

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

*Enlightened Technology<sup>®</sup>*

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

## **IMPORTANT!!!**

PLEASE TAKE THE TIME TO FILL OUT THIS FORM COMPLETELY. FILE IT 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 # \_\_\_\_\_ AA1TSS \_\_\_\_\_

TYPE # \_\_\_\_\_ INCANDESCENT \_\_\_\_\_

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

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

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

# **TWR Lighting, Inc.** **MARK**

*Enlightened Technology*

## **AA1TSS CONTROLLER**

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**WARRANTY & RETURN POLICY**

**RETURN MERCHANDISE AUTHORIZATION (RMA) FORM**

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

*Enlightened Technology<sup>®</sup>*

## **AA1TSS CONTROLLER**

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### APPENDIX

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|---|----------------|
| CHASSIS COMPONENT LAYOUT .....                    | 202-R (REV D)  |
| SCHEMATIC LAYOUT .....                            | 202-S (REV D)  |
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# **TWR Lighting, Inc.** HARK<sup>®</sup>

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## **AA1TSS CONTROLLER**

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### **1.0 GENERAL INFORMATION**

The TWR Lighting<sup>®</sup>, Inc. (TWR<sup>®</sup>) Model AA1-TSS Controller is for A1 lighting of towers 151' to 350' AGL (above ground level) in accordance with the Federal Aviation 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 beacon 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 the switch to "ON."

The beacon requires two (2) 620 watt or two (2) 700 watt, 120V bulbs. TWR<sup>®</sup> recommends that you use only these bulbs. Each sidelight requires one (1) 116 watts, 120V bulb (620PS40P, 700PS40P, and 116A21TS).

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

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

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

## **AA1TSS CONTROLLER**

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### **2.0 INSTALLATION INSTRUCTIONS**

#### **2.1 MOUNTING THE CONTROL CABINET**

(Refer to Drawing 202-R)

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 202-R. Power wiring to the control cabinet should be in accordance with local methods and the National Electrical Codes (NEC).

**2.1.1** 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.” The photocell should be positioned so that it does not “see” ambient light, which would prevent it from switching to the nightmode.

**2.1.2** 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.

**2.1.3** 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 202-R)

**2.2.1** Connect the **BLACK** wire from the photocell to terminal block TB2 marked “L.”

## **AA1TSS CONTROLLER**

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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 202-R)

2.3.1 Power wiring to the control cabinet should be in accordance with local methods and the National Electrical Codes (NEC).

2.3.2 Circuit breaker needs to be rated at 20 amps.

2.3.3 Connect incoming 120V AC 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.”

2.3.5 Connect the AC ground to the aluminum mounting plate.

### **2.4 RED BEACON AND SIDELIGHT WIRING**

(Refer to Drawings 202-R, 260-13, and 260-14)

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 **WHITE** neutral wire(s) to one (1) or more of the terminals on TB1 marked “N.”

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## **AA1TSS CONTROLLER**

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### **3.0 THEORY OF OPERATION**

#### **3.1 POWER SUPPLY**

120V AC enters the controller from the circuit breaker panel. Line sits at the PRD, waiting to be switched on. When the 6390-FAA photocell is activated, line energizes the coil of the PRD relay. This also can be accomplished by using the photocell by-pass switch (SW1).

#### **3.2 SIDELIGHTS**

Line S is sent to the circuit breaker marked “S” which powers the sidelight circuit.

#### **3.3 BEACONS**

Line LD is sent to Module M1. Module M1 is a solid state flasher which its output is sent to circuit breaker “B” which then powers the beacon at 30 fpm with duration of 2/3 on 1/3 off.

## **AA1TSS CONTROLLER**

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### **4.0 TROUBLESHOOTING GUIDE**

#### **4.1 SYMPTOM – BEACON NOT FLASHING**

Check for pulsing 120V AC at circuit breaker “B.” If the circuit breaker is tripped, there may have been a surge or could be a short in the tower wiring. This can be checked by looking for a short between circuit breaker “B” and the ground. If it is okay and 120V AC is not present, then check the PF-250 flasher to see if there is voltage on the input (pin #2). If okay, the flasher module has probably failed and needs to be replaced. If everything appears to be correct, but the beacon still does not work, check the tower wiring and the lamps within the beacon.

#### **4.2 SYMPTOM – SIDELIGHT OUT**

Check for constant 120V AC at circuit breaker “S.” If tripped, check for a short in the tower wiring. If not, and voltage is present, check the tower wiring and the lamp within the sidelights.

#### **4.3 SYMPTOM – CONTROLLER ALWAYS “ON”**

If the tower lights stay on in the daytime, check to see that switch SW1 is off. If the switch is off, then remove the photocell out of the socket. If the lights go out, replace the photocell. If not, check for welded contacts on the PRD. Replace if necessary.



## **AA1TSS CONTROLLER**

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### **5.0 MAINTENANCE GUIDE**

#### **5.1 RED OBSTRUCTION LIGHTING**

The only required maintenance needed to be performed is 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 Advisory Circular 70/7460-1K. By following these instructions, maximum safety and performance can be achieved.

**TOOLS REQUIRED:** NONE

#### **5.2 L-864 LAMP REPLACEMENT**

**5.2.1** Loosen the one (1) wing nut on the latch pin so that it can recline.

**5.2.2** Open the lens and tilt it back.

**5.2.3** To remove each lamp, depress down while rotating the lamp counter-clockwise 90°.

**5.2.4** Install the new lamps by depressing down while rotating the lamp clockwise 90°.

**5.2.5** Close the lens and let the latch pin drop in the recessed slot.

**5.2.6** Tighten the wing nut snug, then ¼ turn more.

#### **5.3 L-810 LAMP REPLACEMENT**

**5.3.1** Unclasp the two (2) latches and let the bails recline back.

**5.3.2** Lift the lens up and over the lamp, letting the lens hang from the safety cable.

**5.3.3** Unscrew the lamp counter-clockwise and remove.

**5.3.4** Install the new lamp by screwing the lamp clockwise.

## **AA1TSS CONTROLLER**

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**5.3.5** Reinstall the lens, making sure it is seated properly on the base.

**5.3.6** Re-clasp the two (2) latches.

### **5.4 L-864 CONTROLLER**

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

### **5.5 PHOTOCELL**

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

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## **AA1TSS CONTROLLER**

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### **6.0 MAJOR COMPONENTS PARTS LIST**

| <b>QTY</b> | <b>PART NUMBER</b>                               | <b>DESCRIPTION</b>              |
|------------|--|---------------------------------|
| 1          | 6390-FAA<br>(This replaces the 102FAA Photocell) | 120 – 240V Photocell            |
| 1          | PF-250<br>(This replaces the FS15530T module)    | Solid State Flasher (M1)        |
| 1          | PRD7AG0  | Mechanical Load Contactor (PRD) |
| 1          | VJ1008HWPL1X004                                  | Enclosure                       |
| 2          | 8WA1808  | End Stop                        |
| 2          | S261D20  | 20 amp Circuit Breaker (B, S)   |
| 6          | 8WA1204  | Single Pole Terminal (TB1, TB2) |
| 1          | MOV524V15  | Metal Oxide Varistor (MOV)      |
| 1          | SSPIGTAIL  | 20' Photocell Pigtail           |
| 1          | STJ01002   | SPDT Switch (SW1)               |

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## **AA1TSS CONTROLLER**

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### **7.0 SUGGESTED SPARE PARTS LIST**

| <b>QTY</b> | <b>PART NUMBER</b>                                  | <b>DESCRIPTION</b>       |
|------------|---|--------------------------|
| 1          | 6390-FAA<br>(This replaces the 102FAA<br>Photocell) | 120 – 240V Photocell     |
| 1          | PF-250<br>(This replaces the FS15530T<br>module)    | Solid State Flasher (M1) |

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## **AA1TSS CONTROLLER**

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### **Warranty & Return Policy**

**TWR Lighting<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** 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<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** warrants its “LED Product” against defects in design, material and workmanship for a period of five (5) years from the date of shipment. TWR<sup>®</sup>, at its sole option, will, itself, or through others, repair, replace or refund the purchase price paid for “LED Product” that TWR<sup>®</sup> 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<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** warrants its “LED Product” against light degradation for a period of five (5) years from the date of installation. TWR<sup>®</sup>, at its sole option, will, itself, or through others, repair, replace, or refund the purchase price paid for “LED Product” that TWR<sup>®</sup> 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.**

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

*Enlightened Technology*

## **AA1TSS 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®, INC., 10810 W. LITTLE YORK RD., #130, HOUSTON, TX 77041-4051, within 30 days of issuance.**

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

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## **AA1TSS 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.

# **TWR Lighting, Inc.** HARK®

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## **AA1TSS 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®. 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® 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® EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED. WITHOUT LIMITING THE GENERALITY OF THE FORGOING, TWR® MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCT(S) FOR ANY PARTICULAR PURPOSE. TWR® EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES.



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## **AA1TSS CONTROLLER**

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

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

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

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

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

---

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

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

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

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**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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## **AA1TSS CONTROLLER**

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

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

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

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

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

---

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

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

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

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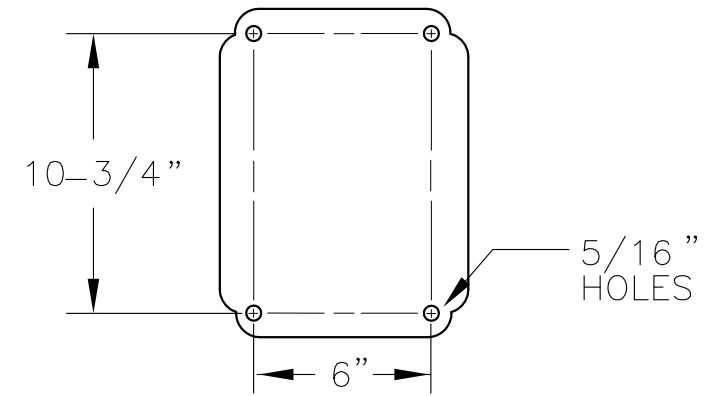
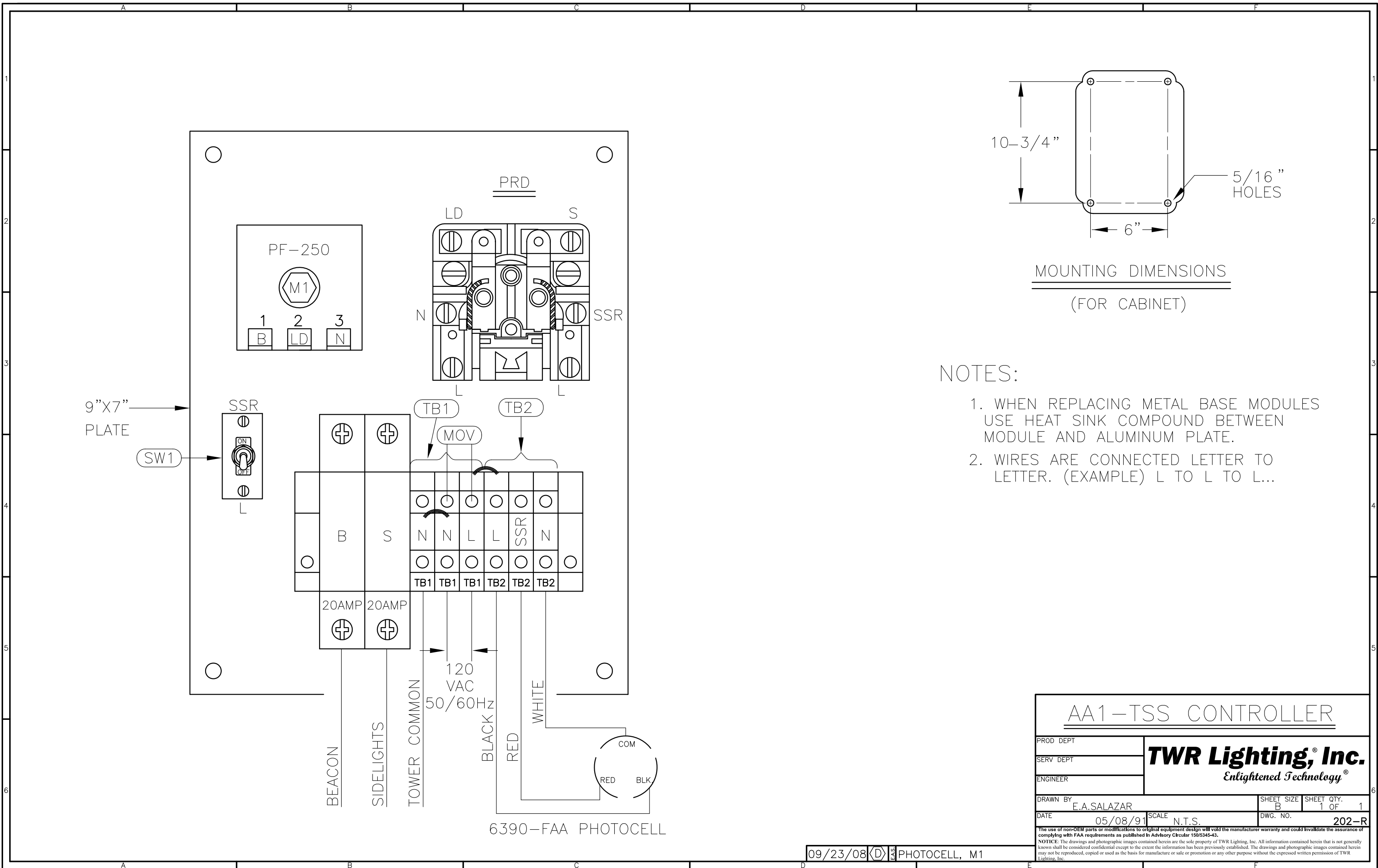
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**SIGNED** \_\_\_\_\_ **DATE NEEDED** \_\_\_\_\_

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

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



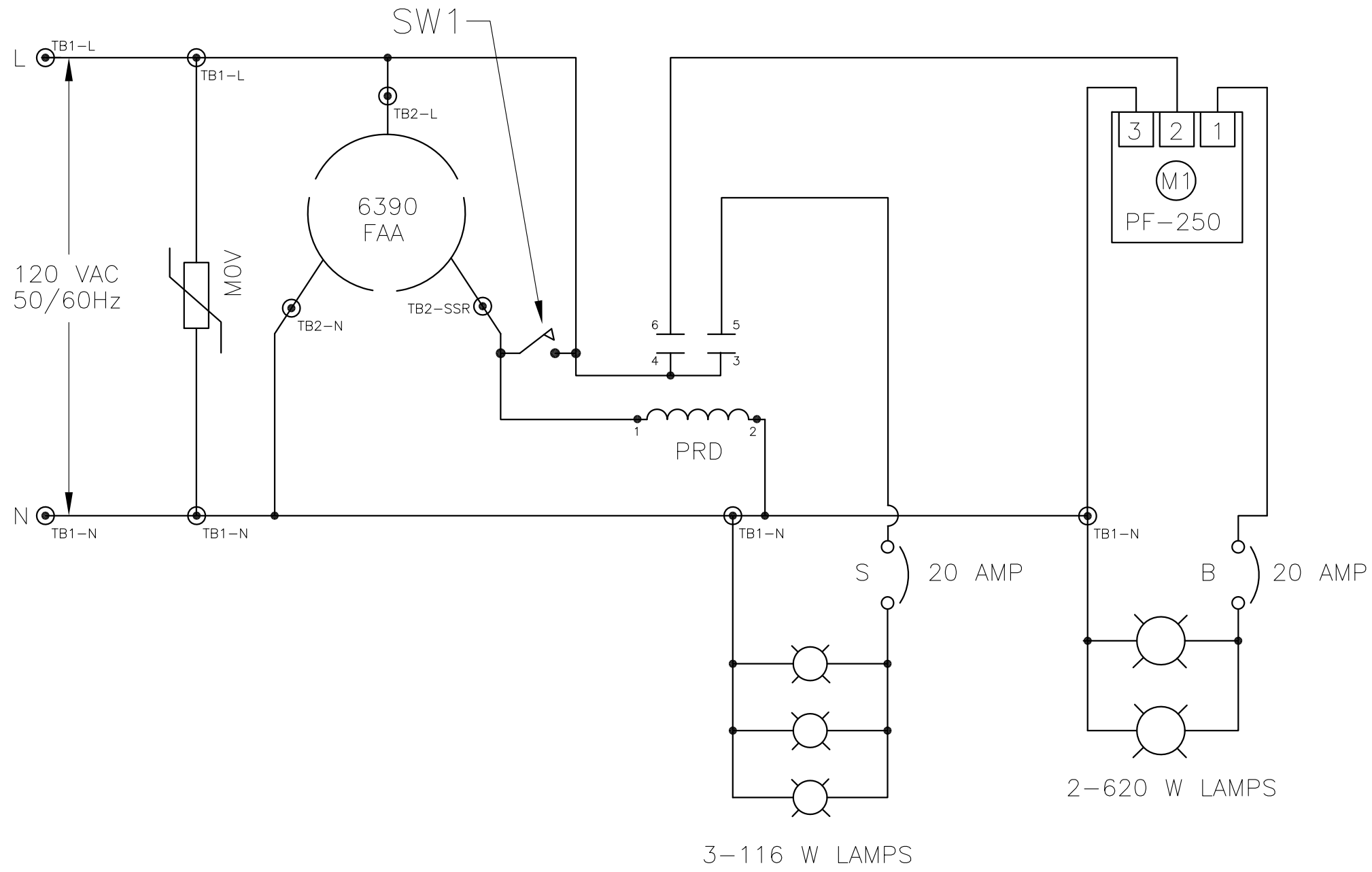
MOUNTING DIMENSIONS  
(FOR CABINET)

NOTES:

1. WHEN REPLACING METAL BASE MODULES USE HEAT SINK COMPOUND BETWEEN MODULE AND ALUMINUM PLATE.
2. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L TO L TO L...

|   |   |                      |  |
|---|---|----------------------|--|
| <b>AA1-TSS CONTROLLER</b>   |   |                      |  |
| PROD DEPT   | <b>TWR Lighting, Inc.</b><br><i>Enlightened Technology®</i> |                      |  |
| SERV DEPT   |   |                      |  |
| ENGINEER  |   |                      |  |
| DRAWN BY<br>E.A.SALAZAR   | SHEET SIZE<br>B   | SHEET QTY.<br>1 OF 1 |  |
| DATE<br>05/08/91  | SCALE<br>N.T.S.   | DWG. NO.<br>202-R    |  |
| <small>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.<br/>         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.</small> |   |                      |  |

09/23/08 (D) PHOTOCELL, M1

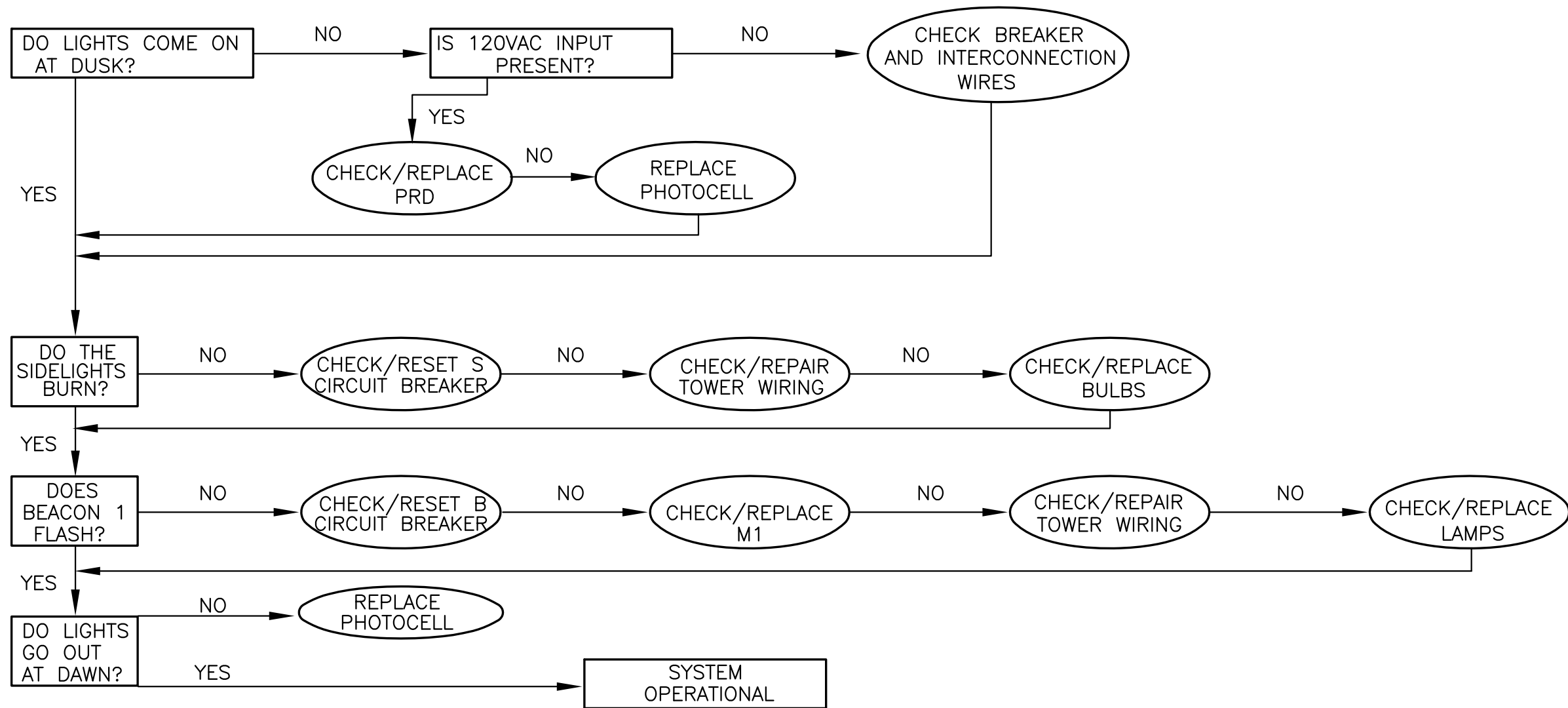


AA1-TSS SCHEMATIC

|                         |  |                      |                   |
|-------------------------|--|----------------------|-------------------|
| PROD DEPT               | <b>TWR Lighting, Inc.</b><br>Enlightened Technology® |                      |                   |
| SERV DEPT               |  |                      |                   |
| ENGINEER                |  |                      |                   |
| DRAWN BY<br>E.A.SALAZAR | SHEET SIZE<br>B                                      | SHEET QTY.<br>1 OF 1 | DWG. NO.<br>202-S |
| DATE<br>06/05/91        | SCALE<br>N.T.S.                                      |                      |                   |

09/23/08 PHOTOCELL

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TROUBLESHOOTING FLOW CHART  
AA1-TSS DWG.#202-R

|                         |  |                      |  |
|-------------------------|--|----------------------|--|
| PROD DEPT               | <b>TWR Lighting, Inc.</b><br>Enlightened Technology® |                      |  |
| SERV DEPT               |  |                      |  |
| ENGINEER                |  |                      |  |
| DRAWN BY<br>E.A.SALAZAR | SHEET SIZE<br>B                                      | SHEET QTY.<br>1 OF 1 |  |
| DATE<br>10/21/98        | SCALE<br>N.T.S.                                      | DWG. NO.<br>202-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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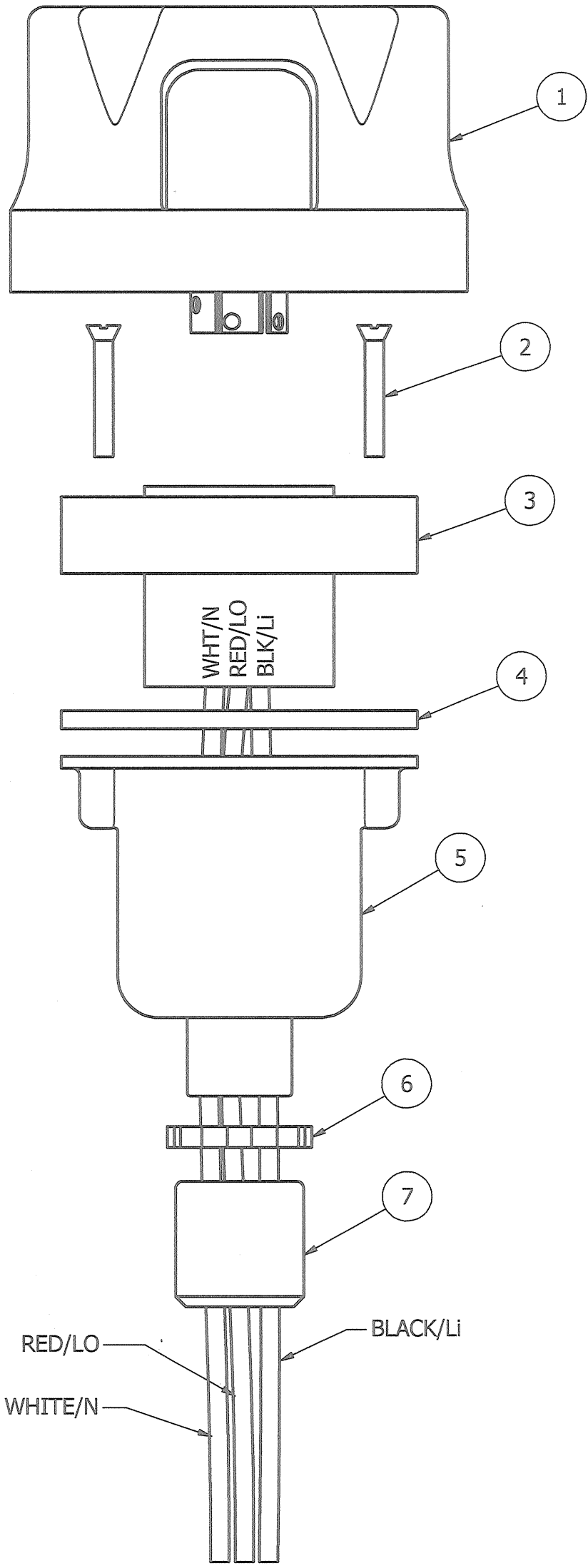
4

3

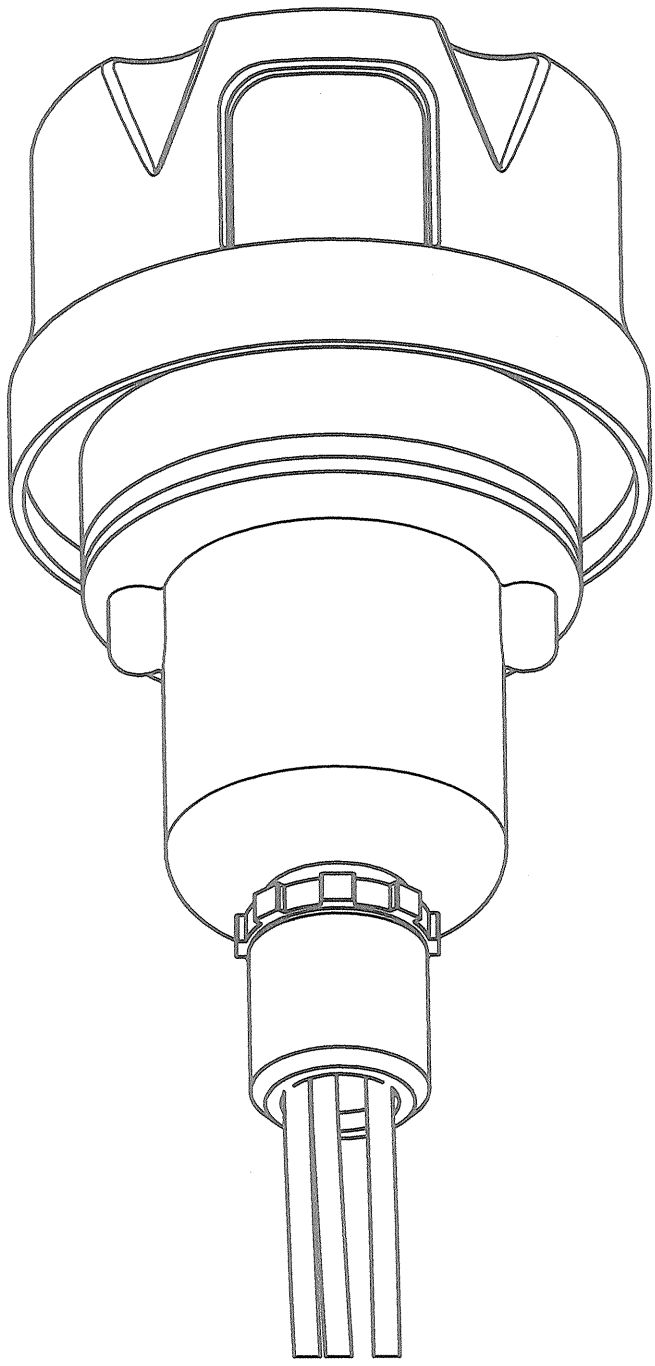
2

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 |

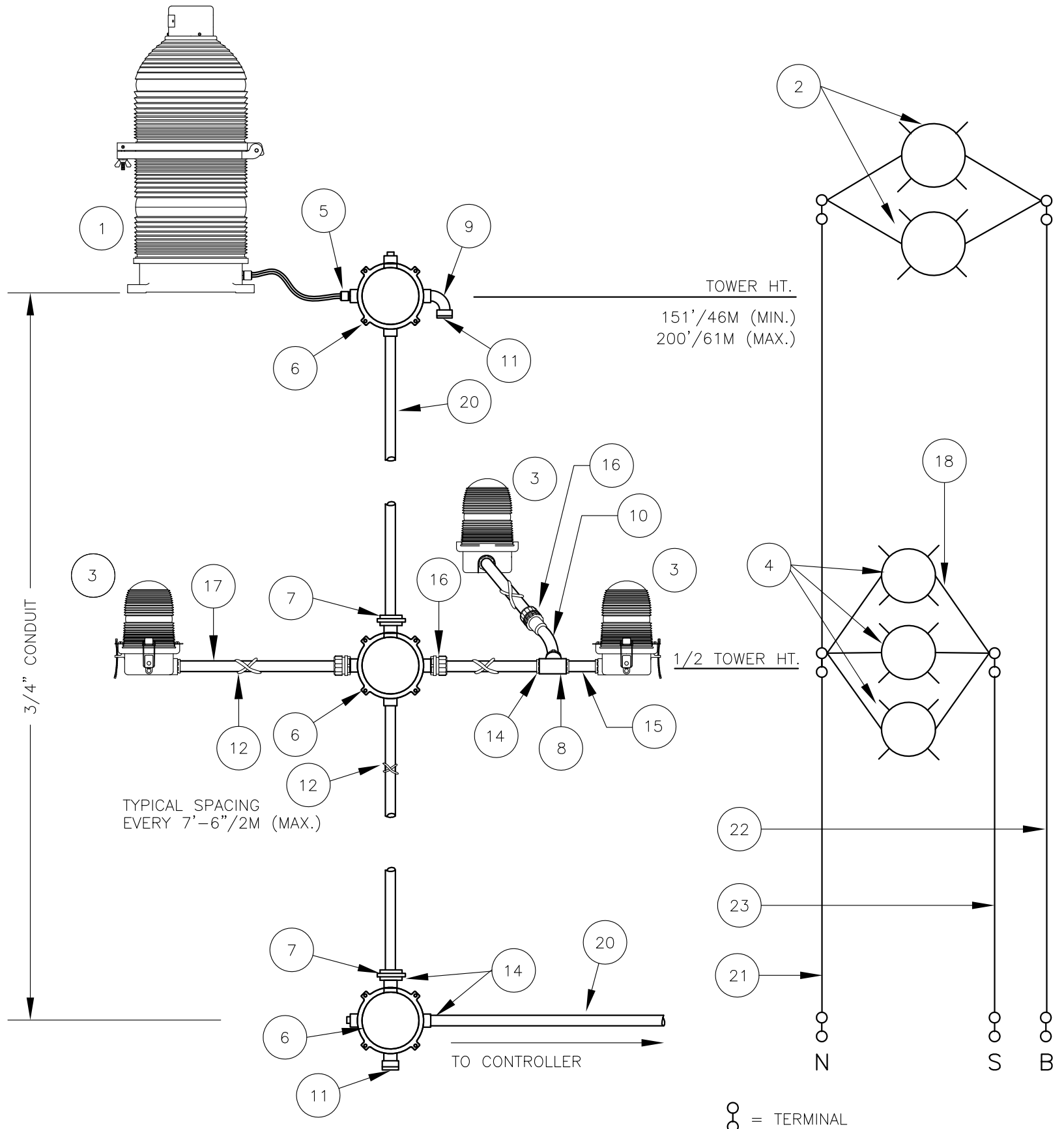
| DATE       | REV | AUTHOR    | DESCRIPTION   |
|------------|-----|-----------|---------------|
| 02/03/2015 | H   | JZAMORANO | UPDATED NOTES |

4

3

2

1



### 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                   |

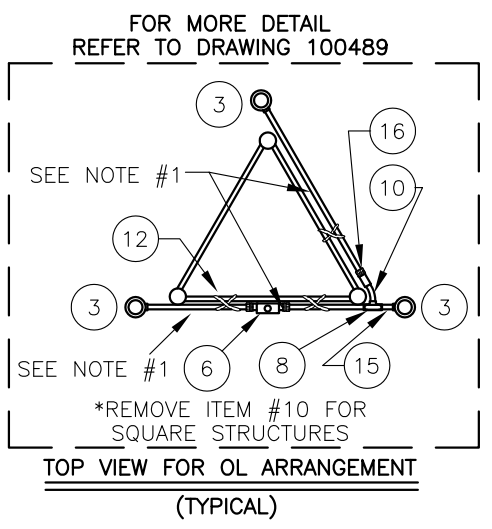
ITEM NUMBERS #20-#23 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

|    |   |           |   |
|----|---|-----------|---|
| 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) |

\* = ITEMS NOT SHOWN

**NOTES:**

- 1) PART #CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION 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.



|   |   |                      |        |
|---|---|----------------------|--------|
| <b>LK3A1 TOWER LIGHTING KIT W/NO BOOST</b><br>(TOWERS 151'/46M TO 200'/61M) |   |                      |        |
| PROD DEPT   | <b>TWR Lighting, Inc.</b><br><i>Enlightened Technology®</i> |                      |        |
| SERV DEPT   |   |                      |        |
| ENGINEER  |   |                      |        |
| DRAWN BY<br>G.D. SEBEK  | SHEET SIZE<br>B   | SHEET QTY.<br>1 OF 1 | 1      |
| DATE<br>3/5/94  | SCALE<br>N.T.S.   | DWG. NO.             | 260-13 |

|          |      |        |                    |
|----------|------|--------|--------------------|
| 12/03/07 | (E)  | J.L.B. | CHG OL ARRANGEMENT |
| DATE:    | LTR. |        | 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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### 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        | 2    | JB0          | 3/4" STRAIN RELIEF BOX           |
| 8        | 6    | UNY205       | 3/4" UNION                       |
| 9        | 2    | T27CG        | 3/4" CONDULET W/COVER AND GASKET |
| 10       | 2    | EL3490       | 3/4" 90° SHORT ELBOW             |
| 11       | 1    | EL3430       | 3/4" 30° ELBOW                   |
| 12       | 2    | 5012902      | 3/4" BREATHER                    |
| 13       | 1    | SS10012      | WRAPLOCK                         |
| * 14     | 1    | PIPDOP       | 4 oz. PIPE DOPE                  |
| 15       | 16   | A314         | 3/4" CONDUIT LOCKNUTS            |
| 16       | 3    | HC402        | 3/4" NO THREAD CONNECTOR         |
| 17       | 3    | N34T3        | 3/4" x 3" NIPPLE                 |
| 18       | 30'  | CONDUIT34    | 3/4" CONDUIT (FOR OLS)           |
| 19       | 3    | SLPIGTAIL25  | 25' SIDELIGHT PIGTAIL            |
| * 20     | 1    | AA1          | AA1 CONTROLLER                   |

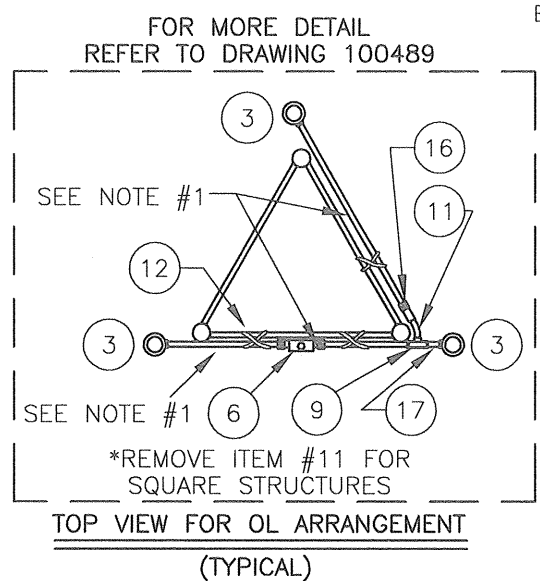
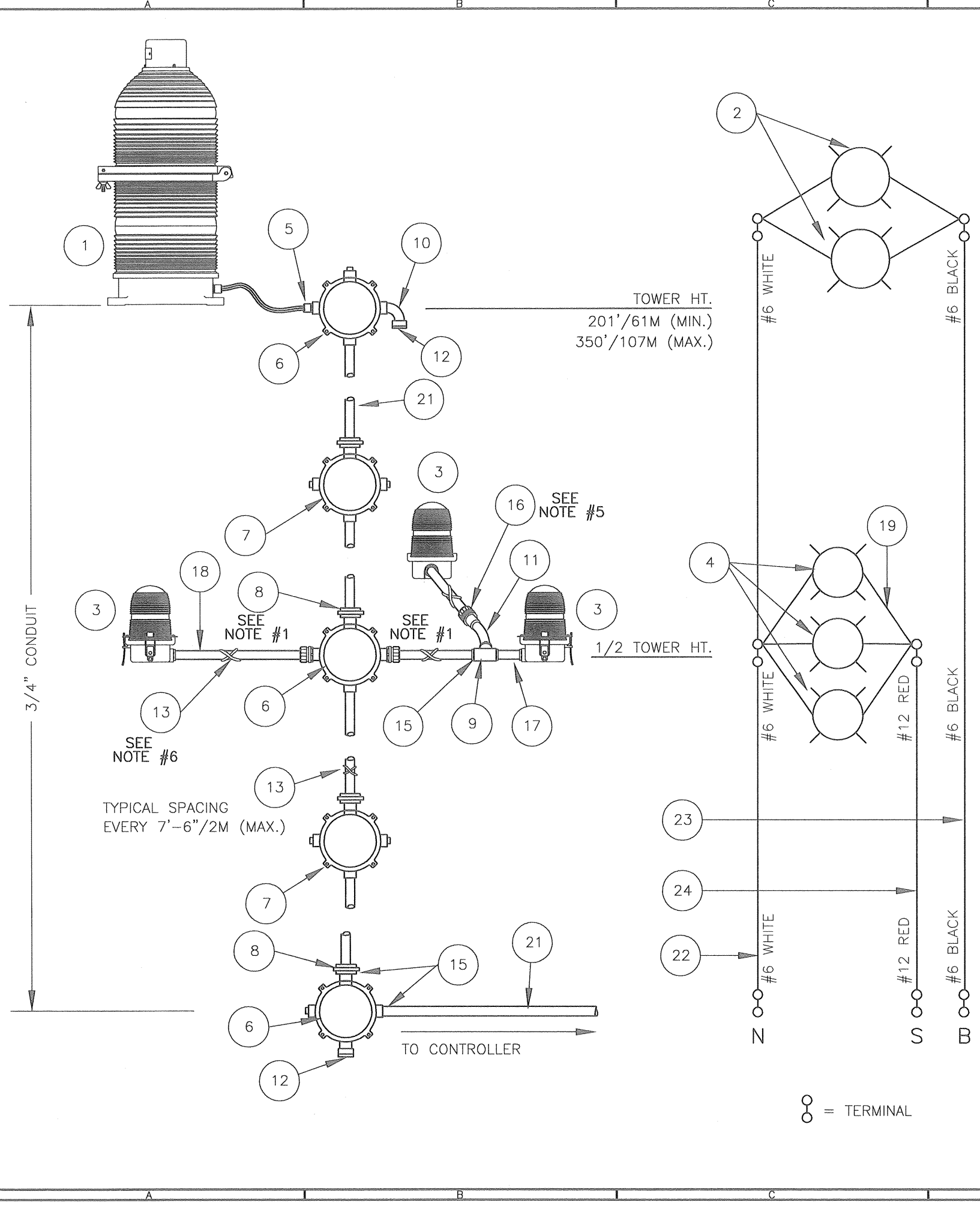
ITEM NUMBERS #21-#24 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

|    |   |           |   |
|----|---|-----------|---|
| 21 | - | CONDUIT34 | 3/4" CONDUIT (TOWER HT. + 30'/9M)       |
| 22 | - | 6THHNWHT  | #6 THHN WHT. WIRE (TOWER HT.+40'/12M)   |
| 23 | - | 6THHNBK   | #6 THHN BLK. WIRE (TOWER HT.+40'/12M)   |
| 24 | - | 12THHNRED | #12 THHN RED WIRE (1/2 TWR HT.+40'/12M) |

\* = ITEMS NOT SHOWN

#### NOTES:

- ITEM #CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION OF OL1 (6"-12") FROM STRUCTURE. ATTACH ITEM #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.
- USE COUPLING THAT IS PROVIDED WITH ITEM #CONDUIT34 TO ATTACH ITEM #EL3430 TO ITEM #HC402.
- STAINLESS STEEL WRAPLOCK TO BE ATTACH TO OL CONDUIT EVERYWHERE IT MEETS STRUCTURE.



|          |      |             |
|----------|------|-------------|
| 11/11/04 | (E)  | UPDATED BOM |
| DATE:    | LTR. | REVISION    |

(NO BOOST)

LK4A1 TOWER LIGHTING KIT W/3 OL-1  
(TOWERS 201'/61M TO 350'/107M)

PROD DEPT

SERV DEPT

ENGINEER

DRAWN BY G.D. SEBEK

DATE 03/05/94

SCALE N.T.S.

SHEET SIZE B

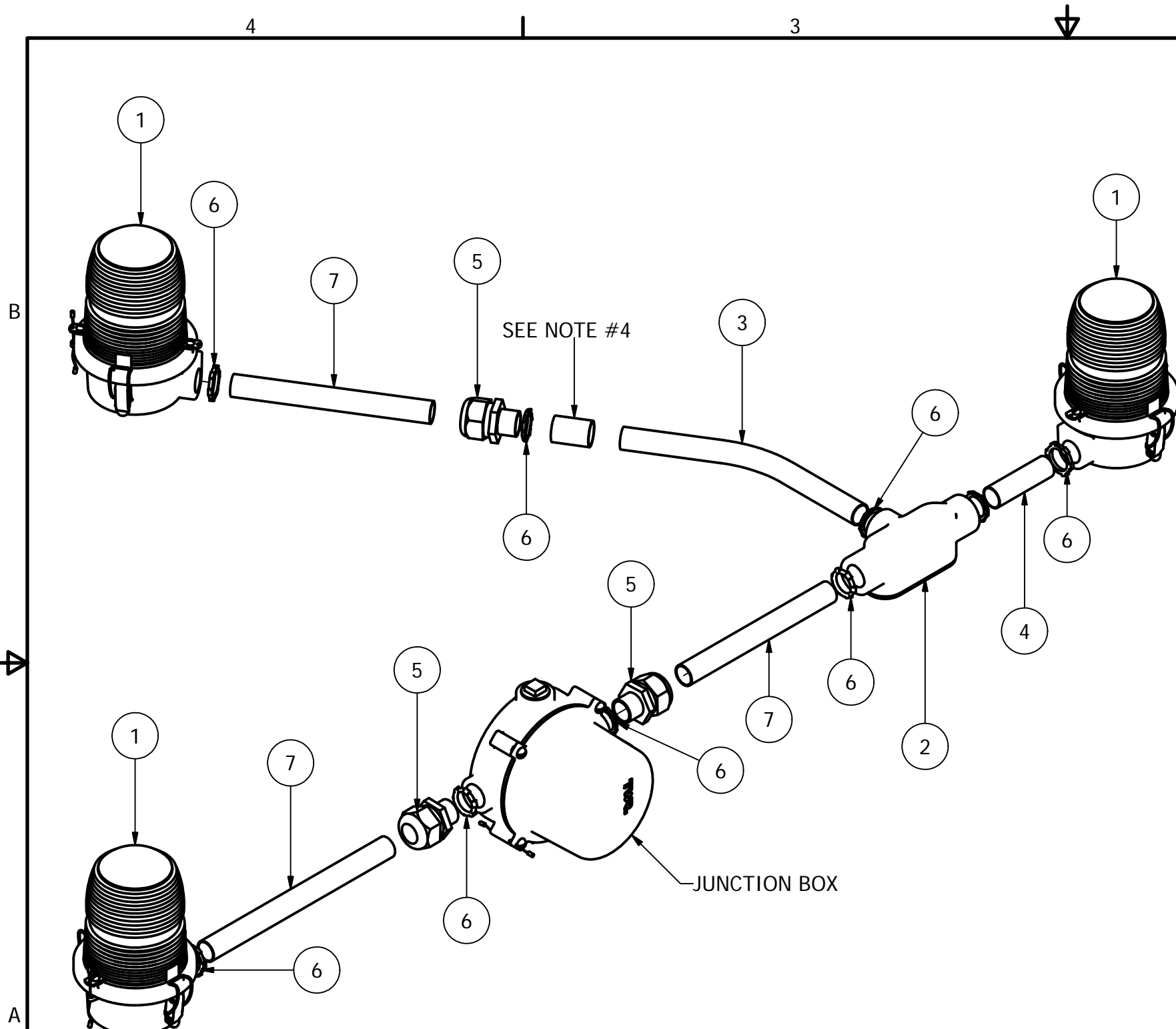
SHEET QTY. 1 OF 1

DWG. NO. 260-14

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

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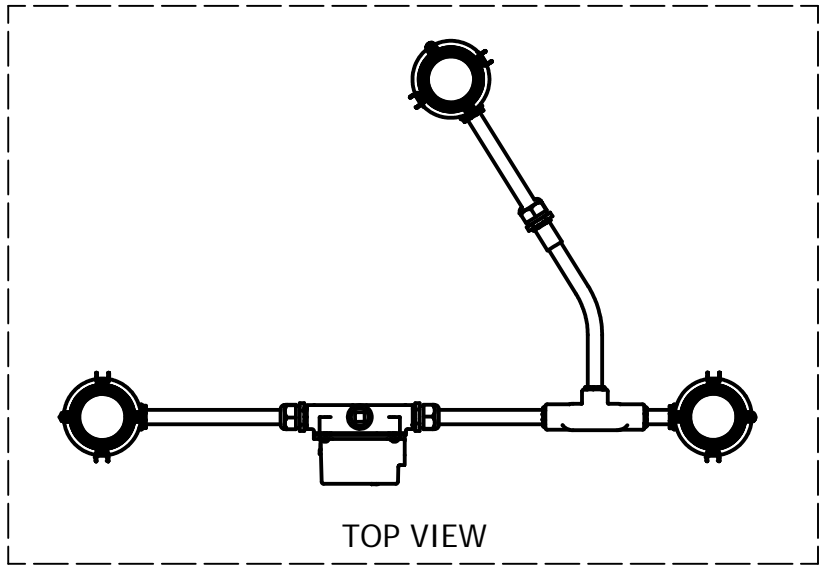




ISOMETRIC VIEW

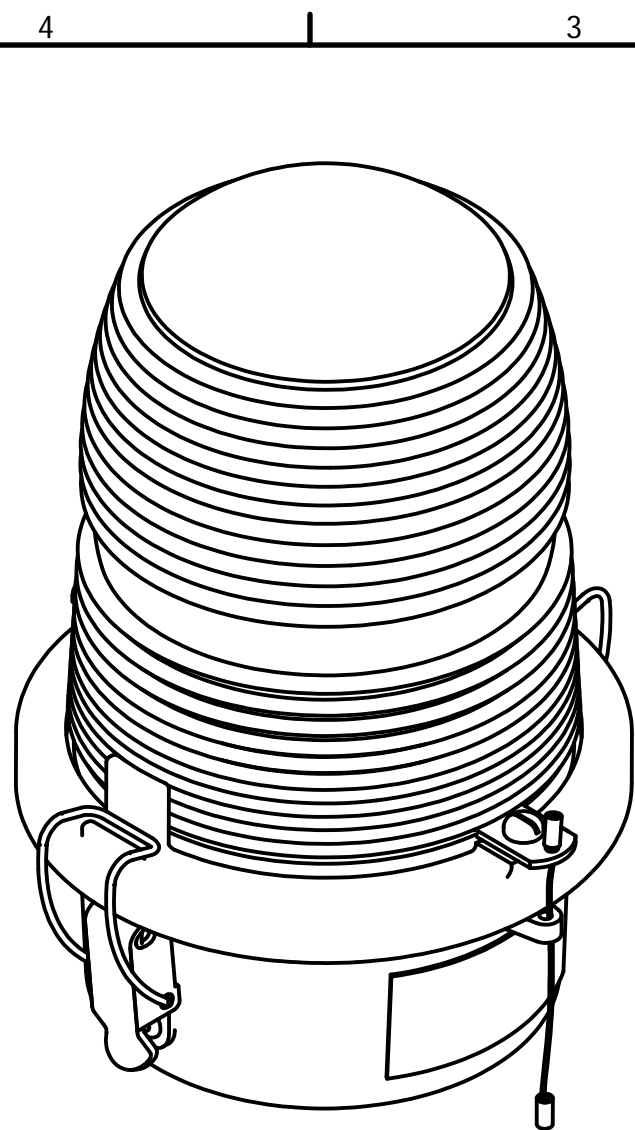
| Parts List |     |             |                                  |
|------------|-----|-------------|----------------------------------|
| ITEM       | QTY | PART NUMBER | DESCRIPTION                      |
| 1          | 3   | OL1/LED     | 3/4" OBSTRUCTION LIGHT           |
| 2          | 1   | 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<br>jbustamante | 1/4/2008 | <b>TWR Lighting, Inc.</b><br><i>Enlightened Technology®</i><br><b>SIDELIGHT MOUNT ASSEMBLY</b><br>(10' FACE WIDTH MAX) |                  |          |
| CHECKED              |          |  |                  |          |
| QA                   |          |  |                  |          |
| MFG                  |          |  |                  |          |
| APPROVED             |          |  |                  |          |
|                      |          | SIZE<br>B  | DWG NO<br>100489 | REV<br>A |
|                      |          | SCALE  | SHEET 1 OF 1     |          |

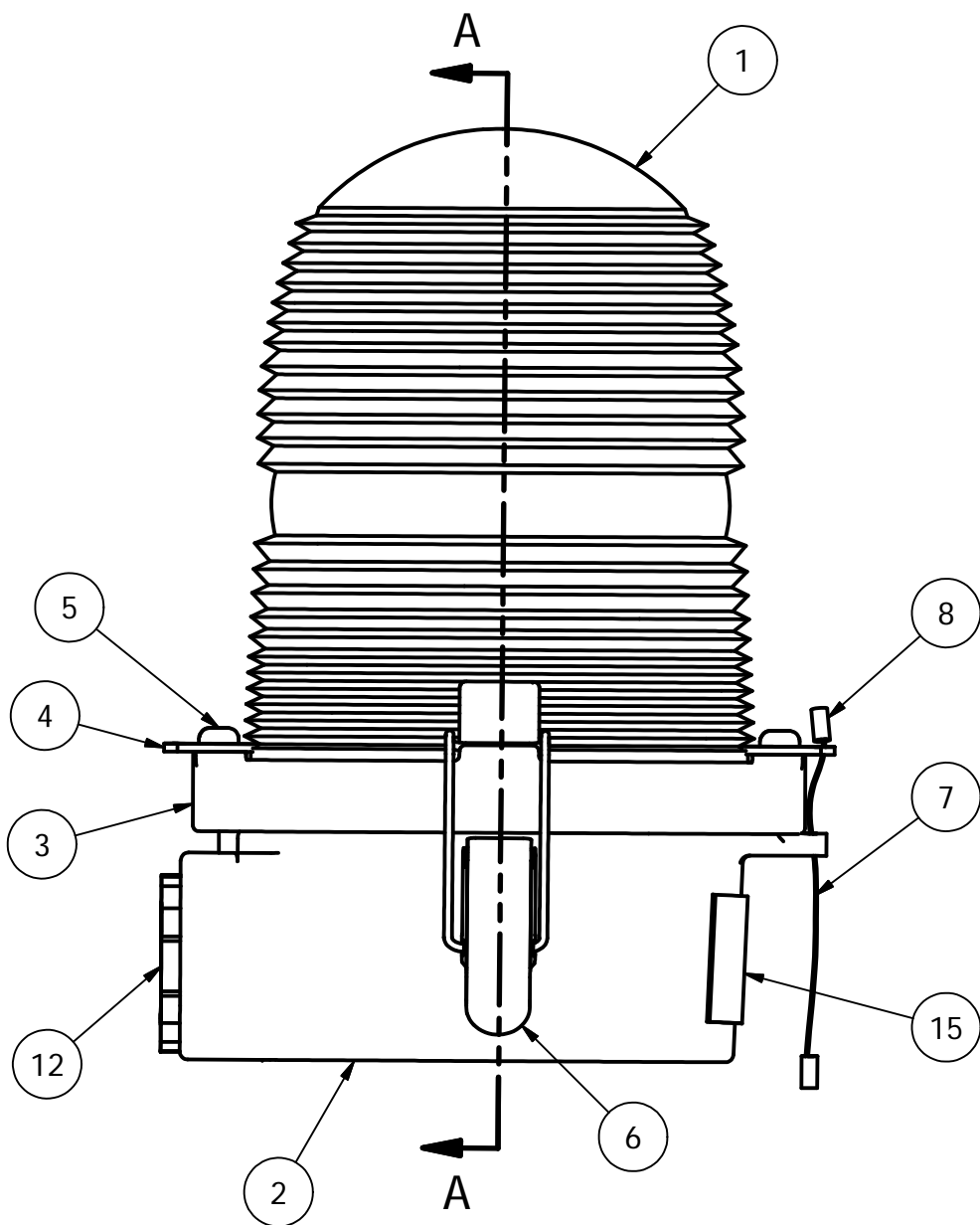
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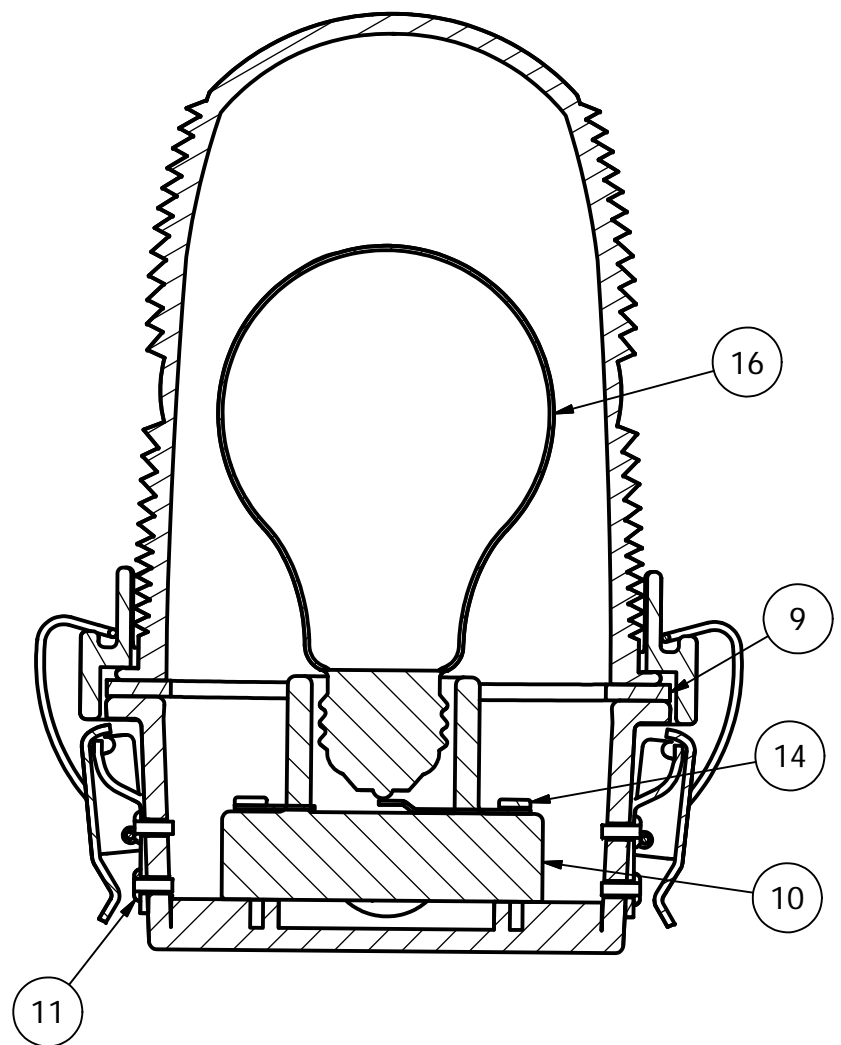
| PARTS LIST |     |             |                              |
|------------|-----|-------------|------------------------------|
| ITEM       | QTY | PART NUMBER | DESCRIPTION                  |
| 1          | 1   | AP35222     | RED SIDELIGHT GLASS          |
| 2          | 1   | 105C        | SINGLE 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.

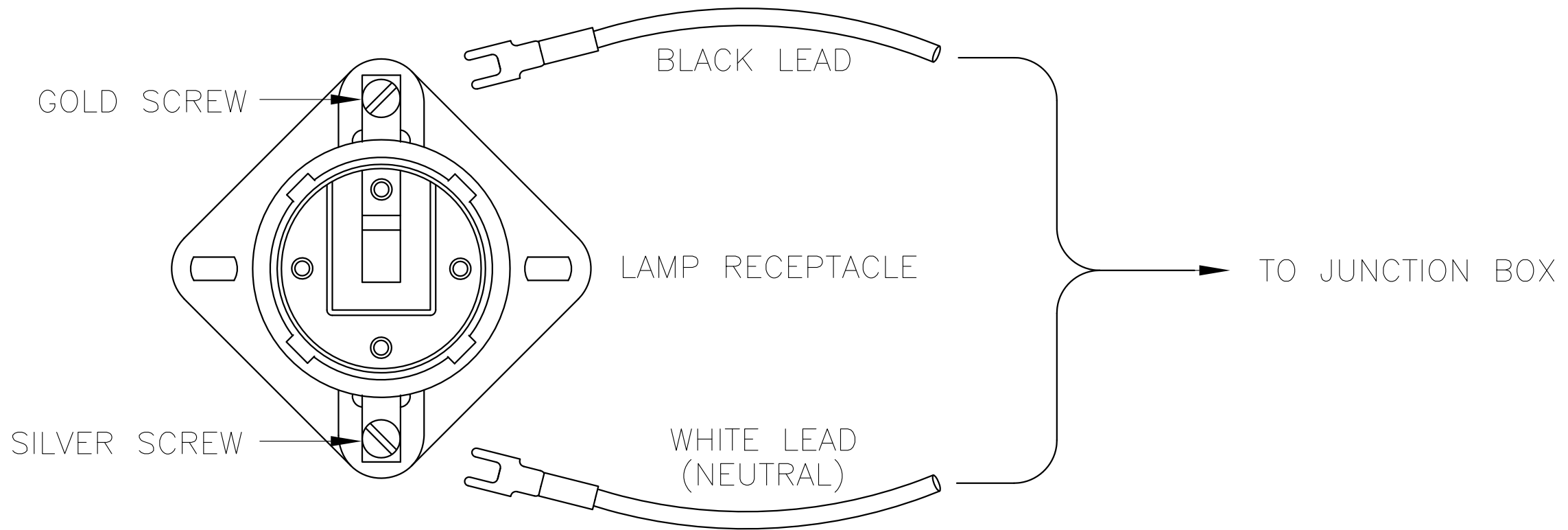


SECTION A-A



|          |            |           |
|----------|------------|-----------|
| DRAWN    | vhernandez | 2/13/2012 |
| CHECKED  |            |           |
| QA       |            |           |
| MFG      |            |           |
| APPROVED |            |           |

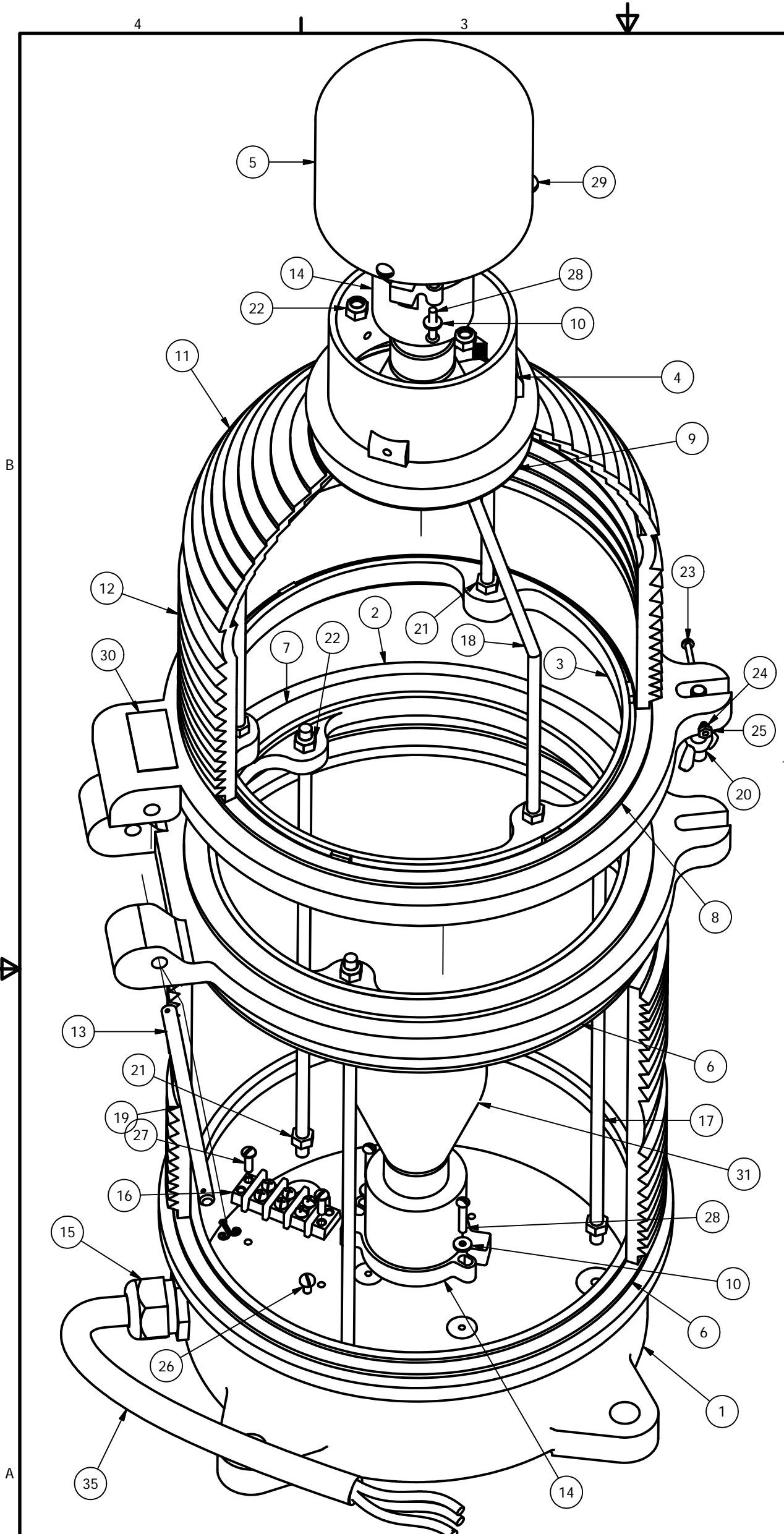
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|--|--------------|-----|
| <b>TWR Lighting, Inc.</b><br><i>Enlightened Technology</i> |              |     |
| TITLE  |              |     |
| 3/4" OL1 SIDE HUB<br>ASSEMBLY DETAIL (PART#OL1)            |              |     |
| SIZE   | DWG NO    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



|                                    |  |            |            |
|------------------------------------|--|------------|------------|
| <b>SIDELIGHT RECEPTACLE WIRING</b> |  |            |            |
| PROD DEPT                          | <b>TWR Lighting, Inc.</b><br><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      |

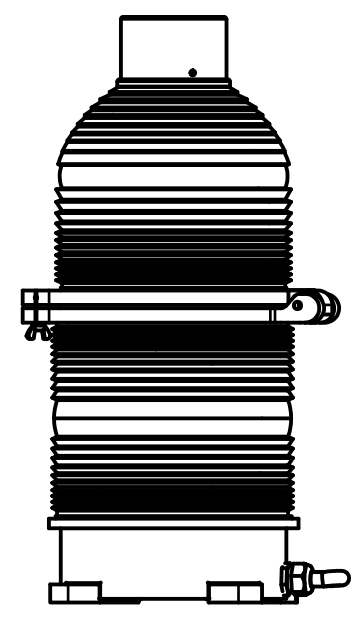
|        |      |               |
|--------|------|---------------|
| 7/2/98 | (A)  | CHANGED LABEL |
| DATE:  | LTR. | REVISION      |

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| 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

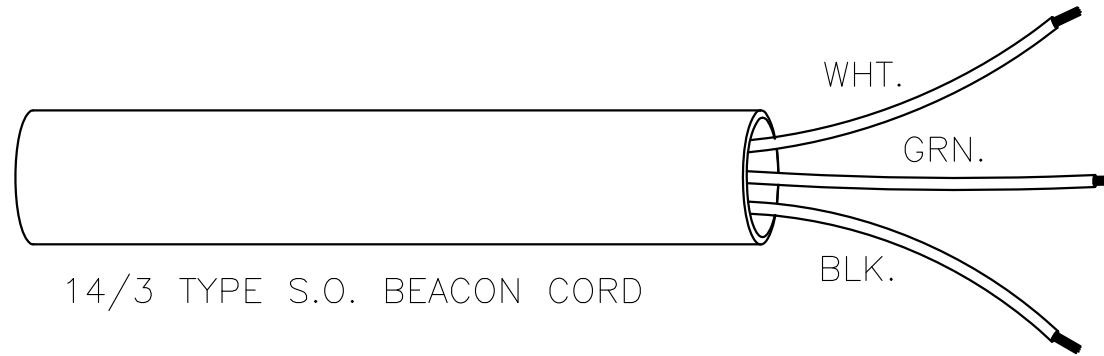
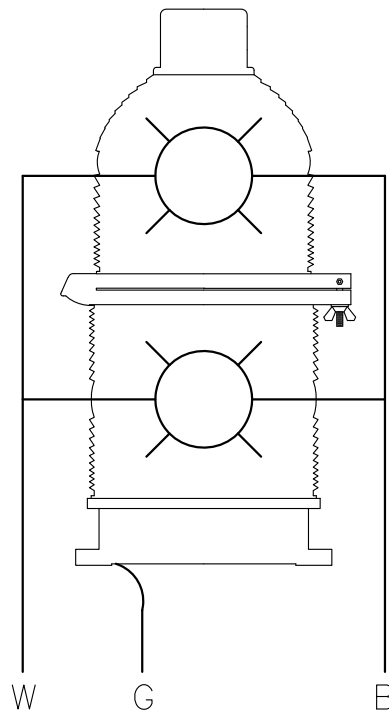


|                         |          |   |                 |          |
|-------------------------|----------|---|-----------------|----------|
| DRAWN<br>J.L.BUSTAMANTE | 11/27/07 | <b>TWR Lighting, Inc.</b><br><i>Enlightened Technology®</i><br><b>300 MM BEACON ASSEMBLY DETAIL</b> |                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

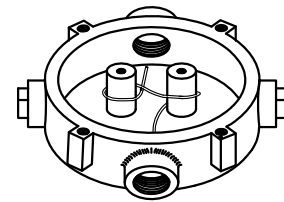
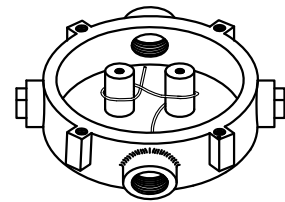
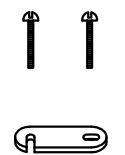
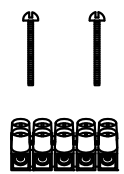
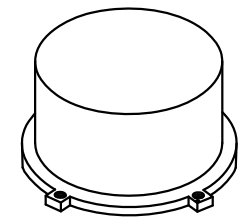
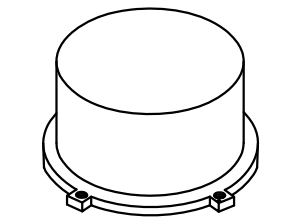
300 MM BEACON



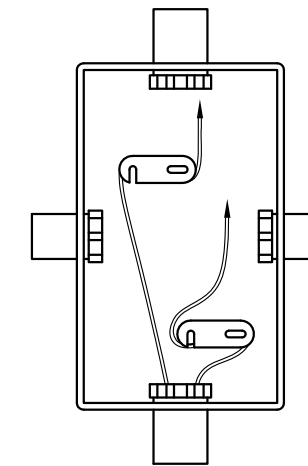
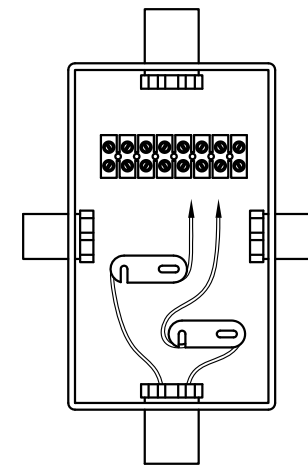
300 MM BEACON WIRE

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

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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.

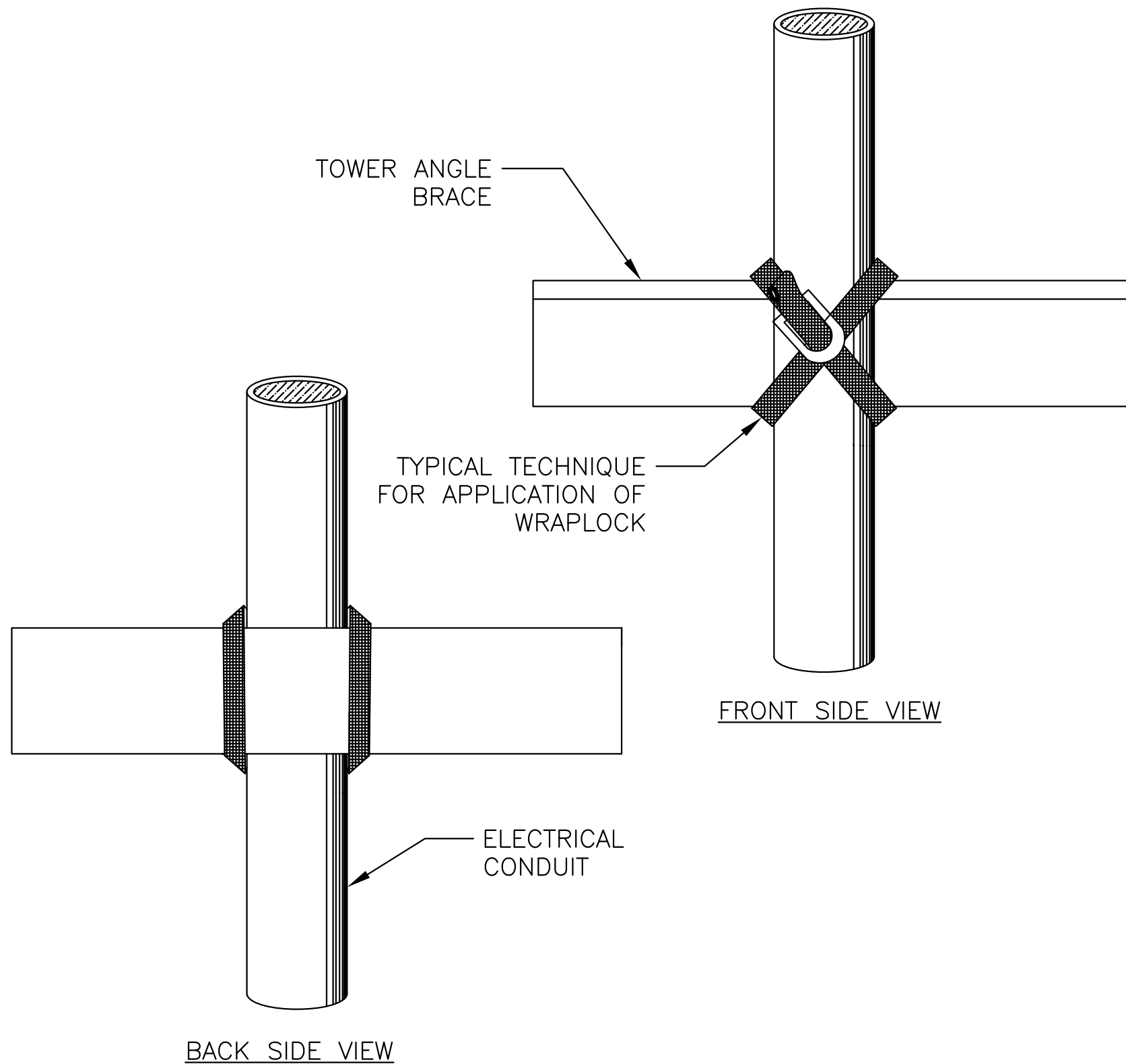
USING THIS JUNCTION BOX METHOD SPACING IS 100 FEET MAXIMUM.

| 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><br><i>Enlightened Technology®</i> |            |            |
| SERV DEPT                               |   |            |            |
| ENGINEER                                |   |            |            |
| DRAWN BY                                | G.D. SEBEK  | SHEET SIZE | SHEET QTY. |
| 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<br>M. PETERMAN                                  | SHEET SIZE<br>B | SHEET QTY.<br>1 OF 1 |
| APPROVED | DATE<br>05/01/2014                                       | SCALE<br>N.T.S. | DWG. NO.<br>100984   |

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