



*SMALL WIRELESS FACILITIES
DESIGN MANUAL*

JULY 21, 2020



Table of Contents

Section I. Executive Summary 4

- A. Background 4
- B. FCC Order 4
- C. Chapter 284..... 5
- D. Goal Statement 6

Section 1. Purpose and Applicability..... 7

Section 2. Definitions 8

Section 3. Locations of SWF and Related Ground Equipment..... 15

- 3.1 Prohibited or Restricted Areas 15
 - 3.1.1 Parks and Residential Areas..... 15
 - 3.1.2 Historic District, Design District, and Regional Employment Center 15
 - 3.1.3 Historic Landmarks..... 15
 - 3.1.5 Location of a SWF 16
- 3.2 Least preferable locations..... 16
 - 3.2.1 Residential Areas and Parks..... 16
 - 3.2.2 Historic District, Design District, and Regional Employment Center 16
- 3.3 Most preferable locations..... 16
- 3.4 Designated Areas 16
- 3.5 Exceptions 17
- 3.6 Order of Preference 17

Section 4. Guidelines on Placement..... 19

- 4.1 Generally 19
- 4.2 Permitting..... 19
 - 4.2.1 Right-of-way Permit 19
 - 4.2.2 Electrical Permit 20
- 4.3 Installation of Transport Facilities 20
- 4.4 Improperly Located SWFs and related ground equipment..... 21
- 4.5 Underground Requirement Areas 21
- 4.6 Network Node facilities placement..... 21
- 4.7 New Node Support Poles or Monopoles..... 22
- 4.8 Ground Equipment..... 22
- 4.9 Municipal Service Poles 23
- 4.10 Noise..... 23

4.11 Photo Simulations.....	24
Section 5. General Aesthetic Requirements	25
5.1 Concealment.....	25
5.2 New Node Support Pole Spacing	25
5.3 Minimize Ground Equipment Concentration	25
5.4 Allowed Colors	25
Section 6. Installation and Inspection	26
6.1 Installation	26
6.2 Inspections	26
Section 7. Interference with Operations	27
7.1 No Liability	27
7.2 Signal Interference with City's Communications Infrastructure Prohibited.....	27
Section 8. Insurance, Indemnity, Bonding and Security Deposits.....	28
8.1 Insurance, Bonding and Security Deposits.....	28
8.2 Indemnity	28
Section 9. Removal, Replacement, Maintenance, and Repair	29
9.1 Removal or Relocation by Network Provider	29
9.2 Removal or Relocation Required for City Project.....	29
9.3 Removal Required by City for Safety and Imminent Danger Reasons.....	29
9.4 Abandonment of Facilities	30
Section 10. General Provisions.....	31
10.1 As Built Maps and Records.....	31
10.2 Allocation of Funds for Removal and Storage.....	31
10.3 Ownership.....	31
10.4 Tree Maintenance	31
10.5 Signage	31
10.6 Graffiti Abatement.....	32
10.7 Restoration	32
10.8 Network provider's responsibility	32
10.9 Reservation of Rights	32
10.10 Design Manual – Updates.....	32
Section 11. Variances.....	33
Appendix A: Historic District Number 1	34
Appendix B: Historic District Number 2	35

Appendix C: Historic District Number 3 36

Appendix D: Historic District Number 4 37

Appendix E: Historic District Number 5 38

Appendix F: Regional Employment Center 39

Appendix G: Design Concepts 40

G.1 Small Wireless Facility Pole 40

G.2 Base Cabinet 41

G.3 Upper Antenna Module 42

G.4 Foundation Selection 42

G.5 Lighting Accessories 43

G.6 Color Options 43

G.7 Product Selection Matrix 44

DRAFT

Section I. Executive Summary

A. Background

The City of McKinney, as with communities across the country and around the world, is facing the next wave of communications technology. While the economic benefits are immense, it has the potential to impact the safety, aesthetic values, and enjoyment of our community in a manner and to a degree that is far more extensive than cellular phones and other types of recent technology.

Small wireless communications, also known as 5G technology, utilizes higher frequencies with the capability to accommodate significantly higher data needs than current 4G/LTE technologies. The physical limits of the higher frequencies require that the transmitters be installed at the spacing of streetlights or fire hydrants rather than 2+/- miles or greater distances that 4G/LTE technologies accommodate. The result of this physical need is that the public rights-of-way are the optimal location to install the required equipment.

In September of 2018, the Federal Communications Commission (FCC) adopted the Declaratory Ruling and Third Report and Order, known as FCC 18-133. The Order outlines the extent to which local agencies may or may not regulate the installation of small wireless facilities within the public rights-of-way and the use of existing public infrastructure.

One year prior to the adoption of the FCC Order, in September of 2017, Chapter 284 of the Texas Local Government Code became effective. In general, Chapter 284 allows wireless network companies to place network nodes in the public right-of-way (ROW), and provides rules, regulations, and fee structures to reimburse cities for use of the ROW. The Chapter states that cities would retain authority to manage the public ROW to ensure the health, safety, and welfare of the public, and would receive compensation for the installation of network nodes on poles.

Similar to the advent of the telephone which required extensive wires, switch boxes, poles and other structures to provide these services, small wireless communications technology will require a structure to mount a transmitter approximately every 300 to 500 feet with fiber and power connections to each one.

Absent the adoption of guidelines to assure that installations are context sensitive, service providers would be free to install equipment with no concern for the visual impact that they create. This document seeks to accommodate the implementation of the new technology while assuring that the new infrastructure is installed using context sensitive solutions.

In addition, the equipment needs to be located where it will not interfere with visibility for drivers, interference with sidewalks, or other common amenities found in public rights-of-way.

Other issues such as safety, noise and accommodating multiple providers at each location are also addressed within these guidelines.

B. FCC Order

On September 26, 2018, the Federal Communications Commissions (FCC) adopted a [Declaratory Ruling and Third Report and Order](#), titled "Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment" (the Order). The Order establishes fees, "shot clocks," and provides limits on local governments' control of small wireless infrastructure.

The FCC Order establishes fees as follows:

- \$500 for non-recurring fees, including a single up-front application that includes up to five Small Wireless Facilities, with an additional \$100 for each small wireless facility beyond five
- \$1,000 for non-recurring fees for a new pole (not a collocation) intended to support one or more small wireless facilities.
- \$270 per small wireless facility per year for all recurring fees, including any possible ROW access fee or fee for attachment to municipally-owned structures in the ROW

The following shot clocks are the FCC's permit review times for new small wireless facilities:

- A 60-day review period for collocation of small wireless facilities
- A 90-day review period for construction of new small wireless facilities

Existing shot clocks for non-small wireless facilities deployments remain in place:

- 90 days for collocation on an existing structure
- 150 days for deployment on a new structure

According to the FCC Order, the “shot clock” rules are as follows:

- Both the new and existing shot clocks apply to “any approval that a siting authority must issue under applicable law prior to deployment.” This includes zoning approvals and building permits, and may also include license or franchise agreements to access the rights-of-way, leases for use of municipal poles or property in the rights-of-way, electric permits and road closure permits, among others.
- For small wireless facilities deployments, shot clocks are reset if the siting authority notifies the applicant within 10 days after submission that the application is incomplete. For subsequent determinations of incompleteness, the shot clock would toll—not reset—if the siting authority provides written notice within 10 days that the supplemental submission did not provide the requested information.
- For non-small wireless facilities, shot clocks begin to run when an application is first submitted, and can be paused—not reset—if the siting authority notifies the applicant within 30 days that the application is incomplete. For subsequent determinations of incompleteness, the process is the same as described above for small wireless facilities.
- Failure to act within the new small wireless facility shot clock constitutes a presumptive violation of the Communications Act and applicants may seek expedited injunctive relief in court within 30 days of a local government missing a shot clock deadline. **There is no “deemed granted” remedy.**

The FCC Order, limits aesthetic reviews and requirements (including undergrounding, spacing, and historic/environmental requirements) to what is:

- (a) reasonable
- (b) no more burdensome than those applied to other types of infrastructure deployments
- (c) objective and published in advance

The effective date of the 2018 Order with respect to the new limitations on rights-of-way fees and deadlines for acting on permit applications was January 14, 2019.

C. Chapter 284

[Chapter 284 of the Texas Local Government Code](#) became effective September 1, 2017. In a similar manner to the FCC Order, Chapter 284 establishes fees, “shot clocks,” and provides limits on local governments’ control of small wireless infrastructure.

Chapter 284 establishes fees as follows:

- *Annual Public Right-Of-Way Rate:* A public right-of-way rate for use of the public right-of-way may not exceed an annual amount equal to \$250 multiplied by the number of network nodes installed in the public right-of-way in the municipality’s corporate boundaries.
- *Application Fees:* \$500 per application covering up to five network nodes, \$250 for each additional network node per application, and \$1,000 per application for each pole.
- *Service Pole Attachment Fee:* The rate to collocate a network node on a service pole in the public right-of-way shall be \$20 per pole per year.

- *Use of Public Right-Of-Way and Applicable Rate:* A network provider must pay the municipality a monthly public right-of-way rate for transport facilities in an amount equal to \$28 multiplied by the number of the network provider's network nodes located in the public right-of-way.

The following “shot clocks” are Chapter 284’s permit review times for network nodes and node support poles:

- Within 30 days of receiving an application for a network node or node support pole, or 10 days for a transport facility, the City shall determine and notify the Applicant whether the application is complete; or if incomplete, the City must specifically identify the missing information in such notification.
- The City shall make its final decision to approve or deny a complete application no later than (i) 21 days after receipt of a complete application for a transport facility, (ii) 60 days after receipt of a complete application for a network node; and (iii) 150 days after receipt of a completed application for a new node support pole.
- The City shall advise the Applicant in writing of its final decision, and, if denied, the basis for that denial, including specific provisions of City Code or applicable law on which the denial was based, and send the documentation to the Applicant on or before the day the City denies the application. The Applicant may cure the deficiencies identified by the City and resubmit the application within 30 days of the denial without paying an additional application fee. The City shall approve or deny the revised application within 90 days of receipt of the amended application. The subsequent review by the City shall be limited to the deficiencies cited in the original denial.
- If the City fails to act on an application within the review period specified, the application shall be deemed approved.
- An applicant seeking to collocate network nodes may, at the Applicant’s discretion, file a consolidated application and receive permits for up to 30 network nodes. Provided however, the City’s denial of any node within a single application shall not affect other nodes submitted in the same application. The City shall grant permits for any and all nodes in a single application that it does not deny, subject to the requirements of this Section.

Chapter 284 also reiterates existing Texas municipal local police-power-based regulations. It states:

- Subject to this chapter [Chapter 284] and applicable federal and state law, a municipality may continue to exercise zoning, land use, planning, and permitting authority in the municipality’s boundaries, including with respect to utility poles.
- A municipality may exercise that authority to impose police-power-based regulations for the management of the public right-of-way that apply to all persons subject to the municipality.
- A municipality may impose police-power-based regulations in the management of the activities of network providers in the public right-of-way only to the extent that the regulations are reasonably necessary to protect the health, safety, and welfare of the public.

D. Goal Statement

Pursuant to its police power authority, the City enacts this Design Manual in order to meet its fiduciary duty to the citizens of the City, and to give assistance and guidance to wireless telecommunications providers to assist such companies in the timely, efficient, safe and aesthetically pleasing installation of technologically competitive equipment.

SECTION 1. PURPOSE AND APPLICABILITY

The City of McKinney (City) encourages the deployment of state-of-the-art small cell wireless technology within the City for the many benefits it promises the citizens of McKinney including increased connectivity and reliable networks and services.

The City recognizes that the State of Texas has delegated to the City the fiduciary duty, as a trustee, to manage the public right-of-way for the health, safety, and welfare of the public.

As expressly allowed by Chapter 284 of the Texas Local Government Code and pursuant to its police power authority reserved in Section 284.301, the City adopts this Small Wireless Facilities Design Manual (“Design Manual”) to meet its fiduciary duty to the citizens of the City; protect the health, safety and welfare of the public by minimizing and reducing impacts to public safety within the City’s Right-of-Way; and to give assistance and guidance to wireless telecommunications providers to assist such companies in the timely, efficient, safe and aesthetically pleasing installation of technologically competitive equipment.

Due to the increasing number of facilities in the City’s Right-of-Way, the City has adopted the “Small Wireless Facility Sitting Ordinance”, Code of Ordinances, City of McKinney, Texas (“McKinney Code”). Section 90-305, et seq., of the McKinney Code, which is applicable to all Wireless Service Providers or Network Providers (collectively, “Providers”) as defined by Chapter 284 of the Texas Local Government Code.

In addition, the City has adopted this Small Wireless Facilities Design Manual to provide technical criteria and details necessary for Providers seeking to install and construct network nodes and node support poles in the City’s Right- of-Way.

Providers shall adhere to the requirements found in the Small Wireless Facility Sitting Ordinance, Right- of-Way and Construction Manual, this Small Wireless Facilities Design Manual and the City’s other applicable Manuals and Ordinances for the installation, operation, maintenance, repair, modification, and replacement of wireless facilities within the City’s Right-of-Way.

The provisions of this Design Manual are intended to be complementary to and consistent with the provisions of the FCC’s Declaratory Ruling and Third Report and Order, Chapter 284 of the Texas Local Government Code; Chapter 90, Article V (Small Wireless Facilities) of the McKinney Code; and, other applicable laws, ordinances, codes, rules and regulations of the City. It is specifically provided that in the event of any conflict or inconsistency between the provisions of this Design Manual and any other applicable provision, the conflict or inconsistency shall be resolved by giving precedence in the following sequence or order:

- a) FCC’s Declaratory Ruling and Third Report and Order
- b) Chapter 284 of the Texas Local Government Code;
- c) This Small Wireless Facilities Design Manual;
- d) Chapter 90, Article V (Small Wireless Facilities) of the McKinney Code;
- e) Chapter 90, Article IV (Rights-of-Way Use and Management) of the McKinney Code;
- f) The City’s [Engineering Design Manual](#) and [Standard Details Manual](#); and
- g) any other applicable laws, ordinances, codes, rules and regulations of the City.

This Design Manual is for siting and criteria for the installation of Small Wireless Facilities, including Micro Network Nodes, Network Nodes, Node Support Poles and related ground equipment being installed pursuant to the FCC’s Declaratory Ruling and Third Report and Order and Chapter 284 of the Texas Local Government Code. This Design Manual shall apply to any sitings, installations, collocations in, on, over or under the public rights-of-way of Network nodes, Node support poles, Micro network nodes, Distributed Antenna Systems, microwave communications or other Wireless Facilities, by whatever nomenclature, whether they are installed pursuant to Chapter 284, or installed pursuant to an agreement as agreed to and consented to by the City in its discretion, or installed as may otherwise be allowed by state or federal law.

SECTION 2. DEFINITIONS

Abandon and its derivatives means the facilities installed in the right-of-way (including by way of example but not limited to: poles, wires, conduit, manholes, handholes, cuts, network nodes and node support poles, or portion thereof) that have been left by Provider in an unused or non-functioning condition for more than 120 consecutive calendar days unless, after notice to Provider, Provider has established to the reasonable satisfaction of the City that the applicable facilities, or portion thereof, is still in active use.

Administrative Review means ministerial review of an Application by the City relating to the review and issuance of a Permit, to determine whether the issuance of a Permit is in conformity with the applicable provisions of these Guideline and all City Codes.

Antenna means communications equipment that transmits or receives electromagnetic radio frequency signals used in the provision of wireless services.

Applicable codes means:

- (A) uniform building, fire, electrical, plumbing, or mechanical codes adopted by a recognized national code organization; and
- (B) local amendments to those codes to the extent not inconsistent with Chapter 90, Article V (Small Wireless Facilities) of the McKinney Code.

Applicable Law means Chapter 284 of the Texas Local Government Code and federal law to the extent it preempts local control.

Applicant means any person who submits an application and is a network provider.

Application means a request submitted by an applicant (i) for a permit to collocate network nodes; or (ii) to install a transport facility; or (iii) approve the installation, replacement or modification of a pole.

AASHTO means the American Association of State Highway and Transportation Officials, which is a standards setting body that publishes specifications, test protocols, and guidelines that are used in highway design and construction throughout the United States.

Authority Used as a noun, means a state, county, or city governing body, board, agency, office or commission authorized by law to make legislative, quasi-judicial, or administrative decision relative to an application.

Base station means a structure or equipment at a fixed location that enables FCC-licensed or authorized wireless communications between user equipment and a communications network. The term does not include a tower or any equipment associated with a tower.

Batched Applications is the submission of multiple siting applications at one time. Batched applications shall not exceed 30 individual Small Wireless Facilities.

Chapter 284 means Texas Local Government Code; Title 9. Public Buildings and Grounds; Subtitle A. Municipal Public Buildings and Grounds; Chapter 284. Deployment of Network Nodes in Public Right-of-Way, as amended, and is incorporated herein by this reference.

City means the City of McKinney, Texas or its lawful successor. As used throughout, the term City also includes the designated agent of the City.

City Code means those ordinance provisions adopted by the City relevant to use of the public right-of-way where compliant with applicable law.

City Council means the McKinney City Council.

City Manager shall mean City Manager or designee

Clear Zone AASHTO's Roadside Design Guide defines a clear zone as the total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area.

Collocate and *collocation* mean the installation, mounting, maintenance, modification, operation, or replacement of network nodes in a public right-of-way on or adjacent to a pole.

Concealment or *Camouflaged* means and refers to any Wireless Facility or Pole that is covered, blended, painted, disguised, camouflaged or otherwise concealed such that the Wireless Facility blends into the surrounding environment and is visually unobtrusive. A Concealed or Camouflaged Wireless Facility or Pole also includes any Wireless Facility or Pole conforming to the surrounding area in which the Wireless Facility or Pole is located and may include, but is not limited to hidden beneath a façade, blended with surrounding area design, painted to match the supporting area, or disguised with artificial tree branches.

Contractor means a person, partnership, corporation, or other legal entity who undertakes to construct, install, alter, move, remove, trim, demolish, repair, replace, excavate, or add to any improvements or public improvements covered by this Manual, that requires work to be undertaken and workers, and/or equipment to be in the ROW in the process of performing the above-named operations. Contractor, as the term is defined herein, should include any and all types of general contractor and subcontractor and successors or assigns of said contractor.

Decorative pole means a streetlight pole specially designed and placed for aesthetic purposes and on which no appurtenances or attachments, other than specially designed informational or directional signage or temporary holiday or special event attachments, have been placed or are permitted to be placed according to nondiscriminatory municipal codes.

Design District means an area that is zoned, or otherwise designated by municipal code, and for which the city maintains and enforces unique design and aesthetic standards on a uniform and nondiscriminatory basis.

Director means the Director of the City's Public Works Department or the City's Engineering Department, or his or her respective designated representative.

Disaster emergency or *disaster* or *emergency* means an imminent, impending, or actual natural or humanly induced situation wherein the health, safety, or welfare of the residents of the city is threatened, and includes, but is not limited to any declaration of emergency by city state or federal governmental authorities.

Distribute Antenna System (DAS) A type of small wireless facility consisting of a network of spatially separated antenna nodes connected to a common source via a transport medium that provides wireless service within a geographic area. Generally, serves multiple carriers. Shall be included as a type of "Network Node."

Duct or *conduit* means a single enclosed raceway for cables, fiber optics, or other wires. "Duct" or "conduit" shall not include the maintenance duct associated with a conduit that is reserved for use in replacing damaged cable or for rerouting purposes.

Easement means and shall include any public easement or other compatible use created by dedication, or by other means, to the city for public utility purposes or any other purpose whatsoever provided that the use of such public easement or other compatible use is not limited or restricted in its scope and duration. "Easement" shall also include a private easement used for the provision of utilities to the extent only that the applicant acquires or obtains permission to use such private easement.

Effectively Screen aesthetically pleasing construction meant to conceal small wireless facility equipment. Shall be required where needed to improve the aesthetics of the local environment.

Eligible facilities request means any request for modification of an existing tower or base station that does not substantially change the physical dimensions of such tower or base station, involving: (i) Collocation of new transmission equipment; (ii) Removal of transmission equipment; or (iii) Replacement of transmission equipment.

Equipment Concealed Whenever technically feasible, antennas, cabling, and equipment shall be fully concealed within a Pole, or otherwise camouflaged to appear to be an integrated part of a Pole.

Excavation or *Excavate* means any opening and/or tunneling in or under the surface of any public place or public rights-of-way in the City. The exception is an opening into a lawful structure below the surface

of a public place or public right-of-way (e.g., a manhole), the top of which is flush with the adjoining surface and so constructed as to allow frequent openings without injury or damage to the public place or public rights-of-way.

Facility(ies) means the plant, equipment, and property, including, but not limited to, lines, transport service, poles, mains, pipes, conduits, ducts, cables and wires located under, on or above the surface of the ground within the public right-of-way and valves, and related facilities and equipment used or useful for the provision of utility services, wireless or network services, or communications services to the public.

Federal Communications Commission or FCC means the Federal Administrative Agency, or lawful successor, authorized to oversee cable television and other multi-channel regulation on a national level.

Height means maximum height of the small wireless facility, including antenna, above established grade measured at the base of the structure

Highway right-of-way means right-of-way adjacent to a state or federal highway.

Historic district means an area that is zoned or otherwise designated as a historic district under municipal, state, or federal law.

Indemnification means that any provider who owns or operates network nodes, node support poles, or transport facilities in the ROW shall indemnify, protect, defend, and hold the City and its elected officials, officers, employees, agents, and volunteers harmless against any and all claims, lawsuits, judgments, costs, liens, losses, expenses, fees to include reasonable attorney fees and costs of defense, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including personal or bodily injury or death, property damage or other harm for which recovery of damages is sought, to the extent that it is caused by the negligence of the Operator who owns or operates Small Wireless Facilities and wireless service in the ROW, any agent, officer, director, representative, employee, affiliate, or subcontractor of the Operator, or their respective officers, agents, employees, directors, or representatives while installing, repairing, or maintaining facilities in the rights-of-Way.

Inspector means the person designated by the City to fulfill the responsibilities that have been empowered with such position.

Landscape means any combination of living plant material, such as trees, shrubs, vines, ground covers, flowers, vegetables, turf or grass; natural features, such as land and water forms; and structural features, including but not limited to landscaped pedestrian plazas, fountains, reflecting pools, screening, walls, fences and benches.

Landscape Screening The installation at grade of plantings, shrubbery, bushes or other foliage intended to screen the base of a small wireless facility from public view.

Lattice Tower an antenna support tower that is self-supporting with multiple legs and cross-bracing of structural steel.

Law means common law or a federal, state, or local law, statute, code, rule, regulation, order, or ordinance.

Local means within the geographical boundaries of the City.

Location means the City approved and lawfully permitted location for the Network Node.

Macro tower means a guyed or self-supported pole or monopole greater than the height parameters prescribed by Section 90-309 of the McKinney Code and that supports or is capable of supporting antennas.

McKinney Code means the Code of Ordinances, City of McKinney, Texas.

Mayor means the Mayor for the City.

Micro network node means a network node that is not larger in dimension than 24 inches in length, 15 inches in width, and 12 inches in height, and that has an exterior antenna, if any, not longer than 11 inches.

Monopole a structure composed of a single spire, pole or tower designed and used to support network node antennas or related equipment. Provisions addressed to node support poles herein shall also apply to monopoles.

Municipally owned utility pole means a utility pole owned or operated by a municipally owned utility, as defined by Section 11.003, Utilities Code, and located in a public right-of-way.

Network node means equipment at a fixed location that enables wireless communications between user equipment and a communications network. The term:

- (A) includes:
 - i. equipment associated with wireless communications;
 - ii. a radio transceiver, an antenna, a battery-only backup power supply, and comparable equipment, regardless of technological configuration; and
 - iii. coaxial or fiber-optic cable that is immediately adjacent to and directly associated with a particular collocation; and
- (B) does not include:
 - i. an electric generator;
 - ii. a pole; or
 - iii. a macro tower.

Network provider means:

- (A) a wireless service provider; or
- (B) a person that does not provide wireless services and that is not an electric utility but builds or installs on behalf of a wireless service provider:
 - i. network nodes; or
 - ii. node support poles or any other structure that supports or is capable of supporting a network node.

Node support pole means a pole or *monopole* installed by a network provider for the primary purpose of supporting a network node.

Order means the FCC’s Declaratory Ruling and Third Report and Order, WT Docket No. 17-79, WC Docket No. 17-84, FCC-18-133, released September 27, 2018, which is incorporated herein by this reference.

Park means an area that is zoned or otherwise designated by the City’s Parks Department and/or the City’s Parks Master Plan as a public park, trail, or open space for the purposes of both passive and recreational activities.

Permit means a written authorization for the use of the public right-of-way or collocation on a service pole required from a municipality before a network provider may perform an action or initiate, continue, or complete a project over which the municipality has police power authority.

Person means an individual, corporation, company, public service provider, public infrastructure contractor or its representative, permittee, governmental entity, limited liability company, joint venture, business trust, estate, partnership, association, trust, or other legal entity or organization.

Pole means a service pole, municipally owned utility pole, node support pole, or utility pole.

Policy means the City’s Small Wireless Facility Siting ordinance, which is Chapter 90, Article V (Small Wireless Facilities) of the McKinney Code, as amended, and is incorporated herein by this reference.

Private easement means an easement or other real property right that is only for the benefit of the grantor and grantee and their successors and assigns.

Provider has the same meaning as “Network Provider.”

Public right-of-way means the area on, below, or above a public roadway, highway, street, public sidewalk, alley, waterway, or utility easement in which the municipality has an interest. The term does not include:

- (A) a private easement; or

(B) the airwaves above a public right-of-way with regard to wireless telecommunications.

Regional Employment Center (REC) means an overlay district that has design standards and guidelines to allow for the development of fully integrated pedestrian-oriented neighborhoods, corridors and districts with the intent to minimize traffic congestion, relative infrastructure costs, and environmental degradation while improving quality of life and promoting the health, safety and welfare of neighborhood communities.

Rights-of-way use and management ordinance means the City ordinance that establishes the rules and regulations regarding the orderly use of the public right-of-way within the geographical limits of the city, which is found in Chapter 90, Article IV (Rights-of-Way Use and Management) of the McKinney Code, as amended, and is incorporated herein by this reference.

Routine Maintenance means:

- (A) work in the public right-of-way that does not require excavation or closing of sidewalks or vehicular lanes in a public right-of-way;
- (B) replacing or upgrading a network node or pole with a node or pole that is substantially similar in size or smaller and that does not require excavation or closing of sidewalks or vehicular lanes in a public right-of-way; or
- (C) the installation, placement, maintenance, operation, or replacement of micro network nodes that are strung on cables between existing poles or node support poles, in the public right-of-way and that does not require excavation or closing of sidewalks or vehicular lanes in a public right-of-way.

Service pole means a pole, other than a municipally owned utility pole, owned or operated by a municipality and located in a public right-of-way, including:

- (A) a pole that supports traffic control functions;
- (B) a structure for signage;
- (C) a pole that supports lighting, other than a decorative pole; and
- (D) a pole or similar structure owned or operated by a municipality and supporting only network nodes.

Signage is prohibited on all network nodes and node support poles, including stickers, logos, and other non-essential graphics and information unless required by the FCC, except for a small placard identifying the service provider and contact information, which shall be placed at 6-feet above grade, facing away from the public rights-of-way.

Small cell or small wireless facility means a facility meeting all of the following criteria:

- (A) facilities mounted on structures 55 feet or less in height including their antennas, or on structures no more than 10 percent taller than other immediately adjacent structures, or that do not extend existing structures where they are located to a height of more than 55 feet or by more than 10 percent, whichever height is greater;
- (B) each antenna is no more than 3 cubic feet in volume;
- (C) all other wireless equipment associated with the structure, including wireless equipment associated with the antenna and any pre-existing associate equipment on the structure is no more than 28 cubic feet in volume; and
- (D) facilities do not result in human exposure to radio frequency radiation in excess of applicable safety standards specified in 47 CFR Rule 1.1307(b).

Unless specifically provided for herein, provisions addressed to network nodes herein shall also apply to small cells and small wireless facilities.

(E) It is not the intent of this definition to violate any section of Chapter 284 or the FCC Order.

Stealth shall mean a method that hides or conceals an antenna, supporting electrical or mechanical equipment or any other support structure, including network nodes.

Street means only the paved portion of the right-of-way used for vehicular travel, being the area between the inside of the curb to the inside of the opposite curb, or the area between the two parallel edges of the paved roadway for vehicular travel where there is no curb. A “Street” is generally part of, but smaller in width than the width of the entire right-of-way, while a right-of-way may include sidewalks and utility easements, a “Street” does not. A “street” does not include the curb or the sidewalk, if either are present at the time of a permit application or if added later.

Substitution pole means a Pole that is installed to replace an existing municipal or utility Pole that serves the intended purpose of the original Pole and in addition supports the new network node. Subject to the following conditions a Provider may elect to remove an existing Pole and replace it with a similar Pole (with some modification), at the Provider’s sole cost and expense, that serves as a new network node in addition to serving the original purpose if:

- (A) the Provider has first obtained written permission from the original Pole owner to place a Network node on the pole;
- (B) the Provider has obtained written permission from the original Pole owner to replace the existing Pole with a Substitution Pole;
- (C) the Substitution Pole is acceptable to the original Pole owner and complies with all City requirements;
- (D) the Substitution Pole becomes the personal property or business property of the original Pole owner; and
- (E) the Substitution Pole and any appurtenant facilities thereto are constructed and installed in strict accordance with the requirements of the McKinney Code, including this Design Manual; Chapter 90, Article V (Small Wireless Facilities) of the McKinney Code; Chapter 90, Article IV (Rights-of-Way Use and Management) of the McKinney Code; and any other applicable local, state or federal laws, ordinances, codes, rules and regulations.

SWPPP shall mean Storm Water Pollution Prevention Plan.

TAS means Texas Accessibility Standards.

TMUTCD means the most current version of the Texas Manual of Uniform Traffic Control Devices.

Tower means any structure built for the sole or primary purpose of supporting any FCC-licensed or authorized antennas and their associated facilities, including structures that are constructed for wireless communications services including, but not limited to, private, broadcast, and public safety services, as well as unlicensed wireless services and fixed wireless services such as microwave backhaul, and the associated site.

Traffic Signal means any device, whether electrically or mechanically operated by which traffic is alternately directed to stop and to proceed.

Transport facility means each transmission path physically within a public right-of-way, extending with a physical line from a network node directly to the network, for the purpose of providing backhaul for network nodes.

TxDOT means the Texas Department of Transportation.

Underground Requirement Area shall mean means an area where poles, overhead wires, and associated overhead or above ground structures have been removed and buried or have been approved for burial underground pursuant to municipal ordinances, zoning regulations, state law, private deed restrictions, and other public or private restrictions, that prohibit installing aboveground structures in a public right-of-way.

User means a person or organization which conducts a business over facilities occupying the whole or a part of a public street or right-of-way, depending on the context.

Utility pole means a pole that provides:

- (A) electric distribution with a voltage rating of not more than 34.5 kilovolts; or

(B) services of a “telecommunications provider,” as defined by [Section 51.002, Texas Utilities Code](#).

Wireless service means any service, using licensed or unlicensed wireless spectrum, including the use of Wi-Fi, whether at a fixed location or mobile, provided to the public using a network node.

Wireless service provider means a person that provides wireless service to the public.

Wireless facilities mean “Micro Network Nodes,” “Network Nodes,” and “Node Support Poles”.

DRAFT

SECTION 3. LOCATIONS OF SWF AND RELATED GROUND EQUIPMENT

3.1 Prohibited or Restricted Areas

The following are prohibited or restricted areas for certain wireless facilities, except with a separate City agreement or are subject to concealment conditions.

3.1.1 Parks and Residential Areas

1. A Network Provider may not install a Node Support Pole in a public right-of-way without the City's discretionary, nondiscriminatory, and written consent of the Director of the City Department of Public Works or the City Department of Engineering, or his or her respective designated representative, if the public right-of-way is in a public park or is adjacent to a street or thoroughfare that is:
 - a. not more than 50 feet wide of paved street surface, being the area measured as the shortest distance between the inside of the curb to the inside of the opposite curb, or the area measured as the shortest distance between the two parallel edges of the paved roadway for vehicular travel where there is no curb; and
 - b. adjacent to single-family residential lots or other multifamily residences or undeveloped land that is designated for residential use by zoning or deed restrictions.
2. A Network Provider installing a Network Node or Node Support Pole in a public right-of-way described above shall comply with private deed restrictions and other private restrictions in the area that apply to those facilities.
3. It is specifically understood and agreed that a network provider generally is not allowed or authorized to install network nodes in public parks.

3.1.2 Historic District, Design District, and Regional Employment Center

1. A Network Provider must obtain advance written approval from the City before collocating Network Nodes or installing Node Support Poles in a Design District with Decorative Poles or in an area of the City zoned or otherwise designated as a Historic District, Design District, or Regional Employment Center.
2. As a condition for approval of Network Nodes or Node Support Poles in Historic District, Design District, or Regional Employment Center, the City shall require reasonable design or Concealment measures for the Network Nodes or Node Support Poles. Therefore, any request for installations in a Historic District, Design District, or Regional Employment Center, must be accompanied with proposed Concealment measures in the permit applications.
3. The City requires that a Network Provider use Camouflage measures to improve the aesthetics of the Network Nodes, Node Support Poles, or related ground equipment, or any portion of the nodes, poles, or equipment, to minimize the impact to the aesthetics in Historic District, Design District, or Regional Employment Center.
4. Network Provider shall comply with and observe all applicable City, State, and federal historic preservation laws and requirements.
5. Each permit application shall disclose if it is within a Design District with Decorative Poles or in an area of the City zoned or otherwise designated as a Historic District, Design District, or Regional Employment Center.

3.1.3 Historic Landmarks

A Network Provider is prohibited from installing a Network Node or Node Support Pole within 300 feet of a historic site or structure or Historic Landmark recognized by the City, state or federal government, as of the date of the submission of the permit. Each permit application must disclose if it is with 300 feet of such a structure.

3.1.4 Compliance with Undergrounding Requirements

1. A Network Provider shall comply with nondiscriminatory undergrounding requirements, including municipal ordinances, zoning regulations, state law, private deed restrictions, and other public or private restrictions, that prohibit installing aboveground structures in a public right-of-way without first obtaining zoning or land use approval.
2. Areas may be designated from time to time by the City as Underground Requirement Areas in accordance with filed plats, and or conversions of overhead to underground areas, as may be allowed by law.
3. Each permit application shall disclose if it is within an area that has undergrounding requirements.

3.1.5 Location of a SWF

Location of a wireless facility must receive written consent from the City prior to installation. If a provider fails to remove any unauthorized wireless facility or any wireless facility that is located in an improper location within the earlier of thirty (30) days after receiving written notice from the City or the date required by the City, the Provider shall be subject to a penalty of \$500.00 per day until the wireless facility is removed or relocated to the correct area within the permitted location, regardless of whether the Provider's contractor, subcontractor, or vendor installed the wireless facility in strict conformity with Chapter 90, Article V (Small Wireless Facility) of the McKinney Code or other applicable Laws concerning improperly located facilities in the public right-of-way.

3.2 Least preferable locations

3.2.1 Residential Areas and Parks

1. A Network Provider is prohibited from installing a Network Node on an existing pole in a public right-of-way without written consent from the City Council if the public right-of-way is located in or adjacent to a street or thoroughfare that is adjacent to a public park or single-family residential lots or other multifamily residences or undeveloped land that is designated for residential use by zoning or deed restrictions.
2. A Network Provider installing a Network Node or a Node Support Pole in a public right-of-way shall comply with private deed restrictions and other private restrictions in the area that apply to those facilities.

3.2.2 Historic District, Design District, and Regional Employment Center

A Network Provider is prohibited from installing a Network Node or a Node Support Pole in the public right-of-way in any area designated by the City as a Historic District, a Design District, or a Regional Employment Center unless such a Network Node or a new Node Support Pole is camouflaged.

3.3 Most preferable locations

1. *Industrial areas* if not adjacent to a public park, Residential area, Historic District or Design District.
2. *Highway Rights-of-Way areas* if not adjacent to a public park, Residential area, Historic District or Design District.
3. *Retail and Commercial areas* if not adjacent to a public park, Residential area, Historic District or Design District.

3.4 Designated Areas

1. The City Council may designate an area as a Historic District, a Design District, or a Regional Employment Center at any time.
2. Currently designated *Historic Districts* and *Regional Employment Centers* are:

- a. Historic District Number 1 (which numeric designation is for purposes of this Design Manual) is the area referred to as the Historic Neighborhood Improvement Zone. Its boundaries are identified in **Appendix A** attached hereto and incorporated herein by reference for all purposes allowed by law.
 - b. Historic District Number 2 (which numeric designation is for purposes of this Design Manual) is the area referred to as the Historic Residential and Commercial Historic Districts. Its boundaries are identified in **Appendix B** attached hereto and incorporated herein by reference for all purposes allowed by law.
 - c. Historic District Number 3 (which numeric designation is for purposes of this Design Manual) is the area referred to as the Cotton Compress Historic District. Its boundaries are identified in **Appendix C** attached hereto and incorporated herein by reference for all purposes allowed by law.
 - d. Historic District Number 4 (which numeric designation is for purposes of this Design Manual) is the area referred to as the Cotton Mill Historic District. Its boundaries are identified in **Appendix D** attached hereto and incorporated herein by reference for all purposes allowed by law.
 - e. Historic District Number 5 (which numeric designation is for purposes of this Design Manual) is the area referred to as the Flour Mill Historic District. Its boundaries are identified in **Appendix E** attached hereto and incorporated herein by reference for all purposes allowed by law.
 - f. Regional Employment Center is an area that includes all the properties that extend generally from the centerline of State Highway 121 northward to FM 720 and including some properties north of FM 720. This district spans from FM 2478 (Custer Road) to U.S. Highway 75. Its boundaries are identified in **Appendix F** attached hereto and incorporated herein by reference for all purposes allowed by law.
3. The failure to designate an area in this Chapter shall not mean that such an area is not within a defined district, if so designated by the City Council. Future areas may be designated as one of these Districts at any time. Such a designation does not require a zoning case.
 4. While it is not required to designate Underground Compliance Areas to prohibit above ground Wireless facilities, the City may also, from time to time, also designate Underground Compliance Areas.

3.5 Exceptions

The City by its discretionary consent and agreement may grant exception to the above prohibited locations and sizes, but only in a non-exclusive, and non-discriminatory manner.

3.6 Order of Preference

In general, network nodes and related ground equipment shall be installed on support facilities as follows (Most Preferred to Least Preferred):

1. *Existing telephone or electrical lines between existing utility poles.* Micro Network Nodes shall only be lashed on existing telephone or electrical lines between existing utility poles (electric poles or telephones poles), with notice to the pole owner as required by the Federal Pole Attachment Act, and not placed on Utility Poles, Node Support Poles or Service Poles.
2. *Existing Utility Poles* (electric poles or telephones poles), shall be the preferred support facility for Network Nodes and related ground equipment.
3. *Municipal Service Poles:*
 - a. *Non-decorative street lights* with a height of more than 20 feet.

- b. *Traffic signal structures* when such installation will not interfere with the integrity of the facility and will not interfere with the safety of the public.
 - c. *Street signage* shall be a low priority use for attachment of a Network Node.
 - d. *Other municipal Service pole* use is discouraged.
4. *New node support poles* or monopoles shall be the least preferred type of allowed facility for attachment of Network Nodes.
5. *Ground Equipment.* Ground equipment should be minimal and the least intrusive.

DRAFT

SECTION 4. GUIDELINES ON PLACEMENT

4.1 Generally

A Network Provider shall construct and maintain Network Nodes and Node Support Poles in a manner that does not:

1. obstruct, impede, or hinder the usual travel or public safety on a public right-of-way;
2. obstruct the legal use of a public right-of-way by other utility providers;
3. violate nondiscriminatory applicable codes;
4. violate or conflict with any Laws, including but not limited to City Code and the Federal Americans with Disabilities Act (ADA) ([42 U.S.C. Section 12101 et seq.](#)).

4.2 Permitting

4.2.1 Right-of-way Permit

Prior to installation or modification of Wireless Facilities, Provider shall complete and submit to the City a Right-of-Way Permit application. Along with standard required documents, the following items will be required for the Right-of-Way Permit application:

1. *Permit fee.* The Provider shall submit the permit fee as set forth in Section 90-307 of City Code.
2. *Map.* Aerial Map showing the location of the proposed or existing pole to which the network node is proposed to be attached, and a street view image.
3. *GIS Data.* Geographic Information System (GIS) data for the location of each proposed wireless facility or node support pole in the format acceptable to the City;
4. *Distance Analysis.* Analysis showing that the proposed new node support pole is spaced at least three hundred (300) linear feet from another existing pole that is capable of supporting Wireless Facilities along the proposed location, unless otherwise approved by the City in writing.
5. *Size Limits.* The Provider shall provide scaled dimensioned drawings in an electronic form and format acceptable to the City or pictures with calculations to show strict conformity to the size limitations, as specified in Section 2 of this Manual, regarding the size of a Micro Network Node, size of Network Nodes, and, maximum pole height, with each application and with each request for a permit for each location. The drawings or pictures shall indicate the spacing from existing curb, driveways, sidewalk, light poles, and any other poles or appurtenances. This shall include a before-and-after street view image. The after-image needs to include the proposed pole and all proposed attachments and associated standalone equipment.
6. *Emergency Contacts.* The names and telephone numbers of at least two (2) persons serving as emergency contacts for the Provider who can be reached by telephone twenty-four (24) hours a day, seven (7) days a week, in the event of an emergency
7. *Engineering Drawings.* Scaled dimensional construction and engineering drawings indicating the current public right-of-way line and showing any proposed underground conduit and equipment and its spacing from the City's existing utility facilities. Such drawings shall also include a sectional profile of the public right-of-way and identify all existing and proposed utilities and utility conflicts.
8. *Traffic Control/Storm Water Pollution Prevention/Trench Safety.* Where required by the City or other applicable entity (e.g.: TxDot, etc.), based on the proposed scope of work, Provider shall submit a traffic control plan, storm water pollution prevention plan, and/or trench safety plan.
9. *State and Federal Rights-of-way permit.* If the project lies within a Highway Right-of-Way, the applicant must provide evidence of a permit from the State or Federal Government.
10. *Confirmation of non-interference with City Safety Communication Networks.*

- a. The Network Provider needs to provide analysis that the proposed network node shall not cause any interference with City public safety radio system, traffic signal light system, or other city safety communications components, and City SCADA systems.
 - b. It shall be the responsibility of the Network Provider to evaluate, prior to making application for permit, the compatibility between the existing City infrastructure and Provider's proposed Network Node. A Network Node shall not be installed in a location that causes any interference. Network Nodes shall not be allowed on City's public safety radio infrastructure.
11. *Daily Work Information.* If the work proposed in the Right-of-Way Permit application involves more than five hundred feet (500') of continuous trenching or boring or the installation of more than three (3) new node support poles or more than three (3) electrical meter pedestals or ground boxes, then the Provider shall submit daily work location information, before work can begin.
 12. *Locates.* Upon approval of the permit, the Provider shall call for Utility locates. Prior to construction, the Provider shall obtain Utility locates by contacting the Texas 811 System at 1-800-344-8377 or online at <https://www.texas811.org/> . The following divisions within the City of McKinney are members of the Texas 811 System: Water Distribution, Wastewater Collection, Department of Public Works, Streetlights, and Signal Lights/Warning Flashers. The following divisions within the City of McKinney are not members of the Texas 811 System: Information Technology. The Provider must contact the City's IT division to provide the location of any IT infrastructure prior to beginning construction. The IT division can be contacted by calling 972-547-7599 or sending email to contact-informationstechnology@mckinneytexas.org .
 13. *Damage.* Network Provider shall repair any damage to any utility infrastructure or any facilities located within the Right-of-Way, and the property of any third party resulting from the Provider's construction activities (or any other of Network Provider's activities hereunder), at Network Provider's sole cost and expense, including restoration of the Right-of-Way and such property to substantially the same condition as it was immediately before the date Network Provider was granted a Permit for the applicable Location or did the work at such Location (even if Network Provider did not first obtain a Permit). Such repair, restoration and replacement shall be subject to the sole, reasonable approval of the City Manager or their designee.

4.2.2 Electrical Permit

1. Provider shall be responsible for obtaining any required electrical power service to the Micro Network Node, Network Node facilities, Node Support Poles and ground equipment. Provider's electrical supply shall be separately metered from the City and must match City infrastructure voltage.
2. Provider shall provide City with the electrical permit and provide sealed engineering drawings for the electrical service providing power to the proposed network node, which drawings must include the conduit size, circuit size, calculations for amperage, and distances running.
3. The City shall not be liable to the Network Provider for any stoppages or shortages of electrical power furnished to the Micro Network Node, Network Node facilities, Node Support Poles or ground equipment, including without limitation, stoppages or shortages caused by any act, omission, or requirement of the public utility serving the structure or the act or omission of any other tenant or Network Provider of the structure, or for any other cause beyond the control of the City. The City is also entitled to disconnect power to the network node or other wireless facilities in emergency situations without incurring any liability to the Network Provider.
4. Network Provider shall not allow or install generators or back-up generators in the Right-of-Way.
5. The electrical meter shall not be mounted on City's poles or structures. Provider shall use 240 voltage when connecting to any City infrastructure and provide key to meter upon inspection.

4.3 Installation of Transport Facilities

A Provider shall not install or modify a new transport facility within the public right-of-way without first obtaining a Right-of-Way Permit from the City. Before beginning excavation in any public right-of-way, Provider shall be responsible for complying with all laws relating to verifying the location of existing utility lines and facilities and avoiding encroachment thereon, including the requirements of Chapter 90, Article V (Small Wireless Facilities) of the McKinney Code and Chapter 90, Article IV (Rights-of-Way Use and Management) of the McKinney Code.

4.4 Improperly Located SWFs and related ground equipment

1. Improperly Located Network Node facilities, Node Support Poles and related ground equipment shall not impede pedestrian or vehicular traffic in the Right-of-Way. If any Network Node facilities, Node Support Poles or ground equipment is installed in a location that is not in accordance with the plans approved by the City Manager and impedes pedestrian or vehicular traffic or does not comply or otherwise renders the Right-of-Way non-compliant with applicable Laws, including the American Disabilities Act, then Network Provider shall promptly remove the Network Node facilities, Node Support Poles or ground equipment.
2. Notice to Remove unauthorized facilities and relocate and penalty: After 30 days' notice to remove of Network Node facilities, Node Support Poles or ground equipment that is located in the incorrect permitted location, if not relocated the Network Provider shall be subject to a penalty, as per City Code, per day until the Network Node facilities, Node Support Poles or ground equipment is relocated to the correct area within the permitted Location, regardless of whether or not the Network Provider's contractor, subcontractor, or vendor installed the Network Node facilities, Node Support Poles or ground equipment in strict conformity with the City Code, and other applicable ordinances concerning improperly located facilities in the rights-of-way.

4.5 Underground Requirement Areas

1. A Network Provider shall, in relation to installation for which the City approved a permit application, comply with nondiscriminatory undergrounding requirements, including municipal ordinances, zoning regulations, state law, private deed restrictions, and other public or private restrictions, that prohibit installing aboveground structures in a public right-of-way without first obtaining zoning or land use approval.
2. If a location is designated by the City to transits to be an Underground Requirement Area, then a Network Provider's permit for the location of the Micro Network Node, Network Node, Node Support Pole, and related ground equipment at such location will be revoked 90 days after the designation, with removal of said the Micro Network Node, Network Node, Node Support Pole, and related ground equipment at such location within 90 days of such designation, or as otherwise reasonably allowed by the City for the transition of other overhead facilities.

4.6 Network Node facilities placement

1. *Right-of-Way:* Network Node facilities, Node Support Poles and related ground equipment shall be placed to comply with the Clear Zone requirements as described in the most recent edition of AASHTO's *Roadside Design Guide*. These specifications generally state that when there is curb and gutter there should be a four-foot clear zone on straightaways and a six-foot clear zone on curves. The placement of these facilities on roads that do not have curb and gutter, need to comply with the Clear Zone requirements in the *Roadside Design Guide*. All facilities must comply with all applicable state and federal requirements, including the Americans with Disabilities Act and must not create a visibility or accessibility issue as finally configured. No components may obstruct any signage or signals. All components must be positioned as to assure that all intersection and driveway visibility requirements are maintained.
2. *Height above ground.* Network Node attachments to a pole shall be installed at least twelve (12) feet above the ground, and if a Network Node attachment is projecting toward the street, for the

safety and protection of the public and vehicular traffic, the attachment shall be installed no less than sixteen (16) feet above the ground.

3. *Protrusions.* No protrusion from the outer circumference of the existing structure or pole shall be more than two (2) feet.
4. *Number of Network Nodes per Site.* The City encourages the collocation of more than one Network Node on any one Pole (see **Appendix G** for a multi-node monopole design).

4.7 New Node Support Poles or Monopoles

1. *New Node Support Poles Spacing.* New node support poles or monopoles shall be spaced apart from existing utility poles or Node Support poles at the same as the spacing between utility poles in the immediate proximity, but no less than at a minimum 300 feet from a utility pole or another Node Support Pole to minimize the hazard of poles adjacent to road ways and to minimize effect on property values and aesthetics on the area. New node supports poles shall be designed as Monopoles, consistent with the pole designs concepts detailed in **Appendix G**.
2. *Height of Node Support Poles or modified Utility Pole.* A Node support pole or modified Utility Pole may not exceed the lesser of:
 - a. 10 feet in height above the tallest existing utility pole located within 500 linear feet of the new pole in the same public right-of-way; or
 - b. 55 feet above ground level, as per the City.
3. *Size and Height of New Wireless Facilities.* New Wireless Facilities in the right-of-way should be no greater than the maximum size and height of any other Utility Poles in the immediate proximity.
4. *Style and Color.* All new Node Support Poles shall match existing poles found in the immediate proximity in style and color.
5. *Wooden poles are prohibited.* All new poles and substitution poles are required to be breakaway, as long as the breakaway pole(s) requested is under 992lbs as described in Section 12-6 of AASHTO's *Load and Resistance Factor Design (LRFD) Structural Supports for Highway Signs, Luminaires, and Traffic Signal* manual, and shall match the existing poles adjacent to the proposed installation area(s). All attachments for the network nodes shall also match the color of the node support pole. All node support poles shall match the existing poles in the surrounding block or district in which the node support pole is located in order to blend into the surrounding environment and be visually unobtrusive. City reserves the right to deny a certain type of pole due to its differences.

4.8 Ground Equipment

1. *Ground Equipment near street corners and intersections:* Ground equipment should be minimal and the least intrusive. To minimize any obstruction, impediment, or hindrance to the usual travel or public safety on a Public right-of-way the maximum line of sight required to add to safe travel of vehicular and pedestrian traffic and in order to maximize that line of sight at Street corners and intersections and to minimize hazards at those locations, ground equipment shall be installed outside of visibility/sight triangles. The placement of ground equipment must comply with all applicable state and federal requirements, including the Americans with Disabilities Act and must not create a visibility or accessibility issue as finally configured. No ground equipment may obstruct any signage or signals. All ground equipment must be positioned as to assure that all intersection and driveway visibility requirements are maintained. Ground equipment should be neutral color, and of material compatible with the surrounding structures as determined by the City staff.
2. *Ground Equipment near public parks.* For the safety of public park patrons, particularly small children, and to allow full line of sights near public park property, the Network Provider shall not install Ground Equipment in a Right-of-Way that is within a park or within 250 feet of the boundary line of a park, unless approved by the City Manager in writing.

3. *Minimize Ground equipment density:* To enhance the safety requirements of line of sight of pedestrians, particularly small children, the City's designee may deny a request for a proposed Location if the Network Provider installs Network Node ground equipment where existing ground equipment within 300 feet already occupies a footprint of 25 sq. ft. or more.

4.9 Municipal Service Poles

1. Prior to installation, modification, or relocation of a network node on an existing pole or structure or modification or relocation of an existing node support pole, Provider will submit construction and engineering drawings prepared by a professional engineer licensed in the State of Texas, and for wireless facilities proposed to be attached to a service pole, a decorative pole or other City-owned or -controlled structure, a certification from the engineer that the existing pole or structure and its foundations have sufficient structural stability to support the proposed network node and can bear the wind load without pole modification, or in the event the installation will require pole re-enforcement, that such re-enforced pole will have sufficient structural stability to support the proposed network node and can bear the wind load without further pole modification. Such construction and engineering drawings must also address the design of the connection of any item to the pole. If pole re-enforcement is necessary, Provider shall provide construction and engineering drawings for the proposed alteration to the existing pole. Any re-enforcement or replacement of a pole shall match the color of the existing pole. Any pole re-enforcement or replacement shall be at Provider's sole cost.
2. *In accordance with Agreement:* Installations on all Service Poles shall be in accordance with a written agreement with the owner of the Service Pole (City, etc.).
3. *Required industry standard pole load analysis:* Installations on all Service Poles shall have an industry standard pole load analysis completed and submitted to the municipality with each permit application indicating that the Service Pole to which the Network Node is to be attached will safely support the load.
4. *Height of attachments:* All attachments on all Service Poles shall be at least 12 feet above grade, and if a Network Node attachment is projecting toward the street, for the safety and protection of the public and vehicular traffic, the attachment shall be installed no less than sixteen (16) feet above the ground.
5. *Installations on Traffic Signals:* Installations on all Traffic signal structures must not interfere with the integrity of the facility in any way that may compromise the safety of the public and must be in accordance with a written agreement with the owner of the traffic signal structure (City, etc.). Installation of Network Node facilities on any traffic signal structures shall:
 - a. Be encased in a separate conduit than the traffic light electronics;
 - b. Have a separate electric power connection than the traffic signal structure; and
 - c. Have a separate access point than the traffic signal structure; and
 - d. Not be attached to signal arms.
6. *Installations on Street signage:* Installations on all street signage structures must not interfere with the integrity of the facility in any way that may compromise the safety of the public. Installation of Network Node facilities on any street signage structures that has electrics shall:
 - a. Be encased in a separate conduit than any City signage electronics;
 - b. Have a separate electric power connection than the signage structure; and
 - c. Have a separate access point than the signage structure.

4.10 Noise.

Network Providers are required to incorporate ambient noise suppression measures and/or required to place the equipment in locations less likely to impact adjacent residences or businesses to ensure compliance with all applicable noise regulations. The maximum allowable noise emitted by the Small Wireless Facility shall not exceed 30 dB measured at a distance of 3 feet from any portion of the facility.

4.11 Photo Simulations

Network Providers are required to provide the specific address, and GPS coordinates for all facilities that will be located on a pole. Addresses are determined by the City. The Provider shall provide a dated aerial photograph of the overall site depicting the site's relation to major streets and highways and poles. For any Provider requesting a new pole, photos are required showing the before and after conditions.

DRAFT

SECTION 5. GENERAL AESTHETIC REQUIREMENTS

5.1 Concealment

1. Concealment of Network Nodes and Node support poles shall be required by the City in Design Districts with Decorative Poles and in Historic Districts.
2. It is also the City's preference that all new node support poles be camouflaged, except those located in an area zoned or predominantly industrial area. Providers shall submit their proposal for camouflage with the permit application. Monopoles pole design concepts, as shown in **Appendix G**, are encouraged.
3. The Network Node facilities shall be concealed or enclosed as much as possible in an equipment box, cabinet, or other unit that may include ventilation openings. External cables and wires hanging off a pole shall be sheathed or enclosed in a conduit, so that wires are protected and not visible or visually minimized to the extent possible.

5.2 New Node Support Pole Spacing

New node support poles shall be at a minimum 300 feet from a utility pole or another Node Support Pole to minimize the hazard of poles adjacent to road ways and to minimize effect on property values and aesthetics on the area.

5.3 Minimize Ground Equipment Concentration

In order to minimize negative visual impact to the surrounding area, and to enhance the safety requirements of line of sight of pedestrians, particularly small children, the City's designee may deny a request for a proposed Location if the Network Provider installs Network Node ground equipment where existing ground equipment within 300 feet already occupies a footprint of 25 sq. ft. or more to minimize effect on property values and aesthetics on the area.

5.4 Allowed Colors

Colors in Historic Districts and Design Districts must be approved by the City Manager. Unless otherwise provided, all colors shall match the background of any structure the facilities are located upon and all efforts shall be made for the colors to be inconspicuous, unless otherwise approved by the City Manager. Colors in areas other than in Historic Districts and Design Districts shall conform to colors of other installations of telecommunication providers in the immediately adjacent areas.

SECTION 6. INSTALLATION AND INSPECTION

6.1 Installation

Provider shall, at its own cost and expense, install the micro network node, network node facilities, node support poles and related ground equipment in a good and workmanlike manner and in strict accordance with the requirements promulgated by the Small Wireless Facilities Design Manual, “Small Wireless Facilities” article, “Right-of-Way Use and Management” article, Public Right-of-Way Permitting and Construction Manual and all other applicable laws, ordinances, codes, rules and regulations of the City, the state, and the United States (“Laws”), as such may be amended from time to time. Provider’s work shall be subject to the regulation, control and direction of the City.

All work done in connection with the installation, operation, maintenance, repair, modification, and/or replacement of the Micro Network Node, Network Node facilities, Node Support Poles and related ground equipment shall be in compliance with all applicable codes and Laws.

6.2 Inspections

The City may perform visual inspections of any Micro Network Node, Network Node, Node Support Pole or related ground equipment located in the Right-of-Way as the City deems appropriate without notice. If the inspection requires physical contact with the Micro Network Node, Network Node, Node Support Poles or related ground equipment, the City shall provide written notice to the Network Provider within five business days of the planned inspection. Network Provider may have a representative present during such inspection.

In the event of an emergency situation, the City may, but is not required to, notify Provider of an inspection. The City may take action necessary to remediate the emergency situation and the City shall notify Provider as soon as practically possible after remediation is complete.

SECTION 7. INTERFERENCE WITH OPERATIONS

7.1 No Liability

1. The City shall not be liable to Provider for any damage caused by other Providers or for failure of Provider's micro network nodes or network nodes for whatever reason, including damage resulting from vehicular collisions, weather related events, or malicious attacks.
2. The City shall not be liable to Provider by reason of inconvenience, annoyance or injury to the network nodes or node support poles or activities conducted by Provider therefrom, arising from the necessity of repairing any portion of the Right-of-Way, or from the making of any necessary alteration or improvements, in, or to, any portion of the Right-of-Way, or in, or to, City's fixtures, appurtenances or equipment. The City will use reasonable efforts not to cause material interference to Provider's operation of its network nodes or node support poles.

7.2 Signal Interference with City's Communications Infrastructure Prohibited.

1. *No interference.* In the event that Provider's micro network nodes or network nodes interferes with the City's traffic signal system, public safety radio system, or other City communications infrastructure operating on spectrum where the City is legally authorized to operate, Provider shall promptly cease operation of the network nodes causing said interference upon receiving notice from the City and refrain from operating. Provider shall respond to the City's request to address the source of the interference as soon as practicable, but in no event later than twenty-four (24) hours of receiving notice.
2. *Protocol for Responding to Event of Interference.* The protocol for responding to events of interference will require Provider to provide the City an Interference Remediation Report that includes the following items:
 - a. Remediation Plan. Devise a remediation plan to stop the event of inference;
 - b. Time Frame for Execution. Provide the expected time frame for execution of the remediation plan; and
 - c. Additional Information. Include any additional information relevant to the execution of the remediation plan.

In the event that interference with City facilities cannot be eliminated, Provider shall shut down the micro network nodes or network nodes and remove or relocate the micro network nodes or network node that is the source of the interference as soon as possible to a suitable alternative location made available by City.

3. Following installation or modification of a micro network node or network node, the City may require Provider to test the micro network node or network node's radio frequency and other functions to confirm it does not interfere with the City's Operations.

SECTION 8. INSURANCE, INDEMNITY, BONDING AND SECURITY DEPOSITS

8.1 Insurance, Bonding and Security Deposits

Insurance, bonding and security deposits shall be in strict accordance with the City's small wireless facility siting ordinance, rights-of-way and use management ordinance, and other applicable ordinances.

8.2 Indemnity

Indemnity shall be in accordance with the City's applicable ordinances and Section 2 of this Manual.

DRAFT

SECTION 9. REMOVAL, REPLACEMENT, MAINTENANCE, AND REPAIR

9.1 Removal or Relocation by Network Provider

1. If the Network Provider removes or relocates a Micro Network Node, Network Node facilities, Node Support Pole or related ground equipment at its own discretion, it shall notify the City Manager in writing not less than 10 business days prior to removal or relocation. Network Provider shall obtain all Permits required for relocation or removal of its Micro Network Node, Network Node facilities, Node Support Poles and related ground equipment prior to relocation or removal.
2. The City shall not issue any refunds for any amounts paid by Network Provider for Micro Network Node, Network Node facilities, Node Support Poles or related ground equipment that have been removed.

9.2 Removal or Relocation Required for City Project

1. Except as provided in existing state and federal law, a Network Provider shall relocate or adjust Micro Network Node, Network Node, Node Support Pole and related ground equipment in a public right-of-way in a timely manner at the Network Provider's expense, and without cost to the City.
2. Network Provider understands and acknowledges that the City or the City's representative may require Network Provider to remove or relocate its Micro Network Node, Network Node, Node Support Pole and related ground equipment, or any portion thereof from the Right-of-Way for City construction projects as allowed by state and federal law, including the common-law.
3. Network Provider shall, at the City Manager's direction, remove or relocate the same at Network Provider's sole cost and expense, except as otherwise provided in existing state and federal law, whenever the City Manager reasonably determines that the relocation or removal is needed for any of the following purposes: Required for the construction, completion, repair, widening, relocation, or maintenance of, or use in connection with, any City construction or maintenance project of a street or public rights-of-way to enhance the traveling public's use for travel and transportation.
4. If Network Provider fails to remove or relocate the Micro Network Node, Network Node, Node Support Pole or related ground equipment, or portion thereof as requested by the City Manager within 120 days of the City's notice, then the City shall be entitled to remove the Micro Network Node, Network Node, Node Support Pole or related ground equipment, or portion thereof at Network Provider's sole cost and expense, without further notice to Network Provider.
5. Network Provider shall, within 30 days following issuance of invoice for the same, reimburse the City for its reasonable expenses incurred in the removal (including, without limitation, overhead and storage expenses) of the Micro Network Node, Network Node, Node Support Pole or related ground equipment, or portion thereof.

9.3 Removal Required by City for Safety and Imminent Danger Reasons

1. Network Provider shall, at its sole cost and expense, promptly disconnect, remove, or relocate the applicable Micro Network Node, Network Node, Node Support Pole and related ground equipment within the time frame and in the manner required by the City Manager if the City Manager reasonably determines that the disconnection, removal, or relocation of any part of a Micro Network Node, Network Node, Node Support Pole and related ground equipment:
 - a. is necessary to protect the public health, safety, welfare, or City property;
 - b. the Micro Network Node, Network Node, Node Support Pole and related ground equipment, or portion thereof, is adversely affecting proper operation of streetlights or City property; or
 - c. Network Provider fails to obtain all applicable licenses, Permits, and certifications required by Law for its Micro Network Node, Network Node, Node Support Pole and related ground equipment, or use of any location under applicable law in strict accordance with the City's small

- wireless facility siting ordinance, rights-of-way use and management ordinance, and other applicable ordinances.
2. If the City Manager reasonably determines that there is imminent danger to the public, then the City may immediately disconnect, remove, or relocate the applicable Micro Network Node, Network Node, Node Support Pole and related ground equipment at the Network Provider's sole cost and expense in strict accordance with the City's small wireless facility siting ordinance, rights-of-way use and management ordinance, and other applicable ordinances.

9.4 Abandonment of Facilities

Network Provider shall remove Micro Network Node, Network Node, Node Support Pole and related ground equipment when such facilities are abandoned regardless of whether or not it receives notice from the City. Unless the City sends notice that removal must be completed immediately to ensure public health, safety, and welfare, the removal must be completed within the earlier of 120 days of the Micro Network Node, Network Node, Node Support Pole and related ground equipment being Abandoned or within 120 days of receipt of written notice from the City. When Network Provider removes, or Abandons permanent structures in the Right-of-Way, the Network Provider shall notify the City Manager in writing of such removal or Abandonment and shall file with the City Manager the location and description of each Micro Network Node, Network Node, Node Support Pole and related ground equipment removed or abandoned. The City Manager may require the Network Provider to complete additional remedial measures necessary for public safety and the integrity of the Right-of-Way.

SECTION 10. GENERAL PROVISIONS

10.1 As Built Maps and Records

1. Provider shall maintain accurate maps and other appropriate records of its Network Node facilities, Node Support Poles and related ground equipment as they are actually constructed in the Rights-of-Way. Provider shall maintain a list of its network nodes and node support poles and provide City an Inventory of locations within ten (10) days of installation. The Inventory of network nodes and node support poles shall include GIS coordinates, date of installation, City pole ID number (if applicable), type of pole used for installation, pole owner, and description/type of installation for each network node and node support pole installation. Network Provider will provide additional maps to the City upon request.
2. Upon City's written request, Provider shall provide a cumulative Inventory within thirty (30) days of City's request. Concerning micro network nodes, network nodes and node support poles that become inactive, the Inventory shall include the same information as active installations in addition to the date the network node and/or node support pole was deactivated and the date the network node and/or node support pole was removed from the Right-of-Way. City may compare the Inventory to its records to identify any discrepancies.

10.2 Allocation of Funds for Removal and Storage.

The City has appropriated \$0 to pay for the cost of any removal or storage of Micro Network Node, Network Node, Node Support Pole and related ground equipment, as authorized under this Article, and no other funds are allocated.

10.3 Ownership

No part of a Micro Network Node, Network Node, Node Support Pole and related ground equipment erected or placed on the Right-of-Way by Network Provider will become, or be considered by the City as being affixed to or a part of, the Right-of-Way. All portions of the Micro Network Node, Network Node, Node Support Pole and related ground equipment constructed, modified, erected, or placed by Network Provider on the Right-of-Way will be and remain the property of Network Provider and may be removed by Network Provider at any time, provided the Network Provider shall notify the City Manager prior to any work in the Right-of-Way.

10.4 Tree Maintenance

Network Provider, its contractors, and agents shall obtain written permission from the City Manager before trimming trees hanging over its Micro Network Node, Network Node, or Node Support Pole, to prevent branches of such trees from contacting attached Micro Network Node, Network Node, or Node Support Pole. When directed by the City Manager, Network Provider shall trim under the supervision and direction of the Parks Director. The City shall not be liable for any damages, injuries, or claims arising from Network Provider's actions under this section.

10.5 Signage

1. Network Provider shall post its name, location identifying information, and emergency telephone number in an area on the cabinet of the Network Node facility that is visible to the public. Signage required under this section shall not exceed 4" x 6", unless otherwise required by law (e.g. RF ground notification signs) or the City Manager.
2. Except as required by Laws or by the Utility Pole owner, Network Provider shall not post any other signage or advertising on the Micro Network Node, Network Node, Node Support Pole, Service pole or Utility Pole.

10.6 Graffiti Abatement

As soon as practical, but not later than fourteen (14) calendar days from the date Network Provider receives notice thereof, Network Provider shall remove all graffiti on any of its Micro Network Node, Network Node, Node Support Pole, and related ground equipment located in the Right of Way. The foregoing shall not relieve the Network Provider from complying with any City graffiti or visual blight ordinance or regulation.

10.7 Restoration

Network Provider shall repair any damage to the Right-of-Way, or any facilities located within the Right-of-Way, and the property of any third party resulting from Network Provider's removal or relocation activities (or any other of Network Provider's activities hereunder) within 10 calendar days following the date of such removal or relocation, at Network Provider's sole cost and expense, including restoration of the Right-of-Way and such property to substantially the same condition as it was immediately before the date Network Provider was granted a Permit for the applicable Location or did the work at such Location (even if Network Provider did not first obtain a Permit), including restoration or replacement of any damaged trees, shrubs or other vegetation. Such repair, restoration and replacement shall be subject to the sole, reasonable approval of the City Manager.

10.8 Network provider's responsibility

Network Provider shall be responsible and liable for the acts and omissions of Network Provider's employees, temporary employees, officers, directors, consultants, agents, Affiliates, subsidiaries, sub-Network Provider's and subcontractors in connection with the installations of any Micro Network Node, Network Node, Node Support Pole and related ground equipment, as if such acts or omissions were Network Provider's acts or omissions.

10.9 Reservation of Rights

1. The City reserves the right to install, and permit others to install, utility facilities in the Rights-of-Way. In permitting such work to be done by others, the City shall not be liable to Provider for any damage caused by those persons or entities.
2. The City reserves the right to locate, operate, maintain, and remove City traffic signal poles in the manner that best enables the operation of its traffic signal system and protect public safety.
3. The City reserves the right to locate, operate, maintain, and remove any City pole or structure located within the right-of-way in the manner that best enables the City's operations.

10.10 Design Manual – Updates

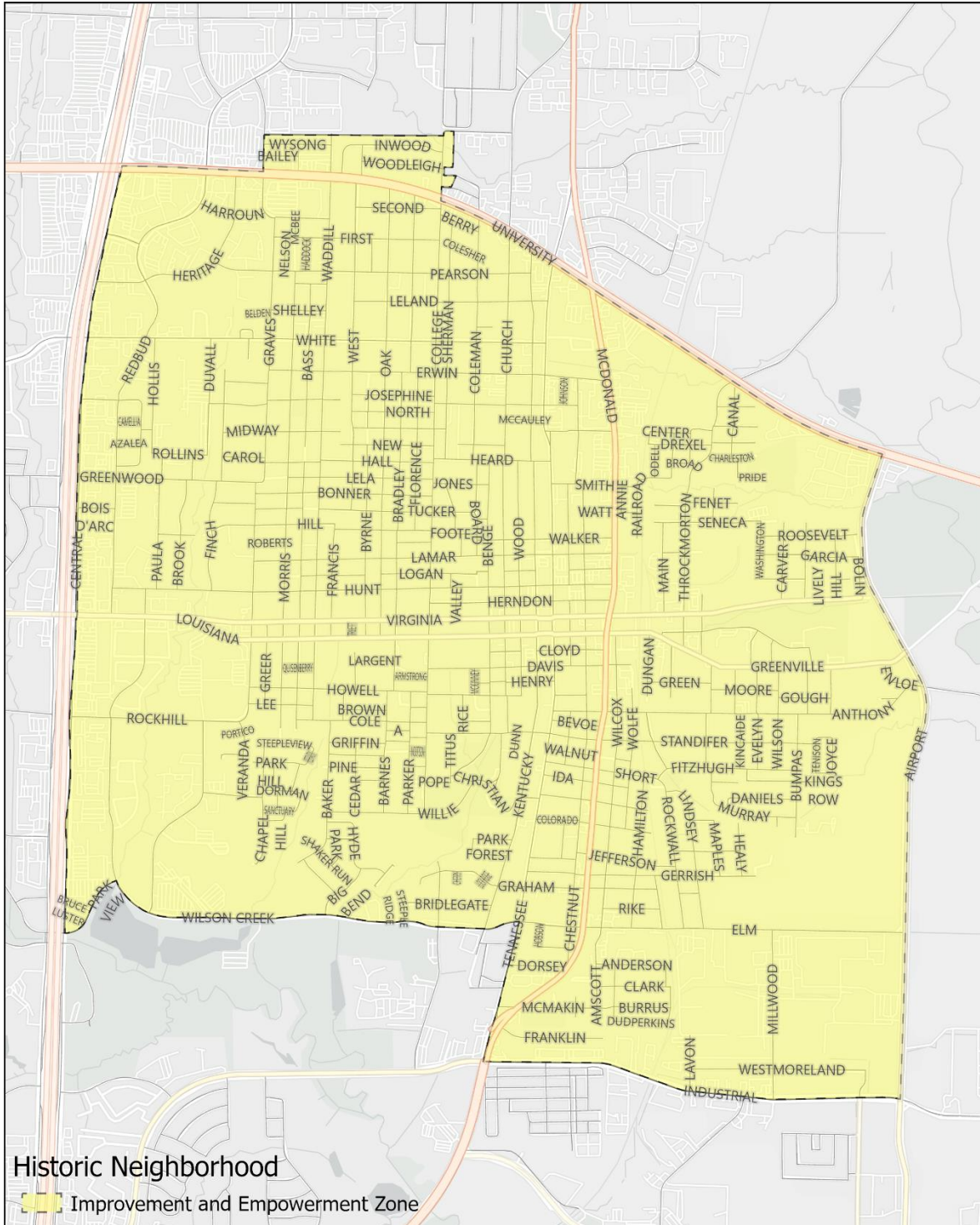
Placement or Modification of Micro Network Node, Network Node, Node Support Pole and related ground equipment shall comply with the City's Design Manual at the time the Permit for installation or Modification is approved and as amended from time to time. The City Manager is authorized to update the City's Design Manual as determined necessary to remain in compliance with applicable Laws and/or when matters or conditions have changed to warrant such updates.

SECTION 11. VARIANCES

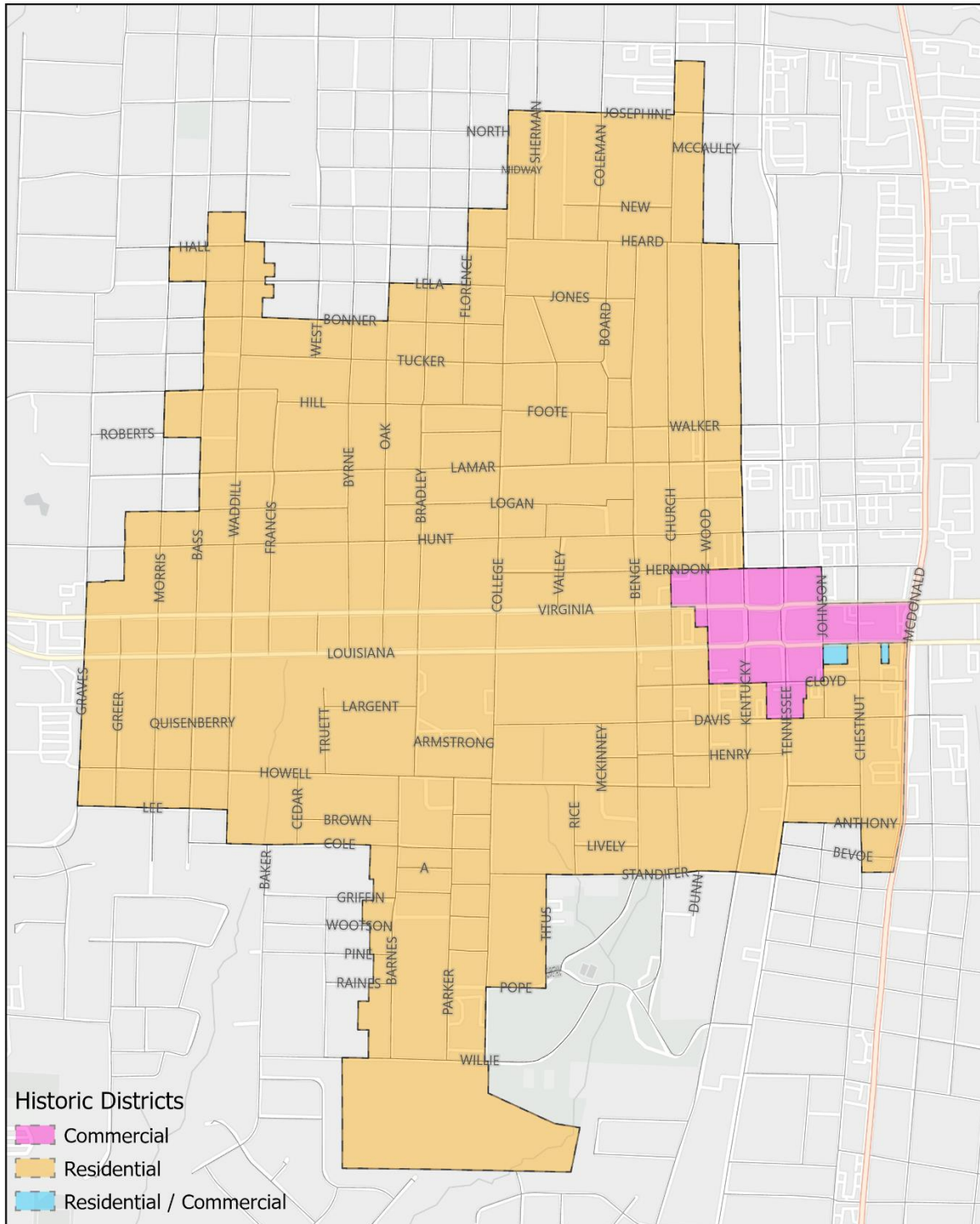
Any variance from the requirements of this document must be approved in advance by the director. The director may grant a variance only if an extreme hardship exists and the public health, safety, welfare, and convenience are not adversely affected by granting the variance. The director may not approve any variance that would give a competitive advantage to one Provider over another Provider providing the same or similar service. The director may not grant a variance from the indemnity requirements as defined in Section 2 of this document.

DRAFT

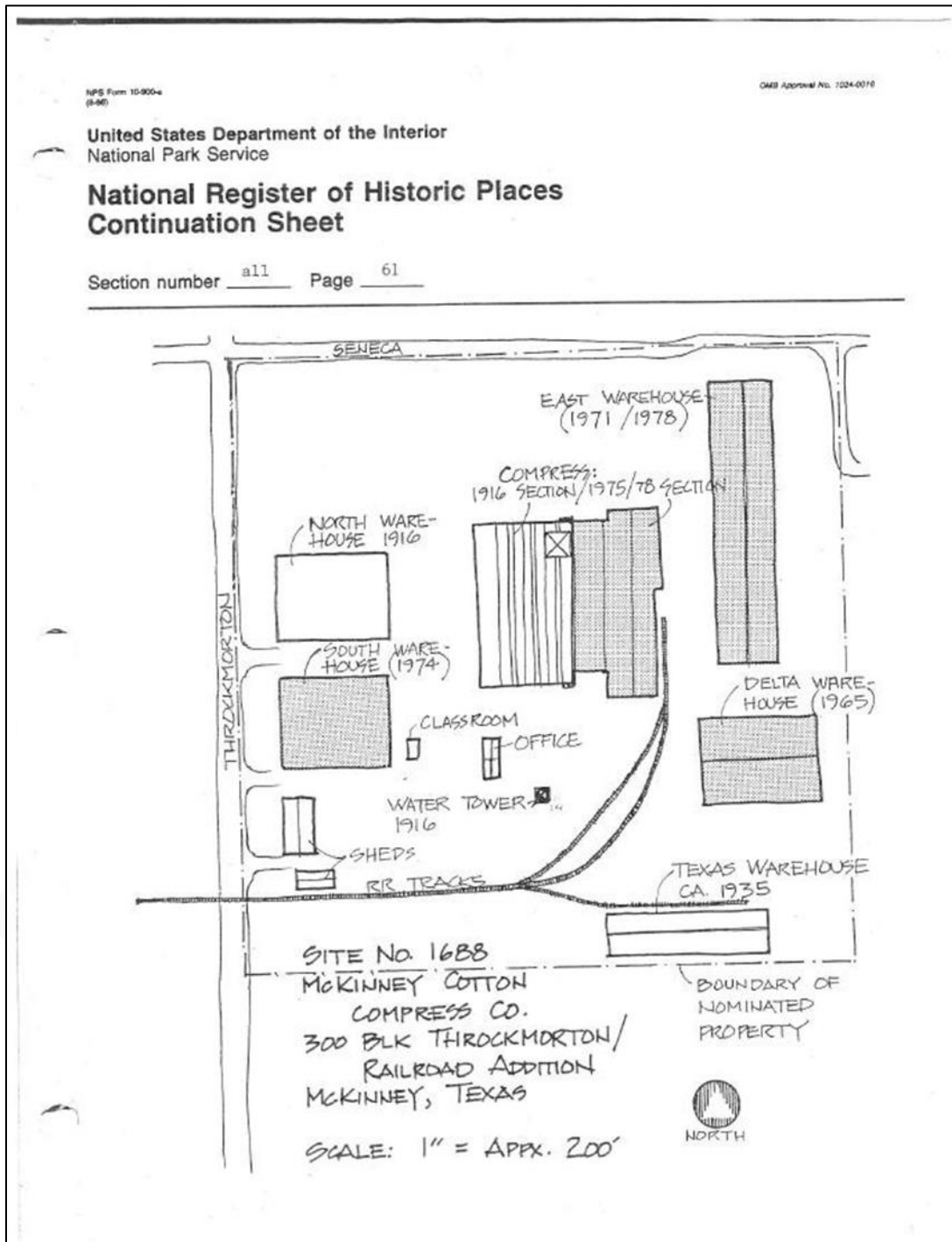
APPENDIX A: HISTORIC DISTRICT NUMBER 1



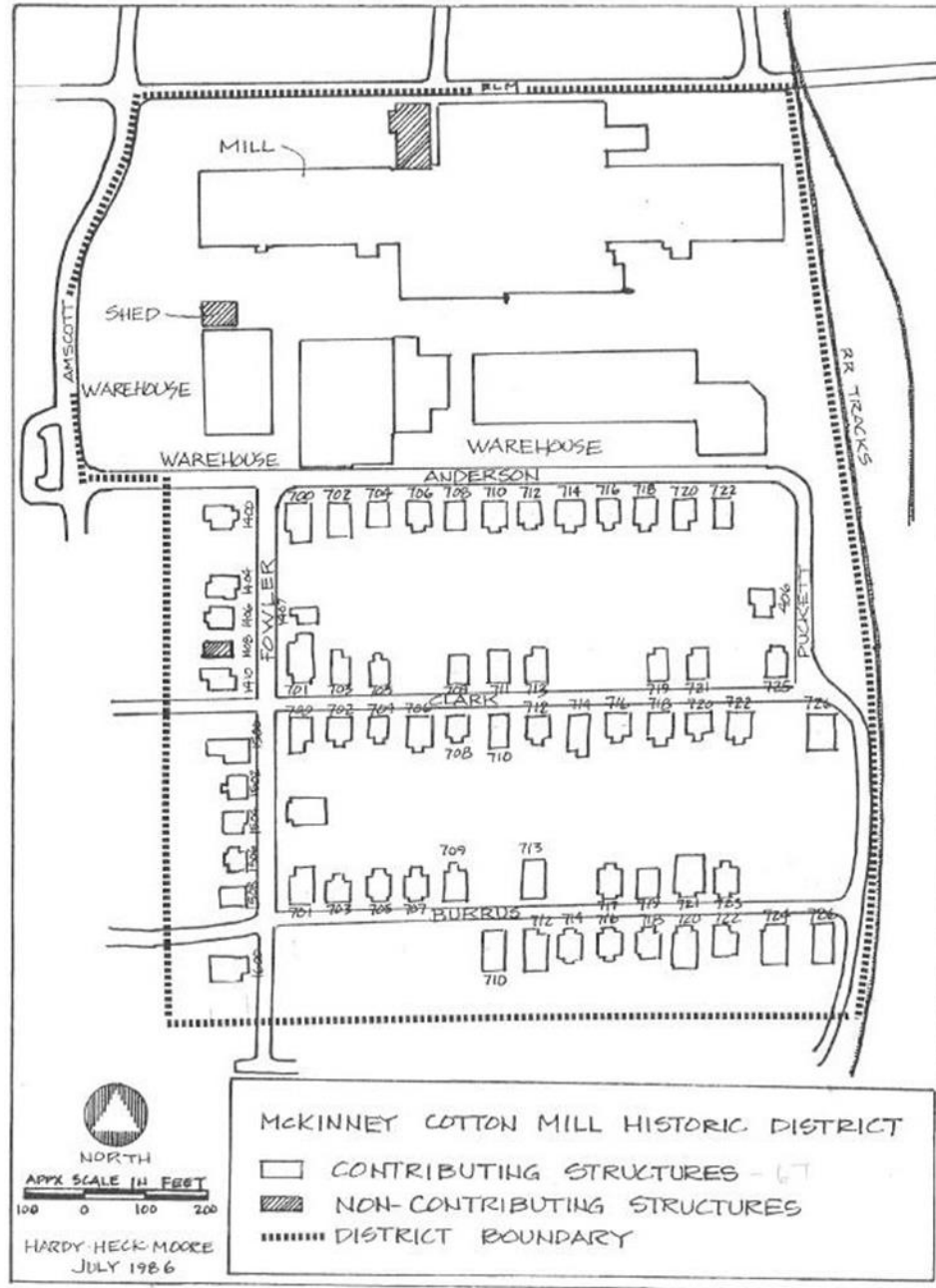
APPENDIX B: HISTORIC DISTRICT NUMBER 2



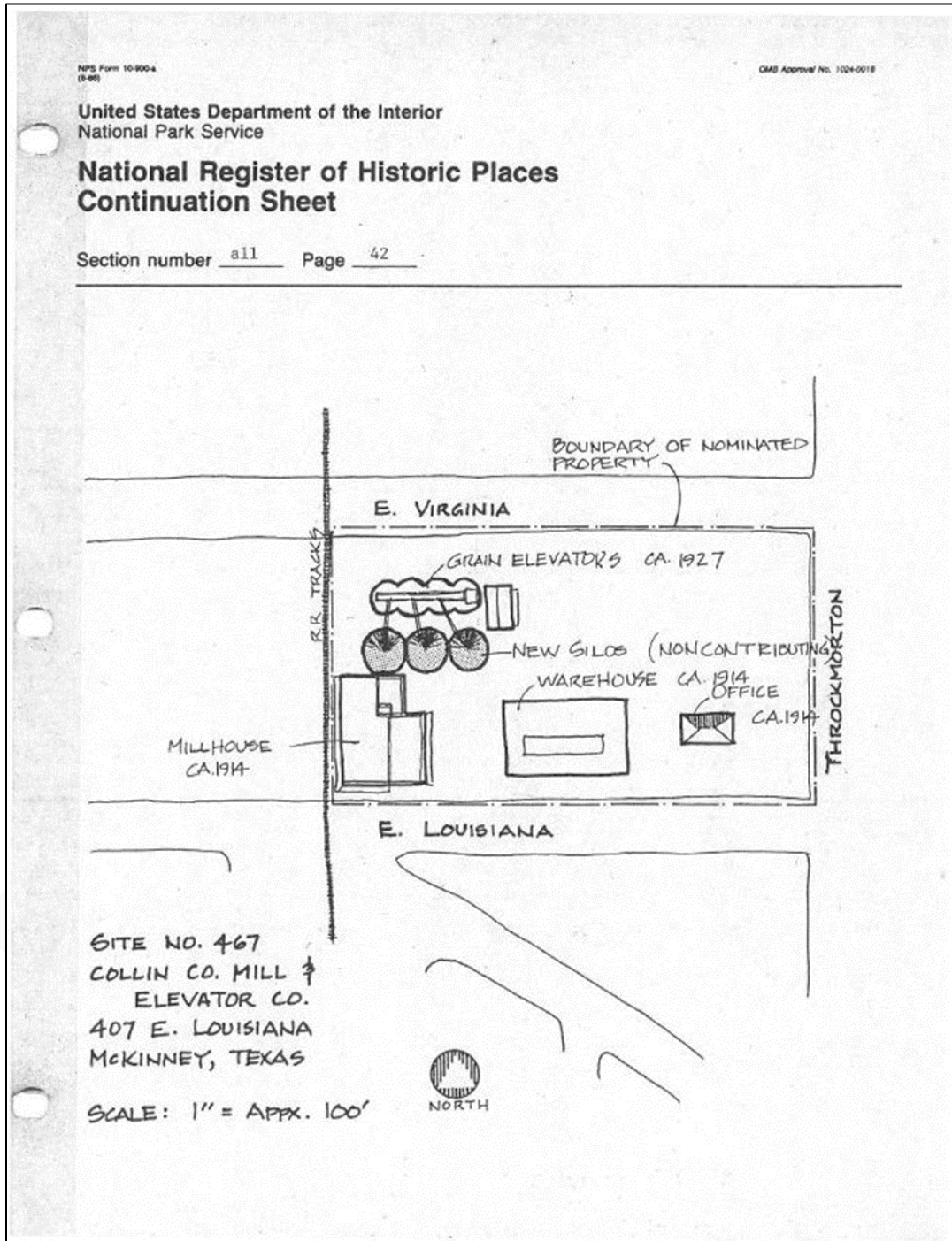
APPENDIX C: HISTORIC DISTRICT NUMBER 3



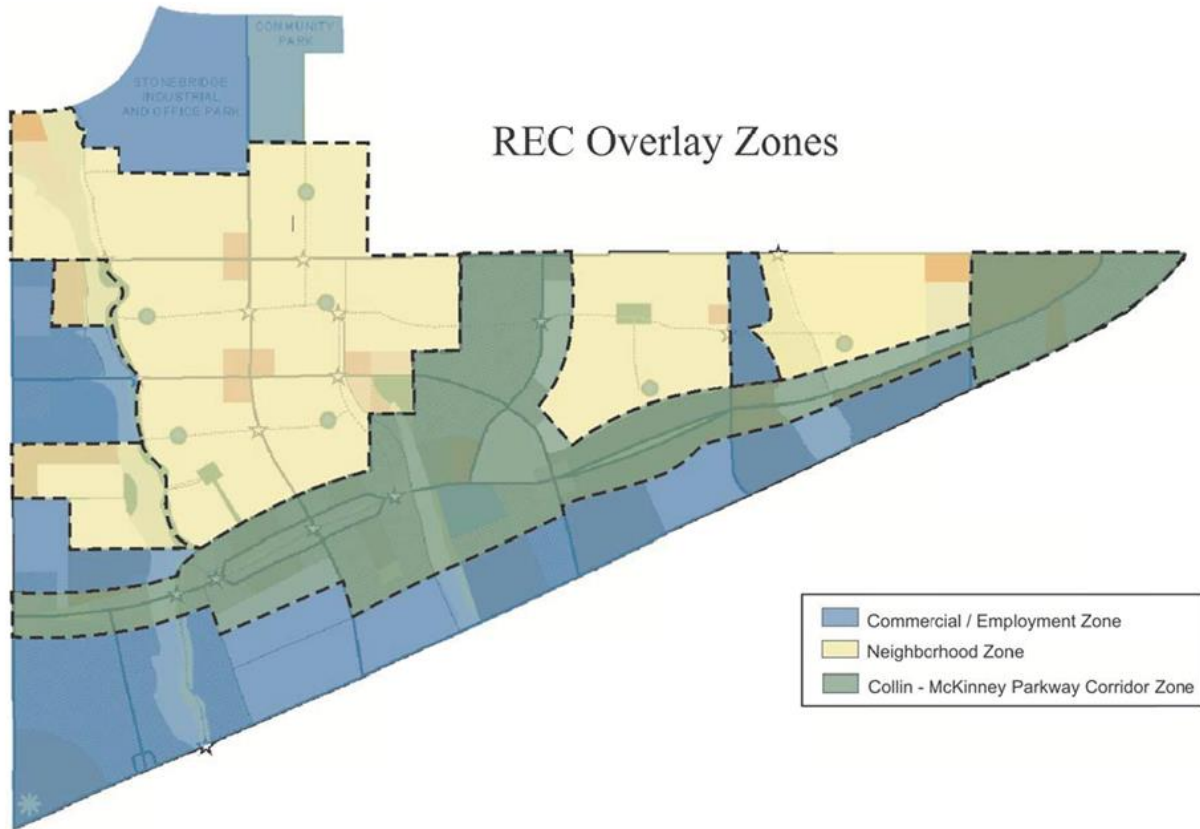
APPENDIX D: HISTORIC DISTRICT NUMBER 4



APPENDIX E: HISTORIC DISTRICT NUMBER 5



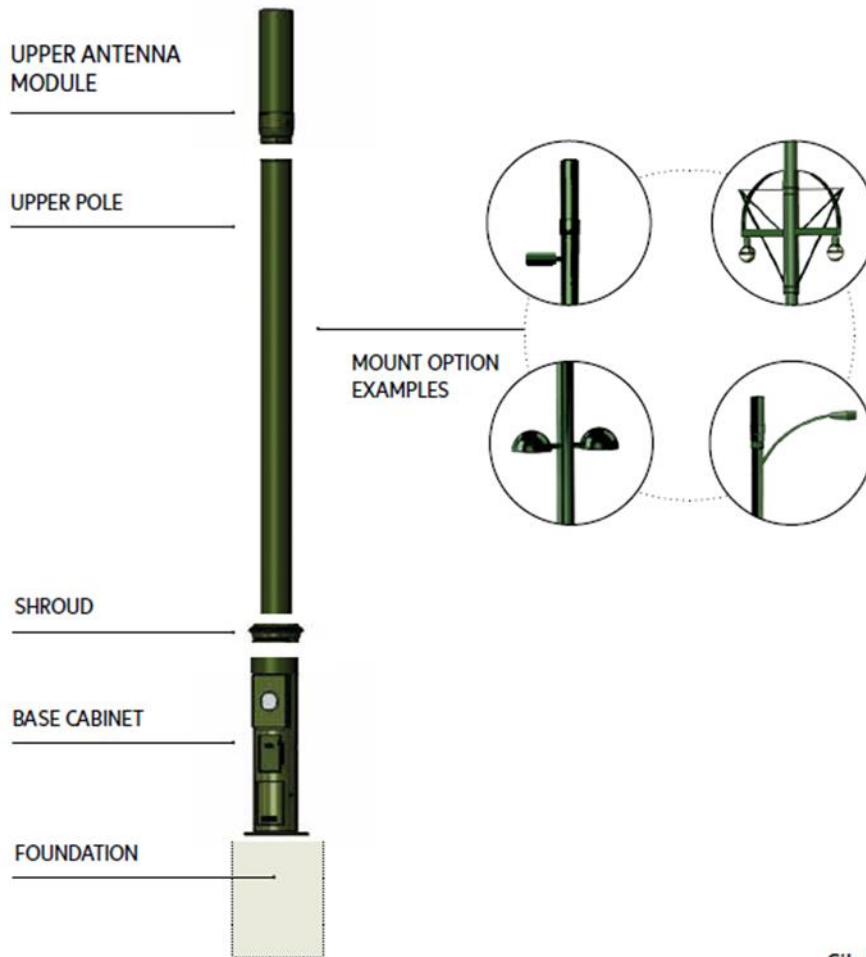
APPENDIX F: REGIONAL EMPLOYMENT CENTER



APPENDIX G: DESIGN CONCEPTS

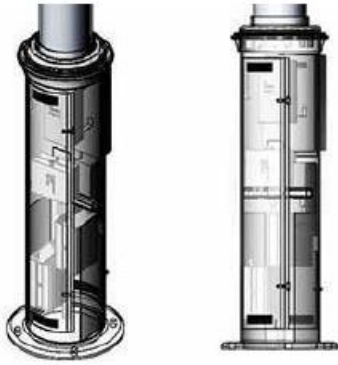
The following diagrams and information were provided by, and used with the permission of, Comptek Technologies/CityPole®. The inclusion of this information in no way indicates that the City endorses CityPole or its products. Self-contained poles from all manufacturers will be considered by City staff as long as the structure meets the other guidelines outlined in the Small Wireless Facility Ordinance and this document. The final design will need to be approved by the City.

G.1 Small Wireless Facility Pole



CityPole.com

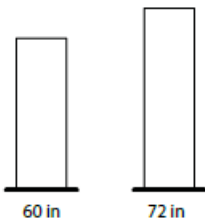
G.2 Base Cabinet



Integrated wireless equipment in base cabinet.

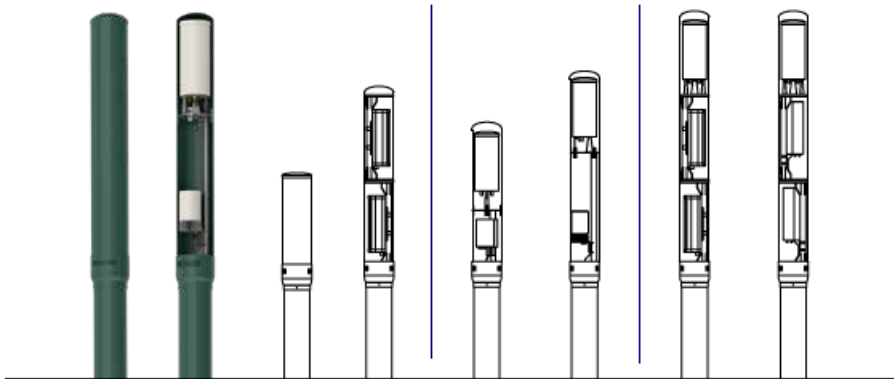


The base cabinet can be configured with a wide range of electrical disconnects to meet local building codes and preferences.



The base cabinet height can be chosen to house future equipment and complement local cityscapes.

G.3 Upper Antenna Module



The upper antenna module can be easily reconfigured for a number of technology generations. These includes multiple configurations of cellular technology, various backhaul and low power options such as WIFI, Bluetooth, or Zigbee, and as many as three different technology generations.

G.4 Foundation Selection



CityPole® pre-cast foundation speeds work in the Right of Way.



Caisson and custom designs are available.

Cast in place foundations are acceptable, as long as the foundation meets accepted guidelines for structural integrity required by the attached equipment.

G.5 Lighting Accessories



G.6 Color Options

All new or replacement Poles shall match existing poles found in the immediate proximity in color.

G.7 Product Selection Matrix

		Standard CityPole® System Offering	Custom Options
Overall Pole Height		25', 30', 35', and 40' Above Ground Level (AGL)	Available ↓
Color Choices		9 Color Choices are Standard (Custom colors are available.)	
Base Cabinet	Technology Types	1, 2, or 3 Different Technologies can be Accommodated	
	Dimension	Ground Diameter: 18", 20", 24" Height: 60", Optional 72"	
	Flexible Mount System	FlexMount™ system to reconfigure internals for future equipment sizes.	
	Electrical Options	No Disconnect, Disconnect Only, or Meter and Disconnect.	
	Universal Meter Bay	Accommodates power meter and meter screen requirements as determined by local utility provider; fits meter boxes of all sizes.	
Upper Pole Antenna Module	Rad Center Location	Variable and Based on Pole Height and Other Options	
	Technology Types	1, 2, or 3 Different Technologies can be Accommodated	
	Auxiliary Bay Options	Low Power RF, Backhaul, and Wifi Options can be Accommodated. Multiple and reconfigurable 12 3/4 inch modules with RlexRail™ universal equipment track system optional.	
	Antenna Mount and Shroud Options	Separate and Secure Bays with RF Transparent Materials to accommodate 4G/5G Equipment. Omni and Panel Types available.	
Accessory Selection	Lighting	Pole can be ordered without lighting or with 1, 2, 3, or 4 lights.	
	Light Mounts	Standard Plate or Offset Arms depending on light selection	
	Lighting	Shoebox, Cobrahead, Cylindrical, Dome and Acorn	
	Other Technology	Gun Shot Sensors, Video, Weather, Traffic Mgmt	
	Lower Shroud Details	Multiple Options are Available	
	Base Plate Details	Multiple Options are Available	
	Foundation Options	Pre-cast, or Cast-in-Place	
Environmental Control	Thermal Management	All Equipment and Antenna Bays Monitored for Temperature. Passive and Forced Air Standard; Heat Pipe and Thermoelectrical Optional	
	Security	External and Internal Locking Features. CityPole® FlexSmart™ Control and Connectivity Optional.	
	Monitoring and Control	Industrial Controller with 24 Digital and 12 Analog Inputs with FlexSmart™	