

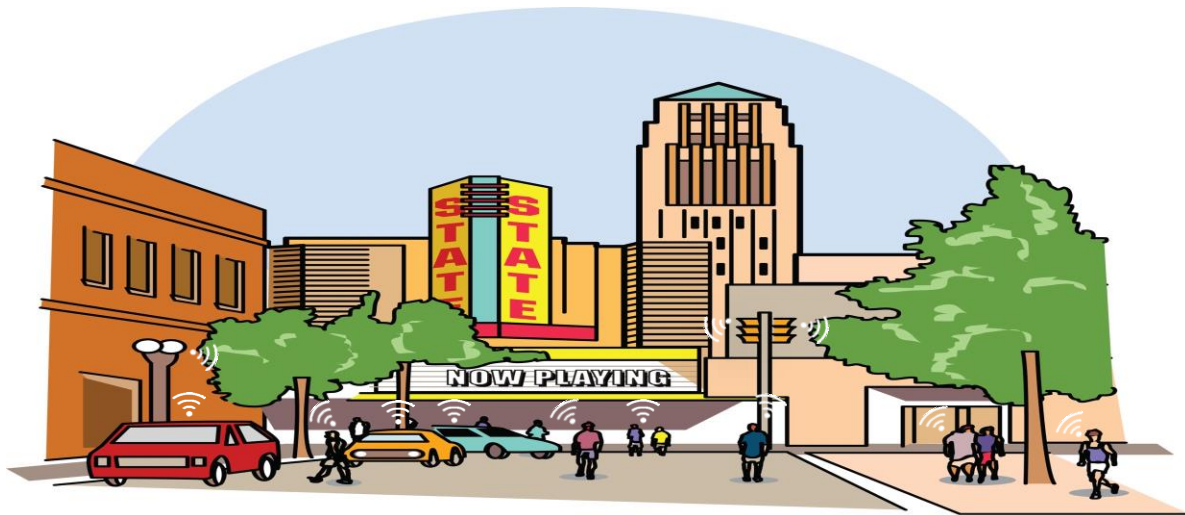


Small Cell Wireless Facilities Design Guidelines

August 2020

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Introduction

Purpose

The purpose of these guidelines is to establish general standards that are consistent with applicable state and federal laws for the design, aesthetic installation, placement, and colocation of small cell wireless facilities and wireless support structures, both as defined in mcl 460.1301 Act 365 of State MI law in the City of Ann Arbor's Public Right-of-Way ("ROW"). This guidance specifically addresses small cell wireless facilities which consists of smaller poles, antennas, and associated equipment, rather than taller macro cell towers, which have been the prevailing technology behind the wireless network for decades. Currently, small cell wireless antennas have a range of approximately 400-500 feet, which requires a denser implementation to meet coverage and capacity demands (see figure 1.1).

This guidance is intended for wireless providers, wireless infrastructure providers, utility franchise holders, owners of small cell wireless facilities and applicants seeking a permit for a small cell installation in Ann Arbor.

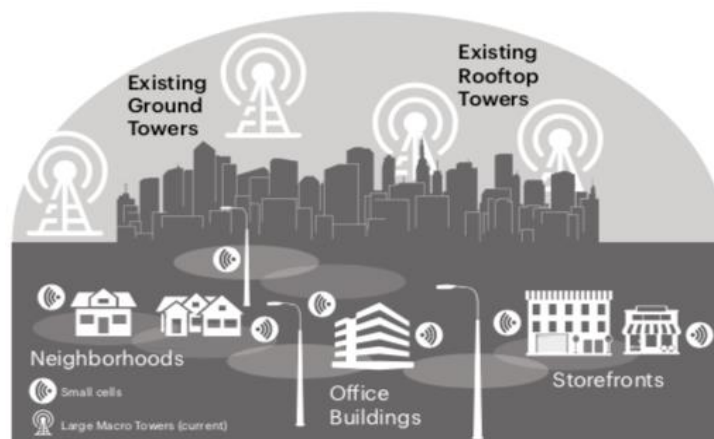


Fig. 1.1 Existing macro towers will provide coverage for miles, while small cells will support the increased needs of 5G and a Smart City.

Goals

The goals of these guidelines are to:

- Ensure that small cell wireless facilities will blend aesthetically into the existing environment.
- Enhance the capability of applicant to deploy small cell technology effectively and efficiently for the residents, businesses and visitors of the City of Ann Arbor to benefit from advanced wireless service;
- Comply with applicable state and federal laws.

Definitions

If any of the defined terms below or otherwise appearing in this document are in conflict with the applicable Michigan code or federal regulation, such definition as established under state or federal law, as applicable, shall control.

- (a) "Antenna" means communications equipment that transmits or receives electromagnetic radio frequency signals used in the provision of wireless services.
- (b) "Applicant" means a wireless provider that submits an application described in this act.
- (c) "Authority pole" means a pole or similar structure owned by the City of Ann Arbor that is or may be used in whole or in part for lighting, traffic control, signage, or a similar function, or a pole or similar structure that meets the height requirements and capable of supporting small cell wireless facilities. Authority pole does not include a sign pole less than 15 feet in height above ground.
- (d) "Colocate" means to install, mount, maintain, modify, operate, or replace wireless facilities on or adjacent to a wireless support structure or utility pole. "Colocation" has a corresponding meaning. Colocate does not include make-ready work or the installation of a new utility pole or new wireless support structure.
- (e) Fire Department Connection (FDC) means a connection on the exterior of a commercial building where responding fire department can attach to.
- (f) "Historic district" means a historic district established under section 3 of the local historic districts act, 1970 PA 169, MCL 399.203, or a group of buildings, properties, or sites that are either listed in the National Register of Historic Places or formally determined eligible for listing by the Keeper of the National Register, the individual who has been delegated the authority by the federal agency to list properties and determine their eligibility for the National Register.
- (g) "Make-ready work" means work necessary to enable an authority pole or utility pole to support colocation, which may include modification or replacement of authority poles or utility poles or modification of lines.
- (h) "Public right-of-way" or "ROW" means the area on, below, or above a public roadway, highway, street, alley, bridge, or sidewalk. However, note that within the City of Ann Arbor, some public rights-of-way are owned or controlled by government entities other than the City of Ann Arbor, in particular the Michigan Department of Transportation.
- (i) "Small cell wireless facility" means a wireless facility that meets both of the following requirements:
 - (i) Each antenna is located inside an enclosure of not more than 6 cubic feet in volume or, in the case of an antenna that has exposed elements, the antenna and all of its exposed elements would fit within an imaginary enclosure of not more than 6 cubic feet.
 - (ii) All other wireless equipment associated with the facility is cumulatively not more than 25 cubic feet in volume. The following types of associated ancillary equipment are not included in the calculation of equipment volume: electric meters, concealment elements, telecommunications demarcation boxes, grounding equipment, power transfer switches, cut-off switches, and vertical cable runs for the connection of power and other services.
- (j) "Small Cell Wireless Facility (SCWF) Interactive Web Portal" means an interactive map where applicants can access City of Ann Arbor small cell data and identify locations where they can

propose small cells. Information includes locations of authority poles, locations of existing small cell wireless facilities and wireless support structures, and applications for small cell wireless facilities and support structures under review.

- (k) "Utility pole" means a pole or similar structure that is not owned by the City of Ann Arbor, and that is or may be used in whole or in part for cable or wireline communications service, electric distribution, lighting, traffic control, signage, or a similar function, or a pole or similar structure that meets the height requirements and capable of supporting small cell wireless facilities. Utility pole does not include a sign pole less than 15 feet in height above ground.
- (l) "Wireline backhaul facility" means a facility used to transport services by wire or fiber-optic cable from a wireless facility to a network.
- (m) "Wireless facility" means equipment at a fixed location that enables the provision of wireless services between user equipment and a communications network, including, but not limited to, radio transceivers, antennas, coaxial or fiber-optic cable, regular and backup power supplies, and comparable equipment, regardless of technological configuration. Wireless facility includes a small cell wireless facility. Wireless facility does not include any of the following:
 - (i) The structure or improvements on, under, or within which the equipment is colocated.
 - (ii) A wireline backhaul facility.
 - (iii) Coaxial or fiber-optic cable between utility poles or wireless support structures or that otherwise is not immediately adjacent to or directly associated with a particular antenna.
- (n) "Wireless infrastructure provider" means any person, including a person authorized to provide telecommunications services in this state but not including a wireless services provider, that builds or installs wireless communication transmission equipment, wireless facilities, or wireless support structures and who, when filing an application with an authority under this act, provides written authorization to perform the work on behalf of a wireless services provider.
- (o) "Wireless provider" means a wireless infrastructure provider or a wireless services provider. Wireless provider does not include an investor-owned utility whose rates are regulated by the MPSC.
- (p) "Wireless services" means any services, provided using licensed or unlicensed spectrum, including the use of Wi-Fi, whether at a fixed location or mobile.
- (q) "Wireless services provider" means a person that provides wireless services.
- (r) "Wireless support structure" means a freestanding structure designed to support or capable of supporting small cell wireless facilities. Wireless support structure does not include an authority pole or a utility pole.

1 - Guidelines for New Small Cell Wireless Facilities and wireless support structures.

The construction and maintenance of small cell wireless facilities should be completed in a manner that does not:

1. Adversely impact public safety, or obstruct, impede or hinder travel;
2. Obstruct other legal use of the public rights-of-way ("ROW").
3. Violate applicable and nondiscriminatory federal, state and local statutes, ordinances, codes, and regulations.
4. Violate or conflict with applicable standards, including but not limited to the City's Public Services Area Standard Specifications for Construction, applicable Building Code requirements, and street design standards.

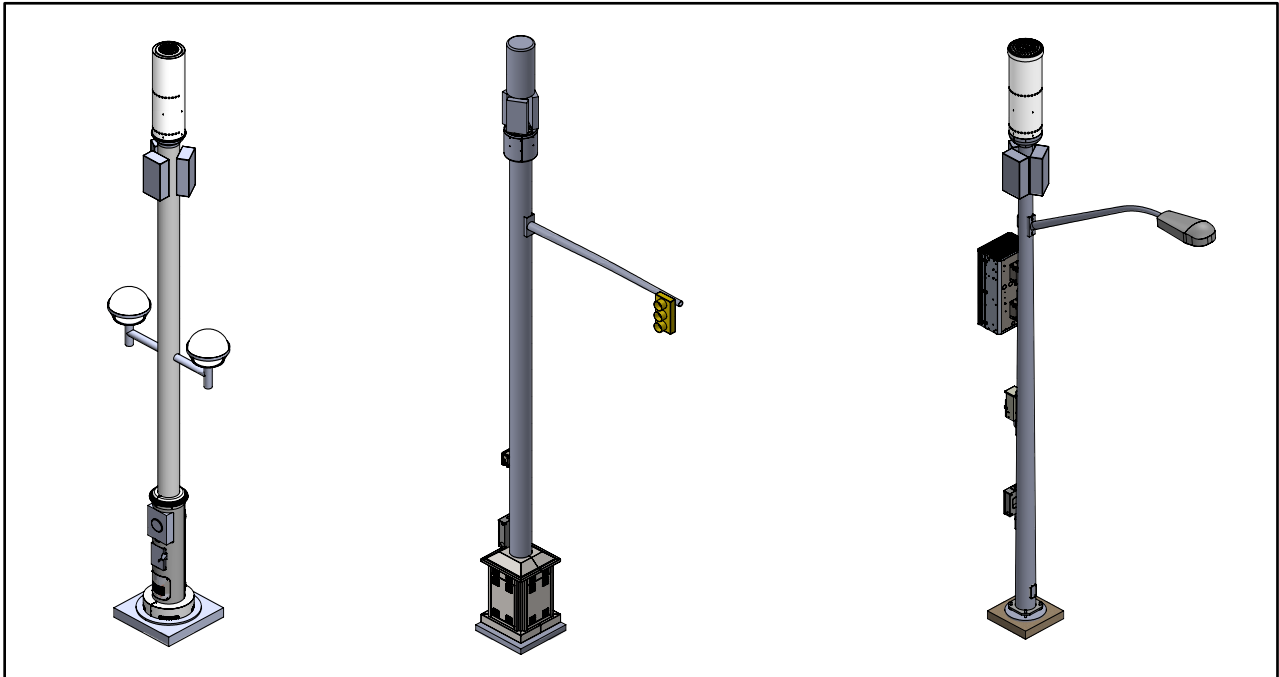
The City desires to promote a clean, organized, and streamlined process in an efficient and least intrusive means available to provide wireless services. The following sections enumerate the City's placement and design preferences for new small cell wireless facilities and wireless support structures. For exceptions or special requests, please see POC on page 13.

Preferred Small Cell Installation Types

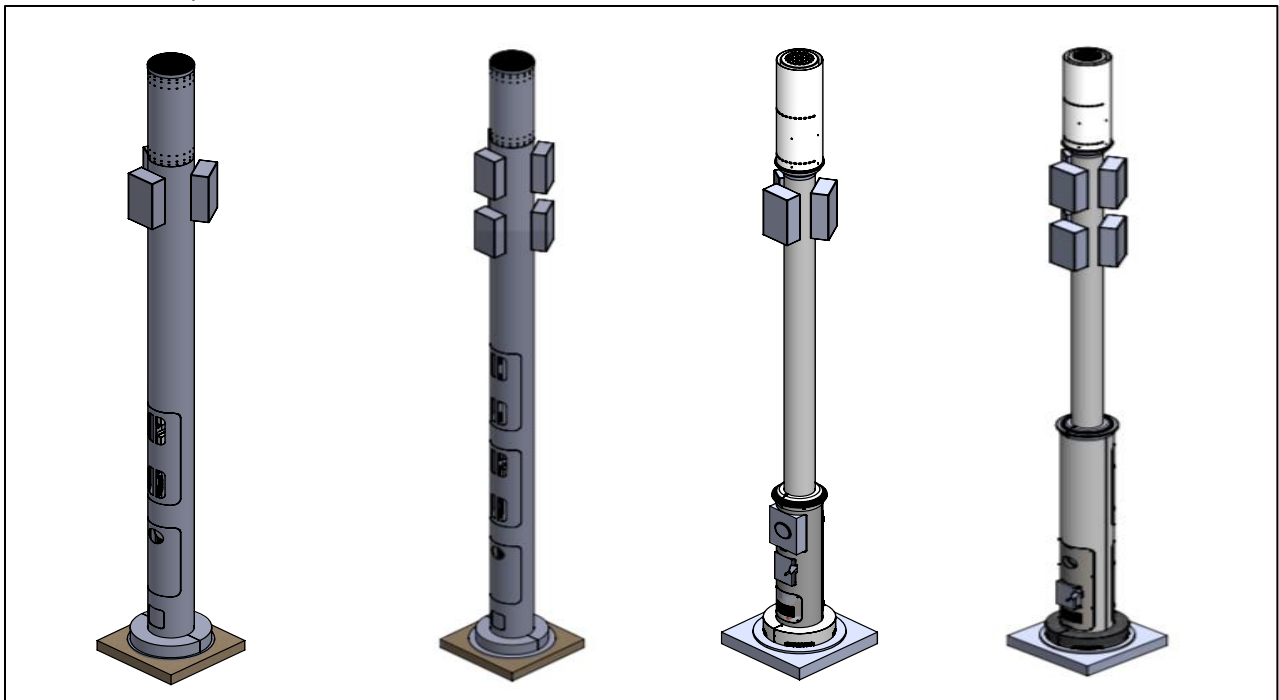
- Type 1 – Colocation on existing infrastructure (utility poles, streetlights and traffic control infrastructure). Reference Appendices 5 & 6 for structure and attachment details.



- Type 2 – Replacement infrastructure for colocation (streetlights, traffic control infrastructure, and wood light poles). Reference Appendices 7, 8, 9, 10, and 11 for structure and attachment details.



- Type 3 – Wireless Support Structures (concealed poles to support between 1 and 3 carriers) in multiple districts (downtown, historic, University and residential). Reference Appendices 12, 13, 14, and 15 for specifics on structure and attachment details.



Proximity to Other Small Cell Wireless Facilities Structures

Small cell wireless facilities should be installed on structures in locations at least 250 feet apart from the locations of other small cell wireless facilities (existing or in the process of an active permit application). An applicant that believes it must locate less than 250 feet from another small cell wireless facility should collocate with an existing structure that has capacity. Or demonstrate (1) that no location at least 250 feet apart from the locations of other small cell wireless facilities is technically feasible, and (2) that collocation cannot be accommodated on an existing structure, or is otherwise not technically feasible. The City's Small Cell Wireless Facilities Interactive web portal (see Appendices section for link) can be used to help identify structures where collocation is feasible and identify where active permit application exist. Collocation on the City-owned streetlights in the following corridors are strongly discouraged:

- a. East Stadium Blvd. from South Main Street to South State Street aka as East Stadium Bridge.
- b. Broadway Street from East Summit Street to Swift Street aka Broadway Bridge.

Preferred Placement

- Small cell wireless facilities should avoid placement in areas with any of the following characteristics;
 - a. Environmental sensitivity, such as wetland areas prone to flooding.
 - b. Historic or cultural sensitivity, such as historic districts and buildings (local historic districts and national register buildings).
 - c. Water and sanitary sewer on separate easements outside the ROW.
- In the University Area, opportunities for collocation on existing pole structures should be considered before freestanding poles are requested. See Section 2 of these guidelines for collocation preferences.
- A minimum of 15 feet from existing drive approaches should be maintained (measured from the closest point on the closest edge).
- Along a roadway, the centerline of new poles should be installed and aligned with existing poles or street trees where present. All State and Local Buildings codes required to be complied with.
- Ensure that any portion of the structure installed in the ground, or any equipment placed on the ground, be less than 3 feet from

the edge of the road travel way, sidewalk, bike lane, curb, gutter, or shared use path.

- Along frontages, align poles with common lot lines to the extent possible.
- Avoid infrastructure placement in front of building features such as windows, doors, balconies, porches, and stoops.
- Placement may not obstruct fire escapes, fire exits, doors, gates, or other ingress/egress to any building entrances/exits that would impede exit from, access to, or delivery to the building, and otherwise comply with applicable codes.
- Avoid placement in the zone created by projecting a perpendicular extension of a primary street facing wall plane for residential building types. Primary wall planes will typically have a front door associated with the façade.
- On street corners, small cell wireless facility placement is preferred on the secondary street frontage.
- Placement may not obstruct or interfere with access to, visibility of, or the operation or function of anything previously and properly installed in the public right-of-way, either City-owned or owned by a third party, including but not limited to conduit, gas, electric, water, wastewater and stormwater pipes and lines, pedestrian signals, lighting, signage, streetlights, bus shelters, bus stop locations, irrigation facilities, parking meters and kiosks, barricades, bollards, bike racks, benches, trash receptacles.
- Placement may not obstruct vehicles in the street, including vehicles in the curb or parking lane.
- Equipment may not encroach on airspace beyond the ROW or over the travel way.
- New Small cell wireless facilities should not be located within 15 feet of a fire station apron or other adjacent emergency service facilities.
- Small cell wireless facilities may not obstruct fire hydrant access, or FDC in the downtown and University areas.
- Small cell wireless facilities placement may not obstruct or otherwise interfere with the operation of equipment already properly placed and operating on or in the vicinity present.
- Placement must adhere to sight distances and visibility triangle requirements in the version of the Public Services Area Standard Specifications for Construction then in effect to ensure safe movements in and around intersections. Similar considerations shall be given to entrances with a 30 feet drive approach width, alleys, and any other place

in which vehicular conflict may occur due to differences in direction of travel and speed.

Impacts to Landscaping

- A minimum of 20 feet from existing mature trees should be maintained.
- Existing mature, healthy trees should not be removed or otherwise impacted by the installation of small cell wireless facilities.
- Equipment placement and construction of small cell in infrastructure should avoid the critical root zone of existing trees. No equipment or storage is permitted in this area.
- Any turf areas, landscaping, plants, or brick pavers disturbed by the installation of small cell wireless facilities should be restored to its original condition.

Aesthetic Guidelines

- Small cell antennas should be shrouded with all wires and supporting equipment integrated with the pole. When the available interior capacity of an existing pole is unavailable enclose all wiring in conduit and or shrouding approved by City.
- Supporting meters, equipment, cabinets, housings, and fans should all be incorporated into the pole base or mounted to the pole at a height that will not create visual or physical obstructions.
- In residential areas, a total maximum height of the small cell installation must not exceed 40 feet plus 5 feet of antenna.
- In commercial areas, a total maximum height of the small cell installation must not exceed 40 feet plus 5 feet of antenna.
- Total width or diameter of the pole should not exceed 20 inches.
- Applicable steel mounting hardware should be used to mount all equipment, access doors, antennas, and equipment cabinets.
- Poles must be set plumb and centered on foundations when installed.
- The diameter of the antenna/enclosure should be a maximum of one and one half times the diameter of the wireless support pole as its widest part (excluding the base). Ultimately, the antenna should appear as a seamless vertical extension of the pole.
- Cylindrical antenna shrouds consistent in color with the pole are preferred.
- All pole-mounted equipment should be grouped as closely together as possible on

the same side of the pole (preferably on the side of the pole away from the street).

Noise

If mechanical fans or other cooling equipment are present, they should not emit collectively more than 50dBA one meter (3.28 ft.) from the pole.

Display of RF & FCC Regulated Signs on Poles and Associated Equipment Specific to Small Cell Wireless Facilities

Signage containing the wireless provider's name, location identifier (site ID) and emergency contact must be attached to the pole within 6 feet of the ground. RF Caution signs must be attached to the pole within 6 feet below the antenna.

Finish of Metal Poles and Associated Equipment

All poles and equipment must have a standard finish of powder coating paint compatible with galvanization treatment. Manufacturer may recommend alternate finishes for the local environment. Powder Coat or alternative exterior finish must be approved by City before production.

- All new poles and equipment should have a double powder coat 4.0 mil thick over all surfaces.
- All handholes should have reinforced covers with stainless steel screws.
- Any defects and scratches on small cell wireless facilities should be primed and painted with a color-matching paint of the existing pole. If damages reach galvanized metal, then in-field re-galvanization will be required.
- Finish colors of the poles, equipment shrouds and all public-facing support infrastructure in downtown, historic, and residential districts should be the color Tiger Drylac Black Satin 38/80020 – Gloss Level 26-35, or similar color as approved by the City.
- Finish colors of the poles, equipment shrouds and all public-facing support infrastructure in all other parts of the City should match the existing color of surrounding utilities or the context of the area where it is placed.

Maintenance of Small Cell Wireless Facilities

- The wireless provider is responsible for maintaining the small cell wireless facilities and small cell support structures it has placed within a ROW, including those it has attached to an authority pole (collectively, “provider’s property”). This requirement includes regular maintenance, periodic re-painting, graffiti or sticker removal, and timely repairs or replacement in the event of damage. Upon notification from the City, any maintenance issue must be remedied within 72 hours or the City may either repair or remove the damaged provider’s property at the wireless provider’s expense.
- If any small cell wireless facility attached to an authority pole is abandoned for ninety (90) or more days, the City may remove it at the wireless provider’s expense, in accordance with the license agreement entered into between the City and the provider for the attachment, including the City’s entitlement to recoup its costs.

2 - Standards for Colocating on Existing Structures

This section addresses the City of Ann Arbor’s preferences for colocating new small cell wireless facilities on existing (Type 1) and replacement (Type 2) streetlight and traffic poles and structures, both in and out of the public ROW. When attaching to existing structures the small cell provider must allow a reserve pole structure capacity of 20% for the City’s existing/future needs for placement and operation of equipment on or in the vicinity of the pole or structure. Existing structures that have been identified for potential colocation, in order of preference, are:

- a. Existing utility poles and structures owned by third parties.
- b. Streetlights and pedestrian signals
- c. Traffic control infrastructure
- d. City parking structures
- e. Other private-owned structures not yet identified for potential colocation.
- f. Other existing City-owned poles, structures or facilities not addressed in this section will be considered on a case-by-case basis.

City Owned Street Lights

DTE owns the majority of the (31,000) streetlight poles in the City of Ann Arbor. This section addresses the approximately 2,419 streetlight poles the City owns in the ROW.

- Colocation on the City’s 14-foot-tall pedestrian level streetlights is strongly discouraged.
- If feasible, Small cell wireless facilities may be co-located on the existing taller City-owned streetlights if the following requirements are met:
 - a. The small cell antenna should add no more than five feet to the existing height of the streetlight.
 - b. The small cell antenna should be shrouded and/or concealed. See Appendix 5 for more details.
 - c. The small cell below equipment should also be concealed. See Appendix 6 for more details.
 - d. Any external small cell equipment including cable, wires, and conduits shall match color of pole and structure.
- In the case of the poles must be replaced, the following requirements must be met:
 - a. Small cell antenna, small cell equipment, cabinets, and equipment housings meter should be incorporated into a decorative pole base to the greatest extent possible.
 - b. City-owned streetlights are 208v, three phase power. Some are de-energized during daylight hours through a photo-sensor at panel locations. Aseparate power source for small cell equipment will be needed.
 - c. City must have a way to safely access and maintain the streetlights. The ability for the City to shut off the small cell operation when needed is required.
 - d. Weatherproof GFI fixtures are required 20 feet above ground on all new poles to accommodate additional temporary lighting fixtures. Depending on the specific location, downtown streetlights may also need to accommodate banners, signs, flood lights, and speakers.

City Owned Traffic Signals

- There are approximately 460 traffic signal poles most of which are owned by the City. In addition to City ownership, DTE, MDOT and University of Michigan own traffic poles as well in the City of Ann Arbor. This section addresses the standard requirements for collocating or replacing City-owned traffic poles.
- Colocation or replacement of traffic poles that are classified as “unavailable” in the Small Cell Wireless Facilities Interactive Map are strongly discouraged. Applicant may submit justification as to why colocation of a small cell wireless facility is required on those specific poles.
- Appendix 5 illustrates a typical mast arm steel traffic pole. However, the City owns two different types; mast arms, and strainpoles.
- There are different attributes on each traffic pole that should be considered when applicant conducts a structural analysis.
- A structural analysis is required for colocation and should use a 50+ year, category 3 wind loading analysis.
- A sonar foundation mapping should also be conducted at the expense of the applicant.
- Small cell wireless facilities may be colocated on City-owned traffic poles if the following requirements are met:
 - a. Steel galvanizing is applied to the design.
 - b. The small cell antenna shall add no more than five feet to the existing height of the traffic pole.
 - c. All cable and/or wires shall be installed internally of the structure if feasible.
 - d. If not feasible, cables and/or wires may run externally and shall be placed inside of a conduit that is strapped to the pole.
 - e. Any external small cell equipment including cable, wires, and conduits shall match the color of the pole and structure.
- If a traffic pole must be replaced, the following requirement must be met:
 - a. Small cell antenna, small cell equipment, cabinets, and equipment housings meter should be incorporated into a decorative pole base to the greatest extent possible. See figures in Appendix 6.

Third Party Structures

DTE owns approximately 62,500 utility poles in the City of Ann Arbor, including most of the street light poles in the City of Ann Arbor, and building heights in commercial areas often reach 30-40 feet or more in height. Based on the prevalence of third-party options across the City, the City prefers that wireless providers first attempt to colocate small cell wireless facilities on non-City-owned structures. See Appendix 11 for more details on a typical utility pole.

- Third party-owned poles and structures colocation applications shall be first approved by the City before submitting approval to utility.
- Wood poles whose only purpose is to provide streetlighting must be replaced with a metal pole.

In the case where the poles must be replaced, the following requirements must be met:

- a. Two separate permit applications are required to be submitted:
 1. Small Cell Antenna Permit Application, and
 2. Permit for Replacement of Third Party- owned pole.
- b. Poles and structure designs must adhere to or comply with City of Ann Arbor’s Small Cell Wireless Facilities Design Guidelines, June 2020.

3 – Submittal Information & Requirements

The following documents and requirements must be submitted as part of a permit application for each individual small cell wireless facility. In addition, all required documents must be submitted using the City's permitting online system (<https://etrakit.a2gov.org/etrakit/Search/project.aspx>). The City of Ann Arbor has the right to revise these forms, requirements if needed from time to time.

Required documentation:

- Completed Small Cell Antenna Application.
- Construction drawings (please refer to the Construction Drawings Requirements in the small cell wireless facilities web site).
- Photo simulations (if applicable).
- Refer to the City of Ann Arbor's Small Cell Wireless Facilities web site for access to these documents (link in the Appendices section).

Project information Requirements:

- Primary Project Data
- Project Name
- Indicate the address or range of addresses for all streets abutting the property. (address information may be obtained from Addressing Services)
- Fill in County Name
- Circle the appropriate jurisdiction
- Property Description* (see application)
- Other Project Data
- Watershed, Watershed Class and Grid Number.
- Facility Ownership/Agent Information
- If the ownership is other than sole or community property, use the boxes provided or attach a list of the partners/beneficiaries/principals and their positions.
- The current owner must sign the antenna application or attach a written authorization for the agent. Be sure all signatures are legible and address information is correct.
- If an agent is designated, this will be the primary contact. If multiple contacts are to receive the case reports, please note this on the application and include related e-mail addresses.

- Annual General Permit fees must be paid and current.
- Provide a location map at a minimum of 4"x4" on the cover sheet of the plan set.
- A brief summary of the project scope.
- Project Manager contact name and phone number.
- Timeframe of project, including projected start and completion dates
- Environmental issues or impact (if applicable), including methods of controls and tree protection to be utilized.

4 – Point of Contacts

For special requests and or exceptions, please contact the following:

- Manny Montoya
Cellular Infrastructure Manager, Public Services
919 Sunset Rd · Ann Arbor · MI · 48103
734.794.6410 (O) · | Internal Extension 43972
- Alison Heatley
Private Development Coordinator, Public Services, Engineering Office
Guy C. Larcom City Hall | 301 E. Huron, 4th Floor · Ann Arbor · MI · 48104
734.794.6410 (O) · | Internal Extension 43621

Appendices:

The following documents can also be accessed via the City of Ann Arbor's Small Cell Wireless Facilities web site @ <https://www.a2gov.org/departments/engineering/Pages/Small-Cell-Wireless-Facilities.aspx>. The City of Ann Arbor has the right to revise these forms, guides, processes and documents if needed from time to time.

Appendix 1

Small Cell Antenna Application Form



SMALL CELL ANTENNA APPLICATION

PUBLIC SERVICES

City Hall: 301 E. Huron St. Ann Arbor, MI 48104-6120
 Mailing: P.O. Box 8647, Ann Arbor, MI 48107-8647
 Phone: 734.794.6426
 Fax: 734.994.8460

| OFFICE USE ONLY | |
|-----------------|---------|
| Permit Number | ROW# |
| | SUBTYPE |
| DATE STAMP | |
| | |

COMPLETE APPLICATION IN ITS ENTIRETY, and UPLOAD TO ETRAKIT WEB PORTAL

| PROPERTY LOCATION/OWNER INFORMATION | | | |
|-------------------------------------------------------|------|-----------------------------------|------------|
| NAME OF PROPERTY OWNER | | HISTORIC DISTRICT (IF APPLICABLE) | |
| PROPERTY ADDRESS | CITY | ZIP CODE | STATE |
| ZONING DISTRICT (COMMERCIAL, RESIDENTIAL, UNIVERSITY) | | SUBDIVISION (IF APPLICABLE) | |
| PROPERTY OWNER'S ADDRESS (IF DIFFERENT FROM ABOVE) | | CITY | STATE, ZIP |

| SITE INFORMATION | | |
|------------------------------------------------------------------|-----------------------------------------|------------------------------------|
| ASSET ID <i>(AS IT WILL APPEAR IN THE CONSTRUCTION DRAWINGS)</i> | SITE NAME | PROPOSED TECHNOLOGY (4GLTE, 5G) |
| SITE COORDINATES (DECIMAL) LONG: | LAT: | INTERSECTION |
| CORNER (NE, NW, SE, SW) | ASSET OWNERSHIP (CITY, DTE, AT&T, etc.) | ROW OWNERSHIP (CITY, MDOT, COUNTY) |

| STRUCTURE TYPE | | | | |
|-------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------------|---------------------------------------|
| <input type="checkbox"/> COLOCATION | <input type="checkbox"/> REPLACEMENT | <input type="checkbox"/> FREESTANDING | <input type="checkbox"/> UPGRADE (ADD-ONS) | <input type="checkbox"/> MODIFICATION |

| WIRELESS SERVICE PROVIDER'S (CARRIER) INFORMATION | | | |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------|----------------|
| CARRIER LEGAL NAME: | | CARRIER SITE NAME & ID (IF DIFFERENT THEN ABOVE) | |
| CARRIER ADDRESS | CITY | ZIP, STATE | MARKET /REGION |
| APPLICATION TYPE (NEW OR RESUBMISSION) | IF RESUBMISSION, PROVIDE PREVIOUS ROW PERMIT # | | |
| CARRIER MARKET MANAGER (PM) NAME: | | CARRIER CONTACT # | |
| <input type="checkbox"/> CARRIER AND CITY LICENSE AGREEMENT | LICENSE AGREEMENT TYPE (CO-LOCATION, REPLACEMENT, OR FREESTANDING) | | |
| <input type="checkbox"/> CARRIER IS AN FCC LICENSED PROVIDER OF WIRELESS SERVICES | IF NOT, PLEASE DESCRIBE | | |

| WIRELESS SERVICE PROVIDER'S SIGNATURE | | |
|---------------------------------------|--------------|--------|
| SIGN HERE X | PRINT NAME X | DATE X |

APPLICANT INFORMATION

| | | | |
|----------------------------------------------------|---------|-----------------------------|---------------------|
| NAME OF APPLICANT <i>(IF DIFFERENT FROM ABOVE)</i> | | | |
| ADDRESS OF APPLICANT | | | CITY |
| STATE | ZIPCODE | PHONE / CELL # () | FAX No () |
| EMAIL ADDRESS | | | |

APPLICANT'S SIGNATURE *(if different from Property Owner)*

| | | |
|------------------|-------------------|-------------|
| SIGN HERE | PRINT NAME | DATE |
|------------------|-------------------|-------------|

PROPOSED WORK

Describe in detail each proposed exterior alteration, improvement and/or repair (use additional paper, if necessary).

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| |

DESCRIBE CONDITIONS THAT JUSTIFY THE PROPOSED CHANGES:

| |
|--|
| |
| |
| |
| |

For Further Assistance With Required Attachments, please visit <https://www.a2gov.org/departments/engineering/Pages/Small-Cell-Wireless-Facilities.aspx>

STRUCTURE TYPE INFORMATION

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------|
| STRUCTURE TYPE | | |
| <input type="checkbox"/> TRAFFIC POLE <input type="checkbox"/> STRAIN TRAFFIC POLE <input type="checkbox"/> STREET LIGHT <input type="checkbox"/> STREET LIGHT – WOOD <input type="checkbox"/> FREESTANDING | | |
| STRUCTURE LOADING ANALYSIS COMPLETE (TRAFFIC POLES, LEAVE BLANK IF NOT APPLICABLE) | <input type="checkbox"/> YES | <input type="checkbox"/> NO |
| IF NO, PLEASE DESCRIBE | PHOTO SIMULATION (FREESTANDING) <input type="checkbox"/> YES <input type="checkbox"/> NO | |
| STRUCTURE OWNERSHIP | 3 RD PARTY OWNER'S APPROVAL? <input type="checkbox"/> YES <input type="checkbox"/> NO | IF NO, PLEASE DESCRIBE |

SMALL CELL ANTENNA INFORMATION (IF ANY INFORMATION IS NOT YET KNOWN PLEASE DESCRIBE BELOW)

| EQUIPMENT | SECTOR (APLHA) | SECTOR (BETA) | SECTOR (GAMMA) |
|-------------------------------------|----------------|---------------|----------------|
| RAD CENTER LINE (FT AGL) | | | |
| ORIENTATION | | | |
| ANTENNA QUANTITY (PER SECTOR) | | | |
| ANTENNA TYPE/MANUFACTURER | | | |
| HEIGHT OF TIP OF ANTENNA/s | | | |
| ANTENNA DIMENSIONS (HXWXD) (INCHES) | | | |
| ANTENNA WEIGHT (LBS PER ANTENNA) | | | |
| ANTENNA MOUNT TYPE | | | |

| | | | |
|-----------------------------------------------------------|--------------------|--------------------|--------------------|
| TOTAL USAGE SPACE OF ANTENNAS (TOP OF STRUCTURE) (CU.YDS) | | | |
| SMALL CELL ANTENNA INFORMATION CONTINUED | | | |
| OTHER EQUIPMENT | EQUIPMENT 1 | EQUIPMENT 2 | EQUIPMENT 3 |
| TMA QUANTITY | | | |
| TMA MODEL AND MANUFACTURER | | | |
| TMA DIMENSIONS (HXWXD) | | | |
| RADIO QUANTITY | | | |
| RADIO MODEL/MANUFACTURER | | | |
| RADIO CENTERLINE (FT AGL) | | | |
| RADIO DIMENSIONS (HXWXD) (CU.YDS) | | | |
| OTHER EQUIPMENT | | | |
| TOTAL USAGE SPACE OF GROUND EQUIPMENT (CU.YDS) | | | |
| DESCRIBE IF INFORMATION ABOVE IS NOT YET KNOWN | | | |
| | | | |
| | | | |
| | | | |
| | | | |

FEE CHART & INSTRUCTIONS FOR SUBMITTING APPLICATIONS

| | | New Pole for & with Small Wireless Facilities (SWF) | SWF attached to City Pole | SWF attached to replacement City Pole |
|-------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------|
| Review fee | Michigan | \$300 per pole (MCL 460.1315(3)(b)) | \$200 per SWF (MCL 460.1315(3)(a)) | \$300 per pole (MCL 460.1315(3)(b)) |
| | Michigan | \$125 (MCL 460.1313(3)(b)) | \$30 per pole (MCL 460.1319(2)) | \$30 per pole (MCL 460.1319(2)) |
| Annual fees | Michigan | \$125 (MCL 460.1313(3)(b)) | \$30 per pole (MCL 460.1319(2)) | \$30 per pole (MCL 460.1319(2)) |
| Other Fees | Michigan | *Michigan also allows an annual fee of \$20 for any other pole to which an SWF is attached, this apply to SWFs attached to third party (e.g., DTE) poles. (MCL 460.1313(3)(a)). | | |

INSTRUCTIONS FOR SUBMITTING APPLICATIONS

All small cell antenna applications must be signed by the wireless service provider and the applicant, if different, with the exception of staff approvals, which may be signed by only the applicant.

All completed small cell antennas applications and their attachments may be submitted to ROW PERMIT Department electrically via eTrakit permit portal,

We accept CASH, CHECK, and all major credit cards. Checks should be made payable to "City of Ann Arbor"

Small Cell Antenna applications that are incomplete or not submitted with the required documentation or payment will not be processed or approved.

APPLICATION EXPIRATION

Applications expire 120 days after the date of approval.

OFFICE USE ONLY

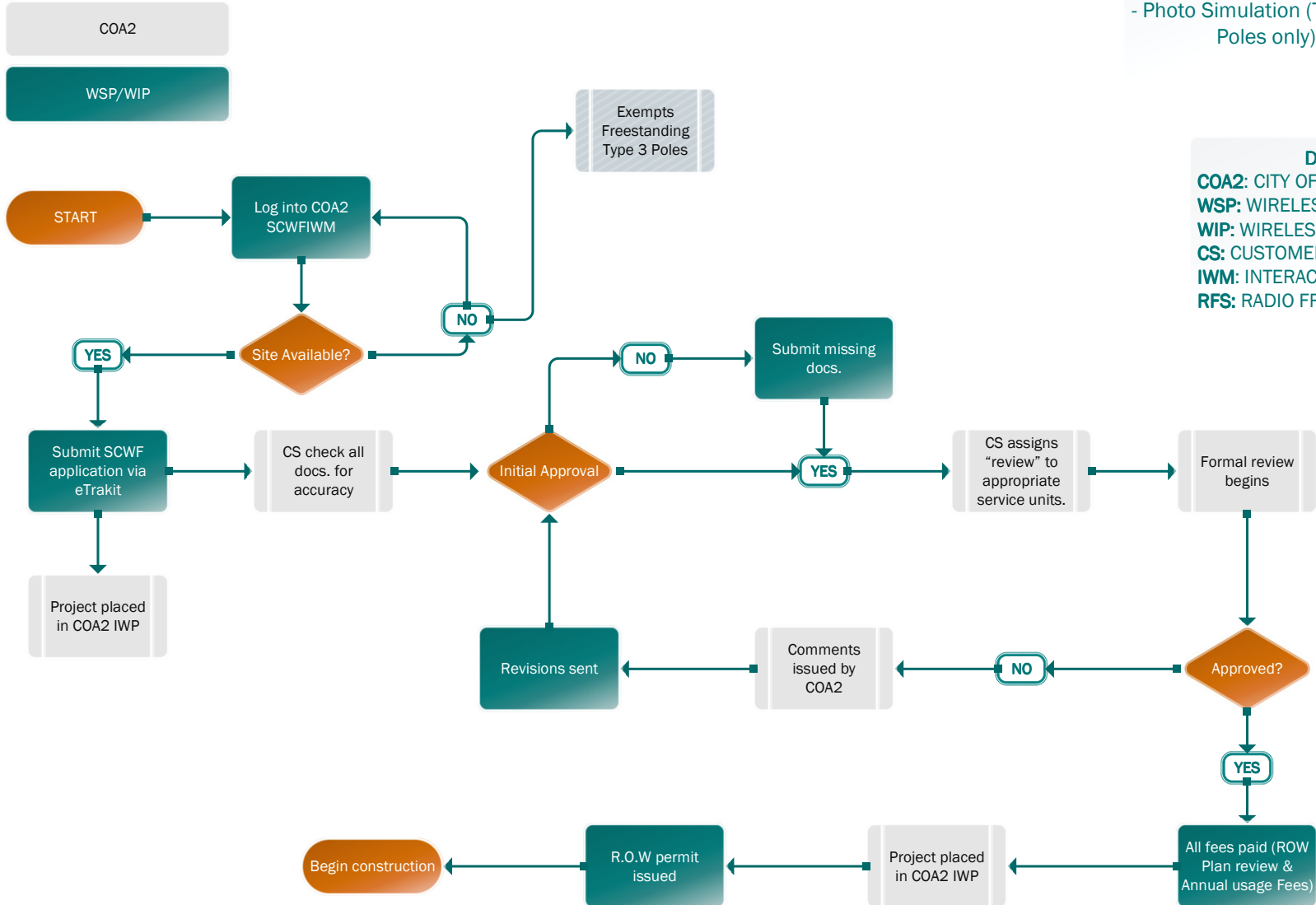
| | |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|
| Date of Review: | |
| ROW engineer review & approval | |
| Antenna review & approval (name) | |
| Comments: | |
| Fee: | \$ _____ |
| Payment Type | <input type="checkbox"/> Check: # _____ <input type="checkbox"/> Cash <input type="checkbox"/> Credit Card |

Appendix 2

Permit Process Flowchart



SMALL CELL WIRELESS FACILITIES PROCESS FLOWCHART



- DOCUMENTS TO BE SUBMITTED:**
- Completed SC Antenna application.
 - Detailed Construction drawings.
 - Photo Simulation (Type 3 – Freestanding Poles only).

- DEFINITIONS:**
- COA2:** CITY OF ANN ARBOR
 - WSP:** WIRELESS SERVICE PROVIDER
 - WIP:** WIRELESS INFRAST. PROVIDER
 - CS:** CUSTOMER SERVICE
 - IWM:** INTERACTIVE WEB MAP
 - RFS:** RADIO FREQUENCY STUDY

For fees schedule and review timelines, see back

| | | New Pole for & with Small Wireless Facilities (SWF) | SWF attached to City Pole | SWF attached to replacement City Pole |
|-------------------|-----------------|------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------|
| Review fee | Michigan | \$300 per pole (MCL 460.1315(3)(b)) | \$200 per SWF (MCL 460.1315(3)(a)) | \$300 per pole (MCL 460.1315(3)(b)) |
| Annual fee | Michigan | \$125 (MCL 460.1313(3)(b)) | \$30 per pole (MCL 460.1319(2)) | \$\$30 per pole (MCL 460.1319(2)) |

| Per MCL 460.1317 | Type 1: Colocation | Type 2: Replacement | Type 3: Freestanding |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Review Timelines | Completeness check 60 days <ul style="list-style-type: none"> - Application Submitted – City approved application for completeness in 25 days. - 35 days remaining to approve application) | Completeness check 90 days <ul style="list-style-type: none"> - Application Submitted – City approved application for completeness in 25 days - 65 days remaining to approve application) | Completeness check 120 days <ul style="list-style-type: none"> - Application Submitted – City approved application for completeness in 25 days - 125 days remaining to approve application) |

Note: The days included above are the maximum days (per MCL 460.1317(d)) it may take the City to act upon an application. All Types will include a 25-day incompleteness determination response.

Appendix 3

Small Cell Wireless Facilities Interactive Map Guide



About SCWF Interactive Web Map

The Small Cell Wireless Facilities (“SCWF”) Interactive Map was developed with the end-user in mind. Very similar to other ArcGIS maps out there, however, this map is specifically for small cells in the City of Ann Arbor. What is a small cell? A low-powered cellular site capable of delivering high transmission speeds to smaller and densified areas where a traditional cellular tower cannot. Although they are called “small,” this is in reference to their **small** coverage area, not their physical size.

Purpose

This SCWF Interactive Map was developed as an additional tool to our small cell design guidelines. The purpose of this map is to establish general standards, consistent with all applicable state and federal laws, for colocation, SCWF placement and identifying all the districts with the City of Ann Arbor and associated design types.

This guidance is intended for wireless providers, wireless infrastructure providers, utility franchise holders, owners of small cell facilities and any applicant or person seeking a permit for a small cell installation in Ann Arbor.

Some of the ways you can interact with this map include:




1. Identify all City district boundaries (these layers can be turn on and off)
 - a. DDA (Downtown)
 - b. Historic
 - c. Residential
 - d. Commercial, and more.
2. Search for specific city-owned and non-city-owned assets for colocation and/or replacement.
 - a. Traffic poles
 - b. Street lights
3. Identify utility poles (not all assets are shown).
4. Identify how many existing applications are in the system for a specific city-owned asset.
5. Identify existing SCWF collocated on city-owned asset.
6. Identify 3rd party owned small cell assets.
7. Identify city-owned assets that have current or forecasted Capital Improvement Projects.
8. Display additional information about the attributes for each city-owned assets.
9. Display the 75’feet radius buffer (per ACT365) on each city-owned traffic signal.
10. Display a 2018 aerial/birds eye color layer.
11. Print and create reports on features and information contained within the map.
12. Share your map with others.

This map functions similarly to most other web ArcGIS maps found online. These functions include:

1. Use the mouse scroll wheel to zoom in/zoom out (or the +/- buttons in the top-left corner)
2. Click and hold the left mouse button, then drag the mouse to pan across the map
3. Clicking on any asset (eg, streetlights) will bring a popup box with additional information about that asset
4. The background aerial image is flat and does not support either 3D-viewing or Street View.



Some additional tools are provided beyond the scope of many web maps.

1.  "**Legend**" widget opens a panel that provides information about the symbology of the map.
2.  "**Layer List**" widget opens a panel that allows the user to toggle each layer on/off.
3.  "**Measurement**" widget allows the user to measure both distance and area.

Below is a glossary of helpful terms to know when navigating this web portal.

1. **SCWF** - Small Cell Wireless Facilities
2. **ACTIVE PERMIT APPLICATIONS** - Applications that are in our eTrakit permitting
3. **EXISTING SCWF** - Any SCWF that construction is complete and/or is live
4. **UNAVAILABLE** - This pertains to all city-owned traffic signals that are not available to house SCWF due to future CIP needs.
5. **EXISTING CARRIER** - Wireless service provided that has an existing SCWF or has an active application ("Carrier 1/2/3" identifies the number of carriers in same location)
6. **RELATED POLE OWNER** - 3rd party pole/infrastructure owner
7. **CAPACITY** - Identify if city-owned structures has capacity or not for additional SCWF loading
8. **PLANNED CIP** - Identifies if there is an existing or forecasted capital improvement project
9. **ACT 51 STREETS** - Road classifications and ownership information as defined by MDOT Act 51

Appendix 4

Construction Drawing Requirements



Construction Drawings Requirements

The following are general comments and notations that must be included in all small cell antenna construction drawings submitted to the City of Ann Arbor for streamline review.

All drawings, revisions, and photo simulations, must be submitted via eTrakit (City of Ann Arbor's online permit portal). This section addresses the City of Ann Arbor's preferences for the following 3 type of applications (eTrakit subtypes):

1. Third party existing structures
 - a. DTE utility poles
 - b. Telecom poles
 - c. Traffic control structures
 - d. Strain traffic control structures, and
 - e. Privately-owned buildings
2. Replacement of Streetlights and pedestrian signals
3. Traffic control infrastructure
 - a. Mast arm
 - b. Strain poles

Other existing City-owned poles, structures or facilities not addressed in this section will be considered on a case-by-case basis.

- a. Wood poles whose only purpose is to provide street lighting must be replaced with a metal pole.
- b. City Parking structures

The following are general notations, comments, and requirements that all construction drawings per each subtype must contain.

General Requirements:

1. All plans shall include
 - a. Title sheet
 - b. General Notes
 - c. Compliance requirements (RF signage, certificate, etc.)
 - d. Overall site layout
 - e. Propose SCWF location plan (map and aerial view combined)
 - f. Enlarged SCWF location plan with photo of site
 - g. Proposed pole elevations and SCWF equipment
 - h. Photo simulation of proposed SCWF (Type 3/Freestanding Poles)
 - i. Nearest property address
 - j. Grounding and wiring plan
 - k. SCWF equipment specifications

General Plan Notations:

1. Ensure that the county is located in the title page – Washtenaw County.
2. All notes referencing digging and/or underground construction shall reference "MISS DIG".
3. Sidewalk and pavement surfaces restorations, reference local codes - City of Ann Arbor standards. If you want to be more general so it is applicable to all projects, you could say, "All sidewalk and pavement surfaces altered during construction to be repaired as required by the authority having jurisdiction."
4. Underground construction and power route will be determined by DTE and local Fiberoptic Service Company (which requires a separate permit). Please note in the Project Summary on the Cover Sheet

CONSTRUCTION DRAWINGS REQUIREMENTS

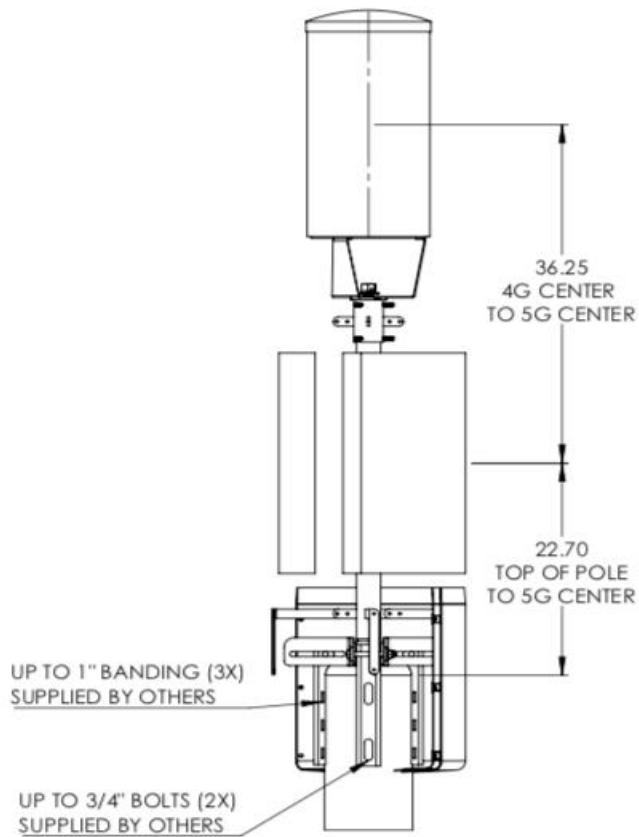


that notes pertaining to underground construction are applicable to the pole only, and other notes are included for reference.

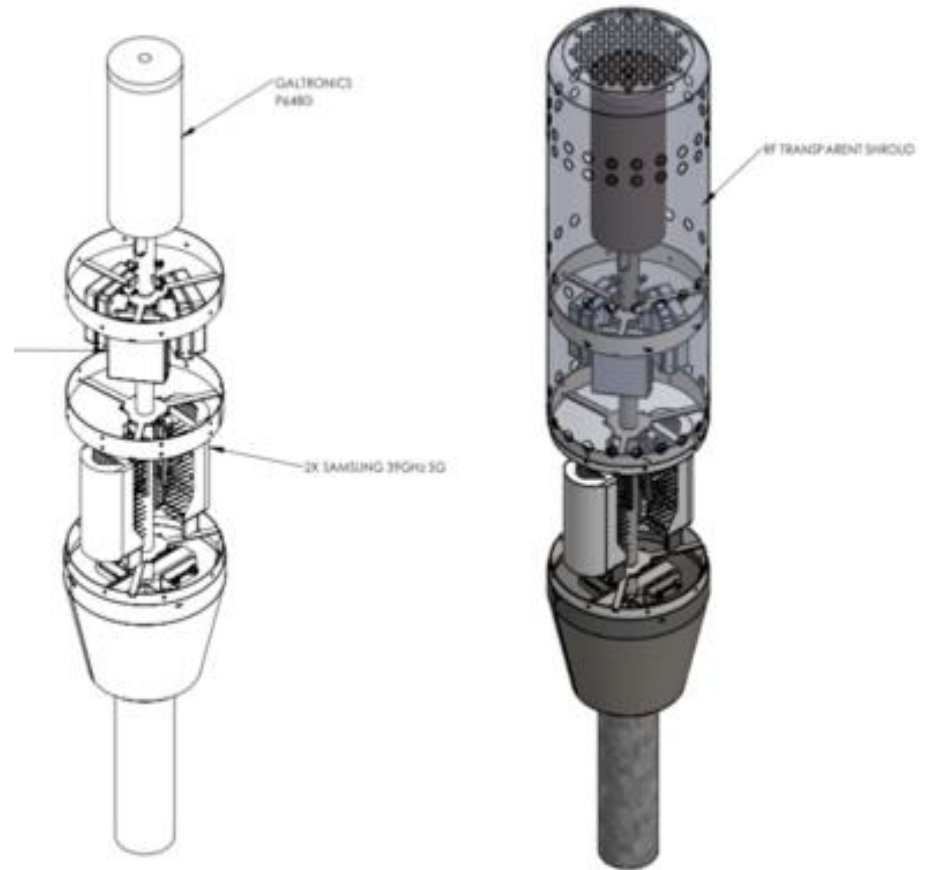
5. Label all visible streets on the plan sheet with its street name.
6. Provide the address of the property adjacent to the pole.
7. Placement of pole must be confirmed on-site with the City Inspector prior to pole installation. In general, plans need to note that poles should be a minimum of three feet from sidewalk ramps, two feet from sidewalk edges, three feet from the face of curb, and four feet from curb face in areas with on-street parking for door-swing if lawn extension is a minimum of six feet wide.
8. **All existing Street signage** on existing poles will need to be reinstalled if pole is replaced. All street signs shall be illustrated in the elevation sheets. Add a note on the plans stating, "That if the sign is reinstalled by the City, the associated costs, including materials, labor and equipment, will be paid by (WSP/CONTRACTOR) upon receipt of an invoice from the City." Please insert company name, contact name, address and email address of the responsible party.
9. In elevation sheets, please illustrate all existing components, equipment (i.e.: street light, other telecom equipment, fiber boxes, etc.).
10. If existing pole is adjacent to a crosswalk that may require additional lighting, please note in the plans that installation of light will need to coordinate with City Transportation Department and DTE.
11. If the light is farther from the crosswalk than positive contrast standards outline, the wattage on the luminaire can be increased should it be replaced. In a residential area such as this, higher wattage luminaires are typically paired with cutoff shields to prevent light spillback.
12. All title sheets shall include the following notation: **"NO TRENCHING, BORING, OR SIGNIFICANT EXCAVATION ARE INCLUDED IN THIS SCOPE OF WORK. NOTES PERTAINING TO UNDERGROUND CONSTRUCTION ARE INCLUDED AS REFERENCE ONLY"**. Note the application/permit if for the installation/attachment of the small cell antenna ONLY. Thus, any work related to power, fiber, etc. requires a separate permit.

Appendix 5

Typical Pole Top Mount Example



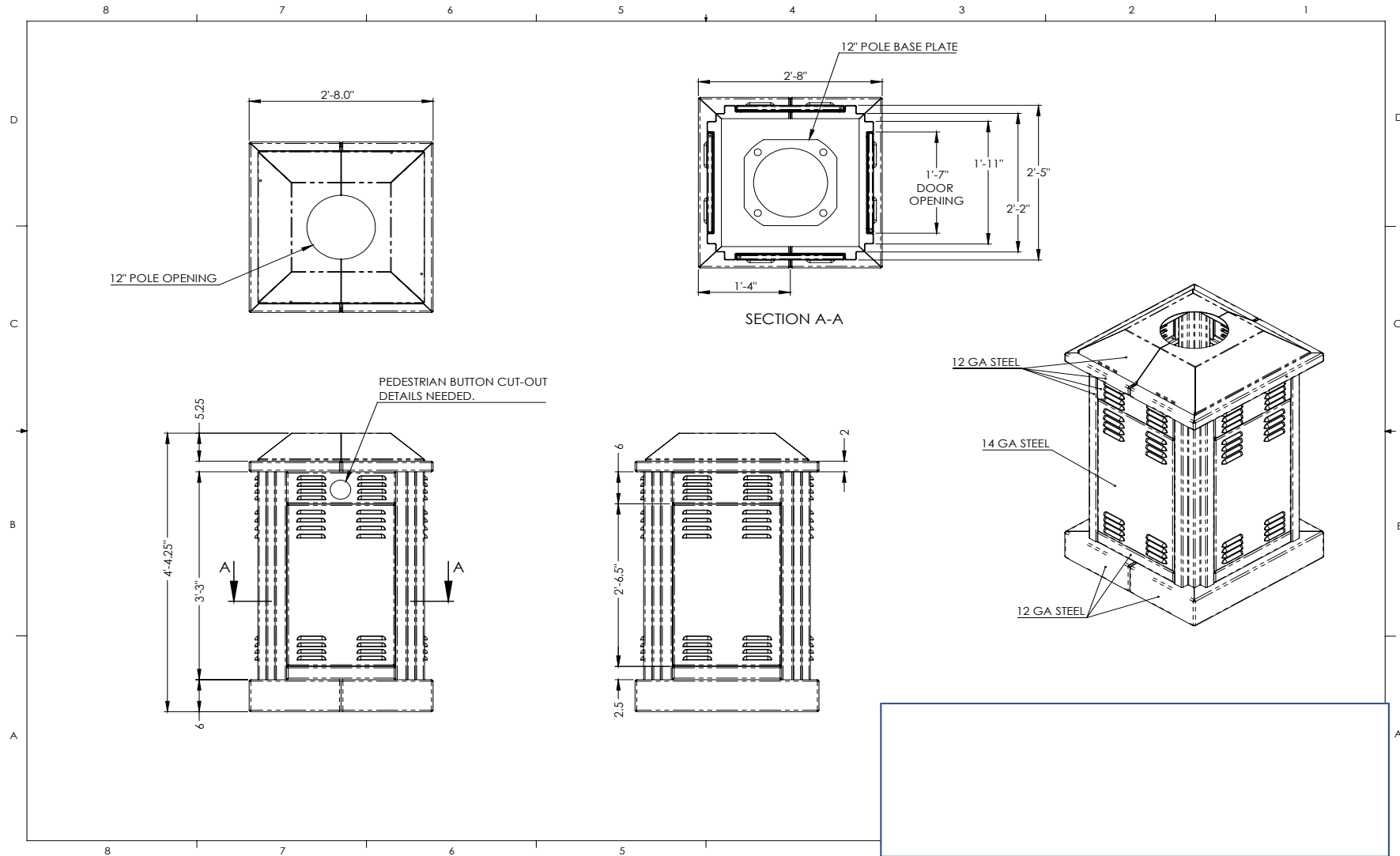
Pole Top Mount – 1



Pole Top Mount Shrouded – 2

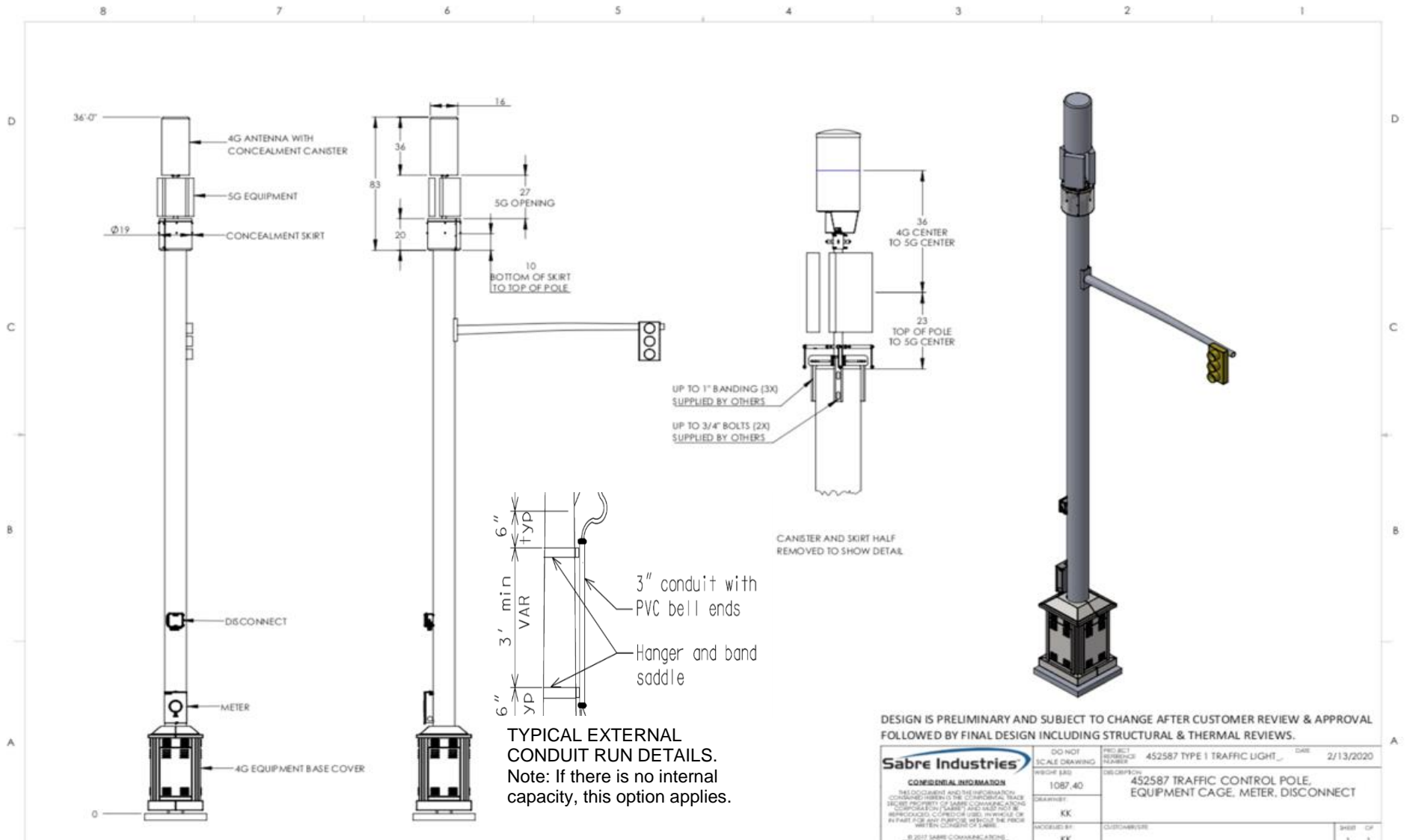
Appendix 6

Type 1 -Typical Decorative Pole Base: Streetlight & Traffic Signal



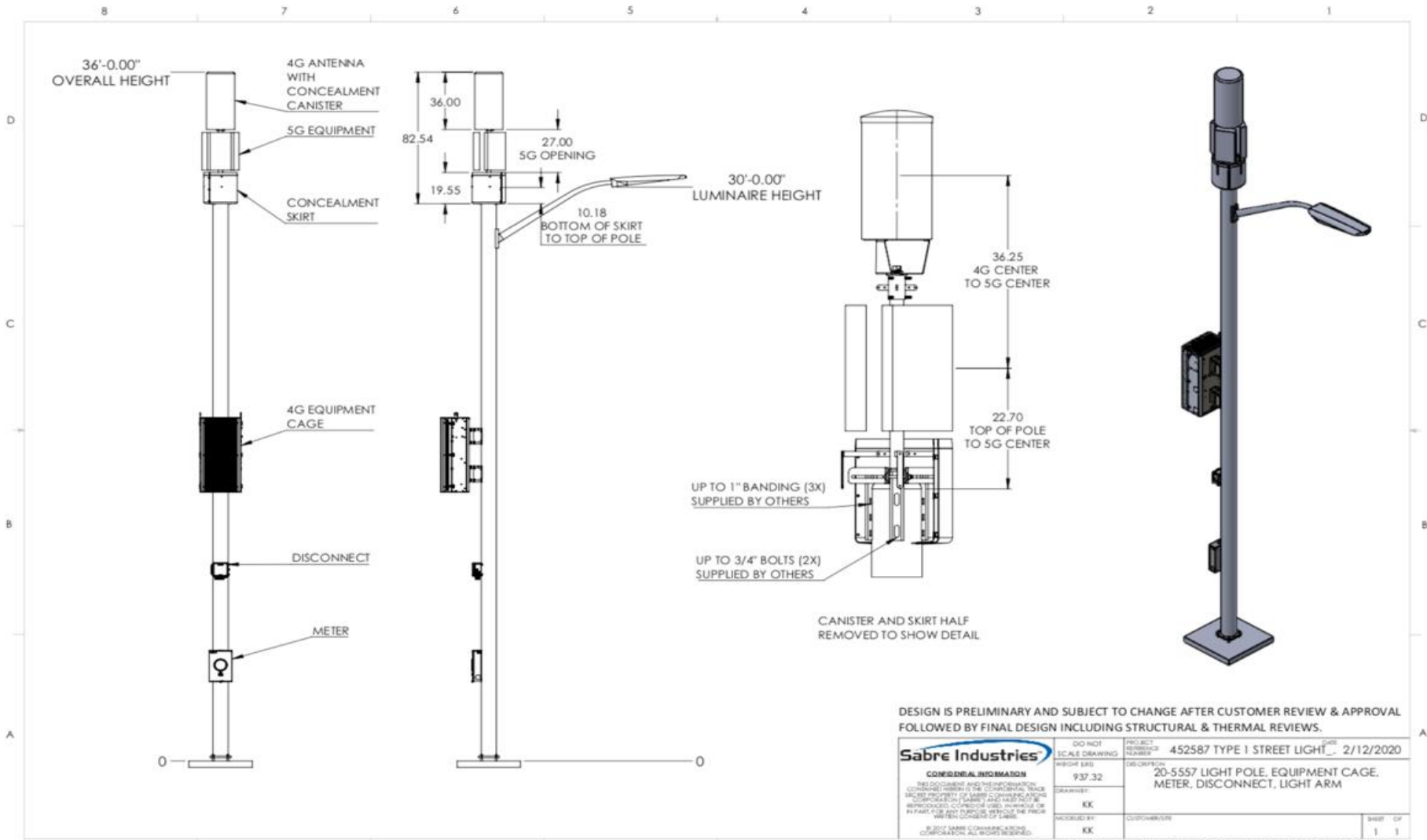
Appendix 7

Type 2 - Typical Traffic Signal



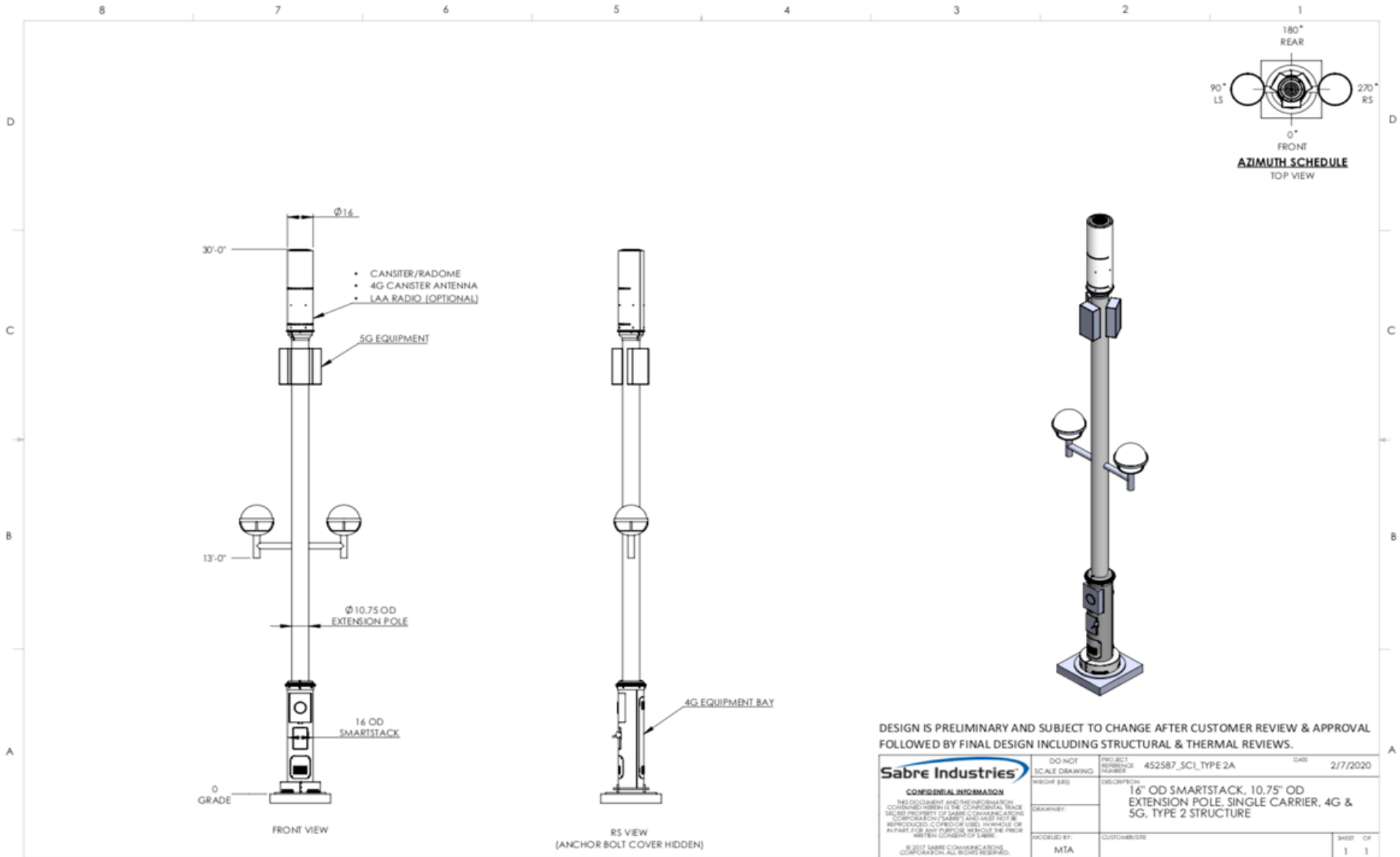
Appendix 8

Type 2 - Typical Street Light Replacement: Example 1



Appendix 9

Type 2 Typical Street Light Replacement: Example 2

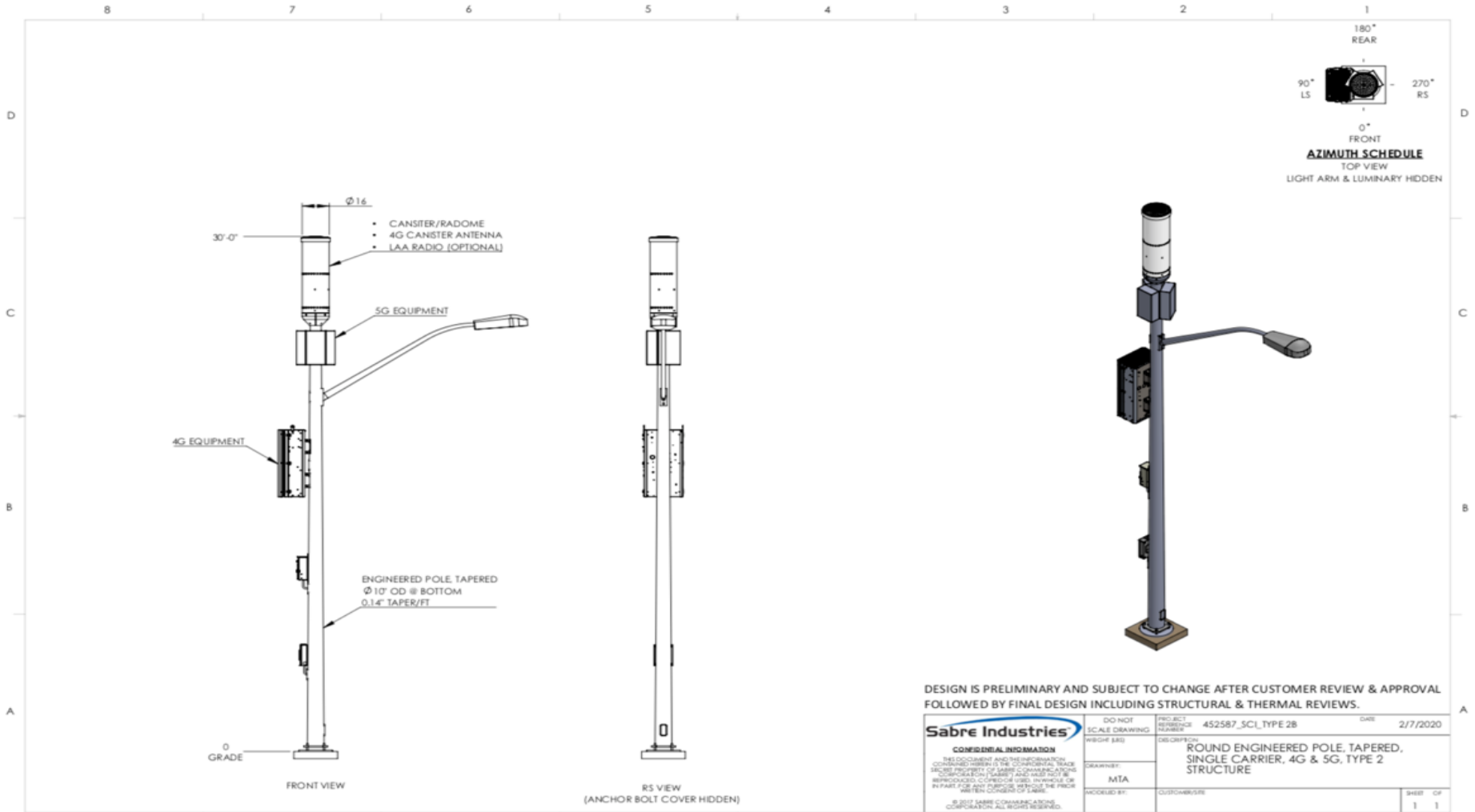


DESIGN IS PRELIMINARY AND SUBJECT TO CHANGE AFTER CUSTOMER REVIEW & APPROVAL FOLLOWED BY FINAL DESIGN INCLUDING STRUCTURAL & THERMAL REVIEWS.

| | | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------|----------------------------------------------------------------------------------------|--------------|----------|-----|
| | DO NOT SCALE DRAWING | PROJECT REFERENCE NUMBER | 452587_SCI_TYPE 2A | DATE | 2/7/2020 | |
| | WEIGHT (LBS) | DESCRIPTION | 16" OD SMARTSTACK, 10.75" OD EXTENSION POLE, SINGLE CARRIER, 4G & 5G, TYPE 2 STRUCTURE | | | |
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| | | | | | SHEET OF | 1 1 |

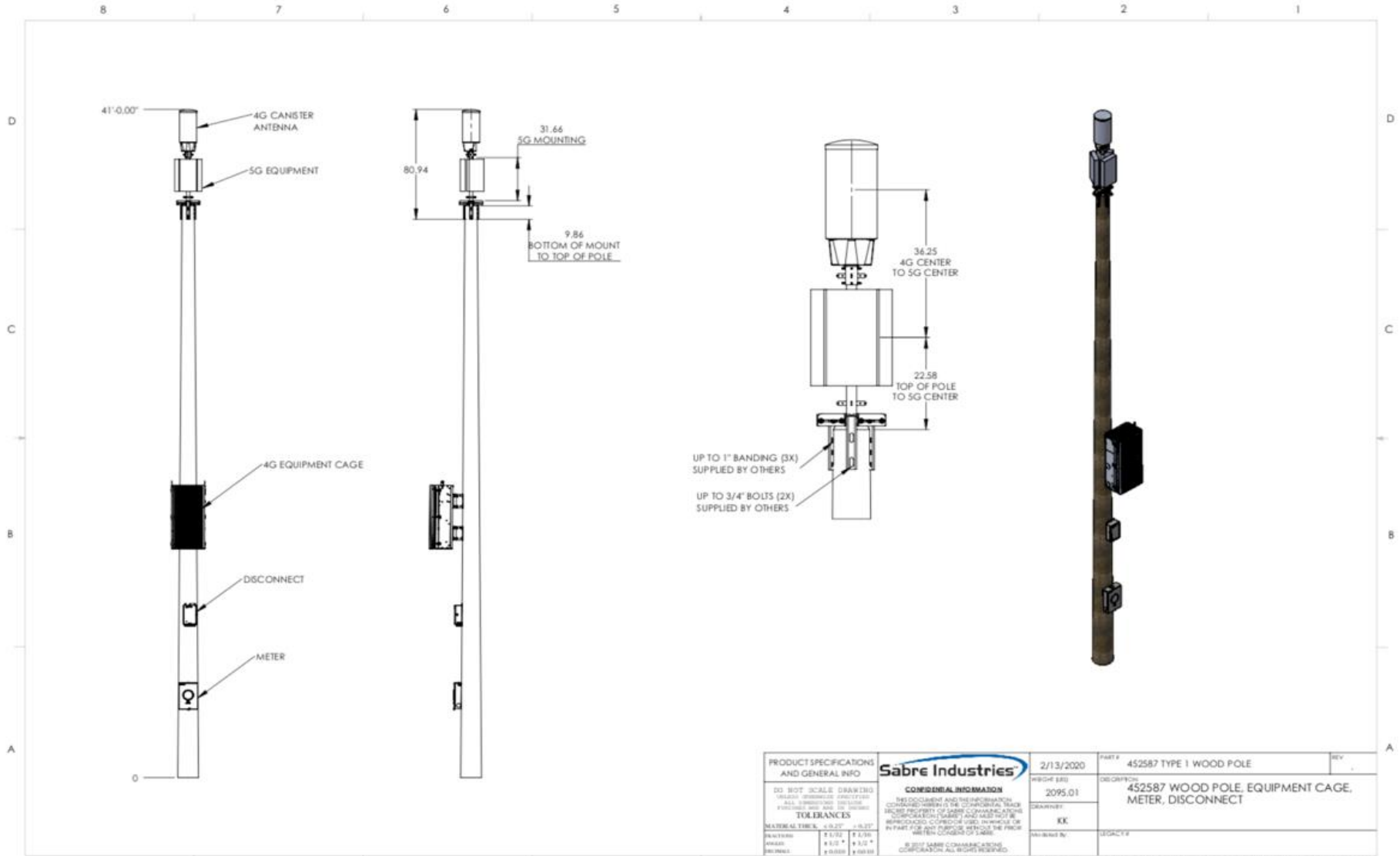
Appendix 10

Type 2 - Typical Street Light Replacement: Example 3



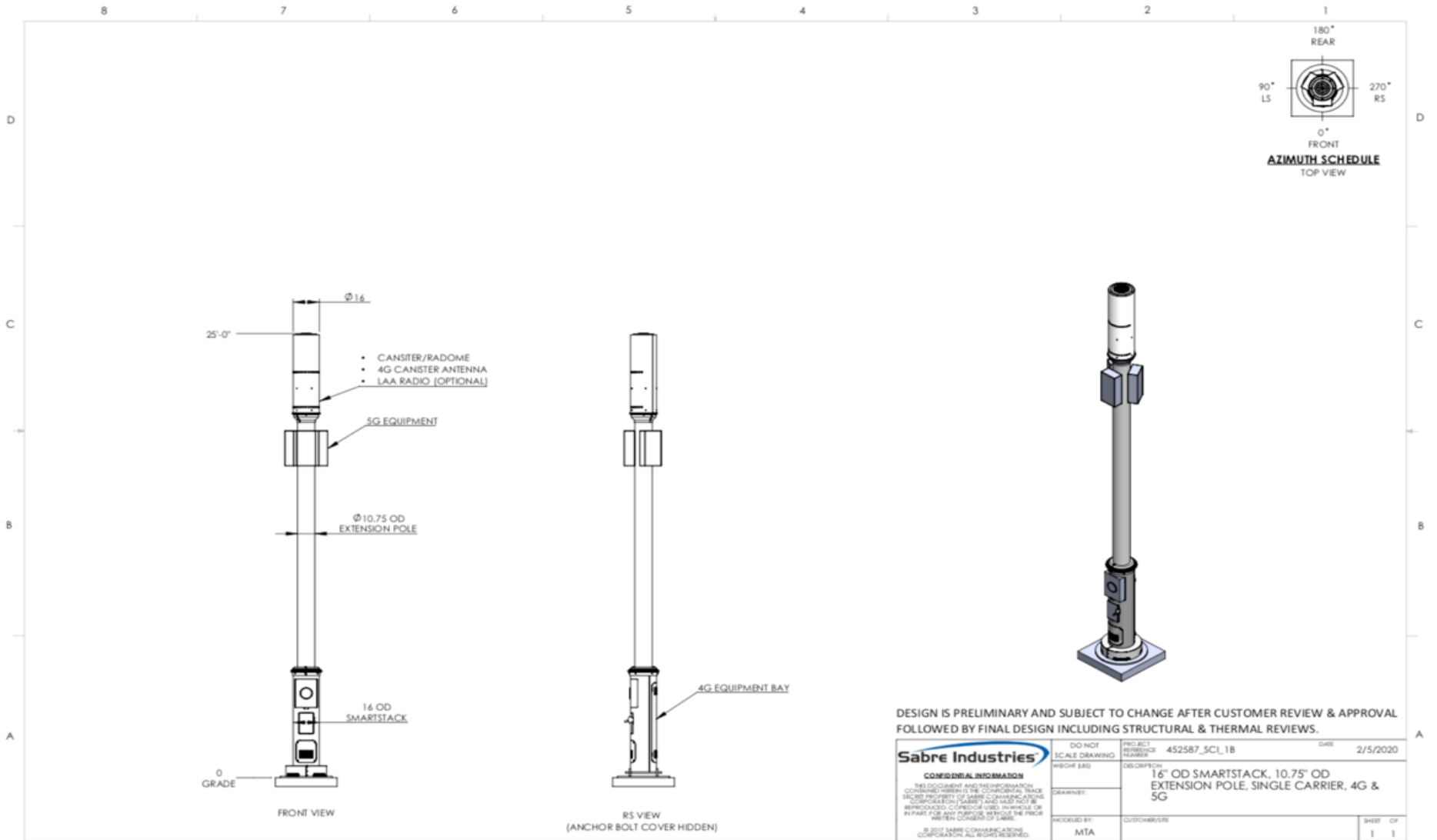
Appendix 11

Type 2 - Typical Third Party Structure



Appendix 12

Type 3 - Typical Node Support Pole Multi Carrier (DDA & Historic Districts): Example 1

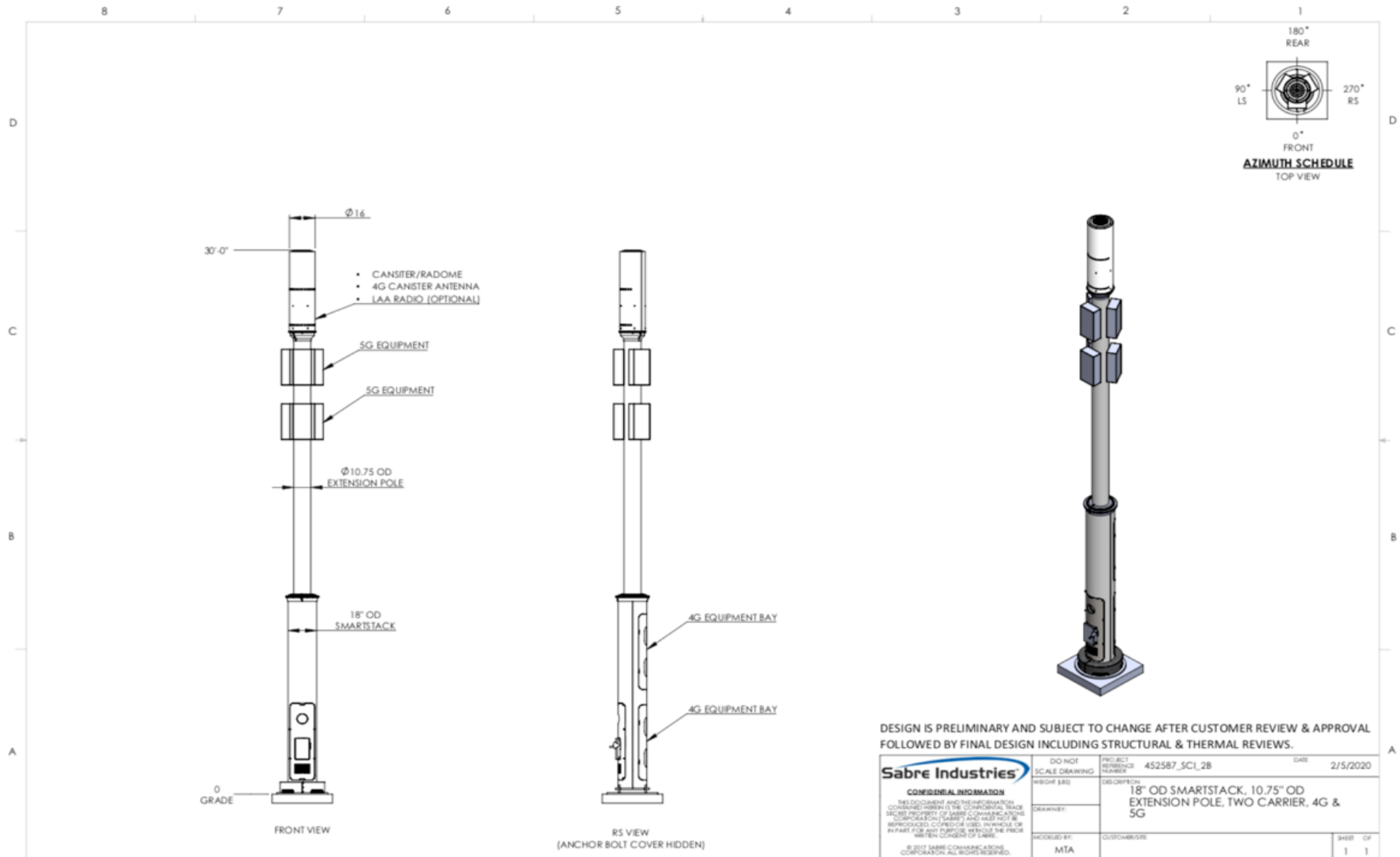


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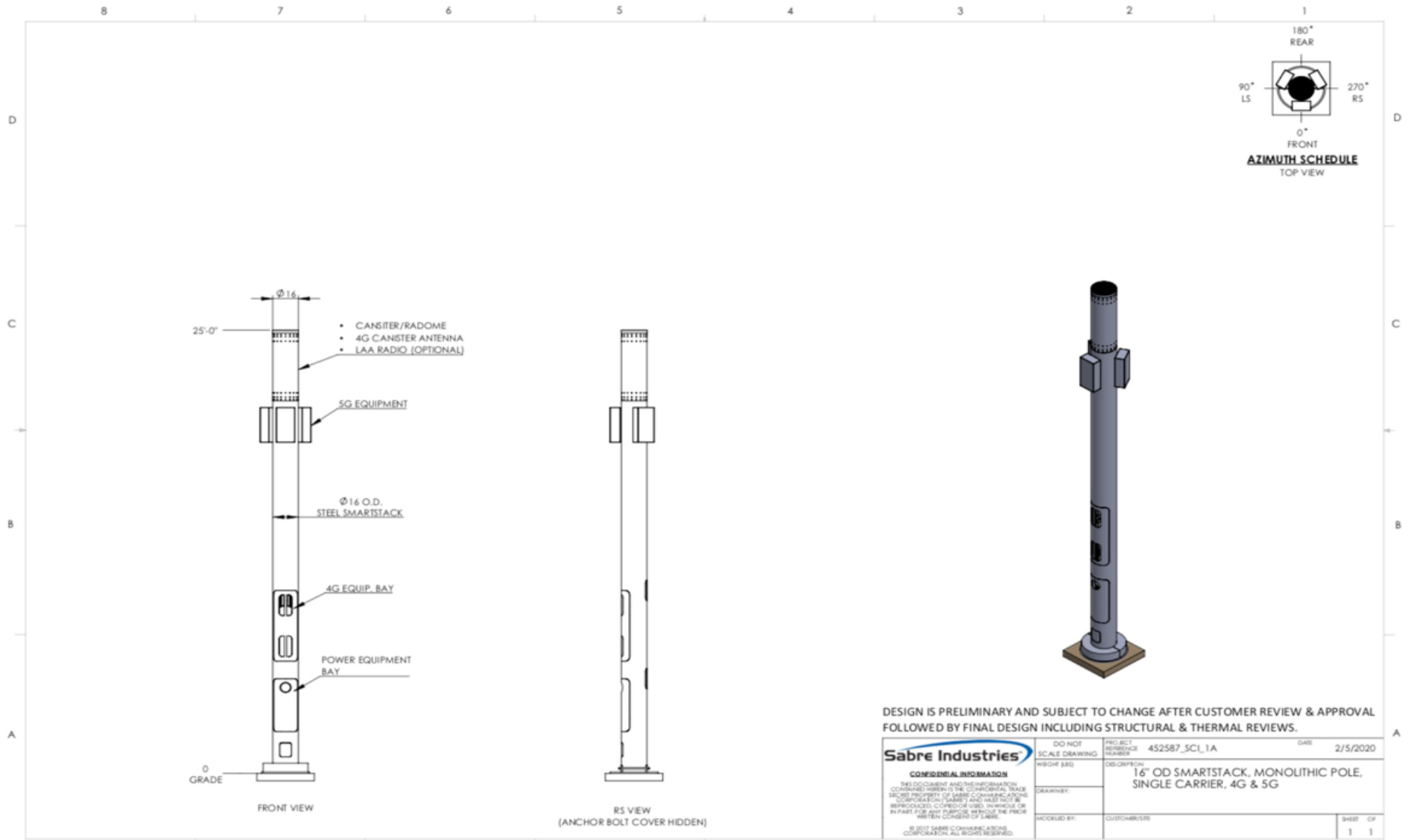
Appendix 13

Type 3 - Typical Node Support Pole Multi Carrier (DDA & Historic Districts): Example 2



Appendix 14

Type 3 - Typical Node Support Pole Multi Carrier (DDA & Historic Districts): Example 3



Appendix 15

Type 3 - Typical Node Support Pole Multi Carrier (DDA & Historic Districts): Example 4

