

# New Apron Lighting Guidelines with Existing Infrastructure



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# IES – RP-37-22

## Illuminating Engineering Society (IES)

Recommended practice for apron lighting to improve safety for pilots, air traffic controllers, and ground crews

- 1 Horizontal average 2 foot-candles at grade and vertical average of 2 foot-candles 6.5' (2m) above grade to not exceed 4:1 uniformity
- 2 Glare control
  - < 25,000 candela at the taxiway
  - < 1,500 candela at the control tower
- 3 Evaluate mounting heights to achieve horizontal and vertical light levels (minimum mounting height of 2x the pilot's eyes)
- 4 For retrofits, must evaluate limitations and need to achieve light levels, uniformity and glare control

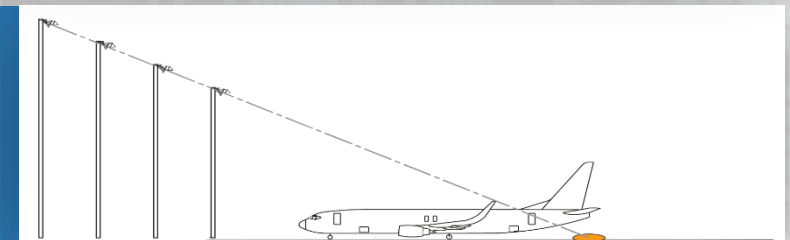
### Light Levels



### Glare Control



### Mounting Heights



# Light Control and Efficiency

Fixtures with poor light control waste light by allowing it to go off the apron into the surrounding area and create light pollution.





# Light Levels

2 fc (avg.)/4:1 (avg/min)



# Design vs. Commissioning

- How do you measure the predicted to assure you are meeting the criteria?
  - Illuminance: Illuminance (Light) meter



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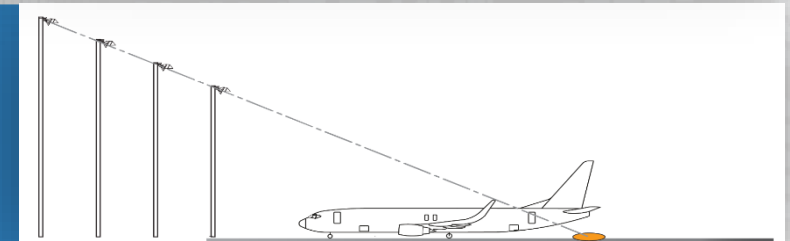
### Light Levels



### Glare Control



### Mounting Heights



# Applying Lumens and Addressing Glare

With LED sources it is relatively easy to harness and place the lumens generated on the area desired. Minimizing glare, on the other hand is challenging.

**In General, If you eliminate LED source visibility within your field of view, You can expect low levels of glare from an applied luminaire.**

# Not All LED Luminaires are Created Equal



Phoenix Sky Harbor  
Phoenix, Arizona



# Light Control



# A Passenger's Perspective



**...What about the Pilots?**

Phoenix Sky Harbor  
Phoenix, Arizona

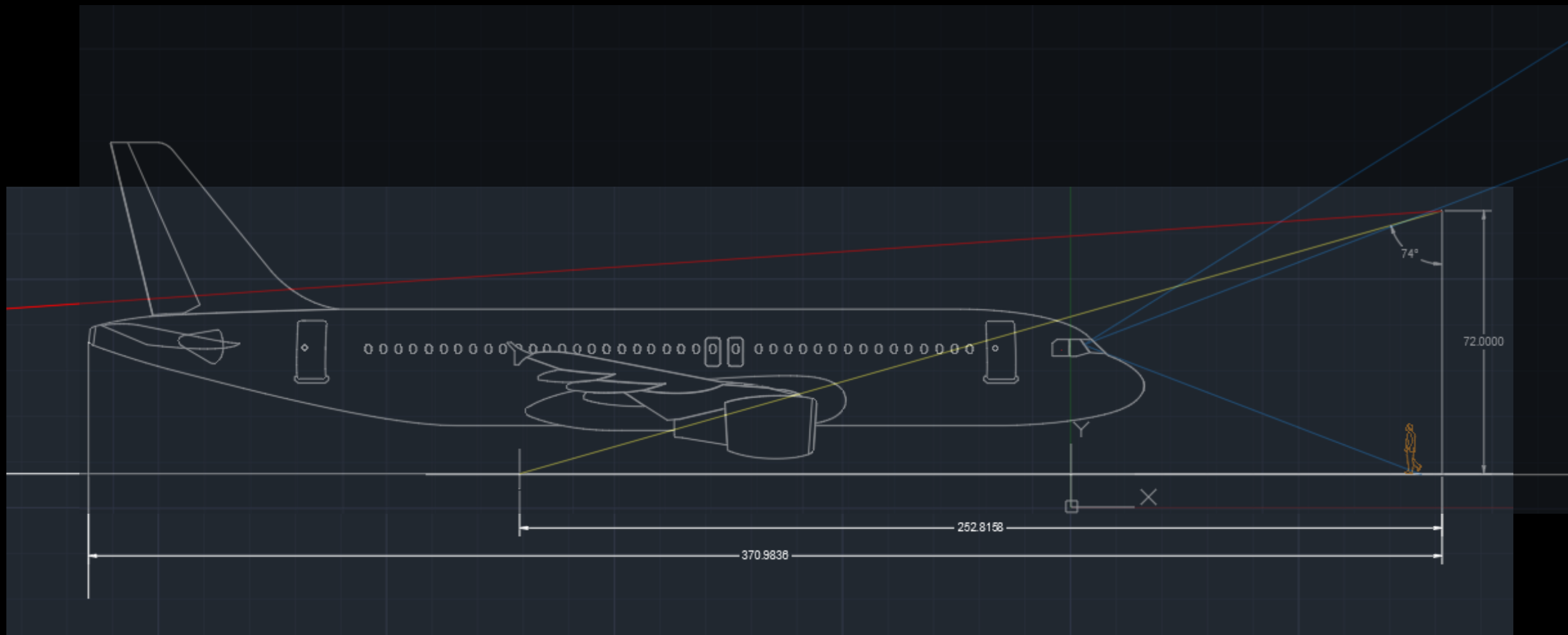
# Design vs. Commissioning

- How do you measure the predicted to assure you are meeting the criteria?
  - Illuminance: Illuminance (Light) meter
  - Candela: Luminous Intensity Meter



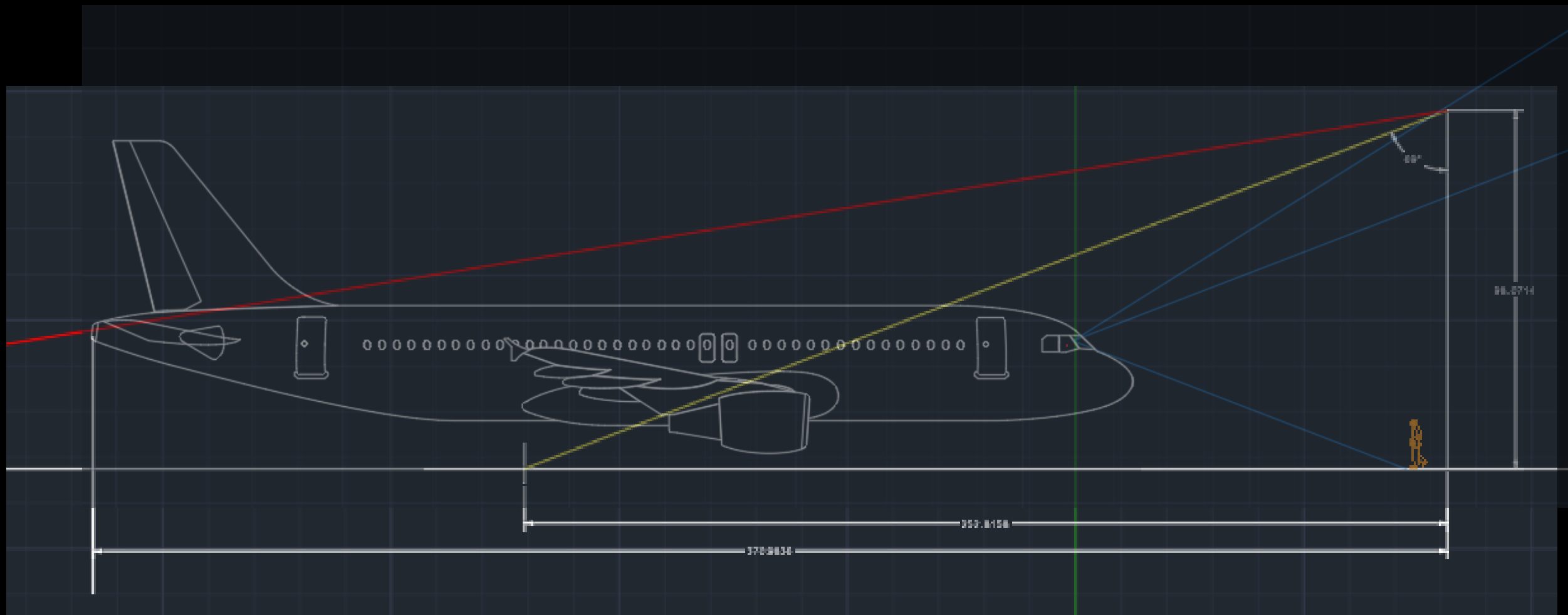
# Existing Infrastructure Limitations

- Gate Placement
- Passenger Boarding Bridge Configuration
- Plane sizes
- Adjacent Terminals
- Apron Lighting Structures (Locations)
- Apron Lighting Structures (Heights)

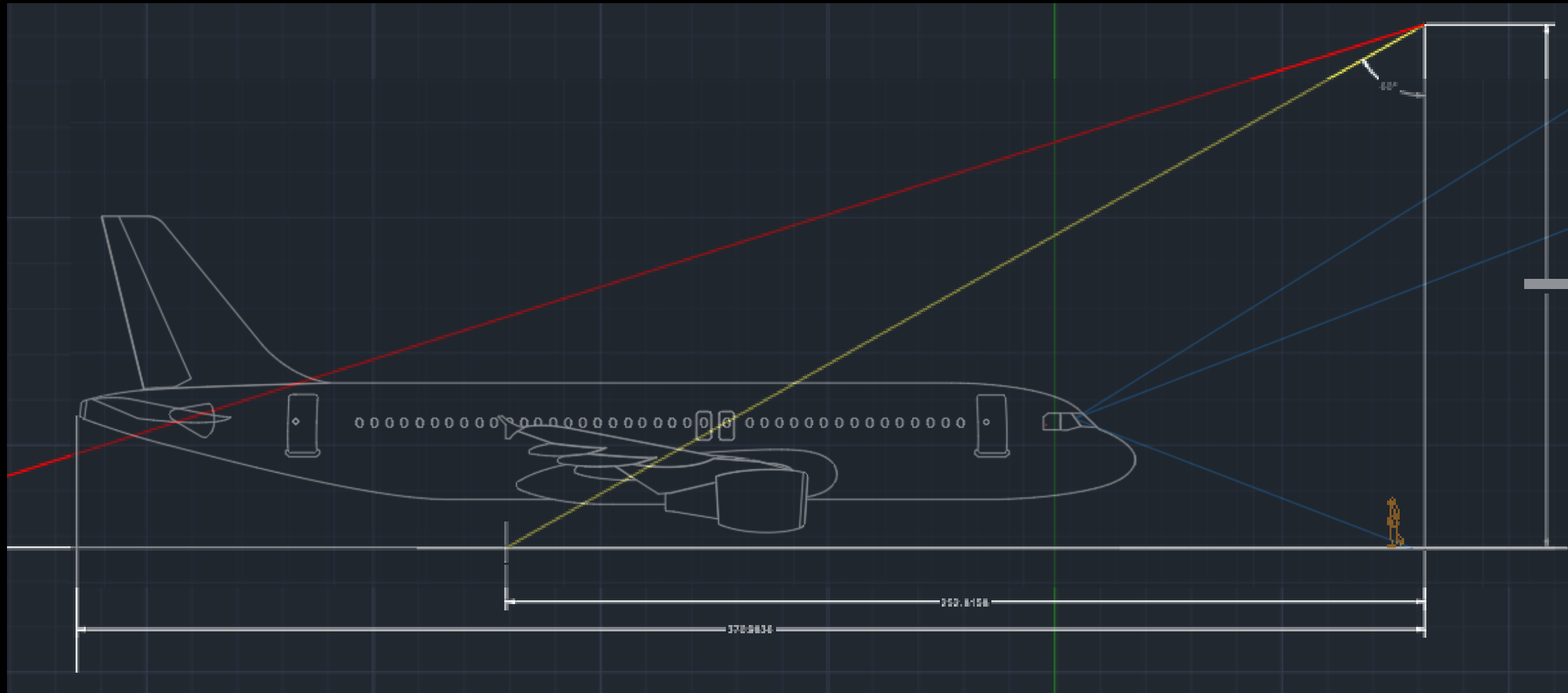








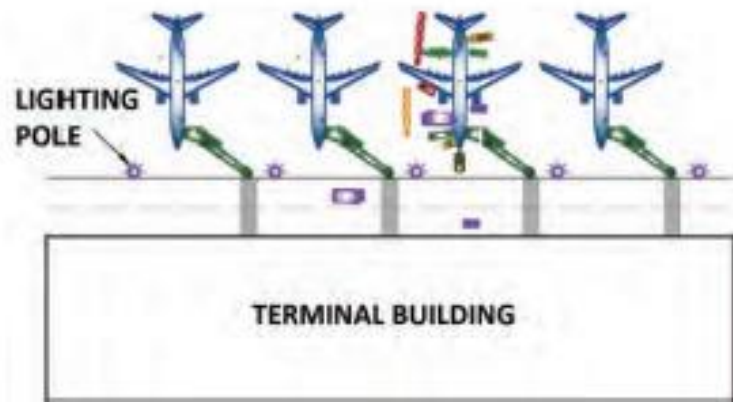




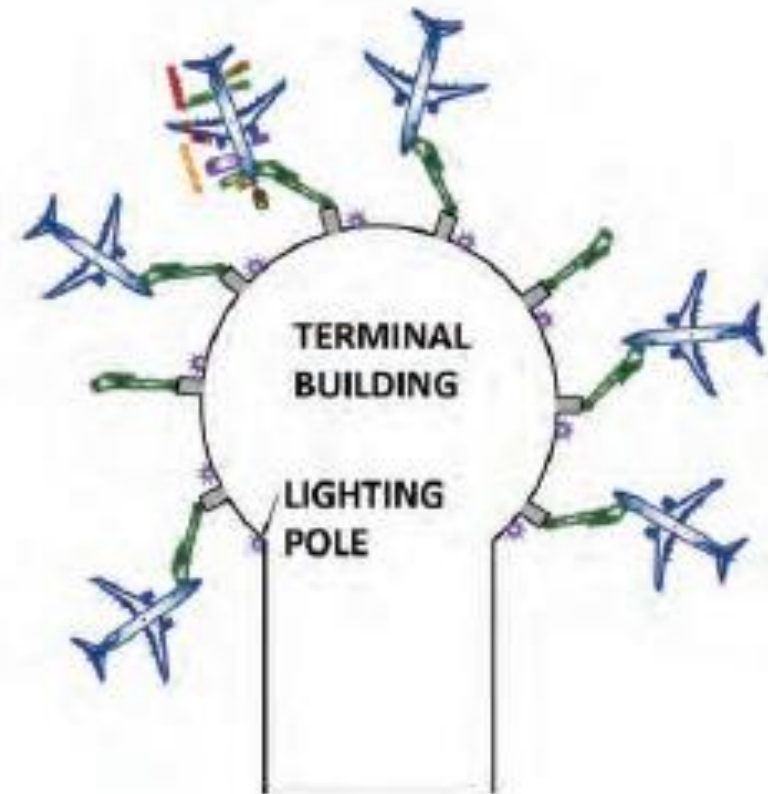




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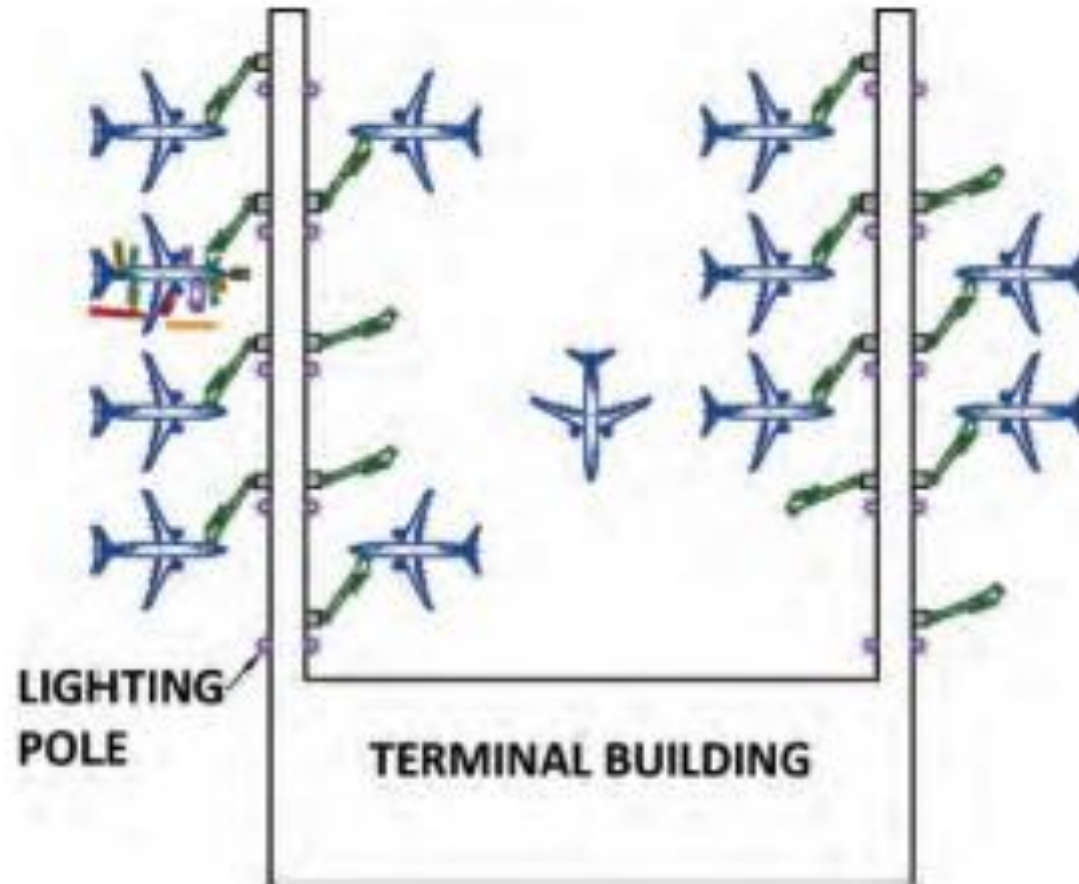


**Figure 4-5. Aircraft parked position: linear concept.**  
(Graphic based on original by Richard Larivee)



**Figure 4-6. Aircraft parked position: satellite concept.**  
(Graphic based on original by Richard Larivee)

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**Figure 4-7. Aircraft parked position: pier concept.**  
(Graphic based on original by Richard Larivee)



# QUESTIONS?

## We invite you to stop by Booth# 200



Detroit Metropolitan Wayne County Airport (DTW)  
Detroit, Michigan