Estimated installation time and equipment needed:

Estimated installation time: 1 hour for preparation of the foundation and 1 hour for the installation, per pole. ~2 hours total.

This is based on average installation time from previous projects. Project specific installation time may vary.

Equipment: truck with crane. Backhoe for foundation digging and prep.

Labor: typically, 3 workers are needed for installation

Materials: they recommended getting the cost of the concrete based on the foundation dimensions and local costs. Anchor bolts are included.

Additional data points:

- The system (solar array, battery size) was spec'd based on an analysis of weather data, solar irradiation (amount of solar power shining down on the specific project area for a given time) for the last 10 years. As additional data is finalized, e.g., pole locations, etc., a final feasibility study will be done. prior to system deployment.
- Energy consumption: the specified LED light pole uses between .020 and .026 kWh/night
- Annual energy consumption and Electricity Savings $: it was calculated the project area has 4,500 hours of night per year. This represents 117 kWh of energy consumption annually per pole. (.026 kWh * 4,500 hours)
- A traditional light pole using a high-pressure sodium bulb consumes 1,800 kWh per year per pole = 216MW per year for 120 poles (1,800 kWh * 120 poles)
- The team calculated an estimated savings in electricity costs of $306 per pole per year = $36,720 = $367,200 over 10 years ($306 * 120 * 10).

Daily Consumption and Energy Generation:

Because of the efficiency of the solar panels, the system generates power based on illumination, i.e., visible light, not just sunlight. So even on a cloudy, rainy, etc. day the solar array is generating power.

- Solar Generation: on an ideal, full illumination day with 9 hrs. and 25 mins (based on the shortest day of the year, Dec 20-21 at the Effingham Sand Hill Complex), the solar generation will be 2.867 kWh
- Summary: based on the shortest day of the year (minimal illumination, minimum amount of time to replenish, and longest period of darkness/light usage) the usage is .375 kWh, which represents just ~13% of the daily solar generation rate.

Technically the battery has the capacity to power the system for up to 4 days without any solar generation.

An optional backup function, called the "anti-blackout system", monitors the weather and the charge/discharge model over the past 5 days and can adapt the output to avoid a shut-down of the light.

The info in the drawing helps to ballpark an estimated application OM given these components:

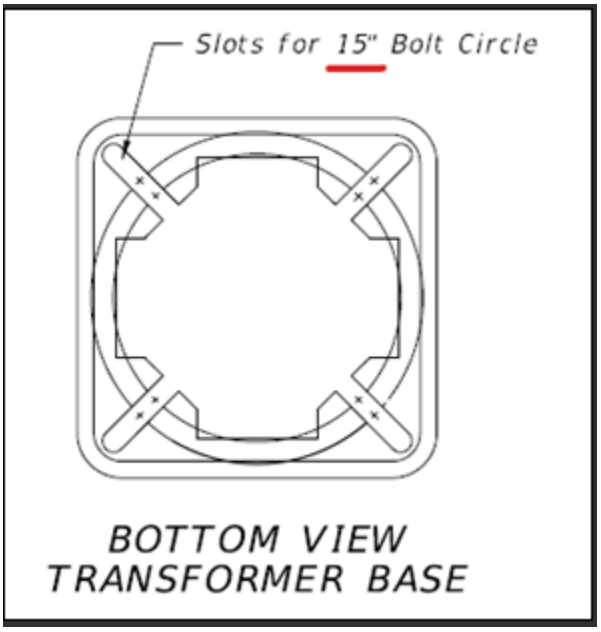
Pole:	~14.6ft high x ~10”OD
Light:	1.55 ft2 EPA (per Light1 drawing), drag coeff = 1
Light Arm:	5.4 ft2 EPA (per Light1 drawing: double tube 3.5” 7ft rise, 8ft run), drag coeff = 0.67
Wind speed:	170mph (per Light1 drawing)

Total Application OM will be ~13 kip-ft so it seems our standard 9.8”OD EasySet has the capacity for the application (20 kip-ft) if a hole can be dug up to 8ft deep (PJF to review and confirm).

Here’s a potential concern that maybe you can check in w/ Kevin to see what his thoughts are:

The breakaway component they are using is actually a 1.5ft high Transformer Base Enclosure that connects into the foundation via a 15” bolt-circle and then ties into the pole via a 13.5” bolt-circle.

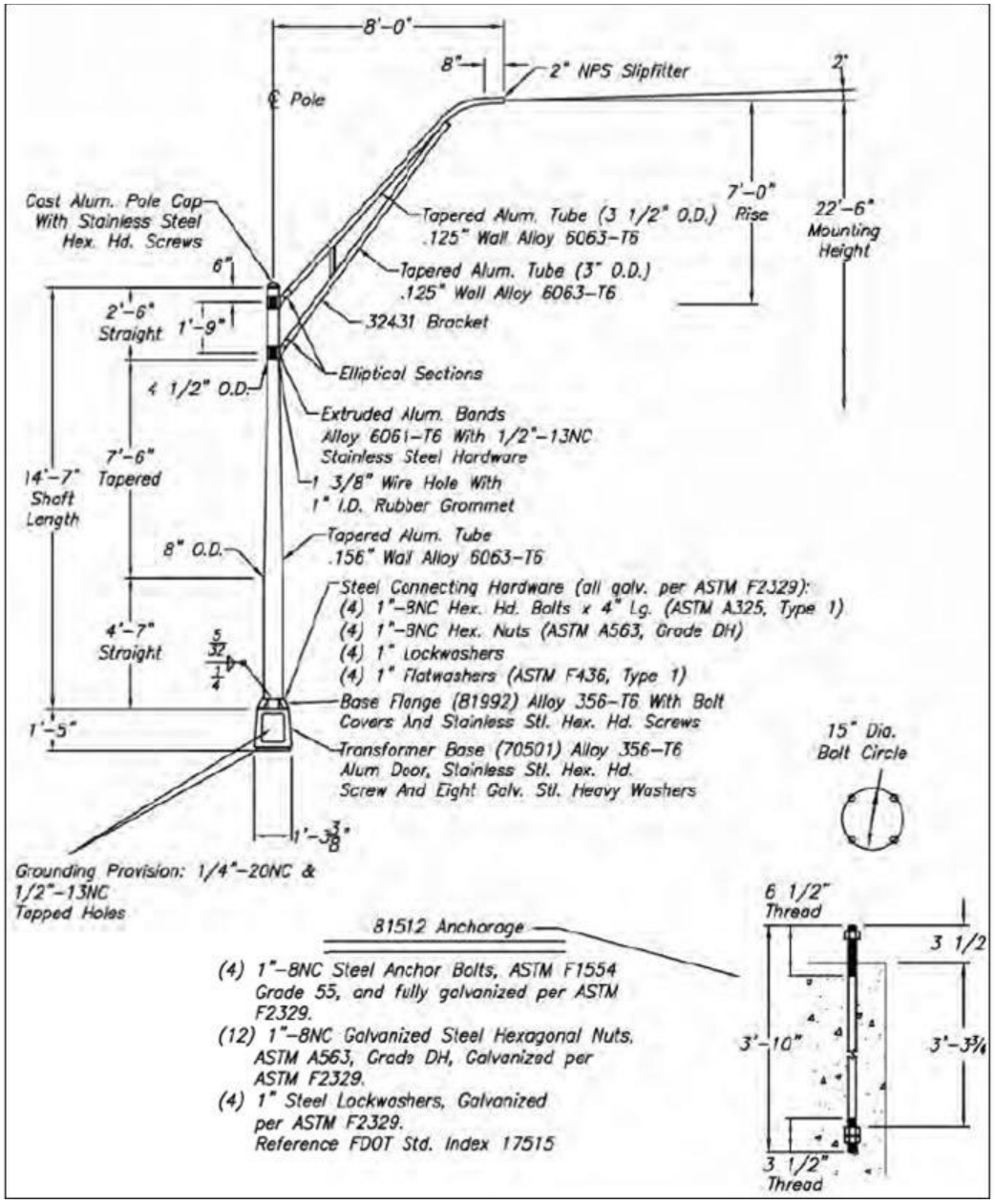
The flange for our EasySet has a bolt-circle range of 11.6” to 14” so maybe Kevin would know if those bottom slots (shown in the below figure) could work for that narrower range.



Off Grid, Solar Street Lighting with Battery Storage Specifications

Pole Structure	
Material	Galvanized steel with hot dipped galvanized coating per ISO 1461 Anchors included.
Shape	Conical
Paint	Available colors with the RAL color matching system
Height	26.25 ft (8m)
Circumference	Base: 6.14 in (156mm), Top: 2.99 in (76mm)
Arm Length	2.62 ft (.8m), single arm configuration • Optional pole arm length from 1.64 ft to 4.92 ft (.5m to 1.5m). Price may differ.
Voltage	24V
Operating Temperature	-40F to 158F
3rd Party Peripherals	Not supported under current architecture*
Foundation	2.62 ft x 2.62 ft x 4.27 ft (0.8m Width x 0.8m Length x 1.3m Depth)

Pole Layout:


8'-0"
8"
2" NPS Slipfitter
2"
℄ Pole
7'-0" Rise
22'-6" Mounting Height
Cast Alum. Pole Cap With Stainless Steel Hex. Hd. Screws
Tapered Alum. Tube (3 1/2" O.D.) .125" Wall Alloy 6063-T6
Tapered Alum. Tube (3" O.D.) .125" Wall Alloy 6063-T6
32431 Bracket
6"
2'-6" Straight
1'-9"
4 1/2" O.D.
Elliptical Sections
Extruded Alum. Bands Alloy 6061-T6 With 1/2"-13NC Stainless Steel Hardware
1 3/8" Wire Hole With 1" I.D. Rubber Grommet
14'-7" Shaft Length
7'-6" Tapered
8" O.D.
Tapered Alum. Tube .156" Wall Alloy 6063-T6
Steel Connecting Hardware (all galv. per ASTM F2329):
(4) 1"-8NC Hex. Hd. Bolts x 4" Lg. (ASTM A325, Type 1)
(4) 1"-8NC Hex. Nuts (ASTM A563, Grade DH)
(4) 1" Lockwashers
(4) 1" Flatwashers (ASTM F436, Type 1)
4'-7" Straight
5/32
1/4
Base Flange (81992) Alloy 356-T6 With Bolt Covers And Stainless Stl. Hex. Hd. Screws
1'-5"
Transformer Base (70501) Alloy 356-T6 Alum Door, Stainless Stl. Hex. Hd. Screw And Eight Galv. Stl. Heavy Washers
15" Dia. Bolt Circle
1'-3 3/8"
Grounding Provision: 1/4"-20NC & 1/2"-13NC Tapped Holes
81512 Anchorage
(4) 1"-8NC Steel Anchor Bolts, ASTM F1554 Grade 55, and fully galvanized per ASTM F2329.
(12) 1"-8NC Galvanized Steel Hexagonal Nuts, ASTM A563, Grade DH, Galvanized per ASTM F2329.
(4) 1" Steel Lockwashers, Galvanized per ASTM F2329.
Reference FDOT Std. Index 17515
6 1/2" Thread
3 1/2
3'-10"
3'-3 3/4
3 1/2" Thread