

# **TWR Lighting, Inc.** HARK<sup>®</sup>

*Enlightened Technology<sup>®</sup>*

10810 W. LITTLE YORK RD., STE. 130 - HOUSTON, TX. 77041-4051  
VOICE (713) 973-6905 - FAX (713) 973-9352  
web: [www.twrlighting.com](http://www.twrlighting.com)

## **IMPORTANT!!!!**

**PLEASE TAKE THE TIME TO FILL OUT THE FORM COMPLETELY. FILE IN A SAFE PLACE. IN THE EVENT YOU EXPERIENCE PROBLEMS WITH OR HAVE QUESTIONS CONCERNING YOUR CONTROLLER, THE FOLLOWING INFORMATION IS NECESSARY TO OBTAIN PROPER SERVICE AND PARTS.**

**MODEL #** AA1-M

**SERIAL #** \_\_\_\_\_

**PURCHASE DATE** \_\_\_\_\_

**PURCHASED FROM** \_\_\_\_\_

# **TWR Lighting, Inc.** **HARK**

*Enlightened Technology*

## **AA1-M CONTROLLER**

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**WARRANTY & RETURN POLICY**

**RETURN MERCHANDISE AUTHORIZATION (RMA) FORM**

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## **AA1-M CONTROLLER**

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# **TWR Lighting, Inc.** HARK<sup>®</sup>

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## **AA1-M CONTROLLER**

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### **1.0 GENERAL INFORMATION**

The TWR Lighting<sup>®</sup>, Inc. (TWR<sup>®</sup>) Model AA1-M Controller is for A1 lighting of towers 151' to 350' above ground level (AGL) in accordance with the Federal Advisory Circular 70/7460-1K. One (1) beacon should be placed at the top of the structure. Three (3) obstruction lights should be placed at the mid-point with respect to overall tower height.

The flash rate of the beacons is 30 per minute. The sidelights burn steady.

A by-pass switch (SW1) allows the controller to be turned on during daylight hours without covering the photocell. This is particularly helpful since the controller can be mounted indoors while the photocell is outdoors. SW1 can be operated by turning "on" the toggle switch mounted on the panel of the controller.

The beacon requires two (2) 620 watt or two (2) 700 watt, 120V bulbs (620PS40P or 700PS40P). The use of any other bulb may give a false beacon lamp burnout alarm. TWR<sup>®</sup> recommends that you use only these bulbs. Do not try to use 130V bulbs. Each sidelight requires one (1) 116 watt, 120V bulb (116A21TS).

The photocell is the three (3) blade, twist to lock, type.

Power supplied to the controller shall be 120V, 50/60 Hz.

The controller housing is rated at NEMA 4X. It is suitable for indoor or outdoor mounting.

Controller functions that are monitored by remote alarms in the form of dry contact closures (Form C) are as follows:

POWER FAILURE	Monitors 120V AC to the controller. Alarms in the event of power failure, or tripped circuit breaker.
LIGHTS "ON"	Gives an indication whenever the controller is activated.
BEACON	Will give an alarm in the event of one (1) or both bulbs failing or flasher stalling.
FLASHER FAILURE	Will give an alarm in the event of flasher failure.
OBSTRUCTION LIGHTS	Will give an alarm when one (1) of three (3) sidelights fails.

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## **AA1-M CONTROLLER**

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### **2.0 INSTALLATION**

#### **WARNING DANGER!!!**

**THIS SYSTEM OPERATES AT HIGH VOLTAGE LEVELS THAT COULD BE LETHAL TO SERVICE PERSONNEL. ALL INSTALLATION AND MAINTENANCE WORK SHOULD BE DONE BY QUALIFIED SERVICE PERSONNEL ONLY. WHEN PERSONNEL IS INSTALLING SYSTEM, OR PERFORMING MAINTENANCE ON THIS SYSTEM, MAKE SURE THE POWER IS TURNED OFF AT THE SERVICE BREAKER PANEL!!**

**READ AND UNDERSTAND THE THEORY OF OPERATION AND ITS SAFETY MESSAGES BEFORE ATTEMPTING INSTALLATION/MAINTENANCE OF THIS SYSTEM. DO NOT ATTEMPT TO DEFEAT THE INTERNAL SAFETY SWITCHES IN THE CONTROLLER AND BEACON!!**

### **2.1 POWER SUPPLY CONTROL CABINET MOUNTING**

2.1.1 The power supply control cabinet can be located at the base of the structure or in an equipment building. Mounting footprints are shown on drawing 1113-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

2.1.2 If the control cabinet is mounted inside an equipment building, the photocell should be mounted vertically on ½” conduit outside the building above the eaves facing north. Wiring from the photocell socket to the control cabinet should consist of one (1) each, red, black, and white wires. The white wire is connected to the socket terminal marked “N,” the black wire is connected to the socket terminal marked “Li,” and the red wire is connected to the socket terminal marked “Lo.” As above, the photocell should be positioned so that it does not “see” ambient light, which would prevent it from switching to the nightmode.

## AA1-M CONTROLLER

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- 2.1.3 If the control cabinet is mounted outside an equipment building, the photocell should be mounted vertically on ½” conduit so the photocell is above the control cabinet. Care must be taken to assure that the photocell does not “see” any ambient light that would prevent it from switching into the nightmode. The photocell wiring is the same as in 2.1.1.
- 2.1.4 The wiring from the photocell, the service breaker, the red incandescent beacon, and the sidelights should enter the control cabinet through the watertight connectors in the bottom of the cabinet. Inside the cabinet, the connections will be made on the terminal strips and circuit breakers located at the bottom of the chassis. These connections are made as follows:

### **2.2 EXTERNAL PHOTOCELL WIRING** (Refer to Drawing 1113-R)

- 2.2.1 Connect the **BLACK** wire from the photocell to terminal block TB2 marked “L.”
- 2.2.2 Connect the **RED** wire from the photocell to terminal block TB2 marked “SSR.”
- 2.2.3 Connect the **WHITE** wire from the photocell to terminal block TB2 marked “N.”

### **2.3 POWER WIRING** (Refer to Drawing 1113-R)

- 2.3.1 Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).
- 2.3.2 Circuit breaker needs to be rated at 20 amps.
- 2.3.3 Connect incoming 120V AC line to terminal block TB1 marked “L.”
- 2.3.4 Connect the neutral wire(s) to one (1) of the terminal blocks on TB1 marked “N.”

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2.3.5 Connect the AC ground to the aluminum mounting plate.

### **2.4 RED BEACON, SIDELIGHT, and LOAD BALANCE RESISTOR WIRING** (Refer to Drawings 1113-R, 260-11 through 260-14, 100214, and 276-R)

Install wiring from the controller to the beacon utilizing either strobe cable or conduit method. Refer to drawings 1113-R, 260-11 through 260-14, 100214, and 276-R, for installation of light kits. Following these requirements, installing light kits will require lifting of the cable by the supplied cable grip or conduit to affix to the tower. Always work safely and adhere to all OSHA Safety Guidelines when lifting wiring or working on the structure or tower itself. It is the installer's responsibility to install the lighting kit in a safe manner. Installers can request from OSHA their requirements 29CFT 1926.21, and 20CFR 1926.105, to ensure compliance to regulations.

***NOTE:*** *On occasion, a set of custom lighting kit drawing may be specifically requested by a customer and installed in this manual. In cases such as these, the drawings will precede the manual if a conflict occurs.*

2.4.1 Connect the **BLACK** wire from the beacon to the circuit breaker marked "B."

2.4.2 Connect the **RED** wire from the sidelight group to the circuit breaker marked "S."

2.4.3 Connect the **BLACK** wire from the Load Balance Resistor (optional) to the circuit breaker marked "R."

2.4.4 Connect the **NEUTRAL** wire(s) to one (1) of the terminal blocks on TB1 marked "N."

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### **WARNING DANGER!!!**

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**READ AND UNDERSTAND THE THEORY OF OPERATION AND ITS SAFETY MESSAGES BEFORE ATTEMPTING INSTALLATION/MAINTENANCE OF THIS SYSTEM. DO NOT ATTEMPT TO DEFEAT THE INTERNAL SAFETY SWITCHES IN THE CONTROLLER AND BEACON!!**

#### **2.5 RED BEACON AND SIDELIGHT ALARM WIRING (Refer to Drawing 1113-R)**

2.5.1 Alarm relays K1-K3, and alarm Modules M2 and M4, are provided for independent contact closures for: Power Failure, Lights "ON," Beacon Flasher Failure, Beacon Lamp Burnout, and Sidelight Lamp Burnout.

2.5.2 Alarm wiring: To utilize all of the red light alarms, the customer will need five (5) pair of wires to interface with his alarm device. One (1) wire from each of the five (5) pairs will terminate at the points marking common (C). The remaining wire from each pair will terminate as follows:

2.5.2.1 Power Failure Alarm: Connect to relay K1, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.



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- 2.5.2.2 Lights “ON” Alarm: Connect to relay K2, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.
- 2.5.2.3 Beacon Flasher Failure: Connect to relay K3, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.
- 2.5.2.4 Beacon Lamp Burnout: Connect to Module M2, terminal T5, for normally open (OR) terminal T6, for normally closed monitoring.
- 2.5.2.5 Sidelight Lamp Burnout: Connect to Module M4, terminal T5, for normally open (OR) terminal T6, for normally closed monitoring.
- 2.5.3 Alarm testing: To test alarms, follow the procedures using an “ohm” meter between alarm common and alarm pints.
  - 2.5.3.1 Power Failure: Pull circuit breaker at electrical panel.
  - 2.5.3.2 Lights “ON”: Operate photocell by-pass switch (SW1), or cover the photocell.
  - 2.5.3.3 Beacon and Sidelights: Trip circuit breakers on the controller panel.

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### **3.0 THEORY OF OPERATION**

#### **3.1 POWER SUPPLY**

120V AC enters the controller from the circuit breaker panel. Lines sit at the PRD, waiting to be switched, and also keep the power failure relay K1 energized. When the 6390-FAA photocell is activated, line energizes the coil of the PRD and K2 "Lights On" relay. This also can be accomplished by using the photocell by-pass switch (SW1).

#### **3.2 SIDELIGHTS**

Line LD is sent through Module M4, which is a current sensing module for sidelights. The CM-250 monitors one (1) level of sidelights, and will provide a contact closure along a visual indication of one (1) or more lamps fail.

#### **3.3 BEACON**

Line LDB is sent to Modules M1, M2, and M3. Module M1 is the primary flasher for the beacon, which provides control voltage to Module M3, which is an auxiliary flasher for the load balance resistor. The output of Module M1 is sent through the current sensing Module M2, then to the circuit breaker output marked "B." If Module M2 detects a lamp burnout, then that module will provide a contact closure along with a visual indication for the lamp circuit.

Relay K3 is a flasher failure relay for the beacon. If Module M2 detects a flasher failure, then that module will provide voltage to relay K3, which will provide a contact closure along with a visual indication for that beacon circuit.

#### **3.4 LOAD BALANCE RESISTOR**

The output of Module M1 (pin #1) is sent to Module M3 for timing purposes. Module M3 output (pin #1) will operate alternately to the primary flasher's output. The load balance resistor (optional) will only be on between flasher and the beacon to even the current draw on the generator system.

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### **4.0 MAINTENANCE GUIDE**

#### **\*\*WARNING - HIGH - VOLTAGE\*\***

**THIS SYSTEM OPERATES AT HIGH VOLTAGE LEVELS THAT COULD BE LETHAL TO SERVICE PERSONNEL. ALL INSTALLATION AND MAINTENANCE WORK SHOULD BE DONE BY QUALIFIED SERVICE PERSONNEL. READ AND UNDERSTAND THE THEORY OF OPERATION AND ITS SAFETY MESSAGES BEFORE ATTEMPTING INSTALLATION OF THIS SYSTEM. DO NOT ATTEMPT TO DEFEAT THE INTERNAL SAFETY DEVICES.**

Tools Required: NONE

### **4.1 RED OBSTRUCTION LIGHTING**

The only required maintenance needed to be performed is the replacement of the lamps in the L-864 and L-810 fixtures. Lamps should be replaced after being operated for not more than 75% of the rated life, or immediately upon failure, as per the Federal Advisory Circular 70/7460-1K. By following these instructions, maximum safety and performance can be achieved.

### **4.2 L-864 LAMP REPLACEMENT**

- 4.2.1 Loosen the one (1) wing nut on the latch pin so that it can recline.
- 4.2.2 Open the lens and tilt it back.
- 4.2.3 To remove each lamp, depress down while rotating the lamp counter-clockwise 90 degrees.
- 4.2.4 Install the new lamps by depressing down while rotating the lamp clockwise 90 degrees.
- 4.2.5 Close the lens and let the latch pin drop in the recessed slot.
- 4.2.6 Tighten the wing nut snug, then ¼ turn more.

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### **4.3 LAMP REPLACEMENT**

- 4.3.1 Unclasp the two (2) latches and let the bail recline back.
- 4.3.2 Lift the lens up and over the lamp, allowing the lens to hang from the safety cable.
- 4.3.3 Unscrew the lamp counter-clockwise and remove.
- 4.3.4 Install the new lamp by screwing the lamp clockwise.
- 4.3.5 Reinstall the lens; making sure it is seated properly on the base.
- 4.3.6 Reclasp the two (2) latches.

### **4.4 L-864 CONTROLLER**

No scheduled maintenance is required. Perform on an “as needed” basis only.

### **4.5 PHOTOCELL**

The photocell is a sealed unit. No maintenance is needed or required other than replacement as necessary.

# **TWR Lighting, Inc. HARK**

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## **AA1-M CONTROLLER**

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### **5.0 MAJOR COMPONENTS PARTS LIST**

QTY	PART NUMBER	DESCRIPTION
1	6390-FAA (Replaces the 102FAA Photocell)	120-240V PHOTOCCELL
1	PF-250 (Replaces the FS15530T Module)	SOLID STATE FLASHER (M1)
1	AF-250 (Replaces the FA155 Module)	SOLID STATE AUXILIARY FLASHER (M3)
1	PRD7AGO	MECHANICAL LOAD CONTACTOR (PRD)
2	KRPA5AG120V	SPDT RELAY (K1 - K3)
2	CM-250 (Replaces the SCR430T, and the FB120A Modules)	SIDELIGHT BURNOUT DETECTOR (M4) BEACON FAILURE DETECTOR (M2)
1	VJ1412HWPL2X004	ENCLOSURE
1	STJ01002	15 amp SPDT SWITCH (SW1)
4	MOV524V15	METAL OXIDE VARISTOR (MOV1 – MOV4)
3	S261D20	20 amp BREAKER (B, R, AND S)
2	8WA1808	END STOP
6	8WA1204	TERMINAL BLOCKS (TB1, TB2)
3	PB27E122	OCTAL SOCKETS (K1 - K3)

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### **6.0 SUGGESTED SPARE PARTS LIST**

<b>QTY</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1	6390-FAA (Replaces the 102FAA Photocell)	120-240V PHOTOCCELL
1	PF-250 (Replaces the FS15530T Module)	SOLID STATE FLASHER (M1)
1	PRD7AGO	MECHANICAL LOAD CONTACTOR (PRD)
1	CM-250 (Replaces the SCR430T, and the FB120A Modules)	SIDELIGHT BURNOUT DETECTOR (M4)  BEACON FAILURE DETECTOR (M2)

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## **AA1-M CONTROLLER**

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### **Warranty & Return Policy**

**TWR Lighting® , Inc. (“TWR®”)** warrants its products (other than “LED Product”) against defects in design, material (excluding incandescent bulbs) and workmanship for a period ending on the earlier of two (2) years from the date of shipment or one (1) year from the date of installation.

**TWR Lighting® , Inc. (“TWR®”)** warrants its “LED Product” against defects in design, material and workmanship for a period of five (5) years from the date of shipment. TWR®, at its sole option, will, itself, or through others, repair, replace or refund the purchase price paid for “LED Product” that TWR® verifies as being inoperable due to original design, material, or workmanship. All warranty replacement “LED Product” is warranted only for the remainder of the original warranty of the “LED Product” replaced. Replacement “LED Product” will be equivalent in function, but not necessarily identical, to the replaced “LED Product.”

**TWR Lighting® , Inc. (“TWR®”)** warrants its “LED Product” against light degradation for a period of five (5) years from the date of installation. TWR®, at its sole option, will, itself, or through others, repair, replace, or refund the purchase price paid for “LED Product” that TWR® verifies as failing to meet 75% of the minimum intensity requirements as defined in the FAA Advisory Circular 150/5345-43G dated 09/26/12. All warranty replacement “LED Product” is warranted only for the remainder of the original warranty of the “LED Product” replaced. Replacement “LED Product” will be equivalent in function, but not necessarily identical, to the replaced “LED Product.”

**Replacement parts (other than “LED Product”) are warranted for 90 days from the date of shipment.**

Conditions not covered by this Warranty, or which might void this Warranty are as follows:

- x Improper Installation or Operation
- x Misuse
- x Abuse
- x Unauthorized or Improper Repair or Alteration
- x Accident or Negligence in Use, Storage, Transportation, or Handling
- x Any Acts of God or Nature
- x **Non-OEM Parts**

**The use of Non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.**

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## **AA1-M CONTROLLER**

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### **Warranty & Return Policy** (continued)

**Field Service** – Labor, Travel, and Tower Climb are not covered under warranty. Customer shall be obligated to pay for all incurred charges. An extensive network of certified and insured Service Representatives is available if requested.

**Repair, Replacement or Product Return RMA Terms** – You must first contact our Customer Service Department at **713-973-6905** to acquire a Return Merchandise Authorization (RMA) number in order to return the product(s). Please have the following information available when requesting an RMA number:

- x The contact name and phone number of the tower owner or
- x The contact name and phone number of the contractor
- x The site name and number
- x The part number(s)
- x The serial number(s) (if any)
- x A description of the problem
- x The billing information
- x The Ship To address

**This RMA number must be clearly visible on the outside of the box.** If the RMA number is not clearly labeled on the outside of the box, your shipment will be refused. Please ensure the material you are returning is packaged carefully. **The warranty is null and void if the product(s) are damaged in the return shipment.**

**All RMAs must be received by TWR LIGHTING<sup>®</sup>, INC., 10810 W. LITTLE YORK RD. #130, HOUSTON, TX 77041-4051, within 30 days of issuance.**

Upon full compliance with the Return Terms, TWR<sup>®</sup> will replace, repair and return, or credit product(s) returned by the customer. It is TWR<sup>®</sup>'s sole discretion to determine the disposition of the returned item(s).



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## **AA1-M CONTROLLER**

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### **Warranty & Return Policy** (continued)

**RMA Replacements** – Replacement part(s) will be shipped and billed to the customer for product(s) considered as Warranty, pending return of defective product(s). When available, a certified reconditioned part is shipped as warranty replacement with a Return Merchandise Authorization (RMA) number attached. Upon receipt of returned product(s), inspection, testing, and evaluation will be performed to determine the cause of defect. The customer is then notified of the determination of the testing.

- x Product(s) that is deemed defective and/or unrepairable and covered under warranty - a credit will be issued to the customer's account.
- x Product(s) found to have no defect will be subject to a **\$75.00 per hour testing charge (1 hour minimum), which will be invoiced to the customer.** At this time the customer may decide to have the tested part(s) returned and is responsible for the return charges.
- x Product(s) under warranty, which the customer does not wish returned, the customer will be issued a credit against the replacement invoice.

**RMA Repair & Return** – A Return Merchandise Authorization (RMA) will be issued for all part(s) returned to TWR<sup>®</sup> for repair. Upon receipt of returned product(s), inspection, testing, and evaluation will be performed to determine the cause of defect. The customer is then notified of the determination of the testing. If the returned part(s) is deemed unrepairable, or the returned part(s) is found to have no defect, the customer will be subject to a **\$75.00 per hour testing charge (1 hour minimum), which will be invoiced to the customer.** Should the returned parts be determined to be repairable, a written estimated cost of repair will be sent to the customer for their written approval prior to any work being performed. In order to have the tested part(s) repaired and/or returned, the customer must issue a purchase order and is responsible for the return shipping charges.

**RMA Return to Stock** – Any product order that is returned to TWR<sup>®</sup> for part(s) ordered incorrectly or found to be unneeded upon receipt by the customer, the customer may be required to pay a minimum **20% restocking fee.** Product returned for credit must be returned within 60-days of original purchase, be in new and resalable condition, and in original packaging. Once the product is received by TWR it's condition will be evaluated and a credit will be issued only once it is determined that the RMA Return Terms have been met.

**Credits** – Credits are issued once it is determined that all of the Warranty and Return Terms are met. All credits are processed on Fridays. In the event a Friday falls on a Holiday, the credit will be issued on the following Friday.

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## **AA1-M CONTROLLER**

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### **Warranty & Return Policy** (continued)

**Freight** – All warranty replacement part(s) will be shipped via ground delivery and paid for by TWR<sup>®</sup>. Delivery other than ground is the responsibility of the customer.

REMEDIES UNDER THIS WARRANTY ARE LIMITED TO PROVISIONS OF REPLACEMENT PARTS AND REPAIRS AS SPECIFICALLY PROVIDED. IN NO EVENT SHALL TWR<sup>®</sup> BE LIABLE FOR ANY OTHER LOSSES, DAMAGES, COSTS, OR EXPENSES INCURRED BY THE CUSTOMER, INCLUDING, BUT NOT LIMITED TO, LOSS FROM FAILURE OF THE PRODUCT(S) TO OPERATE FOR ANY TIME, AND ALL OTHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING ALL PERSONAL INJURY OR PROPERTY DAMAGE DUE TO ALLEGED NEGLIGENCE, OR ANY OTHER LEGAL THEORY WHATSOEVER. THIS WARRANTY IS MADE BY TWR<sup>®</sup> EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED. WITHOUT LIMITING THE GENERALITY OF THE FORGOING, TWR<sup>®</sup> MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCT(S) FOR ANY PARTICULAR PURPOSE. TWR<sup>®</sup> EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES.

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## **AA1-M CONTROLLER**

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### **RETURN MERCHANDISE AUTHORIZATION (RMA) FORM**

**RMA#:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**CUSTOMER:** \_\_\_\_\_

**CONTACT:** \_\_\_\_\_ **PHONE NO.:** \_\_\_\_\_

**ITEM DESCRIPTION (PART NO.):** \_\_\_\_\_

**MODEL NO.:** \_\_\_\_\_ **SERIAL NO.:** \_\_\_\_\_

**ORIGINAL TWR INVOICE NO.:** \_\_\_\_\_ **DATED:** \_\_\_\_\_

**DESCRIPTION OF PROBLEM:** \_\_\_\_\_

**SIGNED** \_\_\_\_\_ **DATE NEEDED** \_\_\_\_\_

**RETURN ADDRESS:** \_\_\_\_\_

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PLEASE RETURN PRODUCT TO: 10810 W. LITTLE YORK RD., #130 HOUSTON, TX 77041-4051

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**RMA#:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**CUSTOMER:** \_\_\_\_\_

\_\_\_\_\_

**CONTACT:** \_\_\_\_\_ **PHONE NO.:** \_\_\_\_\_

**ITEM DESCRIPTION (PART NO.):** \_\_\_\_\_

\_\_\_\_\_

**MODEL NO.:** \_\_\_\_\_ **SERIAL NO.:** \_\_\_\_\_

**ORIGINAL TWR INVOICE NO.:** \_\_\_\_\_ **DATED:** \_\_\_\_\_

**DESCRIPTION OF PROBLEM:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

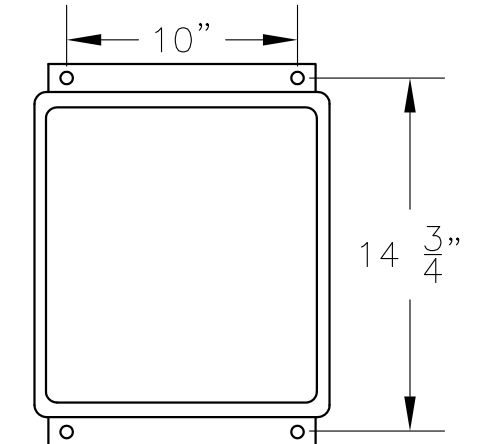
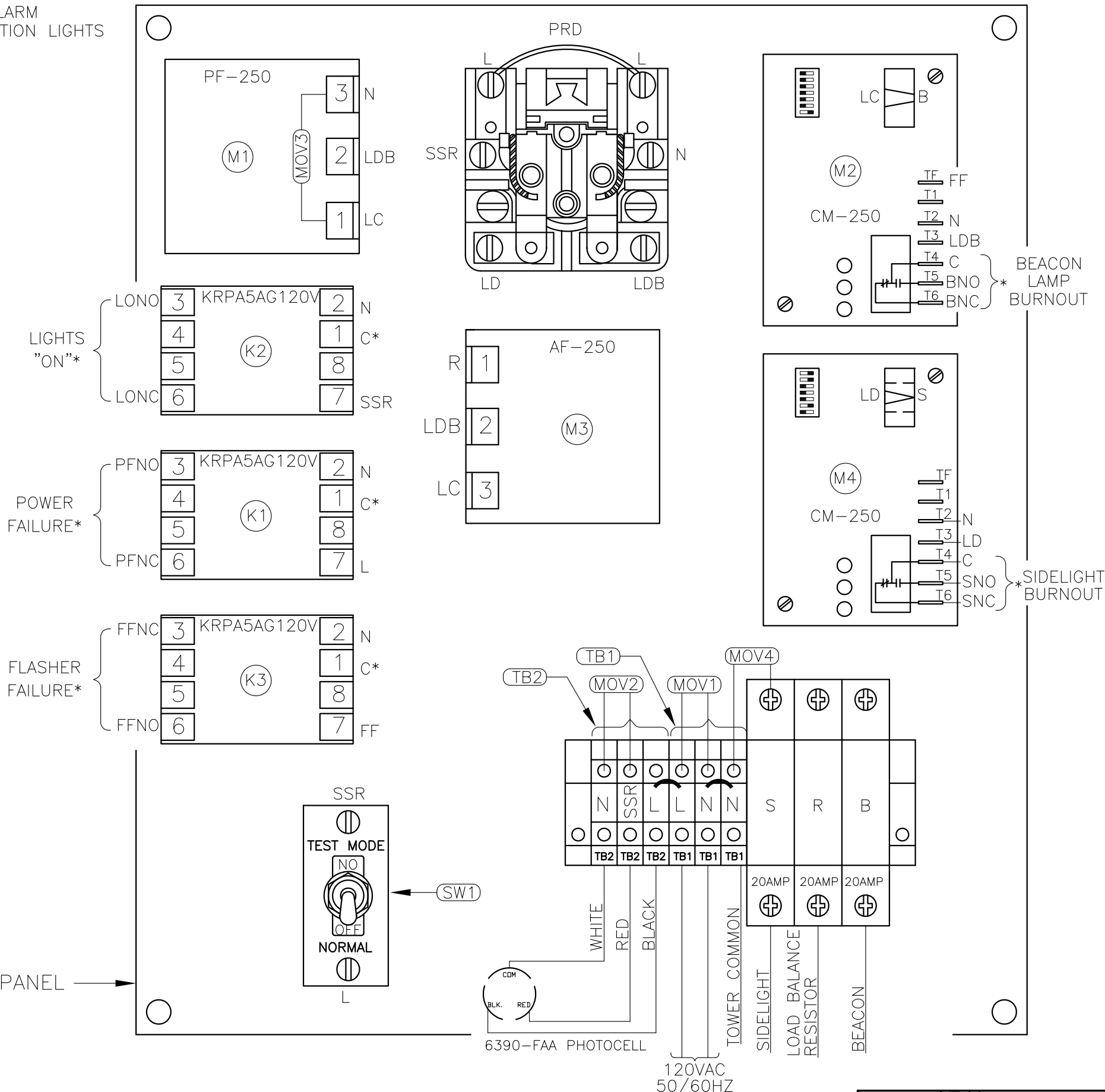
**SIGNED** \_\_\_\_\_ **DATE NEEDED** \_\_\_\_\_

**RETURN ADDRESS:** \_\_\_\_\_

\_\_\_\_\_

PLEASE RETURN PRODUCT TO: 10810 W. LITTLE YORK RD., #130 HOUSTON, TX 77041-4051

\*=CUSTOMER REMOTE ALARM POINTS FOR OBSTRUCTION LIGHTS



MOUNTING DIMENSIONS  
(FOR CABINET)

- NOTES:
1. WHEN REPLACING METAL BASE MODULES USE HEAT SINK COMPOUND BETWEEN MODULES AND ALUMINUM PLATE.
  2. PLUG 6390-FAA PHOTOCCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
  3. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L TO L TO L.

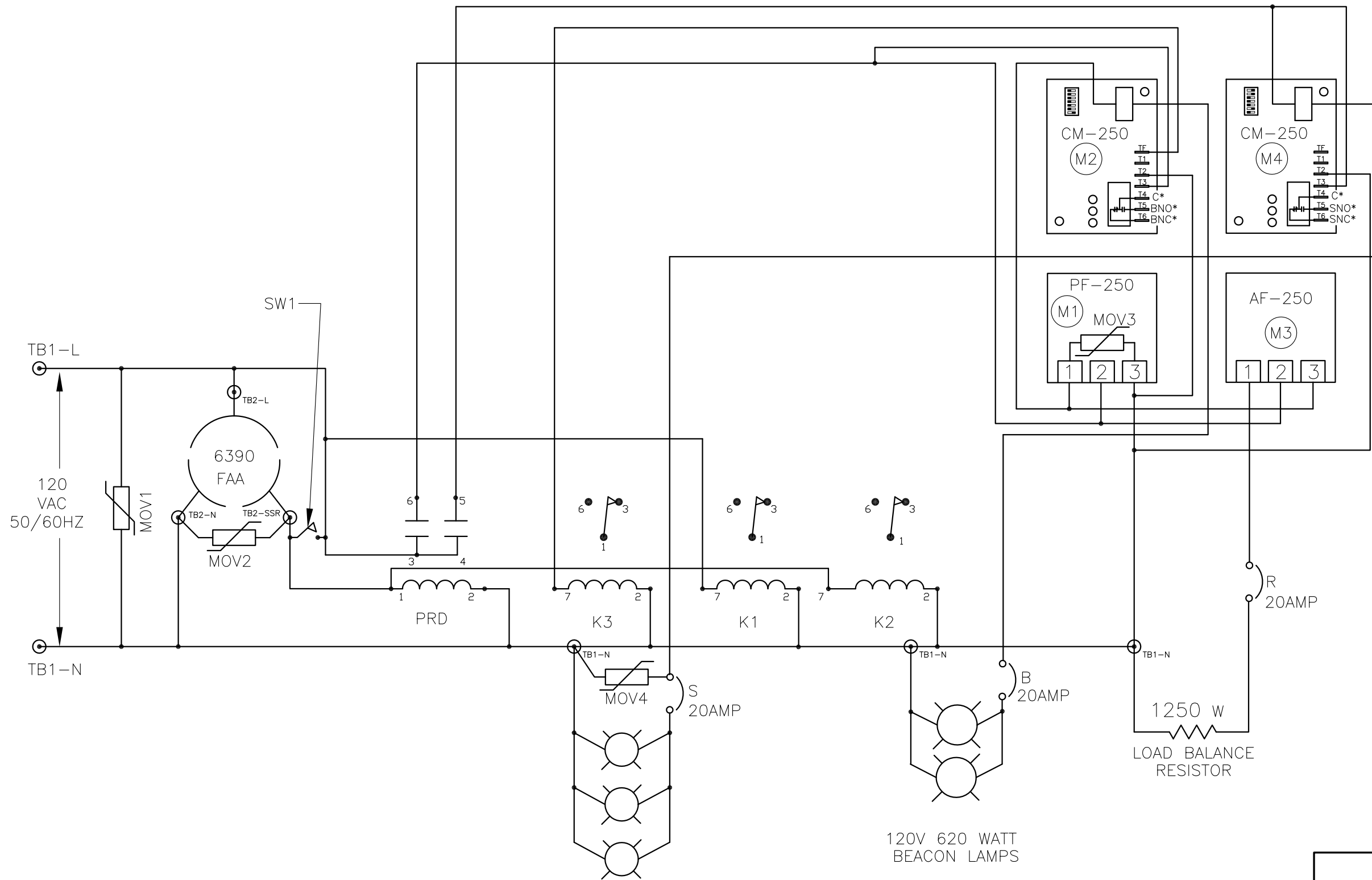
10-7/8"x12-7/8" PANEL

AA1-M CHASSIS LAYOUT

PROD DEPT	<b>TWR Lighting, Inc.</b> Enlightened Technology®		
SERV DEPT			
ENGINEER			
DRAWN BY G.D. SEBEK	SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 02/28/94	SCALE N.T.S.	DWG. NO. 1113-R	

11/18/09	CHG. M1, M2
DATE:	REVISION

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.  
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120V 116 WATT SIDELIGHT LAMPS

120V 620 WATT  
BEACON LAMPS

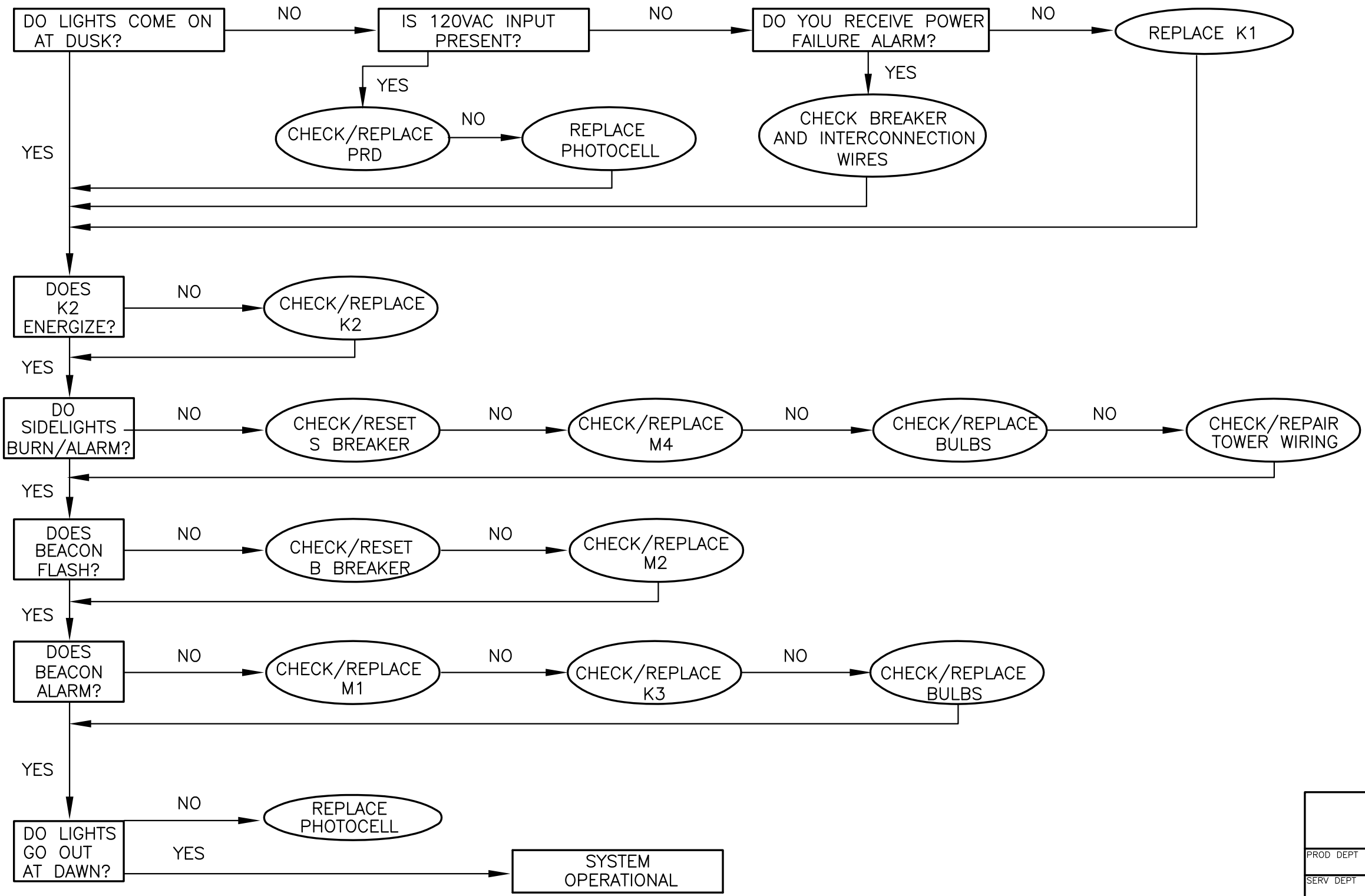
1250 W  
LOAD BALANCE  
RESISTOR

AA1-M SCHEMATIC

PROD DEPT	<b>TWR Lighting, Inc.</b> Enlightened Technology®		
SERV DEPT			
ENGINEER			
DRAWN BY G.D. SEBEK	SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 02/28/94	SCALE N.T.S.	DWG. NO. 1113-S	

11/18/09	CHG. M1
DATE:	REVISION

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**AA1-M TROUBLESHOOTING  
FLOW CHART DWG# 1113-R**

PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
SERV DEPT			
ENGINEER			
DRAWN BY G.D. SEBEK	SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 02/28/94	SCALE N.T.S.	DWG. NO. 1113-F	

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.  
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10/16/09 1113  
DATE: LTR. REVISION

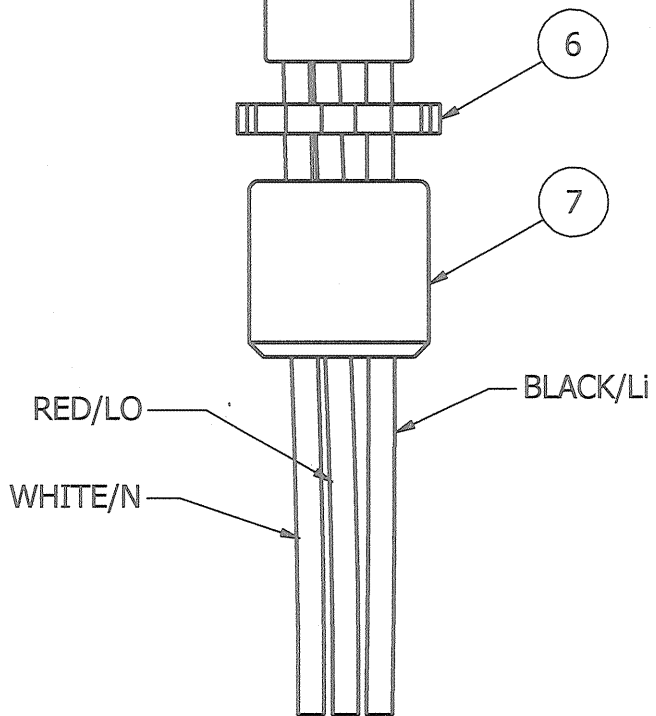
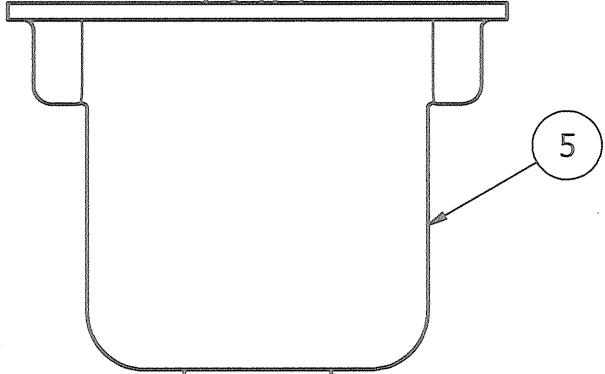
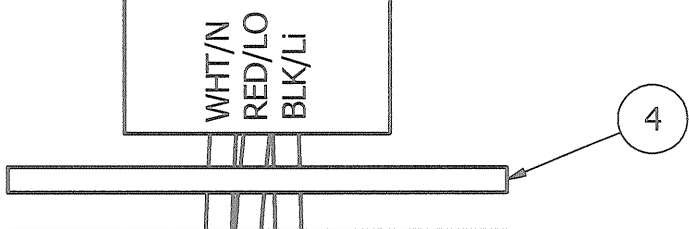
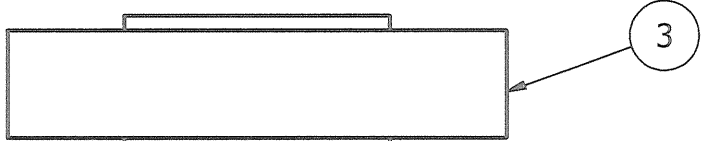
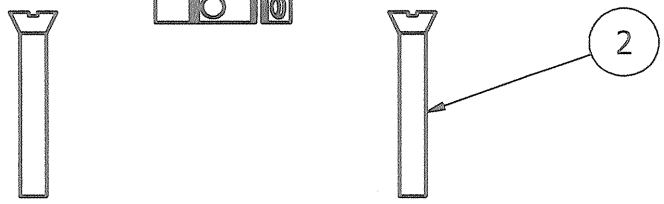
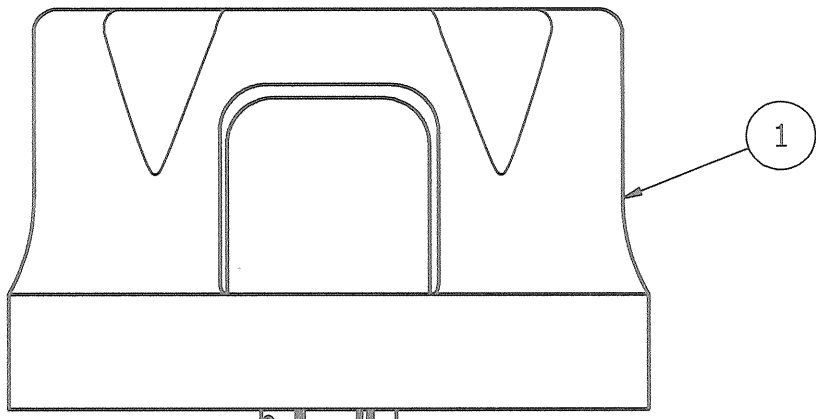
4

3

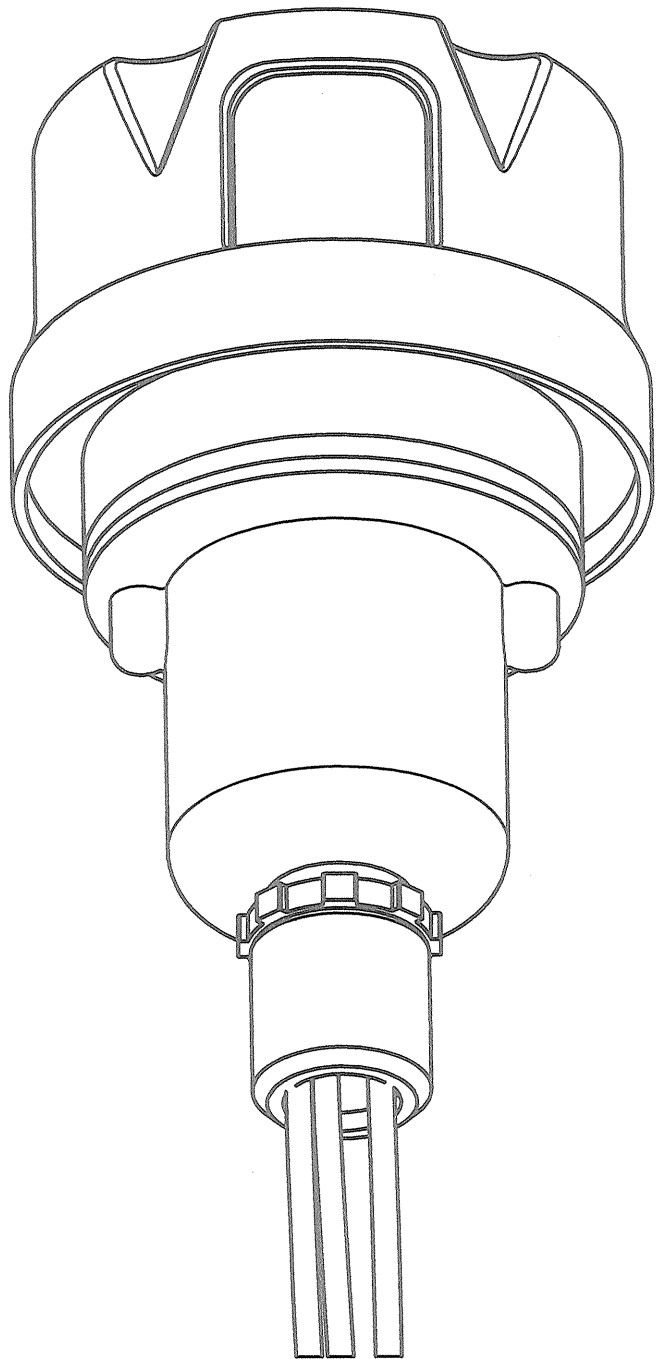
2

1

PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	PHOTOCELL
2	2	6-32 x 1" SCREW
3	1	RECEPTACLE SOCKET
4	1	RECEPTACLE GASKET
5	1	RECEPTACLE HOUSING
6	1	1/2" CONDUIT LOCKNUT
7	1	3/4" TO 1/2" REDUCER



EXPLODED VIEW



ASSEMBLY

NOTES:

- ITEM #7 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.
- IF ADDITIONAL WIRE IS REQUIRED OVER THE FACTORY 20', USE THE FOLLOWING CHART.  
 21' TO 300' - 16 AWG TFFN  
 301' TO 500' - 14 AWG TFFN

PHOTOCELL HOUSING DETAIL

PROD. DEPT  
 SERV. DEPT  
 ENGINEER  
**TWR Lighting, Inc. HARK**  
*Enlightened Technology®*

DRAWN BY	vhernandez	SHEET SIZE	B	SHEET QTY.	1 OF 1
DATE	10/18/1995	SCALE	1/1	DWG. NO.	100239i

DATE	REV	AUTHOR	DESCRIPTION
02/03/2015	H	JZAMORANO	UPDATED NOTES

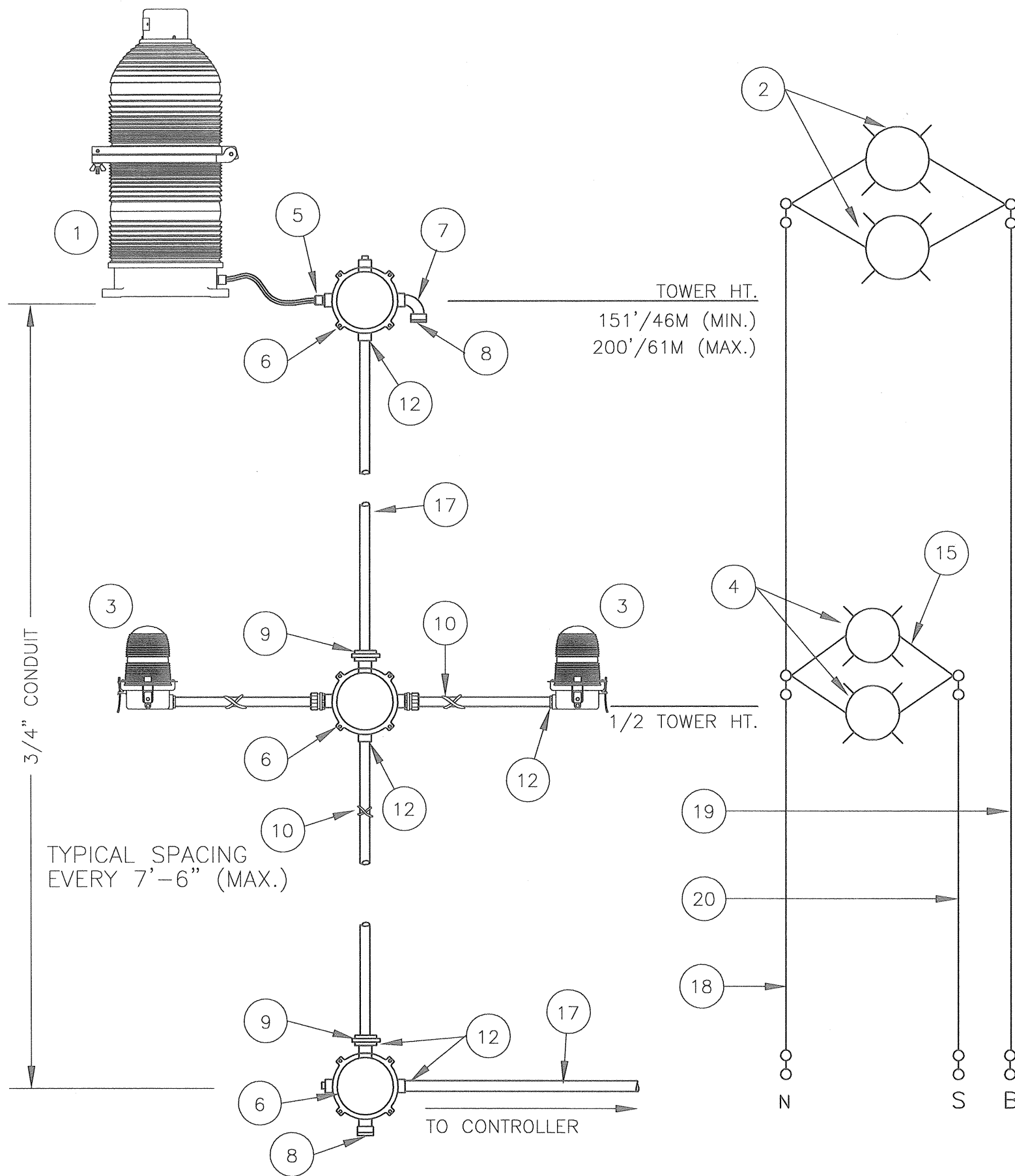
4

3

2

1





TOWER HT.  
151'/46M (MIN.)  
200'/61M (MAX.)

1/2 TOWER HT.

3/4" CONDUIT

TYPICAL SPACING  
EVERY 7'-6" (MAX.)

TO CONTROLLER

⊙ = TERMINAL

### BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	1	BEACON	300 MM BEACON RED
2	2	---	120 OR 240 VOLT LAMP
3	2	OL1	3/4" OBSTRUCTION LIGHT
4	2	---	120 OR 240 VOLT LAMP
5	1	CGB295SA	3/4" CORD CONNECTOR
6	3	JB5	3/4" JUNCTION BOX
7	2	EL3490	3/4" 90° SHORT ELBOW
8	2	5012902	3/4" BREATHER
9	3	UNY205	3/4" UNION
10	1	SS10012	WRAPLOCK
* 11	1	PIPDOP	4 oz. PIPE DOPE
12	10	A314	3/4" CONDUIT LOCKNUTS
13	2	HC402	3/4" NO THREAD CONNECTOR
14	20'	CONDUIT34	3/4" CONDUIT (FOR OL)
15	2	SLPIGTAIL6	SIDELIGHT PIGTAIL 6 FEET
* 16	1	AA1	AA1 CONTROLLER

ITEM NUMBERS #17-#20 ARE NOT INCLUDED IN THE KIT BUT, ARE AVAILABLE UPON REQUEST AND REQUIRED FOR INSTALLATION.

17	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 30'/9M)
18	-	8THHNWHT	#8 THHN WHT. WIRE (TOWER HT.+40'/12M)
19	-	8THHNBLK	#8 THHN BLK. WIRE (TOWER HT.+40'/12M)
20	-	12THHNRED	#12 THHN RED WIRE (1/2 TWR HT.+40'/12M)

\* = ITEMS NOT SHOWN

#### NOTES:

- PART #CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION OF OL1 (6"-12") FROM STRUCTURE. ATTACH PART #HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
- CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- USE RIGID GALVANIZED STEEL CONDUIT.
- BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.

LK1A1 TOWER LIGHTING KIT W/NO BOOST  
(TOWERS 151'/46M TO 200'/61M)

PROD DEPT \_\_\_\_\_  
SERV DEPT \_\_\_\_\_  
ENGINEER *[Signature]*

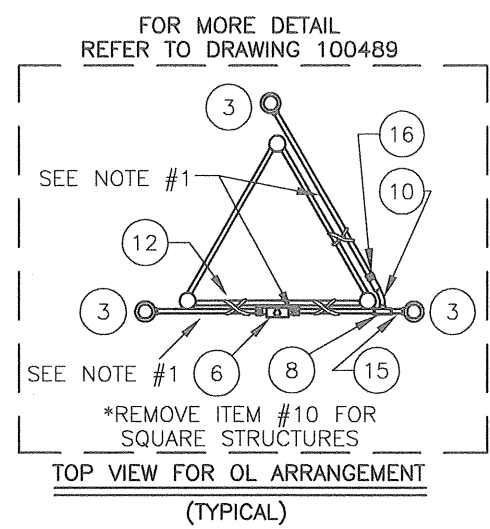
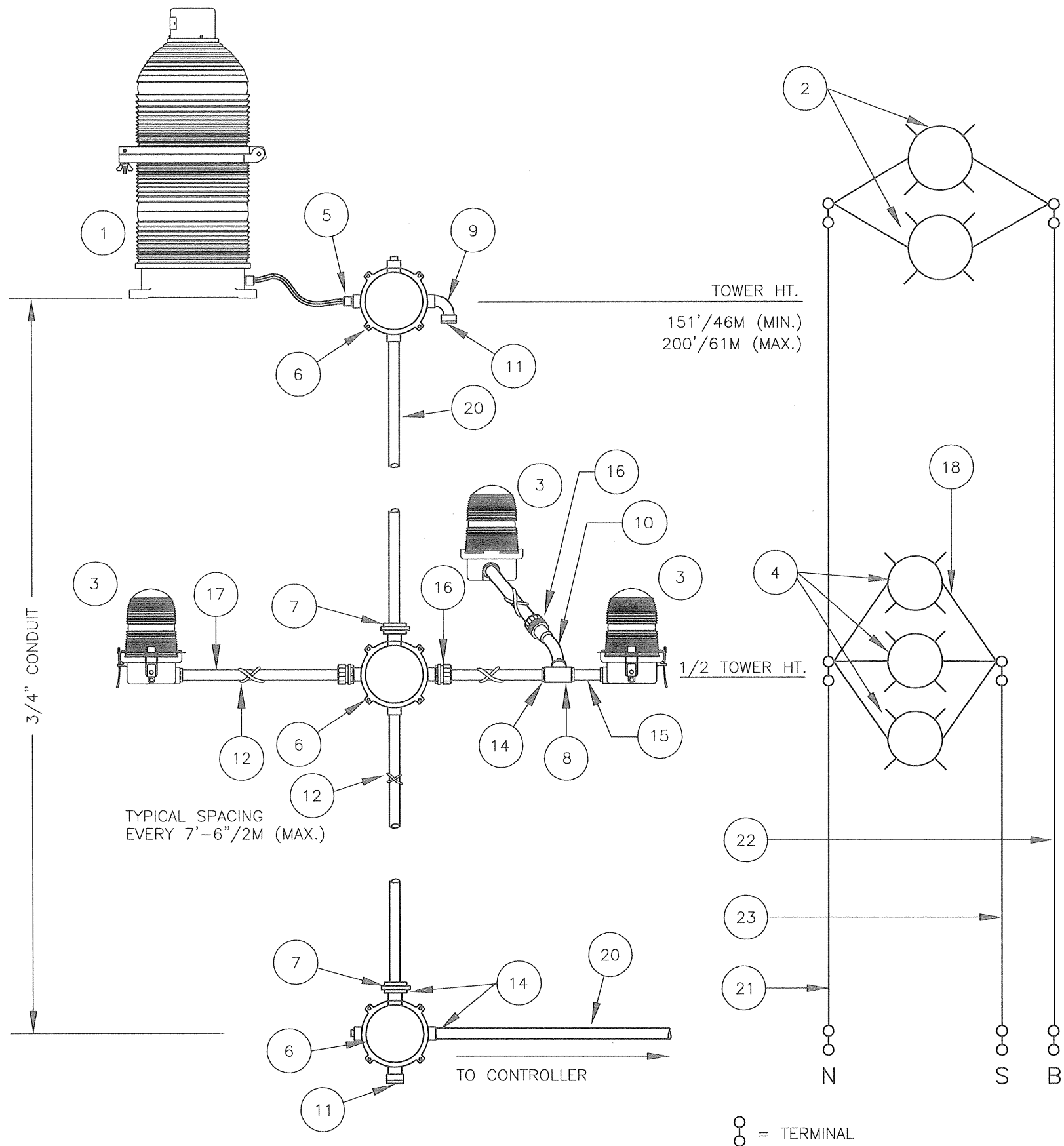
**TWR Lighting, Inc.**  
Enlightened Technology®

DRAWN BY E.A.SALAZAR  
DATE 1/5/93 SCALE N.T.S.

SHEET SIZE B SHEET QTY. 1 OF 1  
DWG. NO. 260-11

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12/04/07	(E)	CHG OL ARRANGEMENT
DATE:	LTR.	REVISION



### BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	1	BEACON	300 MM BEACON RED
2	2	---	120 OR 240 VOLT LAMP
3	3	OL1	3/4" OBSTRUCTION LIGHT
4	3	---	120 OR 240 VOLT LAMP
5	1	CGB295SA	3/4" CORD CONNECTOR
6	3	JB5	3/4" JUNCTION BOX
7	4	UNY205	3/4" UNION
8	2	T27CG	3/4" CONDULET W/COVER AND GASKET
9	2	EL3490	3/4" 90° SHORT ELBOW
10	1	EL3430	3/4" 30° ELBOW
11	2	5012902	3/4" BREATHER
12	1	SS10012	WRAPLOCK
* 13	1	PIPDOP	4 oz. PIPE DOPE
14	12	A314	3/4" CONDUIT LOCKNUTS
15	1	N34T3	3/4" x 3" NIPPLE
16	3	HC402	3/4" NO THREAD CONNECTOR
17	30'	CONDUIT34	3/4" CONDUIT (FOR OL)
18	3	SLPIGTAIL25	25' SIDELIGHT PIGTAIL
* 19	1	AA1	AA1 CONTROLLER
20	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 30'/9M)
21	-	8THHNWHT	#8 THHN WHT. WIRE (TOWER HT.+40'/12M)
22	-	8THHNBK	#8 THHN BLK. WIRE (TOWER HT.+40'/12M)
23	-	12THHNRED	#12 THHN RED WIRE (1/2 TWR HT.+40'/12M)

ITEM NUMBERS #20-#23 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

\* = ITEMS NOT SHOWN

#### NOTES:

- 1) PART #CONDUIT34 CUT TO LENGTH FOR PROPER EXTENTION OF OL1 (6"-12") FROM STRUCTURE. ATTACH PART #HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
- 2) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- 3) USE RIGID GALVANIZED STEEL CONDUIT.
- 4) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
- 5) USE COUPLING THAT IS PROVIDED WITH PART #CONDUIT34 TO ATTACH PART #EL3430 TO PART #HC402.

LK3A1 TOWER LIGHTING KIT W/NO BOOST  
(TOWERS 151'/46M TO 200'/61M)

PROD DEPT \_\_\_\_\_  
SERV DEPT \_\_\_\_\_  
ENGINEER \_\_\_\_\_

**TWR Lighting, Inc.**  
Enlightened Technology®

DRAWN BY G.D. SEBEK  
DATE 3/5/94 SCALE N.T.S.

SHEET SIZE B SHEET QTY. 1 OF 1  
DWG. NO. 260-13

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.  
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12/03/07	(E)	CHG OL ARRANGEMENT
DATE:	LTR.	REVISION

# BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	1	BEACON	300 MM BEACON RED
2	2	---	120 OR 240 VOLT LAMP
3	2	OL1	3/4" OBSTRUCTION LIGHT
4	2	---	120 OR 240 VOLT LAMP
5	1	CGB295SA	3/4" CORD CONNECTOR
6	3	JB5	3/4" JUNCTION BOX
7	2	JBO	3/4" STRAIN RELIEF BOX
8	2	EL3490	3/4" 90° SHORT ELBOW
9	2	5012902	3/4" BREATHER
10	5	UNY205	3/4" UNION
11	1	SS10012	WRAPLOCK
*	1	PIPDOP	4 oz. PIPE DOPE
13	14	A314	3/4" CONDUIT LOCKNUTS
14	2	HC402	3/4" NO THREAD CONNECTOR
15	20'	CONDUIT34	3/4" CONDUIT (FOR OL)
16	2	SLPIGTAIL6	SIDLIGHT PIGTAIL 6 FEET
*	1	AA1_____	AA1_____ CONTROLLER

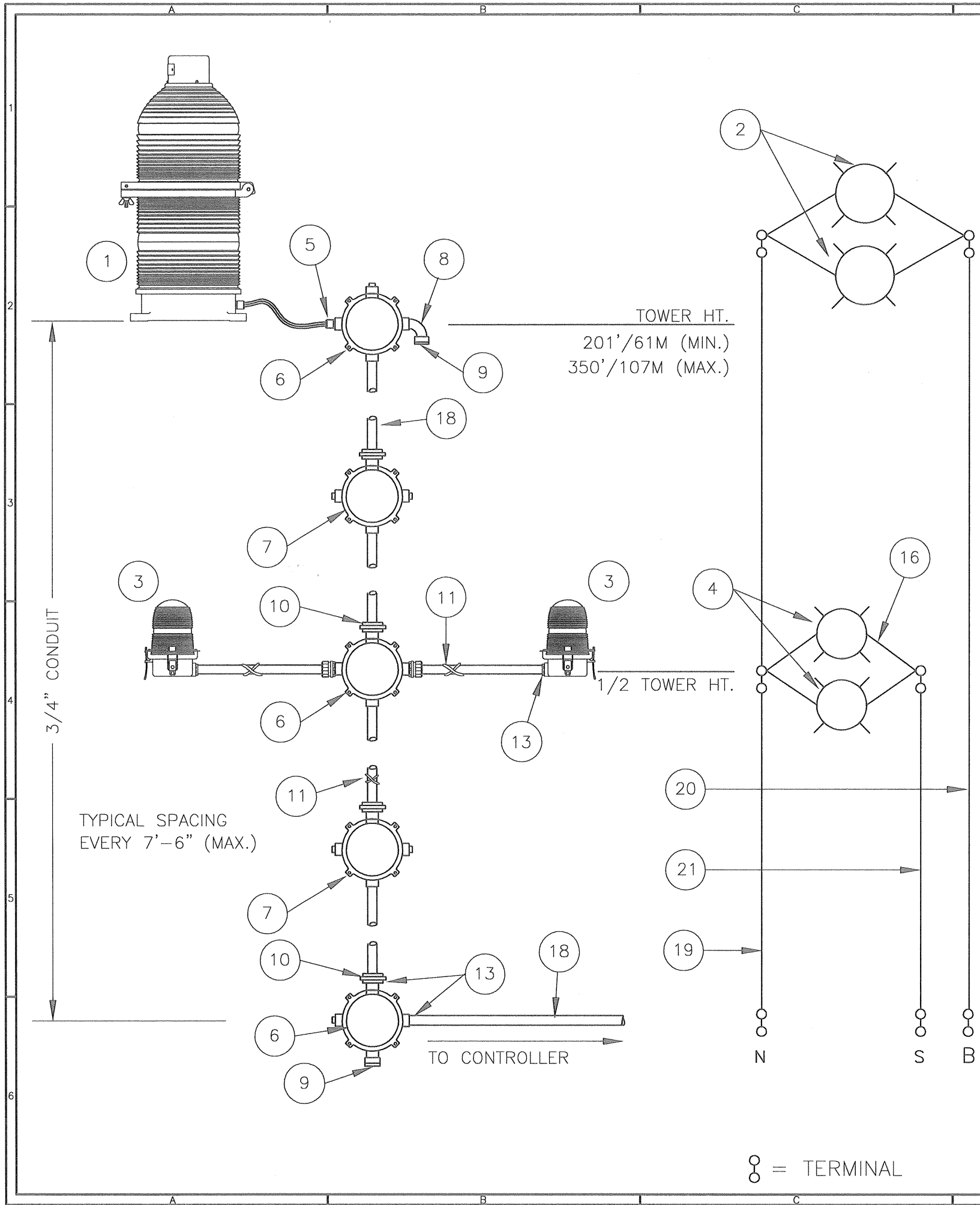
ITEM NUMBERS #18-#21 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

18	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 30'/9M)
19	-	6THHNWHT	#6 THHN WHT. WIRE (TOWER HT.+40'/12M)
20	-	6THHNBLK	#6 THHN BLK. WIRE (TOWER HT.+40'/12M)
21	-	12THHNRED	#12 THHN RED WIRE (1/2 TWR HT.+40'/12M)

\* = ITEMS NOT SHOWN

### NOTES:

- PART #CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION OF OL1 (6"-12") FROM STRUCTURE. ATTACH PART #HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
- CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- USE RIGID GALVANIZED STEEL CONDUIT.
- BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.



⊙ = TERMINAL

LK2A1 TOWER LIGHTING KIT W/NO BOOST  
(TOWERS 201'/61M TO 350'/107M)

PROD DEPT \_\_\_\_\_  
SERV DEPT \_\_\_\_\_  
ENGINEER *[Signature]*  
DRAWN BY E.A.SALAZAR  
DATE 01/05/93 SCALE N.T.S.

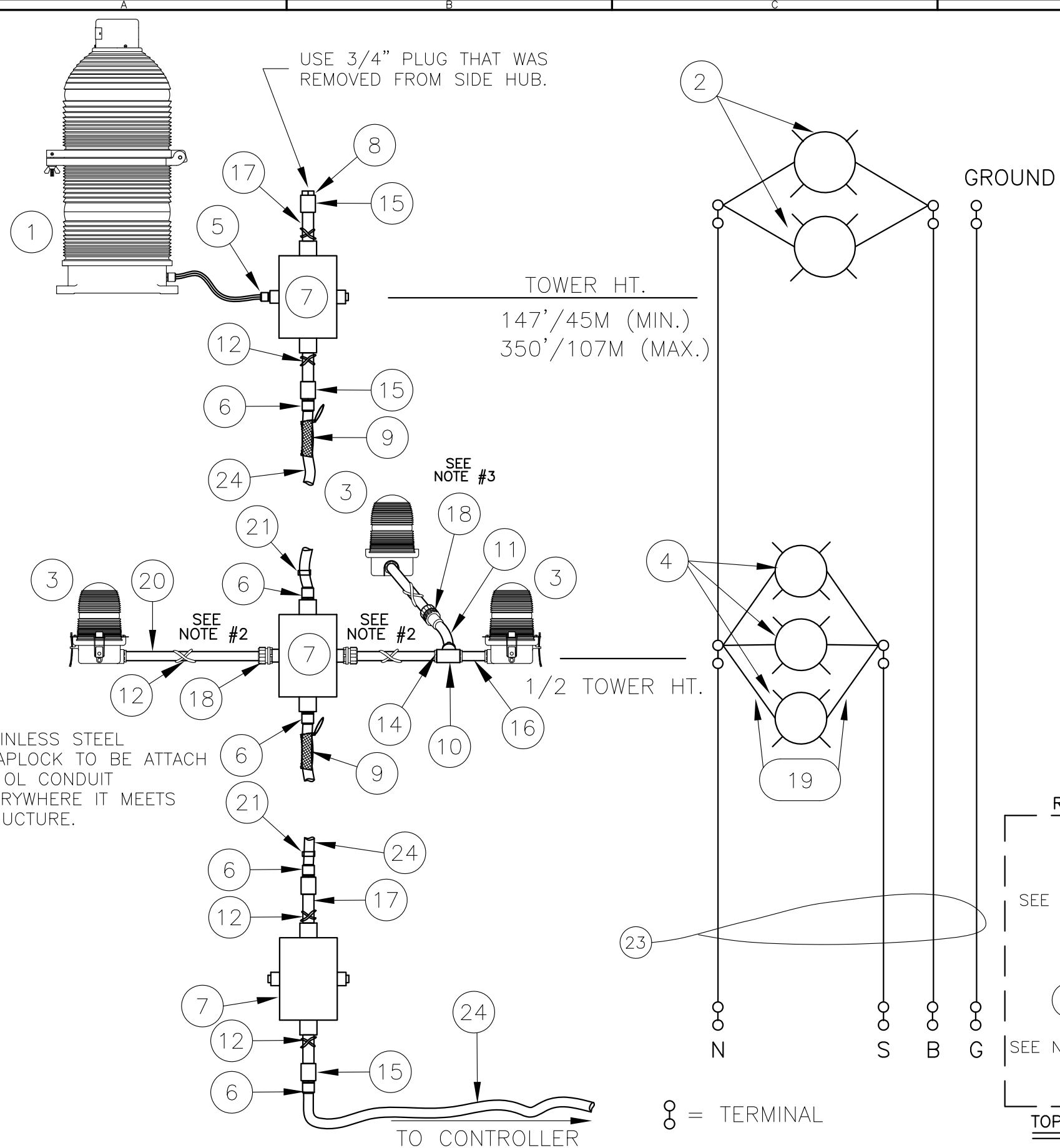
**TWR Lighting, Inc.**  
Enlightened Technology®

SHEET SIZE B SHEET QTY. 1 OF 1  
DWG. NO. 260-12

02/17/2015	(E)	UPDATED B.O.M
DATE:	LTR.	REVISION

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**BILL OF MATERIALS**

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	1	BEACON	300 MM BEACON RED
2	2	620PS40P	620 WATT 120 VOLT LAMP
3	3	OL1	3/4" OBSTRUCTION LIGHT
4	3	116A21TS	116 WATT 120 VOLT LAMP
5	1	CGB295SA	3/4" CORD CONNECTOR
6	6	CG871100	1" CORD CONNECTOR (.875" - 1.00")
7	3	JB8C	1" JUNCTION BOX CAST
8	1	RE32	1" TO 3/4" REDUCER
9	2	CABLEGRIP6	SINGLE EYE LACE MESH (.75" - .99")
10	1	T27CG	3/4" CONDULET W/COVER AND GASKET
11	1	EL3430	3/4" 30° ELBOW
12	1	SS5012	WRAPLOCK
* 13	1	PIPDOP	4 oz. PIPE DOPE
14	3	A314	3/4" CONDUIT LOCKNUTS
15	4	CPLG1	1" GALVANIZED COUPLING
16	1	N34T3	3/4" x 4" NIPPLE
17	4	N1T12	1" x 12" NIPPLE
18	3	HC402	3/4" NO THREAD CONNECTOR
19	3	SLPIGTAIL25	25' SIDELIGHT PIGTAIL
20	30'	CONDUIT34	3/4" CONDUIT (OL1 MOUNTING)
21	-	STCABLTIE	CABLE TIES (TWR. HT. ÷ 5)
* 22	1	AA1	AA1 CONTROLLER
* 23	1	EN1246	ENLARGER (0.75" - 1.00")

ITEM NUMBER #24 IS NOT INCLUDED IN THE KIT BUT IS AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

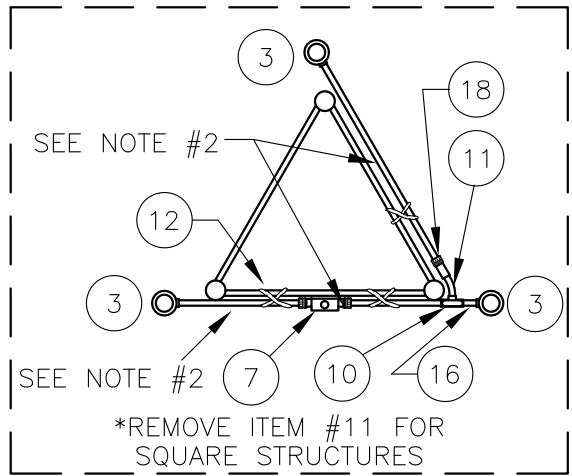
24	-	CS06/4	S.O. CORD 4 WIRE #6 (TWR. HT. + 30')
----	---	--------	--------------------------------------

\* = ITEMS NOT SHOWN

**NOTES:**

- 1) MOUNT BEACON HINGE SO LENS WILL OPEN UNOBSTRUCTED BY STRUCTURE.
- 2) ITEM CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION OF OL1 (6"-12") FROM STRUCTURE. ATTACH ITEM HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
- 3) USE COUPLING THAT IS PROVIDED WITH ITEM CONDUIT34.
- 4) ON AM TOWER APPLICATIONS, KEEP GROUND LUG FROM BEING CONNECTED TO EARTH GROUND. GROUND TO THE TOWER ONLY.
- 5) POWER SUPPLY IS NORMALLY MOUNTED AT EYE LEVEL ON TOWER. IT CAN ALSO BE MOUNTED INDOORS. RECOMMENDED MOUNTING HEIGHT IS 42" TO BOTTOM OF ENCLOSURE FOR EASE OF MAINTENANCE.
- 6) THIS DRAWING IS PROVIDED AS A GENERAL REFERENCE. TWR LIGHTING, INC. DOCUMENTATION SUPERCEEDS THIS DRAWING & SHOULD BE REVIEWED PRIOR TO INSTALLATION OF THIS SYSTEM.
- 7) ITEM EN1246 TO BE USED FOR CONTROLLER ENTRANCE.

FOR MORE DETAIL REFER TO DRAWING 100489



TOP VIEW FOR OL ARRANGEMENT (TYPICAL)

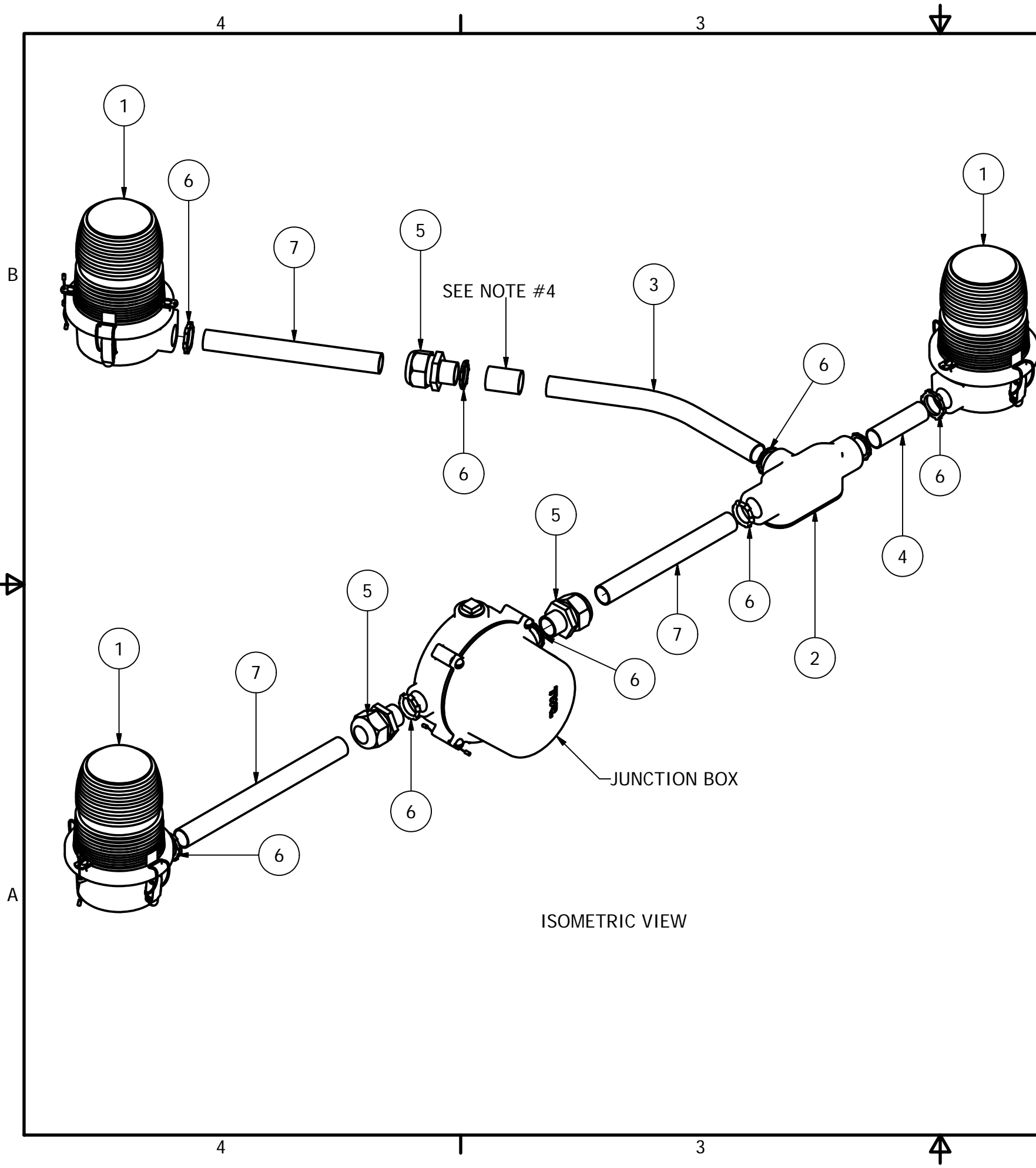
11/16/12	(E)	ADDED ITEM#23
DATE:	LTR.	REVISION

(NO BOOST)

**LK4A1MSO TOWER LIGHTING KIT W/ S.O. CORD FOR 147'/45M TO 350'/107M TOWERS (3 OL-1)**

PROD DEPT	<b>TWR Lighting, Inc.</b> Enlightened Technology®	SHEET SIZE	SHEET QTY.
SERV DEPT		B	1 OF 1
ENGINEER		DWG. NO.	100214
DRAWN BY	E.A.SALAZAR	SCALE	N.T.S.
DATE	06/20/95		

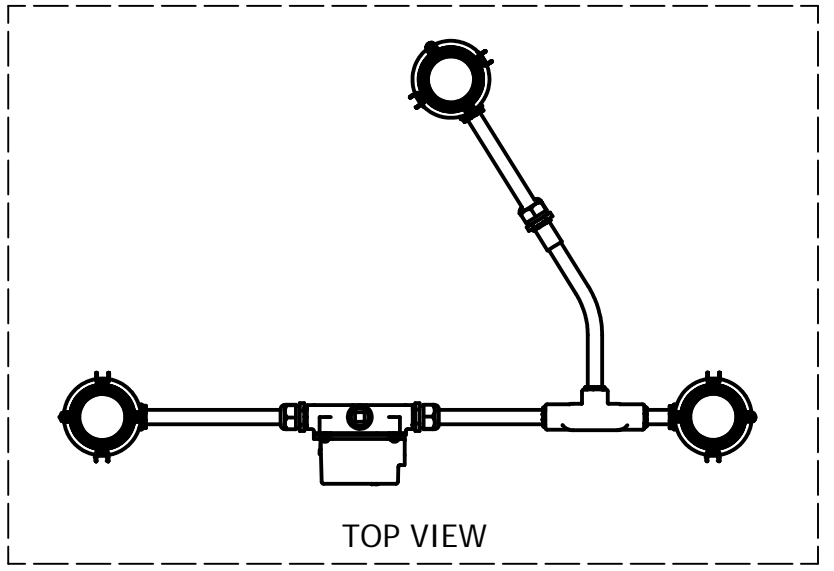
The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43. NOTICE: The drawings and photographic images contained herein are the sole property of TWR Lighting, Inc. All information contained herein that is not generally known shall be considered confidential except to the extent the information has been previously established. The drawings and photographic images contained herein may not be reproduced, copied or used as the basis for manufacture or sale or promotion or any other purpose without the expressed written permission of TWR Lighting, Inc.



ISOMETRIC VIEW

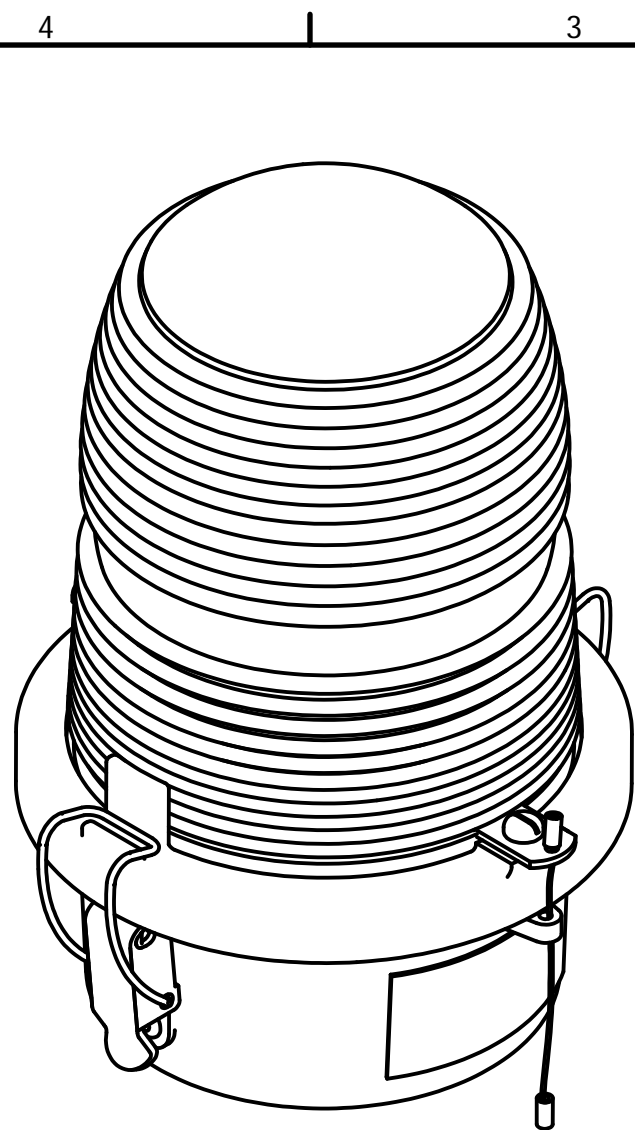
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	OL1/LED	3/4" OBSTRUCTION LIGHT
2	1	T27CG	3/4" CONDULET W/COVER AND GASKET
3	1	EL3430	3/4" 30° ELBOW
4	1	N34T3	3/4" X 3" NIPPLE
5	3	HC402	3/4" NO THREAD CONNECTOR
6	5	A314	3/4" CONDUIT LOCKNUTS
7	1	CONDUIT34	3/4" CONDUIT

- NOTES:
1. THIS DRAWING IS A TYPICAL INSTALLATION DETAIL FOR 3 OL-1 PER LEVEL SYSTEM.
  2. PART # EL3430 MAY BE OMITTED WHEN ARRANGING FOUR LEG TOWERS.
  3. PART # COUNDUIT34 CUT TO LENGTH FOR PROPER EXTENTION OF OL1 FROM STRUCTURE (6"-12"). ATTACH PART # HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
  4. USE COUPLING THAT IS PROVIDED BY PART # CONDUIT34.
  5. GREEN WIRE USED ONLY ON LED SIDELIGHTS



DRAWN jbustamante	1/4/2008	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
CHECKED				
QA				
MFG				
APPROVED		TITLE SIDELIGHT MOUNT ASSEMBLY (10' FACE WIDTH MAX)		
		SIZE B	DWG NO 100489	REV A
		SCALE	SHEET 1 OF 1	

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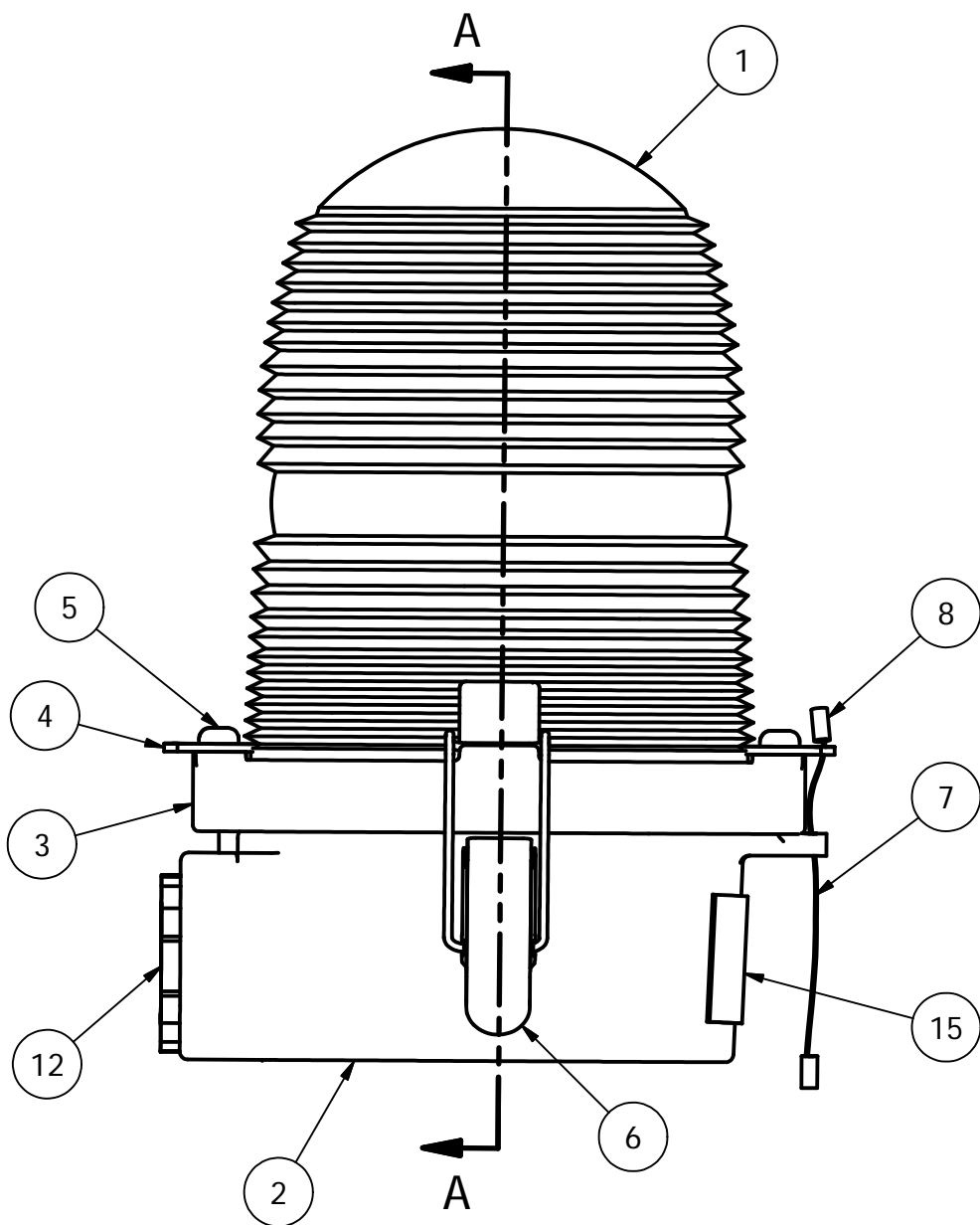


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	AP35222	RED SIDELIGHT GLASS
2	1	105C	SINGLE SIDELIGHT BODY
3	1	106C	LENS HOLDER RING
4	2	12V245	OL LENS CLIP
5	2	832X14PH	8-32 X 1/4" PH SS SLOT SCREW
6	2	HC255SS	SIDELIGHT LATCH
7	1	7X7SS	1/16 HOL 7X7 S.S. WIRE
8	2	A1A	STAKON CRIMP
9	1	OLG	OL GASKET
10	1	TWR19062	SIDELIGHT RECEPTACLE
11	4	18PRSS	1/8 X .40 SS POP RIVET
12	1	A314	3/4" CONDUIT LOCKNUT GALV.
*	2	104G	WHITE TEFLON WASHER
14	2	832X34PH	8-32 X 3/4" S.S. RH SLOT
15	1	100327	OL1 SERIAL NUMBER LABEL
~	1	116A21TS	116W-120V LAMP (TYP.)

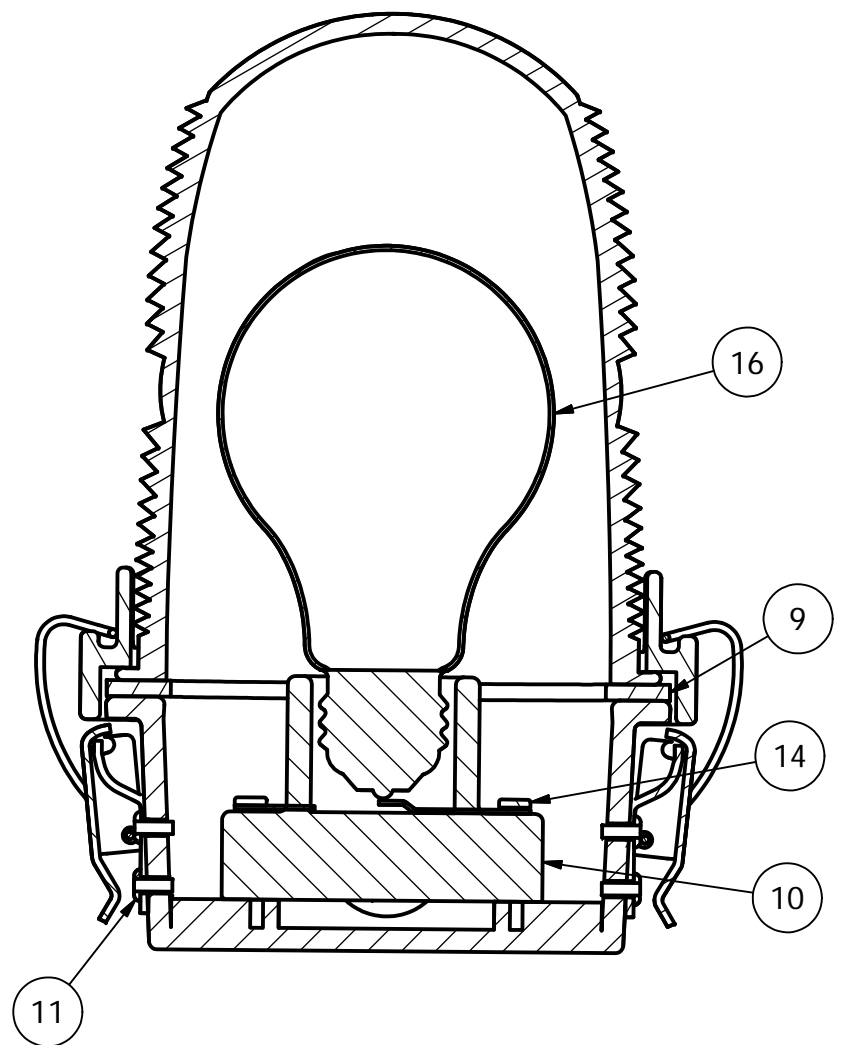
\* = PART NOT SHOWN  
 ~ = PART SOLD SEPARATELY

**NOTE:**

1. FAA APPROVED LIGHT USES THE 116A21TS LAMP.  
 OTHER LAMPS ARE AVAILABLE TO MEET YOUR APPLICATION.

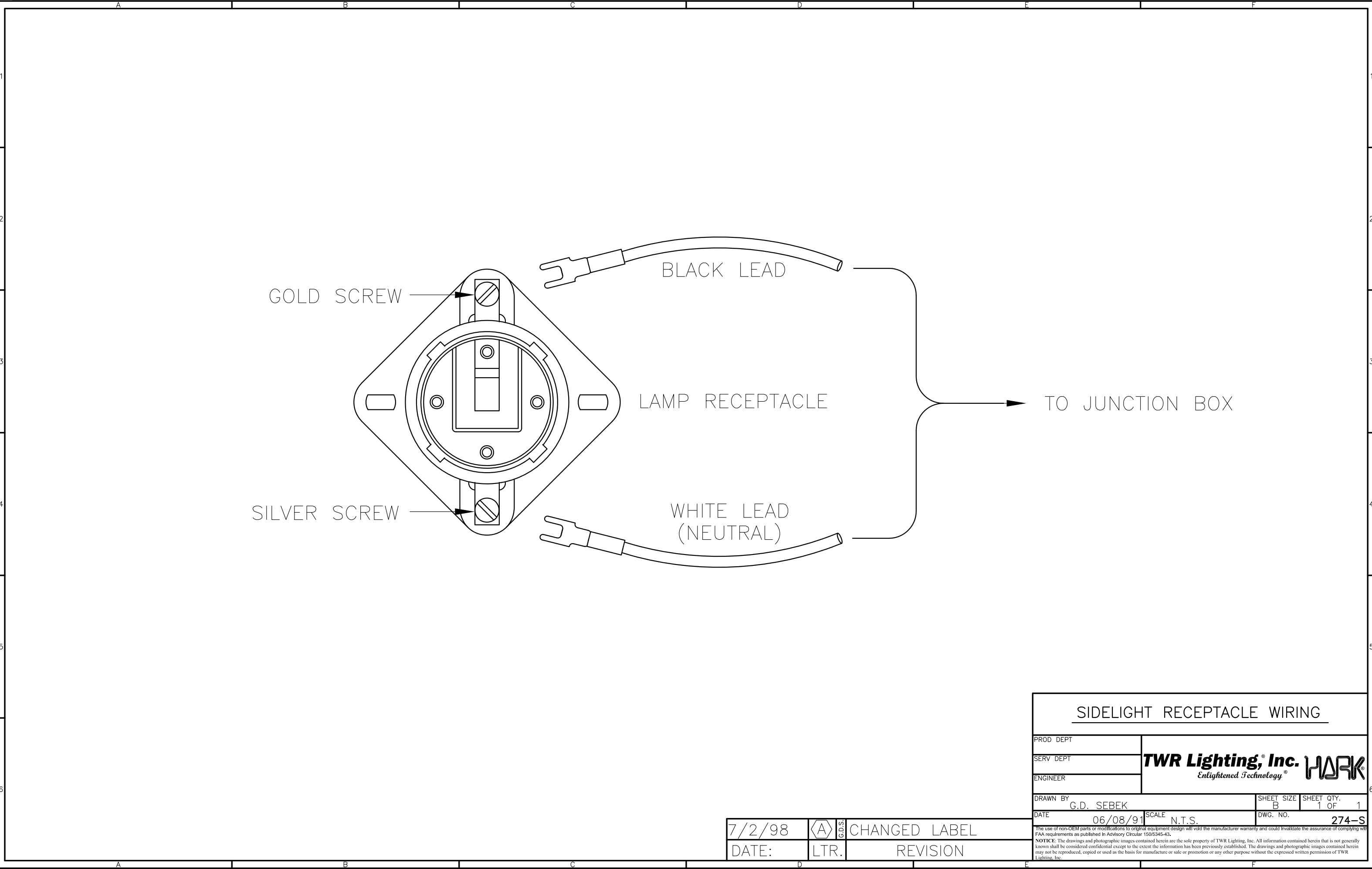


**SECTION A-A**



DRAWN	vhernandez	2/13/2012
CHECKED		
QA		
MFG		
APPROVED		

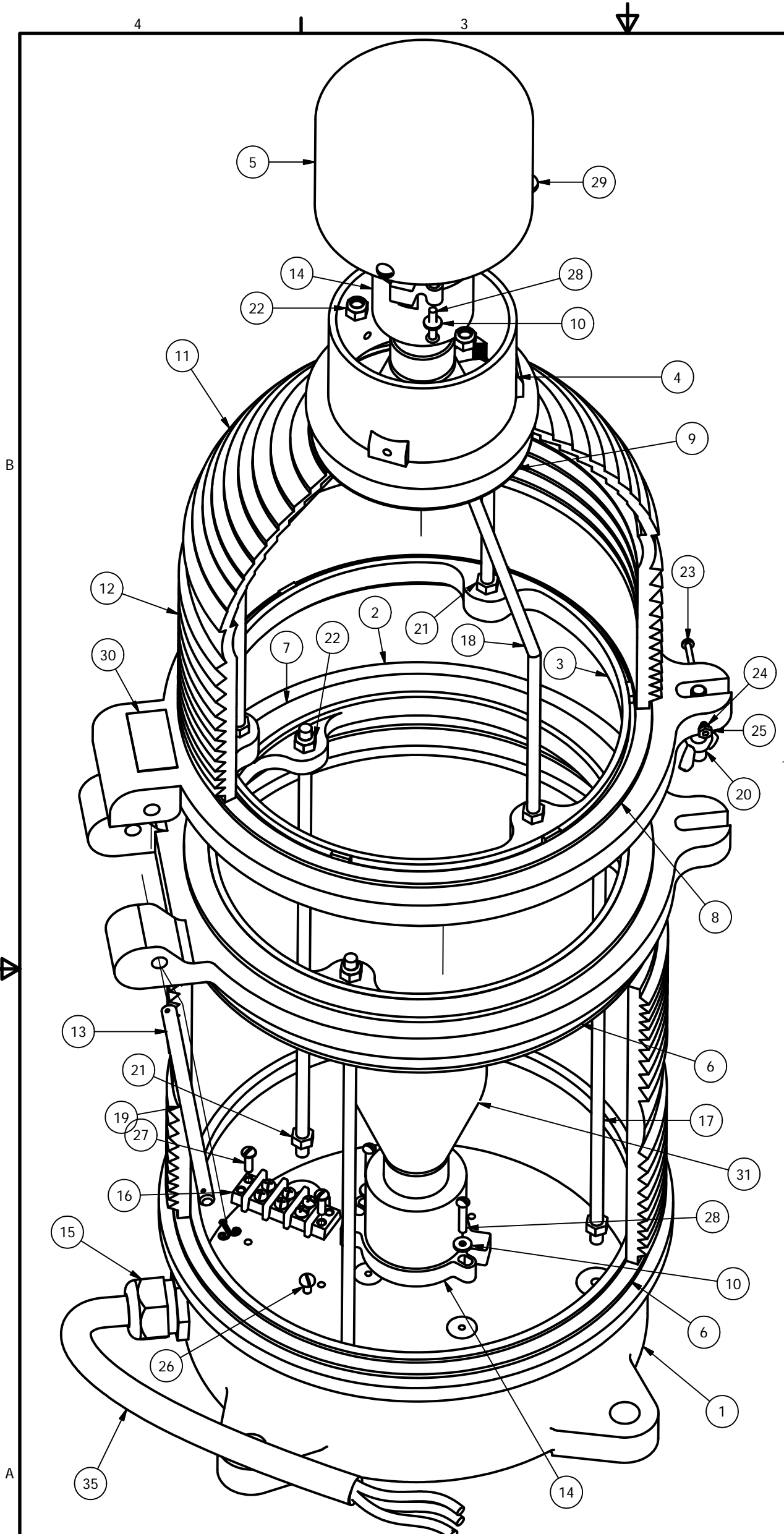
<b>TWR Lighting, Inc.</b> <i>Enlightened Technology</i>		
TITLE		
3/4" OL1 SIDE HUB ASSEMBLY DETAIL (PART#OL1)		
SIZE	DWG NO	REV
B	279-OL	C
SCALE	SHEET 1 OF 1	
2/3		



<b>SIDELIGHT RECEPTACLE WIRING</b>			
PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology</i> <b>WORK</b>		
SERV DEPT			
ENGINEER			
DRAWN BY	G.D. SEBEK	SHEET SIZE	SHEET QTY.
DATE	06/08/91	B	1 OF 1
		SCALE	DWG. NO.
		N.T.S.	274-S
<small>NOTE: The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.</small>			
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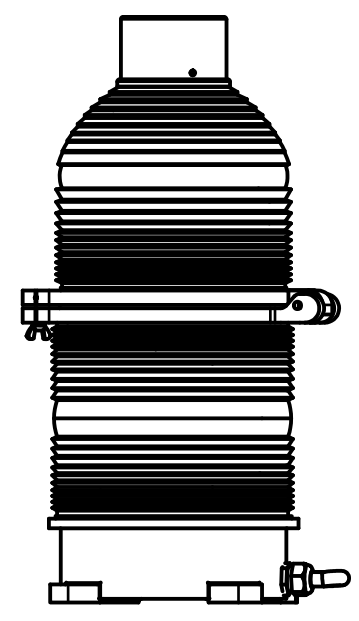
7/2/98	(A)	CHANGED LABEL
DATE:	LTR.	REVISION





Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	100C	BEACON BASE
2	1	101C	LOWER HINGE
3	1	102C	UPPER HINGE
4	1	103C	CANOPY CAP
5	1	104C	CANOPY FLANGE
6	2	100G	GASKET BEACON BASE
7	1	101G	GASKET MIDDLE BEACON
8	1	102G	GASKET, TOP HINGE
9	1	103G	GASKET TEFLON, TOP
10	4	104G	WHITE TEFLON WASHER
11	1	AP3557	CAP LENS RED
12	1	AP3556	MIDDLE LENS RED
13	2	AP3555	BOTTOM LENS RED
14	2	TWR23-546	BEACON LAMP RECEPTACLE
15	1	CGB295SA	3/4" CORD CONNECTOR .62 TO .75
16	1	TERMBLK3	TERMINAL BLOCK 3-PART
17	3	BTRS-1	BEACON TIE ROD STRAIGHT
18	3	BTRB	BEACON TIE ROD BENT
19	1	BHP	BEACON HINGE PIN W/ COTTER PIN
20	1	BLP	BEACON LATCH PIN
21	6	516NUT	5/16-15 HEX NUT
22	6	516NUTN	5/16-18 NUT W/NYLON INSERT
23	1	632X2RH	6-32 X 2 SS RH SLOT SCREW
24	1	632LW	6-32 LOCK WASHER
25	1	632NUT	6-32 NUT HEX
26	1	1032x38BH	10-32 X 3/8 PILLIPS PAN HEAD
27	2	1032x58PH	10-32 X 5/8 PH SLOT SCREW
28	4	1032X1RH	10-32 X 1 SS RH SCREW
29	3	1420X58RH	14-20 X 5/8 RH SLOT SCREW
30	1	100328	BEACON SERIAL NUMBER LABEL
31	2	---	BEACON LAMP
* 32	7	TYZ23M	HI TEMP TY WRAPS T&B TEFZEL
* 33	4'	16HTWH	#16 HI-TEMP WIRE SRML WHITE
* 34	4'	16HTBL	#16 HI-TEMP WIRE SRML BLACK
35	5'	CSO14/3	S.O. CORD 14AWG/3 CONDUCTOR
* 36	11	YAV14-H34F	(STAKON) BURNDY HEAVY DUTY

\* = ITEMS NOT SHOWN  
 ~ = PART SOLD SEPARATELY

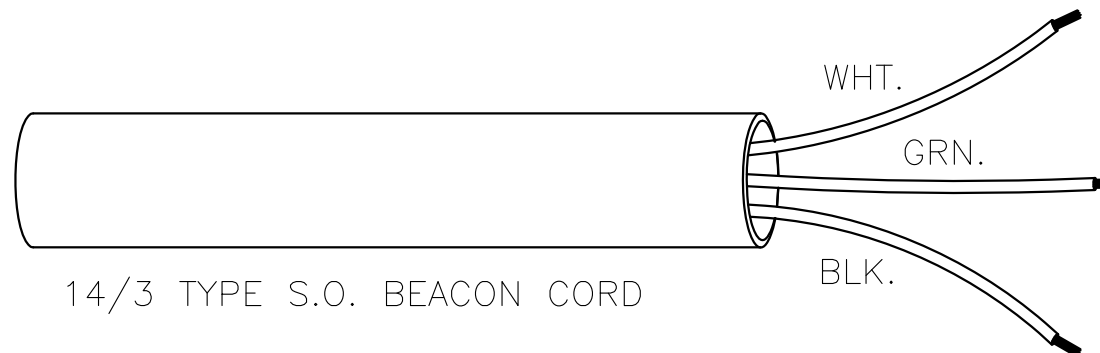
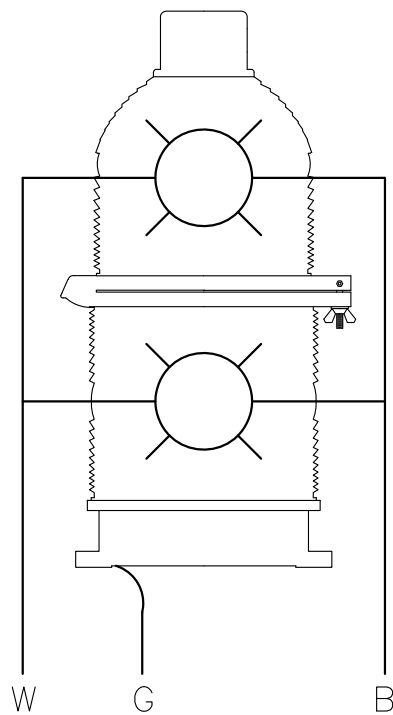


DRAWN J.L.BUSTAMANTE	11/27/07	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
CHECKED				
QA		TITLE		
MFG		300 MM BEACON ASSEMBLY DETAIL		
APPROVED		SIZE B	DWG NO 275-B	REV E
		SCALE	SHEET 1 OF 1	

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- 1) WHITE WIRE IS NEUTRAL TO BOTH LAMPS.
- 2) BLACK WIRE IS LINE TO BOTH LAMPS.
- 3) GREEN WIRE IS EARTH GROUND.

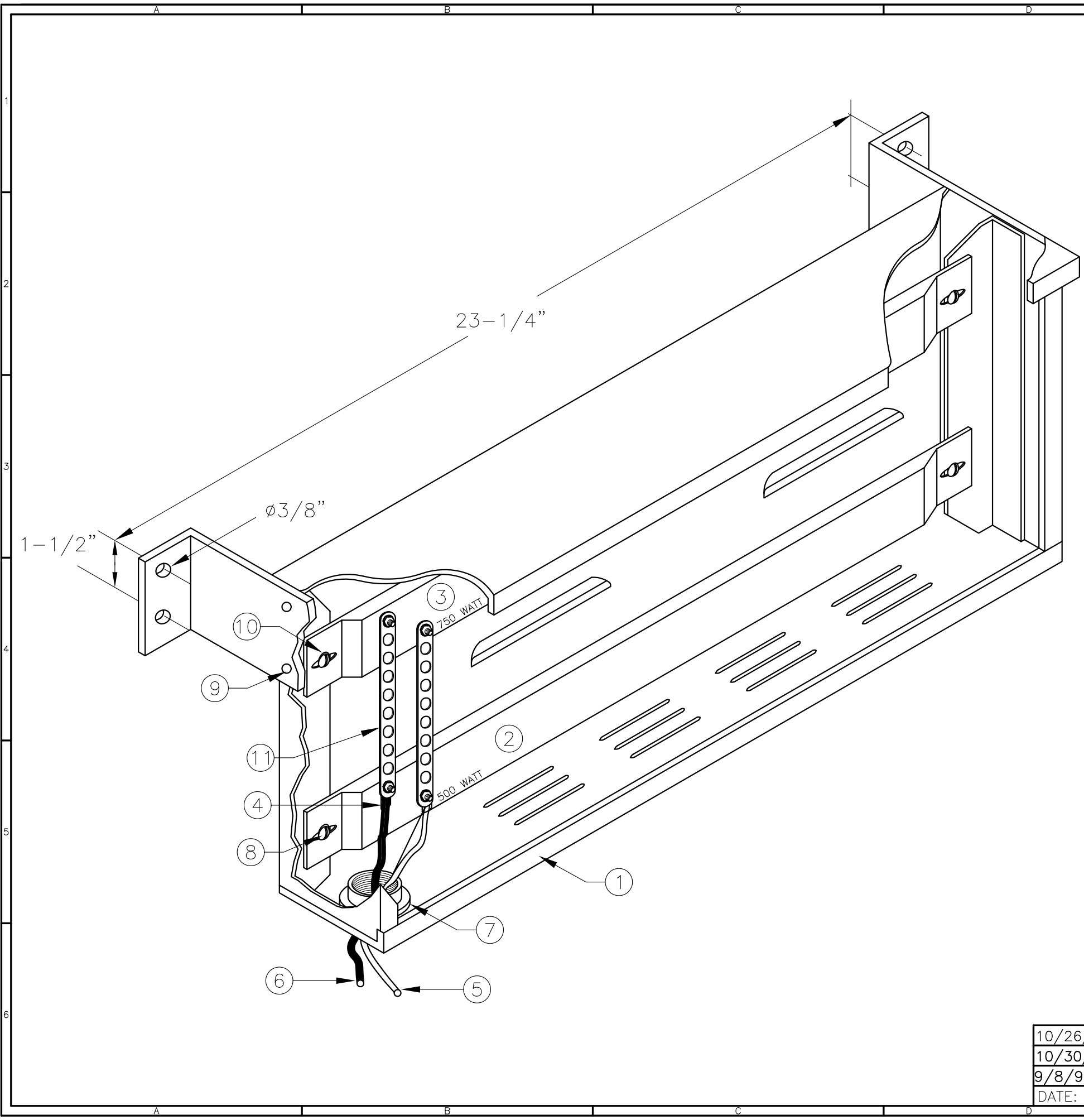
300 MM BEACON



300 MM BEACON WIRE

PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
SERV DEPT			
ENGINEER			
DRAWN BY G.D. SEBEK	SHEET SIZE B	SHEET QTY. 1 OF 1	DWG. NO. 273-B
DATE 6/10/91	SCALE N.T.S.		

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ITEM NO	QTY.	TWR PART NUMBER	DESCRIPTION
1	1	LBRBX	RESISTOR BOX GALVANIZED
2	1	LBR500	LBR HEATING ELEMENT
3	1	LBR750	LBR HEATING ELEMENT
4	2	YAV14-H56F	(STAKON) BURNDY HEAVY DUTY
5	20'	16HTWH	#16 HI-TEMP. APPL. WIRE SRML-1
6	20'	16HTBL	#16 HI-TEMP. APPL. WIRE
7	1	ST2	3/4" MEYERS HUB
8	4	832X12RH	8-32 x 1/2" RH, S.S. SCREW
9	8	832X14PH	8-32 x 1/4" PH S.S. SLOT
10	4	104G	WHITE TEFLON WASHER 5K MIN.
11	2	BUSSBAR	BUSS BAR, BRASS, CA-1003(LBR)

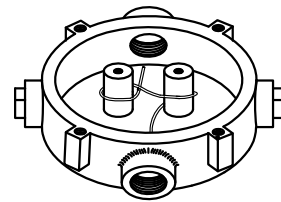
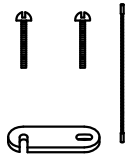
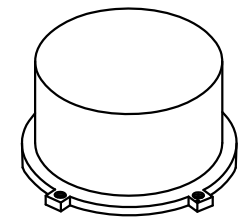
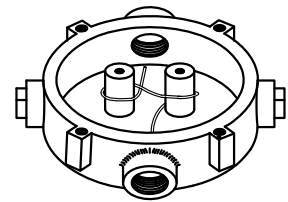
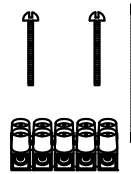
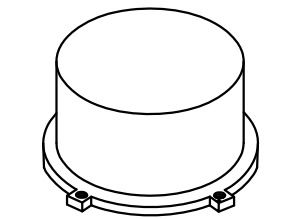
NOTES:

1. ALLOW A MINIMUM OF 6" CLEARANCE FOR TOP AND BOTTOM OF HOUSING.
2. MOUNTING BRACKETS CAN BE RELOCATED 90° FOR OVERHEAD MOUNT.
3. RUN WIRE IN 3/4" CONDUIT TO CONTROLLER.
4. 20' OF HIGH TEMPERATURE WIRE IS PROVIDED WITH LOAD BALANCE RESISTOR.

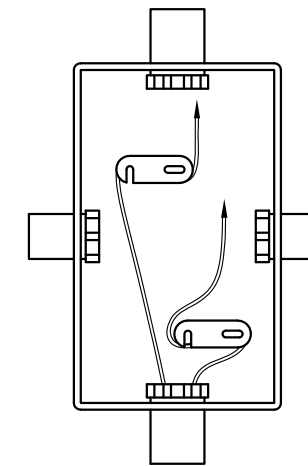
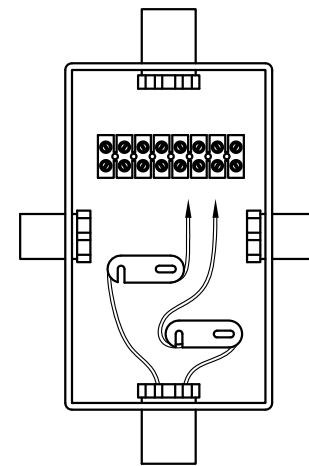
# LBR

<b>LOAD BALANCE RESISTOR ASSEMBLY DETAIL (PART #LBR)</b>			
PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		SHEET SIZE
SERV DEPT			B
ENGINEER			SHEET QTY.
DRAWN BY	E.A.SALAZAR	SCALE	1 OF 1
DATE	02/08/85	N.T.S.	DWG. NO. 276-R
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10/26/98	(C)	CHG. B.O.M.
10/30/96	(B)	UPDATED DRAWING
9/8/94	(A)	DELETED NOTE
DATE:	LTR.	REVISION



JB-5 AND JB-0  
3/4" JUNCTION BOX



JB-8 AND JB-8SR  
1" JUNCTION BOX

NOTES:

- 1) DRAWING ILLUSTRATES METHOD OF STRAIN RELIEVING WIRE. USE THIS METHOD ON ALL JUNCTION BOXES.
- 2) THE NATIONAL ELECTRICAL CODE-ARTICLE 300-19-B3 REQUIRES CONDUCTORS IN A VERTICAL CONDUIT BE SUPPORTED TO RELIEVE STRAIN ON TERMINAL BLOCK CONNECTIONS.
- 3) SKETCH ILLUSTRATES METHOD OF STRAIN RELIEVING A SINGLE CONDUCTOR. SEVERAL CONDUCTORS MAY BE GROUPED TOGETHER.
- 4) CONDUCTORS MAY BE MIXED BUT SHOULD NOT TAKE UP MORE THAN 40% OF CONDUIT'S INSIDE AREA.

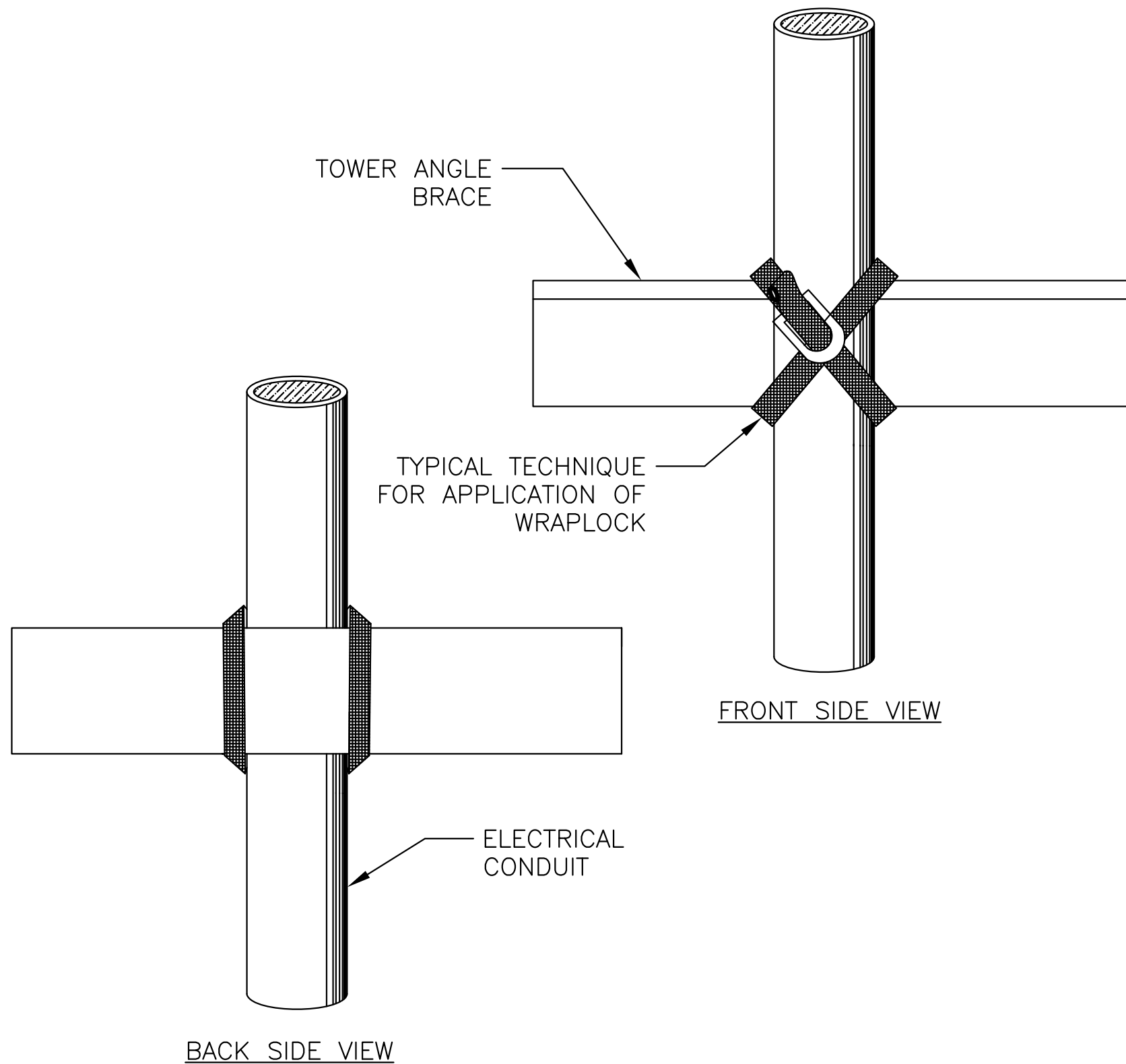
USING THIS JUNCTION BOX METHOD SPACING IS 100 FEET MAXIMUM.

AWG WIRE SIZE	MAX. NUMBER WIRES IN 3/4" CONDUIT	MAX. NUMBER WIRES IN 1" CONDUIT	WIRE AREA SQ. INCHES	WEIGHT PER 100 FEET
12 THHN	16	26	0.0117	2.50
10 THHN	10	17	0.0184	4.10
8 THHN	6	9	0.0373	6.70
6 THHN	4	7	0.0519	10.30
4 THHN	2	4	0.0845	16.20

<u>JUNCTION AND STRAIN RELIEF BOXES</u>					
PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>				
SERV DEPT					
ENGINEER					
DRAWN BY	G.D. SEBEK	SHEET SIZE	B	SHEET QTY.	1 OF 1
DATE	07/26/93	SCALE	N.T.S.	DWG. NO.	100089

9/29/00	(A)	UPDATED NOTES
DATE:	LTR.	REVISION

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**DIRECTIONS FOR USING  
WrapLock**  
CUT OFF BAND TO PROPER LENGTH.  
(SEE TABLE ON COVER OF BOX)

1.— PASS ONE END THROUGH YOKE AND BEND BACK ABOUT 1 1/2" AND FLATTEN DOWN.



2.— PASS BAND AROUND WORK AND THROUGH YOKE.



3.— REPEAT AND PASS END THROUGH A SECOND TIME, DRAW UP FREE END SNUGLY WITH PLIERS.



4.—



INSERT FREE END IN SLOT OF RATCHET.

5.—



TURN DOWN UNTIL CLAMP IS TIGHT.

6.—

BACK OFF SLIGHTLY TO REMOVE RATCHET. CLAMP IS NOW SECURELY LOCKED.

**TO REMOVE WrapLock**  
UNCOIL END WITH RATCHET. PRESS DOWN AT POINT WHERE BAND METAL HAS BEEN FORCED THROUGH CURVED PART OF YOKE.

**WRAPLOCK FASTENING DETAIL**

ENGINEER	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
APPROVED			
APPROVED			
APPROVED	DRAWN BY M. PETERMAN	SHEET SIZE B	SHEET QTY. 1 OF 1
APPROVED	DATE 05/01/2014	SCALE N.T.S.	DWG. NO. 100984

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