

# 5G

## Mobile Telecommunications Infrastructure



**AT&T**

**T Mobile**

**verizon**<sup>✓</sup>

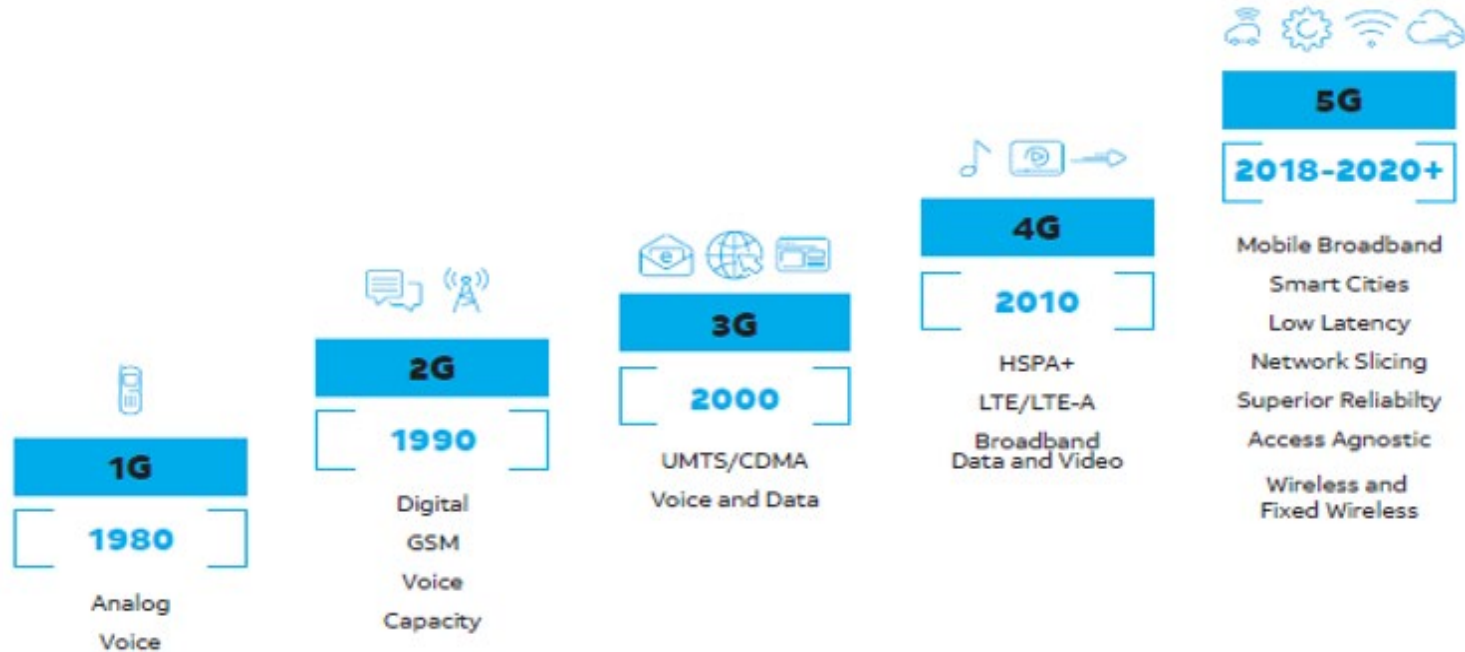


# 5G Mobile Telecom Infrastructure

- **5G and Small Cells**
- **Current State**
- **DoITT's Objective**
- **Precedents**
- **City Oversight**
- **5G Equipment Design**
- **Holistic Vision**



# Wireless Generation Evolution



Source: AT&T



# What is 5G?

**Fifth generation wireless technology, also known as “5G”, will deliver enhanced mobile broadband capabilities that are up to 100 times faster than speeds today with immediate responsiveness.**

**5G will be transmitted over higher wave frequency spectrum bands.**

- Higher frequency bands do not propagate well – they typically require “line-of-sight” and do not pass through obstacles.
- This will require a high level of cell densification via “small cells” in locations such as lampposts, buildings, and utility poles.

**5G will:**

- Significantly increase speed and provide real-time information.
- Connect everything



Source: Verizon



# What is a Small Wireless Facility?

- Small wireless facilities, also called “small cells,” are required to add capacity to existing wireless networks to meet the growing demand for wireless data.
- They contain antennas and support equipment that can typically be installed atop utility poles, transit poles, street lights, signs, and signal light poles.
- Unlike traditional cell towers, small wireless facilities are designed to blend into the existing environment as much as possible, making them less obtrusive and more aesthetically pleasing.



Source: Verizon



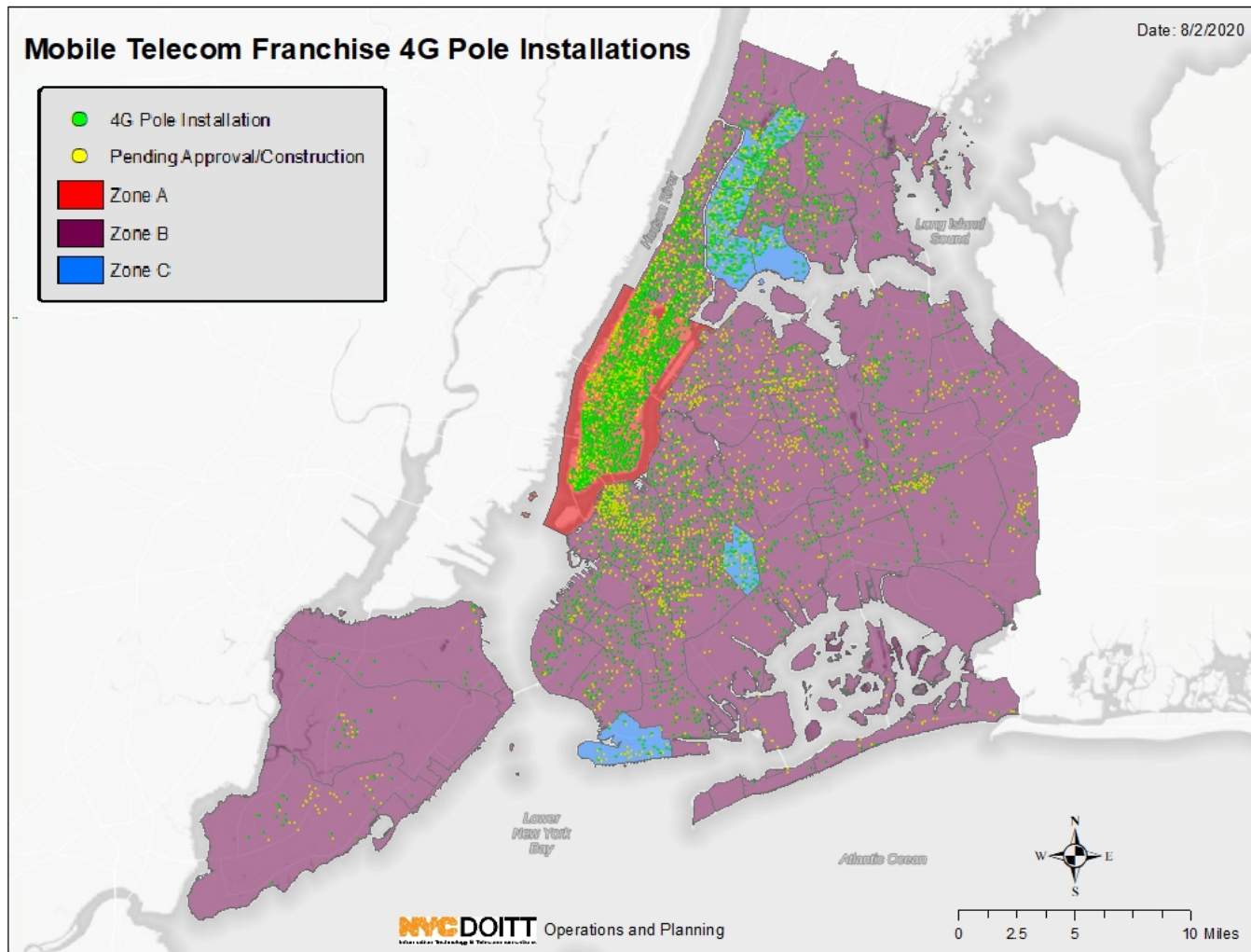
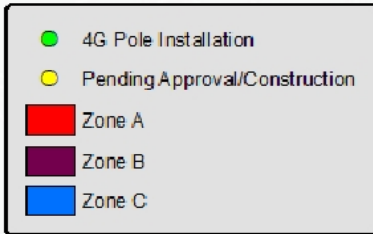
## Current State

- Carriers are deploying 5G in cities—big and small—across the world. New York City is at risk of falling behind.
- Existing 4G equipment design does not provide sufficient capacity to support 5G infrastructure.
- Installation of 5G equipment has largely been unregulated resulting in unsightly pole attachments deployed throughout the country.
- DoITT directed the wireless industry to collaborate and design a uniform and minimally obtrusive pole attachment capable of accommodating every carrier's 4G and 5G deployment needs.



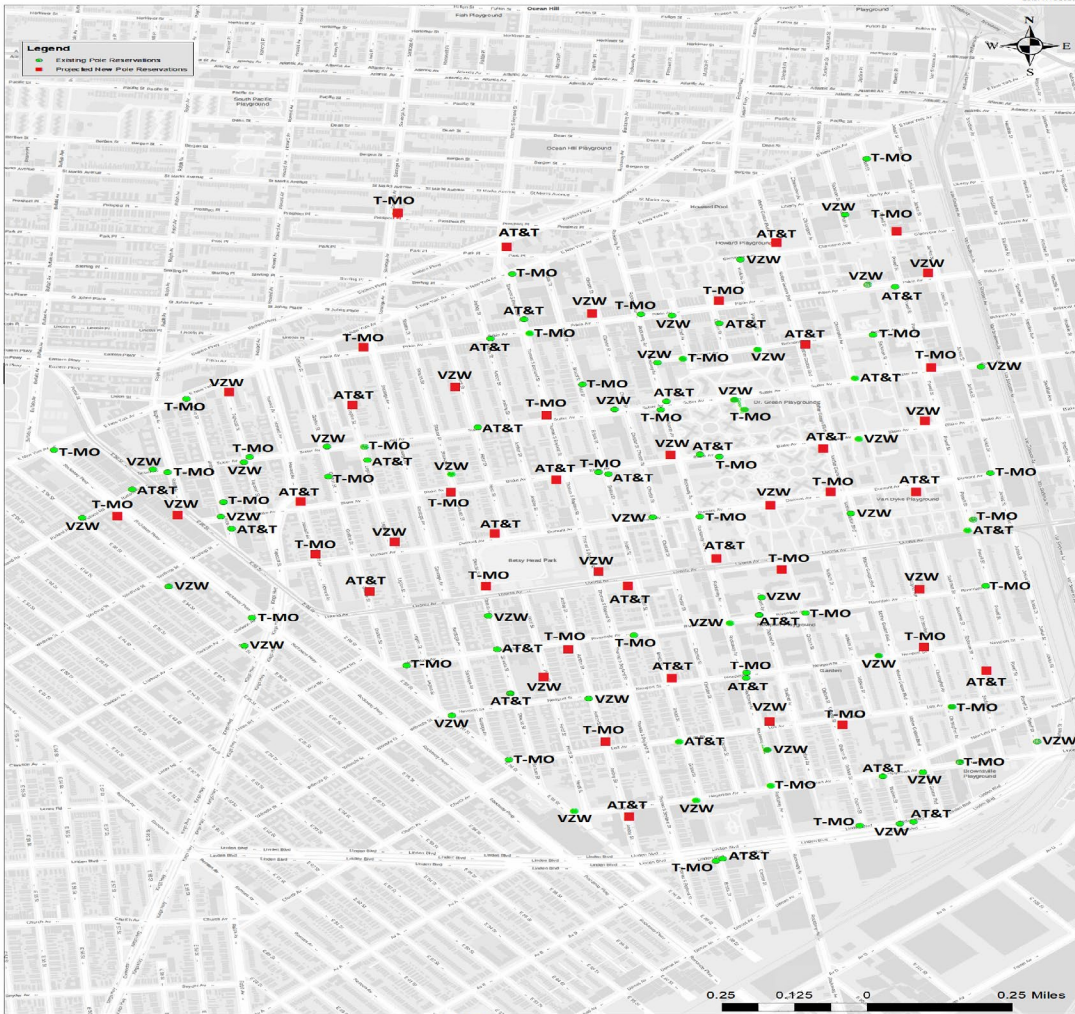
# Mobile Telecom Franchise 4G Pole Installations

Date: 8/2/2020



# Brownsville

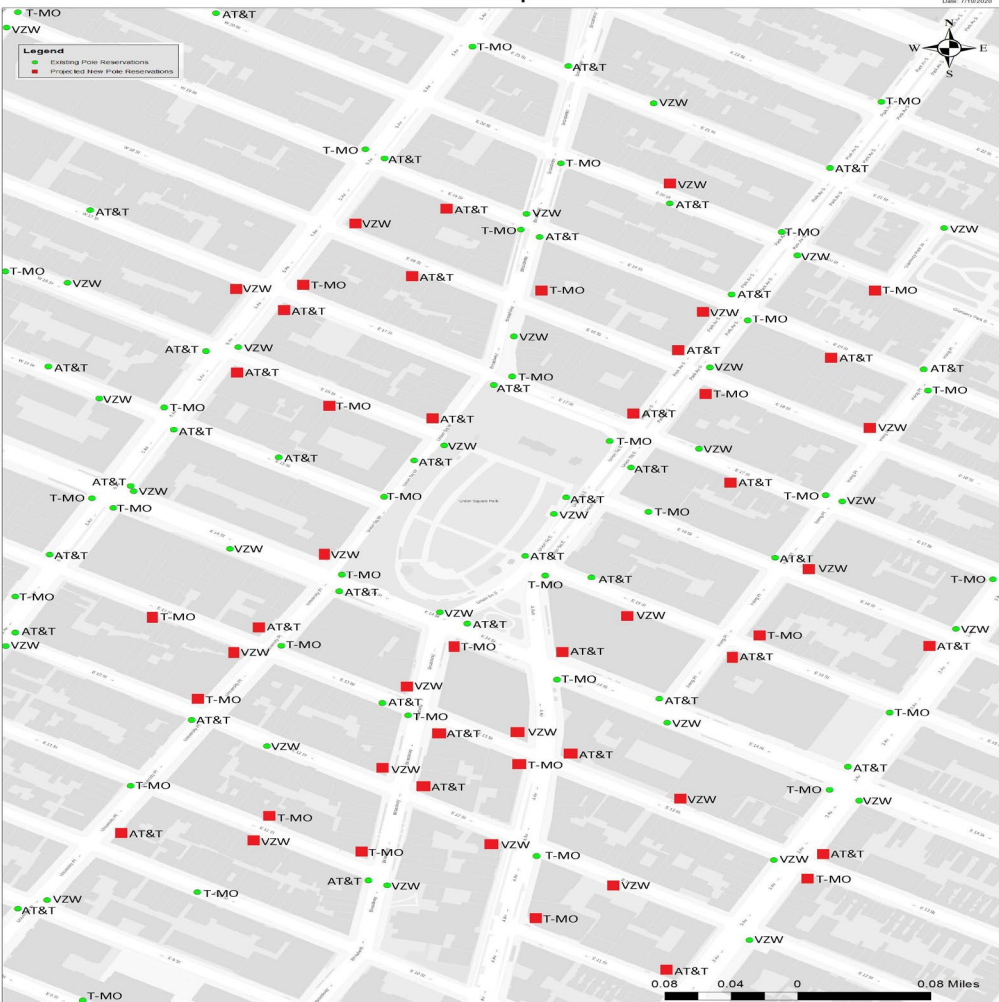
Date: 7/19/2020





# Union Square

Date: 7/19/2023



## DoITT's Objective

- Encourage industry collaboration to thoughtfully design a unified equipment enclosure to promote a rapid and safe citywide 5G deployment.
- Replace all existing 4G-only installations (~4,000) with new equipment capable of transmitting both 4G and 5G.
- Facilitate thousands of additional 5G installations throughout city in the next 2-3 years.
- Continue to focus on the equitable distribution of wireless services to ensure that traditionally underserved communities receive the same quality of service as those in the core of Manhattan.
- Implement review process efficiencies to enable expedited approvals.



# Precedents



Minneapolis



Chicago



San Francisco



# Precedents



Philadelphia



Los Angeles



Pittsburgh



## City Oversight

- Consulting with DOT, DoITT initiates pole reservation periods allocating a set number of poles and a geographic area of focus from which franchisees select.
- Pole site selection is based on franchisee network coverage or capacity needs.
- DoITT coordinates with DOT and Parks and Landmarks, where applicable, to review each reserved pole.
- One reservation/installation permitted per pole (i.e. one antenna shroud, one equipment box).
- All visible equipment must be painted to match color of pole.
- New foundations will be required to ensure structural integrity.
- Original historic light poles are off-limits.
- Radio frequency levels must comply with federal guidelines.

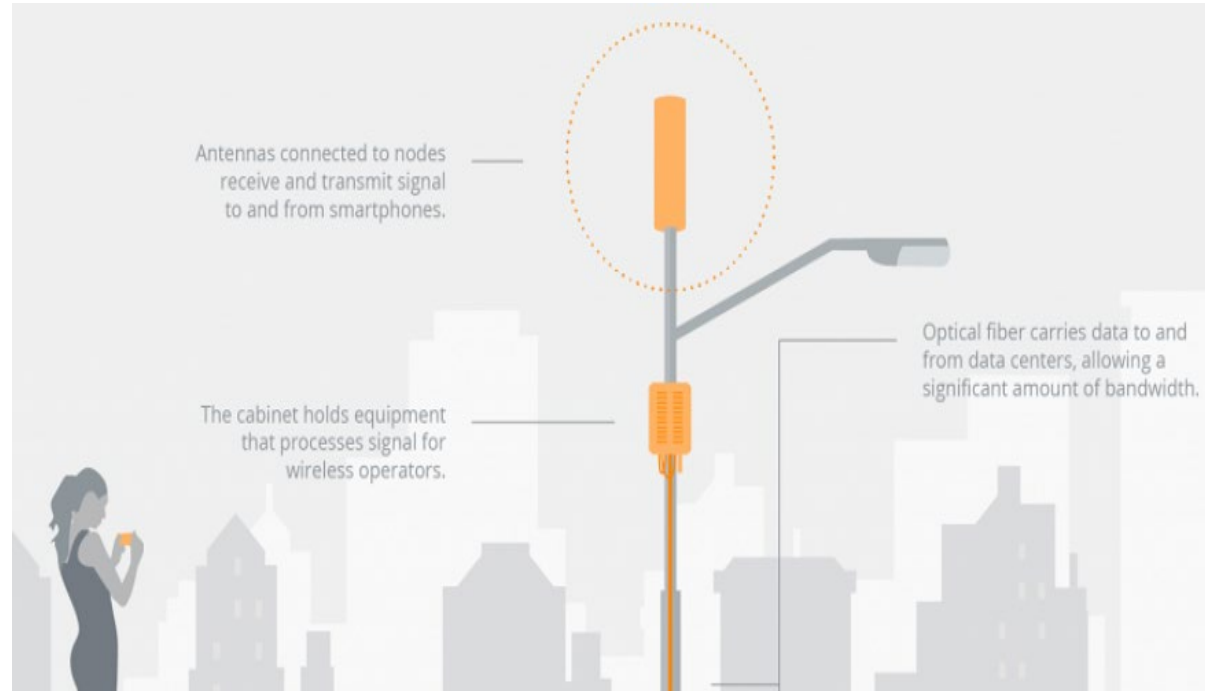


## Antenna Shroud

- Conceal 4G antenna and integrated 5G antenna/radio.
- Optimal height for unobstructed radio frequency transmission is 25-30 feet.
- Designed to conceal each carrier's unique 4G/5G equipment.

## Equipment Shroud

- Conceal 4G radio equipment.
- Placed between 17-18 feet up on pole to avoid typical DOT pole attachments.
- Designed to conceal each carrier's unique 4G radio equipment.

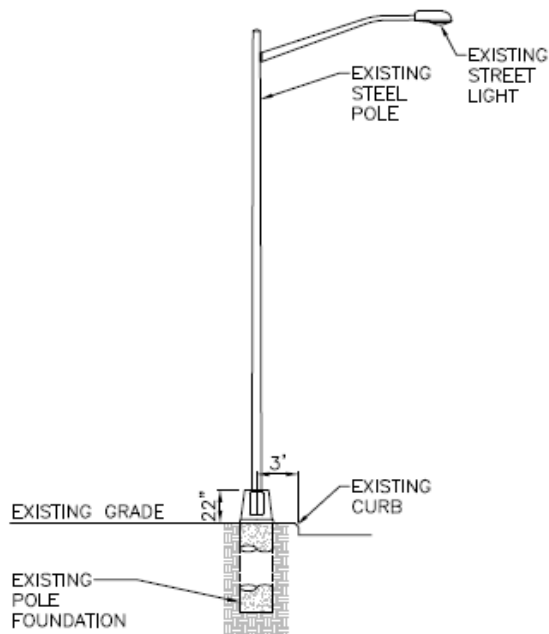


Source: Texas 5G Alliance



**NOTE:**

REFER TO STRUCTURAL ANALYSIS BY AHEAD ENGINEERING, DATED 6/13/2020 FOR STRUCTURAL CAPACITY OF EXISTING STRUCTURE TO SUPPORT PROPOSED DESIGN LOADING.



**EXISTING POLE ELEVATION**

SCALE: N.T.S

1  
LE-1

**NOTE:**

1. MOUNT PER MANUFACTURER'S SPECIFICATIONS.

2. DIMENSIONS SHOWN ARE APPROXIMATE DIMENSIONS REQUIRED FOR CONCEPTUAL REVIEW AND ARE SUBJECT TO CHANGE

TOP OF PROPOSED ANTENNA  
ELEV. = 32'-0" A.G.L

TOP OF EXISTING POLE  
ELEV. = 27'-0" A.G.L

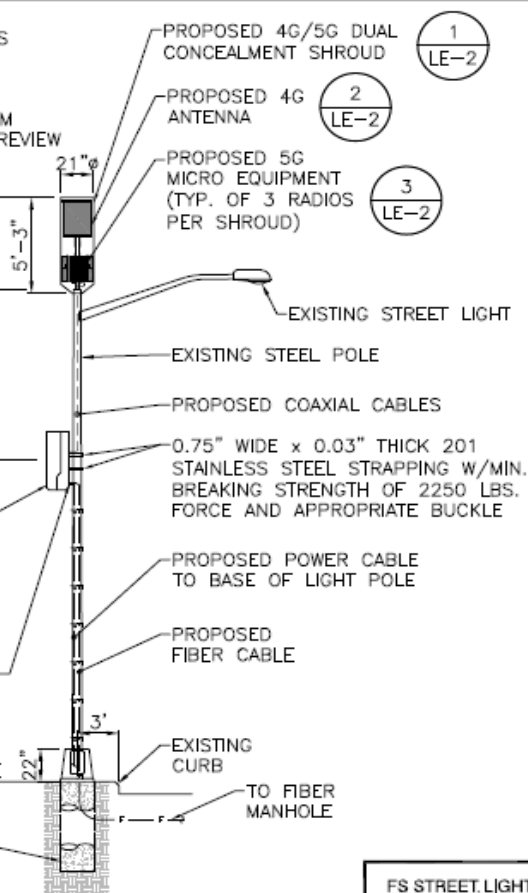
CL OF PROPOSED EQUIPMENT SHROUD  
ELEV. = 17'-6" A.G.L

5  
LE-2

PROPOSED EQUIPMENT INSTALLED WITHIN SHROUD EQUIPMENT ASSEMBLY (MOUNTED ON SIDEWALK SIDE OF POLE, PARALLEL TO MAJOR STREET)

PROPOSED 2" PENETRATION HOLE THROUGH POLE SHAFT FOR POWER, GROUND AND COAX (THREADED AND REINFORCED)

REPLACE EXISTING FOUNDATION WITH DOT APPROVED FOUNDATION



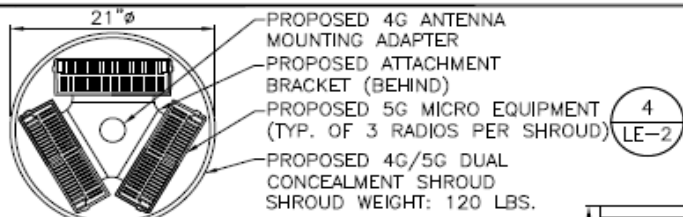
**PROPOSED POLE ELEVATION**

SCALE: N.T.S

2  
LE-1

FS STREET LIGHT POLE LE-1  
4G/5G SOLUTION

SCENARIO 3:  
MICRO 21' SHROUD

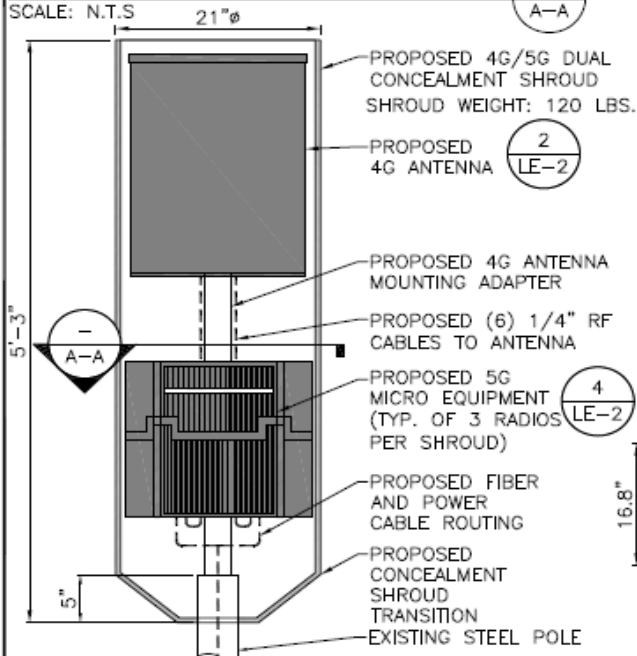


**NOTE:**  
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**NOTE:**  
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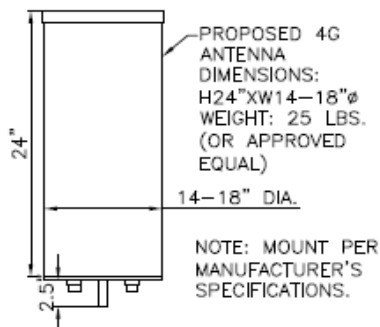
### 5G MICRO RADIO MOUNTING PLAN

SCALE: N.T.S



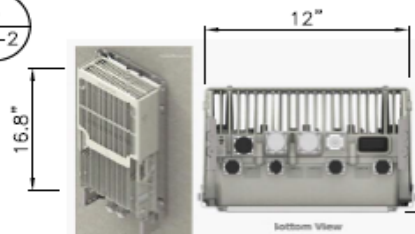
### 4G/5G ANTENNA CONCEALMENT SHROUD DETAIL

SCALE: N.T.S



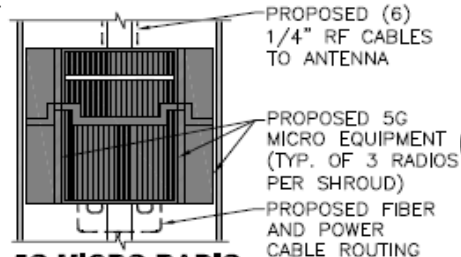
### 4G ANTENNA DETAIL

SCALE: N.T.S



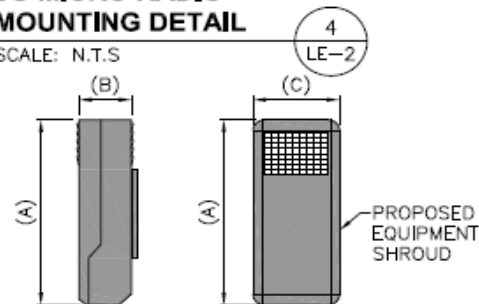
### 5G MICRO RADIO DETAIL

SCALE: N.T.S



### 5G MICRO RADIO MOUNTING DETAIL

SCALE: N.T.S



### EQUIPMENT SHROUD DIMENSION CHART

SHROUD	(A) LENGTH	(B) WIDTH	(C) DEPTH
EQUIPMENT SHROUD	38"	16"	14"

EQUIPMENT SHROUD WEIGHT: 130.75 LBS.

### EQUIPMENT SHROUD DETAIL

SCALE: N.T.S

FS STREET LIGHT  
 POLE LE-2  
 4G/5G SOLUTION

SCENARIO 3:  
 MICRO 21' SHROUD





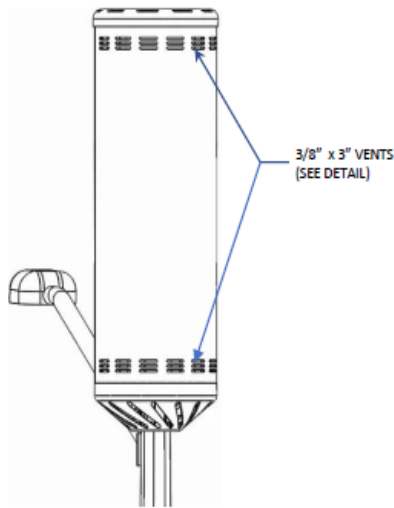
POLE TOP MOUNT



SIDE-MOUNT

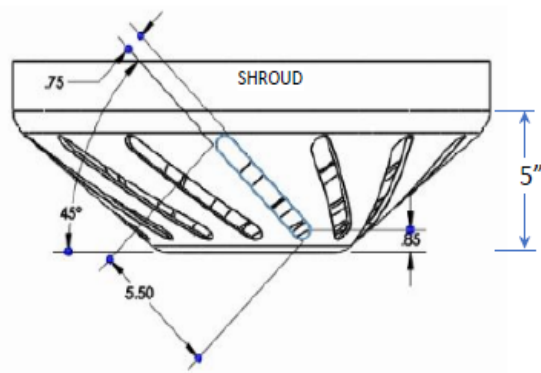
ISOMETRIC VIEWS

FRONT VIEWS

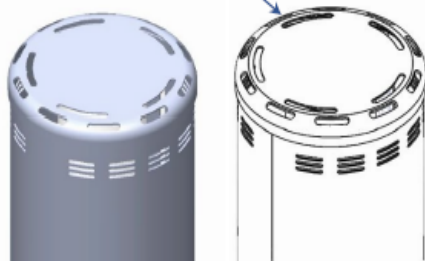


OPTIONAL VENTS IN SHROUD TOP AS NEEDED TO FACILITATE COOLING OF ENCLOSED EQUIP. (NOT VISIBLE FROM GROUND)

BOTTOM CONE DETAIL

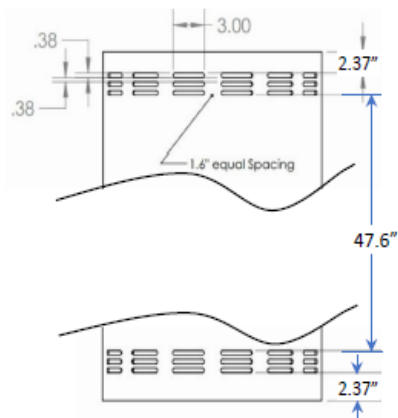


OPTIONAL ANNULAR VENTILLATION SLOTS



TOP DETAILS

VENTS DETAIL



SHROUD COVER & BASE MADE OF UV STABILIZED RF-TRANSPARENT PLASTIC OR COMPOSITE MATERIAL

DO NOT SCALE DRAWINGS		
QUOTE: NA		
PERSPECTIVES & DIMENSIONS		
SITE ID: NA	SCHROFFTECH - PROPRIETARY	DWG NO: A1
DWG ID: STI-200708-01-DWG	DWG 1.1	PAGE 1 of 1

DoITT SHROUD  
FULL SIZE

FIRST USED:  
NYC DoITT 5G  
Shroud - Pole Top

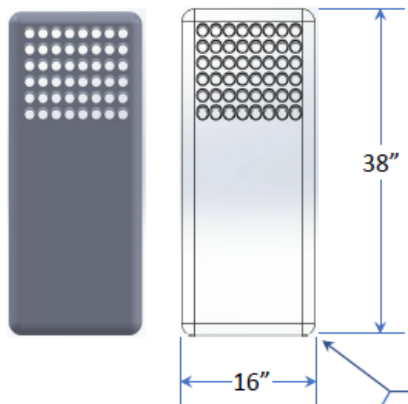
Rev.	Date	Revision Description	Drawn by	Approved
L.0	7/06/20	Initial Drawings for Review & Approval	RAD	DT
L.1	7/10/20	REVISED PER CUSTOMER FEEDBACK	RAD	DT



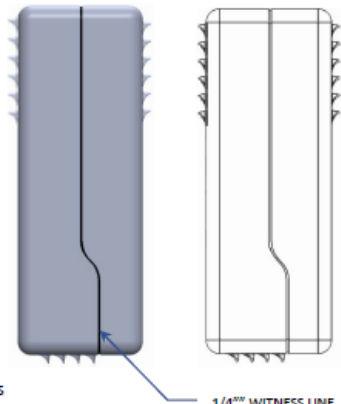


ISOMETRIC VIEWS

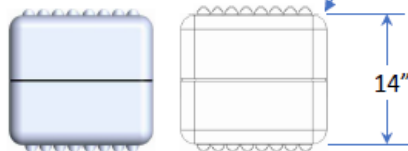
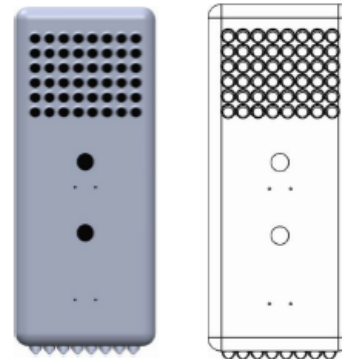
FRONT VIEWS



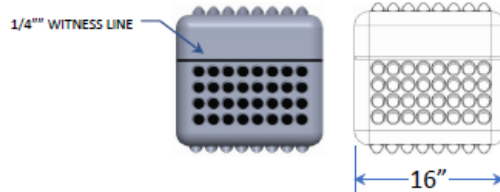
SIDE VIEWS



BACK VIEWS



TOP VIEWS



BOTTOM VIEWS

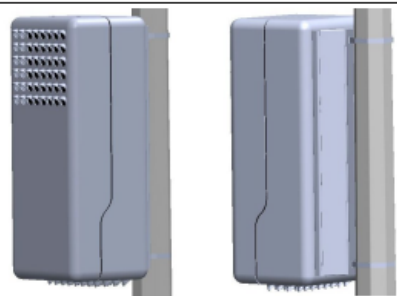
SHROUD COVER & BASE MADE OF UV STABILIZED RF-TRANSPARENT PLASTIC OR COMPOSITE MATERIAL

DO NOT SCALE DRAWINGS			
QUOTE: NA			
PERSPECTIVES & DIMENSIONS			
SITE ID: NA	SCHROFFTECH - PROPRIETARY	DWG NO: A1	
DWG ID: STI-200708-01-DWG	DWG ID: 1.1	PAGE 1 of 4	

DoITT SHROUD  
FULL SIZE

FIRST USED:  
NYC DoITT 5G  
Shroud - Equipment

Rev.	Date	Revision Description	Drawn by	Approved
1.0	7/06/20	Initial Drawings for Review & Approval	BAO	DT
1.1	7/30/20	REVISED PER CUSTOMER FEEDBACK	BAO	DT



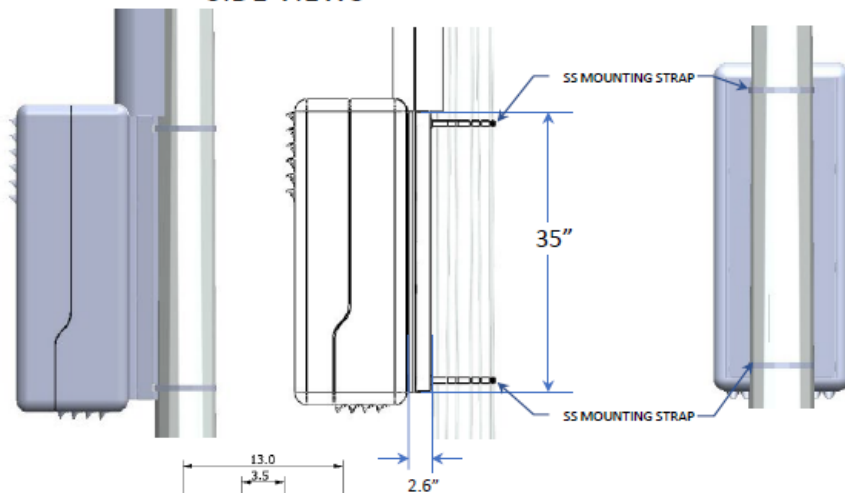
MOUNT WITH CABLES RUN  
INSIDE THE MOUNTING POLE



MOUNT WITH CABLES RUN  
OUTSIDE THE MOUNTING POLE  
(SIDE-MOUNT POLE TOP SHROUD)

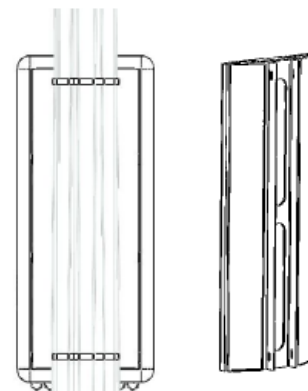
**ISOMETRIC VIEWS**

**SIDE VIEWS**



**MOUNT DETAILS**

**BACK VIEWS**



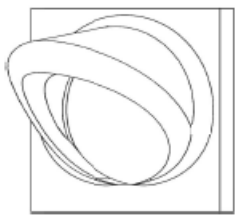
SHROUD COVER & BASE MADE OF  
UV STABILIZED RF-TRANSPARENT  
PLASTIC OR COMPOSITE MATERIAL  
MOUNT MADE OF FORMED METAL  
POWDER COAT TO COLOR MATCH

<b>DO NOT SCALE DRAWINGS</b>		
QUOTE: NA		
<b>PERSPECTIVES &amp; DIMENSIONS</b>		
SITE ID: NA	SCHROFFTECH - PROPRIETARY	DWG NO: A2
DWG ID: STI-200708-01-DWG	DWG ID: 1.1	PAGE 2 of 4

**DoITT SHROUD  
FULL SIZE  
WITH MOUNT**

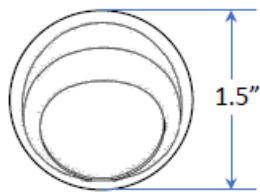
FIRST USED:  
NYC DoITT 5G  
Shroud - Equipment

Rev.	Date	Revision Description	Drawn by	Approved
1.0	7/08/20	Initial Drawings for Review & Approval	RAD	DT
1.1	7/10/20	REVISED PER CUSTOMER FEEDBACK	RAD	DT

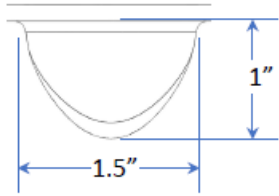
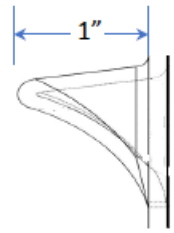
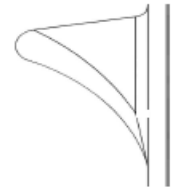


ISOMETRIC VIEWS

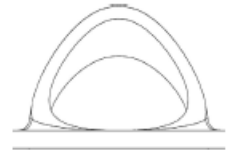
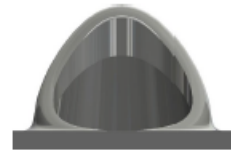
FRONT VIEWS



SIDE VIEWS



TOP VIEWS



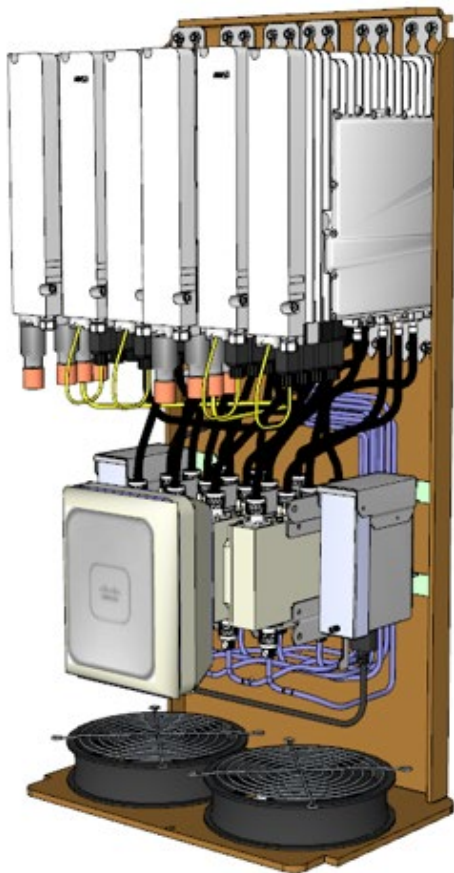
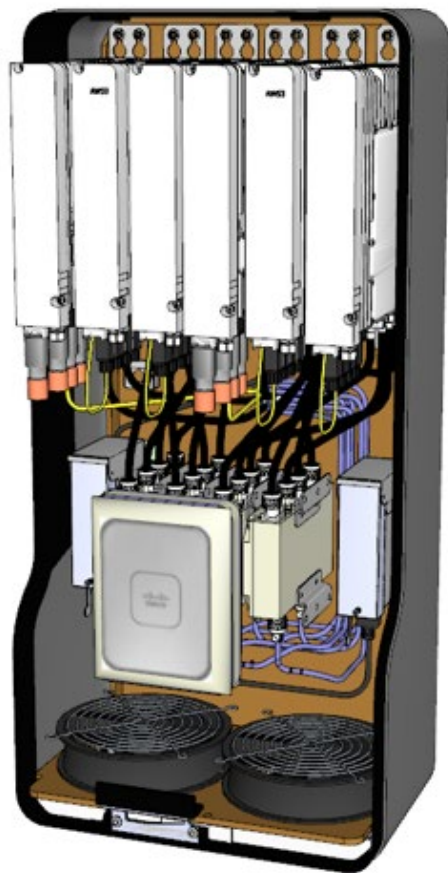
BOTTOM VIEWS

<b>DO NOT SCALE DRAWINGS</b>		
QUOTE: NA		
<b>PERSPECTIVES &amp; DIMENSIONS</b>		
SITE ID: NA	SOBROFFTECH - PROPRIETARY	DWG NO: A3
DWG ID: STI-200708-01-DWG	DWG ID: 1.1	PAGE 3 of 4

**VENT CUP DETAILS**

FIRST USED:  
NYC DoITT 5G  
Shroud - Equipment

Rev.	Date	Revision Description	Drawn by	Approved
1.0	7/08/20	Initial Drawings for Review & Approval	RAD	DT
1.1	7/30/20	REVISED PER CUSTOMER FEEDBACK	RAD	DT





NYC DoITT 4G vs 5G  
FS



FS





NYC DoITT 4G vs 5G  
Flatbush



Flatbush



NYC DoITT 4G vs 5G  
Bishop's Crook





NYC DoITT 4G vs 5G  
ADNY



Downtown Alliance



NYC DoITT 4G vs 5G  
Type M



Type M





NYC DoITT 4G vs 5G  
30' Davit





NYC DoITT 4G vs 5G  
City Light



City Light



NYC DoITT 4G vs 5G  
M2



NYC DoITT 4G vs 5G  
TBTA

## Holistic Vision for 5G Beyond City Streetlight Poles

- Consider alternative pole attachment designs to accommodate multiple carriers at a single location.
- Evaluate small cell installations within LinkNYC kiosks and other street furniture.
- Solicit standalone purpose-built infrastructure (“Smart Pole”) solutions.
- Facilitate 5G equipment installations on utility poles in outer boroughs.

