CITY OF SARATOGA SPRINGS SMALL WIRELESS FACILITY DESIGN STANDARDS

June 2025

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Table of Contents

Background and Purpose

When designing cellular network infrastructure, various types of wireless facilities are deployed to ensure comprehensive coverage and capacity. These facilities vary in size, power, and coverage area, each serving distinct purposes within the network.

Macro wireless facilities, commonly known as cell towers, are tall, high-powered structures designed to serve areas with a radial distance greater than 3,000 feet from the structure. These facilities are essential for providing wide-area coverage in urban, suburban, and rural environments.

Small wireless facilities, also referred to as small cells, are smaller structures that can be collocated on streetlights, utility poles, or other existing structures, or they can be freestanding. These facilities serve areas with a radial distance ranging from 600 feet to 3,000 feet, enhancing coverage and capacity in densely populated urban areas and large indoor spaces.

Additionally, there are even smaller wireless facilities within the category of small wireless infrastructure, including **pico-cells** and **femto-cells**. Pico-cells are designed for large to medium-sized indoor areas such as stadiums and malls, while femto-cells are intended for small indoor areas, such as single residential homes.

These design standards will focus specifically on small wireless facilities, detailing the requirements and guidelines for their deployment to ensure optimal network performance and coverage.

Pursuant to Utah Chapter 54.21, effective September 1, 2018, wireless service providers and wireless infrastructure providers are permitted to locate small wireless facilities in the public right-of-way. This network of low-powered micro antennas provides cellular and data coverage to supplement the provider's macro-cellular network. New small wireless facility installations will improve the providers' ability to meet current and future consumer cellular and data needs.

These design standards provide design and aesthetic requirements and specifications that all small wireless facilities installed within the ROW must meet prior to installation within the City of Saratoga Springs boundaries. Small wireless facilities installed within the ROW are bound to these design standards, City Code 8.05, 19.11 and 19.05.03, sections 05530 and 05540 of the Standard Technical Specifications and Drawings, and the adopted electrical code, or their successors.

Providers shall consider the aesthetics of the existing streetlights and other City infrastructure near proposed small wireless facility locations, with special attention given to the details of neighborhoods with unique street light assemblies. Unique assemblies may include mast arms, decorative pole bases, architectural luminaires, mounting heights, pole colors, etc.

Definitions

Definitions shall match those outlined in City code 8.05.01, or its successor.

Permit Application

A provider must first execute a Master License Agreement, and if required a franchise agreement, with the city, then complete a small wireless facility (SWF) permit application pursuant to Title 8.05, or its successor.

Review Process

The review process for a SWF permit application is as follows:

1. **Consolidated Applications**: A provider may submit a consolidated application for the installation, modification, replacement, or collocation of up to twenty-five (25) wireless facilities, so long as the wireless facilities are of substantially the same type, and are proposed for collocation on substantially the same types of structures. In any thirty (30) day period, a provider may not file more than: 1) one consolidated application, or 2) multiple applications that collectively seek site licenses for a combined total of more than twenty-five (25) wireless facilities and structures.
2. **Completeness**: Within thirty (30) days after the date when an application is submitted to the City, the City shall determine whether the application is complete, and shall notify the provider of that determination in writing. If the City determines that an application is incomplete, the City shall specifically identify the missing information in the written notification. The processing deadline will be tolled from the date when the City sends the written notification until the date when the provider submits the missing information. If the provider does not submit the missing information within ninety (90) days after the date of the written notification, the application will expire.
3. **Processing Deadlines**: The City shall approve or deny applications in accordance with the following deadlines:
    a. Applications for the collocation of small wireless facilities shall be approved or denied within sixty (60) days after the day when the City receives a complete application. The City may extend the deadline by a single additional period of ten (10) business days by sending the applicant written notice of the extension before the applicable deadline.
    b. Applications for new, modified, or replacement utility poles shall be approved or denied within one hundred five (105) days after the day when the City receives a complete application. The City may extend the deadline by a single additional period of ten (10) business days by sending the applicant written notice of the extension before the applicable deadline.
4. **Denial**: If the City denies an application, the City shall provide the applicant with a written decision that documents the basis for the denial, and shall send that decision to the applicant on or before the day that the City denies the application. If the City denies an application for one or more utility poles, or one or more small wireless facilities in a consolidated application, the City shall not use that denial as a basis to delay the application process for any other utility pole or small wireless facility in the same consolidated application.
5. **Resubmittal**: Within thirty (30) days after the day on which the City denies an application, the applicant may cure the deficiencies noted in the denial and resubmit the application without paying an application fee. The City shall approve or deny the resubmitted application within thirty (30) days of receipt, and shall limit its review to the deficiencies noted in the original denial unless the applicant has changed another portion of the application.

6. **Approval**: Upon approval of the permit application, an applicant may begin the application process for an encroachment permit pursuant to Title 18.04, or its successor. Approval of the permit applications authorizes the applicant to collocate or install a small wireless facility, as requested in the application, operate and maintain for a period of at least 10 years.
7. **Installation Deadline**: A site license will expire two hundred seventy (270) days after approval if the licensed small wireless facility or utility pole is not installed and operational. The foregoing deadline will be tolled for any period of time during which the lack of commercial power or communications facilities delays completion.

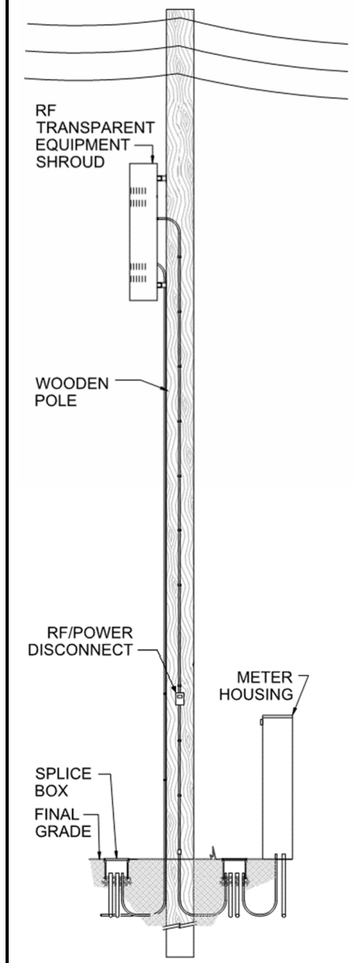
Required Documents

The following documents are required to complete the application process:

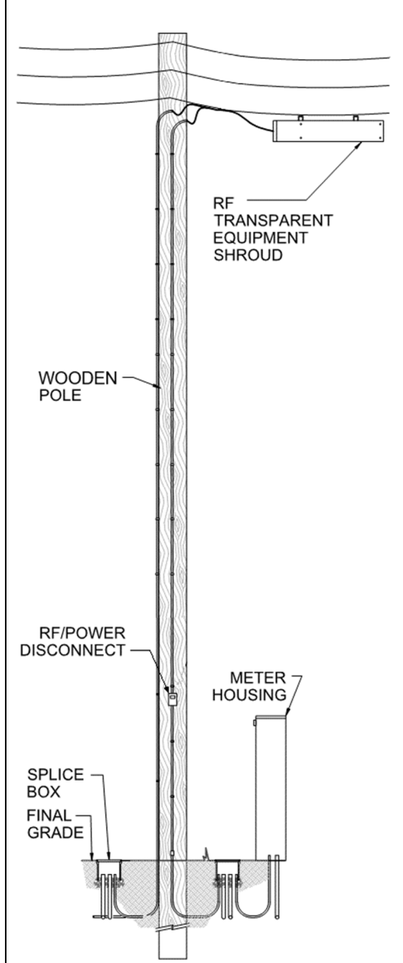
1. A visual survey of the surrounding poles and existing aesthetics
2. Aerial orientation exhibit & site photo simulation.
3. Scaled site plan and construction documents.
4. Structural load analysis
5. Non-ionizing radiation electromagnetic radiation (NIER) report
6. Wireless service use confirmation.

General Design Standards

There are several different small wireless facility installations permitted within the City of Saratoga Springs:

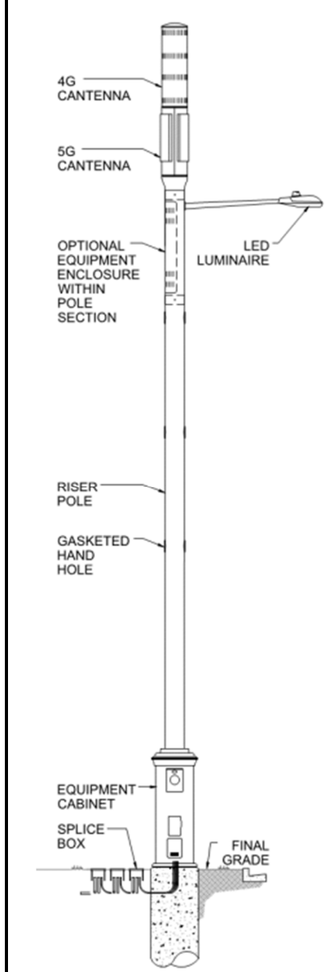


Type 1A – Utility pole mounted

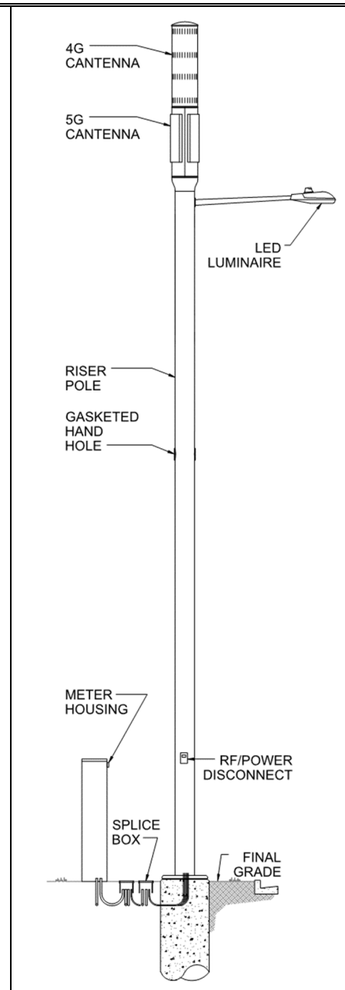


Type 1B - Strand mounted

Type 1* – Attachments to utility poles

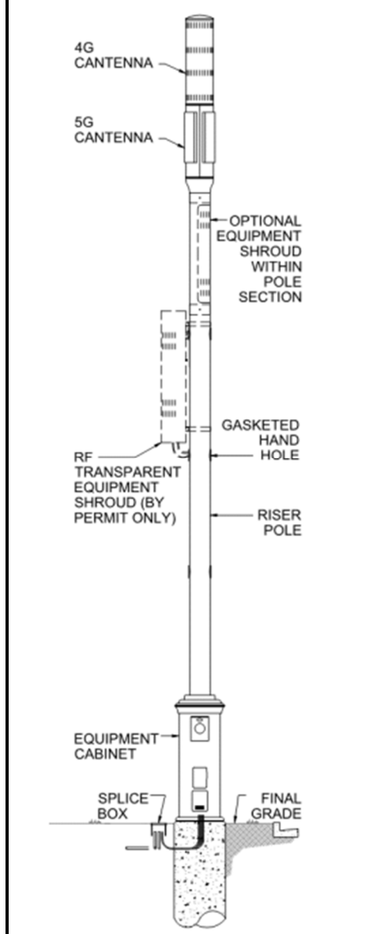


Type 2A - Street Light with Antenna

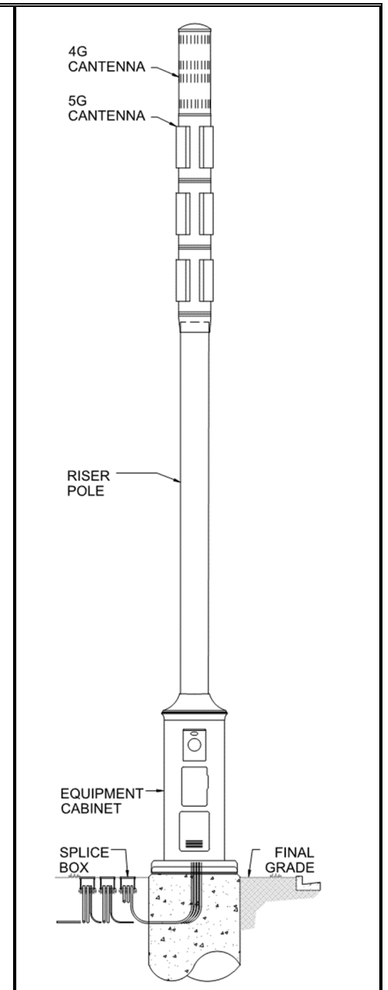


Type 2B - Streetlight with Antenna external meter housing

Type 2* – Collocated on metal streetlights



Type 3 – New freestanding installations



Type 4 – Multi-carrier freestanding installations

Figure 1: Small Wireless facility Installation Types

Not Shown: Type 5* – Other attachments including but not limited to kiosks, etc.

*This type is not a preferred collocation option.

General Requirements

Residential Zones. A wireless provider may not install a new utility pole in a public way adjacent to single family, multifamily, and residential zones and uses, or undeveloped land that is designated for residential uses by zoning or deed restrictions, if the curb-to-curb measurement of the street is 60 feet wide or other measurement provided with the application, unless City has given prior written consent.

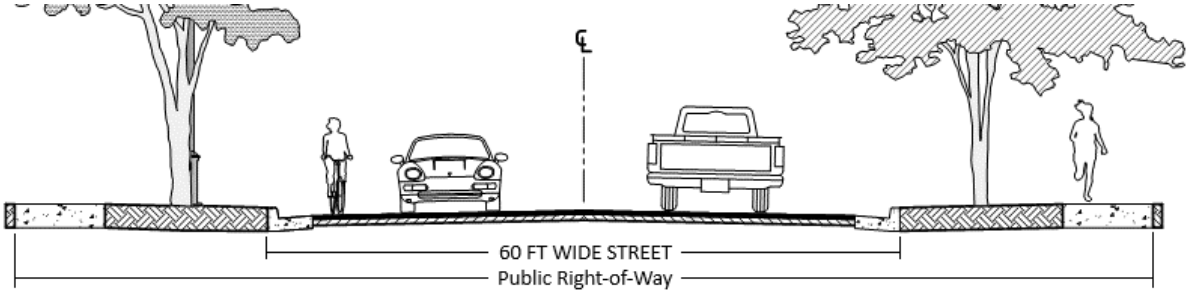


Figure 2: Street width

Structural Load Analysis. The application shall include an industry-standard pole load analysis indicating that the structure on which the wireless facilities will be mounted will safely support the load. If a small wireless facility cannot be safely installed on the respective structure, the applicant shall either replace the structure with a compliant structure of the same type or propose a new location.

Non-ionizing radiation electromagnetic radiation (NIER) report. A NIER report shall be submitted with each application to be specific to the proposed equipment and retained on file for equipment type and model. The NIER report shall be endorsed by a qualified professional. It shall specify minimum approach distances to the general public as well as electrical and communication workers that are not trained for working in an RF environment (uncontrolled) when accessing the pole by climbing or bucket.

Position. Poles should not significantly obstruct property sight lines, at the intersection of property lines, provide clearance for existing utilities, and preference that new poles be located in park strips.

ROW Position. All equipment located within the public ROW shall be located such that it meets ADA requirements and does not obstruct, impede, or hinder usual pedestrian or vehicular travel or interferes with the operation and maintenance of signal lights, signage, streetlights, street furniture, fire hydrants, or business district maintenance. All communication cables, conduit, and appurtenances necessary to service the small wireless facility site shall be placed in the 10’ PUE adjacent to the public ROW where the small wireless facility is to be implemented.

Pole Aesthetics. A visual survey of the surrounding poles and existing aesthetics to be included as part of the permit application. If necessary to collocate a wireless facility on a decorative pole, a wireless provider may replace a decorative pole, if the replacement pole reasonably conforms to the design aesthetics of the displaced decorative pole and meets the requirements of this section, including the design standards.

Power and Ground Utility Box. Shall comply with all City and local code requirements. Backup batteries are not allowed. Wireless service providers shall separate electrical services and fiber by owner with separate conduit, splice box(es), equipment access, and dividers within the pole. Wireless service provider shall provide a power disconnect to easily shut off power while working on the pole.

Noise Limitation. Must meet the City required noise limitation for ambient sound.

All installations are subject to the SWF permit application, review process and encroachment permit. To qualify for an external shroud, the Applicant must demonstrate that proposed deployment(s) cannot be integrated into the pole assembly, equipment cabinet or the antenna.

Antenna and equipment

Aesthetics. Equipment should match the aesthetics of the pole and surrounding poles.

Antennas. Antenna must be mounted directly on top of the pole, unless a side arm installation is required by a pole owner. A tapered transition between the upper pole and antenna is required. Antenna shroud should be maximum of 16-inch diameter. The maximum protrusion for 5G antennas is 18-inch diameter.

Battery Backup. Backup batteries must be in a ground mounted utility box or underground where possible.

Cables. All cables should be clearly labeled for future identification.

Color. All equipment should be painted to match pole aesthetics. The paint should be powder coated over zinc paint.

Conduits. All cables shall be in conduits and shall be flush with the pole unless required to be installed inside the pole.

Electrical Service. Requirements per the applicable electric service provider and city's electrical department.

Equipment Cabinet Access Doors. Lockable access door sized to install, maintain, and remove all small wireless facility equipment as needed shall meet provider's requirements. Utility access shall be per the applicable utility pole owner requirements. Access doors shall be accessible by all users of the equipment cabinet and pole.

External Shrouding. The antenna shall be concealed by shrouding or contained in a canister to the extent technologically feasible. All other equipment shall be contained in an external ground-mounted cabinet, or a ground mounted utility box unless the visual impact can otherwise be reduced by its location on the pole.

Ground Mounted Equipment. Equipment located on the ground and not integrated with the pole shall be placed in the adjacent PUE, screened by a decorative wrought iron fence or solid fence material, comply with all clear sight triangle requirements and be attached to a concrete foundation. Equipment screening may be permitted up to six feet high.

Hardware Attachment. All hardware attachments should be hidden. Welding onto existing equipment is not permitted.

Height of Equipment on Pole. The lowest point may not be lower than 8 feet from the top of the pole foundation.

Internal Installs. Equipment shall be installed within an existing pole and always on a new pole. Any equipment installed within a pole may not protrude from the pole except to the extent reasonably necessary to connect to power or a wireline. If an existing pole cannot accept additional internal installs a new pole must be installed.

Lights. There shall be no lights on the equipment unless required by federal law.

Power Meter. Contained within the base equipment cabinet when required otherwise within ground mounted equipment and then as required by the applicable electric service provider and in a location that (1) minimizes its interference with other users of the City's right-of-way including, but not limited to, pedestrians, motorists, and other entities with equipment in the right-of-way, and (2) minimizes its aesthetic impact.

RF/Power Disconnect. City workers and contractors shall have the ability to easily shut off radio signals and power while working on pole and have the right to turn off or disconnect for necessary operations.

Sidearm (Off-Set) Installs. If permitted, may not allow the furthest point of the enclosure to extend more than 18 inches from the pole and must be concealed by a RF transparent equipment shroud.

Stickers and Signage. One RF warning sticker, per FCC requirements, shall face the street near the elevation of the antennae and one 4-inch by 6-inch (maximum) plate with the provider's name, location identifying information, and 24-hour emergency telephone number shall be required. Other than signage that may be required by Federal or Utah statute and those mentioned above, there shall be no identification signs located on the utility pole, structure, or screening material.

New and replacement metal Poles

Base Equipment Cabinet. Equipment cabinet integrated with the pole may not exceed 20 inches in diameter or 5 feet-10 inches in height.

Color. A pole and pole extension shall be galvanized in accordance with AASHTO M 111. A pole and pole extension shall be painted to match existing street light aesthetics; paint shall be powder coated over zinc paint (Pole shall still be galvanized).

Concrete Base. Precast concrete or cast-in-place pole foundations shall be designed per City standard.

Conduit Sweeps in Concrete Base. Four (4) 3" PVC conduit sweeps shall be installed. Conduit shall accommodate City electrical, and wireless provider electrical and fiber with up to one (1) spare sweep for future service.

Conduits. All cables shall be in conduits and shall be flush with the pole unless required to be installed inside the pole.

Design Wind Velocity. All structural components of small wireless facility pole, standard, base, equipment cabinet, couplers, anchor bolts, luminaires, antenna, and other attachments to be used shall be designed for a minimum of 115 MPH wind velocity, in accordance with AASHTO's Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, TIA-222 rev G and ASC 710 with IBC 2021 (or latest standard), plus amendment for snow loading and other local conditions. Any pole not meeting these requirements may not be used for a small wireless facility collocation or must be replaced.

Diameter. Poles shall not exceed 14 inches in diameter [nominal].

Grommets. Weatherproof grommets shall be integrated into the pole design to allow cable to exit the pole, for external shrouds, without water seeping into the pole.

Height. The top of the antenna shroud shall be the minimum height needed for the operation of the wireless facility and may not exceed 10 feet above the top of the structure it is being collocated on. Any pole with a collocated small wireless facility shall not exceed 50 feet including the equipment. Pole shall be measured from the top of concrete base to the top of the antenna shroud.

Helical Piles. Piles must connect to the bottom of the pole 4” to 5” above finished grade and be concealed with a concrete collar able to support the full diameter of the base equipment cabinet or decorative clam shell base.

Pole Connection. Attachments to the side of a pole must be placed perpendicular to the street away from the vehicular traffic.

Pole Style. If necessary to collocate a wireless facility on a decorative pole, a wireless provider may replace a decorative pole, if the replacement pole reasonably conforms to the design aesthetics of the displaced decorative pole and meets the requirements of this section, including the design standards.

Transition Shroud. Transition shrouds are required between the antenna shroud and pole and between the base equipment cabinet and the pole. The transition shroud above the base equipment cabinet shall be slanted or designed to provide sufficient relief to prevent the accumulation of items.

Installation Type Specifications

Type 1 – Attachments to utility poles

Purpose

This section of the standards is for attachment of a small wireless facility to a third-party pole. A small wireless facility attachment will conform to pole owner's attachment standards.

Standards

Attachments to a third-party utility pole must be approved by the owner of the utility pole as well as The City of Saratoga Springs prior to installation. All wireless facility equipment shall be visually concealed. Only two enclosures, including the disconnect and antenna, shall be installed at each utility pole location. No ground-mounted equipment is allowed, except for meters required by the electric service provider and boxes necessary for splicing, including backup power supplies. Ground mounted equipment shall be installed in the PUE adjacent to the right-of-way. If the owner of the utility pole requires replacement of the pole for the purpose of attaching a small wireless facility, the new pole would follow the specifications of a Type 3 – New Freestanding installation.

As the City is an Underground District, it is required that distribution powerlines, and the under-build attached to the supporting poles, be placed underground and the poles removed when the property adjacent to the powerlines is developed. Type 1 installations will be required to be removed. A new permit application is required to replace the removed Type 1 with a Type 2 or Type 3 installation.

Type 2 – Collocated on metal streetlights

Purpose

This section of the standards is to be applied when installing a collocated small wireless facility and streetlight pole. A collocated small wireless facility and streetlight pole is typically located where an existing metal streetlight pole is approved to be removed and replaced, or at a new privately owned location where it has been identified that a streetlight is necessary. Existing streetlights in City and UDOT right-of-way are typically owned by the City. All proposals to replace existing streetlights owned by a Third-party shall meet the Third-party standards as well as the City's small wireless facility and street lighting design guidelines and associated permit procedures.

Standards

Components of a Type 2 pole include the foundation, base equipment cabinet, riser pole, luminaire, mast arm, luminaire control node if applicable, antenna or antenna enclosure, and all hardware and electrical equipment necessary for a complete assembly.

All provider equipment shall be housed internal to the base equipment cabinet or hidden behind the antenna shroud. No provider equipment shall be strapped to the outside of the pole. No small wireless devices shall be installed on a streetlight without confirming that the intended installation has no impact on the streetlight's operational performance including the streetlight control system.

On an existing streetlight:

1. The equipment, excluding the antenna, should be enclosed in a base equipment cabinet if mounted on the pole. If not, it should be shielded from view in an external ground-mounted cabinet, or contained in a ground-mounted utility box. The external cabinet and utility box must be in the PUE adjacent to the right-of-way.
2. The antenna should be hidden within the antenna shroud.
3. The city's and wireless providers' wiring and cabling internal to the pole should be fully separated by chambers or conduits.
4. A Structural Load Analysis shall be submitted with the permit application when attaching to an existing pole not maintained by the applicable electric service provider, otherwise follow the applicable electric service provider standards.

If any of the requirements above cannot be met a Type 3 – New Freestanding Installation should be considered.

On a new streetlight, the provider may house the equipment inside the pole structure in an equipment cabinet at the base of the upper pole.

The base equipment cabinet shall be round with a preferred diameter of a base cabinet 16-inch with a maximum 20-inch diameter.

The meter shall be contained in the base equipment cabinet, unless permitted to be inside an external ground mounted cabinet as approved by the applicable electric service provider.

New streetlights or replacement streetlights shall comply with the City Street light standard technical specifications and drawings and Appendix B of this document, which provides guidance on luminaire design aesthetics, lighting level criteria, typical streetlight spacing, and streetlight details.

- All equipment shall be above the top of foundation at least 8 feet. If the small wireless facility equipment orients toward the street, the attachment shall be installed no less than 16 feet above the ground.
- Equipment should be oriented away from the street.
- The size of small wireless facility should be minimized as possible to minimize visual impact without interfering with the small wireless facility operation.
- Equipment may not block visibility of street light banners.
- Attachments to an enhanced service area light pole cannot change the overall character of light or proportion of the luminaires with the placement of an antenna. The lighting level of service cannot be decreased.
- All new luminaires shall be the same height as adjacent streetlights.
- City may require a new freestanding structure in lieu of a replaced streetlight.

Figure 3: Unacceptable Type 2 Installation

Figure 4: Acceptable Type 2 Installation

Type 3 – New freestanding installations

Purpose

This section of the standards is to be applied when installing new or replacement free standing small wireless facility pole. All small wireless facility carrier equipment shall be housed internal to the equipment cabinet, hidden behind the antenna shroud or specially permitted external shroud, or as otherwise specified in this guideline.

Standards

Freestanding small wireless facility pole components include foundation, base equipment cabinet, riser pole, antenna or antenna shroud, permitted external shroud, and all hardware and electrical equipment necessary for a complete assembly.

All small wireless facility carrier equipment excluding the antenna shall be housed internal to a base equipment cabinet at the base of the pole. The antenna shall be hidden behind the antenna shroud. No provider equipment shall be strapped to the outside of the utility pole.

The base equipment cabinet shall be round with a preferred diameter of a base cabinet 16-inch with a maximum 20-inch diameter for a single carrier, multi-carrier free standing poles shall follow Type 5 installations.

- Freestanding installations to coordinate with neighborhood pole style and material type.
- New freestanding installations must be metal (aluminum or steel).
- Ownership of freestanding installations is to remain with the provider. City reserves the right to attach any sign (such as a no parking sign) on the freestanding installation.
- All new poles must have appropriate clearance from existing utilities.

Figure 5: Unacceptable Type 3 Installation

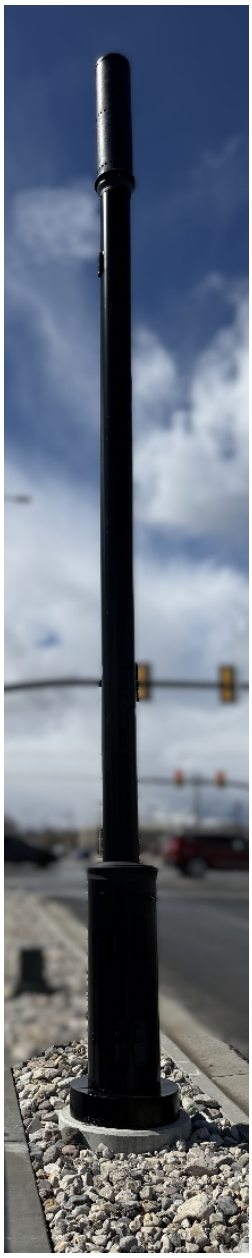


Figure 6: Acceptable Type 3 installation

Type 4 – Multi-carrier freestanding installations

Purpose

This section of the standards is to be applied when installing a multi-carrier (equipment for no fewer than two wireless carriers) freestanding small wireless facility pole.

Standards

Type 5 freestanding small wireless facility pole components include the foundation, riser pole which shall internally house all necessary small wireless facility equipment, and all hardware and electrical equipment necessary for a complete assembly. Type 5 poles, as permitted in these guidelines, include a decorative transition shroud over the base equipment cabinet upper bolts, hidden hardware connections, and a restriction of horizontal flat spaces greater than 1.5 inches to prevent cups, trash, and other objects from being placed on the pole components. Each pole component shall be architecturally compatible to create a cohesive aesthetic.

- Multi-carrier small wireless facility shall not exceed 50 feet, from the top of concrete base to the top of the antenna shroud.
- The diameter of the base equipment cabinet shall be 30” max., riser pole shall be 14” max., and antenna shroud shall be 16” max. The maximum protrusion for 5G antennas is 18-inch diameter.
- Concrete base shall not exceed 5” from final grade and shall accommodate eight (8) 3” PVC conduit sweeps. Conduit shall accommodate wireless facility provider electrical and fiber with up to four (4) spare sweeps for future service.

Type 5 – Other attachments including but not limited to kiosks, etc.

Purpose

This section of the standards is to be applied for small wireless facility installations on other City owned assets located in the public way such as kiosks or signs.

Standards

All small wireless facilities proposed to be installed on kiosks or signs within the public way shall be approved by City prior to installation.

The City of Saratoga Springs owns a small number of kiosks located with the public way. The Kiosks are generally small structures used for advertising local events. Installation of small wireless facilities on a kiosk will require all equipment to be installed within the kiosk or the roof structure with an antenna extending above the roof. The design of the facility must take into account the architectural design of the kiosk and the surrounding development to accomplish the goal of integrating the facility and limiting its visual impact.

Utah Code Chapter 54.21 allows the installation of small wireless facilities on signs located within the public way. Most signs in the public way are related to public safety, traffic and parking regulation and provide directional information. The City of Saratoga Springs will consider the placement of small wireless facilities on pole signs located within the public way only when it can be demonstrated that the small wireless facility will not create any hazard for pedestrians, cyclists or motor vehicles, visibility of adjacent buildings is not unduly impaired and that the existing structure can adequately handle the structural requirements for such a facility.

The small wireless facility design and installation shall be compatible with the aesthetics of existing kiosks or signs. The provider shall perform a visual prior to submitting a permitting application to determine existing aesthetics. The small wireless facility components shall be sized to be proportional and limit the potential impact along the streetscape.

Location Preferences

Placement requirements

A wireless provider may not install a new utility pole in a public way adjacent to single family, multifamily, and residential zones and uses, or undeveloped land that is designated for residential uses by zoning or deed restrictions, if the curb-to-curb measurement of the street is 60 feet wide or less as depicted on the official plat records or other measurement provided with the application, unless City has given prior written consent.

Placement for Type 2 installations

Collocated small wireless facility and streetlight sites shall follow the City streetlight separation standards.

Placement for Type 3 installations

New freestanding sites shall be placed:

- In alignment with existing trees, utility poles, and streetlights, where possible.
- From trees by 15 feet or 1 foot for every inch of the tree's diameter measured at 4’6”, whichever is greater.
- From fire hydrants by 15 feet.
- With appropriate clearance from existing utilities.
- At intersecting property lines when on a lot frontage to avoid interference with building face, views, business signage, pedestrian flow, etc. or along secondary property street face.
- From any pole by 75 feet radial distance.
- From another Type 3 installation by 250 feet radial distance.
- Outside of the curb return radius point of tangent. If the curb return radius is 30 ft or less, then outside of the 30-foot clear sight triangle at intersection corners.
- Shall not be located within 100 feet of the driveway apron of a fire station or other adjacent emergency service facility.
- Freestanding poles shall be located such that they in no way impede, obstruct, or hinder the usual pedestrian or vehicular travel, affect public safety, obstruct the legal access to or use of the ROW, violate applicable law, violate or conflict with ROW design standards, specifications, or design district requirements, violate the Federal Americans with Disabilities Act of 1990, or in any way create a risk to public health, safety, or welfare

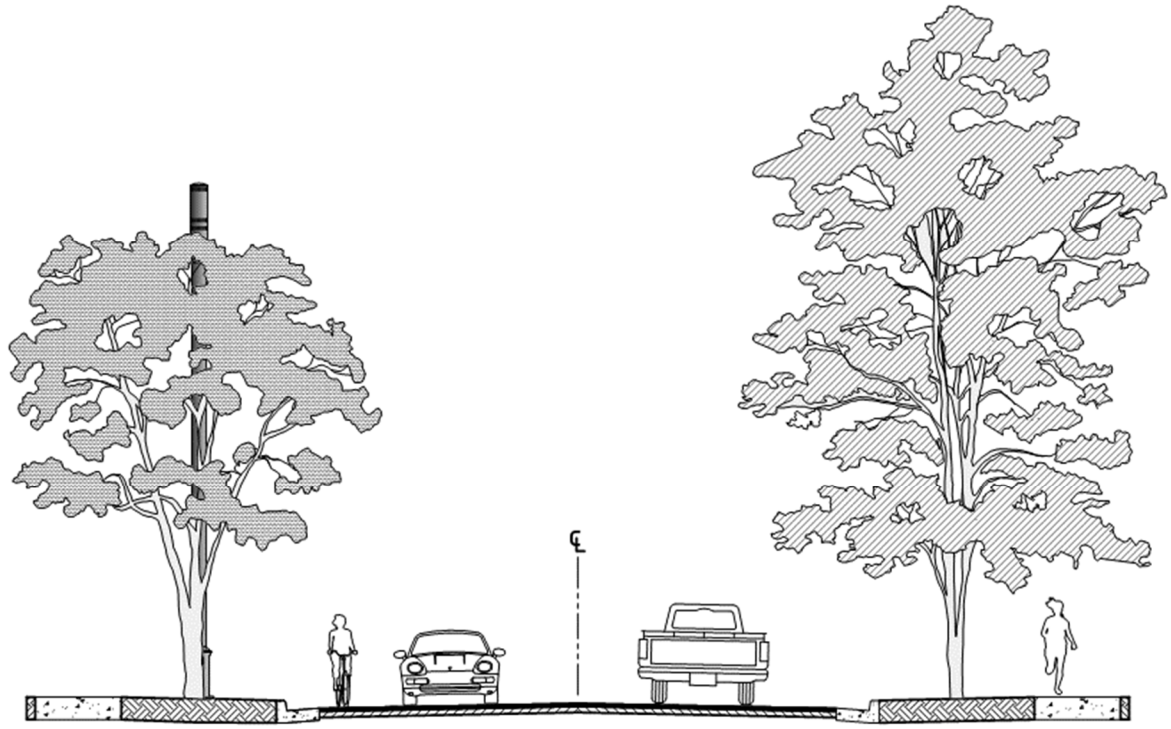


Figure 7: Freestanding Small Wireless Facility in Parkstrip

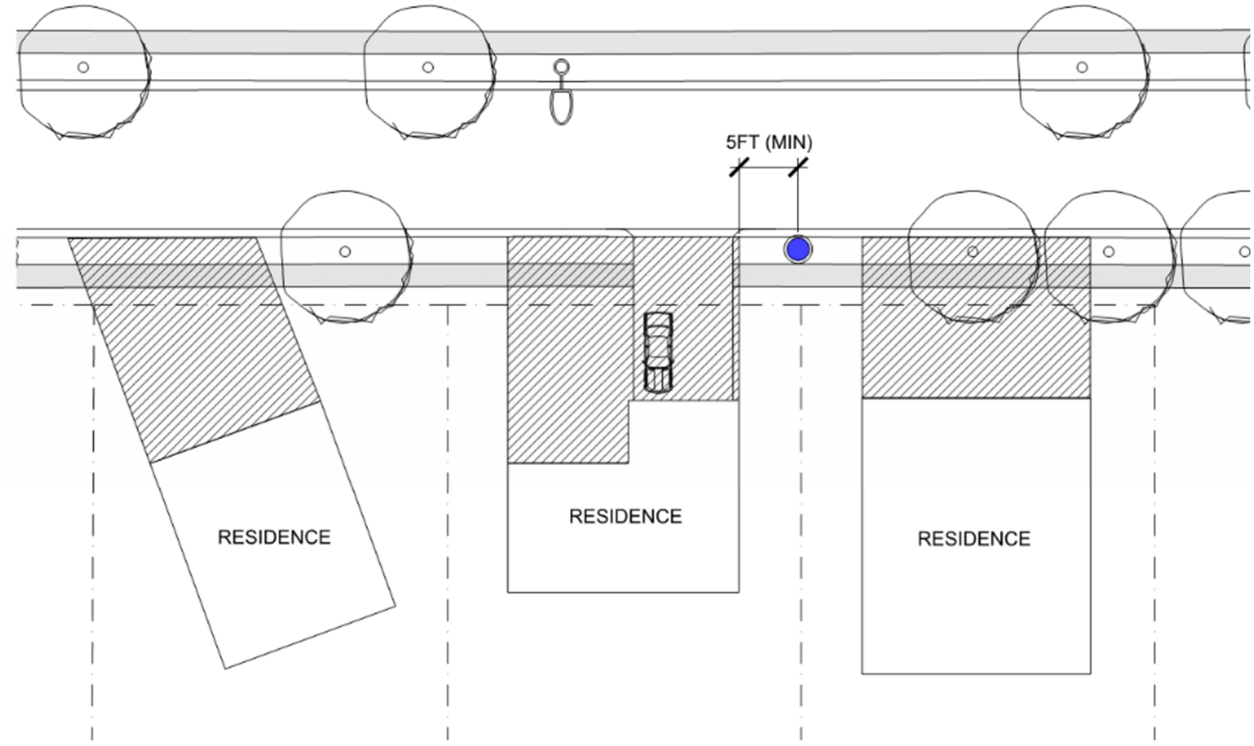


Figure 8: Freestanding pole location between lots

Figure 9: Freestanding pole location between lots and trees

Figure 10: Freestanding pole in commercial area

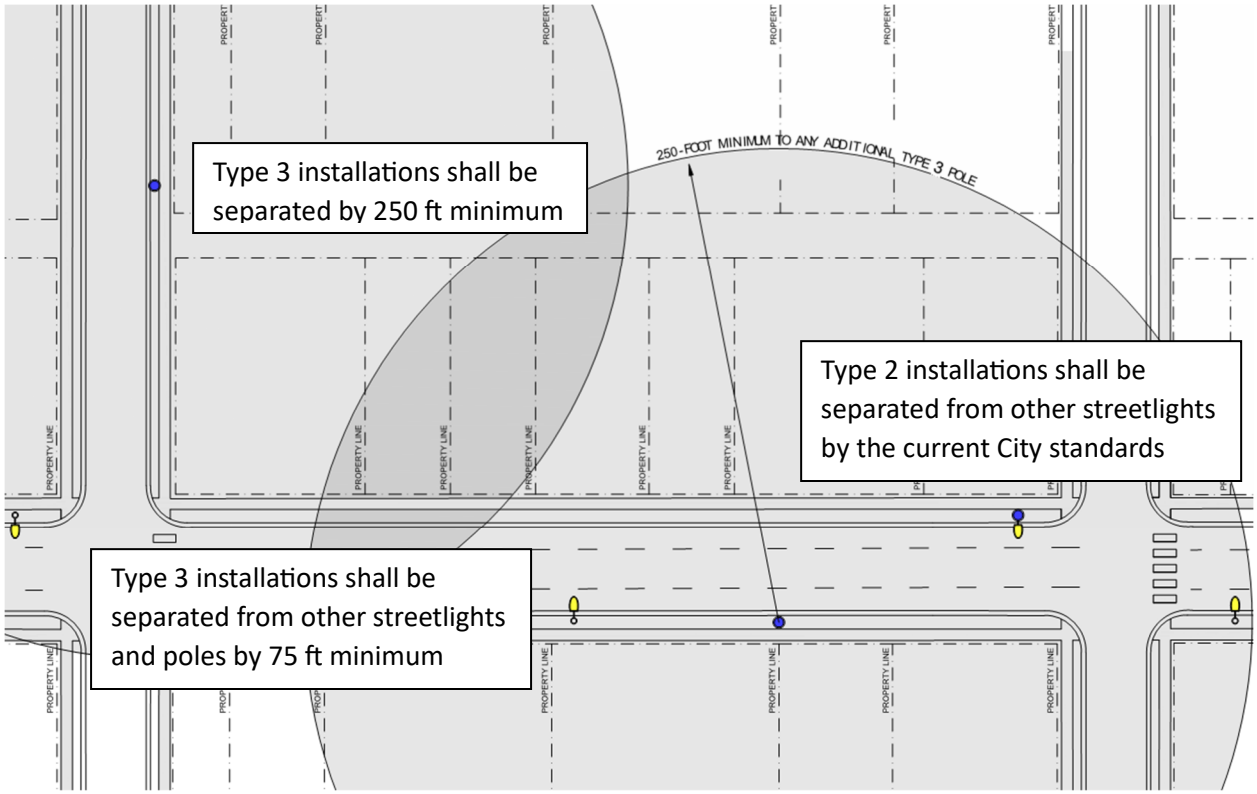


Figure 11: Distance to another Type 3 installation

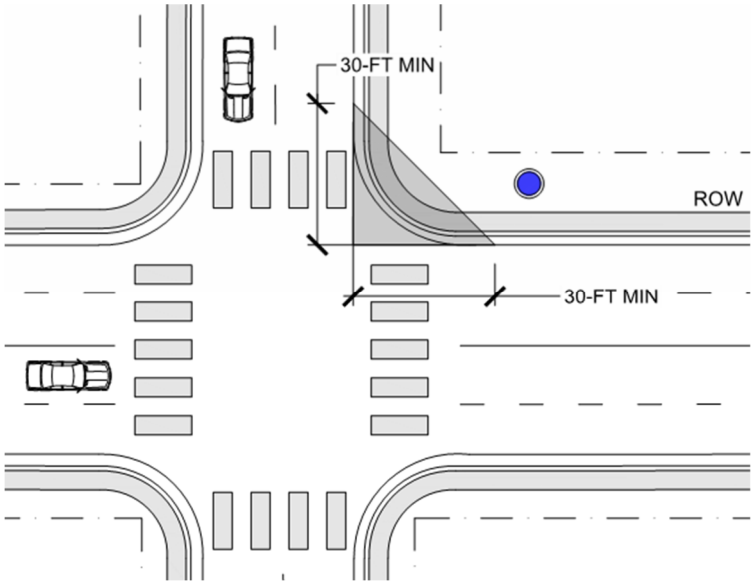


Figure 12: 30-ft sight triangle clearance

Relocation requirements

Notwithstanding any provision to the contrary, in these design standards or of Utah code section 54-21, the City may require a wireless provider to relocate or adjust a small wireless facility in a public right-of-way in a timely manner and without cost to the City.

Special District

Underground District

The entire incorporated limits of the City of Saratoga Springs is hereby designated an "Underground District" in accordance with Utah Code Section 54- 21-207, as amended. Therefore, servicing proposed wireless facilities with aerial cables is prohibited. All wireline backhaul facilities and electrical distribution lines serving Wireless Facilities shall be located underground. Collocating Wireless Facilities on existing utility poles is prohibited.

Historic districts and design districts

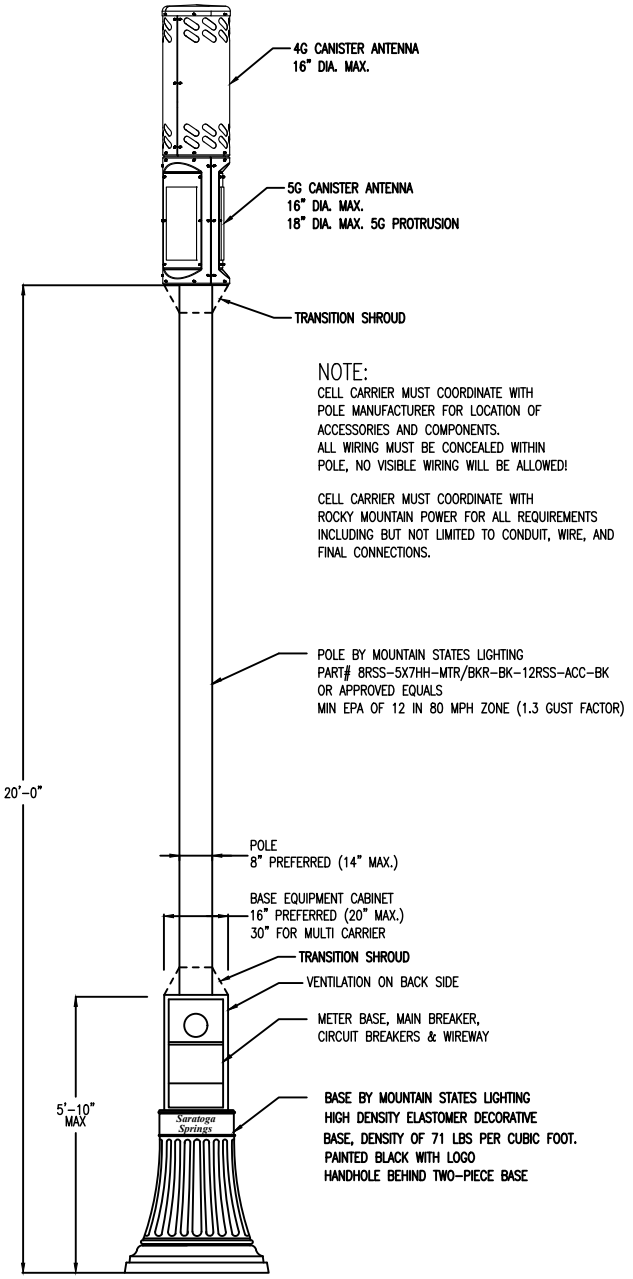
Gateway districts

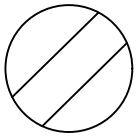
In order to maintain the character of a historic district and/or design district, all wireless facilities and new structures in such a district must employ screening, concealment, camouflage, or other stealth techniques to minimize visual impacts, and comply with all requirements and obtain all approvals as required by the historic landmark commission as permitted by Utah code section 54-21-208, or its successor. Wireless facilities and new structures must be architecturally integrated with existing buildings, structures and landscaping, including considerations of height, color, style, placement, design, and shape.

Special Area

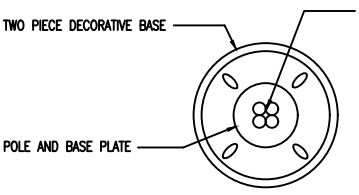
Small wireless facilities in UDOT right-of-way shall be permitted through UDOT with design and appearance approved by the City of Saratoga Springs.

Appendix A: Standard Drawings

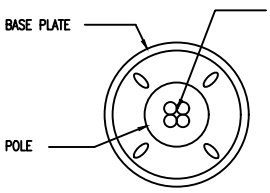




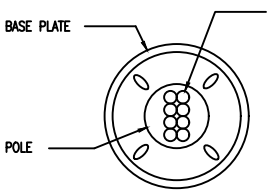
INTERNAL POLE DIVIDERS



16" BASE EQUIPMENT CABINET
ANCHOR BASE DETAIL
20" BOLT CIRCLE
1 1/8" x 2" HOLES TO
ACCOMODATE UP TO 1" DIA BOLT



20" BASE EQUIPMENT CABINET
ANCHOR BASE DETAIL
24" BOLT CIRCLE
1 1/8" x 2" HOLES TO
ACCOMODATE UP TO 1" DIA BOLT



30" BASE EQUIPMENT CABINET
ANCHOR BASE DETAIL
32" BOLT CIRCLE
1 1/8" x 2" HOLES TO
ACCOMODATE UP TO 1" DIA BOLT

NOTES:

1. WHERE OVERHEAD POWER LINES WILL REMAIN, THE HEIGHT OF THE POLE MAY BE REDUCEDTO THE MINIMUM CLEAR DISTANCE SPECIFIED BY THE POWER COMPANY.
2. ADDITIONAL UDOT REQUIREMENTS MAY APPLY.
3. ALTERNATIVE PRODUCTS MAY BE SUBSTITUTED IF DEEMED TO BE EQUAL AND APPROVED BY THE CITY.
4. SMALL WIRELESS FACILITIES TO COMPLY WITH UTAH CODE TITLE 54-21 AND CITY CODE 8.05.
5. SMALL WIRELESS FACILITIES SHALL BE POWDER COATED WITH THE SAME PAINT AS THE DECORATIVE POLE.

FREE-STANDING POLE FOR SMALL WIRELESS FACILITIES

DATE:	JUNE 2025
DRAWING NAME:	LP-7
DRAWN BY:	KDK
CHECKED:	APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS

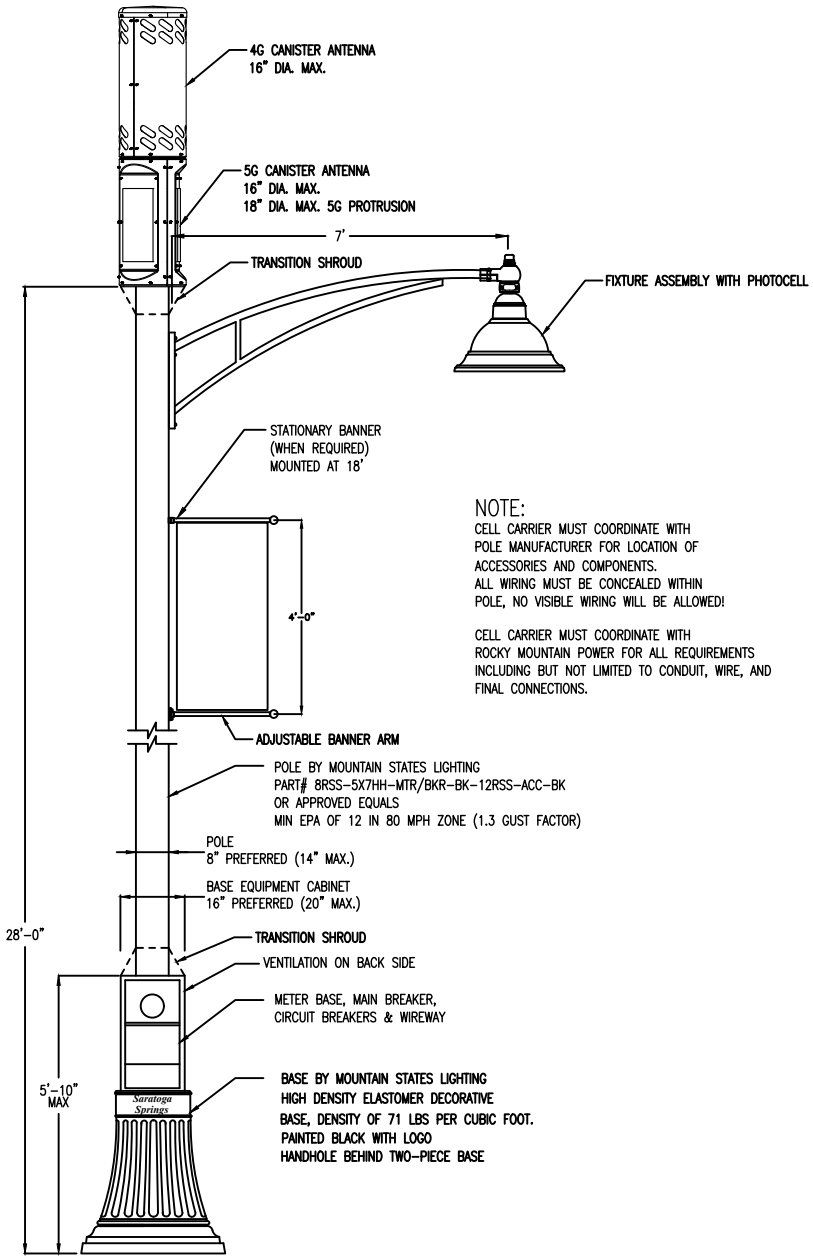
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STREET LIGHTS

LP-7



NOTE:
CELL CARRIER MUST COORDINATE WITH POLE MANUFACTURER FOR LOCATION OF ACCESSORIES AND COMPONENTS.
ALL WIRING MUST BE CONCEALED WITHIN POLE, NO VISIBLE WIRING WILL BE ALLOWED!

CELL CARRIER MUST COORDINATE WITH ROCKY MOUNTAIN POWER FOR ALL REQUIREMENTS INCLUDING BUT NOT LIMITED TO CONDUIT, WIRE, AND FINAL CONNECTIONS.

NOTES:

1. WHERE OVERHEAD POWER LINES WILL REMAIN, THE HEIGHT OF THE POLE MAY BE REDUCEDTO THE MINIMUM CLEAR DISTANCE SPECIFIED BY THE POWER COMPANY.
2. ADDITIONAL UDOT REQUIREMENTS MAY APPLY.
3. ALTERNATIVE PRODUCTS MAY BE SUBSTITUTED IF DEEMED TO BE EQUAL AND APPROVED BY THE CITY.
4. SMALL WIRELESS FACILITIES TO COMPLY WITH UTAH CODE TITLE 54-21 AND CITY CODE 8.05.
5. SMALL WIRELESS FACILITIES SHALL BE POWDER COATED WITH THE SAME PAINT AS THE DECORATIVE POLE.

COLLOCATED STREETLIGHT POLE FOR SMALL WIRELESS FACILITIES

DATE:	JUNE 2025
DRAWING NAME:	LP-7A
DRAWN BY:	KDK
CHECKED:	APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

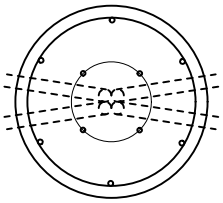
SARATOGA SPRINGS CITY

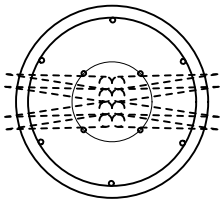
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

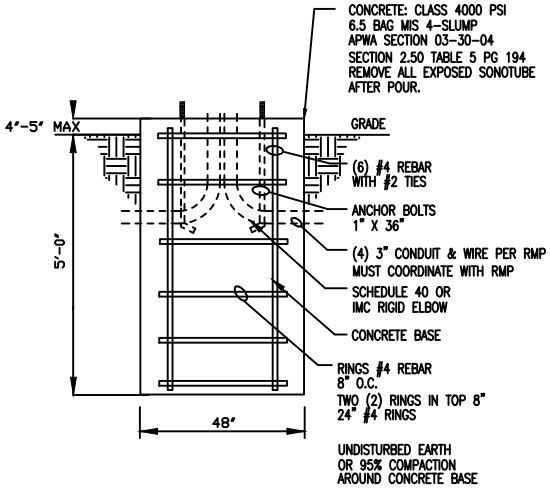
STANDARD DETAILS

STREET LIGHTS

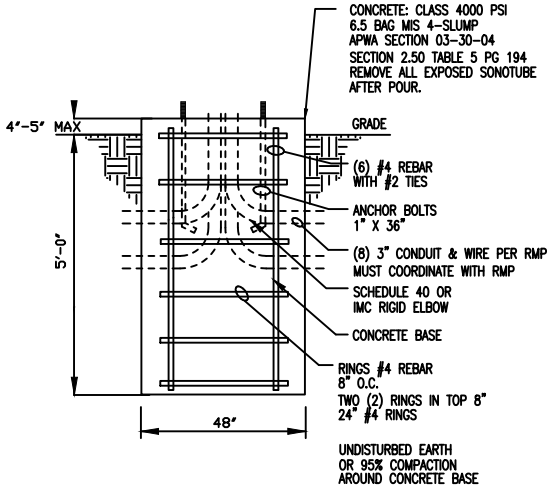
LP-7A







16"-20" BASE EQUIPMENT CABINET
CONCRETE BASE DETAIL



30" BASE EQUIPMENT CABINET
CONCRETE BASE DETAIL

CONCRETE BASE FOR SMALL WIRELESS FACILITIES

DATE: JUNE 2025

DRAWING NAME: LP-7B

DRAWN BY: KDK

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STREET LIGHTS

LP-7B

Appendix B: Technical Specifications

PURPOSE

Appendix B describes in detail the foundation and electrical specifications. All work completed in the ROW must be in accordance with City of Saratoga Springs Design Standards.

Furnishing and installing foundations, small wireless facility poles, conduit, junction boxes, cable, wiring, junction boxes, and incidental materials for small wireless facility installation must be completed in accordance with these specifications and in conformance with the details, lines, grades, and locations shown on the plans.

MATERIALS

Small Wireless Facility materials shall conform to these Small Wireless Facility and Electrical Materials:

Foundations. Concrete bases and equipment pads shall be pre-cast or cast-in-place concrete per the City standard to meet ACI 318. A complete foundation includes concrete, reinforcing steel, anchor bolts, leveling nuts, conduit stubs, ground rod and wire, excavation and backfill, restoration, and accessories as required to provide a complete unit. Banner arm (if required) wind loading shall be incorporated into light standard structural design.

Small Wireless Facility Standard. A complete small wireless facility standard includes the metal upper pole, mounting bracket, canister, base equipment cabinet, grounding system, and all hardware. A complete small wireless facility light standard shall include the components of a small wireless facility standard as well as the mast arm(s). The upper pole shall have a handhole at the top to maintain City streetlight electrical service. Pole and mast arm or arms shall be the type and size shown on the drawings.

Conduit. Conduit includes conduit, trenching, backfill, jacking, drilling, fittings, drainage tees, sealing, restoration, and accessories as required to provide a complete installation.

Electrical Warning Tape. Detectable electrical warning tape shall consist of pre-manufactured non-adhesive polyethylene material that is unaffected by acids, alkalines, and other soil components. The color of the tape shall be red, and it shall be, at a minimum, 3.5 mils thick and 6 inches wide. Its tensile strength shall be 2,500 psi lengthwise.

The electrical tape shall include the following identification printed in black letters continuously along the length of the tape: “CAUTION BURIED ELECTRIC LINE BELOW”.

The identification note and color of tape shall conform to the requirements of the “American Public Works Association (APWA) Uniform Color Codes (Red) – Electrical Power Lines, Cables, Conduit and Lighting Cables.”

Conductors. Conductor includes control wiring, luminaire wiring, main circuit wiring, ground wiring, service entrance wiring, pulling, splicing, connections, testing, and all other wiring necessary for a complete installation.

Pull Boxes. Pull box includes pull box, cover with bolts, excavation, gravel base, backfill sealing, restoration, and accessories as required to provide a complete installation.

Materials List. At the preconstruction conference the Contractor shall submit to the City three copies of a list of all materials and equipment to be incorporated into the work. The Contractor shall include the following items on the list:

1. Small wireless facility standards
2. Pull Box
3. Fuse holders
4. Conductors
5. Conduit
6. Wireless Lighting Control and Monitoring System
7. Small wireless facility foundations
8. Equipment pads
9. All other items required for a complete installation

The City will return lists that are incomplete or that include unacceptable materials to the Contractor for correction and re-submission.

The Contractor shall not order materials or equipment until the City and the party or agency responsible for maintenance have reviewed and approved the materials and equipment list. The City's approval of the list shall not relieve the Contractor responsibility for the proper functioning of the completed installation.

GENERAL

1. All work shall conform to these specifications and the National Electrical Code (NEC) when the small wireless facility pole is owned by the City or the provider, or the National Electrical Safety Code (NESC) when the small wireless facility pole is owned by Rocky Mountain Power.
2. The Contractor and/or provider shall keep fully informed of and comply with all Federal, State, and local laws, ordinances, and regulations, and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which may affect those engaged or employed on the work or affect the conduct of the work. The Contractor and/or provider shall protect and indemnify the City and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor and/or provider, the subcontractors, suppliers of materials or services, or their employees.
3. Each system shall be installed as shown on the plans or as designated. The Contractor and/or provider shall furnish and install all incidentals necessary to provide a complete working unit or system.

CONCRETE FOUNDATION PADS AND SMALL WIRELESS FACILITY STANDARD FOUNDATIONS

1. Foundations shall be installed as shown on the plans, complete with grounding. The Contractor and/or provider shall test and report soil conditions to the City as necessary to ensure proper installation of foundations. Foundations shall be installed at the final grade.

2. All anchor bolts shall be positioned by means of steel templates. The center of the template shall coincide with the center of the foundation. Anchor bolt size and 20-inch bolt circle shall accommodate a 16-inch equipment cabinet per manufacturer's requirements. Anchor bolt size and 24-inch bolt circle shall accommodate a 20-inch equipment cabinet per manufacturer's requirements. Anchor bolt size and 32-inch bolt circle shall accommodate a 30-inch equipment cabinet per manufacturer's requirements.
3. All small wireless facility standard foundations shall be detailed.
4. Conduits shall be properly positioned and anchored before the concrete is placed.
5. Coordinate the base setback and orientation with the City.
6. All foundations shall have ground rods conforming to the NEC or NESC. All foundations on structures shall be grounded to the structural steel by a method that is in accordance with the NEC or NESC and which is approved by the City.
7. Concrete shall be Class B.
8. Anchor bolts shall be designed by the Contractor's and/or provider's engineer or as shown on the working drawings. The threaded ends of the anchor bolts, the nuts, and the washers shall be galvanized in accordance with ASTM A153.

POLES AND ANTENNAS

1. Metal small wireless facility standards shall be fabricated of steel unless otherwise approved by the City. Whenever metal is specified, the Contractor and/ or provider shall furnish galvanized steel. The Contractor and/or provider may furnish aluminum small wireless facility standards if the City gives approval. Material type and shape of standards shall be the same throughout the design district, unless otherwise approved by the City.
2. All standards shall have weatherproof cable-entrance grommets located in conformity with the type of mounting used. Metal surfaces shall be free of imperfections marring the appearance and of burrs or sharp edges that might damage the cable.
3. All metal poles shall be straight and shall be supplied with pole caps when applicable.
4. Steel mast arms shall be made of Schedule 40 standard steel pipe conforming to ASTM A 53.
5. All steel poles, mast arms and base flanges shall be hot-dip galvanized in accordance with ASTM A 123. Units on which the spelter coating has been damaged shall be repaired as provided in AASHTO M 36, or other approved method.
6. Base flanges for steel poles shall have continuous welds both inside and outside, unless otherwise permitted. Base flanges inserted into the pole and bonded shall meet the requirements for materials and strength stated herein.
7. Each metal standard shall be wired with a breakaway fused connector of proper capacity rating. The fused connector shall be located inside the equipment cabinet. If the light standard has no equipment cabinet, the fused connector shall be located inside the pole at the hand hole.
8. All equipment cabinets or bases shall have vandal resistant, removable access doors.

9. Hardware used with steel standards shall be either cadmium plated steel, hot dip galvanized steel, or stainless steel.
10. Materials shall be of a standard line from a name brand manufacturer or as specified in this document. Electrical material shall be listed by the Underwriters' Laboratories, Inc. (UL), and shall conform to the National Electrical Code (NEC) when the streetlights are owned by the City, or the National Electrical Safety Code (NESC) when the streetlights are owned by the Utility. Material shall be the same as, or compatible with, that used and accepted by the agency responsible for maintenance.
11. The City may inspect all lighting material and all electrical materials and all other materials and accept or reject them at the project site. Samples may be taken or manufacturer's certifications may be accepted in lieu of samples.
12. Poles, equipment cabinets, and bolts shall be galvanized stainless steel. Galvanizing will be performed in accordance with ASTM 123 and meet the following galvanization and paint requirements.
13. Galvanizing will be SSPC-SP1 Solvent wiped where needed and the Galvanizing will receive a sweep blast to a uniform dull appearance. Any areas of fracture will be repaired. Any excess zinc build up should be blended to no higher than the height of a dime with no thick edges or areas that may cause paint entrapment potentially leading to a premature coating failure.
14. The first epoxy coat typically should be applied within 120-180 minutes of abrasive blasting. Items shall be cleaned free of blast debris before coating. Compressed air should be used to clean items; items should be free of oil, residue, and any other contaminates/debris.
    a. Epoxy Primer Gray- B107989EA80K-A
    b. Impact Resistance Direct 100 IN/LBS @ 2.0-3.0 Mils (ASTM D2794)
    c. Impact Resistance Indirect- 100 IN/LBS @ 2.0-3.0 Mils (ASTM D2794)
    d. Cross- Hatch Adhesion 5B (ASTM D3359)
    e. Conical Mandrel 1/8" (ASTM D522)
    f. Pencil Hardness 2H (ASTM D3363)
    g. Specific Gravity 1.58 +/- 0.05 G/ML
    h. Theoretical Coverage 121.63 ft2/LB @ 1.0 Mil
    i. 60 percent gloss 75-85 (ASTM D523)
15. The Epoxy prime coat shall be applied on poles for an DFT Average of 5.0 Mils for the bottom eight feet, 3.0 Mils DFT above that. Arms have the epoxy prime applied for a 3.0 mil DFT. DFT readings shall be taken in accordance with SSPC-PA2.
16. Topcoat to be applied for an DFT of 3.0 mils average unless noted otherwise.
17. Aerosol touch up should be used for coverage on areas that were masked by a hanging device (Hanging hook or chain, etc.) or used to repair small scratches or imperfections.
18. Poles shall be set plumb, and centered, on the small wireless facility standard foundation using leveling nuts when installed.

19. Defects and scratches on painted, powder-coated, or anodized poles shall be primed and painted with a color-matched paint to match undamaged pole sections. Defects and scratches on galvanized poles shall be re-galvanized in the field.
20. Stainless steel mounting hardware shall be used to mount luminaires, mast arms, access doors, antenna, equipment cabinet, and other hardware to the poles. Apply an approved zinc-based anti-seize compound to all mounting hardware prior to assembly.
21. Banner arms (if required) shall be incorporated into small wireless facility standard structural design.

CONDUIT

1. All conduit installed within the ROW between the small wireless facility and ground mounted boxes shall be at least three-inch (3") minimum inside diameter unless otherwise designated on the plans. The Contractor and/or provider may use larger conduit than specified. If larger conduit is used, it shall be for the entire run from outlet to outlet. Reducer couplings shall not be used. Larger conduits shall be sized to accommodate the constraints established by the hole in the pole anchor base plate.
2. Conduit terminating in standards or pedestals shall extend approximately two inches past the foundations and shall slope toward the junction box opening. Conduit entering pull boxes shall terminate two inches inside the box wall and two to five inches above the bottom and shall slope toward the top of the box to facilitate pulling of conductors.
3. Conduit entering through the bottom of a ground mounted box shall be located near the end walls to leave the major portion of the box clear. At all outlets, conduits shall enter from the direction of the run.
4. The ends of all conduits, whether shop or field cut, shall be reamed to remove burrs and rough edges. Cuts shall be made square and true so that the ends will butt or come together for their full circumference.
5. Unless otherwise specified, conduit shall be rigid non-metallic electrical conduit currently recommended and approved by Underwriters' Laboratories, Inc. for the proposed use conforming to ASTM-F 441 schedule 40, (Schedule 80 or bored HDPE where installed under roadways).
6. Fittings shall be the type used outside the conduit and PVC cement welded. Submersible fittings shall connect the conduit in a manner that makes the joints watertight.
7. All ground mounted boxes shall be polymer concrete, bottomless and tier 22 rated bolted covers. 13 inches by 24 inches and 18 inches deep manufactured by Quazite; Cat. #PG1324BA18, unless otherwise noted on the plans. Covers shall be Cat. # PG1324HH00 with stainless steel bolts and the word "ELECTRIC" molded into the top.
8. Conduit connections at junction boxes shall be tightly secured and waterproofed. All conduit ends shall be sealed with duct seal after installation of wiring. The duct seal shall be rated for outdoor use.

9. When specified, conduit shall be installed under existing pavement by boring operations.
10. Where plans show that existing pavement is to be removed, jacking the conduit is not required. Jacking or drilling pits shall maintain a minimum of two feet clear of the edge of pavement. Water shall not be used as an aid in the jacking or drilling operations.
11. Trenching shall be in conformance with City standards. Backfill shall be per City standards. Detectable red electrical warning tape shall be installed between six inches and 12 inches below finished grade for all underground conduit runs.
12. Underground conduit shall be buried a minimum of 30 inches below finished grade. There shall be no sag between boxes. Conduit within the ROW shall be buried 48 inches (maximum) below finished grade.
13. Junction Boxes shall be placed at conduit ends, at all locations where conduit bends in a single run would equal 360° or greater per NEC requirements, and at all other locations shown on the plans. The Contractor may install additional pull boxes to facilitate the work.
14. Excavate minimum 24 inches below base depth of each junction box, backfill and compact with pea rock to permit draining of water.
15. Placement and setback of the junction boxes shall be coordinated with the City.
16. Unless otherwise shown on the plans or directed by the City, junction boxes shall be installed so that the covers are level with the sidewalk grade. Covers shall be flush with the surrounding finished ground when no grade is established.
17. Where a conduit stub-out is called for on the plans, a sweeping elbow shall be installed in the direction indicated. All conduit stub outs shall be capped.

WIRING

1. All wiring shall be copper, 600 Volt rated, Type: Conform to the applicable UL and ICEA Standards for the use intended. Copper conductors with 600-volt insulation unless otherwise specified or noted on the drawings. Stranded conductors for No. 8 and larger, with the exception of the ground rod conductor shall be #6 AWG solid, bare, copper.
2. Aluminum Conductors Prohibited: Aluminum conductors will not be permitted. Insulation: Type THWN/ XHHW for underground installation in conduit, insulation minimum unless otherwise specified or noted on the drawings. Size: No. 12 minimum unless otherwise specified or noted on the drawings. Not less than NEC (NESC if Utility owned) requirements for the system to be installed.
3. Color Coding: Phase, neutral and ground conductors color-coded in accordance with NEC (NESC if Utility owned). Connect all Conductors of the same color to the same phase conductor as follows:
    a. 208Y/120V-3PH-4W Color coding shall be:
        i. Phase = Black
        ii. Phase = Red
        iii. Phase = Blue

iv. Neutral = White
v. Ground = Green

b. 120/240V-1PH-3W Color coding shall be:
i. Line 1 = Black
ii. Line 2 = Red
iii. Neutral = White
iv. Ground = Green

4. Unless otherwise authorized, the multiple system of electrical distribution shall be used. Conductors of the size and material specified shall be installed for control wiring, luminaire wiring, small wireless facility equipment wiring, City IOT wiring, main circuit wiring, ground wiring, service entrance wiring, and all other wiring necessary for a complete installation.
5. Conductors shall be sized to prevent a voltage drop of more than three percent per feeder run. All conductors shall be installed in conduit.
6. All power and lighting circuits shall include an insulated green grounding conductor.
7. A complete grounding system shall be installed for the entire lighting installation.
8. Grounding shall consist of ground cables, conduits, grounding rods, wire or strap, and ground fittings, as required by the NEC (or NESC if Utility owned).
9. Type THWN conductors shall be used for all underground conduit runs. Leave sufficient lengths of branch conductors to allow conductor splices to be extracted from pole base for maintenance. Type XHHW shall be used for the service entrance conductors.
10. Extend three conductor SOW cable feeder leads to the luminaires from the cables in the pole base.
11. Install in-the-line fuses on each feeder lead. Leave sufficient lengths of feeder conductors to allow fuses and conductors to be extracted from pole base for maintenance.
12. Provide a No. 6 AWG solid, bare, copper wire connection to ground rod with ample length to allow connection to light standard, and system ground conductor.
13. Attach grounding conductor to the energy suppliers neutral at the service point.
14. Terminate grounding conductor with less than 25 ohms ground reference at the service point. If ground resistance is greater than 25 ohms, add additional ground rod(s) or other ground reference bond to bring the resistance to under 25 ohms resistance to earth.
15. Provide ground rods elsewhere as shown on the drawings. Butt splices within the bases are not acceptable.
16. No splices are approved unless a manufacturer provides a specific splice enclosure or approved method for the specified use of their product. All splices need to be enclosed in the junction box or easily accessed inside the pole from the hand hole. In no case will wire nuts be an acceptable method of splicing.
17. At each pole, provisions shall be made for convenient sectionalizing of the circuits. This shall be done by providing ample length (18 to 24 inches) of branch conductor ends and performing

splices using submersible type (Burndy Uni-tap connectors or an approved equal). Wire nuts are not an acceptable method for splicing. Splicing shall only be performed within the pole bases and splice boxes where applicable.

18. Separation of service shall be provided within the pole by conduit or dividers. Electrical wiring and fiber shall be separated by Owner within.

FUSES

Each luminaire in the 120-volt system shall be fused with one 6-amp fuses. Fuse connectors shall be installed in the phase wires of their respective circuits at the pull box located adjacent to the light standards or in the pole base. The fuses shall be mounted in inline single-pole molded fuse connector/holders. The fuse holders shall be a DOT-PLUG (Catalog No. Duraline-16998) or approved equal.

Fuses shall be of the breakaway type. The Contractor shall provide sufficient excess conductor length to allow withdrawal of the connected fuse holder. The grounding wires shall not be fused. Fuses and fuse holders shall be “UL” listed and shall be installed in such a manner that the fuse stays with the load side when holder is separated. In addition, the Contractor shall form loops in the leads on each side of the fuse holders and so position the fuse holders so that they may be easily removed or inserted through the opening at top of pull box.

AS-BUILT DRAWINGS

1. Contractor shall supply accurate as-built drawings of the project to the City.
2. Drawings shall indicate location and setback of conduit, lighting control center, and utility service point, and pole locations along the roadway measured from a reliable location.