Schedule C: Guidelines, Part III

Urban Design Guidelines for wireless infrastructure on City-owned assets.

March 2021

IMPORTANT:

- For the most recent version, go to www.calgary.ca/wirelessinfrastructure
- All words that are capitalized are defined within the body of the Master Licence Agreement for Wireless Infrastructure.
- All words that are italicized and capitalized are defined within the glossary of Schedule C, Master Licence Agreement for Wireless Infrastructure.

General

These guidelines, including the contextual and design considerations, have been established in alignment with existing Council policies, strategies and plans. Support for inquiries, requirements for design review or restrictions as summarized in the Design Matrix have been established in compliance and alignment with these policies, strategies and plans.

These guidelines apply to both established and new communities within city boundaries. The purpose of these design guidelines is to provide a protocol for reduction of the negative visual impacts related to the specific antenna type, street type, building category, location and aesthetic requirements of wireless equipment on City of Calgary owned buildings and infrastructure in the public realm.

For new community locations within the city that are in early planning or construction phases, proponents are encouraged to select streets, municipally owned sites, buildings and structures for the placement of their telecommunication antennas prior to development taking place. The City promotes this course of action so that those purchasing properties in these new developing areas will be able to make informed decisions based on an understanding of where telecommunication antenna structures are likely to be installed initially.[1]

As with any new structure, the placement of telecommunication antenna structures in developed areas often raises contextually driven concerns about aesthetics.

Key contextual considerations

As outlined in Section 4.0 of the Telecommunication Antenna Structures Siting Protocols[2] **key contextual considerations** include:

- Proposed antenna on municipally owned site/location in a community or area;
- Adjacent sites and their existing and proposed uses and buildings /structures;
- Proximity to residences;
- Proximity to schools (towers should be no closer than 100 metres away from the nearest portion of a school building or the nearest portable classroom, whichever is closer to the proposed installation)[3];
- Co-location potentials on subject site and on nearby sites with other existing or proposed telecommunication antenna structures; and
- Existing and proposed on-site uses and structures.

[1] This should not be construed to mean that telecommunication antenna structures will be confined to these locations only. Changes in technology and increased demand for cellular phone service and data streaming may require additional sites in the community that cannot presently be determined.

[2] http://publicaccess.calgary.ca/lldm01/livelink.exe?func=ccpa.general&msgID=CTTrqKyygKQ&msgAction=Download

[3] For practical purposes, towers should be no closer than 100 metres away from the school property line to accommodate future portable classrooms.

Key site design considerations[4]

As outlined in Section 4.0 of the Telecommunication Antenna Structures Siting Protocols[5] **key site design considerations** include:

- Removal of aged or redundant infrastructure (by way of a re-build, replacement or co-location);
- Location of the new antenna on the site;
- Distance to other existing towers;
- Access/egress to the facility/on site;
- Impact on existing deep and shallow utilities;
- Impact on on-site parking facilities and vehicular movement;
- Impact on on-site garbage facilities;
- Impact on on-site utility Rights-of-Ways;
- Type of structure and proposed antenna height;
- Antenna diameter (if a monopole or tri-pole);
- Number of antenna arrays (including futures);
- Shrouding of antenna arrays;
- Potential for disguising or camouflaging;
- Screening of equipment compound and shelter(s);
- Materials and colours of equipment shelter(s);
- Site plans for arrangement; and
- Proposed signage or other markings and lighting.

[4] Separation distances within this document or the Telecommunication Antenna Structures Siting Protocols are not based on any City of Calgary medical or scientific requirement, evidence or verification.

Key site design considerations

As outlined in Section 7.2 of the Telecommunication Antenna Structures Siting Protocols[6] **preferred built forms** should be considered.

Preferred built forms for telecommunication antenna structures within Calgary include:

- Roof top installations
- Freestanding telecommunication antenna structures in the form of monopole and tri-pole towers with flush mounted or cluster mounted telecommunication antennas
- Street light and parking lot light poles that have telecommunication antennas sheathed completely within the pole.

Pinwheel telecommunication antennas are discouraged, as is the use of guy wires and cables to steady, support or reinforce a tower. Lattice work towers may be considered in specific circumstances, at the discretion of The City of Calgary.

Safety Code 6

The City of Calgary review primarily focusses on design, location and structural consideration. Our review does not assess or evaluate health and radiofrequency exposure. Health concerns relating to radiofrequency, energy and safety fall under the national jurisdiction of Health Canada.

[5] http://publicaccess.calgary.ca/lldmo1/livelink.exe?func=ccpa.general&msgID=CTTrqKyygKQ&msgAction=Download

[6] http://publicaccess.calgary.ca/lldmo1/livelink.exe?func=ccpa.general&msgID=CTTrqKyygKQ&msgAction=Download

Visual impacts

Wireless networks have a visual impact on the urban environment through a variety of antenna types. Those antennas compete with hundreds of other physical elements that define Calgary's streets, public spaces and buildings.

These important community assets - nature, public spaces, streetscapes, landmark buildings and structures – are considered the public realm and make up more than 30 percent of the city.

As with any new structure, from an urban design perspective, antennas may have a negative visual impact on the public realm, when:

a) Obstructing significant views, vistas;
b) Creating visual clutter to special places, parks and cultural landscapes;
c) Creating visual clutter to landmark buildings and structures, their architectural and aesthetic integrity; and
d) Creating impact on universal design/accessibility for physically and visually challenged users due to proliferation of cabinets and other fiber-optic equipment on sidewalks.

Key design principles

Respecting Existing Planning Policies

The deployment of wireless technology on City-owned Property must consider the current Municipal Development Plan (MDP) and other relevant planning policies, multi-community plans, area redevelopment plans (ARP), area structure plans (ASP), Centre City urban design guidelines, and applicable street master plans.

Respecting *Heritage Resources*

The deployment of wireless technology on City-owned Property should consider *Heritage Resources*, to find a balance between policy requirements and opportunities for technology deployment.

Minimizing Visual Impact

The primary principle is to minimize the visual impact on neighbourhoods, streets and buildings and take into consideration policies related to protected view corridors, especially in the Centre City.

Mitigating Cumulative Effects

Cumulative effects of the deployment of wireless infrastructure shall not compromise the long-term street functionality, local character, established heritage or other visible aesthetic qualities.

Multiple providers sharing the same City-owned Property must provide unified solutions and coordinate co-location, design approaches, number of antennas to mitigate the cumulative effect of wireless infrastructure.

Respecting and Prioritizing Green Infrastructure and Environmental Integrity

Trees are an important element and valuable resource to the fabric of Calgary.

Deployment of wireless infrastructure must comply with all relevant environmental policies and tree protection bylaws (e.g. Tree Protection Bylaw) to ecologically significant natural lands, trees and sites of topological prominence. Trees shall not be seen as an obstacle or removable impediment. Continuous enhancement and implementation of green infrastructure in the public realm shall not be compromised by wireless infrastructure.

Respecting Universal Design Requirements

Deployment/location of wireless technology shall respect The City's Access Design Standards.

Calgary Street Typologies

The Municipal Development Plan (MDP) and Calgary's Complete Streets policy clearly defines street typologies, their priority, function and key design features, including locations of street lights and landscaping requirements. Current street typologies are outlined in the Complete Streets Policy (TP021) and Guide[7] as follows:

Skeletal Road Type (Skeletal Road)

- Primary function of the Skeletal Road Type is public transit (movement of people, goods and automobiles), where walking and cycling is not required, or poor performance is acceptable.
- This type of road may accommodate *Macro Towers*, *Macro Cells* on advertising signage, as well as *Macro Street Light Poles* and *Small Cells*.
- Example: Glenmore Tr. S.W.

[7]https://www.calgary.ca/_layouts/cocis/DirectDownload.aspx?target=http%3a%2f%2fwww.calgary.ca%2fCA%2fcity-clerks%2fDocuments%2fCouncil-policy-library%2fTP021-Complete-Streets-Policy.pdf&noredirect=1&sf=1

Arterial Streets (Arterial Street, Industrial Arterial, Local Arterial Street)

- As defined by the Complete Streets Policy (TP021) and Guide the primary function of Arterial Streets is public transit (movement of people, goods and automobiles), with walking and cycling accommodated with either high or variable standards.
- Arterial Streets may accommodate macro cells on advertising billboards, macro street light poles and small/micro cells.
- Industrial Arterials may accommodate: all types permitted.
- Local Arterials may accommodate: no cell towers permitted.
- Example: Arterial Street – Northland Dr. N.W., Industrial Arterial – 14 Ave. S.E., Local Arterial – 85 St. S.W.

Liveable Streets (Urban Boulevard, Parkway, Neighbourhood Boulevard)

- As defined by the Complete Streets Policy (TP021) and Guide the primary functions of Livable Streets are walking, cycling and public transit, while movement of goods and automobiles is either not required, or accommodated with variable standards.
- Urban Boulevards may accommodate macro street light poles and small/micro cells.
- Parkways may accommodate macro street light poles and small/micro cells.
- Neighbourhood Boulevards may accommodate macro street light poles and small/micro cells.
- Examples: Urban Boulevard - 49 St. N.W., Parkway - University Dr. N.W., Neighbourhood Boulevard - Garrison Gate S.W.

Local Streets (Primary Collector, Activity Centre Street, Collector, Industrial Street, Residential Street, Lanes (Alleys)

- As defined by the Complete Streets Policy (TP021) and Guide the primary functions of Local Streets are walking, cycling and public transit, while movement of goods is not required, or poor performance is acceptable; movement of automobiles is either not required, or accommodated with variable standards.
- Primary Collector Local Streets may accommodate: Macro ells on larger buildings facing the street, as well as macro street light poles and small cells.
- Activity Centre Local Streets may accommodate macro cells and small cells.
- Collector Local Streets may accommodate macro streetlight and small cells.
- Industrial Local Streets may accommodate macro towers, macro cells, macro streetlight and small cells.
- Residential Local Streets may accommodate macro streetlight and small cells.
- Lanes / Alleys may accommodate macro cells (Centre City lanes) and small cells in lower density neighbourhood lanes.

- Examples: Primary collector - Fifth Ave. N.W., Activity Centre Street - 33 Ave. SW, Collector Local Street - 24 Ave. N.W., Industrial Local Street - 53 Ave. S.E., Residential Local Street - Kensington Close NW.

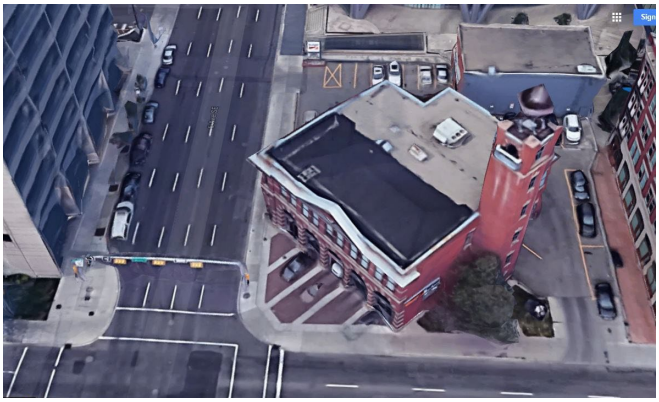
Standard street light poles

- Junction boxes and other equipment should be limited whenever possible and placed in a location other than a sidewalk (e.g. same alignment as the street lights or boulevard) whenever possible.
- Limit impact to parks by locating junction boxes and other equipment in the same alignment as street lights.
- Note: as the first street light pole applications are designed and constructed, this section will be refined further.

City-owned built form & infrastructure categories

(see Design Matrix)

Category 1A: Public Administration Buildings (Landmark Architecture)



- Large scale municipal buildings located in downtown or other high-density environments.
- Unique, landmark buildings or structures with high architectural design qualities or heritage character that may be fully protected from any alterations. Exceptions for the deployment of wireless technology will be considered based on design merit.
- Placement of macro cells and small cells on landmark buildings require consideration of the protected view corridors, location on building, size, shape and screening of wireless equipment.
- Examples: Calgary City Hall, Calgary Central Public Library, Calgary Public Building, Calgary Water Centre Building, Fish Creek Public Library, Fire Hall #1.

Category 1B: Public Administration Buildings (Standard)

- Large single buildings or larger groups of office or utilitarian buildings in the Greater Downtown Plan area or industrial parks.
- Average or low degree of architectural importance and heritage significance.
- Buildings in industrial parks are typically embedded in larger service parking and storage depot areas.
- These buildings are less sensitive to façade alterations and deployment of macro cells or small cell hardware to their facades.
- Examples: Andrew Davison Building, Whitehorn Multi-services Centre.

Category 2: Municipal Maintenance and Service Facilities

- Single or small groups of utilitarian buildings in low density areas.
- Average or low degree of architectural importance.
- Typically embedded in larger service parking and storage depot areas.
- These buildings are not sensitive to façade alterations and deployment of cell hardware to their facades.
  Examples: Manchester Centre, Saddleridge Operations Centre, Streets Maintenance Depot-Capitol Hill.

The Case Steward (or designate Community Planning – Technical Planning) will be responsible for reviewing all applications for compliance with the urban design guidelines. Reviews will conform with The City's Municipal Development Plan policies regarding historic sites and environmentally sensitive areas. All submissions related to Main Street Program/locations will include Planning and Development - Urban Initiatives located on City-owned Property.

1.0 Buildings – General

Location of all antenna types on all public buildings and structures shall not impede, obstruct or compromise safety of pedestrian, bicycle or vehicular movement.

1.2 For all Category 1a public buildings, placement of macro cell antennas on the podium, body and top parapet will be not permitted.

1.3 For all Category 1b public buildings, placement of larger macro cell antennas as well as multiple macro cells on larger/multi-storey public buildings will be considered if:

1.3.1 Placed in the centre or perimeter of the roof area and top parapet - at the discretion of the Asset Steward, Case Steward, Community Planning

1.3.2 There is an adequate architectural integration and screening with elements like canopies, decorative rooftop and façade elements or other types of architectural elements that will mitigate negative visual impact. These elements will be considered for all buildings.

1.4 Placement of multiple small cells by one or more WSPs at podium level will be considered if:

1.4.1 Blending-in through location along cornice lines, fenestration/storefront rhythm or building's material and colour palette;

1.4.2 Blending through the size, shapes, textures, colours and materials of wireless equipment.

1.5 Regardless of having one or multiple WSPs co-locating equipment on a single building, it is required to visually coordinate location, size, and overall composition of wireless equipment with the primary architectural elements, or to integrate with façade elements like wayfinding signage, canopies or colonnades.

1.6 Conduits, mounting brackets and other supporting hardware must be blended with existing façade elements or concealed (e.g. add shrouding using primary materials, colors or textures of the building or use elements of the façade that is set back) from view.

2.0 Buildings (Landmark Architecture)

2.1 Unique, landmark buildings or structures with high architectural design quality, or heritage characteristics may be fully protected from any alterations. Exceptions will be considered based on design merit. If the buildings are provincially designated, no installation will be permitted without an approved intervention requested from the Province.

2.2 Any type of macro-tower, macro cell or macro street light antenna within a 150-metre (length of an average downtown city block radius) of landmark public building (1a) will be considered for architectural and urban design impact.

2.3 If supported, wireless antennas should be designed and located to respect:

2.3.1 Policy related to protected view corridors;

2.3.2 The building's architectural character;

2.3.3 The rhythm of primary and secondary architectural elements;

2.3.4 Fenestration patterns; and

2.3.5 Building materials, textures and colours.

3.0 Specific Guidelines for Identified Landmark Buildings

3.1 CALGARY CENTRAL PUBLIC LIBRARY

3.1.1 Macro cells could be considered on the rooftop if outside of protected Stephen Ave. view corridor (Eighth Ave. S.E. - looking west);

3.1.2 Small cells could be considered at podium level on the rear (east façade).

3.2 MUNICIPAL BUILDING - HISTORIC CITY HALL

3.2.1 No equipment of any type will be permitted on historic City Hall.

3.3 MUNICIPAL BUILDING - NEW CITY HALL

3.3.1 Macro cells could be considered on the rooftop if outside of protected Stephen Ave. view corridor (Eighth Ave. S.W. - looking east);

3.3.2 Small cells could be considered along northern façade (Seventh Ave. LRT station) and southern façade (Ninth Ave. S.E.);

3.3.3 Limited number of small cell antennas could be considered on the main façade (facing City Hall Plaza and McLeod Trail); and

3.3.4 Small cells could be considered along Third St. S.E. (east façade) if integrated within the existing colonnade.

3.4 CALGARY PUBLIC BUILDING (*Heritage Resource*)

3.4.1 Limited opportunity to locate macro cells on the rooftop if located in the centre or on the south side of the roof;

3.4.2 No small cell antennas locations along Stephen Ave. S.E. and First St. S.E.

3.5 CENTRAL MEMORIAL PUBLIC LIBRARY (*Heritage Resource*)

3.5.1 No small cell or other antennas will be considered on the building.

3.6 FISH CREEK PUBLIC LIBRARY

3.6.1 Small cell antennas could be considered on all sides of the building at podium level.

3.7 PEACE BRIDGE

3.7.1 No small cell or other antennas will be considered on the bridge structure.

3.7.1.1 CENTRE STREET BRIDGE (*Heritage Resource*)

3.7.2 No small cell or other antennas will be considered on the bridge structure.

3.8 ST.PATRICK'S BRIDGE

3.8.1 No small cell or other antennas will be considered on the bridge structure.

4.0 Streetscapes

4.1 Place wireless equipment in a way that minimizes the visual impact on streetscapes.

4.2 Preference is one provider per standard light pole for the visual consistency and integration of the equipment. If there is co-location of two or more providers on street light poles, it is required to visually coordinate location, size, and overall composition of wireless equipment on the standard pole.

4.3 Placement of wireless equipment shall not eliminate or otherwise compromise natural shape, root systems, or health of any existing public street trees.

4.4 Future deployment of wireless technology should not eliminate or compromise future expectations for street tree placement in Street Master Plans.

4.5 Placement of macro towers or macro cell antennas on streetscapes within policy protected view corridors are not permitted. Refer to the Centre City Plan (Section 7.4 Views of CP2007-049), as updated from time-to-time.

4.6 Location of all antenna types in the public realm shall conform to City of Calgary Accessibility Standards and not impede, obstruct or compromise safety of pedestrian, bicycle or vehicular movement.

4.7 All antenna types shall stay clear of sight visibility triangles at intersection corners. This is particularly relevant for any equipment located between 0.5m and 1m from base. Refer to the Land Use Bylaw (Section 44 Corner Visibility Triangle of 1P2007), as updated from time-to-time.

4.8 In Centre City, Activity Centre/ Main Streets (i.e. 17 Ave. S.W./S.E., 33 Ave. S.W., Kensington Rd., Ninth Avenue Inglewood) location of equipment cabinets and pedestals (fibre-optics, electrical, other) should be underground (unless otherwise approved as part of the concurrence letter in consultation with Urban Initiatives) or located on private property to eliminate clutter and allow accessibility for physically or visually challenged users. Each proposal is to be reviewed based on the merits of the application.

4.9 In all other areas, cabinets are allowed with the provision of enhanced perimeter landscaping and/or cladding or wrapping to minimize the visual impact.

4.10 *HERITAGE RESOURCES* that are STREETS / AREAS (i.e. Stephen Avenue Walk, Ninth Avenue Inglewood)

4.10.1 Where applicable, small cell deployment on street light poles or other structures will need special design review by City Wide Urban Design and Urban Initiatives teams to evaluate feasibility and design impacts, which will be completed as part of issuing a concurrence letter.

4.11 SPECIAL PLACES (Urban Plazas and Squares)

4.11.1 Unique, landmark public spaces and architecture with high historic, design and heritage characteristics may be fully protected from any new antenna deployment.

4.11.2 If considered, micro street light antennas and small cell antennas should be concealed within decorative columns or other landscape elements.

4.11.3 Examples: Central Memorial Park, Olympic Plaza, Century Gardens.

Design Matrix - Locational Preference

For municipally-owned Property, The City has established the following Design Matrix of preferred and discouraged locations for the proposed antenna types as outlined below. The Wireless Service Provider or authorization agent must also meet the requirements set out in the Telecommunication Antenna Structures Siting Protocols and receive a concurrence letter before proceeding.[8]

LEGEND:

	NOT APPLICABLE	APPROVAL: STREAM 3
	SUPPORTED ON DESIGN MERIT	APPROVAL: STREAM 3
	REVIEW FOR DESIGN MERIT	APPROVAL: STREAM 3+CWUD
	NOT SUPPORTED ON DESIGN MERIT	APPROVAL: STREAM 3+CWUD

#	APPLICABLE CONTEXT	ANTENNA TYPE						
		MACRO TOWERS	MACRO ROOF-TOPS	MACRO STREET LIGHT	SMALL CELLS	CABINETS UNDERG.	CABINETS a GRADE	OTHER
STREET TYPOLOGY (ONLY R.O.W.)								
1	STREET TYPE 1: SKELETAL ROAD							Cabinets at grade with enhanced peripheral landscaping
2	STREET TYPE 2: ARTERIAL STREETS							
2a	Arterial Street							Cabinets at grade with enhanced peripheral landscaping
2b	Industrial Arterial							Cabinets at grade with enhanced peripheral landscaping (See Sections 4.8 and 4.9)
2c	Local Arterial							Cabinets at grade with enhanced peripheral landscaping (See Sections 4.8 and 4.9)
3	STREET TYPE 3: LIVEABLE STREETS							
3a	Urban Boulevard							Cabinets at grade with enhanced peripheral landscaping (See Sections 4.8 and 4.9)
3b	Parkway							Cabinets at grade with enhanced peripheral landscaping (See Sections 4.8 and 4.9)
3c	Neighbourhood Boulevard							Cabinets at grade with enhanced peripheral landscaping (See Sections 4.8 and 4.9)
4	STREET TYPE 4: LOCAL STREETS							
4a	Primary Collector							
4b	Activity Centre Street							
4c	Collector							
4d	Industrial Street							

[8] http://publicaccess.calgary.ca/lldmo1/livelink.exe?func=ccpa.general&msgID=CTTrqKyygKQ&msgAction=Download

#	APPLICABLE CONTEXT	ANTENNA TYPE						
		MACRO TOWERS	MACRO ROOF-TOPS	MACRO STREET LIGHT	SMALL CELLS	CABINETS UNDERG.	CABINETS a GRADE	OTHER
4e	Residential Street							
4f	Lanes/Alleys							Macro cells only in Centre City
BUILDING & INFRASTRUCTURE CATEGORIES								
1a	CATEGORY 1a: Public Admin. Buildings (Landmark)		P B TP R	P B TP R	P B TP R			See Iconic Arch Guidelines.
1b	CATEGORY 1b: Public Admin. Buildings (Other)		P B TP R	P B TP R	P B TP R			
2	CATEGORY 2: Municipal Maintenance and Service Facilities		P B TP R	P B TP R	P B TP R			Macro towers/macro street light on site only allowed
5	CATEGORY 5: Small Utility Buildings		P B TP R	P B TP R	P B TP R			Macro towers only at larger sites
STANDARD STREET POLE TYPES								
1	ALL STREET LIGHT TYPOLOGIES 9-25m tall							See *WID* small cell on designated street light pole guidelines
2	ALL STREET LIGHT TYPOLOGIES less than 4.5-9m tall							See *WID* small cell on designated street light pole guidelines

BUILDING AND INFRASTRUCTURE CATEGORIES – LOCATION OPPORTUNITIES

P = BUILDING PODIUM

A podium in architecture is the element that forms the "foot," or base of the building. It may be two or more floors high, depending on overall building height. A podium is always structurally or decoratively emphasized and depending on land use, a podium may accommodate residential or commercial units and create an active, walkable edge.

B = BUILDING BODY

The middle or body of the building represents the main part of the building. The body of the building is highly visible and contributes to the physical and visual quality of the building and overall streetscape. The design of the middle or body should consider appropriate massing, step-backs, materials, textures and colour that are appropriately suited for its location and orientation on its site and in relationship to the base building.

BP = BUILDING PARAPET

A building parapet is a barrier which is an extension of the building body wall at the edge of a roof, terrace, or balcony. Historic architecture defined parapets with elaborate architectural articulation, and modern architecture treats parapets in a simpler form, with less details. Building parapets may also be used as a visual barrier/screening for the mechanical equipment on the roof.

R = ROOF

The roof condition expressed as an upper storey or roof feature should be designed to contribute to the visual quality of the building and streetscape. Design of the building top may contribute to the unique skyline of the building or city. Rooftop mechanical systems as well as communication hardware (antennas etc.) should be fully integrated into rooftop designs wherever possible.