

LED Baseball Scoreboards

Models BA-2001-11, BA-2002-11
and BA-2008-11

Installation and Maintenance Manual

ED13131

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Please fill in the information below for your display; use it for reference when calling Daktronics for assistance.

Scoreboard Serial No. _____

Scoreboard Model No. _____

Date Installed _____



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Section 1: Introduction

1.1 How To Use This Manual

This manual explains the installation of *Daktronics LED Baseball Scoreboard Models BA-2001-11, BA-2002-11, and BA-2008-11* and provides details for display maintenance. For other questions regarding the safety, installation, operation, or service of these systems, contact Daktronics. Customer Service Help Desk telephone numbers are listed on the cover page 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. Properly ground the scoreboard with a ground rod at the scoreboard location.
4. **Disconnect power when the scoreboard is not in use.**
5. **Disconnect power when servicing the scoreboard.**
6. Do not modify the scoreboard structure or attach any panels or coverings without the express written consent of Daktronics, Inc.

The box at right, **Figure 1**, illustrates Daktronics drawing numbering system. Daktronics identifies individual drawings with a number (7087-P08A-69945 in the example), which is located in the bottom right corner of each drawing. This manual refers to drawings by the last set of digits 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 02
APPR. BY: AVB	7087-P08A-69945	
SCALE: 1 = 4		

Figure 1: Daktronics Drawing Label

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

Listed below are a number of drawing types commonly used by Daktronics, along with the information that each is likely to provide.

- **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 references to drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as in this example: "Refer to **Drawing A-114667** for the location of the driver enclosure." Additionally, any drawings referenced within a particular subsection are listed at the beginning of that subsection in the following manner:

Reference Drawing:

Shop Drawing; 16 High 2 ½" Small Matrix **Drawing A-114667**

Daktronics identifies manuals by their ED (engineering document) number, which is located on the cover page of the manual. For example, this manual would be referred to as **ED13131**.

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 the one shown in **Figure 2**. When calling Daktronics Customer Service, please have this information available to ensure that your request is serviced as quickly as possible. For future reference, note your scoreboard model number, serial number, and installation date on the front page of this manual.



Figure 2: Scoreboard ID Label

Daktronics displays are built for 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** 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 replacement programs. Refer to these instructions if you must replace or repair any display component.

1.2 Daktronics Nomenclature

To fully understand some Daktronics drawings, such as schematics, it is necessary to know how various components are labeled in those drawings. You will find this information 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 of ribbon cables.

- "F-_____" denotes a fuse.
- "T-_____" denotes a transformer.
- "PR-_____-_" denotes a specially ordered part.
- "M-_____" denotes a metal part, and "0M-_____" typically denotes a fabricated metal assembly.

1.3 Manual Overview

This manual details outdoor multi-section scoreboards with LED digits and characters. It is divided into the following sections:

- Section 1:** Contains an overview of the product, product safety information, and labeling and numbering descriptions.
- Section 2:** Contains tables that show all of the mechanical specifications, circuit specifications and maximum power requirements for each model.
- Section 3:** Contains information needed to perform the mechanical installation information for each model.
- Section 4:** Contains electrical installation information for each model.
- Section 5:** Contains the information needed to service the scoreboards and explains Daktronics exchange and repair programs.
- Section 6:** Contains service and troubleshooting information for team name message centers.
- Appendix:** Contains all drawings referenced in this manual and additional miscellaneous documents.

1.4 Product Overview

Reference Drawings:

Component Locations; BA-2001-11	Drawing A-158484
Component Locations; BA-2002-11	Drawing A-158731
Component Locations; BA-2001-11 w/LED TNMC	Drawing A-159624
Component Locations; BA-2002-11 w/LED TNMC	Drawing A-159680
Component Locations, BA-2008-11 w/TNMC	Drawing A-166064

Daktronics LED baseball 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 digits 15", 18" and 24" tall, Models BA-2001-11, BA-2002-11, and BA-2008-11 all use light emitting diodes to power the scoreboard display. (Light-emitting diodes, or 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.)

Because of their LED technology, the scoreboards consume little power, some barely more than a household lamp. Power usage for large displays in this series ranges from approximately 650 W to a maximum of 1200 W.

Most Daktronics scoreboards also carry a two number suffix that refers to indoor-outdoor status, power supply, and digit colors; -11 are outdoor scoreboards, 120 V, and they feature red digits; -21 are outdoor scoreboards, 120 V, and feature amber digits.

BA-2001-11 and BA-2008-11, the smaller of the baseball scoreboards, are single-section displays measuring 7' high by 28' wide. BA-2002-11, is a two-section display, 9'4" high and 36' wide. The top

and bottom sections are shipped separately and joined at installation. The models are illustrated in the component locations drawings listed above.

Cabinets for the displays are of heavy-gauge aluminum construction. Mounting weights and dimensions, along with power specifications for each model, are listed in **Section 2** of this manual.

Note: **Section 6** of this manual contains text and engineering drawings describing *team name message centers*, or TNMCs. Team name message centers are scoreboard-mounted matrix LED units which electronically display home and guest team names. Programmable TNMCs are available as a standard new scoreboard option with all of the models in this series, and the message centers are also available for retrofit on existing scoreboards. BA-2001-11 and BA-2008-11 are both available with an 8x32-matrix TNMC, while BA-2002-11 may be equipped with a larger, 8x48 message center. **Section 6** of this manual offers step-by-step information on TNMC maintenance and troubleshooting.

The outdoor LED scoreboards have been designed for use with an All Sport® 3000 Series control console; displays equipped with team name message centers require an All Sport 5000 Series controller. 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:

- **ED12126:** All Sport 3000 Series Control Console Operation Manual
- **ED11976:** All Sport 5000 Series Control Console Operation Manual

1.5 Model Names

Daktronics scoreboards are differentiated by their model numbers: The two-letter prefix for the scoreboards in this manual is **BA**, which identifies them as baseball displays. The four numbers following the prefix, **2001** and **2002**, simply identify a specific scoreboard model.

Most Daktronics scoreboards also carry a two-number suffix that refers to indoor-outdoor status and power supply: **-11** and **-21**, for example, are outdoor scoreboards, 120 V and 230 V respectively. All of the LED scoreboards in this manual carry the **-11** suffix, signifying that they have been designed and manufactured for outdoor use and have a 120 V AC power requirement. Models that operate with a 230 V circuit are also available.

1.6 Product Safety Approval

Daktronics outdoor scoreboards are ETL listed, tested to CSA standards and CE labeled for outdoor use. Contact Daktronics with any questions regarding the testing procedures.

Section 2: Specifications

The chart on the following pages shows all of the mechanical specifications, circuit specifications, and maximum power requirements for each display in this manual. Models are listed in alphanumeric order.

2.1 LED Baseball Displays

Note: Signal wires must be a minimum of 24 AWG (shielded 2-conductor). Daktronics recommends using W-1234. Displays require 120 V A C, 15 A circuit. Displays with a 230 V A C power requirement are also available.

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
BA-2001	1	H7'-0", W28'-0", D8" (2134 mm, 8534 mm, 203 mm)	640 lb 291 kg (1216 lb) (552 kg)	<ul style="list-style-type: none"> ▪ Innings, Runs, Hits, Errors 15" (361 mm) ▪ At Bat, Ball, Strike, Out, H/E 18" (457 mm) ▪ 11: red ▪ 21: amber 	900 W	120 V AC	7.5 A	A1 67 A2 68 A3 69
BA-2001 w/TNMC	1	H7'-0", W28'-0", D8" (2134 mm, 8534 mm, 203 mm)	640 lb 291 kg (1216 lb) (552 kg)	<ul style="list-style-type: none"> ▪ Innings, Runs, Hits, Errors 15" (381 mm) ▪ At Bat, Ball, Strike, Out, H/E 18" (457 mm) ▪ 11: red ▪ 21: amber 	1200 W (with red TNMC) 1500 W (with amber TNMC)	120/240 V AC	10.0 A 12.5 A	A1 67 A2 68 A3 69 TNMC 22
BA-2002	2 Total	H9'-4", W36'-0", D8" (2845 mm, 10 973 mm, 203 mm)	1116 lb 508 kg (2120 lb) (989 kg)	<ul style="list-style-type: none"> ▪ 11: red ▪ 21: amber 	900 W*	120/240 V AC	7.5 A	A1 67 A2 68 A3 69
	Top	H4'-0", W36'-0", D8" (1219 mm, 10 973 mm, 203 mm)	448 lb 265 kg (1065 lb) (482 kg)	(Top) <ul style="list-style-type: none"> ▪ At Bat, Ball, Strike, Out, H/E 24" (610 mm) ▪ 11: red ▪ 21: amber 	900 W*			
	Bottom	H5'-4", W36'-0", D8" (1626 mm, 10 973 mm, 203 mm)	668 lb 304 kg (1269 lb) (576 kg)	(Bottom) <ul style="list-style-type: none"> ▪ Innings, Runs, Hits, Errors 18" (457 mm) ▪ 11: red ▪ 21: amber 	900 W*			

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
BA-2002 w/TNMC	2 Total	H9'-4", W36'-0", D8" (2845 mm, 10 973 mm, 203 mm)	1116 lb 508 kg (2120 lb) (989 kg)	<ul style="list-style-type: none"> ▪ 11: red ▪ 21: amber 	1200 W* (with red TNMC) 1500 W* (with amber TNMC)	120/240 V AC	10 A 12.5 A	A1 67 A2 68 A3 69 TNMC 22
	Top	H4'-0", W36'-0", D8" (1219 mm, 10 973 mm, 203 mm)	448 lb 265 kg (1065 lb) (482 kg)	(Top) <ul style="list-style-type: none"> ▪ At Bat, Ball, Strike, Out, H/E 24" (610 mm) 	1200 W*			
	Bottom	H5'-4", W36'-0", D8" (1626 mm, 10 973 mm, 203 mm)	668 lb 304 kg (1269 lb) (576 kg)	(Bottom) <ul style="list-style-type: none"> ▪ Innings, Runs, Hits, Errors 18" (457 mm) 	1200 W*			
BA-2008	1	H7'-0", W28'-0", D8" (2134 mm, 8534 mm, 203 mm)	720 lb 327 kg (1368 lb) (621 kg)	<ul style="list-style-type: none"> ▪ Innings, Runs, Hits, Errors 15" (361 mm) ▪ SOP, Ball, Strike, Out, H/E 18" (457 mm) ▪ 11: red ▪ 21: amber 	1200 W	120/240 V AC	10 A	A1 64 A2 65 A3 66 A4 11

*Indicates wattage for both sections of scoreboard

Section 3: Mechanical Installation

Mechanical installation consists of installing concrete footings and steel beams, and mounting the scoreboard and accompanying ad panels to the beams. Models BA-2001-11, BA-2002-11 and BA-2008-11 can be mounted using two methods: the scoreboards can be clamped to vertical beams or welded to horizontal beams. Refer to **Scoreboard Mounting, Section 3.5**.

3.1 Scoreboard Protective Devices

Note: Some users install devices to protect the scoreboard from projectiles. Scoreboard protection devices not provided by Daktronics must be approved by Daktronics prior to installation. Failure to follow this approval procedure will void the scoreboard warranty.

Daktronics makes available optional devices, including screens and netting, to help protect the scoreboard from damage due to normal ball impacts.

3.2 Footings and Beams

Reference Drawings:

Shop Dwg; BA-2001-11	Drawing B-165469
Shop Dwg; BA-2002-11	Drawing B-165511
Shop Dwg; BA-2008-11	Drawing B-166280

Refer to the shop drawings listed above for installation specifications of each of the models. These drawings specify the number of beams and the recommended spacing between them. The drawings also indicate the size of beams required to support the scoreboard at different heights under various wind speed conditions. All of the beam specifications illustrate "W" shape steel beams (wide-flange I-beams). The first number indicates the front-to-rear depth of the beam, and the second number indicates the weight in pounds per foot of length.

The column and footing dimensions provided assist with estimating installation costs. They are estimates only and are not intended for construction purposes. Be sure that your installation complies with local building codes and is suitable for your particular soil and wind conditions.

The columns and footings and all connection details must be designed and certified by a professional engineer licensed to practice in the state in which scoreboard will be installed. ***Daktronics assumes no liability for installations derived from the information provided in this manual or designed and installed by others.***

3.3 Horizontal Beams

Horizontal beams must be attached to the vertical beams before the display sections are lifted and attached to the structure.

Refer to the following figures to determine the size and vertical spacing of the horizontal beams for each model.

Models BA-2001-11 and BA-2008-11

Figure 3 shows the spacing of the horizontal beams for Models BA-2001-11 and BA-2008-11. The horizontal beams themselves must have a vertical dimension (height) of 4". The first horizontal beam is level with the bottom of the scoreboard and is considered the zero mark for measuring the other two horizontal beams. The second horizontal beam is at 84" (measuring to the *top* of the horizontal beam) and will be flush with the top of the scoreboard.

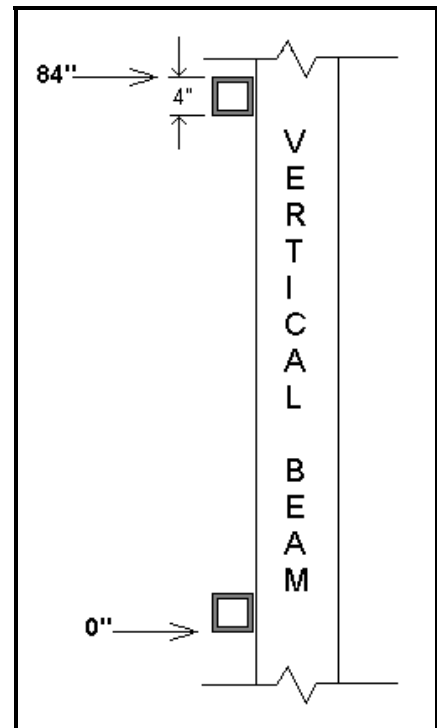


Figure 3: Beam Spacing for BA-2001-11 and BA-2008-11

Model BA-2002-11

Figure 4 shows the spacing of the horizontal beams for Model 2002-11. The horizontal beams themselves must have a vertical dimension (height) of 4". The bottom of the first horizontal beam is level with the bottom of the scoreboard and is considered the zero mark for measuring the other two horizontal beams. The second horizontal beam is at 66.2" (measuring to the *top* of the horizontal beam). The third horizontal beam is at 112.4" (measuring to the *top* of the horizontal beam) and will be flush with the top of the scoreboard.

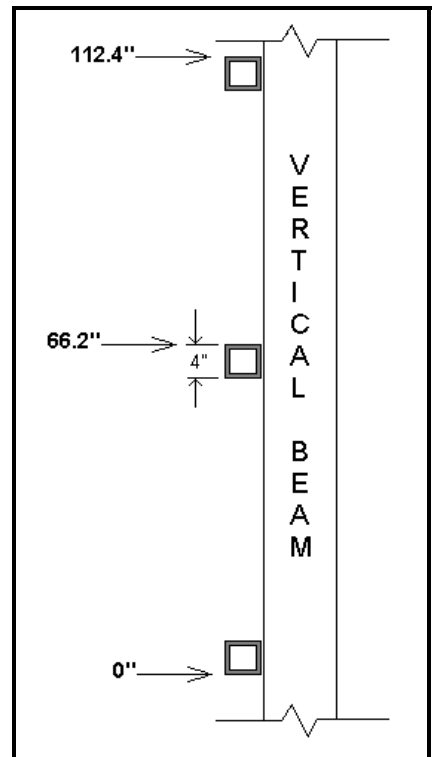


Figure 4: BA-2002-11 Beam Spacing

3.4 Lifting the Scoreboard

Reference Drawing:

Lifting the Scoreboard **Drawing A-44548**

Large scoreboard sections 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.

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 following illustration and in **Drawing A-44548**.

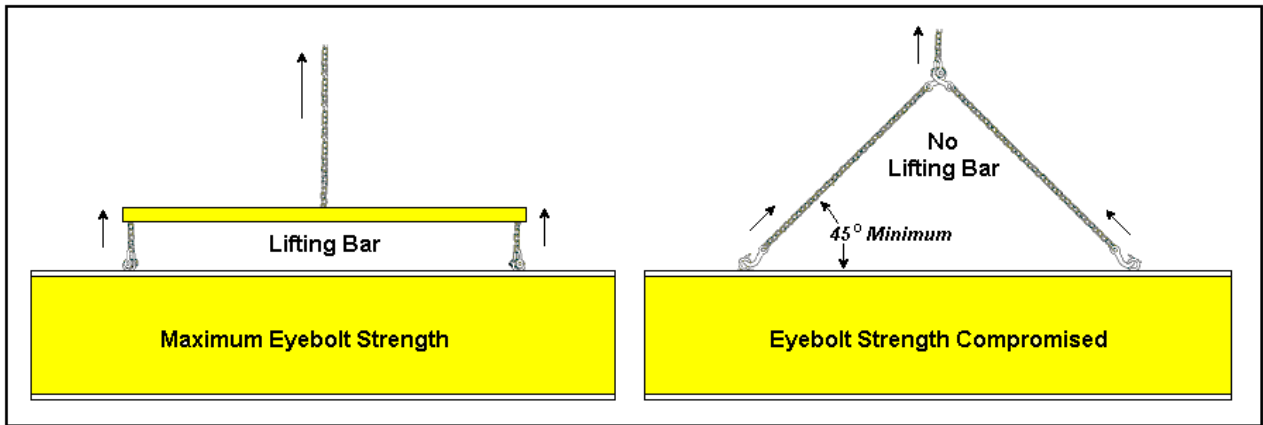


Figure 5: Lifting the Display

Figure 5 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 **ED7244, Eyebolts**, to determine allowable loads and load angles for the lifting hardware. **ED7244** is located in **Appendix B** 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 5**, 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°.

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, as with BA-2002-11, 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.

3.5 Scoreboard Mounting

Reference Drawings:

Steel Clip Angle Mounting.....	Drawing A-83301
Pole Mtg Detail.....	Drawing A-89234

Models BA-2001-11, BA-2002-11, and BA-2008-11 are typically mounted in one of two ways: permanently welded to tubular horizontal supports, or clamped to vertical beams using mounting angles and long threaded rods. The following subsections describe both options.

Welding to Horizontals

Drawing A-83301 illustrates the mounting of the display to horizontal beams. Bolted to the back of each scoreboard section are steel clip angles. These clip angles are welded on three sides to the horizontal beam structure

Review the illustrations of the mounting hardware in **Drawing A-83301**, then use the following procedure for each section.

Note: Take care during the installation process to ensure the drain holes in the bottom or the bottom angles of the scoreboard/display are not covered by the mounting structure. *If they are covered,* $\frac{3}{8}$ " holes must be drilled through the mounting structure in the same spot as the original holes.

1. Visually check the display structure before beginning the installation process.
 - Ensure that the structure will provide a straight and square mounting frame for the scoreboard/display.
 - Check to ensure the mounting frame will not give away at unsupported points after the scoreboard/display is mounted. If any problems are noted, take corrective action immediately.
2. Lift the display section into position. If there are two or more scoreboard sections, the lower section is typically attached first, and then the upper sections are positioned above the lower section and attached to the structure. *These sections do not attach to each other.*

3. Adjust the clip angles so that they are firmly against the horizontal beam, as shown in **Figure 6**. During the installation of the first section, carefully monitor the horizontal and vertical straightness of the display. If the mounting structure does not provide a straight or square mounting surface, it will be necessary to place shims between the display section and the mounting surface to ensure straightness of the scoreboard/display section.
4. Weld the three sides of each clip angle that are in contact with the horizontal beam.
5. Inspect the top and sides of the display for any holes that may allow moisture to enter the display. Plug and silicone around any hole or opening that will allow moisture to enter the display.

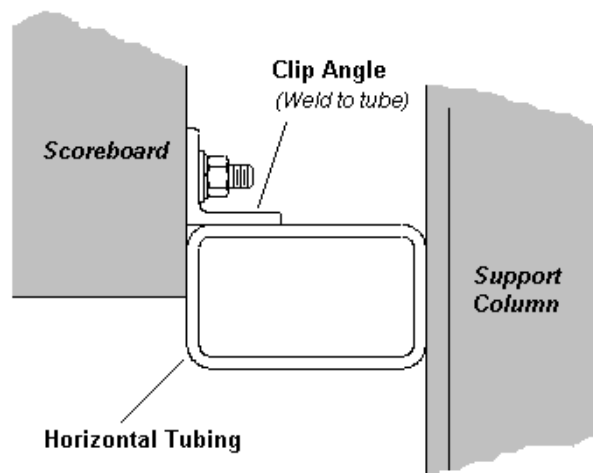


Figure 6: Mounting Display To Tubing

Clamping to Verticals

Figure 7, at right, illustrates a no-weld, clamping method for the baseball scoreboards. For additional mounting details, refer to **Drawing A-89234, B-165469, A-182909**.

Note: Refer to drawing **B-165469** for mounting the BA-2001 and BA-2008. On this drawing note that the spacing from the left edge of the scoreboard to the left most vertical beam is different than the spacing from the right end of the scoreboard to the right most vertical beam. This beam spacing is critical if you plan to rear access these models of scoreboards for servicing. There are so many digits that it is almost impossible to find clear areas on the back of the scoreboard to locate the three beams required to mount these displays. This model of scoreboard is designed to be either front or rear access to accommodate use in integrated scoring systems.

The back sheets are not flanged on this display. But the digit covers and driver covers that are attached to the back sheets (that are required for rear access) are flanged. There is one digit cover per digit as well as one rear driver cover per driver.

If you never intend to rear access the scoreboard for servicing you can flatten (or cut) the flanges on the covers that will cause interference with the poles.

Another alternative is to add spacers between the back of the scoreboard and the front of the beam. The spacers would need to be at least 1" deep. Refer to drawing **A-182909** for one illustration of how to install spacers.

Mount the scoreboard as follows:

1. Determine where to drill the holes in the rear flanges of the scoreboard perimeter extrusion.
2. Drill $\frac{9}{16}$ " holes in the extrusion on either side of the vertical beam, within 1" of the outer edge of the beam. Use the pre-drilled holes in the clamping angle as a guide.
3. Position the holes from the edge of the perimeter extrusion so that the square nut will fit into the channel (approximately 1" from the outer edge).
4. Attach the threaded rods and mounting angles using $\frac{1}{2}$ " hardware, and tighten securely.

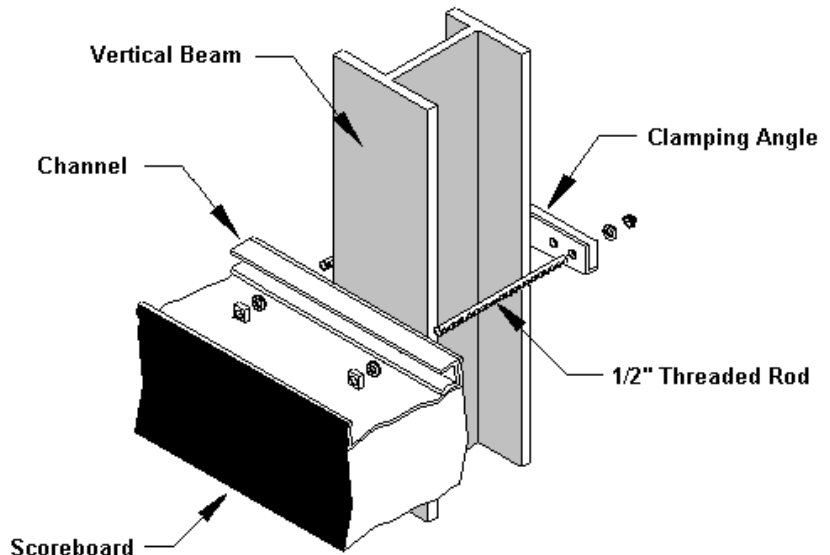


Figure 7: Scoreboard Mounting, Clamping Method

Section 4: Electrical Installation

Reference Drawings:

F. Assy; BA-2001-11	Drawing B-158423
F. Assy; BA-2002-11	Drawing B-158495
F. Assy; BA-2001-11 w/LED TNMC	Drawing B-159564
F. Assy; BA-2002-11 w/LED TNMC	Drawing B-159667
F. Assy, BA-2008-11 w/TNMC	Drawing B-165921

Electrical installation consists of the following processes:

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

Power specifications for the baseball scoreboard are listed in **Section 2** and on the final assembly drawings listed above.

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.

4.1 Power

Reference Drawing:

Schematic; Gen II OD LED, 3 Drvr, Multi-Sect & TNMC	Drawing A-158084
Schematic; Gen II OD LED, BA-2007 w/TNMC*	Drawing B-160180

**Used with Model BA-2008-11*

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.

Baseball scoreboards BA-2001-11, BA-2002-11, and BA-2008-11 all require a dedicated 120 V circuit for incoming power. The displays themselves have no breakers or fuses.

Note: 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 22 AWG.

Refer to the outdoor scoreboard schematics listed above and to the chart in **Section 2** to determine circuit specifications and maximum power requirements for the models described in this manual.

Grounding

Reference Drawing:

Schematic; Gen II OD LED, 3 Drvr, Multi-Sect & TNMC **Drawing A-158084**

Schematic; Gen II OD LED, BA-2007 w/TNMC* **Drawing B-160180**

**Used with Model BA-2008-11*

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

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

The display system *must* be connected to earth ground. Proper grounding is necessary for reliable equipment operation. It also protects the equipment from damaging electrical disturbances and lightning. **The display must be properly grounded or the warranty will be void.** Refer to the schematics, **Drawings A-158084** and **B-160180**, for information on where to connect the grounding wire. Connection at the duplex receptacle is illustrated in the lower right sections of the drawings.

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 considerations for 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. Under this circumstance, *do not* connect neutral to ground at the disconnect or at the display. **This would violate electrical codes and void the warranty.** Use a disconnect so that all hot lines and 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 conductor at the local disconnect, never at the display driver/power enclosure.
- Use a disconnect that opens all of the ungrounded phase conductors.

4.2 Power and Signal Connection

Reference Drawings:

Driver; 16 Col Outdoor LED, Gen II **Drawing A-154792**

Schematic; Gen II OD LED, 3 Drvr, Multi-Sect & TNMC..... **Drawing A-158084**

Schematic; Gen II OD LED, BA-2007 w/TNMC* **Drawing B-160180**

**Used with Model BA-2008-11*

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 outdoor LED scoreboards.

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.

Connect the power and signal cables at the appropriate locations on the driver enclosure panel, as shown in **Drawing A-154792**.

The power feeder circuit connects directly to the receptacle located in the lower right corner of the driver enclosure, as shown in **Figure 8**. Refer to the driver illustration and the schematics, **Drawings A-158084** and **B-160180**, for wiring details. The schematic includes a detailed illustration of the power termination.

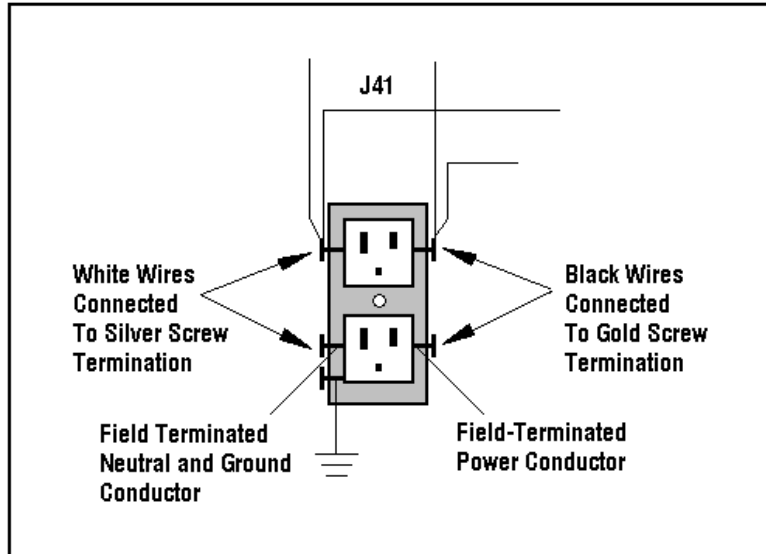


Figure 8: 120 V Power Receptacle in Driver Enclosure

Route signal cabling to the terminal block in the upper left corner of the enclosure. The connections are labeled to permit easy installation. At the Signal In terminal block, connect the red signal wire to the positive terminal, the black to the negative terminal, and the shield (silver) wire to the shield terminal. *It is important that the shield wire is properly connected to the shield terminal on the signal surge arrestor card.* **Figure 9** illustrates the printed circuit board and the terminal blocks.

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-1234) is preferred.

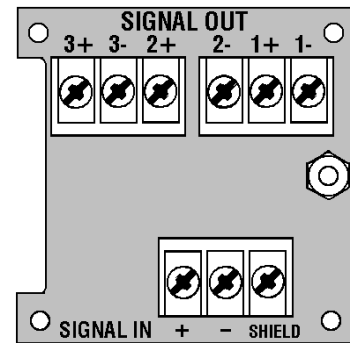


Figure 9: Signal Surge Arrestor Card

For additional information on signal connection, refer to the All Sport 5000 Series or All Sport 3000 Series Control Console Operation Manuals, ED11976 and ED12126.

Multiple Driver Connections

The baseball scoreboards require multiple drivers. These models have been configured to operate with a master/slave driver system. Master and slave drivers function identically, but the slave units lack the power receptacle and signal surge suppression card. The drivers have been designed to simply plug into one other via an interconnect harness, the slave receiving power and redriven signal from the master driver enclosure. Larger boards can add as many driver slaves as they require.

All driver interconnect harnesses are factory-installed. No additional connection is necessary. (The harness emerges from the bottom of the master driver enclosure, and the J42 jack from the master is connected to the slave's P43 plug.) Likewise, signal harnesses connecting digits and drivers have been installed at the factory, and no additional connections are necessary.

Refer to your scoreboard drawings to determine driver location and other model-specific information.

Section 5: Scoreboard Maintenance and Troubleshooting



IMPORTANT NOTES:

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

Note: For assistance in the maintenance of team name message centers or other optional scoreboard message centers, refer to **Section 6** or the service manual that accompanies those units.

5.1 Cabinet Specifications

Cabinets for Daktronics outdoor LED scoreboards are constructed of heavy-gauge aluminum. Dimensions and weights for each model are listed in the chart in **Section 2**. Removable panels for digits and indicators and for component access are detailed in each model's component locations drawing, listed in **Section 5.2** below

5.2 Component Location and Access

Reference Drawings:

Digit Assembly (18 and 24").....	Drawing A-135662
Component Locations; BA-2001-11	Drawing A-158484
Component Locations; BA-2002-11	Drawing A-158731
Component Locations; BA-2001-11 w/LED TNMC	Drawing A-159624
Component Locations; BA-2002-11 w/LED TNMC	Drawing A-159680
Component Locations, BA-2008-11 w/TNMC	Drawing A-166154

For the front-access scoreboards in this series, all internal electronic components and digits can be reached by opening a face panel, an access door, or a digit panel on the front of the display. Most have hinged doors. The component locations drawings listed above show all access doors for the baseball scoreboards

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 screw at the bottom. Care is required in opening the scoreboard. Hold the digit panel in place by putting hand pressure on it while removing the screw, and carefully lift it from the board, sliding it down and out. If the panel is not

held in place, it will drop immediately when the screw is removed, possibly damaging LEDs or the digit harness. Refer to **Figure 10** at right and to **Drawing A-135662**, which illustrates a typical digit assembly.

Component placement varies with each scoreboard model; consult the model-specific component location drawing to determine the layout for your scoreboard

With a non-digit access panel, simply remove the top, side and bottom screws holding it in place. As noted previously, some access panels are hinged doors and swing open when the screws are removed or loosened.

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.

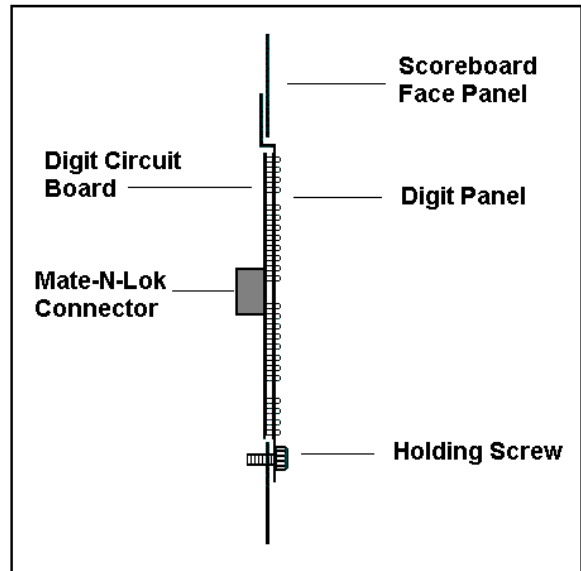


Figure 10: LED Digit Panel (Not to Scale)

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 **Drawing A-135662**.

To remove a scoreboard digit, follow these steps:

1. Open the digit panel as described in the preceding section.
2. Disconnect the power/signal connector from the back of the digit. Release the connector by squeezing together the locking tabs as you pull the connector free.
3. The digits are secured to the inside of the panel with standoff bolts, spacers and nuts. Remove the #8 nuts and lift the digit off the standoff bolts.
4. Position a new digit over the bolts and tighten the nuts.
5. Reconnect the power/signal connector. **Note:** *This is a keyed connector. 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.

Replacing a Driver

Drivers are typically mounted inside the scoreboard and immediately behind a digit, but location and mounting varies with the model of the scoreboard. Refer to the component locations drawings in **Section 5.2** for the location of your scoreboard driver.

Each driver is enclosed with a power supply and signal terminal block. Before a failed driver can be reached, the enclosure must be accessed. Follow these steps:

1. Open the digit panel or scoreboard access panel as described in **Section 5.2**.
2. Remove the cover from the driver enclosure.
3. Disconnect all connectors from the driver. Release each released by squeezing together the locking tabs as you pull the connector free. **Note:** *These are keyed connectors and will attach in one way only. Do not attempt to force the connections.*
4. Remove the hardware 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. Follow steps 1 through 5 in reverse order to attach a new driver.

5.3 Schematic

Reference Drawing:

- Schematic; Gen II OD LED, 3 Drvr, Multi-Sect & TNMC..... **Drawing A-158084**
- Schematic; Gen II OD LED, BA-2007 w/TNMC*..... **Drawing B-160180**

**Used with Model BA-2008-11*

The schematic diagrams the power and signal inputs and all wiring for each scoreboard. Models BA-2001-11 and BA-2002-11 use **Drawing A-158084**, and BA-2008-11 uses **Drawing B-160180**.

5.4 LED Drivers

Reference Drawings:

- Driver; 16 Col Outdoor LED, Gen II **Drawing A-154792**
- 16 Column LED Driver II Specifications **Drawing A-134371**
- Address Table, 1 Through 128..... **Drawing A-115078**

In the scoreboard, the task of switching digits on and off is performed by the LED drivers. Refer to **Drawing A-154792**. Each driver has 20 or more connectors providing power and signal inputs to the circuit, and outputs to the digits and indicators. The connectors function as follows:

16-Column LED Driver	
Connector No.	Function
1 – 16	Outputs to digits and indicators
17	Power and signal input
18	Relay
19	Address
20	Protocol

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.

For the scoreboard to receive signal and function properly, the driver must be set to the correct address. This address is set with jumper wires in a 12-pin plug which mates with a jack on the driver. **Drawing A-134371** details the specifications for the 16-column drivers. Refer to **Drawing A-115078** for a listing of the wire/pin connections for driver addresses 1 - 128.

5.5 Segmentation and Digit Designation

Reference Drawing:

Segmentation, 7 Segment Bar Digit.....	Drawing A-38532
Digit Designation; BA-2001-11	Drawing A-158421
Digit Designation; BA-2002-11	Drawing A-158496
Digit Designation; BA-2001-11 w/LED TNMC.....	Drawing A-159621
Digit Designation; BA-2002-11 w/LED TNMC.....	Drawing A-159666
Digit Designation, BA-2008-11 w/TNMC.....	Drawing A-166064

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 digit designation drawings listed above specify the driver connectors controlling the digits. Numbers shown in hexagons in the upper half of each digit (or above each digit) indicate the digit designation, that is, which connector is wired to that digit.

5.6 Troubleshooting

This section lists potential problems with the scoreboard, indicates possible causes and suggests corrective action. This list does not include every possible problem, but it does represent some of the more common situations that may occur. (Refer to the appropriate manual for a list of potential problems with add-on or separately mounted message centers.)

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

Important: When the LED drivers are replaced, plugs P25 and P26 (if present) must be removed from the old driver and plugged into the new driver.

5.7 Lightning Protection

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 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 being used. The same surges that may damage the scoreboard's driver can also damage the console's circuit.

5.8 Replacement Parts

Refer to the following table for Daktronics scoreboard replacement parts. (Refer to **Section 6** or to the appropriate manual for a listing of parts required for the service of optional message centers.)

Description	Location	Daktronics Part No.
Driver assembly, 16 column LED, master	Scoreboard	0A-1192-1000
Driver, 16 col, outdoor, LED	Driver enclosure	0P-1192-0011
Power supply, 24 V, 150W, 86-132 V input	Driver enclosure	A-1720
Signal surge arrestor	Driver enclosure	0P-1033-0114
Fan, 32 cfm, 24 V DC, 3.15 sq. in	Driver enclosure	B-1030
Driver assembly, 16 column LED, slave	Scoreboard	0A-1192-1005
TNMC assembly, 832 LED, red	Scoreboard BA-2001-11	0A-1192-1079
TNMC assembly, 848 LED, red	Scoreboard BA-2002-11	0A-1192-1080
Digit, 15", 7-seg outdoor LED, red-orange	Scoreboard	0P-1192-0009
Digit, 18", 7-seg outdoor LED, red-orange	Scoreboard	0P-1192-0008
Digit, 24", 7-seg outdoor LED, red-orange	Scoreboard	0P-1192-0003
Interconnect harness, power/signal, 12'	Driver enclosure	0A-1192-1031
Interconnect harness, power/signal, 16'	Driver enclosure	0A-1192-1032
Harness, address, 12-pin	Driver enclosure	0A-1150-0064
Harness, Gen II 16-col, LED driver, master	Driver enclosure	0A-1192-0006
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 cord; 1/4" phone 20'	Signal	W-1236
Signal cord; 1/4" phone 30'	Signal	W-1238
Signal cord; 1/4" phone 50'	Signal	W-1237

5.9 Daktronics Exchange and Repair and Return Programs

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

Daktronics' unique Exchange Program is a quick, economical service for replacing key components in need of repair. If a component fails, Daktronics sends the customer a replacement, and the customer, in turn, sends the failed component to Daktronics. This not only saves money but also decreases scoreboard downtime.

Daktronics provides these plans to ensure users get the most from their Daktronics products, and it offers the service to qualified customers who follow the program guidelines explained below. Please call the Help Desk – 877-605-1113 – if you have questions regarding the Exchange Program or any other Daktronics service.

When you call the Daktronics Help Desk, a trained service technician will work with you to solve the equipment problem. You will work together to diagnose the problem and determine which exchange replacement part to ship. If, after you make the exchange, the equipment still causes problems, please contact our Help Desk immediately.

If the replacement part fixes the problem, package the defective part in the same box and wrapping in which the replacement part arrived, fill out and attach the enclosed UPS shipping document, and *RETURN THE PART TO DAKTRONICS*. In most circumstances, you will be invoiced for the replacement part at the time it is shipped. This bill is due when you receive it.

Daktronics expects immediate return of an exchange part if it does not solve the problem. The company also reserves the right to refuse equipment that has been damaged due to acts of nature or causes other than normal wear and tear.

If the defective equipment is not shipped to Daktronics within 30 working days from the invoice date, it is assumed you are purchasing the replacement part, and you will be invoiced for it. This second invoice represents the difference between the exchange price and the full purchase price of the equipment. The balance is due when you receive the second invoice. If you return the exchange equipment after 30 working days from the invoice date, you will be credited for the amount on the second invoice, minus a restocking fee.

To avoid a restocking charge, please return the defective equipment within 30 days from the invoice date.

Daktronics also offers a Repair and Return program for items not subject to exchange.

Return Materials Authorization: To return parts for service, contact your local representative prior to shipment to acquire a Return Material Authorization (RMA) number. If you have no local representative, call the Daktronics Help Desk for the RMA. This expedites repair of your component when it arrives at Daktronics.

Packaging for Return: Package and pad the item well so that it will not be damaged in shipment. Electronic components such as printed circuit boards should be installed in an enclosure or placed in an antistatic bag before boxing. Please enclose your name, address, phone number and a clear description of symptoms.

This is how to reach us:

Mail: Customer Service
Daktronics, Inc.
PO Box 5128
331 32nd Ave
Brookings SD 57006

Phone: Daktronics Help Desk: 877-605-1113 (toll free)
or 605-697-4036

Fax: 605-697-4444

E-mail: helpdesk@daktronics.com

Section 6: Team Name Message Center Maintenance



IMPORTANT NOTES:

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

6.1 Team Name Message Center System Overview

Team name message centers are available in two sizes: an 8x32 matrix model, comprised of four, 8x8-pixel modules, and an 8x48 model, made up of six 8x8 modules. TNMCs are typically installed in pairs. Light emitting diodes (LEDs) illuminate the displays.

The monochrome message centers feature an array of red LEDs, and they are capable of displaying characters up to 10" high. Pixels on the 10" TNMC consist of a three-LED cluster.

Although TNMCs are customarily used for team names, they can display any type of caption. Characters are shown on a single line, and either single- or double-stroke fonts may be used for the caption or name.

6.2 Maintenance and Troubleshooting Overview

Standard Daktronics outdoor LED scoreboards are typically front-accessible, but some models may be ordered with rear service access. Because of that, Daktronics team name message centers have been designed so that they may be accessed from both the front *and* rear for easy maintenance and repair of internal components.

This section provides the following TNMC information:

- **Signal Routing Summary:** provides a basic explanation of the signal travel through the TNMC display.
- **Power Routing Summary:** provides a basic explanation of the power travel through the display.
- **Service and Diagnostics:** provides instructions for removing various display components and explains the functions of circuit board connectors and the meanings of any diagnostic LEDs.
- **Maintenance:** lists a number of steps to take to keep this Team Name Message Centers in safe, working order.
- **Troubleshooting:** lists possible display malfunctions and suggests a number of causes and corrections for each malfunction.
- **Replacement Parts Lists:** lists the part description and part number of display components that could possibly need replacing during the life of this display.

6.3 Signal Summary

Reference Drawing:

Control Layout; Outdoor LED TNMC **Drawing B-107507**

Refer to **Drawing B-107507** for complete information on TNMC signal routing. From signal input from the All Sport controller, routing can be summarized as follows:

1. Data from the display controller travels via cable harness into the display.
2. The signal then travels through the power and signal entrance enclosure, (power and signal termination panel) to the J1 connector on the current loop interface card.
3. Data exits at J3 and is relayed to the J1 connector on the multipurpose display controller (MDC). The signal then exits the MDC and enters the first module of the TNMC.
4. Signal is relayed from module to module until it reaches the last module on the message center. Refer to **Drawing B-107507**.

6.4 Power Summary

Reference Drawing:

Control Layout; Outdoor LED TNMC **Drawing B-107507**

Refer to **Drawing B-107507**. Power routing for the display can be summarized as follows:

1. Incoming power terminates at the power and signal entrance enclosure. It is then routed to the power supply within the TNMC.
2. From the power supply, power from the power supply is relayed to the MDC, the current loop interface (CLI) card, and to each module.

6.5 Service and Diagnostics

Reference Drawings:

Control Layout; Outdoor LED TNMC. **Drawing B-107507**
Exploded Front, Module **Drawing B-126111**
Exploded Rear, Module..... **Drawing B-126112**
F. Assy; 832 LED TNMC **Drawing B-159055**
F. Assy; 848 LED TNMC **Drawing B-159081**
Component Layout; 832/848 LED TNMC **Drawing A-145045**
Schematic; LED TNMC, Gen II **Drawing A-158552**

The following subsections address servicing of the following display components:

- TNMC Interface Card
- TNMC Controller
- Modules and Drivers
- Power Supplies

The subsections also address any diagnostic LEDs, fuses and signal/power connectors found on the unit. On **Drawings B-159055**, **B-159081**, and **A-145045**, the TNMC components are denoted as follows.

Component	Part Number	Location
TNMC CLI card	0P-1146-0020	Behind modules, on TNMC back panel. Refer to Drawing A-145045 .
TNMC controller	0A-1146-0061	Behind modules, on TNMC back panel. Refer to Drawing A-145045 .
Modules	0A-1208-3002	Over entire face of the TNMC. Refer to Drawings B-159055 and B-159081 .
Power supplies	A-1633	Behind modules and attached to power supply assembly 0A-1213-4013 on the back panel. Refer to Drawing A-145045 .

Remember: Disconnect power before servicing internal components!

TNMC Current Loop Interface Card

The current loop interface (CLI) card, located on the rear-access panel of the TNMC, translates the signal media to TIA/EIA-232 (formerly RS-232) for use within the components of the TNMC. The signal transfers into the TNMC controller where that component interprets and distributes the data to the modules. Refer to **Drawing A-145045**.

TNMC Controller

The controller, located on the rear-access panel, receives signal from the CLI and sends data to the modules. Refer to the signal summary in **Section 6.3** for more information and to **Drawing A-145045** for the position of the controller board. **Figure 11**, below, illustrates a typical controller.

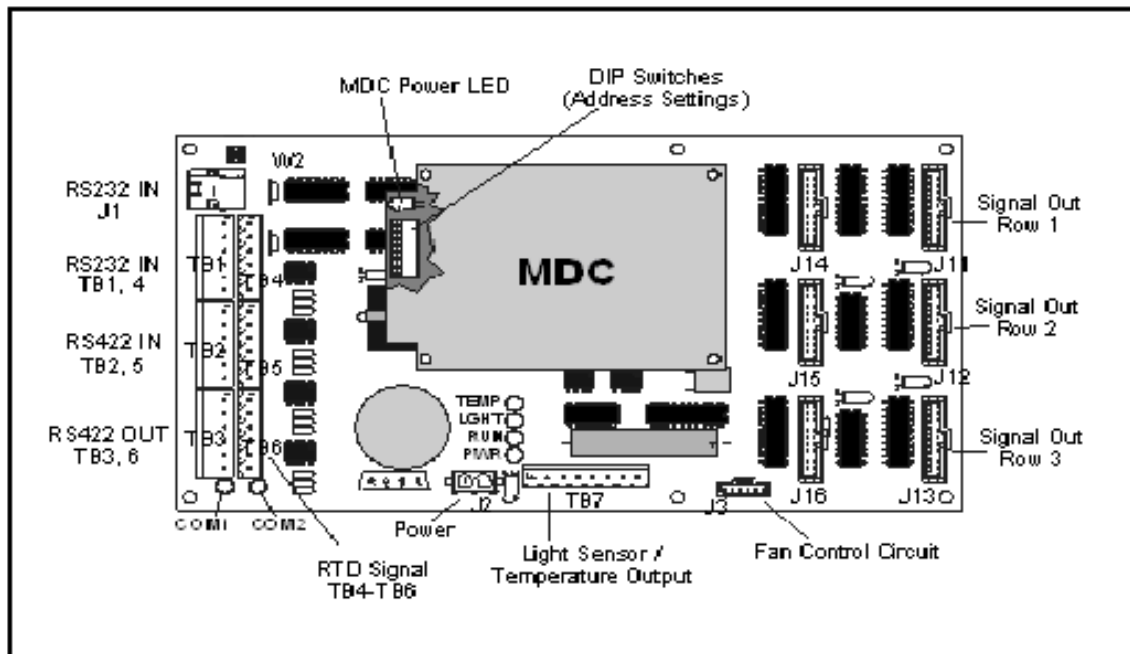


Figure 11: Controller Component Layout

DIP switches are located on the controller's MDC (see preceding illustration). These DIP switches set the hardware address that the software uses to identify that particular display. When replacing a controller board, be sure to set the DIP switches in the same address configuration as the defective controller.

Note: Setting the DIP switches to address 0 (turn all the switches to OFF by switching them toward the printed switch numbers) can activate a test mode. Power down the display and then reconnect to run the test mode.

Switch Number								Address
8	7	6	5	4	3	2	1	
Off	Off	Off	Off	Off	Off	Off	Off	Test Mode
Off	Off	Off	Off	Off	Off	Off	On	1 (Home)
Off	Off	Off	Off	Off	Off	On	Off	2 (Guest)

Four diagnostic LEDs are located on the controller. Two other LEDs note when the MDC is receiving signal information. The following table explains what each LED represents.

LED	Color	Function	Operation	Summary
TEMP	Red	Temperature level	Flashes	Flash rate is dependent upon the temperature. The LED flashes faster in high temperature and slows as the temperature decreases.
LGHT	Red	Photocell light level	Flashes	Flash rate is dependent on the light level. The LED flashes faster in bright light and slows as darkness descends.
RUN	Red	Controller	Steady Flash	A steady flash indicates the controller is running correctly. Normal flash rate is about once a second.
PWR	Green	Power	Always On	The LED, when lit, indicates that there is power to the data input circuit.
RX1	Yellow	Com 1	Flashes	The LED turns on and flashes when receiving information.
RX2	Yellow	Com 2	Flashes	The LED turns on and flashes when receiving information; this LED is typically used in custom applications.

Removing/Changing the Controller

Complete the following steps to remove the controller from the display.

1. To access the controller from the front, unlatch the latch fasteners on the LED module. (The fasteners may be referred to as "latch plugs" on the drawings). One is centered below the top row of pixels and one is centered above the bottom row. Using a $\frac{7}{32}$ " nut driver, turn each fastener a quarter-turn. Turn the top latch clockwise and the bottom latch counterclockwise. Carefully remove the module and detach the ribbon cables. It may be helpful to label the cables so you will know which cable goes to which connector when reattaching.

To access the controller from the rear of the TNMC, remove the right rear-access panel from the TNMC by loosening all four of the screws. Slide the access panel sideways to the larger keyhole and carefully lift it off the TNMC. Take care not to drop the panel, and remember that the module controller is attached to the panel.

2. Disconnect power from J2.
3. Remove all power and signal connections from the board. Release "locked" connectors by squeezing together the tabs, then carefully pulling them from the jack. Label the cables, indicating which cable was removed from which connector; the labeling will be helpful when you replace the board.
4. Remove the four nuts holding the board in place.
5. Follow the previous steps in reverse order to install a new controller board.

Modules and Drivers

Reference Drawings

Exploded Front View; Single Panel Module	Drawing B-126111
Exploded Rear View; Single Panel Module	Drawing B-126112

The module and driver board are a single functional unit.

The LED power supplies are identified as assemblies (refer to **Power Supplies**, following in this section). Each power supply unit controls four modules; a power supply assembly (two power supply units) controls eight modules.

Removing/Changing a Module

To remove a module, complete the following steps:

1. The modules are attached to an internal frame called the module mounting panel. Find the latch-access fasteners (referred to as "latch plugs" on the drawings) on the module. One is centered below the top row of pixels and one is centered above the bottom row.
2. Unlatch the latch fasteners by turning them a quarter-turn using a $\frac{7}{32}$ " nut driver. Turn the top latch clockwise and the bottom latch counterclockwise. Carefully remove the module and detach the ribbon cables. Label the cables, indicating which cable was removed from which connector; the labeling will be helpful when you replace the board.

To access the controller from the rear of the TNMC, remove the right rear-access panel from the TNMC by loosening all four of the screws. Slide the access panel sideways to the larger keyhole and carefully lift it off the TNMC. Take care not to drop the panel, and remember that the module controller is attached to the panel. With a $\frac{7}{32}$ " nut driver, turn the latch-access fasteners a quarter-turn. Turn the top latch counter-clockwise and the bottom latch clockwise.

3. If you are accessing the unit from the rear, follow this procedure: While holding onto the module, push it out and turn it in such a manner (generally a sideways, diagonal turn) that it will fit through the frame opening. Then pull the module back through the opening in the frame. Carefully disconnect the ribbon cables. Once again, label the cables, indicating which cable was removed from which connector; the labeling will be helpful when reconnecting.

When installing a module, reverse the previous steps and take note of the following points:

- Weatherstripping on the back edge of the module must be intact and in good condition if it is to prevent water from seeping into the display.
- Module latches must be fully engaged to create a watertight seal around the edge of the module. The module should be firmly seated against the display when the latches are fully engaged.

Each module assembly contains a module housing (containing LEDs and the driver board) and a louver assembly. **Drawings B-126111** and **B-126112** illustrate the various module components.

From time to time, it may become necessary to remove one or more parts from the module housing for repair or replacement. The following subsection explains how to disassemble a module.

Removing the Louver Assembly

Damaged louvers may reduce the brightness and contrast of this display. If any of the louvers on the display are broken or damaged, replace the entire louver assembly. Refer to the Replacement Parts List in **Section 6.9**. When replacing the louver assembly, take care not to strip the plastic twist-on fasteners.

Removing/Changing a Louver

Complete the following steps to remove the louver assembly from the face of the module.

1. See the directions above in the **Module and Drivers** subsection for information on how to access the louver from the front or rear.
2. Remove the five twist-on fasteners holding the louver assembly to the module with an $\frac{11}{32}$ " nut driver.
3. Lift the louver assembly straight away from the module.

Power Supplies

The LED power supplies are identified as assembly 0A-1213-4013 in the component location drawings.

Removing/Changing a Power Supply

Complete the following steps to remove a power supply from the display:

1. See the directions above in the **Module and Drivers** subsection for information on how to access the component from the front or rear.
2. Disconnect all the wires connected to the power supply.
3. Remove the hardware holding the power supply in place to free the unit.
4. Follow these steps in reverse order to install a new power supply.

Weatherstripping

To ensure that the display is waterproof, weather stripping has been provided around the entire display and around each module. It is important that the weather stripping is installed properly at all times or water may leak into the display and damage the components.

6.6 TNMC Display Maintenance

Complete a yearly inspection to maintain safe and dependable display operation. This inspection should address the following issues:

- **Loose Hardware**
Verify that fasteners, such as bolts and rivets, have not come loose. Check and tighten or replace fasteners as required.
- **Excessive Dust Buildup**
Occasionally it may be necessary to vacuum the inside of the display cabinet to remove dust/dirt buildup that may interfere with airflow.
- **Water Intrusion – Water Stain Marks**
Water can enter the display where weatherstripping has come loose or deteriorated; where fasteners have come loose, allowing gaps in the panels; or where moisture may be entering around hardware. Check electronic components for displays of corrosion.
- **Corrosion**
Check the paint, and look for possible corrosion, especially at footings, structural tie points, and ground rods and other types of grounding electrodes.

If you notice any of the preceding conditions, make repairs or take corrective action immediately.

6.7 Troubleshooting

This subsection contains some symptoms that may be encountered in the displays. This list does not include every possible symptom, but does represent common situations that may occur.

Symptom/Condition	Possible Cause/Remedy
<i>One or more LEDs on a single module fail to light</i>	<ul style="list-style-type: none"> ▪ Check/replace the ribbon cables on the module. ▪ Replace the module.
<i>One or more LEDs on a single module fail to turn off</i>	<ul style="list-style-type: none"> ▪ Check/replace the ribbon cables on module. ▪ Replace the module.
<i>A section of the display is not working; the section extends all the way to the right side of the display</i>	<ul style="list-style-type: none"> ▪ Replace the first module/driver on the left side of the first module that is not working. ▪ Replace the second module that is not working. ▪ Replace the power supply assembly on the first module that is not working. ▪ Replace the ribbon cable.
<i>One row of modules does not work or is garbled</i>	<ul style="list-style-type: none"> ▪ Replace the first module. ▪ Replace the controller. ▪ Check the fuses in the power termination box.
<i>A group of modules which share the same power supply assembly fails to work</i>	<ul style="list-style-type: none"> ▪ Replace the power supply assembly.
<i>Entire display fails to work</i>	<ul style="list-style-type: none"> ▪ Check for proper line voltage into the power termination panel. ▪ Check/replace the ribbon cable from the controller to the modules. ▪ Check the voltage settings on the power supplies. ▪ Check/replace the signal cable to the controller. ▪ Replace the controller. ▪ Verify proper use of the software in the operation manual.

6.8 Initialization Information at Startup

Every time the display is powered up, the display will run through an initialization in which it will test all LEDs and addresses. When completed, the initialization test will display Home and Guest in the appropriate location.

6.9 Replacement Parts List

The following table contains some of the TNMC components that may require replacement over the life of a display. Many of the components within the display also have attached part number labels.

Part Description	Part Number
Controller II	0A-1146-0061
Current loop interface card, coated	0A-1146-0020
Module; 3R, 8x8 coated type 1 (red, 3 LED/pixel)	0P-1208-3002
Power supply	A-1633
Modem jack; 6-pin female	J-1094
Cable; 36" RJ-11; 6-conductor	0A-1120-0134
Ribbon cable; 40-conductor, 30 AWG (controller to module, module to module)	W-1412
Cable; 22 AWG	W-1234
Electrical contact cleaner/lubricant (CaiLube)	CH-1019

To prevent theft Daktronics recommends purchasing a lockable cabinet to store manuals and replacement and spare parts.

Refer to **Section 5.9** for information on the Daktronics Exchange and Repair and Return programs.

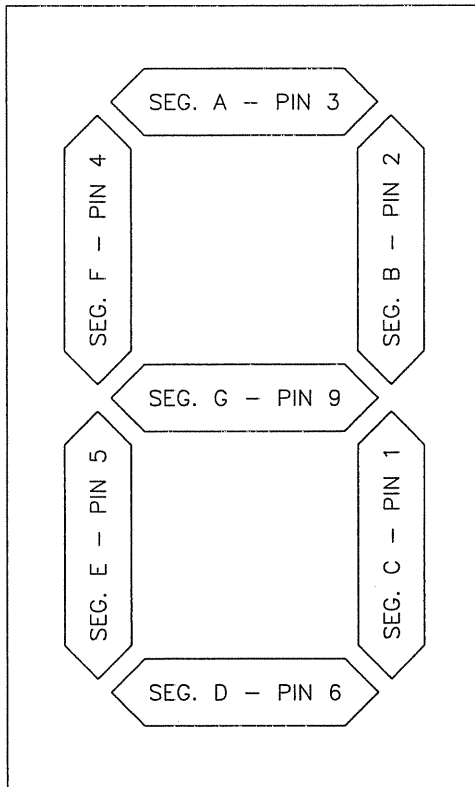
Reference Drawings

A Drawings

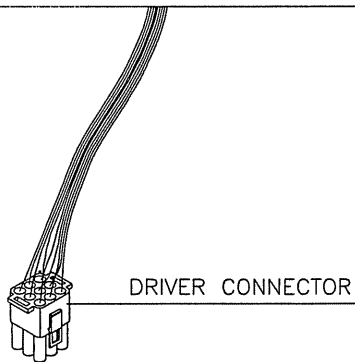
Segmentation, 7 Segment Bar Digit.....	Drawing A-38532
Lifting the Scoreboard.....	Drawing A-44548
Steel Clip Angle Mounting.....	Drawing A-83301
Pole Mtg Detail.....	Drawing A-89234
Address Table, 1 Through 128	Drawing A-115078
16 Column LED Driver II Specifications	Drawing A-134371
Digit Assembly 18"-24".....	Drawing A-135662
Component Layout; 832/848 LED TNMC	Drawing A-145045
Driver, 16 Col Outdoor LED Gen II	Drawing A-154792
Schematic; Gen II OD LED, 3 Drvr, Multi-Sect & TNMC.....	Drawing A-158084
Digit Designation; BA-2001-11.....	Drawing A-158421
Component Locations; BA-2001-11	Drawing A-158484
Digit Designation; BA-2002-11.....	Drawing A-158496
Schematic; LED TNMC, Gen II	Drawing A-158552
Component Locations; BA-2002-11	Drawing A-158731
Digit Designation; BA-2001-11 w/LED TNMC.....	Drawing A-159621
Component Locations; BA-2001-11 w/LED TNMC	Drawing A-159624
Digit Designation; BA-2002-11 w/LED TNMC.....	Drawing A-159666
Component Locations; BA-2002-11 w/LED TNMC	Drawing A-159680
Digit Designation, BA-2008-11 w/TNMC.....	Drawing A-166064
Component Locations, BA-2008-11 w/TNMC.....	Drawing A-166154
Scoreboard Mtg; scoreboard with spacers	Drawing A-182909

B Drawings

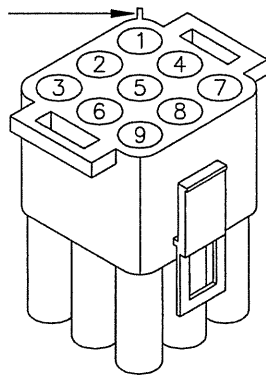
Control Layout; Outdoor LED TNMC	Drawing B-107507
Exploded Front View; Single Panel Module.....	Drawing B-126111
Exploded Rear View; Single Panel Module.....	Drawing B-126112
F. Assy; BA-2001-11	Drawing B-158423
F. Assy; BA-2002-11	Drawing B-158495
F. Assy; 832 LED TNMC, Red	Drawing B-159055
F. Assy; 848 LED TNMC, Red	Drawing B-159081
F. Assy; BA-2001-11 w/LED TNMC	Drawing B-159564
F. Assy; BA-2002-11 w/LED TNMC	Drawing B-159667
Schematic; Gen II, OD LED, BA-2007 w/TNMC	Drawing B-160180
Shop Drawing; BA-2001-11	Drawing B-165469
Shop Drawing; BA-2002-11	Drawing B-165511
F. Assy, BA-2008-11 w/TNMC	Drawing B-165921
Shop Dwg, BA-2008-11	Drawing B-166280



7 SEGMENT BAR DIGIT
FRONT VIEW



CONNECTOR PIN NUMBERING
NOTE SPLINE NEAR NO. 1



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

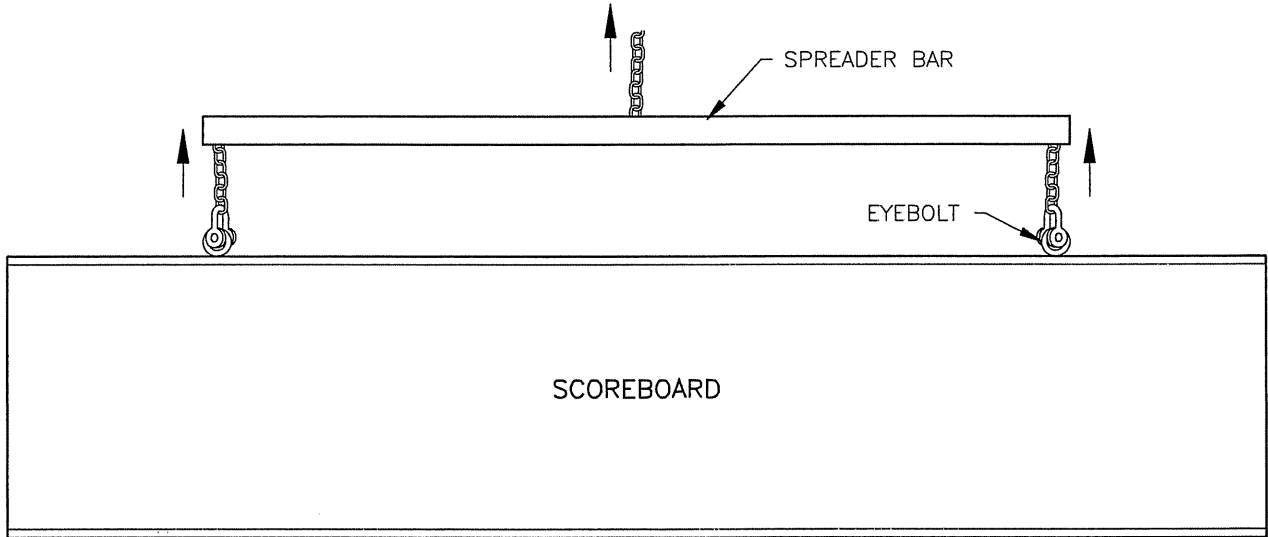
NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

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DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
2	30 APR 97	ADDED SEGMENT DESIGNATIONS TO DIGIT FIGURE.	AVB	AVB
1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	

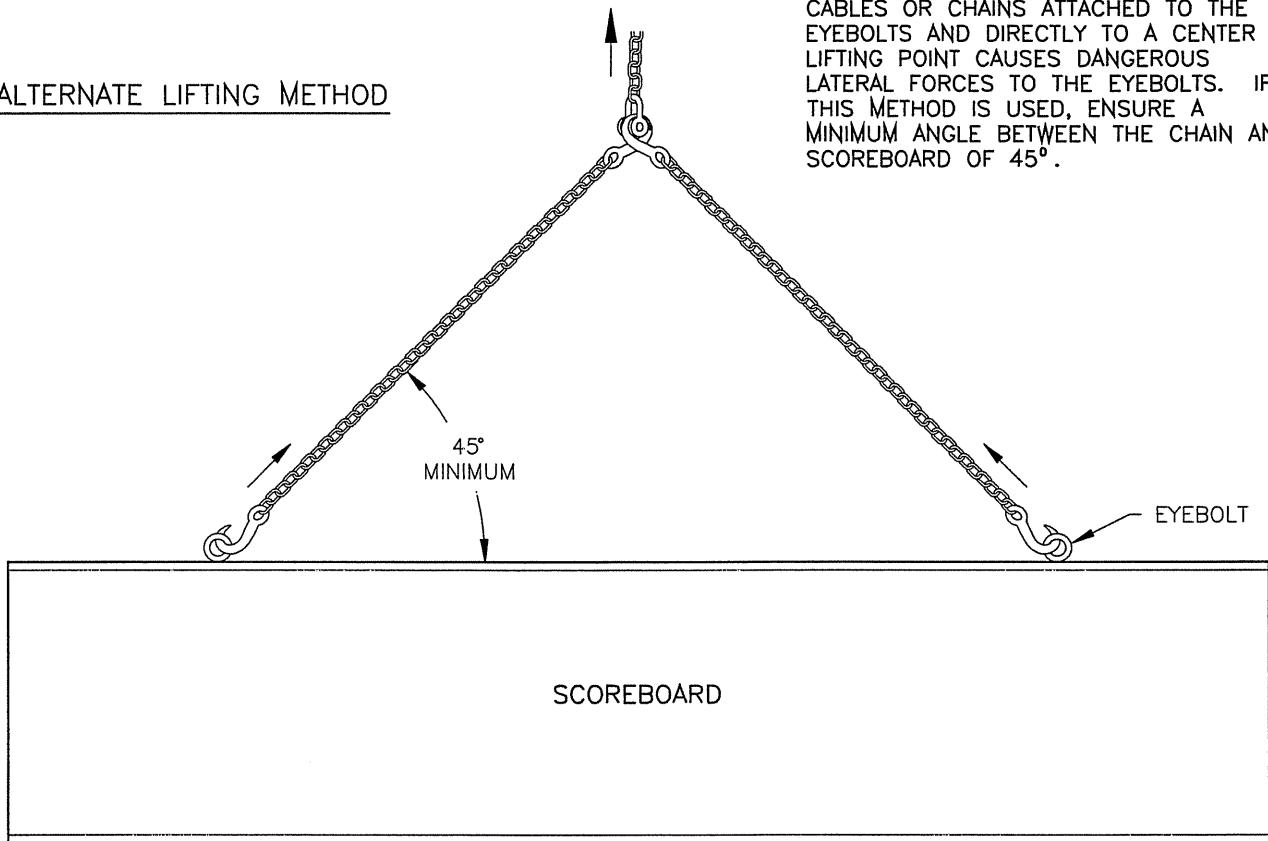
PROJ: BASKETBALL	
TITLE: SEGMENTATION, 7 SEGMENT BAR DIGIT	
DES. BY:	DRAWN BY: HEIDERSCHIEDT DATE: 5 JUN 89
REVISION	APPR. BY: AVB
02	SCALE: 1=4
1009-R04A-38532	



PREFERRED LIFTING METHOD

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

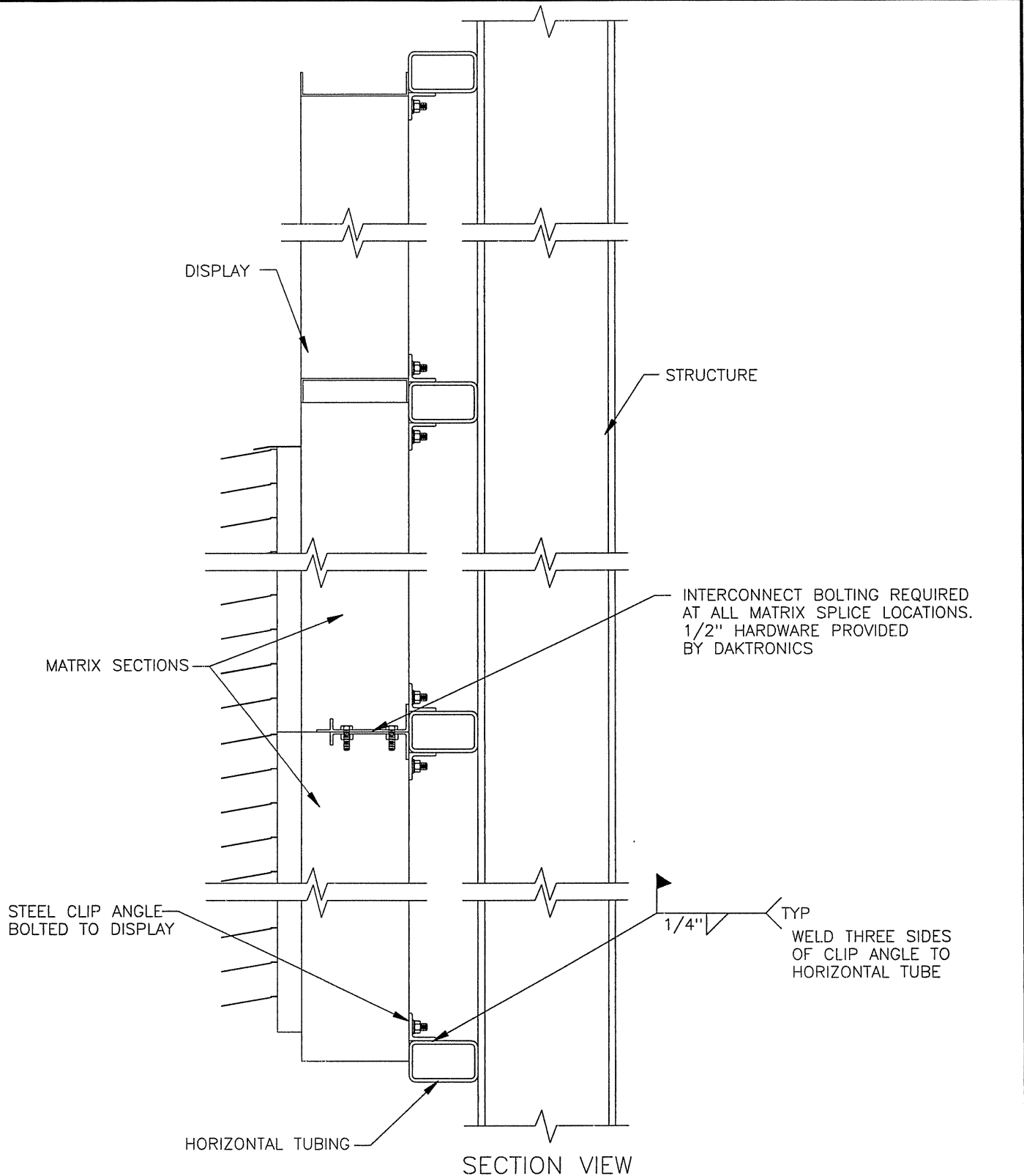
ALTERNATE LIFTING METHOD



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°.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR SCOREBOARDS			
TITLE: LIFTING SCOREBOARD			
DES. BY:		DRAWN BY: AVB	
		DATE: 12SEP90	
REVISION	APPR. BY:	1091-R10A-44548	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.
1	17 MAY 01	ADDED MINIMUM ANGLE TO ALTERNATE LIFTING METHOD; CHANGED CORRECT TO PREFERRED METHOD AND WRONG TO ALTERNATE METHOD	TWEBER	



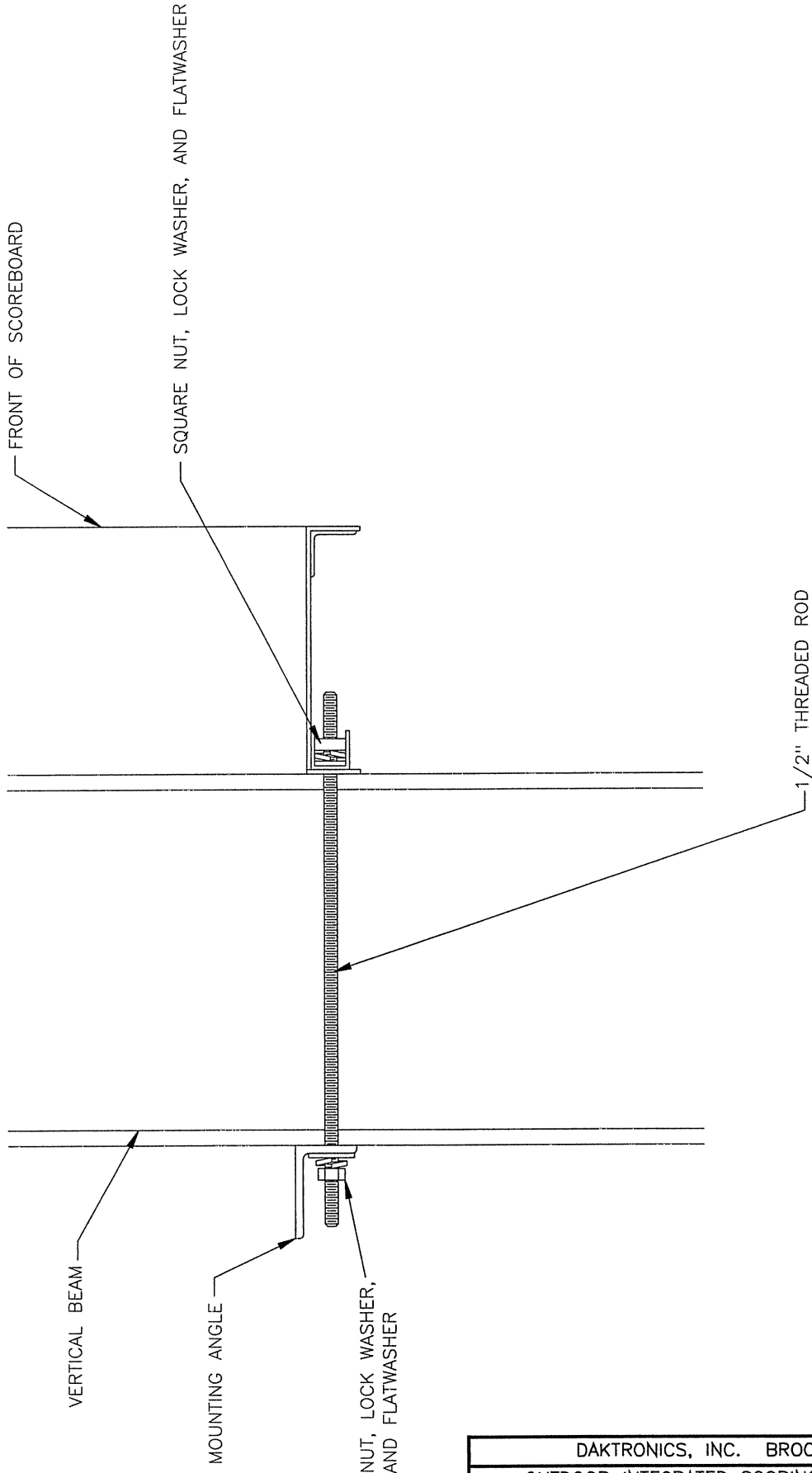
SECTION VIEW

MOUNTING INSTRUCTIONS:

1. LIFT DISPLAY SECTION INTO POSITION.
2. ADJUST CLIP ANGLES AS NEEDED, SO THEY ARE FIRMLY AGAINST HORIZONTAL TUBE.
3. BOLT ANY MATRIX SPLICES.
4. WELD THE THREE SIDES OF EACH CLIP ANGLE THAT ARE IN CONTACT WITH THE HORIZONTAL TUBE.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR SCOREBOARDS			
TITLE: STEEL CLIP ANGLE MOUNTING			
DES. BY: BPETER		DRAWN BY: BPETER	
		DATE: 30JAN97	
REVISION	APPR. BY:	1173-E07A-83301	
	SCALE: 1 = 10		

1	09OCT97	ADDED MATRIX SPLICE DETAIL ADDED NOTE 3	BDP		
REV.	DATE	DESCRIPTION	BY	APPR.	



DETAIL OF MOUNTING LOCATION

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR INTEGRATED SCORING SYSTEMS	
TITLE: POLE MTG DETAIL	
DES. BY: BVANDERTUIN	DRAWN BY: BVANDERTUIN DATE: 27DEC96
REVISION	APPR. BY:
SCALE: 1=5	1157-E10A-89234

1	7FEB97	CHANGED TO USE SQUARE NUTS IN SCOREBOARD CHANNEL.	BJV	
REV.	DATE	DESCRIPTION	BY	APPR.

KEY: 0 = WIRE NOT CONNECTED 1 = WIRE IS CONNECTED

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
1	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	0	1
4	0	0	0	0	0	0	1	0
5	0	0	0	0	0	0	1	0
6	0	0	0	0	0	0	1	1
7	0	0	0	0	0	0	1	1
8	0	0	0	0	0	0	1	1
9	0	0	0	0	0	0	1	1
10	0	0	0	0	0	0	1	1
11	0	0	0	0	0	0	1	1
12	0	0	0	0	0	0	1	1
13	0	0	0	0	0	0	1	1
14	0	0	0	0	0	0	1	1
15	0	0	0	0	0	0	1	1
16	0	0	0	0	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
33	0	0	1	0	0	0	0	1
34	0	0	1	0	0	0	0	1
35	0	0	1	0	0	0	0	1
36	0	0	1	0	0	0	1	0
37	0	0	1	0	0	0	1	0
38	0	0	1	0	0	0	1	0
39	0	0	1	0	0	0	1	1
40	0	0	1	0	0	0	0	0
41	0	0	1	0	0	0	0	0
42	0	0	1	0	0	0	0	0
43	0	0	1	0	0	0	0	0
44	0	0	1	0	0	0	0	0
45	0	0	1	0	0	0	0	0
46	0	0	1	0	0	0	0	0
47	0	0	1	0	0	0	0	0
48	0	0	1	0	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
65	0	1	0	0	0	0	0	1
66	0	1	0	0	0	0	0	1
67	0	1	0	0	0	0	0	1
68	0	1	0	0	0	0	0	1
69	0	1	0	0	0	0	0	1
70	0	1	0	0	0	0	0	1
71	0	1	0	0	0	0	0	1
72	0	1	0	0	0	0	0	1
73	0	1	0	0	0	0	0	1
74	0	1	0	0	0	0	0	1
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76	0	1	0	0	0	0	0	1
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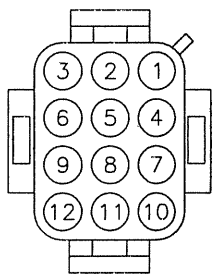
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101	0	1	1	0	0	0	0	1
102	0	1	1	0	0	0	0	1
103	0	1	1	0	0	0	0	1
104	0	1	1	0	0	0	0	1
105	0	1	1	0	0	0	0	1
106	0	1	1	0	0	0	0	1
107	0	1	1	0	0	0	0	1
108	0	1	1	0	0	0	0	1
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110	0	1	1	0	0	0	0	1
111	0	1	1	0	0	0	0	1
112	0	1	1	0	0	0	0	1

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
17	0	0	0	0	0	0	0	1
18	0	0	0	0	0	0	0	1
19	0	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	1
21	0	0	0	0	0	0	0	1
22	0	0	0	0	0	0	0	1
23	0	0	0	0	0	0	0	1
24	0	0	0	0	0	0	0	1
25	0	0	0	0	0	0	0	1
26	0	0	0	0	0	0	0	1
27	0	0	0	0	0	0	0	1
28	0	0	0	0	0	0	0	1
29	0	0	0	0	0	0	0	1
30	0	0	0	0	0	0	0	1
31	0	0	0	0	0	0	0	1
32	0	0	0	0	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
49	0	0	1	1	0	0	0	1
50	0	0	1	1	0	0	0	1
51	0	0	1	1	0	0	0	1
52	0	0	1	1	0	0	0	1
53	0	0	1	1	0	0	0	1
54	0	0	1	1	0	0	0	1
55	0	0	1	1	0	0	0	1
56	0	0	1	1	0	0	0	1
57	0	0	1	1	0	0	0	1
58	0	0	1	1	0	0	0	1
59	0	0	1	1	0	0	0	1
60	0	0	1	1	0	0	0	1
61	0	0	1	1	0	0	0	1
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63	0	0	1	1	0	0	0	1
64	0	1	0	0	0	0	0	0

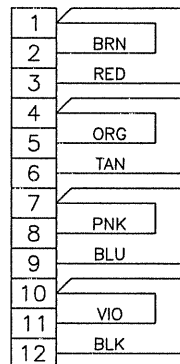
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83	0	1	0	1	0	0	0	1
84	0	1	0	1	0	0	0	1
85	0	1	0	1	0	0	0	1
86	0	1	0	1	0	0	0	1
87	0	1	0	1	0	0	0	1
88	0	1	0	1	0	0	0	1
89	0	1	0	1	0	0	0	1
90	0	1	0	1	0	0	0	1
91	0	1	0	1	0	0	0	1
92	0	1	0	1	0	0	0	1
93	0	1	0	1	0	0	0	1
94	0	1	0	1	0	0	0	1
95	0	1	0	1	0	0	0	1
96	0	1	0	1	0	0	0	1

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
113	0	1	1	1	0	0	0	1
114	0	1	1	1	0	0	0	1
115	0	1	1	1	0	0	0	1
116	0	1	1	1	0	0	0	1
117	0	1	1	1	0	0	0	1
118	0	1	1	1	0	0	0	1
119	0	1	1	1	0	0	0	1
120	0	1	1	1	0	0	0	1
121	0	1	1	1	0	0	0	1
122	0	1	1	1	0	0	0	1
123	0	1	1	1	0	0	0	1
124	0	1	1	1	0	0	0	1
125	0	1	1	1	0	0	0	1
126	0	1	1	1	0	0	0	1
127	0	1	1	1	0	0	0	1
128	1	0	0	0	0	0	0	0



ADDRESS PLUG
WIRE SIDE

WIRING DIAGRAM
ADDRESS PLUG
WITH ALL WIRES
CONNECTED



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: ADDRESS TABLE, 1 THROUGH 128

DES. BY: AVB

DRAWN BY: A VANBEMMEL

DATE: 28 APR 99

REVISION

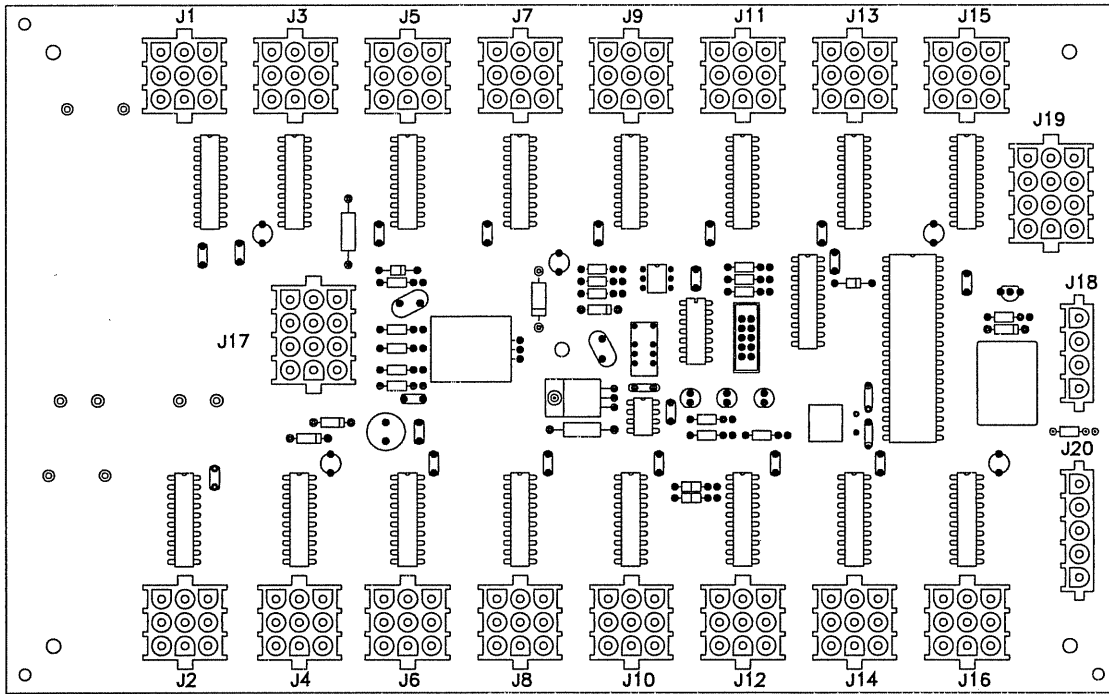
APPR. BY:

SCALE: NONE

1150-R04A-115078

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:

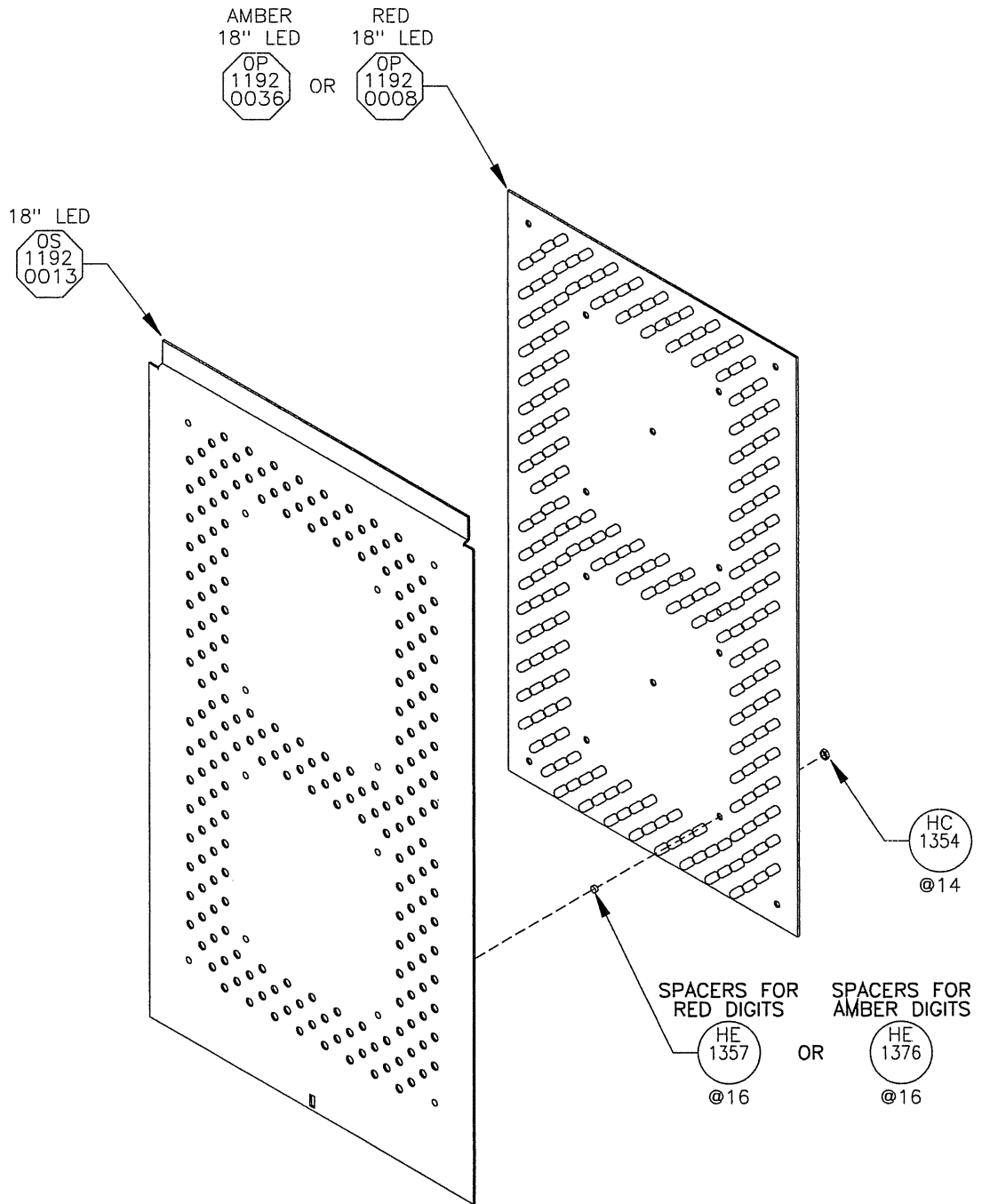
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SCALE:

NONE

1192-R07A-134371

REV.	DATE	DESCRIPTION	BY	APPR.

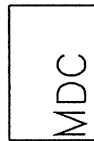
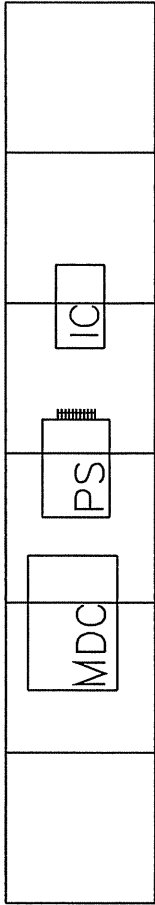
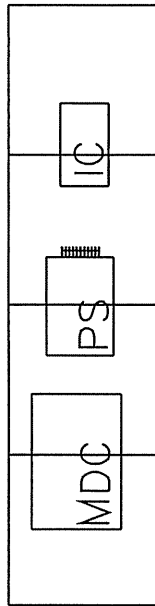


REV.	DATE	DESCRIPTION	BY	APPR.
03	28AUG02	ADDED HE-1376 REMOVED 24" LED DIGIT ASSY NUMBERS	MCOPL	
2	29JUN01	ADDED 18" AND 24" AMBER DIGIT PART NUMBERS	MCOPL	
1	BDEC00	UPDATED ATTACHING TO SHOW PEM STUD AND SPACER	GDB	

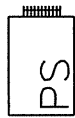
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED DIGIT SCOREBOARDS	
TITLE: DIGIT ASSEMBLY 18" RES/ORG-AMBER	
DES. BY: GBREEN	DATE: 24JUL00
DRAWN BY: GBREEN	
REVISION	APPR. BY:
	SCALE: 1=5
1192-E08A-135662	

832 LED TNMC

848 LED TNMC



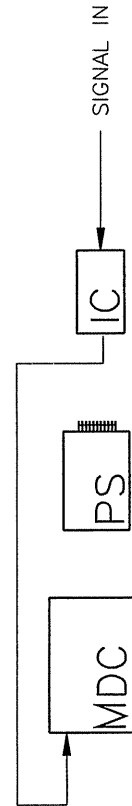
MDC CONTROLLER
OA-1146-0061
MOUNTED TO BACK



POWER SUPPLY
OA-1213-4013
MOUNTED TO BACK

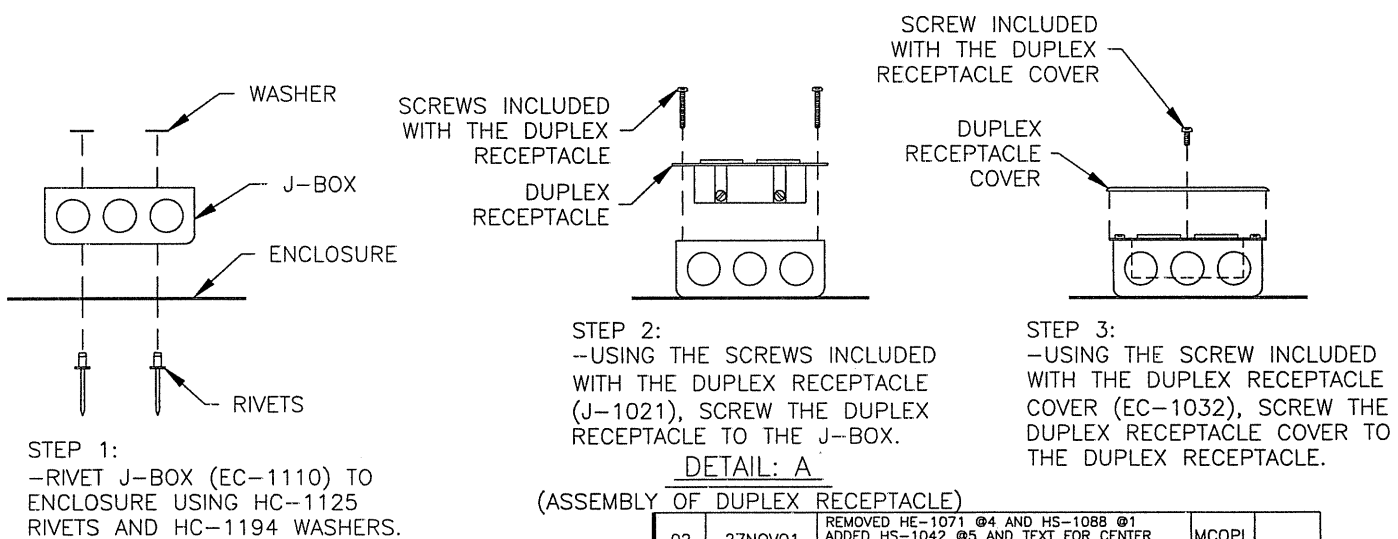
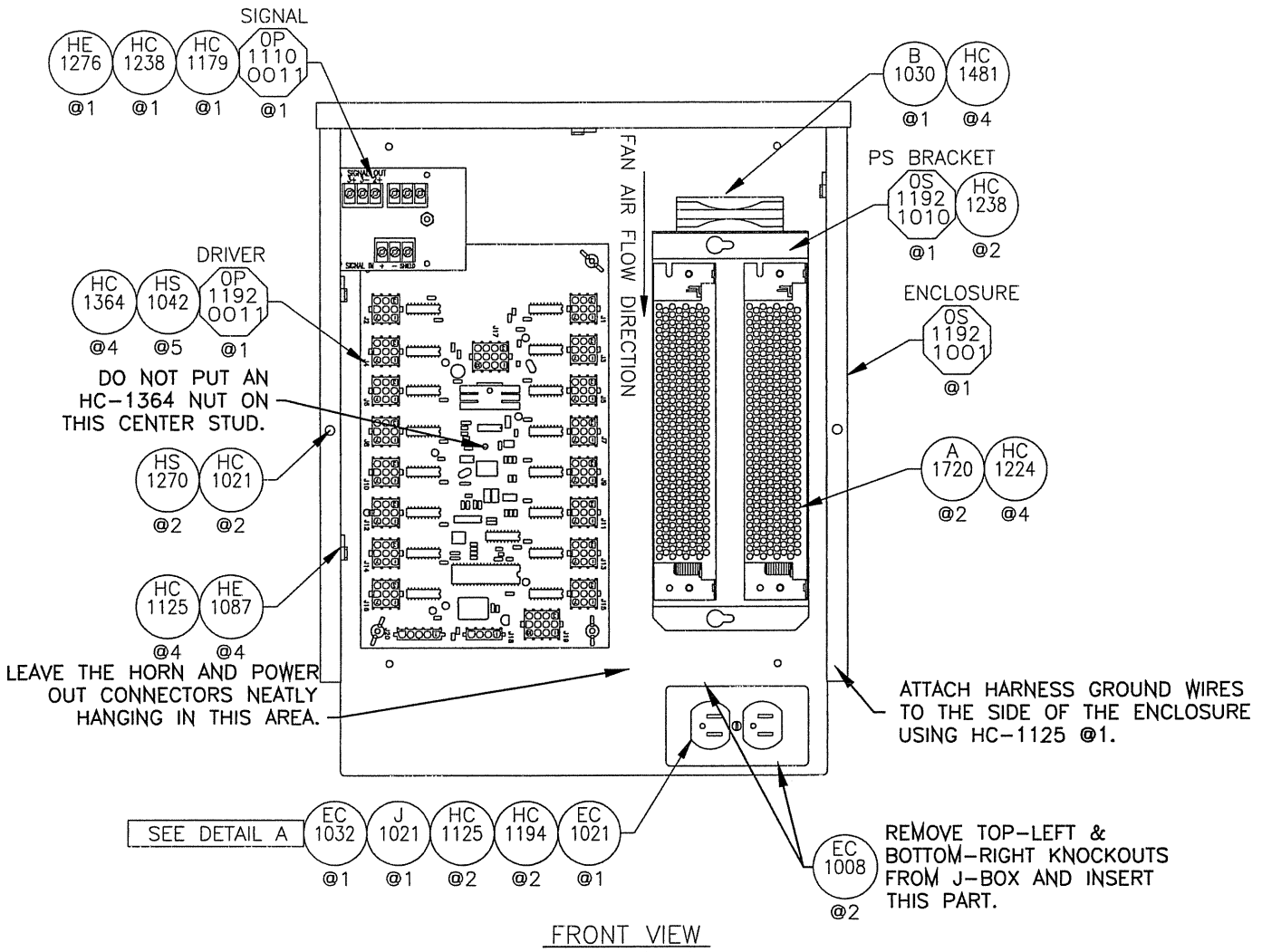


TNMC INTERFACE CARD
OP-1146-0020
MOUNTED TO BACK



03	22JAN02	CHANGED PART OP-1146-0016 TO OP-1146-0020	MCOPL	
02	28MAR01	REVISED SIGNAL IN DIAGRAM	MCOPL	
01	12MAR01	CHANGED DRV TO MDC	MCOPL	
REV.	DATE	DESCRIPTION	BY	APPR.

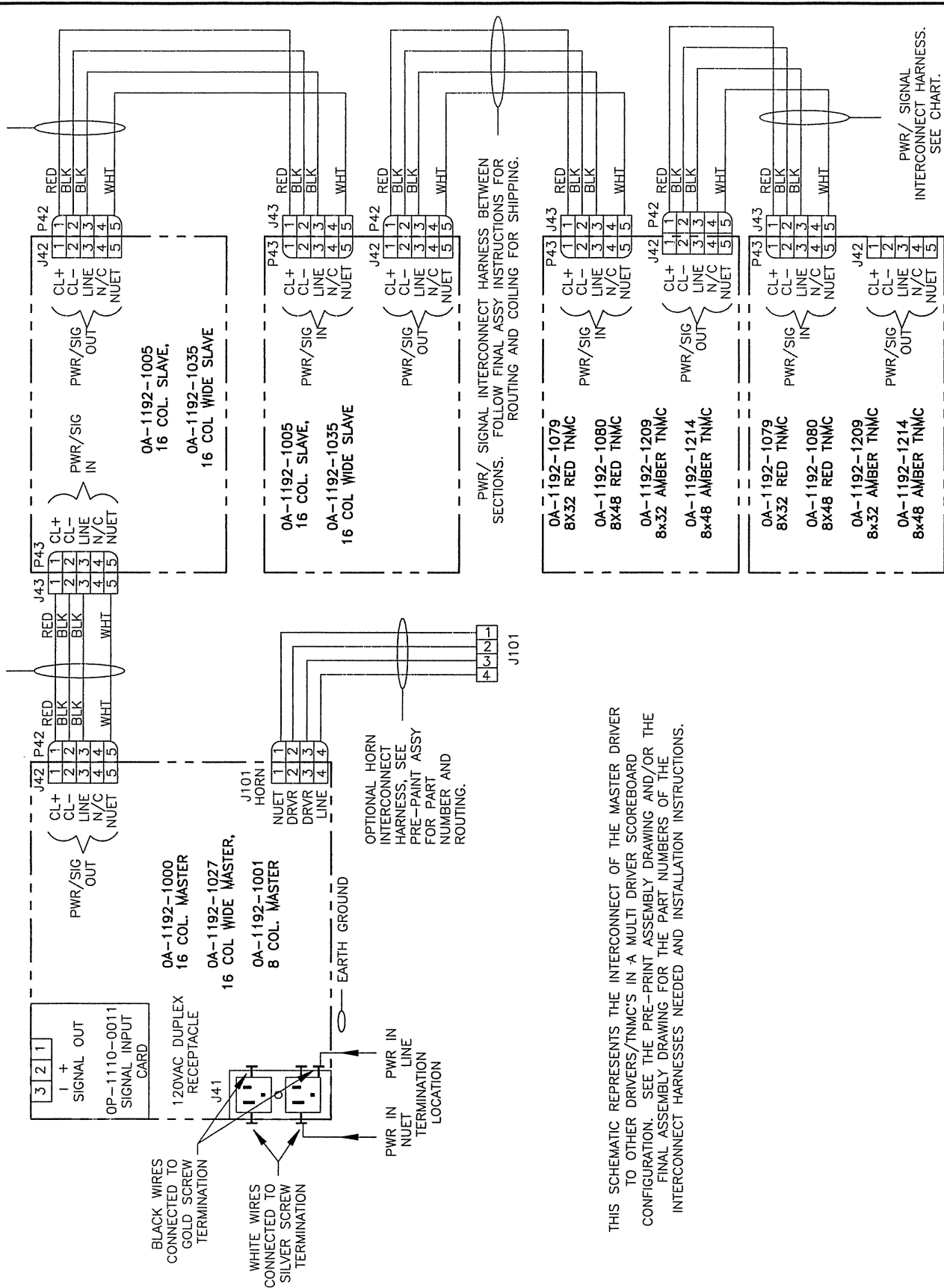
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LAYOUT; 832/848 LED TNMC			
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN	
		DATE: 22FEB01	
REVISION	APPR. BY:	1192-E07A-145045	
	SCALE: NONE		



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	
DAKTRONICS, INC. BROOKINGS, SD 57006				
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.
		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			

PWR/ SIGNAL INTERCONNECT HARNESS BETWEEN SECTIONS.
FOLLOW FINAL ASSY INSTRUCTIONS FOR ROUTING AND
COILING FOR SHIPPING.

PWR/ SIGNAL
INTERCONNECT HARNESS.
SEE CHART.

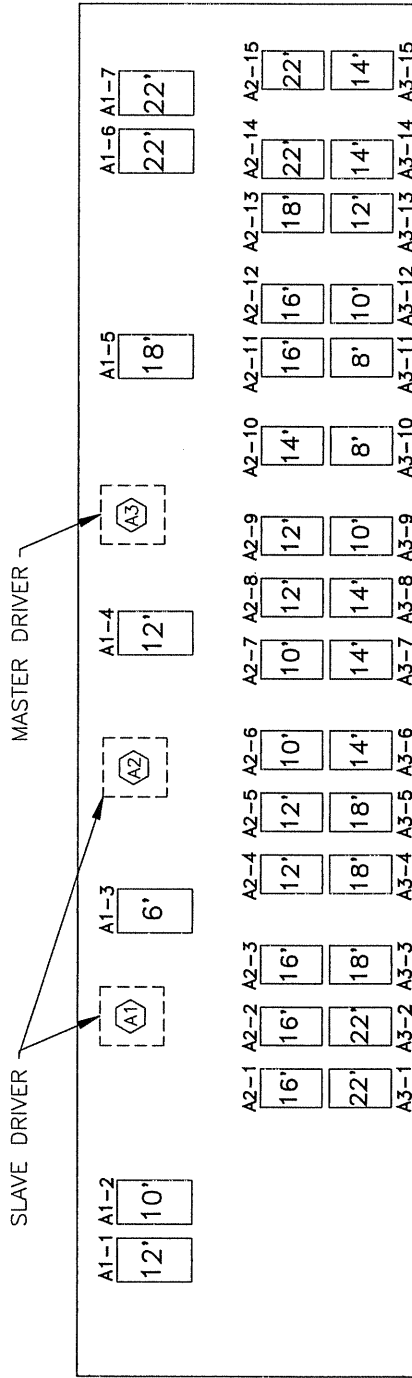


PWR/ SIGNAL INTERCONNECT HARNESS BETWEEN
SECTIONS. FOLLOW FINAL ASSY INSTRUCTIONS FOR
ROUTING AND COILING FOR SHIPPING.

THIS SCHEMATIC REPRESENTS THE INTERCONNECT OF THE MASTER DRIVER
TO OTHER DRIVERS/TNMC'S IN A MULTI DRIVER SCOREBOARD
CONFIGURATION. SEE THE PRE-PRINT ASSEMBLY DRAWING AND/OR THE
FINAL ASSEMBLY DRAWING FOR THE PART NUMBERS OF THE
INTERCONNECT HARNESSES NEEDED AND INSTALLATION INSTRUCTIONS.

REV.	DATE	DESCRIPTION	BY	APPR.
02	20 MAY 02	REPLACED OP-1033-0114 WITH OP-1110-0011 AND REMOVED J101 FOR HORN. ADDED AMBER TNMC.	THS	
01	23 JAN 02	ADDED WIRE COLORS, UPDATED WIRE CONNECTION.	MWM	

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED SCOREBOARDS	DESIGN: MMILLER
TITLE: SCHEMATIC; GEN II OD LED, 3 DRVR, MULTI SECT & TNMC	DATE: 29 OCT 01
REVISION	APPR. BY:
SCALE: 1 = 1	1192-R10A-158084



DIGIT HARNESS

- (6') = 0A-1171-4004 @1
- (8') = 0A-1171-4005 @2
- (10') = 0A-1171-4012 @5
- (12') = 0A-1171-4013 @7
- (14') = 0A-1171-4015 @6
- (16') = 0A-1171-4016 @5
- (18') = 0A-1171-4017 @5
- (22') = 0A-1171-4019 @6

DRIVER INTERCONNECT HARNESS

DRIVER A3 -- 0A-1192-1031 = 12' DRV PWR/SIGN INTCT HARNESS -- DRIVER A2
 DRIVER A2 -- 0A-1192-1031 = 12' DRV PWR/SIGN INTCT HARNESS -- DRIVER A1

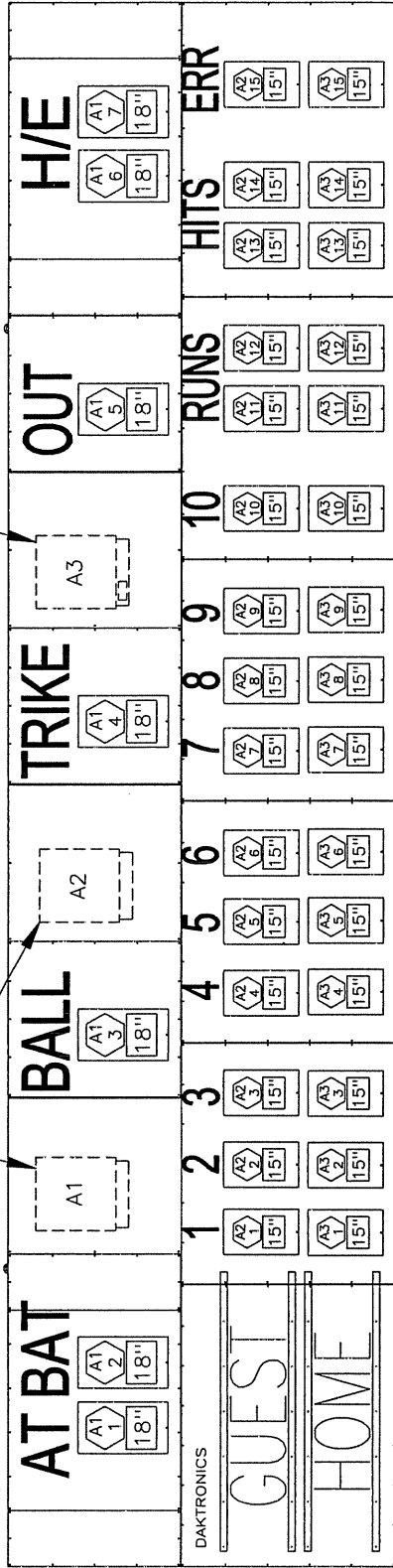
REV.	DATE	DESCRIPTION	BY	APPR.
03	31DEC02	MADE DRAWING UNIVERSAL FOR GEN 2 AND 3	MCOPL	
02	08APR02	CHANGED HARNESS LENGTHS PER ECO 032513	MCOPL	
01	22FEB02	ADDED DRV INTERCONNECT HARNESS NUMBERS	MCOPL	

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED SCOREBOARDS	
TITLE: DIGIT DESIGNATION; BA-2001-11	
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN
DATE: 06NOV01	
REVISION	APPR. BY:
	SCALE: 1=50
1192-E10A-158421	

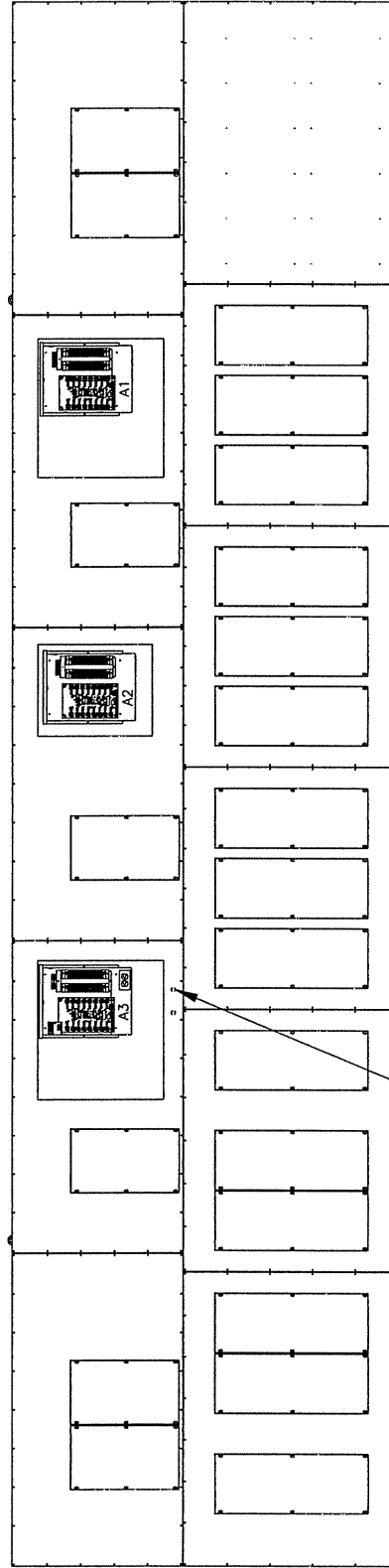
BA-2001-11

ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

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



FRONT VIEW



REAR VIEW

REAR ACCESS COVERS REMOVED TO SHOW THE LED DRIVER AND THE POWER/SIGNAL ENCLOSURE.

⊠₁ = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

18" = DIGIT SIZE

KNOCKOUTS FOR 1/2" CONDUIT

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; BA-2001-11

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

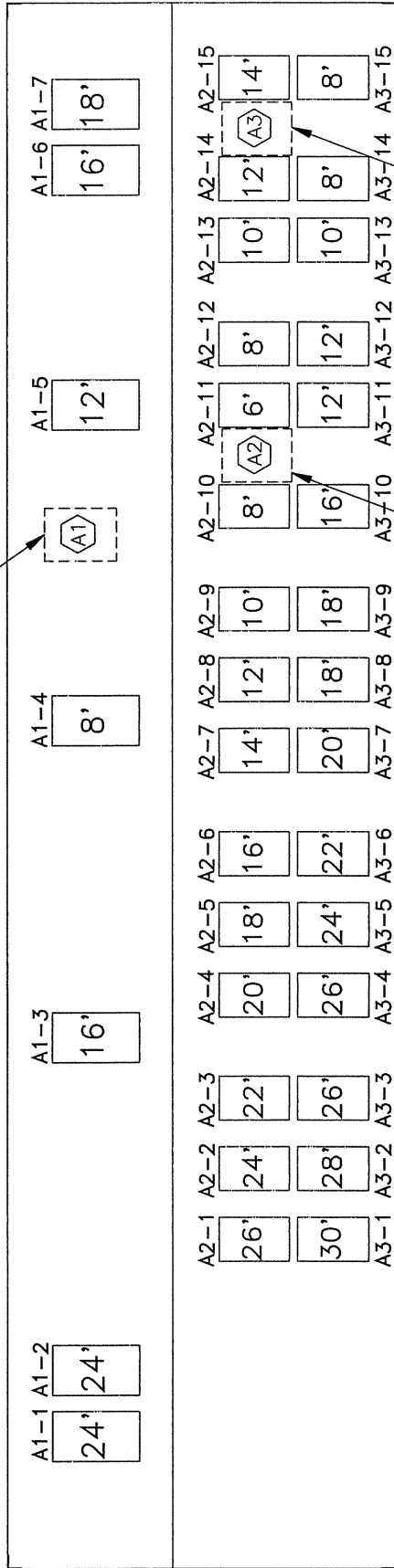
DATE: 06NOV01

REV.	DATE	DESCRIPTION	BY	APPR.
01	21FEB02	ADDED KNOCKOUTS TO REAR VIEW	MCOPL	

REVISION	APPR. BY:
	SCALE: 1=40

1192-E07A-158484

MASTER DRIVER @1



SLAVE DRIVER @2

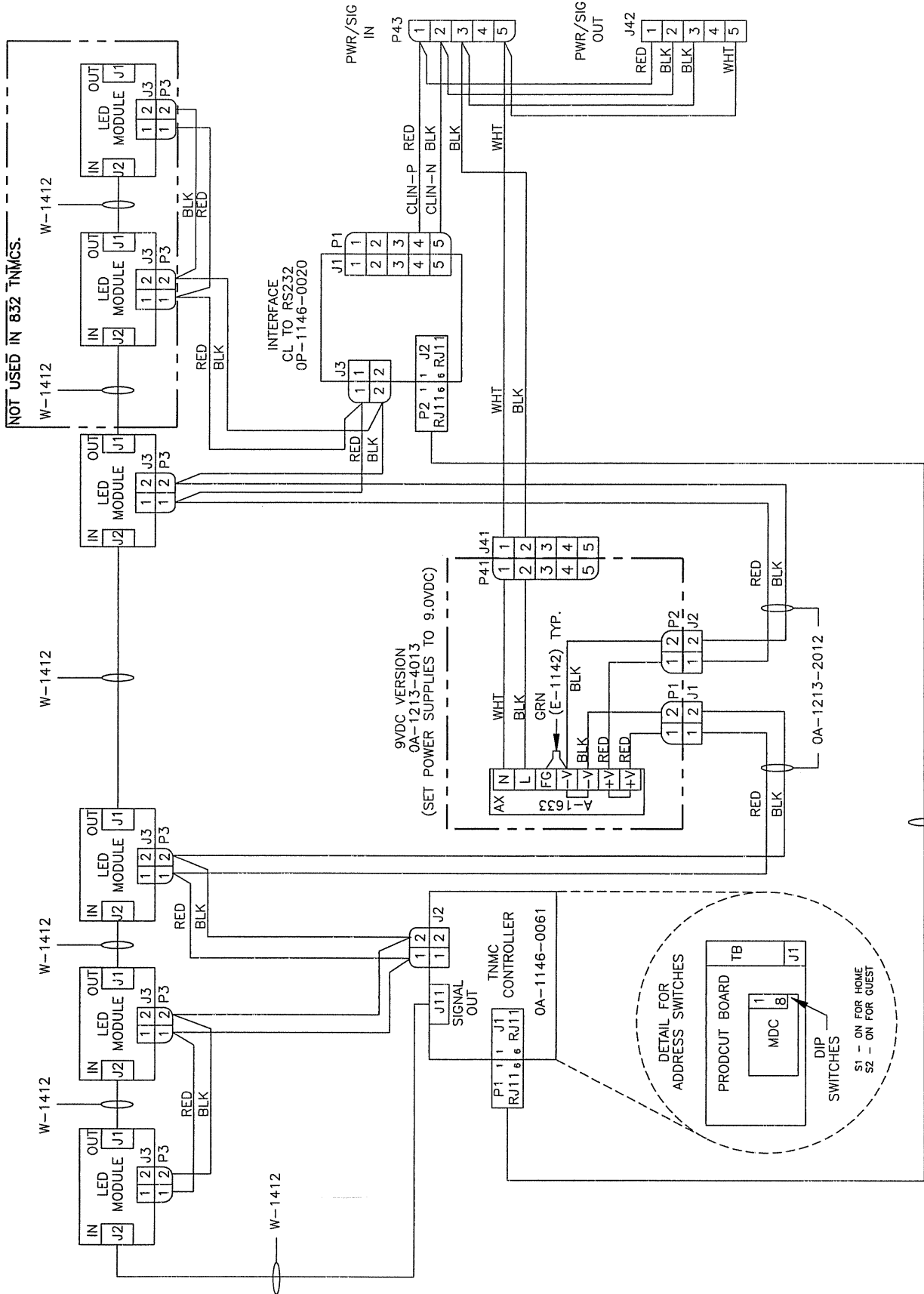
DIGIT HARNESS

- (6') = 0A-1171-4004 @1
- (8') = 0A-1171-4005 @5
- (10') = 0A-1171-4012 @3
- (12') = 0A-1171-4013 @5
- (14') = 0A-1171-4015 @2
- (16') = 0A-1171-4016 @4
- (18') = 0A-1171-4017 @4
- (20') = 0A-1171-4018 @2
- (22') = 0A-1171-4019 @2
- (24') = 0A-1171-4020 @4
- (26') = 0A-1171-4021 @3
- (28') = 0A-1171-4022 @1
- (30') = 0A-1171-4023 @1

03	02JAN03	MADE DRAWING UNIVERSAL FOR GEN 2 AND 3	MCOPL	
02	25FEB02	ADDED NOTE FOR DRIVER INTERCONNECT HARNESS	MCOPL	
01	27NOV01	MOVED MASTER DRIVER FROM A2 TO A1	MCOPL	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	OUTDOOR LED SCOREBOARDS
TITLE:	DIGIT DESIGNATION; BA-2002-11
DES. BY:	MCOPLAN
DRAWN BY:	MCOPLAN
DATE:	11NOV01
REVISION	APPR. BY:
SCALE:	1=40
1192-E07A-158496	

OA-1192-1079 - 8X32 RED LED TNMC
 OA-1192-1080 - 8X48 RED LED TNMC

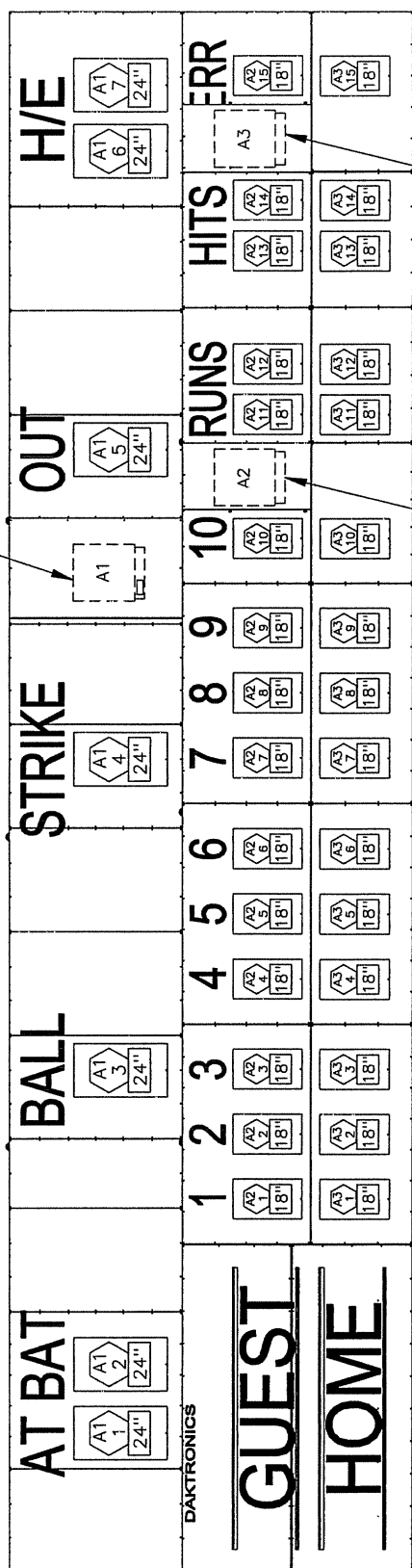


DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED DIGIT SCOREBOARDS			
TITLE: SHCEMATIC; LED TNMC, GEN II			
DES. BY: MILLER	DRAWN BY: MILLER		DATE: 07 NOV 01
REVISION	APPR. BY:	1192-R03A-158552	
	SCALE: 1=1		

REV.	DATE	DESCRIPTION	BY	APPR.
01	19 NOV 01	CHANGED PART NUMBER FOR RJ11 CABLE FROM J2 ON INTERFACE TO J1 ON TNMC CONTROLLER	MWM	

BA-2002-11

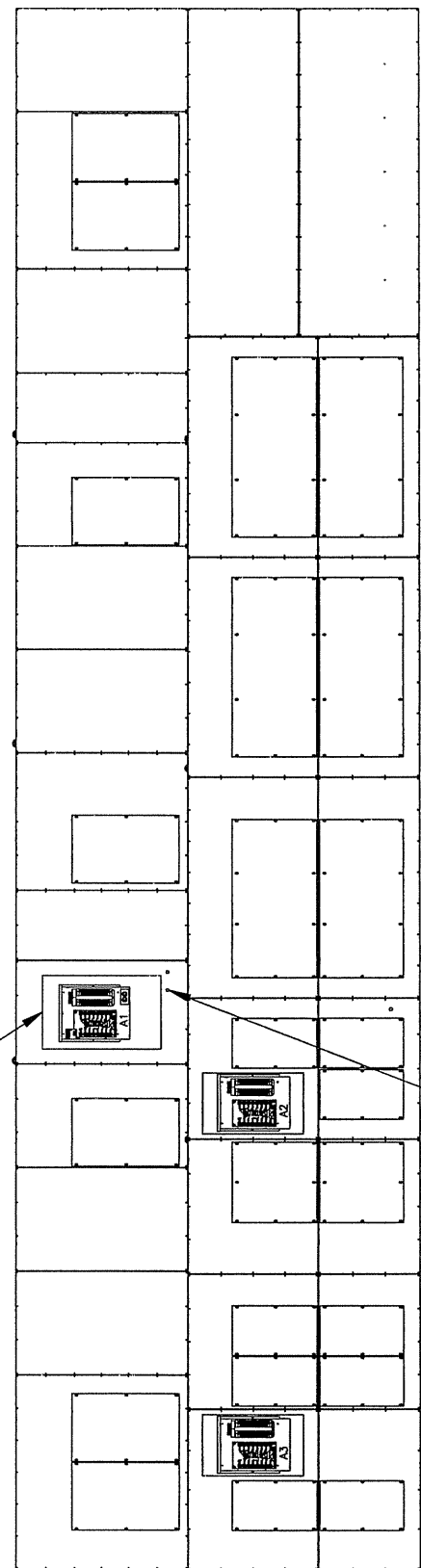
ENCLOSED 16 COLUMN MASTER LED DRIVER AND POWER/SIGNAL ENCLOSURE @1. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

FRONT VIEW

REMOVEABLE ACCESS PANELS HAVE BEEN REMOVED



HINGED ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND THE POWER/SIGNAL ENCLOSURE.

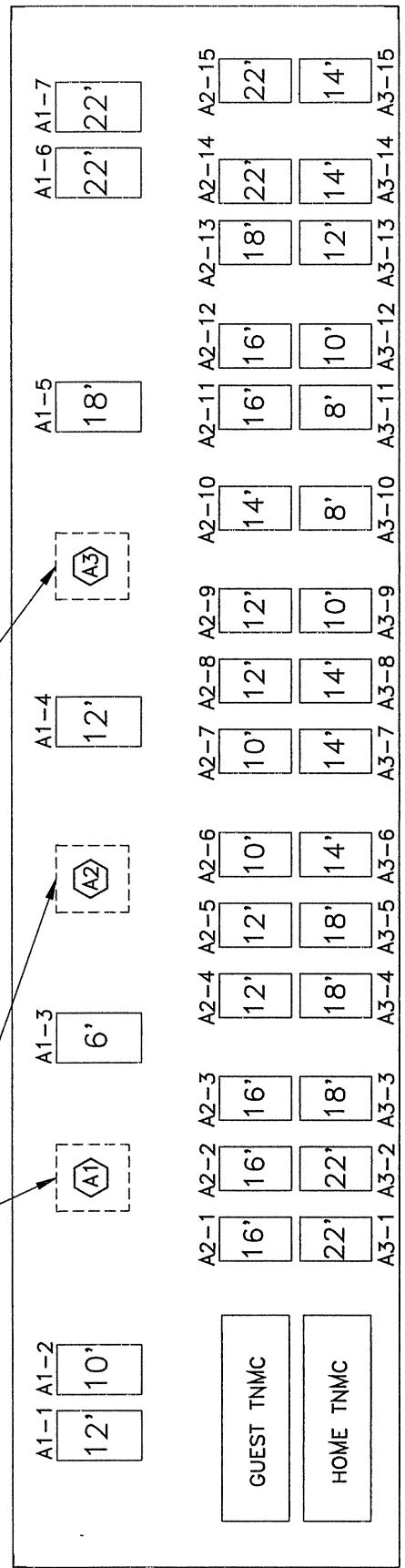
18" = DIGIT SIZE

A1 = LAMP DRIVER NUMBER & LAMP DRIVER CONNECTOR WIRED TO THAT DIGIT.

REV.	DATE	DESCRIPTION	BY	APPR.
02	25FEB02	ADDED KNOCKOUTS	MCOPL	
01	27NOV01	MOVED MASTER DRIVER FROM A2 TO A1	MCOPL	

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOCATIONS; BA-2002-11			
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN	DATE: 11NOV01	
REVISION	APPR. BY:	1192-E07A-158731	
	SCALE: 1=50		

SLAVE DRIVER @2 MASTER DRIVER @1



DIGIT HARNESS

- (6') = A-1171-4004 @1
- (8') = A-1171-4005 @2
- (10') = A-1171-4012 @5
- (12') = A-1171-4013 @7
- (14') = A-1171-4015 @6
- (16') = A-1171-4016 @5
- (18') = A-1171-4017 @5
- (22') = A-1171-4019 @6

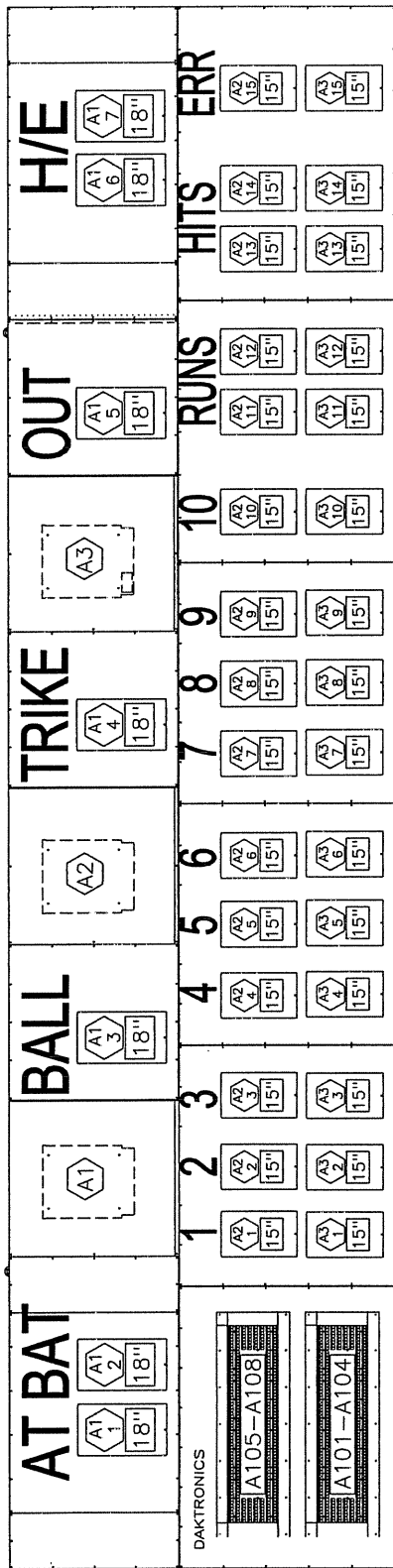
DRIVER & TNMC INTERCONNECT HARNESS

- DRIVER A3 -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- DRIVER A2
- DRIVER A2 -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- DRIVER A1
- DRIVER A1 -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- GUEST TNMC
- GUEST TNMC -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- HOME TNMC

REV.	DATE	DESCRIPTION	BY	APPR.
04	02JAN03	MADE DRAWING UNIVERSAL FOR GEN 2 AND 3	MCOP	
03	08APR02	CHANGED HARNESS LENGTHS PER ECO 032513	MCOP	
02	22FEB02	ADDED DRV/TNMC INTERCONNECT HARNESS	MCOP	

01	04JAN02	CHANGED VARIOUS HARNESS LENGTHS PER ECO 025086	MCOP	
DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: OUTDOOR LED SCOREBOARDS				
TITLE: DIGIT DESIGNATION; BA-2001-11 W/ LED TNMC				
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN		DATE: 03DECO1
REVISION	APPR. BY:	1192-E10A-159621		
	SCALE: 1=40			

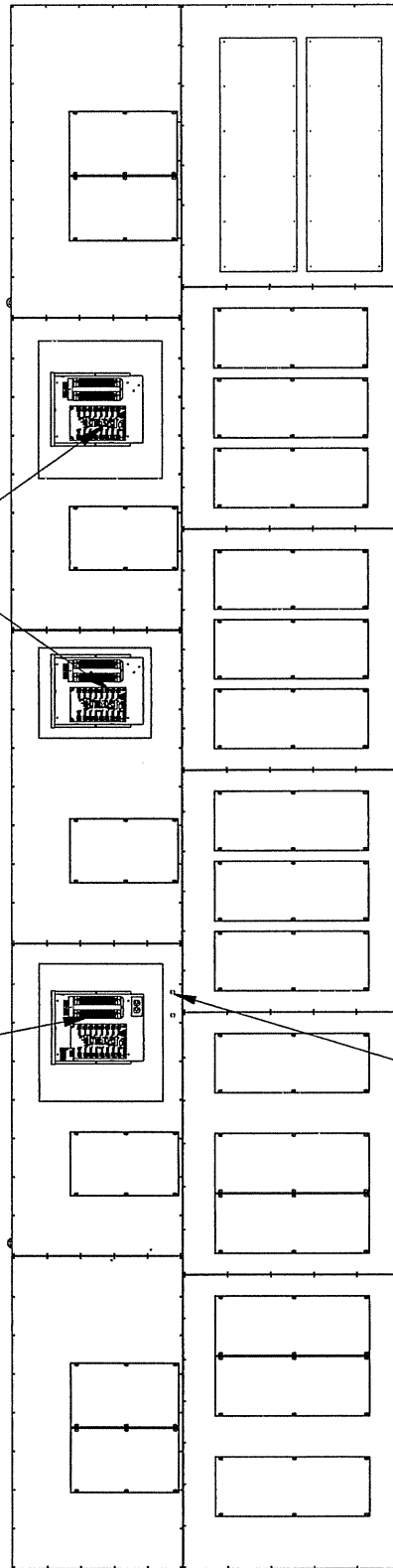
BA-2001-11 W/ 832-10 LED TNMC



FRONT VIEW

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

ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



REAR VIEW

KNOCKOUTS FOR 1/2" CONDUIT

REAR ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND POWER/SIGNAL ENCLOSURE.

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

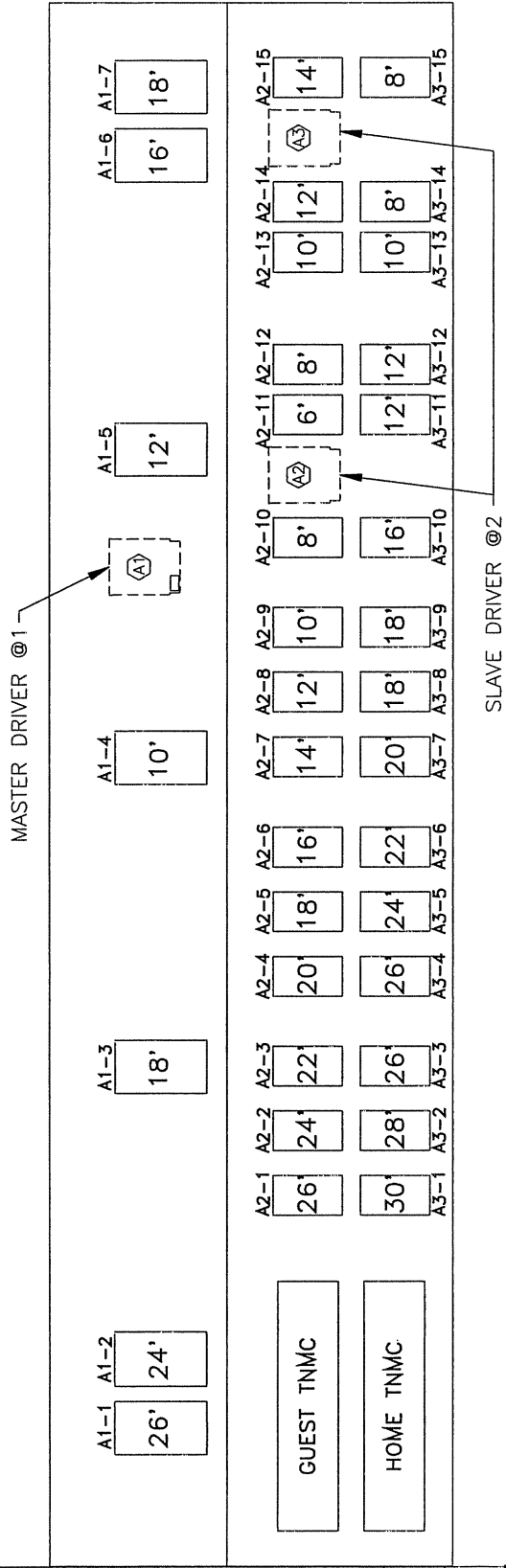
A1

= DIGIT SIZE

18"

01	21FEB02	ADDED KNOCKOUTS	MCOPL	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOCATIONS; BA-2001-11 W/ LED TNMC			
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN	
DATE: 03DECO1			
REVISION	APPR. BY:	1192-E07A-159624	
	SCALE:	1=40	



DIGIT HARNESS

- (6') = A-1171-4004 @1
- (8') = A-1171-4005 @4
- (10') = A-1171-4012 @4
- (12') = A-1171-4013 @5
- (14') = A-1171-4015 @2
- (16') = A-1171-4016 @3
- (18') = A-1171-4017 @5
- (20') = A-1171-4018 @2
- (22') = A-1171-4019 @2
- (24') = A-1171-4020 @3
- (26') = A-1171-4021 @4
- (28') = A-1171-4022 @1
- (30') = A-1171-4023 @1

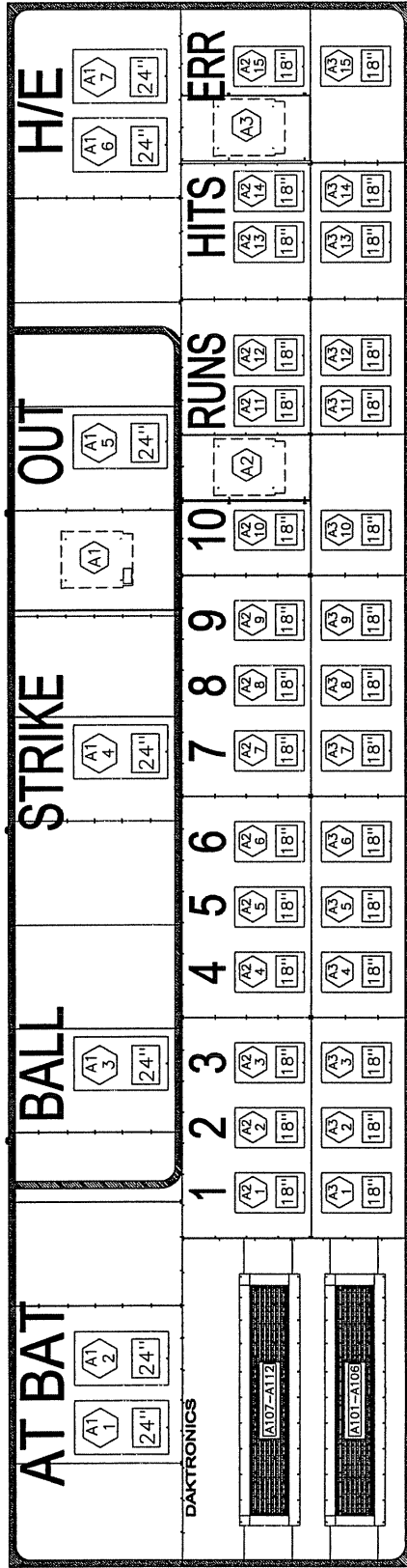
DRIVER/TNMC INTERCONNECT HARNESS

SEE ROUTING IN ASSEMBLY PACKET.

03	08JUN04	CHANGED NUMBER OF 8', 10', 16', 18', 24', 26'. PER ECO# 39363	JML	
02	05DEC02	MADE DRAWING COMPATIBLE WITH GEN III	MCOPL	
01	25FEB02	ADDED NOTE FOR DRV/TNMC INTERCONNECT HARN	MCOPL	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: DIGIT DESIGNATION; BA-2002-11/-21 W/ LED TNMC			
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN	DATE: 04DEC01	
REVISION	APPR. BY:	1192-E10A-159666	
03	SCALE: 1=50		

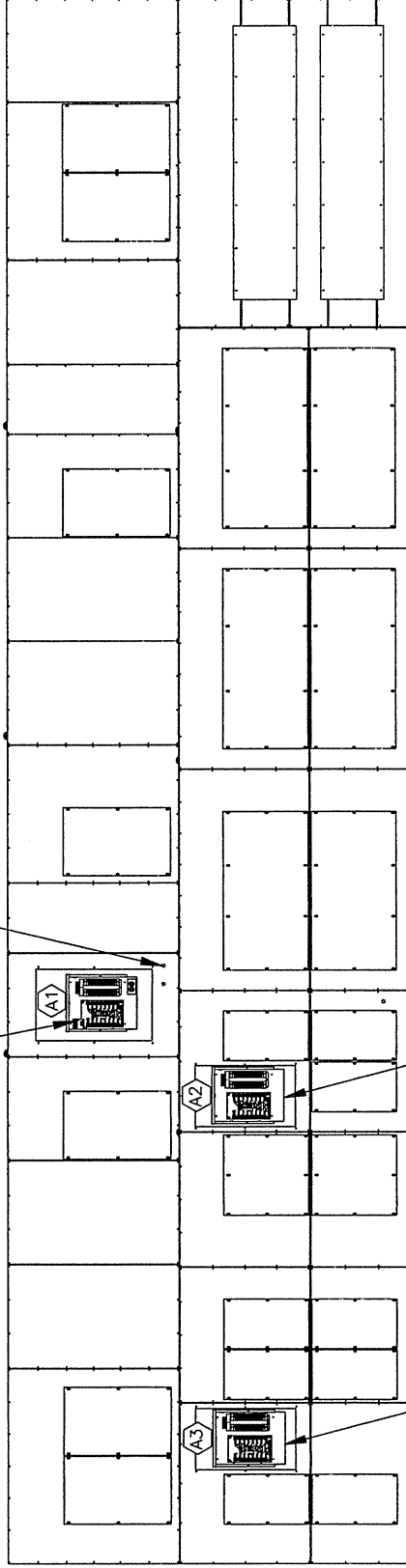
BA-2002-11 W/ 848-10 LED TNMC



FRONT VIEW

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

KNOCKOUTS FOR 1/2" CONDUIT



ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).

REAR VIEW

A1 = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.
 18" = DIGIT SIZE

REAR ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND POWER/SIGNAL ENCLOSURE.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; BA-2002-11 W/ LED TNMC

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 04DEC01

REVISION

APPR. BY:

SCALE: 1=50

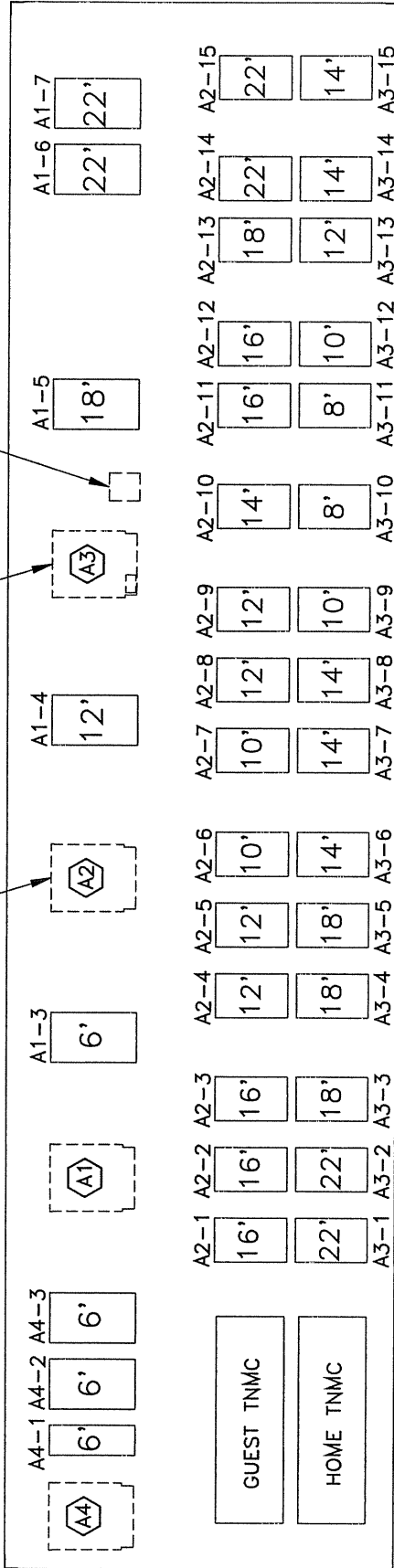
1192-E07A-159680

REV.	DATE	DESCRIPTION	BY	APPR.
01	25FEB02	ADDED KNOCKOUTS	MCOPL	

SPEED OF PITCH
ENTRANCE ENCLOSURE
OA-1157-1535 @1

MASTER DRIVER
OA-1192-1000 @1

SLAVE DRIVER
OA-1192-1005 @3



DIGIT HARNESS

- (6') = A-1171-4004 @4
- (8') = A-1171-4005 @2
- (10') = A-1171-4012 @4
- (12') = A-1171-4013 @6
- (14') = A-1171-4015 @6
- (16') = A-1171-4016 @5
- (18') = A-1171-4017 @5
- (22') = A-1171-4019 @6

DRIVER & TNMC INTERCONNECT HARNESS

- DRIVER A3 -- OA-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- DRIVER A2
- DRIVER A2 -- OA-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- DRIVER A1
- DRIVER A1 -- OA-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- GUEST TNMC
- GUEST TNMC -- OA-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- HOME TNMC
- DRIVER A4 -- OA-1192-1110 = 36' PWR/SIG INTCT HARNESS -- SOP SIG/DRIVER A3

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: DIGIT DESIGNATION, BA-2008-11 W/TNMC

DES. BY: KBRICKER

DRAWN BY: KBRICKER

DATE: 25APR02

REVISION

APPR. BY:

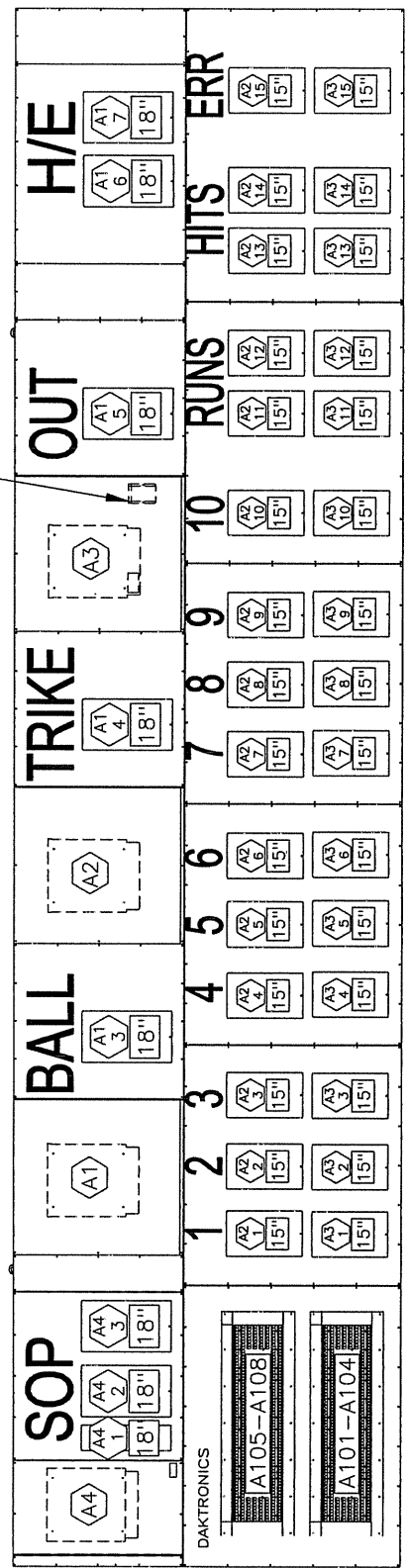
SCALE: 1=40

1192-R04A-166064

REV.	DATE	DESCRIPTION	BY	APPR.

BA-2008-11 W/ 832-10 LED TNMC

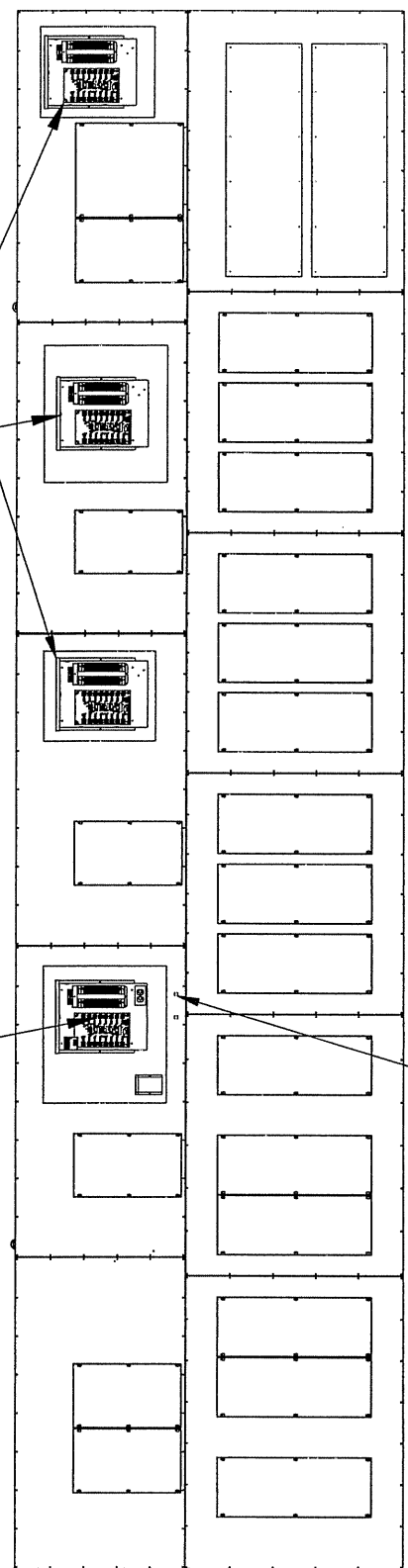
SIGNAL ENTRANCE FOR DRIVER A4



FRONT VIEW

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

ENCLOSED 16 COLUMN SLAVE LED DRIVER AND POWER/SIGNAL ENCLOSURE @3. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



REAR VIEW

REAR ACCESS DOORS REMOVED TO SHOW THE LED DRIVER AND POWER/SIGNAL ENCLOSURE.

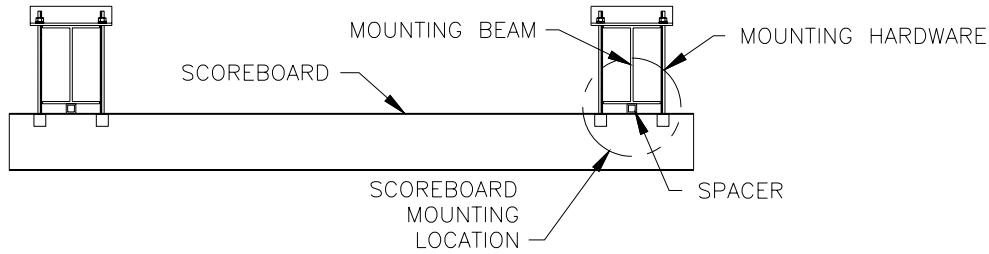
18" = LED DRIVER NUMBER & LED DRIVER CONNECTOR WIRED TO THAT DIGIT.

A1 1 = DIGIT SIZE

KNOCKOUTS FOR 1/2" CONDUIT

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOCATIONS, BA-2008-11 W/TNMC			
DES. BY: KBRICKER		DRAWN BY: KBRICKER	
DATE: 26APR02			
REVISION	APPR. BY:	1192-E10A-166154	
	SCALE: 1=40		

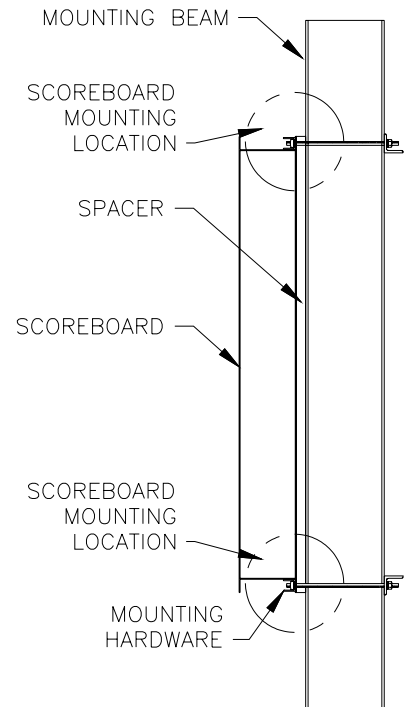
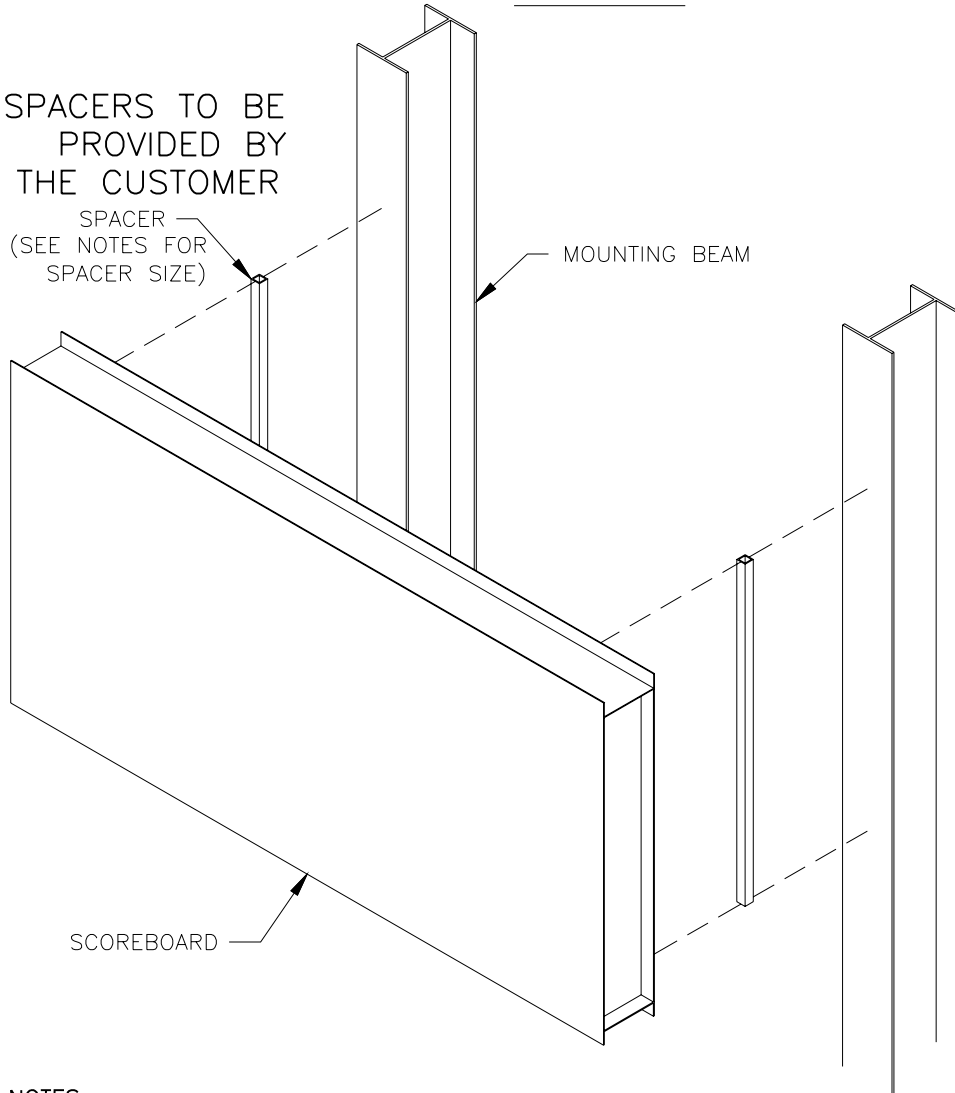
REV.	DATE	DESCRIPTION	BY	APPR.



TOP VIEW

SPACERS TO BE PROVIDED BY THE CUSTOMER

SPACER (SEE NOTES FOR SPACER SIZE)



SIDE VIEW

NOTES:

- SPACER SIZE CANNOT EXCEED THE HEIGHT OF THE SCOREBOARD BUT DOES NOT HAVE TO BE THE SAME HEIGHT AS THE SCOREBOARD. SMALLER LENGTHS OF SPACER MATERIAL MAY BE USED AS LONG AS THEY ARE USED AT THE TOP AND BOTTOM SCOREBOARD MOUNTING LOCATIONS. SPACERS SHOWN ABOVE ARE 1"x1". TYPICALLY, THE SPACER DEPTH WILL BE DETERMINED BY THE DIFFERENCE IN DEPTH OF THE SCOREBOARD AND THE AD PANEL (AD PANEL DEPTH - SCOREBOARD DEPTH = SPACER DEPTH).
- THE SPACERS ARE TO BE PROVIDED BY THE CUSTOMER.
- THE SPACERS ARE TO BE PLACED BETWEEN THE SCOREBOARD AND THE MOUNTING POLE.
- THE SPACERS DO NOT NEED TO BE MECHANICALLY ATTACHED TO THE SCOREBOARD OR THE MOUNTING BEAM. THEY WILL BE COMPRESSED BETWEEN THE SCOREBOARD AND THE MOUNTING BEAM WHEN THE SCOREBOARD IS MOUNTED.
- REFER TO THE SCOREBOARD MANUAL FOR THE SCOREBOARD MOUNTING HARDWARE AND OTHER SCOREBOARD MOUNTING DETAILS.

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 2003 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: SCOREBOARD MTG; SCOREBOARD WITH SPACERS

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 07FEB03

REVISION

APPR. BY:

SCALE: 1=20

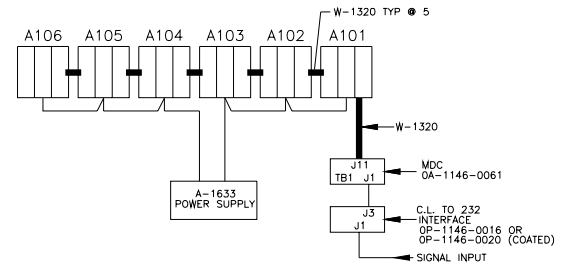
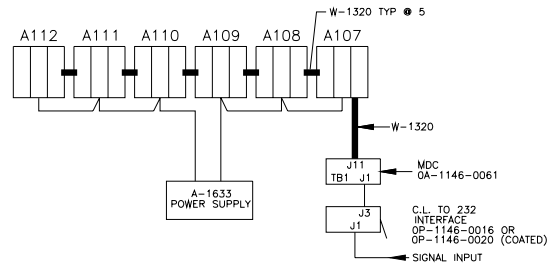
1192-R08A-182909

REV.	DATE	DESCRIPTION	BY	APPR.

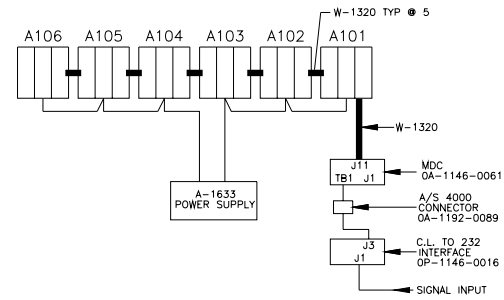
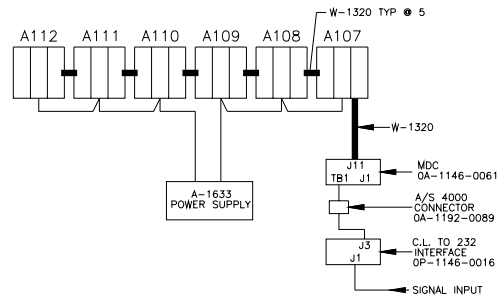
GUEST

HOME

AS-5000 MASTER-MASTER LAYOUT



AS-4000 MASTER-MASTER LAYOUT



NOTE:

USE THE FOLLOWING POWER SUPPLY ASSEMBLY
OA-1213-4013 8X32 OR 8X48 TNMC P/S ASSY

USE THE FOLLOWING POWER/SIGNAL HARNESS
OA-1192-0068 OUTDOOR LED TNMC POWER/SIGNAL HARNESS (1 PER TNMC)
OA-1192-0073 MULTI-SECTION OUTDOOR LED TNMC HARNESS (USE W/ -0068)

USE THE FOLLOWING ADAPTER FOR A/S 4000 APPLICATIONS
OA-1192-0089 A/S 4000 CONNECTOR KIT

FOR BOTH A/S 5000 AND 4000 APPLICATIONS THE FOLLOWING DIP SWITCHES MUST BE SET ON THE BACK OF THE MDC FOR HOME AND GUEST:
HOME; S1 = ON
GUEST; S2 = ON

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

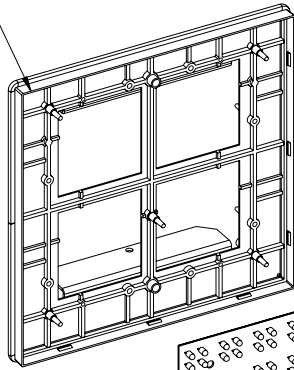
TITLE: CONTROL LAYOUT; OUTDOOR LED TNMC

DES. BY: CBRECZI DRAWN BY: CBRECZI DATE: 22 DEC 00

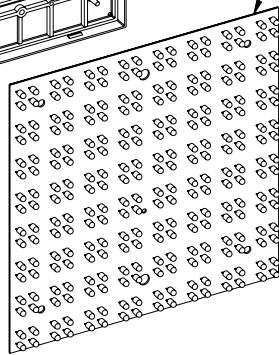
REVISION APPR. BY: SCALE: 1=1 1192-E10B-107507

REV.	DATE	DESCRIPTION	BY	APPR.
01	24 JUN 02	ADDED OP-1146-0020 TO CL TO RS232 INTERFACE PART.	MWM	

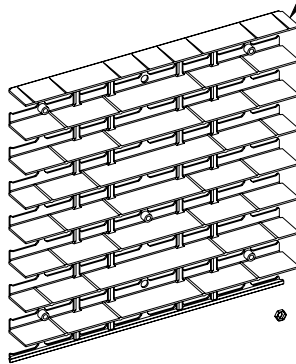
PLASTIC HOUSING WITH WEATHERSTRIPPING FOR WATERPROOFING



SINGLE LED AND DRIVER PANEL



LOUVER



LATCH ACCESS PLUG #2 FOR FRONT AND REAR MODULE ACCESS AND WATERPROOFING



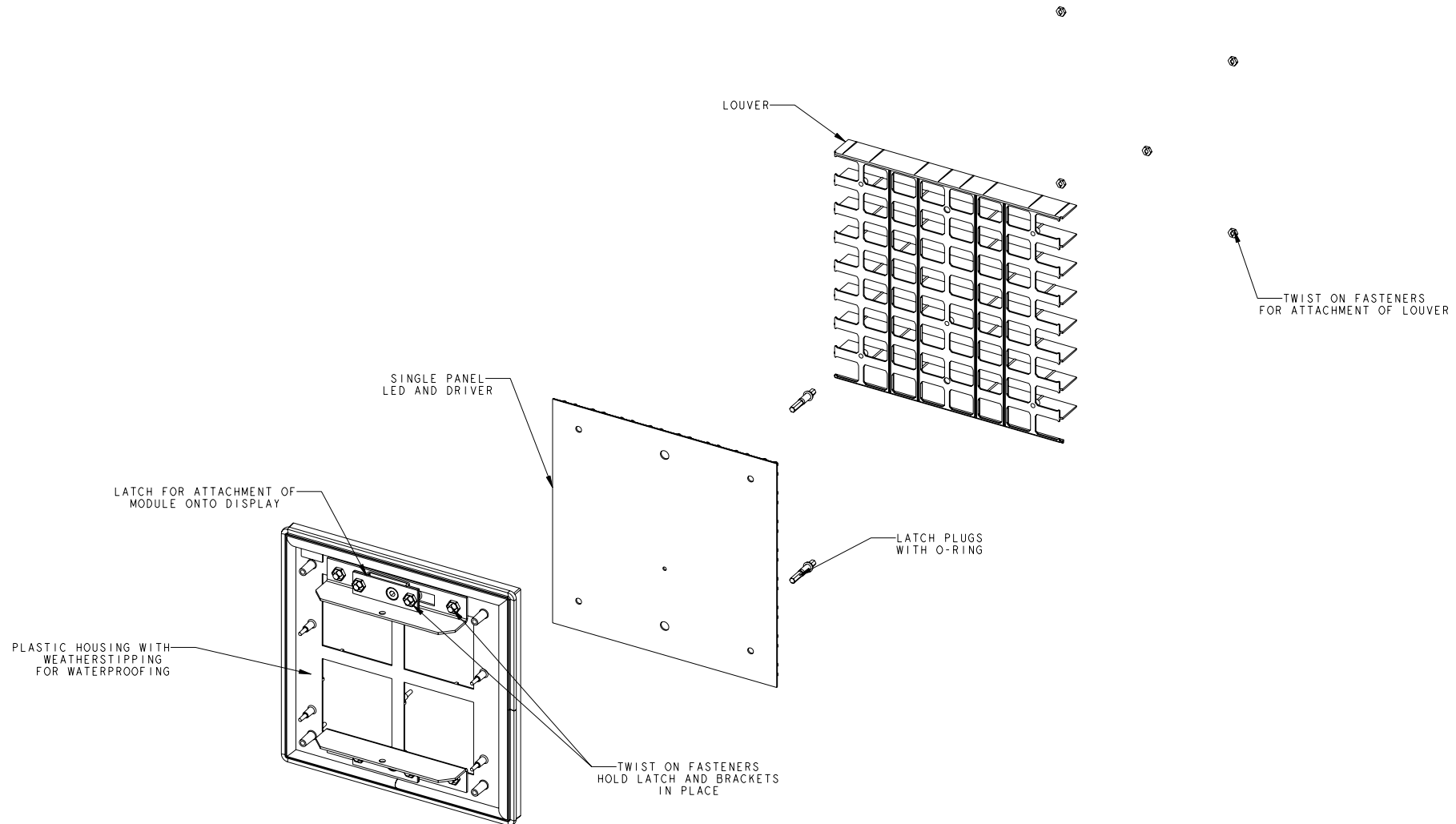
TWIST ON FASTENERS #5 FOR ATTACHMENT OF LOUVER



DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	34MM OUTDOOR GALAXY
TITLE:	EXPLODED FRONT VIEW; SINGLE PANEL MODULE
DES. BY:	NANDAL
DRAWN BY:	DNUGTEREN
DATE:	10JAN00
REVISION	SHEET 1 OF DWG 126111
SCALE:	1=2

REV.	DATE	DESCRIPTION	BY	APPR.

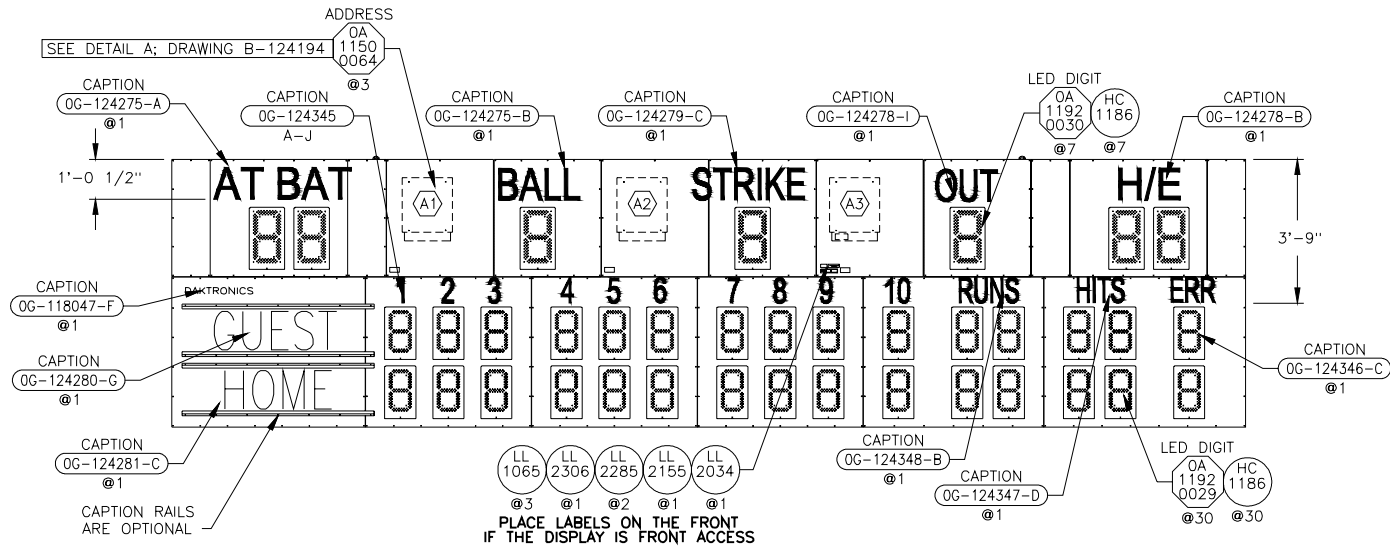
1208-E10B-126111



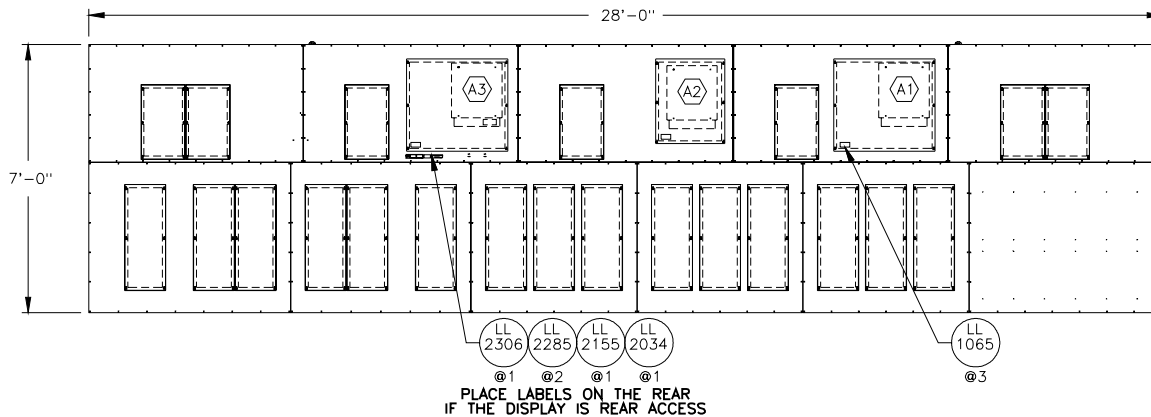
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	34MM OUTDOOR GALAXY
TITLE:	EXPLODED REAR VIEW; SINGLE PANEL MODULE
DES. BY:	NANDAL
DRAWN BY:	DNUGTEREN
DATE:	10JAN00
REVISION	SHEET 1 OF DWG 126112
SCALE:	1=2

REV.	DATE	DESCRIPTION	BY	APPR.

1208 - E10B - 126112



FRONT VIEW



REAR VIEW

ADDRESS SETTINGS:
DRIVER: A1
ADDRESS PLUG: 0A-1150-0064
ADDRESS: 67
NOTES: CUT ALL BUT THE VIOLET, RED, & BROWN WIRES.

ADDRESS SETTINGS:
DRIVER: A2
ADDRESS PLUG: 0A-1150-0064
ADDRESS: 68
NOTES: CUT ALL BUT THE VIOLET & ORANGE WIRES.

ADDRESS SETTINGS:
DRIVER: A3
ADDRESS PLUG: 0A-1150-0064
ADDRESS: 69
NOTES: CUT ALL BUT THE VIOLET, ORANGE, & BROWN WIRES.

BA-2001-11 W/ LED DIGITS
SPECIFICATIONS
MODEL: BA-2001-11
VOLTS: 120/240V AC
AMPS: 7.5
MAX WATTS: 900

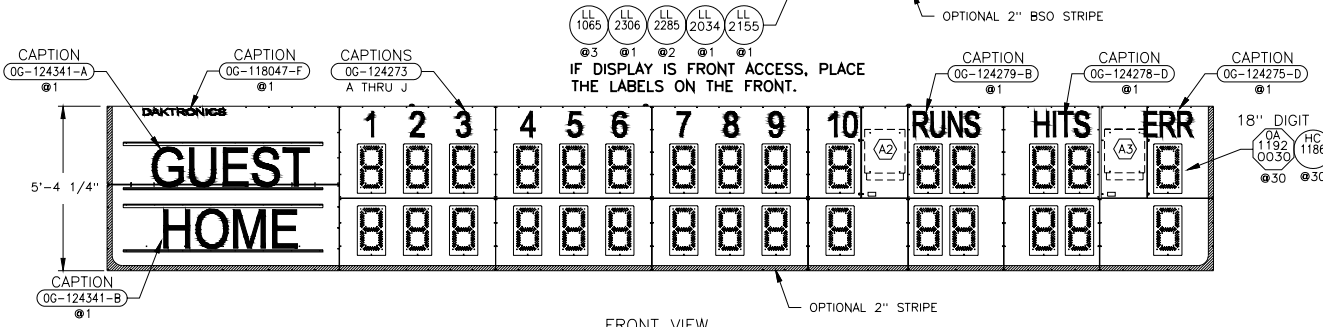
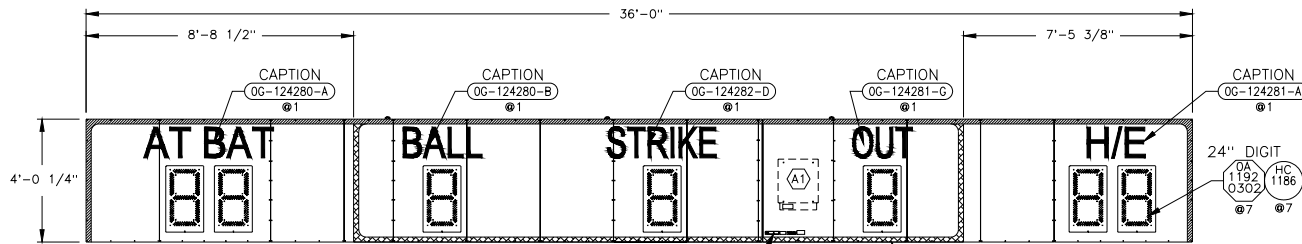
ASSEMBLY PACKET

0A-1192-1060...F. ASSY; BA-2001-11

DAKTRONICS, INC. BROOKINGS, SD 57006

01	28MAR02	CHANGED THE POWER WATTAGE AND AMPERAGE PER NEW CALCULATION METHODS.	THS	MWW
01	21FEB02	ADDED LABELS TO FRONT VIEW REMOVED NOTES	MCOP	
REV.	DATE	DESCRIPTION	BY	APPR.

PROJ: OUTDOOR LED SCOREBOARDS		
TITLE: F. ASSY; BA-2001-11		
DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 06NOV01		
REVISION	APPR. BY:	1192-E10B-158423
SCALE: 1=40		



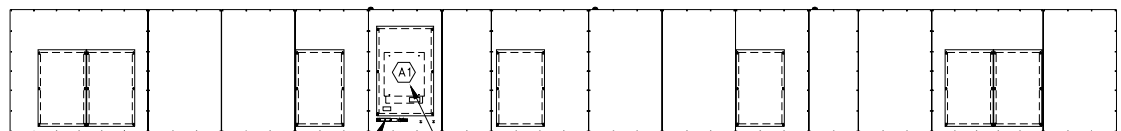
FRONT VIEW

ADDRESS SETTINGS:
DRIVER: A1
ADDRESS PLUG: OA-1150-0064
ADDRESS: 67
NOTES: CUT ALL BUT THE VIOLET, RED, & BROWN WIRES.

ADDRESS SETTINGS:
DRIVER: A2
ADDRESS PLUG: OA-1150-0064
ADDRESS: 68
NOTES: CUT ALL BUT THE VIOLET & ORANGE WIRES.

ADDRESS SETTINGS:
DRIVER: A3
ADDRESS PLUG: OA-1150-0064
ADDRESS: 69
NOTES: CUT ALL BUT THE VIOLET, ORANGE, & BROWN WIRES.

BA-2002-11 W/ LED DIGITS
SPECIFICATIONS
MODEL: BA-2002-11
VOLTS: 120V AC
AMPS: 7.5
MAX WATTS: 900



IF DISPLAY IS REAR ACCESS, PLACE THE LABELS ON THE REAR.

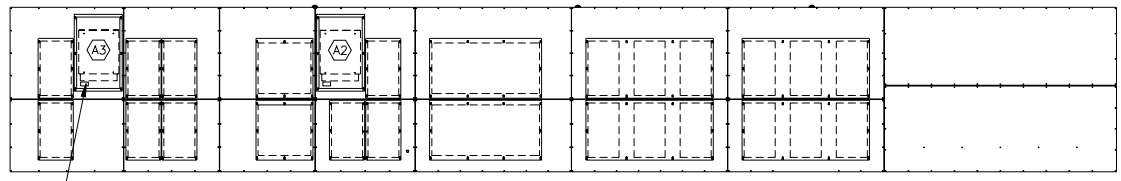
LL 2306 @1

LL 2285 @2

LL 2034 @1

LL 2155 @1

ADDRESS OA 1150 0064 @3 SEE DETAIL A; DRAWING B-124194

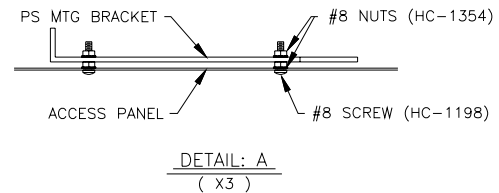
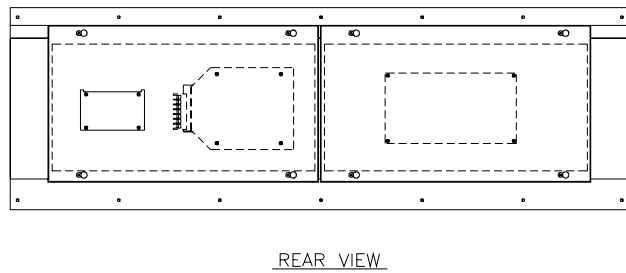
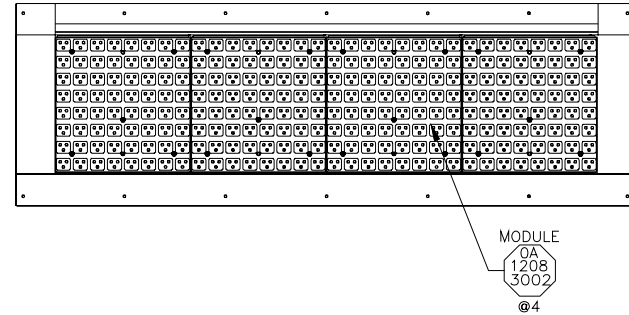
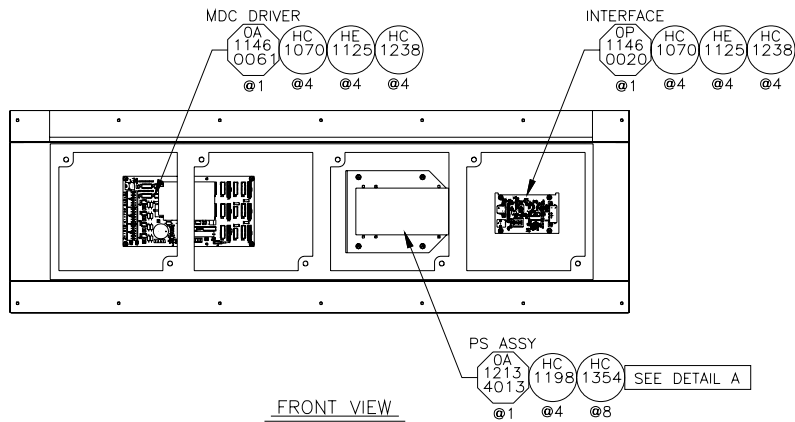


REAR VIEW

ASSEMBLY PACKET

OA-1192-1062.....F. ASSY; BA-2002-11

03	28MAR02	CHANGED THE POWER WATTAGE AND AMPERAGE PER NEW CALCULATION METHODS.	THS	MWM	DAKTRONICS, INC. BROOKINGS, SD 57006 PROJ: OUTDOOR LED SCOREBOARDS TITLE: F. ASSY; BA-2002-11 DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 09NOV01 REVISION APPR. BY: SCALE: 1=50 1192-E10B-158495
02	25FEB02	REMOVED NOTES, MOVED LABELS ADDED KNOCKOUTS BELOW DRIVER 1	MCOPL		
01	27NOV01	MOVED MASTER DRIVER FROM A2 TO A1	MCOPL		
REV.	DATE	DESCRIPTION	BY	APPR.	

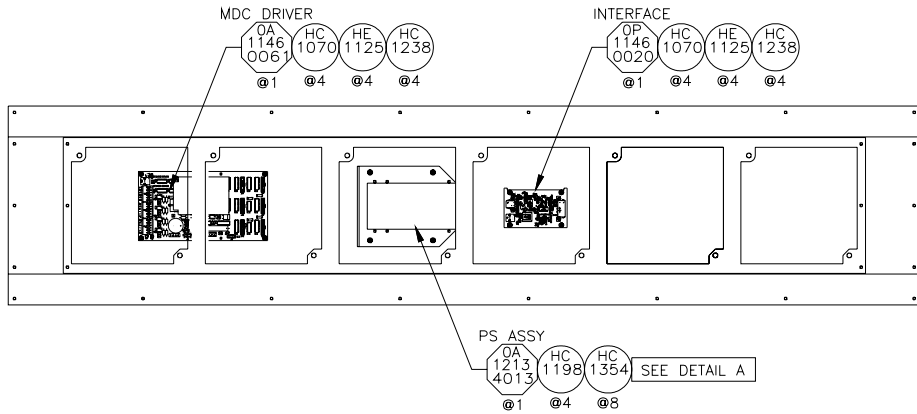


ASSEMBLY PACKET

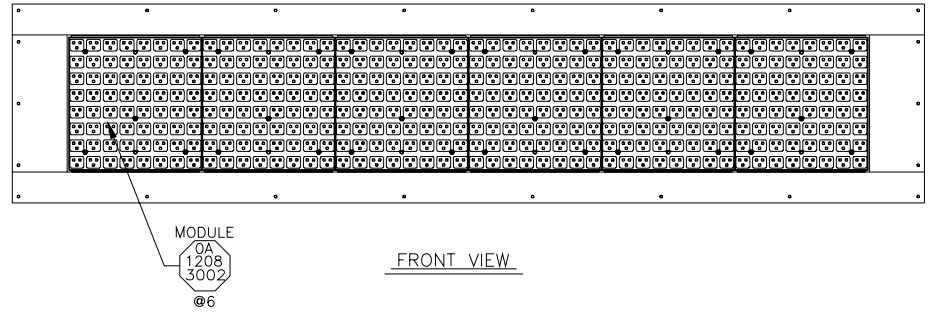
OA-1192-1079.....F. ASSY; 832 LED TNMC, RED

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED SCOREBOARDS	
TITLE: F. ASSY; 832 LED TNMC, RED	
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN DATE: 15NOV01
REVISION	APPR. BY: 1192-E10B-159055
SCALE: 1=10	

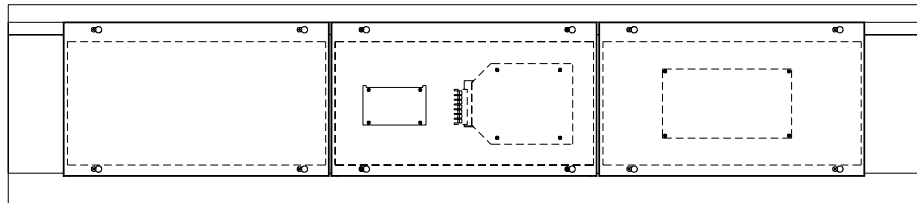
REV.	DATE	DESCRIPTION	BY	APPR.
01	26DEC01	INCREASED WIDTH OF ASSEMBLY	MCOPL	



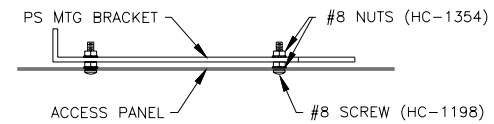
FRONT VIEW



FRONT VIEW



REAR VIEW



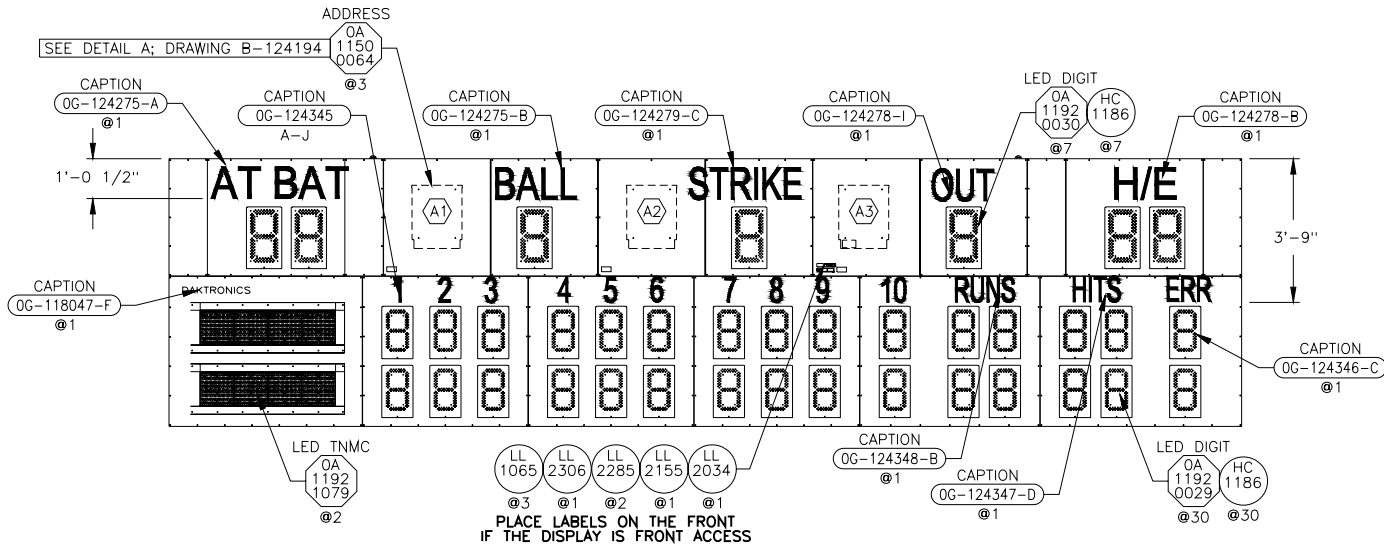
DETAIL: A
(X3)

ASSEMBLY PACKET

0A-1192-1080.....F. ASSY; 848 LED TNMC, RED

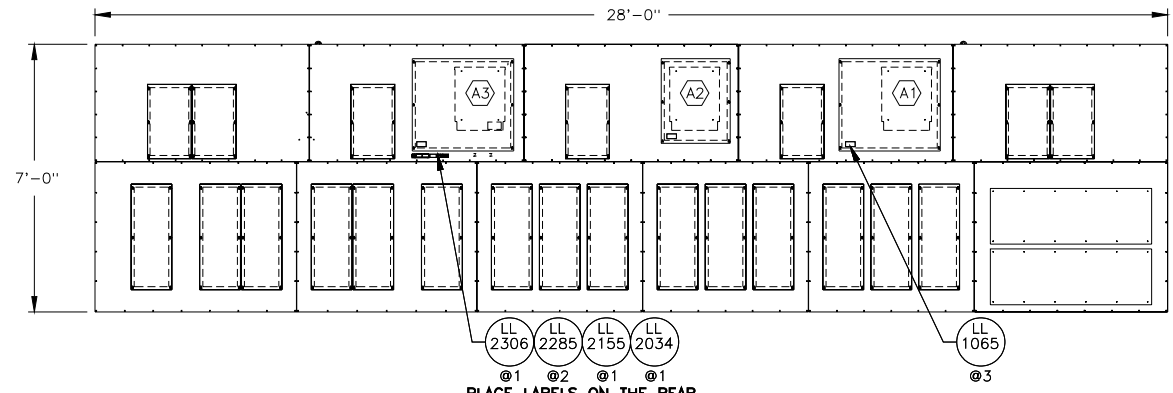
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED SCOREBOARDS	
TITLE: F. ASSY; 848 LED TNMC, RED	
DES. BY: MCOPLAN	DATE: 15NOV01
DRWN BY: MCOPLAN	
REVISION	APPR. BY:
	SCALE: 1=10
1192-E10B-159081	

REV.	DATE	DESCRIPTION	BY	APPR.



PLACE LABELS ON THE FRONT
IF THE DISPLAY IS FRONT ACCESS

FRONT VIEW



PLACE LABELS ON THE REAR
IF THE DISPLAY IS REAR ACCESS

REAR VIEW

ADDRESS SETTINGS:	
DRIVER:	A1
ADDRESS PLUG:	0A-1150-0064
ADDRESS:	67
NOTES: CUT ALL BUT THE VIOLET, & BROWN WIRES.	

ADDRESS SETTINGS:	
DRIVER:	A2
ADDRESS PLUG:	0A-1150-0064
ADDRESS:	68
NOTES: CUT ALL BUT THE VIOLET & ORANGE WIRES.	

ADDRESS SETTINGS:	
DRIVER:	A3
ADDRESS PLUG:	0A-1150-0064
ADDRESS:	69
NOTES: CUT ALL BUT THE VIOLET, ORANGE, & BROWN WIRES.	

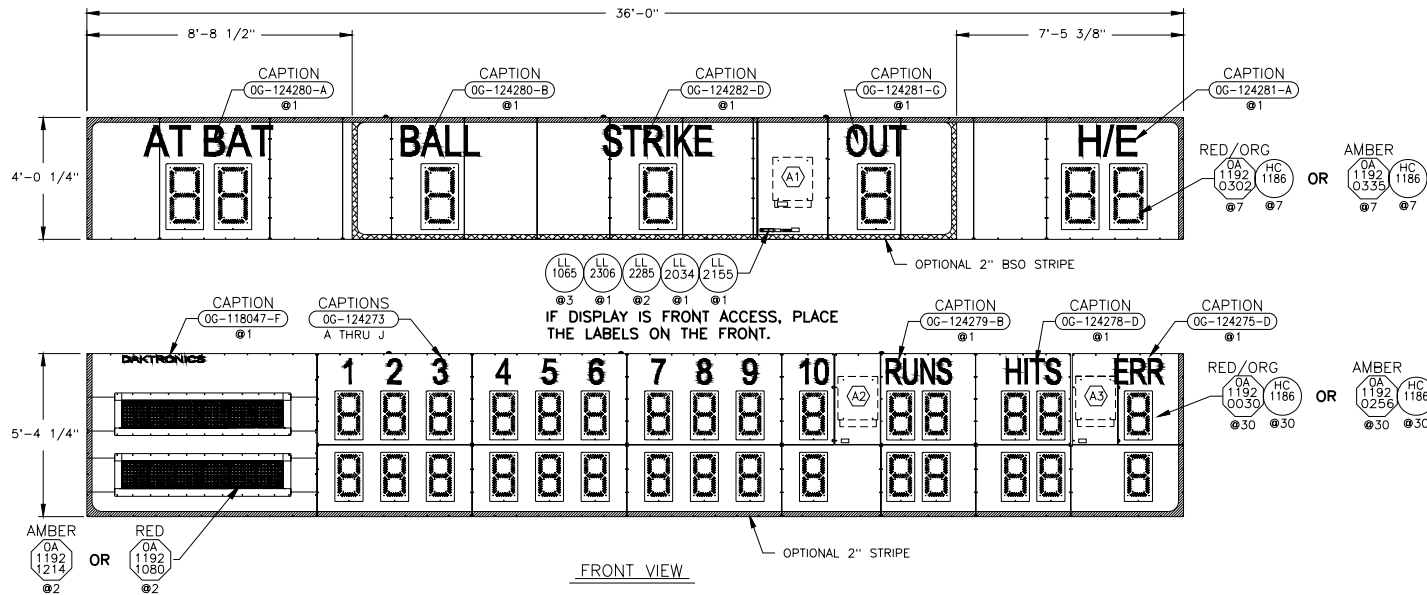
BA-2001-11 W/ TNMC & LED DIGITS	
SPECIFICATIONS	
MODEL:	BA-2001-11 W/ LED TNMC
VOLTS:	120/240V AC
AMPS:	10
MAX WATTS:	1200

ASSEMBLY PACKET

0A-1192-1061....F. ASSY; BA-2001-11 W/ TNMC

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	OUTDOOR LED SCOREBOARDS
TITLE:	F. ASSY; BA-2001-11 W/ LED TNMC
DES. BY:	MCOPLAN
DRAWN BY:	MCOPLAN
DATE:	03DEC01
REVISION	APPR. BY:
	SCALE: 1=40
	1192-E10B-159564

REV.	DATE	DESCRIPTION	BY	APPR.
02	28MAR02	CHANGED THE POWER WATTAGE AND AMPERAGE PER NEW CALCULATION METHODS.	THS	MWM
01	21FEB02	ADDED LABELS TO FRONT VIEW ADDED KNOCKOUTS REVISED NOTES	MCOPL	



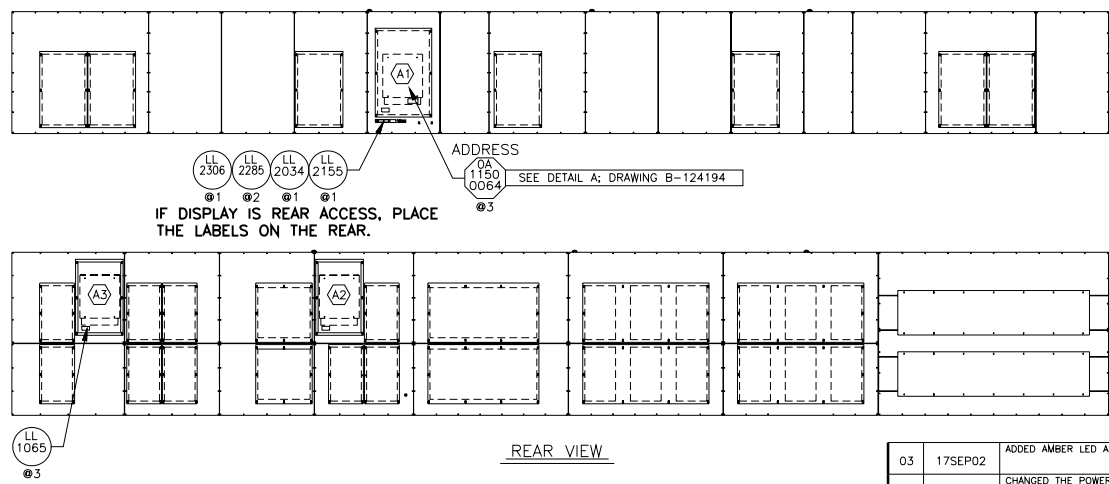
ADDRESS SETTINGS:	
DRIVER:	A1
ADDRESS PLUG:	0A-1150-0064
ADDRESS:	67
NOTES:	CUT ALL BUT THE VIOLET, RED, & BROWN WIRES.

ADDRESS SETTINGS:	
DRIVER:	A2
ADDRESS PLUG:	0A-1150-0064
ADDRESS:	68
NOTES:	CUT ALL BUT THE VIOLET & ORANGE WIRES.

ADDRESS SETTINGS:	
DRIVER:	A3
ADDRESS PLUG:	0A-1150-0064
ADDRESS:	69
NOTES:	CUT ALL BUT THE VIOLET, ORANGE, & BROWN WIRES.

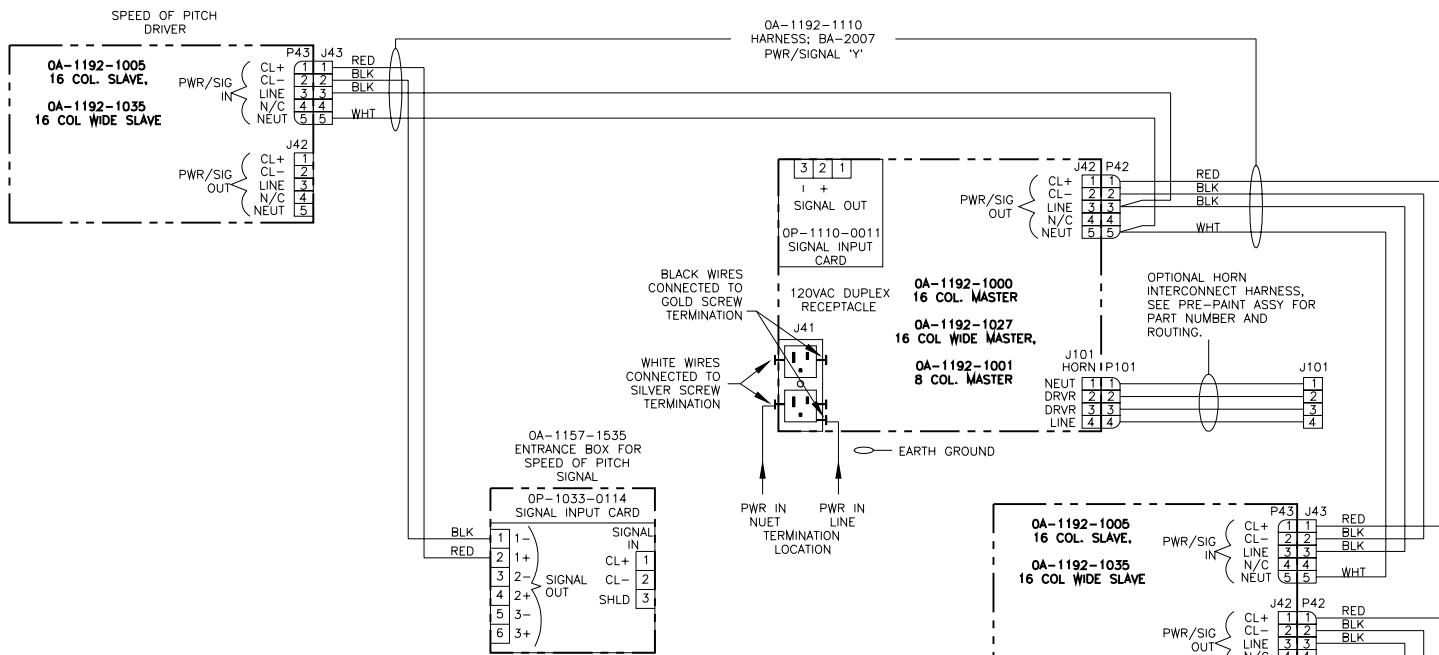
BA-2002-11 W/ LED DIGITS & LED TNMC	
SPECIFICATIONS	
MODEL:	BA-2002-11 W/ TNMC
VOLTS:	120V AC
MAX WATTS:	900
AMPS:	7.5

BA-2002-21 W/ LED DIGITS & LED TNMC	
SPECIFICATIONS	
MODEL:	BA-2002-21 W/ TNMC
VOLTS:	120V AC
MAX WATTS:	900
AMPS:	7.5



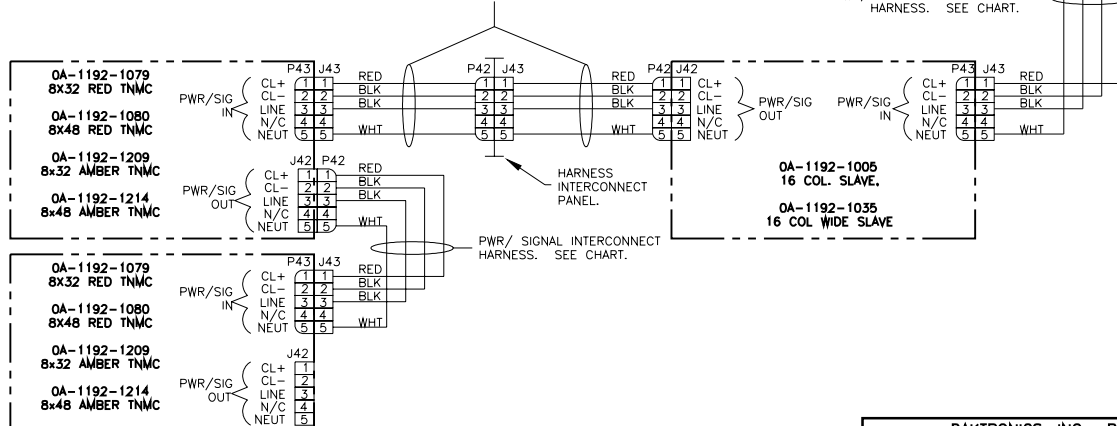
ASSEMBLY PACKET
 0A-1192-1063.....F. ASSY; BA-2002-11 W/ LED TNMC
 0A-1192-1305.....F. ASSY; BA-2002-21 W/ LED TNMC

01	25FEB02	REMOVED NOTES, ADDED LABELS TO BOTH SIDES, ADDED KNOCKOUTS BENEATH DRIVER A1	MCOPL	
DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: OUTDOOR LED SCOREBOARDS				
TITLE: F. ASSY; BA-2002-11 W/ LED TNMC				
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN		DATE: 04DEC01
REV. 03		17SEP02		ADDED AMBER LED ASSEMBLY NUMBERS
REV. 02		28MAR02		CHANGED THE POWER WATTAGE AND AMPERAGE PER NEW CALCULATION METHODS.
REV.	DATE	DESCRIPTION	BY	APPR.
REVISION				
APPR. BY:			1192-E10B-159667	
SCALE: 1=50				

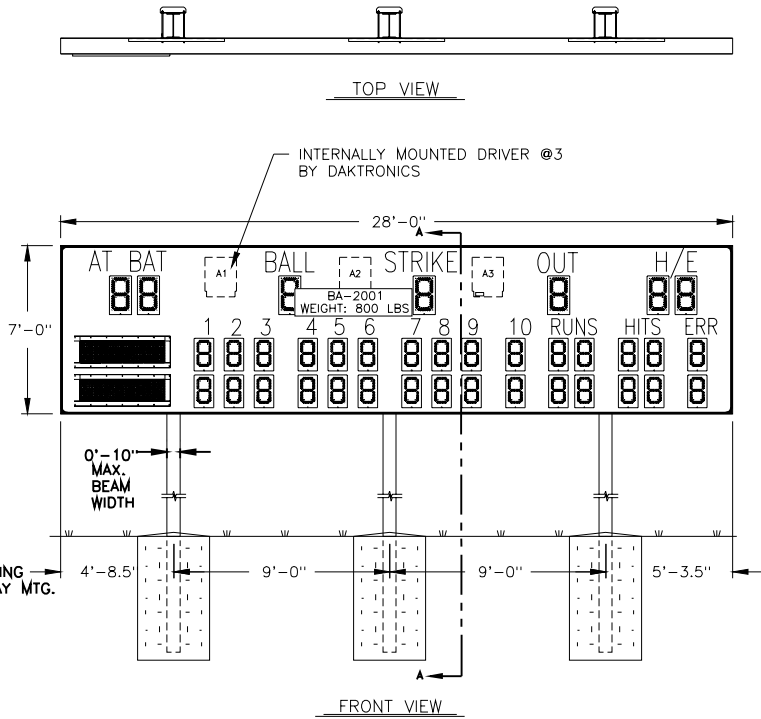


THIS SCHEMATIC REPRESENTS THE INTERCONNECT OF THE MASTER DRIVER TO OTHER DRIVERS/TNMC'S IN A MULTI DRIVER SCOREBOARD CONFIGURATION. SEE THE PRE-PAINT ASSEMBLY DRAWING AND/OR THE FINAL ASSEMBLY DRAWING FOR THE PART NUMBERS OF THE INTERCONNECT HARNESSES NEEDED AND INSTALLATION INSTRUCTIONS.

PWR/ SIGNAL INTERCONNECT HARNESSES BETWEEN SECTIONS. FOLLOW FINAL ASSY INSTRUCTIONS FOR ROUTING TO INTERCONNECT PANEL AND FOR ROUTING THROUGH NEXT SECTION.

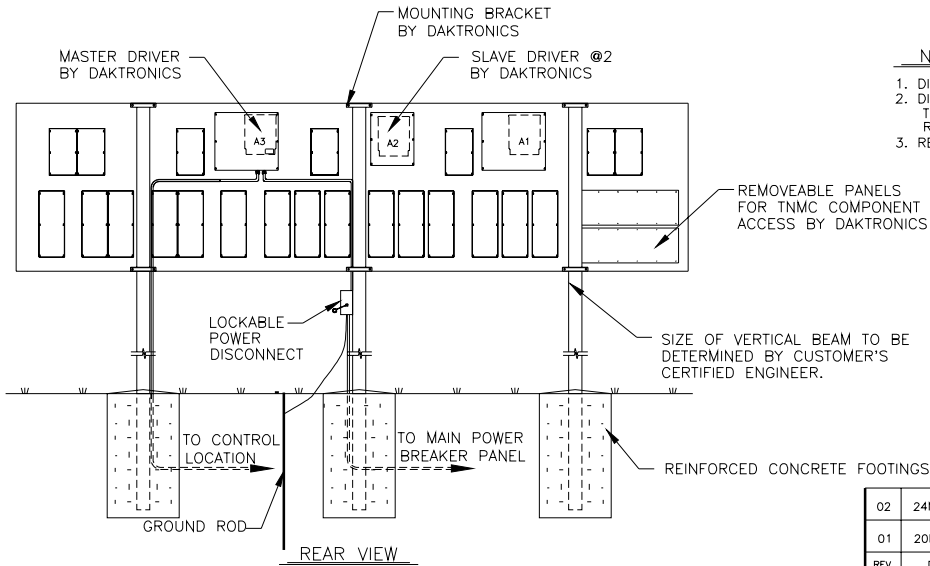


DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED DIGIT SCOREBOARDS			
TITLE: SCHEMATIC; GEN II, OD LED, BA-2007 /W TNMC			
DES. BY: MILLER		DRAWN BY: MILLER DATE: 14 DEC 01	
REV.	DATE	DESCRIPTION	BY APPR.
02	20 MAY 02	REPLACED OP-1033-0114 WITH OP-1110-0011. ADDED AMBER TNMC AND REMOVED J101 FROM SLAVE DRIVERS.	THS
01	22 JAN 02	ADDED WIRE CABLE COLORS	THS
REVISION		APPR. BY:	1192-R03B-160180
		SCALE: 1=1	

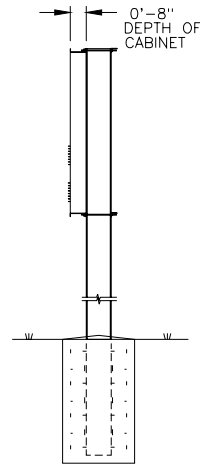


VERTICAL BEAM SPACING FOR CORRECT DISPLAY MTG.

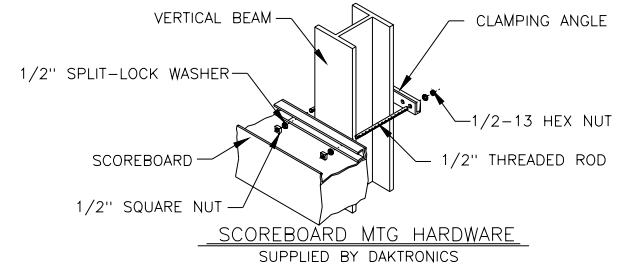
FRONT VIEW



REAR VIEW



SECTION VIEW A-A



BA-2001 BEAMS & FOOTINGS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				60 MPH	80 MPH	100 MPH
10 FT	NONE	7 FT	BEAM	W8x15	W8x21	W10x26
			FOOTING	5'x3'	7'x3'	8'x3.5'
	2 FT	9 FT	BEAM	W8x18	W10x22	W14x26
			FOOTING	6.5'x3'	8'x3.5'	9'x4'
4 FT	11 FT	BEAM	W8x21	W12x26	W14x34	
		FOOTING	7'x3'	8.5'x4'	10'x4'	
14 FT	NONE	7 FT	BEAM	W8x18	W10x22	W12x26
			FOOTING	6'x3'	7.5'x3'	9'x4'
	2 FT	9 FT	BEAM	W8x21	W12x26	W14x34
			FOOTING	7'x3'	8.5'x4'	10'x4.5'
4 FT	11 FT	BEAM	W10x22	W12x30	W16x40	
		FOOTING	7.5'x3'	9'x4'	10.5'x4.5'	
18 FT	NONE	7 FT	BEAM	W8x21	W10x30	W12x35
			FOOTING	6.5'x3'	8'x3.5'	9.5'x4'
	2 FT	9 FT	BEAM	W8x24	W10x33	W12x45
			FOOTING	7.5'x3'	9'x4'	10.5'x4.5'
4 FT	11 FT	BEAM	W8x31	W12x40	W14x48	
		FOOTING	8'x3.5'	10'x4.5'	11'x5'	

FOOTING = DEPTH X DIAMETER

NOTES:

1. DISPLAY IS OF ALL ALUMINUM CONSTRUCTION.
2. DISPLAY IS FRONT OR REAR SERVICE ACCESS FOR ALL ELECTRONICS WITH THE EXCEPTION OF THE LOAD CENTER & SIGNAL TERM PANEL WHICH ARE REAR ACCESS ONLY.
3. REMOVABLE LIFT EYES ARE PROVIDED IN TOP OF SECTION.

A NOTE ABOUT BEAM NOMENCLATURE:

FOR A TYPICAL BEAM, W12X30 FOR EXAMPLE, "W" STANDS FOR "WIDE-FLANGE BEAM". THE FIRST NUMBER (12) IS THE APPROXIMATE FRONT TO REAR DIMENSION OF THE BEAM IN INCHES. THE SECOND NUMBER (30) IS THE WEIGHT PER FOOT IN POUNDS.

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

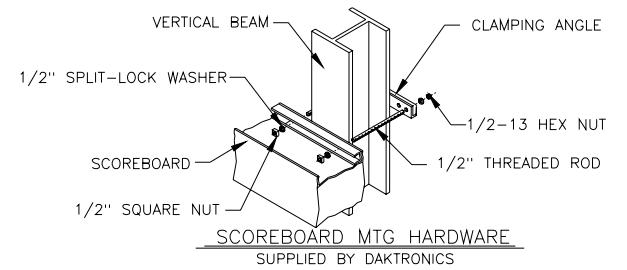
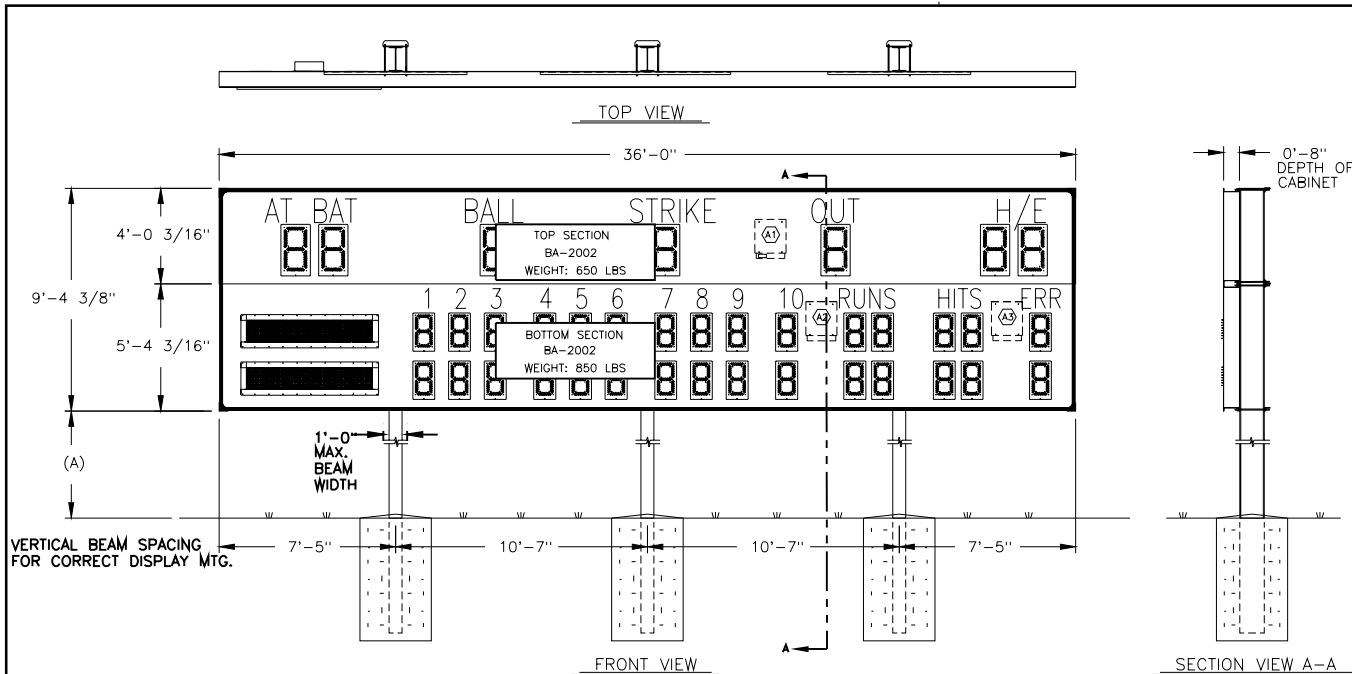
ACTUAL FOOTING DEPTH AND DIAMETER FOR A PARTICULAR INSTALLATION MUST BE DETERMINED USING DATA FROM A SOIL SAMPLE TEST AT THE SITE. BOTH COLUMNS AND FOOTINGS MUST BE DESIGNED BY A STATE LICENSED ENGINEER.

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

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:	OUTDOOR LED SCOREBOARDS		
TITLE:	SHOP DRAWING; BA-2001-11		
DES. BY:	MCOPLAN	DRAWN BY:	MCOPLAN
		DATE:	12APRO2
REVISION	APPR. BY:	1192-E10B-165469	
02		SCALE:	3/16"=1"

REV.	DATE	DESCRIPTION	BY	APPR.
02	24NOV03	CORRECTED REAR ACCESS PANEL LOCATIONS	MCOPL	
01	20FEB03	CORRECTED BEAM SPACING FROM DISPLAY ENDS	MCOPL	



BA-2002 BEAMS & FOOTINGS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				60 MPH	80 MPH	100 MPH
10 FT	NONE	9'-4 3/8"	BEAM W8x18	W10x22	W12x30	
			FOOTING 6.5'x3'	7.5'x3.5'	9'x4'	
	2 FT	11'-4 3/8"	BEAM W8x21	W12x26	W14x34	
			FOOTING 7'x3'	8.5'x4'	10'x4.5'	
14 FT	4 FT	13'-4 3/8"	BEAM W10x22	W12x30	W14x43	
			FOOTING 7.5'x3.5'	9'x4'	10.5'x4.5'	
	NONE	9'-4 3/8"	BEAM W8x21	W10x30	W12x35	
			FOOTING 7'x3'	8'x4'	9.5'x4.5'	
18 FT	2 FT	11'-4 3/8"	BEAM W8x24	W12x30	W14x43	
			FOOTING 7.5'x3.5'	9'x4'	10.5'x4.5'	
	4 FT	13'-4 3/8"	BEAM W10x26	W14x34	W14x53	
			FOOTING 8'x3.5'	10'x4.5'	11'x5'	
18 FT	NONE	9'-4 3/8"	BEAM W8x24	W10x33	W14x43	
			FOOTING 7.5'x3'	9'x4'	10'x4.5'	
	2 FT	11'-4 3/8"	BEAM W10x26	W12x35	W14x48	
			FOOTING 8'x3.5'	9.5'x4.5'	11'x5'	
18 FT	4 FT	13'-4 3/8"	BEAM W10x33	W12x45	W14x61	
			FOOTING 8.5'x4'	10.5'x4.5'	12'x5'	

FOOTING = DEPTH X DIAMETER

NOTES

1. DISPLAY SECTIONS ARE OF ALL ALUMINUM CONSTRUCTION.
2. DISPLAY IS FRONT OR REAR SERVICE ACCESS FOR ALL ELECTRONICS WITH THE EXCEPTION OF THE LOAD CENTER & SIGNAL TERM PANEL WHICH ARE REAR ACCESS ONLY.
3. REMOVABLE LIFT EYES ARE PROVIDED IN TOP OF EACH DISPLAY SECTION.

REMOVEABLE PANELS FOR TNMC COMPONENT ACCESS BY DAKTRONICS.

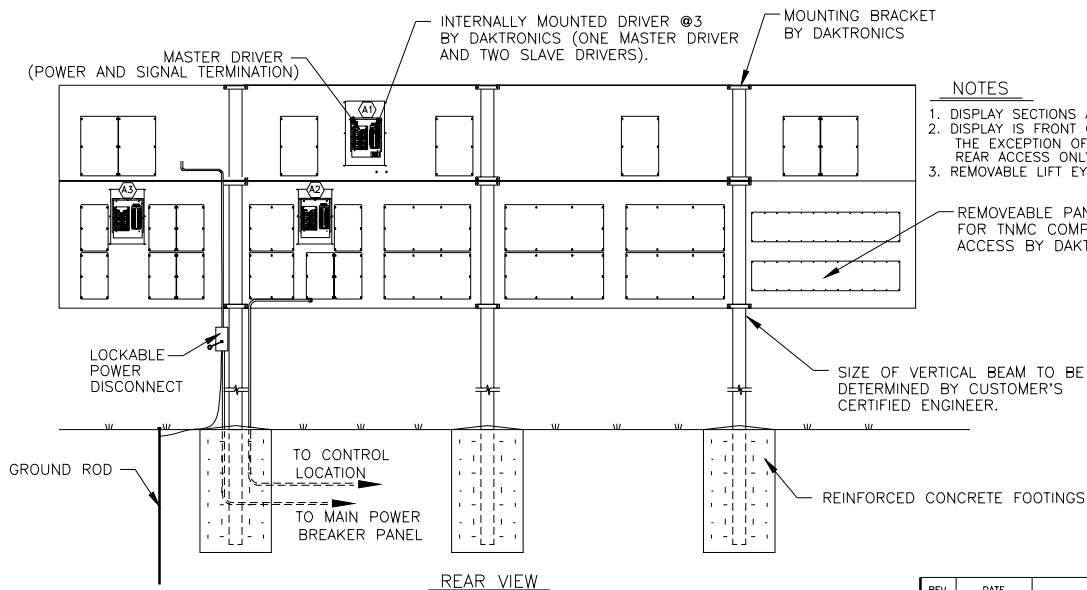
A NOTE ABOUT BEAM NOMENCLATURE:

FOR A TYPICAL BEAM, W12X30 FOR EXAMPLE, "W" STANDS FOR "WIDE-FLANGE BEAM". THE FIRST NUMBER (12) IS THE APPROXIMATE FRONT TO REAR DIMENSION OF THE BEAM IN INCHES. THE SECOND NUMBER (30) IS THE WEIGHT PER FOOT IN POUNDS.

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

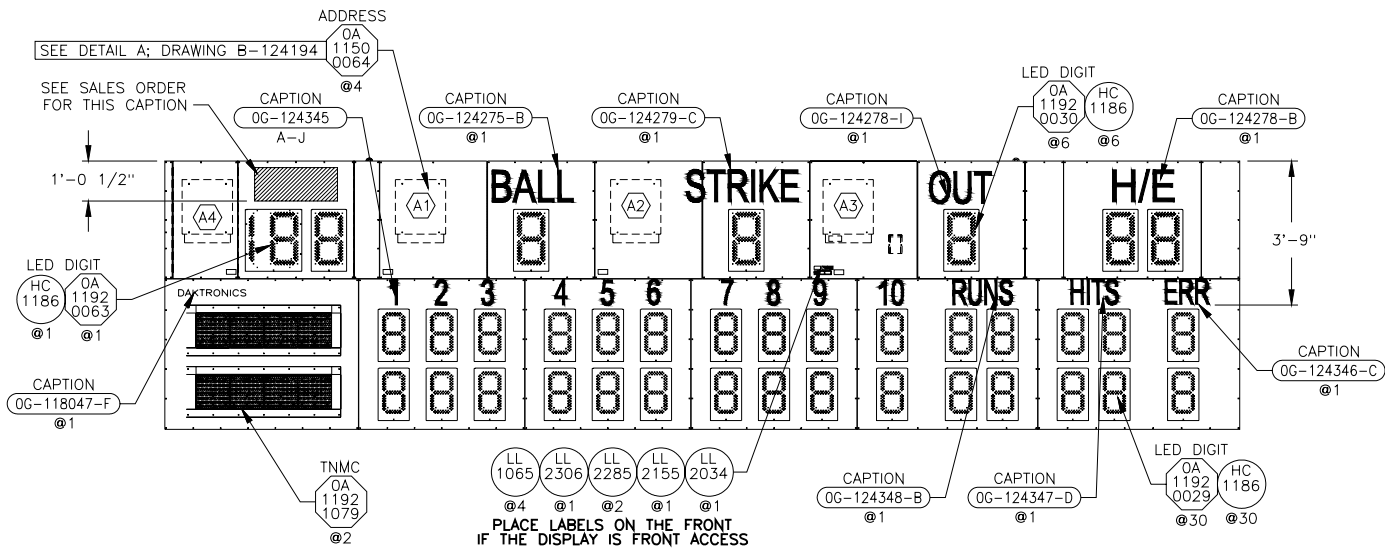
ACTUAL FOOTING DEPTH AND DIAMETER FOR A PARTICULAR INSTALLATION MUST BE DETERMINED USING DATA FROM A SOIL SAMPLE TEST AT THE SITE. BOTH COLUMNS AND FOOTINGS MUST BE DESIGNED BY A STATE LICENSED ENGINEER.

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

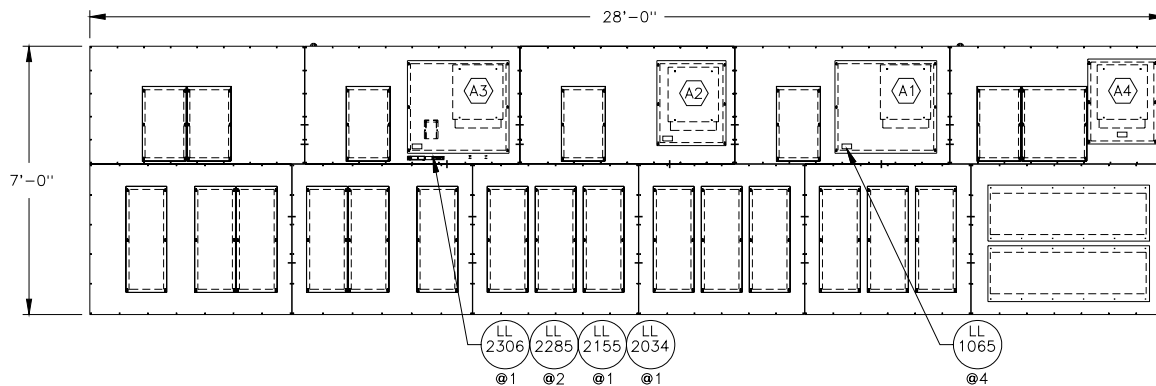


REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: SHOP DRAWING; BA-2002-11			
DES. BY: MCOPLAN	DRAWN BY: MCOPLAN		DATE: 15APR02
REVISION	APPR. BY:	SCALE: 3/16"=1"	
		1192-E10B-165511	



FRONT VIEW



REAR VIEW

ADDRESS SETTINGS:
DRIVER: A1
ADDRESS PLUG: OA-1150-0064
ADDRESS: 64
NOTES: CUT ALL WIRES EXCEPT THE VIOLET WIRE.

ADDRESS SETTINGS:
DRIVER: A2
ADDRESS PLUG: OA-1150-0064
ADDRESS: 65
NOTES: CUT ALL BUT THE VIOLET & BROWN WIRES.

ADDRESS SETTINGS:
DRIVER: A3
ADDRESS PLUG: OA-1150-0064
ADDRESS: 66
NOTES: CUT ALL WIRES EXCEPT THE VIOLET & RED WIRES.

ADDRESS SETTINGS:
DRIVER: A4
ADDRESS PLUG: OA-1150-0064
ADDRESS: 11
NOTES: CUT ALL BUT THE TAN, RED, AND BROWN WIRES.

BA-2008-11 W/ TNMC & LED DIGITS
SPECIFICATIONS
MODEL: BA-2008-11 W/ LED TNMC
VOLTS: 120/240V AC
AMPS: 10
MAX WATTS: 1200

ASSEMBLY PACKET

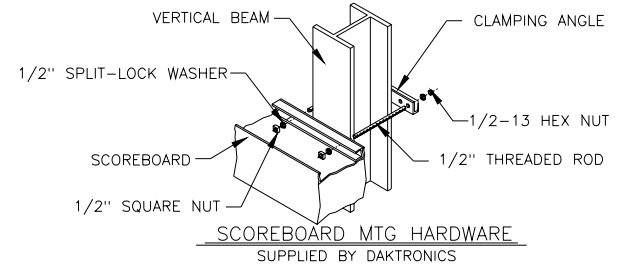
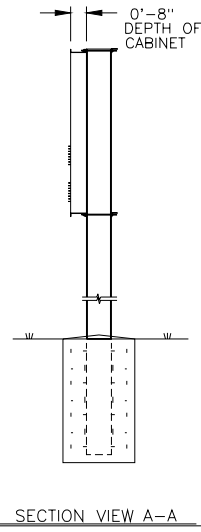
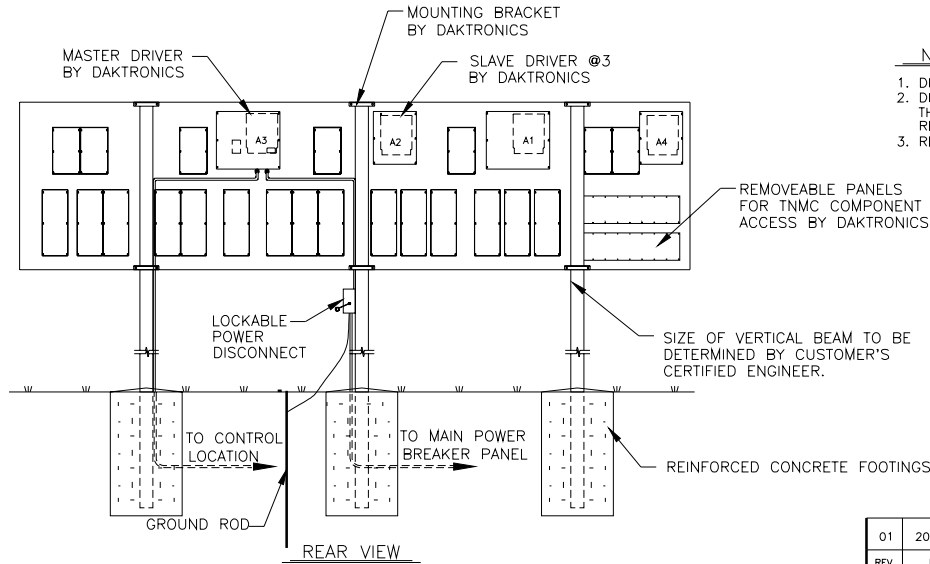
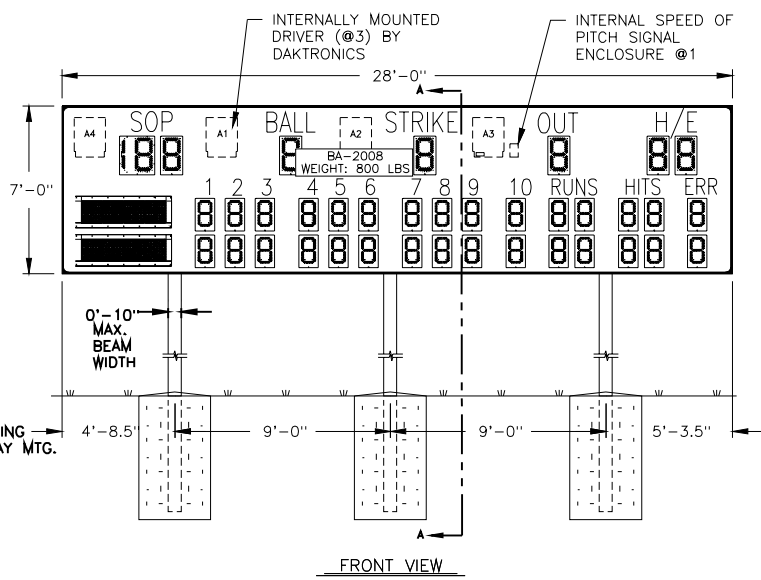
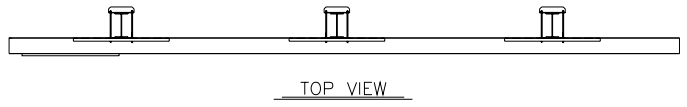
OA-1192-1232...F. ASSY; BA-2008-11 W/ TNMC

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS
TITLE: F.ASSY, BA-2008-11 W/TNMC
DES. BY: KBRICKER
APP. BY: KBRICKER
DATE: 24APR02

REV.	DATE	DESCRIPTION	BY	APPR.
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SCALE: 1=40	1157-E10B-165921
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BA-2001 BEAMS & FOOTINGS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				60 MPH	80 MPH	100 MPH
10 FT	NONE	7 FT	BEAM	W8x15	W8x21	W10x26
			FOOTING	5'x3'	7'x3'	8'x3.5'
	2 FT	9 FT	BEAM	W8x18	W10x22	W14x26
			FOOTING	6.5'x3'	8'x3.5'	9'x4'
4 FT	11 FT	BEAM	W8x21	W12x26	W14x34	
		FOOTING	7'x3'	8.5'x4'	10'x4'	
14 FT	NONE	7 FT	BEAM	W8x18	W10x22	W12x26
			FOOTING	6'x3'	7.5'x3'	9'x4'
	2 FT	9 FT	BEAM	W8x21	W12x26	W14x34
			FOOTING	7'x3'	8.5'x4'	10'x4.5'
4 FT	11 FT	BEAM	W10x22	W12x30	W16x40	
		FOOTING	7.5'x3'	9'x4'	10.5'x4.5'	
18 FT	NONE	7 FT	BEAM	W8x21	W10x30	W12x35
			FOOTING	6.5'x3'	8'x3.5'	9.5'x4'
	2 FT	9 FT	BEAM	W8x24	W10x33	W12x45
			FOOTING	7.5'x3'	9'x4'	10.5'x4.5'
4 FT	11 FT	BEAM	W8x31	W12x40	W14x48	
		FOOTING	8'x3.5'	10'x4.5'	11'x6'	

FOOTING = DEPTH X DIAMETER

- NOTES:
1. DISPLAY IS OF ALL ALUMINUM CONSTRUCTION.
 2. DISPLAY IS FRONT OR REAR SERVICE ACCESS FOR ALL ELECTRONICS WITH THE EXCEPTION OF THE LOAD CENTER & SIGNAL TERM PANEL WHICH ARE REAR ACCESS ONLY.
 3. REMOVABLE LIFT EYES ARE PROVIDED IN TOP OF SECTION.

A NOTE ABOUT BEAM NOMENCLATURE:
FOR A TYPICAL BEAM, W12X30 FOR EXAMPLE, "W" STANDS FOR "WIDE-FLANGE BEAM". THE FIRST NUMBER (12) IS THE APPROXIMATE FRONT TO REAR DIMENSION OF THE BEAM IN INCHES. THE SECOND NUMBER (30) IS THE WEIGHT PER FOOT IN POUNDS.

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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.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SHOP DWG, BA-2008-11 W/TNMC

DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 30APR02

REVISION: APPR. BY: SCALE: 1"=3/16" 1192-E10B-166280

REV.	DATE	DESCRIPTION	BY	APPR.
01	20FEB03	CORRECTED BEAM SPACING FROM DISPLAY ENDS	MCOPL	

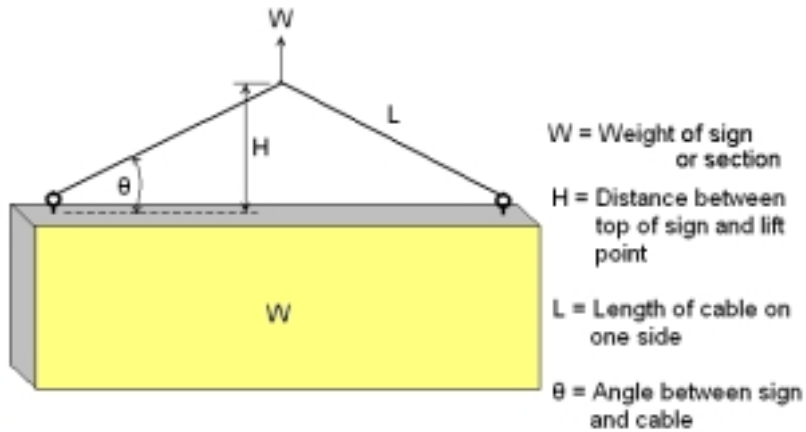
Appendix B: Eyebolts

ED7244: Eyebolts B-1

Eyebolts

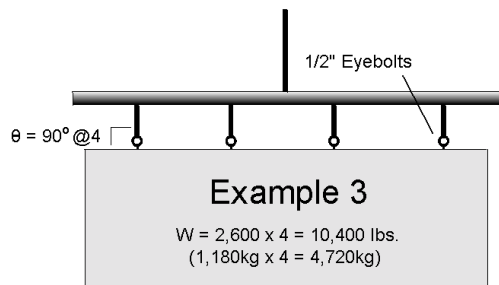
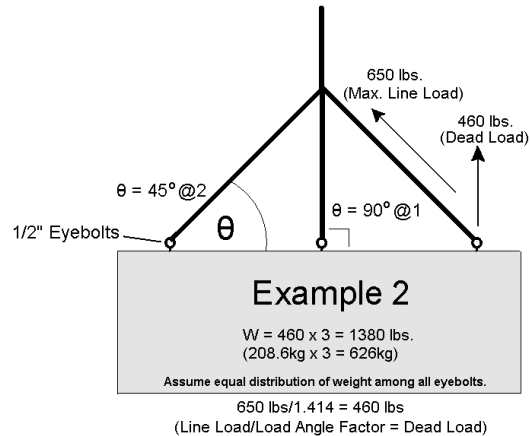
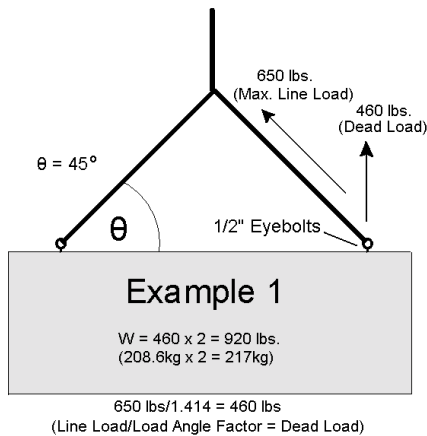
Almost every display that leaves Daktronics is equipped with eyebolts for lifting the display. There are two standard sizes of eyebolts: 1/2" and 5/8".

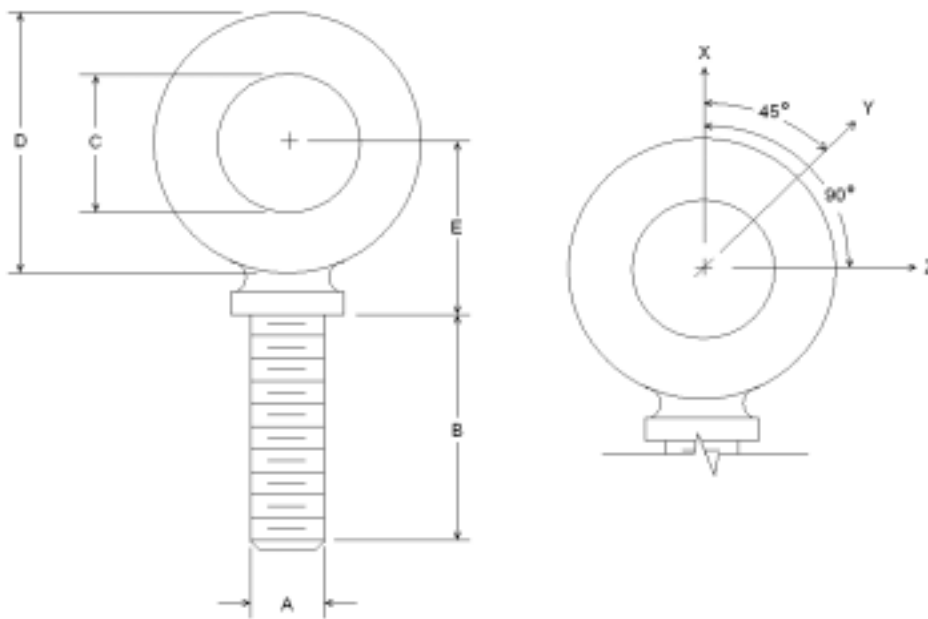
Load Increase Factor: The load increases as the lift angle (θ) decreases. The allowable load on the eyebolts also decreases with the lift angle due the bending stress on the eyebolts. In sum, the smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift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



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.