

TWR Lighting, Inc.

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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 # AA2/3MB

SERIAL #

PURCHASE DATE

PURCHASED FROM

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APPENDIX

DRAWING NUMBER

CHASSIS COMPONENT LAYOUT	1135-R
SCHEMATIC LAYOUT	1135-S
TROUBLE SHOOTING FLOW CHART	1135-F
PHOTOCELL HOUSING DETAIL	100239
TOWER LIGHTING KIT 351' TO 400'	261-31B
TOWER LIGHTING KIT 401' TO 700'	261-32B
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 FB 300 MM BEACON	FM100017
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JUNCTION BOX DETAIL	100089

GENERAL INFORMATION

The TWR Model AA2/3MB Controller is for A2 lighting of towers 351' to 700' AGL in accordance with the FAA Advisory Circular 70/7460-1J. One (1) beacon should be placed at the top and two (2) beacons at mid-level. Obstruction lights should be placed at the $\frac{3}{4}$ and $\frac{1}{4}$ intervals with respect to overall tower height.

The flash rate of the beacons is 30 per minute. The beacons flash synchronized to one another. 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 pulling out on the plunger.

Each 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 one (1) 116 watt, 120V bulb (620PS40P, 700PS40P, and 116A21TS).

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

Power supplied to the Controller shall be 120/240V, three (3) wire, single phase.

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.
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LIGHTS "ON"	Gives an indication whenever the Controller is activated.
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BEACONS	Will give an alarm in the event of one (1) or both bulbs failing or the flasher stalling.
FLASHER FAILURE	Will give an alarm in the event of failure of flasher.
OBSTRUCTION LIGHTS	Will give an alarm when one (1) of three (3) sidelights fail.

INSTALLATION INSTRUCTIONS

1.0 MOUNTING THE CONTROL CABINET

(Refer to Drawing 1135-R)

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 1135-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

1.1.1 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 "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.

1.1.2 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 1.1.1.

- 1.2 The wiring from the photocell, the service breaker, the red incandescent beacons, 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:

2.0 EXTERNAL PHOTOCELL WIRING

(Refer to Drawing 1135-R)

- 2.1 Connect the BLACK wire from the photocell to terminal block TB2 marked "L2."
- 2.2 Connect the RED wire from the photocell to terminal block TB2 marked "SSR."
- 2.3 Connect the WHITE wire from the photocell to terminal block TB2 marked "N."

3.0 POWER WIRING (Refer to Drawing 1135-R)

- 3.1 Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes.
- 3.2 Circuit breaker needs to be a two (2) pole common trip rated at 40 amps.
- 3.3 Connect incoming 120V AC "Hot #1" to terminal block TB1 marked "L1."
- 3.4 Connect incoming 120V AC "Hot #2" to terminal block TB1 marked "L2."
- 3.5 Connect the neutral wire(s) to one (1) of the terminal blocks on TB1 marked "N."
- 3.6 Connect the AC ground to the aluminum mounting plate.

4.0 RED BEACON AND SIDELIGHT WIRING

(Refer to Drawings 1135-R, 261-31B, and 261-32B)

- 4.1 Connect the BLACK wire from Beacon #1 to the circuit breaker marked "B1."
- 4.2 Connect the first BLUE wire from Beacon #2 to the circuit breaker marked "B2."
- 4.3 Connect the second BLUE wire from Beacon #3 to the circuit breaker marked "B3."
- 4.4 Connect the RED wire from sidelight group #1 to the circuit breaker marked "S1."
- 4.5 Connect the YELLOW wire from sidelight group #2 to the circuit breaker marked "S2."
- 4.6 Connect the WHITE neutral wire(s) to one (1) or more of the terminals marked "N."

5.0 RED BEACON AND SIDELIGHT ALARM WIRING

(Refer to Drawings 1135-R and 1135-S)

- 5.1 Alarm relays K1-K5, and alarm Modules M2, M4, M6, M7, and M8, are provided for independent contact closures for: Power Failure, Lights "On," B1 Flasher Failure, B2 Flasher Failure, B3 Flasher Failure, B1 Lamp Burnout, B2 Lamp Burnout, B3 Lamp Burnout, S1 Lamp Burnout, and S2 Lamp Burnout.

- 5.2 Alarm Wiring: To utilize all of the red light alarms, the customer will need ten (10) pair of wires to interface with his alarm device. One (1) wire from each of the ten (10) pair will terminate at the points marking common (C). The remaining wire from each pair will terminate as follows:

- 5.2.1 Power Failure Alarm: Connect to relay K1, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.
- 5.2.2 Lights "On" Alarm: Connect to relay K2, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.
- 5.2.3 B1 Flasher Failure: Connect to relay K3, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.
- 5.2.4 B2 Flasher Failure: Connect to relay K4, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.
- 5.2.5 B3 Flasher Failure: Connect to relay K5, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.
- 5.2.6 B1 Lamp Burnout: Connect to relay M2, terminal T6, for normally open (OR) terminal #7, for normally closed monitoring.
- 5.2.7 B2 Lamp Burnout: Connect to relay M4, terminal T6, for normally open (OR) terminal #7, for normally closed monitoring.
- 5.2.8 B3 Lamp Burnout: Connect to relay M6, terminal T6, for normally open (OR) terminal T7, for normally closed monitoring.
- 5.2.9 S1 Lamp Burnout: Connect to relay M7, terminal T5, for normally open (OR) terminal T6, for normally closed monitoring.
- 5.2.10 S1 Lamp Burnout: Connect to relay M8, terminal T5, for normally open (OR) terminal T6, for normally closed monitoring.

5.3 Alarm Testing: To test alarms, follow the procedures using an “ohm” meter between alarm common and alarm points.

5.3.1 Power Failure: Pull circuit breaker at electrical panel.

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.)

5.3.3 Beacon and Sidelights: Trip breakers on the controller panel.

THEORY OF OPERATION

6.0 THEORY OF OPERATION

6.1 POWER SUPPLY

120/240V AC enters the Controller from the circuit breaker panel. Lines L1 and L2 sit at the PRD, waiting to be switched, and also keeps the power failure relay K1 energized. When the 102FAA photocell is activated, Line L2 energizes the coil of the PRD and K2 “Lights On” relay. This also can be accomplished by using the photocell by-pass switch (SW1).

6.2 SIDELIGHTS

Line LD4 is sent to Modules M7 and M8, which are current sensing modules for sidelights. Each SCR430T monitors one (1) level of sidelights, and will provide a contact closure along a visual indication if one (1) or more lamps fail.

6.3 BEACONS

Lines LD1, LD2, and LD3 are sent to Modules M1, M3, and M5. M1 is the primary flasher for Beacon #1, which provides control voltage to Modules M3 and M5, which are auxiliary flashers for Beacon #2 and Beacon #3. The output of these modules is sent to the primary of boost transformers T1, T2, and T3. The boosted output voltage (126V at 120V nominal input) is sent through the current sensing Modules M2, M4, and M6, then to the fuse outputs B1, B2, and B3. If Modules M2, M4, or M6 detect a lamp burnout, then that particular module would provide a contact closure along with a visual indication for that lamp circuit.

Relays K3 – K5 are flasher failure relays for the Beacons B#1 – B#3. If Modules M2, M4, or M6 detect a flasher failure, then that particular module would provide a contact closure for that flasher circuit.

MAINTENANCE

7.0 MAINTENANCE

7.1 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 70/7460-1J. By following these instructions, maximum safety and performance can be achieved.

TOOLS REQUIRED: NONE

7.2 L-864 LAMP REPLACEMENT

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

7.2.2 Open the lens and tilt it back.

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

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

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

7.2.6 Tighten the wing nut snug, then ¼ turn more.

7.3 LAMP REPLACEMENT

7.3.1 Unclasp the two (2) latches and let the bail recline back.

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

7.3.3 Unscrew the lamp counter-clockwise and remove.

7.3.4 Install the new lamp by screwing the lamp clockwise.

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

7.3.6 Reclasp the two (2) latches.

7.4 L-864 CONTROLLER

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

7.5 PHOTOCELL

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

MAJOR COMPONENTS PARTS LIST

QUANTITY	PART NUMBER	DESCRIPTION
1	102-FAA	Photocell
1	FS155-30T	Solid State Flasher (M1)
1	B12J2K5	2,500 ohm 12 watt Resistor (R1)
1	FA155-2	Solid State Load Contactor (M3 & M5)
1	PM17AY120V	Mechanical Load Contactor (PRD)
3	XFMR-15amp	Boost Transformer (T1-T3)
3	FB120A	Beacon Failure Detector (M2, M4, & M6)
5	PB27E122	Octal Sockets
4	X9KE-115V	SPDT Relay (K1, K3, K4, & K5)
2	SCR430T	Sidelight Burnout Detector (M7 & M8)
1	SPEC 224	Time Delay Relay (K2)
1	STJ02001	Switch (SW1)
1	VJ1816HWPL2	Enclosure
8	8WA1204	Terminal Block (TB1 & TB2)
3	8WA1802	Rail Link
2	8WA1808	Terminal Block End Stop
5	5SX2120-8	20 amp Circuit (B1-B3, S1 & S2)

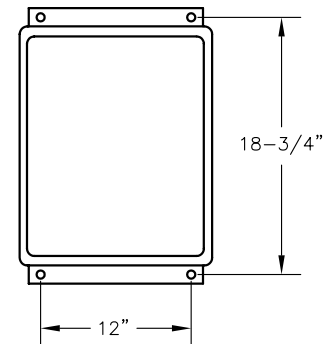
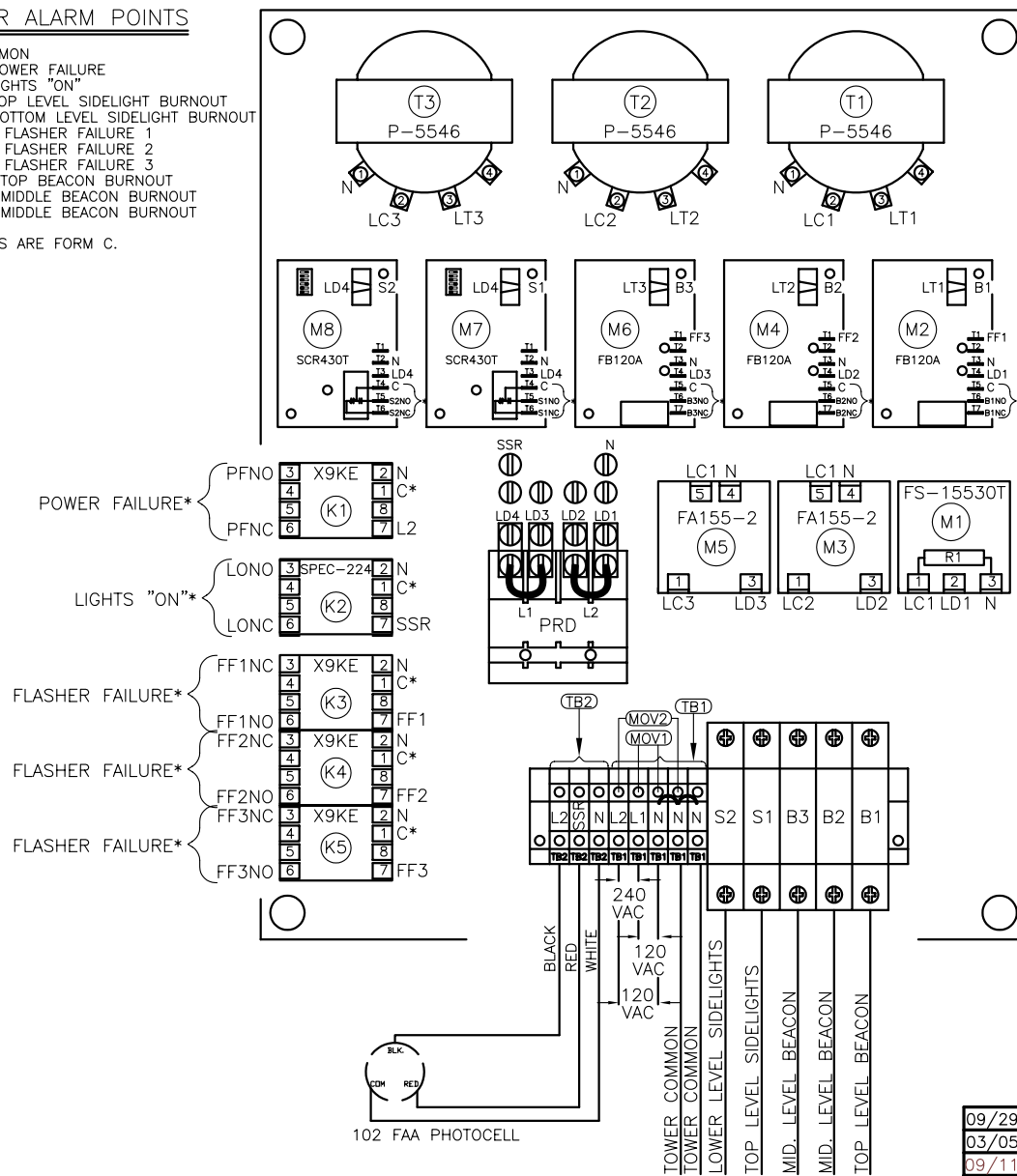
SUGGESTED SPARE PARTS LIST

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	FS155-30T	Solid State Flasher (M1)
1	FA155-2	Solid State Load Contactor (M3-M5)
1	FB120A	Beacon Failure Detector (M2, M4 & M6)
1	X9KE-115V Relay	SPDT Relay (K1, K3, K4, & K5)
1	SPEC 224	Time Delay Relay (K2)
1	SCR430T	Sidelight Burnout Detector (M7 & M8)

*CUSTOMER ALARM POINTS

C = ALARM COMMON
 PFNO/PFNC = POWER FAILURE
 LONO/LONC = LIGHTS "ON"
 S1NO/S1NC = TOP LEVEL SIDELIGHT BURNOUT
 S2NO/S2NC = BOTTOM LEVEL SIDELIGHT BURNOUT
 FF1NO/FF1NC = FLASHER FAILURE 1
 FF2NO/FF2NC = FLASHER FAILURE 2
 FF3NO/FF3NC = FLASHER FAILURE 3
 B1NO/B1NC = TOP BEACON BURNOUT
 B2NO/B2NC = MIDDLE BEACON BURNOUT
 B3NO/B3NC = MIDDLE BEACON BURNOUT

* ALARM OUTPUTS ARE FORM C.

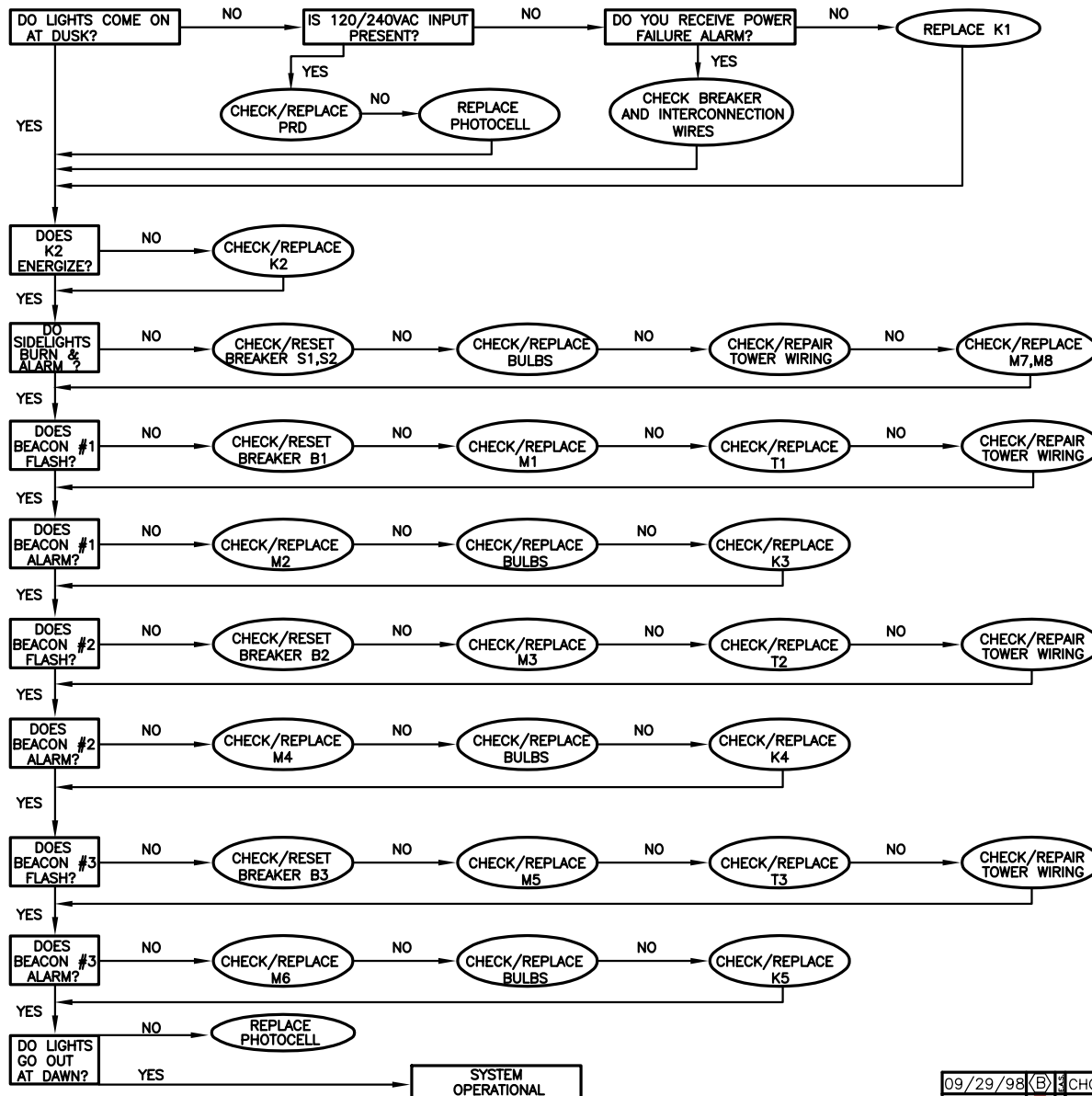


MOUNTING DIMENSIONS
 (FOR CABINET)

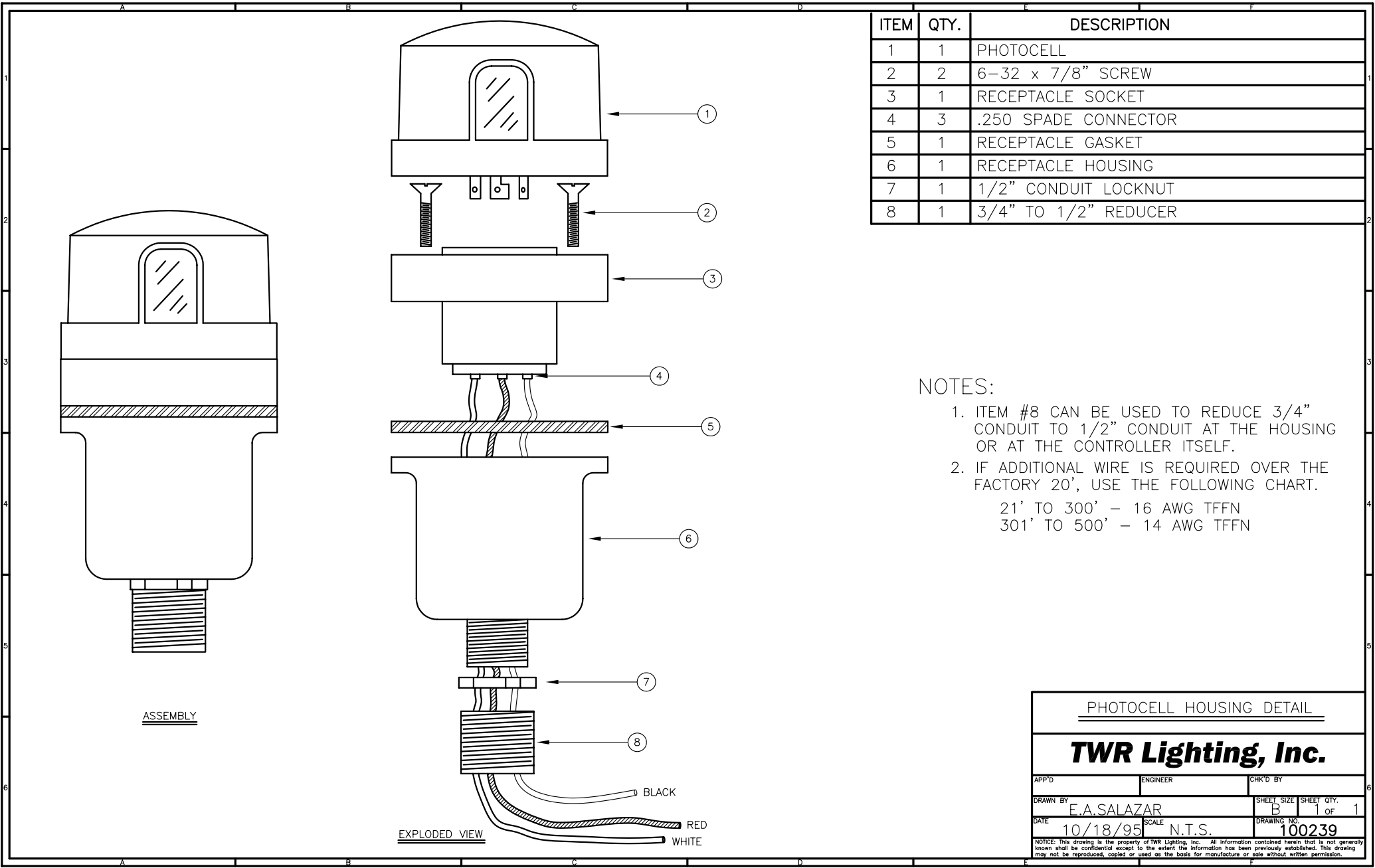
NOTES:

1. WHEN REPLACING METAL BASE MODULES USE HEAT SINK COMPOUND BETWEEN MODULE 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) B1 TO B1 TO B1.

AA2/3MB CONTROLLER CHASSIS LAYOUT		
TWR Lighting, Inc.		
APP'D	ENGINEER	CHK'D BY
09/29/98	CHG. FUSE TO BREAKER	DATE
03/05/98	UPDATED CONTROLLER	DATE
09/11/97	UPDATED CONTROLLER	DATE
DATE:	LTR.	REVISION
DRAWN BY E.A.SALAZAR		SHEET SIZE B
DATE 09/06/94		SHEET QTY. 1 OF 1
SCALE N.T.S.		DRAWING NO. 1135-R
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TROUBLESHOOTING FLOW CHART			
AA2/3MB DWG.#1135-R			
TWR Lighting, Inc.			
APP'D	ENGINEER	CHK'D BY	
DRAWN BY E.A.SALAZAR		SHEET SIZE B	SHEET QTY. 1 OF 1
DATE 09/29/98	SCALE 9/7/94	DRAWING NO. 1135-F	
09/15/97 (A) 3 CHG. FUSE TO BREAKER		09/15/97 (A) 3 UPDATED CHART	
DATE:	LTR.	REVISION	
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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

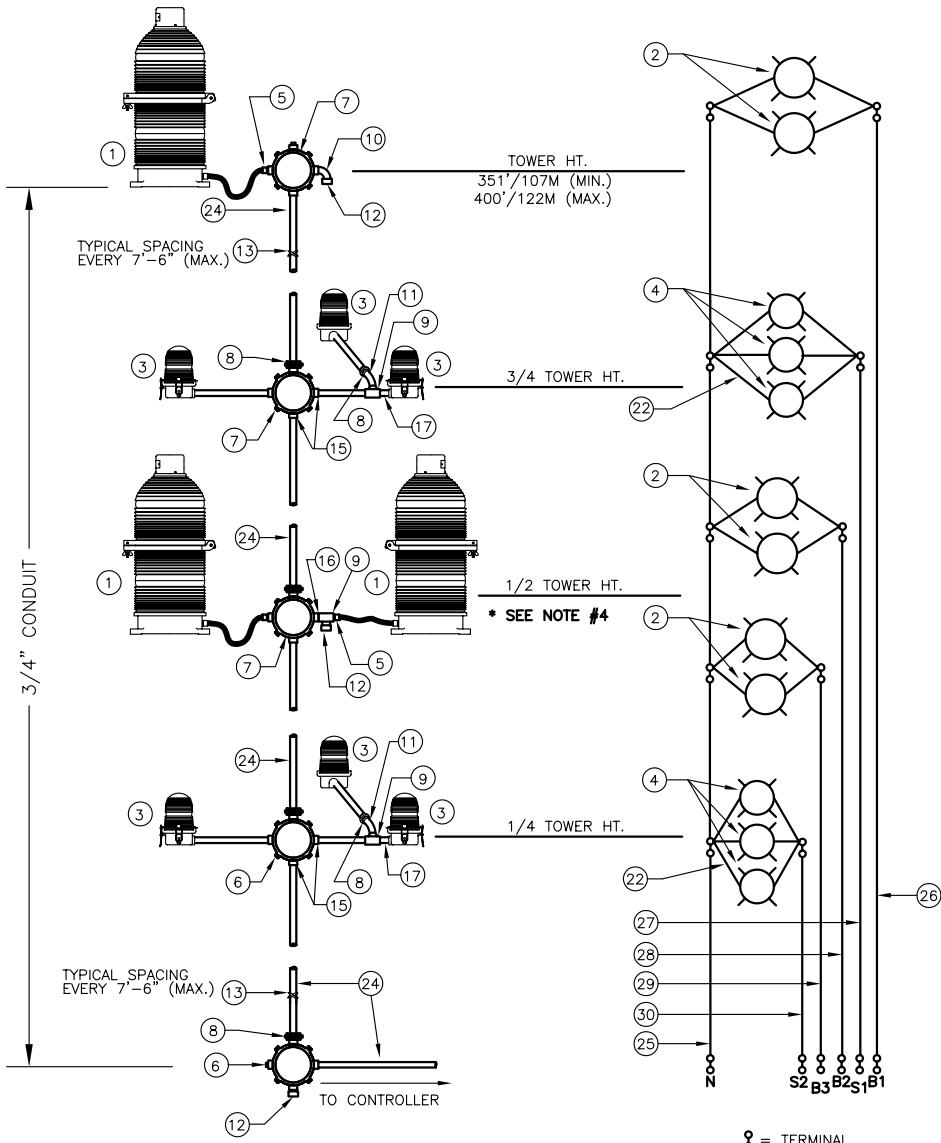
- NOTES:
- 1. ITEM #8 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.
 - 2. IF ADDITIONAL WIRE IS REQUIRED OVER THE FACTORY 20', USE THE FOLLOWING CHART.
21' TO 300' - 16 AWG TFFN
301' TO 500' - 14 AWG TFFN

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

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BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	3	BEACON	300 MM BEACON RED
2	6	620PS40P	620 WATT 120 VOLT LAMP
3	6	OL1	3/4" OBSTRUCTION LIGHT
4	6	116A21TS	116 WATT 120 VOLT LAMP
5	3	CGB295SA	3/4" CORD CONNECTOR
6	2	JB5/7	3/4" JUNCTION BOX W/ 7 TERMINALS
7	3	JB5	3/4" JUNCTION BOX
8	7	UNY205	3/4" UNION
9	4	T27CG	3/4" CONDULET W/COVER AND GASKET
10	2	EL3490	3/4" 90° SHORT ELBOW
11	2	EL3430	3/4" 30° ELBOW
12	3	5012902	3/4" BREATHER
13	2	SS10012	WRAPLOCK
14	2	PIPDOP	4 oz. PIPE DOPE
15	15	A314	3/4" CONDUIT LOCKNUTS
16	16	CPLG34	3/4" GALVANIZED COUPLING
17	8	N34T3	3/4" x 3" NIPPLE
18	6	N34T6	3/4" x 6" NIPPLE
19	6	N34T12	3/4" x 12" NIPPLE
20	6	N34T24	3/4" x 24" NIPPLE
21	4	N34T36	3/4" x 36" NIPPLE
22	6	SLPIGTAIL25	25' SIDELIGHT PIGTAIL
23	1	AA2/3 B	AA2/3 B CONTROLLER W/BOOST

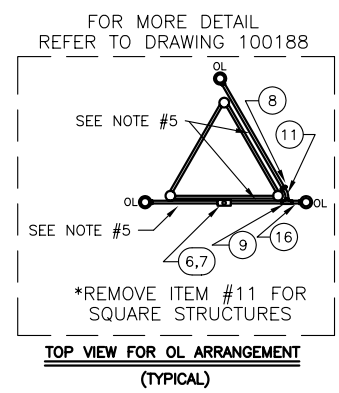
ITEM NUMBERS #24-#30 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

24	-	CONDUIT34	3/4" CONDUIT (TOWER HT.+ 30'/9M)
25	-	6THHNWHT	#6 THHN WHT. WIRE (TOWER HT.+40'/12M)
26	-	10THHNBLK	#10 THHN BLK. WIRE (TOWER HT.+40'/12M)
27	-	12THHNRED	#12 THHN RED WIRE (3/4 TWR HT.+40'/12M)
28	-	12THHNBLUE	#12 THHN BLUE WIRE (1/2 TWR HT.+40'/12M)
29	-	12THHNBLUE	#12 THHN BLUE WIRE (1/2 TWR HT.+40'/12M)
30	-	12THHNYLW	#12 THHN YLW. WIRE (1/4 TWR HT.+40'/12M)

* = ITEMS NOT SHOWN

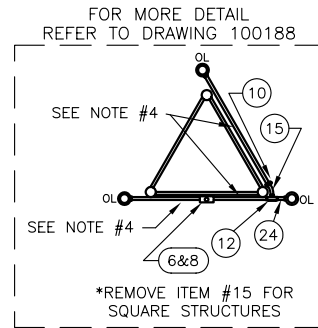
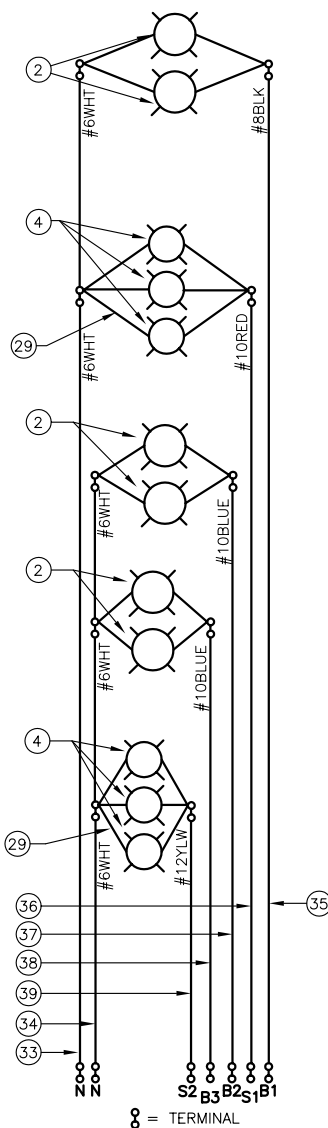
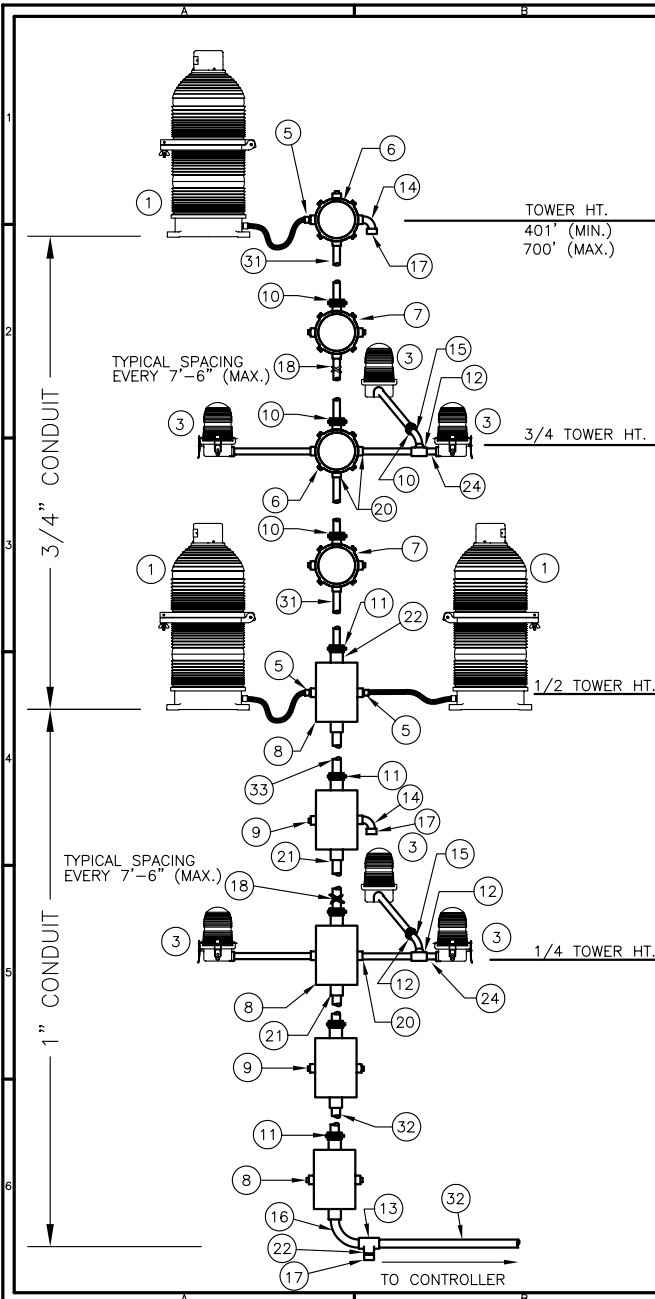
NOTES:

- 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) MIDDLE LEVEL BEACONS CAN NOT BE MOUNTED AT LESS THAN 200'/61M.
- 5) ITEMS #17-#20 TO BE USED IN VARIOUS COMBINATIONS FOR OL1 RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6".
- 6) USE ITEM #16 TO COUPLE CONDUIT NIPPLES. APPROPRIATE OL1 EXTENSION IS 12".



LK1A2/3B TOWER LIGHTING KIT W/BOOST (TOWERS 351'/107M TO 400'/122M)		
TWR Lighting, Inc.		
APP'D	ENGINEER	CHK'D BY
DRAWN BY	E.A.SALAZAR	SHEET SIZE B 1 OF 1
DATE	12/8/92	SCALE N.T.S.
DRAWING NO. 261-31B		
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07/26/00	(D)	UPDATED B.O.M.
05/01/96	(C)	UPDATED B.O.M.
9/15/94	(B)	REWORK KIT PARTS
2/25/94	(A)	ADDED MATERIALS
DATE:	LTR.	REVISION



TOP VIEW FOR OL ARRANGEMENT
(TYPICAL)

06/29/98	(D)	REWORKED KIT PARTS
05/01/96	(C)	UPDATED B.O.M.
9/15/94	(B)	REWORK KIT PARTS
2/25/94	(A)	ADDED MATERIALS
DATE:	LTR.	REVISION

BILL OF MATERIALS

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	3	BEACON	300 MM BEACON RED
2	6	620PS40P	620 WATT 120 VOLT LAMP
3	6	OL1	3/4" OBSTRUCTION LIGHT
4	6	116A21TS	116 WATT 120 VOLT LAMP
5	4	CGB295SA	3/4" CORD CONNECTOR
6	2	JB5	3/4" JUNCTION BOX
7	2	JB0	3/4" STRAIN RELIEF BOX
8	3	JB8	1" JUNCTION BOX
9	2	JB8SR	1" STRAIN RELIEF BOX
10	6	UNY205	3/4" UNION
11	5	UNY305	1" UNION
12	3	T27CG	3/4" CONDUIT W/COVER AND GASKET
13	2	T37CG	1" CONDUIT W/COVER AND GASKET
14	2	EL3490	3/4" 90° SHORT ELBOW
15	2	EL3430	3/4" 30° ELBOW
16	2	EL190	1" 90° ELBOW
17	3	5012902	3/4" BREATHER
18	2	SS10012	WRAPLOCK
19	2	PIPDOP	4 oz. PIPE DOPE
20	19	A314	3/4" CONDUIT LOCKNUTS
21	12	A315	1" CONDUIT LOCKNUT
22	2	RF32	1" TO 3/4" REDUCER
23	16	CPLG34	3/4" GALVANIZED COUPLING
24	8	N34T3	3/4" x 3" NIPPLE
25	6	N34T6	3/4" x 6" NIPPLE
26	6	N34T12	3/4" x 12" NIPPLE
27	6	N34T24	3/4" x 24" NIPPLE
28	4	N34T36	3/4" x 36" NIPPLE
29	6	SLPGTAIL25	25' SIDELIGHT PIGTAIL
30	1	AA2/3	B AA2/3 B CONTROLLER

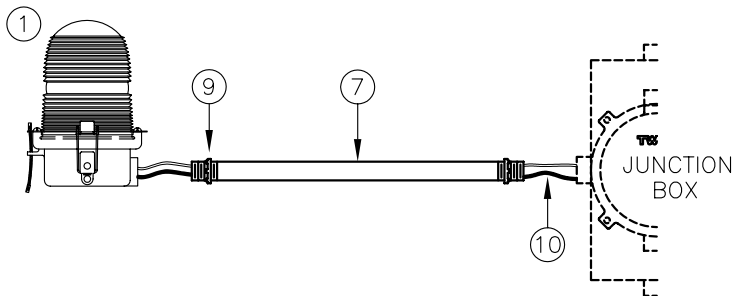
- ITEM NUMBERS #31-#39 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.
- | | | | |
|----|---|-----------|--|
| 31 | — | CONDUIT34 | 3/4" CONDUIT (1/2 TOWER HT.) |
| 32 | — | CONDUIT1 | 1" CONDUIT (1/2 TOWER HT.+ 30'/9M) |
| 33 | — | 6THHNWHT | #6 THHN WHT. WIRE (TOWER HT.+40'/12M) |
| 34 | — | 6THHNWHT | #6 THHN WHT. WIRE (1/2 TWR HT.+40'/12M) |
| 35 | — | 8THHNBK | #8 THHN BLK. WIRE (TOWER HT.+40'/12M) |
| 36 | — | 10THHNRED | #10 THHN RED WIRE (3/4 TWR HT.+40'/12M) |
| 37 | — | 10THHNBK | #10 THHN BLK. WIRE (1/2 TWR HT.+40'/12M) |
| 38 | — | 10THHNBK | #10 THHN BLK. WIRE (1/2 TWR HT.+40'/12M) |
| 39 | — | 12THHNYLW | #12 THHN YLW. WIRE (1/4 TWR HT.+40'/12M) |
- * = ITEMS NOT SHOWN
- NOTES:
- CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
 - USE RIGID GALVANIZED STEEL CONDUIT.
 - BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
 - ITEMS #24-#28 TO BE USED IN VARIOUS COMBINATIONS FOR OL1 RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6".
 - USE ITEM #23 TO COUPLE CONDUIT, NIPPLES. APPROPRIATE OL1 EXTENSION IS 12".

LK2A2/3B TOWER LIGHT KIT W/BOOST (TOWERS 401'/122M TO 700'/213M)

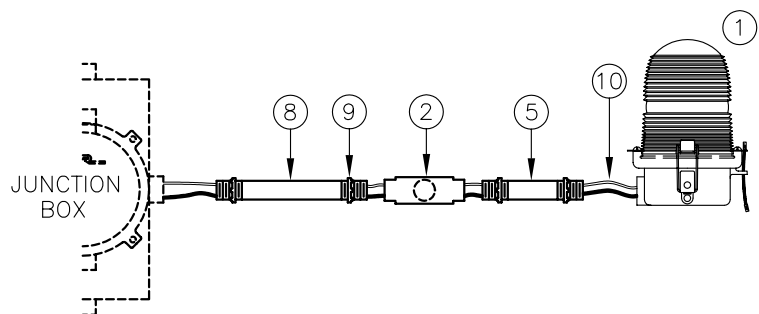
TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY	E.A.SALAZAR	SHEET SIZE
DATE	12/15/92	SCALE
DATE:	LTR.	REVISION

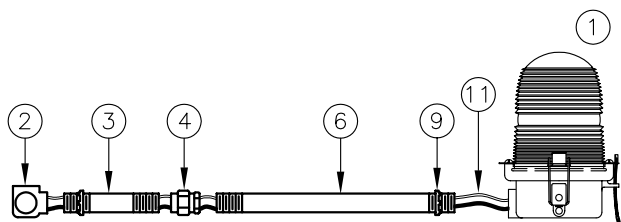
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VIEW A



VIEW B



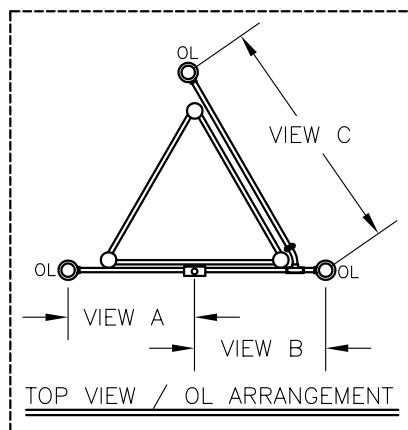
VIEW C

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
DRAWING NO.	100188	SHEET QTY.
		1 OF 1

6/06/96 (A) ADDED NOTES (GDS)

DATE: LTR. REVISION

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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.

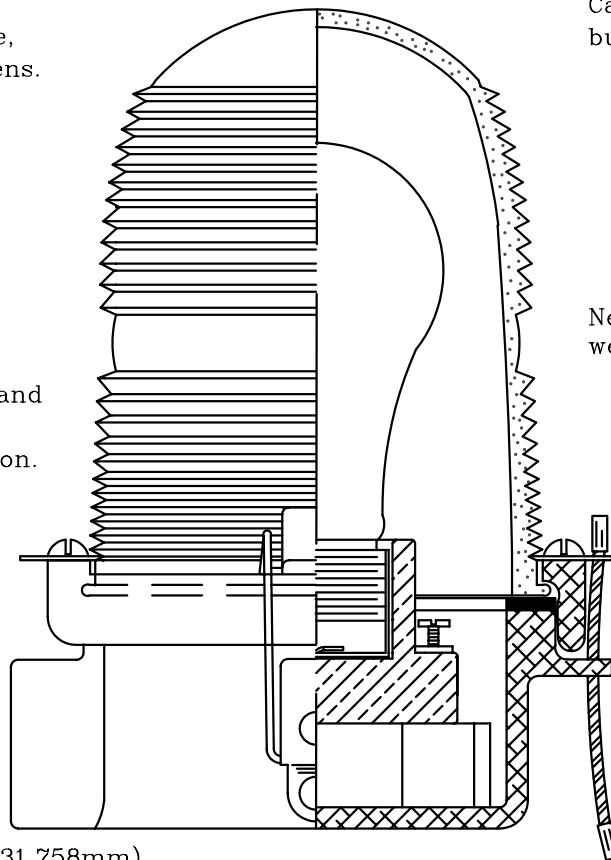
High temperature, ultra pure
FAA approved Aviation red, blue,
yellow, or clear glass fresnel lens.

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.

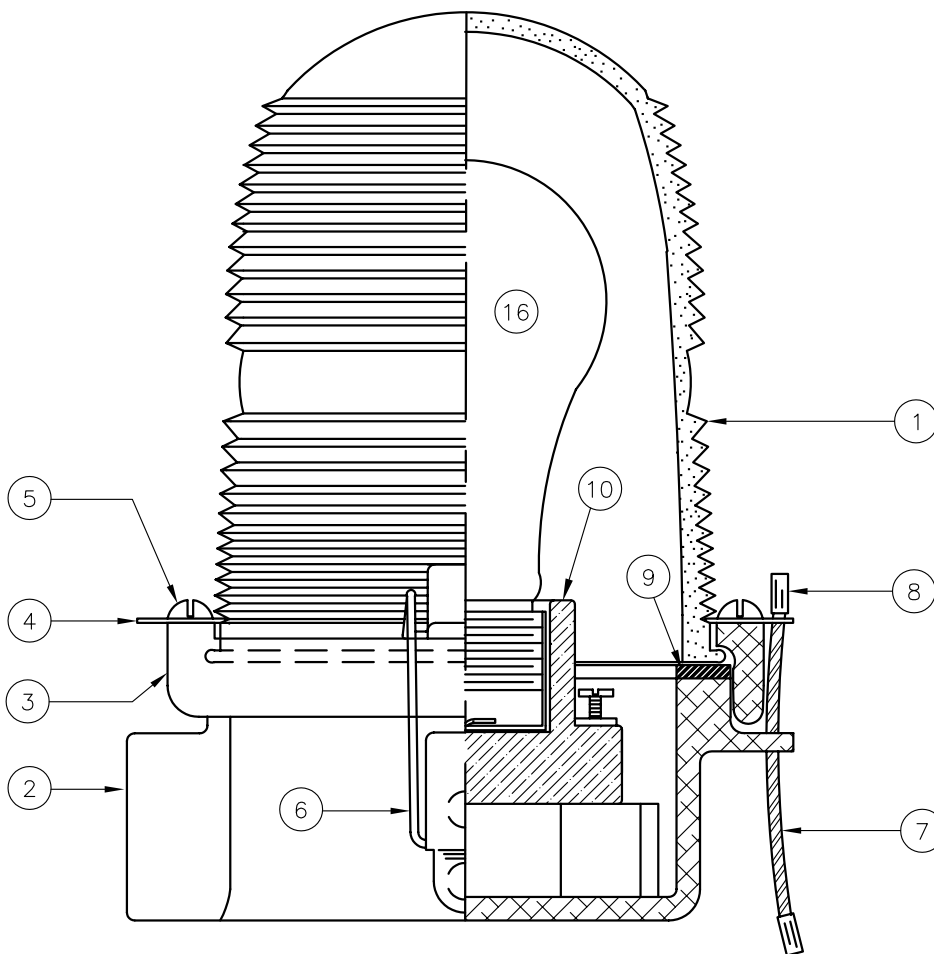
Stainless steel
safety cable.

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>
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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)

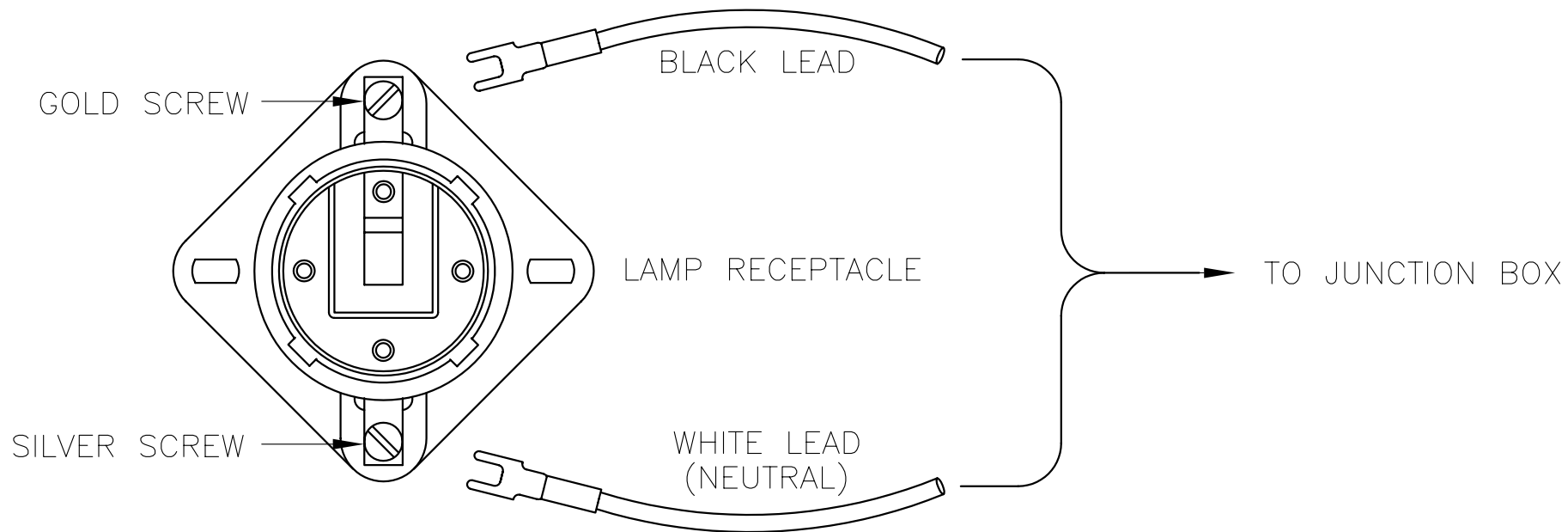
TWR Lighting, Inc.

APP'D	ENGINEER	CHK'D BY
DRAWN BY	E.A.SALAZAR	SHEET SIZE
DATE	1/7/92	SCALE
		DRAWING NO.

05/13/02 (B) UPDATED B.O.M.

DATE: LTR. REVISION

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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		CDL	CHANGED LABEL
DATE:	LTR.		REVISION

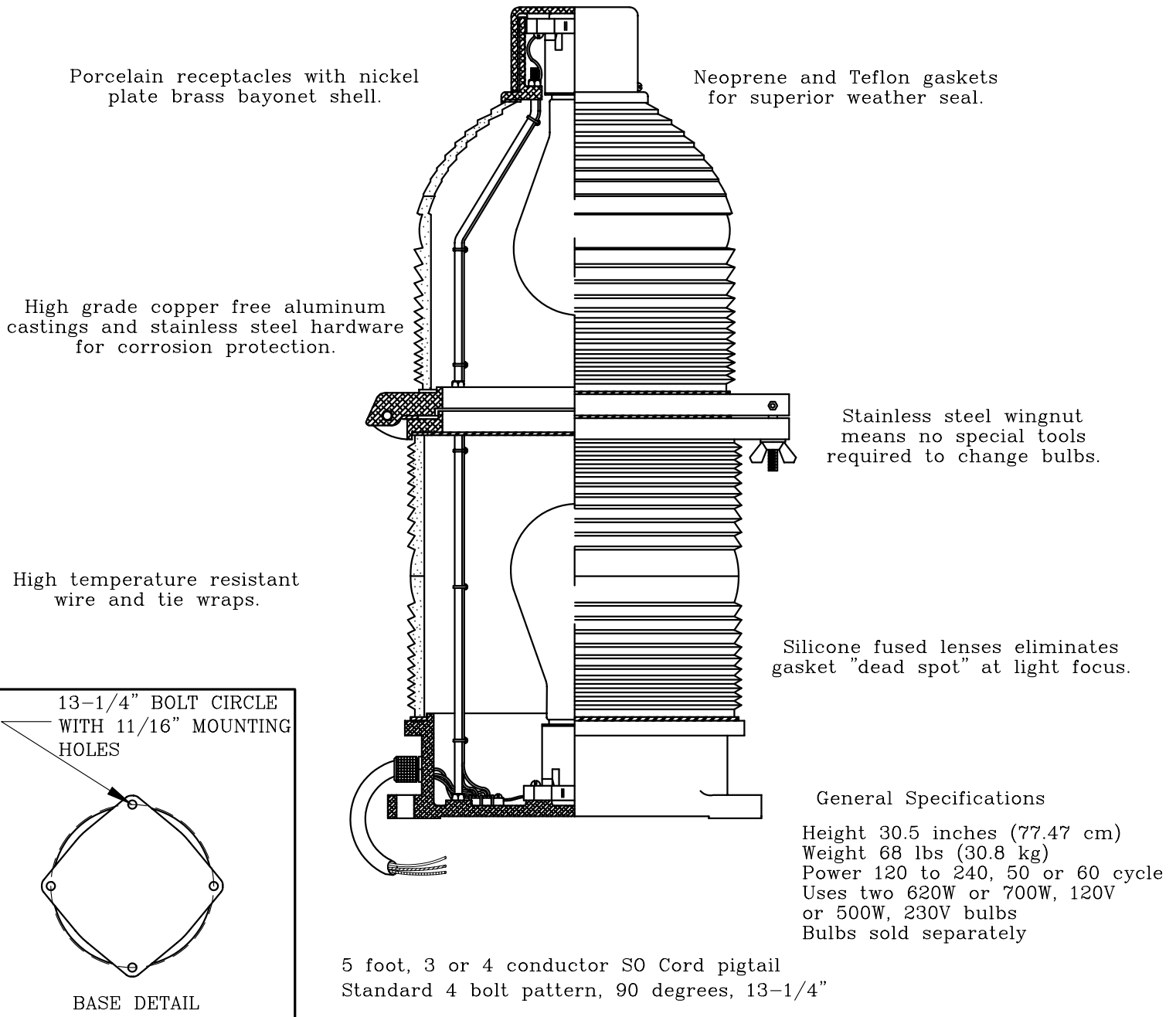
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TWR Lighting, Inc.

FAA Approved L-864 300 mm BEACON

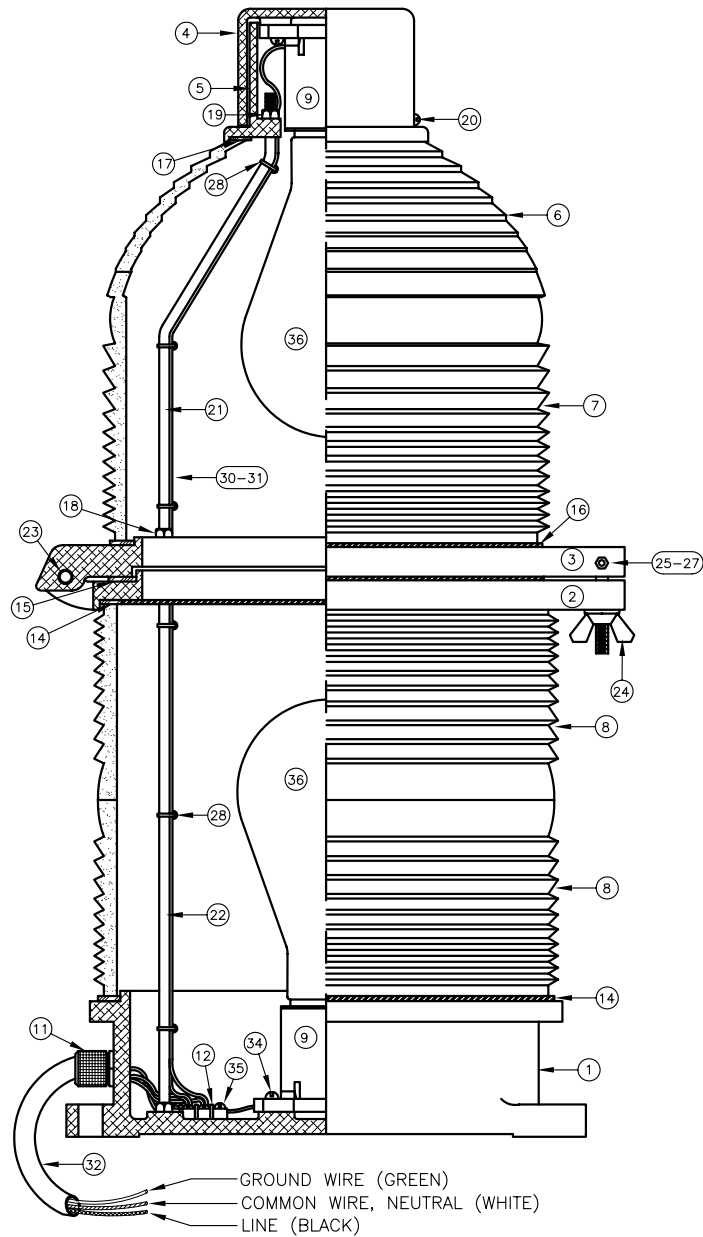
FM10017RB.DWG

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.



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WEB SITE: <http://www.twrlighting.com>
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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)

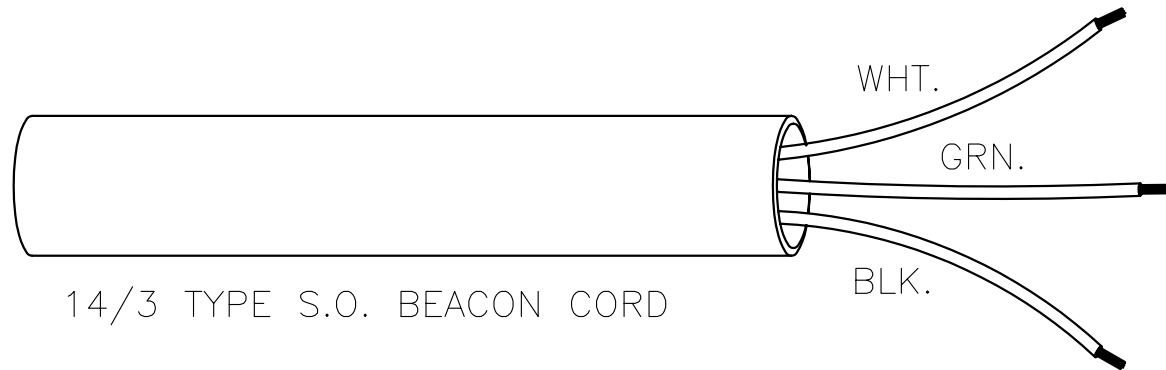
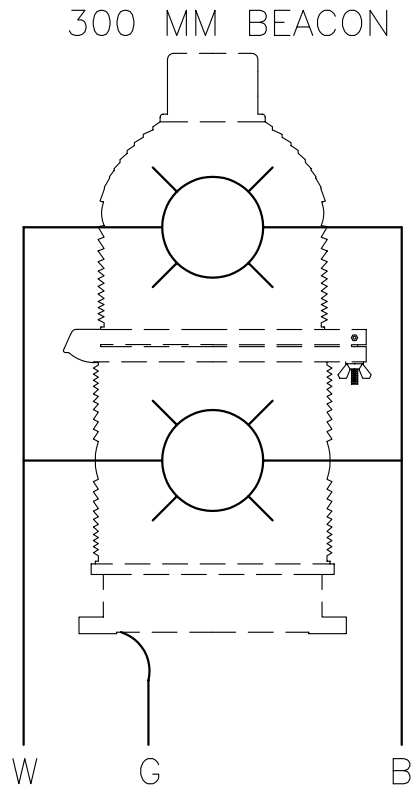
TWR Lighting, Inc.

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

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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.

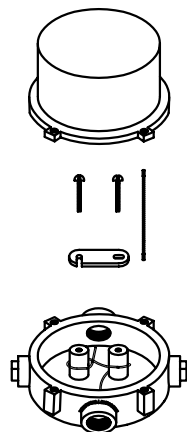
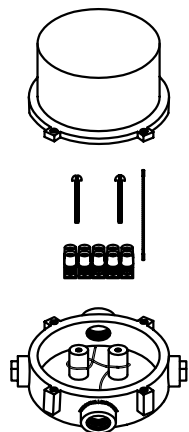


300 MM BEACON WIRE

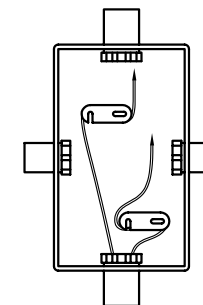
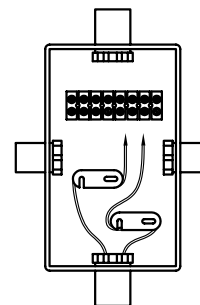
TWR Lighting, Inc.

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

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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

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