

**Generation III
LED Baseball Scoreboards
BA-2000 Series**

Display Manual

ED-13788

Rev 7 – 24 October 2006

DAKTRONICS

Models*	
BA-2001	BA-2002
BA-2008	BA-2009
BA-2018	

**All models include a suffix of -11 or -21,
indicating power and digit style.*

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

This manual explains the installation and maintenance of the **BA-2000 Series, Daktronics Baseball Scoreboards**, including Models BA-2001, BA-2002, BA-2008, BA-2009, and BA-2018 both with and without Team Name Message Centers (TNMCs). If you have any questions regarding the safety, installation, operation, or service of these systems, contact the Daktronics Customer Service helpdesk at the telephone numbers listed in **Section 5.9** of this manual.

1.1 How to Use this Manual

Important Safeguards:

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

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

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: BASKETBALL	
TITLE: SEGMENTATION, 7 SEG BAR DIGIT	
DES. BY: BPETERSON DRAWN BY: TNELSON DATE: 8 JUL 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 they provide.

- **System riser diagrams:** overall system layout from control room to display, power and phase requirements
- **Shop drawings:** component locations, mounting information, power and signal entrance points and access location (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 2½" 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 **ED-13788**.

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 quick service. For future reference, note the scoreboard’s 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 repair and return programs. Refer to these instructions to 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. This information is useful when trying to communicate maintenance or troubleshooting efforts.

The label “A” on a drawing item typically denotes an assembly. An assembly can be a single circuit board or a collection of components that function together, usually mounted on a single plate or in a single enclosure.

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

drawings:

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

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

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

1.3 Manual Overview

This manual details outdoor baseball 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-2002-11/-21 w/TNMC, G3	Drawing A-179604
Component Locations; BA-2001-11/-21, G3	Drawing A-180359
Component Locations; BA-2002-11/-21, G3	Drawing A-180360
Component Locations; BA-2001-11/-21 w/TNMC, G3	Drawing A-180361
Component Locations; BA-2009-11/-21 w/TNMC, G3	Drawing A-185787
Component Locations; BA-2008-11/-21 w/TNMC, G3	Drawing A-185855
Component Locations; BA-2018-11/-21 w/TNMC, G3	Drawing A-222092
Component Locations; BA-2018-11/-21	Drawing A-222578

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", 24" and 30" tall, the models in this manual use light emitting diodes. 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 900 W to a maximum of 1800 W. Daktronics baseball scoreboards use red or amber LEDs for maximum outdoor visibility.

The BA-2001 and the BA-2001 with TNMC (the smaller of the baseball scoreboards,) are a single-section displays measuring 7' high by 28' wide. The BA-2002 with TNMCs are two-section displays measuring 9'4" high by 36' wide. The top and bottom sections are shipped separately and joined at installation. The BA-2008 and BA-2008 with TNMCs are single-section displays measuring 7' high by 28' wide. The BA-2009 and BA-2009 with TNMCs are also two-section displays, 9' 4¹/₂" high and 36' wide. The BA-2018 is a four-section display, 13' high by 42' wide. The models are illustrated in the reference drawing list at the beginning of this section.

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

Note: **Section 6** 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 each of the models in this series and the message centers are also available for retrofit on existing scoreboards. The BA-2001 and BA-2008 are available with an 8x32-matrix TNMC, while BA-2002, BA-2009 and BA-2018 may be equipped with a larger, 8x48 message center.

Section 6 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 scoreboards operate without modification on All Sport 5000 signal protocol. Refer to the following controller manuals for operating instructions:

- **ED-12126:** All Sport 3000 Series Control Console Operation Manual
- **ED-11976:** 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**, for example, simply identify a specific scoreboard model. Most Daktronics scoreboards also carry a two-number suffix that refers to indoor-outdoor status, power supply, and digit color: **-11** and **-12** are outdoor scoreboards, 120 V and 230 V respectively, and they feature red digits; **-21** and **-22** are outdoor scoreboards, 120 V and 230 V respectively, and feature amber digits.

1.6 Product Safety Approval

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

Section 2: Specifications

The following tables show all of the mechanical specifications, circuit specifications and power requirements for each model in this manual. The models are listed in the tables in alphanumeric order.

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 Digit Color	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
BA-2001	1 Total	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 (8x32)	1 Total	H7'-0", W28'-0", D8" (2134 mm, 8534 mm, 203 mm)	760 lb (345 kg) 1444 lb (655 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	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

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size Digit Color	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
BA-2002	2 Total	H9'-4", W36'-0", D8" (2845 mm, 10973 mm, 203 mm)	1116 lb (506 kg) 2120 lb (962 kg)	<i>Top Section:</i> <ul style="list-style-type: none"> At Bat, Ball, Strike, Out, H/E 24" (610 mm) <i>Bottom Section:</i> <ul style="list-style-type: none"> Innings, Runs, Hits, Errors 18" (457 mm) -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, 10973 mm, 203 mm)	448 lb (203 kg) 851 lb (386 kg)					
	Bottom	H5'-4", W36'-0", D8" (1626 mm, 10973 mm, 203 mm)	668 lb (303 kg) 1269 lb (576 kg)					
BA-2002 w/TNMC (8x48)	2 Total	H9'-4", W36'-0", D8" (2845 mm, 10973 mm, 203 mm)	1236 lb (561 kg) 2348 lb (1065 kg)	<i>Top Section:</i> <ul style="list-style-type: none"> At Bat, Ball, Strike, Out, H/E 24" (610 mm) <i>Bottom Section:</i> <ul style="list-style-type: none"> Innings, Runs, Hits, Errors 18" (457 mm) 	1200 W (with red TNMC)	120/240 V AC	10 A	A1 67 A2 68 A3 69 TNMC 22
	Top	H4'-0", W36'-0", D8" (1219 mm, 10973 mm, 203 mm)	448 lb (203 kg) 851 lb (386 kg)					

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size Digit Color	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
	Bottom	H5'-4", W36'-0", D8" (1626 mm, 10973 mm, 203 mm)	788 lb (357 kg) 1497 lb (679 kg)	-11: red -21: amber				
BA-2008	1 Total	H7'-0", W28'-0", D8" (2134 mm, 8534 mm, 203 mm)	690 lb (313 kg) 1311 lb (594 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 V AC	10 A	A1 67 A2 68 A3 69 A4 11
BA-2008 w/TNMC (8x32)	1 Total	H7'-0", W28'-0", D8" (2134 mm, 8534 mm, 203 mm)	810 lb (367 kg) 1539 lb (698 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	1500 W (w/ with red TNMC) 1800 W (with amber TNMC)	120 V AC	12.5 A 15 A	A1 67 A2 68 A3 69 A4 11 TNMC 22

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size Digit Color	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
BA-2009	2 Total	H9'-4", W36'-0", D8" (2845 mm, 10973 mm, 203 mm)	1176 lb (533 kg) 2234 lb (1013 kg)	<i>Top Section:</i> <ul style="list-style-type: none"> At Bat, Ball, Strike, Out, H/E 24" (610 mm) <i>Bottom Section:</i> <ul style="list-style-type: none"> Innings, Runs, Hits, Errors 18" (457 mm) -11: red -21: amber	1200 W*	120 V AC	10 A	A1 67 A2 68 A3 69 A4 11
	Top	H4'-0", W36'-0", D8" (1219 mm, 10973 mm, 203 mm)	508 lb (230 kg) 965 lb (437 kg)					
	Bottom	H5'-4", W36'-0", D8" (1626 mm, 10973 mm, 203 mm)	728 lb (339 kg) 1383 lb (627 kg)					
BA-2009 w/TNMC (8x48)	2 Total	H9'-4", W36'-0", D8" (2845 mm, 10973 mm, 203 mm)	1386 lb (628 kg) 2233 lb (1194 kg)	<i>Top Section:</i> <ul style="list-style-type: none"> At Bat, Ball, Strike, Out, H/E 24" (610 mm) <i>Bottom Section:</i> <ul style="list-style-type: none"> Innings, Runs, Hits, Errors 18" (457 mm) 	1500 W (w with red TNMC)	120 V AC	12.5 A	A1 67 A2 68 A3 69 A4 11 TNMC 22
	Top	H4'-0", W36'-0", D8" (1219 mm, 10973 mm, 203 mm)	508 lb (230 kg) 976 lb (442 kg)					

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size Digit Color	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
	Bottom	H5'-4", W36'-0", D8" (1626 mm, 10973 mm, 203 mm)	878 lb (357 kg) 1668 lb (756 kg)	-11: red -21: amber				
BA-2018	4 Total	H13'-0", W42'-0", D8" (3962 mm, 12800 mm, 203 mm)	2730 lb (1075 kg) 4503 lb (2043 kg)	<i>Top Section:</i> <ul style="list-style-type: none"> Innings, Runs, Hits, Error 24" (610 mm) <i>Bottom Section:</i> <ul style="list-style-type: none"> Average, At Bat, Ball Strike, Out, MPH 30" (762mm) -11: red -21: amber	1200 W	120 V AC	10 A	A1 66 A2 65 A3 64 A4 01
	Top Left	H7'-6", W23'-0", D8" (2438 mm, 7010mm, 203 mm)	863 lb (392 kg)					
	Bottom Left	H5'-6", W423'-0", D8" (2134 mm, 7010 mm, 203 mm)	633 lb (288kg)					
	Top Right	H7'-6", W19'-0", D8" (2438 mm, 5791mm, 203 mm)	713 lb (324 kg)					
	Bottom Right	H5'-6", W19'-0", D8" (2134 mm, 5791mm, 203 mm)	523 lb (238 kg)					

Model	Number of Sections	Dimensions (Height, Width, Depth)	Weight Uncrated (Crated)	Digit Size Digit Color	Maximum Wattage	Power	Amps per Line (Single-Phase)	Driver Number and Address
BA-2018 w/TNMC (8x48)	4 Total	H13'-0", W42'-0", D8" (3962 mm, 12800 mm, 203 mm)	2730 lb (1075 kg) 4503 lb (2043 kg)	<i>Top Section:</i> <ul style="list-style-type: none"> Innings, Runs, Hits, Error 24" (610 mm) <i>Bottom Section:</i> <ul style="list-style-type: none"> Average, At Bat, Ball Strike, Out, MPH 30" (762mm) -11: red -21: amber	1400 W	120 V AC	12 A	A1 66 A2 65 A3 64 A4 01
	Top Left	H7'-6", W23'-0", D8" (2438 mm, 7010mm, 203 mm)	863 lb (392 kg)					
	Bottom Left	H5'-6", W423-0", D8" (2134 mm, 7010 mm, 203 mm)	633 lb (288kg)					
	Top Right	H7'-6", W19'-0", D8" (2438 mm, 5791mm, 203 mm)	713 lb (324 kg)					
	Bottom Right	H5'-6", W19'-0", D8" (2134 mm, 5791mm, 203 mm)	523 lb (238 kg)					

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 and BA-2002 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

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

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.

3.2 Footings and Beams

Reference Drawings:

Shop Drawing; BA-2001-11	Drawing B-165469
Shop Drawing; BA-2002-11	Drawing B-165511
Shop Dwg ; BA-2018, Horiz Tubes	Drawing B-222672
Clip Dwg; BA-2018-11/21, G3.....	Drawing B-238121
Shop Dwg; 2-pole, BA-2001/2008-11 or -21	Drawing B-257893

Refer to the shop drawings listed above for installation specifications for 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 and are not intended for construction purposes. Be sure that the installation complies with local building codes and is suitable for the particular soil and wind conditions.

The columns, 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.

Note: 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.

Model BA-2001 and Model BA-2008

Figure 3, below, shows the spacing of the horizontal beams for the BA-2001 and BA-2008. 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.

Model BA-2002 and Model BA-2009

Figure 4, below, shows the spacing of the horizontal beams for the BA-2002 and BA-2009. 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.

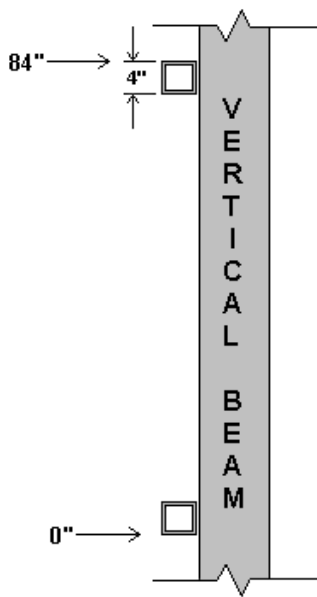


Figure 3: Beam Spacing,
BA-2001 and BA-2008

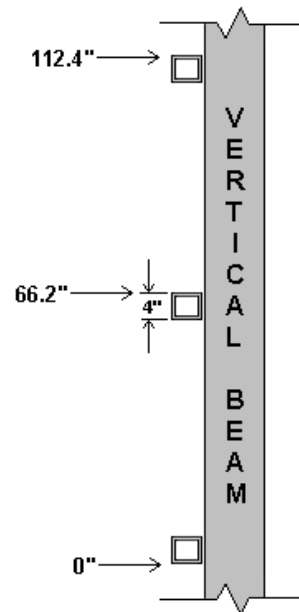


Figure 4: Beam Spacing,
BA-2002 and BA-2009

Model BA-2018

Figure 5 shows the spacing of the horizontal beams for the BA-2018. 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 156" (measuring to the top of the horizontal beam) and will be flush with the top of the scoreboard. Refer to Drawing B-238121 for location of the clip angles.

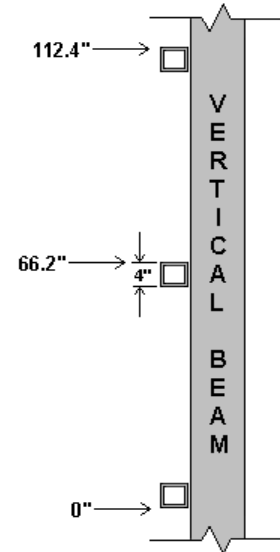


Figure 5: Beam Spacing, BA-2018

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.

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

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

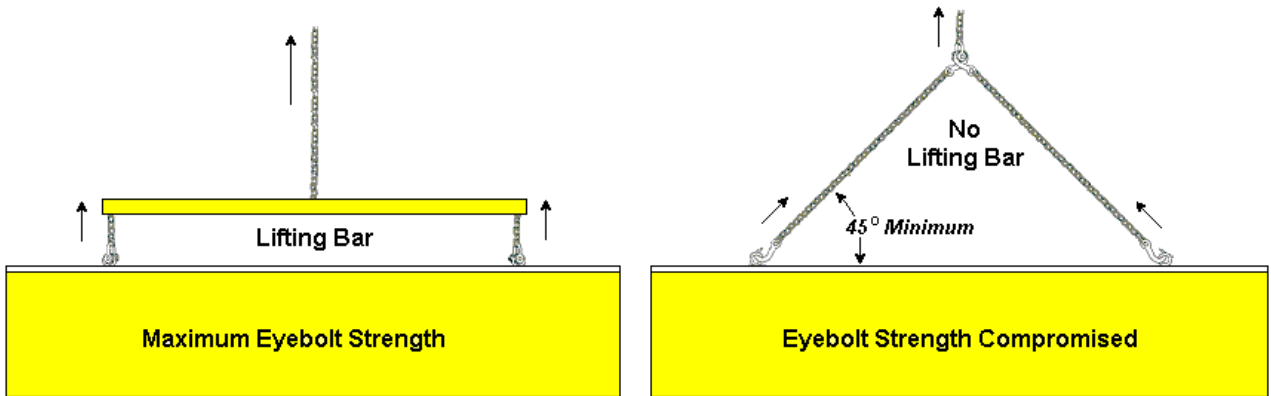


Figure 6: Lifting the Display

Figure 6 above illustrates both the preferred method (left example) and an alternative method (right example) for lifting a scoreboard. When lifting the display:

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

Take special care to ensure the rated load of the eyebolts is not exceeded. Refer to **ED-7244, Eyebolts**, to determine allowable loads and load angles for the lifting hardware. **ED-7244** is located in **Appendix 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 6**, can create a dangerous lateral force on the eyebolts and may cause the eyebolts to fail. Daktronics scoreboards use 1/2" and 5/8" shoulder-type eyebolts mounted to a 1/8" aluminum plate or steel nut plate, but exceeding load angles or weight limits could cause the bolts to pull out or cause the scoreboard cabinet to buckle. In either circumstance, the result would be serious damage to the scoreboard. If using this method, ensure a minimum angle of at least 45 degrees between the chain and scoreboard.

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, BA-2009 and BA-2018 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, BA-2002, BA-2008, BA-2009 and 2018 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. Steel clip angles are bolted to the back of each scoreboard section. These clip angles are welded on three sides to the horizontal beam structure

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

Note: Take care during the installation process to ensure that 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 way 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 7** (pictured on the next page). 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.

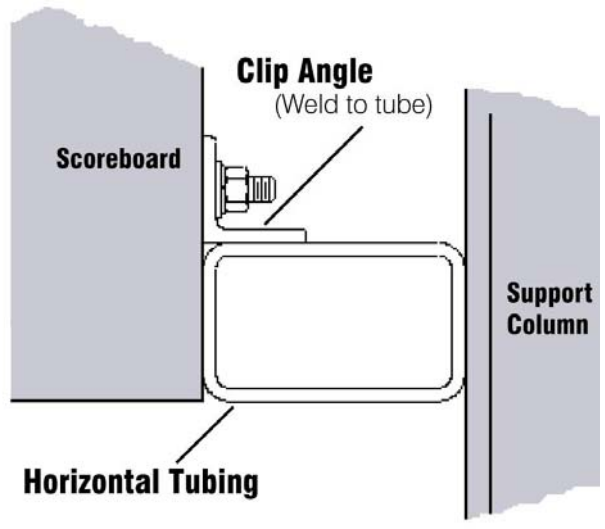


Figure 7: Mounting Display to Tubing

Clamping to Verticals

Figure 8, below, illustrates a no-weld, clamping method for the baseball scoreboards. For additional mounting details, refer to **Drawing A-89234**.

Mount the scoreboard as follows:

1. Determine where to drill the holes in the rear flanges of the scoreboard perimeter extrusion. 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. 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).
2. Attach the threaded rods and mounting angles using $\frac{1}{2}$ " hardware, and tighten securely.

Attach the threaded rods and mounting angles using $\frac{1}{2}$ " hardware, and tighten securely.

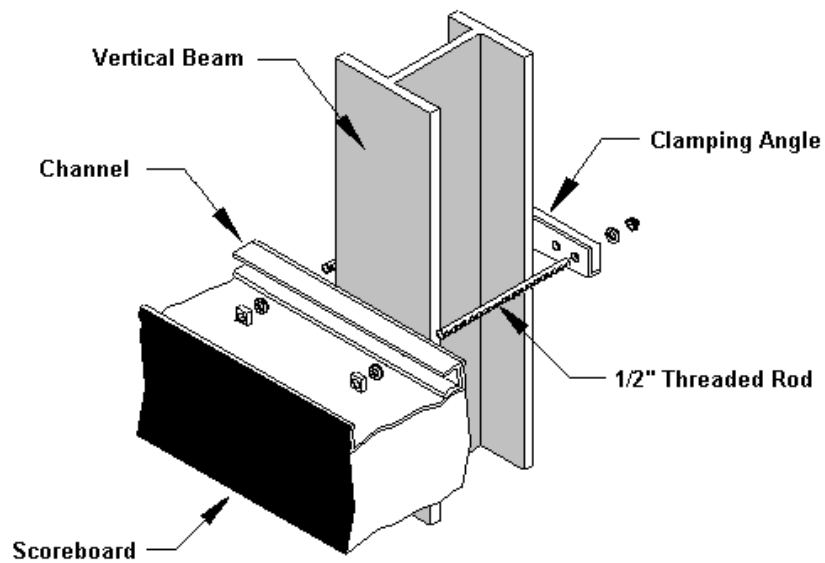


Figure 8: Scoreboard Mounting, Clamping Method

Section 4: Electrical Installation

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.

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 Drawings:

Schematic; Gen III Outdoor LED, 16 Column Drvr	Drawing A-177931
Schematic; Gen III, OD LED, 3 Drvr Display	Drawing A-179541
Schematic; Gen III, OD LED, 3 Drv, Multi-Sec w/TNMC	Drawing A-179593
Schematic; Gen III, OD LED, 3 Drv w/TNMC	Drawing A-180081
Schematic; Baseball w/ S.O.P., Gen III, Optional TNMC	Drawing B-204264
Schematic; BA-2018	Drawing B-221946

Power specifications for the baseball scoreboard are listed in **Section 2**.

Daktronics outdoor LED scoreboards have been designed for easy access to the 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, BA-2002, BA-2008, BA-2009 and BA-2018 require a dedicated, 120 V circuit for incoming power. The displays themselves have no breakers or fuses.

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

All power conductors are 14 AWG, except where 18 AWG wiring is called out on the schematic. All signal conductors are 22 AWG.

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

Grounding

Reference Drawings:

Schematic; Gen III Outdoor LED,
16 Column Drvr..... **Drawing A-177931**

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

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

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

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

Refer to the schematic, **Drawing A-177931**, for information on where to connect the grounding wire. The connection is illustrated in the “Pwr In” detail of the *Master Configuration* portion of the schematic.

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 power installations to consider: 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.

Note: 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 cable 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:

Schematic; Gen III Outdoor LED, 16 Column Drvr	Drawing A-177931
Driver; Gen III Outdoor LED, 16 Col Master	Drawing A-178197
Schematic; Gen III, OD LED, 3 Drvr Display	Drawing A-179541
Schematic; Gen III, OD LED, 3 Drv, Multi-Sec w/TNMC	Drawing A-179593
Schematic; Gen III, OD LED, 3 Drv w/TNMC	Drawing A-180081
Schematic; Baseball w/ S.O.P., Gen III, Optional TNMC	Drawing B-204264
Schematic; BA-2018	Drawing B-221946

Route power and signal cables into the scoreboard from the rear. There are two knockouts for conduit connections in the back. All power and signal wiring terminates at the driver enclosure. **Drawing A-178197** 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 locations.

Connect power and signal cables at the appropriate locations on the driver enclosure panel, shown in **Drawing A-178197**.

The conventional power termination panel has been eliminated from Daktronics outdoor scoreboards; the power feeder circuit connects directly to a terminal block in the driver enclosure, as shown in **Figure 9**. The terminal block is located in the lower right corner of the enclosure. Connect the power wires as shown in the illustration. Refer to the driver engineering drawing and the schematics listed at the beginning of this section for additional wiring details. The schematics include a detailed illustration of the power termination.

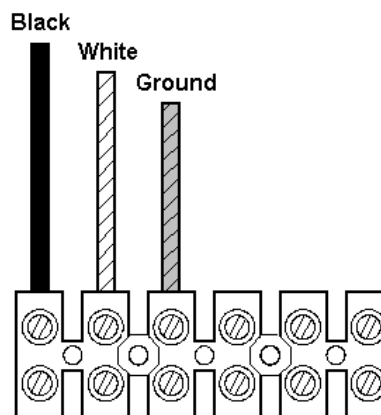


Figure 9: Power Terminal Block

Note: Driver enclosures in some earlier Daktronics scoreboards included a 120 V power receptacle. There is no 120 V receptacle in Generation III displays. If you want power to operate the control console at the scoreboard for troubleshooting, Daktronics recommends that you have the installation electrician provide a 120 V outlet close to the disconnect box specifically for this purpose.

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

Note: It is important that the shield wire is properly connected to the shield terminal on the signal surge arrester card. **Figure 10** illustrates the signal surge arrester card and connections.

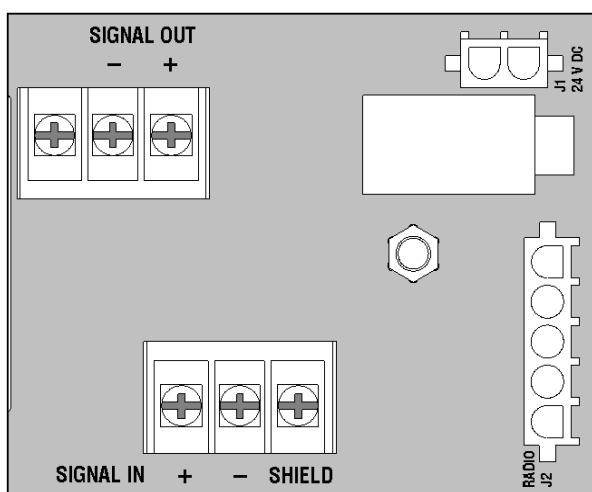


Figure 10: Signal Surge Arrester Card

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.

For additional information on signal connection, refer to the All Sport 5000 Series or All Sport 3000 series control console operation manuals, **ED-11976** and **ED-12126**.

Multiple Driver Connections

BA-2000 series baseball scoreboards require multiple drivers, and those models have been configured to operate with a master/slave driver system. Master and slave drivers function identically, but slave units lack the power terminal block and signal surge suppression card. The two drivers have been designed to simply plug into one another via an interconnect harness, the slave receives 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 cables from drivers to digit also have been factory-installed, and no additional connection is necessary.

Refer to the 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:

Component Locations; BA-2008-11 w/TNMC	Drawing A-166154
Component Locations; BA-2002-11/-21 w/TNMC, G3	Drawing A-179604
Component Locations; BA-2001-11/-21, G3	Drawing A-180359
Component Locations; BA-2002-11/-21, G3	Drawing A-180360
Component Locations; BA-2001-11/-21 w/TNMC, G3	Drawing A-180361
Component Locations; BA-2009-11/-21, G3	Drawing A-185787
Component Locations; BA-2008-11/-21 W/TNMC, G3.....	Drawing A-185855
Component Locations; BA-2018-11/-21 W/TNMC, G3.....	Drawing A-222092
Component Locations; BA-2018-11/-21, G3	Drawing A-222578

For front-access scoreboards, 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.

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 three screws at the bottom, as shown in **Figure 11**. (Very large digits may have additional screws across the bottom.) Open the scoreboard with care. Hold the digit panel in place by putting hand pressure on it while removing the screws, and carefully lift it from the board, sliding it out and down. If the panel is not held in place, it could drop immediately when the screw is removed, possibly damaging LEDs or the digit harness. (A stud insert on the back of the digit panel is designed to minimize damage from dropping.)

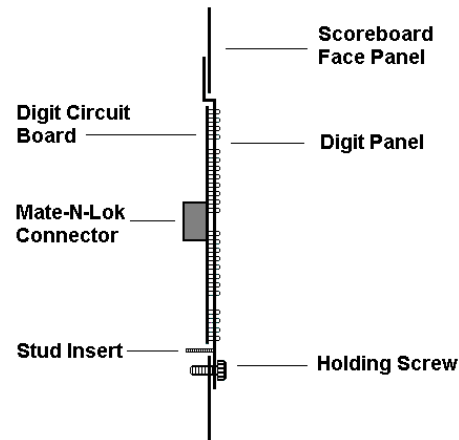


Figure 11: LED Digit Panel

Component location varies with each scoreboard model, but drivers and power and signal components are typically mounted inside the scoreboard behind an access panel or a digit.

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

Note: Disconnect power before servicing the display. The power should be disconnected when the display is not in use. Prolonged power-on may shorten the life of some electronic components.

Replacing a Digit

The digit circuit board, the platform for the LEDs, is mounted to the back of the digit panel. See **Figure 12**, next page. Do not attempt to remove individual LEDs. In the case of a malfunctioning board, replace the entire digit panel.

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 fixed machine screws, spacers and push nuts.
4. Remove the nuts and lift the digit off the standoff screws. (The push nuts can be removed in several ways, but Daktronics recommends using a $\frac{9}{32}$ " nut driver.)

5. Position a new digit over the screws and tighten the nuts.
6. Reconnect the power/signal connector. **Note:** This is a keyed connector **Bit** will attach in one way only. Do not attempt to force the connection.
7. Close and secure the digit panel and test the scoreboard.

Replacing a Digit Segment

Reference Drawing:

Digit Assemblies; Gen III LED Digits **Drawing B-177679**

When a digit malfunctions, in most cases it is necessary to replace the entire digit circuit board. Some larger digits (24", 30", 36"), however, are constructed in segments, as shown in **Figure 12**, it may be possible to make repairs by removing only the defective segment. As with smaller digits, the digit segment circuit boards are mounted to the back of the digit panel. **Note:** Do not attempt to remove individual LEDs. Refer to **Drawing B-177679**.

To remove a digit segment, follow these steps:

1. Open the digit panel as described above.
2. Disconnect the 2-pin power/signal connector from the back of the individual segment. Release the connector by squeezing together the locking tabs as you pull the connector free.
3. The individual segments are secured to the inside of the panel with fixed machine screws, spacers and push nuts. Remove the nuts and lift the segment off the standoff screws.
4. Position a new segment over the screws and tighten the nuts.
5. Reconnect the power/signal connector.

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

6. Close and secure the digit panel and test the scoreboard. Replace a malfunctioning colon, decimal, or indicator assembly in the same manner.

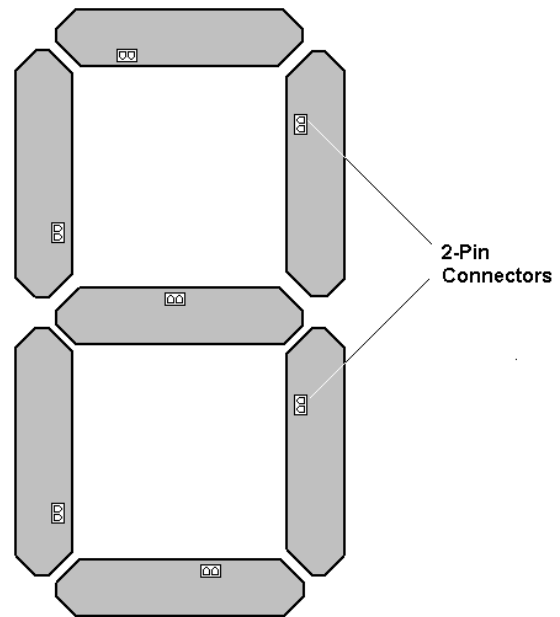


Figure 12: Segmented Digit Panel (Rear View)

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 the scoreboard driver. All scoreboards in this manual are front-accessible.

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 face panel as described in **Section 5.2**.
2. Remove the cover from the driver enclosure.
3. Disconnect all connectors from the driver. Release each connector by squeezing together the locking tabs while pulling the connector free.

Note: When reconnecting, remember that these are keyed connectors and will attach in one way only. Do not attempt to force the connections.

4. Remove the screws, nuts, or wing nuts securing the driver to the inside of the enclosure. Refer to **Figure 13**.
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.

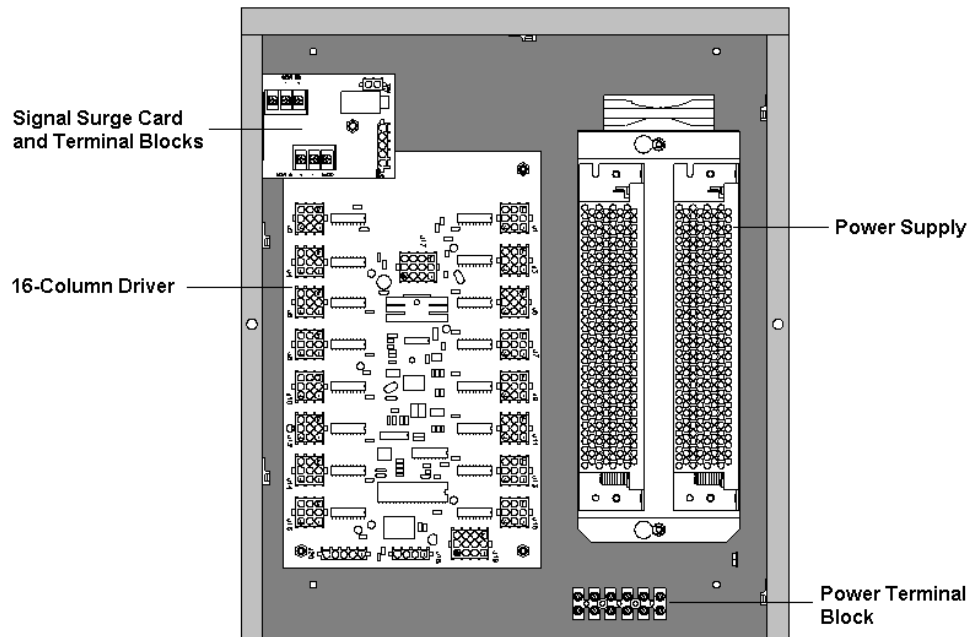


Figure 13: 16-Column Driver Enclosure

5.3 Schematic

Reference Drawings:

Schematic; Gen III Outdoor LED, 16 Column Drvr.....	Drawing A-177931
Schematic; Gen III, OD LED, 3 Drvr Display.....	Drawing A-179541
Schematic; Gen III, OD LED, 3 Drv, Multi-Sec w/TNMC	Drawing A-179593
Schematic; Gen III, OD LED, 3 Drv w/TNMC.....	Drawing A-180081
Schematic; Baseball w/S.O.P., Gen III, Optional TNMC	Drawing B-204264
Schematic; BA-2018.....	Drawing B-221946

Drawings A-177931, A-179541, A-179593, and A-180688 are the schematic diagrams for the Daktronics BA-2000 Series scoreboards and the 16-column driver used in them. The schematics include power and signal inputs and all wiring for the models described in this manual.

Use the following table to determine the schematic for each scoreboard model. The drawings are listed below by model number and inserted in alphanumeric order by drawing number.

Models	Schematic Name	Drawing
BA-2001	Schematic; Gen III, OD LED, 3 Drvr Display	A-179541
BA-2002 and BA-2002 w/ 8x48 TNMC	Schematic; Gen III, OD LED, 3 Drv, Multi-Sec w/TNMC	A-179593
BA-2001 w/8x32 TNMC	Schematic; Gen III, OD LED, 3 Drv w/TNMC	A-180081
BA-2008 and BA-2008 w/8x32 TNMC	Schematic; Baseball w/ S.O.P., Gen III, optional TNMC	B-204264
BA-2009 and BA-2009 w/8x48 TNMC	Schematic; Baseball w/ S.O.P. Gen III, OD LED, Optional TNMC	B-204264
BA-2018 and BA- 2018 w/8x48 TNMC	Schematic; BA-2018	B-221946

5.4 LED Drivers

Reference Drawings:

Address Table, 1 Through 128.....	Drawing A-115078
16 Column LED Driver II Specifications	Drawing A-134371
Driver; Gen III Outdoor LED, 16 Col Master.....	Drawing A-178197

In the scoreboard, the LED drivers perform the task of switching digits on and off. Refer to **Drawing A-178197**. Each driver has up to 19 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	
<i>Connector No.</i>	<i>Function</i>
1 – 16	Output 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 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 Drawings:

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/-21 w/LED TNMC	Drawing A-159666
Component Locations; BA-2009-11/-21 w/TNMC, G3	Drawing A-185787
Component Locations; BA-2008-11/-21, G3	Drawing A-185855
Digit Designation, BA-2018	Drawing B-221953

In each digit, certain LEDs always go on and off together. These groupings of LEDs are referred to as *segments*.

Drawing A-38532 illustrates digit segmentation. It also details which connector pin is wired to each digit segment and the wiring color code used throughout the display.

The component locations drawings in **Section 5.2** specify the driver connectors controlling the digits. Numbers displayed in hexagons in the upper half of each digit, as shown in **Figure 14**, indicate which connector is wired to that digit. (The lower number in the square indicates nominal digit size.) The drawings listed at the beginning of this section also indicate digit designation and specify the harnesses used for each of the digit/driver connections.

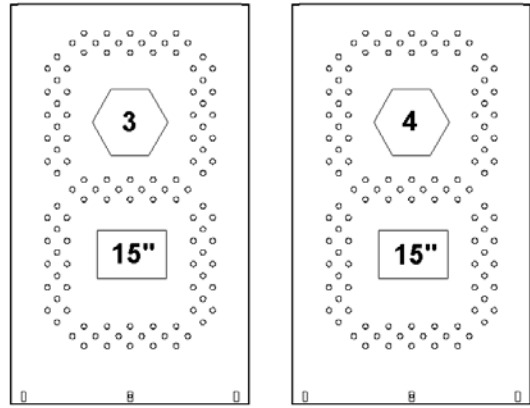


Figure 14: Digit Designation

5.6 Lightning Protection

The use of a disconnect near the scoreboard to completely cut all current-carrying lines significantly protects the circuits against lightning damage. The National Electrical Code also requires the disconnect. In order for this system 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 junction box when the system is not in use. The same surges that may damage the scoreboard's driver can also damage the console's circuit.

5.7 Troubleshooting

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

Symptom/Condition	Possible Cause
Scoreboard will not light	<ul style="list-style-type: none"> • Console not connected or poor connection • No power to control console • No power to the scoreboard
Garbled display	<ul style="list-style-type: none"> • Internal driver logic malfunction • Control console malfunction
Digit will not light	<ul style="list-style-type: none"> • Black wire to digit broken • Poor contact at driver connection. • Driver malfunction

Symptom/Condition	Possible Cause
Segment will not light	<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
Segment stays lit	<ul style="list-style-type: none"> • Driver shift register failure • Short circuit on digit
Date appears in the wrong place on the scoreboard	<ul style="list-style-type: none"> • Incorrect address settings on drivers (consult tables and set correct addresses)

5.8 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, 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-1110-0011
Fan, 32 cfm, 24 V DC, 3.15 sq. in	Driver enclosure	B-1030
Digit, 15", 7-seg outdoor LED, red	Scoreboard	0P-1192-2000
Digit, 15", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0214
Digit, 18", 7-seg outdoor LED, red	Scoreboard	0P-1192-0202
Digit, 18", 7-seg outdoor LED, amber	Scoreboard	0P-1192-0216
Digit segment, 30", outdoor LED, red (vertical)	Scoreboard	0P-1192-0206
Digit segment, 30", outdoor LED, red (horizontal)	Scoreboard	0P-1192-0207
Digit segment, 30", outdoor LED, amber (vertical)	Scoreboard	0P-1192-0220
Digit segment, 30", outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0221
Digit segment, 24", outdoor LED, red (horizontal)	Scoreboard	0P-1192-0205

Description	Location	Daktronics Part No.
Digit segment, 24", outdoor LED, red (vertical)	Scoreboard	0P-1192-0204
Digit segment, 24", outdoor LED, amber (horizontal)	Scoreboard	0P-1192-0219
Digit segment, 24", outdoor LED, amber (vertical)	Scoreboard	0P-1192-0218
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.

Exchange Program

Daktronics unique Exchange Program is a quick, economical service for replacing key parts in need of repair. If a part requires repair or replacement, Daktronics sends the customer a replacement, and the customer sends the problem part to Daktronics. This not only saves money, but also decreases display downtime.

To participate in the Exchange Program, follow these steps.

1. **Call the local Daktronics representative or the Daktronics Customer Call Center:** 877-605-1115 (toll-free) or 605-697-4036. Choose option 2 to have a Customer Service Coordinator order a new part.
2. **When the new exchange part is received, mail the old part to Daktronics.**
 - If the replacement part fixes the problem, send in the problem part, which is being replaced.
 - Package the old part in the same shipping materials in which the replacement part arrived.
 - Fill out and attach the enclosed UPS shipping document.
 - Ship the part to Daktronics.

- 3. You will be billed for the replacement part immediately, unless you have a qualifying service agreement in place.**

In most circumstances, you will be invoiced for the replacement part at the time it is shipped. This bill, which represents the exchange price, is due when you receive it.

- 4. You must send the problem part to Daktronics within 30 days.** If you do not ship it to Daktronics within 30 working days from the invoice date, Daktronics assumes you are purchasing the replacement part outright with no exchange. You will therefore be invoiced for the replacement part at the full purchase price, with the balance due upon receipt. The second invoice represents the difference between the exchange price (billed previously) and the full purchase price of the part. 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.

Note: Second invoice policies also apply to customers with qualifying service agreements in place. **To avoid a restocking charge, return the part, which has been replaced within 30 days of the invoice date.**

- 5. If the replacement part does not solve the problem, return the part within 30 working days or you will be billed for it at full purchase price.**

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

Repair and Return Program

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

Call your local Daktronics representative or the Daktronics Customer Call Center:

877-605-1115 (toll-free) or 605-697-4036.

Receive a Return Materials Authorization (RMA) number before shipping.

This expedites repair of your part.

Package and pad the item carefully to prevent damage during shipment.

Electronic components, such as printed circuit boards, should be placed in an antistatic bag before boxing.

Enclose:

- your name
- address
- phone number
- the RMA number
- a clear description of symptoms

How to reach us

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

Phone: Daktronics Customer Call Center:
877-605-1115 (toll-free) or 605-697-4036

Fax: 605-697-4444

Section 6: TNMC Maintenance for BA-2001, 2002, 2008 and 2009

IMPORTANT NOTES:

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

6.1 Team Name Message Center System Overview

Team name message centers (TNMCs) are available in two sizes: an 8x32 matrix model with four 8x8-pixel modules, and an 8x48 model comprised of six 8x8 modules. **Figure 15**, below, illustrates the larger unit. Light emitting diodes (LEDs) – tiny, solid-state lighting units – illuminate the displays.

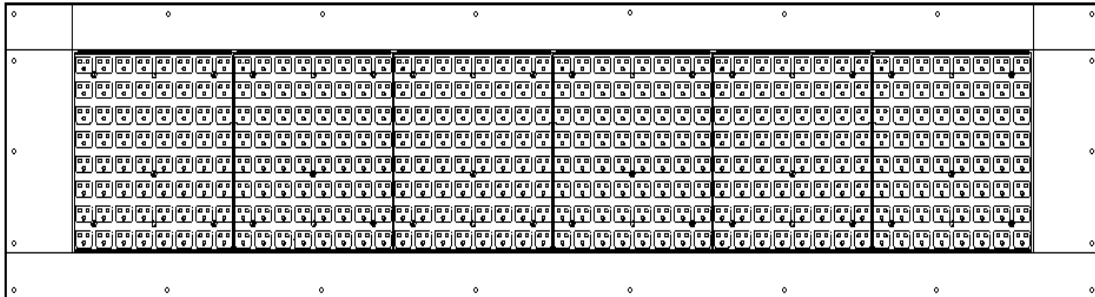


Figure 15: 8x48 Team Name Message Center

The message centers feature an array of red or amber LEDs, and they are capable of displaying characters up to 10" high. Pixels in the red TNMC consist of a three-LED cluster, while amber TNMCs use four-LEDs per pixel.

The four-module TNMC measures approximately 1'-4" tall by 4' wide, while the six-module TNMC measures approximately 1'-4" by 6' wide; both have an in-cabinet depth of about 5". The smaller units weigh about 80 pounds per pair, and the larger TNMC sets add about 120 pounds to scoreboard weight.

TNMCs are typically installed in pairs. Although the message centers customarily are used for team names (home and guest), they are programmable and 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 typically are front-accessible, but some models may be ordered with rear service access. For that reason, 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 signal travel through the TNMC display.
- **Power routing summary:** provides a basic explanation of power travel through the display.
- **Service and diagnostics:** provides instructions for removing various display components and explains the functions of circuit board connectors as well as the meanings of diagnostic LEDs.
- **Maintenance:** lists a number of steps to take to keep the 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 list:** includes the part description and number of display components that may have to be replaced during the life of this display.

6.3 Signal Summary

Reference Drawings:

Schematic, Red LED TNMC, Gen III.....	Drawing A-187661
Schematic; Amber LED TNMC, Gen III.....	Drawing A-187662
Component Locations; 832/842 Red/Amb TNMC, G3.....	Drawing A-187987

Use these reference drawings after 11/29/05

Schematic, Amber TNMC, GEN IV	Drawing A-252645
Schematic, Red TNMC, GEN IV	Drawing A-252681
Component Locations; 832/848 Red/Amb LED TNMC, G4.....	Drawing A-257029

Refer to your schematic, **A-187661** or **A-187662** (or **A-252645** or **A-252681** for **GEN 4**), for complete information on TNMC signal routing. **Drawing A-187987** (or **A-257029** for **GEN 4**) indicates the locations of the internal electronic components. 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 scoreboard.

2. The signal then travels through the driver/power enclosure to the J1 connector on the current loop interface card.
3. Data exits at J42 via current loop harness, and connects with P43 at the TNMC controller assembly. An interconnect harness carries the signal to the first module, and the signal relays from module to module, in daisy-chain style, until it reaches the last module on the message center.

6.4 Power Summary

Reference Drawings:

Schematic, Red LED TNMC, Gen III	Drawing A-187661
Schematic; Amber LED TNMC, Gen III	Drawing A-187662
Component Locations; 832/842 Red/Amb TNMC, G3	Drawing A-187987

Use these reference drawings after 11/29/05

Schematic, Amber TNMC, GEN IV	Drawing A-252645
Schematic, Red TNMC, GEN IV	Drawing A-252681
Component Locations; 832/848 Red/Amb LED TNMC, G4	Drawing A-257029

Refer to your schematic, **A-187661** or **A-187662** (or **A-252645** or **A-252681** for **GEN 4**), for complete information on TNMC power routing. **Drawing A-187987** for **GEN III** only (or **A-257029** for **GEN 4**) indicates the locations of the internal electronic components.

Note: Amber TNMCs always contain two power supplies, while red TNMCs require only a single power supply.

Power routing for the display can be summarized as follows:

1. Incoming power terminates at the terminal block in the scoreboard driver enclosure. Using the same harness and J42-P43 connections as signal, power is then routed to the TNMC controller where it then travels to both the power supply assembly and to a transformer on the controller tray.
2. From the power supply assembly, power is relayed to the first module, and then from module to module.
3. While the modules draw their power directly from the power supply assemblies (6.5 V for red LED modules, 9 V for amber), the TNMC controller itself receives 16 V power from the transformer.

6.5 Service and Diagnostics

The following subsections address servicing of these display components:

- TNMC Controller
- Modules and Drivers
- Power Supplies

The subsections also address diagnostic LEDs and signal/power connectors found on the TNMC controller.

Note: Disconnect power before servicing internal components!

TNMC Controller

Reference Drawings:

- 4 Column MASC LED Driver Specifications..... **Drawing A-166216**
Component Locations; 832/842
Red/Amb LED TNMC, G3..... **Drawing A-187987**
Component Locations; 832/848
Red/Amb IED TNMC, G4..... **Drawing A-257029**

The TNMC controller, located on the rear-access panel, receives signal directly from the control console and sends data to the modules. Refer to the signal summary in **Section 6.3** for more information and to **Drawing A-187987 (or A-257029 for GEN 4)** for the location of the controller board in the TNMC. The controller itself is detailed in **Drawing A-166216. Figure 16** below illustrates a typical controller assembly. The card and transformer are mounted to a tray, which is mounted to the back panel of the TNMC cabinet.

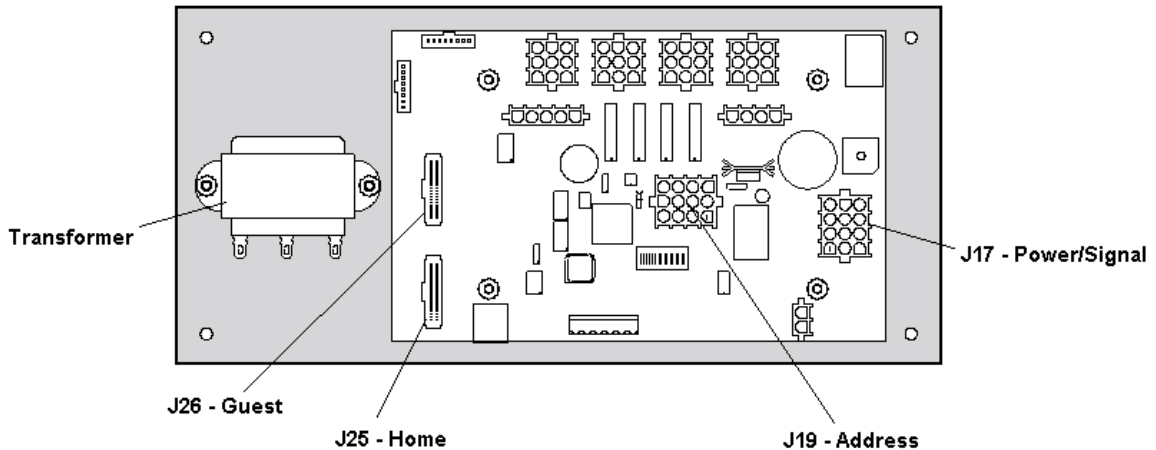


Figure 16: TNMC Controller Assembly

Note: Connectors J25 and J26 control home and guest displays. When the ribbon cable is plugged into J25, the TNMC sends home team information to the matrix display. In the opposite message center, the signal cable would be plugged into the J26 connector, and guest information would be displayed. (Switching the cables reverses the information each message center receives.)

J19 is the connector for the address plug. The address setting for TNMCs will always be 221. (There may be other settings if the TNMCs are used to display messages other than team names.)

Diagnostic LEDs

Reference Drawing:

4 Column MASC LED Driver Specifications **Drawing A-166216**

There are seven diagnostic LEDs located on the TNMC controller, six indicating when the controller is receiving signal, and the seventh indicating power status. Four of the LEDs, those indicating CAN and RS-232 signal functions, are not used with the TNMC controller.

The following table explains the operation and functions of each of the diagnostic LEDs.

LED	Color	Function	Operation	Summary
DS1	Red	CL signal	Steady on or blinking	DS1 will be on or blinking when the driver is receiving signal and off when there is no signal with CL (current loop).
DS2	Green	CL signal	Steady on or blinking	DS2 will be on or blinking when the driver is receiving signal and off when there is no signal with CL (current loop).
DS3 (Not used with TNMC functions)	Red	CAN signal	Steady on or blinking	DS3 will be blinking when the driver is receiving signal and on when there is no signal with CAN (controller area network). If there is no CAN device connected to TB1, both DS3 and DS4 will be on and steady.
DS4 (Not used with TNMC functions)	Green	CAN signal	Steady on or blinking	DS4 will be blinking when the driver is receiving signal and on when there is no signal with CAN (controller area network). If there is no CAN device connected to TB1, both DS3 and DS4 will be on and steady.
DS5 (Not used with TNMC functions)	Red	RS-232 signal	Steady on or blinking	DS5 will be on or blinking when the driver is receiving signal and off when there is no signal with RS-232.
DS6 (Not used with TNMC functions)	Green	RS-232 signal	Steady on or blinking	DS6 will be on or blinking when the driver is receiving signal and off when there is no signal with RS-232.
DS7	Green	Power	Steady on	DS7 will be on and steady indicating the driver has power.

Removing/Changing the Controller

Reference Drawings:

Component Locations; 832/842 Red/Amb LED TNMC, G3	Drawing A-187987
Exploded Front View; Single Panel Module.....	Drawing B-126111
Exploded Rear View; Single Panel Module	Drawing B-126112

Use this reference after 11/29/05

Component Locations; 832/848 Red/Amb LED TNMC, G4	Drawing A-257029
--	-------------------------

Drawing A-187987 (or A-257029 for GEN IV) indicates the location of the TNMC controller for each of the TNMC models. **Figure 17** below illustrates a typical TNMC layout. 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 front face the LED module. Refer to **Drawings B-126111** and **B-126112**. (The fasteners are referred to as “latch plugs” on the drawings). One latch fastener is centered below the top row of pixels and one is centered above the bottom row. They may be slightly hidden by the louvers.

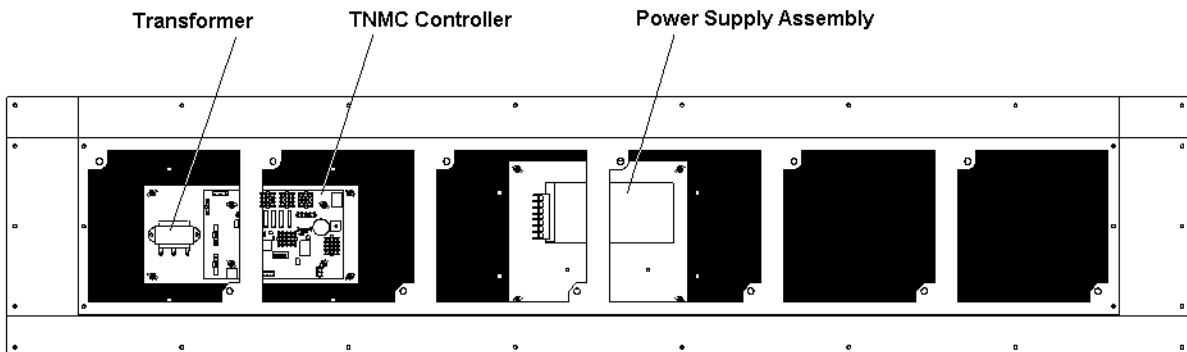


Figure 17: TNMC Internal Components (Modules Removed)

2. 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.

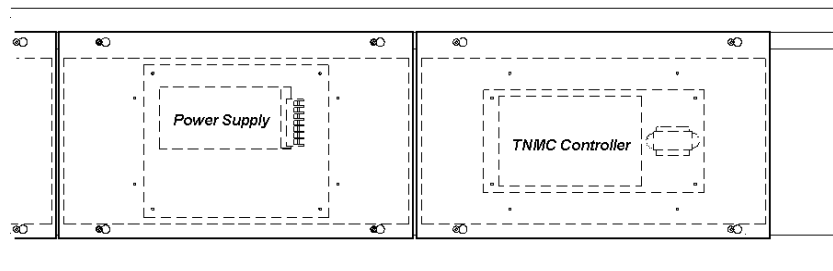


Figure 18: TNMC Rear Access

Note: To access the controller from the rear of the TNMC, as shown in **Figure 18**

above, remove the appropriate rear-access panel from the TNMC by loosening all four of the screws. Slide the access panel sideways to the larger part of the 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. Disconnect power from J17.

3. Remove all power and signal connections from the board. Release “locked” connectors by squeezing together the tabs, and 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. 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 front of the module. One is centered below the top row of pixels and one is centered above the bottom row (They may be slightly hidden by the louvers).
2. Unlatch the latch fasteners, illustrated in **Figure 19**, 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.

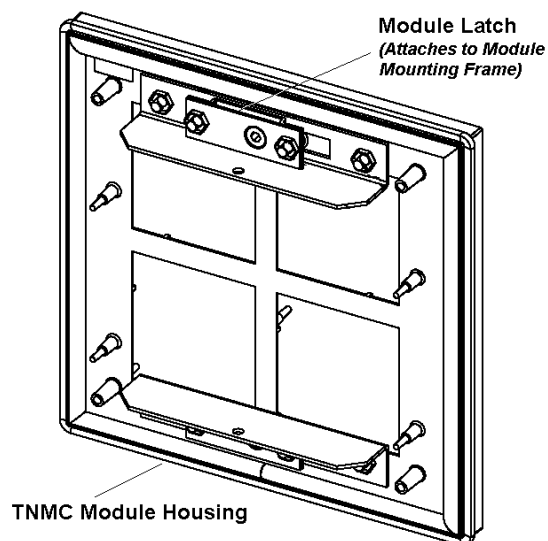


Figure 19: TNMC Module (Rear View)

If you are accessing the unit from the rear, follow this procedure:

1. First, remove the rear access panel (explained in preceding subsection.)
2. 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.
3. Carefully disconnect the ribbon cables.

4. 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:

1. Weatherstripping on the back edge of the module must be intact and in good condition to prevent water from seeping into the display.
2. 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.

Individual components such as louvers can be removed for service, but Daktronics recommends that the module be kept intact and that the entire assembly be sent in for repair or replacement.

Power Supplies

Reference Drawings:

Schematic, Red LED TNMC, Gen III.....**Drawing A-187661**
Schematic; Amber LED TNMC, Gen III.....**Drawing A-187662**

Use these reference drawings after 11/29/05

Schematic, Amber TNMC, GEN IV**Drawing A-252645**
Schematic, Red TNMC, GEN IV**Drawing A-252681**

The red-LED TNMC uses a single power supply assembly to power all modules in the 8x32 and 8x48 models. The amber TNMC uses a dual power supply assembly to power all modules in the 8x32 or 8x48 models. Refer to **Drawings A-187661** and **A-187662** (or **A-252645** or **A-252681** for GEN IV)..

Removing/Changing a Power Supply

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

1. See the directions in the preceding **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.

Follow these steps in reverse order to install a new power supply.

Weatherstripping

To ensure that the display is waterproof, weatherstripping has been installed around

the entire display and around each module. It is important that the weatherstripping is attached properly at all times, or water may leak into the display and damage the components.

6.6 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 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.

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

6.7 Troubleshooting

This section 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
One or more LEDs on a single module fails to light.	<ul style="list-style-type: none"> ▪ Check/replace the ribbon cables on the module. ▪ Replace the module.
One or more LEDs on a single module fails to turn off.	<ul style="list-style-type: none"> ▪ Check/replace the ribbon cables on module. ▪ Replace the module.
A section of the display is not working; the section extends all the way to the right side of the display.	<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.

Symptom/Condition	Possible Cause/Remedy
	<ul style="list-style-type: none"> ▪ Replace the power supply assembly on the first module that is not working. ▪ Replace the ribbon cable.
One row of modules does not work or is garbled.	<ul style="list-style-type: none"> ▪ Replace the first module. ▪ Replace the controller.
A group of modules that share the same power supply assembly fails to work.	<ul style="list-style-type: none"> ▪ Replace the power supply assembly.
Entire display fails to work.	<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.

6.8 Initialization Information at Startup

Every time the display is powered up, the display will run through an initialization during which it will test all LEDs and addresses. First, the message center will display the proper address number. When completed, the initialization test will display home and guest in the appropriate location. If the entire TNMC display fails at startup, signal may not be properly connected, or the address plug may not be connected to the J17 jack on the TNMC controller card. Check both connections in the event of a failure.

6.9 Replacement Parts List

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

Part Description	Part Number (Prior to 11/29/05)	Part Number (After 11/29-05)
Controller assy; 8x32/8x48, LED TNMC, G3	0A-1152-2549	Same
Driver (only); MASC, 4-col, LED, coated	0P-1192-0068	Same
Transformer; 115/230 V pri, 16 V sec @ 2 A	T-1063	Same
Module, TNMC; amber LED (4A, 8x8, coated, Type 2)	0A-1208-3005	0A-1208-4001
Module, TNMC; red LED (3R, 8x8, coated, Type	0A-1208-3017	0A-1208-4000

Part Description	Part Number (Prior to 11/29/05)	Part Number (After 11/29-05)
2)		
Power supply assy; amber LED TNMC, G3	0A-1192-2551	0A-1192-3161
Power supply (only); amber LED TNMC	A-1555	A-1591
Power supply assy; red LED TNMC, G3	0A-1192-2550	0A-1192-3160
Power supply (only); red LED TNMC	A-1633	Same
Cable assy; 20-pos ribbon, 18", dual row (module to module)	W-1387	Same
Cable assy; 20-pos ribbon, 30" (TNMC controller to first module)	0A-1000-0017	Same
Electrical contact cleaner/lubricant (CaiLube [®])	CH-1019	Same

*Effective in Fall 2003, Daktronics Part Number 0A-1208-3005 was replaced with Part Number 0A-1208-3018. Contact Daktronics Customer Service for specific replacement part numbers.

Part numbers for each complete team name message center assembly are as follows:

Assembly	Part Number (Prior to 11/29/05)	Part Number (After 11/29-05)
Amber LED TNMC, 8x32	0A-1192-2555	0A-1192-3165
Red LED TNMC, 8x32	0A-1192-2554	0A-1192-3164
Amber LED TNMC, 8x48	0A-1192-2553	0A-1992-3167
Red LED TNMC, 8x48	0A-1192-2552	0A-1192-3166

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.

Section 7: TNMC Maintenance for BA-2018

IMPORTANT NOTES:

1. **Disconnect power before doing any repair or maintenance work on the message centers.**
2. **Only qualified service personnel should access internal display electronics.**
3. **Disconnect power when the scoreboard is not in use.**

7.1 Team Name Message Center System Overview

Team name message centers (TNMCs) are available in two sizes: an 8x32 matrix model with four 8x8-pixel modules, and an 8x48 model comprised of six 8x8 modules. Light emitting diodes (LEDs)-tiny, solid-state lighting units-illuminate the displays.

The message centers feature an array of red or amber LEDs, and they are capable of displaying characters up to 18" high. The TNMCs contains pixels that consist of a cluster of LED's 12-LEDs per pixel.

The six-module TNMC measures approximately 1'-11" high by 10'-0" wide and has an in-cabinet depth of about 8". The TNMC units add about 120 pounds to scoreboard weight.

TNMCs are typically installed in pairs. Although the message centers customarily are used for team names, they are programmable and 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.

7.2 Maintenance and Troubleshooting Overview

Standard Daktronics outdoor LED scoreboards typically are front-accessible, but some models may be ordered with rear service access. For that reason, Daktronics team name message centers have been designed so that they may be accessed from 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 List:** includes the part descriptions and numbers of display components that may need replacement during the life of the display.

7.3 Signal Summary

Reference Drawing:

F. Assy, 8x48-2.5" LED TNMC	Drawing B-164514
F. Assy, 8x48-2.5" LED TNMC, Amber, G3	Drawing B-177822
Schematic; 2.5" Red/Org, LED TNMC, Gen III.....	Drawing B-188553
Schematic; 2.5" Amber LED TNMC, Gen III	Drawing B-190140

Refer to the schematic, **Drawings B-190140** or **B-188553** for complete information on TNMC signal routing. **Drawings B-177822** and **B-164514** indicate the locations of the internal electronic components. Routing from the All Sport controller's signal input 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 driver/power enclosure to the J1 connector on the current loop interface card.
3. Data exits at J42 via current loop harness, and connects with P43 at the TNMC controller assembly. An interconnect harness carries the signal to the first module, and the signal relays from module to module, in daisy-chain style, until it reaches the last module on the message center.

7.4 Power Summary

Reference Drawing:

F. Assy, 8x48-2.5" LED TNMC	Drawing B-164514
F. Assy, 8x48-2.5" LED TNMC, Amber, G3	Drawing B-177822
Schematic; 2.5" Red/Org, LED TNMC, Gen III.....	Drawing B-188553
Schematic; 2.5" Amber LED TNMC, Gen III	Drawing B-190140

Refer to the schematic, **Drawing B-190140** or **B-188553** for complete information on TNMC power routing. **Drawings B-177822** and **B-164514** indicate the locations of the internal electronic components. Note that amber TNMCs contain six power supplies each.

Power routing for the display can be summarized as follows:

1. Incoming power terminates at the terminal block in the scoreboard driver enclosure. Using the same harness and J42-P43 connections as signal, power is then routed to the TNMC controller where it then travels to both the power supply assembly and to a transformer on the controller tray.
2. From the power supply assembly, power is relayed to the first module, and then from module to module.
3. While the modules draw their power directly from the power supply assemblies (12 V or amber), the TNMC controller itself receives 16 V power from the transformer.

7.5 Service and Diagnostics

The following subsections address servicing of these display components:

- TNMC Controller
- Modules and Drivers
- Power Supplies

The subsections also address diagnostic LEDs and signal/power connectors found on the TNMC controller.

Remember: Disconnect power before servicing internal components.

TNMC Controller

Reference Drawings:

- 4 Column MASC LED Driver Specifications.....**Drawing A-166216**
- F. Assy, 8x48-2.5" LED TNMC.....**Drawing B-164514**
- F. Assy, 8x48-2.5" LED TNMC, Amber, G3.....**Drawing B-177822**

The TNMC controller, located on an internal vertical panel, receives signal directly from the control console and sends data to the modules. Refer to the signal summary in **Section 5.3** for more information and to **Drawings B-177822** or **B-164514** for the location of the controller board in the TNMC. The controller itself is detailed in **Drawing A-166216**.

The card and transformer are mounted to a tray, which is mounted to an internal vertical panel of the TNMC cabinet.

Note: Connector J25 and J26 control home and guest. When the ribbon cable is plugged into J25, the TNMC sends home team information to the matrix display. In the opposite message center, the signal cable would be plugged into the J26 connector, and guest information would be displayed. Switching the cables reverses the information each message center receives.

J19 is the connector for the address plug. The address setting for TNMCs will always be 221. There may be other settings if the TNMCs are used to display messages other than team names.

Diagnostic LEDs

Reference Drawing:

4 Column MASC LED Driver Specifications **Drawing A-166216**

There are seven diagnostic LEDs located in the TNMC controller, six indicating when the controller is receiving signal, and the seventh indicating power status. Four of the LEDs, those indicating CAN and RS-232 signal functions, are not used with the TNMC controller. Refer to the drawing listed above for more information. The following table explains the operation and functions of each of the diagnostic LEDs.

LED	Color	Function	Operation	Summary
DS1	Red	CL signal	Steady on or blinking	DS1 will be on or blinking when the driver is receiving signal and off when there is no signal with CL (current loop).
DS2	Green	CL signal	Steady on or blinking	DS2 will be on or blinking when the driver is receiving signal and off when there is no signal with CL.
DS3 (Not used with TNMC functions)	Red	CAN signal	Steady on or blinking	DS3 will be blinking when the driver is receiving signal and on when there is no signal with CAN (controller area network). If there is no CAN device connected to TB1, both DS3 and DS4 will be on and steady.
DS4 (Not used with TNMC functions)	Green	CAN signal	Steady on or blinking	DS4 will be blinking when the driver is receiving signal and on when there is no signal with CAN. If there is no CAN device connected to TB1, both DS3 and DS4 will be on and steady.
DS5 (Not used with TNMC functions)	Red	RS-232 signal	Steady on or blinking	DS5 will be on or blinking when the driver is receiving signal and off when there is no signal with RS-232.
DS6 (Not used with TNMC functions)	Green	RS-232 signal	Steady on or blinking	DS6 will be on or blinking when the driver is receiving signal and off when there is no signal with RS-232
DS7	Green	Power	Steady on	DS7 when on and steady indicates the driver has power.

Removing/Changing the Controller

Reference Drawings:

Face Panel Assy, 2.5" LED TNMC	Drawing B-164446
F. Assy, 8x48-2.5" LED TNMC	Drawing B-164514
F. Assy, 8x48-2.5" LED TNMC, Amber, G3.....	Drawing B-177822
Face Panel Assy; 8x8-2.25" Amber TNMC.....	Drawing B-177836

The drawings listed above indicate the location of the TNMC controller for each of the TNMC models. Complete the following steps to remove the controller from the display.

- 1. To access the LED controller from the front:** Unlatch the fasteners on the front face of the LED module. Refer to **Drawing B-177836**. (The fasteners are referred to as "latch plugs" on the drawings). One latch fastener is centered below the top row of pixels and one is centered above the bottom row. They may be slightly hidden by the louvers.
- 2.** 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 re-attaching.
- 3. To access the controller from the rear of the TNMC:** Remove the appropriate rear-access panel from the TNMC by loosening all four of the screws. Slide the access panel sideways to the larger part of the 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.
- 4.** Disconnect the power from J17.
- 5.** Remove all power and signal connection from the board. Release "locked" connectors by squeezing together the tabs, and 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.
- 6.** Remove the four nuts holding the board in place.
- 7.** Follow the previous steps in reverse order to install a new controller board.

Modules and Drivers

Reference Drawings:

Face Panel Assy, 2.5" LED TNMC.....	Drawing B-164446
F. Assy, 8x48-2.5" LED TNMC.....	Drawing B-164514
F. Assy, 8x48-2.5" LED TNMC, Amber, G3	Drawing B-177822
Face Panel Assy; 8x8-2.25" Amber TNMC	Drawing B-177836

The module and driver board are a single, functional unit. To remove a module, complete the following steps:

1. The modules are attached to an internal frame called the module-mounting panel. Remove the modules by removing each of the screws in the four corners, as shown in **Drawings B-177836, B-177822 and B-164514**. 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.
2. To access the module from the rear of the TNMC, remove the right rear-access panel from the TNMC by loosening all three of the screws, as shown in final assembly **Drawings B-177822 and B-164514**. Take care not to drop the panel, and remember that the module controller is attached to the face panel.
3. If you are accessing the unit from the rear, it is unnecessary to remove the entire module for service. Individual PC boards can be replaced from the rear by removing the module driver and unfastening the wing nuts hold the board in place. (Before unfastening the board, 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).
4. When installing a module, reverse the previous steps.

During installation, inspect the weather-stripping on the back edge of the module. It must be intact and in good condition of it is to prevent water from seeping into the display.

Power Supplies

Reference Drawing:

Schematic; 2.5" Red/Org, LED TNMC, Gen III	Drawing B-188553
Schematic; 2.5" Amber Led TNMC, Gen III	Drawing B-190140

The amber TNMC uses a dual power supply assembly to power all modules in the 8x48 model. Refer to **Drawings B-190140 and B-188553**.

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.

7.6 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 fasteners have come loose, allowing gaps in the panels; or where moisture may be entering around hardware. Check electronic components for 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.

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

7.7 Troubleshooting

This subsection contains a list of problems common to LED displays. This list does not include every possible symptom but does represent typical situations that may occur.

Symptom/Condition	Possible Cause/Remedy
One or more LEDs on a single module fails to light.	<ul style="list-style-type: none"> ▪ Check/replace the ribbon cables on the module. ▪ Replace the module.
One or more LEDs on a single module fails to turn off.	<ul style="list-style-type: none"> ▪ Check/replace the ribbon cables on module. ▪ Replace the module.
One row of modules does not work or is garbled.	<ul style="list-style-type: none"> ▪ Replace the first module. ▪ Replace the controller.
A section of the display is not working; the section extends all the way to the right side of the display.	<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.

Symptom/Condition	Possible Cause/Remedy
	<ul style="list-style-type: none"> ▪ Replace the power supply assembly on the first module that is not working. ▪ Replace the ribbon cable.

7.8 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. First, the message center will display the proper address number. When completed, the initialization test will display HOME and GUEST in the appropriate location. If the entire TNMC display fails at startup, signal may not be properly connected, or the address plug may not be connected to the H17 jack on the TNMC controller card. Check both connections on the event of a failure.

7.9 Replacement Parts

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. The part number of the complete TNMC assembly is as follows:

Part Description	Part Number
Controller assy, 8x32/8x48, LED TNMC, Gen 3	0A-1152-2549
<ul style="list-style-type: none"> ▪ Driver (only); MASC, 4-col, LED, coated 	0P-1192-0068
<ul style="list-style-type: none"> ▪ Transformer; 115/230 V pri, 16 V sec @ 2 A 	T-1063
Module, TNMC; amber LED (4A, 8x8, coated, Type 2)	0A-1192-2674
Power supply assy; amber LED TNMC, G3	0A-1192-2551
<ul style="list-style-type: none"> ▪ Power supply (only); amber LED TNMC, G3; 12 V, 8.5 A, 85-265 V AC 	A-1555
Module, TNMC; red LED (4A, 8x8, coated, Type 2)	0A-1192-2673
Power supply assy; red LED TNMC, G3	0A-1192-2655
<ul style="list-style-type: none"> ▪ Power supply (only); red LED TNMC, G3; 12 V, 8.5 A, 85-265 V AC 	A-1555
Cable assy; 20-pos ribbon, 18", dual row (module to module)	W-1387
Cable assy; 20-pos ribbon, 30" (TNMC controller to first module)	0A-1000-0017
Electrical contact cleaner/lubricant (CaiLube)	CH-1019

Assembly	Part Number
Amber LED TNMC, 8x48	0A-1192-2576
Red LED TNMC, 8x48	0A-1192-2575

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.

Appendix A: Reference Drawings

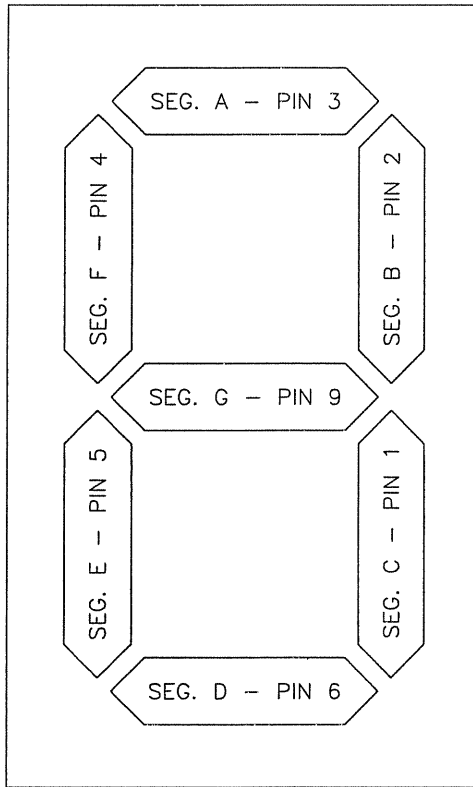
A Drawings

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 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
Component Locations; BA-2008-11/-21 w/TNMC.....	Drawing A-166154
4 Column MASC LED Driver Specifications.....	Drawing A-166216
Schematic; Gen III Outdoor LED, 16 Column Drvr.....	Drawing A-177931
Driver; Gen III Outdoor LED, 16 Col Master.....	Drawing A-178197
Schematic; Gen III, OD LED, 3 Drvr Display	Drawing A-179541
Schematic; Gen III, OD LED, 3 Drv, Multi-Sec w/TNMC.....	Drawing A-179593
Component Locations; BA-2002-11/-21 w/TNMC, G3	Drawing A-179604
Schematic; Gen III, OD LED, 3 Drv w/TNMC	Drawing A-180081
Component Locations; BA-2001-11/-21, G3	Drawing A-180359
Component Locations; BA-2002-11/-21, G3	Drawing A-180360
Component Locations; BA-2001-11/-21 w/TNMC, G3	Drawing A-180361
Component Locations; BA-2009-11/-21 w/TNMC, G3	Drawing A-185787
Component Locations; BA-2008-11/-21 w/TNMC, G3	Drawing A-185855
Schematic; Red LED TNMC, GEN III	Drawing A-187661
Schematic; 1.5" Amber LED TNMC, GEN III.....	Drawing A-187662
Component Locations; 832/842 Red/Amber LED TNMC, G3.....	Drawing A-187987
Component Locations; BA-2018-11/-21 w/TNMC, G3	Drawing A-222092
Component Locations; BA-2018-11/-21	Drawing A-222578
Schematic; Amber TNMC GEN IV	Drawing A-252645
Schematic; Red TNMC GEN IV.....	Drawing A-252681
Component Location; 832/842 Red/Amber LED TNMC, G4.....	Drawing A-257029

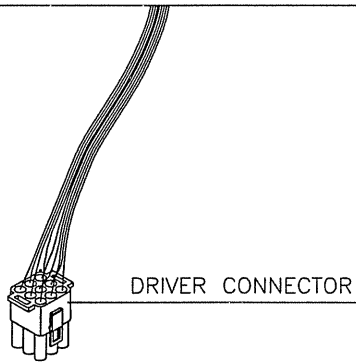
B Drawings

Exploded Front View; Single Panel Module	Drawing B-126111
Exploded Rear View; Single Panel Module.....	Drawing B-126112
Face Panel Assy, 2.5" LED TNMC	Drawing B-164446
F.Assy, 8x48-2.5" LED TNMC, Red/Org, G3	Drawing B-164514
Shop Drawing; BA-2001-11	Drawing B-165469
Shop Drawing; BA-2002-11	Drawing B-165511
Digit Assemblies; Gen III LED Digits	Drawing B-177679
F.Assy, 8x48-2.5" LED TNMC, Amber, G3	Drawing B-177822
Face Panel Assy, 8x8-2.5", Amber TNMC	Drawing B-177836
Schematic; 2.5" Red/Org, LED TNMC GEN III.....	Drawing B-188553
Schematic; 2.5" Amber LED TNMC, GEN III.....	Drawing B-190140

Schematic Baseball w/ S.O.P., Gen III, Optional TNMC.	Drawing B-204264
Schematic BA-2018	Drawing B-221946
Digit Designation; BA-2018	Drawing B-221953
Shop Drawing; BA-2018, Horiz Tubes	Drawing B-222672
Clip DWG; BA-2018-11/21, G3	Drawing B-238121
Shop Drawing, 2-Pole, BA-2001/2008-11 or -21	Drawing B-257893

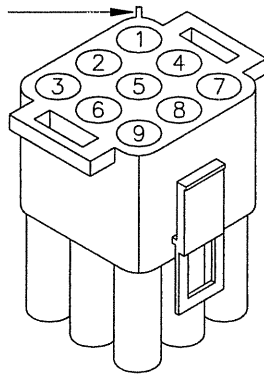


7 SEGMENT BAR DIGIT
FRONT VIEW



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

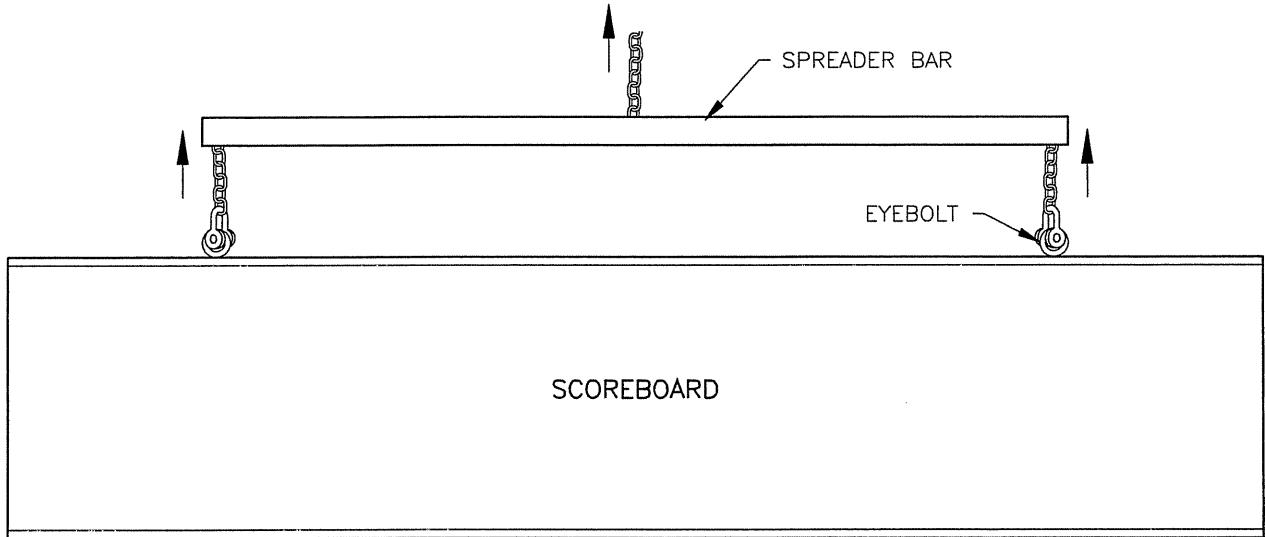
NOTE: "H" SEGMENT, GRAY WIRE IS NOT USED ON 7 SEGMENT BAR DIGIT.

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

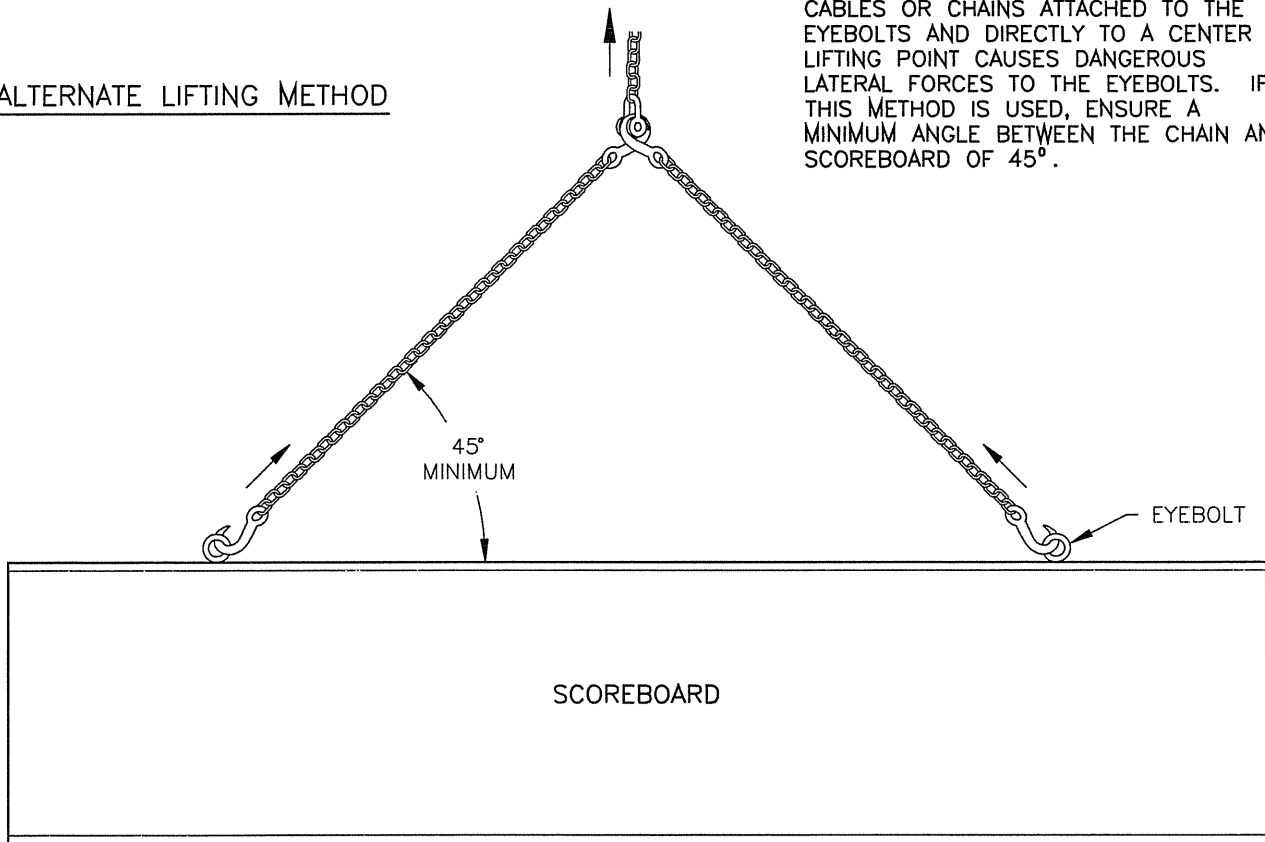
REV.	DATE	DESCRIPTION	BY	APPR.
2	30 APR 97	ADDED SEGMENT DESIGNATIONS TO DIGIT FIGURE.	AVB	AVB
1	2 JAN 92	CHANGED FROM B-SIZE TO A-SIZE DWG.	C FICK	



PREFERRED LIFTING METHOD

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

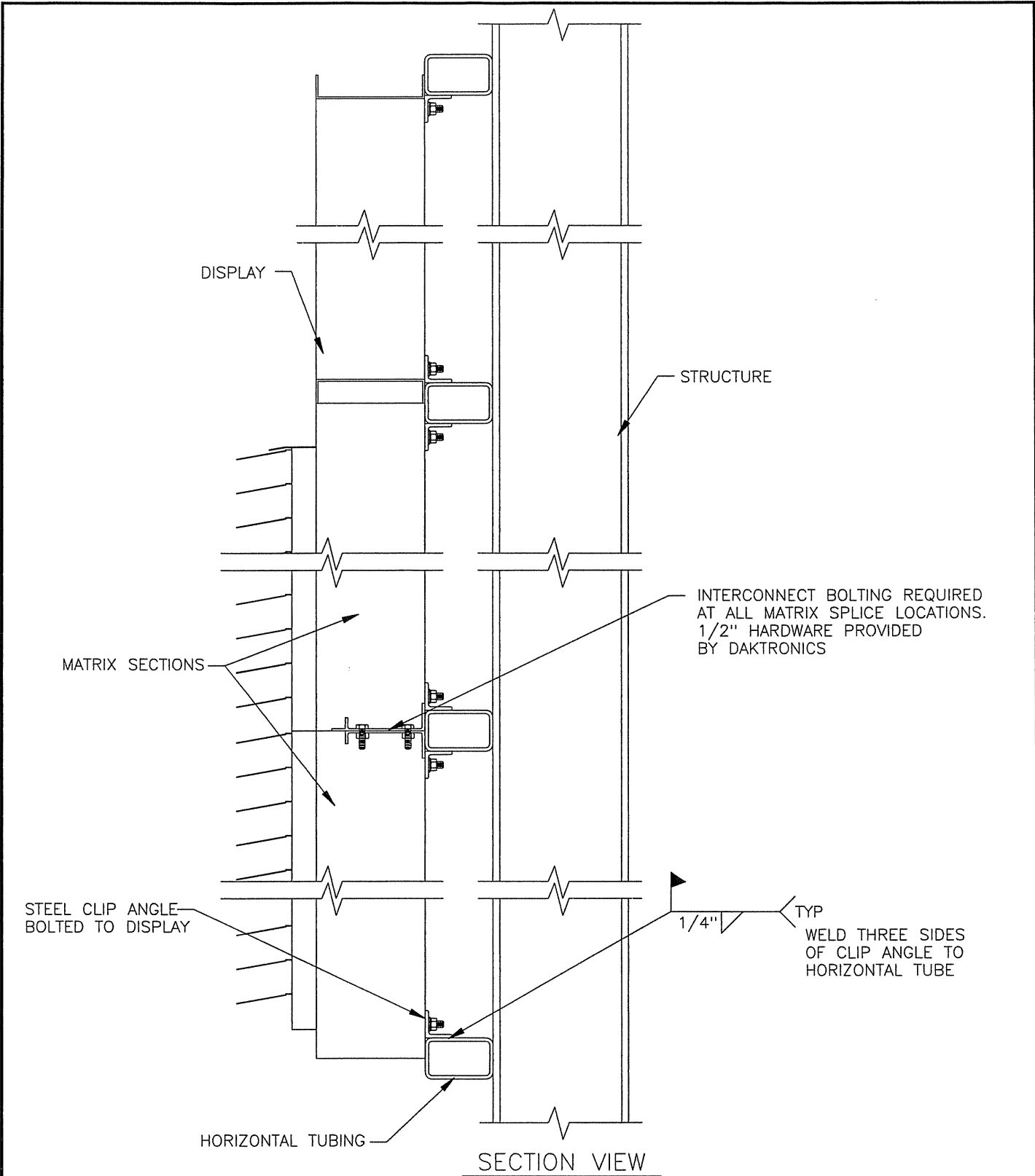
ALTERNATE LIFTING METHOD



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		

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



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

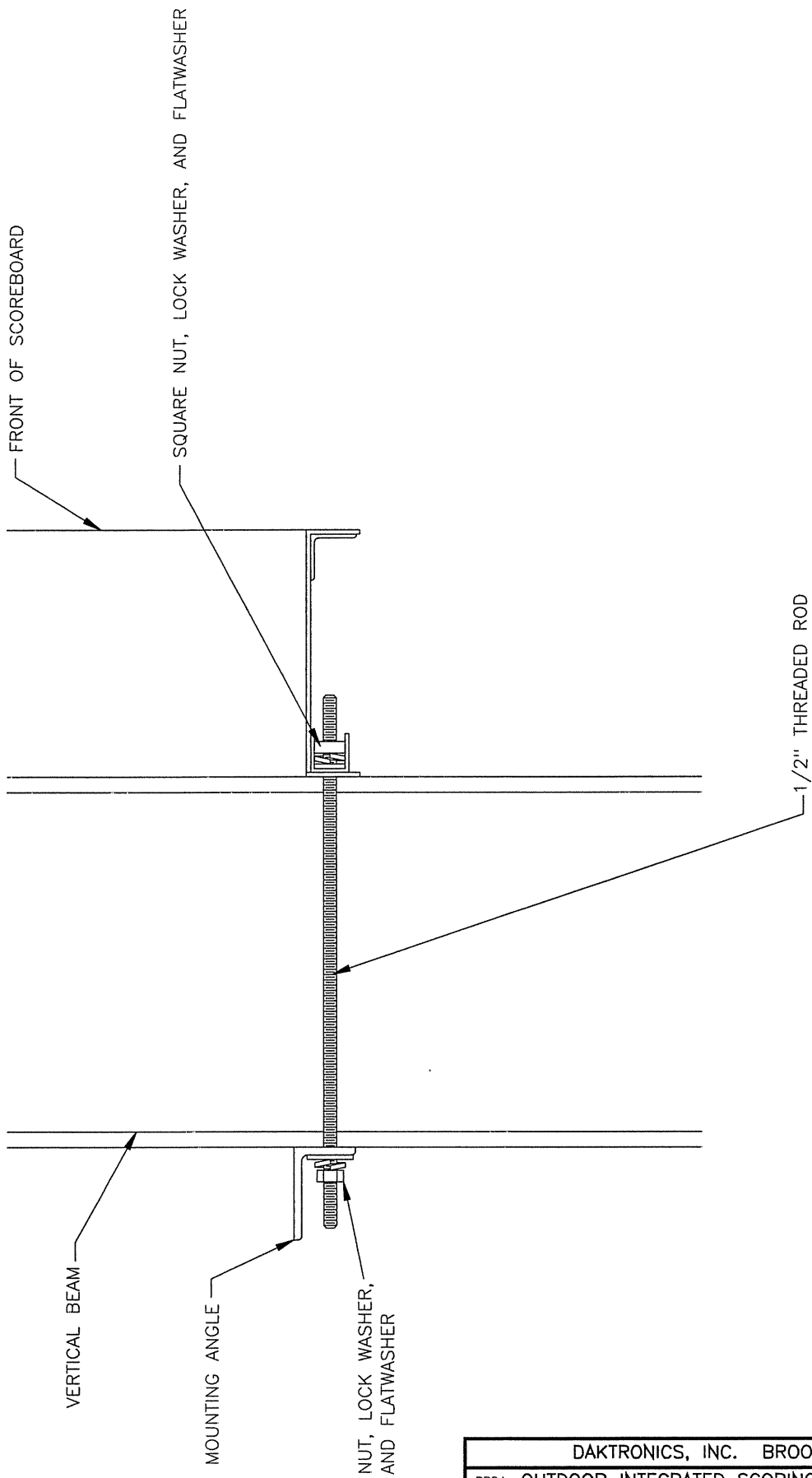
1	09OCT97	ADDED MATRIX SPLICE DETAIL ADDED NOTE 3	BDP	
REV.	DATE	DESCRIPTION	BY	APPR.

REVISION

APPR. BY:

SCALE: 1=10

1173-E07A-83301



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

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

REVISION	APPR. BY:
	SCALE: 1=5

1157-E10A-89234

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	1	0
3	0	0	0	0	0	0	1	1
4	0	0	0	0	0	1	0	0
5	0	0	0	0	0	1	0	1
6	0	0	0	0	0	1	1	0
7	0	0	0	0	0	1	1	1
8	0	0	0	0	1	0	0	0
9	0	0	0	0	1	0	0	1
10	0	0	0	0	1	0	1	0
11	0	0	0	0	1	1	1	1
12	0	0	0	0	1	1	0	0
13	0	0	0	0	1	1	0	1
14	0	0	0	0	1	1	1	0
15	0	0	0	0	1	1	1	1
16	0	0	0	1	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	1	0
35	0	0	1	0	0	0	1	1
36	0	0	1	0	0	1	0	0
37	0	0	1	0	0	1	0	1
38	0	0	1	0	0	1	1	0
39	0	0	1	0	0	1	1	1
40	0	0	1	0	1	0	0	0
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44	0	0	1	0	1	1	0	0
45	0	0	1	0	1	1	0	1
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48	0	0	1	1	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
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67	0	1	0	0	0	0	1	1
68	0	1	0	0	0	1	0	0
69	0	1	0	0	0	1	0	1
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76	0	1	0	0	1	1	0	0
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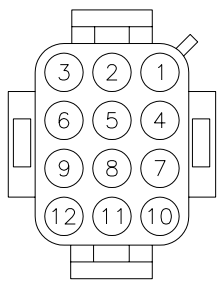
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103	0	1	1	0	0	1	1	1
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112	0	1	1	1	0	0	0	0

DECIMAL ADDRESS	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
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19	0	0	0	1	0	0	1	1
20	0	0	0	1	0	1	0	0
21	0	0	0	1	0	1	0	1
22	0	0	0	1	0	1	1	0
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28	0	0	0	1	1	1	0	0
29	0	0	0	1	1	1	0	1
30	0	0	0	1	1	1	1	0
31	0	0	0	1	1	1	1	1
32	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
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53	0	0	1	1	0	1	0	1
54	0	0	1	1	0	1	1	0
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60	0	0	1	1	1	1	0	0
61	0	0	1	1	1	1	0	1
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64	0	1	0	0	0	0	0	0

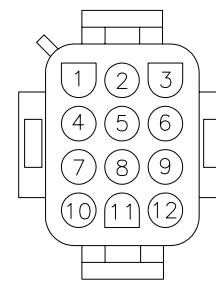
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85	0	1	0	1	0	1	0	1
86	0	1	0	1	0	1	1	0
87	0	1	0	1	0	1	1	1
88	0	1	0	1	1	0	0	0
89	0	1	0	1	1	0	0	1
90	0	1	0	1	1	0	1	0
91	0	1	0	1	1	0	1	1
92	0	1	0	1	1	1	0	0
93	0	1	0	1	1	1	0	1
94	0	1	0	1	1	1	1	0
95	0	1	0	1	1	1	1	1
96	0	1	1	0	0	0	0	0

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	1	0
115	0	1	1	1	0	0	1	1
116	0	1	1	1	0	1	0	0
117	0	1	1	1	0	1	0	1
118	0	1	1	1	0	1	1	0
119	0	1	1	1	0	1	1	1
120	0	1	1	1	1	0	0	0
121	0	1	1	1	1	0	0	1
122	0	1	1	1	1	0	1	0
123	0	1	1	1	1	0	1	1
124	0	1	1	1	1	1	0	0
125	0	1	1	1	1	1	0	1
126	0	1	1	1	1	1	1	0
127	0	1	1	1	1	1	1	1
128	1	0	0	0	0	0	0	0



ADDRESS PLUG
WIRE SIDE

WIRING DIAGRAM
ADDRESS PLUG
WITH ALL WIRES
CONNECTED



BOTTOM VIEW

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:

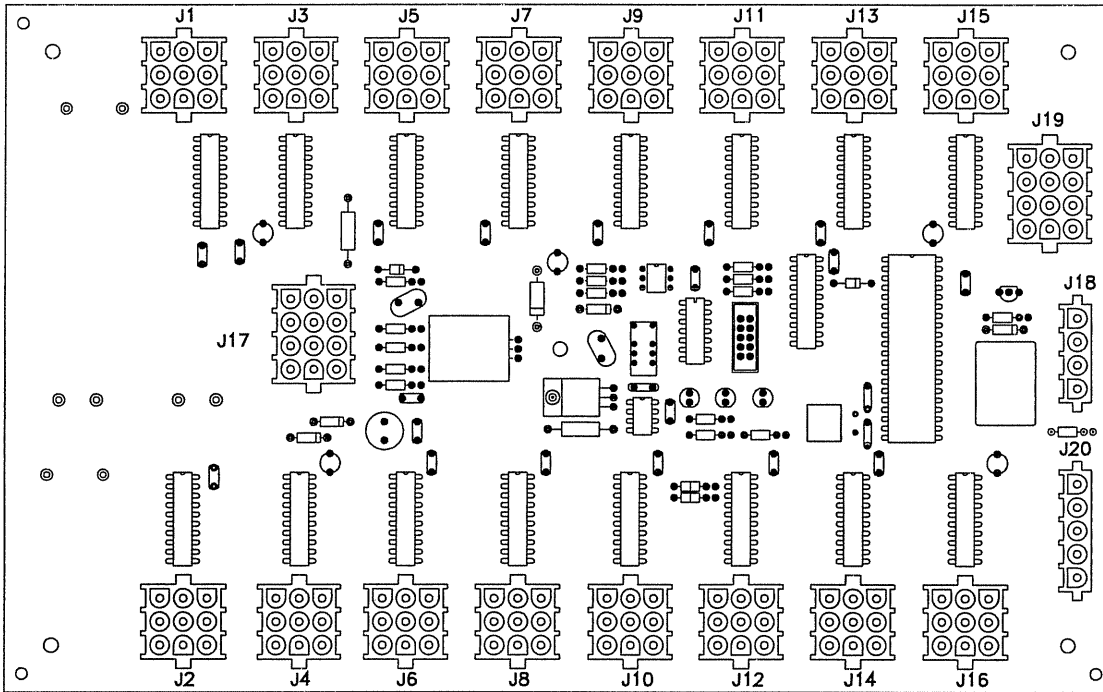
SCALE: NONE

01

1150-R04A-115078

REV.	DATE	DESCRIPTION	BY	APPR.
01	08 MAR 05	ADDED BOTTOM VIEW	KQB	

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

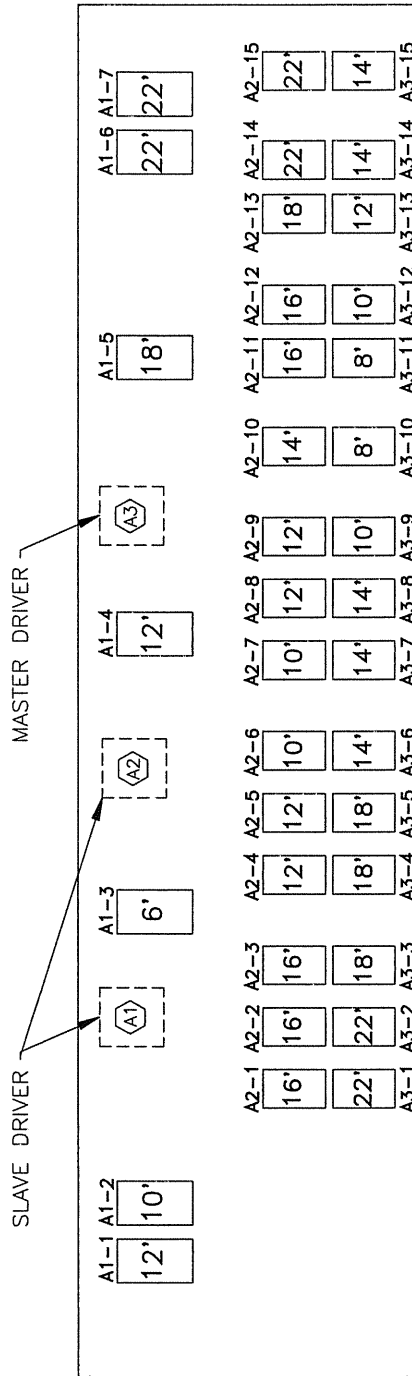
- WITH NO ADDRESS PINS SELECTED THE DRIVER WILL DEFAULT TO A/S 4000 PROTOCOL
- GREEN LED INDICATES THE DRIVER HAS POWER
- RED LED WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL
- AMBER LED INDICATES LED DRIVER STATUS, LED WILL BE BLINKING TO INDICATE THAT THE DRIVER IS RUNNING, IF THE LED 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 00 APPR. BY: SCALE: NONE 1192-R07A-134371

REV.	DATE	DESCRIPTION	BY	APPR.



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

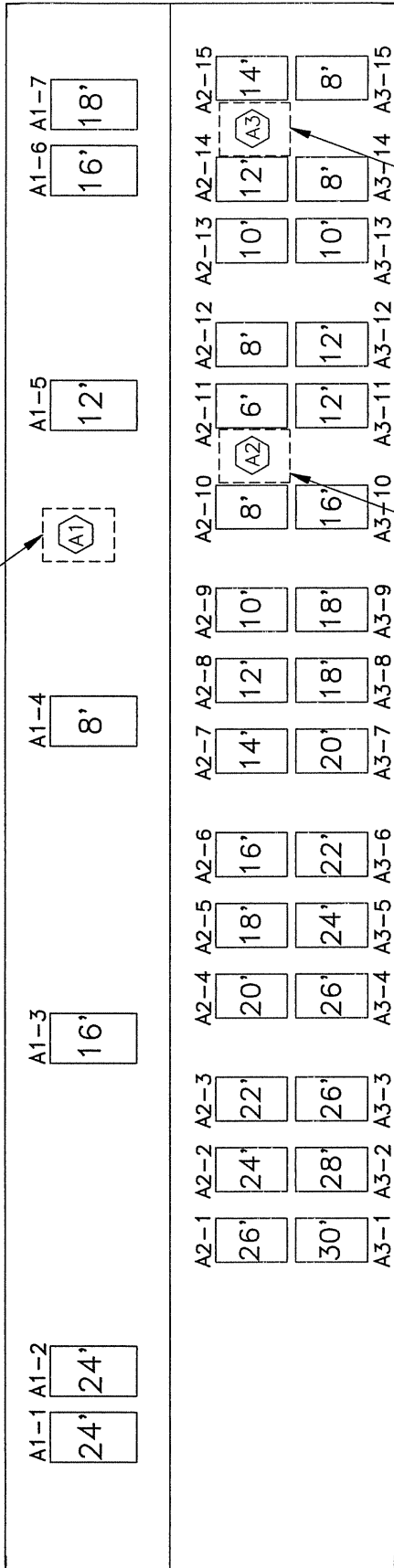
DRIVER INTERCONNECT HARNESS

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

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	
REV.	DATE	DESCRIPTION	BY	APPR.

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:	1192-E10A-158421	
	SCALE: 1=50		

MASTER DRIVER @1



SLAVE DRIVER @2

DIGIT HARNESS

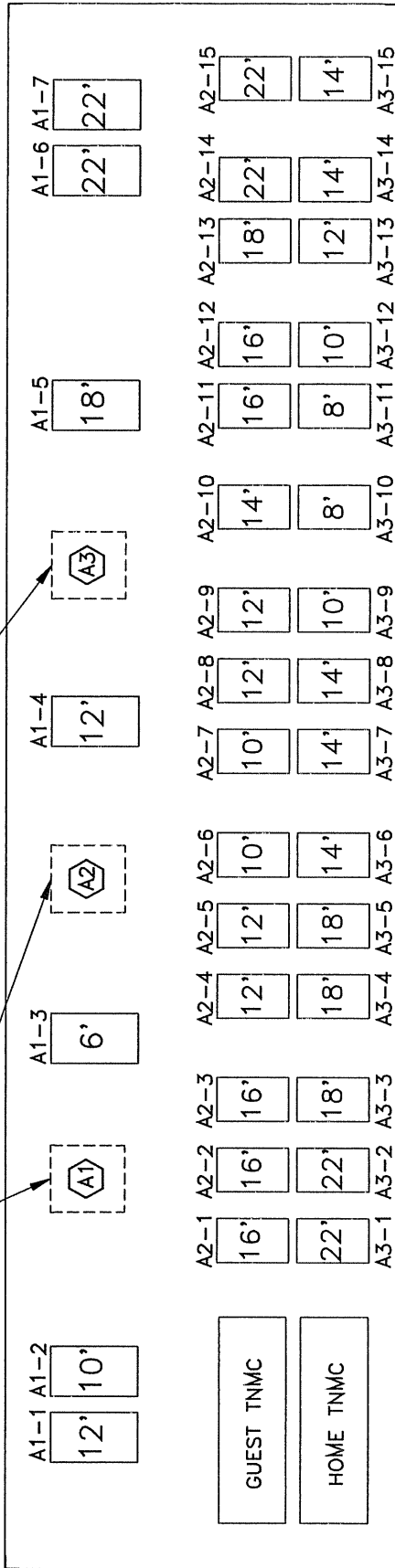
- (6') = 0A-1171-4004 @1
- (8') = 0A-1171-4005 @5
- (10') = 0A-1171-4012 @3
- (12') = 0A-1171-4013 @5
- (14') = 0A-1171-4015 @2
- (16') = 0A-1171-4016 @4
- (18') = 0A-1171-4017 @4
- (20') = 0A-1171-4018 @2
- (22') = 0A-1171-4019 @2
- (24') = 0A-1171-4020 @4
- (26') = 0A-1171-4021 @3
- (28') = 0A-1171-4022 @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	DATE: 11NOV01
REVISION	APPR. BY:
	SCALE: 1=40
1192-E07A-158496	

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

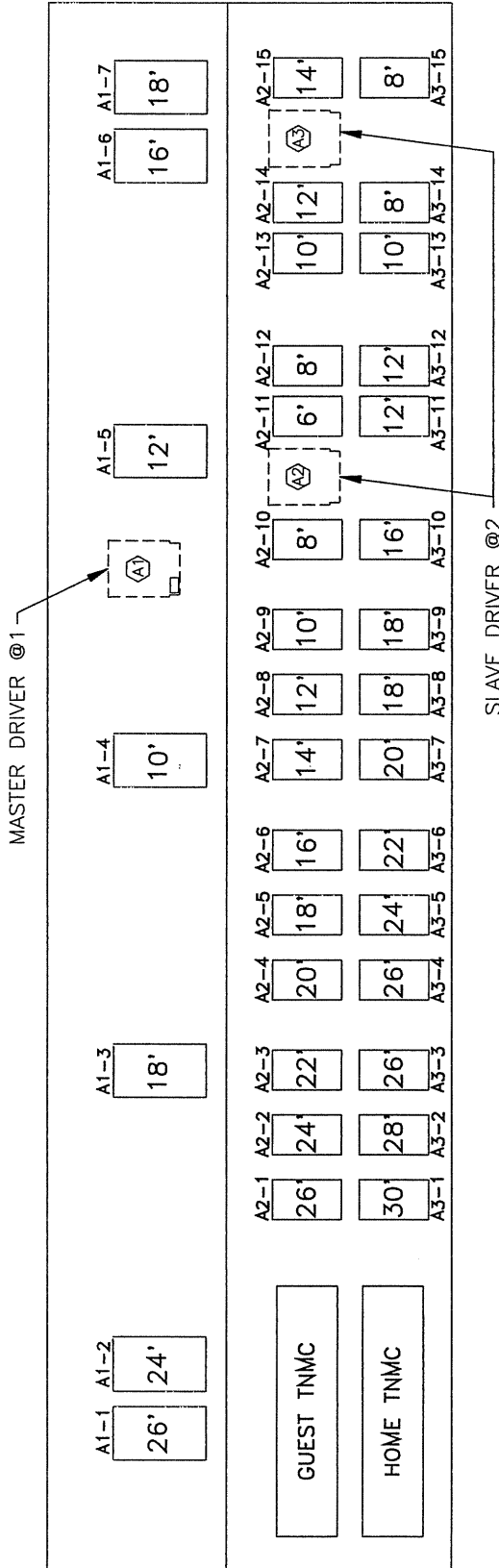
- DRIVER A3 -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- DRIVER A2
- DRIVER A2 -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- DRIVER A1
- DRIVER A1 -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- GUEST TNMC
- GUEST TNMC -- 0A-1192-1031 = 12' DRV PWR/SIG INTCT HARNESS -- HOME TNMC

01	04JAN02	CHANGED VARIOUS HARNESS LENGTHS PER ECO 025086	MCOPL
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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS	
TITLE: DIGIT DESIGNATION; BA-2001-11 W/ LED TNMC	
DES. BY: MCOPLAN	DATE: 03DEC01
REVISION	APPR. BY:
SCALE: 1=40	1192-E10A-159621

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

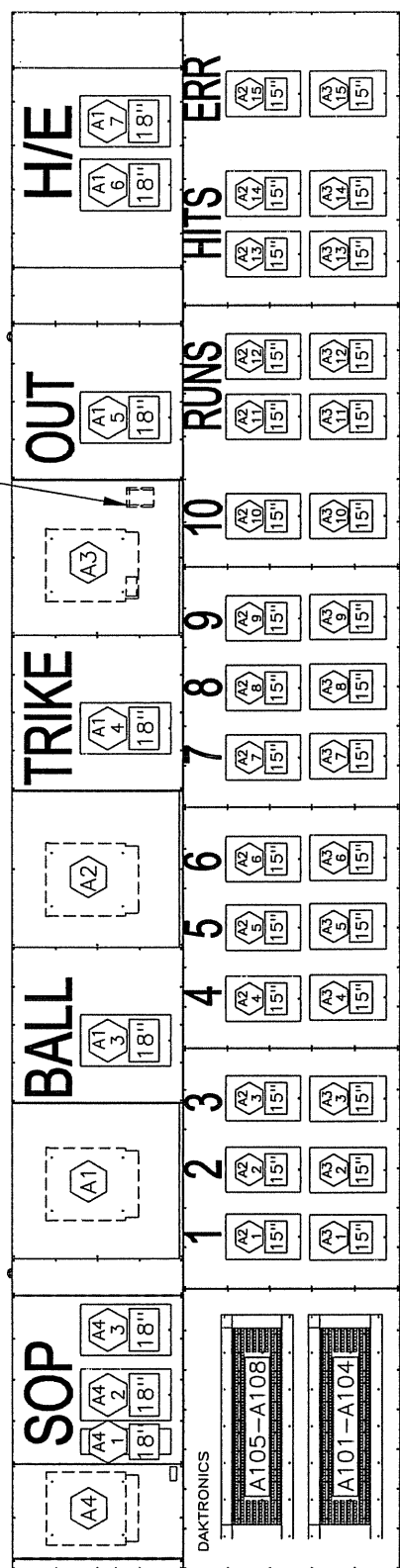


REV.	DATE	DESCRIPTION	BY	APPR.
03	08JUN04	CHANGED NUMBER OF 8', 10', 16', 18', 24', 26'. PER ECO# 39363	JML	
02	05DEC02	MADE DRAWING COMPATIBLE WITH GEN III	MCOPL	
01	25FEB02	ADDED NOTE FOR DRV/TNMC INTERCONNECT HARN	MCOPL	

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 03	APPR. BY: 1192-E10A-159666
SCALE: 1=50	

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

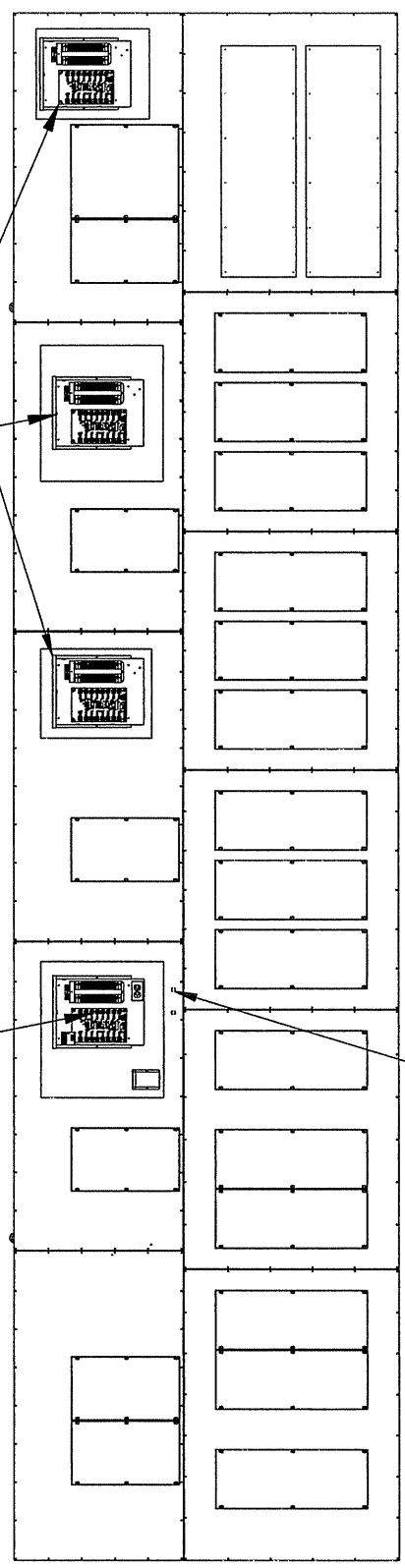
SIGNAL ENTRANCE FOR DRIVER A4



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.

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

18" = DIGIT SIZE
A1 1

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.

OP-1192-0067 UNCOATED OR OP-1192-0068 COATED
4 COLUMN MASC LED DRIVER

J-27 RS232 COM	
PIN	FUNCTION
1	RX-P
2	TX-P
3	GND-N
4	+12V -P
5	DCD-P
6	RESET-P

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

TB1 CAN	
PIN	FUNCTION
1	N/C
2	+5V-P
3	CANH-P
4	CANL-P
5	GND-N
6	GND-N

J24	
PIN	FUNCTION
1	MODEM_RTS-P
2	MODEM_RESET-P
3	MODEM_TX-P
4	GND-N
5	MODEM_RX-P
6	MODEM_DCD-P

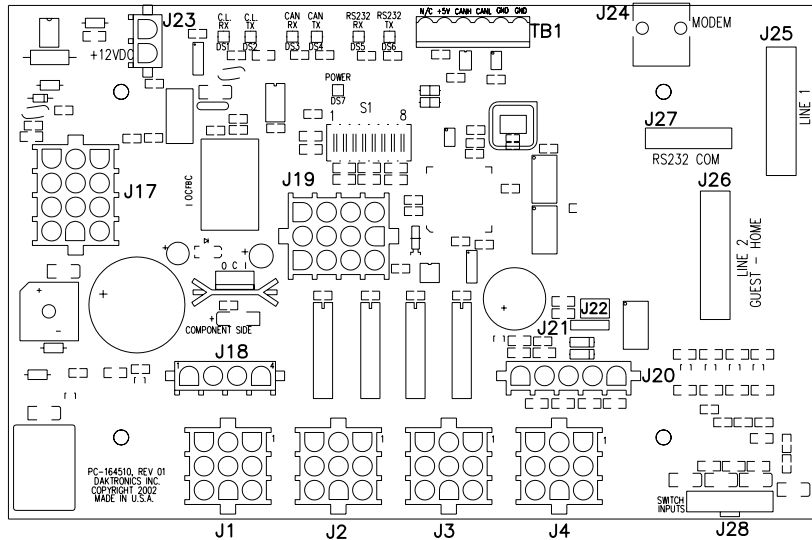
J23 +12VDC	
PIN	FUNCTION
1	+12VDC-P
2	GND-N

J25			
FUNCTION	PIN	PIN	FUNCTION
L1_ID0-P	1	20	RED1-P
L1_ID1-P	2	19	GRN1-P
GND-N	3	18	L1_LATCH-P
GND-N	4	17	L1_DIM-P
GND-N	5	16	RED2-P
GRN2-P	6	15	RED3-P
GND-N	7	14	L1_CLK-P
GND-N	8	13	GRN3-P
L1_ID2-P	9	12	RED4-P
L1_ID3-P	10	11	GRN4-P

J26			
FUNCTION	PIN	PIN	FUNCTION
L2_ID0-P	1	20	RED1-P
L2_ID1-P	2	19	GRN1-P
GND-N	3	18	L2_LATCH-P
GND-N	4	17	L2_DIM-P
GND-N	5	16	RED2-P
GRN2-P	6	15	RED3-P
GND-N	7	14	L2_CLK-P
GND-N	8	13	GRN3-P
L2_ID2-P	9	12	RED4-P
L2_ID3-P	10	11	GRN4-P

J17 MAIN	
PIN	FUNCTION
1	CLIN-P
2	CLIN-N
3	232IN-P
4	CLOUT-P
5	CLOUT-N
6	16VAC-P
7	GND-N
8	N/C
9	16VAC-N
10	GND-N
11	N/C
12	+VBB-P

J18 RELAY	
PIN	FUNCTION
1	HORNOUT-N
2	AUXOUT2-N
3	120SW1-N
4	120SW1-P



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

J20 PROTOCOL	
PIN	FUNCTION
1	GND
2	PR0-N
3	PR1-N
4	PR2-N
5	PR3-N

J21 ISP	
PIN	FUNCTION
1	VFP-P
2	BKD-P
3	GND-N
4	RESET-P

J28 SWITCH	
PIN	FUNCTION
1	SWITCH1-P
2	SWITCH1-N
3	SWITCH2-P
4	SWITCH2-N
5	SWITCH3-P
6	SWITCH3-N
7	SWITCH4-P
8	SWITCH4-N

J22 ISP	
PIN	FUNCTION
1	BKD-P
2	GND-N
3	N/C
4	RESET-P
5	VFP-P
6	+5V-P

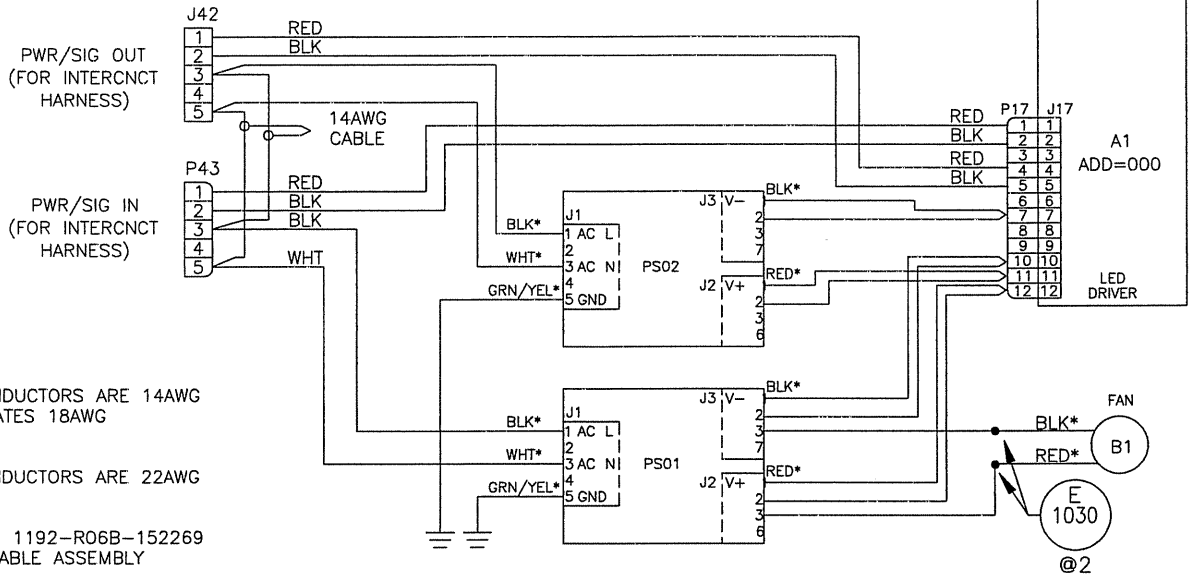
NOTE:

- RED LED CL RX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH CL
- GREEN LED CL TX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH CL
- RED LED CAN RX WILL BE BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND ON WHEN THERE IS NO SIGNAL WITH CAN
- GREEN LED CAN TX WILL BE BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND ON WHEN THERE IS NO SIGNAL WITH CAN
- IF THERE IS NOT A CAN DEVICE CONNECTED TO TB1, CAN RX AND TX LEDS WILL BE ON AND STEADY.
- RED LED RS232 RX WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH RS232
- GREEN LED RS232 TX6 WILL BE ON OR BLINKING WHEN THE DRIVER IS RECEIVING SIGNAL AND OFF WHEN THERE IS NO SIGNAL WITH RS232
- GREEN LED POWER INDICATES THE DRIVER HAS POWER

REV.	DATE	DESCRIPTION	BY	APPR.
3	27 NOV 04	UPDATE DRIVER J-27 FOR CORRECT PIN OUT	DMD	
2	16 MAY 03	UPDATE DRIVER FOR LATEST REVISION OF MASC DRIVER.	CJB	
1	06JUN02	ADDED LED LABELS ADDED NEW NOTES	JJS	

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: 4 COLUMN MASC LED DRIVER SPECIFICATIONS			
DES. BY:	DRAWN BY: JSPAHR	DATE: 29 APR 02	
REVISION	APPR. BY:	1192-R07A-166216	
03	SCALE: 1=2		

SLAVE CONFIGURATION
0A-1192-2253

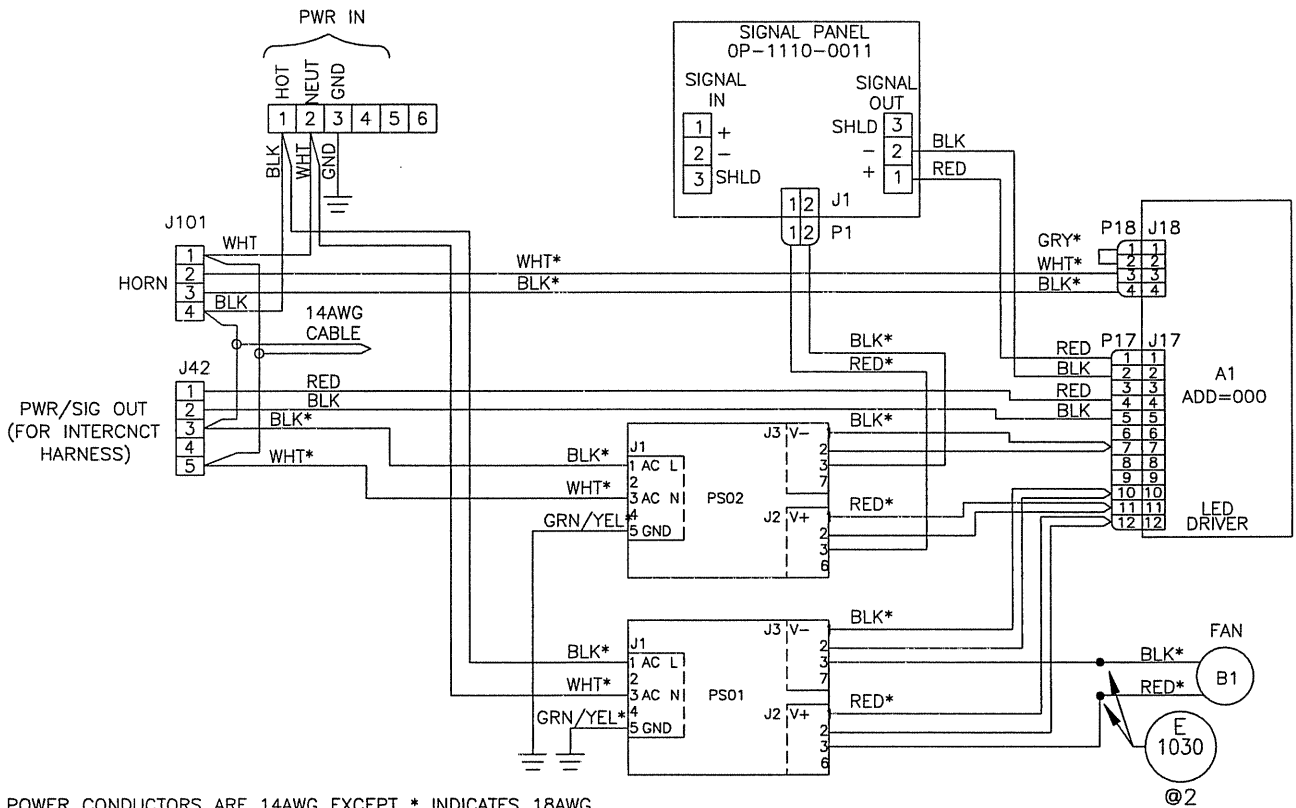


ALL POWER CONDUCTORS ARE 14AWG EXCEPT * INDICATES 18AWG CONDUCTORS.

ALL SIGNAL CONDUCTORS ARE 22AWG CONDUCTORS.

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

MASTER CONFIGURATION
0A-1192-2252



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

ALL SIGNAL CONDUCTORS ARE 22AWG CONDUCTORS.

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

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 SCOREBOARD

TITLE: SCHEMATIC; GEN III OUTDOOR LED, 16 COLUMN DRV R

DES. BY: MMILLER

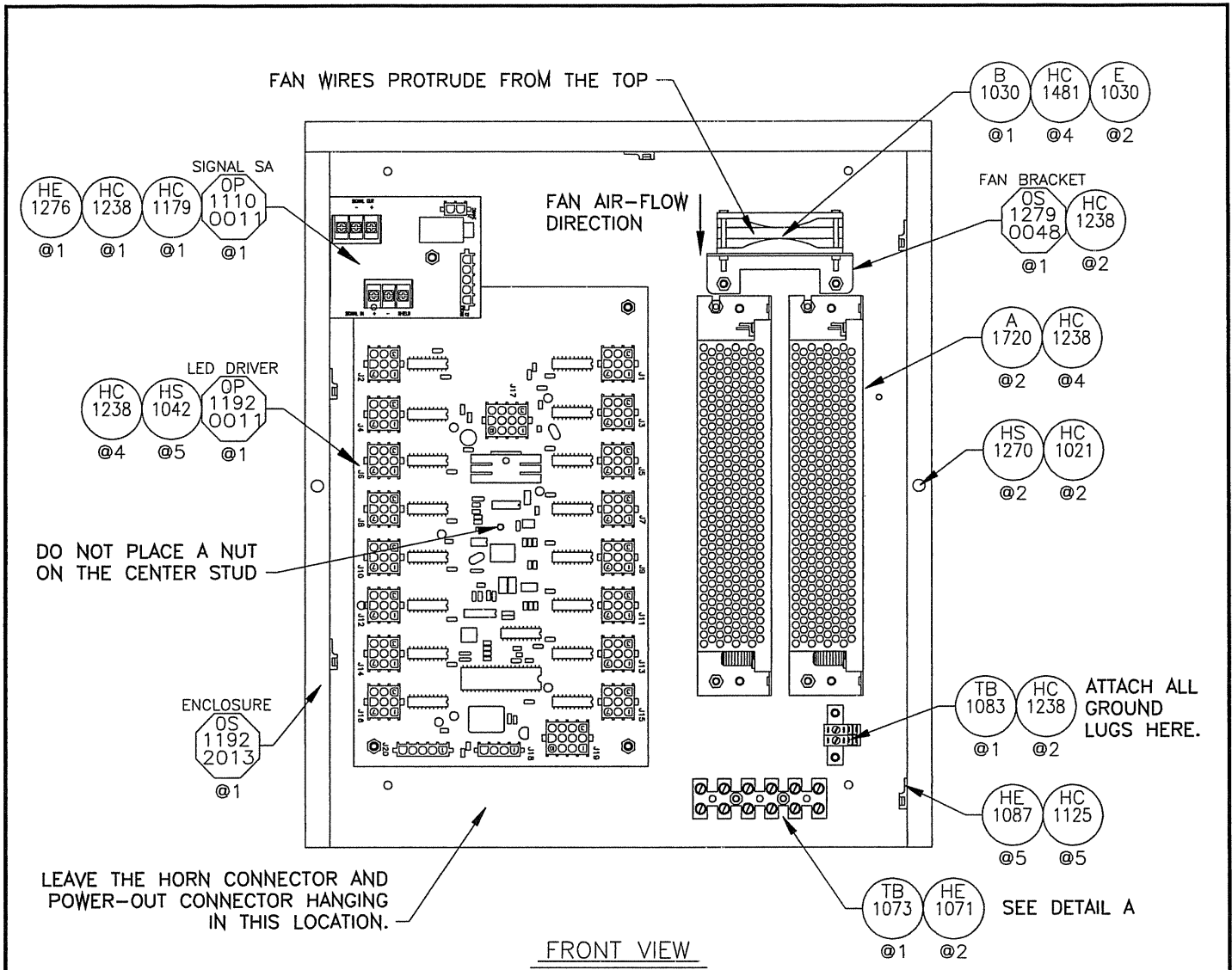
DRAWN BY: MMILLER

DATE: 05 NOV 02

REV.	DATE	DESCRIPTION	BY	APPR.
01	10 DEC 02	ADDED BLOCKS 5 AND 6 TO PWR IN	AJL	MWM

REVISION	APPR. BY:
01	

1192-R03A-177931

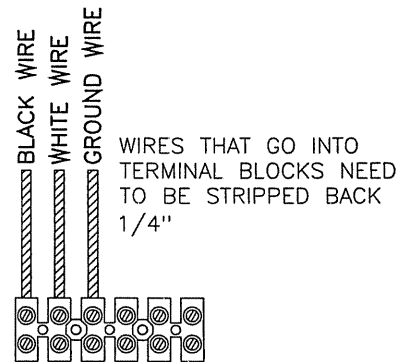


NOTES:

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

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

-SEE DRAWING A-178206 FOR LABELING.



DETAIL: A
(SCALE 1=1.5)

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

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

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: DRIVER; GEN III OUTDOOR LED, 16 COL MASTER

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 08NOV02

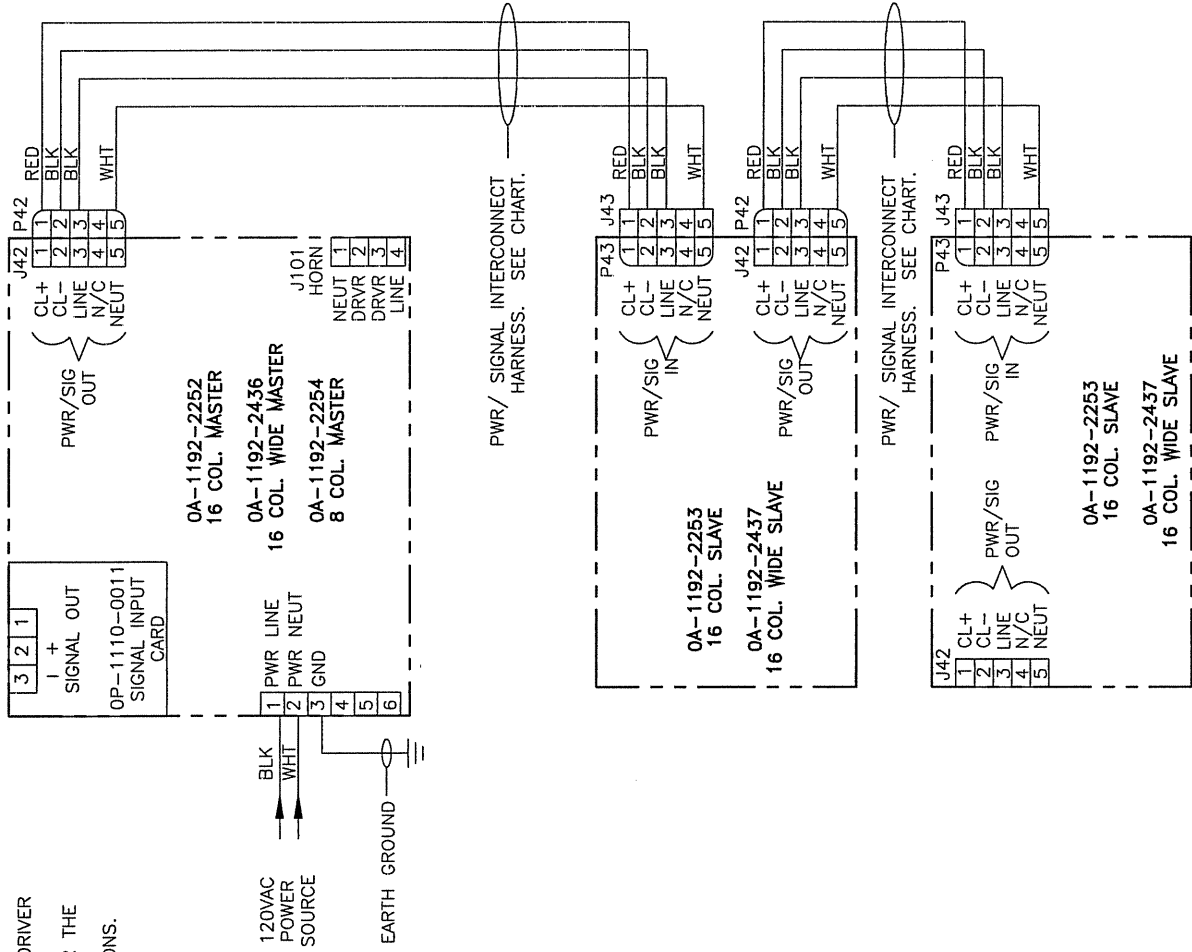
REVISION 08 APPR. BY: SCALE: 1=4

1192-E10A-178197

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/SIG INTERCONNECT HARNESS

PART NUMBER	LENGTH
0A-1192-1028	4'
0A-1192-1029	8'
0A-1192-1030	10'
0A-1192-1031	12'
0A-1192-1032	16'
0A-1192-1033	22'
0A-1192-1034	26'
0A-1192-1083	30'
0A-1192-1084	35'



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: SCHEMATIC; GEN III, OD LED, 3 DRVR DISPLAY

DES. BY: MMILLER

DRAWN BY: MMILLER

DATE: 04 DEC 02

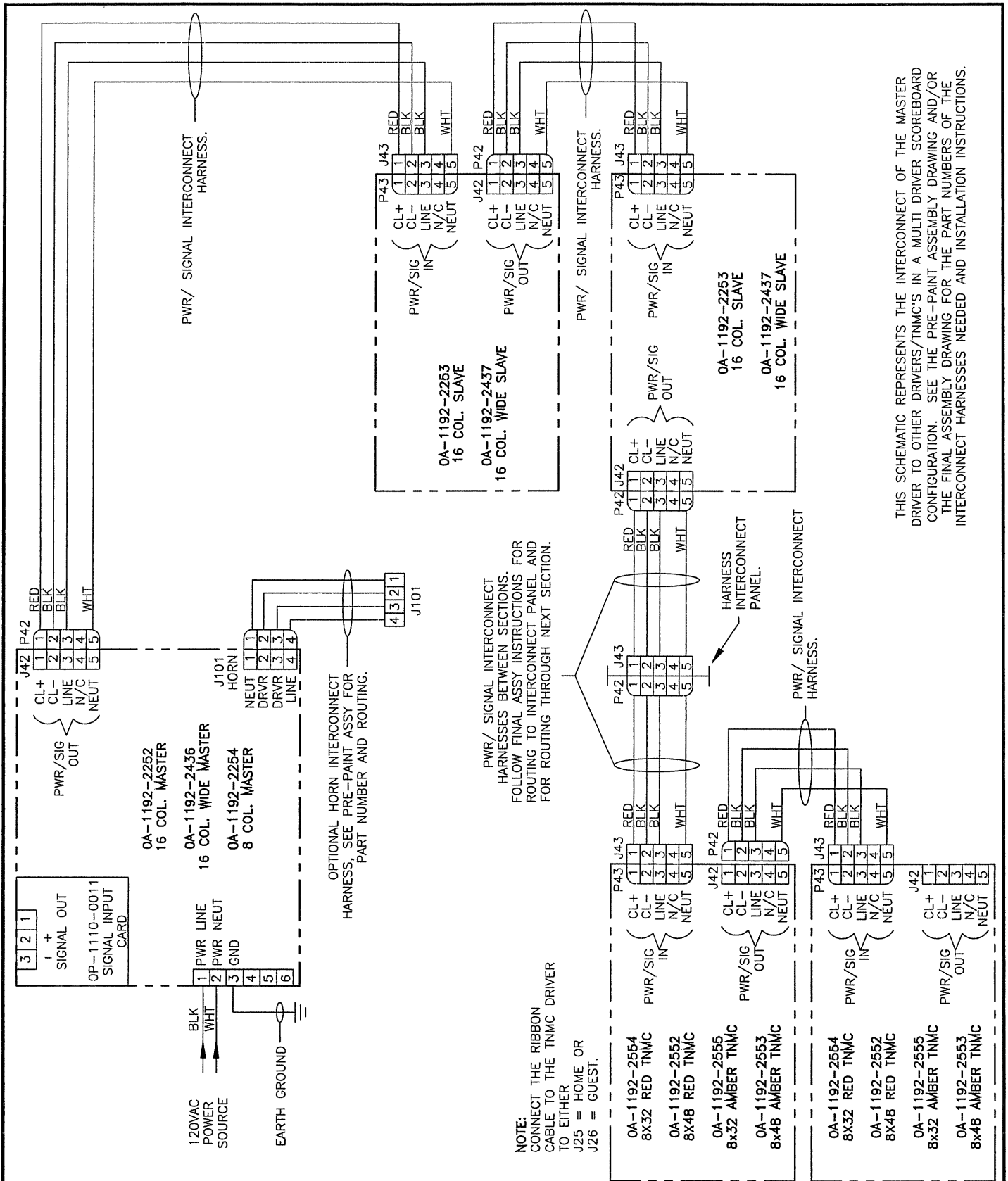
REVISION

APPR. BY:

SCALE: 1=1

1192-R10A-179541

REV.	DATE	DESCRIPTION	BY	APPR.
01	20 FEB 03	CORRECTED SPELLING ON NEUT. ADDED 16 COL. WIDE PART NUMBER	MWM	



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.

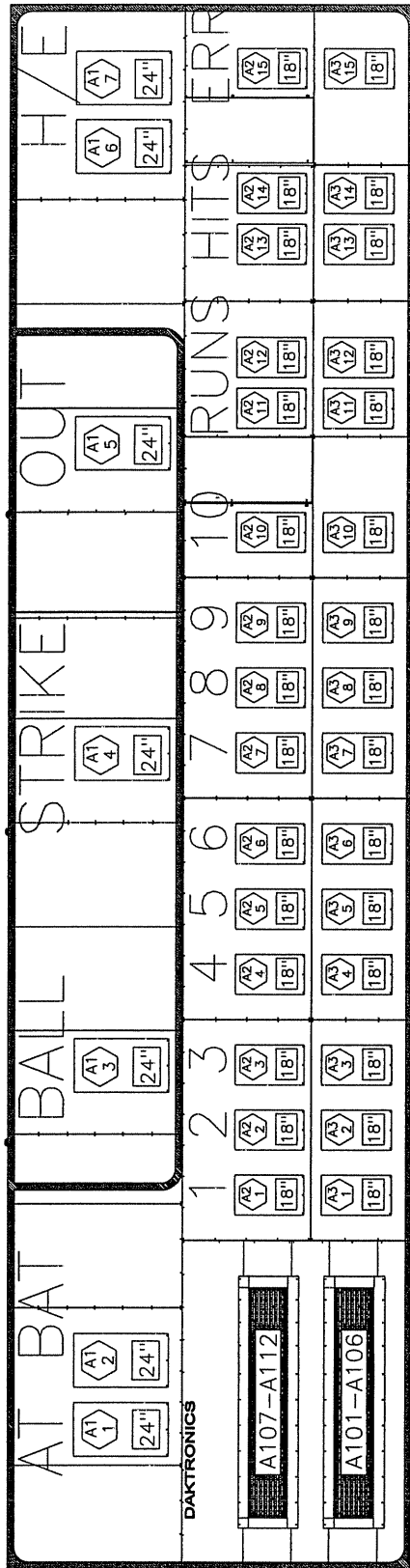
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS	
TITLE: SCHEMATIC; GEN III, OD LED, 3 DRV, MULTI-SEC /W TNMC	
DES. BY: MILLER	DRAWN BY: MILLER
DATE: 06 DEC 02	
REVISION	APPR. BY:
SCALE: NONE	1192-R10A-179593

REV.	DATE	DESCRIPTION	BY	APPR.
02	08 MAY-03	CHANGED TNMC TEXT TO NEW GEN 3 AND ADDED NOTE.	TAS	MWM
01	20 FEB 03	CORRECTED THE SPELLING FOR NEUT. ADDED 16 COL. WIDE PART NUMBERS.	MWM	

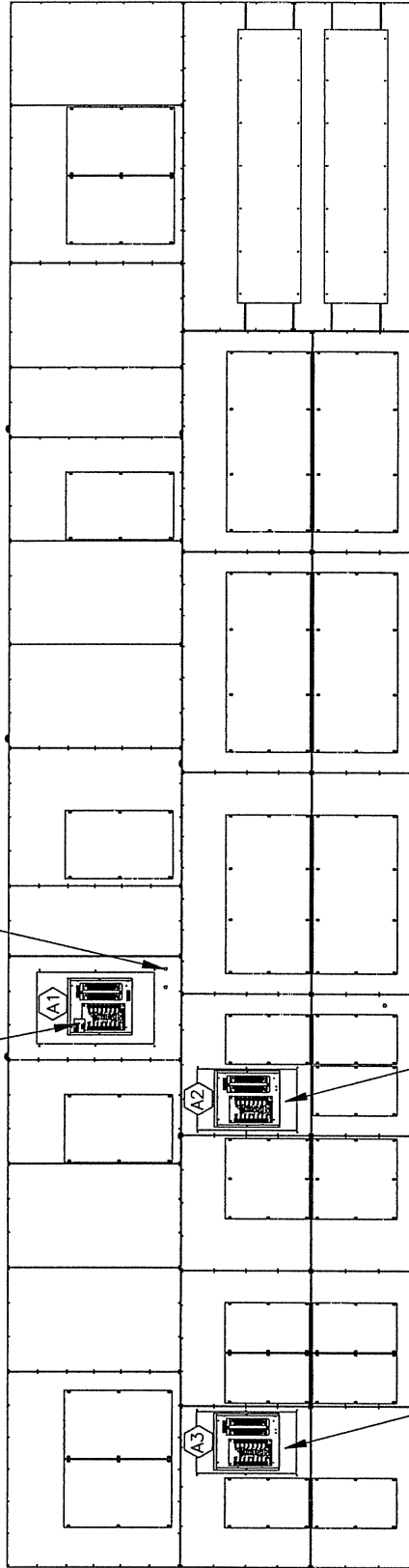
BA-2002-11/-21 W/ TNMC



FRONT VIEW

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

ENCLOSURE @2. (THE COVER HAS BEEN REMOVED TO SHOW THE ENCLOSURE COMPONENT DETAIL).



REAR VIEW

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

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

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

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; BA-2002-11/-21 W/ TNMC, G3

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 05DEC02

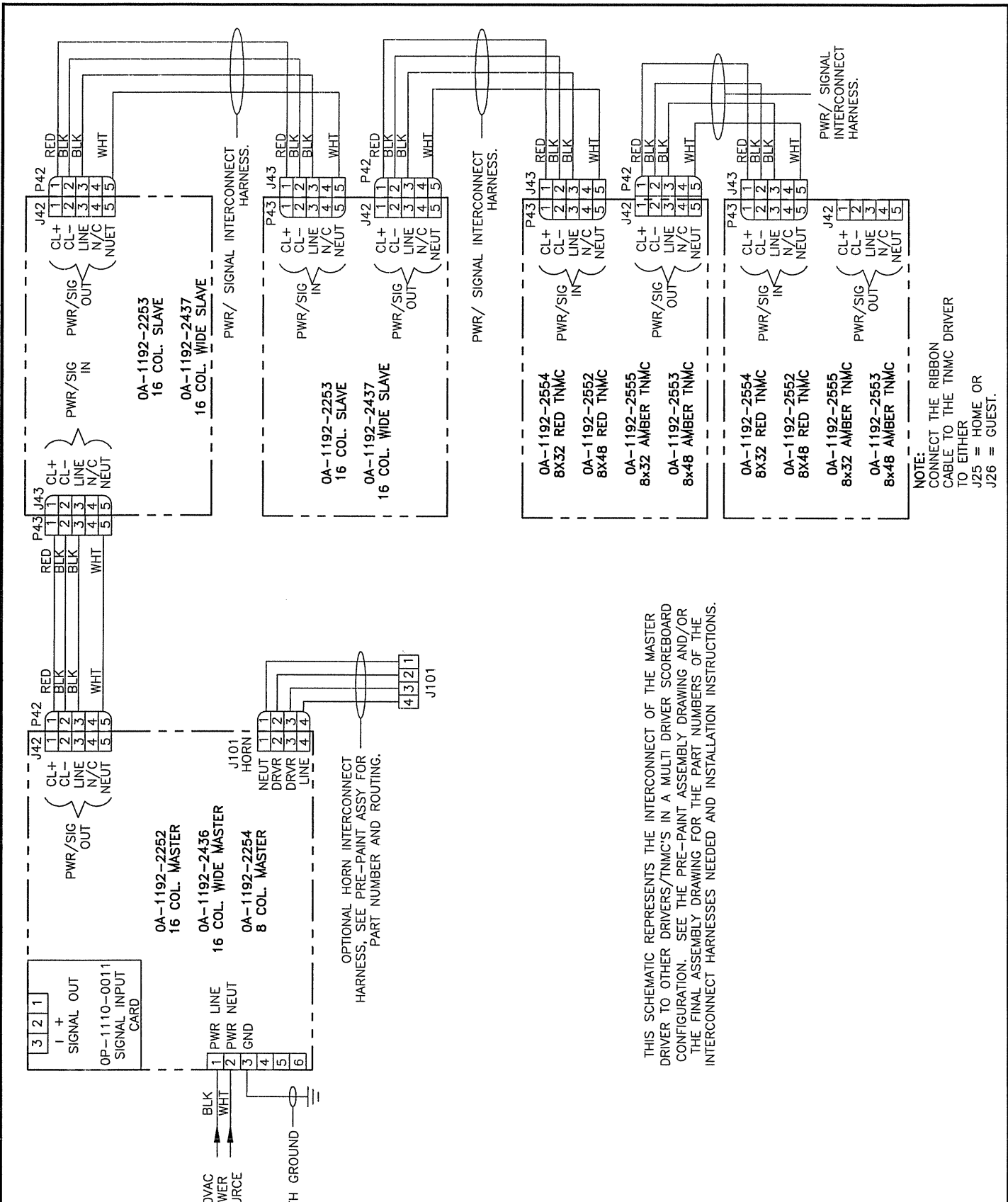
REVISION

APPR. BY:

SCALE: 1=50

1192-R08A-179604

REV.	DATE	DESCRIPTION	BY	APPR.



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.

NOTE:
CONNECT THE RIBBON CABLE TO THE TNMC DRIVER TO EITHER J25 = HOME OR J26 = GUEST.

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DAKTRONICS, INC. BROOKINGS, SD 57006

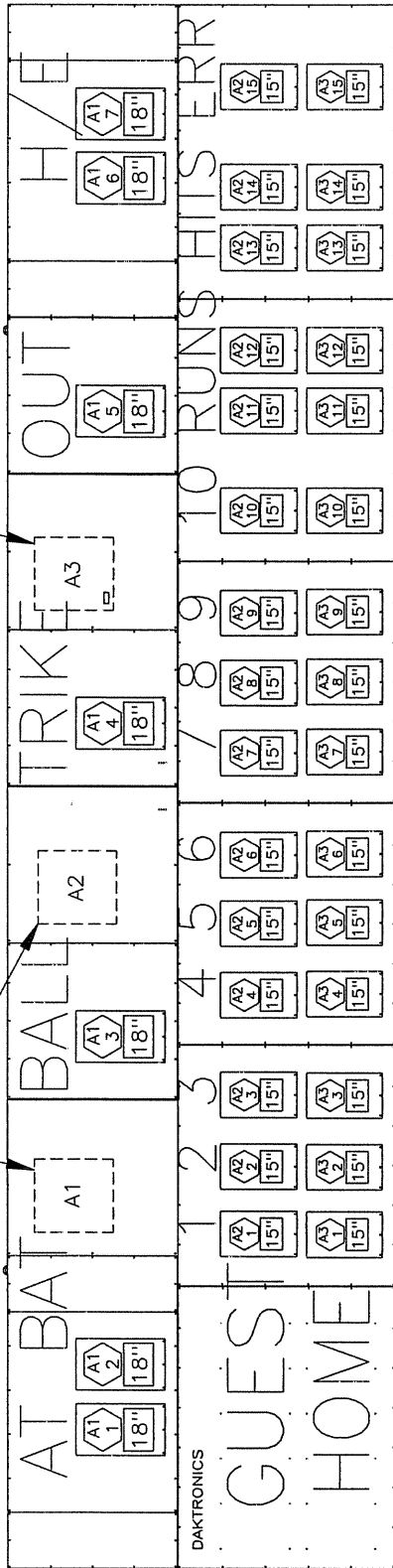
PROJ: OUTDOOR LED DIGIT SCOREBOARDS	
TITLE: SCHEMATIC; GEN III, OD LED, 3 DRV W/ TNMC	
DES. BY:	DRAWN BY: ALINDHO DATE: 18 DEC 02
REVISION	APPR. BY:
SCALE: NONE	1192-R10A-180081

02	08 MAY-03	CHANGED TNMC TEXT TO NEW GEN 3 AND ADDED NOTE.	TAS	MWM
01	20 FEB 03	CORRECTED SPELLING ON NEUT. ADDED 16 COL. WIDE PART NUMBERS.	MWM	
REV.	DATE	DESCRIPTION	BY	APPR.

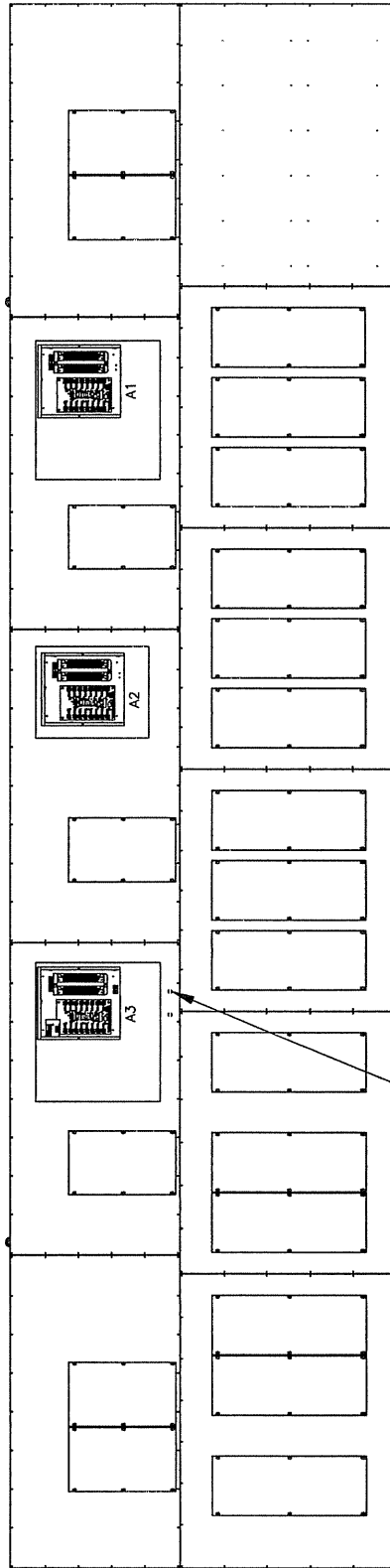
BA-2001-11/-21

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.

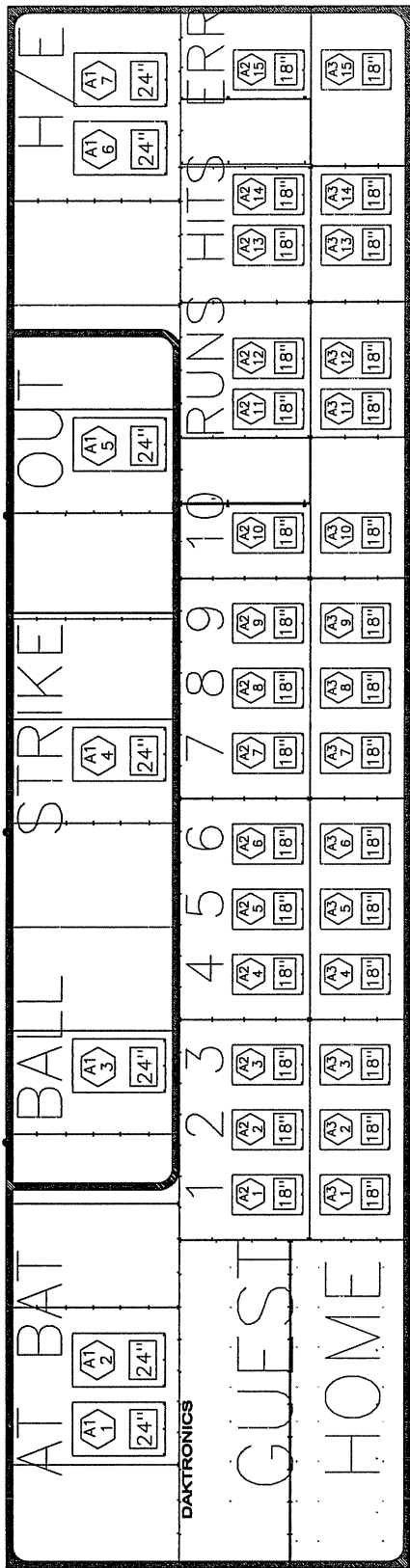
ⓐ1

18" = DIGIT SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOCATIONS; BA-2001-11/-21, G3			
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN	
DATE: 26DEC02			
REVISION	APPR. BY:	1192-R08A-180359	
	SCALE: 1=40		

REV.	DATE	DESCRIPTION	BY	APPR.

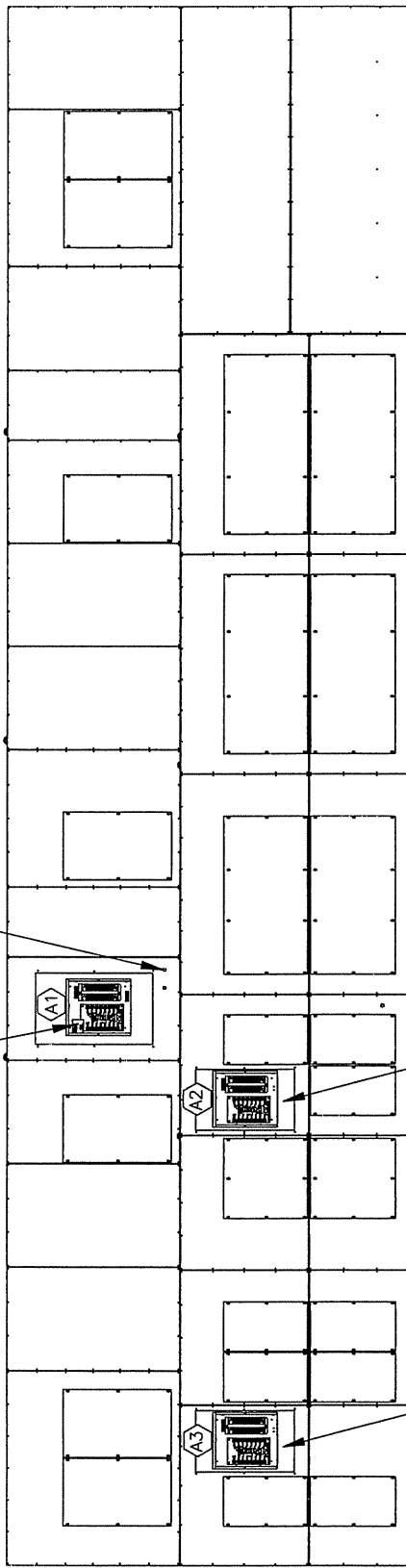
BA-2002-11/-21



FRONT VIEW

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

ENCLOSURE COMPONENT DETAIL.



REAR VIEW

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

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

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

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; BA-2002-11/-21, G3

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 26DEC02

REVISION

APPR. BY:

SCALE: 1=50

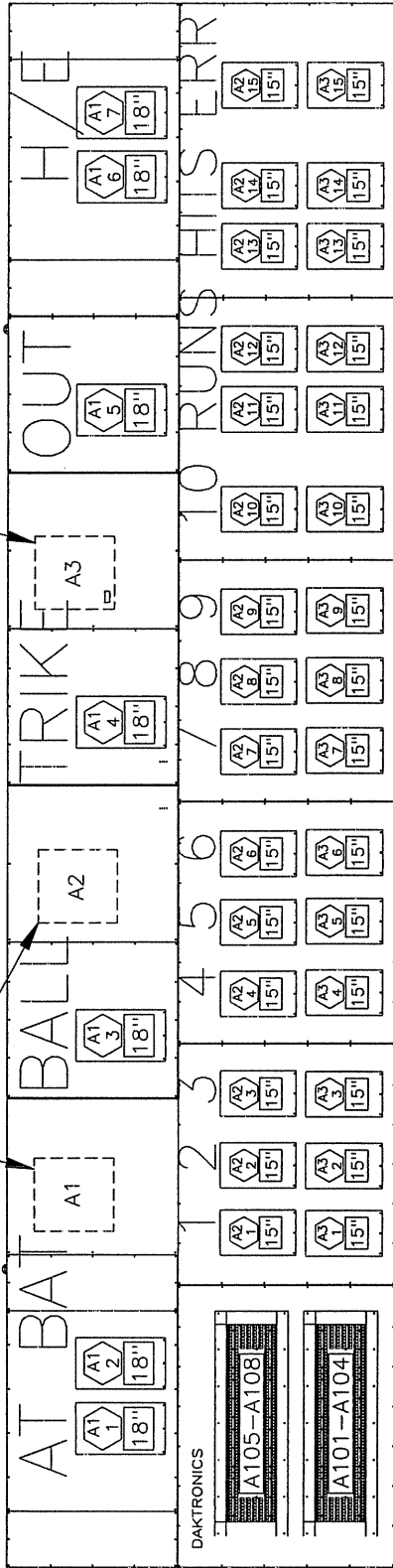
1192-R08A-180360

REV.	DATE	DESCRIPTION	BY	APPR.

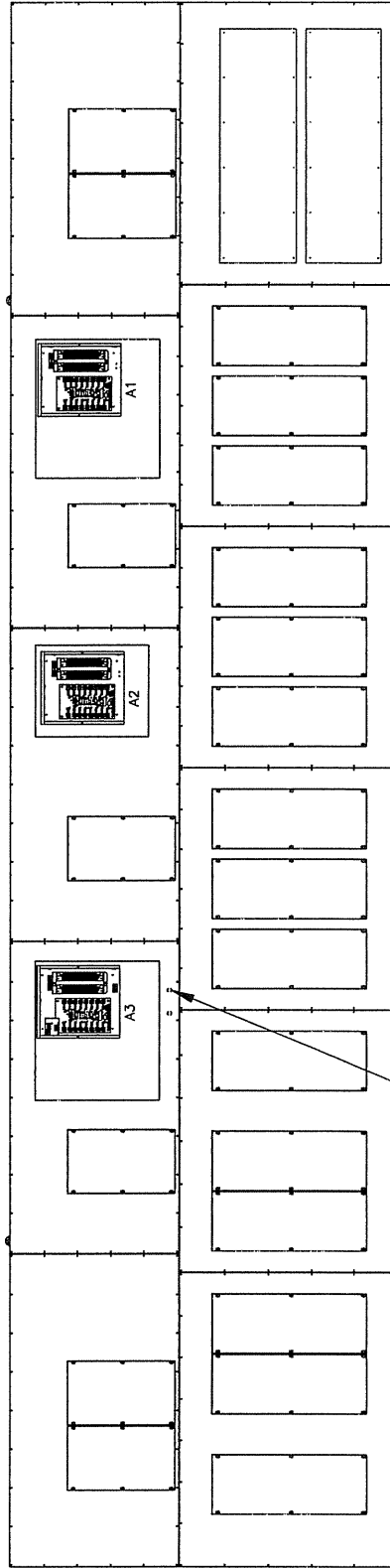
BA-2001-11/-21 W/ TNMC

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

1/2" CONDUIT

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

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

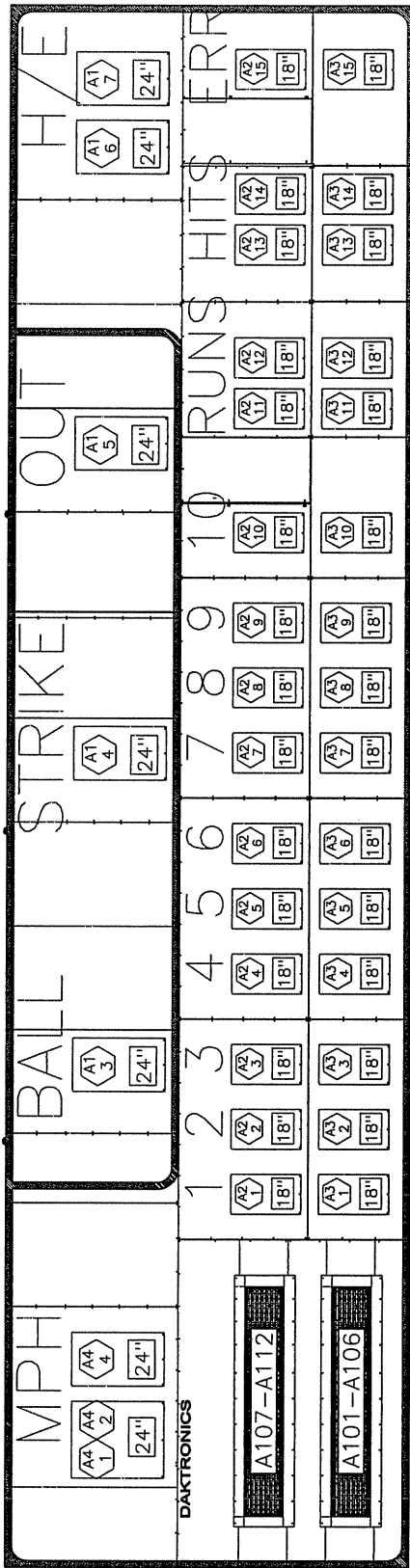
A1 1

18" = DIGIT SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOCATIONS; BA-2001-11/-21 W/ TNMC, G3			
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN	
DATE: 26DEC02			
REVISION	APPR. BY:	1192-R08A-180361	
	SCALE: 1=40		

REV.	DATE	DESCRIPTION	BY	APPR.

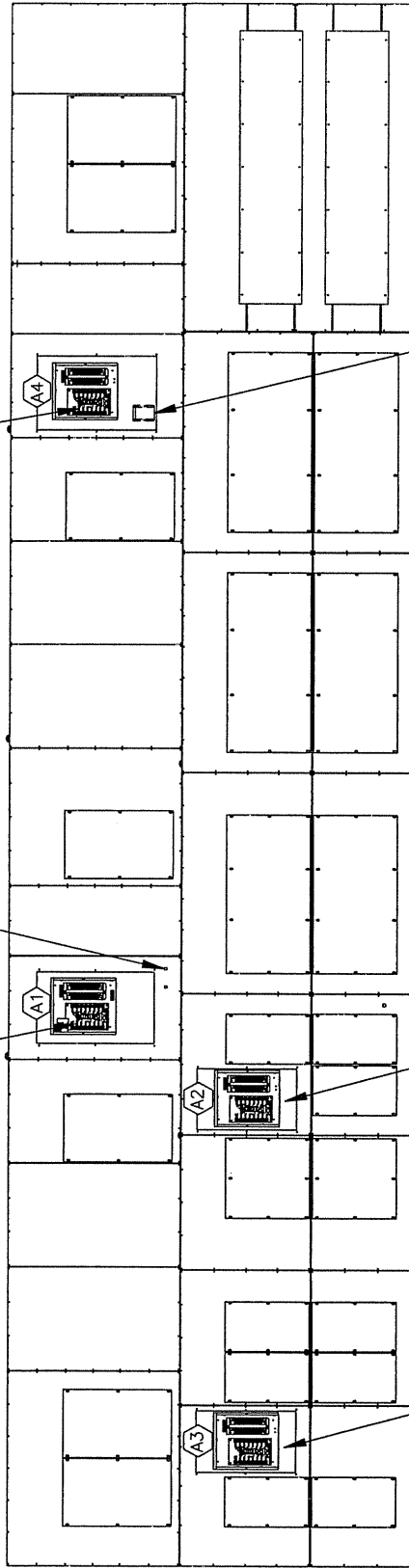
BA-2009-11/-21 W/ TNMC



FRONT VIEW

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

ENCLOSURE COMPONENT DETAIL.



REAR VIEW

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

SOP SIGNAL ENCLOSURE

(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.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS; BA-2009-11/-21 W/ TNMC, G3

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 28MAR03

REVISION

APPR. BY:

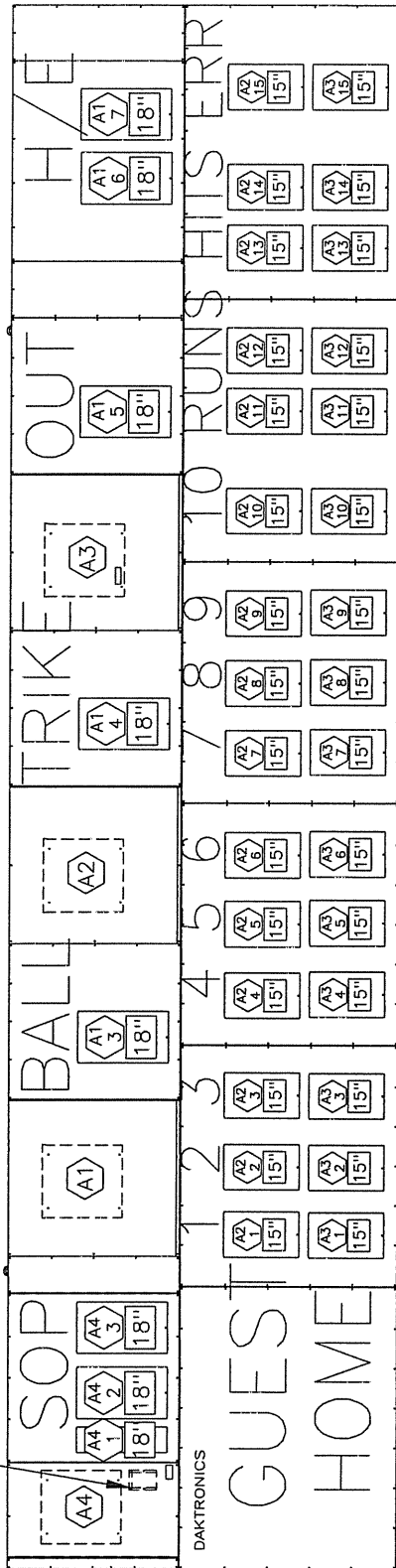
SCALE: 1=50

1192-R08A-185787

REV.	DATE	DESCRIPTION	BY	APPR.

BA-2008-11/-21

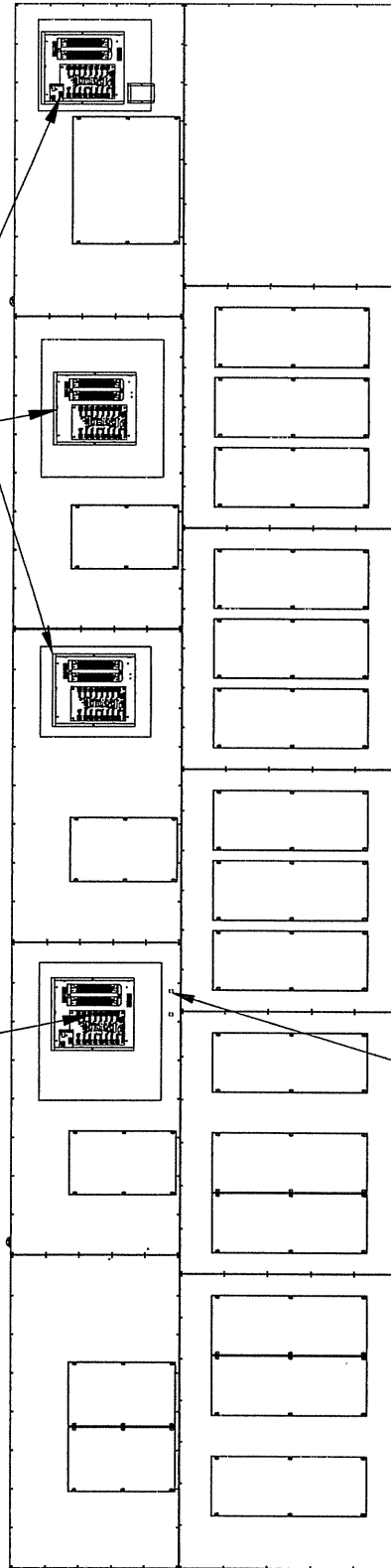
SIOP SIGNAL ENCLOSURE



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

18" = DIGIT SIZE

A1 1

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

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

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: COMPONENT LOCATIONS, BA-2008-11/-21, G3

DES. BY: MCOPLAN

DRAWN BY: MCOPLAN

DATE: 31MAR03

REVISION

APPR. BY:

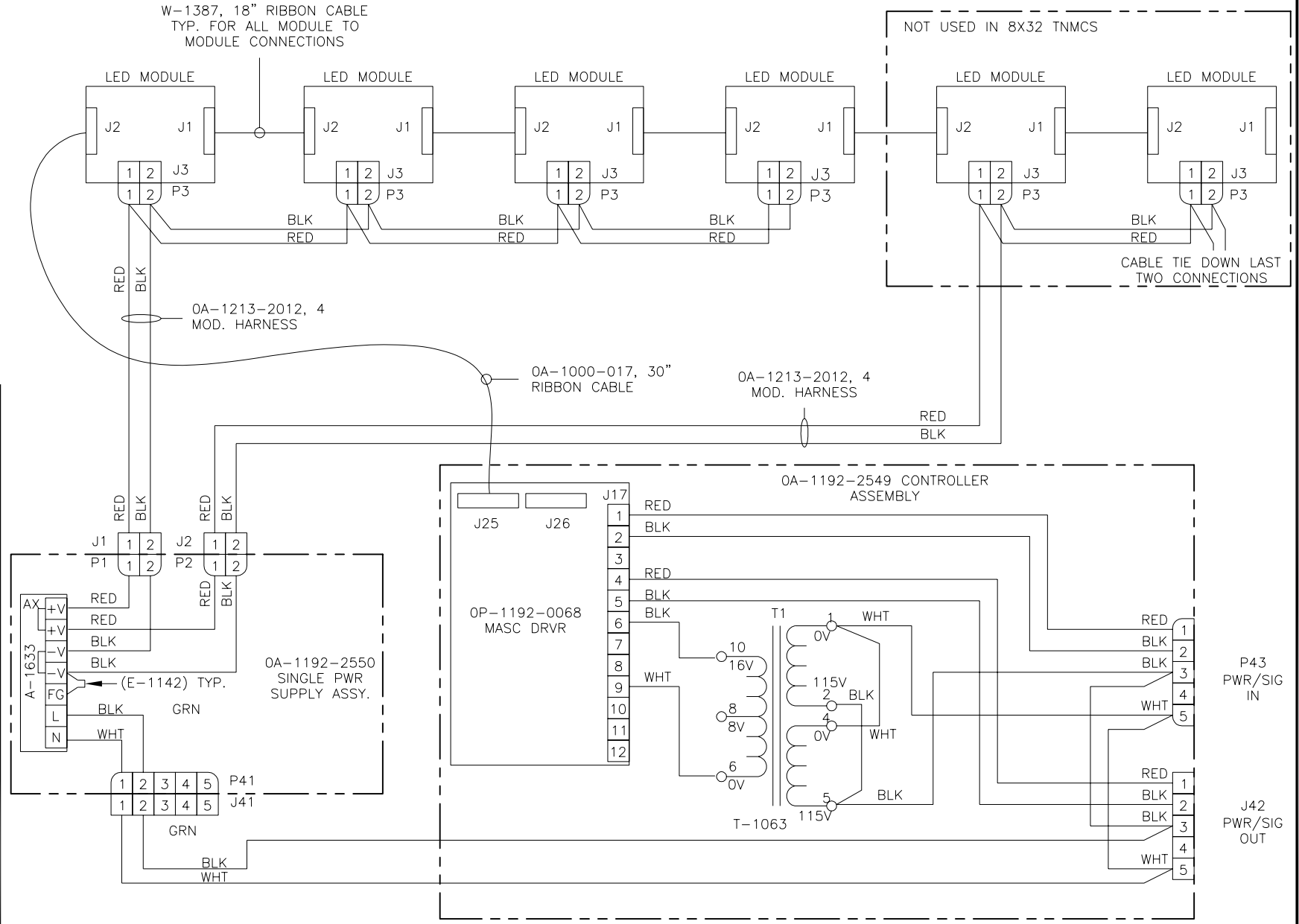
SCALE: 1=40

1192-R08A-185855

REV.	DATE	DESCRIPTION	BY	APPR.

REV.	DATE
DESCRIPTION	
BY	APPR.

0A-1192-2554 - 8X32 RED LED TNMC, GEN III
 0A-1192-2552 - 8X48 RED LED TNMC, GEN III



PROJ:	OUTDOOR LED DIGIT SCOREBOARDS
TITLE:	SCHEMATIC; RED LED TNMC, GEN III
DES. BY:	MILLER
DRAWN BY:	MILLER
DATE:	21 APR 03
REVISION	APPR. BY:
SCALE:	NONE
1192-R03A-187661	

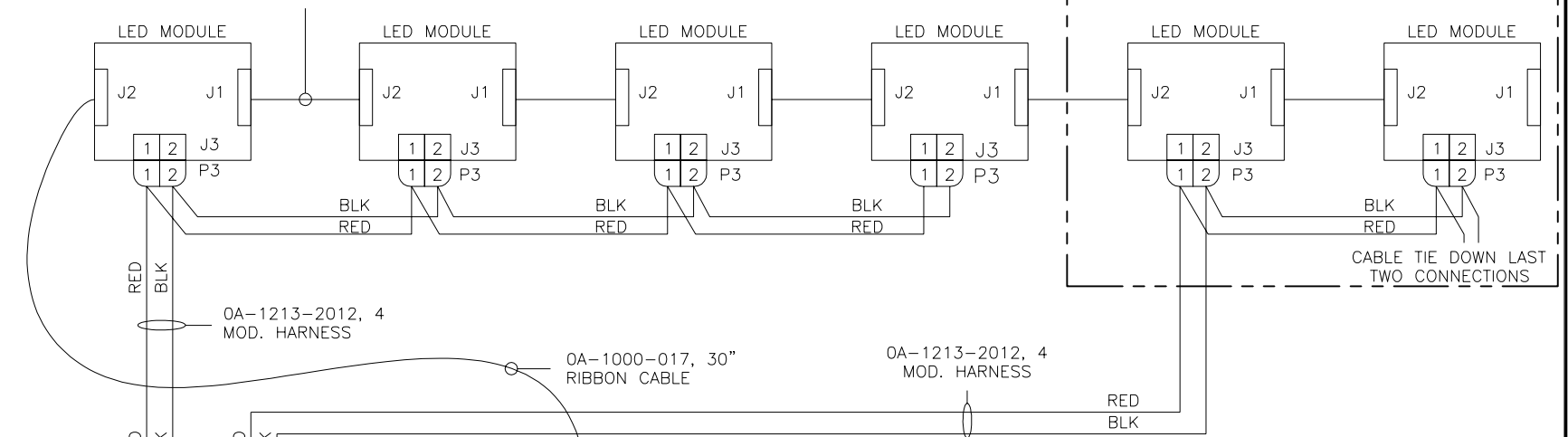
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2003 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
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W-1387, 18" RIBBON CABLE
TYP. FOR ALL MODULE TO
MODULE CONNECTIONS

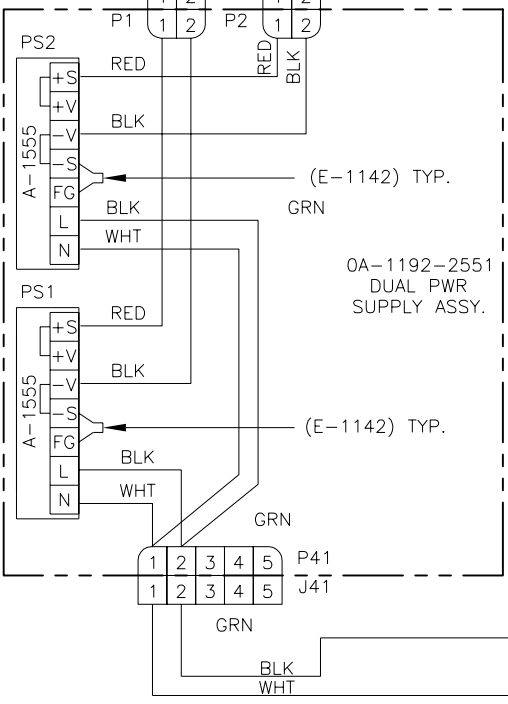
OA-1192-2555 - 8X32 1.5" AMBER LED TNMC, GEN III
OA-1192-2553 - 8X48 1.5" AMBER LED TNMC, GEN III



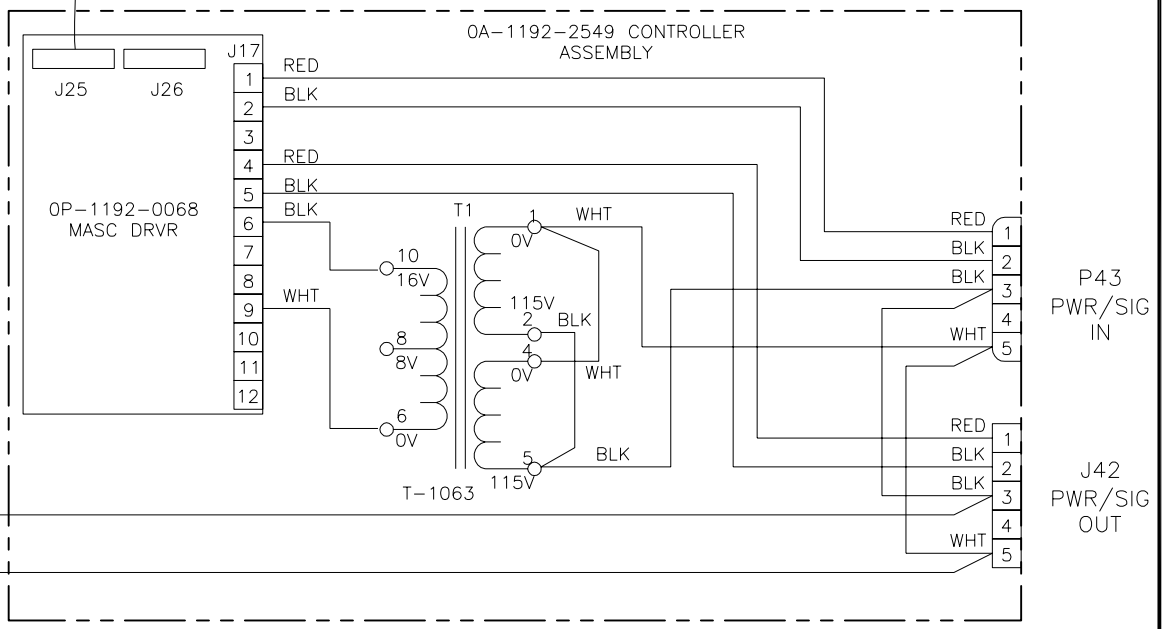
OA-1213-2012, 4
MOD. HARNESS

OA-1000-017, 30"
RIBBON CABLE

OA-1213-2012, 4
MOD. HARNESS



OA-1192-2551
DUAL PWR
SUPPLY ASSY.



OA-1192-2549 CONTROLLER
ASSEMBLY

OP-1192-0068
MASC DRVR

T-1063 115V

P43
PWR/SIG
IN

J42
PWR/SIG
OUT

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PROJ: OUTDOOR LED DIGIT SCOREBOARDS

TITLE: SCHEMATIC; 1.5" AMBER LED TNMC, GEN III

DES. BY: MILLER

DRAWN BY: MILLER

DATE: 01 MAY 03

REVISION

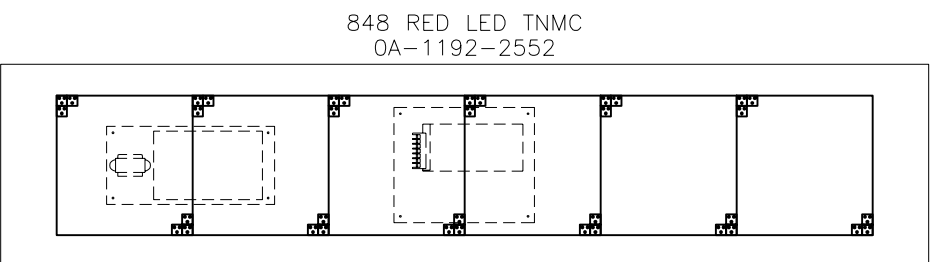
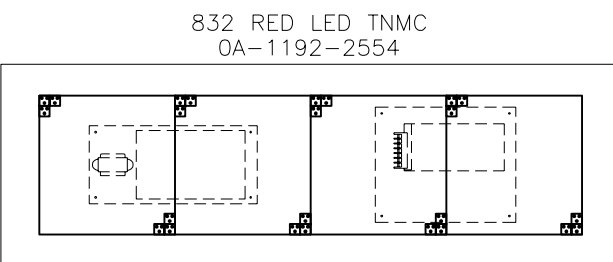
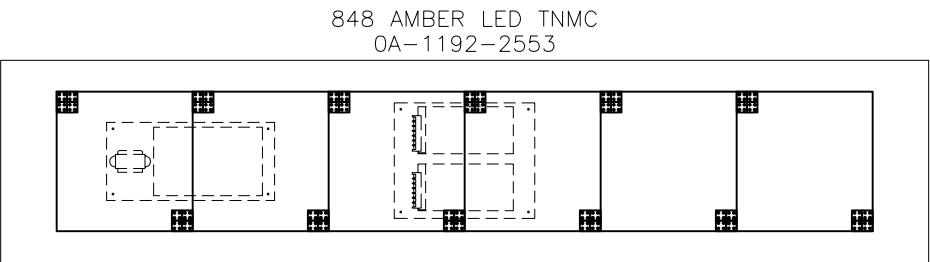
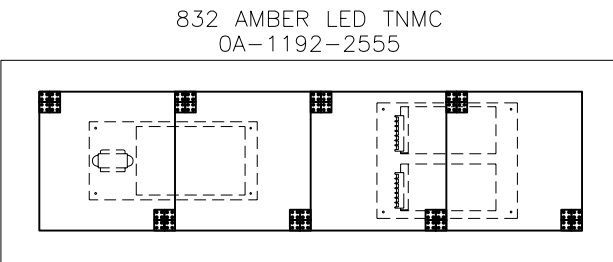
APPR. BY:

SCALE: NONE

1192-R03A-187662

DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.



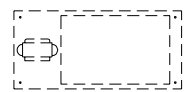
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PROJ: OUTDOOR LED SCOREBOARDS
DAKTRONICS, INC. BROOKINGS, SD 57006

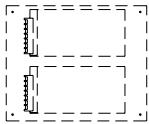
TITLE: COMPONENT LOCATIONS; 832/842 RED/AMB LED TNMC, G3

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 01MAY03

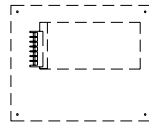
REVISION APPR. BY: 1192-R08A-187987 SCALE: 1=15



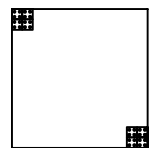
TNMC CONTROLLER
OA-1192-2549
USED IN RED & AMBER LED TNMCs



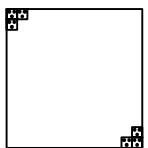
DOUBLE POWER SUPPLY ASSEMBLY
OA-1192-2551
USED IN AMBER LED TNMCs



SINGLE POWER SUPPLY ASSEMBLY
OA-1192-2550
USED IN RED LED TNMCs



AMBER LED TNMC MODULE
OA-1208-3005
USED IN AMBER LED TNMCs

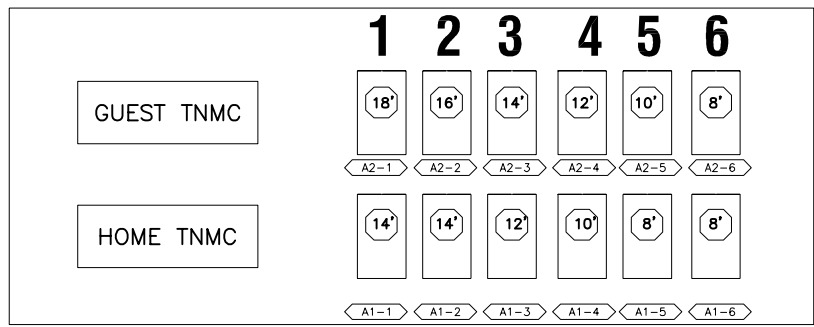


RED LED TNMC MODULE
OA-1208-3006
USED IN RED LED TNMCs

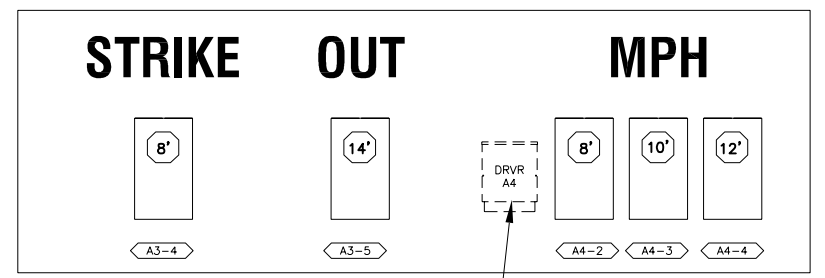
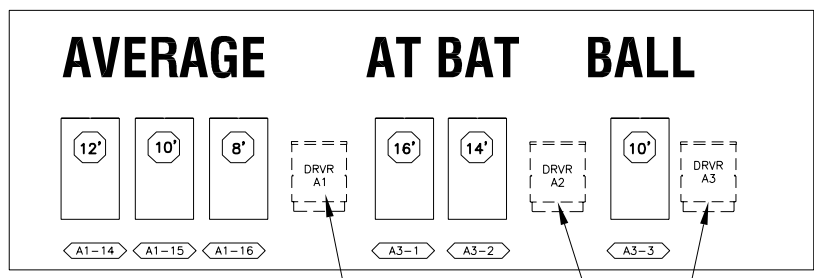
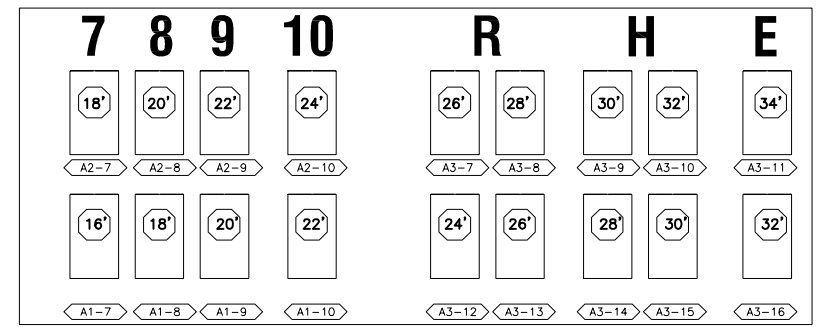
REV. DATE DESCRIPTION BY APPR.

BA-2018-11/21 W/ TNMC

TOP LEFT



TOP RIGHT



LOCATION OF 16 COLUMN MASTER DRIVER @1. POWER/SIGNAL TERMINATIONS

BOTTOM LEFT

BOTTOM RIGHT

ENCLOSED 16 COLUMN LED SLAVE DRIVER.

LOCATION OF 16 COLUMN MASTER DRIVER @1. POWER/SIGNAL TERMINATIONS

AZ-Z = LED DRIVER NUMBER AND LED DRIVER CONNECTOR WIRED TO DIGIT.

16 = HARNESS LENGTH

DRIVER/TNMC INTERCONNECT HARNESS

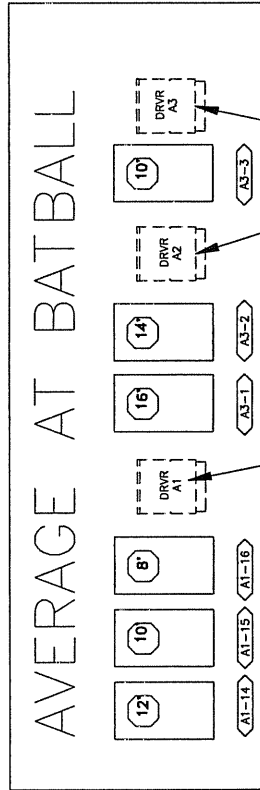
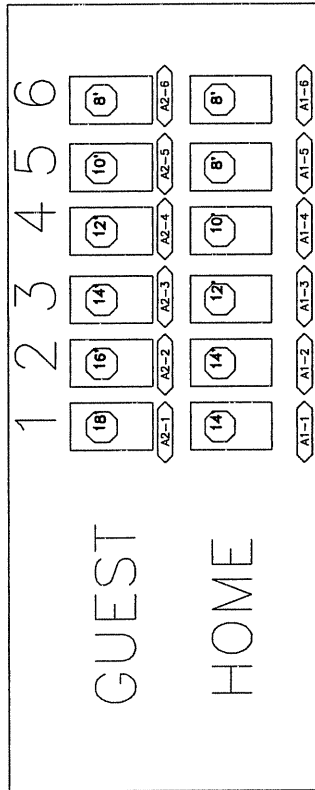
SEE ROUTING IN ASSEMBLY PACKET.

REVISION 00
 TITLE: COMPONENT LOCATION, BA-2018-11/21 W/ TNMC
 DES. BY: KBRICKER
 DRAWN BY: CCAIN
 DATE: 24 AUG 04
 PROJ: OUTDOOR LED SCOREBOARDS
 DAKTRONICS, INC. BROOKINGS, SD 57006
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APPR. BY: NONE
 SCALE: NONE
 1192-E10A-222092

BA-2018-11/21

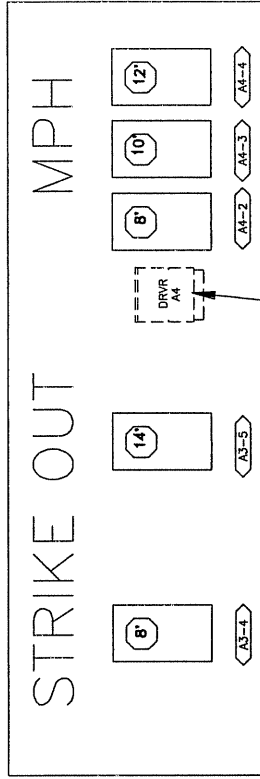
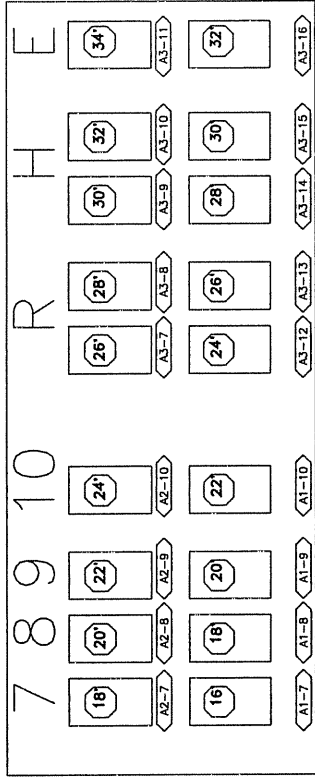
TOP LEFT



LOCATION OF 16 COLUMN MASTER DRIVER @ 1. POWER/SIGNAL TERMINATIONS

ENCLOSED 16 COLUMN LED SLAVE DRIVER.

TOP RIGHT



LOCATION OF 16 COLUMN MASTER DRIVER @ 1. POWER/SIGNAL TERMINATIONS

LED DRIVER NUMBER AND LED DRIVER CONNECTOR WIRED TO DIGIT.

(16) = HARNESS LENGTH

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED SCOREBOARDS			
TITLE: COMPONENT LOCATION, BA-2018-11/21			
DES. BY: KBRICKER		DRAWN BY: CCAIN	
DATE: 31 AUG 04			
REVISION	APPR. BY:	1192-E10A-222578	
00	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.
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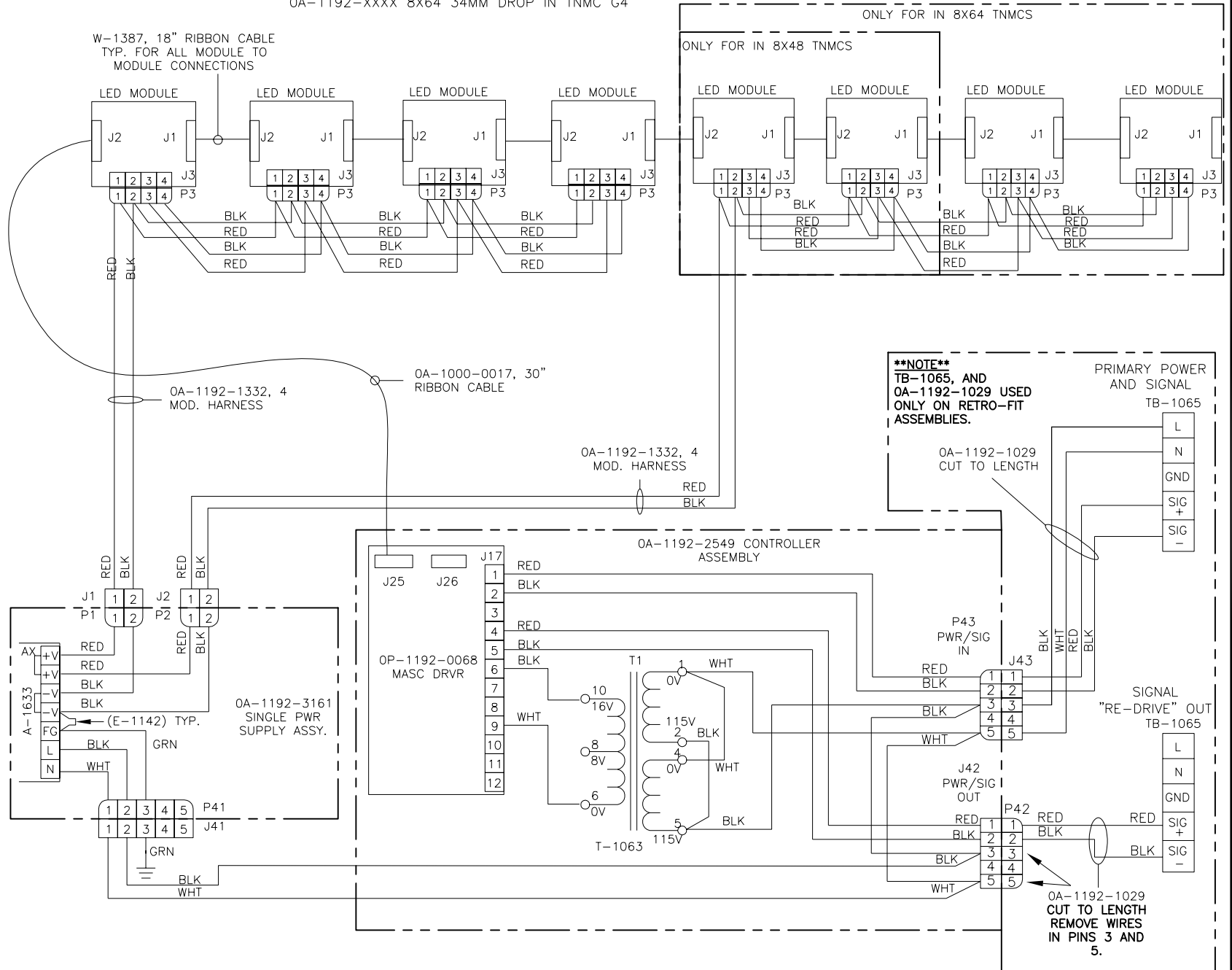
REV.	DATE	DESCRIPTION	BY	APPR.
02	14 FEB 06	UPDATED PART NUMBERS AND EXPANDED DRAWING TO COVER 8X64 OPTION	MMM	
01	01 DEC 05	CHANGED MOD. PWR HARNESS FROM 2 PIN TO 4 PIN HARNESS	SJC	

PROJ:	OUTDOOR LED DIGIT SCOREBOARDS
TITLE:	SCHEMATIC; AMBER TNMC GEN IV
DES. BY:	MILLER
APPR. BY:	DDINING
DATE:	31 AUG 05
REVISION	SCALE: NONE
02	1192-R01A-252645

DAKTRONICS, INC. BROOKINGS, SD 57006

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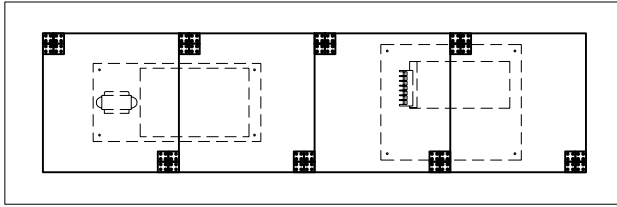
- 0A-1192-3165 8X32 34MM AMBER TNMC G4
- 0A-1192-3167 8X48 34MM AMBER TNMC G4
- 0A-1192-XXX 8X64 34MM AMBER TNMC G4
- 0A-1192-3229 8X32 34MM DROP IN TNMC G4
- 0A-1192-3231 8X48 34MM DROP IN TNMC G4
- 0A-1192-XXXX 8X64 34MM DROP IN TNMC G4



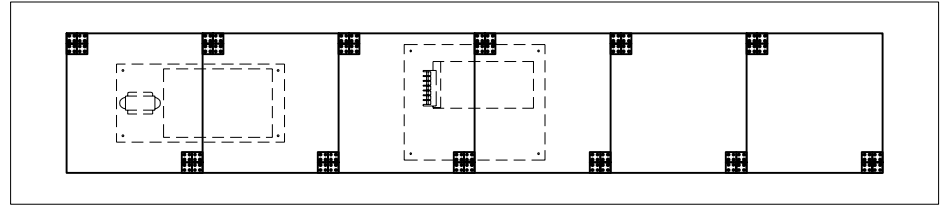
DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
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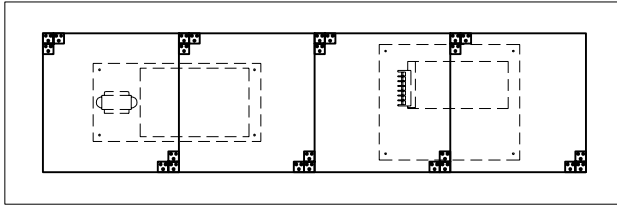
832 AMBER LED TNMC
OA-1192-3165



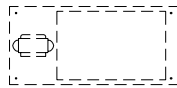
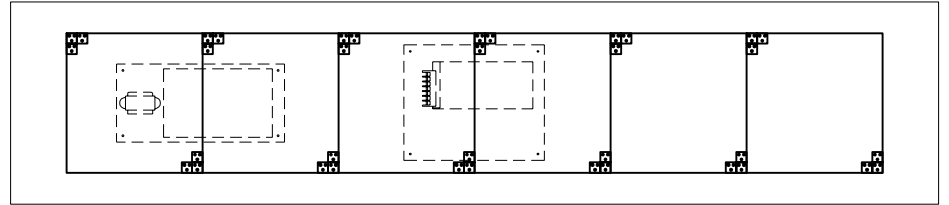
848 AMBER LED TNMC
OA-1192-3166



832 RED LED TNMC
OA-1192-3164

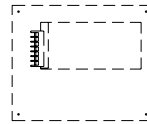


848 RED LED TNMC
OA-1192-3167



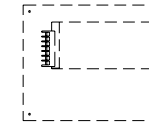
TNMC CONTROLLER
OA-1192-2549

USED IN RED & AMBER LED TNMCs



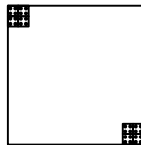
SINGLE POWER SUPPLY ASSEMBLY
OA-1192-3161

USED IN AMBER LED TNMCs



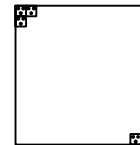
SINGLE POWER SUPPLY ASSEMBLY
OA-1192-3160

USED IN RED LED TNMCs



AMBER LED TNMC MODULE
OA-1208-4001

USED IN AMBER LED TNMCs



RED LED TNMC MODULE
OA-1208-4000

USED IN RED LED TNMCs

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PROJ: OUTDOOR LED SCOREBOARDS
DAKTRONICS, INC. BROOKINGS, SD 57006

TITLE: COMPONENT LOCATIONS; 832/842 RED/AMB LED TNMC, G4

DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 08NOV05

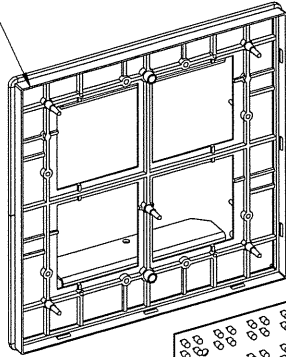
REVISION 00 APPR. BY: 1192-R08A-257029

00

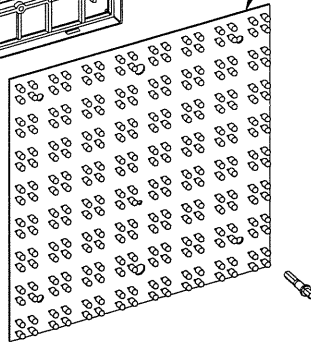
SCALE: 1=15

1192-R08A-257029

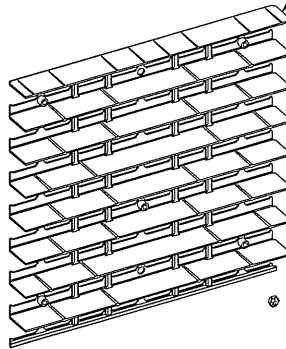
PLASTIC HOUSING WITH WEATHERSTRIPPING FOR WATERPROOFING



SINGLE LED AND DRIVER PANEL



LOUVER



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

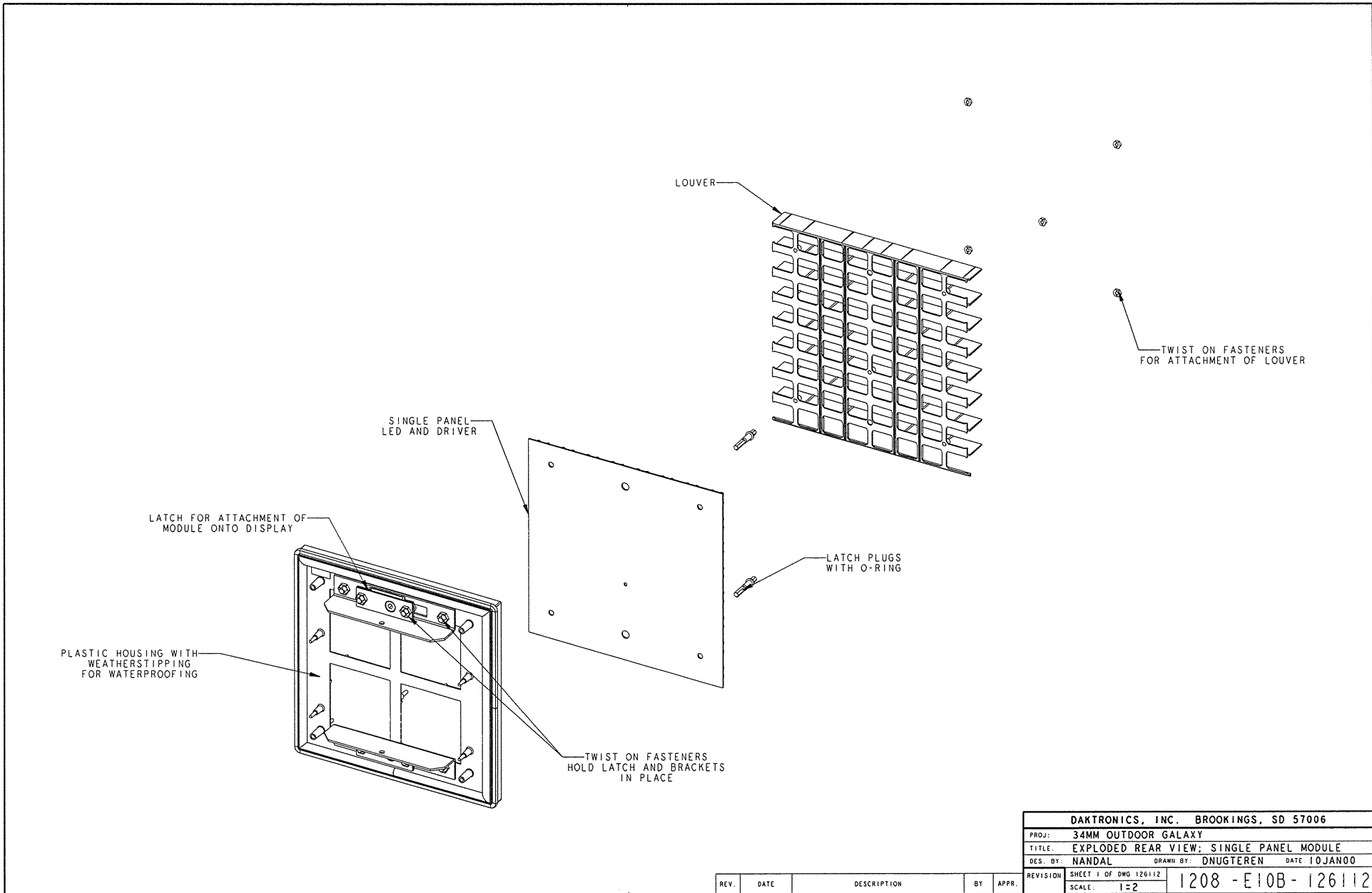


TWIST ON FASTENERS #5 FOR ATTACHMENT OF LOUVER



DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	34MM OUTDOOR GALAXY
TITLE:	EXPLODED FRONT VIEW; SINGLE PANEL MODULE
DES. BY:	NANDAL
DRAWN BY:	DNUGTEREN
DATE:	10 JAN 00
REVISION	SHEET 1 OF DWG 126111
SCALE:	1=2
1208 - E10B - 126111	

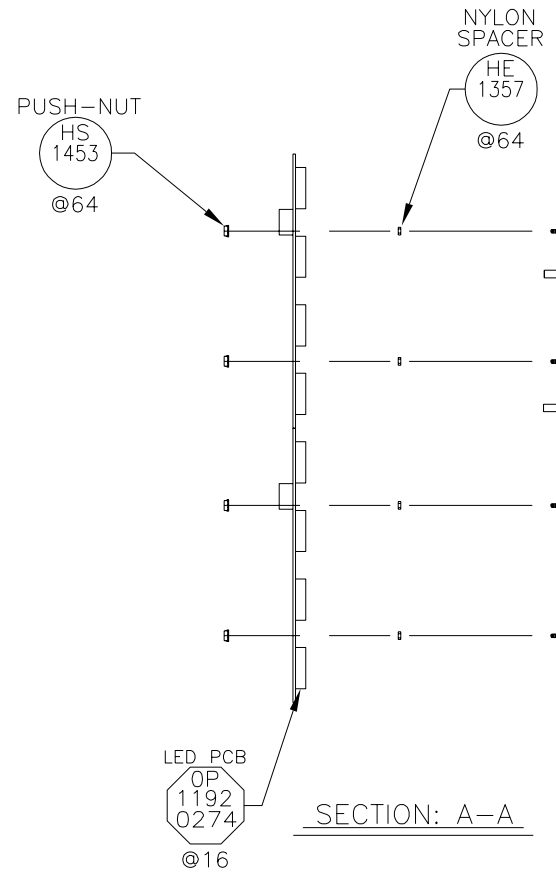
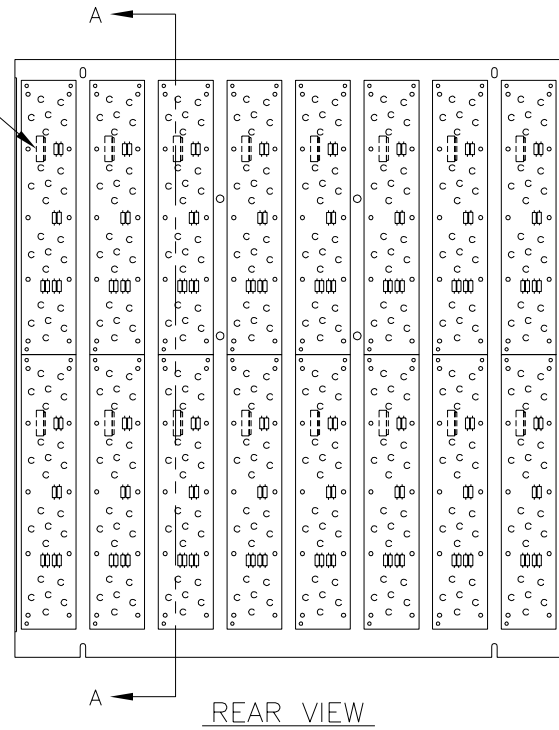
REV.	DATE	DESCRIPTION	BY	APPR.



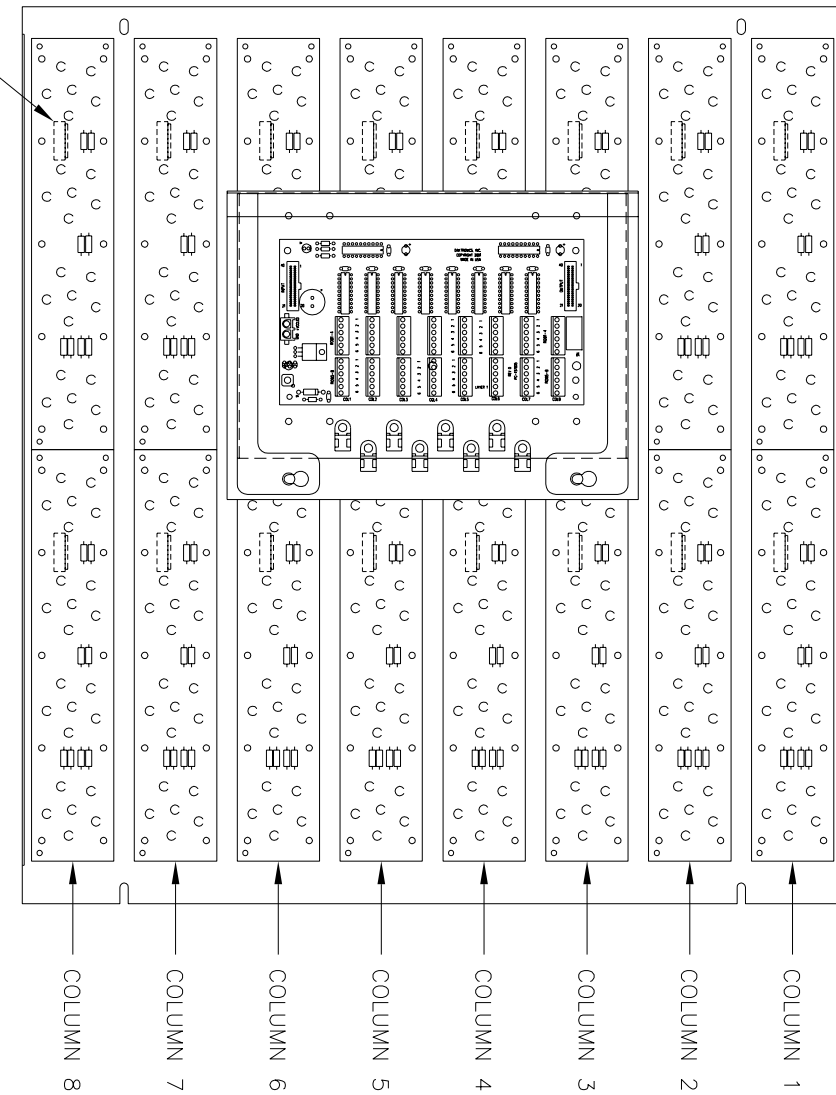
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ:	34MM OUTDOOR GALAXY
TITLE:	EXPLODED REAR VIEW; SINGLE PANEL MODULE
DES. BY:	NANDAL
DRAWN BY:	DNUGTEREN
DATE:	10 JAN 00
REVISION	SHEET 1 OF DWG 126112
SCALE:	1=2
1208 - E10B - 126112	

REV.	DATE	DESCRIPTION	BY	APPR.

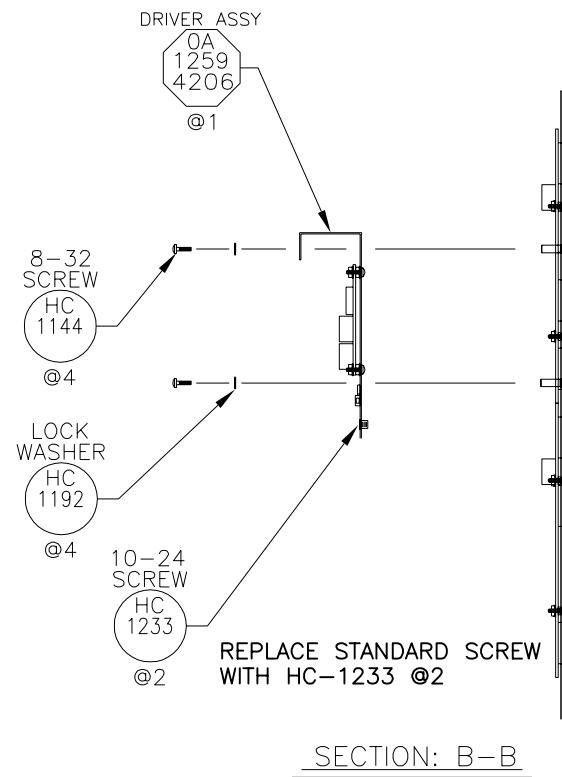
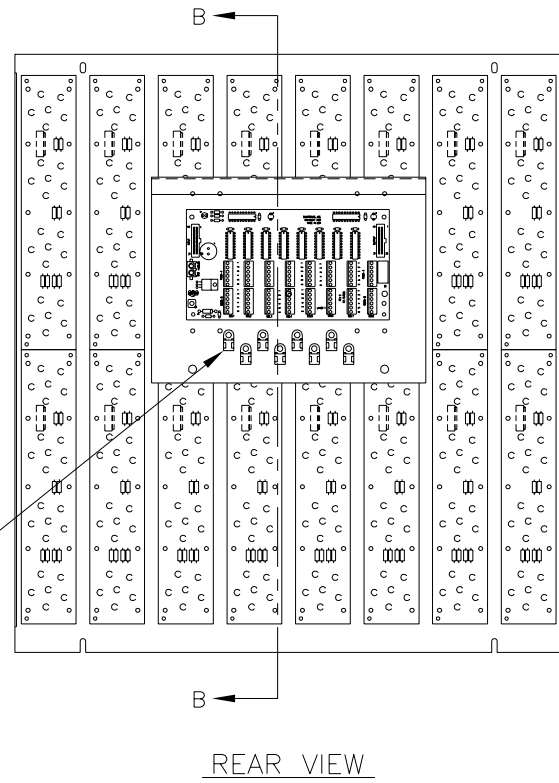
ORIENT PCB SO HARNESS PLUG FACES TO THE TOP



LED HARNESS
OA 1261 0001
@16



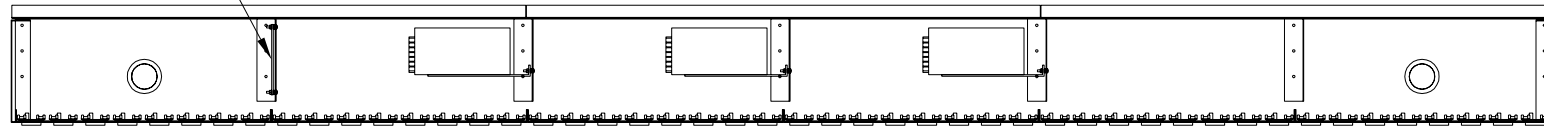
REMOVE ANCHOR SO NOT TO INTERFERE WITH MOUNTING HOLE



REV.	DATE	DESCRIPTION	BY	APPR.
06	30 APR 04	ADDED HC-1233 @2 AND NOTE.	KJB	
05	13 JUN 03	REPLACED OP-1192-0064 WITH OP-1192-0274.	KJB	
04	12 MAY 03	REPLACED OA-1259-4011 WITH OA-1259-4206.	KJB	
03	25 NOV 02	REPLACED OZ-10006-4100TI WITH OS-1192-0183.	KJB	
02	31 OCT 02	REPLACED ITEM HC-1179 WITH HC-1144, AND ITEM HC-1149 WITH HC-1192 AND HC-1364 WITH HS-1453.	LXC	

01	09MAY02	REMOVED CABLE TIE ANCHORS, UPDATED PACKET NUMBERS.	KJB
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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED DIGIT SCOREBOARDS			
TITLE: FACE PANEL ASSY, 2.5" LED TNMC			
DES. BY: KBRICKER		DRAWN BY: KBRICKER	
DATE: 21MAR02			
REVISION	APPR. BY:	1192-E10B-164446	
06	SCALE: 1=7		

LOCATION OF MDC

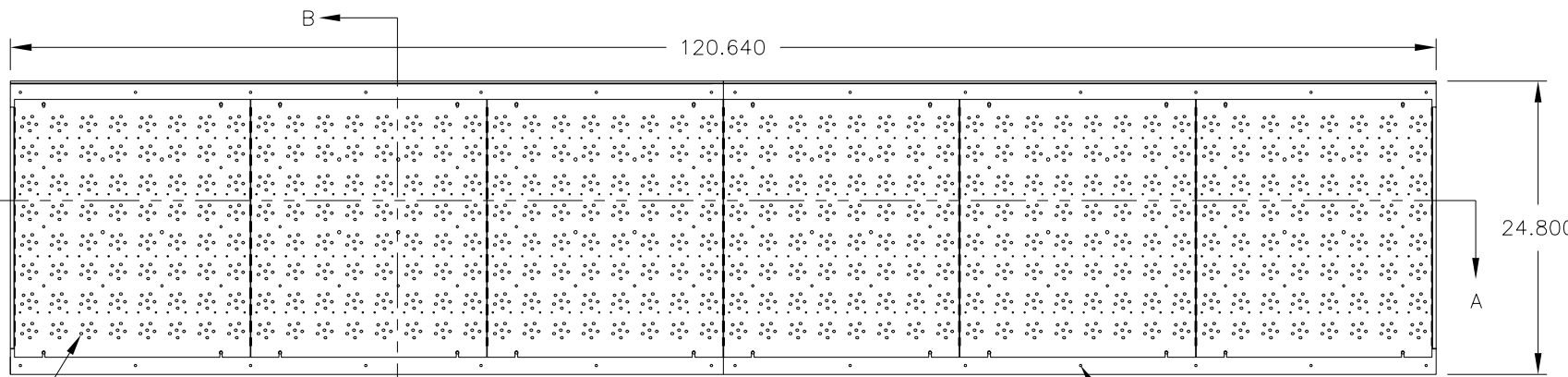


VIEW A-A

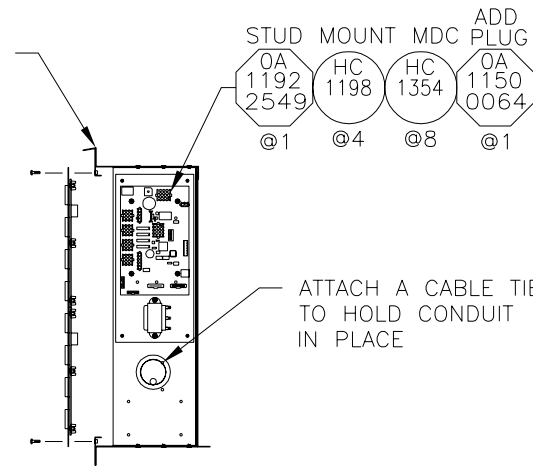
	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
221	1	1	0	1	1	1	0	1

SET ADDRESS PLUG TO 221

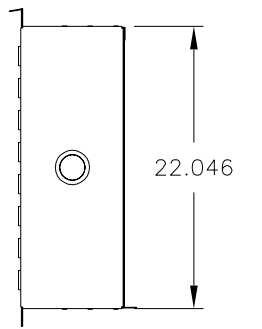
APPLY A BEAD OF SILICONE TO THE TOP OF SHROUD TO PREVENT WATER FROM ENTERING SHELL BETWEEN SPOT-WELDED PARTS



FRONT VIEW



VIEW B-B

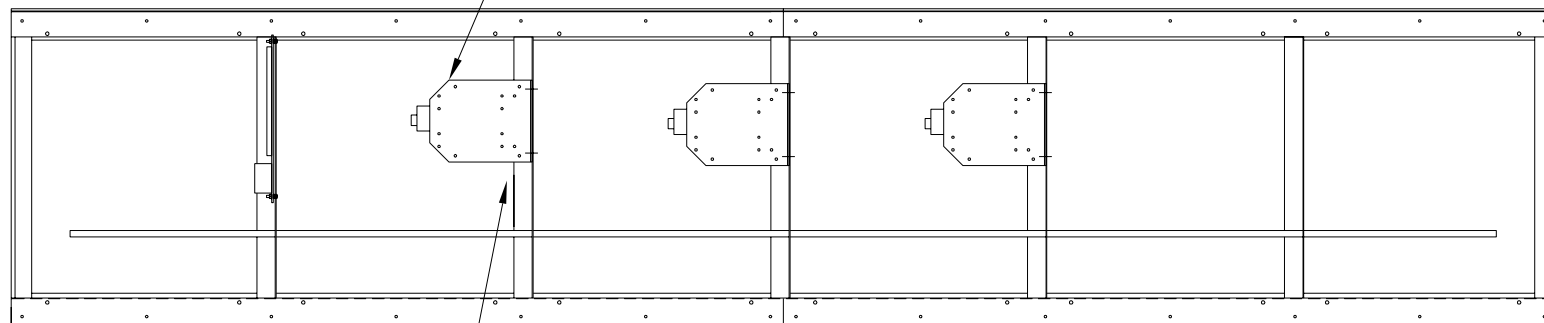


SIDE VIEW

8x8-2.5" RED/ORG MOD
 OA 1192 2673
 @6

RIVET HC 1125 @28
 USE HOLES TO ATTACH SHELL TO THE TNMC SECTION OF THE SCOREBOARD, ATTACH WITH RIVETS.

MOUNT POWER SUPPLY SO IT CAN BE SERVICED FROM THE FRONT OR REAR BASED ON SCOREBOARD ACCESS. SEE F.ASSY DWG OF SCOREBOARD. (REAR ACCESS SHOWN)



FRONT VIEW (SHOWN WITH FRONT OPEN)

STUD MOUNT POWER SUPPLY
 HC 1198 HC 1354 OA 1192 2655
 @6 @12 @3

SCHEMATIC: 8x48-2.5" LED TNMC
 1192-R03B-188553

SHELL ASSY: 8x48-2.5" LED TNMC
 1192-E10B-164464

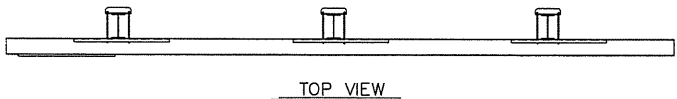
OTHER ASSY PACKETS NOT SHOWN:

.0A-1192-0384..SHELL ASSY, 8x48-2.5" LED TNMC

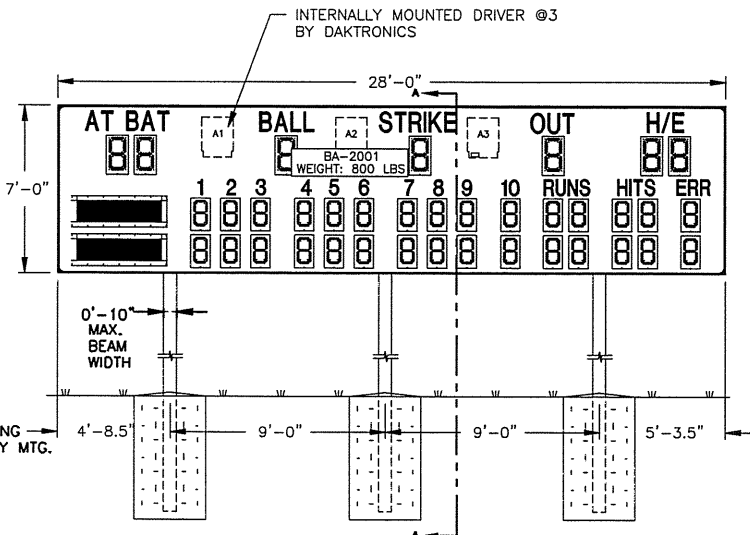
02	09MAY02	REMOVED ENLCOSURE, LOWERED HOLES FOR CONDUIT, & CHANGED POWER SUPPLY BRACKET.	KJB
01	27MAR02	ADDED ENCLOSURE FOR MDC/CLI AND NOTES.	KJB

REV.	DATE	DESCRIPTION	BY	APPR.
07	30 JUL 04	ADDED OA-1150-0064 @1 AND ADDRESS DETAIL PER ECO-042612	CAC	
06	13JUN03	REPLACED OA-1192-0383 WITH OA-1192-2673. UPDATED SCHEMATIC FROM B-164243 TO B-188553.	KJB	
05	08MAY03	REMOVED OA-1146-0061 & OA-1146-0020 AND REPLACED WITH OA-1192-2549.	KJB	
04	25NOV02	REPLACED OZ-10006-4100TP WITH OA-1192-0382 AND UPDATED ASSY PACKETS.	KJB	
03	09SEP02	ADDED SILICONE STEP TO TOP OF SHROUD.	KJB	

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED DIGIT SCOREBOARDS			
TITLE: F.ASSY, 8x48-2.5" LED TNMC, RED/ORG, G3			
DES. BY: KBRICKER		DRAWN BY: KBRICKER DATE: 22MAR02	
REVISION	APPR. BY:	1192-E10B-164514	
07	SCALE: 1=15		

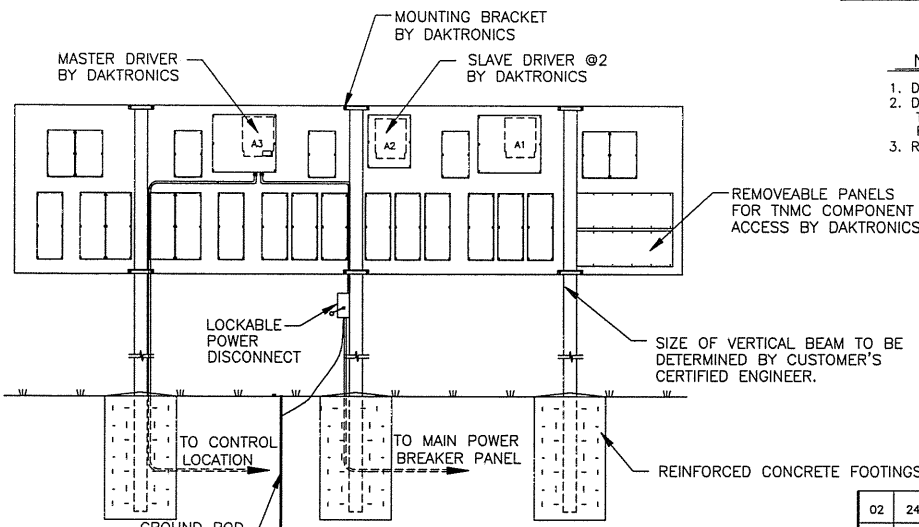


TOP VIEW

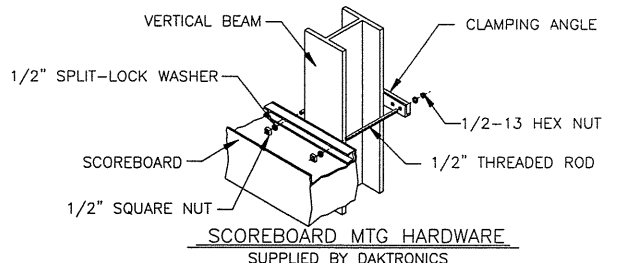


FRONT VIEW

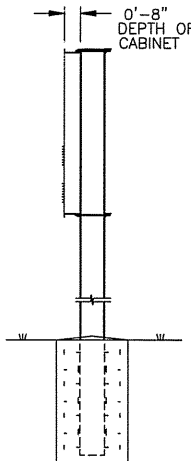
VERTICAL BEAM SPACING FOR CORRECT DISPLAY MTG.



REAR VIEW



SCOREBOARD MTG HARDWARE
SUPPLIED BY DAKTRONICS



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'
			BEAM	W8x18	W10x22	W14x26
14 FT	2 FT	9 FT	FOOTING	6.5'x3'	8'x3.5'	9'x4'
			BEAM	W8x21	W12x26	W14x34
			FOOTING	7'x3'	8.5'x4'	10'x4.5'
18 FT	4 FT	11 FT	BEAM	W8x18	W10x22	W12x26
			FOOTING	6'x3'	7.5'x3'	9'x4'
			BEAM	W10x22	W12x30	W16x40
10 FT	NONE	7 FT	FOOTING	7.5'x3'	9'x4'	10.5'x4.5'
			BEAM	W8x21	W10x30	W12x35
			FOOTING	6.5'x3'	8'x3.5'	9.5'x4'
14 FT	2 FT	9 FT	BEAM	W8x24	W10x33	W12x45
			FOOTING	7.5'x3'	9'x4'	10.5'x4.5'
			BEAM	W8x31	W12x40	W14x48
18 FT	4 FT	11 FT	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.

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

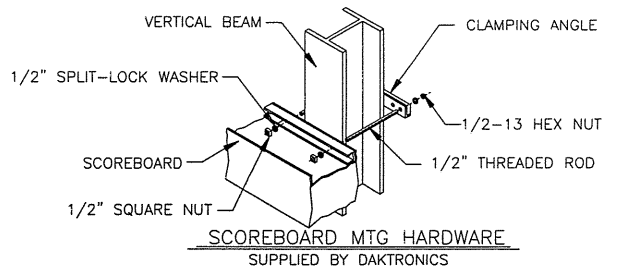
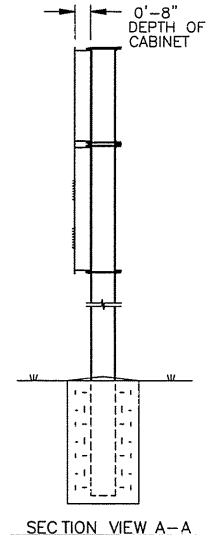
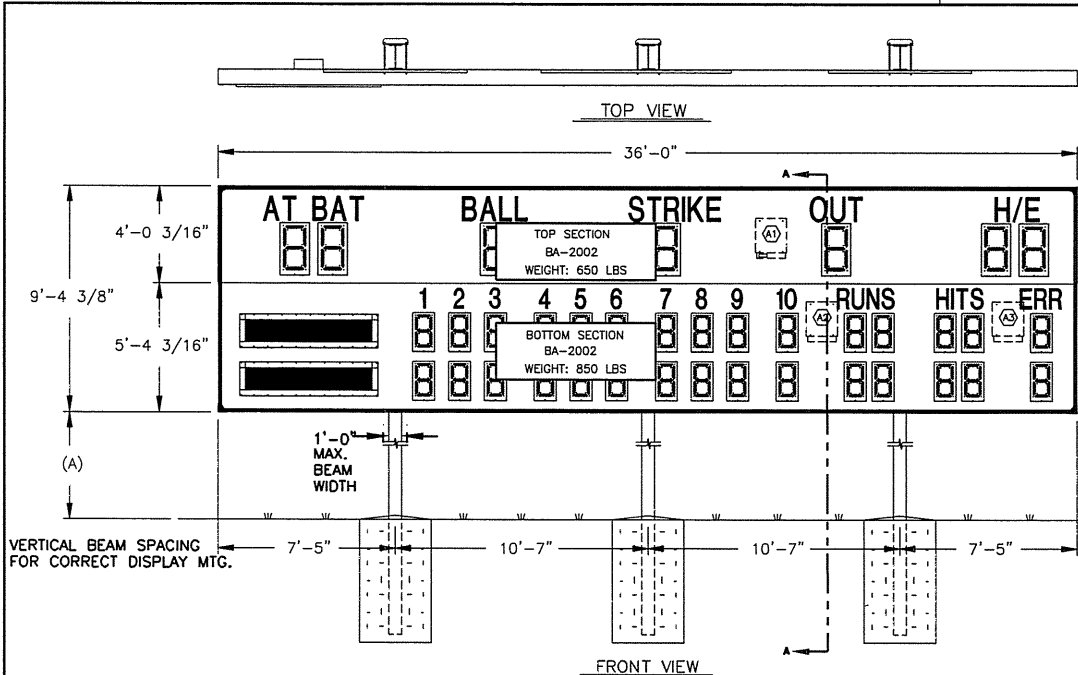
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SHOP DRAWING; BA-2001-11

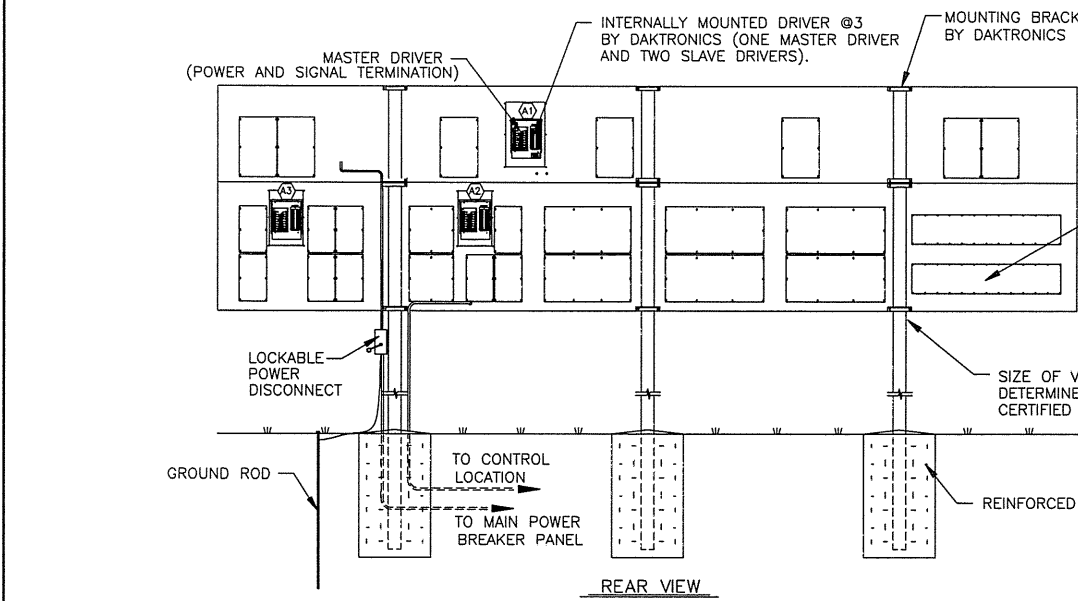
DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 12APR02

REVISION 02 APPR. BY: SCALE: 3/16"=1" 1192-E10B-165469



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'
4 FT	13'-4 3/8"	BEAM	W10x22	W12x30	W14x43	
		FOOTING	7.5'x3.5'	9'x4'	10.5'x4.5'	
14 FT	NONE	9'-4 3/8"	BEAM	W8x21	W10x30	W12x35
			FOOTING	7'x3'	8'x4'	9.5'x4.5'
	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'
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.

REMOVABLE 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.

SIZE OF VERTICAL BEAM TO BE DETERMINED BY CUSTOMER'S CERTIFIED ENGINEER.

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

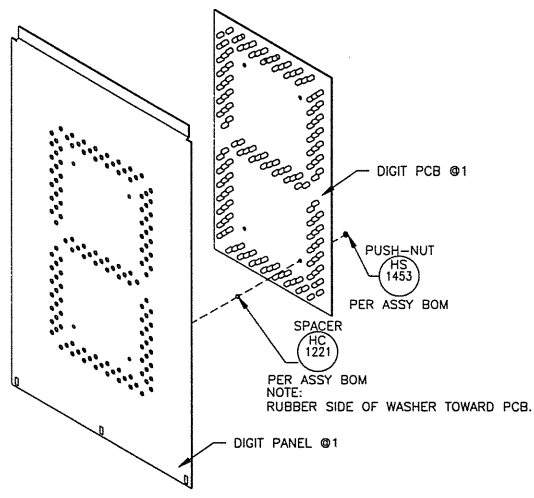
PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SHOP DRAWING; BA-2002-11

DES. BY: MCOPLAN DRAWN BY: MCOPLAN DATE: 15APR02

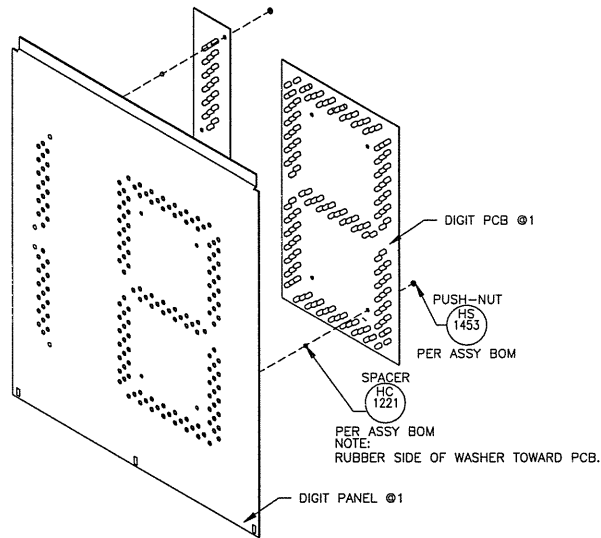
REVISION APPR. BY: SCALE: 3/16"=1" 1192-E10B-165511

REV.	DATE	DESCRIPTION	BY	APPR.



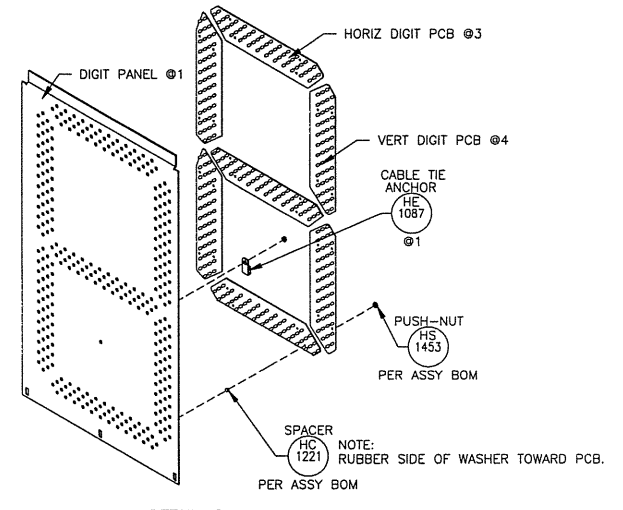
DETAIL: A

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



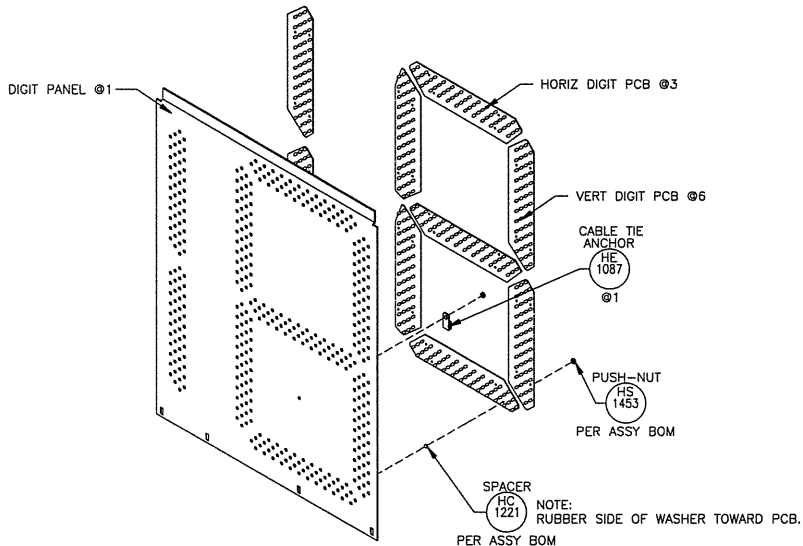
DETAIL: B

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



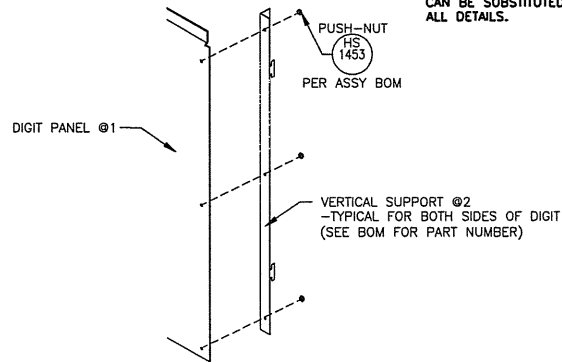
DETAIL: C

REFER TO THIS DETAIL FOR THE FOLLOWING RED/ORG, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -24", 24" WIDE, 30", 30" WIDE, 36", 42", AND 48"
 *SEE ALSO DETAIL F FOR HARNESS CONNECTIONS.



DETAIL: D

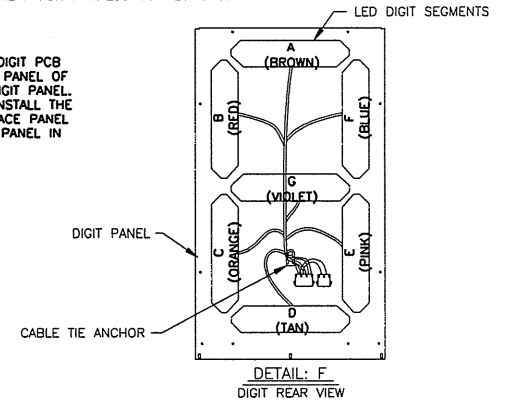
REFER TO THIS DETAIL FOR THE FOLLOWING RED/ORG, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -24"+1, 30"+1, 36"+1, 42"+1, AND 48"+1
 *SEE ALSO DETAIL F FOR HARNESS CONNECTIONS.



DETAIL: E

REFER TO THIS DETAIL FOR THE FOLLOWING RED/ORG, GRN, AND AMBER LED DIGIT ASSEMBLY SIZES:
 -30", 30"+1, 30" WIDE, 48", AND 48"+1

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



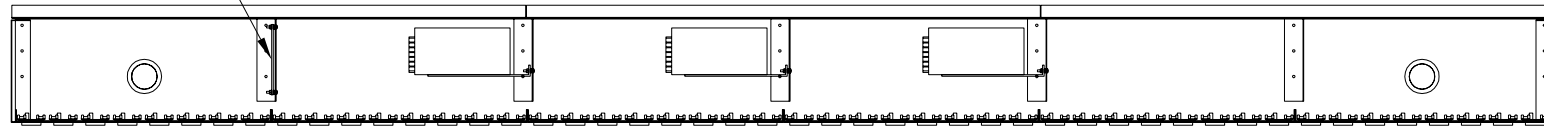
DETAIL: F
 DIGIT REAR VIEW

REFER TO THIS DETAIL WHEN ASSEMBLING INDIVIDUAL SEGMENTED LED DIGITS SUCH AS IN DETAILS C AND D. ATTACH LED DIGIT SEGMENT HARNESS (SEE BOM FOR PART NUMBER) AS SHOWN ABOVE. WHEN ATTACHING LED DIGIT SEGMENT HARNESS, MATCH THE COLORED HARNESS TO THE CORRESPONDING LED DIGIT SEGMENTS AS SHOWN ABOVE AND CABLE TIE WHERE NEEDED USING CABLE TIES AND CABLE TIE ANCHOR. TRY TO BUNDLE CABLES TOGETHER TO MAKE HARNESS LOOK LIKE ABOVE WHEN COMPLETE.

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DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: OUTDOOR LED SCOREBOARDS				
TITLE: DIGIT ASSEMBLIES; GEN III LED DIGITS				
DES. BY: MCOPLAN		DRAWN BY: MCOPLAN		DATE: 30OCT02
REVISION		APPR. BY:		1192-E10B-177679
SCALE: 1=6				

REV.	DATE	DESCRIPTION	BY	APPR.
03	01JAN03	CHANGE LETTER FOR VIOLET TO G ON DETAIL F	CME	
02	31 DEC 02	ADDED HARNESS TO DETAIL "F" TO SHOW HOW TO CABLE TIE.	CJB	
01	03 DEC 02	REPLACED SPACER HE-1376 WITH HC-1221	ATB	

LOCATION OF MDC

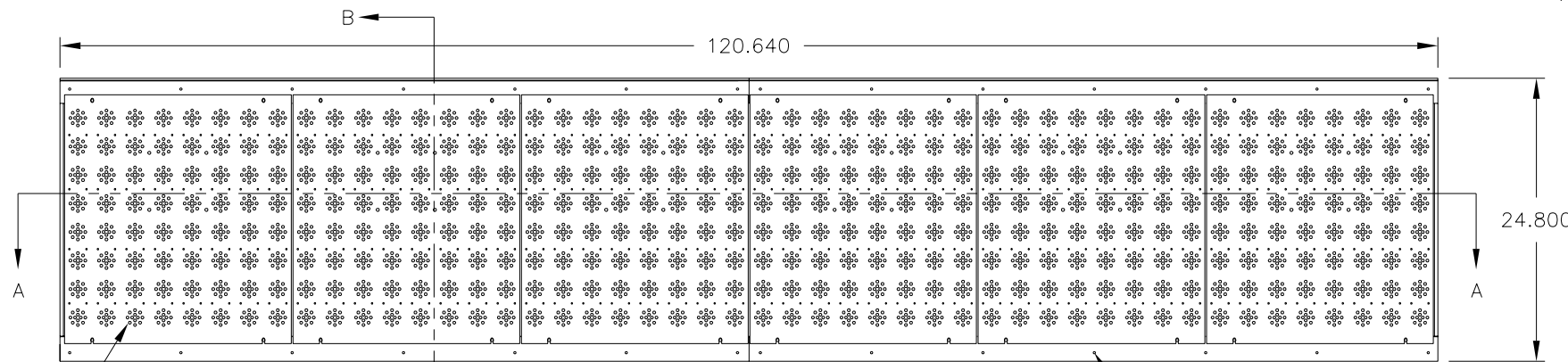


VIEW A-A

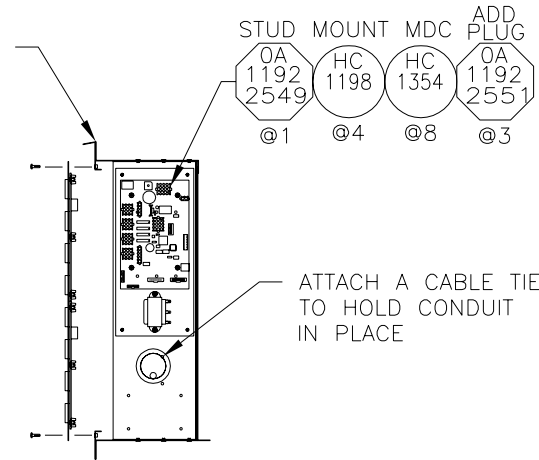
	PIN 12	PIN 11	PIN 9	PIN 8	PIN 6	PIN 5	PIN 3	PIN 2
221	1	1	0	1	1	1	0	1

SET ADDRESS PLUG TO 221

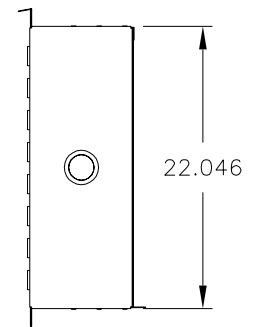
APPLY A BEAD OF SILICONE TO THE TOP OF SHROUD TO PREVENT WATER FROM ENTERING SHELL BETWEEN SPOT-WELDED PARTS. (POST-PAINT)



FRONT VIEW



VIEW B-B

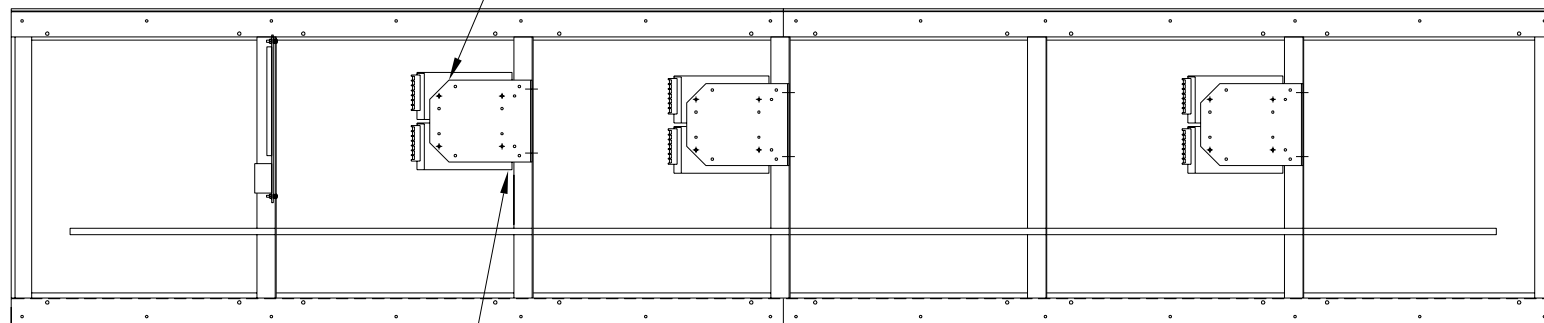


SIDE VIEW

8x8-2.5" AMB MOD
 OA 1192 2674
 @6

RIVET HC 1125 @28
 USE HOLES TO ATTACH SHELL TO THE TNMC SECTION OF THE SCOREBOARD, ATTACH WITH RIVETS.

MOUNT POWER SUPPLY SO IT CAN BE SERVICED FROM THE FRONT OR REAR BASED ON SCOREBOARD ACCESS. SEE F.ASSY DWG OF SCOREBOARD. (REAR ACCESS SHOWN)



FRONT VIEW (SHOWN WITH FRONT OPEN)

STUD MOUNT POWER SUPPLY
 HC 1198 HC 1354 OA 1150 0064
 @6 @12 @1

SCHEMATIC: 8x48-2.5" AMBER LED TNMC
 1192-R03B-190140

SHELL ASSY: 8x48-2.5" LED TNMC
 1192-E10B-164464

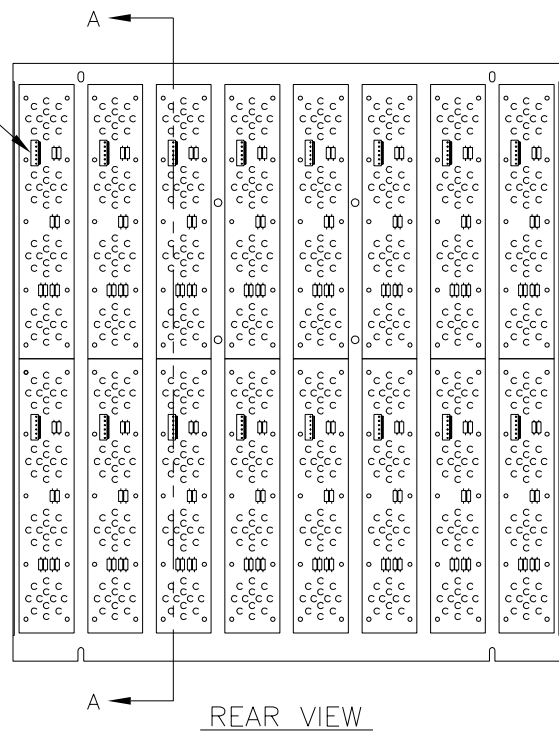
OTHER ASSY PACKETS NOT SHOWN:
 OA-1192-0384.SHELL ASSY, 8x48-2.5" AMBER, LED TNMC

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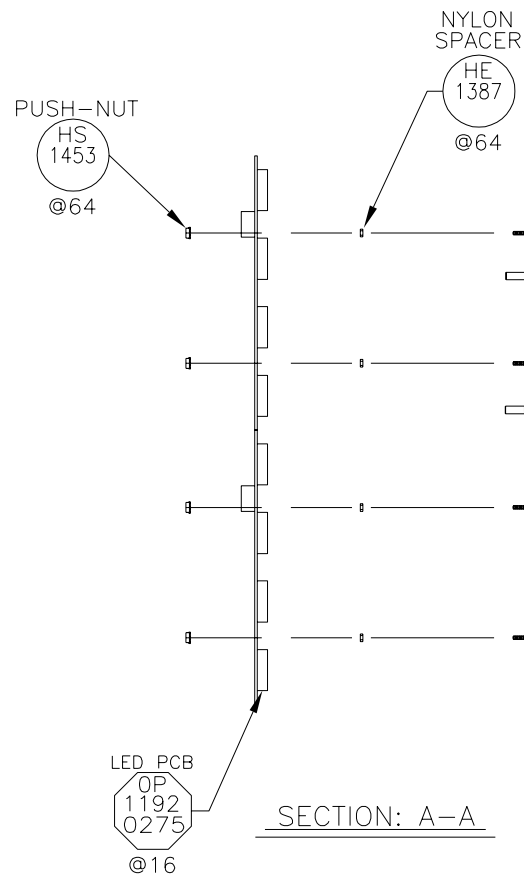
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED DIGIT SCOREBOARDS	
TITLE: F.ASSY, 8x48-2.5" LED TNMC, AMBER, G3	
DES. BY: KBRICKER	DATE: 04NOV02
REVISION 03	SCALE: 1=15
1192-E10B-177822	

REV.	DATE	DESCRIPTION	BY	APPR.
03	30 JUL 04	ADDED OA-1150-0064 @1 AND ADDRESS DETAIL PER ECO-042612	CAC	
02	13JUN03	REPLACED OA-1192-0382 WITH OA-1192-2674. CHANGED OA-1213-2043 TO OA-1192-2155 AND UPDATED SCHEMATIC TO B-190140.	KJB	
01	09MAY03	REMOVED OA-1146-0061 & OA-1146-0020 AND REPLACED WITH OA-1192-2549.	KJB	

ORIENT PCB SO
HARNESS PLUG
FACES TO THE TOP



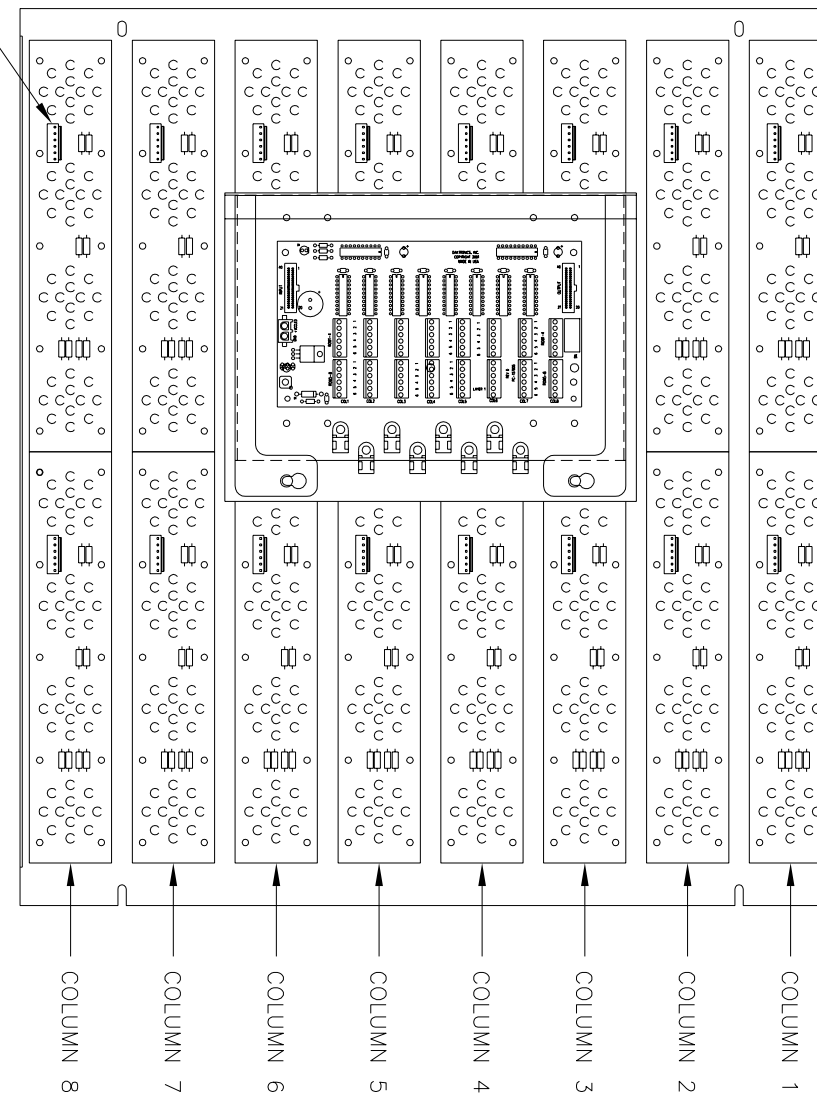
REAR VIEW



SECTION: A-A

LED HARNESS

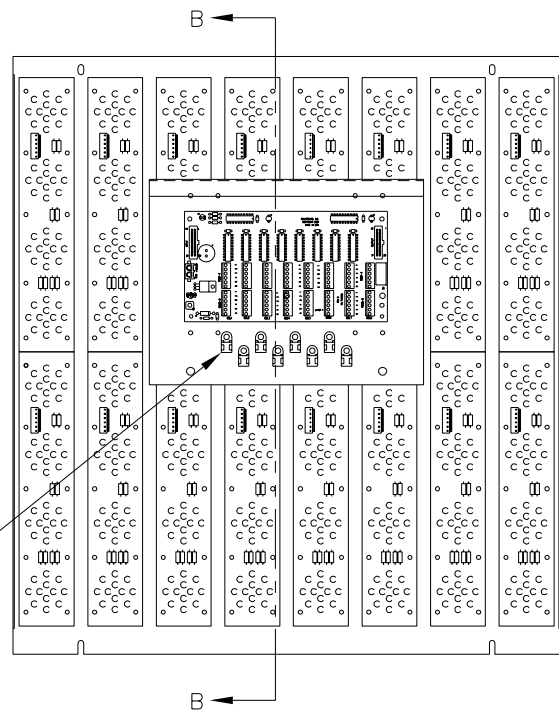
OA
1261
0001
@16



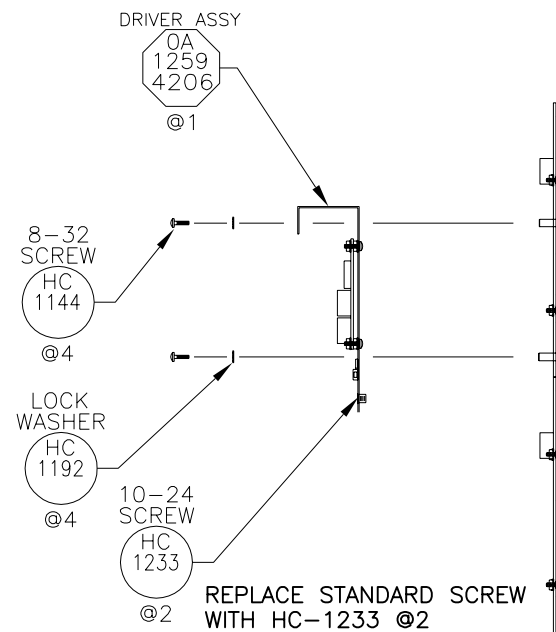
REAR VIEW

(SCALED UPx3/2)

REMOVE ANCHOR
SO NOT TO INTERFERE
WITH MOUNTING HOLE



REAR VIEW



SECTION: B-B

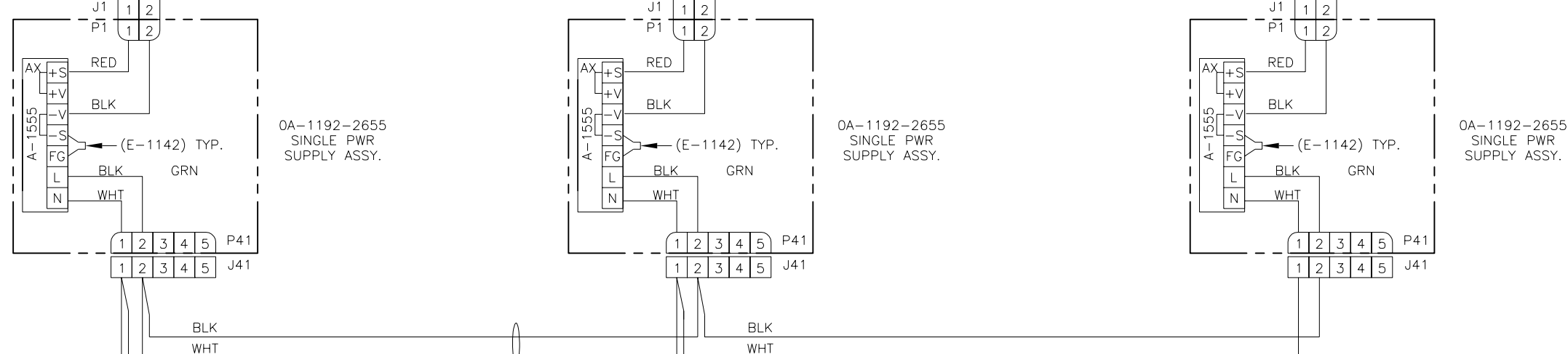
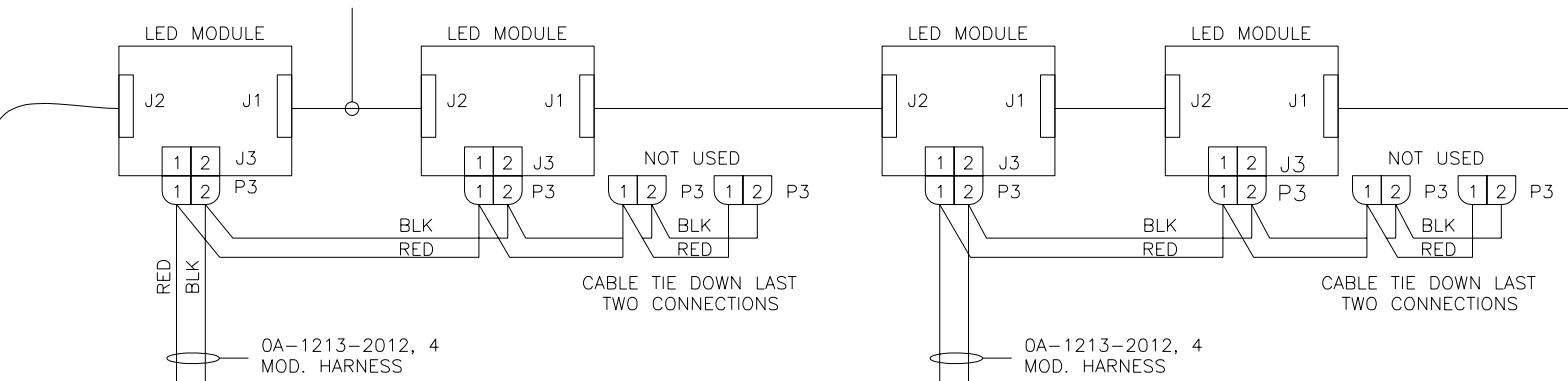
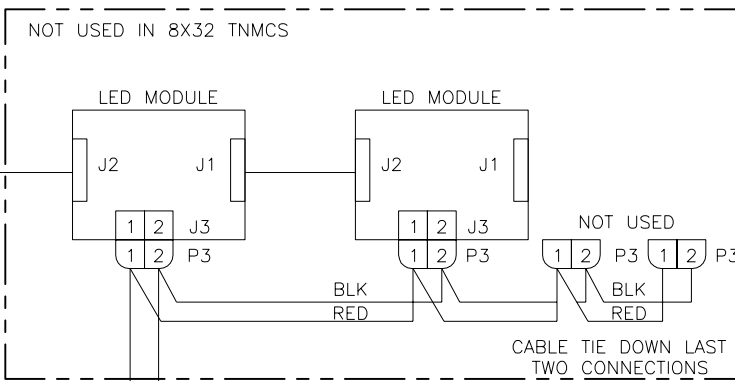
REV.	DATE	DESCRIPTION	BY	APPR.
04	14SEP05	REPLACED HE-1357'S W/ HE-1387'S PER ECO-047377	TAJ	
03	30 APR 04	ADDED HC-1233 @2 AND NOTE.	KJB	
02	13 JUN 03	REPLACED OP-1192-0087 WITH OP-1192-0275.	KJB	
01	12 MAY 03	REPLACED OA-1259-4011 WITH OA1259-4206.	KJB	

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DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: OUTDOOR LED DIGIT SCOREBOARDS	
TITLE: FACE PANEL ASSY, 8x8-2.5", AMBER TNMC	
DES. BY: KBRICKER	DATE: 04NOV02
DRAWN BY: KBRICKER	
REVISION	APPR. BY:
04	SCALE: 1=7

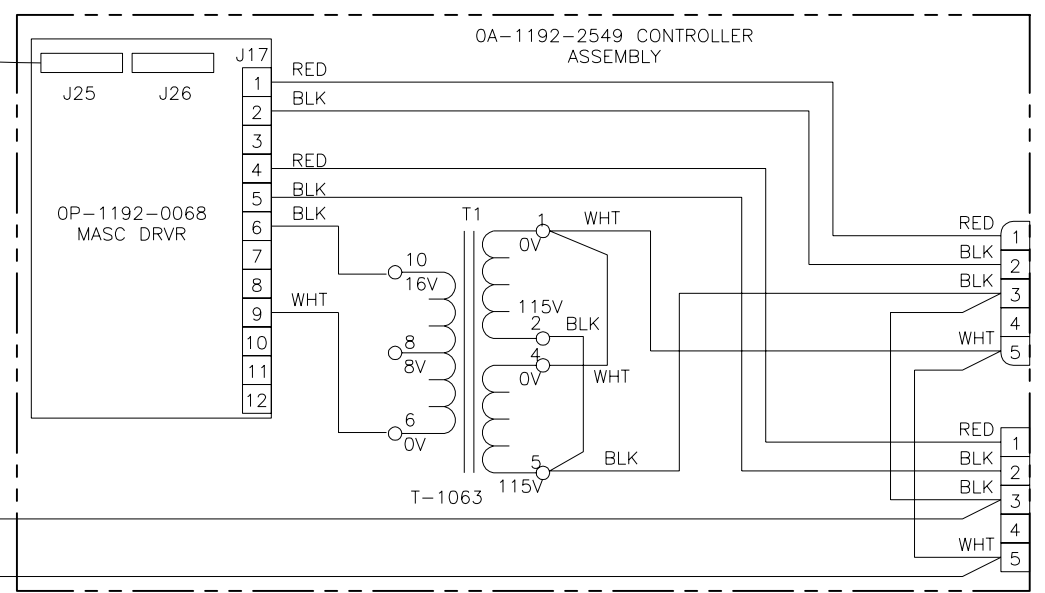
1192-E10B-177836

OA-1192-2653 - 8X32 2.5" RED LED TNMC, GEN III
 OA-1192-2575 - 8X48 2.5" RED LED TNMC, GEN III

OA-1000-0018
 24" RIBBON CABLE TYP.
 FOR ALL MODULE TO MODULE
 CONNECTIONS



OA-1000-0017, 30" RIBBON CABLE



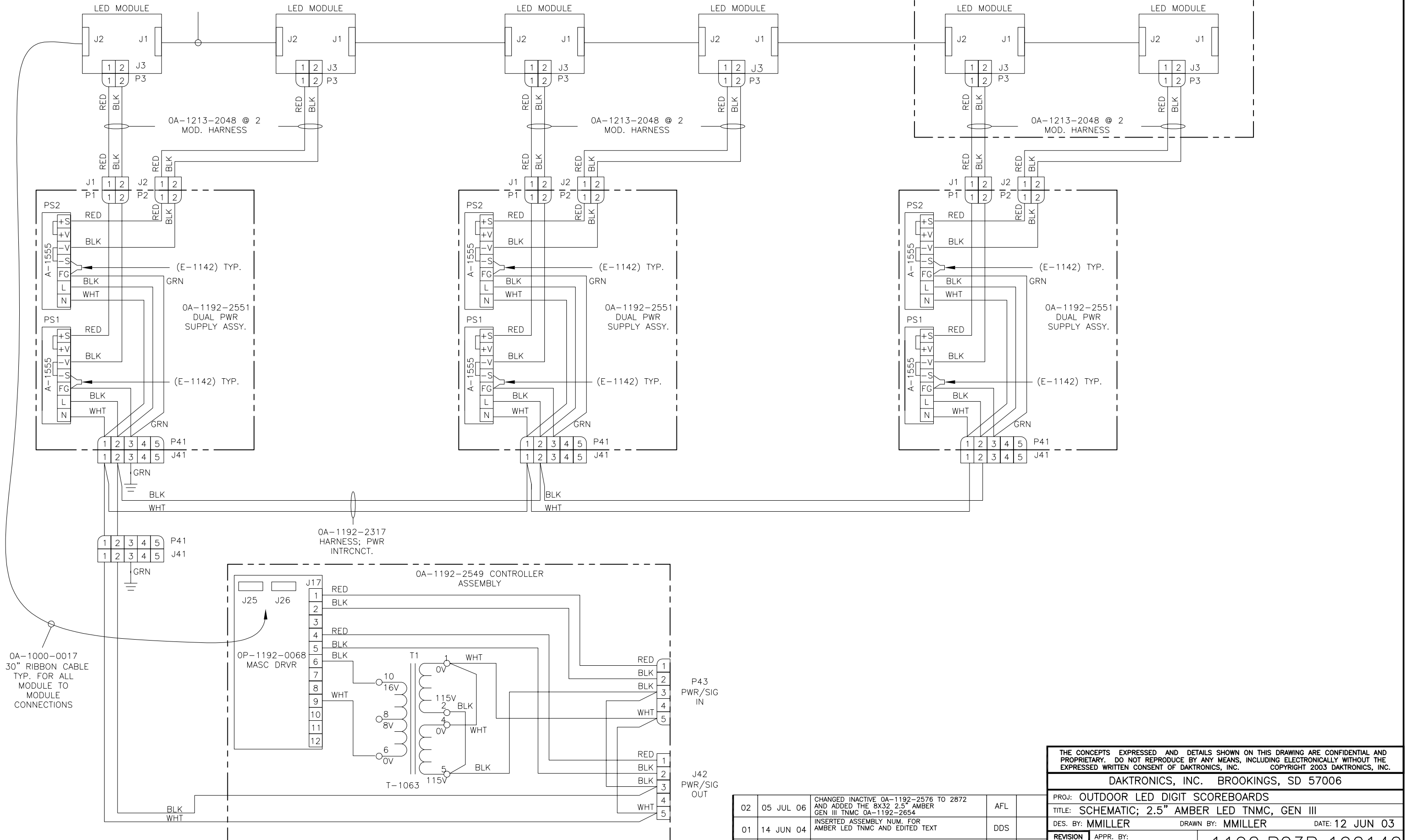
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2003 DAKTRONICS, INC.				
DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: OUTDOOR LED DIGIT SCOREBOARDS				
TITLE: SCHEMATIC; 2.5" RED/ORG, LED TNMC GEN III				
DES. BY: MMILLER		DRAWN BY: MMILLER		DATE: 13 MAY 03
REVISION	APPR. BY:	1192-R03B-188553		
00	SCALE: NONE			

REV.	DATE	DESCRIPTION	BY	APPR.

OA-1192-2872 - 8X48 2.5" AMBER LED TNMC, GEN III
 OA-1192-2654 - 8X32 2.5" AMBER LED TNMC, GEN III

OA-1000-0018
 24" RIBBON CABLE TYP. FOR ALL
 MODULE TO MODULE CONNECTIONS

NOT USED IN 8X32 TNMCS



OA-1000-0017
 30" RIBBON CABLE
 TYP. FOR ALL
 MODULE TO
 MODULE
 CONNECTIONS

OA-1213-2048 @ 2
 MOD. HARNESS

OA-1213-2048 @ 2
 MOD. HARNESS

OA-1213-2048 @ 2
 MOD. HARNESS

OA-1192-2551
 DUAL PWR
 SUPPLY ASSY.

OA-1192-2551
 DUAL PWR
 SUPPLY ASSY.

OA-1192-2551
 DUAL PWR
 SUPPLY ASSY.

OA-1192-2317
 HARNESS; PWR
 INTRCNCT.

OA-1192-2549 CONTROLLER
 ASSEMBLY

OP-1192-0068
 MASC DRVR

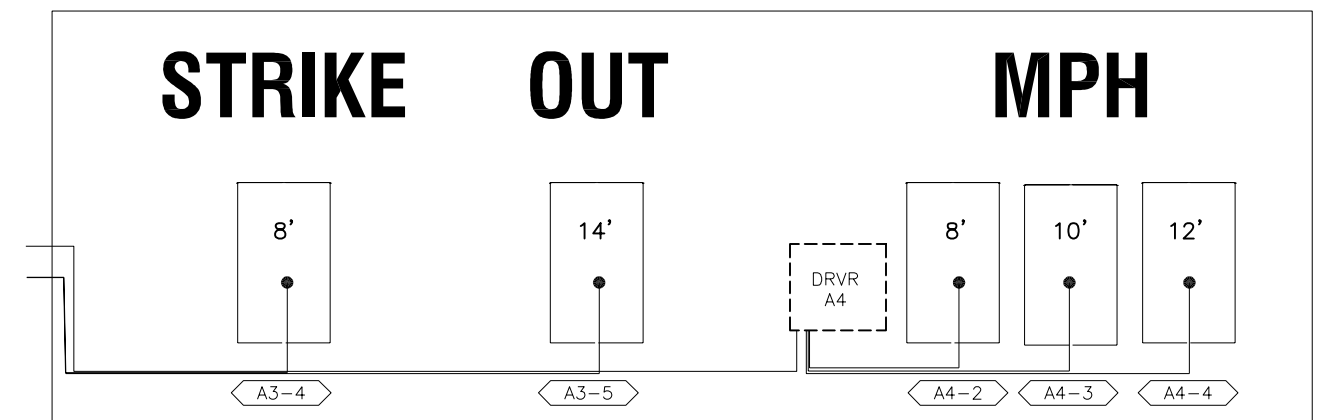
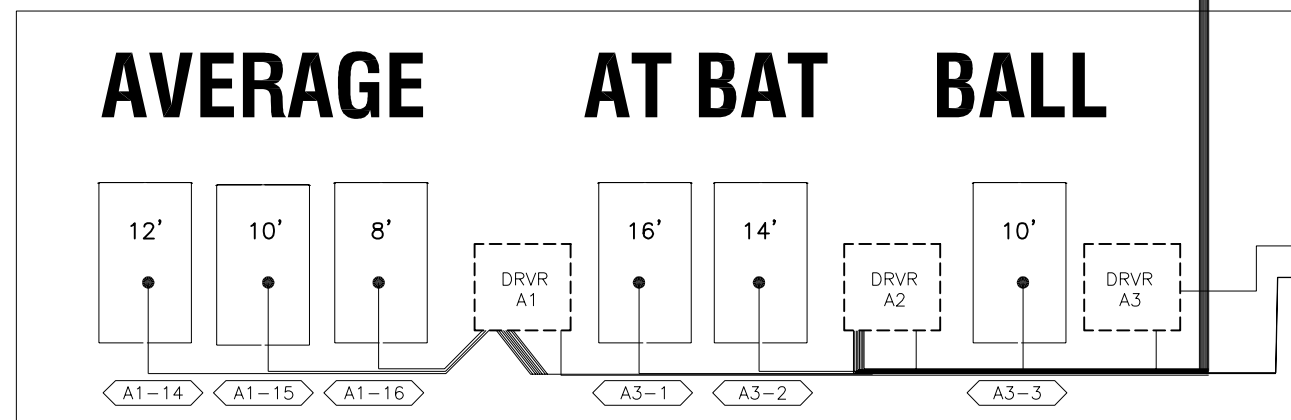
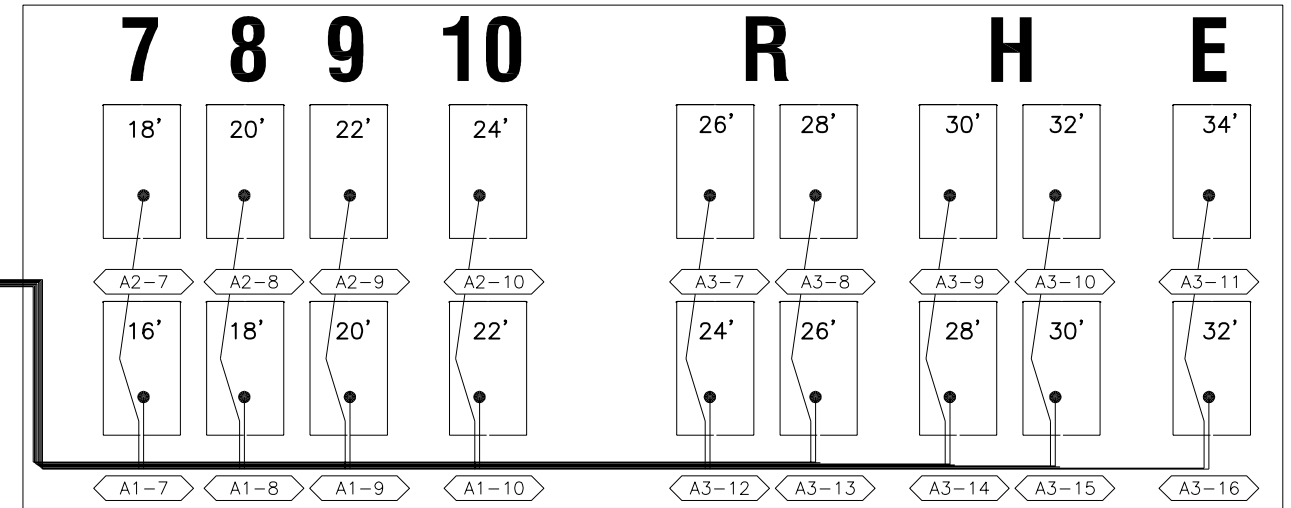
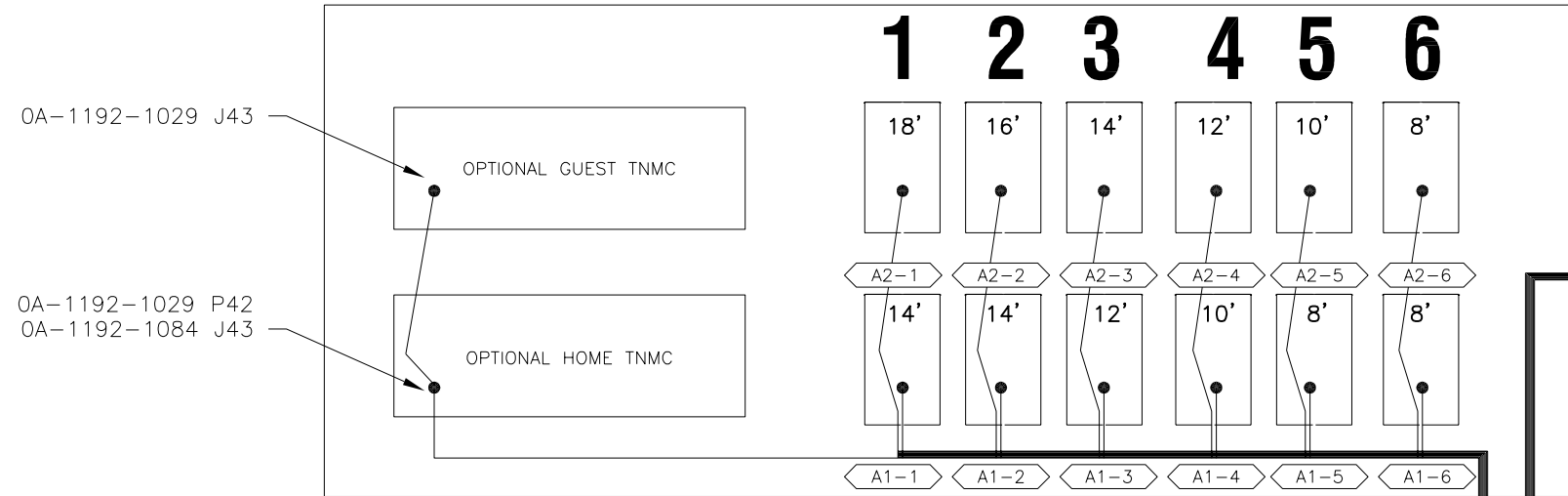
T-1063

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DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: OUTDOOR LED DIGIT SCOREBOARDS				
TITLE: SCHEMATIC; 2.5" AMBER LED TNMC, GEN III				
DES. BY: MMILLER		DRAWN BY: MMILLER		DATE: 12 JUN 03
REVISION	APPR. BY:	1192-R03B-190140		
02	SCALE: NONE			

REV.	DATE	DESCRIPTION	BY	APPR.
02	05 JUL 06	CHANGED INACTIVE OA-1192-2576 TO 2872 AND ADDED THE BX32 2.5" AMBER GEN III TNMC OA-1192-2654	AFL	
01	14 JUN 04	INSERTED ASSEMBLY NUM. FOR AMBER LED TNMC AND EDITED TEXT	DDS	

TOP LEFT

TOP RIGHT



BOTTOM LEFT

BOTTOM RIGHT

TOP LEFT PARTS REQUIRED:

- OA-1171-4005 8' DIGIT HARN @ 3
- OA-1171-4012 10' DIGIT HARN @ 2
- OA-1171-4013 12' DIGIT HARN @ 2
- OA-1171-4015 14' DIGIT HARN @ 3
- OA-1171-4016 16' DIGIT HARN @ 1
- OA-1171-4017 18' DIGIT HARN @ 1

OPTIONAL TNMC PARTS:

- OA-1192-1029 8' PWR/SIG HARNESS @ 1
- OA-1192-1084 35' PWR/SIG HARNESS @ 1

BOTTOM LEFT PARTS REQUIRED:

- OA-1171-4005 8' DIGIT HARN @ 1
- OA-1171-4012 10' DIGIT HARN @ 2
- OA-1171-4013 12' DIGIT HARN @ 1
- OA-1171-4015 14' DIGIT HARN @ 1
- OA-1171-4016 16' DIGIT HARN @ 1
- DRVR A1 TO SECTION HECKO
- OA-1091-0451 24' P-J DIGIT HARN @ 10
- DRVR A2 TO SECTION HECKO
- OA-1091-0459 18' P-J DIGIT HARN @ 10
- DRVR A3 TO SECTION HECKO (TOP)
- OA-1091-0457 12' P-J DIGIT HARN @ 10
- DRVR A3 TO SECTION HECKO (SIDE)
- OA-1091-0330 8' P-J DIGIT HARN @ 2
- OA-1192-1054 22' PWR INTERCONNECT @ 1
- OA-1192-1031 12' PWR/SIG HARN @ 2
- OA-1150-0064 ADDRESS PLUG @ 3
- OA-1192-2252 16 COL. MASTER ENCL. @ 1
- OA-1192-2253 16 SLAVE ENCL. @ 2
- OA-1192-1019 PWR/SIG Y HARNESS @ 1

TOP RIGHT PARTS REQUIRED:

- OA-1171-4016 16' DIGIT HARN @ 1
- OA-1171-4017 18' DIGIT HARN @ 2
- OA-1171-4018 20' DIGIT HARN @ 2
- OA-1171-4019 22' DIGIT HARN @ 2
- OA-1171-4020 24' DIGIT HARN @ 2
- OA-1171-4021 26' DIGIT HARN @ 2
- OA-1171-4022 28' DIGIT HARN @ 2
- OA-1171-4023 30' DIGIT HARN @ 2
- OA-1171-4024 32' DIGIT HARN @ 2
- OA-1171-4025 34' DIGIT HARN @ 1

BOTTOM RIGHT PARTS REQUIRED:

- OA-1171-4005 8' DIGIT HARN @ 2
- OA-1171-4012 10' DIGIT HARN @ 1
- OA-1171-4013 12' DIGIT HARN @ 1
- OA-1171-4015 14' DIGIT HARN @ 1
- OA-1150-0064 ADDRESS PLUG @ 1
- OA-1192-2252 16 COL. MASTER ENCL. @ 1
- OA-1192-1053 16' PWR INTERCONNECT @ 1

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

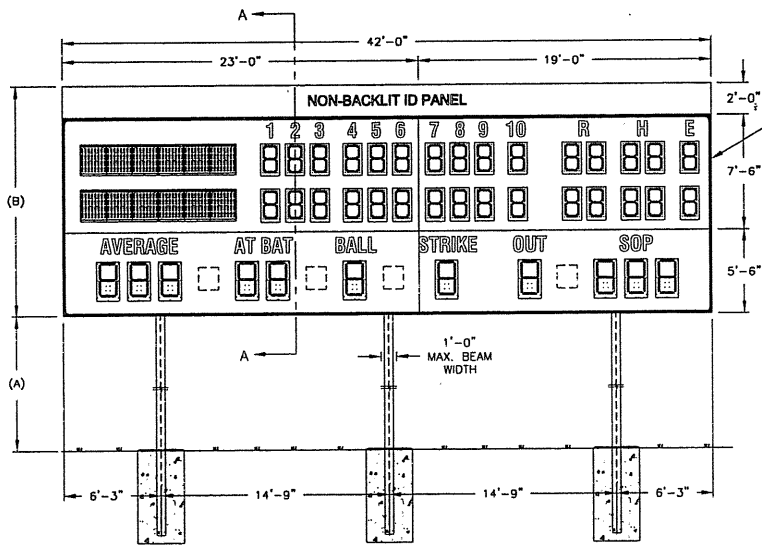
TITLE: DIGIT DESIGNATION; BA-2018

DES. BY: RTAGTOW DRAWN BY: RTAGTOW DATE: 23 AUG 04

REVISION APPR. BY: 1192-R10B-221953

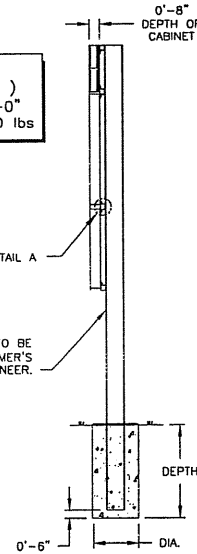
SCALE: NONE

REV.	DATE	DESCRIPTION	BY	APPR.
02	07 MAR 06	ADDED NOTES TO IDENTIFY PLUGS ENDS FOR OA-1192-1029 AND OA-1192-1084.	BJC	
01	22APR05	CORRECTED TEXT TYPE PER ECO 047326	MCOPL	

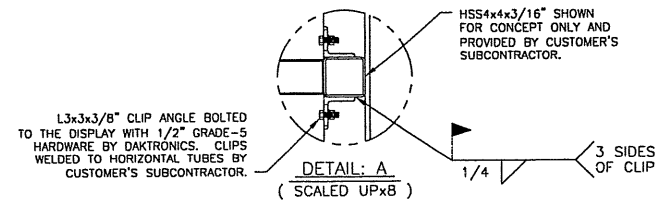


FRONT VIEW

BA-2018:
(4 SECTIONS)
13'-0" x 42'-0"
WEIGHT = 2,730 lbs



VIEW A-A



BA-2018 BEAMS & FOOTINGS					
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)	DESIGN WIND VELOCITY		
			70 MPH	80 MPH	100 MPH
10 FT	NONE	13'-0"	BEAM W10x39	W12x40	W12x50
		FOOTING 3.0'x8.5'	3.0'x9.5'	3.0'x11.0'	
	2 FT	15'-0"	BEAM W12x40	W12x50	W12x58
		FOOTING 3.0'x9.0'	3.0'x10.0'	3.0'x12.0'	
14 FT	NONE	13'-0"	BEAM W14x48	W12x53	W14x61
		FOOTING 3.0'x9.5'	3.0'x10.5'	3.0'x12.6'	
	2 FT	15'-0"	BEAM W12x45	W12x50	W14x61
		FOOTING 3.0'x9.0'	3.0'x10.0'	3.0'x12.0'	
18 FT	NONE	13'-0"	BEAM W12x50	W12x58	W14x68
		FOOTING 3.0'x9.5'	3.0'x10.5'	3.0'x13.0'	
	2 FT	15'-0"	BEAM W12x53	W14x61	W14x82
		FOOTING 3.0'x10.0'	3.0'x11.5'	3.0'x14.0'	
18 FT	NONE	13'-0"	BEAM W12x53	W14x61	W14x74
		FOOTING 3.0'x9.5'	3.0'x10.5'	3.0'x13.0'	
	2 FT	15'-0"	BEAM W14x61	W14x68	W14x90
		FOOTING 3.0'x10.5'	3.0'x11.5'	3.0'x14.0'	
4 FT	17'-0"	BEAM W14x68	W14x74	W14x109	
	FOOTING 3.0'x11.0'	3.0'x12.0'	3.0'x15.5'		

FOOTING = DEPTH X DIAMETER

NOTES:

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

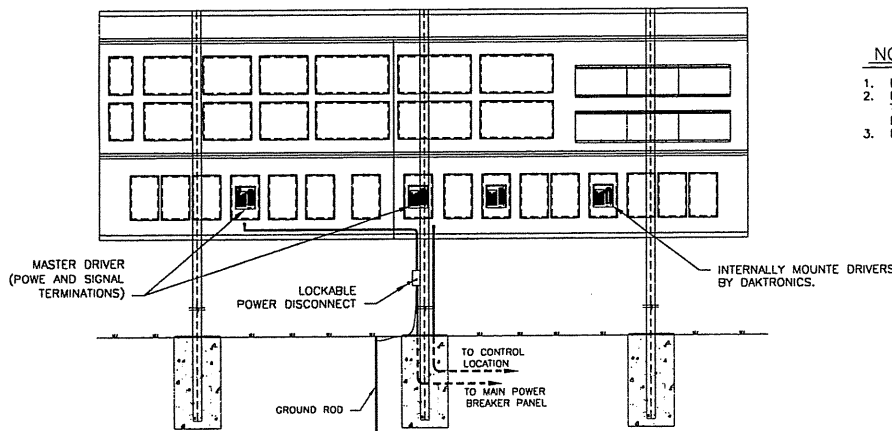
A NOTE ABOUT BEAM NOMENCLATURE:

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.



REAR VIEW

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SHOP DWG, BA-2018, HORIZ TUBES

DES. BY: KBRICKER

DRAWN BY: KBRICKER

DATE: 01SEP04

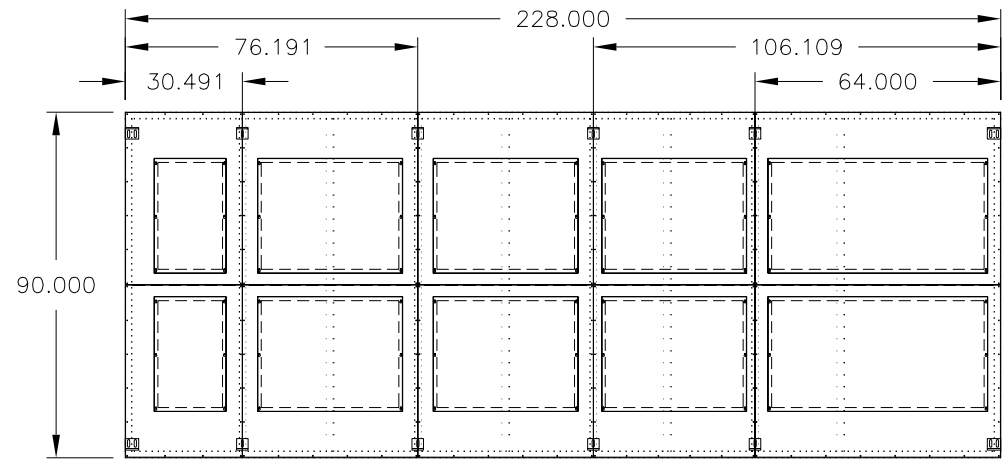
REVISION

APPR. BY:

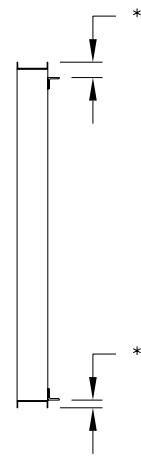
SCALE: 1/8"=1"

1192-E10B-222672

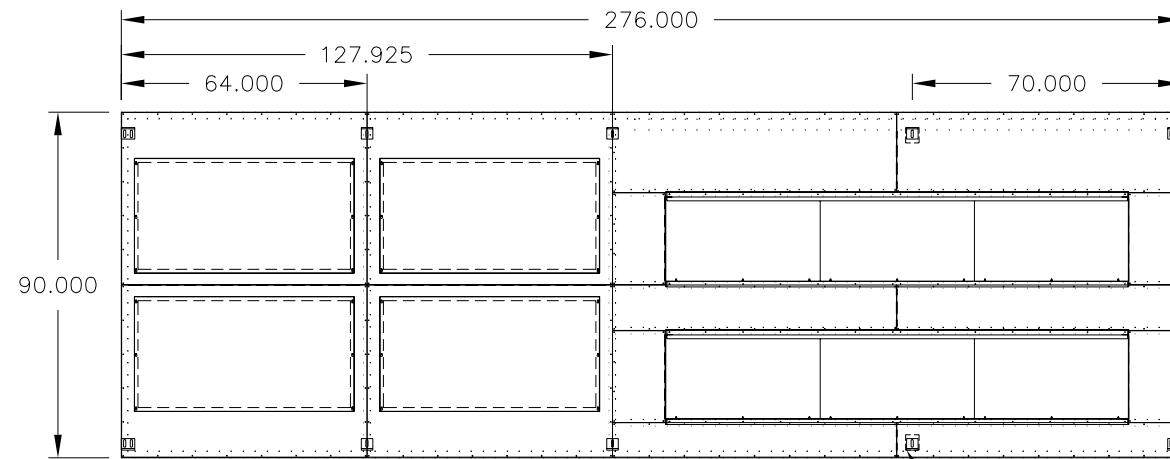
REV.	DATE	DESCRIPTION	BY	APPR.
00				



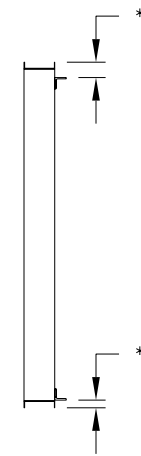
REAR VIEW



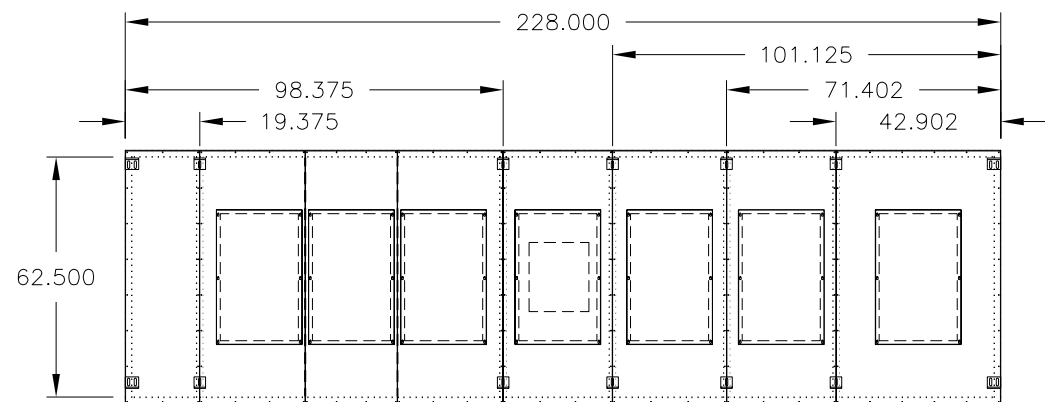
SIDE VIEW



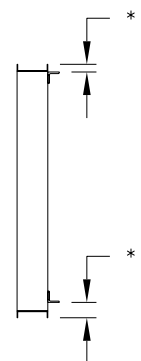
REAR VIEW



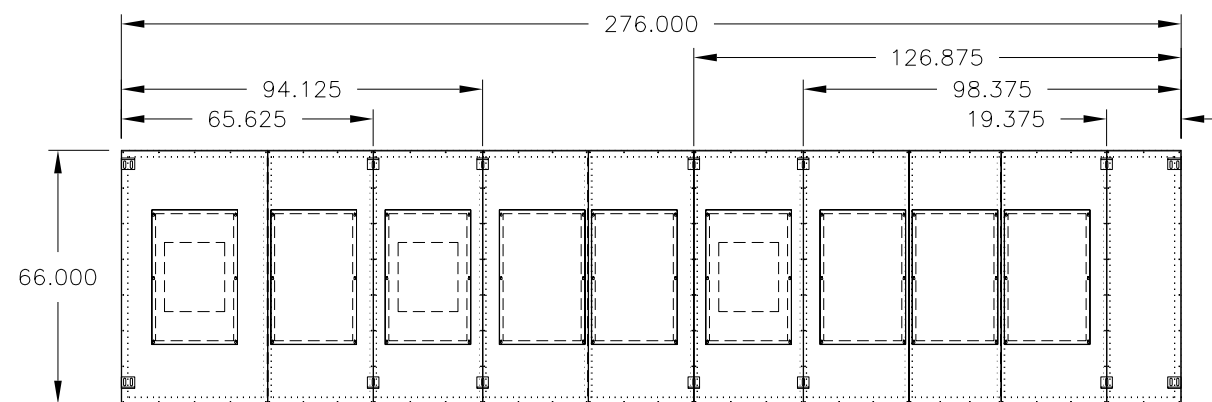
SIDE VIEW



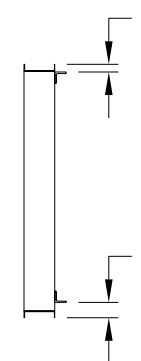
REAR VIEW



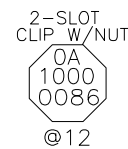
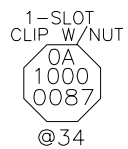
SIDE VIEW



REAR VIEW



SIDE VIEW



NOTES:

- DIMENSIONS TO CLIPS ARE TO THE CENTER OF THE CLIP.
- USE 2-SLOT CLIPS ON THE DISPLAY ENDS, AND 1-SLOT CLIP ANGLES BETWEEN THEM.
- LOCATION OF CLIP ANGLES IS VERTICALLY CRITICAL.

* CONTACT PROJECT ENGINEER FOR CLIP ANGLE DIMENSIONS. REFER TO PROJECT BOM FRONT PAGE FOR THE PE.

OA-1157-1567...MTG HDWE; BA-2018, 3-HORIZ. POLES

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR INTERGRATED SCOREBOARDS

TITLE: CLIP DWG; BA-2018-11/21, G3

DES. BY: KBRICKER DRAWN BY: KBRICKER

DATE: 04APR05

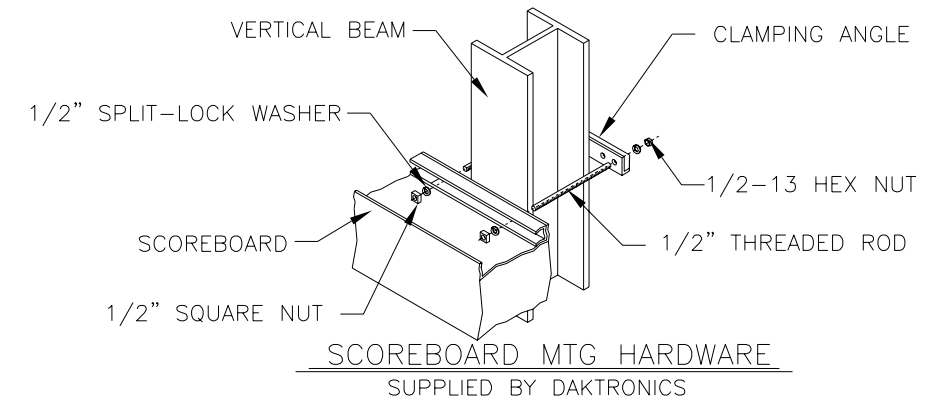
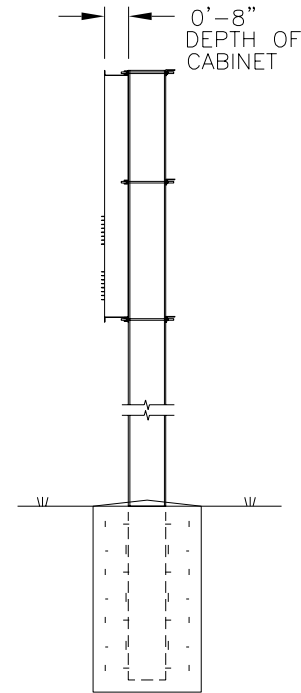
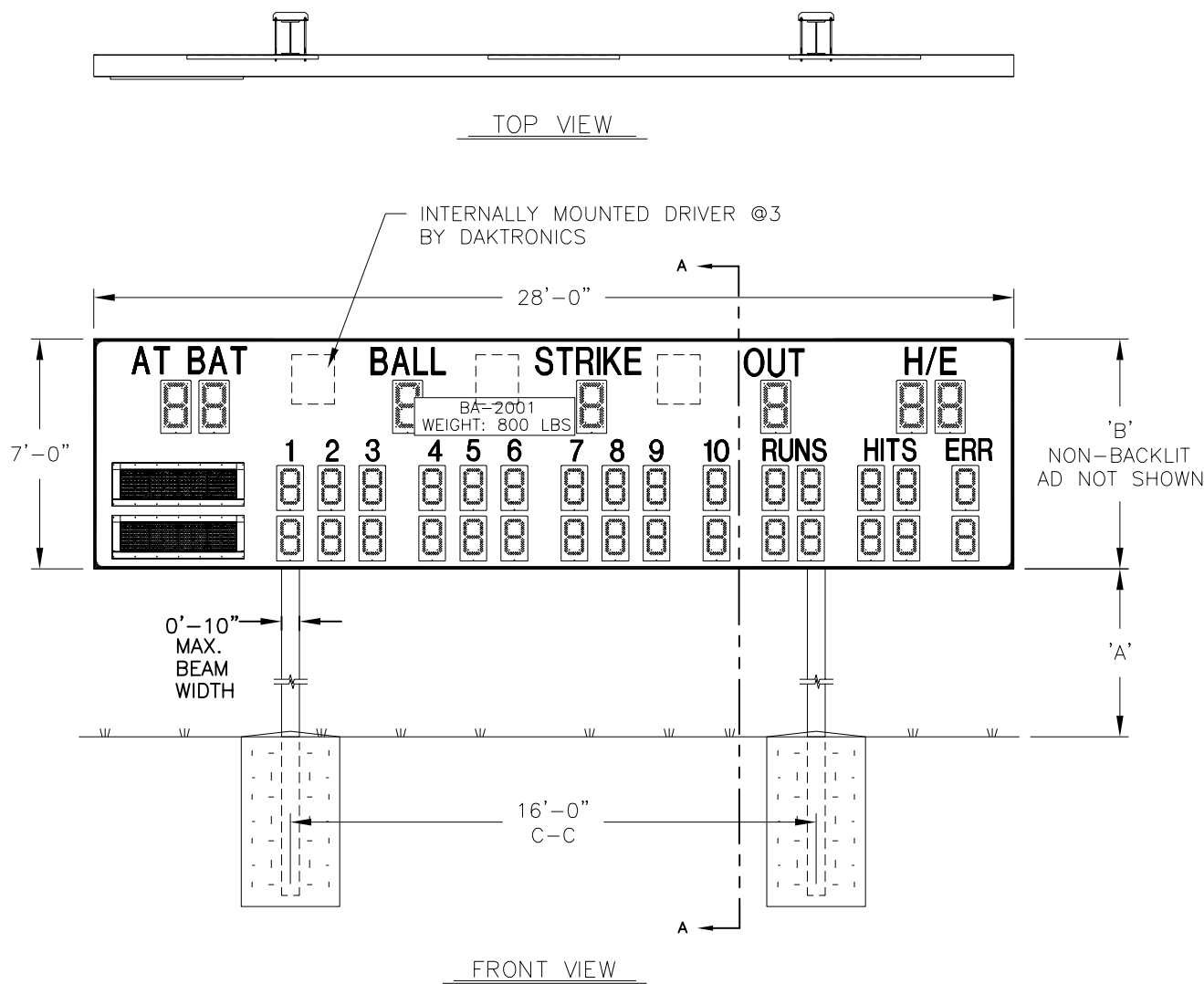
REVISION

APPR. BY:

SCALE: 1=50

1157-E10B-238121

REV.	DATE	DESCRIPTION	BY	APPR.
00				



BA-2001 BEAMS & FOOTINGS						
VERTICAL DISTANCE (A)	AD PANEL HEIGHT	COMBINED HEIGHT (B)		DESIGN WIND VELOCITY		
				70 MPH	80 MPH	100 MPH
10 FT	NONE	7 FT	BEAM	W8x24	W12x26	W12x30
			FOOTING	3'-0"x7'-0"	3'-0"x8'-0"	3'-0"x9'-6"
10 FT	4 FT	11 FT	BEAM	W10x33	W10x39	W14x43
			FOOTING	3'-0"x8'-6"	3'-0"x9'-6"	3'-0"x11'-6"
12 FT	NONE	7 FT	BEAM	W12x26	W14x30	W10x33
			FOOTING	3'-0"x7'-6"	3'-0"x8'-0"	3'-0"x9'-6"
12 FT	4 FT	11 FT	BEAM	W10x39	W12x40	W12x50
			FOOTING	3'-0"x9'-0"	3'-0"x10'-0"	3'-0"x12'-0"
14 FT	NONE	7 FT	BEAM	W8x31	W10x33	W10x39
			FOOTING	3'-0"x8'-0"	3'-0"x8'-6"	3'-0"x10'-0"
14 FT	4 FT	11 FT	BEAM	W12x40	W12x45	W12x53
			FOOTING	3'-0"x9'-6"	3'-0"x10'-6"	3'-0"x12'-0"
16 FT	NONE	7 FT	BEAM	W10x33	W10x39	W12x45
			FOOTING	3'-0"x8'-0"	3'-0"x9'-0"	3'-0"x10'-6"
16 FT	4 FT	11 FT	BEAM	W12x45	W10x49	W12x58
			FOOTING	3'-0"x9'-6"	3'-0"x10'-6"	3'-0"x13'-0"
18 FT	NONE	7 FT	BEAM	W10x39	W12x40	W10x49
			FOOTING	3'-0"x8'-6"	3'-0"x9'-0"	3'-0"x11'-0"
18 FT	4 FT	11 FT	BEAM	W10x49	W12x53	W12x65
			FOOTING	3'-0"x10'-0"	3'-0"x11'-0"	3'-0"x13'-6"
20 FT	NONE	7 FT	BEAM	W12x40	W12x45	W12x53
			FOOTING	3'-0"x8'-6"	3'-0"x9'-6"	3'-0"x11'-0"
20 FT	4 FT	11 FT	BEAM	W12x53	W12x58	W14x74
			FOOTING	3'-0"x10'-6"	3'-0"x11'-6"	3'-0"x14'-0"

FOOTING = DEPTH X DIAMETER

NOTES:

1. DISPLAY IS OF ALL ALUMINUM CONSTRUCTION.
2. 2-POLE SPACING ON BA-2001/2008 WILL COVER UP ACCESS DOORS ON THE REAR OF THE DISPLAY MAKING IT FRONT ACCESS ONLY FOR ALL ELECTRONICS AND DIGITS.
3. REMOVABLE LIFT EYES ARE PROVIDED IN TOP OF SECTION.

SECTION VIEW A-A

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

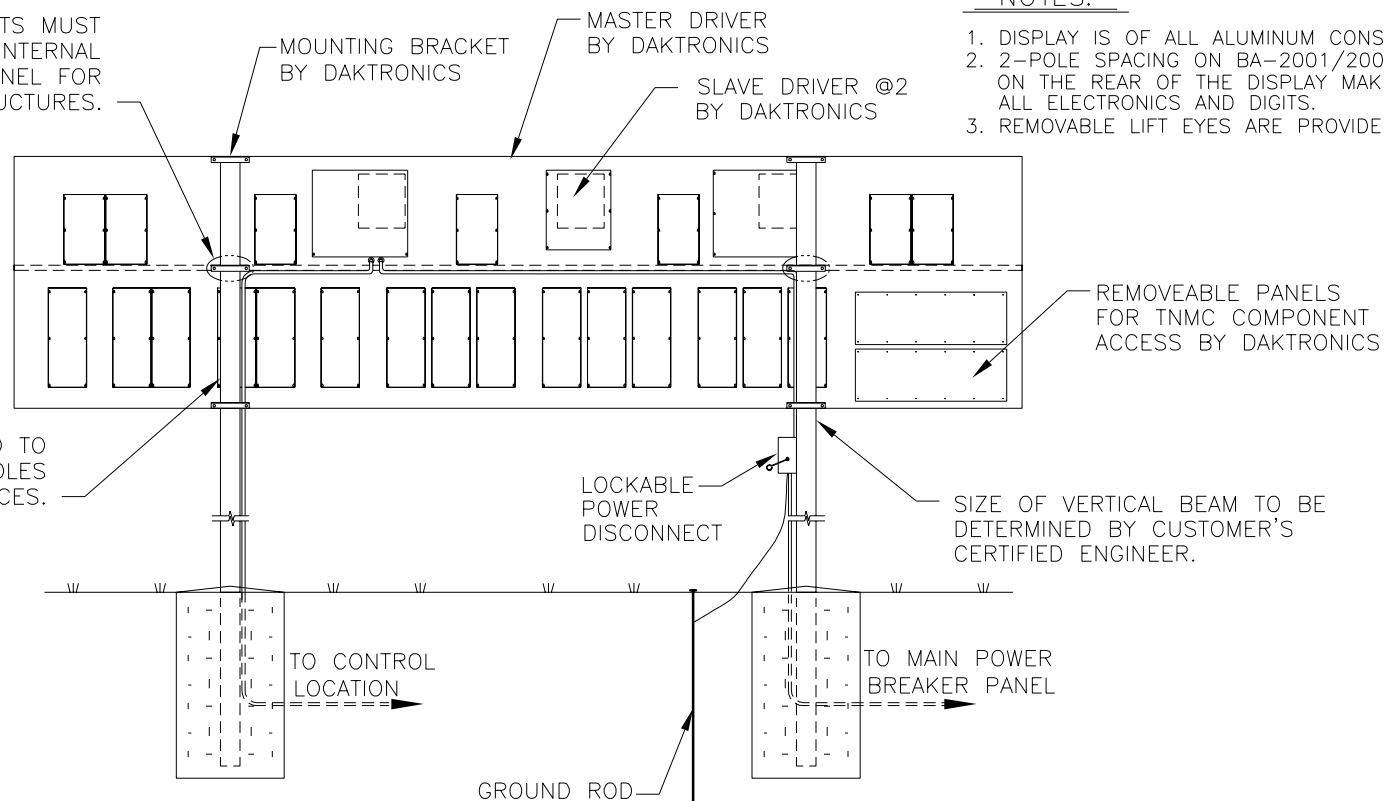
ACTUAL FOOTING DEPTH AND DIAMETER FOR A PARTICULAR INSTALLATION MUST BE DETERMINED USING DATA FROM A SOIL SAMPLE TEST AT THE SITE. BOTH COLUMNS AND FOOTINGS MUST BE DESIGNED BY A STATE LICENSED ENGINEER.

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

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.

MOUNTING BRACKETS MUST BE INSTALLED TO INTERNAL HORIZONTAL CHANNEL FOR 2-POLE MOUNT STRUCTURES.



DOOR FLANGES NEED TO BE FLATTENED FOR POLES THAT COVER UP REAR ACCES.

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 2005 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED SCOREBOARDS

TITLE: SHOP DRAWING; 2-POLE, BA-2001/2008-11 OR -21

DES. BY: KBRICKER DRAWN BY: KBRICKER DATE: 21NOV05

REVISION 00 APPR. BY: SCALE: 3/16"=1" 1192-E10B-257893

REV.	DATE	DESCRIPTION	BY	APPR.

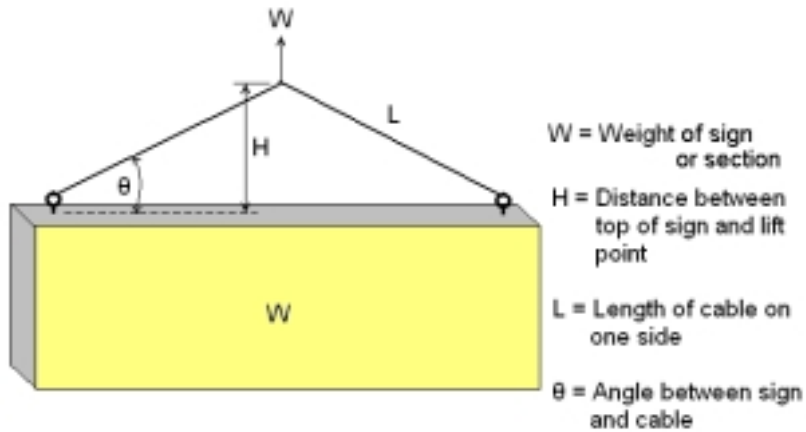
Appendix B: Eyebolts

EyeboltsED-7244

Eyebolts

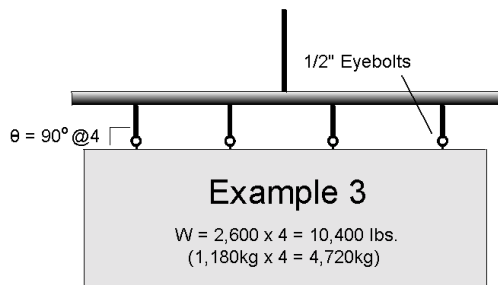
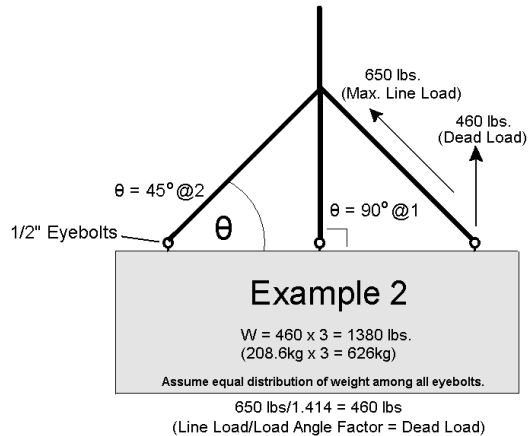
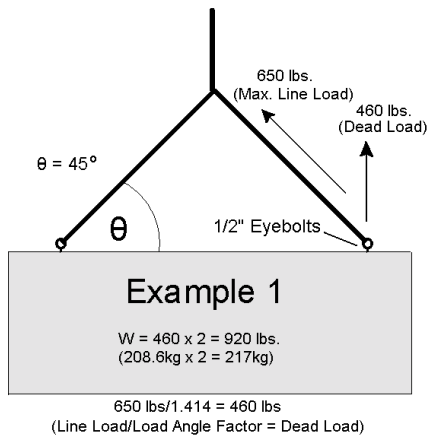
Almost every display that leaves Daktronics is equipped with eyebolts for lifting the display. There are two standard sizes of eyebolts: 1/2" and 5/8".

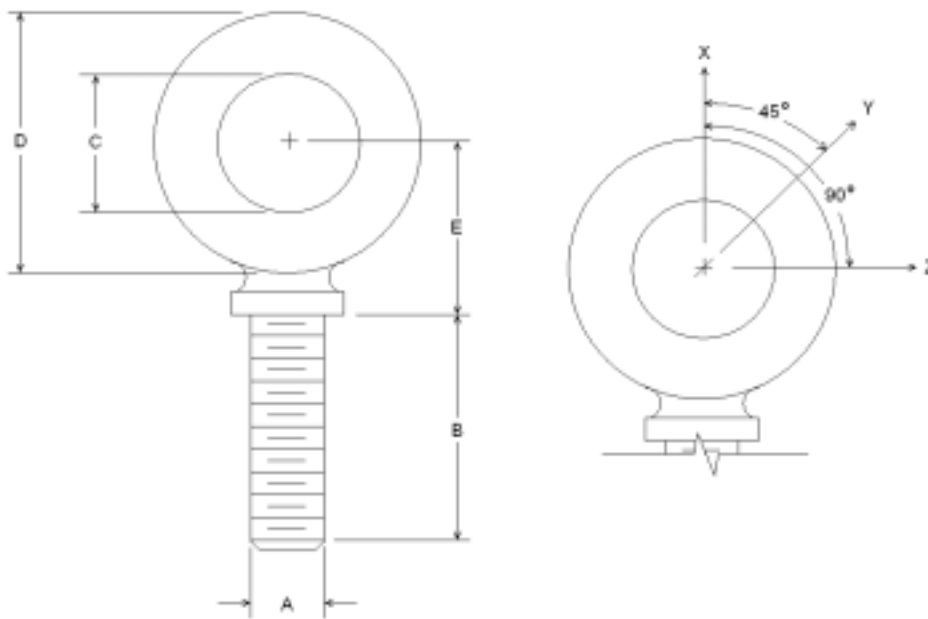
Load Increase Factor: The load increases as the lift angle (θ) decreases. The allowable load on the eyebolts also decreases with the lift angle due the bending stress on the eyebolts. In sum, the smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift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



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.