Indexes 715-001, 715-002, & 715-003 Conventional Lighting

Design Criteria

AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (LRFDLTS-1); ***Structures Manual (SM)***, Volume 3, FDOT Modifications to LRFDLTS-1; ***Structures Manual (SM)*** Introduction, I.6 References; ***FDOT Design Manual (FDM)***

Design Assumptions and Limitations

See notes on ***Indexes 715-001 & 002***, ***FDM 231***, ***FDM 261***, and ***Structures Manual (SM)***, Volume 3.

Fixture Mounting Height is defined in the Lighting Design Requirements.

The design weight of luminaire is 75 lbs, and the equivalent projected area (EPA) of the luminaire is 1.55 square feet.

Foundations are based upon the following conservative soil criteria (which covers the majority of soil types found in Florida)

Classification = Cohesionless (Fine Sand)

Friction Angle = 30 degrees

Unit Weight = 50 pcf (Submerged)

Bearing Resistance = 2000 psf

Only in cases where the Designer considers the soil types at the specific site to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Borings in the area that were performed for other purposes may be used to confirm the assumed soil properties.

Unique site circumstances where poorer soil conditions are encountered may require custom foundation designs.

Standard Roadway Aluminum Light Poles and Utility Conflict Poles:

Design Mounting Height is the height measured from the top of the foundation to the light fixture.

Fill Height is the height measured from the natural ground line adjacent to the poles to the finish grade at the pole base. The Fill Height above surrounding terrain may be limited to 25 feet.

Wind Height is measured from the natural ground elevation adjacent to the poles, to the light fixture; therefore, the *Wind Height* at *Fixture* is equal to the *Design Mounting Height* plus the *Fill Height*, rounded up to the next highest 5-foot increment.

Design Mounting Heights in the Standard Plans are the following:

- Standard Aluminum Lighting, Conventional or Wildlife Sensitive:
  30, 35, 40, 45, or 50-foot height with either a top-mounted fixture or a single arm fixture (arm lengths of 8, 10, 12 or 15 feet).
- Standard Aluminum Lighting, Wildlife-Sensitive Only:
  20 or 25-foot height with single arm fixture (arm lengths of 8 or 10 feet)
- Utility Conflict Pole:
  35, 40, 45, or 50-foot height with single arm fixture (arm length of 16 feet)

Locate poles in accordance with ***FDM 231*** for Lighting along with ***FDM 215*** for Roadside Safety and ***FDM 222*** for Pedestrian Facilities.

Placement of standalone light poles is not permitted in medians. However, for placement near frontage roads or other constrained conditions requiring project-specific approval, the Minimum Falling Area applies. Where a pole with a frangible base is placed between adjacent traffic lanes, a Minimum Falling Area is required on both sides. This falling area is an offset measured laterally from the roadway, between the edge of traveled way and the pole face, and it must be a distance of at least 40% of the Mounting Height.

These poles are designed for ground mounts per the Standard Plans details. Mounting on top of walls or bridge decks is not permitted. Poles may be placed on pedestals using project-specific mounting designs following the requirements of Index 521-650 and 521-660.

Median Barrier/Traffic Railing Mounted Aluminum Light Poles:

Median Traffic Railing Mounted lighting should not be used on bridges unless the light level requirement of ***FDM 231*** cannot be meet be by installing the lighting on the outside of the bridge traffic railing using ***Index 521-660***.

Design Mounting Height is the distance from finished grade at the pole base to the light fixture.

Base Height is the height measured from the natural ground line adjacent to the poles or the mean high water to the finished grade at the pole base.

Wind Height is measured from the natural ground elevation adjacent to the poles or from the mean water elevation (as appropriate),to the light fixture; therefore, the *Wind Height* at *Fixture* is equal to the *Design Mounting Height* plus the *Base Height*, rounded up to the next highest 5-foot increment.

Median Barrier Mounted Light Poles on cylindrical or spread footings are applicable for fill levels up to 70 feet (Wind Height of 110 feet or less).

Design Mounting Height is 40 ft. and can be used with Single or Double Arms of 8', 10' or 12' lengths. For Lighting on bridges, locate light poles near substructure supports to minimize vibration of light poles due to traffic.

Plan Content Requirements

See ***FDM 943***.

Payment

Item number	Item Description	Unit Measure
715-4-AB	Light Pole, Complete	EA

See the ***BOE*** and ***Specification 715*** for additional information on payment, pay item use and compensation.