

TWR Lighting, Inc.

4300 WINDFERN RD., SUITE 100 HOUSTON, TX 77041-8943

VOICE (713) 973-6905 FAX (713) 973-9352

WEB: 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 #	<u>AA1-M</u>
SERIAL #	<u></u>
PURCHASE DATE	<u></u>
PURCHASED FROM	<u></u>

AA1-M CONTROLLER

TABLE OF CONTENTS

1.0	GENERAL INFORMATION	4
2.0	INSTALLATION	5
2.1	POWER SUPPLY CONTROL CABINET MOUNTING	5
2.2	EXTERNAL PHOTOCELL WIRING	6
2.3	POWER WIRING.....	6
2.4	RED BEACON, SIDELIGHT AND LOAD BALANCE RESISTOR WIRING	6
2.5	RED BEACON AND SIDELIGHT ALARM WIRING.....	7
3.0	THEORY OF OPERATION	9
3.1	THE POWER SUPPLY.....	9
3.2	THE SIDELIGHTS	9
3.3	BEACON	9
3.4	LOAD BALANCE RESISTOR.....	9
4.0	MAINTENANCE GUIDE	10
4.1	RED OBSTRUCTION LIGHTING	10
4.2	L-864 LAMP REPLACEMENT.....	10
4.3	LAMP REPLACEMENT	10
4.4	L-864 CONTROLLER.....	11
4.4	PHOTOCELL.....	11
5.0	MAJOR COMPONENTS LIST	12
6.0	SUGGESTED SPARE PARTS LIST	13
	WARRANTY & RETURN POLICY	14
	RETURN GOODS AUTHORIZATION FORM (RGA).....	16

AA1-M CONTROLLER

APPENDIX

CHASSIS LAYOUT	1113-R
SCHEMATIC LAYOUT	1113-S
TROUBLE SHOOTING FLOW CHART	1113-F
PHOTOCELL HOUSING DETAIL	100239
TOWER LIGHTING KIT 151' TO 200'	260-11
.....	260-13
TOWER LIGHTING KIT 201' TO 350'	260-12
.....	260-14
OL-1 LIGHT LEVEL DETAIL	100188
L-810 OL-1 SINGLE OBSTRUCTION LIGHT	FM10018RB
L-810 OL-1 SINGLE OBSTRUCTION LIGHT DETAIL	279-OL
L-810 OL-1 WIRING DETAIL	274-S
L-864 FM 300 MM BEACON	FM10017
L-864 FM 300 MM BEACON	275-B
L-864 FM 300 MM WIRING DETAIL	273-B
LOAD BALANCE RESISTOR DETAIL	276-R
JUNCTION BOX DETAIL	100089

AA1-M CONTROLLER

1.0 GENERAL INFORMATION

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

The photocell is the tree (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 fail.

AA1-M CONTROLLER

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 113-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 "COM", the black wire is connected to the socket terminal marked "B", and the red wire is connected to the socket terminal marked "R". These socket connections are made by using .25' quick connect terminals, which must be crimped to the wires. As above, the photocell should be positioned so that it does not "see" ambient light, which would prevent it from switching to the nightmode.
- 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.

AA1-M CONTROLLER

- 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".
- 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 and 276-R)

Install wiring between the controller to the beacon utilizing either strobe cable or conduit method. Refer to Drawings 1113-R, 260-11 through 260-14 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. Incases such as these, the drawings will proceed the manual if a conflict occurs.

AA1-M CONTROLLER

- 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 of the terminal blocks on TB1 marked "N".

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!!

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

- 2.5.1 Alarm relays K1-K3, and alarm Modules M1 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) pair 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.
 - 2.5.2.2 Lights "ON" Alarm: Connect to relay K2, terminal #3, for normally open (OR) terminal #6, for

AA1-M CONTROLLER

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 M1, terminal T6, for normally open (OR) terminal T7, 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. **NOTE: (Indication will be delayed 8 – 10 seconds for all the beacon and sidelight relays to position themselves.)**

2.5.3.3 Beacon and Sidelights: Trip circuit breakers on the controller panel.

AA1-M CONTROLLER

3.0 THEORY OF OPERATION

3.1 THE POWER SUPPLY

120V AC enters the controller from the circuit breaker panel. Lines sit at the PRD, waiting to be switched, and also keeps the power failure relay K1 energized. When the 102FAA 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. Each SCR430T 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 M2 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 M2 is sent through the current sensing Module M1 to the circuit breaker output "B". If Module M1 detects a lamp burnout, then that module would 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 M1 detects a flasher failure, then that module would provide voltage to relay K3, which would provide a contact closure along with a visual indication for that beacon circuit.

3.4 LOAD BALANCE RESISTOR

AA1-M CONTROLLER

The output of Module M2 (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 to the beacon to even the current draw on the generator system.

AA1-M CONTROLLER

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

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

4.2 LAMP REPLACEMENT

- 4.2.1 Unclasp the two (2) latches and let the bail recline back.
- 4.2.2 Lift the lens up and over the lamp letting the lens hang from the safety cable.
- 4.2.3 Unscrew the lamp counter-clockwise and remove.

AA1-M CONTROLLER

4.2.4 Install the new lamp by screwing the lamp clockwise.

4.2.5 Reinstall the lens; making sure it is seated properly on the base.

4.2.6 Reclasp the two (2) latches.

4.3 L-864 CONTROLLER

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

4.4 PHOTOCELL

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

AA1-M CONTROLLER

5.0 MAJOR COMPONENTS LIST

QUANTITY #	DESCRIPTION	PART NUMBER
1	PHOTOCELL	102FAA
1	SOLID STATE FLASHER (M2)	FS15530T
1	SOLID STATE AUXILIARY FLASHER (M3)	FA155
1	MECHANICAL LOAD CONTACTOR (PRD)	PRD7AGO
1	BEACON FAILURE DETECTOR (M1)	FN120A
2	SPDT RELAY (K1 AND K3)	X9KE-115V
1	SIDELIGHT BURNOUT DETECTOR (M4)	SCR430T
1	TIME DELAY RELAY (K2)	SPEC224
1	ENCLOSURE	VJ1412HWPL2
1	15 amp SPDT SWITCH (SW1)	STJ02002
4	METAL OXIDE VARISTOR (MOV1 – MOV4)	MOV524V15
3	20 amp BREAKER (B, R, AND S)	5SX2120-8
2	END STOP	8WA1808
6	TERMINAL BLOCKS (TB1, TB2)	8WA1204
3	OCTAL SOCKETS (K1-K3)	PB27E122

AA1-M CONTROLLER

6.0 SUGGESTED PARTS LIST

QUANTITY#	PART NUMBER	DESCRIPTION
1	102FAA	PHOTOCELL
1	FS15530T	SOLID STATE FLASHER (M2)
1	PRD7AGO	LOAD CONTACTOR (PRD)

AA1-M CONTROLLER

Warranty & Return Policy

TWR Lighting, Inc. ("TWR") warrants its products (other than replacement parts) 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.

Replacement parts 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:

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

Field Service – Repairs are warranted for 90 days from the date of service, except where TWR has made recommendations that were not adhered to that may cause premature failure on previous repairs. Labor, Travel, and Tower Climb are not covered under warranty. Customer shall be obligated to pay for all incurred charges not related to warranty. All warranty repairs are performed by trained TWR personnel, or dispatched through an extensive network of certified and insured subcontractors.

Return Policy

Return Terms – You must first contact our Product Support Administrative Assistant at **(713-973-6905)** to acquire a Return Goods Authorization (RGA) number in order to return the product(s). Please have the following information available when requesting an RGA number:

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

This RGA number must be clearly visible on the outside of the box. If the RGA 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 RGA's must be received by TWR 4300 Windfern Rd., Suite 100, Houston TX 77041-8943, within 30 days of issuance.

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

AA1-M CONTROLLER

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 Goods Authorization (RGA) 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.

- Product(s) that is deemed defective and/or un-repairable and covered under warranty, a credit will be issued to the customer's account.
- Product(s) that are found to have no defect will be subject to a **\$60.00 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.
- Product(s) under warranty, which the customer does not wish returned, the customer will be issued a credit against the replacement invoice.

Repair & Return – A Return Goods Authorization (RGA) will be issued for all part(s) returned to TWR 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 un-repairable or the returned part(s) is found to have no defect, the customer will be subject to a **\$60.00 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.

Return to Stock – Any order that is returned to TWR for part(s) ordered incorrectly by the customer or unneeded upon receipt, the customer is required to pay a **20% restocking fee.** A credit will be issued once it is determined that the Return Terms are 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.

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 PRODUCTS TO OPERATE FOR ANY TIME, AND ALL OTHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING ALL PERSONAL INJURY PROPERTY DAMAGE DUE TO ALLEGED NEGLIGENCE, STRICTLY LIABLE, OR ANY OTHER LEGAL THEORY WHATSOEVER. THIS WARRANTY IS MADE BY **TWR** EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, **TWR** MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCTS FOR ANY PARTICULAR PURPOSE. **TWR** EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES.

AA1-M CONTROLLER

TWR Lighting, Inc.

RETURN GOODS AUTHORIZATION FORM (RGA)

RGA#: _____ 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: _____

AA1-M CONTROLLER

PLEASE RETURN PRODUCT TO: 4300 WINDFERN RD #100 HOUSTON TX 77041-8943

TWR Lighting, Inc.

RETURN GOODS AUTHORIZATION FORM (RGA)

RGA#: _____ **DATE:** _____

CUSTOMER: _____

CONTACT: _____ **PHONE NO.:** _____

ITEM DESCRIPTION (PART NO.): _____

MODEL NO.: _____ **SERIAL NO.:** _____

ORIGINAL TWR INVOICE NO.: _____ **DATED:** _____

DESCRIPTION OF PROBLEM: _____

SIGNED _____ **DATE NEEDED** _____

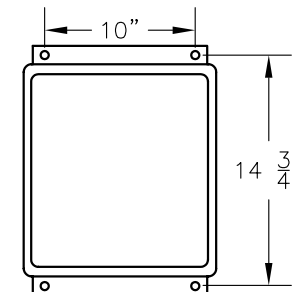
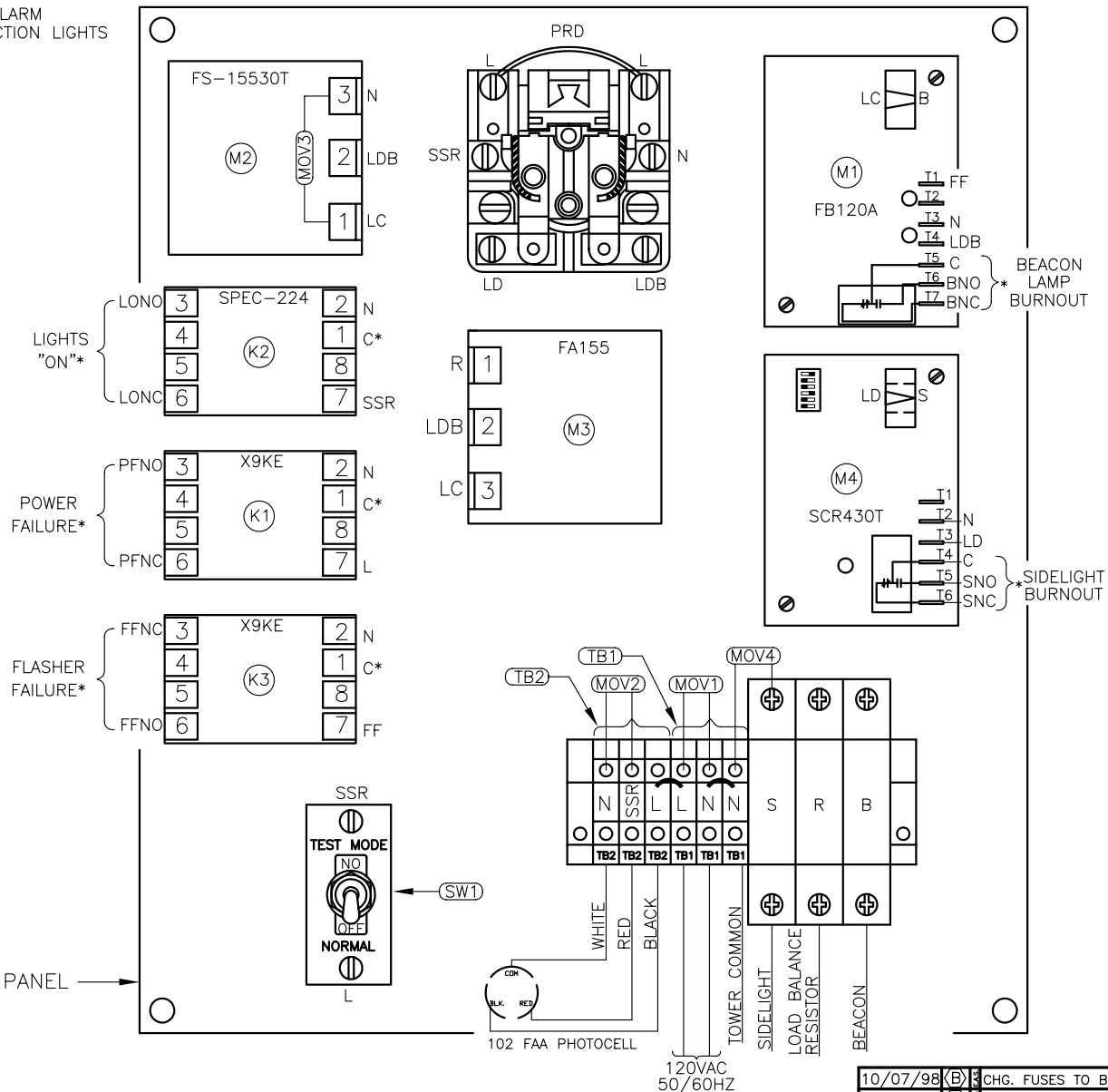
C:\Documents and Settings\esalazar\Local Settings\Temporary Internet Files\OLK19\AA1M Rev 033103.doc

AA1-M CONTROLLER

RETURN ADDRESS: _____

PLEASE RETURN PRODUCT TO: 4300 WINDFERN RD #100 HOUSTON TX 77041-8943

*=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 102 FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
3. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L TO L TO L.

AA1-M CHASSIS LAYOUT

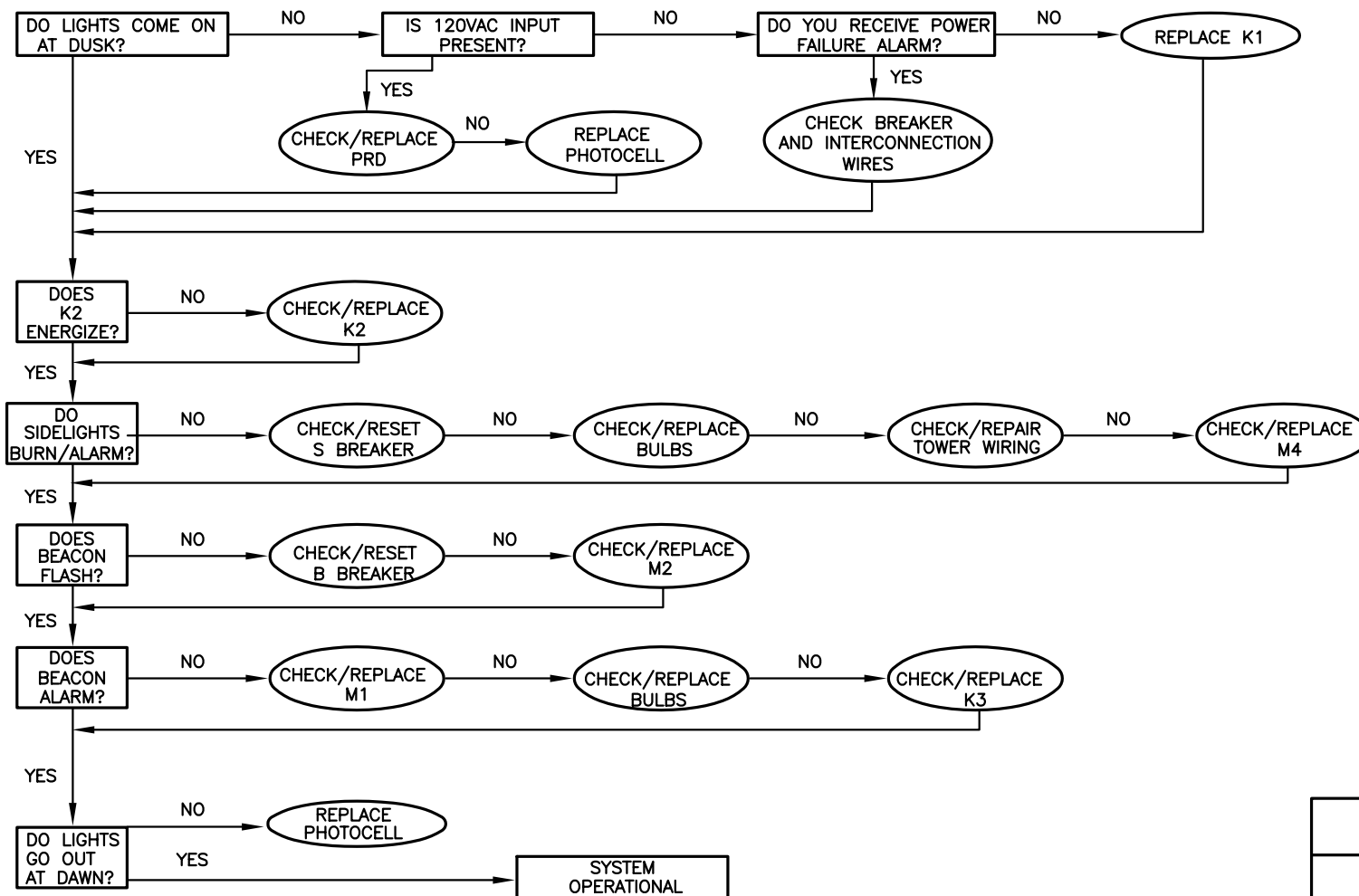
TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY	G.D.SFBEK	SHEET SIZE
DATE	2/28/94	SHEET QTY.
SCALE	N.T.S.	1 OF 1
DRAWING NO.	1113-R	

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

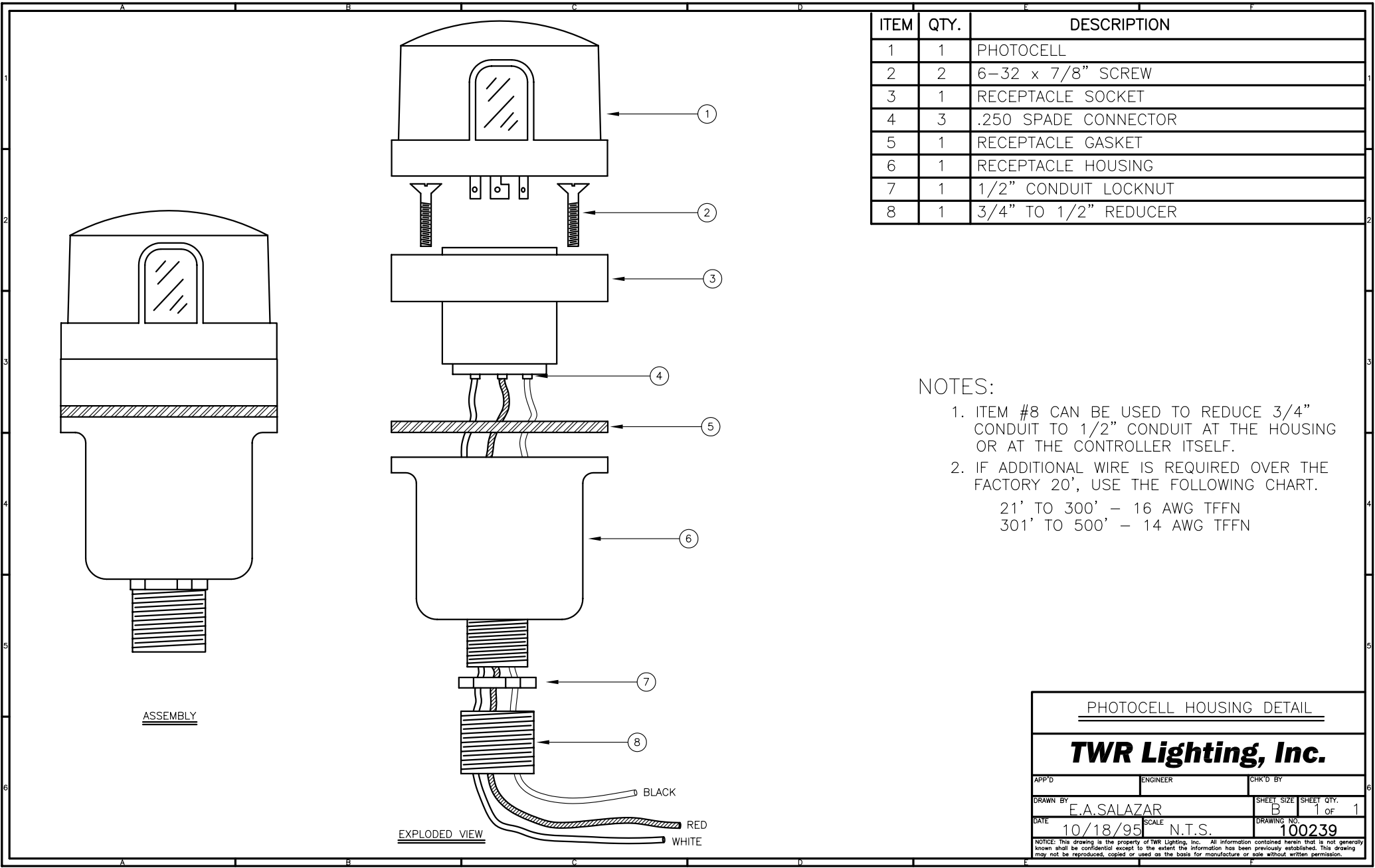
10/07/98 (B) 3	CHG. FUSES TO BREAKERS
01/26/98 (A) 8	UPDATED CONTROLLER
DATE:	LTR. REVISION

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



AA1-M TROUBLESHOOTING FLOW CHART DWG# 1113-R			
TWR Lighting, Inc.			
APP'D	ENGINEER	CHK'D BY	
DRAWN BY	G.D.SEBEK	SHEET SIZE	SHEET QTY.
DATE	2/28/94	B	1 OF 1
SCALE	N.T.S.	DRAWING NO.	1113-F
NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.			

10/07/98	(B)	3	CHG. FUSES TO BREAKERS
01/26/98	(A)	3	UPDATED FLOW CHART
DATE:	LTR.	REVISION	



ITEM	QTY.	DESCRIPTION
1	1	PHOTOCELL
2	2	6-32 x 7/8" SCREW
3	1	RECEPTACLE SOCKET
4	3	.250 SPADE CONNECTOR
5	1	RECEPTACLE GASKET
6	1	RECEPTACLE HOUSING
7	1	1/2" CONDUIT LOCKNUT
8	1	3/4" TO 1/2" REDUCER

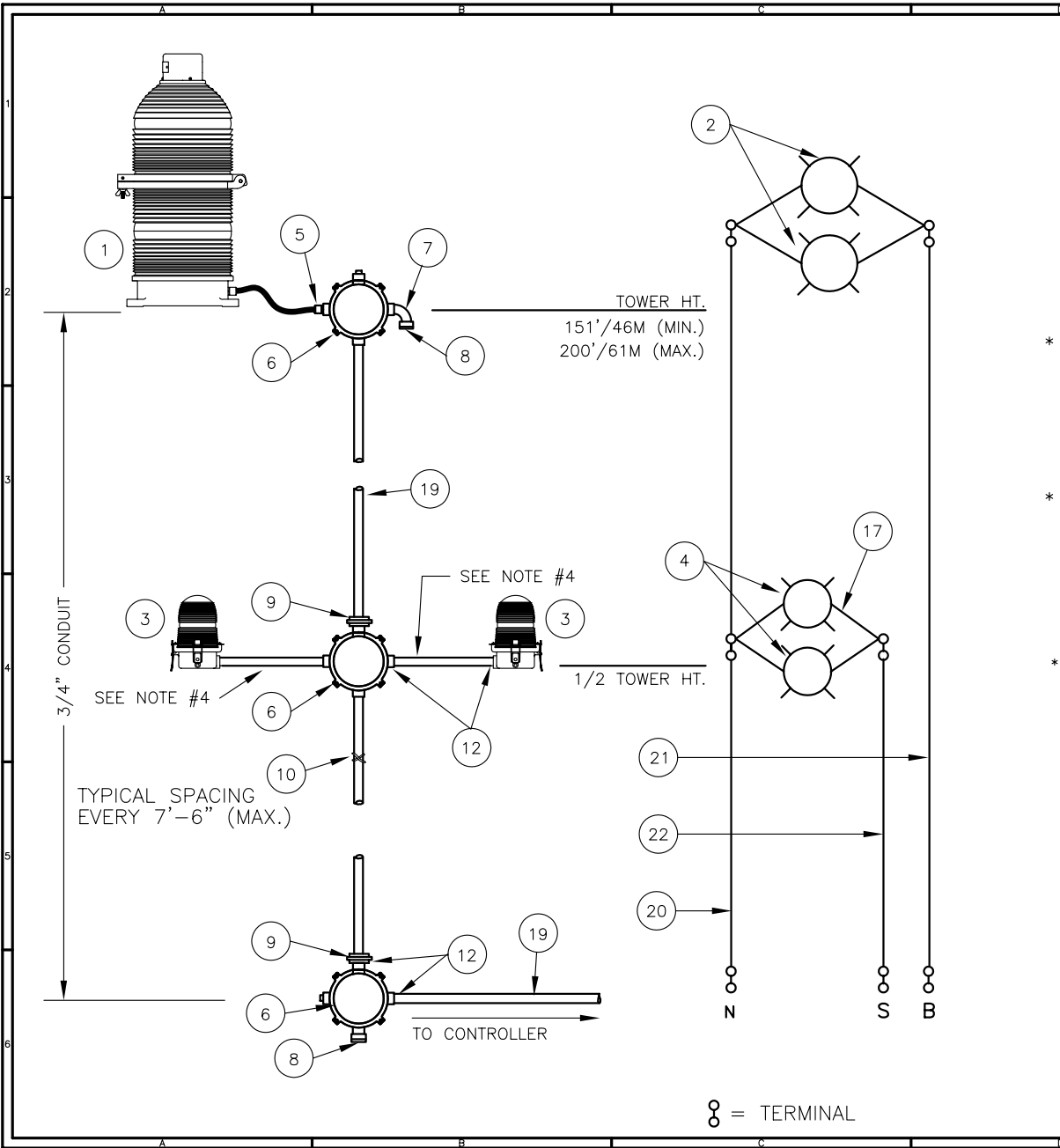
- NOTES:
- 1. ITEM #8 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.
 - 2. IF ADDITIONAL WIRE IS REQUIRED OVER THE FACTORY 20', USE THE FOLLOWING CHART.
21' TO 300' - 16 AWG TFFN
301' TO 500' - 14 AWG TFFN

PHOTOCELL HOUSING DETAIL

TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY E.A.SALAZAR		SHEET SIZE B
DATE 10/18/95		SHEET QTY. 1 OF 1
SCALE N.T.S.		DRAWING NO. 100239

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.



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	2	OL1	3/4" OBSTRUCTION LIGHT
4	2	116A21TS	116 WATT 120 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	6	CPLG34	3/4" GALVANIZED COUPLING
14	2	N34T3	3/4" x 3" NIPPLE
15	3	N34T12	3/4" x 12" NIPPLE
16	3	N34T24	3/4" x 24" NIPPLE
17	2	SLPIGTAIL6	SIDELIGHT PIGTAIL 6 FEET
* 18	1	AA1	CONTROLLER

ITEM NUMBERS #19-#22 ARE NOT INCLUDED IN THE KIT BUT, ARE AVAILABLE UPON REQUEST AND REQUIRED FOR INSTALLATION.

19	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 30'/9M)
20	-	8THHNWHT	#8 THHN WHT. WIRE (TOWER HT.+40'/12M)
21	-	8THHNBK	#8 THHN BLK. WIRE (TOWER HT.+40'/12M)
22	-	12THHNRED	#12 THHN RED WIRE (1/2 TWR HT.+40'/12M)

* = ITEMS NOT SHOWN

NOTES:

- 1) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- 2) USE RIGID GALVANIZED STEEL CONDUIT.
- 3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
- 4) ITEMS #14-#16 TO BE USED IN VARIOUS COMBINATIONS FOR OL1 RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6".
- 5) USE ITEM #13 TO COUPLE CONDUIT NIPPLES. APPROPRIATE OL1 EXTENSION IS 12".

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

TWR Lighting, Inc.

APP'D

ENGINEER

CHK'D BY

DRAWN BY
E.A.SALAZAR

SHEET SIZE
B

SHEET QTY.
1 OF 1

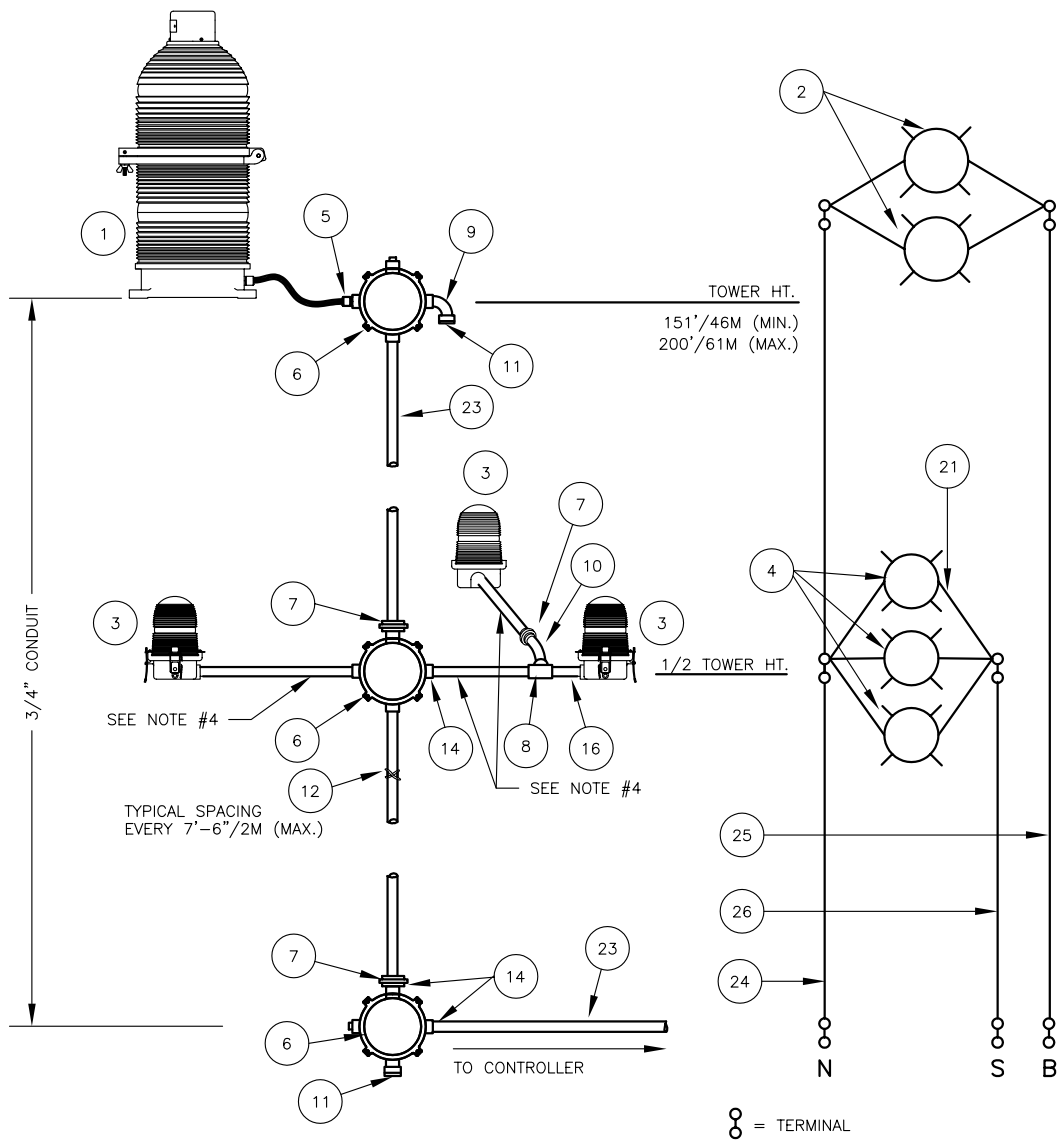
DATE
1/5/93

SCALE
N.T.S.

DRAWING NO.
260-11

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

01/09/01	DATE:	LTR.	REVISION
01/09/01	DATE:	LTR.	REVISION



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	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	8	CPIG34	3/4" GALVANIZED COUPLING
16	4	N34T3	3/4" x 3" NIPPLE
17	3	N34T6	3/4" x 6" NIPPLE
18	3	N34T12	3/4" x 12" NIPPLE
19	3	N34T24	3/4" x 24" NIPPLE
20	2	N34T36	3/4" x 36" NIPPLE
21	3	SLPIGTAIL25	25' SIDELIGHT PIGTAIL
* 22	1	AA1	AA1 CONTROLLER

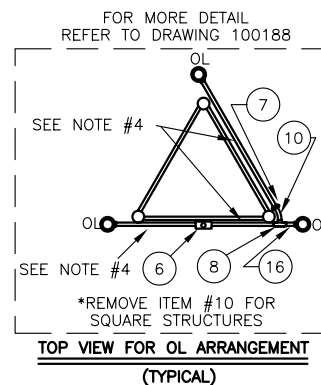
ITEM NUMBERS #23-#26 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

23	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 30'/9M)
24	-	8THHNWHT	#8 THHN WHT. WIRE (TOWER HT.+40'/12M)
25	-	8THHNBK	#8 THHN BLK. WIRE (TOWER HT.+40'/12M)
26	-	12THHNRD	#12 THHN RED WIRE (1/2 TWR HT.+40'/12M)

* = ITEMS NOT SHOWN

NOTES:

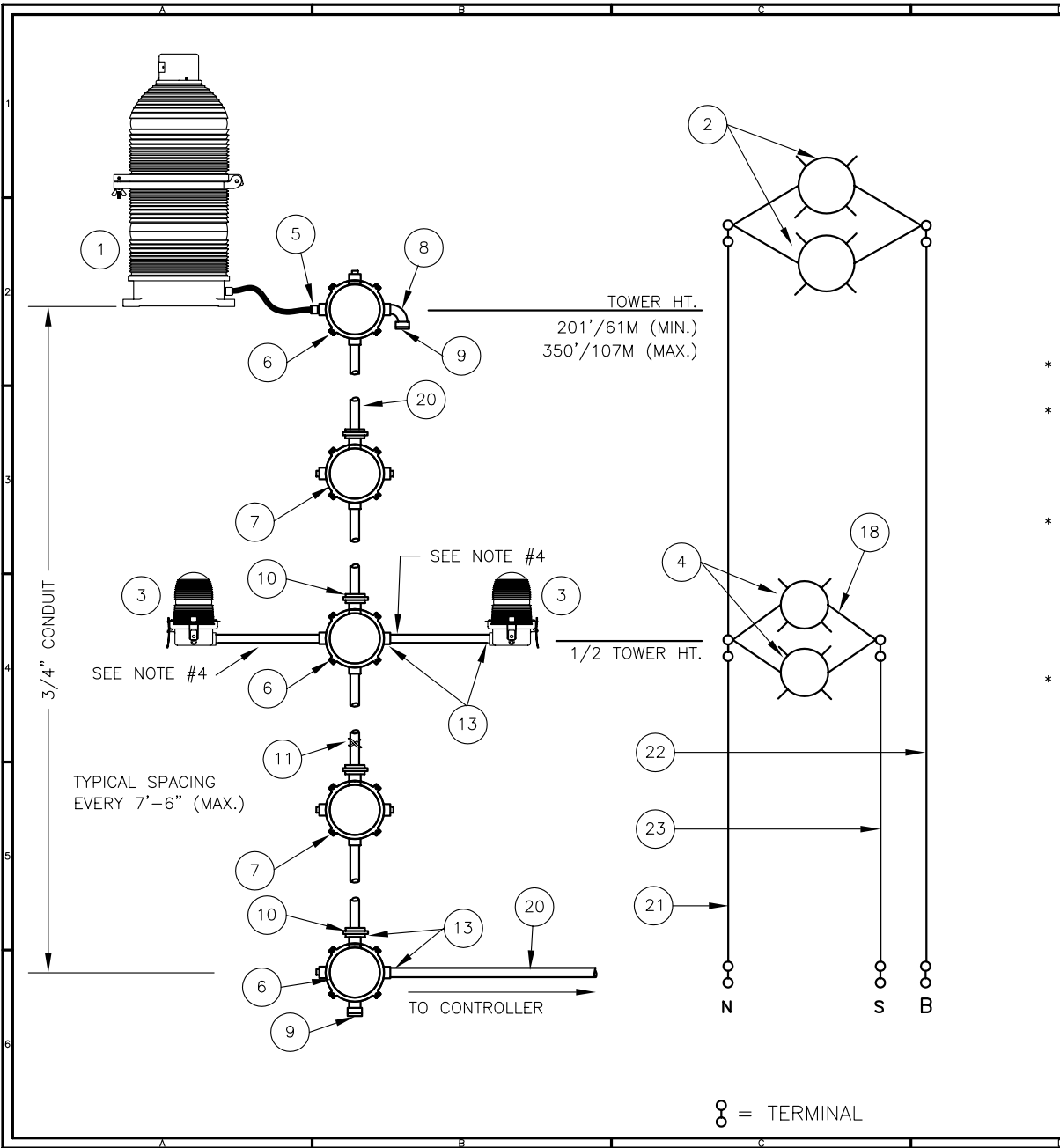
- 1) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- 2) USE RIGID GALVANIZED STEEL CONDUIT.
- 3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
- 4) ITEMS #16-#20 TO BE USED IN VARIOUS COMBINATIONS FOR OL1 RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6".
- 5) USE ITEM #15 TO COUPLE CONDUIT NIPPLES. APPROPRIATE OL1 EXTENSION IS 12".



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

TWR Lighting, Inc.

04/24/96 (D)	REVISE B.O.M.	APP'D	ENGINEER	CHK'D BY
03/19/96 (C)	UPDATED B.O.M.	DRAWN BY	G.D.SFBEK	SHEET SIZE B 1 OF 1
9/9/94 (B)	REWORK KIT PARTS	DATE	3/5/94	SCALE N.T.S.
3/8/94 (A)	ADDED MATERIALS	DRAWING NO.	260-13	
DATE:	LTR.	REVISION	NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.	



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	2	OL1	3/4" OBSTRUCTION LIGHT
4	2	116A21TS	116 WATT 120 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	2	EL3490	3/4" 90° SHORT ELBOW
9	2	5012902	3/4" BREATHER
10	5	UNY205	3/4" UNION
11	1	SS10012	WRAPLOCK
12	1	PIPDOP	4 oz. PIPE DOPE
13	14	A314	3/4" CONDUIT LOCKNUTS
14	6	CPLG34	3/4" GALVANIZED COUPLING
15	2	N34T3	3/4" x 3" NIPPLE
16	3	N34T12	3/4" x 12" NIPPLE
17	3	N34T24	3/4" x 24" NIPPLE
18	2	SLPIGTAIL6	SIDELIGHT PIGTAIL 6 FEET
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	-	6THHNWHT	#6 THHN WHT. WIRE (TOWER HT.+40'/12M)
22	-	6THHNBK	#6 THHN BLK. WIRE (TOWER HT.+40'/12M)
23	-	12THHNRED	#12 THHN RED WIRE (1/2 TWR HT.+40'/12M)

* = ITEMS NOT SHOWN

NOTES:

- 1) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- 2) USE RIGID GALVANIZED STEEL CONDUIT.
- 3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
- 4) ITEMS #15-#17 TO BE USED IN VARIOUS COMBINATIONS FOR OL1 RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6'.
- 5) USE ITEM #14 TO COUPLE CONDUIT NIPPLES. APPROPRIATE OL1 EXTENSION IS 12".

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

TWR Lighting, Inc.

APP'DENGINEERCHK'D BY

04/25/96 (C) UPDATED B.O.M.'S
9/9/94 (B) REWORK KIT PARTS
2/25/94 (A) ADDED MATERIALS

DATE: LTR. REVISION

DRAWN BY
E.A.SALAZAR

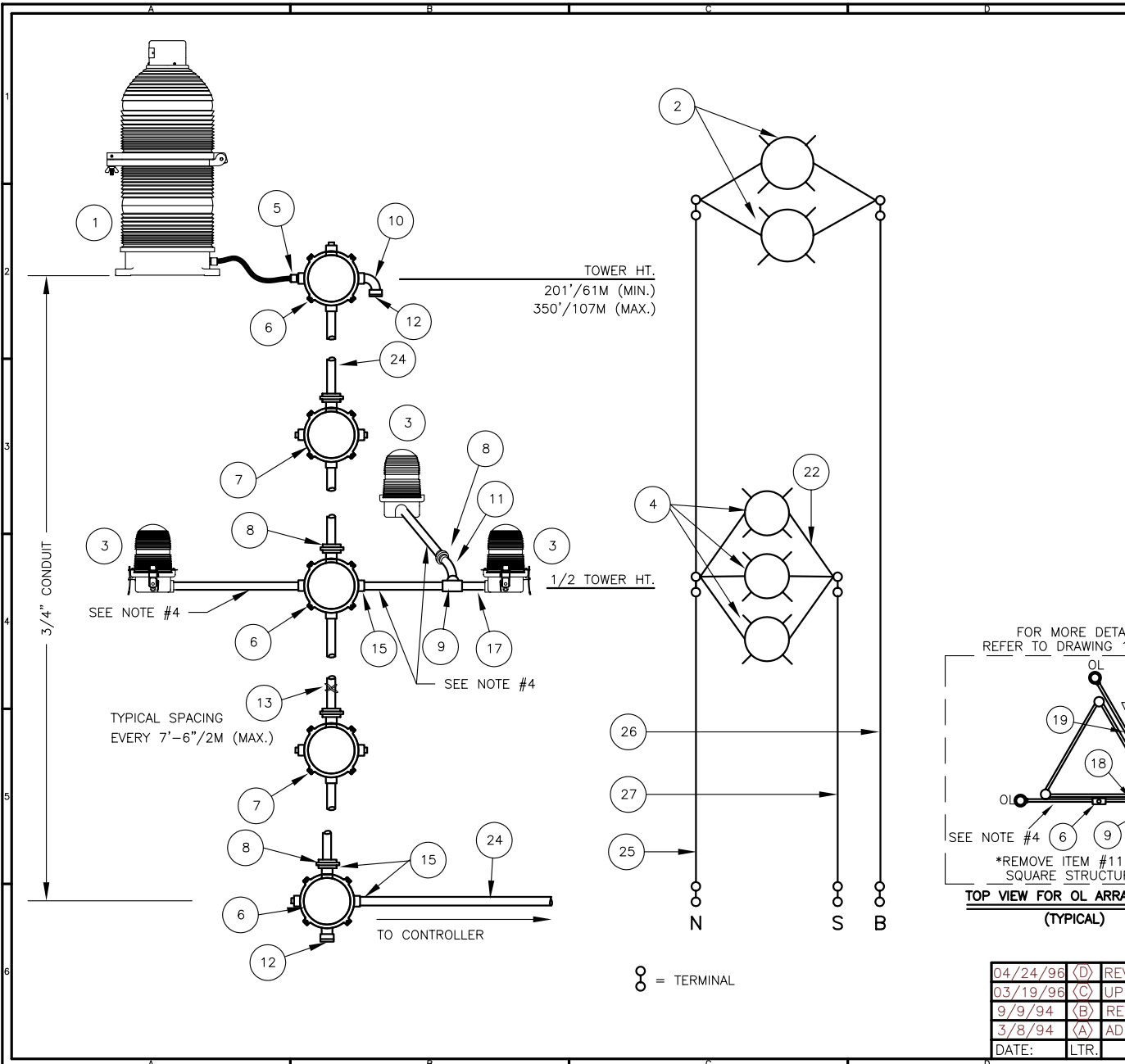
DATE
1/5/93

SHEET SIZE
B

SHEET QTY.
1 OF 1

DRAWING NO.
260-12

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.



BILL OF MATERIALS

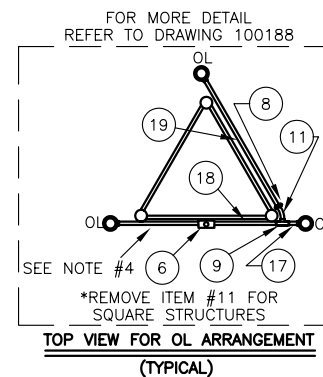
ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	1	BEACON	300 MM BEACON RED
2	2	620PS40P	620 WATT 120 VOLT LAMP
3	3	OL1	3/4" OBSTRUCTION LIGHT
4	3	116A21TS	116 WATT 120 VOLT LAMP
5	1	CGB295SA	3/4" CORD CONNECTOR
6	3	JB5	3/4" JUNCTION BOX
7	2	JB0	3/4" STRAIN RELIEF BOX
8	6	UNY205	3/4" UNION
9	2	T27CG	3/4" CONDULET 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	8	CPLG34	3/4" GALVANIZED COUPLING
17	4	N34T3	3/4" x 3" NIPPLE
18	3	N34T6	3/4" x 6" NIPPLE
19	3	N34T12	3/4" x 12" NIPPLE
20	3	N34T24	3/4" x 24" NIPPLE
21	2	N34T36	3/4" x 36" NIPPLE
22	3	SLPIGTAIL25	25' SIDELIGHT PIGTAIL
23	1	AA1	AA1 CONTROLLER
24	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 30' / 9M)
25	-	6THHNWHT	#6 THHN WHT. WIRE (TOWER HT.+40' / 12M)
26	-	6THHNBK	#6 THHN BLK. WIRE (TOWER HT.+40' / 12M)
27	-	12THHNRED	#12 THHN RED WIRE (1/2 TWR HT.+40' / 12M)

ITEM NUMBERS #24-#27 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

* = ITEMS NOT SHOWN

NOTES:

- 1) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- 2) USE RIGID GALVANIZED STEEL CONDUIT.
- 3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
- 4) ITEMS #17-#21 TO BE USED IN VARIOUS COMBINATIONS FOR OL1 RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6'.
- 5) USE ITEM #16 TO COUPLE CONDUIT NIPPLES. APPROPRIATE OL1 EXTENSION IS 12".



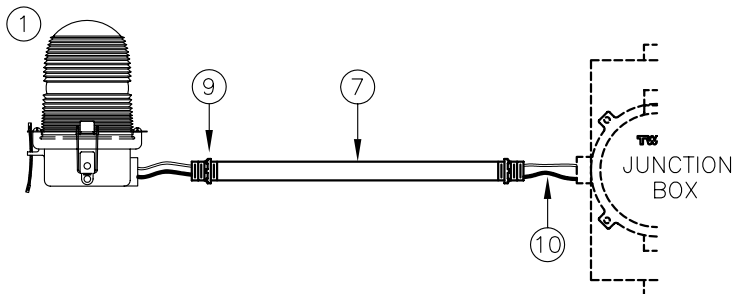
(NO BOOST)

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

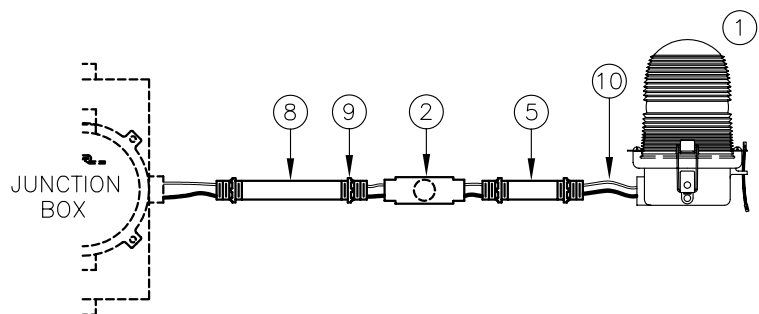
TWR Lighting, Inc.

04/24/96 (D) REVISE B.O.M.	APP'D	ENGINEER	CHK'D BY
03/19/96 (C) UPDATED B.O.M.	DRAWN BY	G.D.SFBEK	SHEET SIZE SHEET QTY.
9/9/94 (B) REWORK KIT PARTS	DATE	3/5/94	B 1 OF 1
3/8/94 (A) ADDED MATERIALS	SCALE	N.T.S.	DRAWING NO.
DATE: LTR. REVISION			260-14

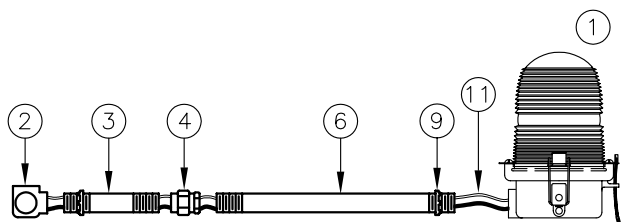
NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.



VIEW A



VIEW B



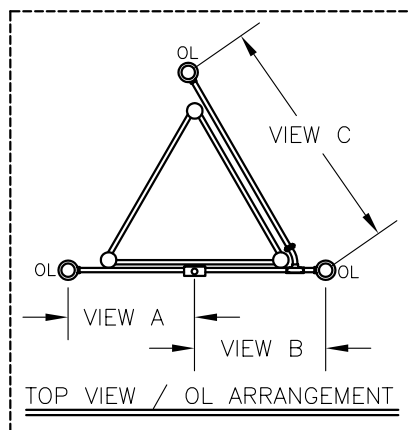
VIEW C

BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	3	OL1	3/4" OBSTRUCTION LIGHT
2	1	T27	3/4" CONDULET W/COVER AND GASKET
3	1	EL3430	3/4" 30° ELBOW
4	1	UNY205	3/4" UNION
5	1	N34T3	3/4" x 3" NIPPLE
6	1	---	3/4" NIPPLE = (FACE + 6")
7	1	---	3/4" NIPPLE = (FACE ÷ 2 + 36)
8	1	---	3/4" NIPPLE = (FACE ÷ 2)
9	5	A314	3/4" CONDUIT LOCKNUTS
10	2	---	#14 RED & WHT. WIRE (FACE - 2 + 36")
11	1	---	#14 RED & WHT. WIRE (FACE x 1.5 + 24")

NOTES:

1. THIS DRAWING IS A TYPICAL INSTALLATION DETAIL FOR 3 OL-1 PER LEVEL SYSTEM.
2. IN VIEW C ITEM NUMBER 3 MAY BE OMITTED WHEN ARRANGING FOUR LEG TOWERS.
3. LENGTHS FOR SIDELIGHT RUNS MAY BE ACHIEVED BY MULTIPLE PIECES OF ITEM NUMBERS 6-8.
4. ITEMS 10 & 11 MAY COME IN BULK LENGTHS.



3-OL-1 LIGHT LEVEL DETAIL (EACH)

TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY	E.A.SALAZAR	SHEET SIZE
DATE	06/06/96	SCALE
REVISION	(A) ADDED NOTES (GDS)	DRAWING NO.
DATE:	LTR.	100188

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

TWR Lighting, Inc.

FAA Approved L-810

Single Obstruction Light Side Hub

OL1

FM10018_RC.DWG

For use as an obstruction light on towers, building, bridges, cooling towers.
Meets or exceeds all FAA specs as found in AC 150/5345-43 Type L-810.

Our most popular light. The side hub allows for a straight run of conduit from the junction box for hook up.

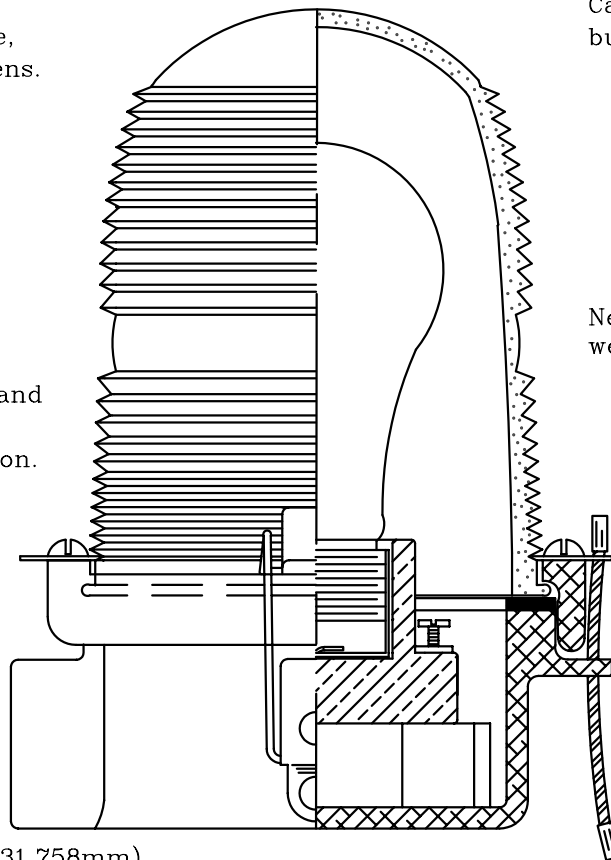
High temperature, ultra pure
FAA approved Aviation red, blue,
yellow, or clear glass fresnel lens.

Can be used steady
burning or flashing.

Copper free aluminum casting and
all stainless steel latches and
hardware for corrosion protection.

Neoprene gasket for
weatherproofing.

Specify conduit size
3/4", 1", 1-1/4" NPT
(19.055mm), (25.407mm), (31.758mm)



High quality porcelain
receptacle.

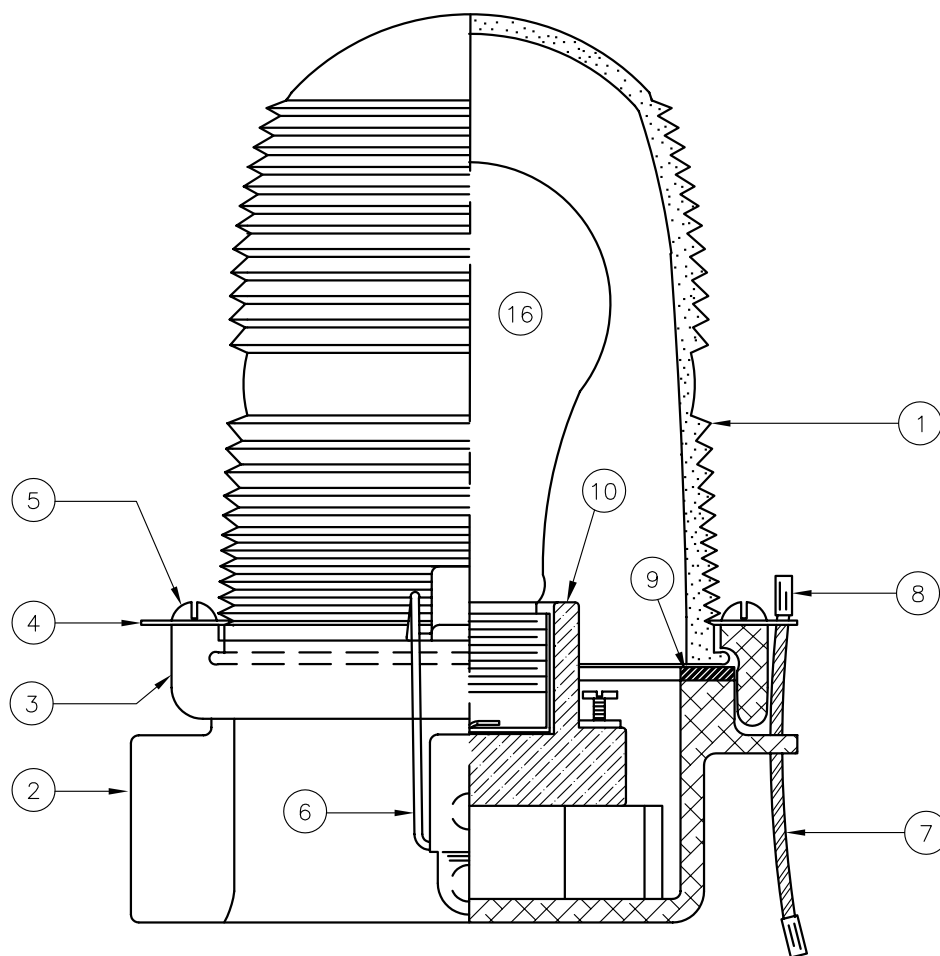
Stainless steel
safety cable.

No special tools required for maintenance.

General Specifications

Height 7.5 inches (19.055 cm)
Weight 3 lbs (13605.442g)
Power 120, 230, or 240 volts AC
Uses 116W, 120V or 240V bulbs
Bulbs sold separately

TWR Lighting, Inc.
4300 Windfern Rd. #100
Houston, Tx., 77041-8943
Phone: (713)973-6905
Fax: (713)973-9352
WEB SITE: <http://www.twrlighting.com>
©2003 TWR Lighting, Inc.



ITEM NO	QTY.	TWR 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 S.S. SLOT
6	2	HC255SS	SIDELIGHT LATCHES
7	1	7X7SS	1/16 7 X 7 S.S. WIRE
8	2	A1A	STAKON CRIMP
9	1	OLG	OL GASKET
10	1	19062	SIDELIGHT RECEPTACLE
* 11	4	18PRSS	1/8 POP RIVETS
* 12	1	A314	3/4" CONDUIT LOCKNUT
* 13	2	104G	WHITE TEFLON WASHER
* 14	2	832X34PH	8-32 X 3/4" S.S. RH SLOT
* 15	1	100327	OL-1 SERIAL NUMBER LABEL
~ 16	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.

OL1

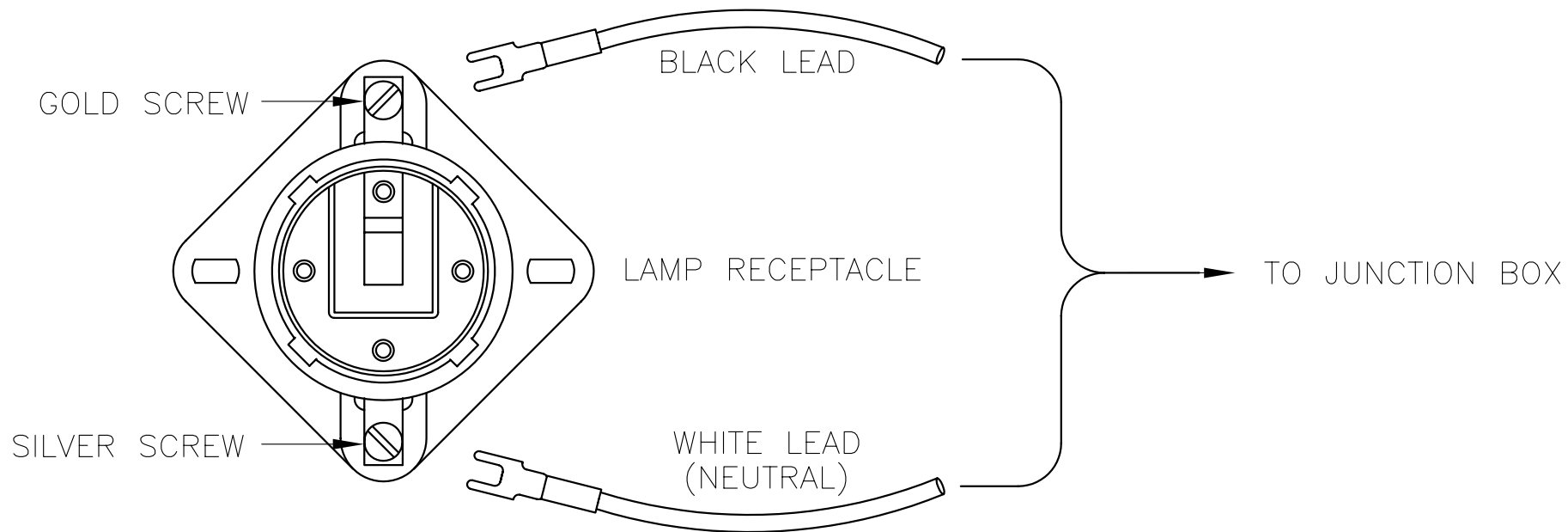
3/4" OL-1 SIDE HUB
ASSEMBLY DETAIL (PART #OL1)

TWR Lighting, Inc.

APP'D		ENGINEER	CHK'D BY
DRAWN BY		E.A.SALAZAR	SHEET SIZE B
DATE		1/7/92	SHEET QTY. 1 OF 1
SCALE		FULL	DRAWING NO. 279-OL

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

05/13/02 (B) UPDATED B.O.M.
 DATE: LTR. REVISION



SIDELIGHT RECEPTACLE WIRING

TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY G.D.SEBEK	SHEET SIZE A	SHEET QTY. 1 OF 1
DATE 6/8/91	SCALE N.T.S.	DRAWING NO. 274-S

7/2/98		CDJ	CHANGED LABEL
DATE:	LTR.		REVISION

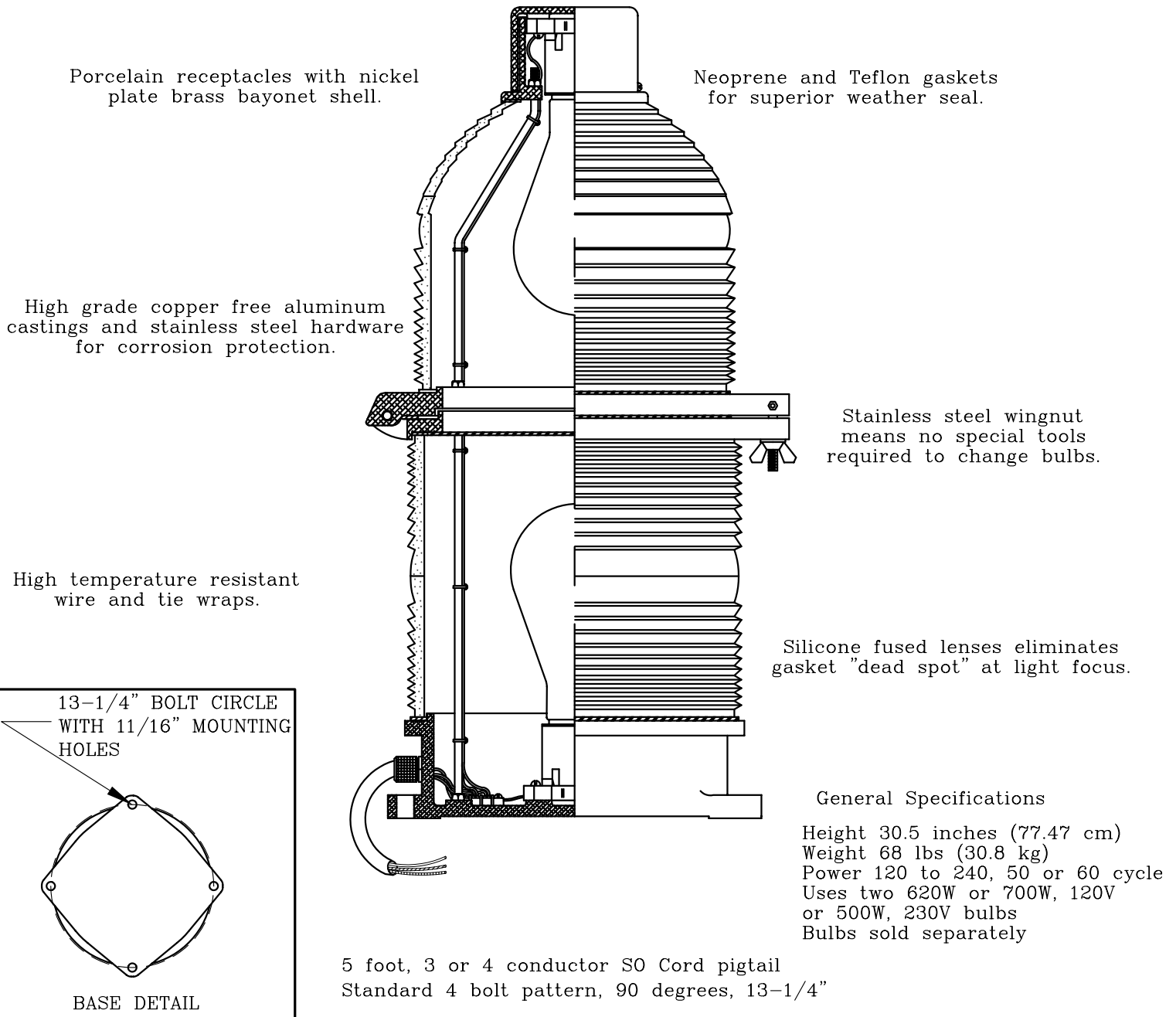
NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

TWR Lighting, Inc.

FAA Approved L-864 300 mm BEACON

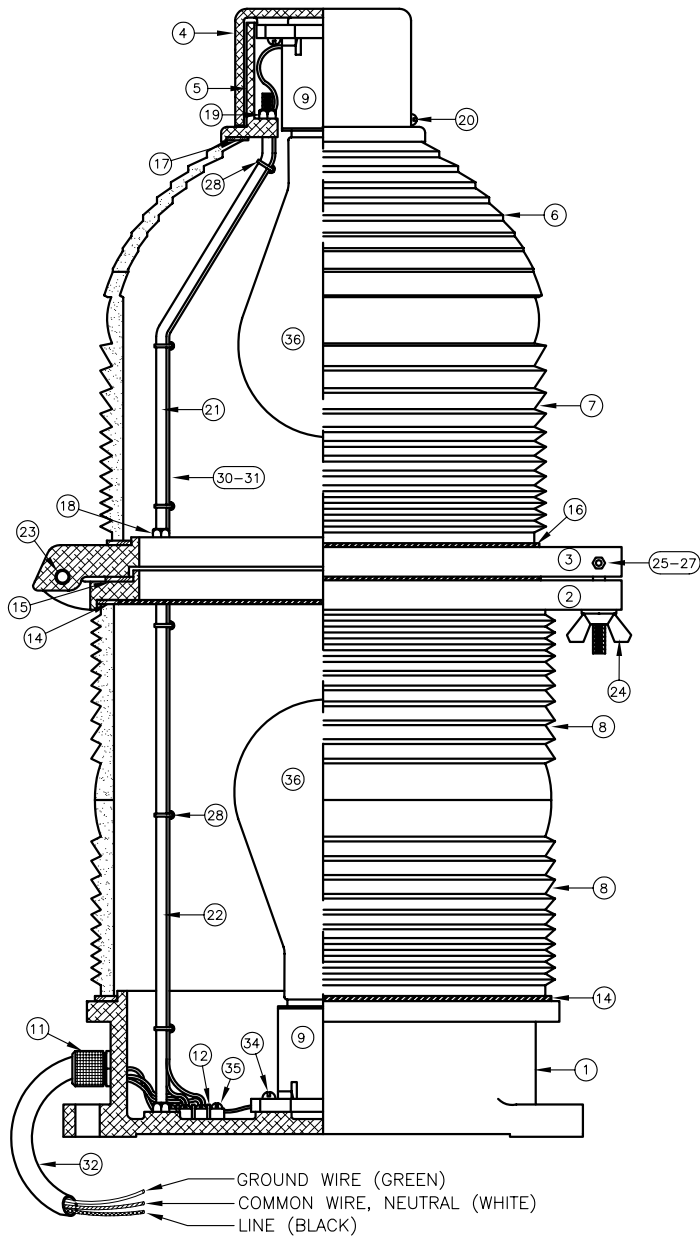
FM10017RB.DWG

Flashing 300 mm Code Red Beacon is used to light aviation obstructions taller than 150 feet AGL. ETL approved to meet or exceed all FAA specifications as found in AC 150/5345-43 Type L-864.



TWR Lighting, Inc.
4300 Windfern Rd. #100
Houston, Tx., 77041-8943
Phone: (713)973-6905
Fax: (713)973-9352

WEB SITE: <http://www.twrlighting.com>
©2003 TWR Lighting, Inc.



ITEM NO.	QTY.	TWR PART NO.	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	1	AP3557	CAP LENS RED
7	1	AP3556	MIDDLE LENS RED
8	2	AP3555	BOTTOM LENS RED
9	2	23X546	BEACON LAMP RECEPTACLE
* 10	4	104G	WHITE TEFLON WASHER 5K MIN.
11	1	CGB295SA	CORD CONNECTOR 3/4 50 - 62
12	1	TERMBLK3	TERMINAL BLOCK 3-PART
13	1	832X38PH	8-32 X 3/8 SS PH SCREW
14	2	100G	GASKET, BEACON BASE
* 15	1	101G	GASKET, MIDDLE BEACON
16	1	102G	GASKET, TOP HINGE
17	1	103G	GASKET TEFLON, TOP
18	6	516NUT	5/16-18 HEX NUT
19	6	516NUTIN	5/16-18 NUT W/NYLON INSERT
20	3	1420X58RH	1/4-20 X 5/8" SS RH SCREW
21	3	BTRB	BEACON TIE RODS BENT
22	3	BTRS-1	BEACON TIE ROD STRAIGHT
23	1	BHP	BEACON HINGE PIN W/COTTER PIN
24	1	BLP	BEACON LATCH PIN
25	1	632X2RH	6-32 X 2 SS RH SCREW
26	1	632NUT	6-32 NUT HEX
27	1	632LW	6-32 LOCK WASHER
28	7	TY223M	HI-TEMP TY WRAPS
* 29	1	100328	BEACON SERIAL NUMBER LABEL
30	4	16HTWH	#16 HI-TEMP WHITE WIRE
31	4	16HTBL	#16 HI-TEMP BLACK WIRE
32	5	CS014/3	S.O. CORD 3 WIRE, #14
* 33	11	YAV14-H34F	(STAKON) BURNDY HEAVY DUTY
34	4	1032X1RH	10-32 X 1 SS RH SCREW
35	2	1032X38BH	10-32 x 3/8 BH
36	2	-	BEACON LAMP
37	1	1032X58PH	10-32 x 5/8 PH

* = ITEM NOT SHOWN
~ = PART SOLD SEPARATELY

300MM BEACON

300 MM BEACON
ASSEMBLY DETAIL (PART #BEACON)

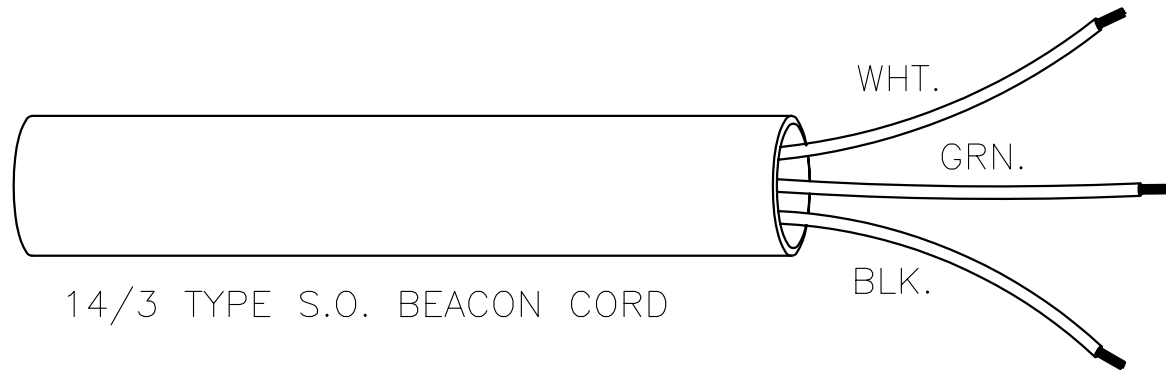
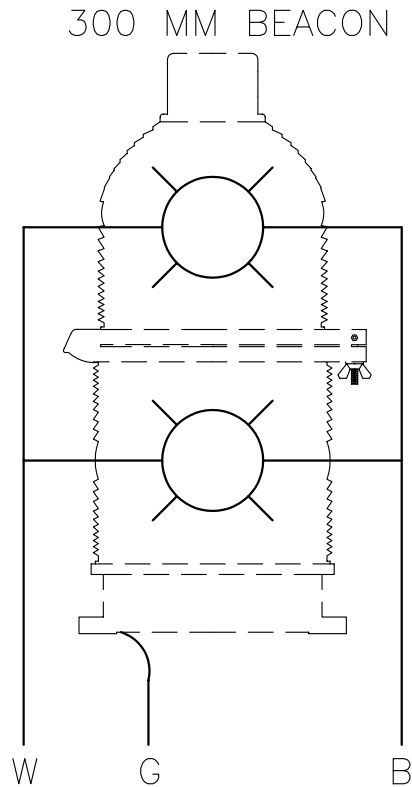
TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY	G.D.SFBEK	SHEET SIZE
DATE	6/3/91	SCALE
	N.T.S.	DRAWING NO.
		275-B

05/18/00(D) 4 UPDATED B.O.M.
DATE: LTR. REVISION

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

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

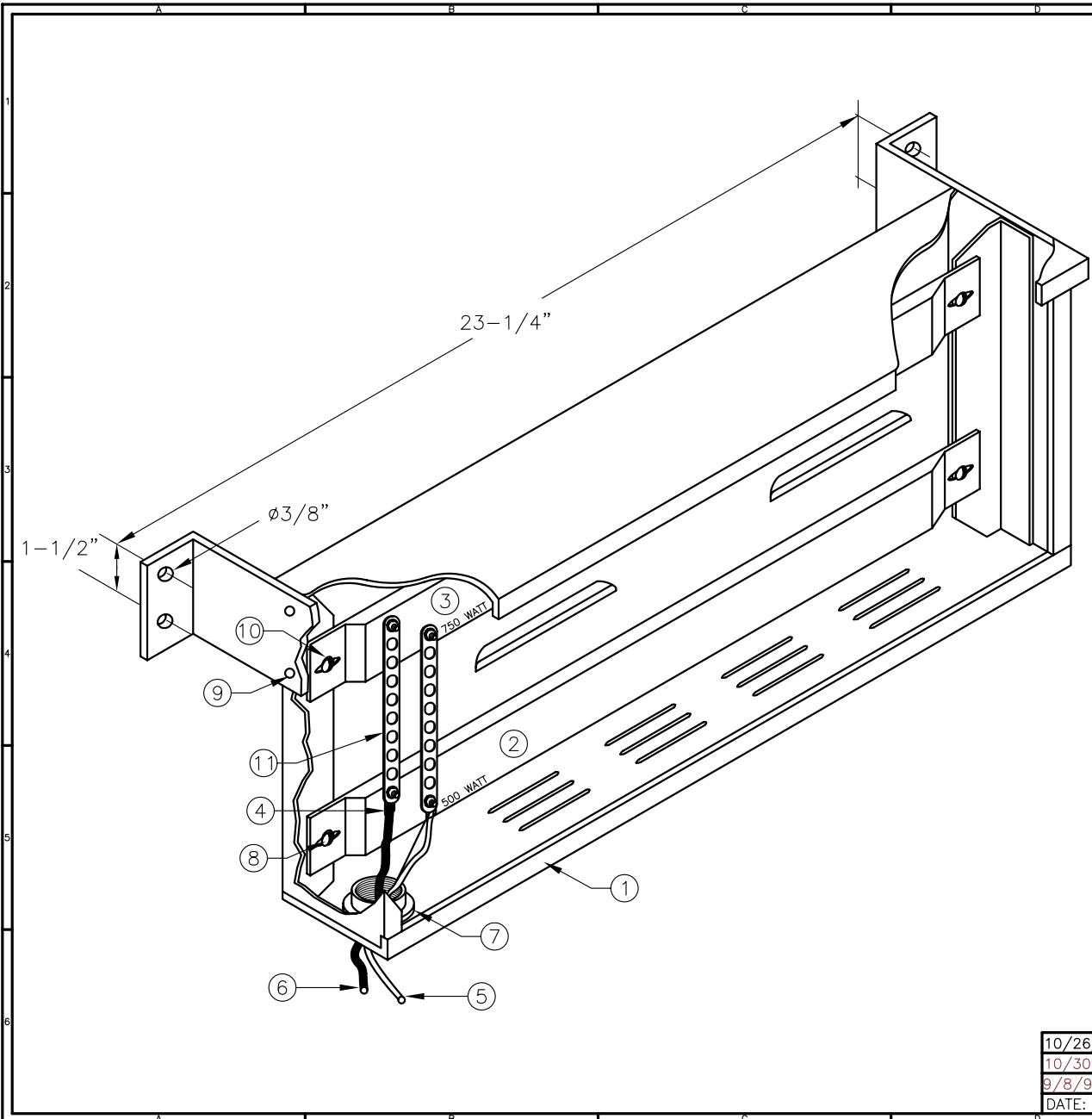


300 MM BEACON WIRE

TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY	
DRAWN BY	G.D.SEBEK		SHEET SIZE
DATE	6/10/91	SCALE	N.T.S.
		DRAWING NO.	273-B

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.



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

LOAD BALANCE RESISTOR
ASSEMBLY DETAIL (PART #LBR)

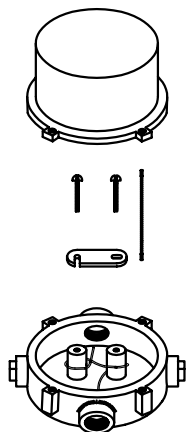
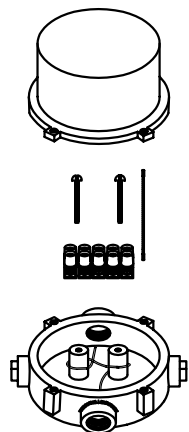
TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
10/26/98	(C) 3	CHG. B.O.M.
10/30/96	(B)	UPDATED DRAWING
9/8/94	(A)	DELETED NOTE
DATE:	LTR.	REVISION

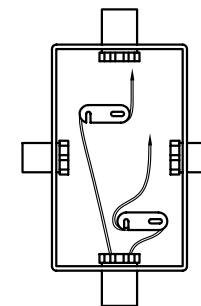
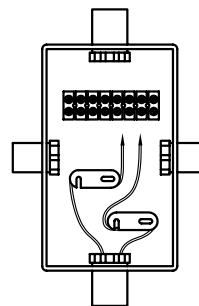
DRAWN BY	E.A.SALAZAR	SHEET SIZE	SHEET QTY.
DATE	2/8/85	SCALE	N.T.S.
DRAWING NO.	276-R		

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.

10/26/98	(C) 3	CHG. B.O.M.
10/30/96	(B)	UPDATED DRAWING
9/8/94	(A)	DELETED NOTE
DATE:	LTR.	REVISION



JB-5 AND JB-O
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

JUNCTION AND STRAIN RELIEF BOXES

TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY G.D.SEBEK		SHEET SIZE B
DATE 7/26/93	SCALE N.T.S.	SHEET QTY. 1 OF 1
		DRAWING NO. 100089

9/29/00 (A) 8 UPDATED NOTES

DATE: LTR. REVISION

NOTICE: This drawing is the property of TWR Lighting, Inc. All information contained herein that is not generally known shall be confidential except to the extent the information has been previously established. This drawing may not be reproduced, copied or used as the basis for manufacture or sale without written permission.