THE FLANGES OF THE BEAM.
 - NO DRILLING IS NECESSARY.

FOOTING DIMENSIONS ARE
 SUGGESTIONS ONLY, PROVIDED TO
 ASSIST WITH ESTIMATING INSTALLATION
 COSTS, AND ARE NOT INTENDED FOR
 CONSTRUCTION PURPOSES.
 ACTUAL FOOTING DEPTH AND
 DIAMETER FOR A PARTICULAR
 INSTALLATION MUST BE DETERMINED
 USING DATA FROM A SOIL SAMPLE
 TEST AT THE SITE. BOTH COLUMNS
 AND FOOTINGS MUST BE DESIGNED
 BY A STATE LICENSED ENGINEER.

DAKTRONICS DOES NOT ASSUME ANY
 LIABILITY FOR ANY INSTALLATIONS
 DERIVED FROM THIS INFORMATION OR
 DESIGNED AND INSTALLED BY
 OTHERS.

REV.	DATE	DESCRIPTION	BY	APPR.
01	15MAR04	CHANGED SCOREBOARD TO GEN 3 VERSION	MCOPL	

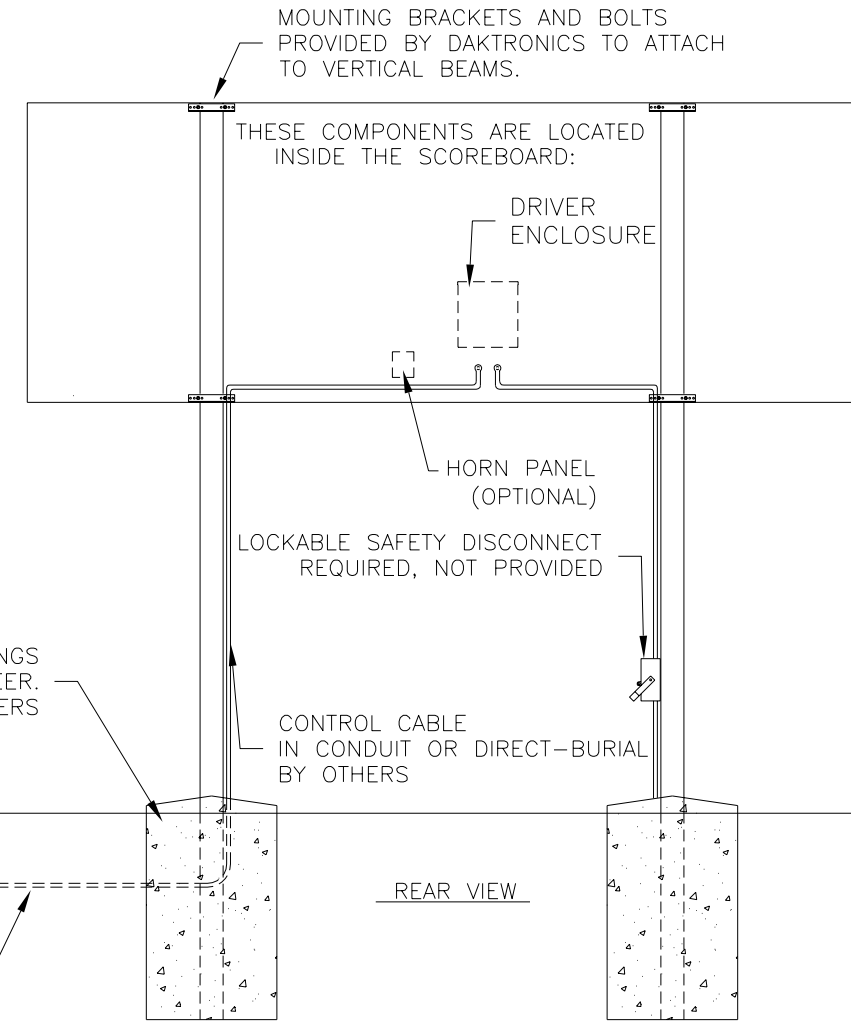
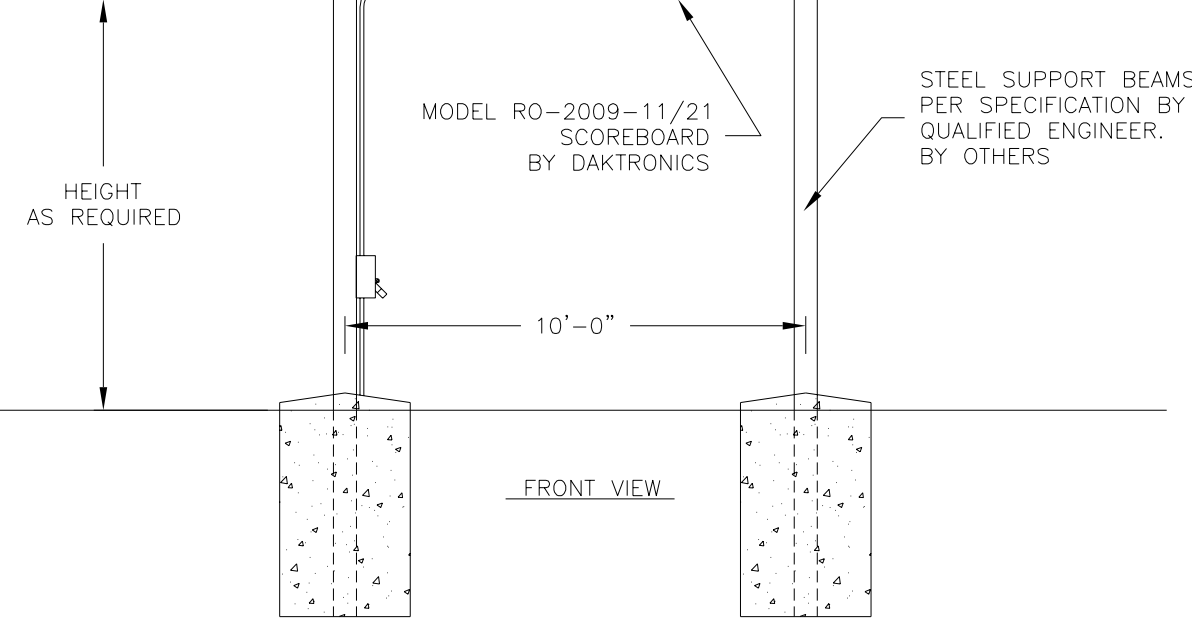
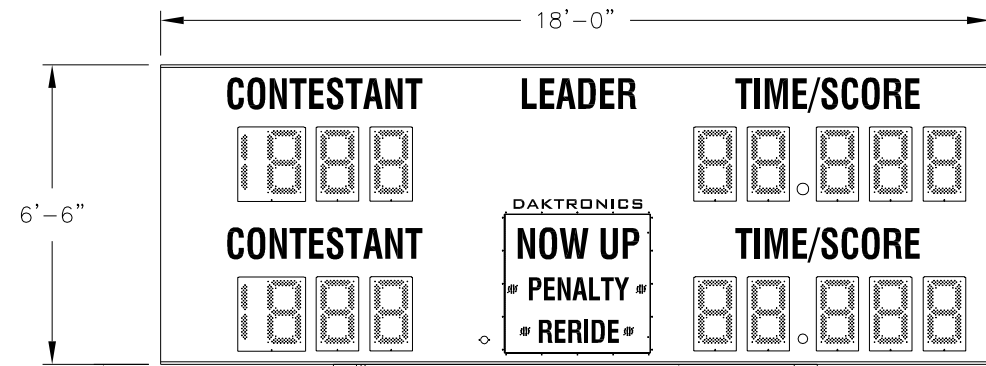
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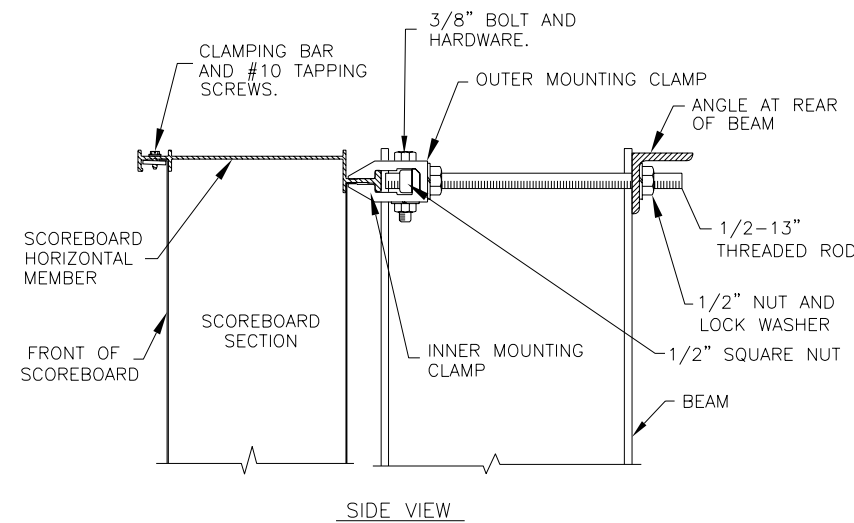
PROJ: OUTDOOR RODEO SCOREBOARDS
 TITLE: SHOP DRAWING; RO-2008-11/21 W/ SIDE PANELS, G3
 DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 10APR02

REVISION 01 APPR. BY: SCALE: 1=55

1162-R08B-165280



CONTROL CABLE
ONE PAIR FOR SIGNAL
TWO PAIRS FOR CAPTION CONTROL
22 AWG REQUIRED (BY OTHERS)



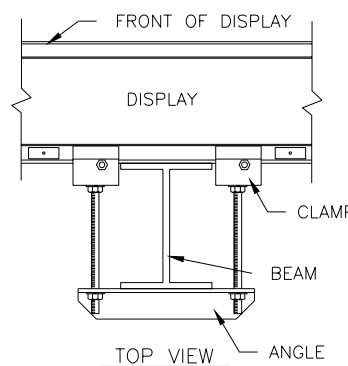
OUTDOOR RODEO SCOREBOARDS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				70 MPH	80 MPH	100 MPH
10'-0"	NONE	6'-6"	BEAM	W6x20	W8x24	W12x26
			FOOTING	3'x5.8'	3'x6.4'	3'x7.5'
12'-0"	NONE	6'-6"	BEAM	W8x24	W12x26	W14x30
			FOOTING	3'x6.1'	3'x6.7'	3'x7.9'
14'-0"	NONE	6'-6"	BEAM	W12x26	W14x30	W10x33
			FOOTING	3'x6.4'	3'x7.0'	3'x8.3'

FOOTING = DIAMETER X DEPTH

FOOTING DIMENSIONS ARE SUGGESTIONS ONLY, PROVIDED TO ASSIST WITH ESTIMATING INSTALLATION COSTS, AND ARE NOT INTENDED FOR CONSTRUCTION PURPOSES.

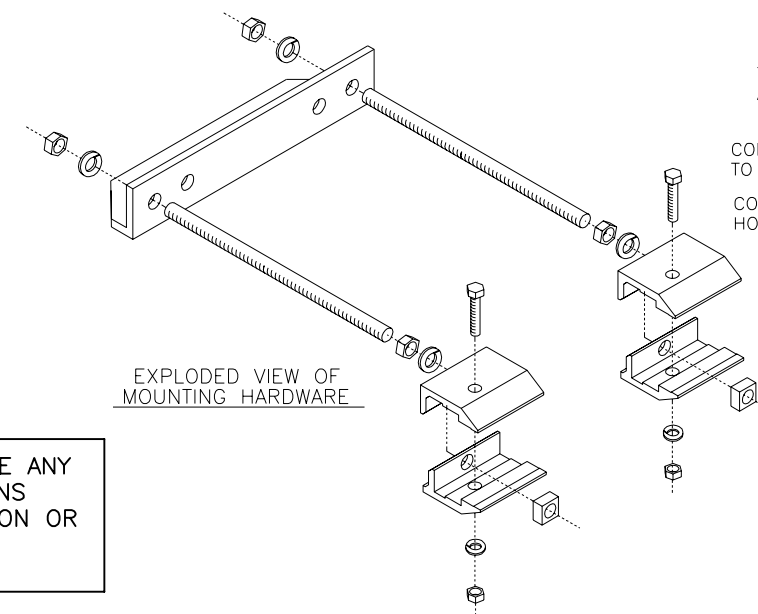
ACTUAL FOOTING DEPTH AND DIAMETER FOR A PARTICULAR INSTALLATION MUST BE DETERMINED USING DATA FROM A SOIL SAMPLE TEST AT THE SITE. BOTH COLUMNS AND FOOTINGS MUST BE DESIGNED BY A STATE LICENSED ENGINEER.

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- THREADED RODS RUN ALONG BOTH SIDES OF BEAM.
- THEY DO NOT PASS THROUGH THE FLANGES OF THE BEAM.
- NO DRILLING IS NECESSARY.

NOTE: CLAMPING BARS AND HARDWARE MAY HAVE TO BE REMOVED IN ORDER TO INSTALL THE INNER AND OUTER MOUNTING CLAMPS.



CONNECT POWER TO THE LOAD CENTER
POWER REQUIREMENT: 300 WATTS MAX
REQUIRES A 120 SINGLE-PHASE CIRCUIT,
1.3 AMPS PER LINE
THE SCOREBOARD IS CAPABLE OF DRAWING
ABOUT 1.3 AMPS ON ONE LINE WITH ALL
LED LIT.

CONNECT CAPTION SWITCH BOX (PROVIDED)
TO TERMINALS IN THE CAPTION HOOKUP BOX.
CONNECT CONTROL SIGNAL TO THE SIGNAL
HOOKUP TERMINALS IN THE SCOREBOARD.

ESTIMATED WEIGHT:
SCOREBOARD: 400 LB (180 KG)

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR RODEO SCOREBOARDS

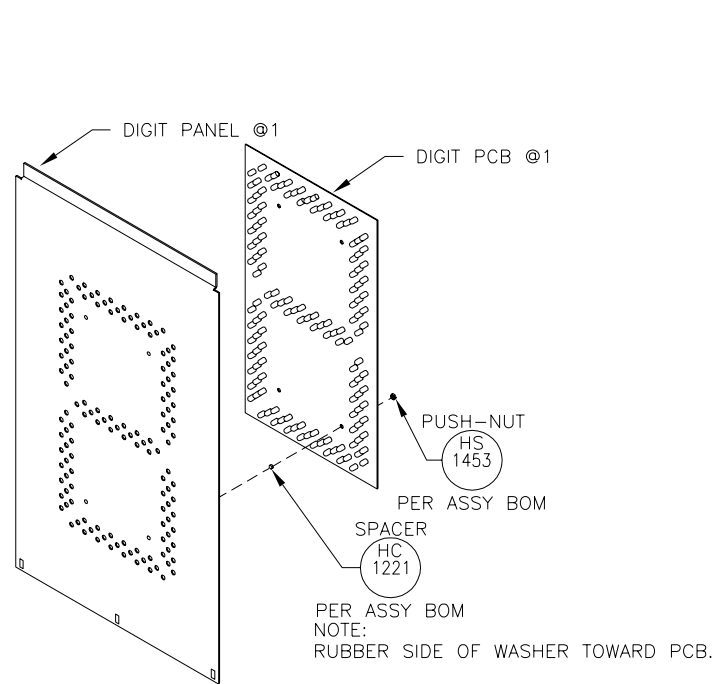
TITLE: SHOP DRAWING; RO-2009-11/21, G3

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 10APR02

REVISION 01 APPR. BY: SCALE: 1=50

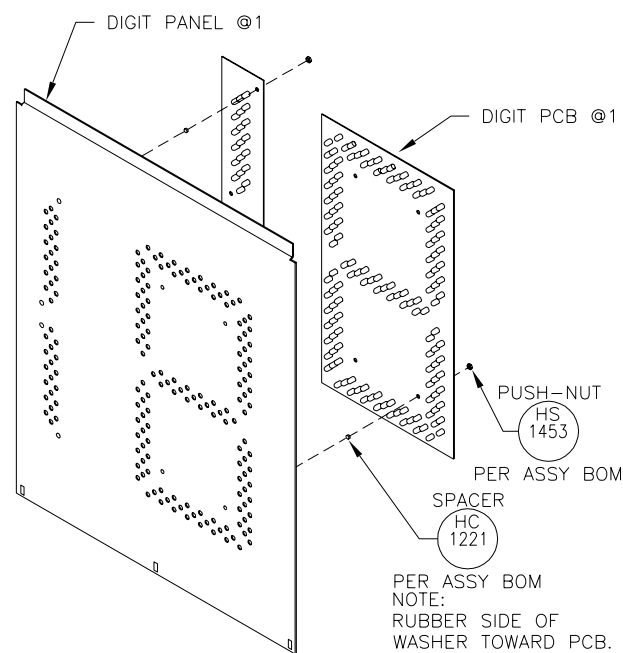
1162-R08B-165282

REV.	DATE	DESCRIPTION	BY	APPR.
01	15MAR04	CHANGED SCOREBOARD TO GEN 3	MCOPL	



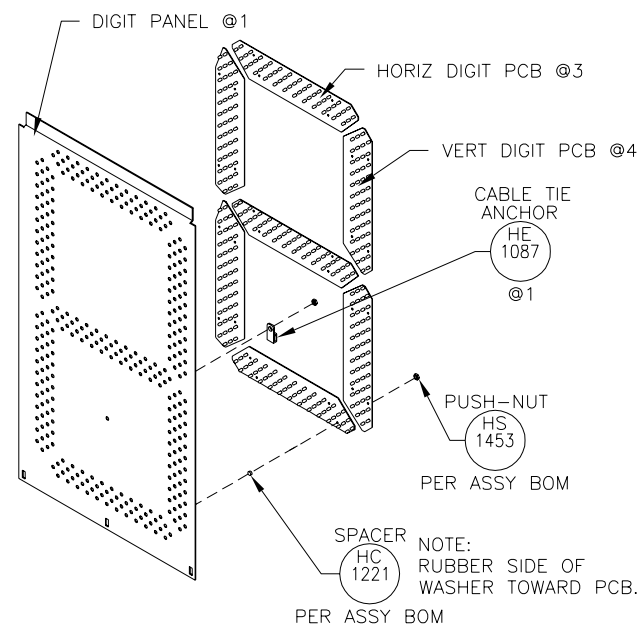
DETAIL: A

REFER TO THIS DETAIL FOR THE FOLLOWING RED, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -5", 7", 10", 15", 18", SMALL FB IND, AND LARGE FB IND (NOTE THAT THE FB INDICATORS DO NOT LOOK LIKE THE DIGIT IN THE ABOVE DETAIL. THESE INDICATORS ARE ASSEMBLED WITH THE SAME METHOD AS THE DIGIT SHOWN IN THE ABOVE DETAIL.)



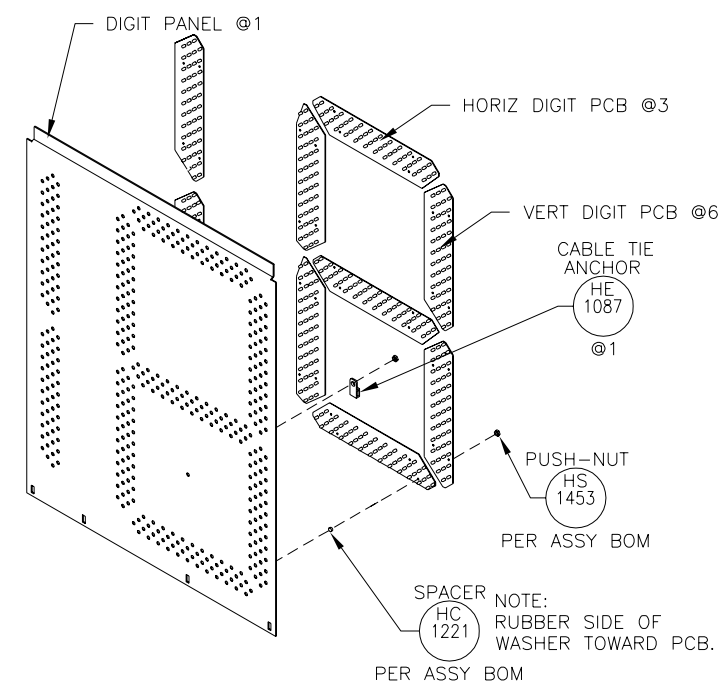
DETAIL: B

REFER TO THIS DETAIL FOR THE FOLLOWING RED, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -15"+1, AND 18"+1



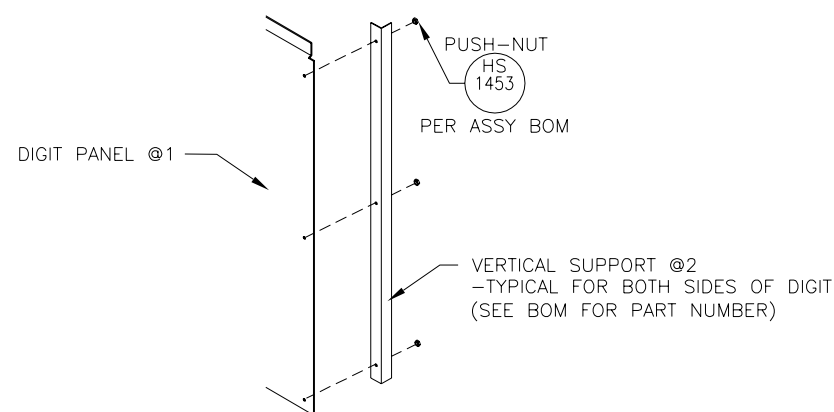
DETAIL: C

REFER TO THIS DETAIL FOR THE FOLLOWING RED, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -24", 24" WIDE, 30", 30" WIDE, 36", 42", 48", 60"



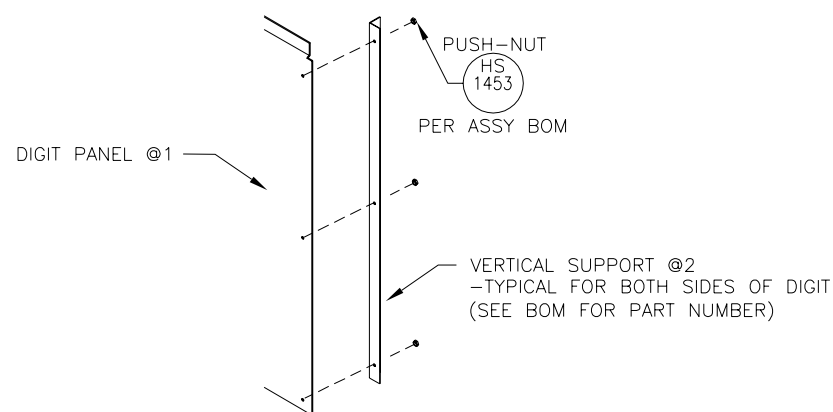
DETAIL: D

REFER TO THIS DETAIL FOR THE FOLLOWING RED, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -24"+1, 30"+1, 36"+1



DETAIL: E

REFER TO THIS DETAIL FOR THE FOLLOWING RED, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 48", AND 48"+1



DETAIL: F

REFER TO THIS DETAIL FOR THE FOLLOWING RED, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -30", 30"+1, AND 30" WIDE.

NOTE: IN SOME APPLICATIONS, THE LED DIGIT PCB MAY BE MOUNTED DIRECTLY TO THE FACE PANEL OF THE SCOREBOARD INSTEAD OF THE LED DIGIT PANEL. THE SAME HARDWARE WILL BE USED TO INSTALL THE LED DIGIT PCB. THE LED SCOREBOARD FACE PANEL CAN BE SUBSTITUTED FOR THE LED DIGIT PANEL IN ALL DETAILS.

REV	DATE	DESCRIPTION	BY	APPR.

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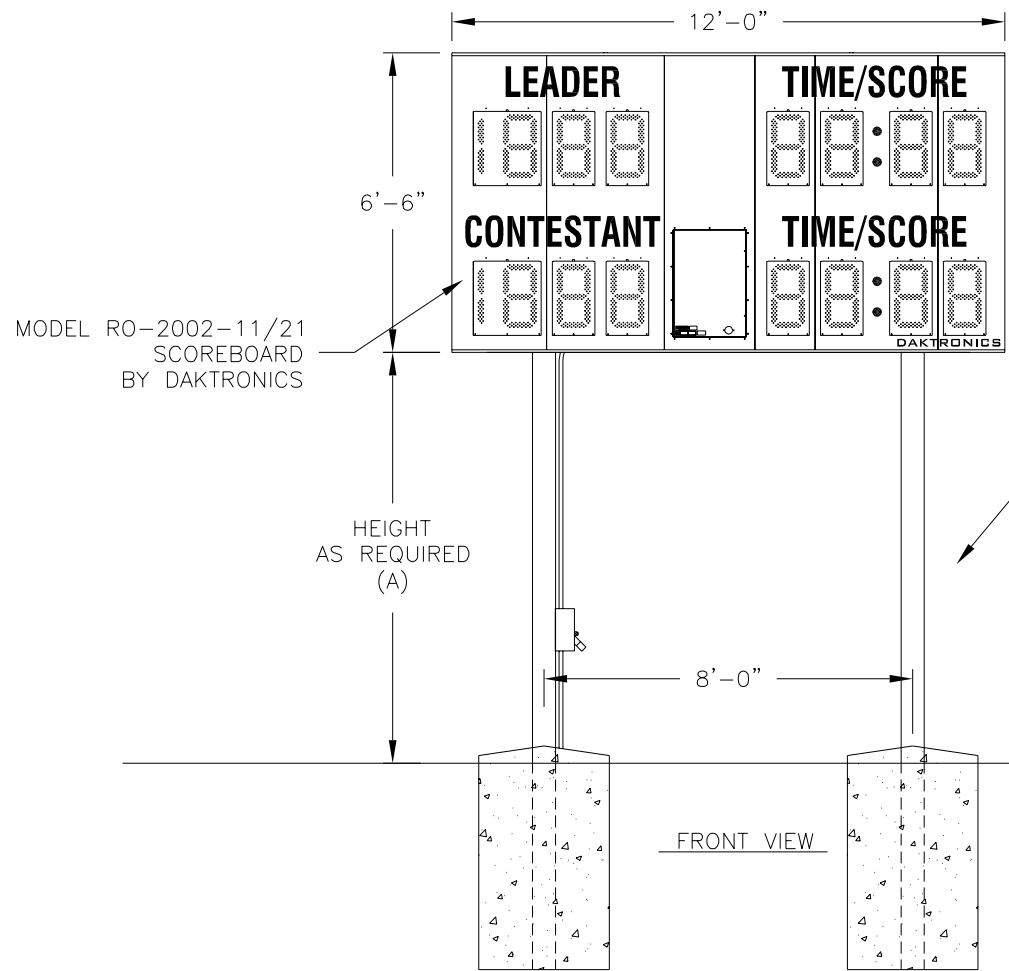
PROJ: OUTDOOR LED SCOREBOARDS

TITLE: DIGIT ASSEMBLIES: GEN III LED DIGITS

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 30OCT02

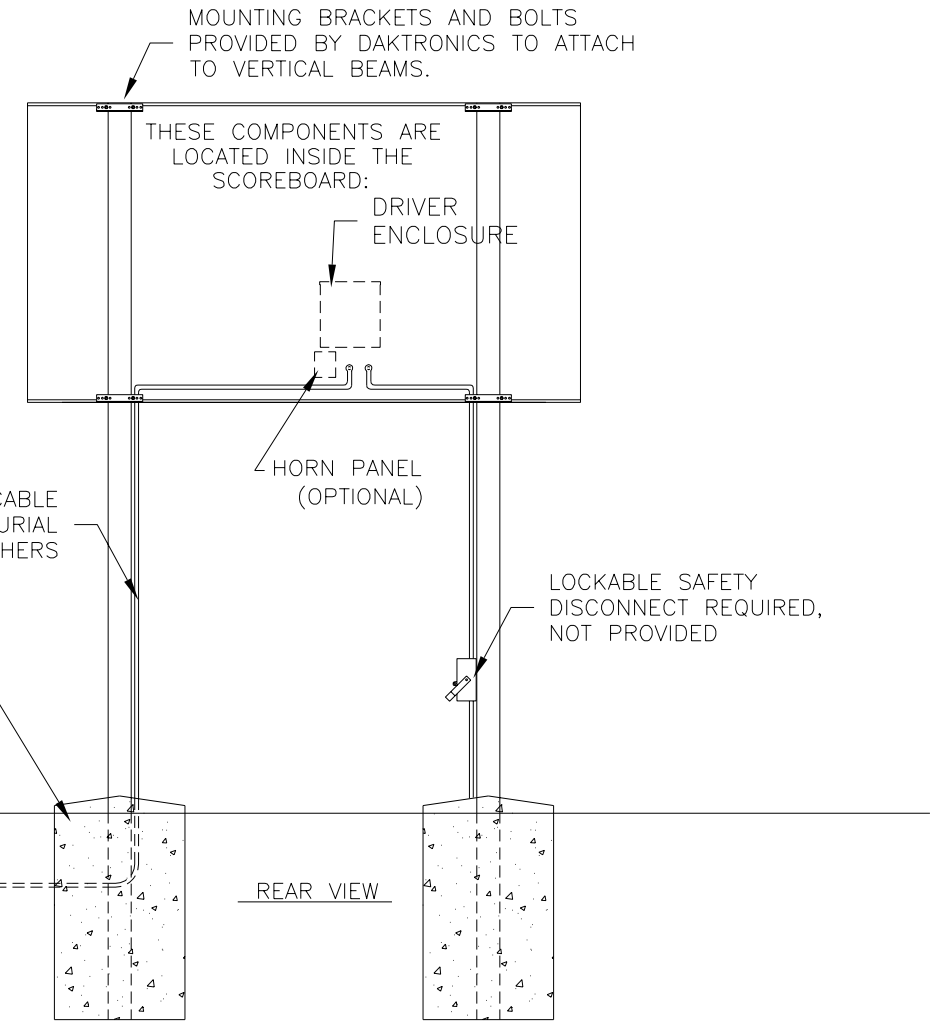
06	16 APR 08	REMOVE WIRING DETAIL	KZB	
REV.	DATE	DESCRIPTION	BY	APPR.

REVISION 06 APPR. BY: SCALE: 1=6 1192-E10B-177679



STEEL SUPPORT BEAMS PER SPECIFICATION BY QUALIFIED ENGINEER. BY OTHERS

REINFORCED CONCRETE FOOTINGS AS SPECIFIED BY QUALIFIED ENGINEER. BY OTHERS



CONTROL CABLE IN CONDUIT OR DIRECT-BURIAL BY OTHERS

CONTROL CABLE ONE PAIR FOR SIGNAL TWO PAIRS FOR CAPTION CONTROL 22 AWG REQUIRED (BY OTHERS)

CONNECT POWER TO THE LOAD CENTER
POWER REQUIREMENT: 300 WATTS MAX
REQUIRES A 120 SINGLE-PHASE CIRCUIT,
1.3 AMPS PER LINE
THE SCOREBOARD IS CAPABLE OF DRAWING
ABOUT 1.3 AMPS ON ONE LINE WITH ALL
LED LIT.

CONNECT CAPTION SWITCH BOX (PROVIDED)
TO TERMINALS IN THE CAPTION HOOKUP BOX.
CONNECT CONTROL SIGNAL TO THE SIGNAL
HOOKUP TERMINALS IN THE SCOREBOARD.

ESTIMATED WEIGHT:
SCOREBOARD: 400 LB (180 KG)

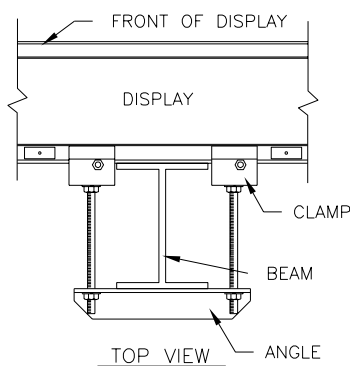
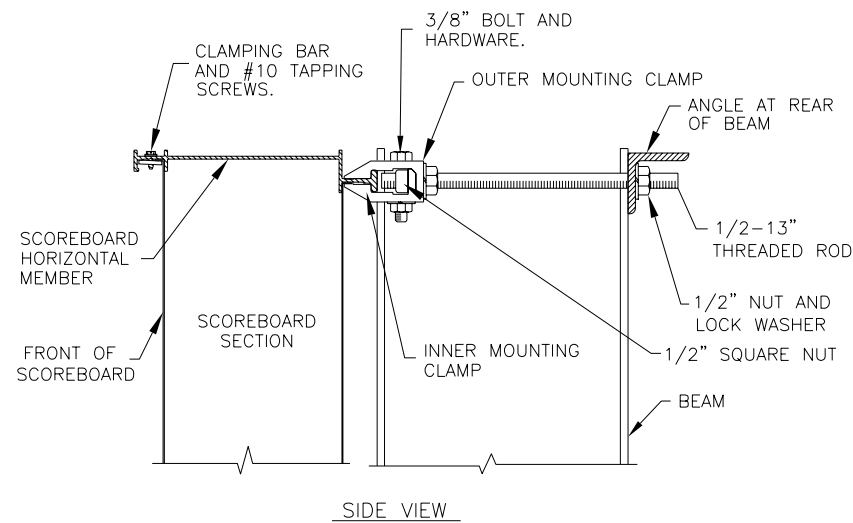
RODEO SCOREBOARDS BEAM & FOOTING						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	TOTAL DISPLAY SIZE		DESIGN WIND VELOCITY		
				70 MPH	80 MPH	100 MPH
10 FT	NONE	12'-0" x 7'-0"	BEAM	W8x18	W6x20	W8x24
			FOOTING	3'x5.2'	3'x5.8'	3'x6.8'
12 FT	NONE	12'-0" x 7'-0"	BEAM	W6x20	W12x26	W14x30
			FOOTING	3'x5.5'	3'x6.0'	3'x7.1'
14 FT	NONE	12'-0" x 7'-0"	BEAM	W12x26	W12x26	W8x31
			FOOTING	3'x5.8'	3'x6.3'	3'x7.5'

FOOTING = DIAMETER X DEPTH

FOOTING DIMENSIONS ARE SUGGESTIONS ONLY, PROVIDED TO ASSIST WITH ESTIMATING INSTALLATION COSTS, AND ARE NOT INTENDED FOR CONSTRUCTION PURPOSES.

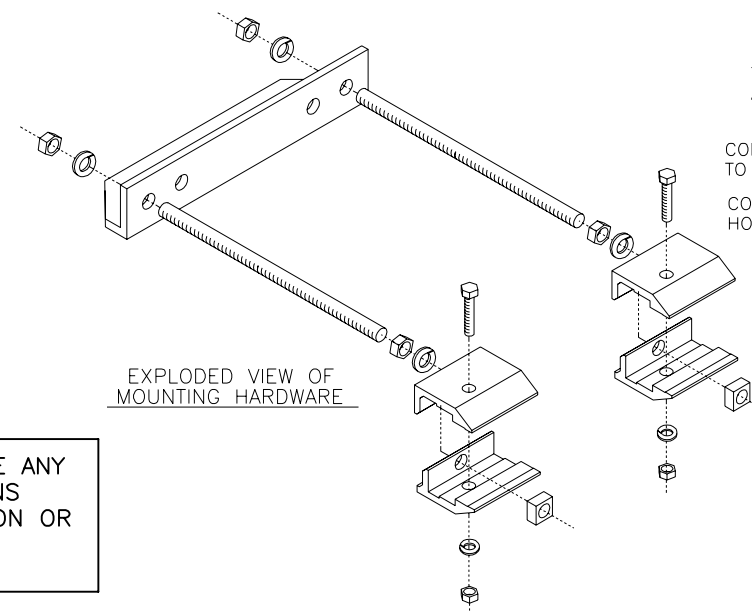
ACTUAL FOOTING DEPTH AND DIAMETER FOR A PARTICULAR INSTALLATION MUST BE DETERMINED USING DATA FROM A SOIL SAMPLE TEST AT THE SITE. BOTH COLUMNS AND FOOTINGS MUST BE DESIGNED BY A STATE LICENSED ENGINEER.

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- THEY DO NOT PASS THROUGH THE FLANGES OF THE BEAM.
- NO DRILLING IS NECESSARY.

NOTE: CLAMPING BARS AND HARDWARE MAY HAVE TO BE REMOVED IN ORDER TO INSTALL THE INNER AND OUTER MOUNTING CLAMPS.



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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:	RODEO SCOREBOARDS
TITLE:	SHOP DRAWING, RO-2002-11/21, G3
DES. BY:	MCOPLAN
DRAWN BY:	MCOPLAN
DATE:	15MAR04
REVISION	APPR. BY:
02	SCALE: 1=50
1162-R08B-206346	

REV.	DATE	DESCRIPTION	BY	APPR.
02	20MAY04	REVISED SCOREBOARD PER CURRENT DESIGN	MCOPL	
01	17 MAR 04	ADDED COLUMN AND FOOTING DIMENSIONS	JLB	

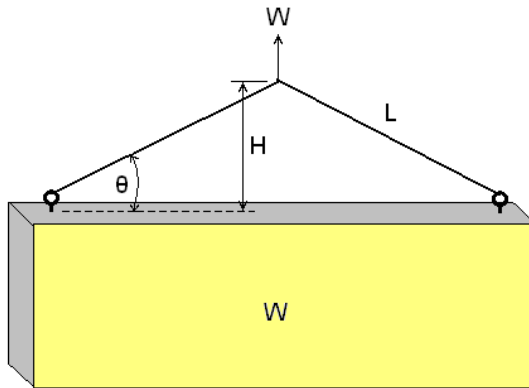
Appendix B: Eyebolts

Refer to the following document for the load limits on eyebolts, [ED-7244](#).

EYEBOLTS

Almost every display that leaves Daktronics is equipped with eyebolts for lifting the display. There are two standard sizes of eyebolts: 1/2" and 5/8".

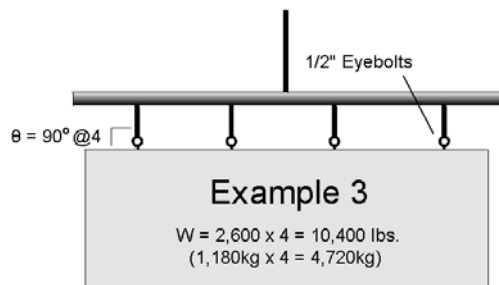
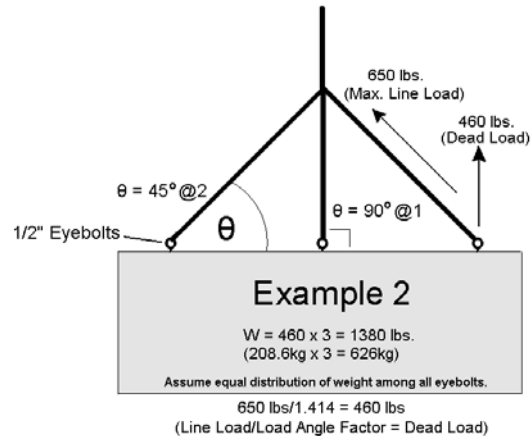
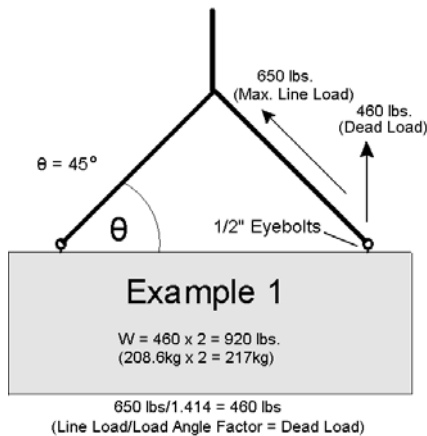
Load Increase Factor: The load increases as the lift angle (θ) decreases. The allowable load on the eyebolts also decreases with the lift angle due the bending stress on the eyebolts. In sum, the smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift it. *Do NOT attempt to lift the display when the lift angle is less than 30 degrees.*

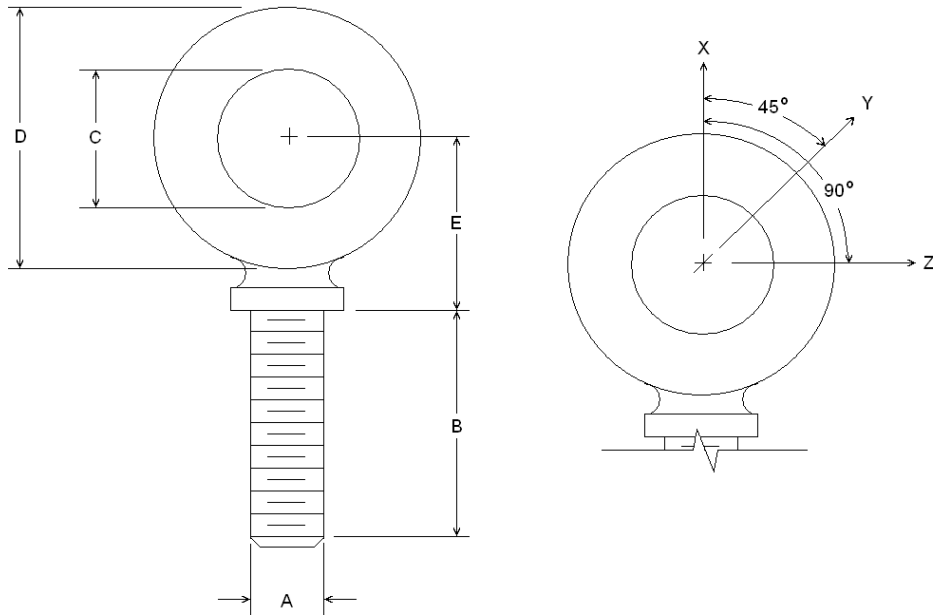


W= Weight of sign or Section
 H= Distance between top of sign and lift point
 L= Length of cable on one side
 θ = Angle between sign and cable

Horizontal Angle	Load Angle Factor (L/H)
90	1.00
60	1.155
50	1.305
45	1.414
30	2.00

θ	1/2"		5/8"	
	Line Load	Weight/Anchor	Line Load	Weight/Anchor
90	2600	2600	4000	4000
60	1500	1299	3300	2858
45	650	460	1000	707
30	520	260	800	400





A	B	C	D	E	No.	Min. Proof Load (lbs.)	Min. Break Load (lbs.)	Stocked	Min. Eff. Thrd. Length	Line Loads		
										Wx	Wy	Wz
1/4	1	3/4	1-3/16	25/32	21	600	2,000	Blank 1/4-20	7/8	400	100	80
3/8	1-1/4	1	1-21/32	1-3/16	23	2,100	5,000	Blank 3/8-16	1-1/8	1,400	350	250
1/2	1-1/2	1-3/16	2-1/16	1-13/32	25	3,900	9,200	Blank 1/2-13	1-11/32	2,600	650	520
9/16	1-5/8	1-9/32	2-13/16	1-17/32	26	4,500	11,830	Blank 9/16-12	1-3/8	3,000	750	600
5/8	1-3/4	1-3/8	2-1/2	1-11/16	27	6,000	14,700	Blank 5/8-11	1-9/16	4,000	1,000	800
3/4	2	1-1/2	2-13/16	1-13/16	28	9,000	21,700	Blank 3/4-10	1-5/8	6,000	1,500	1,200
7/8	2-1/4	1-11/16	3-1/4	2-1/16	29	10,000	30,000	Blank 7/8-9	1-13/16	6,600	1,670	1,330
1	2-1/2	1-13/16	3-9/16	2-5/16	30	12,000	39,400	Blank 1-8	2-1/16	8,000	2,000	1,600
1-1/2	3-1/2	2-9/16	5-1/2	3-5/32	34	27,000	91,300	Blank 1-1/2-6	3	17,800	4,500	3,600

- A. Do not use eyebolts on angular lifts unless absolutely necessary. For angular lifts, the shoulder pattern eyebolt is preferred.
- B. Load should always be applied to eyebolts in the plane of the eye, not at some angle to this plane.
- C. Shoulder eyebolts must be properly seated (should bear firmly against the mating part), otherwise the working loads must be reduced to those indicated for regular eyebolts. A washer or spacer may be required to put the plane of the eye in the direction of the load when the shoulder is seated.
- D. No load greater than the safe working load listed in the data table should be used.
- E. To obtain the greatest strength from the eyebolt, it must fit reasonably tight in its mounting hole to prevent accidental unscrewing due to twist of cable.
- F. Eyebolts should never be painted or otherwise coated when used for lifting. Such coatings may cover potential flaws in the eyebolt.
- G. To attain the safe working loads listed for regular eyebolts, 90% of the thread length must be engaged.