

Vertical Infrastructure in the ROW: January 2021 Update



2021 Design Commission & Historic Landmarks Commission Briefing



PBOT
PORTLAND BUREAU OF TRANSPORTATION

Agenda

1. Background
2. Recap of Small Cells
3. Federal Communications Commission (FCC) Developments
4. Vertical Infrastructure (VI) Program
5. New Street Light Pole RFI/RFP Process
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7. Example Small Wireless Facilities (SWFs)
8. Current Conditions
9. Final Design Concepts
10. Updated Ornamental Design
11. New Ornamental Design
12. Next Steps
13. Questions



Background

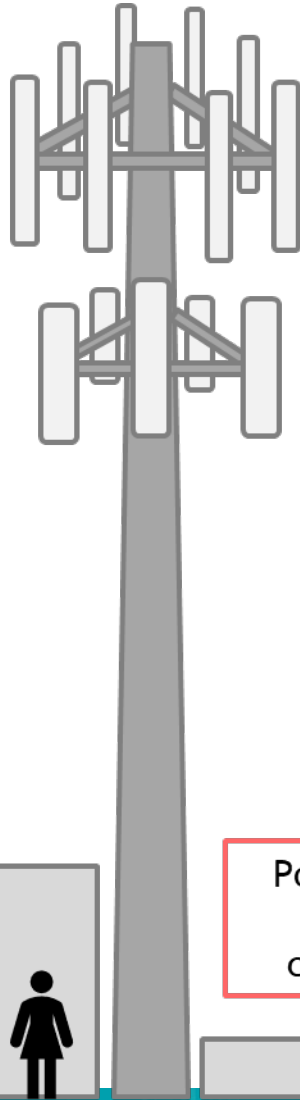
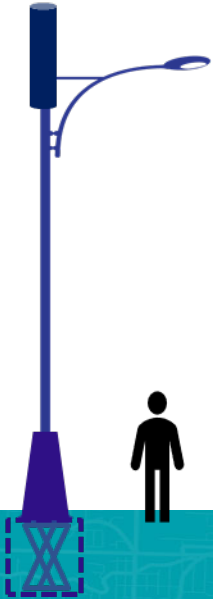
- In Spring 2018, PBOT staff briefed the Design Commission and Historic Landmarks Commission on the potential impacts that vertical infrastructure (VI) deployments could have on Portland
- PBOT staff returned in 2019 to update the Commissions on City of Portland directives established on how we will govern this emerging technology:
 1. Insure digital inclusion across communities
 2. Manage the public right-of-way (ROW) to support the well-being of residents
 3. Secure fair and reasonable compensation for use of the ROW
 4. Ensure VI deployments support the *Digital Equity Action Plan* (DEAP), as adopted by City Council
 5. Ensure that the City protects the public health, safety, and welfare of its citizens



Recap of Small Cells

MacroCell Tower ~80 ft
(can range from 30-250 ft)

Small Cell Site on a Streetlight
Antenna, radio relay units,
sometimes batteries or backup
power equipment



Power supply equipment,
backup generators,
climate-controlled base

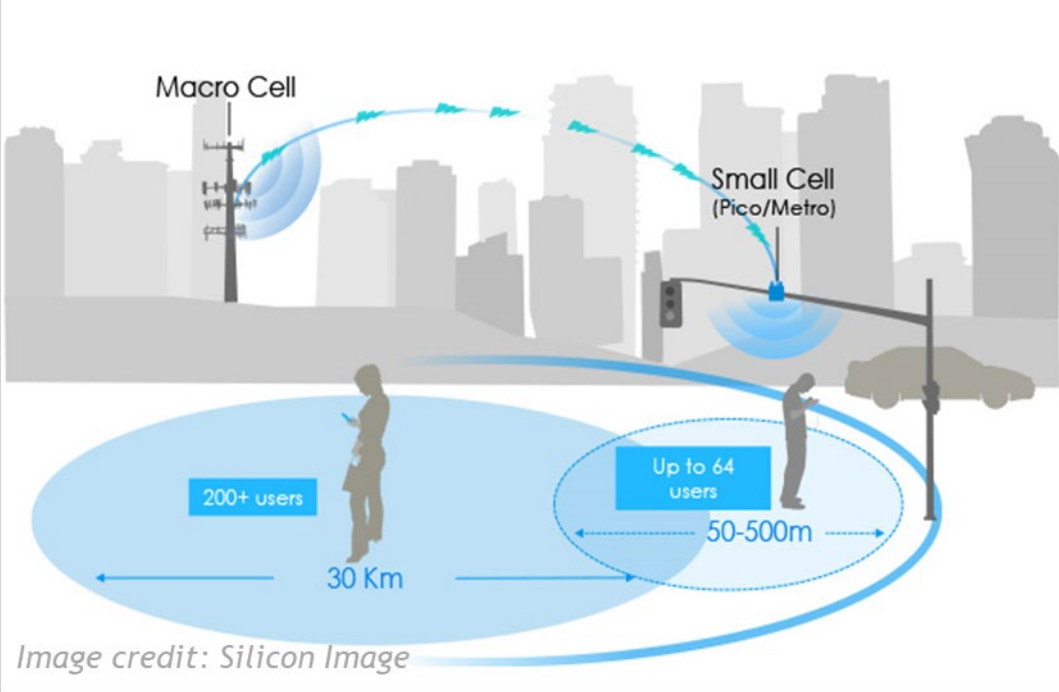


Image credit: Silicon Image

- Small cells or distributed antenna systems (DAS) – short range, low-powered cellular radio access
- Small because these mobile base stations have:
 - Shorter range and handle fewer calls/sessions
 - Not because of physical size

Federal Communications Commission (FCC) Developments

- The FCC adopted a Small Cell Order in 2018 that significantly impacts wireless infrastructure deployment in Portland:
 - Safe harbor fee of \$270/small wireless facility (or recover Portland's actual costs)
 - Limited aesthetic controls
- Portland - as named party in national coalition - challenged Small Cell Order in Ninth Circuit.
 - Safe harbor fee: UPHELD
 - Limited aesthetic controls: OVERTURNED
- Portland - and national coalition - considering a request to US Supreme Court to review Small Cell Order.

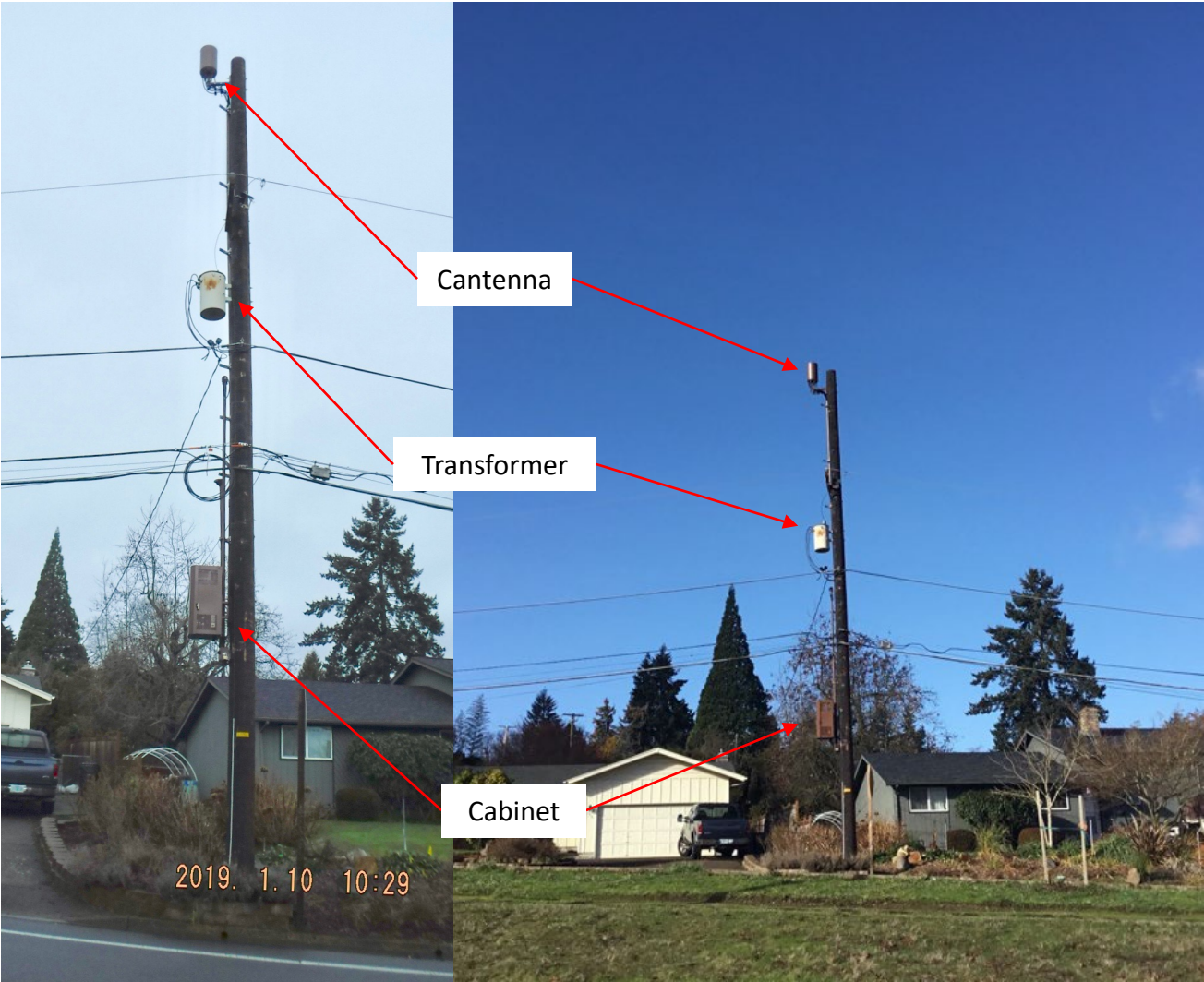
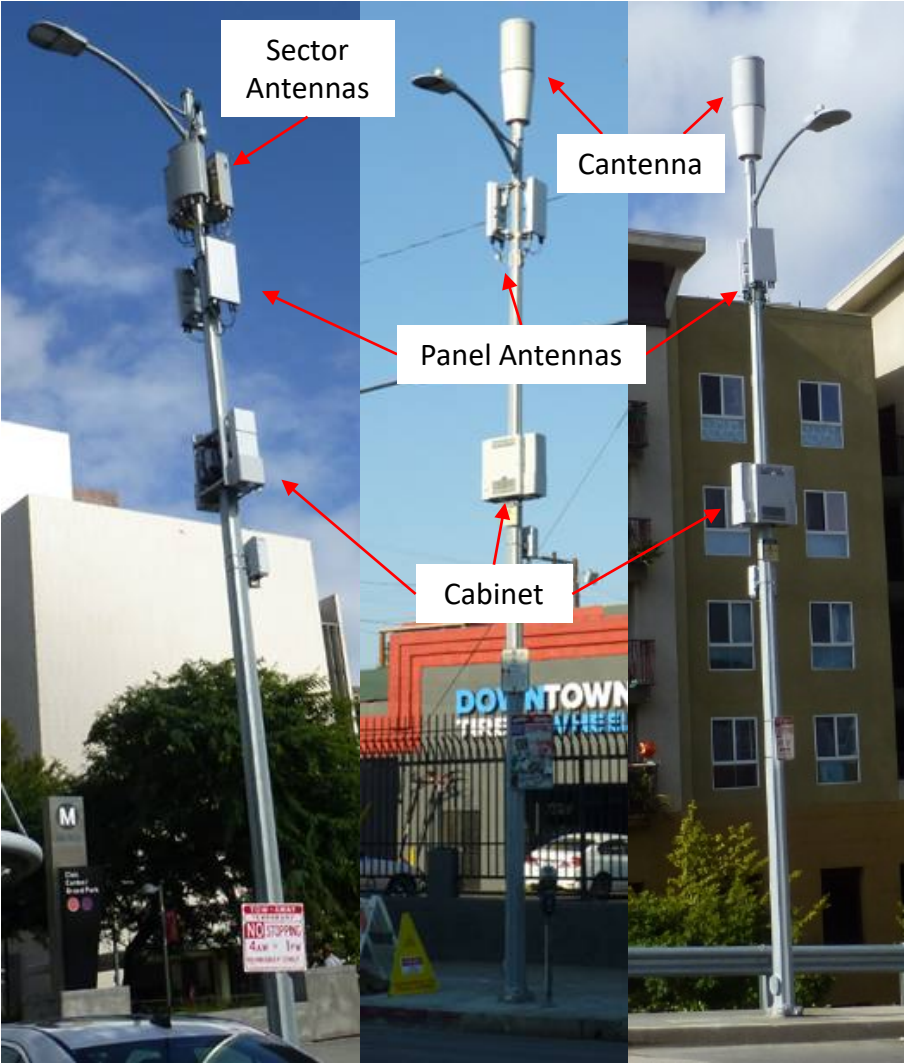


New Street Light Pole RFI/RFP Process

- On January 21, 2020, PBOT released an RFI/RFP to design a new street light pole standard to be used when replacing ornamentals.
- Commissioners Brian McCarter and Maya Foty volunteered to join the Advisory Committee.
- Aero Wireless Group was awarded the contract to develop two streetlight pole designs via two workshops.
- Final two design concepts for Commissions to review.



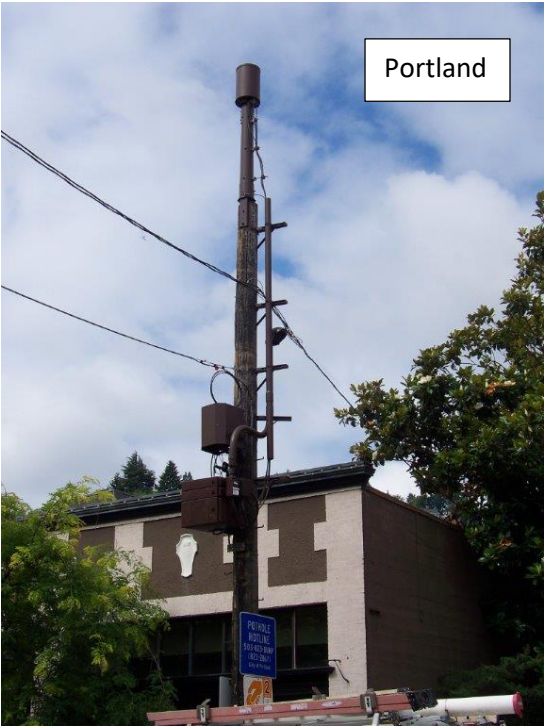
Pole Design Standards (Street Light) - Examples



Example Small Wireless Facilities (SWFs)



Example Small Wireless Facilities (SWFs)



Current Conditions



Ornamentals in Downtown Chinatown

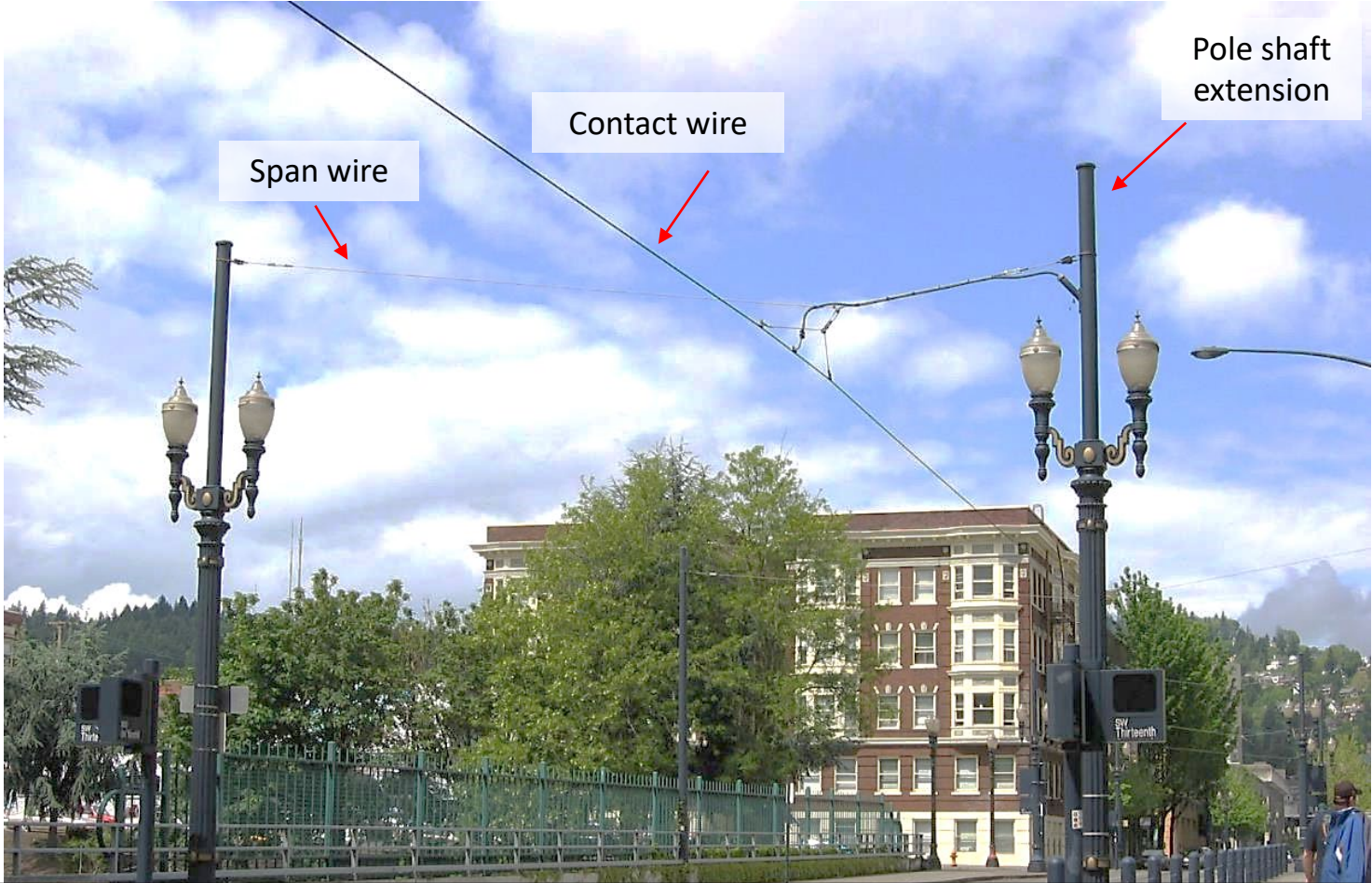
Current Conditions

The Twin Ornamental was re-engineered to accommodate a full-height steel pole within the outer ornamental cladding.



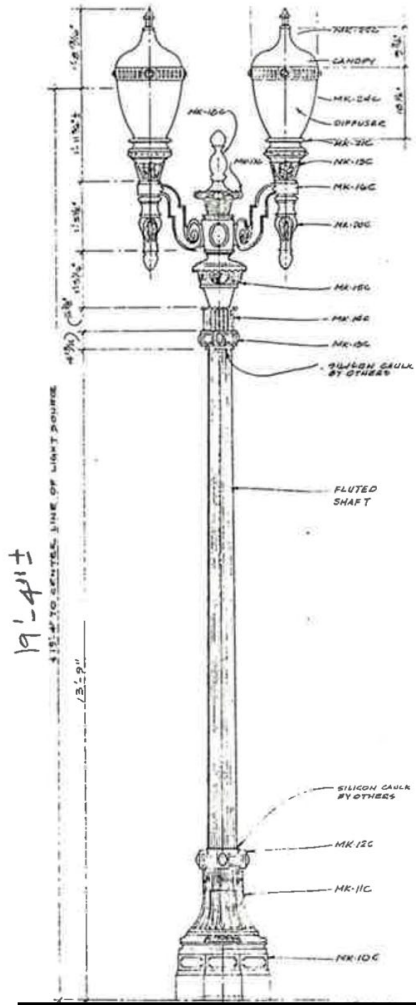
Portland Streetcar:
Single use strain pole, 18" diameter,
faceted, untapered

Current Conditions

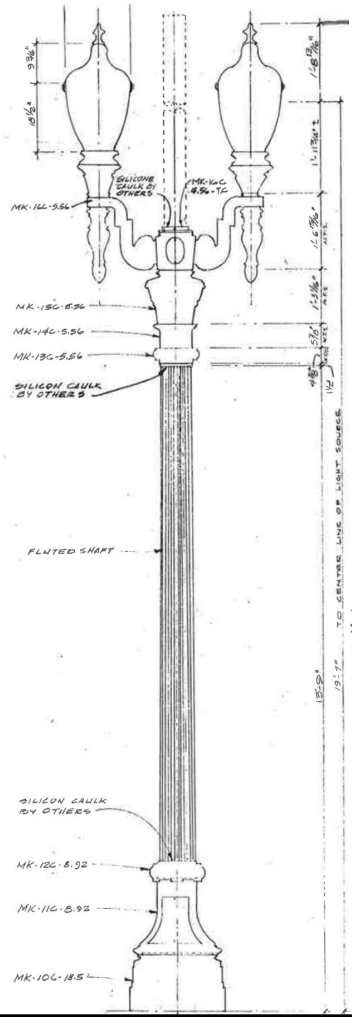


Concept for dual use pole began in 1986 with Banfield Light Rail Downtown. The Twin Ornamental was re-engineered to accommodate a full-height steel pole within the outer ornamental cladding.

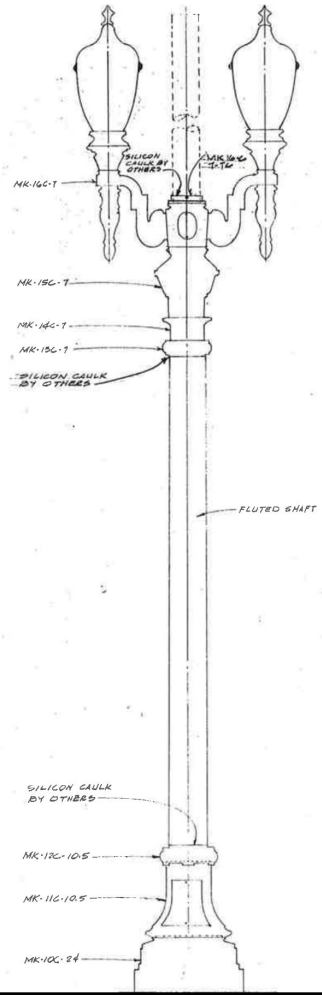
Current Conditions



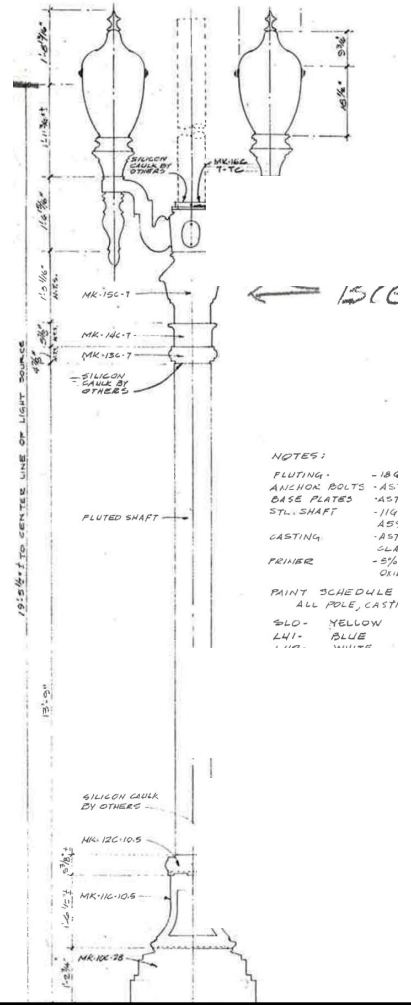
23-3/4" Base
Standard



23-3/4" Base
LU-1



28" Base
LU-2

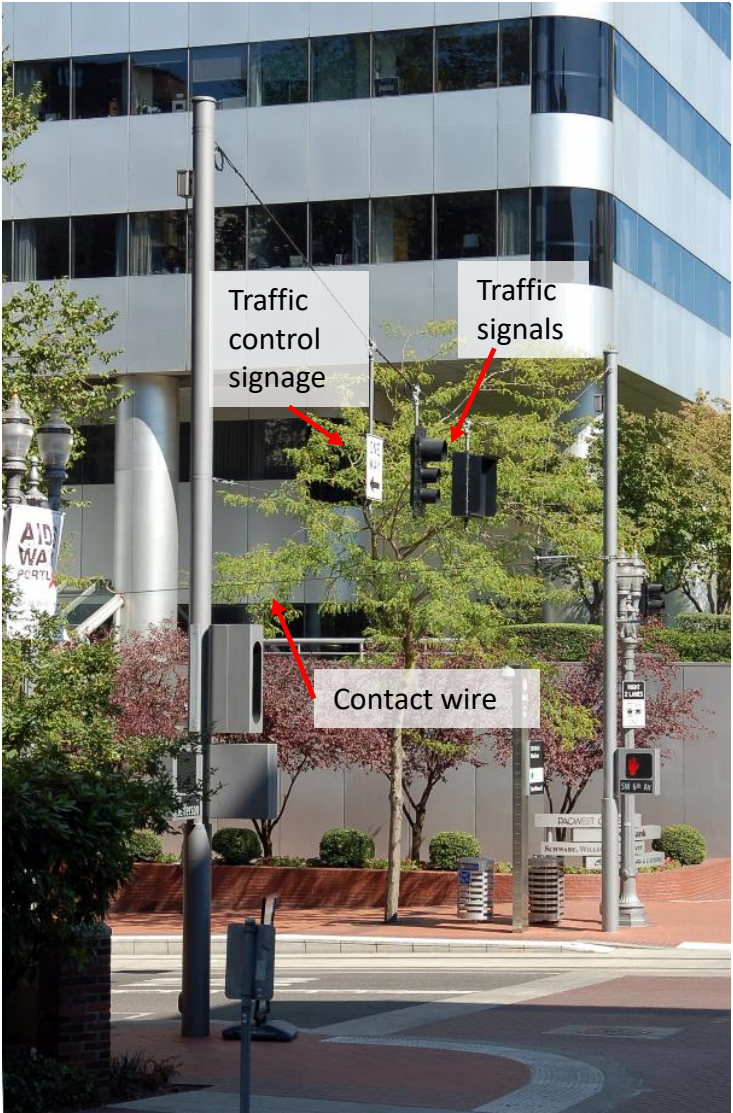


32" Base
LU-3

- NOTES:
- FLUTING - 184
 - ANCHOR BOLTS - A5
 - BASE PLATES - A57
 - STL. SHAFT - 114
 - CASTING - A51
 - PRIMER - S4
 - PAINT SCHEDULE - S76
 - ALL POLE CAST
 - SLO - YELLOW
 - L41 - BLUE



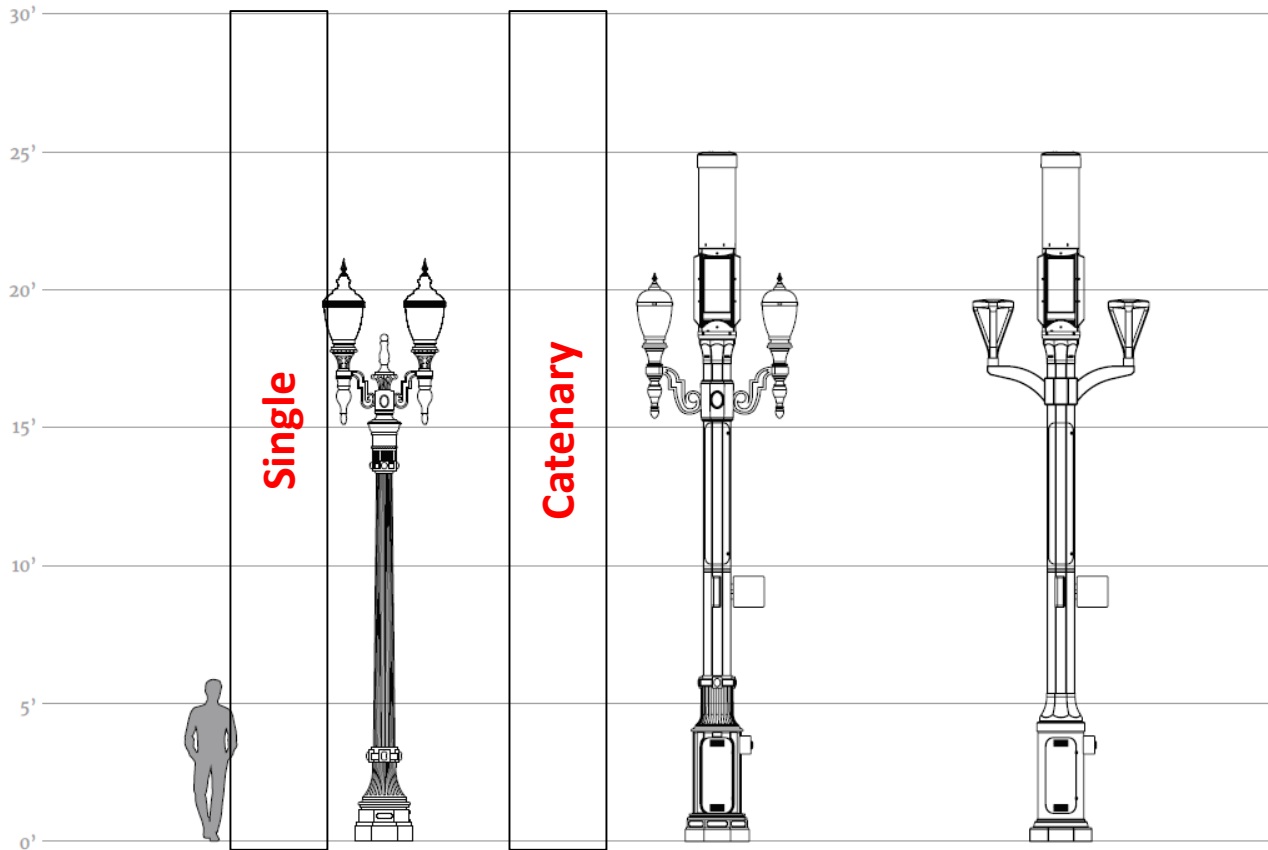
Current Conditions





Portland Transit Mall Light Rail:
Reminder how mature trees mitigate pole and infrastructure impact on public realm.

Final Design Concepts



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Size Comparison
 Existing, 1A Traditional, 1B Contemporary

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Updated Ornamental



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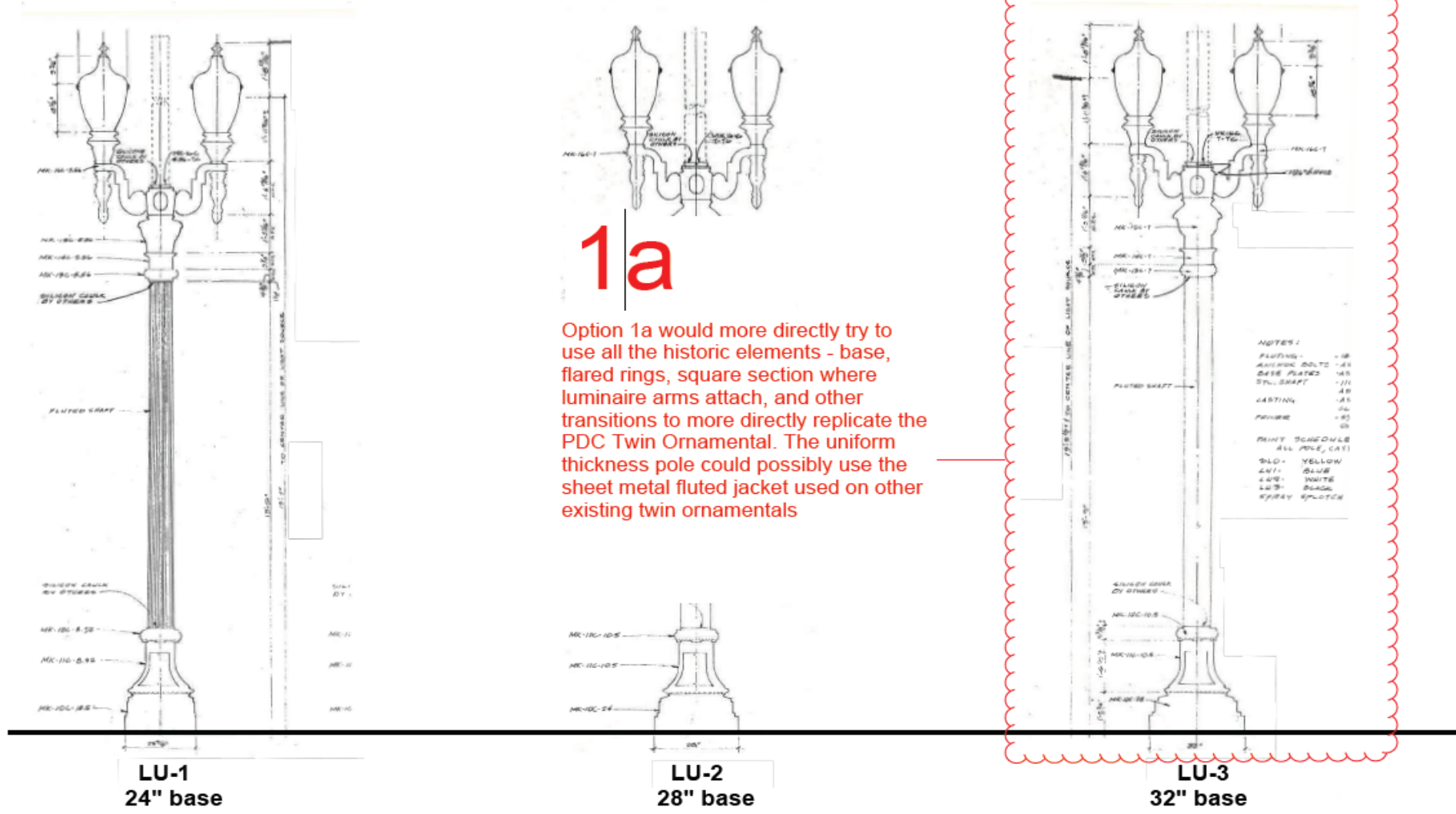


Proposed Twin Ornamental
1A – Traditional Octagonal Pole With Base Cabinet

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Copies of drawings I received from Bill Hughes, City lighting engineer, back in the early 1990's. The deployment of these dual use, twin ornamentals was based on different structural requirements, Under the heaviest horizontal loading, LU-3 was used. The manufacturer was able to keep the basic look and feel of proportions by simply scaling up the base and pole.



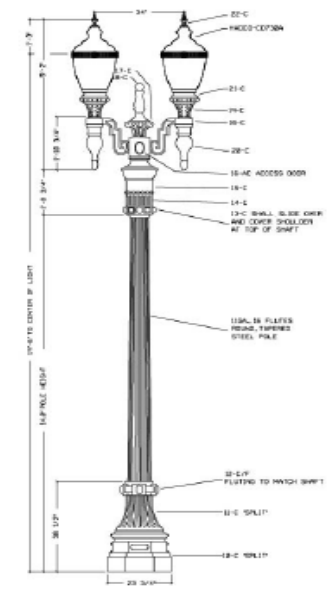
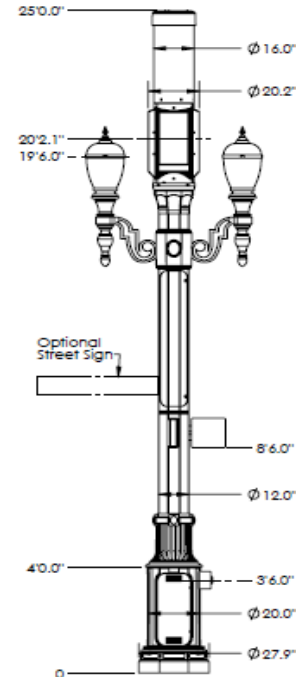
City of Portland Smart Pole Design

Replacement Concepts



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Estimated Usable Cabinet Volume:
 Available Cellular Equipment Volume: 7.5 Cubic Feet
 Available City or Future Equipment Volume: 4 Cubic Feet
 Maximum Equipment Width: 15"



Proposed Twin Ornamental
 1A - Traditional Octagonal Pole With Base Cabinet

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Modern Ornamental

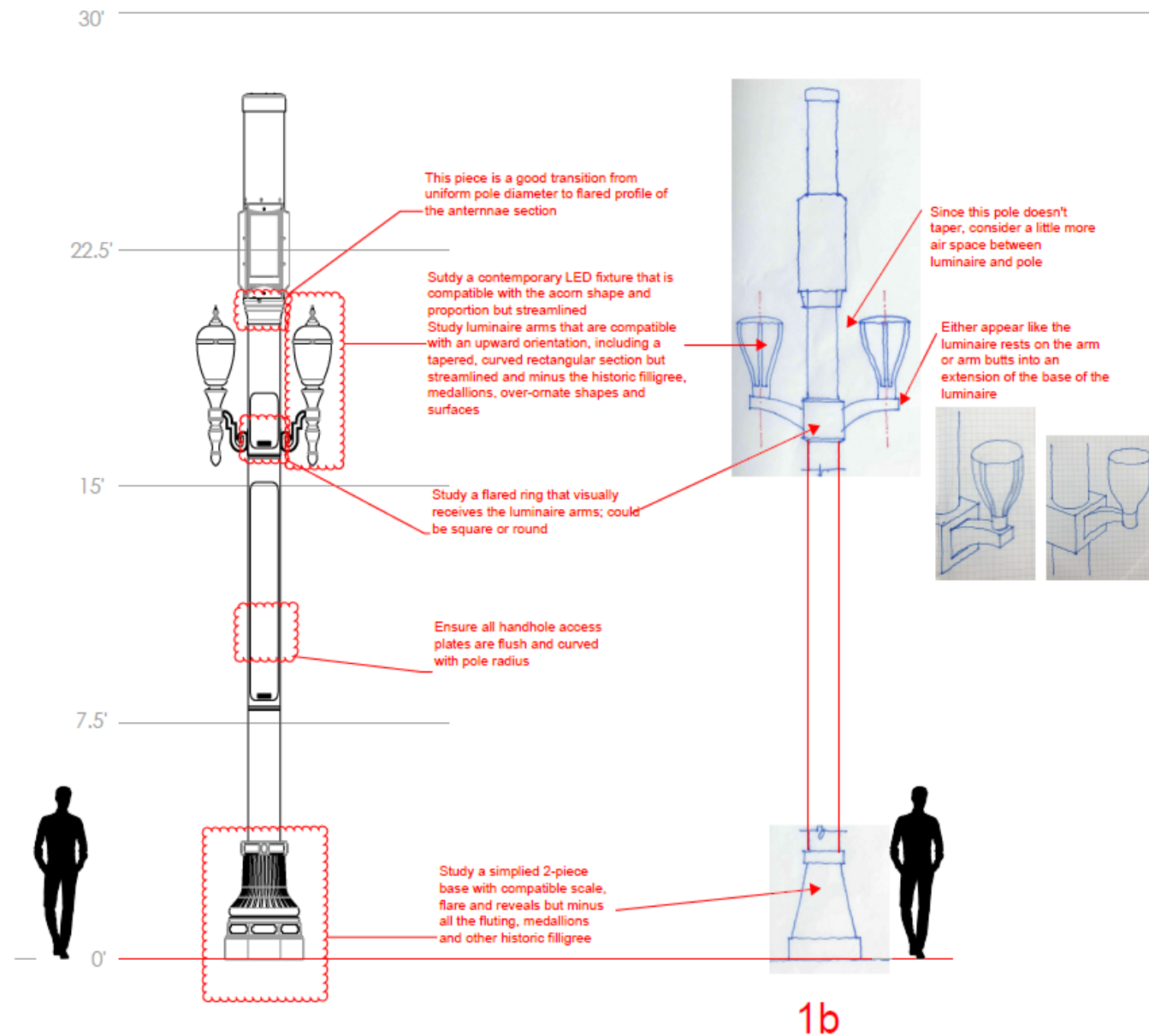


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Proposed Twin Ornamental
1B – Contemporary Octagonal Pole With Base Cabinet

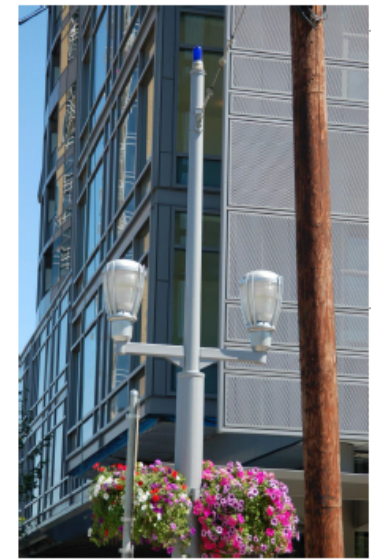
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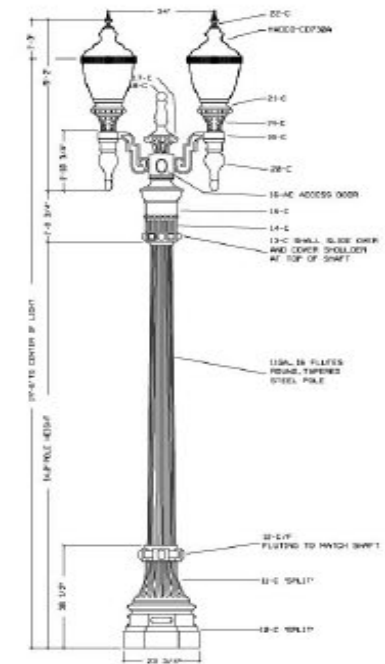
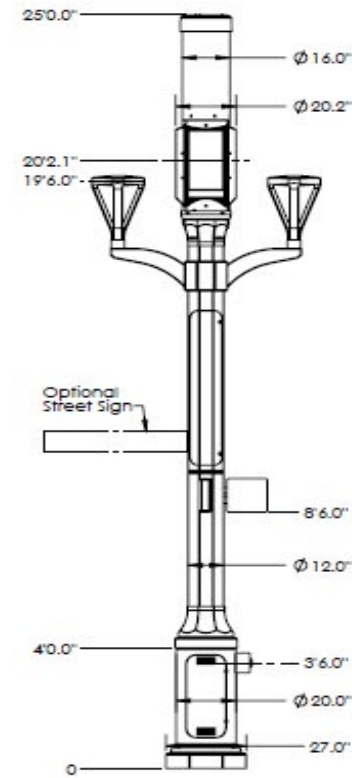
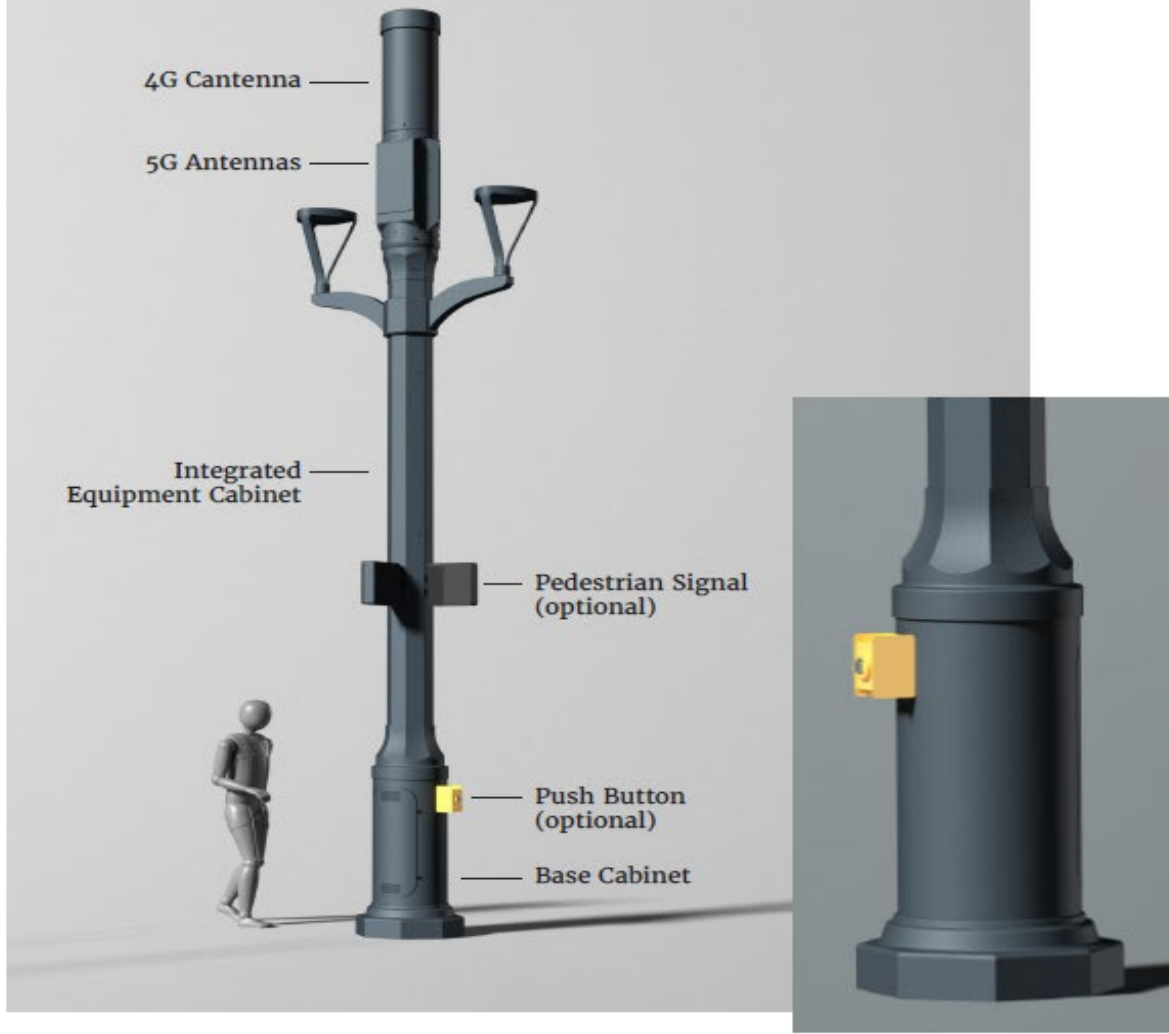
This Landscape forms luminarie is a successful example of contemporary luminaire that is compatible with the traditional acorn-shaped Portland ornamental street light .



South Waterfront street light is an example of a twin luminaire fixture with clean attachment of support arms and an energy-efficient luminaire.



Estimated Usable Cabinet Volume:
 Available Cellular Equipment Volume: 7.5 Cubic Feet
 Available City or Future Equipment Volume: 4 Cubic Feet
 Maximum Equipment Width: 15"



Next Steps

- PBOT request of the Design Commission and Historic Landmarks Commission:
 - Letter of Support approving one of the two design concepts to advance to final engineering and implementation

Special thanks to BPS, BDS, OCT and City Attorney's Office for their continuing support throughout this process



Questions?

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