MONTGOMERY COUNTY, MARYLAND
DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING AND OPERATIONS

MARCH 2019

TELECOMMUNICATION SMALL CELL STREETLIGHT POLES

1) DESCRIPTION

This document prescribes the general requirements for the design and manufacture of streetlight poles incorporating telecommunication small cell equipment. The objective is to replace the County's existing streetlight poles with specialty poles that are designed and manufactured for the additional equipment and the associated load. For the purpose of this document, these streetlight poles shall be referred to as "Small Cell Poles".

The County owns and maintains several different streetlight types. While most of the requirements are generic and apply to all types of streetlights, some requirements are specific as outlined in this document. These specifications may be subject to modification based on industry practices, safety, equipment requirements and/or community design requirements.

2) GENERAL SPECIFICATIONS

Any Small Cell Pole to be used in Montgomery County shall:

1. Be reviewed and approved by the Montgomery County Department of Transportation (MCDOT) prior to installation;
2. Have a context-uniform design matching the aesthetics and the general shape of the streetlight pole it replaces;
3. Use context uniform paint, galvanizing, or other finishing needed to match the aesthetics color of the existing streetlight pole it replaces;
4. Be of the same material as the streetlight pole it replaces, unless the existing pole is fiberglass, in which case, Cast Aluminum or Steel shall be used;
5. Shall have the structural integrity to support the weight of the existing streetlight fixture, traffic signs (if any), and the weight of all of the communication equipment expected to be mounted on it;
6. Be equipped with all necessary holes for attachment of the equipment such that field drilling or welding directly to the pole is not necessary;
7. Have a circular base cabinet, no larger than 18" in diameter and 72" in height, for housing telecommunication small cell equipment, utility meter (if any), and the

lighting disconnect box;
8. Have a shaft that is similar in size and shape to the pole it replaces;
9. Be single-piece from bottom to the top;
10. Be equipped with up to two sets of hardware suitable for mounting antennas as required for telecommunication small cell equipment;
11. Be equipped with a horizontal mast arm (two horizontal mast arms in case of Silver Spring vehicular & pedestrian poles) using the same tenant size for mounting of the fixture (s);
12. Be equipped with the necessary anchor bolts and associated hardware; and
13. Be equipped with a crash-worthy (see Sec 4.4) breakaway base when installed within the clear zone.

3) GENERAL GUIDELINES

3.1 Telecommunications Small Cell Components

Each pole is permitted to have the following characteristics for telecommunications use:

1. DIAMETER
    a. BASE – A wide base (base cabinet) for housing telecommunications small cell equipment. The base cabinet shall be circular, limited to 18" in diameter and 72" high. The top of the base cabinet shall have a gradual transition or tapered section to the main pole section and this transition or tapered section shall meet the requirements of Section 3.2. As indicated in Item 2.7, all communication equipment shall be placed inside the base cabinet, except for the antenna (s) that will be mounted on the pole. No ground-mounted equipment is permitted for use with a Small Cell Pole.
    b. SHAFT – Similar in size and shape to the existing pole being replaced, but designed to accommodate the light and antenna (s).
2. ANTENNA – One antenna, placed at the top of the pole, limited to 5'-0" in height. Another antenna (if necessary) may be placed below the horizontal mast arms. See section 4.3 for effective projected area requirements.

See attached drawing at the end of this specification for additional details.

3.2 Context Uniformity and Aesthetics

Each pole shall have a context-uniform design and shall match the aesthetics of any nearby MCDOT streetlight poles. Context-uniformity includes the materials, light pole shaft, horizontal mast arms, receptacles, luminaires, and finish.

Specifications of nearby MCDOT streetlight poles can be provided for use in developing a context-uniform design. The base cabinet and antennas shall be designed to meet this context uniform design as closely as possible.

4) DESIGN CRITERIA

4.1 AASHTO Standards

All components of the pole and attachments shall meet the requirements of the American Association of State Highway and Transportation Officials (AASHTO) Standard, "Specification for Structural Supports for Highway Signs, Luminaires and Traffic Signals," latest edition.

4.2 Wind Load

All components of the pole and attachments shall be designed to resist (at yield strength of the material without permanent deflection or destruction), test loads equivalent to the calculated wind loads developed by the velocity pressures of an 80 MPH wind with a 30% gust factor. A minimum safety factor of 1.82 on the yield strength shall be maintained.

4.3 Effective Projected Area (EPA)

The pole and associated components and attachments shall have an EPA with the following requirements:

a) Streetlight luminaires, mast arms, and traffic signs shall meet the EPA requirements of the associated nearby MCDOT streetlight poles as required for context uniformity in Section 3.2.

b) All antenna above the equipment base cabinet shall have a combined EPA less than 16 square feet.

4.4 Breakaway/Crash Requirements

The final pole including all attachments and telecommunications equipment shall incorporate breakaway devices when the pole is located in the roadway clear zone and may be impacted by a vehicle. All breakaway devices shall meet the requirements of the AASHTO Manual for Assessing Safety Hardware (MASH) Second Edition, dated 2016.

5) MATERIALS

5.1 Pole and Mast Arms

The pole, including base cabinet and mast arm (s) shall meet the material requirements of the existing pole it replaces. If the existing light pole is made of fiberglass material, cast aluminum or steel shall be used.

5.2 Caisson

The concrete for the caisson foundation shall have a minimum 28-day compressive strength (f'c) of 3000 psi. All reinforcing steel shall be grade 60 with 60,000 psi yield strength (fy).

5.3 Base Plate

A 1¼" inch thick (minimum) steel base plate sufficient to fully develop the ultimate strength of the pole shall be secured to the base of the equipment base cabinet.

5.4 Anchor Bolts

Anchor bolts shall conform to the requirements of ASTM F1554 and shall have a minimum yield strength of 55,000 psi. All anchor bolts and associated hardware shall be galvanized in accordance with ASTM A153.

6) TELECOMMUNICATION SMALL CELL EQUIPMENT

With the exception of the antenna (s), all telecommunication small cell equipment shall be housed inside the base cabinet, above the breakaway system. No communication equipment, other than the antenna (s) is permitted to be installed on the pole. Access to the Montgomery County lighting cables, meter, and/or disconnect box shall be provided in the base cabinet.

7) HEIGHT

The total height of the pole, including antenna, shall not exceed 35'-0". The height of the antenna at the top of the pole shall not exceed 5'-0".

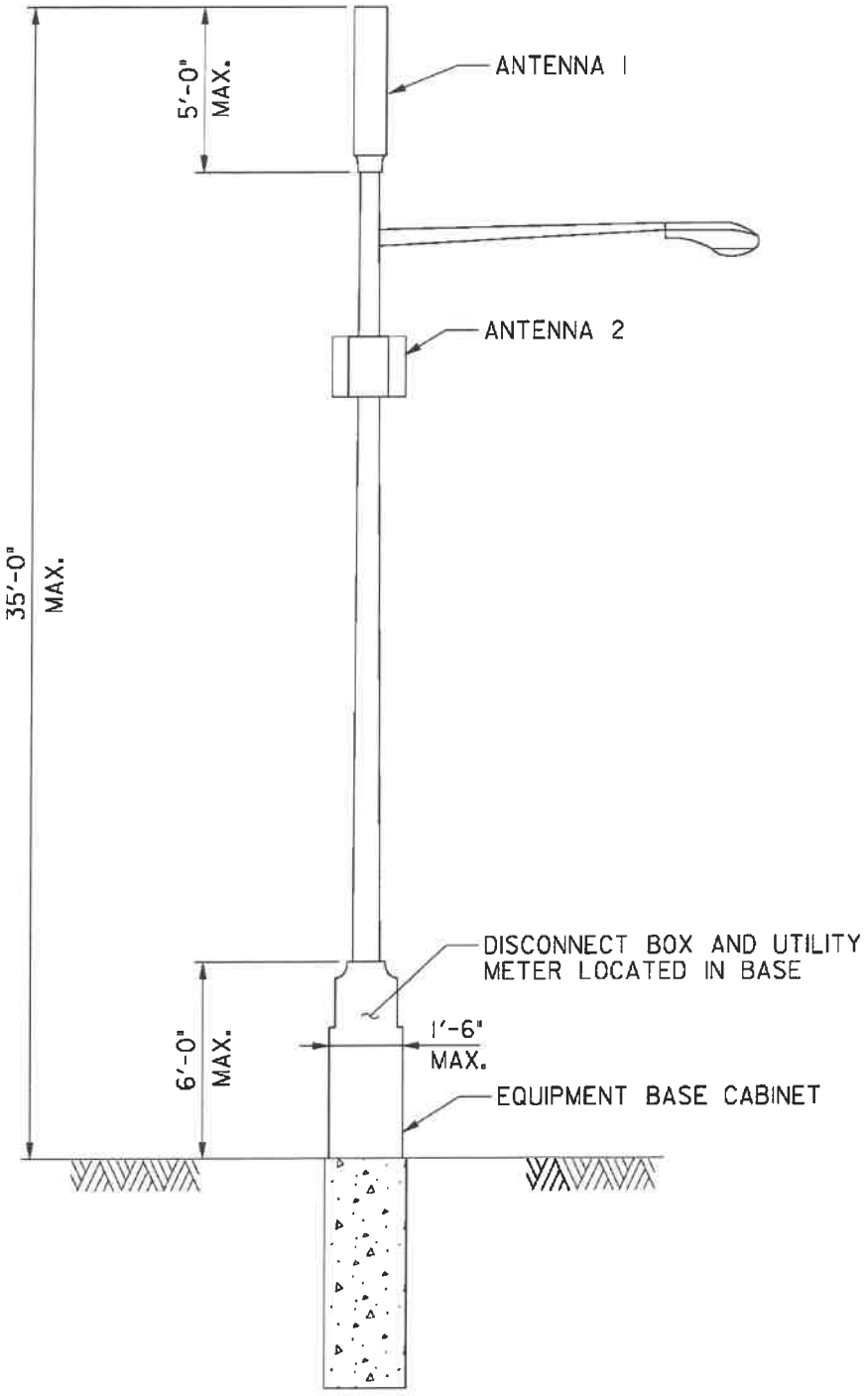
8) ANCHOR BOLTS

Each pole shall be supplied with a minimum of four (4) steel anchor bolts with a 1¼"

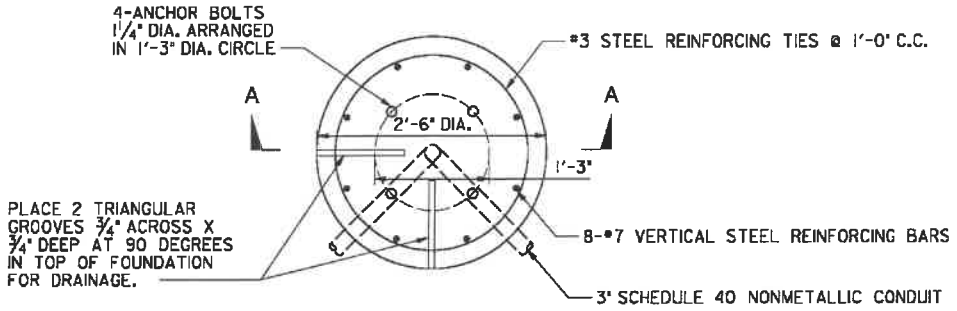
diameter extending 42" into the caisson. The anchor bolts shall be arranged in a circular pattern with a diameter of 1'-3". The anchor bolts shall be connected to a ½" anchor plate located in the caisson foundation and secured with nuts and washers on both sides of the anchor plate. A ¼" thick steel template shall be provided for the installation of the anchor bolts.

9) POLE CAISSON FOUNDATION

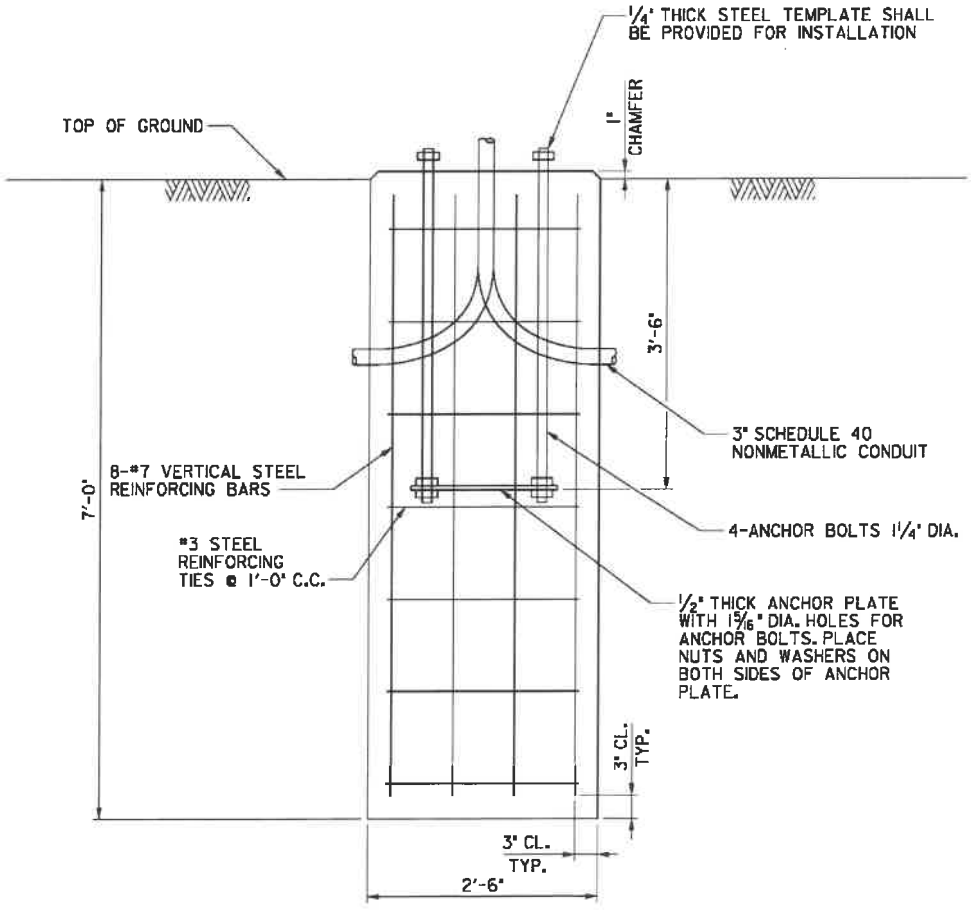
The pole shall be supported on a concrete caisson foundation. The caisson shall have a diameter of 2'-6" and shall have reinforcing steel as shown in the attached drawing. Three-inch Schedule 40 nonmetallic conduits shall be placed in the caisson, as needed, for electric and telecommunication cables. At the top of the caisson, two triangular grooves shall be provided for drainage. The total length of the buried portion of the caisson shall be a minimum of 7'-0". See attached drawing for additional details.



SMALL CELL POLE



POLE CAISSON FOUNDATION PLAN



SECTION A-A