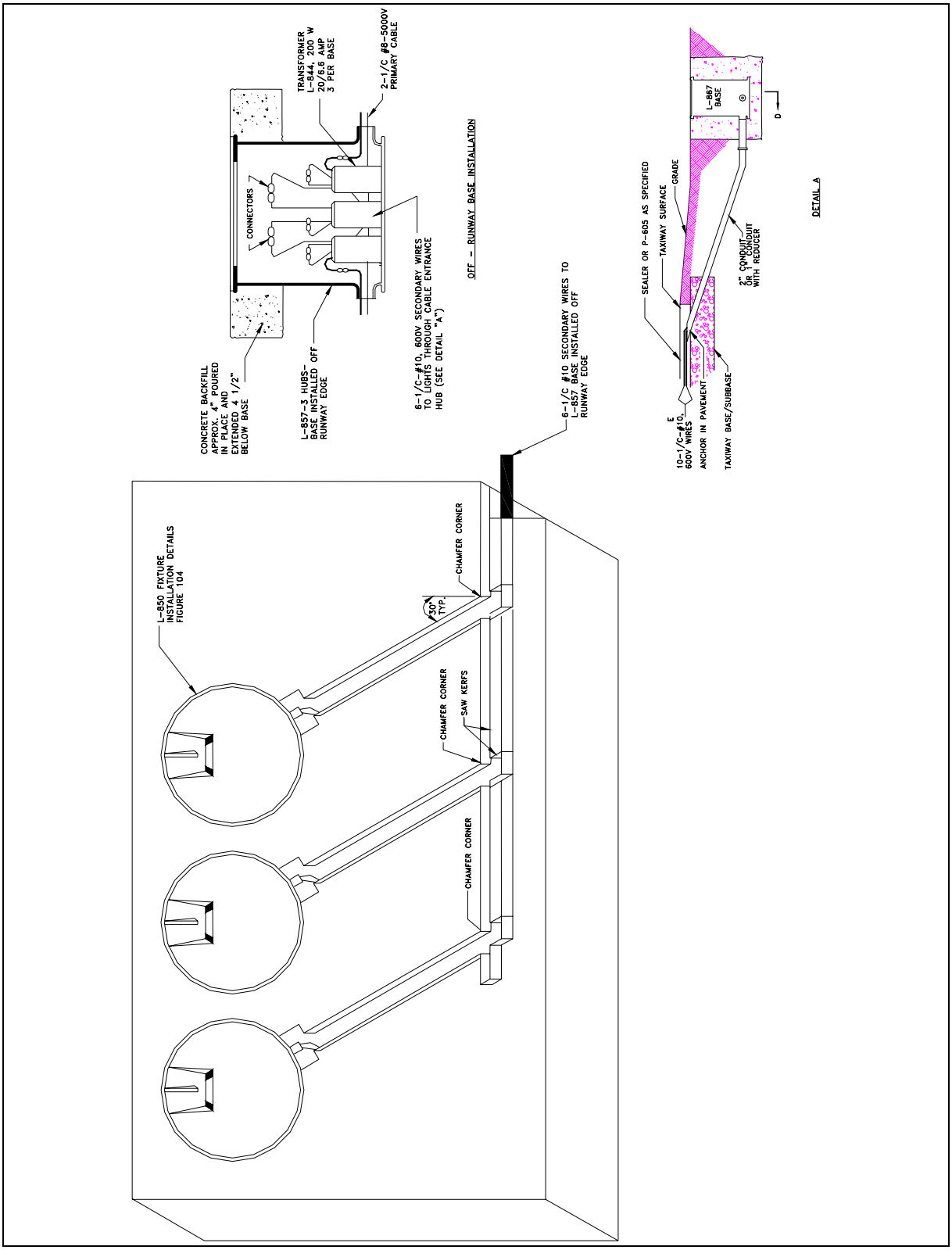


Figure 41 Typical Equipment Layout, Inset Type Lighting Fixtures

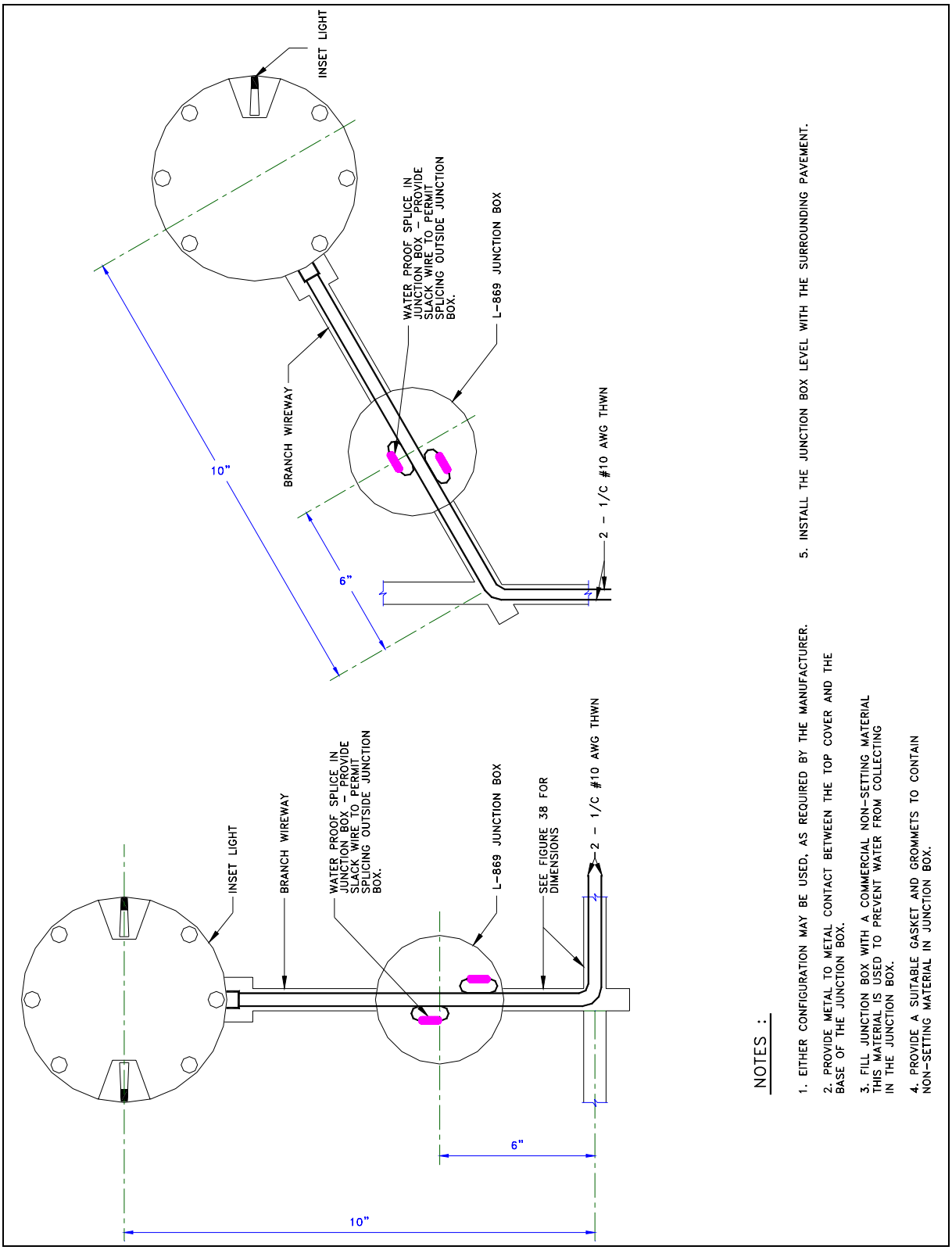


Figure 42 Junction Box for Inset Fixture Installation

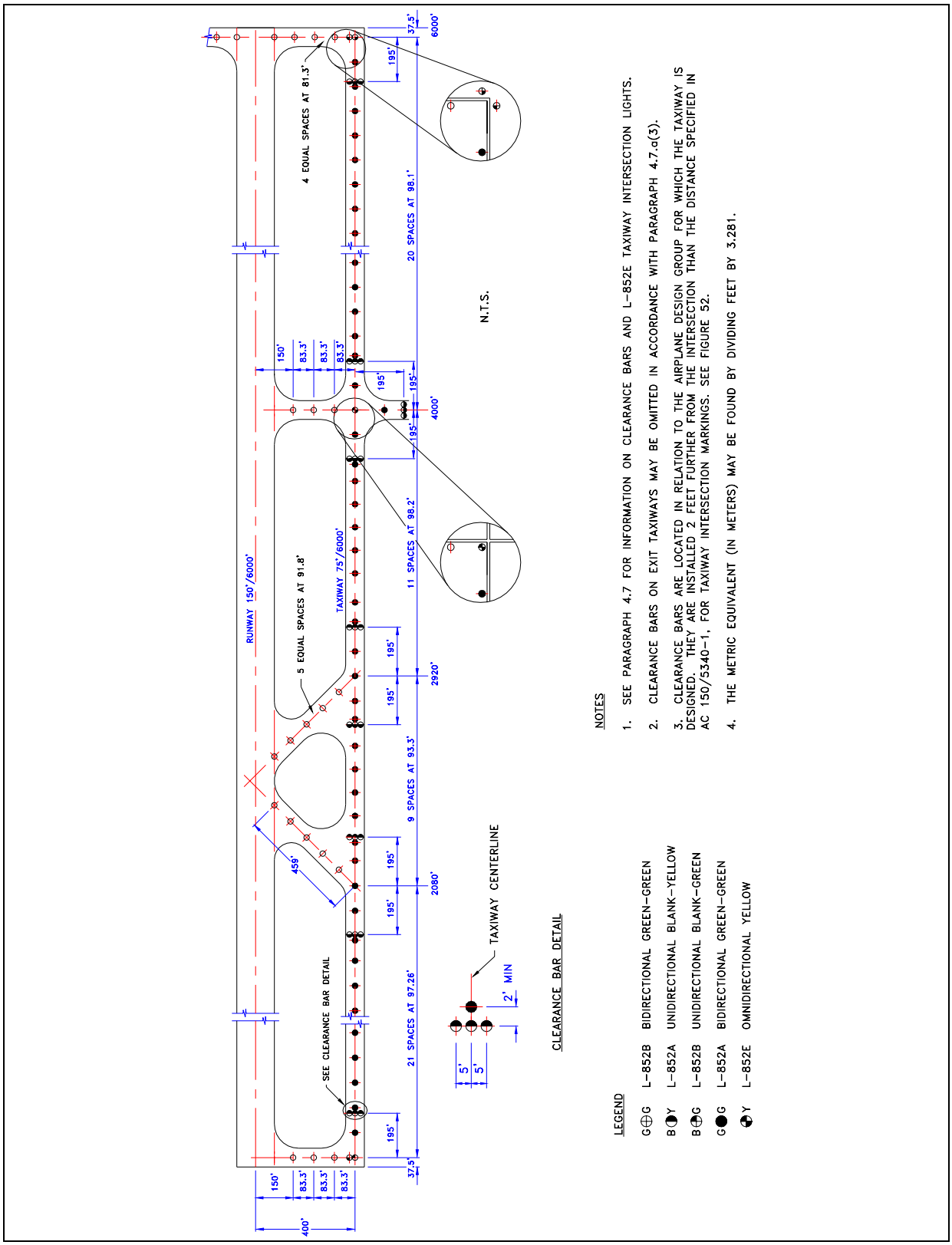


Figure 43 Typical Taxiway Centerline Lighting Configuration for Non-Standard Fillets. (Centerline light spacing for operations above 1,200 feet (365 m) RVR)

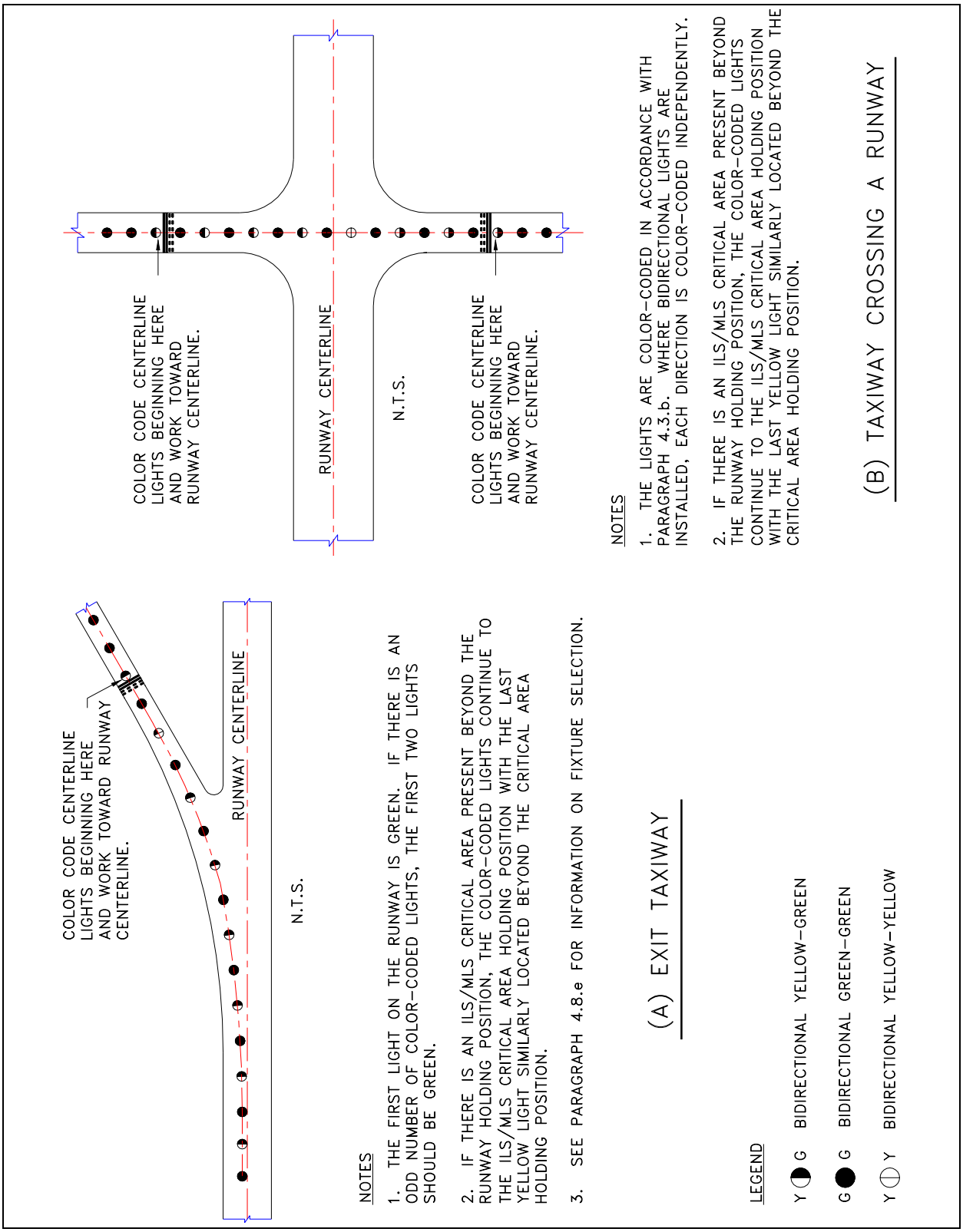


Figure 44 Color-Coding of Exit Taxiway Centerline Lights

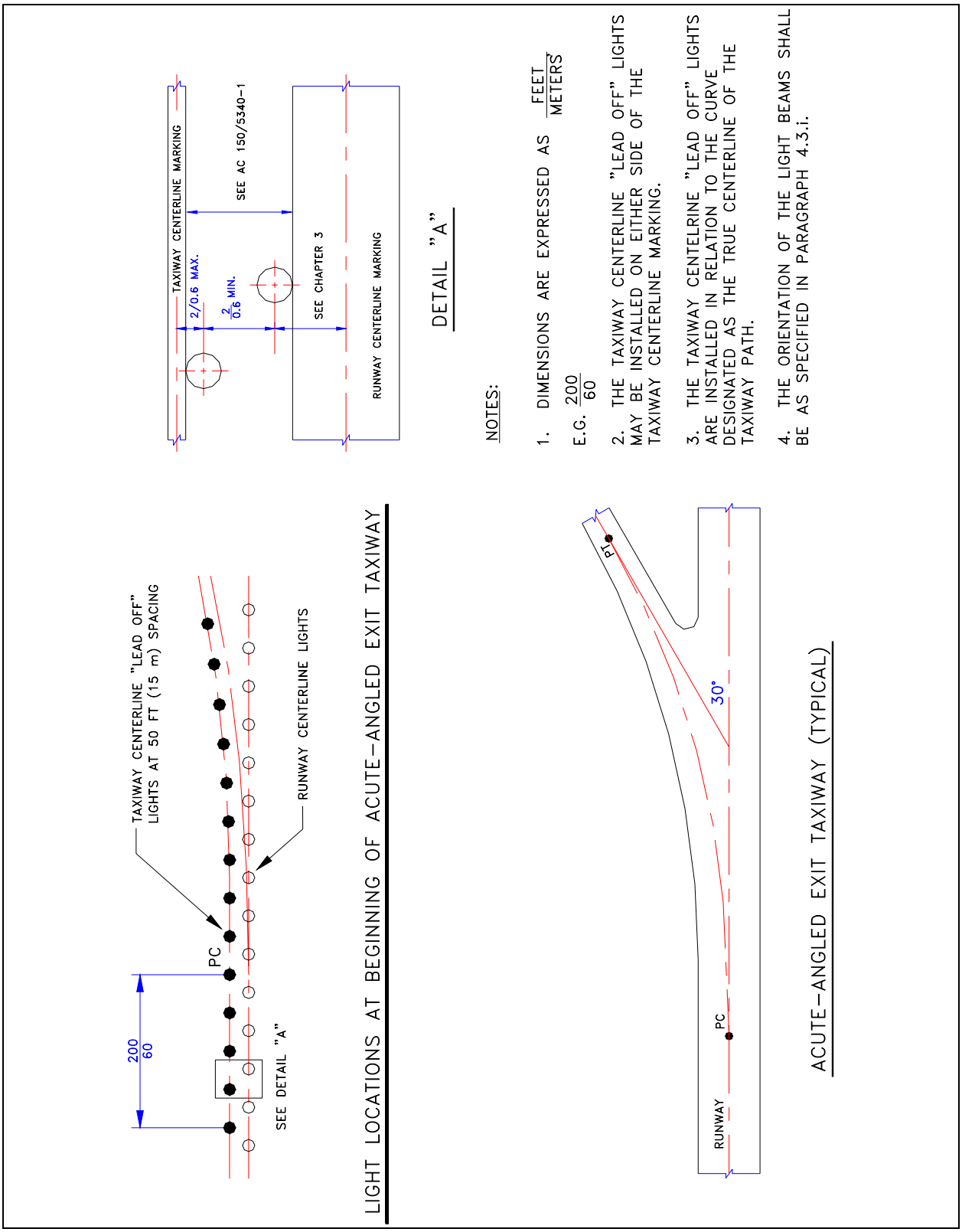


Figure 45 Taxiway Centerline Lighting Configuration for Acute-Angled Exits

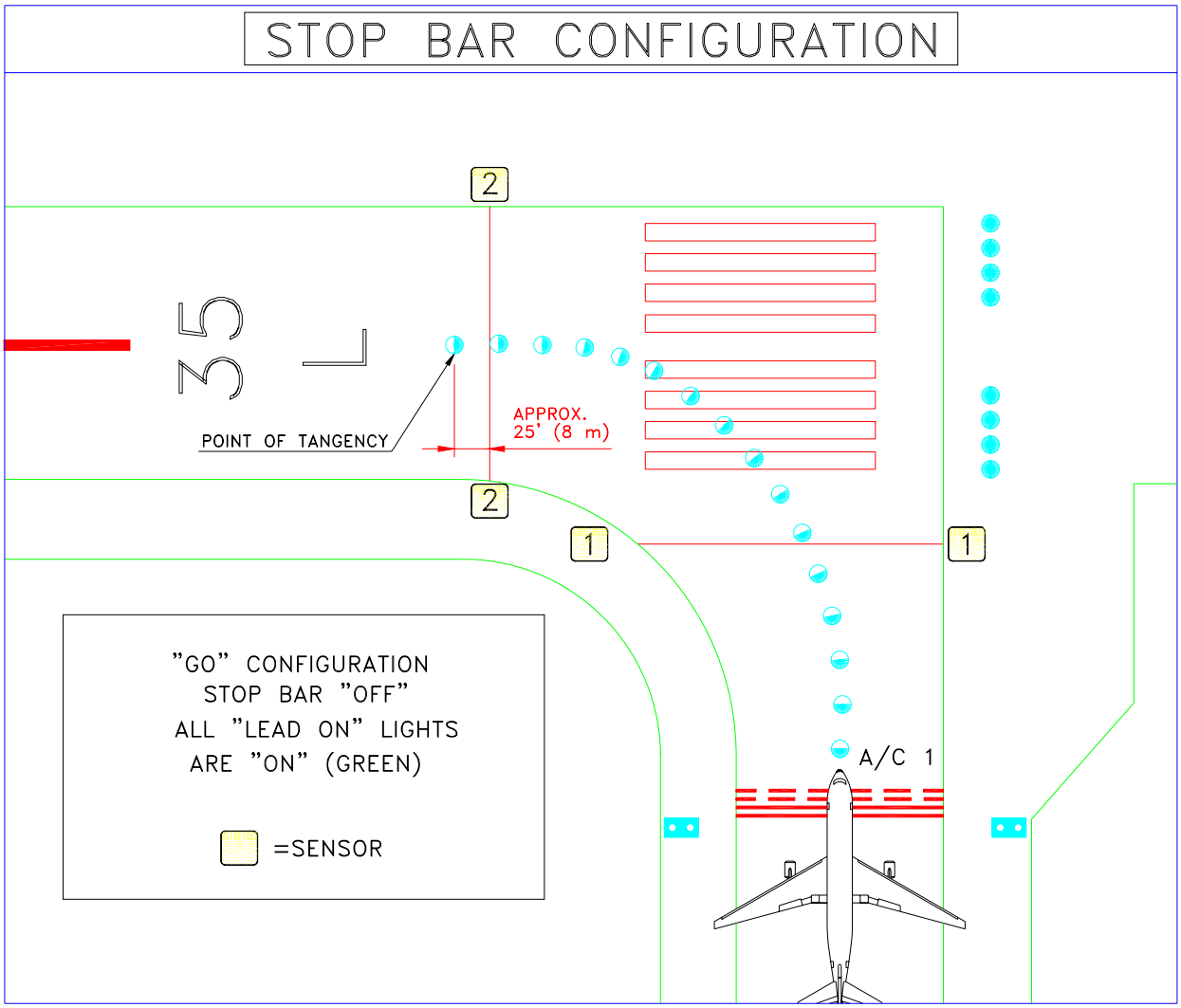


Figure 46 Controlled Stop Bar Design and Operation – "GO" Configuration

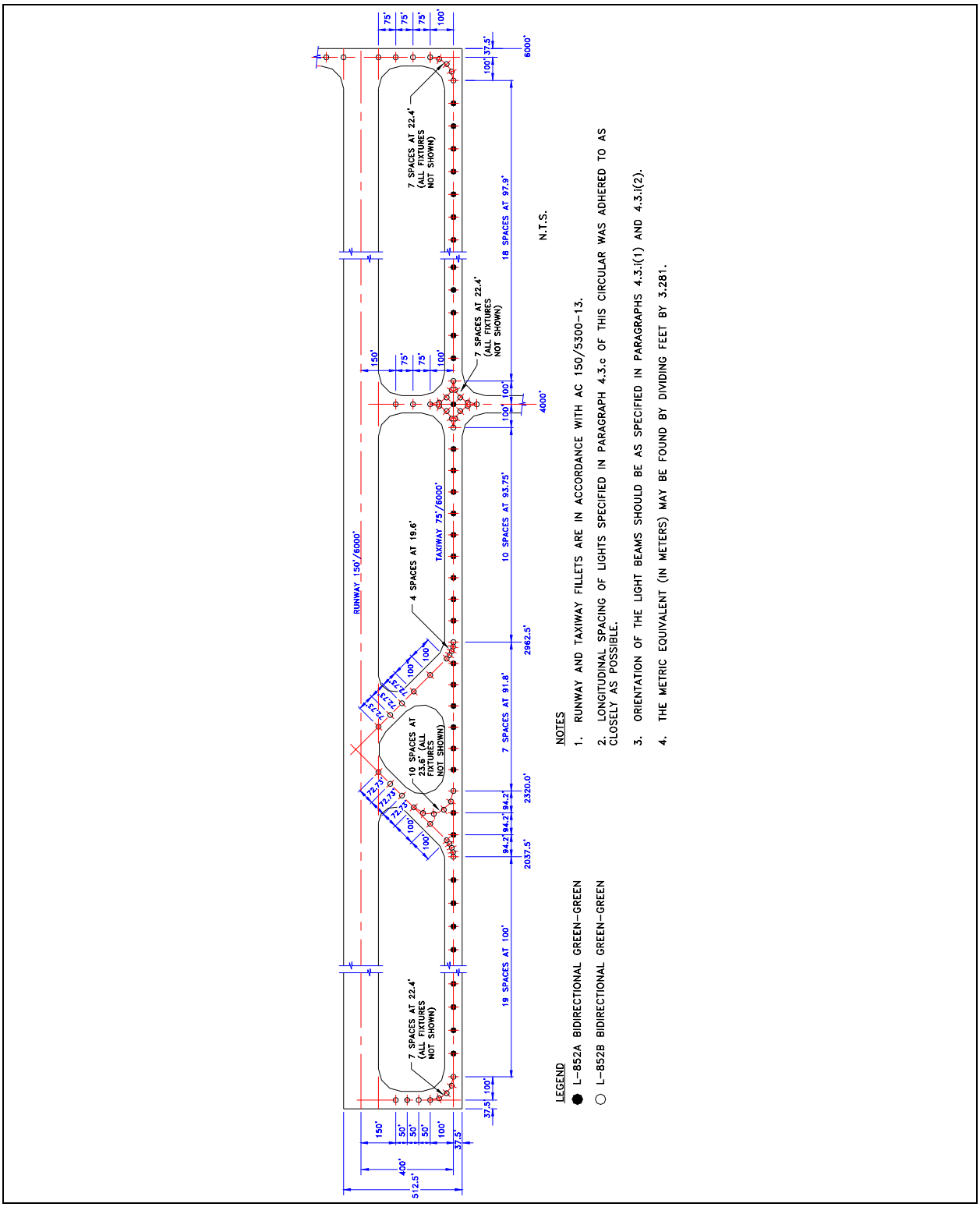
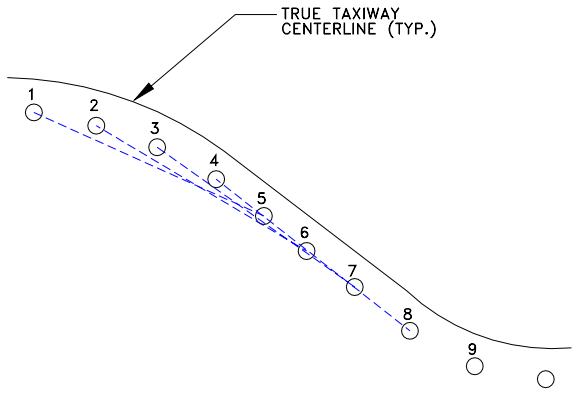
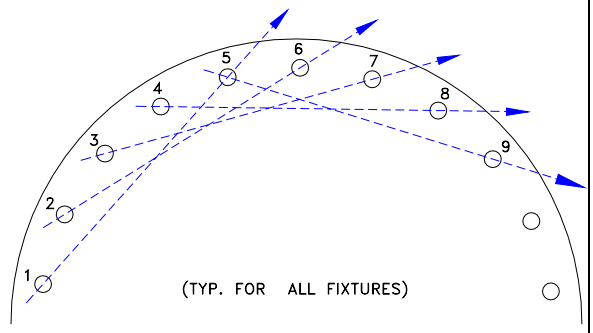


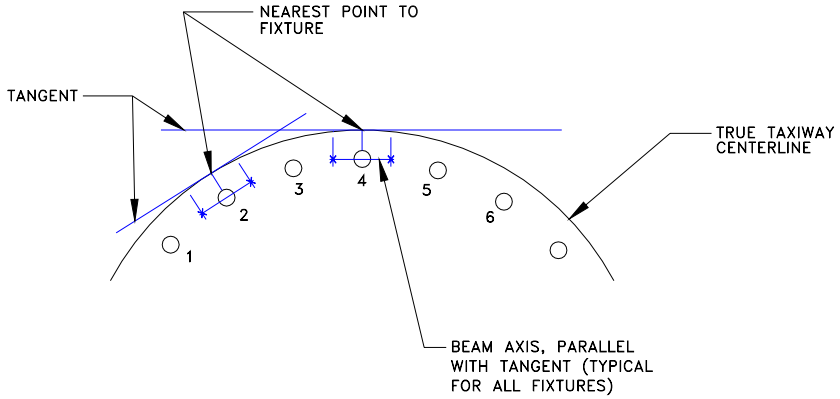
Figure 47 Typical Taxiway Centerline Lighting Configuration for Standard Fillets (Centerline light spacing for operations above 1,200 feet (365 m) RVR)



UNIDIRECTIONAL LIGHT ON SPIRAL CURVE



UNIDIRECTIONAL LIGHT ON CIRCULAR CURVE



BIDIRECTIONAL LIGHT ON CIRCULAR CURVE

NOTES:

1. FOR BIDIRECTIONAL LIGHTS, THE AXIS OF THE TWO BEAMS SHALL BE ORIENTED PARALLEL TO THE TANGENT OF THE NEAREST POINT OF THE CURVE DESIGNATED AS THE TRUE CENTERLINE OF THE TAXING PATH.

2. FOR UNIDIRECTIONAL LIGHTS, THE AXIS OF THE BEAM SHALL BE "TOED IN" TO INTERSECT THE CENTERLINE AT A POINT APPROXIMATELY EQUAL
TO FOUR TIMES THE SPACING OF LIGHTS (EVERY FOURTH LIGHT) ON THE CURVE PORTION, AND SUCH SPACING SHALL BE MEASURED ALONG THE CHORD OF THE CURVE.

Figure 48 Taxiway Centerline Light Beam Orientation

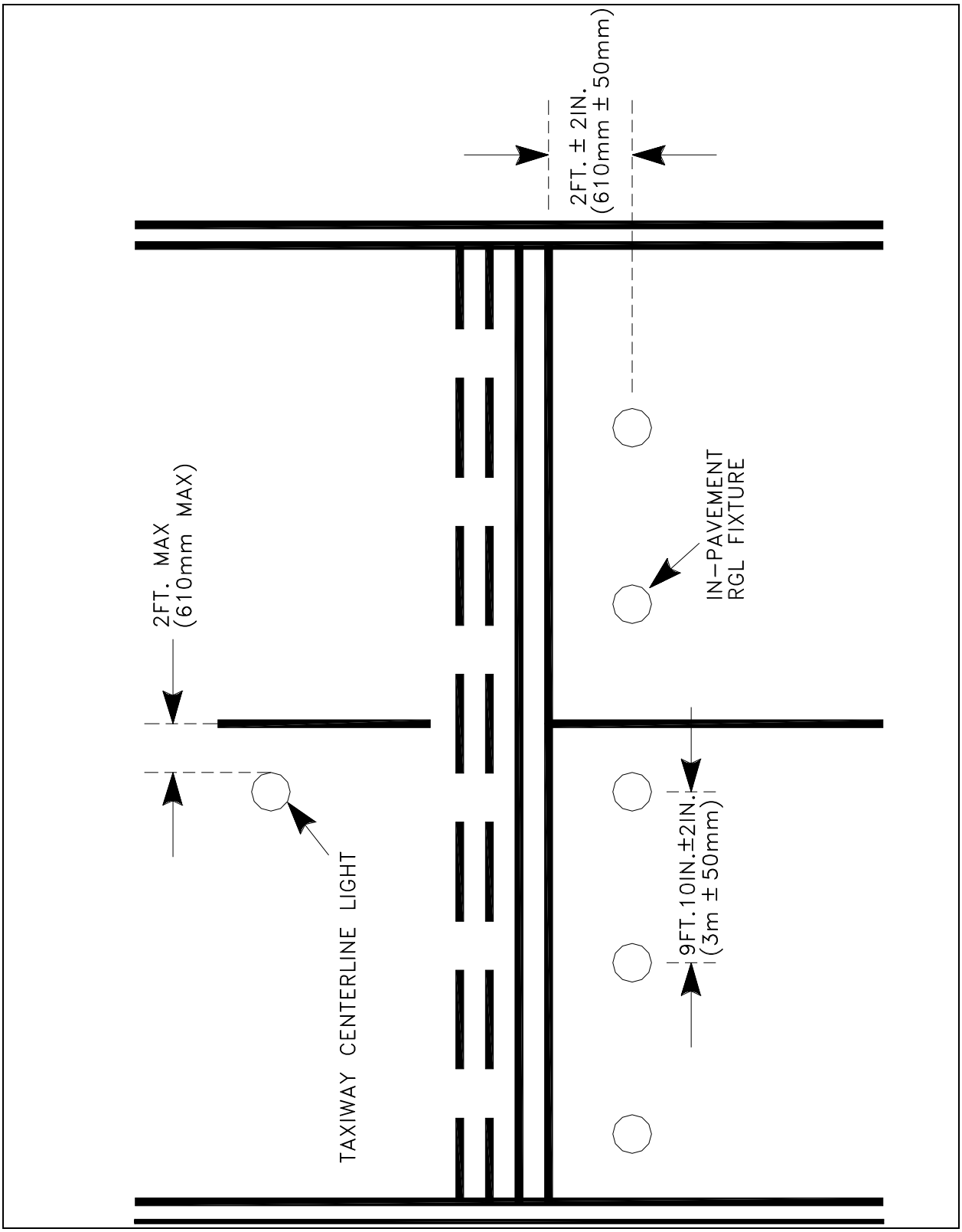


Figure 49 In-Pavement Runway Guard Light Configuration

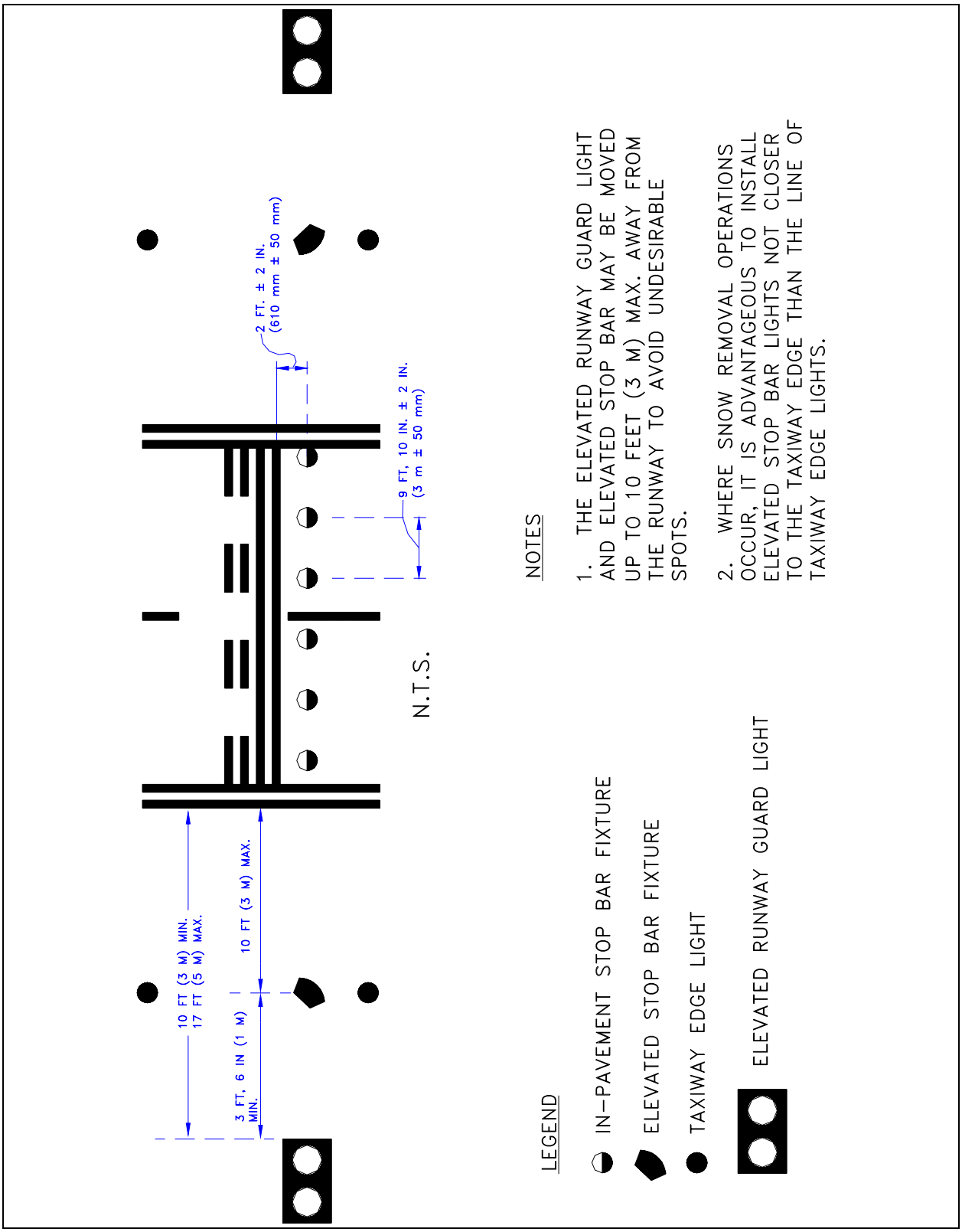


Figure 50 Elevated RGL and Stop Bar Light Configuration

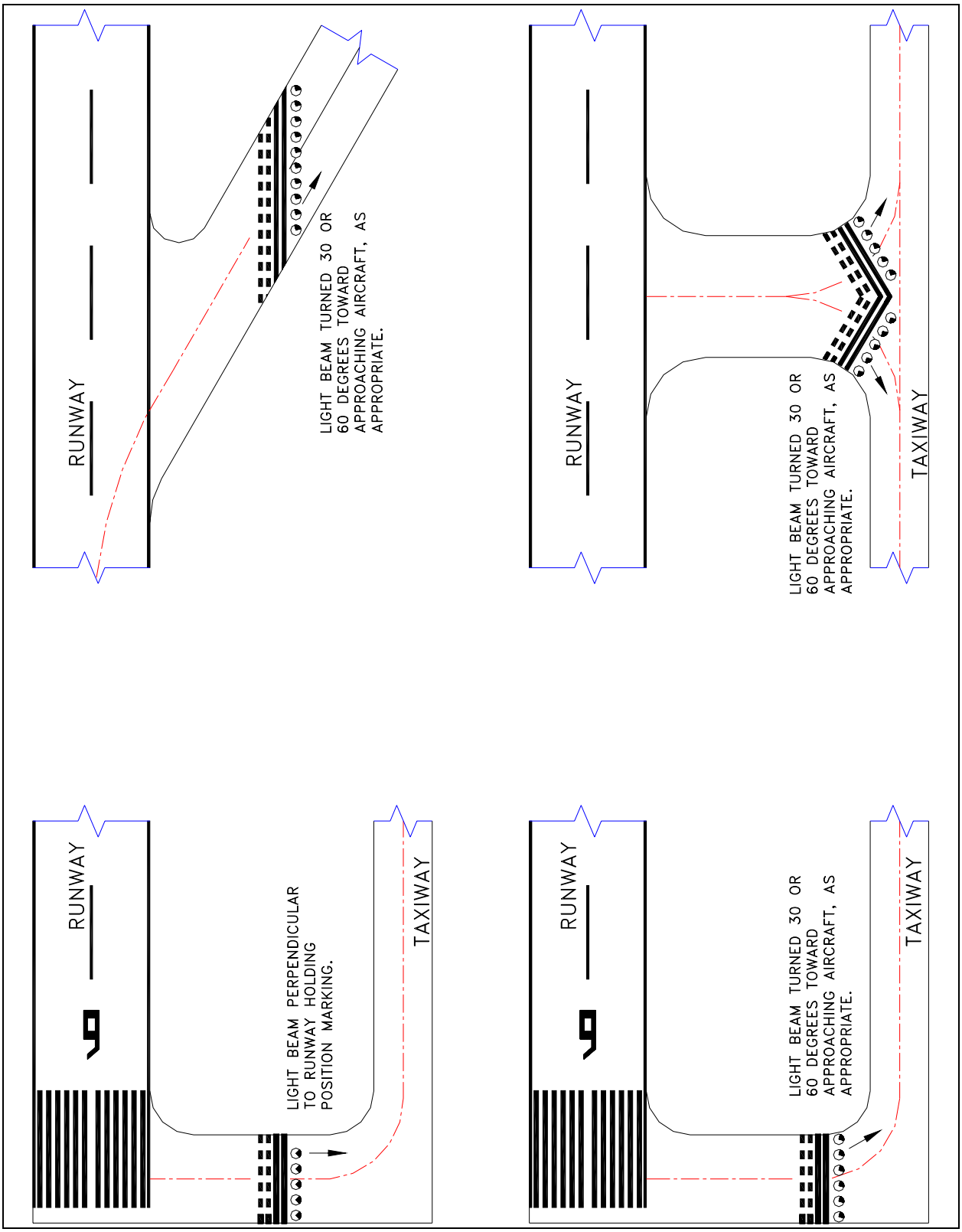


Figure 51 Typical Light Beam Orientation for In-Pavement RGLs and Stop Bars

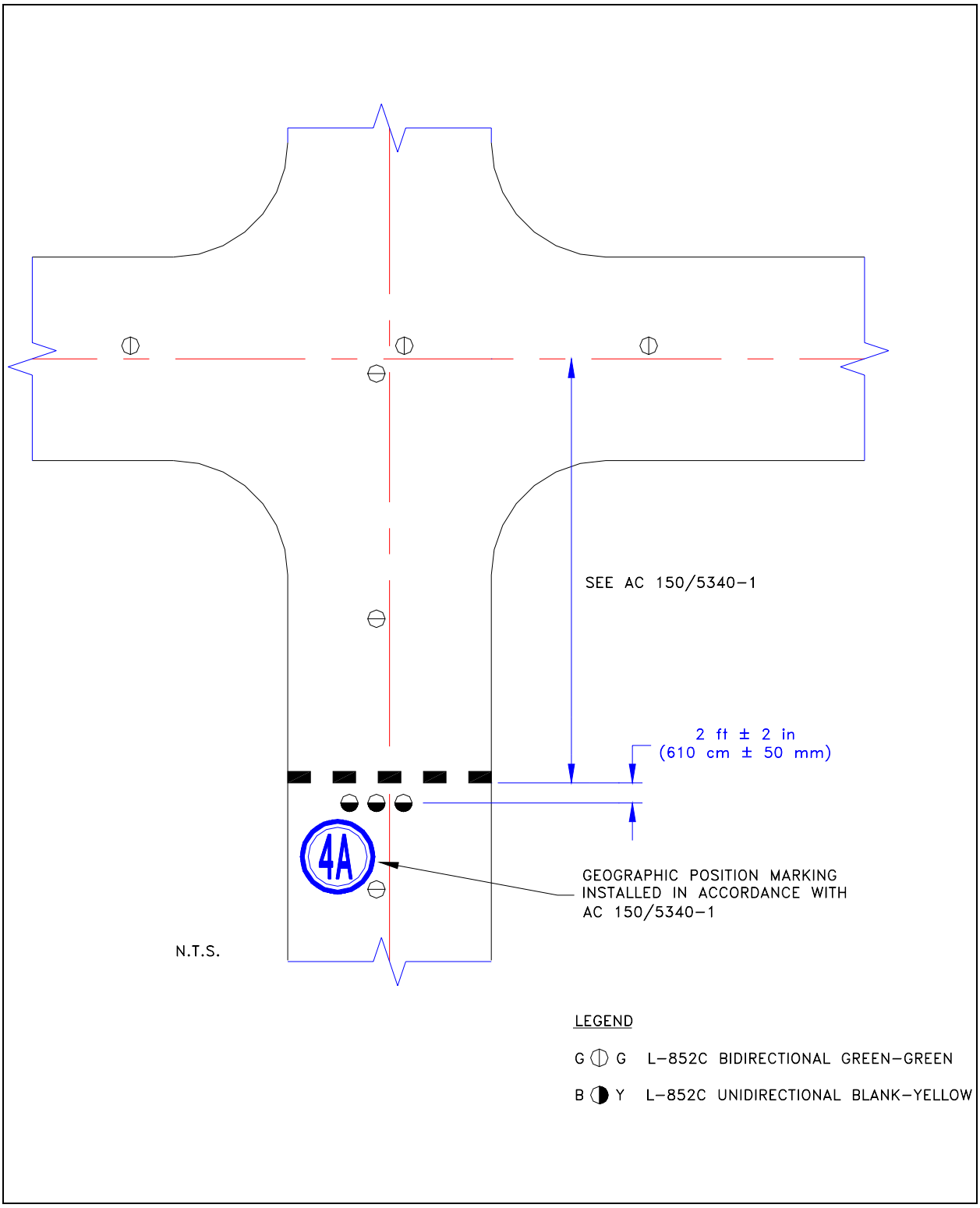


Figure 52 Clearance Bar Configuration at a Low Visibility Hold Point

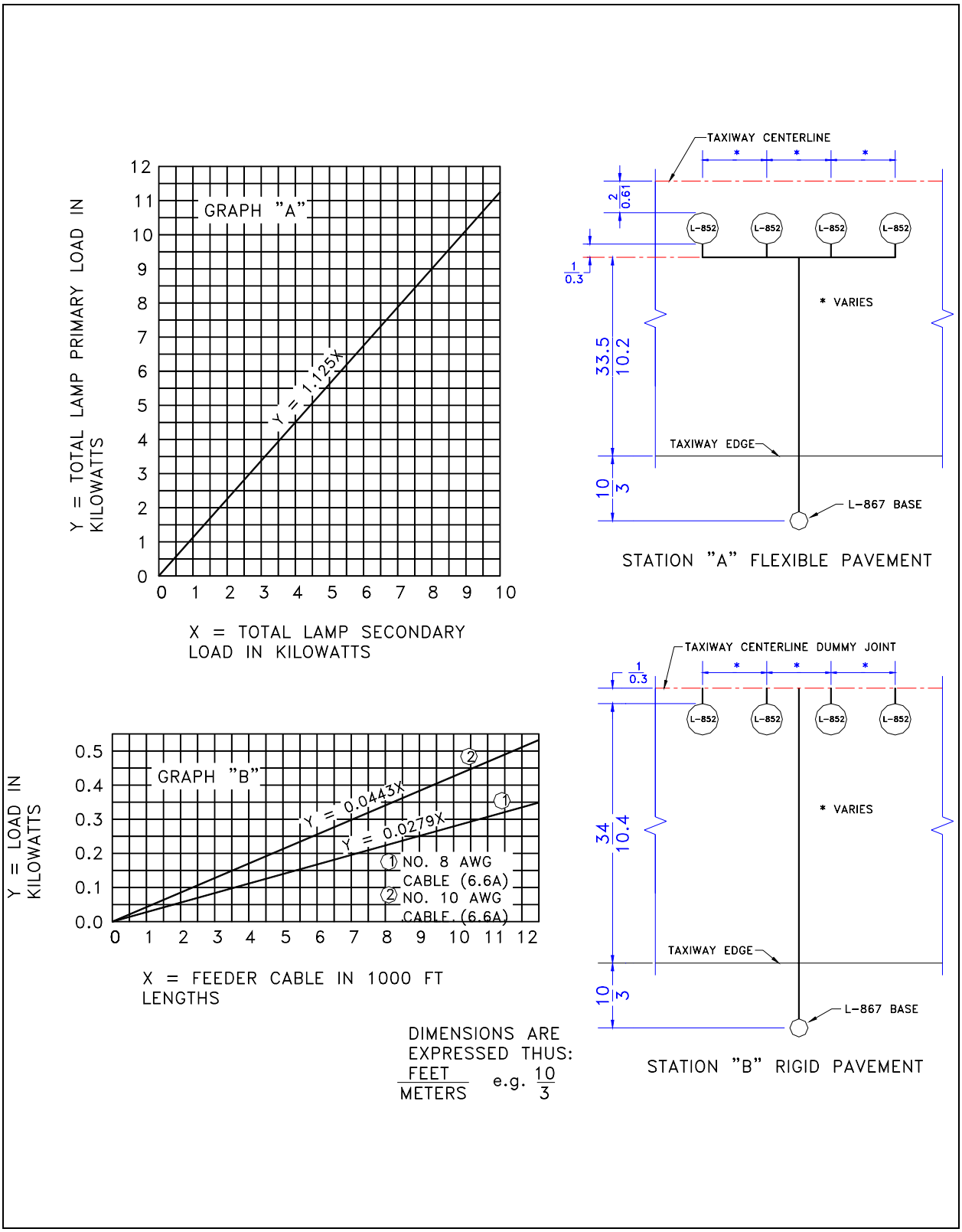


Figure 53 Curves for Estimating Primary Load for Taxiway Centerline Lighting Systems

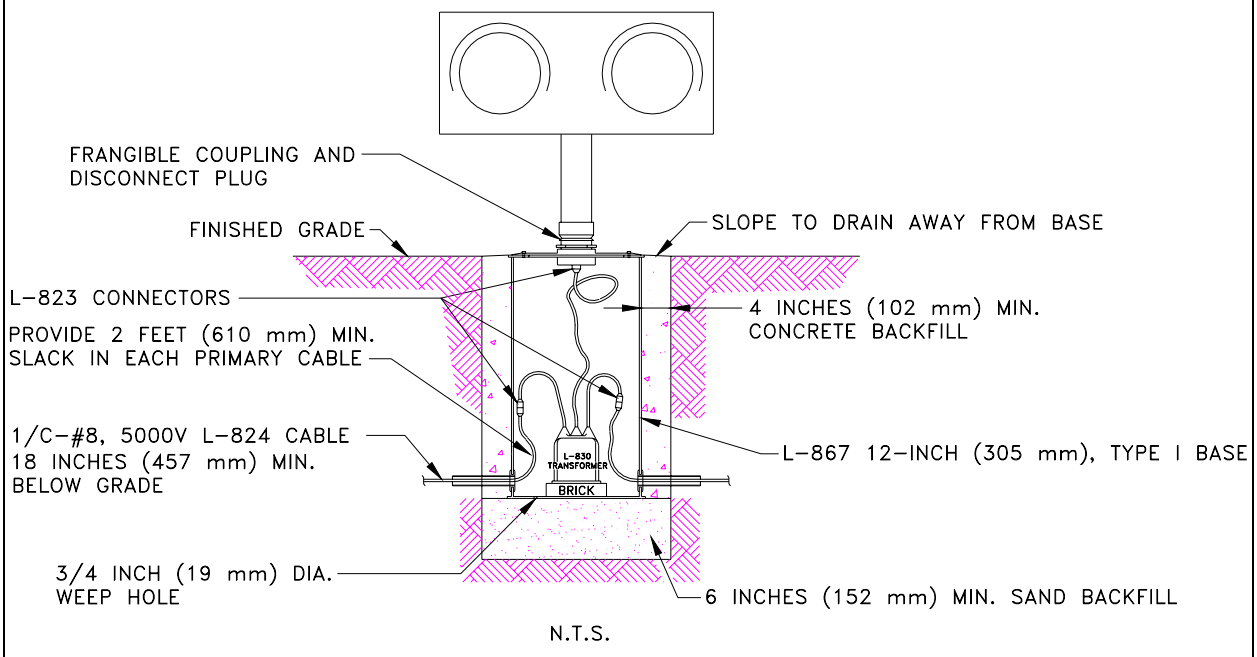


Figure 54 Typical Elevated RGL Installation Details

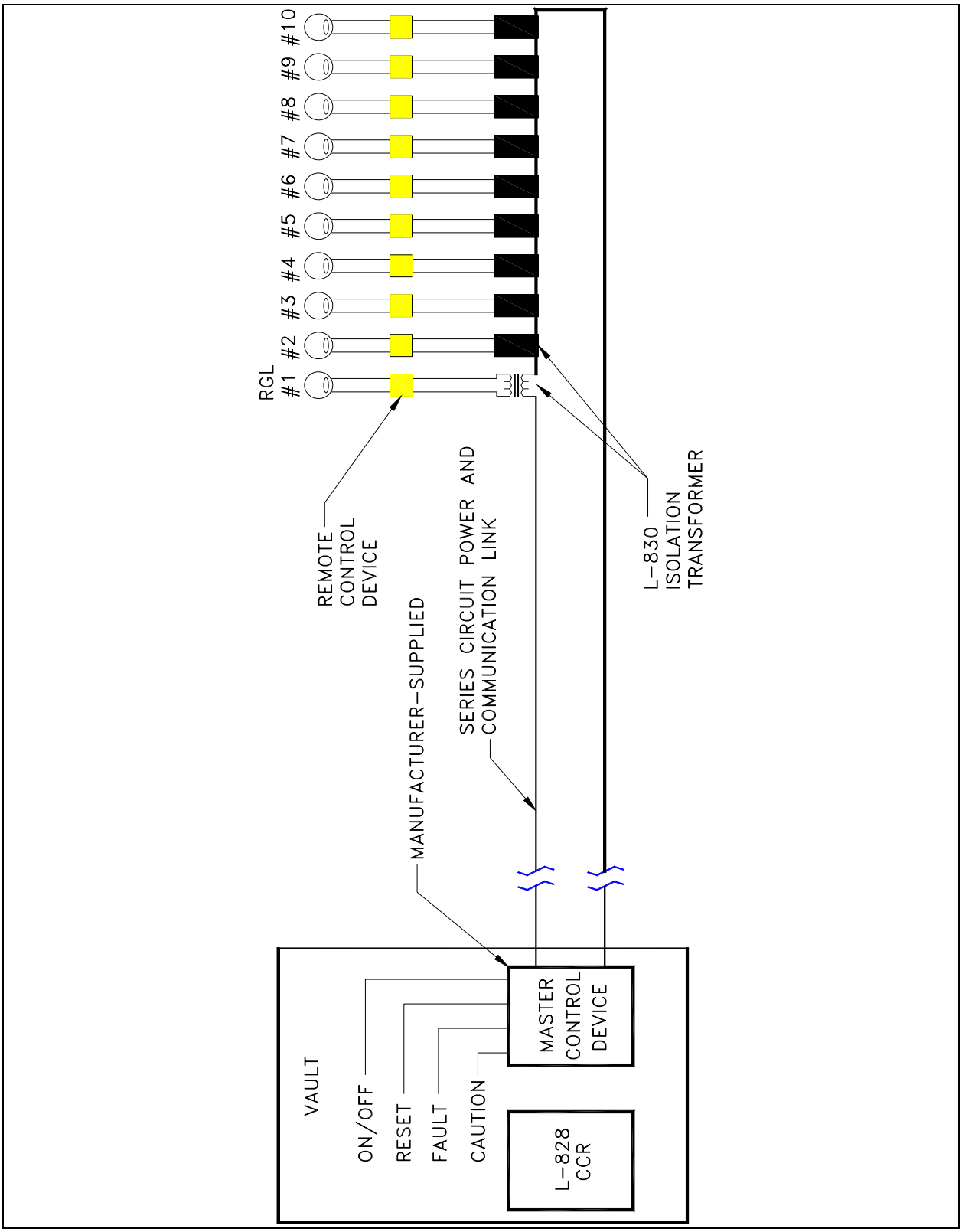


Figure 55 Typical In-Pavement RGL External Wiring Diagram – Power Line Carrier Communication, One Light Per Remote

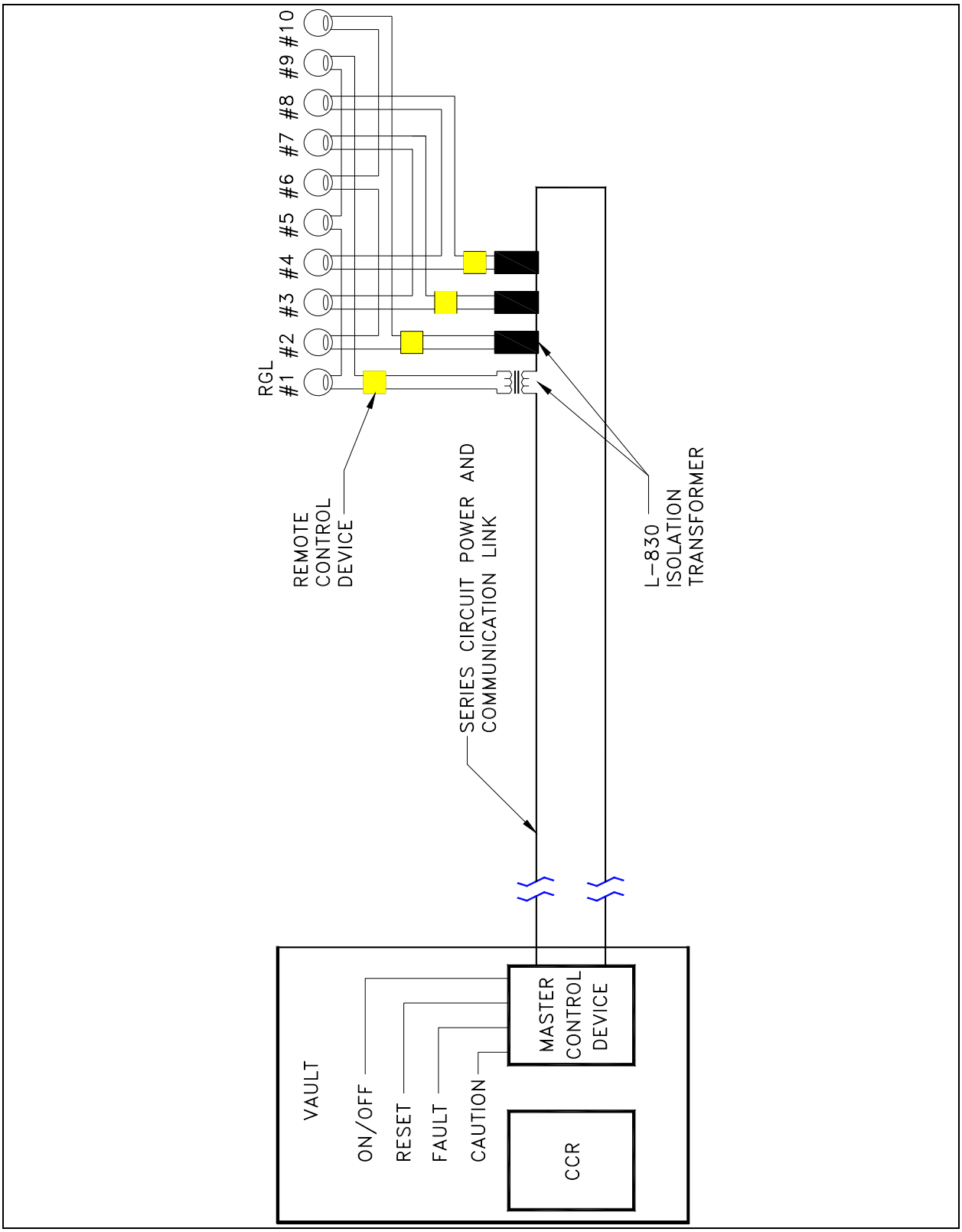


Figure 56 Typical In-Pavement RGL External Wiring Diagram – Power Line Carrier Communication, Multiple Lights per Remote

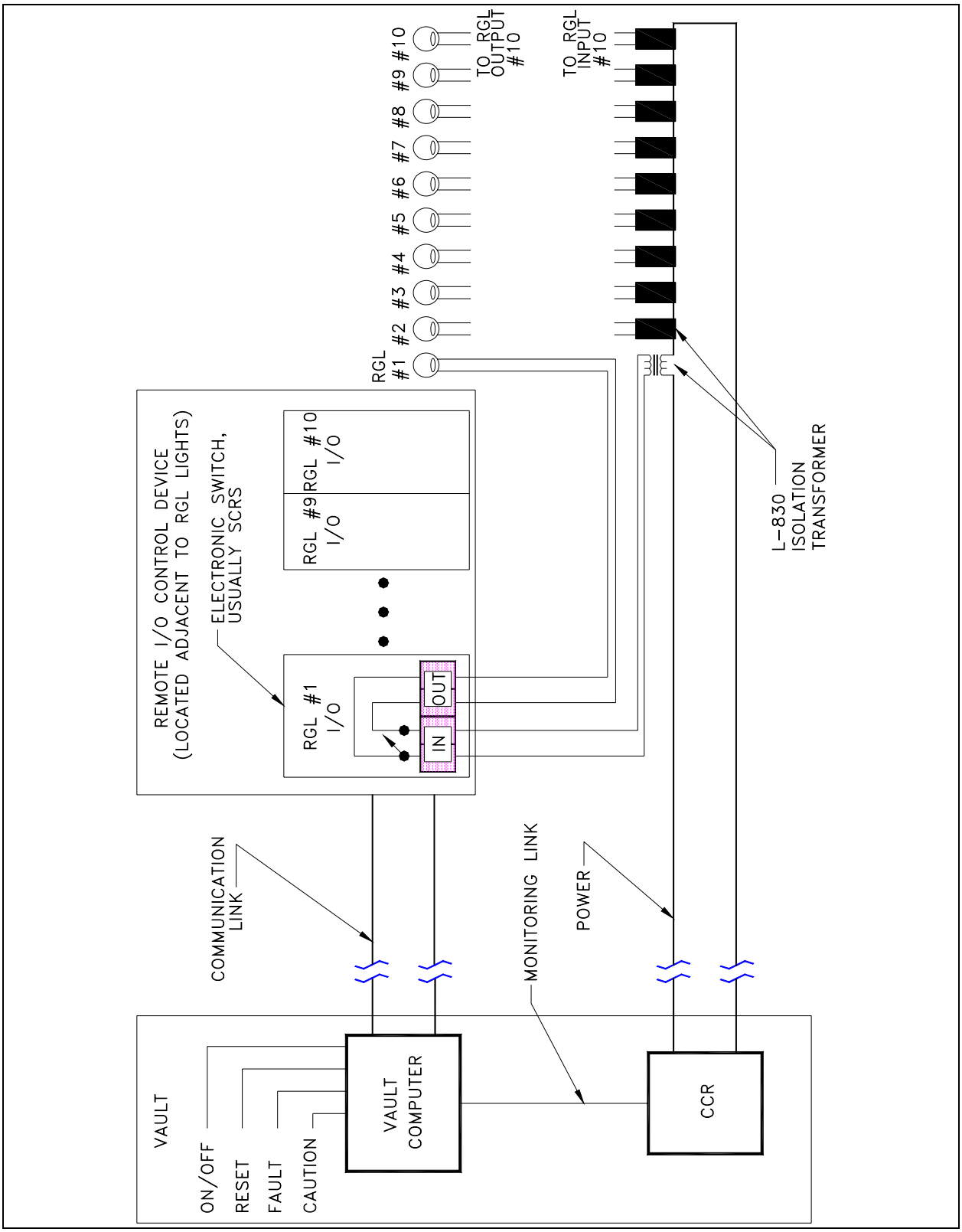


Figure 57 Typical In-Pavement RGL External Wiring Diagram – Dedicated Communication Link

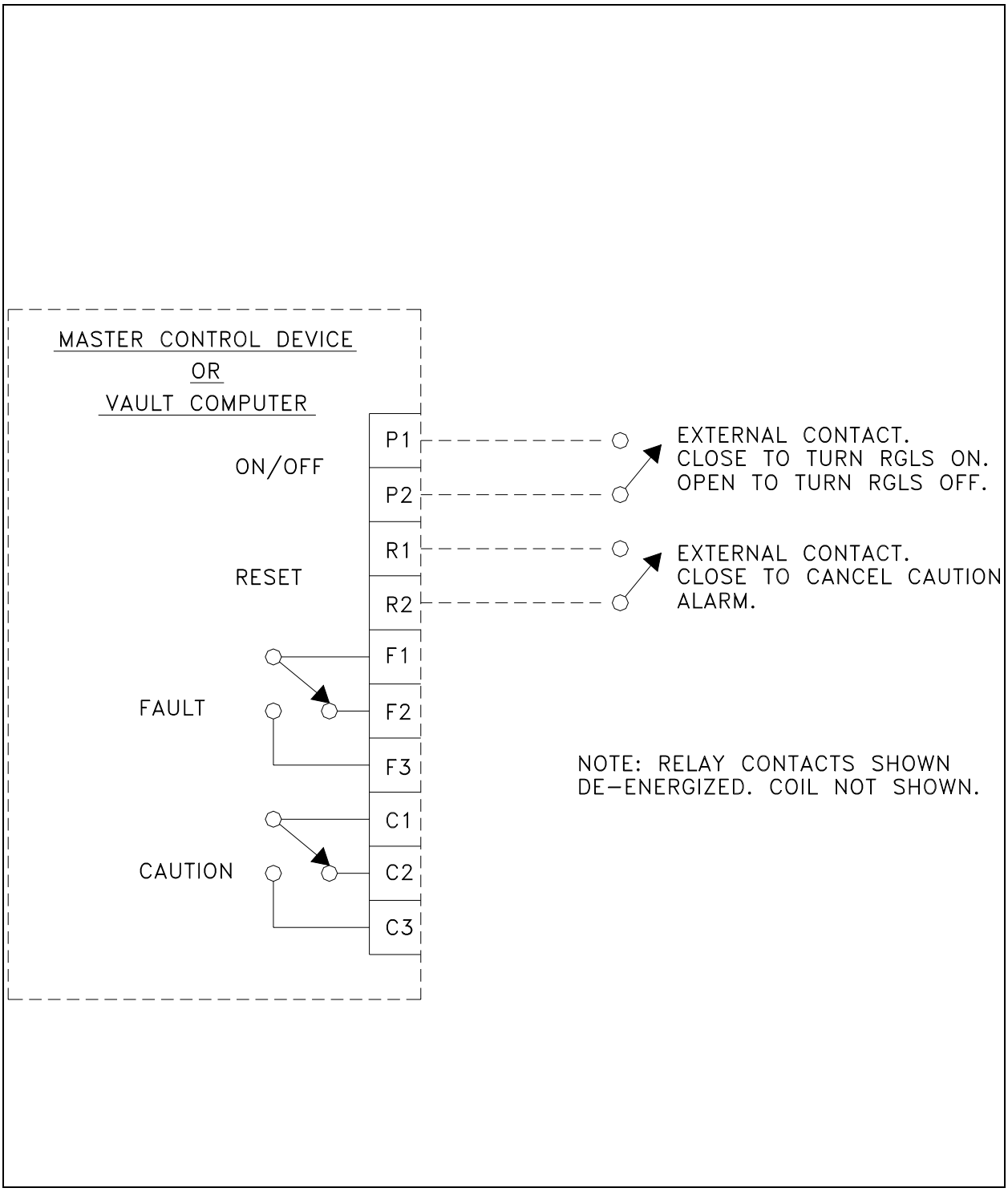


Figure 58 In-Pavement RGL Alarm Signal Connection

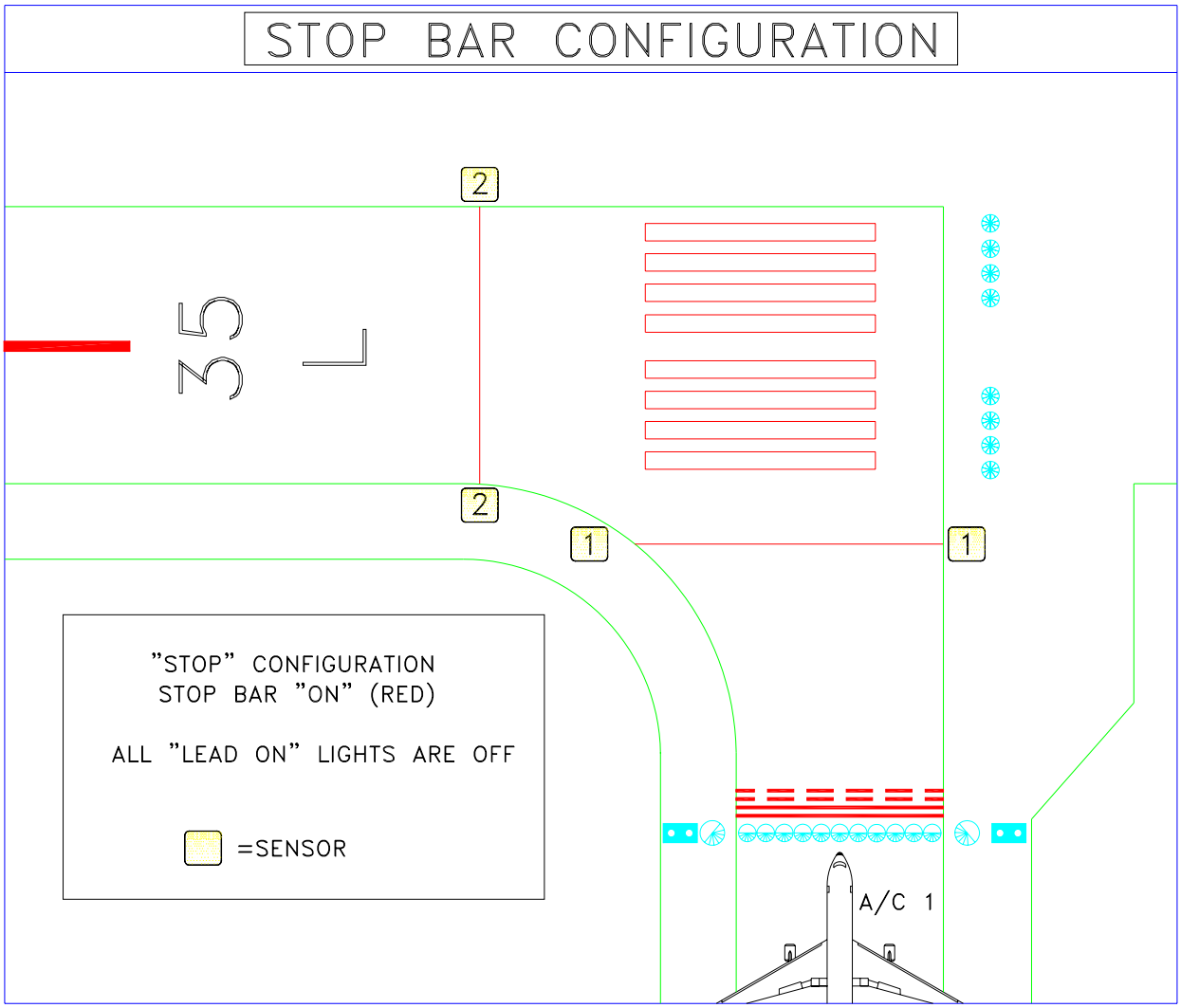


Figure 59 Controlled Stop Bar Design and Operation – "STOP" Configuration

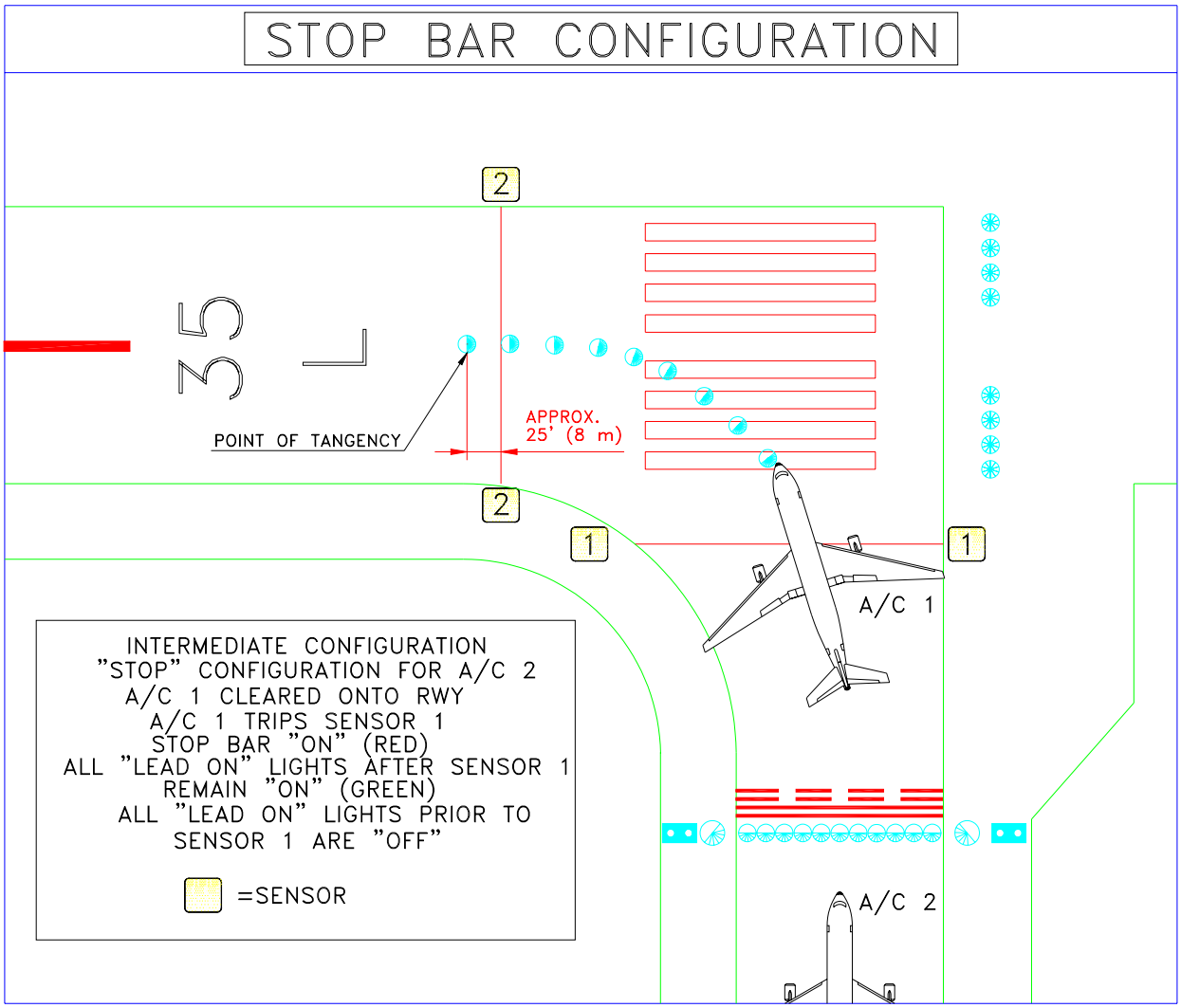


Figure 60 Controlled Stop Bar Design and Operation – Intermediate Configuration

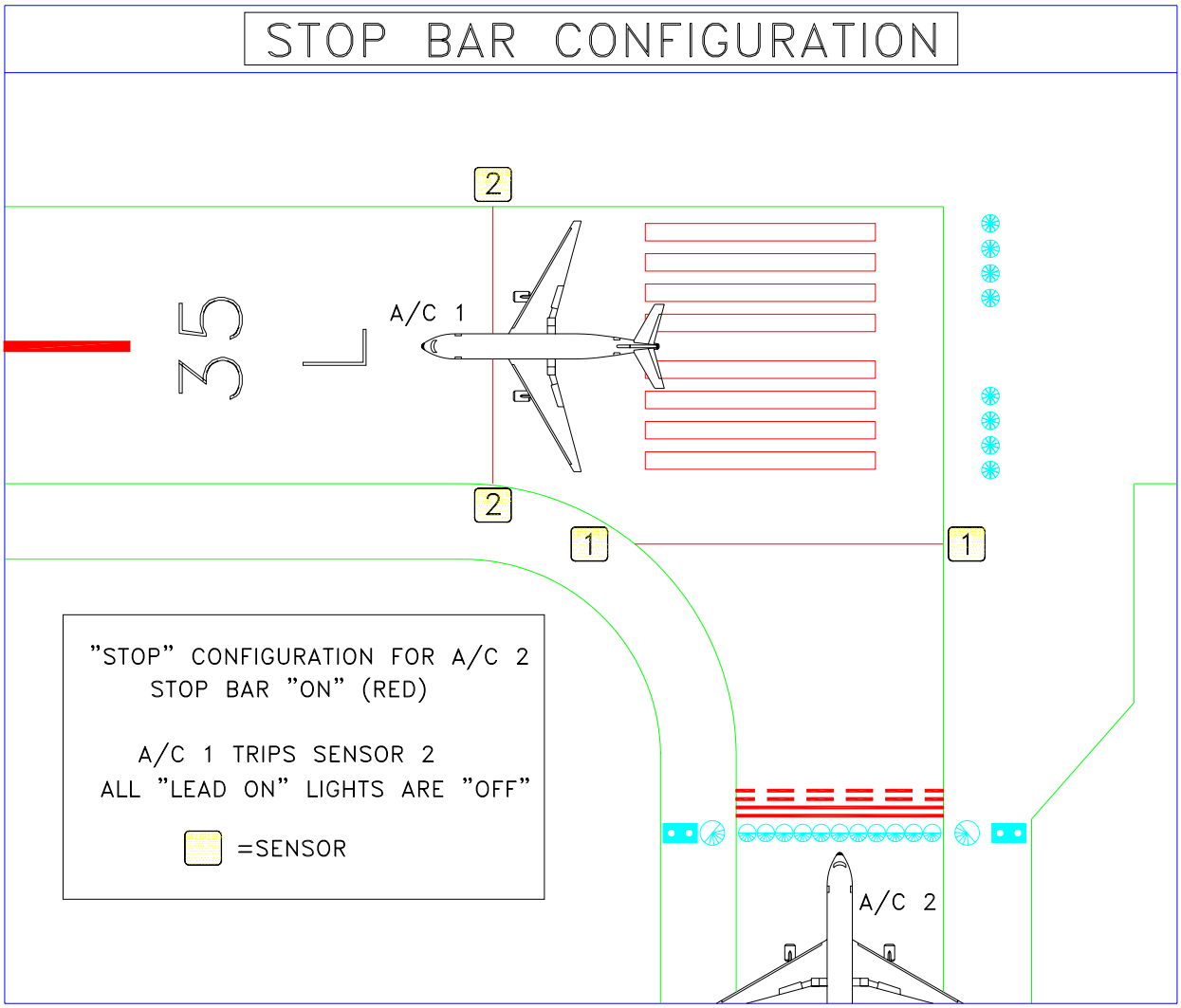


Figure 61 Controlled Stop Bar Design and Operation – "STOP" Configuration for A/C 2

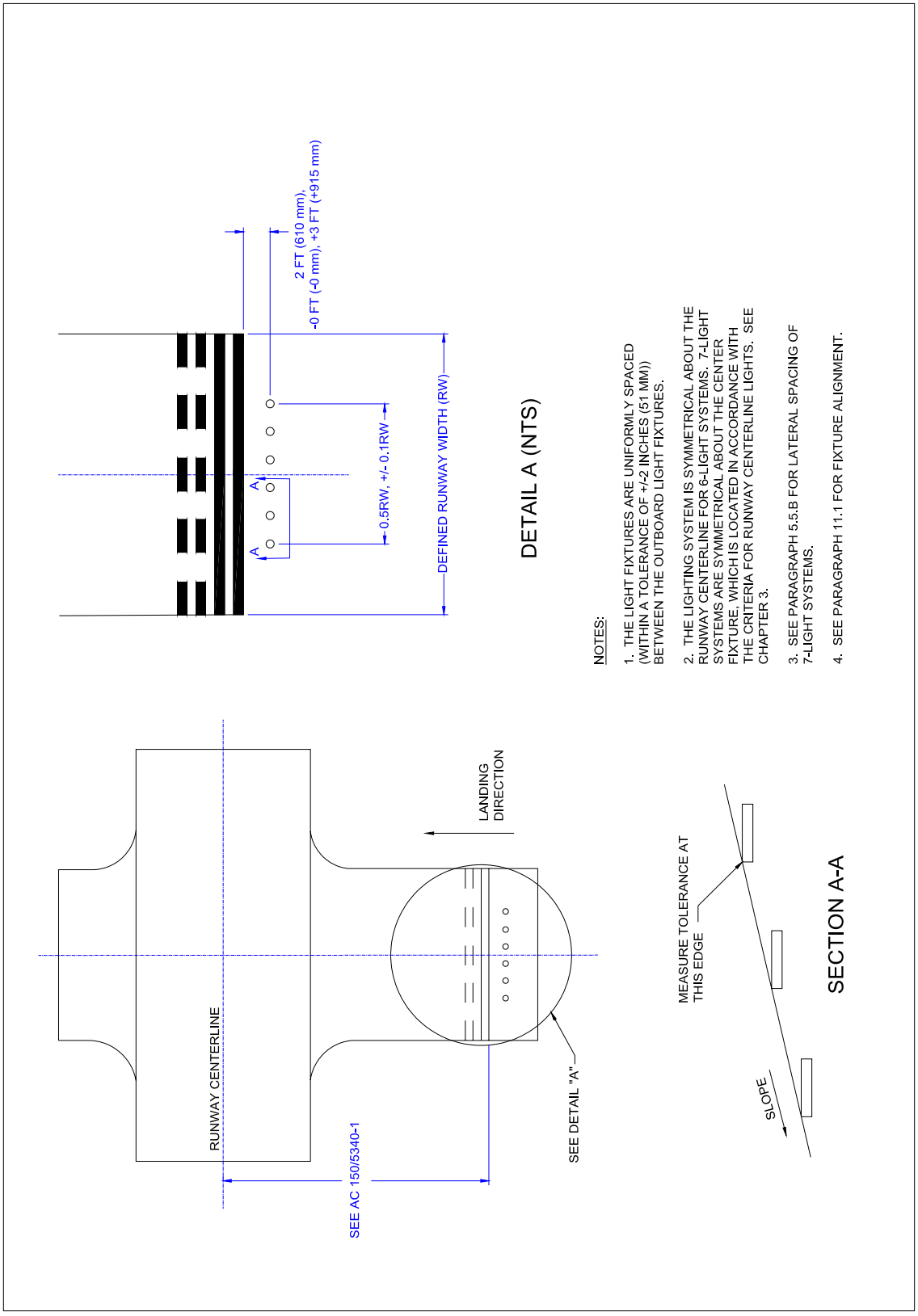
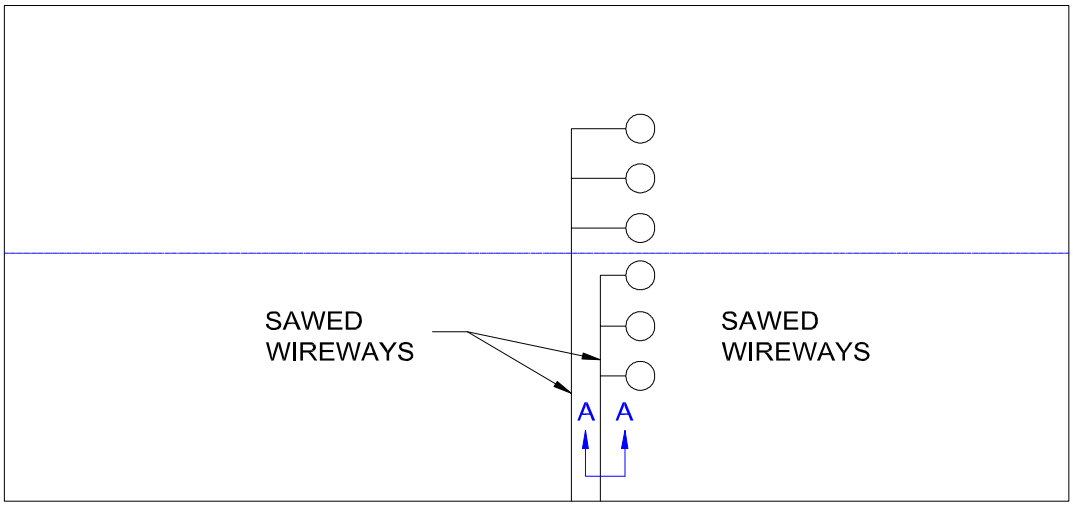
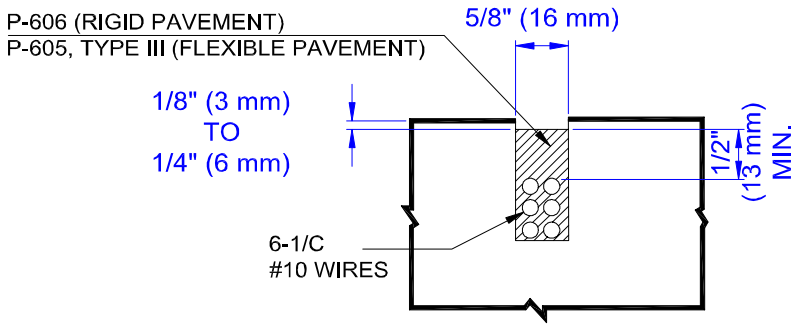


Figure 62 Typical Layout for Land and Hold Short Lights





SECTION A-A

GENERAL NOTES

1. THE INSTALLATION DETAILS SHOWN ARE FOR RIGID OR FLEXIBLE PAVEMENT UNLESS OTHERWISE SPECIFIED.

2. THE DIAMETERS AND DEPTHS OF HOLES FOR DIRECT-MOUNTED LIGHTING FIXTURES ARE IN ACCORDANCE WITH FIGURE 64.

3. THE ALIGNMENT OF DRILLED WOLES FOR THE FIXTURES SHOULD NOT VARY MORE THAN 2 INCHES.

4. WHERE WIREWAYS CROSS JOINTS IN RIGID PAVEMENT, THEIR DEPTH IS INCREASED AS SHOWN ON PLANS. SEE FIGURE 64 FOR A TYPICAL DETAIL OF JOINT INTERSECTION.

Figure 63 Typical Wireway Installation Details for Land & Hold Short Lights

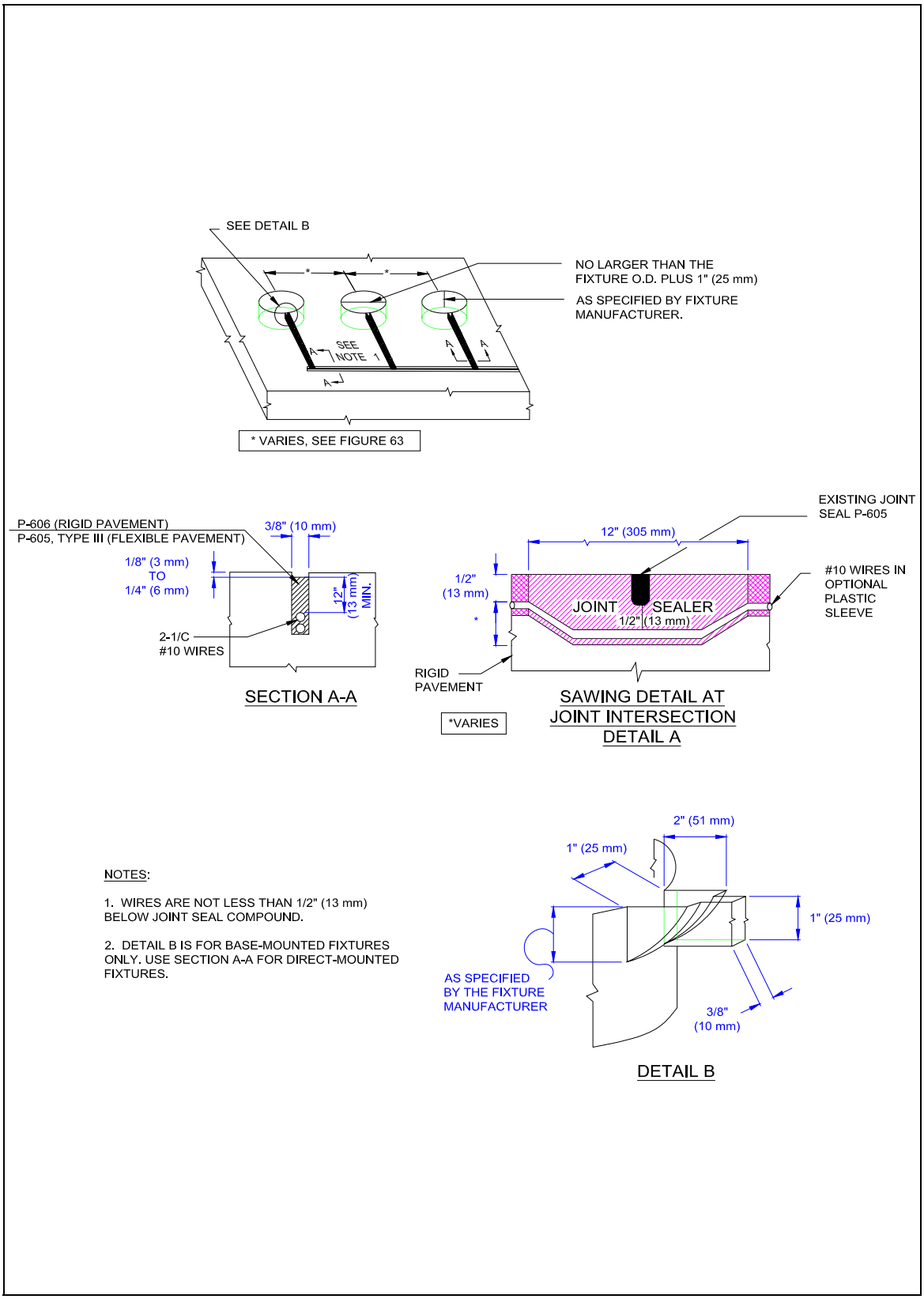


Figure 64 Sawing & Drilling Details for In-pavement Land & Hold Short Lights

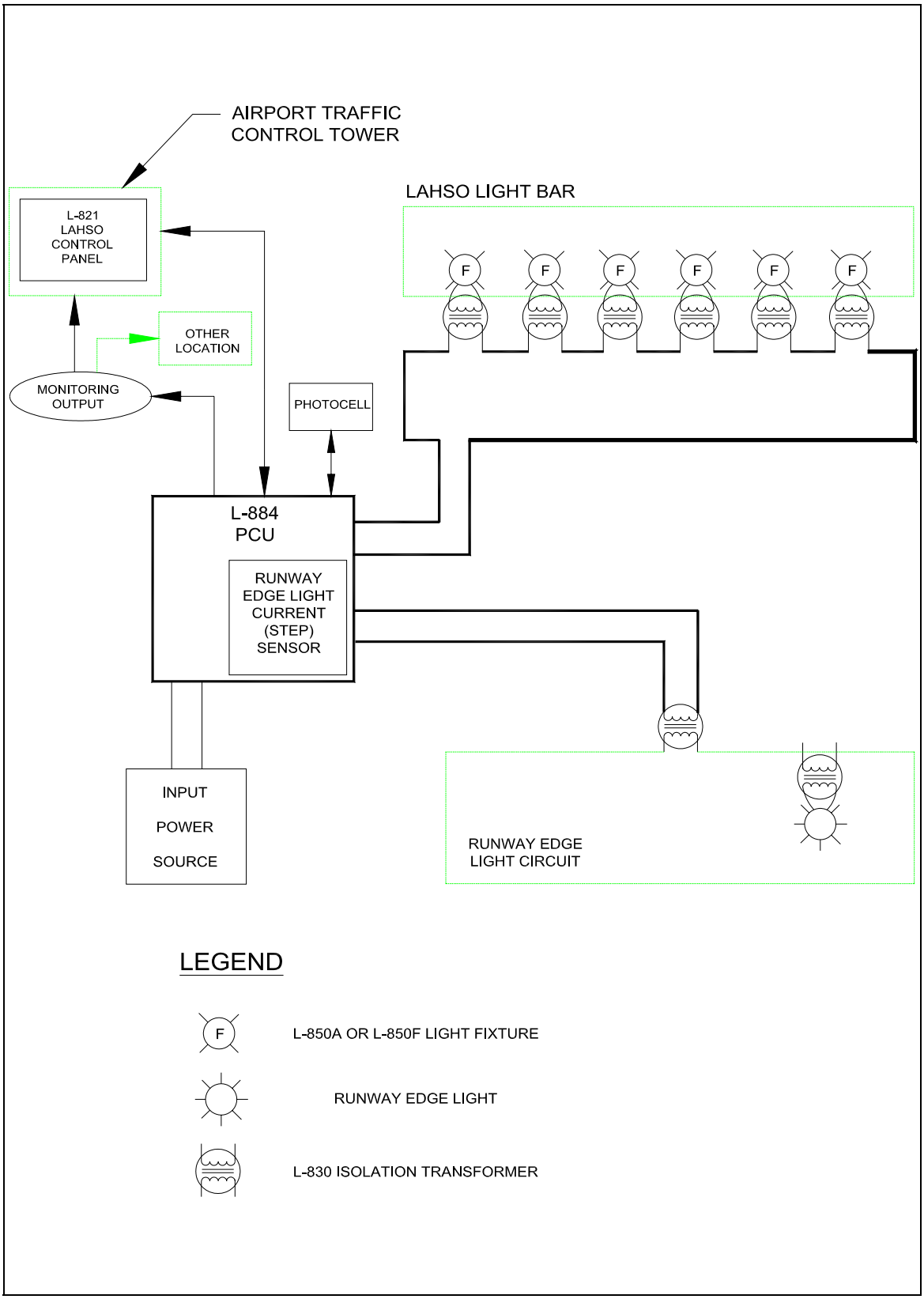


Figure 65 Typical Block Diagram for Land & Hold Short Lighting System

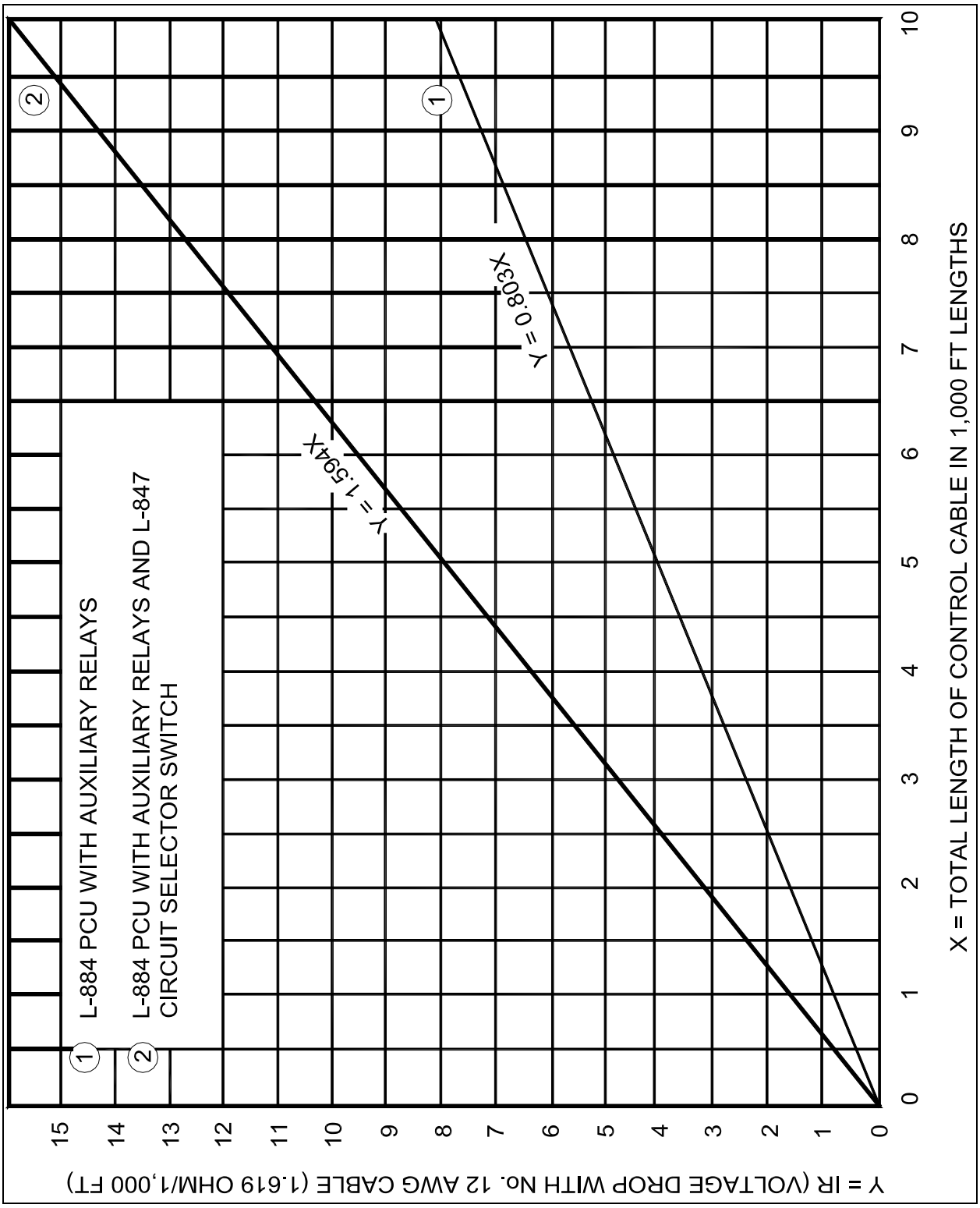


Figure 66 Curve for Determining Maximum Separation Between Vault and Control Panel with 120-volt AC Control

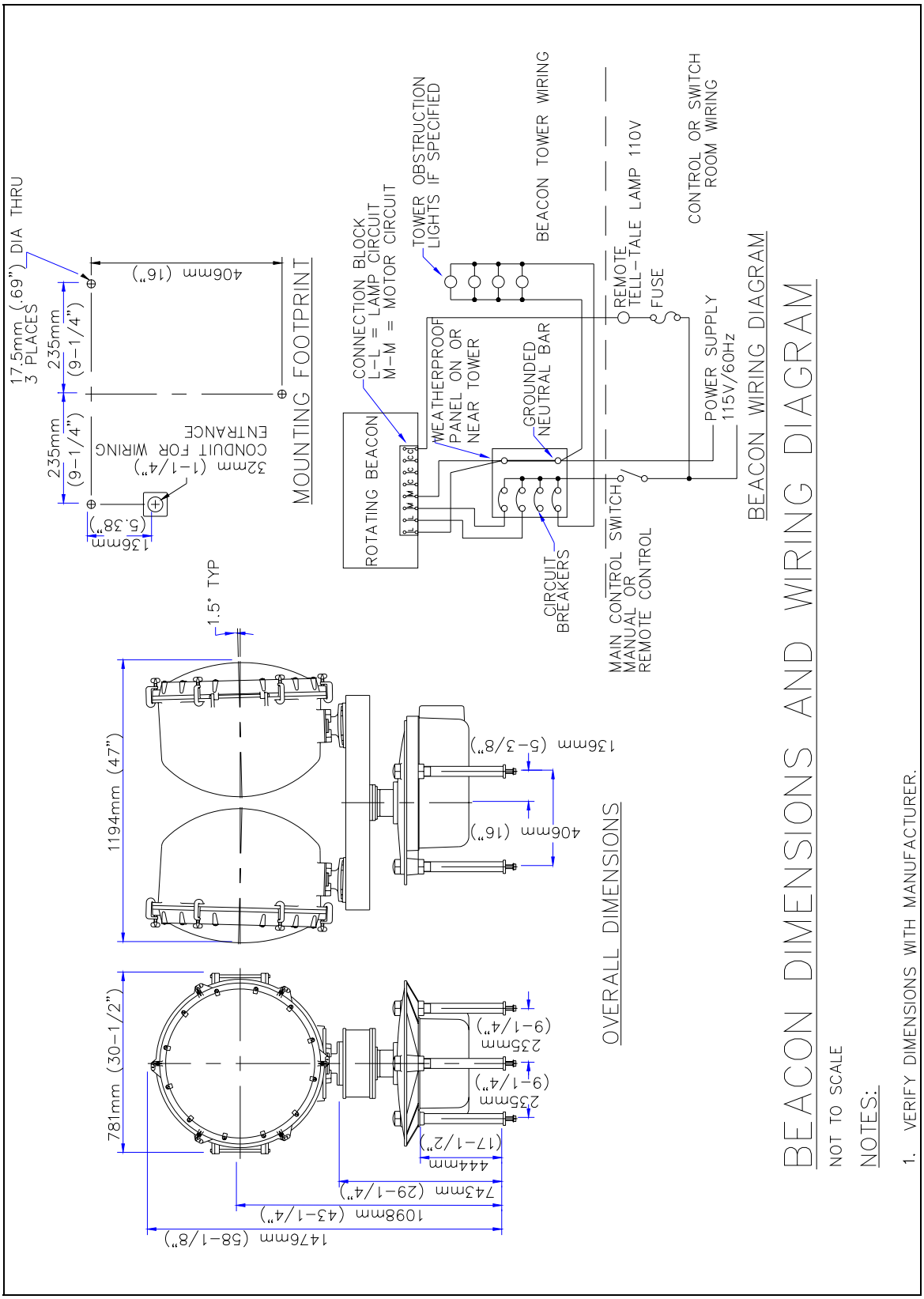


Figure 67 Beacon Dimensions and Wiring Diagram

COPPER-WIRE, AMERICAN WIRE GAUGE B&S

B&S GAUGE NO.	OHMS PER 1 000 FEET 25° C., 77°F.	AREA CIRCULAR MILS	DIAMETER IN MILS AT 20°C.	APPROXIMATE POUNDS PER 1,000 FEET
2	0.1593	66,370	257.6	201
4	0.2523	41,740	204.3	126
6	0.4028	26,250	162.0	79
8	0.6405	16,510	128.5	50
10	1.018	10,380	101.9	31
12	1.619	6,530	80.81	20

Calculations

1. To determine the AWG size wire necessary for a specific connected load to maintain the proper voltage for each miscellaneous lighting visual aid, use the above table and Ohms Law $I = \frac{E}{R}$ as follows:

   a. Example. What size wire will be necessary in a circuit of 120 volts AC to maintain a 2 percent voltage drop with the following connected load which is separated 500 feet from the power supply?

      (1) Lighted Wind Tee Load - 30 lamps, 25 watts each = 750 watts.

      (2) The total operating current for the wind tee is $I = \frac{watts}{volts} = \frac{750}{120} = 6.25\,amperes$.

      (3) Permissible voltage drop for homerun wire is 120 volts x 2% = 2.4 volts.

      (4) Maximum resistance of homerun wires with a separation of 500 feet (1,000 feet of wire used) to maintain not more than 2.4 volts drop is $R = \frac{E}{I} = \frac{2.4\,volts}{6.25\,amperes} = 0.384\,ohms$ per 1,000 feet of wire.

      (5) From the above table, obtain the wire size having a resistance per 1,000 feet of wire that does not exceed 0.384 ohms per 1,000 feet of wire. The wire size that meets this requirement is No. 4 AWG wire with a resistance of 0.2523 ohms per 1,000 feet of wire.

      (6) By using No. 4 AWG wire in this circuit, the voltage drop is E=IR=6.25 amperes x 0.2523 ohms=1.58 volts which is less than the permissible voltage drop of 2.4 volts.

2. Where it has been determined that it will require an extra large size wire for homeruns to compensate for voltage drop in a 120-volt power supply, one of the following methods should be considered.

   a. A 120/240-volt power supply.

   b. A booster transformer, in either a 120-volt or 120/240-volt power supply, if it has been determined its use will be more economical.

Figure 68 Calculations for Determining Wire Size

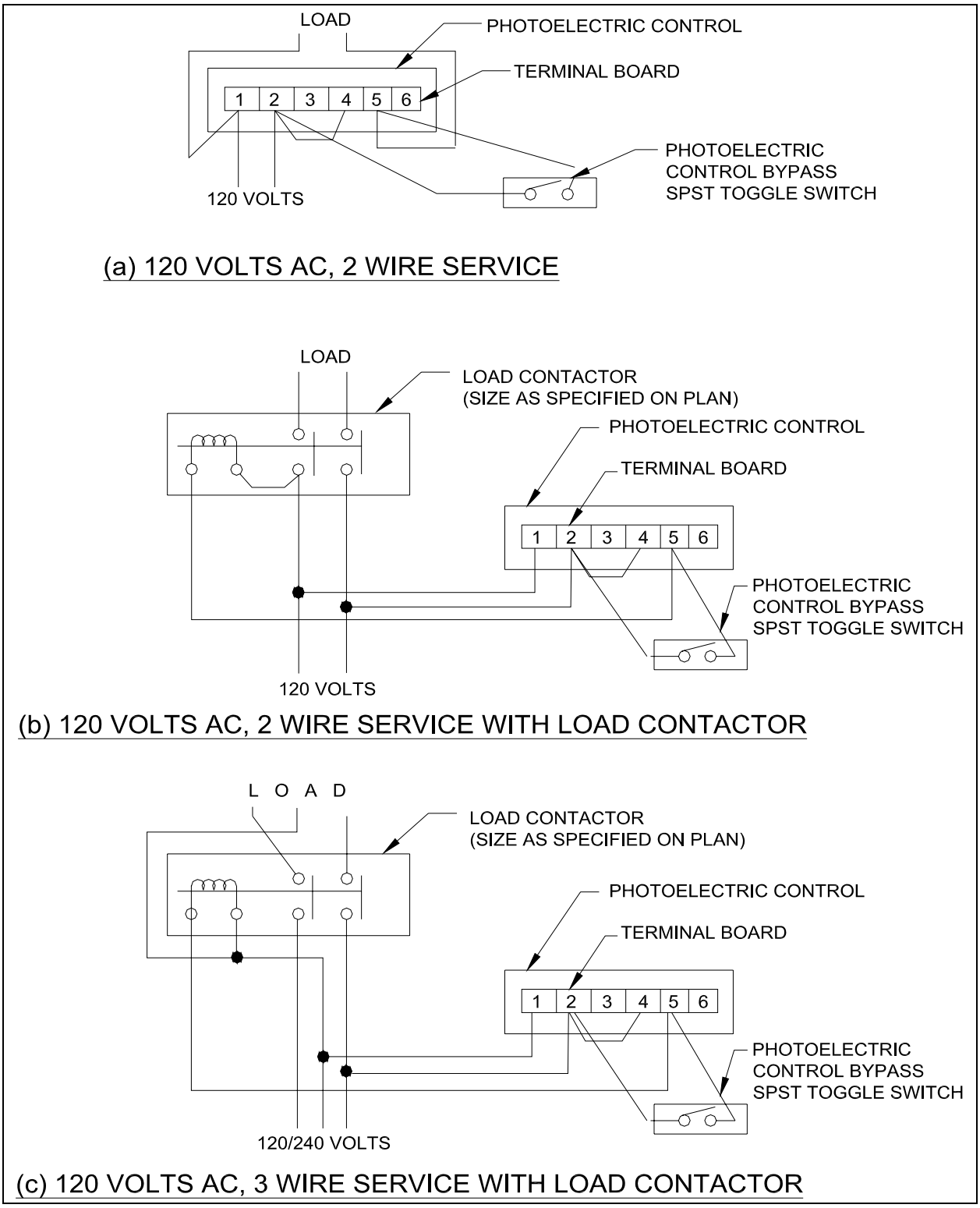


Figure 69 Automatic Control

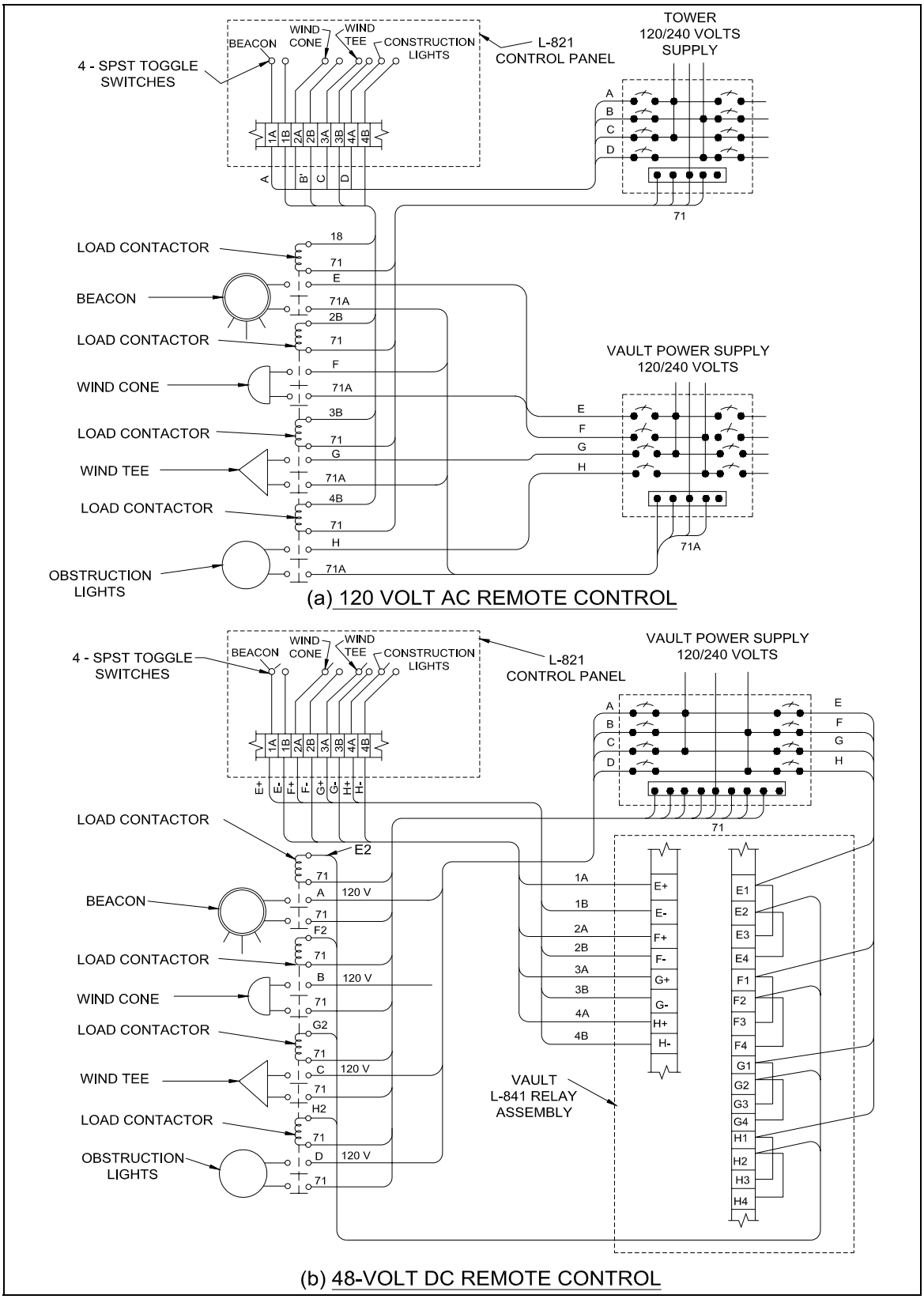


Figure 70 120-Volt AC and 48-Volt DC Remote Control

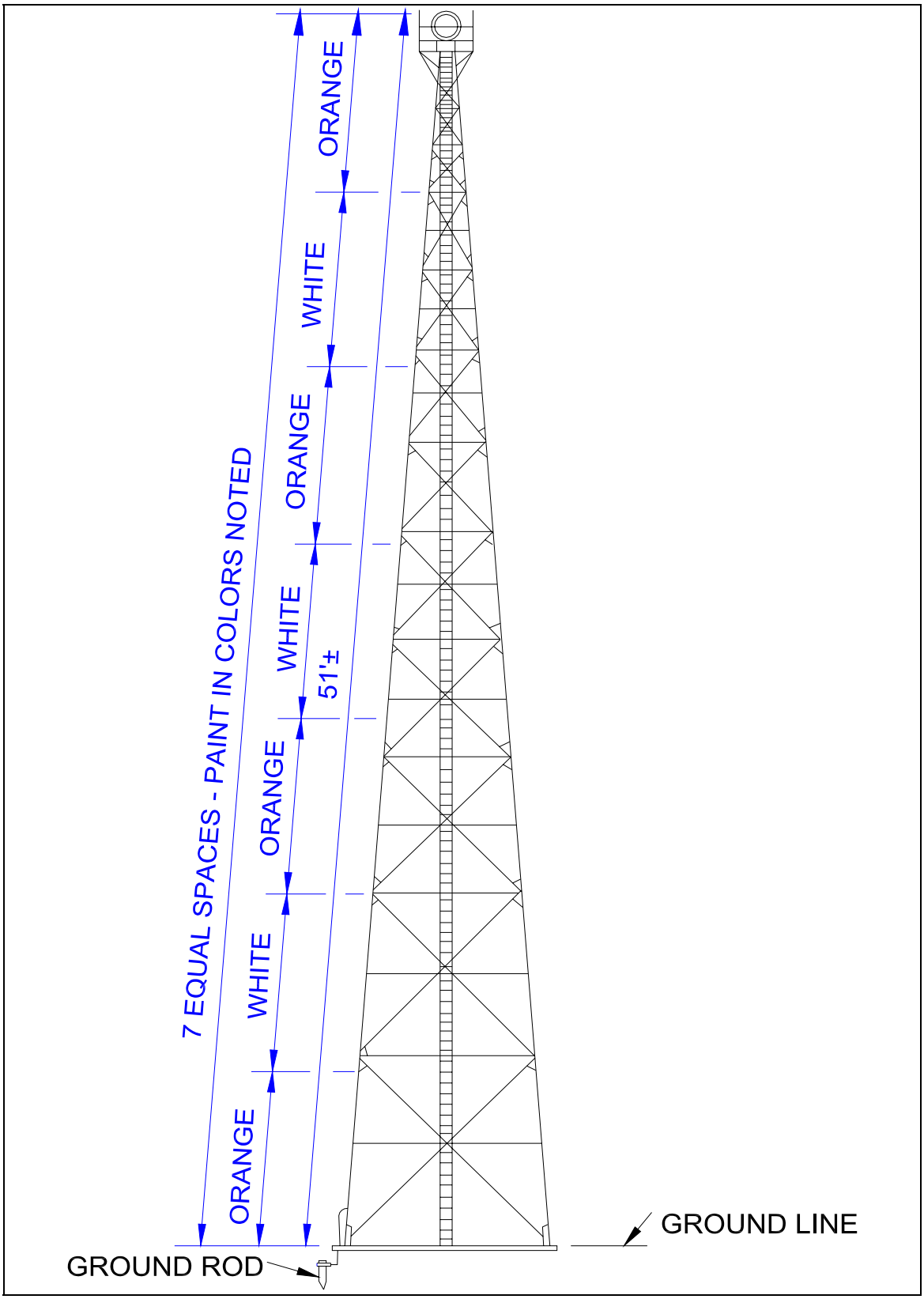


Figure 71 Structural Steel Beacon Tower and Color Scheme

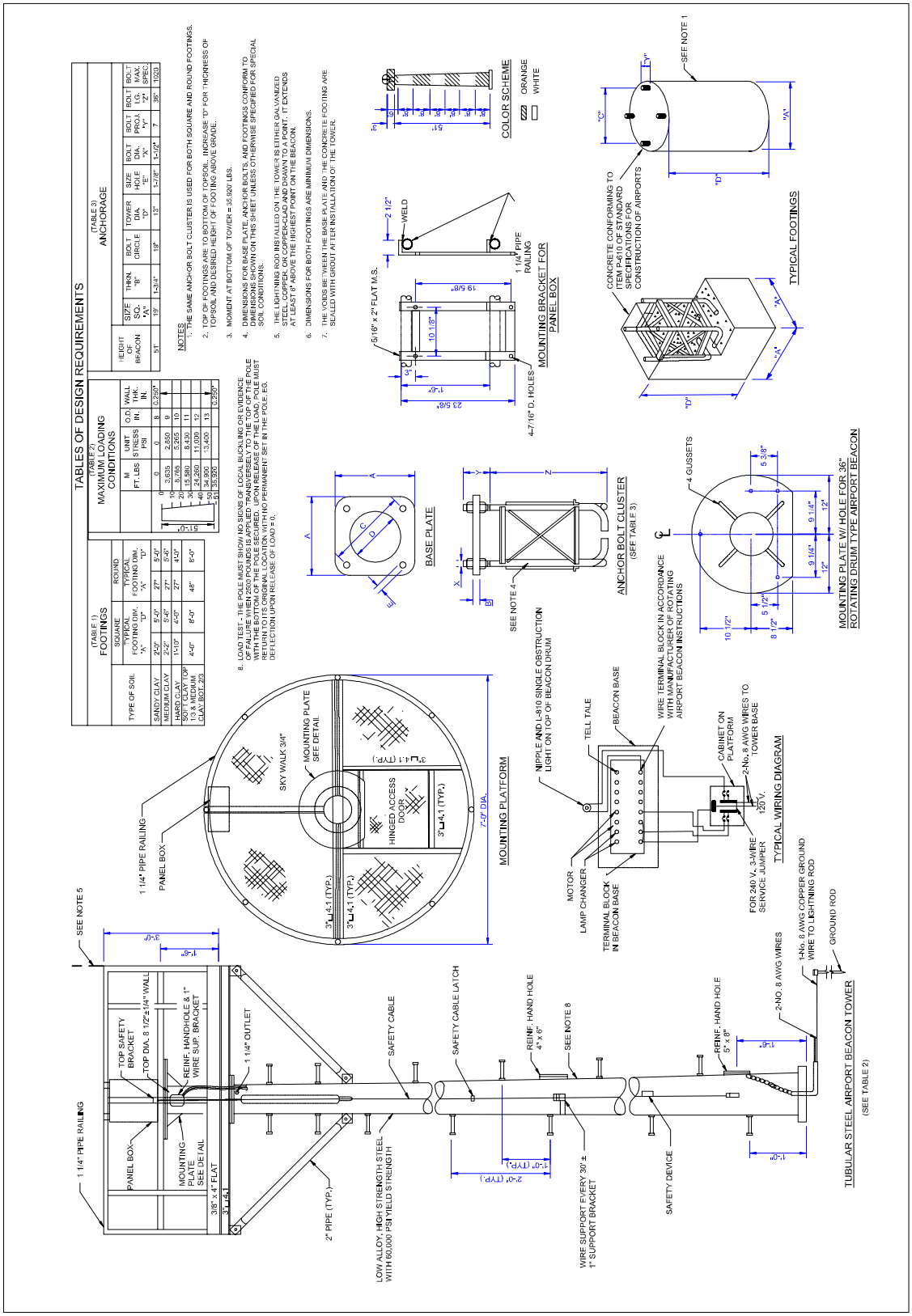


Figure 72 Tubular Steel Beacon Tower

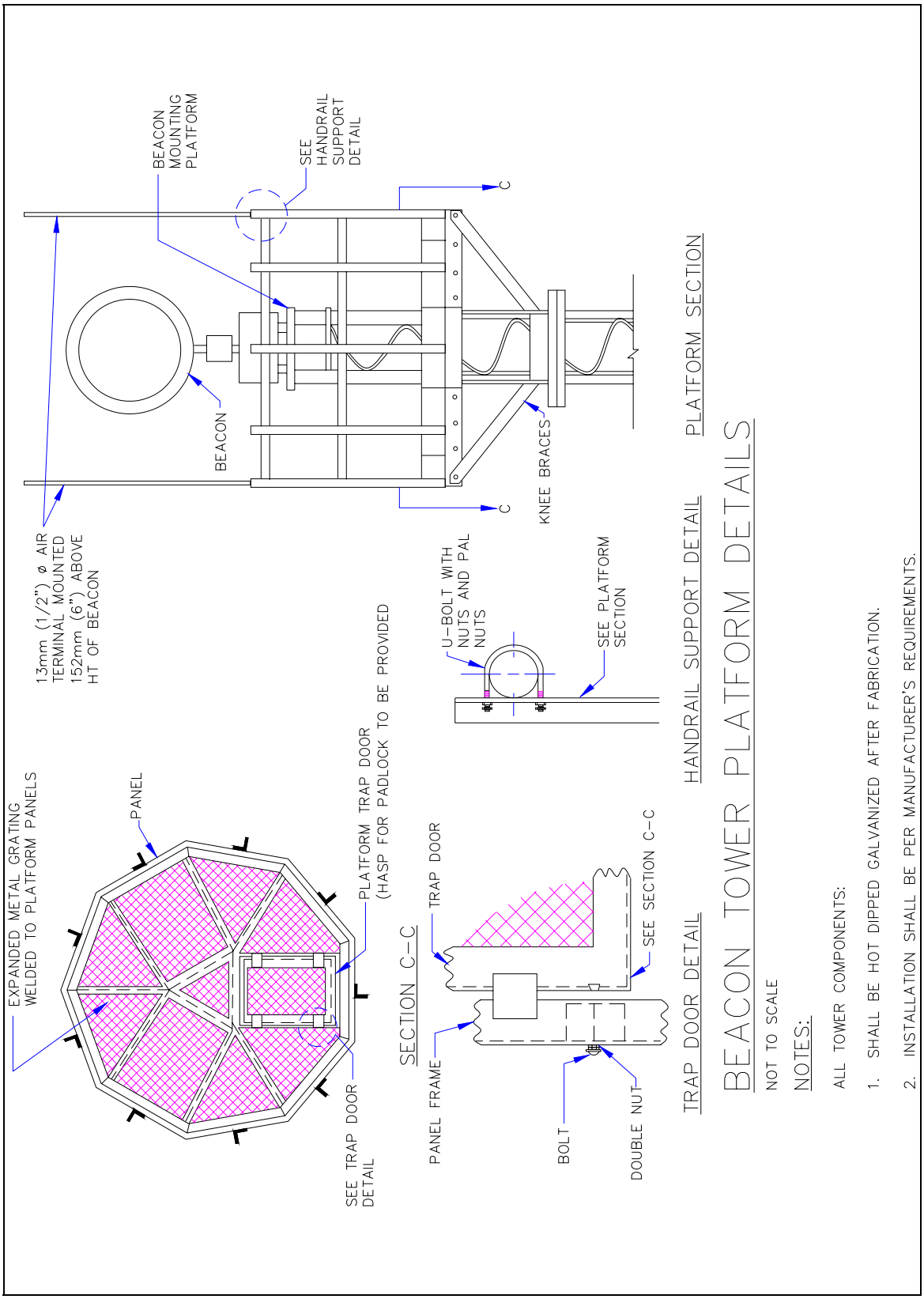


Figure 73 Pre-fabricated Beacon Tower Structure

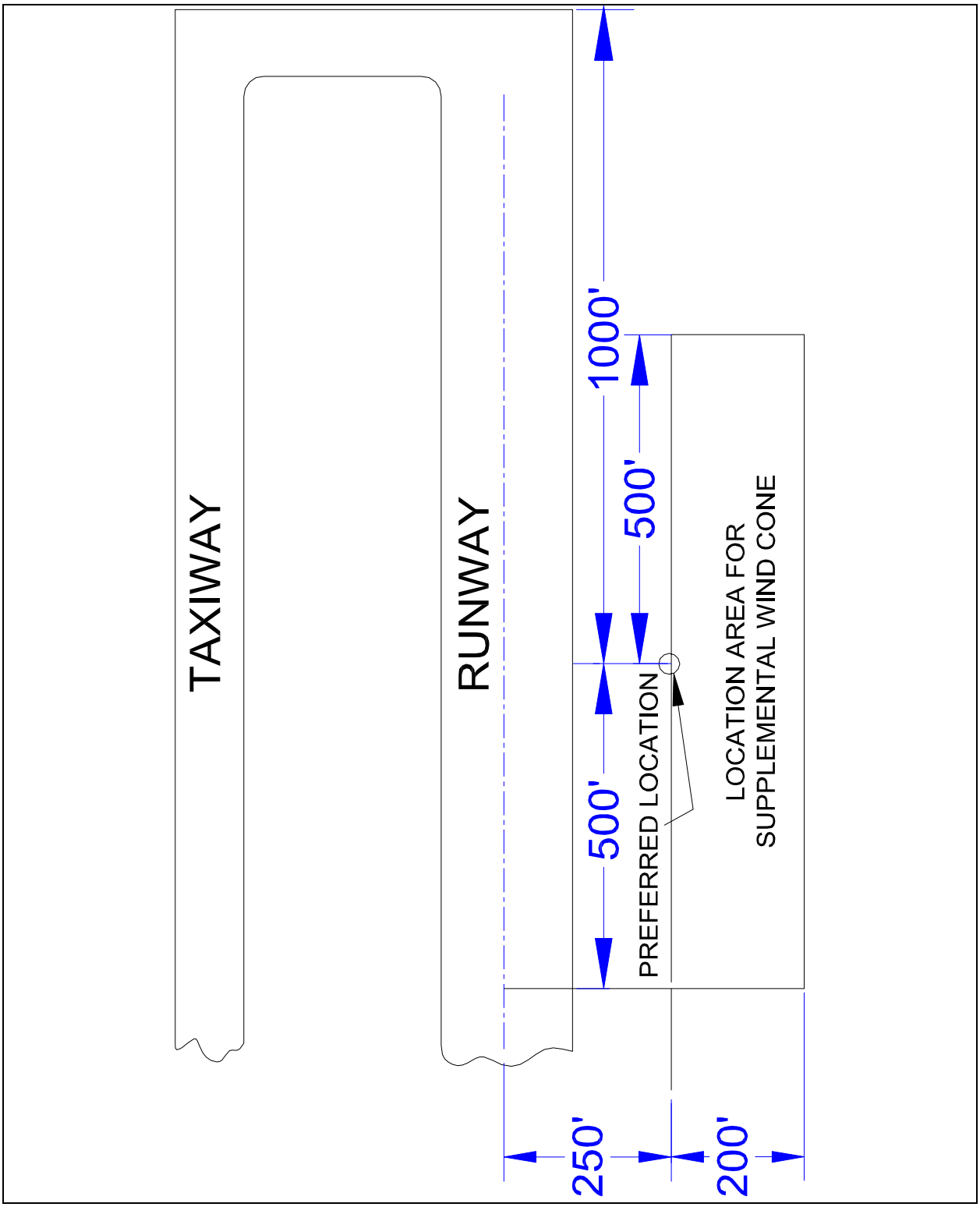


Figure 74 Location of Supplemental Wind Cone

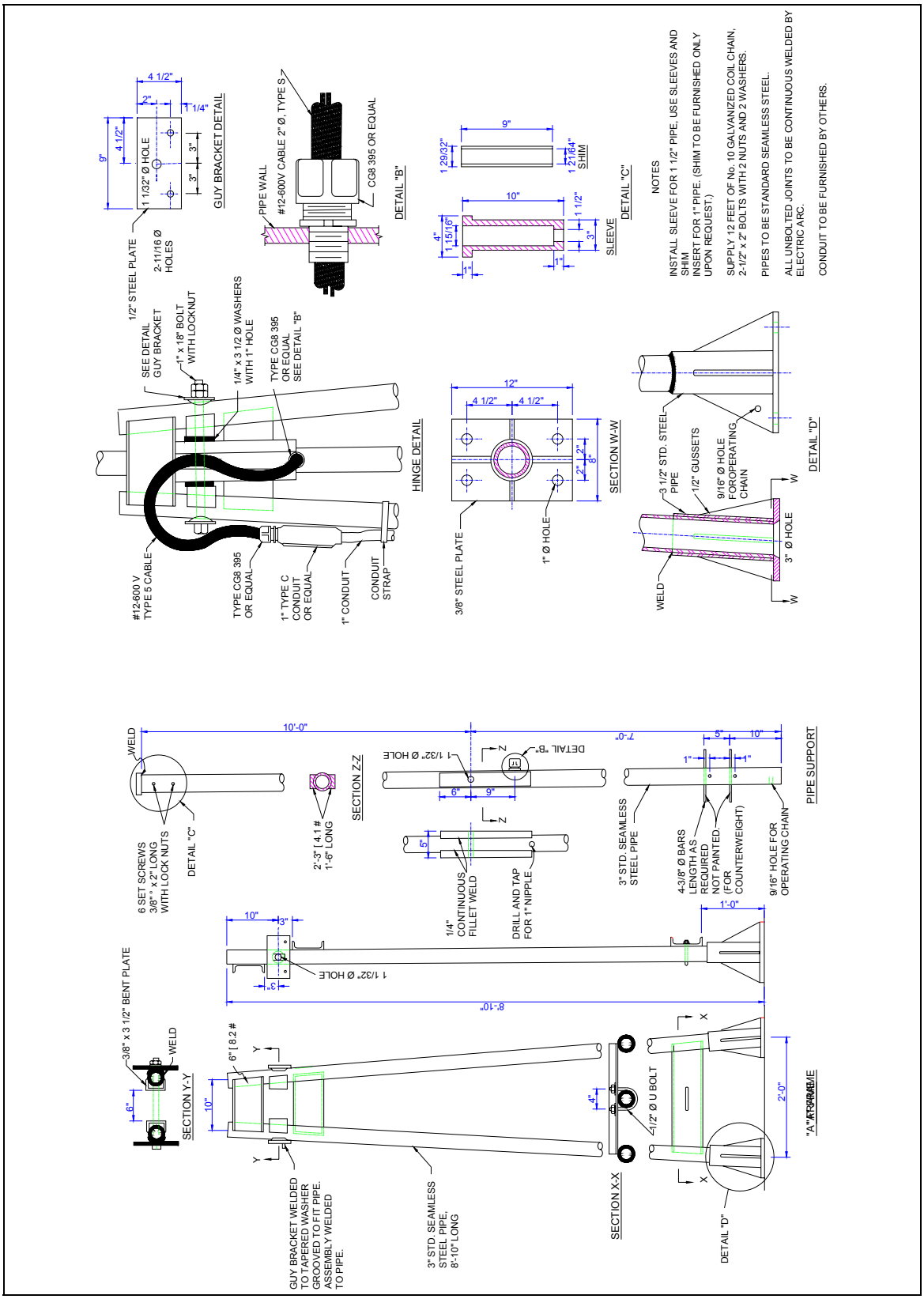


Figure 75 “A” Frame Wind Cone Assembly

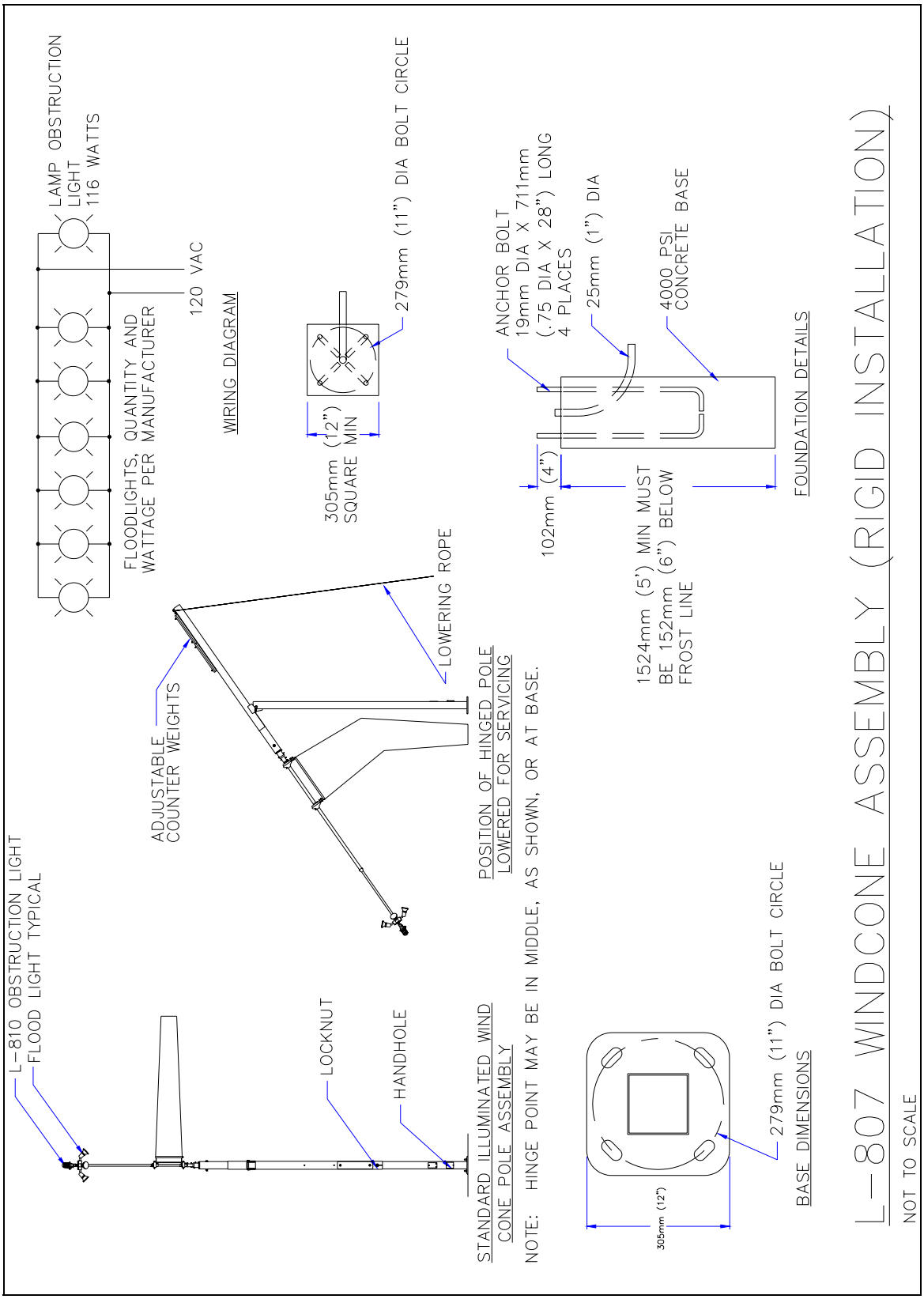


Figure 76 Wind Sock L-807 Assembly

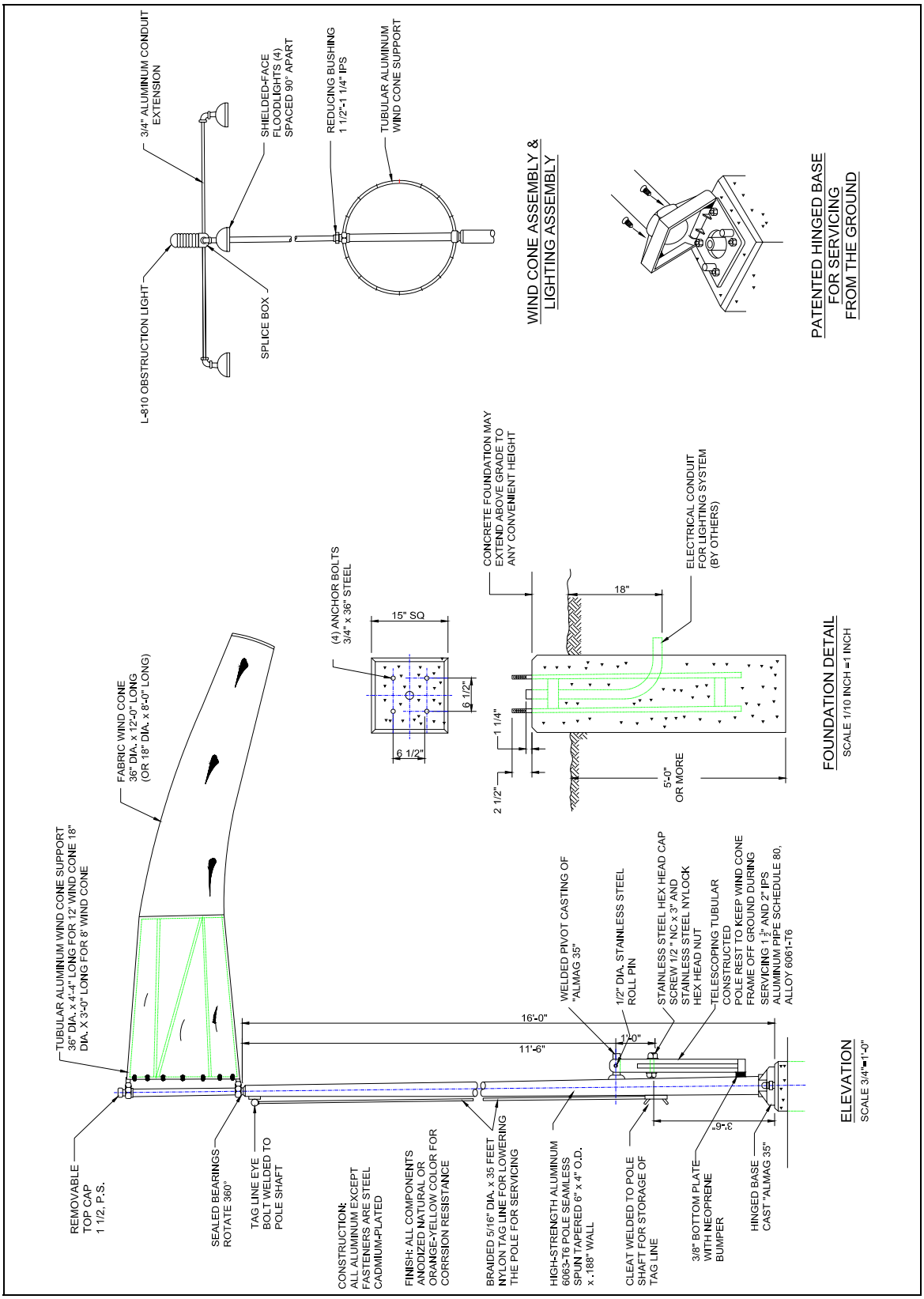


Figure 77 Anodized Aluminum Wind Cone Assembly

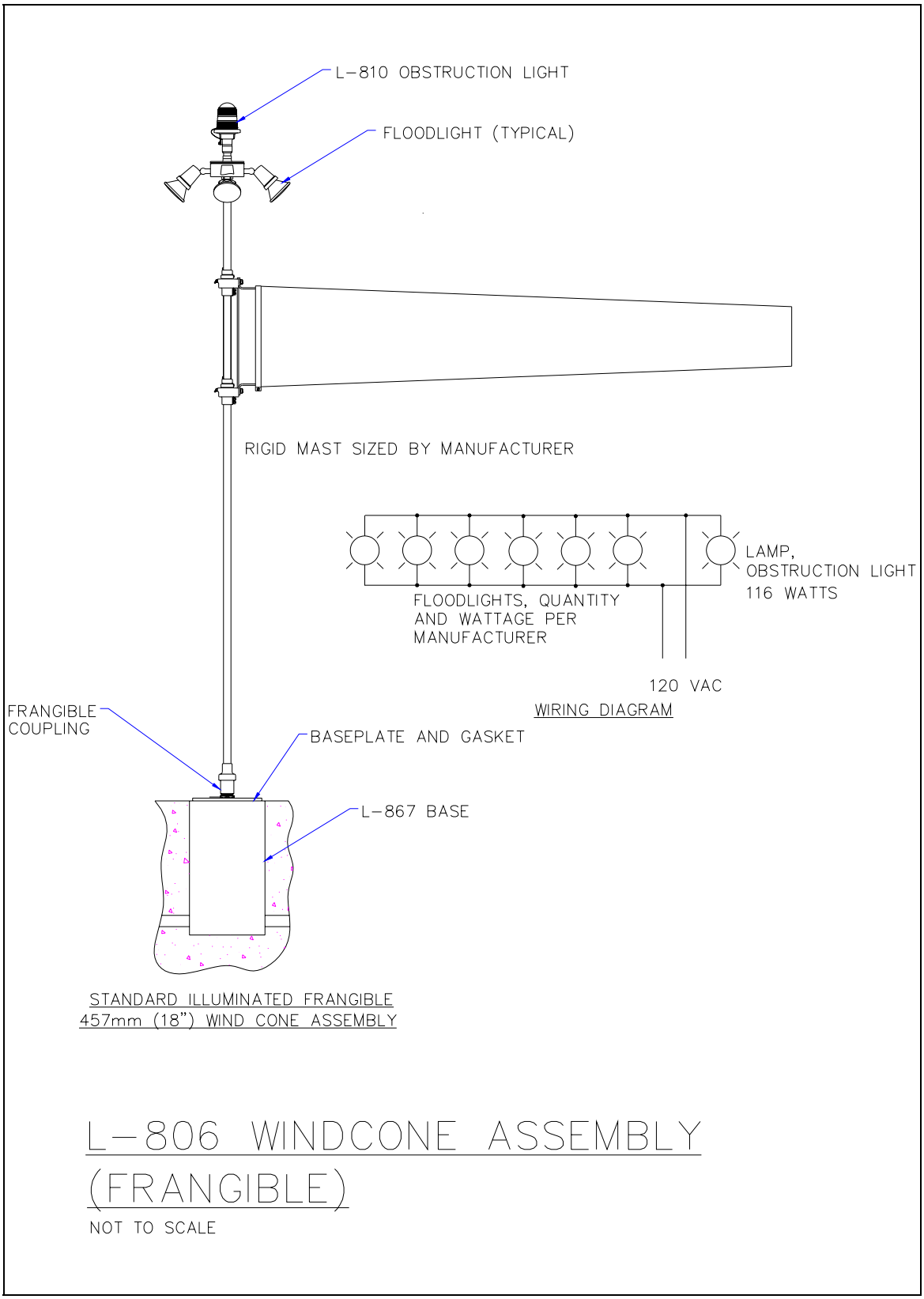


Figure 78 Wind Cone Assembly (Frangible)

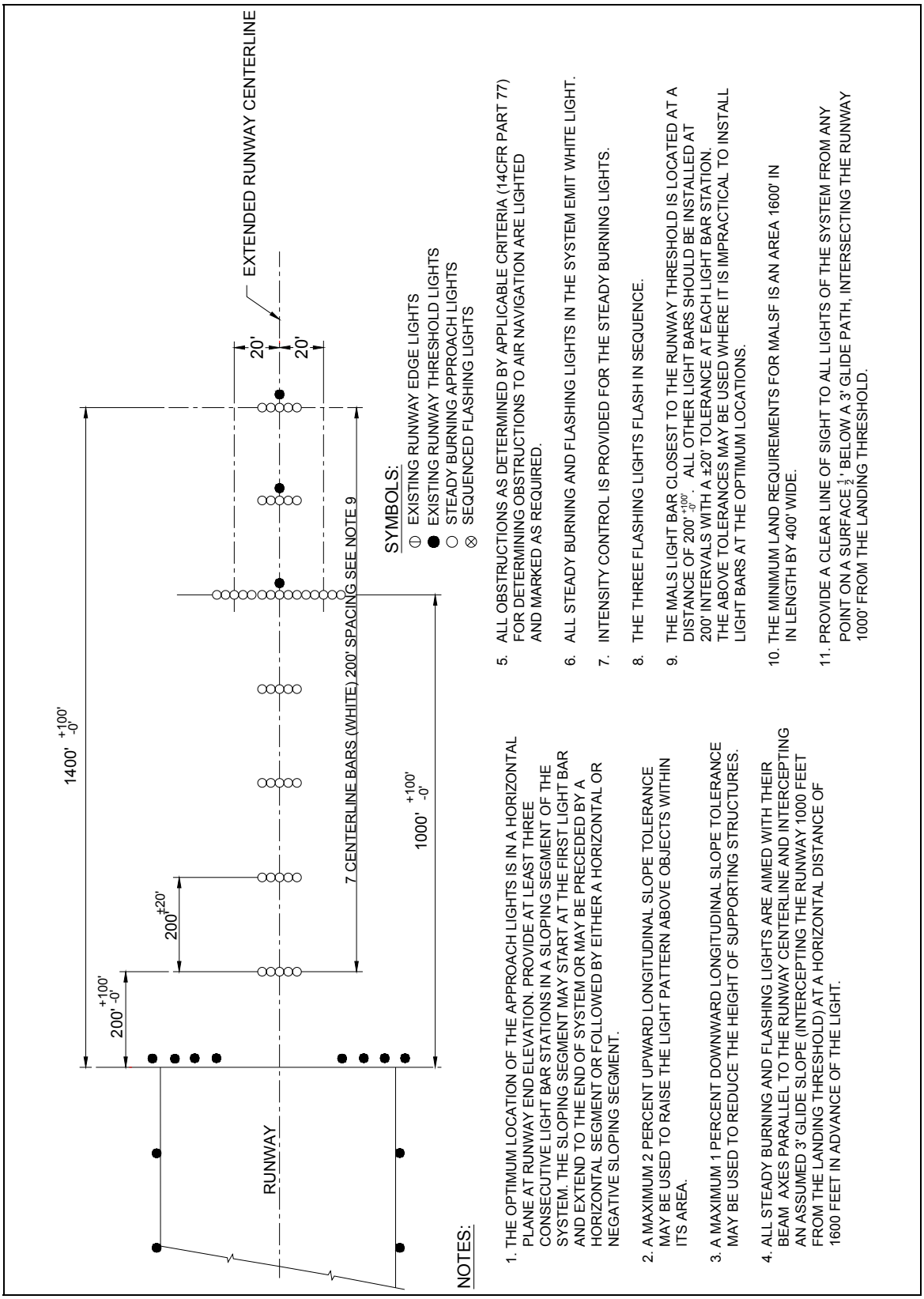


Figure 79 Typical Layout for MALSF

NOTES

1. THE OPTIMUM LOCATION FOR EACH LIGHT UNIT IS IN LINE WITH THE RUNWAY THRESHOLD AT 40 FT FROM THE RUNWAY EDGE.

2. A 90 FT UPWIND AND A 40 FT DOWNWIND LONGITUDINAL TOLERANCE IS PERMITTED FROM THE RUNWAY THRESHOLD IN LOCATING THE LIGHT UNITS.

3. THE LIGHT UNITS SHALL BE EQUALLY SPACED FROM THE RUNWAY CENTERLINE. WHEN ADJUSTMENTS ARE NECESSARY THE DIFFERENCE IN THE DISTANCE OF THE UNITS FROM THE RUNWAY CENTERLINE SHALL NOT EXCEED 10 FT.

4. THE BEAM CENTERLINE (AIMING ANGLE) OF EACH LIGHT UNIT IS AIMED 15 DEGREES OUTWARD FROM A LINE PARALLEL TO THE RUNWAY CENTERLINE AND INCLINED AT AN ANGLE 10 DEGREES ABOVE THE HORIZONTAL. IF ANGLE ADJUSTMENTS ARE NECESSARY, PROVIDE AN OPTICAL BAFFLE AND CHANGE THE ANGLES TO 10 DEGREES HORIZONTAL AND 20 DEGREES VERTICAL.

5. LOCATE THE ADL EQUIPMENT A MINIMUM DISTANCE OF 40 FT FROM OTHER RUNWAYS AND TAXIWAYS.

6. IF REILS ARE USED WITH PAPI-2, INSTALL REILS AT 75 FT FROM THE RUNWAY EDGE. WHEN INSTALLED WITH OTHER FACILITIES REILS SHALL BE INSTALLED AT 40 FT FROM THE RUNWAY EDGE.

7. THE ELEVATION OF BOTH UNITS SHALL BE WITHIN 3 FT OF THE HORIZONTAL PLANE THROUGH THE RUNWAY CENTERLINE.

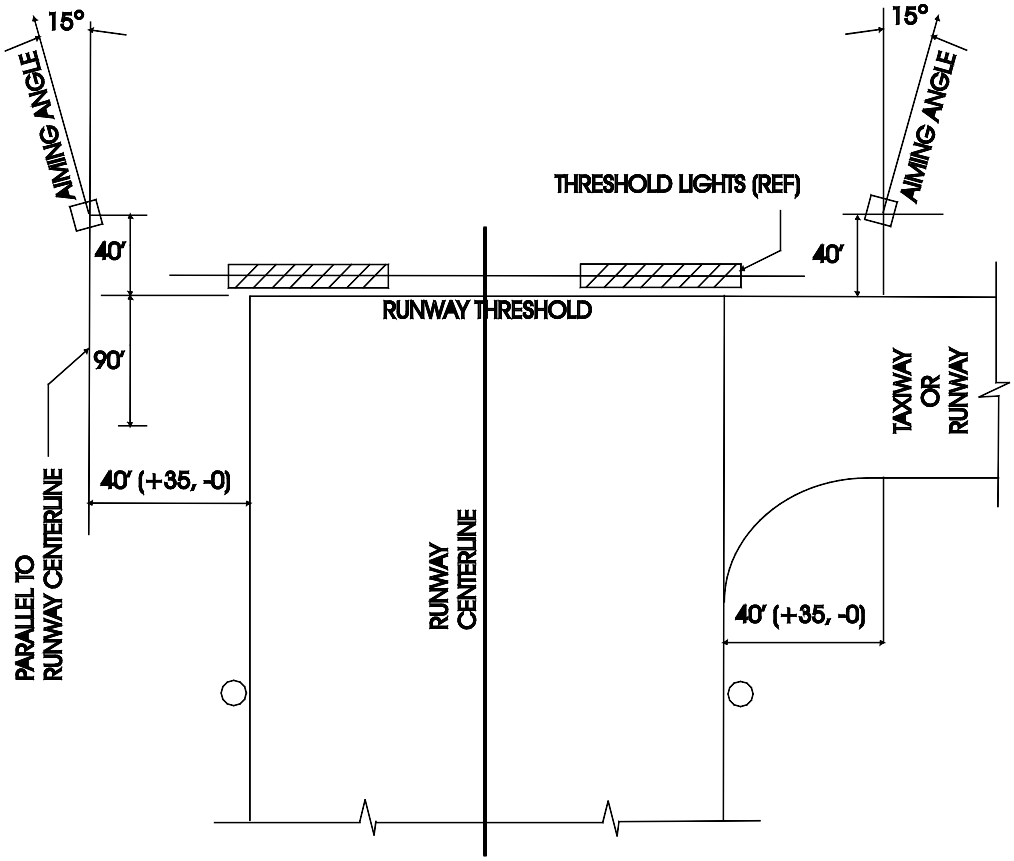
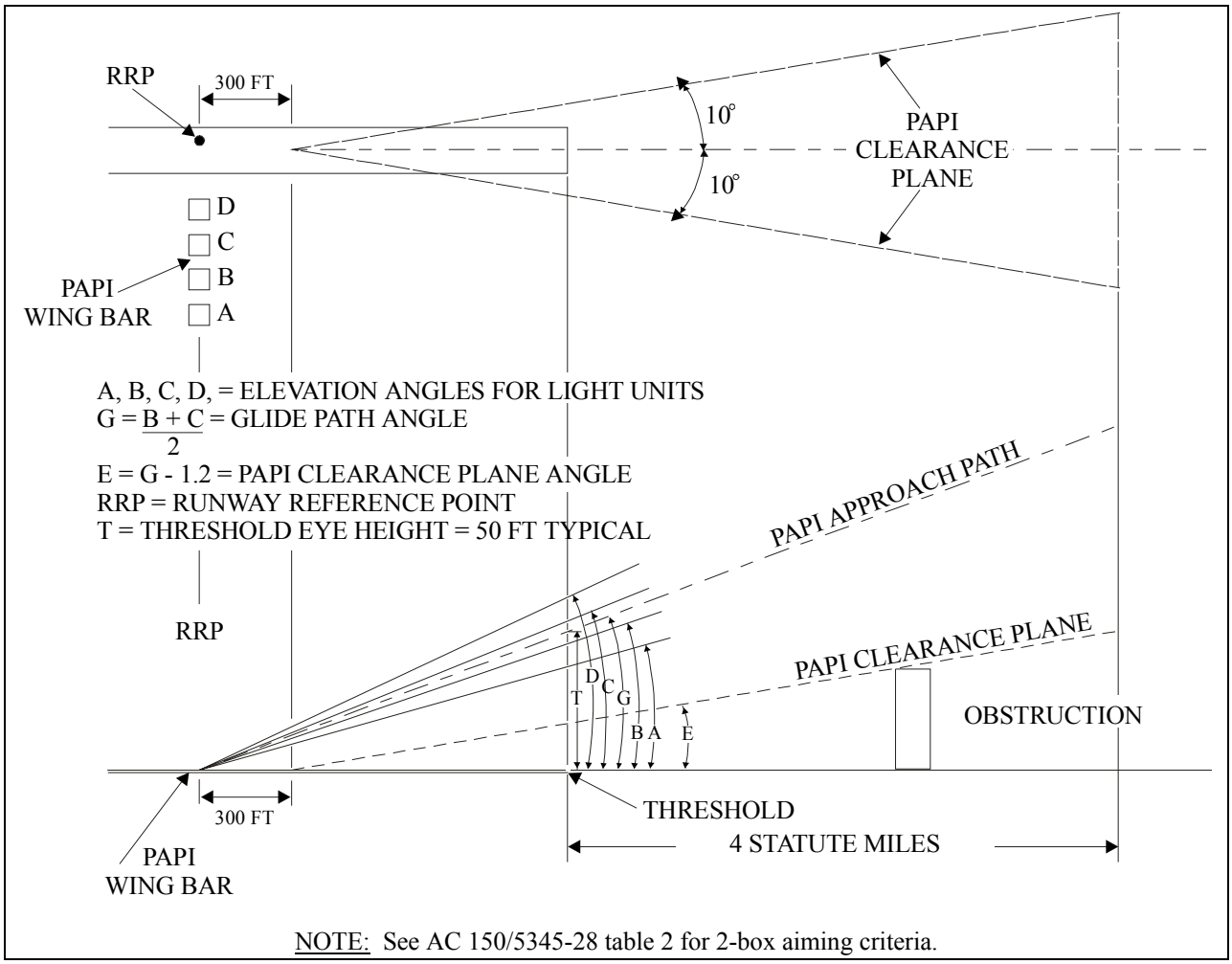


Figure 80 Typical Layout for Runway End Identifier Lights (REILs)



NOTE: See AC 150/5345-28 table 2 for 2-box aiming criteria.

Figure 81 4-Box PAPI Installation and Aiming Criteria