

5G

Mobile Telecommunications Infrastructure

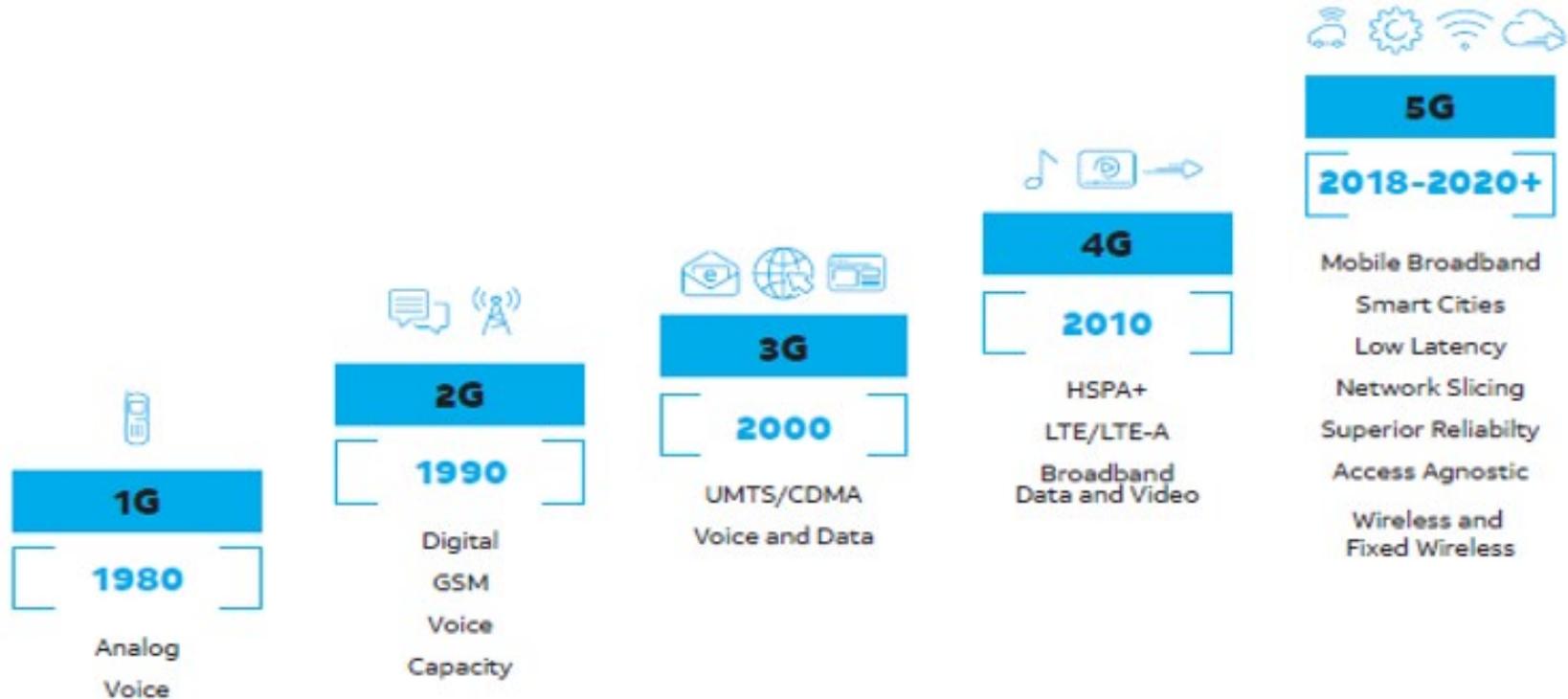


5G Mobile Telecom Infrastructure

- **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



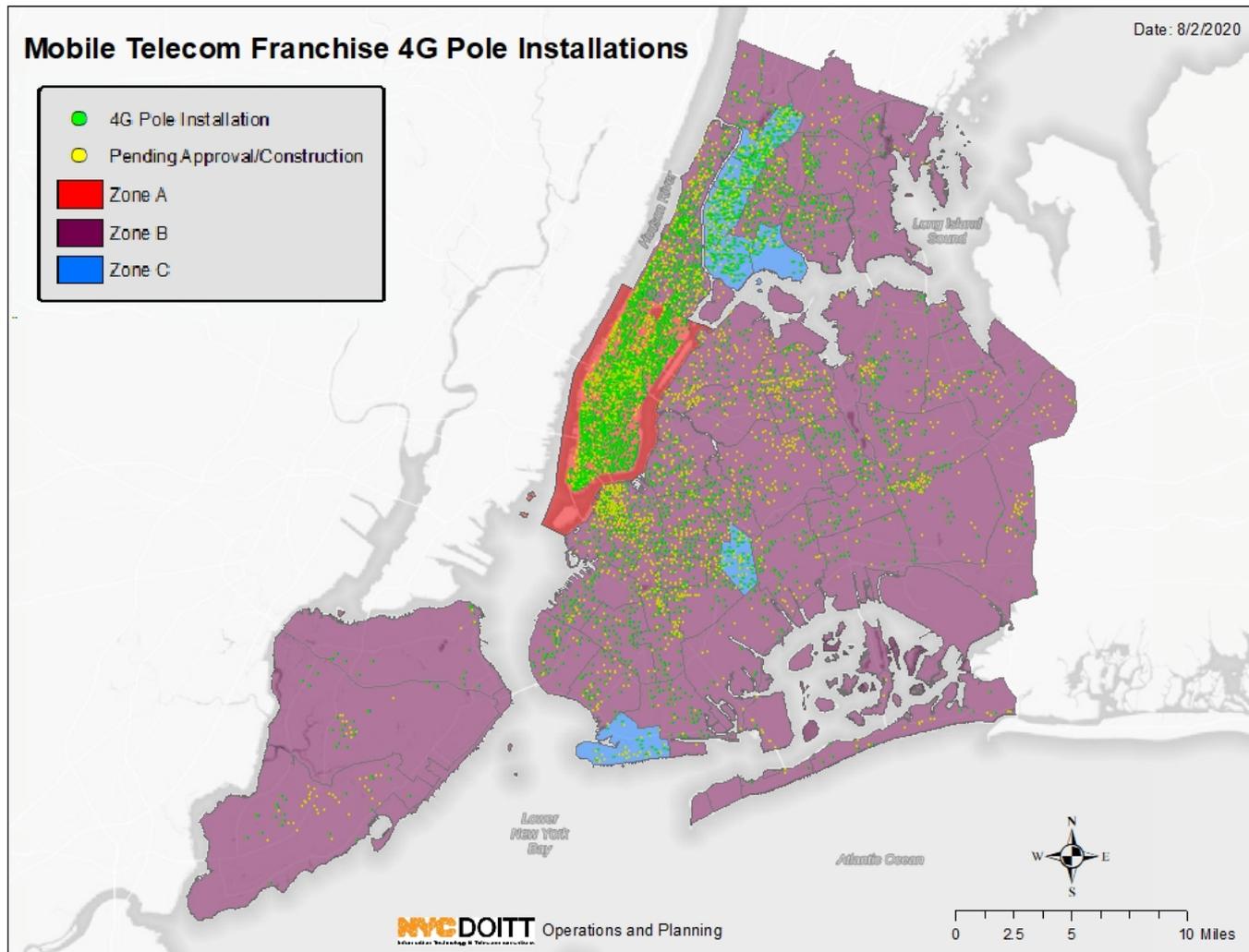
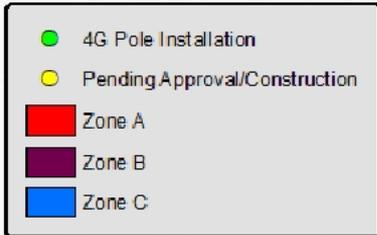
Current State

- 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.



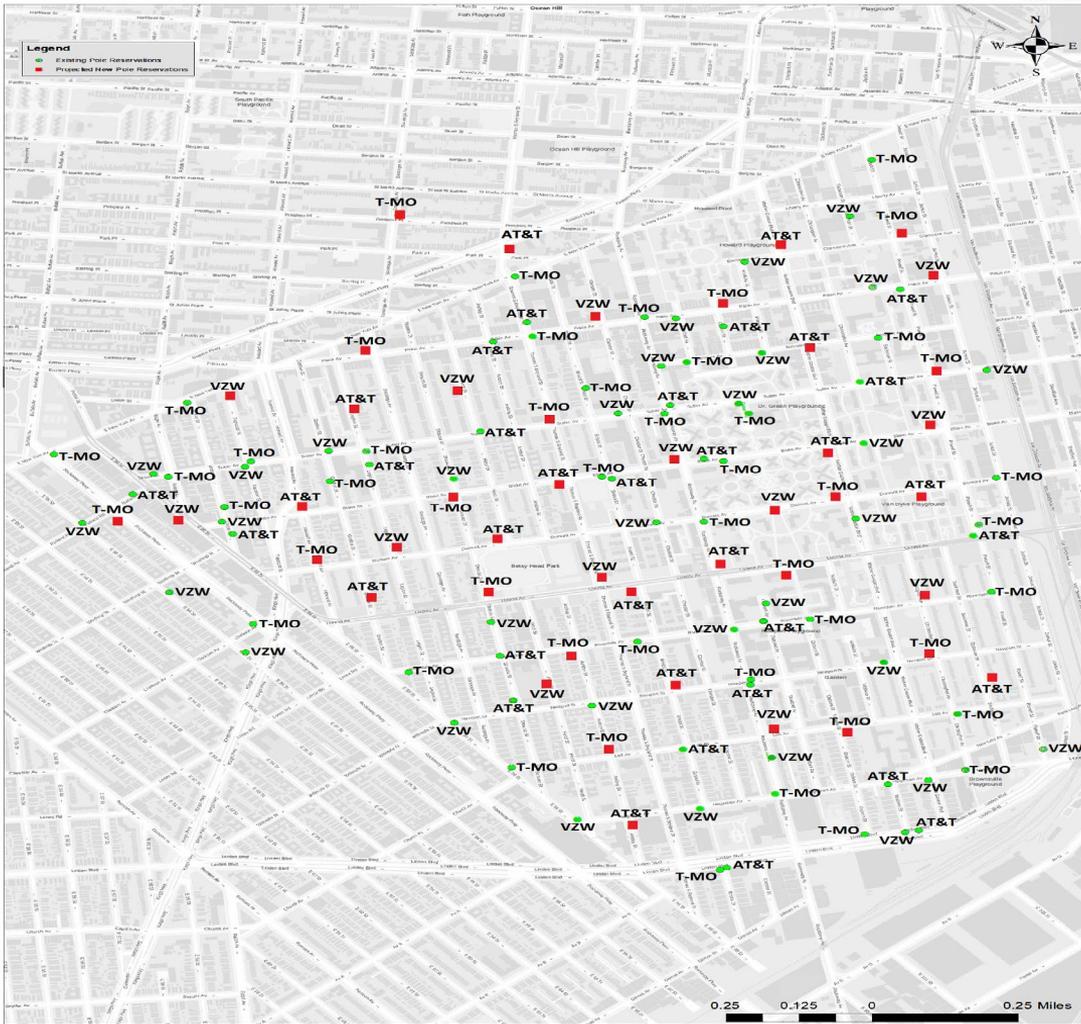
Mobile Telecom Franchise 4G Pole Installations

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.

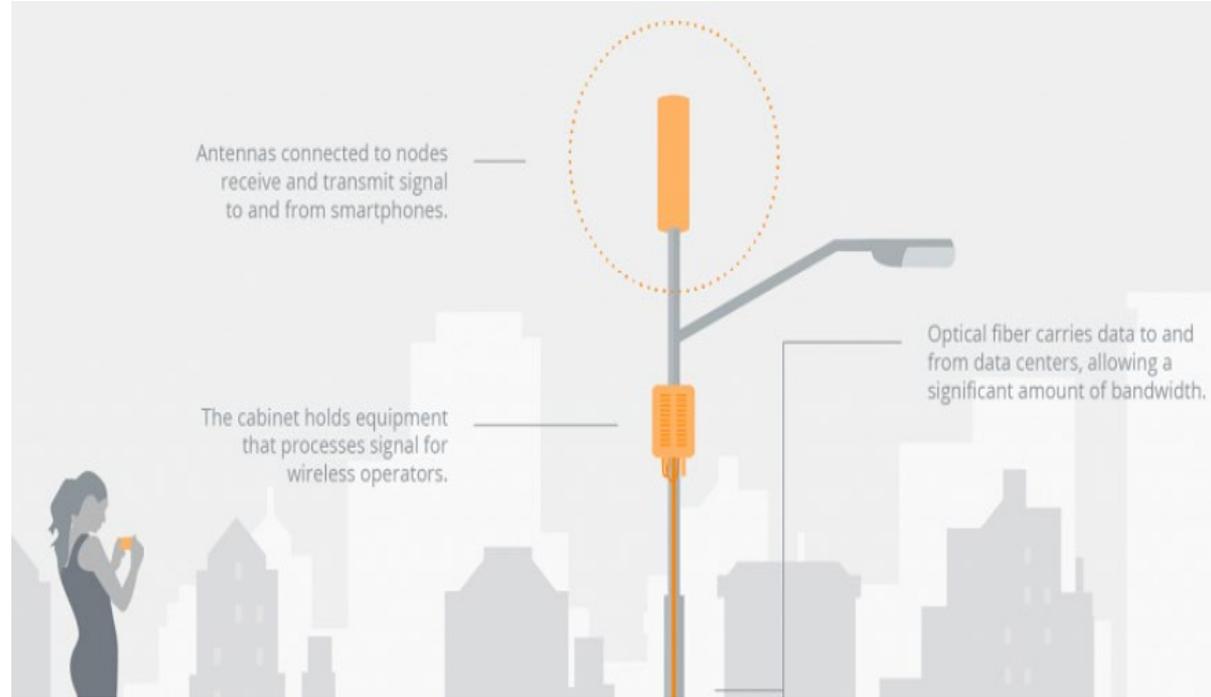


Antenna Shroud

- 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.

NOTE:

1. MOUNT PER MANUFACTURER'S
SPECIFICATIONS.

2. DIMENSIONS SHOWN ARE
APPROXIMATE REQUIRED MINIMUM
DIMENSIONS 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.

● C 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 4G/5G DUAL
CONCEALMENT SHROUD

1
LE-2

PROPOSED 4G
ANTENNA

2
LE-2

PROPOSED 5G
MICRO EQUIPMENT
(TYP. OF 3 RADIOS
PER SHROUD)

3
LE-2

21" ø
5'-3"

EXISTING STREET LIGHT

EXISTING STEEL POLE

PROPOSED COAXIAL CABLES

0.75" WIDE x 0.03" THICK 201
STAINLESS STEEL STRAPPING W/MIN.
BREAKING STRENGTH OF 2250 LBS.
FORCE AND APPROPRIATE BUCKLE

PROPOSED POWER CABLE
TO BASE OF LIGHT POLE

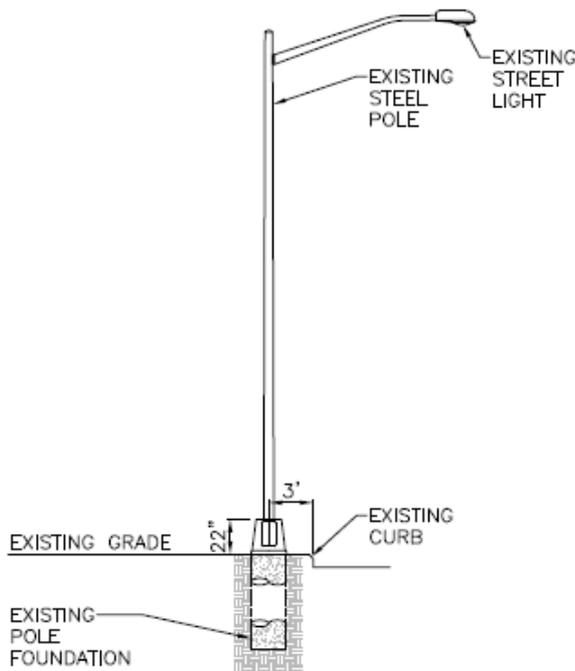
PROPOSED
FIBER CABLE

EXISTING GRADE

22"

EXISTING CURB

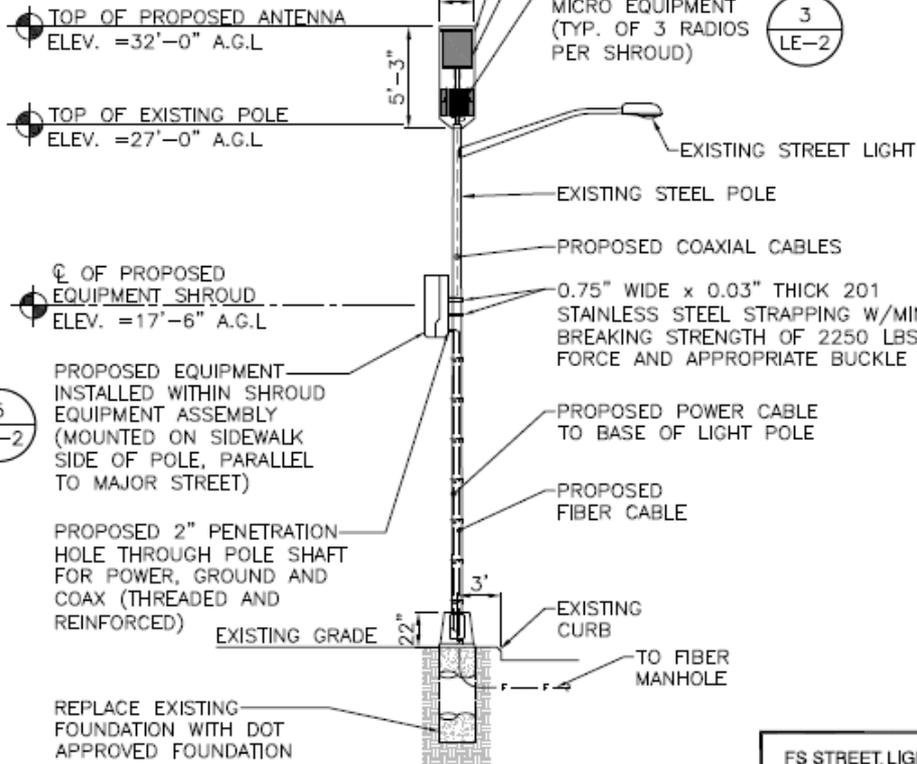
TO FIBER
MANHOLE



EXISTING POLE ELEVATION

SCALE: N.T.S

1
LE-1



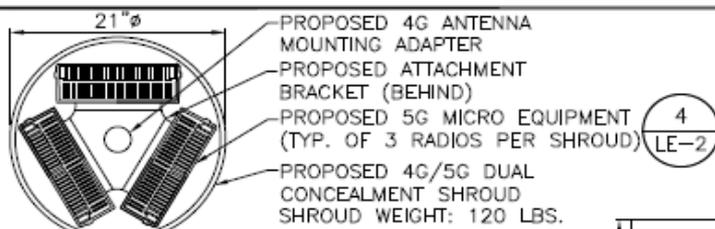
PROPOSED POLE ELEVATION

SCALE: N.T.S

2
LE-1

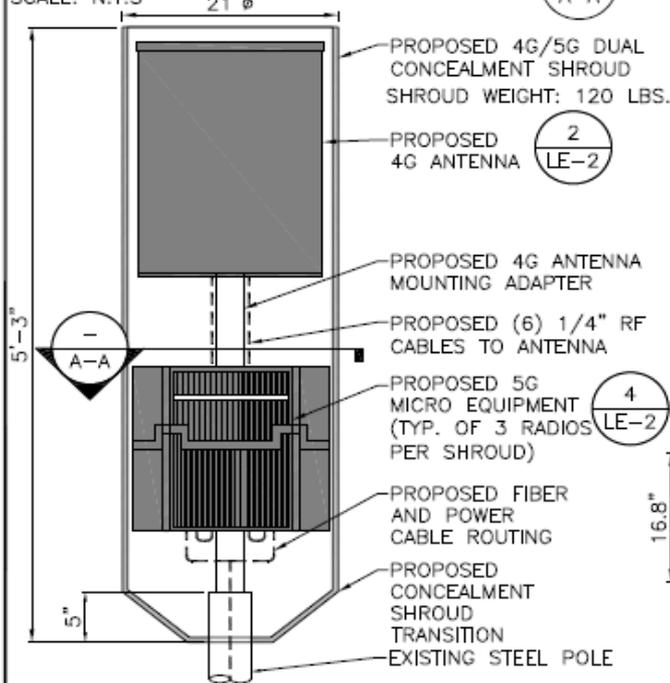
FS STREET LIGHT
POLE LE-1
4G/5G SOLUTION

SCENARIO 3:
MICRO 21' SHROUD



5G MICRO RADIO MOUNTING PLAN

SCALE: N.T.S



4G/5G ANTENNA CONCEALMENT SHROUD DETAIL

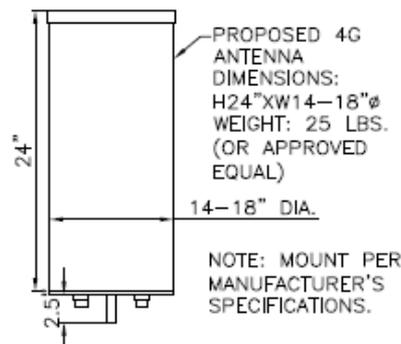
SCALE: N.T.S

1
LE-2

- NOTE:**
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 2. DIMENSIONS SHOWN ARE APPROXIMATE REQUIRED MINIMUM DIMENSIONS FOR CONCEPTUAL REVIEW AND ARE SUBJECT TO CHANGE.

NOTE:

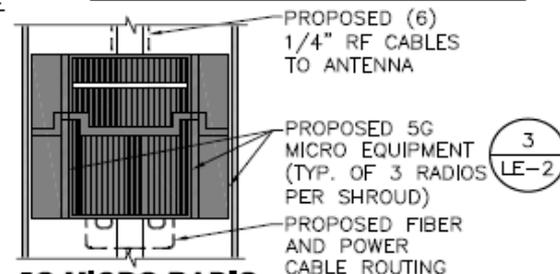
REFER TO STRUCTURAL ANALYSIS BY AHEAD ENGINEERING, DATED 6/13/2020 FOR STRUCTURAL CAPACITY OF EXISTING STRUCTURE TO SUPPORT PROPOSED DESIGN LOADING.



4G ANTENNA DETAIL

SCALE: N.T.S

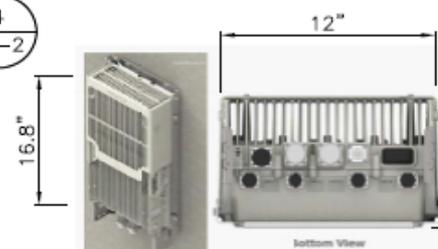
2
LE-2



5G MICRO RADIO MOUNTING DETAIL

SCALE: N.T.S

4
LE-2

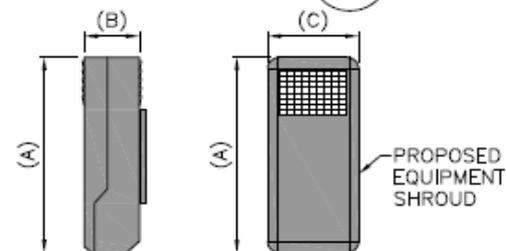


RADIO DIMENSIONS: 16.8"X12"X4"
WEIGHT: 26.4 LBS.
QUANTITY: 3

5G MICRO RADIO DETAIL

SCALE: N.T.S

3
LE-2



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

5
LE-2

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

SCENARIO 3:
MICRO 21' SHROUD



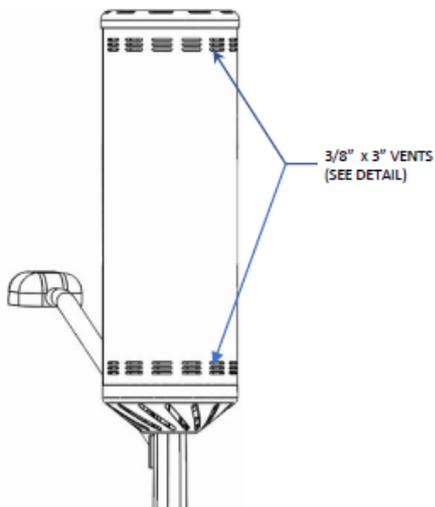
POLE TOP MOUNT



SIDE-MOUNT

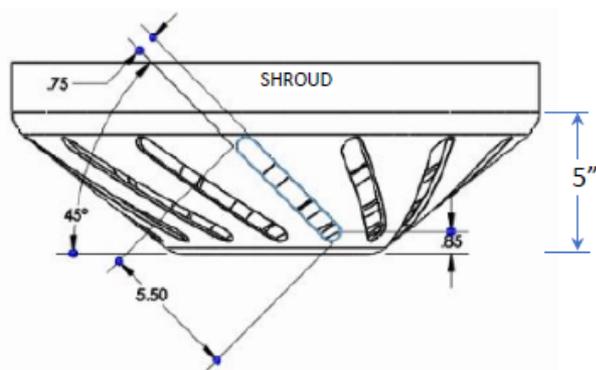
ISOMETRIC VIEWS

FRONT VIEWS

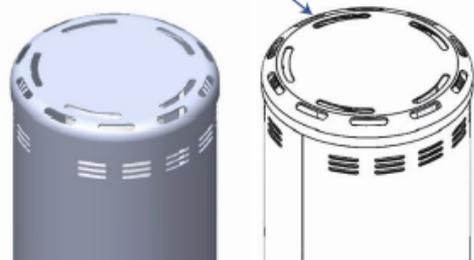


OPTIONAL VENTS IN SHROUD TOP AS NEEDED TO FACILITATE COOLING OF ENCLOSED EQUIP. (NOT VISIBLE FROM GROUND)

BOTTOM CONE DETAIL

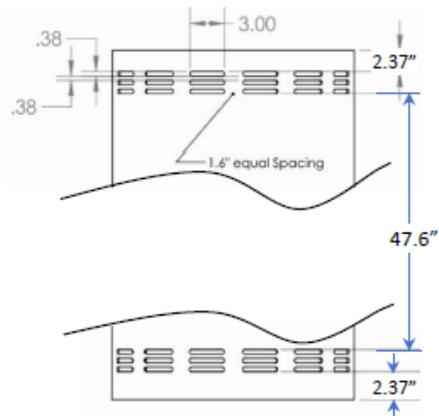


OPTIONAL ANNULAR VENTILLATION SLOTS



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 ID: 1.1	PAIR	1 of 1

DoITT SHROUD
FULL SIZE

FIRST USED:
NYC DoITT 5G
Shroud - Pole Top

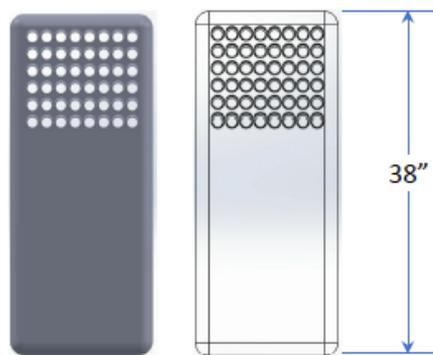
Rev.	Date	Revision Description	Drawn by	Approved
1.0	7/08/20	Initial Drawings for Review & Approval	RAD	DT
1.1	7/10/20	REVISED PER CUSTOMER FEEDBACK	RAD	DT



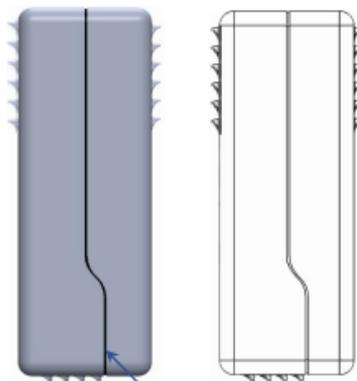


ISOMETRIC VIEWS

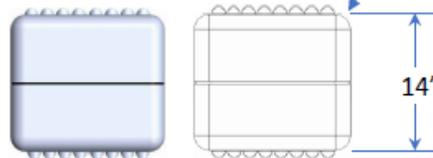
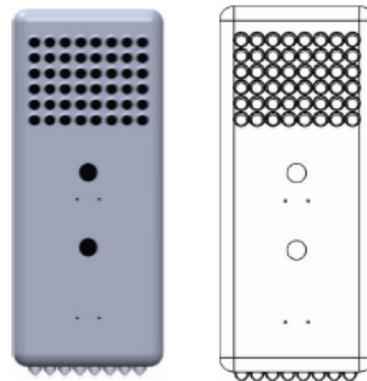
FRONT VIEWS



SIDE VIEWS



BACK VIEWS

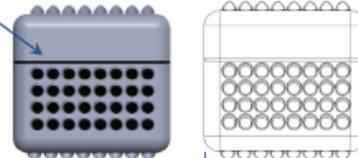


TOP VIEWS

1.5" RADIUS

1/4" WITNESS LINE

1/4" WITNESS LINE



BOTTOM VIEWS

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

DO NOT SCALE DRAWINGS

QUOTE: NA

PERSPECTIVES & DIMENSIONS

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DWG ID: STI-200708-01-DWG DWG ID: 1.1 PART 1 of 4

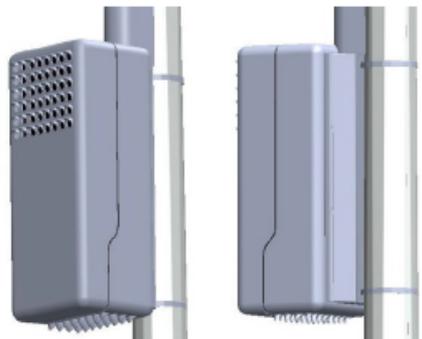
DoITT SHROUD
FULL SIZE

FIRST USED:
NYC DoITT 5G
Shroud - Equipment

Rev.	Date	Revision Description	Drawn by	Approved
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1.1	7/10/20	REVISED PER CUSTOMER FEEDBACK	RAD	DT



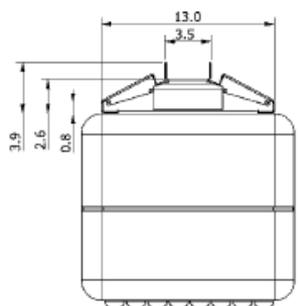
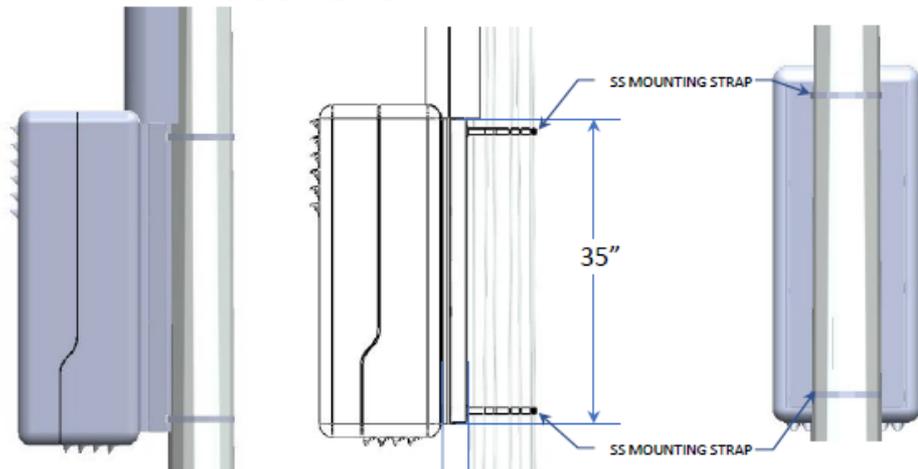
MOUNT WITH CABLES RUN
INSIDE THE MOUNTING POLE



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

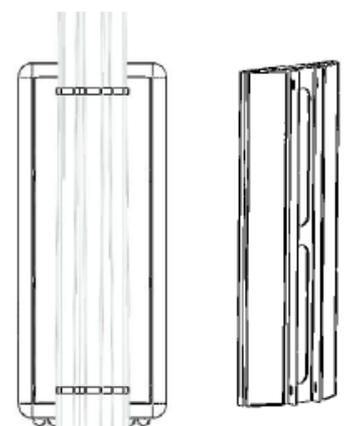
ISOMETRIC VIEWS

SIDE VIEWS



MOUNT DETAILS

BACK VIEWS



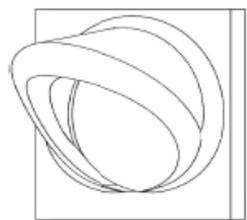
SHROUD COVER & BASE MADE OF
UV STABILIZED RF-TRANSPARENT
PLASTIC OR COMPOSITE MATERIAL
MOUNT MADE OF FORMED METAL
POWDER COAT TO COLOR MATCH

DO NOT SCALE DRAWINGS			
QUOTE: NA			
PERSPECTIVES & DIMENSIONS			
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**

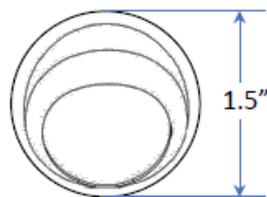
FIRST USED:
**NYC DoITT 5G
Shroud - Equipment**

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1.0	7/08/20	Initial Drawings for Review & Approval	RAD	DT
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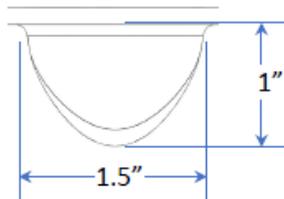
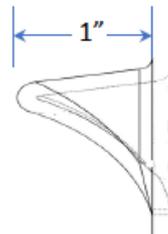
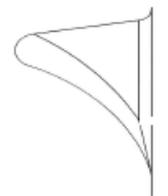


ISOMETRIC VIEWS

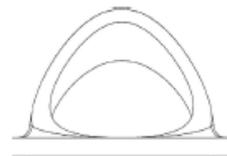
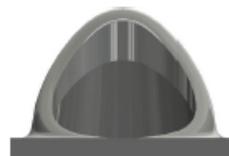
FRONT VIEWS



SIDE VIEWS



TOP VIEWS



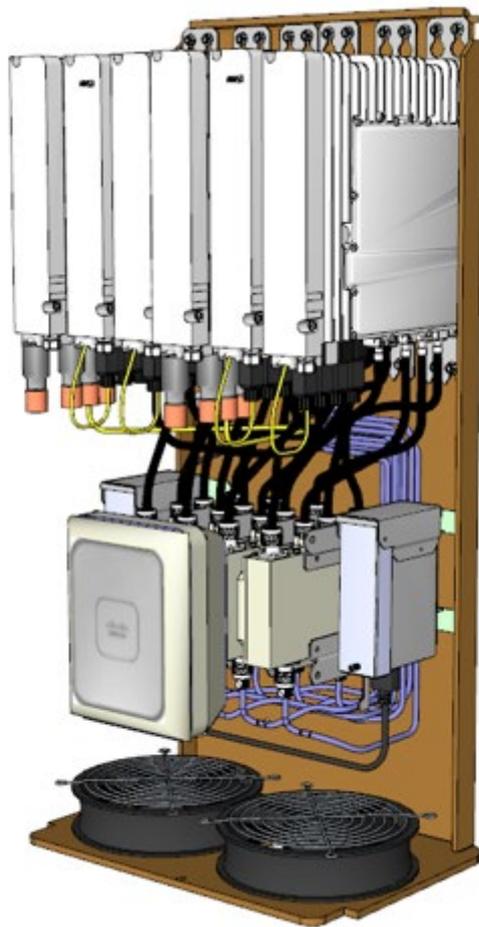
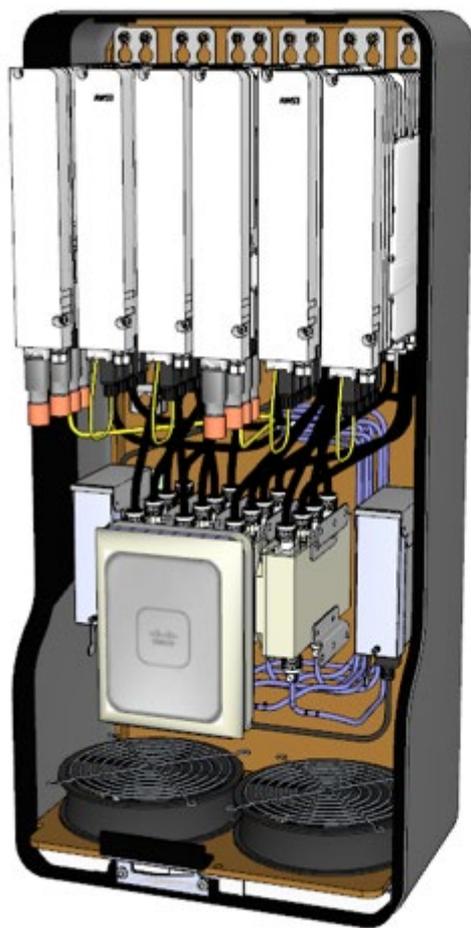
BOTTOM VIEWS

DO NOT SCALE DRAWINGS			
QUOTE: NA			
PERSPECTIVES & DIMENSIONS			
SITE ID: NA	SCHROFFTECH - PROPRIETARY	DWG ID: 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	7/10/20	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.

