

# WIRELESS FACILITY ON CITY OWNED INFRASTRUCTURE



## STRUCTURAL DESIGN CHECK SHEET

*Effective 08/17/2020*



*To be completed ONLY by a duly authorized representative of a wireless carrier granted authority by the City of Portland under an existing, valid Right-of-Way Agreement to place wireless communication facilities in City streets. This design check sheet must be submitted with any application to use City-owned assets for new or additional wireless communication attachments. Failure to fully complete the check sheet may result in application rejection or denial.*

*All structural design, detailing, and construction practices shall be in conformance with the most currently published version of PBOT's Structural Design Criteria for Vertical Infrastructure.*

### Primary Documents

<i>Applicant</i>		<i>COP Staff</i>
<b>Required</b>		<b>Provided</b>
<input type="checkbox"/>	DETAILED PLANS - Stamped and signed by Professional Engineer currently registered in the State of Oregon (required following acceptance of application)	<input type="checkbox"/>
<input type="checkbox"/>	POLE, MAST ARM, FOUNDATION, ANCHORAGE STRUCTURAL CALCULATIONS - Stamped and signed by Professional Engineer currently registered in the State of Oregon	<input type="checkbox"/>
<input type="checkbox"/>	GEOTECHNICAL ENGINEERING REPORT - Stamped by Professional Engineer or Geologist currently registered in the State of Oregon (Unless using PBOT Standard Drawings)	<input type="checkbox"/>
<input type="checkbox"/>	EXISTING STRUCTURE ASSESSMENT - Stamped and signed by Professional Engineer currently registered in the State of Oregon	<input type="checkbox"/>
<input type="checkbox"/>	PROJECT SPECIAL PROVISIONS - Stamped and signed by Professional Engineer currently registered in the State of Oregon	<input type="checkbox"/>

### Detailed Plans

<input type="checkbox"/>	Site map included with Latitude and Longitude of each proposed pole location	<input type="checkbox"/>
<input type="checkbox"/>	Offset dimension from proposed pole to existing pole, if the pole is a replacement	<input type="checkbox"/>
<input type="checkbox"/>	Existing building limits above and below ground	<input type="checkbox"/>
<input type="checkbox"/>	Existing infrastructure features, i.e. poles, walls, fences, bus shelters, planters, garbage bins, awnings, etc.	<input type="checkbox"/>
<input type="checkbox"/>	Existing trees, including spread of foliage	<input type="checkbox"/>
<input type="checkbox"/>	Existing and proposed overhead utilities, including temporary relocation locations and heights	<input type="checkbox"/>
<input type="checkbox"/>	Existing and proposed underground utilities, including temporary relocations locations and depths	<input type="checkbox"/>
<input type="checkbox"/>	Existing and proposed sidewalk limits	<input type="checkbox"/>
<input type="checkbox"/>	Existing and proposed curb and curb ramp limits	<input type="checkbox"/>
<input type="checkbox"/>	Right-of-way boundaries and easements	<input type="checkbox"/>
<input type="checkbox"/>	North arrow	<input type="checkbox"/>
<input type="checkbox"/>	Drawing scale	<input type="checkbox"/>
<input type="checkbox"/>	Proposed light or signal pole location, including footing elevations	<input type="checkbox"/>
<input type="checkbox"/>	Dimensioned offset of proposed street light or signal pole and foundation from face of curb, building face, and other building structural elements such as basement walls.	<input type="checkbox"/>
<input type="checkbox"/>	Show all weld symbols, special weld details, special inspection requirements, structure dimensions to be field verified, structure layout, member sizes, and any non-PBOT-standard structural detailing.	<input type="checkbox"/>
<input type="checkbox"/>	All proposed relevant dimensions of pole attachments including weight, location, elevation, size of such as signs, luminaires, signal heads, antenna, service cabinets, banners, etc.	<input type="checkbox"/>

*The City of Portland is committed to meaningful access. To request translation, interpretation, modifications, accommodations or other auxiliary aids or services, contact 503-823-6868, Relay 711. Service 711.*

# WIRELESS FACILITY ON CITY OWNED INFRASTRUCTURE



## STRUCTURAL DESIGN CHECK SHEET

*Effective 08/17/2020*



### Detailed Plans (Continued)

<input type="checkbox"/>	Material specifications for all structural components including pole, bolts, welds, anchors, concrete, rebar, etc.	<input type="checkbox"/>
<input type="checkbox"/>	All design criteria, including, but not limited to the following:	<input type="checkbox"/>
	Appropriate design wind speed of 100 mph, with a Gust factor of 1.14 and a wind importance factor (Ir) of 1.00	
	Fatigue category	
	Recurrence interval	
	Future loading conditions	
<input type="checkbox"/>	Equipment orientation diagram for each pole	<input type="checkbox"/>
<input type="checkbox"/>	Reference to 2010 City of Portland Standard Construction Specifications as basis of construction	<input type="checkbox"/>
<input type="checkbox"/>	The foundation reinforcement is completely detailed and is site specific.	<input type="checkbox"/>
<input type="checkbox"/>	Number of anchor bolts meets or exceeds minimum specified by AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, Sixth Edition (2013)	<input type="checkbox"/>

### Equipment Details

<input type="checkbox"/>	Labeled with identifiable names that match the calculations	<input type="checkbox"/>
<input type="checkbox"/>	Details for all proposed equipment and appurtenances shall be provided. Details should include size, fully-loaded weight, anchorages, effective projected area, and proposed mounting location.	<input type="checkbox"/>
<input type="checkbox"/>	Connection details for all proposed pieces of equipment shall be provided and completely detailed.	<input type="checkbox"/>

### Base Plate Details

<input type="checkbox"/>	Pole base plate size, thickness, material, bolt circle, bolt hole size and location should be detailed. Weld size between pole and base plate shall be shown.	<input type="checkbox"/>
--------------------------	---	--------------------------

### Anchorage Details

<input type="checkbox"/>	Anchor bolt number, length, size, embedment depth, projected height above foundation, projected height above base plate, bolt circle, finish, and material shall be clearly detailed.	<input type="checkbox"/>
--------------------------	---	--------------------------

### Foundation Details

<input type="checkbox"/>	Foundations shall be a minimum of 3'-0" in diameter for street lights, and 3'-6" for signal poles	<input type="checkbox"/>
<input type="checkbox"/>	Concrete specifications shall be provided, and shall have a minimum compressive strength of 4,000 psi at 28 days	<input type="checkbox"/>
<input type="checkbox"/>	Foundation reinforcement shall be detailed with bar locations, shapes, sizes, spacing, and covers	<input type="checkbox"/>
<input type="checkbox"/>	Foundation elevations referenced from City of Portland datum. For more information: <a href="https://www.portlandoregon.gov/TRANSPORTATION/article/70676">https://www.portlandoregon.gov/TRANSPORTATION/article/70676</a>	<input type="checkbox"/>
<input type="checkbox"/>	Foundations contain a pillar 30" tall, above finished grade, if no curb is present	<input type="checkbox"/>

### Pole Shop Drawings

<input type="checkbox"/>	Signed and stamped by a Professional Engineer registered in the State of Oregon. Pole shop drawings shall include details for all pole, connection, mast arm, and anchorage components. All materials, sizes, and finishes of bolts and welds shall be detailed.	<input type="checkbox"/>
--------------------------	--	--------------------------

# WIRELESS FACILITY ON CITY OWNED INFRASTRUCTURE



## STRUCTURAL DESIGN CHECK SHEET

*Effective 08/17/2020*



### Structural Calculations

<input type="checkbox"/>	Calculation book cover sheet	<input type="checkbox"/>
<input type="checkbox"/>	Table of contents	<input type="checkbox"/>
<input type="checkbox"/>	Designed per AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, Sixth Edition (2013)	<input type="checkbox"/>
<input type="checkbox"/>	Complete design criteria including all design codes used, live load assumptions, seismic values, wind speeds, etc.	<input type="checkbox"/>
<input type="checkbox"/>	Pole loading calculations to show the proposed equipment falls within the maximum allowable Zone loads as shown in Standard Drawings P-667 through P-669	<input type="checkbox"/>
<input type="checkbox"/>	Final design calculations for the following elements, at a minimum: Mast arm and luminaire arm Mast arm and luminaire arm connection weld Mast arm and luminaire arm connection bolts Mast arm and luminaire arm connection plates Vertical post Connections for all fully-loaded weight of equipment and appurtenances Vertical post base weld Base plate Anchor bolts Foundation concrete and rebar Foundation diameter and embedment depth, unless provided in geotech report Vaulted basements, sidewalks, or building walls	<input type="checkbox"/>
<input type="checkbox"/>	References cited for all numbers/values/assumptions/criteria taken from other calculations or sources, including design codes and standard drawings and details	<input type="checkbox"/>
<input type="checkbox"/>	Completed header for all sheets	<input type="checkbox"/>
<input type="checkbox"/>	Load summary table stating the calculated loads vs the allowable loads	<input type="checkbox"/>
<input type="checkbox"/>	All sheets shall be numbered	<input type="checkbox"/>
<input type="checkbox"/>	Calculations shall be clearly separated with divider pages for each primary element of the design, i.e. pole, mast arm, anchorage, foundation, etc.	<input type="checkbox"/>
<input type="checkbox"/>	All computer output shall include accompanying Engineer's narrative and interpretation of the results	<input type="checkbox"/>
<input type="checkbox"/>	Input parameters into computer models shall be clearly defined and presented	<input type="checkbox"/>
<input type="checkbox"/>	The calculations show clearly that all structural elements, connections, anchorages, and features are at a D/C ratio of less than 100%.	<input type="checkbox"/>

### Geotechnical Engineering Report (Not required if using PBOT Standard Drawing P-669)

<input type="checkbox"/>	Report cover sheet	<input type="checkbox"/>
<input type="checkbox"/>	Table of contents	<input type="checkbox"/>
<input type="checkbox"/>	Boring logs	<input type="checkbox"/>
<input type="checkbox"/>	Recommended soil parameters	<input type="checkbox"/>
<input type="checkbox"/>	Recommended foundation diameter and embedment depth, unless provided in calculation section	<input type="checkbox"/>
<input type="checkbox"/>	Recommended construction and temporary support requirements	<input type="checkbox"/>
<input type="checkbox"/>	Recommended special provision requirements	<input type="checkbox"/>
<input type="checkbox"/>	L-Pile analysis	<input type="checkbox"/>

*The City of Portland is committed to meaningful access. To request translation, interpretation, modifications, accommodations or other auxiliary aids or services, contact 503-823-6868, Relay 711. Service 711.*

# WIRELESS FACILITY ON CITY OWNED INFRASTRUCTURE



## STRUCTURAL DESIGN CHECK SHEET

*Effective 08/17/2020*



### Existing Structure Assessment

<input type="checkbox"/>	Report cover sheet	<input type="checkbox"/>
<input type="checkbox"/>	Table of contents	<input type="checkbox"/>
<input type="checkbox"/>	List of possible affected structures, or statement of no structures affected	<input type="checkbox"/>
<input type="checkbox"/>	Results of site visit and records search related to vaulted basements, sidewalks or existing building walls	<input type="checkbox"/>
<input type="checkbox"/>	Determination of possible or anticipated impacts to vaulted basements, sidewalks or existing building walls	<input type="checkbox"/>
<input type="checkbox"/>	Assessment or analysis of condition and load carrying capacity of existing vaulted basements, sidewalks or existing building walls	<input type="checkbox"/>
<input type="checkbox"/>	Recommended design criteria, and any recommended action necessary to preserve and protect existing structures	<input type="checkbox"/>

### Special Provisions

<input type="checkbox"/>	Signed and stamped by a Professional Engineer registered in the State of Oregon	<input type="checkbox"/>
<input type="checkbox"/>	Based on 2010 City of Portland Standard Construction Specifications	<input type="checkbox"/>
<input type="checkbox"/>	All applicable Sections and Subsections included	<input type="checkbox"/>
<input type="checkbox"/>	Shall incorporate recommendations provided by project Geotechnical Engineer and Structural Engineer	<input type="checkbox"/>