Robinson+Cole

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Also admitted in Massachusetts
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June 28, 2021

Via Electronic Mail

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
411 West Putnam Avenue, Greenwich, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains a roof-top wireless telecommunications facility at 411 West Putnam Avenue in Greenwich, Connecticut (the "Property). The facility consists of antennas and remote radio heads attached ballast-mount frame on the roof of the building and related equipment inside the building. In 1992, the Council approved the AT&T rooftop facility at the Property and, since that time, has maintained jurisdiction over this roof-top. Cellco's rooftop facility was originally approved by the Town of Greenwich ("Town"). Cellco's representatives attempted to obtain a copy of its original approval from the Town. After an extensive search by Town staff, in various departments, a copy of the local approval was not recovered.

Cellco now intends to modify its facility by removing six (6) antennas and installing twelve (12) antennas (three (3) Samsung 64T64RMMU antennas, six (6) JAHH-65B-R3B antennas, and three (3) CBRS antennas). Cellco also intends to remove three (3) remote radio heads ("RRHs") and install six (6) new RRHs on Cellco's existing ballasted mounting frames. A set of project plans showing Cellco's proposed facility modifications and new antennas and RRHs specifications are included in Attachment 1.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Greenwich's Chief Elected Official and Land Use Officer.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed on Cellco's existing ballasted-mounted frames at same heights on the roof.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The installation of Cellco's new antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for the modified facility are included in Attachment 2. The modified facility will be capable of providing Cellco's 5G wireless service.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. According to the attached Support Structure Structural Evaluation Letter and Mount Analysis (MA), which also includes analysis of the existing pipe masts, new masts and hose building, states that the existing building, antenna masts, and antenna mounting devices can support Cellco's proposed modifications. A copy of the Support Structure Structural Letter and MA are included in Attachment 3. Also included in Attachment 3 is a separate letter prepared by the consulting engineer responsible for the preparation of the plans, Structural Evaluation Letter and MA verifying that the antenna model described in the documents, as a Licensed-Sub6 Antenna or VZS01 Antenna, is the Samsung 64T64R model antenna and RRH that will be installed on the tower.

A copy of the parcel map and Property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 5.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Fred Camillo, Greenwich First Selectman
Katie DeLuco, Director of Planning and Zoning
West Putnam Owner LLC, Property Owner
Aleksey Tyurin

ATTACHMENT 1

SUPPORTING DOCUMENTS

RADIO FREQUENCY (RF) DESIGN DATE: 9/14/20

ANTENNA MOUNT STRUCTURAL ANALYSIS DATE: TBD

ANTENNA SUPPORT STRUCTURE (ROOFTOP) STRUCTURAL EVALUATION DATE: TBD

verizon

20 ALEXANDER DRIVE, WALLINGFORD, CT 06492

GREENWICH SOUTHWEST CT

WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

ELECTRIC SUB-METER NOTE:
AS PART OF THIS APPLICATION, CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE EXISTING VERIZON WIRELESS ELECTRIC SUB-METER (NOT SHOWN ON THESE DRAWINGS) AND REPLACE WITH A NEW ELECTRIC SUB-METER WITH REMOTE READING CAPABILITY COMPATIBLE WITH THE EXISTING ELECTRIC SERVICE EQUIPMENT CURRENTLY IN PLACE. SUB-METER SHALL BE SOURCED FROM POWER DESIGN & SUPPLY GROUP, LLC (PDSG); 115 BI-COUNTY BOULEVARD; FARMINGDALE, NY 11735. CONTRACTOR SHALL COORDINATE ALL REQUIRED SITE PREPARATIONS AND SERVICE ARRANGEMENTS WITH BUDDY WACHSMUTH OF PDSG AND COORDINATE THE SAME WITH VERIZON WIRELESS REPRESENTATIVES.

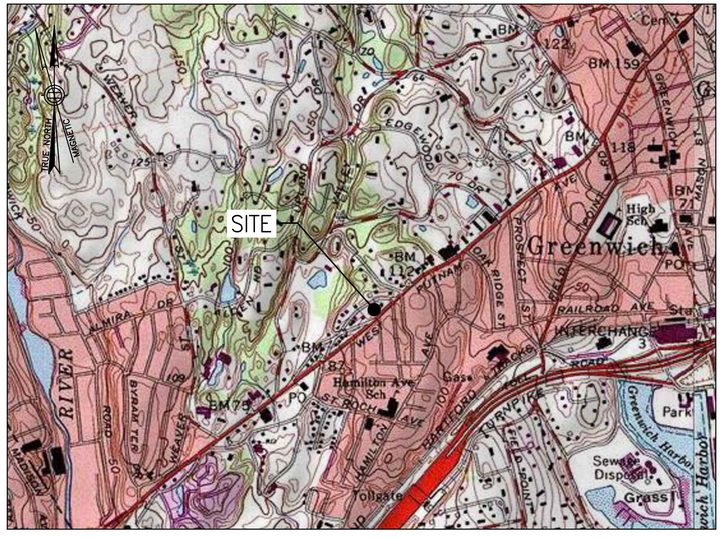
PROJECT TYPE: ANTENNA UPGRADE TO EXISTING WIRELESS TELECOMMUNICATIONS INSTALLATION ON ROOFTOP OF (4)-STORY OFFICE BUILDING

SITE INFORMATION

PROPERTY OWNER:	411 PUTNAM AVE, LLC 411 WEST PUTNAM AVENUE GREENWICH, CT 06830
APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
SITE ADDRESS:	411 WEST PUTNAM AVENUE GREENWICH, CT 06830
ROOFTOP MANAGEMENT COMPANY:	SBA COMMUNICATIONS CORPORATION 8051 CONGRESS AVENUE BOCA RATON, FL 33487
ROOFTOP MANAGEMENT COMPANY SITE ID:	CT95623
COUNTY:	FAIRFIELD COUNTY, CT
SITE CONTROL POINT:	BUILDING CORNER (SEE ROOF PLAN ON SHEET A01) N 41°-01'-17.32" (41.021478°) (NAD '83) W 73°-38'-27.68" (73.641022°) (NAD '83)
ZONING CLASSIFICATION:	GENERAL BUSINESS (GB)
ZONING JURISDICTION:	TOWN OF GREENWICH, CT
PARCEL ID:	03-1664/S
ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752

VICINITY MAP

SCALE: 1"=1000'



SHEET INDEX

DWG.	DESCRIPTION	REV.
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DO NOT SCALE DRAWINGS

ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD DURING THE CONSTRUCTION PHASE. THE PROJECT OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES IMMEDIATELY PRIOR TO PROCEEDING WITH THE PROPOSED WORK AFFECTED BY SUCH DISCREPANCIES. IN THE EVENT OF LACK OF SUCH NOTIFICATION, SUCH DISCREPANCIES SHALL BECOME THE RESPONSIBILITY OF THE PREVAILING CONTRACTOR RESPONSIBLE FOR CONSTRUCTION.

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

2. NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE CT-15 SOUTH. TAKE EXIT 28 FOR ROUND HILL ROAD. TURN LEFT ONTO ROUND HILL ROAD. AT THE TRAFFIC CIRCLE, TAKE THE 1ST EXIT AND STAY ON ROUND HILL ROAD. CONTINUE ONTO LAKE AVENUE. AT THE TRAFFIC CIRCLE, TAKE THE 2ND EXIT ONTO DEARFIELD DRIVE. TURN RIGHT ONTO US-1 SOUTH. THE SITE WILL BE LOCATED ON THE RIGHT HAND SIDE.

PROJECT DESCRIPTION

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
2. THIS FACILITY DOES NOT, NOR WILL IT CONSUME UNRECOVERABLE ENERGY.
3. NO PORTABLE WATER SUPPLY IS OR WILL BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER IS OR WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE IS OR WILL BE GENERATED AT THIS LOCATION.

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Civil · Structural · Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SAPIENZA
No. 25876
LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:

GREENWICH SOUTHWEST CT

WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

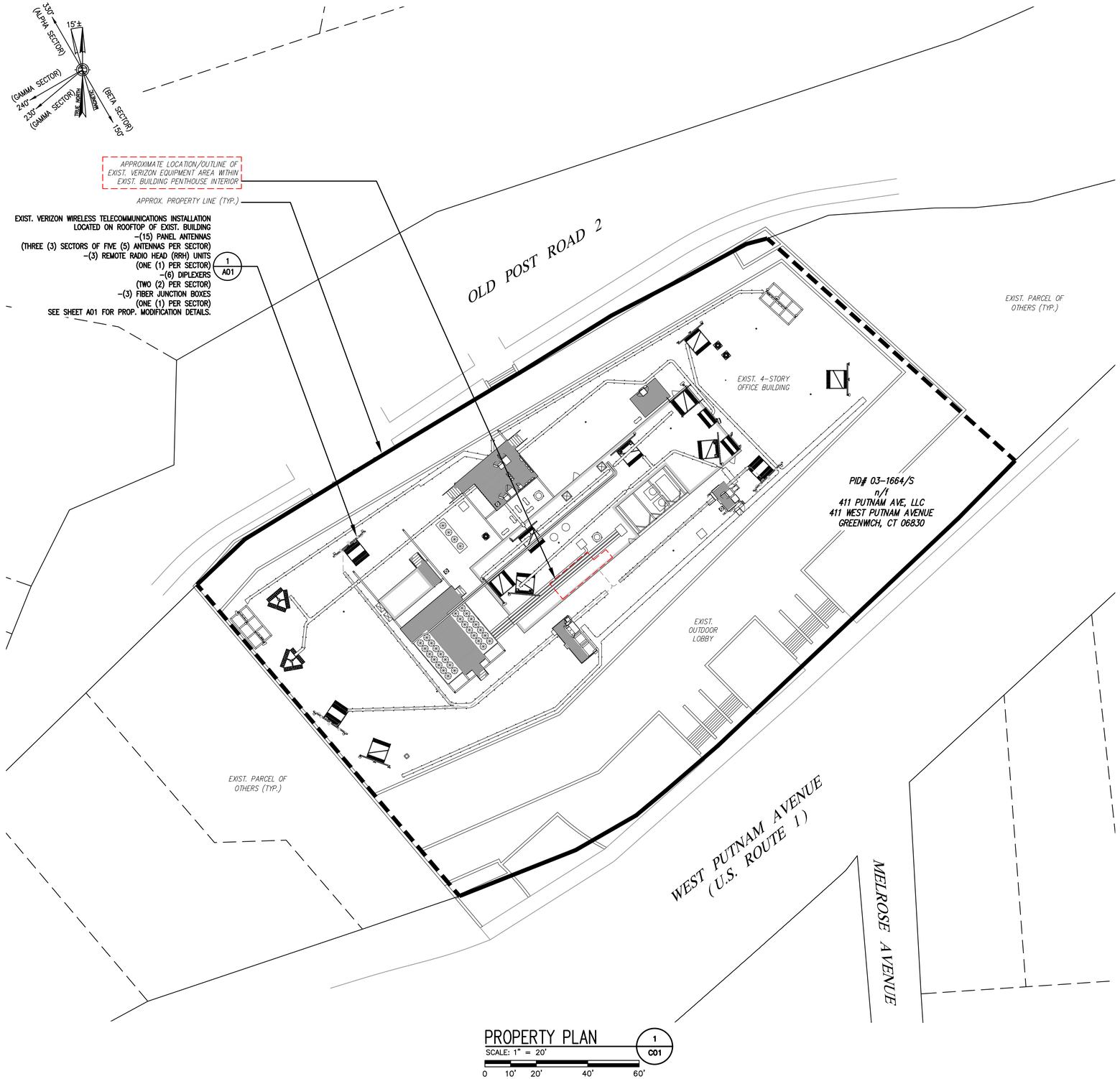
DRAWING TITLE:

TITLE SHEET

DRAWING NO:

T01

SCALE: AS SHOWN	DESIGNED BY: CMC	VZW LOCATION CODE: 467305
	DRAWN BY: CMC	
	CHECKED BY: GRS	
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	



PROPERTY PLAN (1 / C01)
SCALE: 1" = 20'
0 10' 20' 40' 60'

GENERAL NOTES:

1A.	LIMITED DESIGN VISIT DATE:	10/28/19
1B.	LIMITED FIELD SURVEY DATE:	9/18/20
2.	VERTICAL DATUM:	NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88)
3.	HORIZONTAL DATUM:	NORTH AMERICAN DATUM OF 1983 (NAD '83)
4.	SITE CONTROL POINT:	BUILDING CORNER (SEE ROOF PLAN ON SHEET A01) LATITUDE: N.41°-01'-17.32" (41.021478') (NAD '83) LONGITUDE: W.73°-38'-27.68" (73.641022') (NAD '83)
5.	PROPERTY OWNER:	411 PUTNAM AVE, LLC 411 WEST PUTNAM AVENUE GREENWICH, CT 06830
6.	APPLICANT SITE NAME:	GREENWICH SOUTHWEST CT
7.	SITE ADDRESS:	411 WEST PUTNAM AVENUE GREENWICH, CT 06830
8.	APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
9.	ZONING JURISDICTION:	TOWN OF GREENWICH, CT
10.	PARCEL ID:	03-1664/S
11.	DEED REFERENCE:	N/A
12.	PLAN REFERENCES:	TOWN OF GREENWICH ASSESSOR/GIS MAPS
13.	ZONING CLASSIFICATION:	GB (GENERAL BUSINESS)

14. ANY UNDERGROUND UTILITY INFORMATION PRESENTED HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY SITE WORK. CALL DIGSAFE 1-888-344-7233 A MINIMUM OF 72 HOURS PRIOR TO PLANNED ACTIVITY.

15. THE PROPERTY LINES SHOWN WERE COMPILED UTILIZING TOWN/CITY ASSESSOR'S PLANS, GIS, RECORDED DEEDS AND PLANS OF REFERENCE AS INDICATED.

16. THE SITE IS LOCATED IN FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF GREENWICH, COMMUNITY PANEL 09001C0494G DATED 07/08/2013.

17. BEARING SYSTEM OF THIS PLAN IS BASED ON TRUE NORTH. TRUE NORTH WAS ESTABLISHED FROM EXIST. PLAN REFERENCE. IT IS NOT INTENDED TO BE AN EXACT REPRESENTATION OF TRUE NORTH.

LEGEND

- PROPERTY LINE (OR STREET)
- ABUTTING PROPERTY LINE
- PROPERTY OFFSET/RADIUS
- EXIST. EASEMENT
- EXIST. CHAIN LINK FENCE
- EXIST. STOCKADE FENCE
- EXIST. EDGE OF PAVEMENT
- EXIST. OVERHEAD UTILITIES (OHW)
- APPROXIMATE ZONING BOUNDARY
- APPROXIMATE TOWN LINE

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PROJECT NAME:

GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:

PROPERTY PLAN

DRAWING NO:

C01

SCALE: 1" = 20'	DESIGNED BY: CMC	VZW LOCATION CODE: 467305
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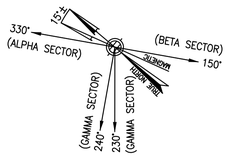
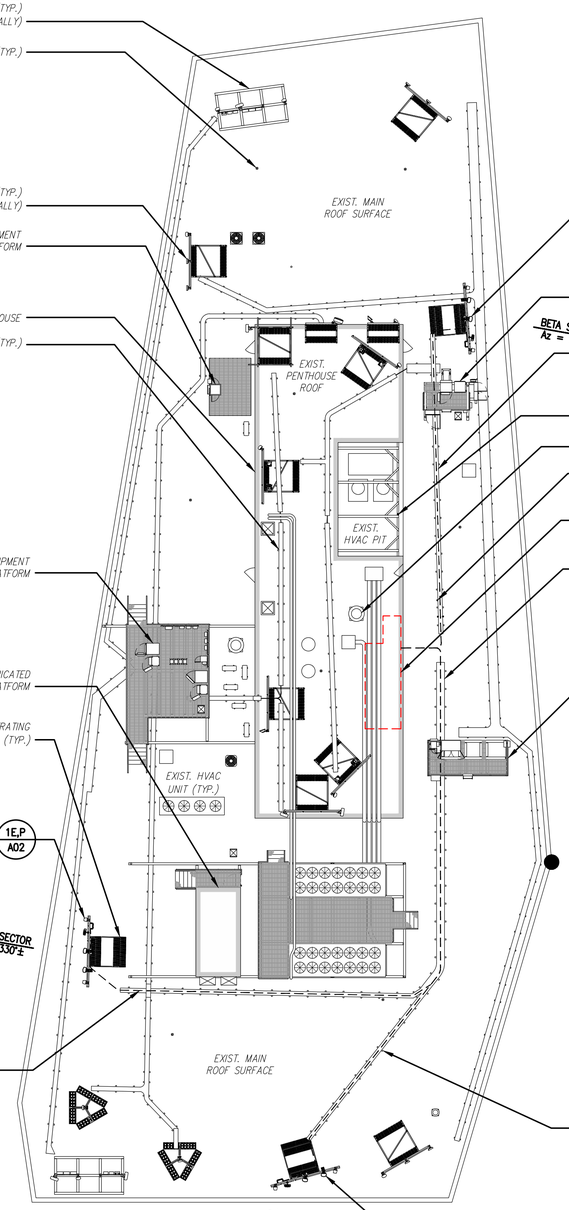


OLD POST ROAD 2

WEST PUTNAM AVENUE (U.S. ROUTE 1)



EXIST. NON-PENETRATING BALLASTED MOUNTING FRAME OF OTHERS (TYP.) (SHOWN SCHEMATICALLY)

EXIST. ROOF DRAIN (TYP.)

EXIST. PANEL ANTENNA OF OTHERS (TYP.) (SHOWN SCHEMATICALLY)

EXIST. CLEARWIRE EQUIPMENT CABINET AND STEEL PLATFORM

EXIST. PENTHOUSE

EXIST. CABLE TRAY OF OTHERS (TYP.)

EXIST. AT&T EQUIPMENT CABINETS AND STEEL PLATFORM

EXIST. NEXTEL 10'±x20'± (200± S.F.) PREFABRICATED EQUIPMENT SHELTER AND STEEL PLATFORM

EXIST. VERIZON NON-PENETRATING BALLASTED MOUNTING FRAME (TYP.)

ALPHA SECTOR (AZIMUTH = 330°±)
EXIST. VERIZON ALPHA SECTOR ON EXIST. NON-PENETRATING BALLASTED MOUNTING FRAME
-EXIST. (5) PANEL ANTENNAS
-(3) TO BE REPLACED (ON EXIST. ANTENNA MOUNTING PIPES)
-(2) TO REMAIN (ON EXIST. ANTENNA MOUNTING PIPES)
-(1) PROP. (ADDITIONAL) PANEL ANTENNA (TO BE INSTALLED ON EXIST. ANTENNA MOUNTING PIPE)
-EXIST. (1) RRH UNIT (TO BE REPLACED WITH PROP. (2) RRH UNITS ON EXIST. MOUNTING PIPES)
-EXIST. (1) FIBER JUNCTION BOX (TO BE REPLACED WITH (1) FIBER JUNCTION BOX ON EXIST. MOUNTING PIPE)
-EXIST. (2) DIPLEXERS (TO BE REPLACED WITH PROP. (1) QUADPLEXER ON EXIST. ANTENNA MOUNTING PIPE)

1E,P A02

ALPHA SECTOR Az = 330°±

EXIST. (1) HYBRID SIGNAL CABLE (TO BE REMOVED AND REPLACED WITH (1) LOW INDUCTANCE HYBRID SIGNAL CABLE), (2)-1⅝"ø COAXIAL SIGNAL CABLES (TO BE REMOVED) AND (2)-1⅝"ø COAXIAL SIGNAL CABLES (TO REMAIN) ROUTED WITHIN EXIST. NON-PENETRATING CABLE TRAY TO EXIST. VERIZON ALPHA SECTOR

BETA SECTOR (AZIMUTH = 150°±)
EXIST. VERIZON BETA SECTOR ON EXIST. NON-PENETRATING BALLASTED MOUNTING FRAME
-EXIST. (5) PANEL ANTENNAS
-(3) TO BE REPLACED (ON EXIST. ANTENNA MOUNTING PIPES)
-(2) TO REMAIN (ON EXIST. ANTENNA MOUNTING PIPES)
-(1) PROP. (ADDITIONAL) PANEL ANTENNA (TO BE INSTALLED ON EXIST. ANTENNA MOUNTING PIPE)
-EXIST. (1) RRH UNIT (TO BE REPLACED WITH PROP. (2) RRH UNITS ON EXIST. MOUNTING PIPES)
-EXIST. (1) FIBER JUNCTION BOX (TO BE REPLACED WITH (1) FIBER JUNCTION BOX ON EXIST. MOUNTING PIPE)
-EXIST. (2) DIPLEXERS (TO BE REPLACED WITH PROP. (1) QUADPLEXER ON EXIST. ANTENNA MOUNTING PIPE)

2E,P A02

BETA SECTOR Az = 150°±

EXIST. SPRINT EQUIPMENT CABINETS AND STEEL PLATFORM

EXIST. (1) HYBRID SIGNAL CABLE (TO BE REMOVED AND REPLACED WITH (1) LOW INDUCTANCE HYBRID SIGNAL CABLE), (2)-1⅝"ø COAXIAL SIGNAL CABLES (TO BE REMOVED) AND (2)-1⅝"ø COAXIAL SIGNAL CABLES (TO REMAIN) ROUTED WITHIN EXIST. NON-PENETRATING CABLE TRAY TO EXIST. VERIZON BETA SECTOR

EXIST. WHIP ANTENNA OF OTHERS

EXIST. VENT HOOD (TYP.)

EXIST. VERIZON (3) GPS ANTENNAS MOUNTED TO EXIST. NON-PENETRATING CABLE TRAY

APPROXIMATE LOCATION/OUTLINE OF EXIST. VERIZON EQUIPMENT AREA WITHIN EXIST. BUILDING PENTHOUSE INTERIOR

EXIST. VERIZON NON-PENETRATING CABLE TRAY (TYP.)

1 A03

EXIST. T-MOBILE EQUIPMENT CABINET AND STEEL PLATFORM

EXIST. (1) HYBRID SIGNAL CABLE (TO BE REMOVED AND REPLACED WITH (1) LOW INDUCTANCE HYBRID SIGNAL CABLE), (2)-1⅝"ø COAXIAL SIGNAL CABLES (TO BE REMOVED) AND (2)-1⅝"ø COAXIAL SIGNAL CABLES (TO REMAIN) ROUTED WITHIN EXIST. NON-PENETRATING CABLE TRAY TO EXIST. VERIZON GAMMA SECTOR

GAMMA SECTOR (AZIMUTH = 230°±/240°±)
EXIST. VERIZON GAMMA SECTOR ON EXIST. NON-PENETRATING BALLASTED MOUNTING FRAME
-EXIST. (5) PANEL ANTENNAS
-(3) TO BE REPLACED (ON EXIST. ANTENNA MOUNTING PIPES)
-(2) TO REMAIN (ON EXIST. ANTENNA MOUNTING PIPES)
-(1) PROP. (ADDITIONAL) PANEL ANTENNA (TO BE INSTALLED ON EXIST. ANTENNA MOUNTING PIPE)
-EXIST. (1) RRH UNIT (TO BE REPLACED WITH PROP. (2) RRH UNITS ON EXIST. MOUNTING PIPES)
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-EXIST. (2) DIPLEXERS (TO BE REPLACED WITH PROP. (1) QUADPLEXER ON EXIST. ANTENNA MOUNTING PIPE)

3E,P A02

NOTE:
EXIST. MISCELLANEOUS APPURTENANCES AND EQUIPMENT OF OTHERS NOT LOCATED WITHIN VICINITY OF PROP. WORK SHOWN SCHEMATICALLY OR NOT SHOWN FOR CLARITY.

SITE CONTROL POINT:
BUILDING CORNER
N 41°-01'-17.32" (41.021478°) (NAD '83)
W 73°-38'-27.68" (73.641022°) (NAD '83)
GROUND ELEVATION – 128.3' AMSL (NAVD '88)

PER CEA 1A SURVEY

ROOF PLAN
SCALE: 1/16" = 1'-0"
1 A01
0 16'-0" 32'-0' 48'-0"

GENERAL NOTES:

1. COORDINATE ALL WORKING HOURS, MATERIAL DELIVERY SCHEDULE AND ALL OTHER CONSTRUCTION ACTIVITIES WITH VERIZON AND OWNER.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UNDERGROUND AND SURFACE UTILITIES AND STRUCTURES AT OR ADJACENT TO THE SITE DURING ALL PHASES OF CONSTRUCTION. ANY EXISTING UTILITIES OR STRUCTURES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. ALL AREAS DISTURBED DUE TO CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
4. COORDINATE THE DISPOSAL OF CONSTRUCTION/SITE CLEARING DEBRIS AND EXCESS SOIL FROM EXCAVATION OPERATIONS WITH VERIZON AND OWNER.
5. ALL DIMENSIONS, CONDITIONS AND OTHER INFORMATION SHOWN ON THE DRAWINGS ARE TAKEN FROM LIMITED FIELD OBSERVATIONS. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS. ANY UNUSUAL CONDITIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. CONTRACTOR SHALL NOT PROCEED WITH ANY AFFECTED WORK UNTIL FORMALLY DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CORRECTNESS OF ALL DIMENSIONS AND/OR QUANTITIES AND FOR THE COORDINATION WITH ALL OTHER WORK. REVIEW OF THE CONTRACTOR'S SUBMISSIONS DOES NOT RELIEVE THE CONTRACTOR FROM THESE RESPONSIBILITIES.
7. THE CONTRACTOR SHALL FURNISH AND INSTALL ANGLE STRUTS, BRACKETS, GOGGLES, EYE BOLTS AND ALL OTHER ACCESSORIES REQUIRED TO PROPERLY SUPPORT, BRACE AND/OR REINFORCE ALL FINISHES, FRAMES, EQUIPMENT, ETC.
8. CONTRACTOR SHALL INSPECT EXISTING MOUNTING HARDWARE FOR DAMAGE AND REPLACE AND/OR RE-USE AS REQUIRED AT REASONABLE DISCRETION TO PRESERVE ACCEPTABLE WORKMANSHIP.
9. ALL MATERIALS SHOWN ON THE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL SUBMIT SAMPLES OF ALL MATERIAL TO VERIZON FOR APPROVAL.
10. MANUFACTURER'S INSTRUCTIONS: THE CONTRACTOR SHALL COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS TO THE EXTENT THAT THEY ARE MORE STRINGENT THAN THE REQUIREMENTS IN THE CONTRACT DOCUMENTS.
11. CLEANING AND PROTECTION: DURING HANDLING AND INSTALLATION, CLEAN AND PROTECT CONSTRUCTION IN PROGRESS AND ADJOINING MATERIALS IN PLACE. APPLY PROTECTIVE COVERING(S) WHERE REQUIRED.
    A. CLEAN AND MAINTAIN COMPLETED CONSTRUCTION AS OFTEN AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD.
    B. LIMITING EXPOSURES: SUPERVISE OPERATIONS TO ENSURE THAT NO PART OF CONSTRUCTION, COMPLETED OR IN PROGRESS, IS SUBJECT TO HARMFUL OR DELETERIOUS EXPOSURE. SUCH EXPOSURE INCLUDES, BUT NOT LIMITED TO:
        a. WATER INFILTRATION AND EXPOSURE TO WEATHER
        b. EXCESSIVE HIGH OR LOW TEMPERATURE OR HUMIDITY
        c. UNUSUAL WEAR OR OTHER MISUSE
        d. HEAVY TRAFFIC, SOILING, STAINING OR CORROSION
        e. CONTACT BETWEEN INCOMPATIBLE MATERIALS
        f. THEFT OR VANDALISM

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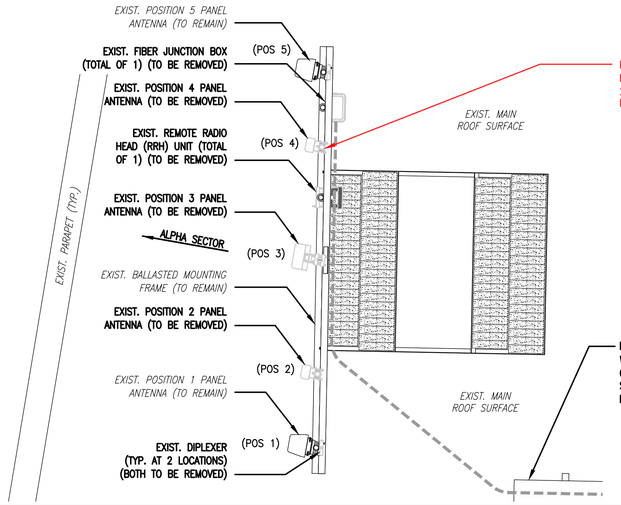
GREENWICH, CT 06830

DRAWING TITLE:
ROOF PLAN

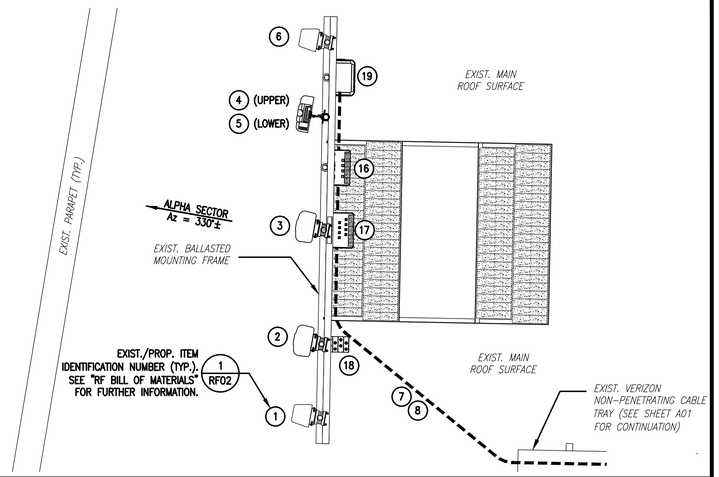
DRAWING NO:
A01

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
1/16" = 1'-0"	DRAWN BY: CMC	467305
CEA PROJECT NO.: 1508.101	CHECKED BY: GRS	
	ORIGINAL ISSUE DATE: 12/10/19	

ALPHA SECTOR

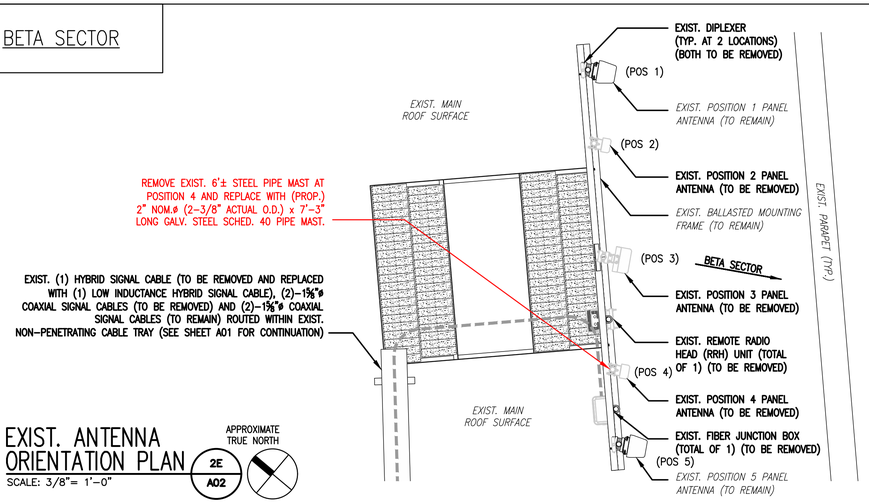


EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
1E / A02
APPROXIMATE TRUE NORTH

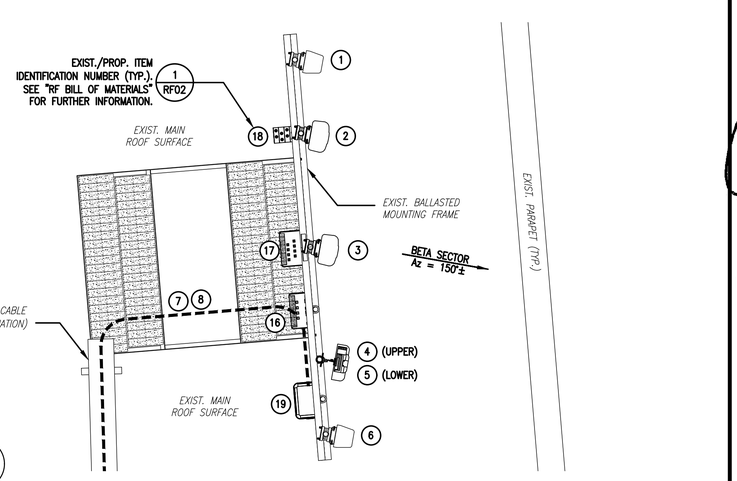


PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
1P / A02
APPROXIMATE TRUE NORTH

BETA SECTOR

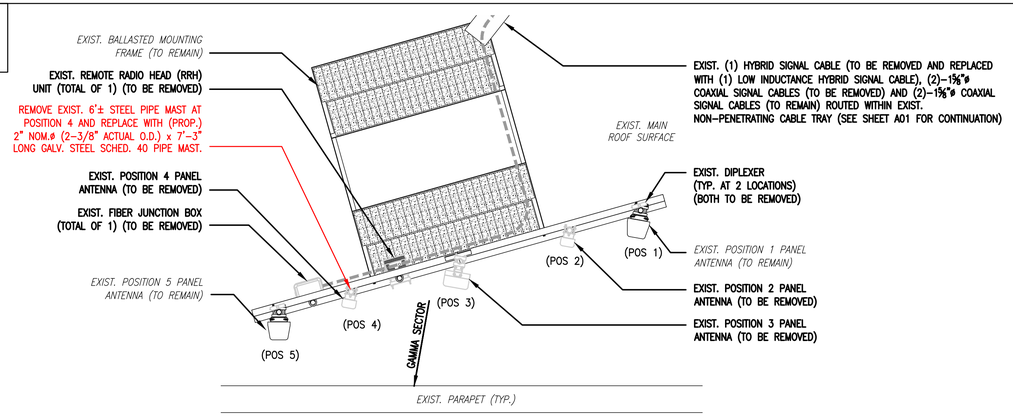


EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
2E / A02
APPROXIMATE TRUE NORTH

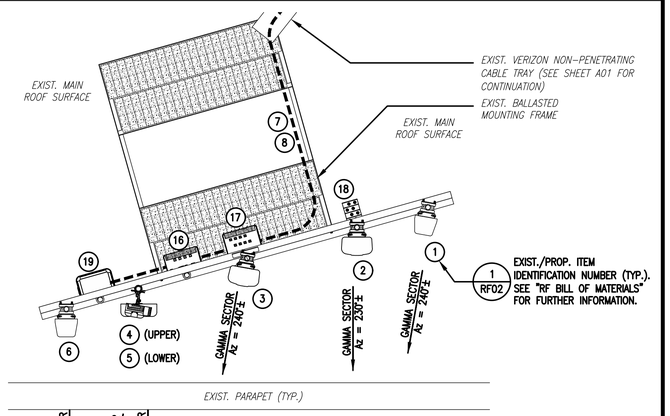


PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
2P / A02
APPROXIMATE TRUE NORTH

GAMMA SECTOR



EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
3E / A02
APPROXIMATE TRUE NORTH



PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
3P / A02
APPROXIMATE TRUE NORTH

verizon
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STATE OF CONNECTICUT
CLEMENT J. SAGE
No. 26876
LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

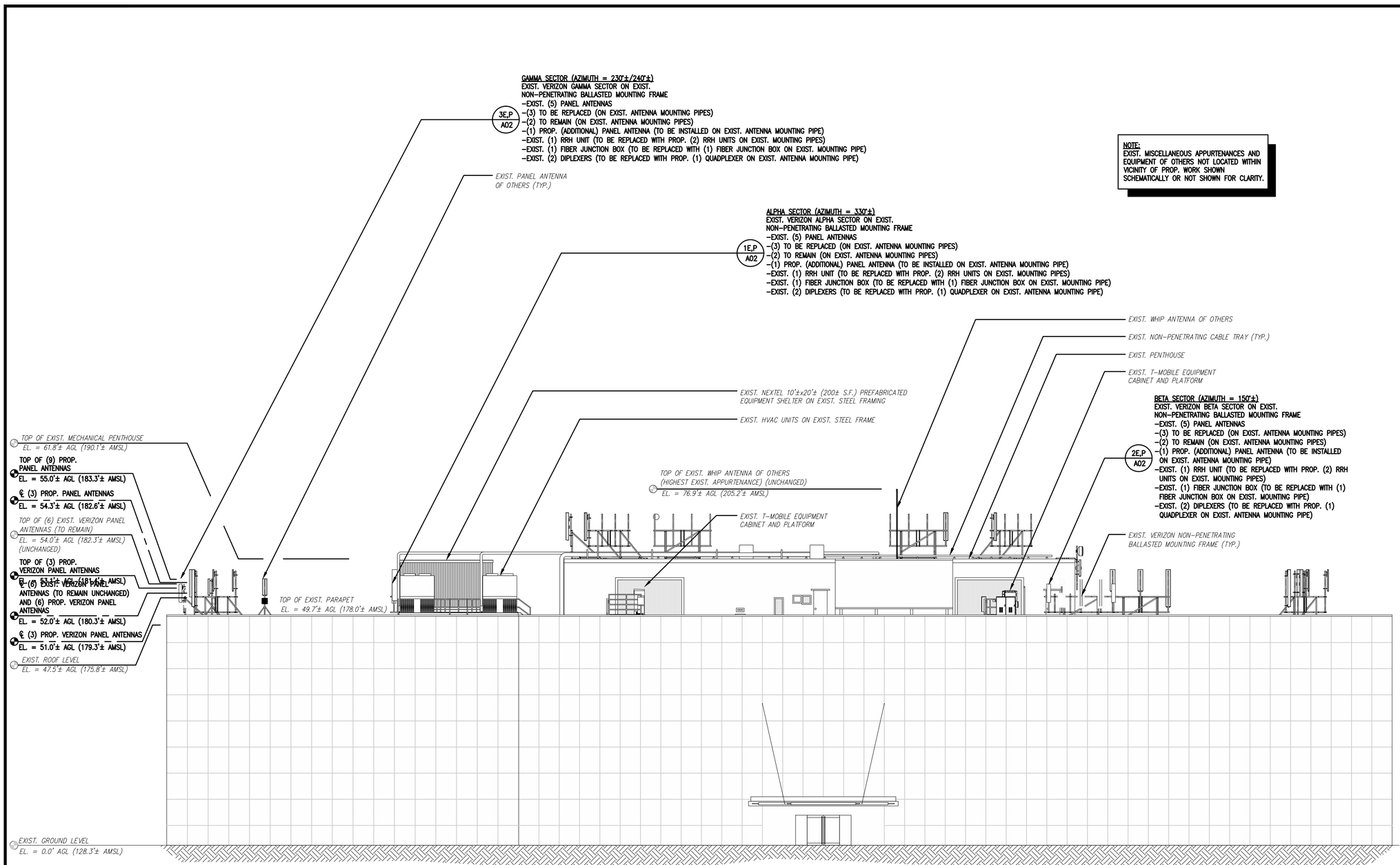
NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
ANTENNA ORIENTATION PLANS

DRAWING NO:
A02

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
3/8" = 1'-0"	DRAWN BY: CMC	467305
CEA PROJECT NO.: 1508.101	CHECKED BY: GRS	
	ORIGINAL ISSUE DATE: 12/10/19	



SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE)

1 A03

SCALE: 3/32" = 1'-0"

0 10'-8" 21'-4" 32'-0"

verizon

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STATE OF CONNECTICUT CLEMENT J. SAPIENZA No. 25876 LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:

GREENWICH
SOUTHWEST CT

WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

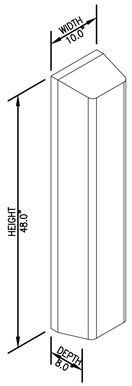
DRAWING TITLE:

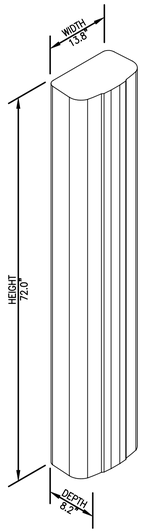
SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE)

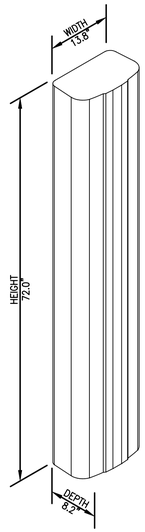
DRAWING NO:

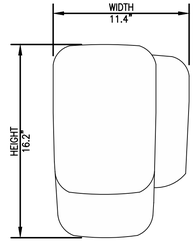
A03

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
3/32" = 1'-0"	DRAWN BY: CMC	467305
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	
1508.101	12/10/19	







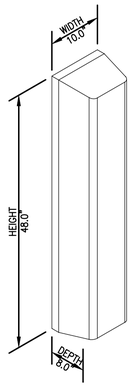


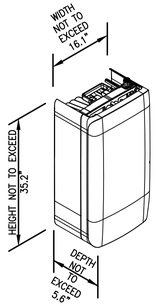
ITEM 4

(BAND 48 (3.5 GHz)) NR AU ANTENNA

DIMENSIONS:	16.2"H x 11.4"W x 5.5"D
WEIGHT:	23.1 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)





ITEM 1

CDMA (850 MHz)

DIMENSIONS:	48.0"H x 10.0"W x 8.0"D
WEIGHT:	12.0 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: EXISTING (TO REMAIN)

ITEM 2

LTE (700/850/1900 MHz) PANEL ANTENNA

DIMENSIONS:	72.0"H x 13.8"W x 8.2"D
WEIGHT:	68.6 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

ITEM 3

LTE (700/850/2100 MHz) PANEL ANTENNA

DIMENSIONS:	72.0"H x 13.8"W x 8.2"D
WEIGHT:	68.6 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

ITEM 5

VZS01 ANTENNA

MAX. DIMENSIONS:	35.2"H x 16.1"W x 5.6"D
MAX. WEIGHT:	87.1 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (ADDITIONAL)

ITEM 6

CDMA (850 MHz)

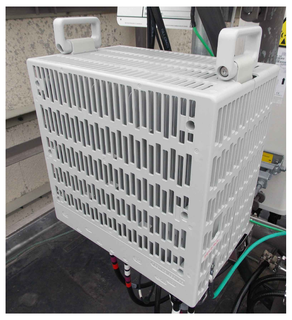
DIMENSIONS:	48.0"H x 10.0"W x 8.0"D
WEIGHT:	12.0 LBS EACH
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: EXISTING (TO REMAIN)

PANEL ANTENNA SPECIFICATIONS (FINAL CONFIGURATION)

SCALE: N.T.S.

1 RF01



ITEM 16

LTE/CDMA (700/850 MHz) REMOTE RADIO HEAD UNIT

DIMENSIONS:	15.5"H x 15.9"W x 10.0"D
WEIGHT:	70.3 LBS
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

ITEM 17

PCS-AWS (1900/2100 MHz) REMOTE RADIO HEAD UNIT

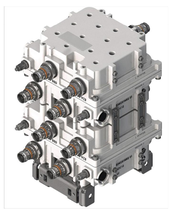
DIMENSIONS:	15.4"H x 15.8"W x 12.0"D
WEIGHT:	84.4 LBS
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (ADDITIONAL)

REMOTE RADIO HEAD (RRH) UNIT SPECIFICATIONS (FINAL CONFIGURATION)

SCALE: N.T.S.

2 RF01



ITEM 18

(700/850 MHz) QUADPLEXER

DIMENSIONS:	6.4"H x 6.9"W x 9.6"D
WEIGHT:	20.7 LBS
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

TYPICAL QUADPLEXER DIMENSIONS

SCALE: N.T.S.

3 RF01

Procedure

Mounting Procedures

4.1 A mounting base is delivered with the unit. The base allows either wall/ladder or pole mounted installation. See picture to identify the holes for each installation method.

4.2 ***Option 1: Pole Mount***
Using supplied hardware, mount Bracket to 2" to 4" diameter pole.

4.3 ***Option 2: Unistrut***

4.4 ***Option 3: Monopole***
Use 1" stainless steel bands (not supplied) through slots on bracket to mount to Monopole.

Gland/Insert Definitions

5.1 See picture to identify Base Gland Assembly Definitions.

Assembled in unit as shipped:

Qty	Connector Size	Pos	Insert P/N	Insert Hole	Cable Type
2	M75	A	190-0760	42mm	6x12 RL
4	M75	B	190-0738	3x 16.5mm	1x2

Included in kit shipped with unit:

Qty	Connector Size	Insert P/N	Insert Hole	Cable Type	Purpose	Pos
2	M75	190-0760	42mm	6x12 RL	2 glands fit 1 each 6/12 Hyb	B
2	M75	190-0747	2x 24.5mm	2x12 DC	2 glands fit 2 each #6 12 cond DC	B
1	M75	190-0905	2x 10.5mm	2x12 Fiber	1 gland fit 2 x 12 fiber trunk	B
1	M75	190-0912	2x 9.5mm	2 ETH	1 gland fits 2 ethernet cable	B

ITEM 19

FIBER JUNCTION BOX

DIMENSIONS:	29.58"H x 16.5"W x 12.6"D
WEIGHT:	32.0 LBS
QUANTITY:	1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

TYPICAL FIBER JUNCTION BOX DIMENSIONS, SCHEMATIC AND MOUNTING PROCEDURE

SCALE: N.T.S.

4 RF01

verizon

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CLEMENT J. SAFFER
No. 25876
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ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:

GREENWICH
SOUTHWEST CT

WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:

ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS

DRAWING NO:

RF01

SCALE: AS SHOWN	DESIGNED BY: CMC DRAWN BY: CMC CHECKED BY: GRS	VZW LOCATION CODE: 467305
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	

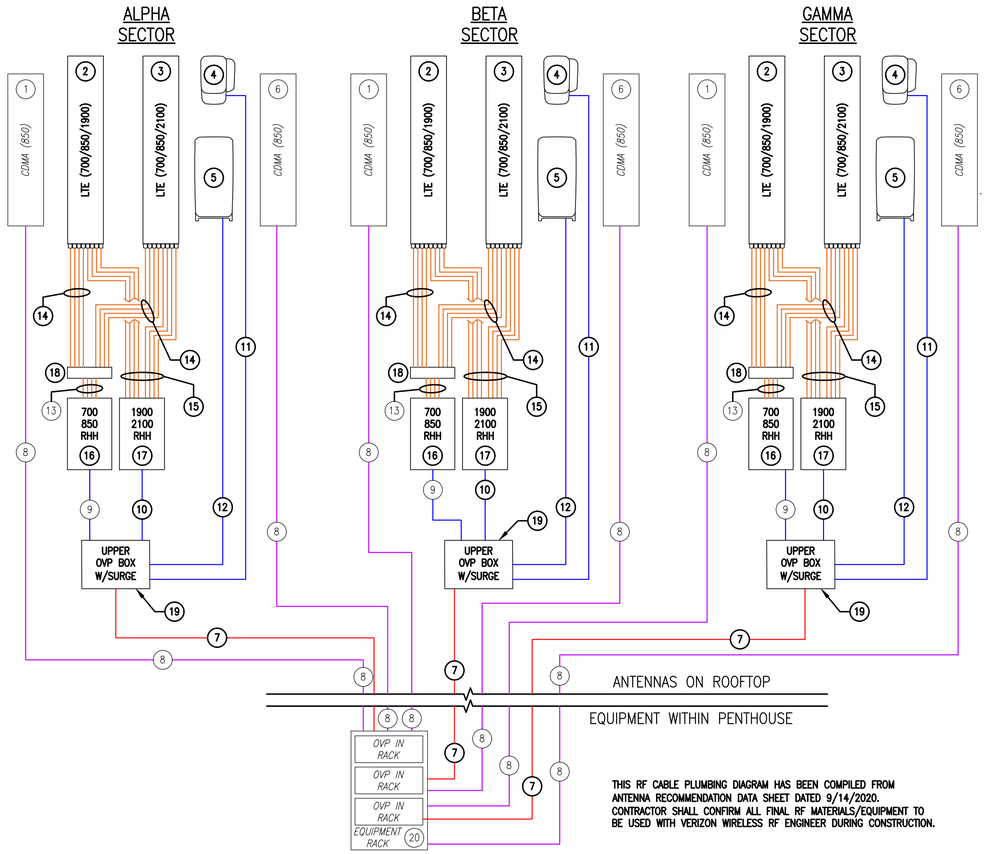
RF BILL OF MATERIALS (PROP. (FINAL) CONFIGURATION)

SITE NAME: GREENWICH SOUTHWEST CT — **A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR**

	ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1 RF01	1	*EXIST. PANEL ANTENNA (TO REMAIN)*	*850*	*3 TOTAL (A,B,G)*	*EXIST.*	*48.0"H x 10.0"W x 8.0"D (12.0 lbs, each)*	*MOUNTED TO EXIST. PIPE MAST*
	2	**PROP. PANEL ANTENNA (REPLACEMENT)**	**700/850/1900**	**3 TOTAL (A,B,G)**	**PROP.**	**72.0"H x 13.8"W x 8.2"D (63.3 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
	3	**PROP. PANEL ANTENNA (REPLACEMENT)**	**700/850/2100**	**3 TOTAL (A,B,G)**	**PROP.**	**72.0"H x 13.8"W x 8.2"D (63.3 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
	4	**PROP. PANEL ANTENNA (REPLACEMENT)**	**BAND 48**	**3 TOTAL (A,B,G)**	**PROP.**	**16.2"H x 11.4"W x 5.5"D (23.1 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
	5	**PROP. PANEL ANTENNA (ADDITIONAL)**	**3700–3980**	**3 TOTAL (A,B,G)**	**PROP.**	**35.2"H x 16.1"W x 5.6"D (87.1 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
	6	*EXIST. PANEL ANTENNA (TO REMAIN)*	*850*	*3 TOTAL (A,B,G)*	*EXIST.*	*48.0"H x 10.0"W x 8.0"D (12.0 lbs, each)*	*MOUNTED TO EXIST. PIPE MAST*
	7	**6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE (MAIN LINE)**	**–**	**3 TOTAL (1 PER SECTOR)**	**PROP.**	**190'±(A), 105'±(B), 195'±(G)**	**ROUTE ALONG ROOFTOP OF EXIST. BUILDING TO PROP. FIBER JUNCTION BOXES**
	8	*5/8"ø COAXIAL SIGNAL CABLE (MAIN LINE)*	*–*	*6 TOTAL (2 PER SECTOR)*	*EXIST.*	*EXIST.*	*ROUTED ALONG ROOFTOP OF EXIST. BUILDING TO EXIST. CDMA ANTENNAS*
	9	*1x1 HYBRID SIGNAL CABLE (JUMPER)*	*–*	*3 TOTAL (1 PER SECTOR)*	*EXIST.*	*EXIST.*	**ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. RRH UNITS**
	10	**1x1 HYBRID SIGNAL CABLE (JUMPER)**	**–**	**3 TOTAL (1 PER SECTOR)**	**PROP.**	**20 FT. MAX. EACH**	**ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. RRH UNITS**
	11	**1x1 HYBRID SIGNAL CABLE (JUMPER)**	**–**	**3 TOTAL (1 PER SECTOR)**	**PROP.**	**20 FT. MAX. EACH**	**ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. "NR AU" PANEL ANTENNA**
	12	**1x2 HYBRID SIGNAL CABLE (JUMPER)**	**–**	**3 TOTAL (1 PER SECTOR)**	**PROP.**	**20 FT. MAX. EACH**	**ROUTE FROM PROP. UPPER OVP BOXES TO PROP. VZS01 ANTENNAS**
	13	*1/2"ø COAXIAL CABLE (JUMPER)*	*–*	*12 TOTAL (4 PER SECTOR)*	*EXIST.*	*5 FT. EACH*	**ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. QUADPLEXERS**
	14	**1/2"ø COAXIAL CABLE (JUMPER)**	**–**	**24 TOTAL (8 PER SECTOR)**	**PROP.**	**20 FT. MAX. EACH**	**ROUTE FROM PROP. QUADPLEXERS TO PROP. ANTENNAS**
	15	**1/2"ø COAXIAL CABLE (JUMPER)**	**–**	**24 TOTAL (8 PER SECTOR)**	**PROP.**	**20 FT. MAX. EACH**	**ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. ANTENNAS**
2 RF01	16	**REMOTE RADIO HEAD (RRH) UNIT**	**700/850**	**3 TOTAL (A,B,G)**	**PROP.**	**15.5"H x 15.9"W x 10.0"D (70.3 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
	17	**REMOTE RADIO HEAD (RRH) UNIT**	**1900/2100**	**3 TOTAL (A,B,G)**	**PROP.**	**15.4"H x 15.8"W x 12.0"D (84.4 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
3 RF01	18	**QUADPLEXER**	**700/850**	**3 TOTAL (A,B,G)**	**PROP.**	**6.4"H x 6.9"W x 9.6"D (20.7 lbs, each)**	**MOUNT TO EXIST. PIPE MAST**
4 RF01	19	**UPPER OVP BOX WITH SURGE**	**–**	**3 TOTAL (A,B,G)**	**PROP.**	**29.58"H x 16.5"W x 12.6"D (32.0 lbs, each)**	**MOUNT TO EXIST. BALLASTED ANTENNA MOUNTING FRAME**
	20	*LOWER OVP BOX/RACK*	*–*	*–*	*–*	*–*	*EQUIPMENT CABINET/ROOM INTERFACE*

THIS RF BILL OF MATERIALS (BOM) HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 9/14/2020. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF BILL OF MATERIALS (FINAL CONFIGURATION) — 1 RF02
SCALE: NONE



THIS RF CABLE PLUMBING DIAGRAM HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 9/14/2020. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION) — 2 RF02
SCALE: NO SCALE

RADIO FREQUENCY (RF) DESIGN NOTES:
1) ALL RADIO FREQUENCY (RF) DESIGN INFORMATION CONTAINED ON THIS SHEET IS SHOWN SCHEMATICALLY.

2) THE GENERAL CONTRACTOR SHALL CONFIRM ALL RF DESIGN ELEMENTS SHOWN (INCLUDING BUT NOT LIMITED TO PANEL ANTENNA MODELS & ARRANGEMENT, AZIMUTHS, REMOTE RADIO HEAD (RRH) UNIT MODELS & ARRANGEMENT AND CABLING DIAGRAMS/SCHEMATICS) WITH THE VERIZON WIRELESS RF ENGINEER AT THE TIME OF CONSTRUCTION.

LEGEND

RED (##)	= HYBRID CABLE (MAIN LINE)
PURPLE (##)	= COAXIAL CABLE (MAIN LINE)
BLUE (##)	= 1x1 HYBRID CABLE (JUMPER)
ORANGE (##)	= 1/2"ø COAXIAL CABLE (JUMPER)
GREEN (##)	= RET CONTROL CABLE(S) (JUMPER)

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STATE OF CONNECTICUT — CLEMENT J. SAPP — No. 25876 — LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
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PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM

DRAWING NO:
RF02

SCALE: AS SHOWN	DESIGNED BY: CMC DRAWN BY: CMC CHECKED BY: GRS	VZW LOCATION CODE: 467305
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	

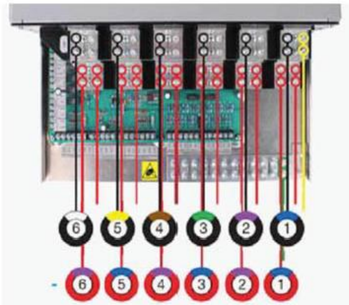
Line Color Code	Band	Tx/Rx	Color Pairs	Sector	Main Line Cable Length/Information
BR	850	Tx0/Rx0	Blue + Red	ALPHA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 190'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
BY	850	Tx1/Rx1	Blue + Yellow		
BG	1900 CDMA	Tx0/Rx0	Blue + Green		
BBG	1900 CDMA	Tx1/Rx1			
BP	700	Tx0/Rx0	Blue + Purple		
BBP	700	Tx1/Rx1			
BBBP	700	Tx2/Rx2			
BBBBP	700	Tx3/Rx3			
BBr	AWS	Tx0/Rx0	Blue + Brown		
BBBr	AWS	Tx1/Rx1			
BBBBr	AWS	Tx2/Rx2			
BBBBBr	AWS	Tx3/Rx3			
BGG	1900 LTE	Tx0/Rx0	Blue + Green		
BBGG	1900 LTE	Tx1/Rx1			
BBBGG	1900 LTE	Tx2/Rx2			
BBBBGG	1900 LTE	Tx3/Rx3			
WR	850	Tx0/Rx0	White + Red	BETA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 105'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
WY	850	Tx1/Rx1	White + Yellow		
WG	1900 CDMA	Tx0/Rx0	White + Green		
WWG	1900 CDMA	Tx1/Rx1			
WP	700	Tx0/Rx0	White + Purple		
WWP	700	Tx1/Rx1			
WWWP	700	Tx2/Rx2			
WWWWP	700	Tx3/Rx3			
WBr	AWS	Tx0/Rx0	White + Brown		
WWBr	AWS	Tx1/Rx1			
WWWBr	AWS	Tx2/Rx2			
WWWWBr	AWS	Tx3/Rx3			
WGG	1900 LTE	Tx0/Rx0	White + Green		
WWGG	1900 LTE	Tx1/Rx1			
WWWGG	1900 LTE	Tx2/Rx2			
WWWWGG	1900 LTE	Tx3/Rx3			
OR	850	Tx0/Rx0	Orange + Red	GAMMA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 195'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
OY	850	Tx1/Rx1	Orange + Yellow		
OG	1900 CDMA	Tx0/Rx0	Orange + Green		
OOG	1900 CDMA	Tx1/Rx1			
OP	700	Tx0/Rx0	Orange + Purple		
OOP	700	Tx1/Rx1			
OOOP	700	Tx2/Rx2			
OOOOP	700	Tx3/Rx3			
OBr	AWS	Tx0/Rx0	Orange + Brown		
OOBr	AWS	Tx1/Rx1			
OOOBr	AWS	Tx2/Rx2			
OOOOBr	AWS	Tx3/Rx3			
OGG	1900 LTE	Tx0/Rx0	Orange + Green		
OOGG	1900 LTE	Tx1/Rx1			
OOOGG	1900 LTE	Tx2/Rx2			
OOOOGG	1900 LTE	Tx3/Rx3			

LINE COLOR CODE SPECIFICATIONS (1 / RF03)

Hybrid Cable on Rooftops and Water tanks

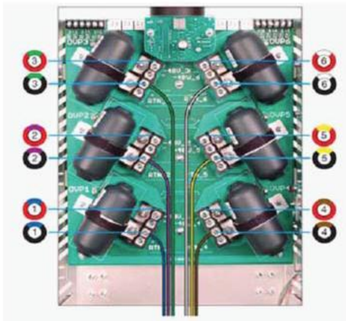
Hybrid Cable 1

Sector	Identification Color	-48V	RTN
700 Alpha	Blue		
AWS Alpha	Violet		
PCS Alpha	Green		
850 Alpha	Brown		
Spare	Yellow		
Spare	White		



Hybrid Cable 2

Sector	Identification Color	-48V	RTN
700 Beta	Blue		
AWS Beta	Violet		
PCS Beta	Green		
850 Beta	Brown		
Spare	Yellow		
Spare	White		



Hybrid Cable 3

Sector	Identification Color	-48V	RTN
700 Gamma	Blue		
AWS Gamma	Violet		
PCS Gamma	Green		
850 Gamma	Brown		
Spare	Yellow		
Spare	White		

HYBRID CABLE COLOR CODE SPECIFICATIONS (2 / RF03)

verizon
" Because Better Matters "

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Civil · Structural · Land Surveying
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SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

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ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

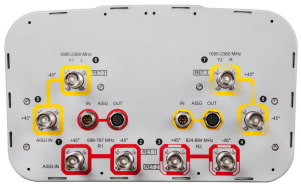
PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
RF COLOR CODE SPECIFICATIONS

DRAWING NO:
RF03

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
N/A	DRAWN BY: CMC	467305
	CHECKED BY: GRS	
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	

JAHH-65B-R3B



8-port sector antenna, 2x 698–787, 2x 824-894 and 4x 1695–2360 MHz, 65° HPBW, 3x RET and low bands have diplexers. Internal SBT's on first LB(Port 1) and first HB(Port 5).

- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One RET for 700MHz, one RET for 850MHz, and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO
- Internal filter on low band and interleaved dipole technology providing for attractive, low wind load mechanical package
- Separate RS-485 RET input/output for low and high band

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Effective Projective Area (EPA), frontal	0.28 m^2 | 3.014 ft^2
Effective Projective Area (EPA), lateral	0.24 m^2 | 2.583 ft^2
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Aluminum | Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	4
RF Connector Quantity, total	8

Remote Electrical Tilt (RET) Information, General

RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

Dimensions

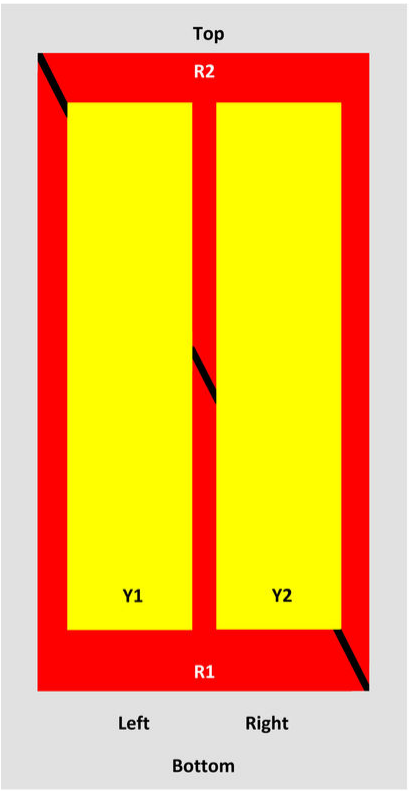
Width	350 mm | 13.78 in

JAHH-65B-R3B

Length	1828 mm | 71.969 in
Depth	208 mm | 8.189 in

Array Layout

JAHH-65A-R3B JAHH-65B-R3B JAHH-65C-R3B



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2360 MHz | 698 – 787 MHz | 824 – 894 MHz
Polarization	±45°

Remote Electrical Tilt (RET) Information, Electrical

Protocol	3GPP/AISG 2.0 (Single RET)
Power Consumption, idle state, maximum	2 W

JAHH-65B-R3B

Power Consumption, normal conditions, maximum	13 W
Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 5
Internal RET	High band (1) | Low band (2)

Electrical Specifications

Frequency Band, MHz	**698–787**	**824–894**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain, dBi	14.5	15.8	18	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
Isolation, Cross Polarization, dB	25	25	25	25	25	25
Isolation, Inter-band, dB	30	30	30	30	30	30
VSWR | Return loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port at 50° C, maximum, watts	200	200	300	300	300	250

Electrical Specifications, BASTA

Frequency Band, MHz	**698–787**	**824–894**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2 ° | 14.3 8 ° | 14.3 14 ° | 14.3	2 ° | 15.0 8 ° | 14.9 14 ° | 15.4	0 ° | 17.2 5 ° | 17.6 10 ° | 17.6	0 ° | 17.6 5 ° | 18.2 10 ° | 18.2	0 ° | 17.7 5 ° | 18.3 10 ° | 18.3	0 ° | 17.9 5 ° | 18.7 10 ° | 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24

CPR at Sector, dB	11	12	11	11	11	8

Mechanical Specifications

Wind Loading at Velocity, frontal	301.0 N @ 150 km/h | 67.7 lbf @ 150 km/h
Wind Loading at Velocity, lateral	254.0 N @ 150 km/h | 57.1 lbf @ 150 km/h
Wind Loading at Velocity, maximum	143.4 lbf @ 150 km/h | 638.0 N @ 150 km/h
Wind Speed, maximum	241 km/h | 149.75 mph

Packaging and Weights

Width, packed	456 mm | 17.953 in
Depth, packed	357 mm | 14.055 in
Length, packed	1975 mm | 77.756 in
Net Weight, without mounting kit	29.2 kg | 64.375 lb
Weight, gross	42.5 kg | 93.696 lb

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Above maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
ROHS	Compliant/Exempted

Included Products

BSAMNT-3	—	Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

SAMSUNG

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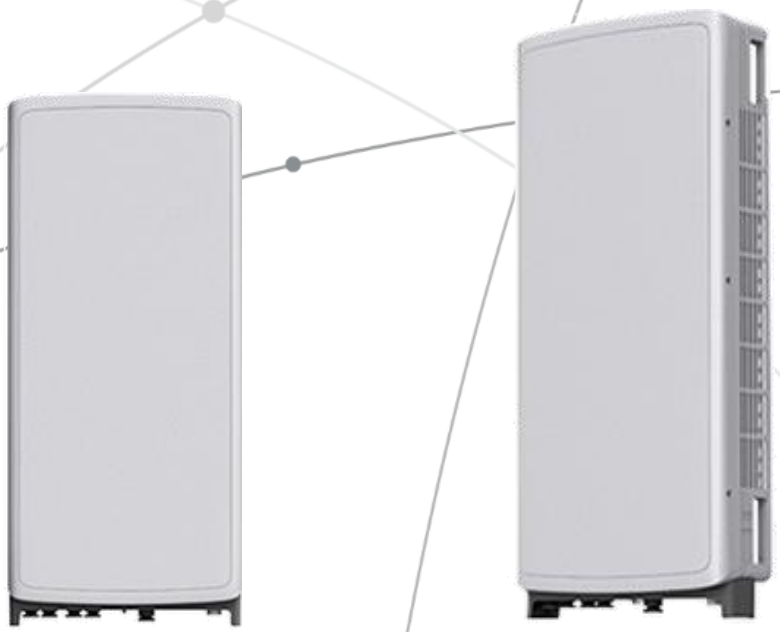
C-Band 64T64R Massive MIMO Radio

for High Capacity and Wide Coverage

Samsung C-Band 64T64R Massive MIMO Radio enables mobile operators to increase coverage range, boost data speeds and ultimately offer enriched 5G experiences to users in the U.S..

Model Code : MT6407-77A

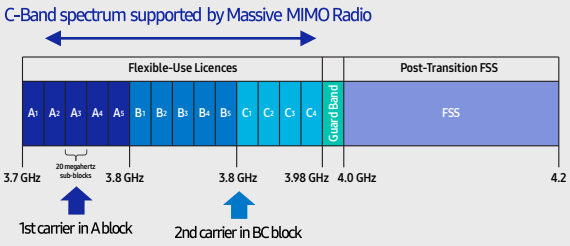


Points of Differentiation

Wide Bandwidth

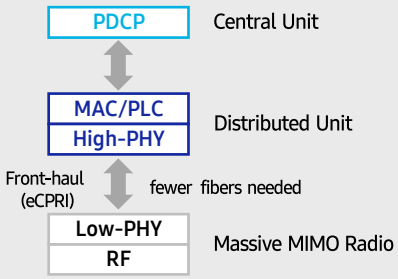
With capability to support up to 2 CC carrier configuration, Samsung C-Band massive MIMO Radio supports 200 MHz bandwidth in the C-Band spectrum.

Samsung C-Band massive MIMO Radio covers the entire C-Band 280 MHz spectrum, so it can meet the operator's needs in current A block and future B/C blocks



Future Proof Product

Samsung C-Band 64T64R Massive MIMO radio supports not only CPRI but also eCPRI as front-haul interface.
It enables operators can cut down on OPEX/CAPEX by reducing front-haul bandwidth through low layer split and using ethernet based higher efficient line.



Enhanced Performance

C-Band massive MIMO Radio creates sharp beams and extends networks' coverage on the critical mid-band spectrum using a large number of antenna elements and high output power to boost data speeds.

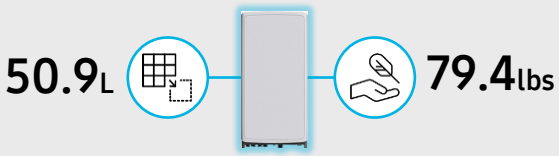
This helps operators reduce their CAPEX as they now need less products to cover the same area than before.

Furthermore, as C-Band massive MIMO Radio supports MU-MIMO(Multi-user MIMO) , it enables to increase user throughput by minimizing interference.

Well Matched Design

Samsung C-Band Massive MIMO radio utilizes 64 antennas, supports up to 280MHz bandwidth, and delivers a 200W output power. despite the above advanced performance, the Radio has a compact size of 50.9L and 79.4lbs. This makes it easy to install the Radio.

It is designed to look solid and compact, with a low profile appearance so that, when installed, harmonizes well with the surrounding environment..



Technical Specifications

Item	Specification
Tech	NR
Band	n77
Frequency Band	3700 - 3980 MHz
EIRP	78.5dBm (53.0 dBm+25.5 dBi)
IBW/OBW	280 MHz / 200 MHz
Installation	Pole/Wall
Size/ Weight	16.06 x 35.06 x 5.51 inch (50.86L)/ 79.4 lbs

SAMSUNG

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI, foundry and LED solutions.

129 Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, Korea

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Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
    B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
    B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
    70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
700/850MHz (B13/B5)
RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

[CBRS] Clip-on Antenna Specifications

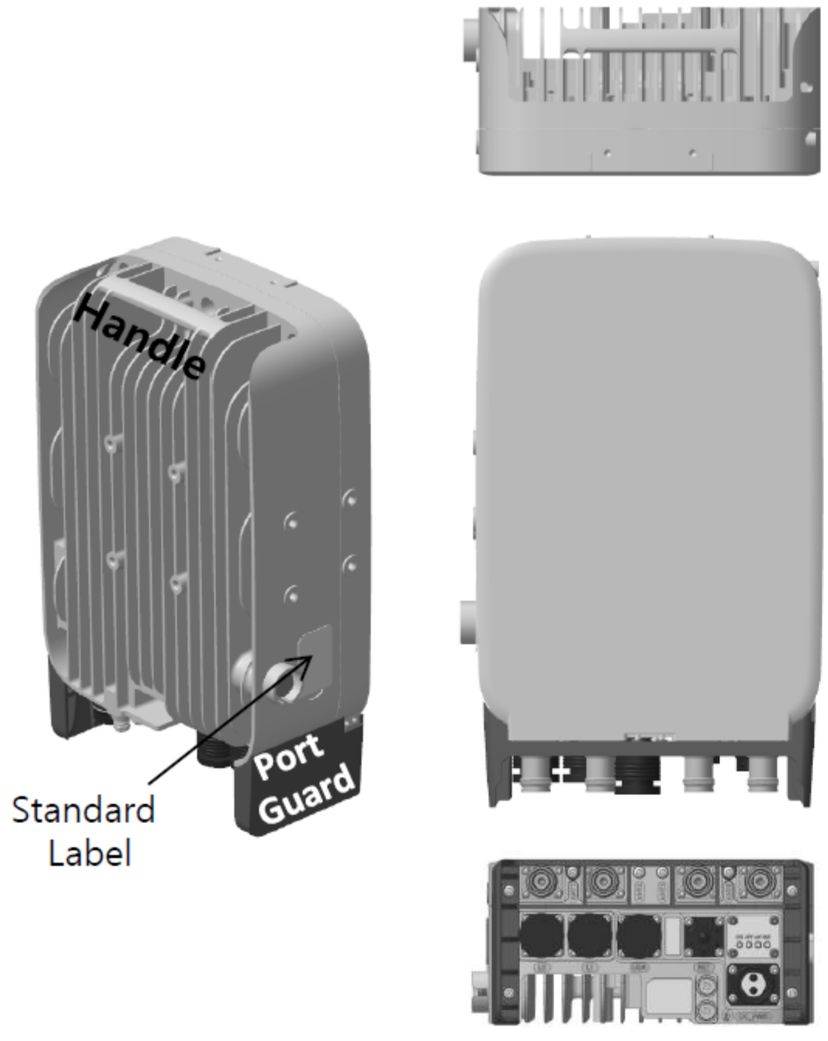
VzW accepted IP45 in FLD, but IP55 is Samsung Spec.

Items	Clip-on Antenna, BASTA**
Antenna Gain	12.5 ± 0.5 dBi (Max 13 dBi)
Horizontal BW (-3dB)	65° ± 5°
Vertical BW (-3dB)	17° ±3°
Electrical Tilt	8° (fixed) ±2°
Front-to-Back Ratio	> 25 dB
Port-to-Port Tracking	< 3 dB
VSWR	< 1.5
Isolation	> 25 dB
Ingress Protection	**IP55**
Size	220(W)×313(H)×34.3(D) mm (*) (8.7 x 12.3 x 1.4 inch.)
Weight	< **2.0** kg [Typ. 1.3 kg]
It is required that the radio should be weatherproofed properly with JMA WPS Boot with external antenna or with Weatherproof Boot for clip-on antennas.	

Antenna includes integrated cable with connector
* Design is subject to minor change

** Ant. spec. follows NGMN recommendations on Base Station Antenna Standards (BASTA). For example, 'mean ± tolerance of 86.6%' is applied to double-sided specification of statistical RF parameters.

[CBRS RRH] Spec.



Current Size: 216 x 307 x 105.5 mm (6.99L)
(8.5 x 12.1 x 4.1 inch., excluding Port Guard)
Design is subject to minor change

Item	Specification
Band	Band 48 (3.5 GHz)
Frequency	3550~3700 MHz
IBW	150 MHz
OBW	80 MHz
# of Carriers	5/10/15/20 MHz x 4 carriers
RF Chain	4TX / 4RX
RF Output Power & EIRP	4 path x 5 W (Total: 20 W = 43 dBm) (EIRP: 47 dBm / 10 MHz)
RX Sensitivity	Typical : -101.5 dBm @ 1 Rx (3GPP 36.104, Wide Area)
Modulation	256-QAM support (1024-QAM with 1~2dB power back-off)
Input Power	-48 VDC (-38 to -57 VDC, 1 SKU), with clip-on AC-DC converter (Option)
Power Consumption	About 160 Watt @ 100% RF load, typical conditions
Volume	**Under 7L** (w/o Antenna), Under 9.6L (with antenna)
Weight	**Under 8.0 kg** (**18.64** lb) (w/o Antenna), Under 10.5 Kg (with ant.)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (W/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A
	[B48] : FCC 47 CFR 96.41 e)
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, duplex or Bi-Di
CPRI Cascade	Not supported
# of Antenna Port	4
External Alarm (UDA)	4
RET	AISG 2.2
TMA & built-in Bias-T I//F and PIM cancellation	Not supported
Mounting Options	Pole, wall, tower, back to back, side by side (for external ant), 3 RRH with Clip-on Antenna on the pole
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
NB-IoT	Not Supported (HW Resource reserved for 1 Guard Band NB-IoT per LTE carrier)
Spectrum Analyzer	TX/RX Support
External Alarm (UDA)	4
5G NR	Support with S/W upgrade
XRAN	Support with S/W upgrade

ATTACHMENT 2

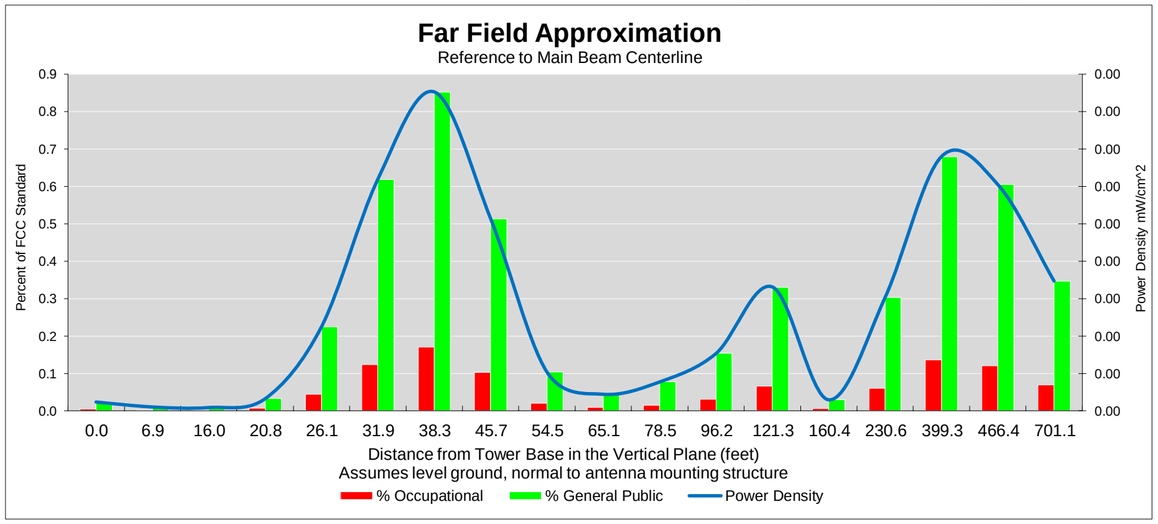
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole/Wire/Yagi Antenna Types

Far Field Approximation
with downtilt variation

verizonwireless

Location:	**GREENWICH SW CT**
Site #:	5-0092
Date:	06/10/21
Name:	Shiva Gadasu
File Name:	GREENWICH SW CT - FF Power

Antenna Type:	**JAHH-65B-R3B**
Operating Freq. (MHz):	**751**
Antenna Height (ft):	**52.0**
Antenna Gain (dBi):	**14.3**
Downtilt (degrees):	**2.0**
Feedline Loss (dB):	**0.0**
Tx Power (W):	**40.0**
No. of Channels:	**4**



Calc Angle		90.0	82.0	72.0	67.0	62.0	57.0	52.0	47.0	42.0	37.0	32.0	27.0	22.0	17.0	12.0	7.0	6.0	4.0
Solve for r, dx to antenna		49.0	49.5	51.5	53.2	55.5	58.4	62.2	67.0	73.3	81.5	92.5	108.0	130.9	167.7	235.8	402.3	469.0	702.8
Distance from Antenna Structure Base in Horizontal plane		0.0	6.9	16.0	20.8	26.1	31.9	38.3	45.7	54.5	65.1	78.5	96.2	121.3	160.4	230.6	399.3	466.4	701.1
Angle from Main Beam (reference to horizontal plane)		90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
dB down from centerline (referenced to centerline)		35.3	38.76	39.14	33.13	24.38	19.54	17.61	19.16	25.33	28.11	24.58	20.26	15.26	23.57	10.53	2.38	1.55	0.45
Reflection Coefficient (1 to 4, 2.56 typical)		2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard		0.00	0.00	0.00	0.01	0.04	0.12	0.17	0.10	0.02	0.01	0.02	0.03	0.07	0.01	0.06	0.14	0.12	0.07
Percent of General Population Standard		0.02	0.01	0.01	0.03	0.22	0.62	0.85	0.51	0.10	0.04	0.08	0.15	0.33	0.03	0.30	0.68	0.60	0.35

Max%: **0.85%**

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power (in watts).
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

751
850
2120
1977.5
3730

JAHH-65B-R3B
VZ-MT6407-77A

751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0	751.0
52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3
2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

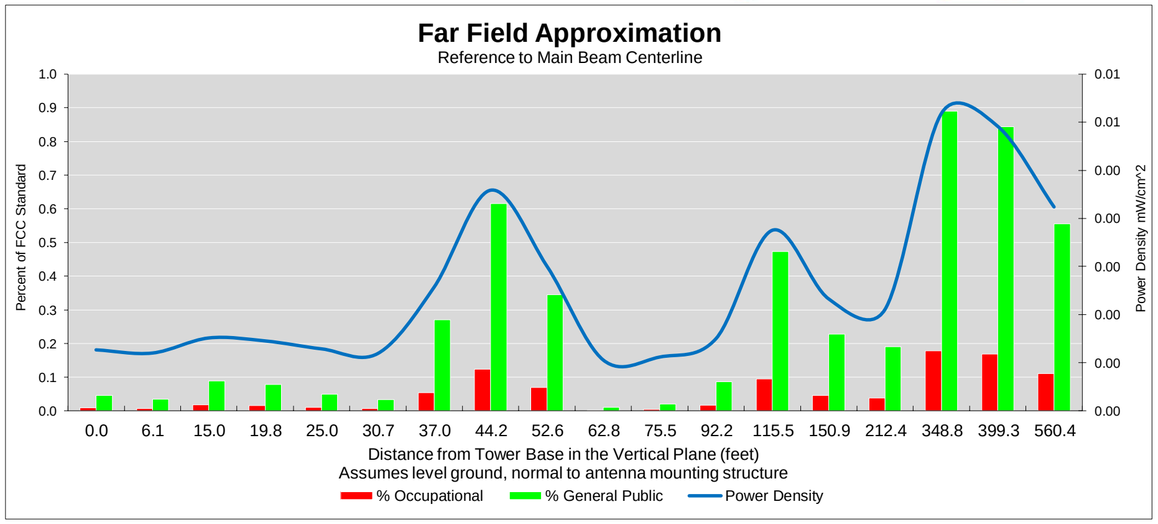
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole/Wire/Yagi Antenna Types

Far Field Approximation
with downtilt variation

verizonwireless

Location:	**GREENWICH SW CT**
Site #:	5-0092
Date:	06/10/21
Name:	Shiva Gadasu
File Name:	GREENWICH SW CT - FF Power

Antenna Type:	**JAHH-65B-R3B**
Operating Freq. (MHz):	**874**
Antenna Height (ft):	**52.0**
Antenna Gain (dBi):	**14.9**
Downtilt (degrees):	**3.0**
Feedline Loss (dB):	**0.0**
Tx Power (W):	**40.0**
No. of Channels:	**4**



Calc Angle	90.0	83.0	73.0	68.0	63.0	58.0	53.0	48.0	43.0	38.0	33.0	28.0	23.0	18.0	13.0	8.0	7.0	5.0
Solve for r, dx to antenna	49.0	49.4	51.2	52.9	55.0	57.8	61.4	66.0	71.9	79.6	90.0	104.4	125.5	158.6	217.9	352.3	402.3	562.5
Distance from Antenna Structure Base in Horizontal plane	0.0	6.1	15.0	19.8	25.0	30.7	37.0	44.2	52.6	62.8	75.5	92.2	115.5	150.9	212.4	348.8	399.3	560.4
Angle from Main Beam (reference to horizontal plane)	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
dB down from centerline (referenced to centerline)	32.23	33.43	29.02	29.3	30.9	32.24	22.61	18.41	20.18	34.85	30.43	22.94	13.97	15.11	13.12	2.26	1.34	0.24
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Percent of Occupational Standard	0.01	0.01	0.02	0.02	0.01	0.01	0.05	0.12	0.07	0.00	0.00	0.02	0.09	0.05	0.04	0.18	0.17	0.11
Percent of General Population Standard	0.05	0.03	0.09	0.08	0.05	0.03	0.27	0.62	0.34	0.01	0.02	0.09	0.47	0.23	0.19	0.89	0.84	0.56

Max%: **0.89%**

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power (in watts).
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

751
874
2120
1977.5
3730

JAHH-65B-R3B
VZ-MT6407-77A

874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0	874.0
52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

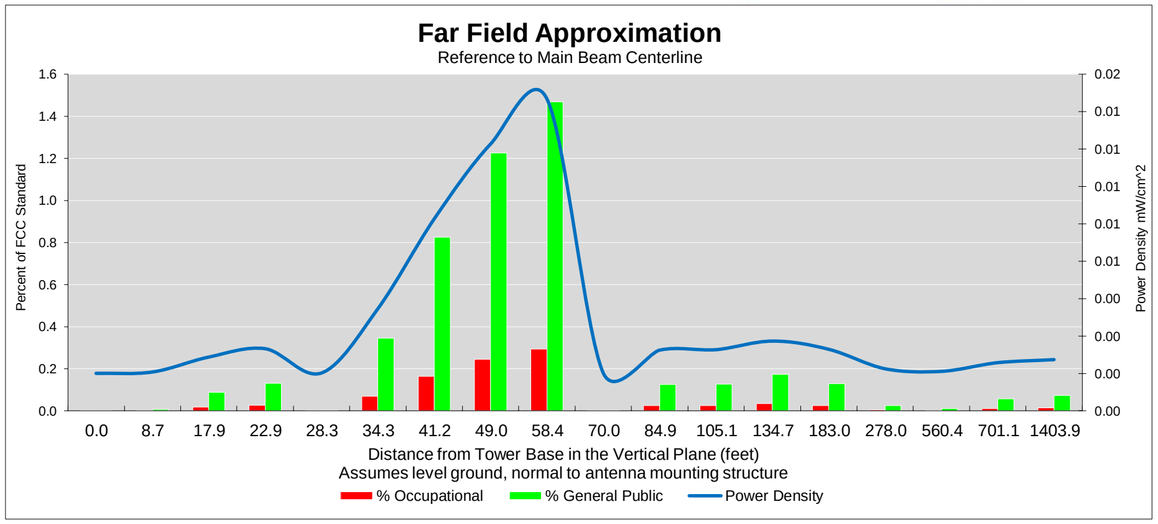
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole/Wire/Yagi Antenna Types

Far Field Approximation
with downtilt variation

verizonwireless

Location:	**GREENWICH SW CT**
Site #:	5-0092
Date:	06/10/21
Name:	Shiva Gadasu
File Name:	GREENWICH SW CT - FF Power

Antenna Type:	**JAHH-65B-R3B**
Operating Freq. (MHz):	**1978**
Antenna Height (ft):	**52.0**
Antenna Gain (dBi):	**18.1**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Tx Power (W):	**40.0**
No. of Channels:	**4**



Calc Angle		90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna		49.0	49.8	52.2	54.1	56.6	59.8	64.0	69.3	76.3	85.5	98.0	116.0	143.3	189.4	282.3	562.5	702.8	1404.7
Distance from Antenna Structure Base in Horizontal plane		0.0	8.7	17.9	22.9	28.3	34.3	41.2	49.0	58.4	70.0	84.9	105.1	134.7	183.0	278.0	560.4	701.1	1403.9
Angle from Main Beam (reference to horizontal plane)		90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
dB down from centerline (referenced to centerline)		57.68	40.71	29.72	27.64	44.15	22.57	18.21	15.8	14.19	40.4	22.7	21.17	17.99	16.83	20.5	18.01	8.97	1.84
Reflection Coefficient (1 to 4, 2.56 typical)		2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard		0.00	0.00	0.02	0.03	0.00	0.07	0.17	0.25	0.29	0.00	0.03	0.03	0.03	0.03	0.01	0.00	0.01	0.01
Percent of General Population Standard		0.00	0.01	0.09	0.13	0.00	0.35	0.83	1.23	1.47	0.00	0.13	0.13	0.17	0.13	0.03	0.01	0.06	0.07

Max%: **1.47%**

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power (in watts).
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

2120
1977.5
3730

JAHH-65B-R3B
VZ-MT6407-77A

1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5	1977.5
52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

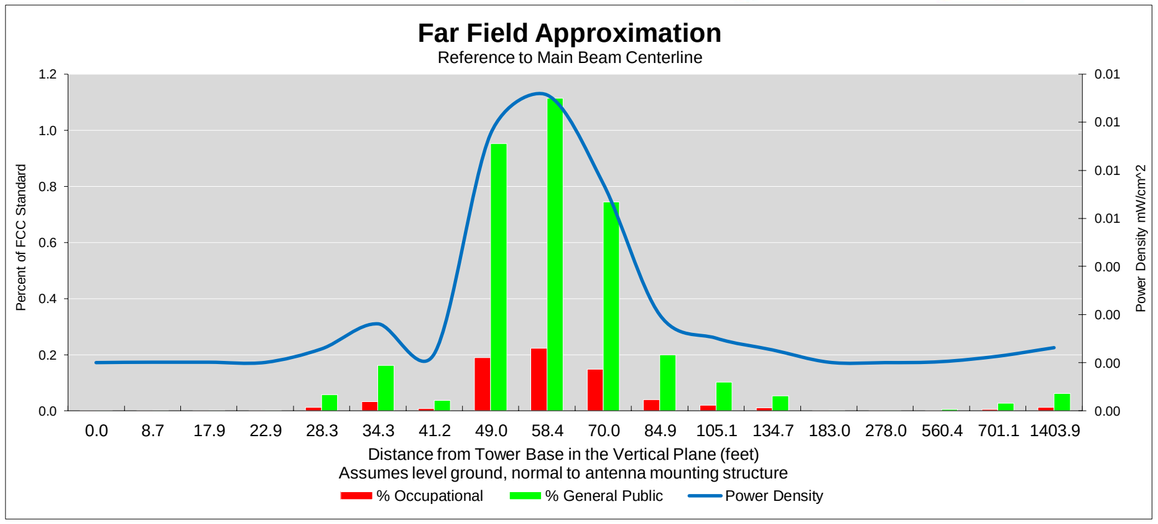
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole/Wire/Yagi Antenna Types

Far Field Approximation
with downtilt variation

verizonwireless

Location:	**GREENWICH SW CT**
Site #:	5-0092
Date:	06/10/21
Name:	Shiva Gadasu
File Name:	GREENWICH SW CT - FF Power

Antenna Type:	**JAHH-65B-R3B**
Operating Freq. (MHz):	**2120**
Antenna Height (ft):	**52.0**
Antenna Gain (dBi):	**18.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Tx Power (W):	**40.0**
No. of Channels:	**4**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	49.0	49.8	52.2	54.1	56.6	59.8	64.0	69.3	76.3	85.5	98.0	116.0	143.3	189.4	282.3	562.5	702.8	1404.7
Distance from Antenna Structure Base in Horizontal plane	0.0	8.7	17.9	22.9	28.3	34.3	41.2	49.0	58.4	70.0	84.9	105.1	134.7	183.0	278.0	560.4	701.1	1403.9
Angle from Main Beam (reference to horizontal plane)	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
dB down from centerline (referenced to centerline)	52.75	45.79	44.9	46.03	30.76	25.78	31.64	16.82	15.31	16.07	20.6	22.04	22.99	34.06	40.58	21.87	12.1	2.52
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.19	0.22	0.15	0.04	0.02	0.01	0.00	0.00	0.00	0.01	0.01
Percent of General Population Standard	0.00	0.00	0.00	0.00	0.06	0.16	0.04	0.95	1.11	0.74	0.20	0.10	0.05	0.00	0.00	0.00	0.03	0.06

Max%: **1.11%**

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power (in watts).
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

2120
1977.5
3730

JAHH-65B-R3B
VZ-MT6407-77A

2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0	2120.0
52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

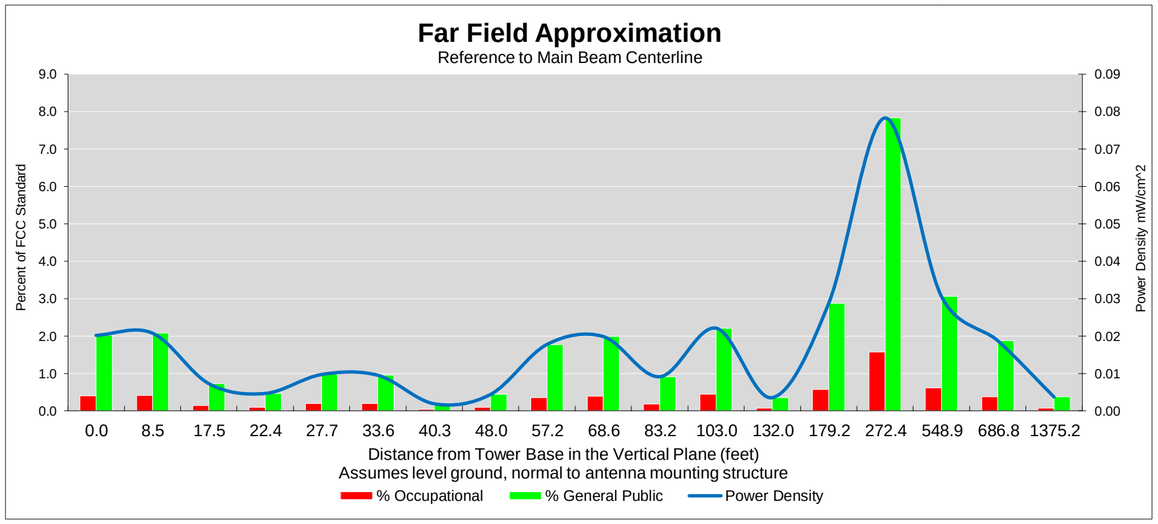
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole/Wire/Yagi Antenna Types

Far Field Approximation
with downtilt variation

verizonwireless

Location:	**GREENWICH SW CT**
Site #:	5-0092
Date:	06/10/21
Name:	Shiva Gadasu
File Name:	GREENWICH SW CT - FF Power

Antenna Type:	**VZ-MT6407-77A**
Operating Freq. (MHz):	**3730**
Antenna Height (ft):	**51.0**
Antenna Gain (dBi):	**25.5**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Tx Power (W):	**30.2**
No. of Channels:	**4**



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	48.0	48.7	51.1	53.0	55.4	58.6	62.7	67.9	74.7	83.7	96.0	113.6	140.4	185.5	276.6	551.0	688.5	1376.1
Distance from Antenna Structure Base in Horizontal plane	0.0	8.5	17.5	22.4	27.7	33.6	40.3	48.0	57.2	68.6	83.2	103.0	132.0	179.2	272.4	548.9	686.8	1375.2
Angle from Main Beam (reference to horizontal plane)	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
dB down from centerline (referenced to centerline)	23.06	22.8	26.95	28.58	24.98	24.59	31	26.65	19.78	18.29	20.49	15.18	21.32	9.78	1.96	0.05	0.25	1.29
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)	0.02	0.02	0.01	0.00	0.01	0.01	0.00	0.00	0.02	0.02	0.01	0.02	0.00	0.03	0.08	0.03	0.02	0.00
Percent of Occupational Standard	0.40	0.42	0.15	0.09	0.19	0.19	0.04	0.09	0.35	0.40	0.18	0.44	0.07	0.57	1.57	0.61	0.37	0.07
Percent of General Population Standard	2.02	2.08	0.73	0.46	0.97	0.95	0.19	0.44	1.77	1.99	0.91	2.21	0.35	2.87	7.83	3.06	1.87	0.37

Max%: **7.83%**

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power (in watts).
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

2120
1977.5
3730

JAHH-65B-R3B
VZ-MT6407-77A

3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0	3730.0
51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0
25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

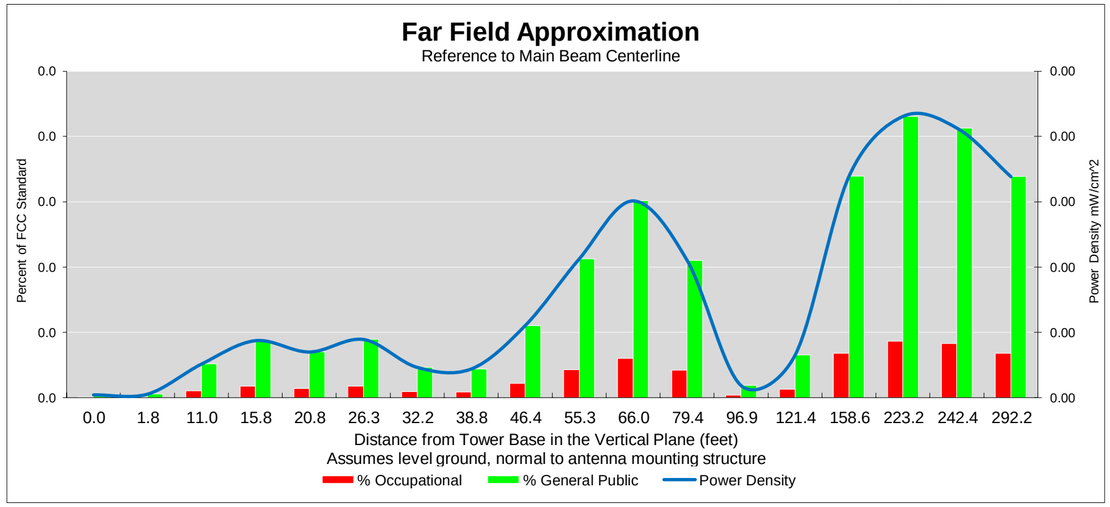
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole/Wire/Yagi Antenna Types

Far Field Approximation
with downtilt variation

verizonwireless

Location:	**GREENWICH SW CT**
Site #:	5-0092
Date:	06/10/21
Name:	Shiva Gadasu
File Name:	GREENWICH SW CT - FF Power

Antenna Type:	**XXDWMM-12.5-65-8T-CBRS**
Operating Freq. (MHz):	**3550**
Antenna Height (ft):	**54.5**
Antenna Gain (dBi):	**12.6**
Downtilt (degrees):	**8.0**
Feedline Loss (dB):	**0.0**
Tx Power (W):	**1.0**
No. of Channels:	**4**



Calc Angle		90.0	88.0	78.0	73.0	68.0	63.0	58.0	53.0	48.0	43.0	38.0	33.0	28.0	23.0	18.0	13.0	12.0	10.0
Solve for r, dx to antenna		51.5	51.5	52.7	53.9	55.6	57.8	60.7	64.5	69.3	75.5	83.7	94.6	109.7	131.9	166.7	229.1	247.8	296.7
Distance from Antenna Structure Base in Horizontal plane		0.0	1.8	11.0	15.8	20.8	26.3	32.2	38.8	46.4	55.3	66.0	79.4	96.9	121.4	158.6	223.2	242.4	292.2
Angle from Main Beam (reference to horizontal plane)		90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
dB down from centerline (referenced to centerline)		34.4	33.3	23.5	21	21.7	20.3	22.7	22.4	17.8	14.2	11.8	12.3	21.5	14.5	5.3	1.5	1	0.3
Reflection Coefficient (1 to 4, 2.56 typical)		2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm^2)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of Occupational Standard		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent of General Population Standard		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.02	0.02	0.02	0.02

Max%: **0.02%**

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba saved as.
2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power (in watts).
4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
7) An odd distance may be entered in the rightmost column of the lower table.

2120
1977.5
3730

JAHH-65B-R3B
VZ-MT6407-77A

3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0	3550.0
54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5	54.5
12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

ATTACHMENT 3

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

March 23, 2021

verizon

20 Alexander Drive
Wallingford, CT 06492

RE:

Support Structure Structural Evaluation
Verizon Site Name: Greenwich Southwest CT
Site Address: 411 West Putnam Avenue, Greenwich, CT 06830
CEA Job Number: 1508.101

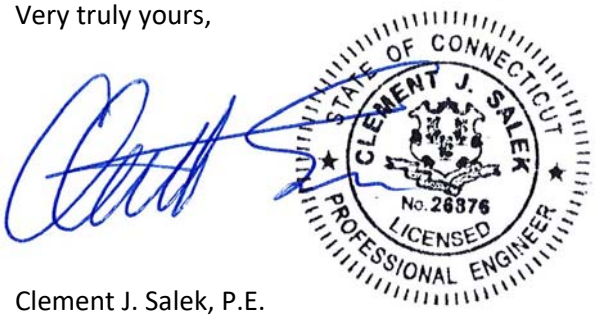
To whom it may concern:

Chappell Engineering Associates, LLC (CEA) has performed a structural evaluation of the existing multi-story commercial office building, in particular the load bearing elements of the building at roof level, located at the above referenced location in conjunction with Verizon's proposal to upgrade/re-configure their existing wireless telecommunications installation located on the rooftop of the building. The installation consists of three (3) steel mounted ballast frames (each housing a "sector" of panel antennas together with related ancillary equipment) with feedlines routed to each sector on non-penetrating cable trays originating from the existing equipment space located within the existing building penthouse.

CEA conducted a site visit on 10/28/19 to investigate the building and to gather information as it relates to both the existing and proposed site configurations on the rooftop. The existing wireless telecommunications installation as described above has been visually inspected and found to be in satisfactory condition at the time of the site visit.

Based upon our evaluation of the existing building, the information obtained from the aforementioned site visit and the magnitude of the anticipated loads, we consider the proposed upgrades to represent a negligible increase in the loads applied to the building and therefore consider the building to **have adequate capacity** to support the proposed site configuration as shown on the upgrade construction drawings dated 2/12/21 (attached as Appendix B).

If there are any questions regarding this matter, please do not hesitate to call us.
Very truly yours,



Clement J. Salek, P.E.
Chappell Engineering Associates, LLC

Existing Building

Existing Building

Existing Verizon Equipment in Penthouse Space

Existing Verizon Equipment in Penthouse Space

Existing Alpha Sector Ballast Frame

Existing Alpha Sector Ballast Frame

Existing Beta Sector Ballast Frame

Existing Beta Sector Ballast Frame

Existing Gamma Sector Ballast Frame

Existing Gamma Sector Ballast Frame

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

Appendix B – Upgrade Construction Drawings

R.K. Executive Centre ■ 201 Boston Post Road West ■ Suite 101 ■ Marlborough, MA 01752
t. 508.481.7400 ■ www.chappellengineering.com ■ f. 508.481.7406

SUPPORTING DOCUMENTS

RADIO FREQUENCY (RF) DESIGN DATE: 9/14/20

ANTENNA MOUNT STRUCTURAL ANALYSIS DATE: TBD

ANTENNA SUPPORT STRUCTURE (ROOFTOP) STRUCTURAL EVALUATION DATE: TBD

verizon

20 ALEXANDER DRIVE, WALLINGFORD, CT 06492

GREENWICH SOUTHWEST CT

WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

ELECTRIC SUB-METER NOTE:
AS PART OF THIS APPLICATION, CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE EXISTING VERIZON WIRELESS ELECTRIC SUB-METER (NOT SHOWN ON THESE DRAWINGS) AND REPLACE WITH A NEW ELECTRIC SUB-METER WITH REMOTE READING CAPABILITY COMPATIBLE WITH THE EXISTING ELECTRIC SERVICE EQUIPMENT CURRENTLY IN PLACE. SUB-METER SHALL BE SOURCED FROM POWER DESIGN & SUPPLY GROUP, LLC (PDSG); 115 B-COUNTY BOULEVARD; FARMINGDALE, NY 11735. CONTRACTOR SHALL COORDINATE ALL REQUIRED SITE PREPARATIONS AND SERVICE ARRANGEMENTS WITH BUDDY WACHSMUTH OF PDSG AND COORDINATE THE SAME WITH VERIZON WIRELESS REPRESENTATIVES.

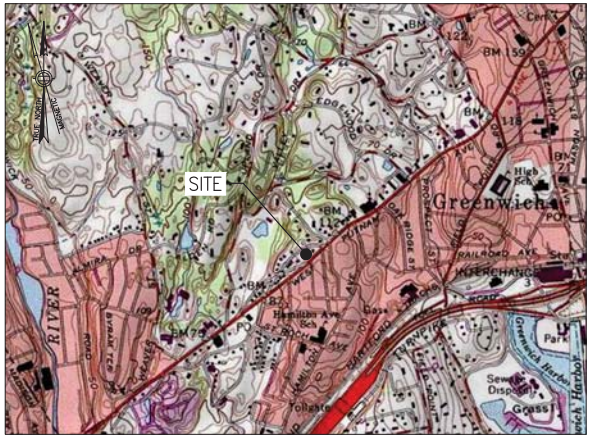
PROJECT TYPE: ANTENNA UPGRADE TO EXISTING WIRELESS TELECOMMUNICATIONS INSTALLATION ON ROOFTOP OF (4)-STORY OFFICE BUILDING

SITE INFORMATION

PROPERTY OWNER:	411 PUTNAM AVE, LLC 411 WEST PUTNAM AVENUE GREENWICH, CT 06830
APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
SITE ADDRESS:	411 WEST PUTNAM AVENUE GREENWICH, CT 06830
ROOFTOP MANAGEMENT COMPANY:	SBA COMMUNICATIONS CORPORATION 8051 CONGRESS AVENUE BOCA RATON, FL 33487
ROOFTOP MANAGEMENT COMPANY SITE ID:	CT95623
COUNTY:	FAIRFIELD COUNTY, CT
SITE CONTROL POINT:	BUILDING CORNER (SEE ROOF PLAN ON SHEET A01) N 41°-01'-17.32" (41.021478°) (NAD '83) W 73°-38'-27.68" (73.641022°) (NAD '83)
ZONING CLASSIFICATION:	GENERAL BUSINESS (GB)
ZONING JURISDICTION:	TOWN OF GREENWICH, CT
PARCEL ID:	03-1664/S
ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752

VICINITY MAP

SCALE: 1"=1000'



SHEET INDEX

DWG.	DESCRIPTION	REV.
T01	TITLE SHEET	9
C01	PROPERTY PLAN	9
A01	ROOF PLAN	9
A02	ANTENNA ORIENTATION PLANS	9
A03	SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE)	9
RF01	ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS	9
RF02	RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM	9
RF03	RF COLOR CODE SPECIFICATIONS	9

DO NOT SCALE DRAWINGS

ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD DURING THE CONSTRUCTION PHASE. THE PROJECT OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES IMMEDIATELY PRIOR TO PROCEEDING WITH THE PROPOSED WORK AFFECTED BY SUCH DISCREPANCIES. IN THE EVENT OF LACK OF SUCH NOTIFICATION, SUCH DISCREPANCIES SHALL BECOME THE RESPONSIBILITY OF THE PREVAILING CONTRACTOR RESPONSIBLE FOR CONSTRUCTION.

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
2. NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE CT-15 SOUTH. TAKE EXIT 28 FOR ROUND HILL ROAD. TURN LEFT ONTO ROUND HILL ROAD. AT THE TRAFFIC CIRCLE, TAKE THE 1ST EXIT AND STAY ON ROUND HILL ROAD. CONTINUE ONTO LAKE AVENUE. AT THE TRAFFIC CIRCLE, TAKE THE 2ND EXIT ONTO DEARFIELD DRIVE. TURN RIGHT ONTO US-1 SOUTH. THE SITE WILL BE LOCATED ON THE RIGHT HAND SIDE.

PROJECT DESCRIPTION

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
2. THIS FACILITY DOES NOT, NOR WILL IT CONSUME UNRECOVERABLE ENERGY.
3. NO PORTABLE WATER SUPPLY IS OR WILL BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER IS OR WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE IS OR WILL BE GENERATED AT THIS LOCATION.

verizon
" Because Better Matters "

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SAL
21876
LICENSED
PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

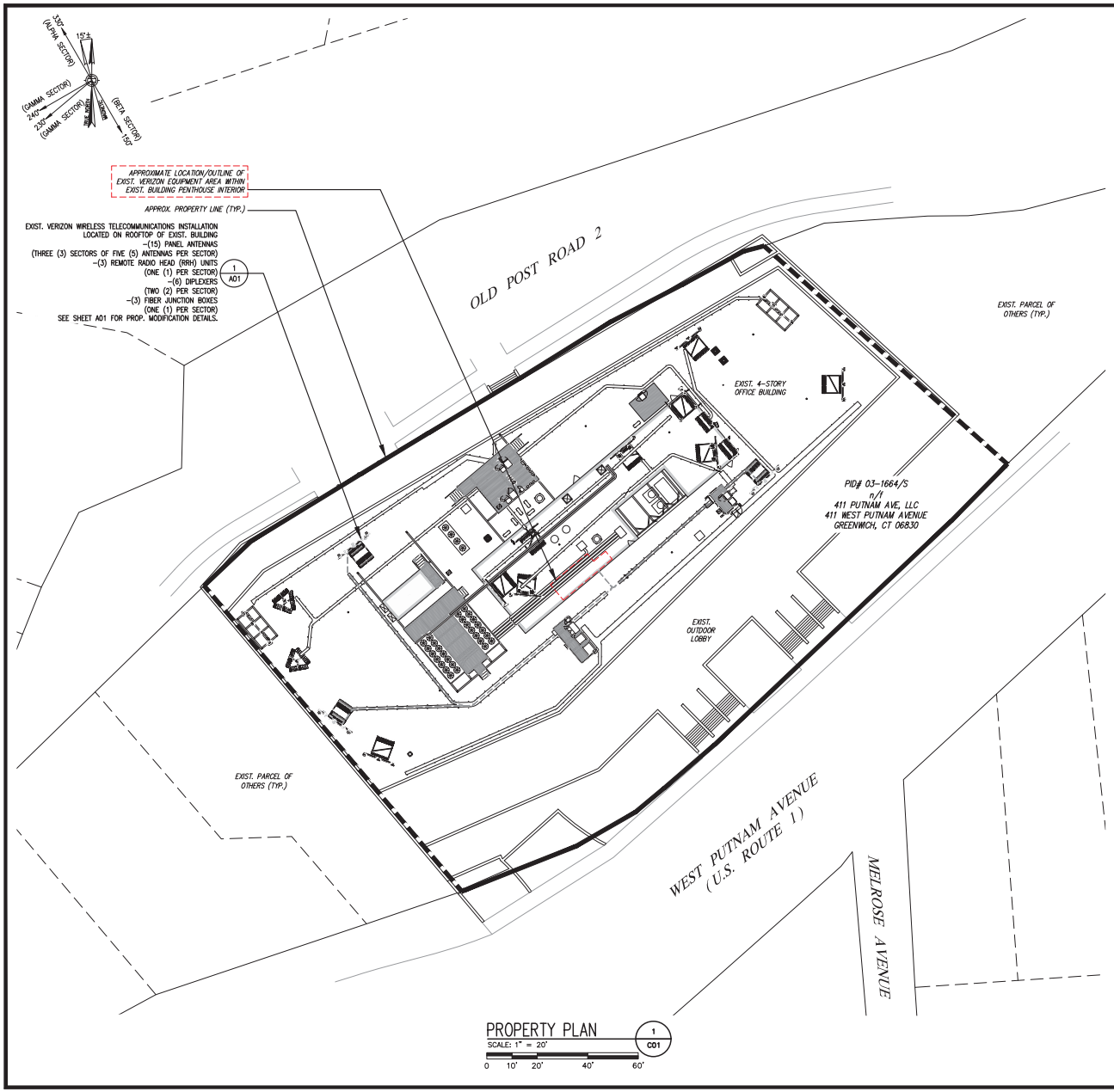
NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
TITLE SHEET

DRAWING NO:
T01

SCALE: AS SHOWN	DESIGNED BY: CMC DRAWN BY: CMC CHECKED BY: GRS	VZW LOCATION CODE: 467305
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	



PROPERTY PLAN (1 / C01)
SCALE: 1" = 20'
0 10' 20' 40' 60'

GENERAL NOTES:

1A.	LIMITED DESIGN VISIT DATE:	10/28/19
1B.	LIMITED FIELD SURVEY DATE:	9/18/20
2.	VERTICAL DATUM:	NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88)
3.	HORIZONTAL DATUM:	NORTH AMERICAN DATUM OF 1983 (NAD '83)
4.	SITE CONTROL POINT:	BUILDING CORNER (SEE ROOF PLAN ON SHEET A01) LATITUDE: N.41°-01'-17.32" (41.021478°) (NAD '83) LONGITUDE: W.73°-38'-27.68" (73.641022°) (NAD '83)
5.	PROPERTY OWNER:	411 PUTNAM AVE, LLC 411 WEST PUTNAM AVENUE GREENWICH, CT 06830
6.	APPLICANT SITE NAME:	GREENWICH SOUTHWEST CT
7.	SITE ADDRESS:	411 WEST PUTNAM AVENUE GREENWICH, CT 06830
8.	APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
9.	ZONING JURISDICTION:	TOWN OF GREENWICH, CT
10.	PARCEL ID:	03-1664/S
11.	DEED REFERENCE:	N/A
12.	PLAN REFERENCES:	TOWN OF GREENWICH ASSESSOR/GIS MAPS
13.	ZONING CLASSIFICATION:	GB (GENERAL BUSINESS)

14. ANY UNDERGROUND UTILITY INFORMATION PRESENTED HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY SITE WORK. CALL DIGSAFE 1-888-344-7233 A MINIMUM OF 72 HOURS PRIOR TO PLANNED ACTIVITY.

15. THE PROPERTY LINES SHOWN WERE COMPILED UTILIZING TOWN/CITY ASSESSOR'S PLANS, GIS, RECORDED DEEDS AND PLANS OF REFERENCE AS INDICATED.

16. THE SITE IS LOCATED IN FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF GREENWICH, COMMUNITY PANEL 09001C0494G DATED 07/08/2013.

17. BEARING SYSTEM OF THIS PLAN IS BASED ON TRUE NORTH. TRUE NORTH WAS ESTABLISHED FROM EXIST. PLAN REFERENCE. IT IS NOT INTENDED TO BE AN EXACT REPRESENTATION OF TRUE NORTH.

LEGEND

- PROPERTY LINE (OR STREET)
- ABUTTING PROPERTY LINE
- PROPERTY OFFSET/RADIUS
- EXIST. EASEMENT
- EXIST. CHAIN LINK FENCE
- EXIST. STOCKADE FENCE
- EXIST. EDGE OF PAVEMENT
- EXIST. OVERHEAD UTILITIES (OHW)
- APPROXIMATE ZONING BOUNDARY
- APPROXIMATE TOWN LINE

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STATE OF CONNECTICUT
CLEMENT J. SALE
15876
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ENGINEER/LAND SURVEYOR DATE

REVISIONS

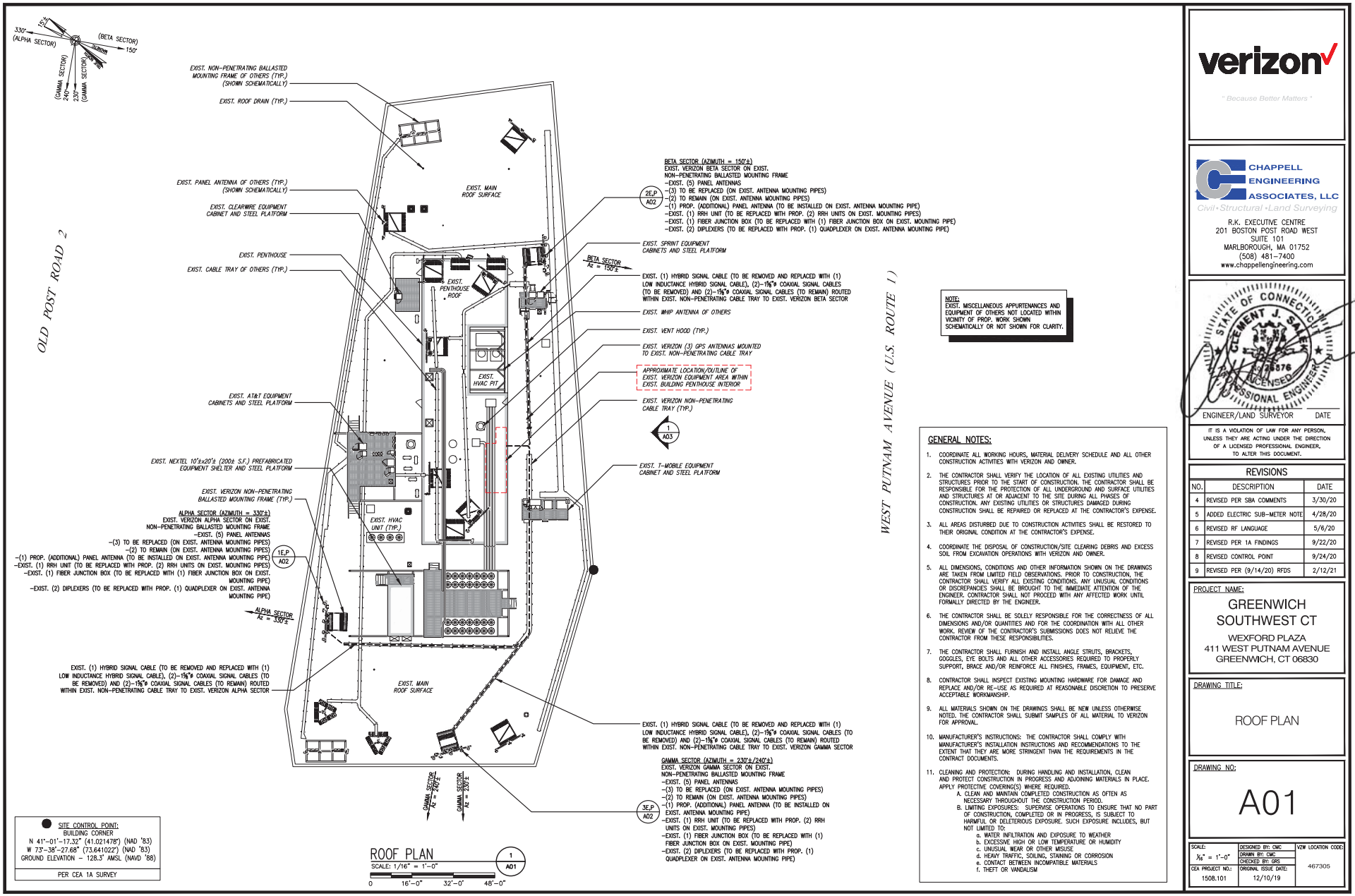
NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
PROPERTY PLAN

DRAWING NO:
C01

SCALE: 1" = 20'	DESIGNED BY: CMC DRAWN BY: CMC CHECKED BY: GRS	VZW LOCATION CODE: 467305
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	



GENERAL NOTES:

1. COORDINATE ALL WORKING HOURS, MATERIAL DELIVERY SCHEDULE AND ALL OTHER CONSTRUCTION ACTIVITIES WITH VERIZON AND OWNER.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UNDERGROUND AND SURFACE UTILITIES AND STRUCTURES AT OR ADJACENT TO THE SITE DURING ALL PHASES OF CONSTRUCTION. ANY EXISTING UTILITIES OR STRUCTURES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. ALL AREAS DISTURBED DUE TO CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
4. COORDINATE THE DISPOSAL OF CONSTRUCTION/SITE CLEARING DEBRIS AND EXCESS SOIL FROM EXCAVATION OPERATIONS WITH VERIZON AND OWNER.
5. ALL DIMENSIONS, CONDITIONS AND OTHER INFORMATION SHOWN ON THE DRAWINGS ARE TAKEN FROM LIMITED FIELD OBSERVATIONS. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS. ANY UNUSUAL CONDITIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. CONTRACTOR SHALL NOT PROCEED WITH ANY AFFECTED WORK UNTIL FORMALLY DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CORRECTNESS OF ALL DIMENSIONS AND/OR QUANTITIES AND FOR THE COORDINATION WITH ALL OTHER WORK. REVIEW OF THE CONTRACTOR'S SUBMISSIONS DOES NOT RELIEVE THE CONTRACTOR FROM THESE RESPONSIBILITIES.
7. THE CONTRACTOR SHALL FURNISH AND INSTALL ANGLE STRUTS, BRACKETS, GOGGLES, EYE BOLTS AND ALL OTHER ACCESSORIES REQUIRED TO PROPERLY SUPPORT, BRACE AND/OR REINFORCE ALL FINISHES, FRAMES, EQUIPMENT, ETC.
8. CONTRACTOR SHALL INSPECT EXISTING MOUNTING HARDWARE FOR DAMAGE AND REPLACE AND/OR RE-USE AS REQUIRED AT REASONABLE DISCRETION TO PRESERVE ACCEPTABLE WORKMANSHIP.
9. ALL MATERIALS SHOWN ON THE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL SUBMIT SAMPLES OF ALL MATERIAL TO VERIZON FOR APPROVAL.
10. MANUFACTURER'S INSTRUCTIONS: THE CONTRACTOR SHALL COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS TO THE EXTENT THAT THEY ARE MORE STRINGENT THAN THE REQUIREMENTS IN THE CONTRACT DOCUMENTS.
11. CLEANING AND PROTECTION: DURING HANDLING AND INSTALLATION, CLEAN AND PROTECT CONSTRUCTION IN PROGRESS AND ADJOINING MATERIALS IN PLACE. APPLY PROTECTIVE COVERING(S) WHERE REQUIRED.
    A. CLEAN AND MAINTAIN COMPLETED CONSTRUCTION AS OFTEN AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD.
    B. LIMITING EXPOSURES: SUPERVISE OPERATIONS TO ENSURE THAT NO PART OF CONSTRUCTION, COMPLETED OR IN PROGRESS, IS SUBJECT TO HARMFUL OR DELETERIOUS EXPOSURE. SUCH EXPOSURE INCLUDES, BUT NOT LIMITED TO:
        a. WATER INFILTRATION AND EXPOSURE TO WEATHER
        b. EXCESSIVE HIGH OR LOW TEMPERATURE OR HUMIDITY
        c. UNUSUAL WEAR OR OTHER MISUSE
        d. HEAVY TRAFFIC, SOILING, STAINING OR CORROSION
        e. CONTACT BETWEEN INCOMPATIBLE MATERIALS
        f. THEFT OR VANDALISM

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STATE OF CONNECTICUT
CLEMENT J. SALT
15876
LICENSED
PROFESSIONAL ENGINEER
ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

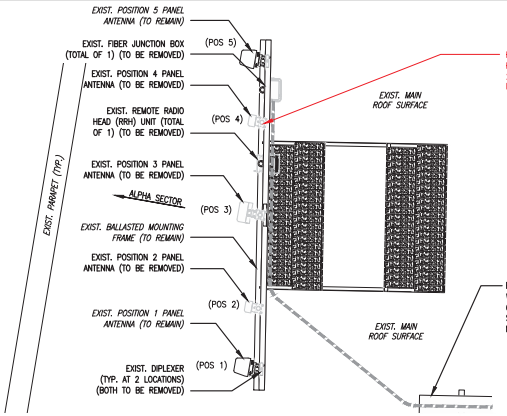
PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
ROOF PLAN

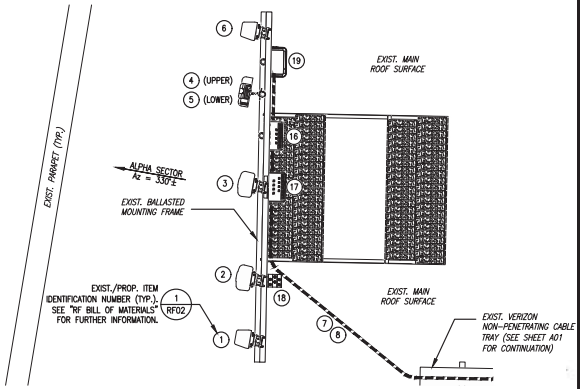
DRAWING NO:
A01

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
As noted	DRAWN BY: CMC	
CEA PROJECT NO.:	CHECKED BY: GRS	467305
1508.101	ORIGINAL ISSUE DATE: 12/10/19	

ALPHA SECTOR

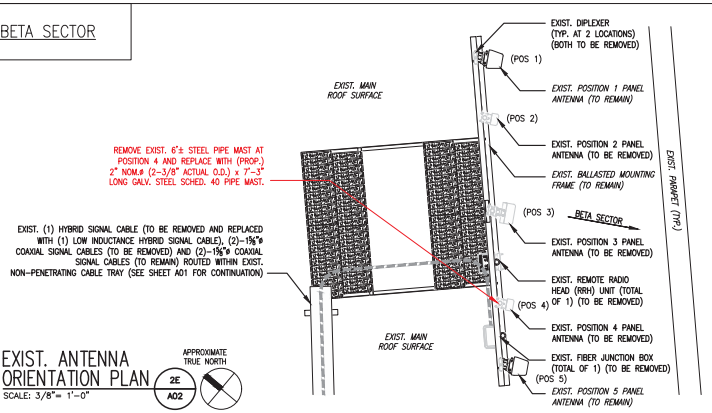


EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
APPROXIMATE TRUE NORTH
1E A02

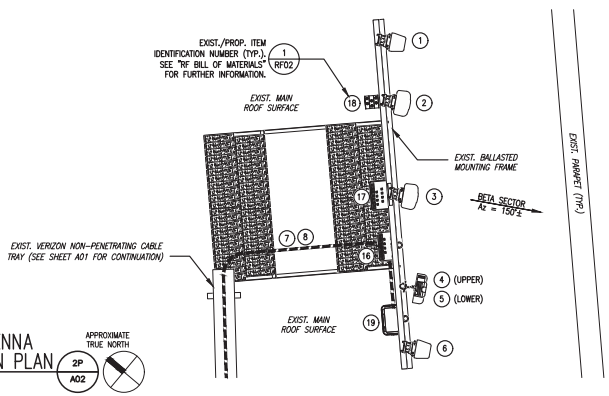


PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
APPROXIMATE TRUE NORTH
1P A02

BETA SECTOR

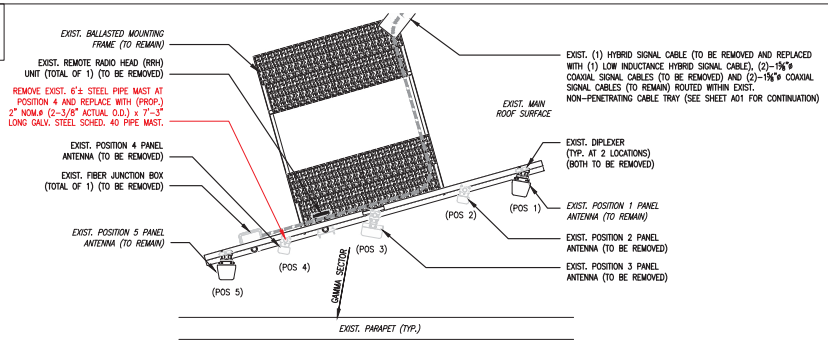


EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
APPROXIMATE TRUE NORTH
2E A02

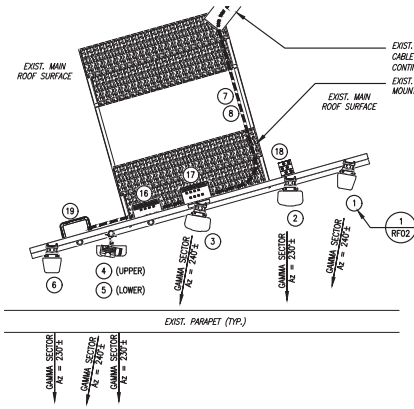


PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
APPROXIMATE TRUE NORTH
2P A02

GAMMA SECTOR



EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
APPROXIMATE TRUE NORTH
3E A02



PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
APPROXIMATE TRUE NORTH
3P A02

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CLEMENT J. SAS
26876
LICENSED PROFESSIONAL ENGINEER
ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
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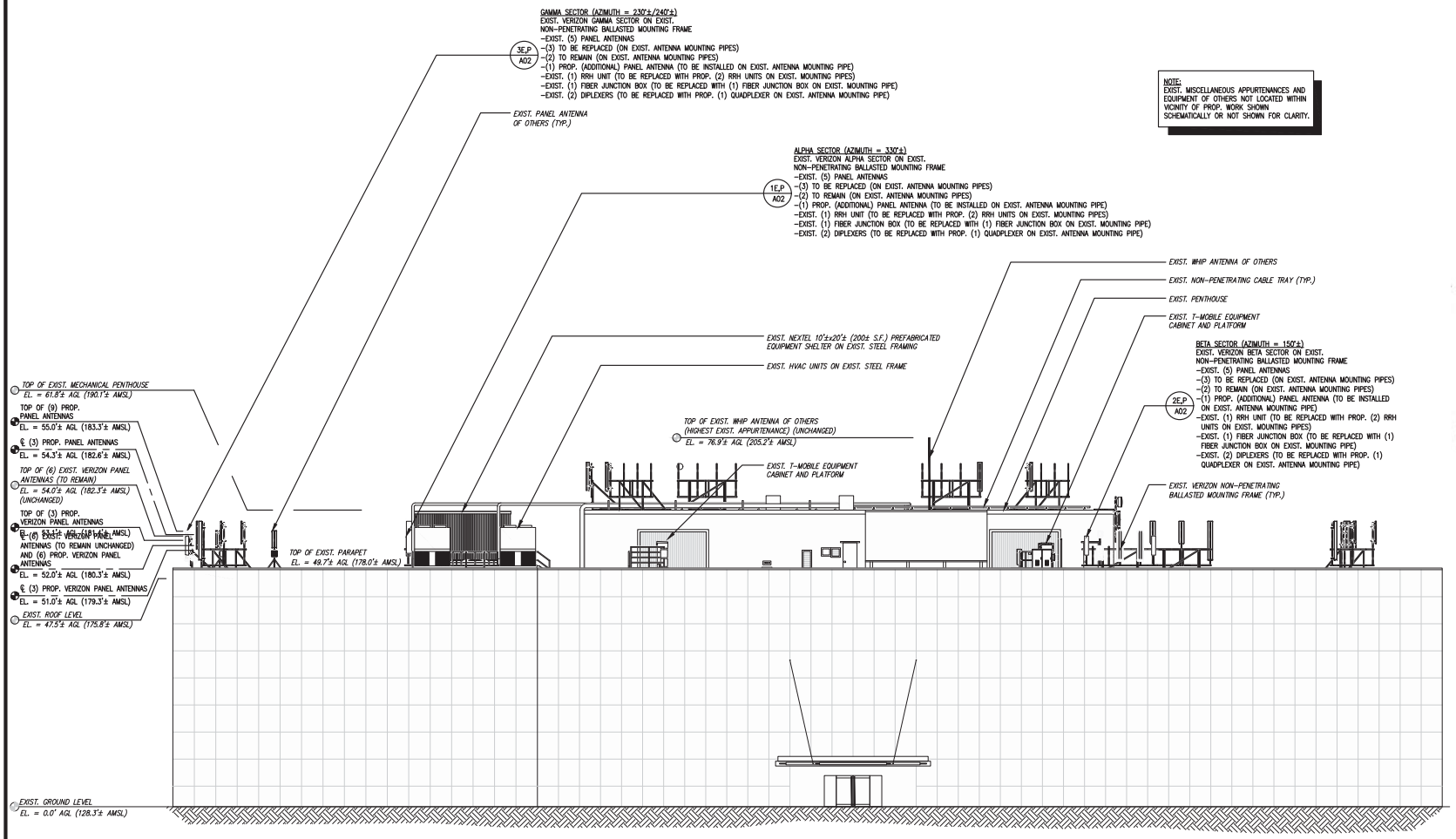
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
ANTENNA ORIENTATION PLANS

DRAWING NO:
A02

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
3/8" = 1'-0"	DRAWN BY: CMC	467305
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	
1508.101	12/10/19	



SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE) 1/A03

SCALE: 3/32" = 1'-0"

0 10'-8" 21'-4" 32'-0"

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ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
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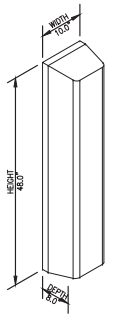
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE)

DRAWING NO:
A03

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
3/32" = 1'-0"	DRAWN BY: CMC	
CEA PROJECT NO.:	CHECKED BY: GRS	467305
1508.101	ORIGINAL ISSUE DATE: 12/10/19	



ITEM 1

CDMA (850 MHz)

DIMENSIONS: 48.0"H x 10.0"W x 8.0"D
WEIGHT: 12.0 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: EXISTING (TO REMAIN)

ITEM 2

LTE (700/850/1900 MHz) PANEL ANTENNA

DIMENSIONS: 72.0"H x 13.8"W x 8.2"D
WEIGHT: 68.6 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

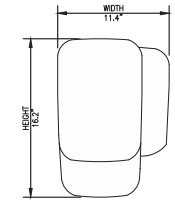
STATUS: PROPOSED (REPLACEMENT)

ITEM 3

LTE (700/850/2100 MHz) PANEL ANTENNA

DIMENSIONS: 72.0"H x 13.8"W x 8.2"D
WEIGHT: 68.6 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

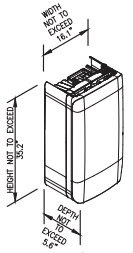


ITEM 4

(BAND 48 (3.5 GHz)) NR AU ANTENNA

DIMENSIONS: 16.2"H x 11.4"W x 5.5"D
WEIGHT: 23.1 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

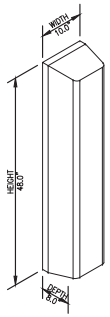


ITEM 5

VZS01 ANTENNA

MAX. DIMENSIONS: 35.2"H x 16.1"W x 5.6"D
MAX. WEIGHT: 87.1 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (ADDITIONAL)



ITEM 6

CDMA (850 MHz)

DIMENSIONS: 48.0"H x 10.0"W x 8.0"D
WEIGHT: 12.0 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: EXISTING (TO REMAIN)

PANEL ANTENNA SPECIFICATIONS (FINAL CONFIGURATION)

SCALE: N.T.S.

1 RF01

ITEM 16

LTE/CDMA (700/850 MHz) REMOTE RADIO HEAD UNIT

DIMENSIONS: 15.5"H x 15.9"W x 10.0"D
WEIGHT: 70.3 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

ITEM 17

PCS-AWS (1900/2100 MHz) REMOTE RADIO HEAD UNIT

DIMENSIONS: 15.4"H x 15.8"W x 12.0"D
WEIGHT: 84.4 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (ADDITIONAL)

REMOTE RADIO HEAD (RRH) UNIT SPECIFICATIONS (FINAL CONFIGURATION)

SCALE: N.T.S.

2 RF01

ITEM 18

(700/850 MHz) QUADPLEXER

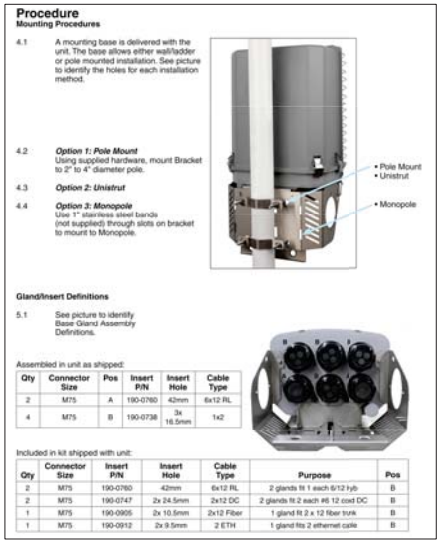
DIMENSIONS: 6.4"H x 6.9"W x 9.6"D
WEIGHT: 20.7 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

TYPICAL QUADPLEXER DIMENSIONS

SCALE: N.T.S.

3 RF01



Procedure

Mounting Procedures

4.1 A mounting base is delivered with the unit. The base allows either wall/ladder or pole mounted installation. See picture to identify the holes for each installation method.

4.2 ***Option 1: Pole Mount***
Using supplied hardware, mount Bracket to 2" to 4" diameter pole.

4.3 ***Option 2: Unistrut***

4.4 ***Option 3: Monopole***
Use 1" stainless steel bands (not supplied) through slots on bracket to mount to Monopole.

• Pole Mount
• Unistrut
• Monopole

Gland/Insert Definitions

5.1 See picture to identify Base Gland Assembly Definitions.

Assembled in unit as shipped:

Qty	Connector Size	Pos	Insert P/N	Insert Hole	Cable Type
2	M75	A	190-0760	42mm	6x12 RL
4	M75	B	190-0738	3x 16.5mm	1x2

Included in kit shipped with unit:

Qty	Connector Size	Insert P/N	Insert Hole	Cable Type	Purpose	Pos
2	M75	190-0760	42mm	6x12 RL	2 glands fit 1 each 6/12 hyb	B
2	M75	190-0747	2x 24.5mm	2x12 DC	2 glands fit 2 each #6 12 cond DC	B
1	M75	190-0905	2x 10.5mm	2x12 Fiber	1 gland fit 2 x 12 fiber trunk	B
1	M75	190-0912	2x 9.5mm	2 ETH	1 gland fits 2 ethernet cable	B

ITEM 19

FIBER JUNCTION BOX

DIMENSIONS: 29.58"H x 16.5"W x 12.6"D
WEIGHT: 32.0 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

TYPICAL FIBER JUNCTION BOX DIMENSIONS, SCHEMATIC AND MOUNTING PROCEDURE

SCALE: N.T.S.

4 RF01

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STATE OF CONNECTICUT
CLEMENT J. SALETT
21876
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ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
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PROJECT NAME:

GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:

ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS

DRAWING NO:

RF01

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
AS SHOWN	DRAWN BY: CMC	
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	467305
1508.101	12/10/19	

RF BILL OF MATERIALS (PROP. (FINAL) CONFIGURATION)

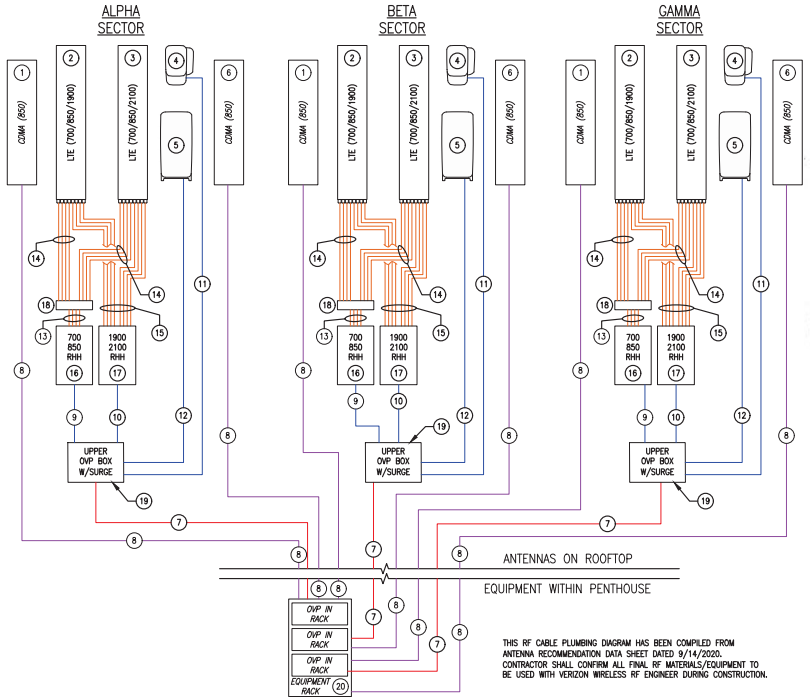
SITE NAME: GREENWICH SOUTHWEST CT — A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR

ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1 (1 RF01)	*EXIST. PANEL ANTENNA (TO REMAIN)*	*850*	*3 TOTAL (A,B,G)*	*EXIST.*	*48.0"H x 10.0"W x 8.0"D (12.0 lbs, each)*	*MOUNTED TO EXIST. PIPE MAST*
2 (1 RF01)	PROP. PANEL ANTENNA (REPLACEMENT)	700/850/1900	3 TOTAL (A,B,G)	PROP.	72.0"H x 13.8"W x 8.2"D (63.3 lbs, each)	MOUNT TO EXIST. PIPE MAST
3 (1 RF01)	PROP. PANEL ANTENNA (REPLACEMENT)	700/850/2100	3 TOTAL (A,B,G)	PROP.	72.0"H x 13.8"W x 8.2"D (63.3 lbs, each)	MOUNT TO EXIST. PIPE MAST
4 (1 RF01)	PROP. PANEL ANTENNA (REPLACEMENT)	BAND 48	3 TOTAL (A,B,G)	PROP.	16.2"H x 11.4"W x 5.5"D (23.1 lbs, each)	MOUNT TO EXIST. PIPE MAST
5 (1 RF01)	PROP. PANEL ANTENNA (ADDITIONAL)	3700–3980	3 TOTAL (A,B,G)	PROP.	35.2"H x 16.1"W x 5.6"D (87.1 lbs, each)	MOUNT TO EXIST. PIPE MAST
6 (1 RF01)	*EXIST. PANEL ANTENNA (TO REMAIN)*	*850*	*3 TOTAL (A,B,G)*	*EXIST.*	*48.0"H x 10.0"W x 8.0"D (12.0 lbs, each)*	*MOUNTED TO EXIST. PIPE MAST*
7	6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE (MAIN LINE)	–	3 TOTAL (1 PER SECTOR)	PROP.	190'±(A), 105'±(B), 195'±(G)	ROUTE ALONG ROOFTOP OF EXIST. BUILDING TO PROP. FIBER JUNCTION BOXES
8	*15/8"ø COAXIAL SIGNAL CABLE (MAIN LINE)*	–	*6 TOTAL (2 PER SECTOR)*	*EXIST.*	*EXIST.*	*ROUTED ALONG ROOFTOP OF EXIST. BUILDING TO EXIST. CDMA ANTENNAS*
9	*1x1 HYBRID SIGNAL CABLE (JUMPER)*	–	*3 TOTAL (1 PER SECTOR)*	*EXIST.*	*EXIST.*	ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. RRH UNITS
10	1x1 HYBRID SIGNAL CABLE (JUMPER)	–	3 TOTAL (1 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. RRH UNITS
11	1x1 HYBRID SIGNAL CABLE (JUMPER)	–	3 TOTAL (1 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. "NR AU" PANEL ANTENNA
12	1x2 HYBRID SIGNAL CABLE (JUMPER)	–	3 TOTAL (1 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. UPPER OVP BOXES TO PROP. VZS01 ANTENNAS
13	*½"ø COAXIAL CABLE (JUMPER)*	–	*12 TOTAL (4 PER SECTOR)*	*EXIST.*	*5 FT. EACH*	ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. QUADPLEXERS
14	½"ø COAXIAL CABLE (JUMPER)	–	24 TOTAL (8 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. QUADPLEXERS TO PROP. ANTENNAS
15	½"ø COAXIAL CABLE (JUMPER)	–	24 TOTAL (8 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. ANTENNAS
16 (2 RF01)	REMOTE RADIO HEAD (RRH) UNIT	700/850	3 TOTAL (A,B,G)	PROP.	15.5"H x 15.9"W x 10.0"D (70.3 lbs, each)	MOUNT TO EXIST. PIPE MAST
17 (2 RF01)	REMOTE RADIO HEAD (RRH) UNIT	1900/2100	3 TOTAL (A,B,G)	PROP.	15.4"H x 15.8"W x 12.0"D (84.4 lbs, each)	MOUNT TO EXIST. PIPE MAST
18 (3 RF01)	QUADPLEXER	700/850	3 TOTAL (A,B,G)	PROP.	6.4"H x 6.9"W x 9.6"D (20.7 lbs, each)	MOUNT TO EXIST. PIPE MAST
19 (4 RF01)	UPPER OVP BOX WITH SURGE	–	3 TOTAL (A,B,G)	PROP.	29.56"H x 16.5"W x 12.6"D (32.0 lbs, each)	MOUNT TO EXIST. BALLASTED ANTENNA MOUNTING FRAME
20	*LOWER OVP BOX/RACK*	–	–	–	–	*EQUIPMENT CABINET/ROOM INTERFACE*

THIS RF BILL OF MATERIALS (BOM) HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 9/14/2020. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF BILL OF MATERIALS (FINAL CONFIGURATION) (1 RF02)

SCALE: NONE



THIS RF CABLE PLUMBING DIAGRAM HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 9/14/2020. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION) (2 RF02)

SCALE: NO SCALE

RADIO FREQUENCY (RF) DESIGN NOTES:
1) ALL RADIO FREQUENCY (RF) DESIGN INFORMATION CONTAINED ON THIS SHEET IS SHOWN SCHEMATICALLY.

2) THE GENERAL CONTRACTOR SHALL CONFIRM ALL RF DESIGN ELEMENTS SHOWN (INCLUDING BUT NOT LIMITED TO PANEL ANTENNA MODELS & ARRANGEMENT, AZIMUTHS, REMOTE RADIO HEAD (RRH) UNIT MODELS & ARRANGEMENT AND CABLING DIAGRAMS/SCHEMATICS) WITH THE VERIZON WIRELESS RF ENGINEER AT THE TIME OF CONSTRUCTION.

LEGEND

- RED (##) = HYBRID CABLE (MAIN LINE)
- PURPLE (##) = COAXIAL CABLE (MAIN LINE)
- BLUE (##) = 1x1 HYBRID CABLE (JUMPER)
- ORANGE (##) = 1/2"ø COAXIAL CABLE (JUMPER)
- GREEN (##) = RET CONTROL CABLE(S) (JUMPER)

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(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT — CLEMENT J. SALE — 21876 — LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM

DRAWING NO:
RF02

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
AS SHOWN	DRAWN BY: CMC	
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	467305
1508.101	12/10/19	

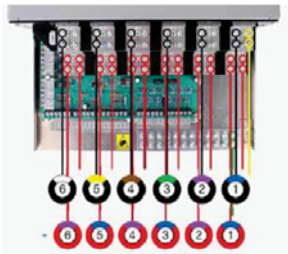
Line Color Code	Band	Tx/Rx	Color Pairs	Sector	Main Line Cable Length/Information
BR	850	Tx0/Rx0	Blue + Red	ALPHA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 190'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
BY	850	Tx1/Rx1	Blue + Yellow		
BG	1900 CDMA	Tx0/Rx0	Blue + Green		
BBG	1900 CDMA	Tx1/Rx1			
BP	700	Tx0/Rx0	Blue + Purple		
BBP	700	Tx1/Rx1			
BBBP	700	Tx2/Rx2			
BBBBP	700	Tx3/Rx3			
BBr	AWS	Tx0/Rx0	Blue + Brown		
BBBr	AWS	Tx1/Rx1			
BBBBr	AWS	Tx2/Rx2			
BBBBBr	AWS	Tx3/Rx3			
BGG	1900 LTE	Tx0/Rx0	Blue + Green		
BBGG	1900 LTE	Tx1/Rx1			
BBBGG	1900 LTE	Tx2/Rx2			
BBBBGG	1900 LTE	Tx3/Rx3			
WR	850	Tx0/Rx0	White + Red	BETA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 105'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
WY	850	Tx1/Rx1	White + Yellow		
WG	1900 CDMA	Tx0/Rx0	White + Green		
WWG	1900 CDMA	Tx1/Rx1			
WP	700	Tx0/Rx0	White + Purple		
WWP	700	Tx1/Rx1			
WWWP	700	Tx2/Rx2			
WWWWP	700	Tx3/Rx3			
WBr	AWS	Tx0/Rx0	White + Brown		
WWBr	AWS	Tx1/Rx1			
WWWBr	AWS	Tx2/Rx2			
WWWWBr	AWS	Tx3/Rx3			
WGG	1900 LTE	Tx0/Rx0	White + Green		
WWGG	1900 LTE	Tx1/Rx1			
WWWGG	1900 LTE	Tx2/Rx2			
WWWWGG	1900 LTE	Tx3/Rx3			
OR	850	Tx0/Rx0	Orange + Red	GAMMA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 195'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
OY	850	Tx1/Rx1	Orange + Yellow		
OG	1900 CDMA	Tx0/Rx0	Orange + Green		
OOG	1900 CDMA	Tx1/Rx1			
OP	700	Tx0/Rx0	Orange + Purple		
OOP	700	Tx1/Rx1			
OOOP	700	Tx2/Rx2			
OOOOP	700	Tx3/Rx3			
OBr	AWS	Tx0/Rx0	Orange + Brown		
OOBr	AWS	Tx1/Rx1			
OOOBr	AWS	Tx2/Rx2			
OOOOBr	AWS	Tx3/Rx3			
OGG	1900 LTE	Tx0/Rx0	Orange + Green		
OOGG	1900 LTE	Tx1/Rx1			
OOOGG	1900 LTE	Tx2/Rx2			
OOOOGG	1900 LTE	Tx3/Rx3			

LINE COLOR CODE SPECIFICATIONS (1 / RF03)

Hybrid Cable on Rooftops and Water tanks

Hybrid Cable 1

Sector	Identification Color	-48V	RTN
700 Alpha	Blue		
AWS Alpha	Violet		
PCS Alpha	Green		
850 Alpha	Brown		
Spare	Yellow		
Spare	White		



Hybrid Cable 2

Sector	Identification Color	-48V	RTN
700 Beta	Blue		
AWS Beta	Violet		
PCS Beta	Green		
850 Beta	Brown		
Spare	Yellow		
Spare	White		

Hybrid Cable 3

Sector	Identification Color	-48V	RTN
700 Gamma	Blue		
AWS Gamma	Violet		
PCS Gamma	Green		
850 Gamma	Brown		
Spare	Yellow		
Spare	White		

HYBRID CABLE COLOR CODE SPECIFICATIONS (2 / RF03)

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ENGINEER/LAND SURVEYOR DATE

REVISIONS

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8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
RF COLOR CODE SPECIFICATIONS

DRAWING NO:
RF03

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
N/A	DRAWN BY: CMC	
	CHECKED BY: GRS	467305
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	
1508.101	12/10/19	

verizon

20 Alexander Drive
Wallingford, CT 06492

MOUNT ANALYSIS
GREENWICH SOUTHWEST CT

Address:
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830
LOCATION CODE: 467305

Date:
MARCH 23, 2021 (REVISION 4)

CHAPPELL ENGINEERING ASSOCIATES, LLC
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t. 508.481.7400 ■ www.chappellengineering.com ■ f. 508.481.7406

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

March 23, 2021

verizon

20 Alexander Drive
Wallingford, CT 06492

RE:

Site Name	Greenwich Southwest CT
Location Code	467305
Site Address	411 West Putnam Avenue, Greenwich, CT 06830

To whom it may concern:

Chappell Engineering Associates, LLC has performed a structural analysis of the existing roof mounted ballast antenna frames at the above-referenced location. Based upon the site walk completed on 10-28-2019, the existing 3-sector site consists of three (3) roof mounted ballast antenna frames located on the main roof.

Verizon currently proposes to remove and replace three (3) of the existing antennas, add one (1) 3700mHz antenna, replace one (1) RRH and install one (1) additional RRH at each of the three (3) sector locations. Additionally, three (3) quadplexers are being proposed (1 quadplexer per sector, total of 3 sectors). The proposed antennas will be mounted to the existing antenna mounting pipes currently supporting the existing antennas currently in service.

We have completed a stability analysis of the existing antenna frames and existing ballast to determine the suitability of the existing frames to support the proposed antenna reconfiguration. Site photos of the existing antenna ballast frames show the current ballast in both the front and rear trays. The final ballast configuration to be installed at each of the ballast frame locations is summarized below:

Sector	Tray	Current Configuration	Proposed (Req'd) Config.	Corrective Action
Alpha	Front	43blocks*34lbs/ea=1,462lbs+/-1,462lbs total	23blocks*34lbs/ea=782lbs+/-782lbs total	None
Alpha	Rear	43blocks*34lbs/ea=1,394lbs+/-1,394lbs total	35blocks*34lbs/ea=1,190lbs+/-1,190lbs total	None
Beta	Front	41blocks*34lbs/ea=1,462lbs+/-1,462lbs total	23blocks*34lbs/ea=782lbs+/-782lbs total	None
Beta	Rear	39blocks*34lbs/ea=1,326lbs+/-1,326lbs total	35blocks*34lbs/ea=1,190lbs+/-1,190lbs total	None
Gamma	Front	41blocks*34lbs/ea=1,462lbs+/-1,462lbs total	23blocks*34lbs/ea=782lbs+/-782lbs total	None
Gamma	Rear	41blocks*34lbs/ea=1,462lbs+/-1,462lbs total	35blocks*34lbs/ea=1,190lbs+/-1,190lbs total	None

As indicated in the last column of table, there is sufficient ballast present at the **alpha, beta** and **gamma** sectors to support the proposed antenna loads.

If you have any questions regarding this matter, please do not hesitate to call.

Very truly yours,
CHAPPELL ENGINEERING ASSOCIATES, LLC

STATE OF CONNECTICUT
CLEMENT J. SALEK
No. 26376
LICENSED
PROFESSIONAL ENGINEER

Clement J Salek, P.E.
CJS/cjs

Appendix A – Upgrade Construction Drawings

SUPPORTING DOCUMENTS

RADIO FREQUENCY (RF) DESIGN DATE: 9/14/20

ANTENNA MOUNT STRUCTURAL ANALYSIS DATE: TBD

ANTENNA SUPPORT STRUCTURE (ROOFTOP) STRUCTURAL EVALUATION DATE: TBD

verizon

20 ALEXANDER DRIVE, WALLINGFORD, CT 06492

GREENWICH SOUTHWEST CT

WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

ELECTRIC SUB-METER NOTE:
AS PART OF THIS APPLICATION, CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE EXISTING VERIZON WIRELESS ELECTRIC SUB-METER (NOT SHOWN ON THESE DRAWINGS) AND REPLACE WITH A NEW ELECTRIC SUB-METER WITH REMOTE READING CAPABILITY COMPATIBLE WITH THE EXISTING ELECTRIC SERVICE EQUIPMENT CURRENTLY IN PLACE. SUB-METER SHALL BE SOURCED FROM POWER DESIGN & SUPPLY GROUP, LLC (PDSG); 115 B-COUNTY BOULEVARD; FARMINGDALE, NY 11735. CONTRACTOR SHALL COORDINATE ALL REQUIRED SITE PREPARATIONS AND SERVICE ARRANGEMENTS WITH BUDDY WACHSMUTH OF PDSG AND COORDINATE THE SAME WITH VERIZON WIRELESS REPRESENTATIVES.

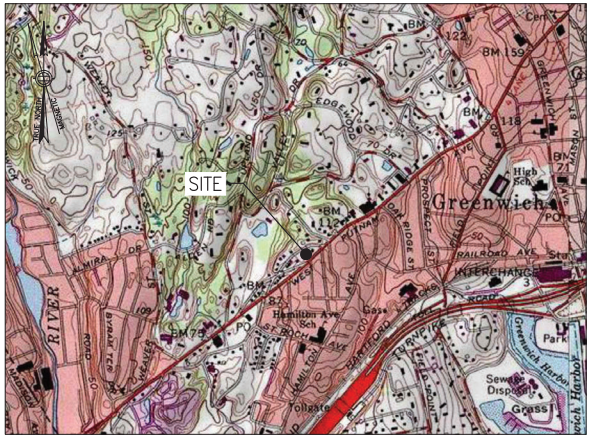
PROJECT TYPE: ANTENNA UPGRADE TO EXISTING WIRELESS TELECOMMUNICATIONS INSTALLATION ON ROOFTOP OF (4)-STORY OFFICE BUILDING

SITE INFORMATION

PROPERTY OWNER:	411 PUTNAM AVE, LLC 411 WEST PUTNAM AVENUE GREENWICH, CT 06830
APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
SITE ADDRESS:	411 WEST PUTNAM AVENUE GREENWICH, CT 06830
ROOFTOP MANAGEMENT COMPANY:	SBA COMMUNICATIONS CORPORATION 8051 CONGRESS AVENUE BOCA RATON, FL 33487
ROOFTOP MANAGEMENT COMPANY SITE ID:	CT95623
COUNTY:	FAIRFIELD COUNTY, CT
SITE CONTROL POINT:	BUILDING CORNER (SEE ROOF PLAN ON SHEET A01) N 41°-01'-17.32" (41.021478") (NAD '83) W 73°-38'-27.68" (73.641022") (NAD '83)
ZONING CLASSIFICATION:	GENERAL BUSINESS (GB)
ZONING JURISDICTION:	TOWN OF GREENWICH, CT
PARCEL ID:	03-1664/S
ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752

VICINITY MAP

SCALE: 1"=1000'



GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
2. NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE CT-15 SOUTH. TAKE EXIT 28 FOR ROUND HILL ROAD. TURN LEFT ONTO ROUND HILL ROAD. AT THE TRAFFIC CIRCLE, TAKE THE 1ST EXIT AND STAY ON ROUND HILL ROAD. CONTINUE ONTO LAKE AVENUE. AT THE TRAFFIC CIRCLE, TAKE THE 2ND EXIT ONTO DEARFIELD DRIVE. TURN RIGHT ONTO US-1 SOUTH. THE SITE WILL BE LOCATED ON THE RIGHT HAND SIDE.

SHEET INDEX

DWG.	DESCRIPTION	REV.
T01	TITLE SHEET	9
C01	PROPERTY PLAN	9
A01	ROOF PLAN	9
A02	ANTENNA ORIENTATION PLANS	9
A03	SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE)	9
RF01	ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS	9
RF02	RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM	9
RF03	RF COLOR CODE SPECIFICATIONS	9

DO NOT SCALE DRAWINGS

ALL PLANS, EXISTING DIMENSIONS AND CONDITIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD DURING THE CONSTRUCTION PHASE. THE PROJECT OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES IMMEDIATELY PRIOR TO PROCEEDING WITH THE PROPOSED WORK AFFECTED BY SUCH DISCREPANCIES. IN THE EVENT OF LACK OF SUCH NOTIFICATION, SUCH DISCREPANCIES SHALL BECOME THE RESPONSIBILITY OF THE PREVAILING CONTRACTOR RESPONSIBLE FOR CONSTRUCTION.

PROJECT DESCRIPTION

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
2. THIS FACILITY DOES NOT, NOR WILL IT CONSUME UNRECOVERABLE ENERGY.
3. NO PORTABLE WATER SUPPLY IS OR WILL BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER IS OR WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE IS OR WILL BE GENERATED AT THIS LOCATION.

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STATE OF CONNECTICUT
CLEMENT J. SAL
No. 26876
LICENSED
PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
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6	REVISED RF LANGUAGE	5/6/20
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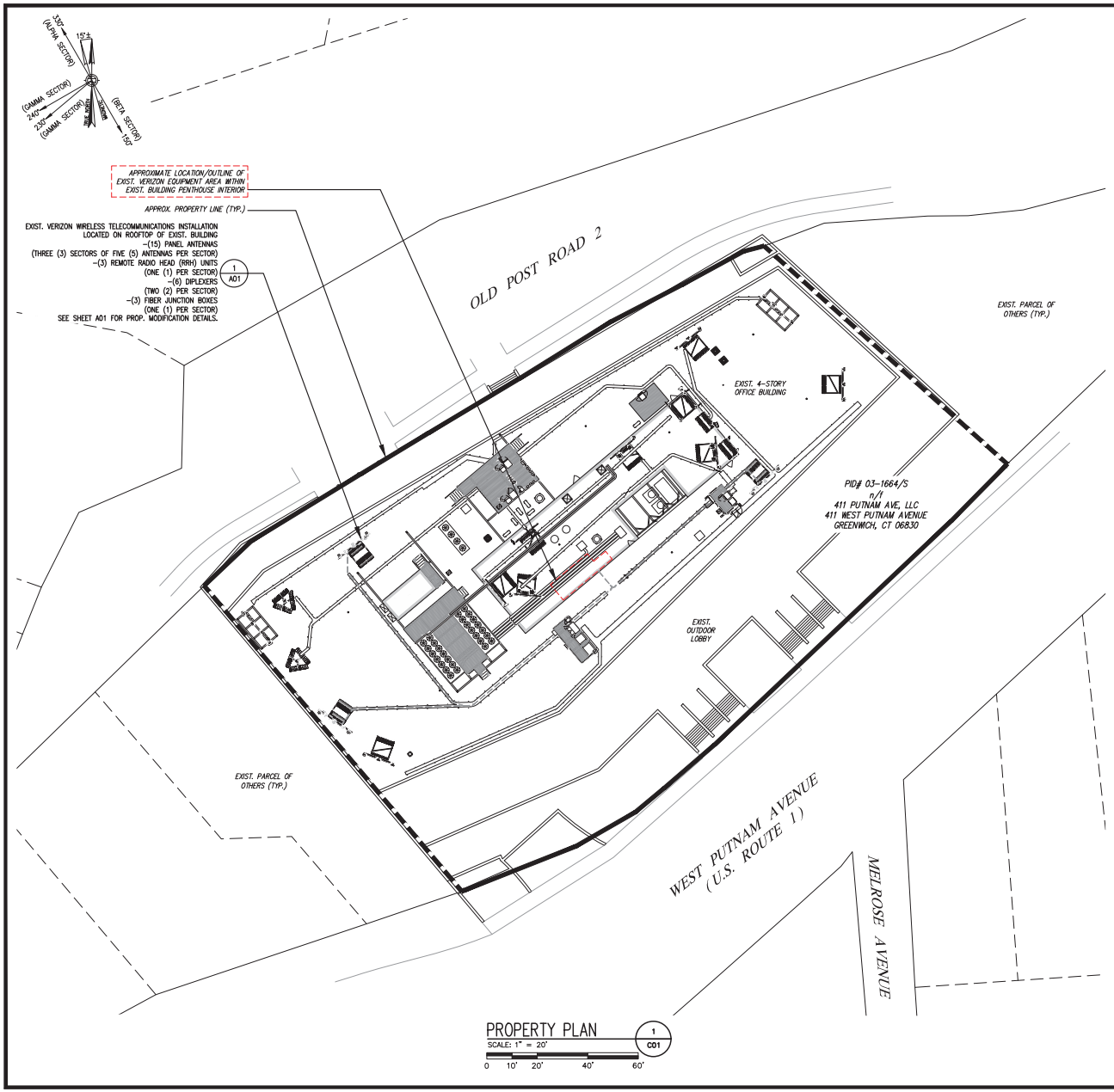
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
TITLE SHEET

DRAWING NO:
T01

SCALE: AS SHOWN	DESIGNED BY: CMC DRAWN BY: CMC CHECKED BY: GRS	VZW LOCATION CODE: 467305
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	



PROPERTY PLAN (1 / C01)
SCALE: 1" = 20'
0 10' 20' 40' 60'

GENERAL NOTES:

1A.	LIMITED DESIGN VISIT DATE:	10/28/19
1B.	LIMITED FIELD SURVEY DATE:	9/18/20
2.	VERTICAL DATUM:	NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88)
3.	HORIZONTAL DATUM:	NORTH AMERICAN DATUM OF 1983 (NAD '83)
4.	SITE CONTROL POINT:	BUILDING CORNER (SEE ROOF PLAN ON SHEET A01) LATITUDE: N.41°-01'-17.32" (41.021478°) (NAD '83) LONGITUDE: W.73°-38'-27.68" (73.641022°) (NAD '83)
5.	PROPERTY OWNER:	411 PUTNAM AVE, LLC 411 WEST PUTNAM AVENUE GREENWICH, CT 06830
6.	APPLICANT SITE NAME:	GREENWICH SOUTHWEST CT
7.	SITE ADDRESS:	411 WEST PUTNAM AVENUE GREENWICH, CT 06830
8.	APPLICANT:	CELLCO PARTNERSHIP (dba VERIZON WIRELESS) 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
9.	ZONING JURISDICTION:	TOWN OF GREENWICH, CT
10.	PARCEL ID:	03-1664/S
11.	DEED REFERENCE:	N/A
12.	PLAN REFERENCES:	TOWN OF GREENWICH ASSESSOR/GIS MAPS
13.	ZONING CLASSIFICATION:	GB (GENERAL BUSINESS)

14. ANY UNDERGROUND UTILITY INFORMATION PRESENTED HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY SITE WORK. CALL DIGSAFE 1-888-344-7233 A MINIMUM OF 72 HOURS PRIOR TO PLANNED ACTIVITY.

15. THE PROPERTY LINES SHOWN WERE COMPILED UTILIZING TOWN/CITY ASSESSOR'S PLANS, GIS, RECORDED DEEDS AND PLANS OF REFERENCE AS INDICATED.

16. THE SITE IS LOCATED IN FLOOD HAZARD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF GREENWICH, COMMUNITY PANEL 09001C0494G DATED 07/08/2013.

17. BEARING SYSTEM OF THIS PLAN IS BASED ON TRUE NORTH. TRUE NORTH WAS ESTABLISHED FROM EXIST. PLAN REFERENCE. IT IS NOT INTENDED TO BE AN EXACT REPRESENTATION OF TRUE NORTH.

LEGEND

- PROPERTY LINE (STREET OR)
- ABUTTING PROPERTY LINE
- PROPERTY OFFSET/RADIUS
- EXIST. EASEMENT
- EXIST. CHAIN LINK FENCE
- EXIST. STOCKADE FENCE
- EXIST. EDGE OF PAVEMENT
- EXIST. OVERHEAD UTILITIES (OHW)
- APPROXIMATE ZONING BOUNDARY
- APPROXIMATE TOWN LINE

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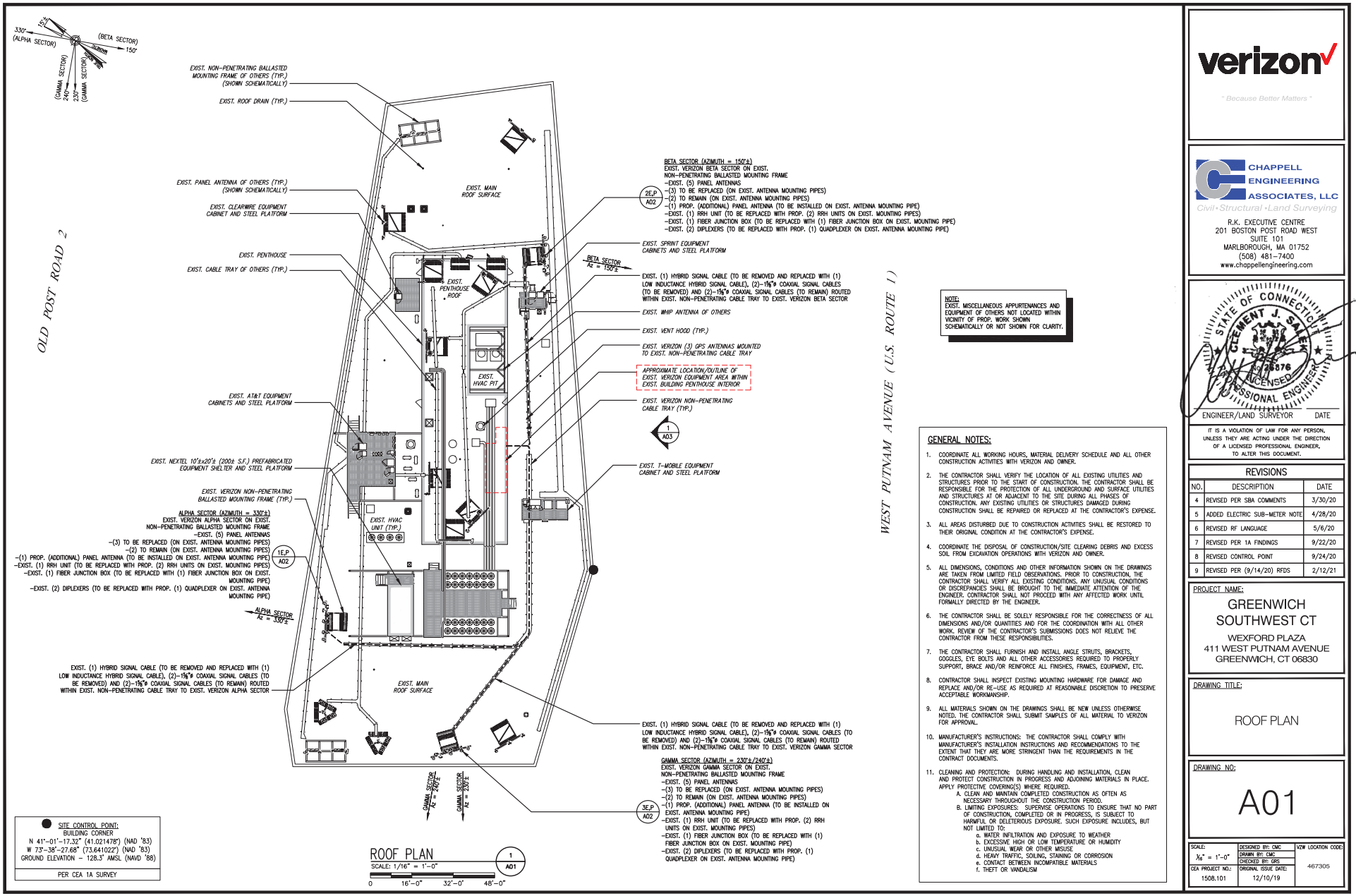
PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
PROPERTY PLAN

DRAWING NO:
C01

SCALE: 1" = 20'	DESIGNED BY: CMC DRAWN BY: CMC CHECKED BY: GRS	VZW LOCATION CODE: 467305
CEA PROJECT NO.: 1508.101	ORIGINAL ISSUE DATE: 12/10/19	



GENERAL NOTES:

1. COORDINATE ALL WORKING HOURS, MATERIAL DELIVERY SCHEDULE AND ALL OTHER CONSTRUCTION ACTIVITIES WITH VERIZON AND OWNER.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UNDERGROUND AND SURFACE UTILITIES AND STRUCTURES AT OR ADJACENT TO THE SITE DURING ALL PHASES OF CONSTRUCTION. ANY EXISTING UTILITIES OR STRUCTURES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. ALL AREAS DISTURBED DUE TO CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
4. COORDINATE THE DISPOSAL OF CONSTRUCTION/SITE CLEARING DEBRIS AND EXCESS SOIL FROM EXCAVATION OPERATIONS WITH VERIZON AND OWNER.
5. ALL DIMENSIONS, CONDITIONS AND OTHER INFORMATION SHOWN ON THE DRAWINGS ARE TAKEN FROM LIMITED FIELD OBSERVATIONS. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS. ANY UNUSUAL CONDITIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. CONTRACTOR SHALL NOT PROCEED WITH ANY AFFECTED WORK UNTIL FORMALLY DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CORRECTNESS OF ALL DIMENSIONS AND/OR QUANTITIES AND FOR THE COORDINATION WITH ALL OTHER WORK. REVIEW OF THE CONTRACTOR'S SUBMISSIONS DOES NOT RELIEVE THE CONTRACTOR FROM THESE RESPONSIBILITIES.
7. THE CONTRACTOR SHALL FURNISH AND INSTALL ANGLE STRUTS, BRACKETS, GOGGLES, EYE BOLTS AND ALL OTHER ACCESSORIES REQUIRED TO PROPERLY SUPPORT, BRACE AND/OR REINFORCE ALL FINISHES, FRAMES, EQUIPMENT, ETC.
8. CONTRACTOR SHALL INSPECT EXISTING MOUNTING HARDWARE FOR DAMAGE AND REPLACE AND/OR RE-USE AS REQUIRED AT REASONABLE DISCRETION TO PRESERVE ACCEPTABLE WORKMANSHIP.
9. ALL MATERIALS SHOWN ON THE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL SUBMIT SAMPLES OF ALL MATERIAL TO VERIZON FOR APPROVAL.
10. MANUFACTURER'S INSTRUCTIONS: THE CONTRACTOR SHALL COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS TO THE EXTENT THAT THEY ARE MORE STRINGENT THAN THE REQUIREMENTS IN THE CONTRACT DOCUMENTS.
11. CLEANING AND PROTECTION: DURING HANDLING AND INSTALLATION, CLEAN AND PROTECT CONSTRUCTION IN PROGRESS AND ADJOINING MATERIALS IN PLACE. APPLY PROTECTIVE COVERING(S) WHERE REQUIRED.
    A. CLEAN AND MAINTAIN COMPLETED CONSTRUCTION AS OFTEN AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD.
    B. LIMITING EXPOSURES: SUPERVISE OPERATIONS TO ENSURE THAT NO PART OF CONSTRUCTION, COMPLETED OR IN PROGRESS, IS SUBJECT TO HARMFUL OR DELETERIOUS EXPOSURE. SUCH EXPOSURE INCLUDES, BUT NOT LIMITED TO:
        a. WATER INFILTRATION AND EXPOSURE TO WEATHER
        b. EXCESSIVE HIGH OR LOW TEMPERATURE OR HUMIDITY
        c. UNUSUAL WEAR OR OTHER MISUSE
        d. HEAVY TRAFFIC, SOILING, STAINING OR CORROSION
        e. CONTACT BETWEEN INCOMPATIBLE MATERIALS
        f. THEFT OR VANDALISM

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CLEMENT J. SALE
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PROFESSIONAL ENGINEER
ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

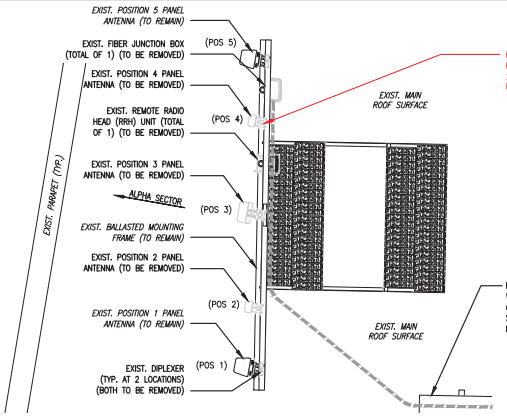
PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
ROOF PLAN

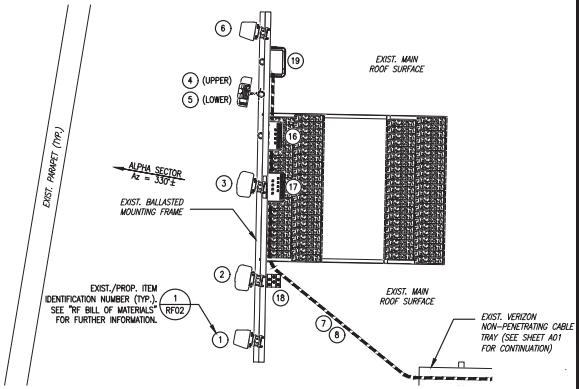
DRAWING NO:
A01

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
As noted	DRAWN BY: CMC	
CEA PROJECT NO.:	CHECKED BY: GRS	467305
1508.101	ORIGINAL ISSUE DATE: 12/10/19	

ALPHA SECTOR

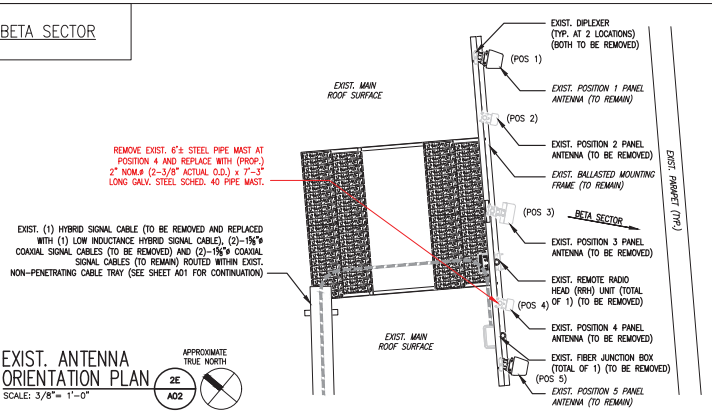


EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
APPROXIMATE TRUE NORTH
1E / A02

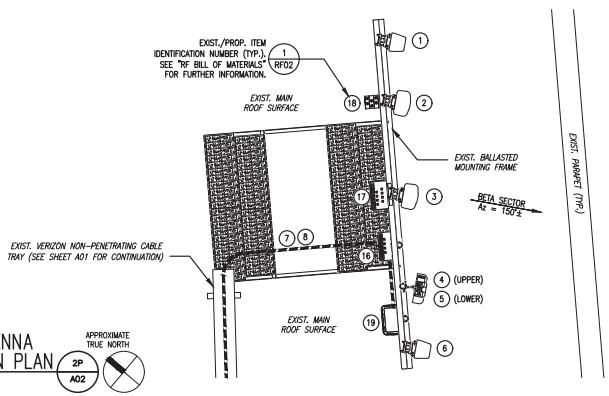


PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
APPROXIMATE TRUE NORTH
1P / A02

BETA SECTOR

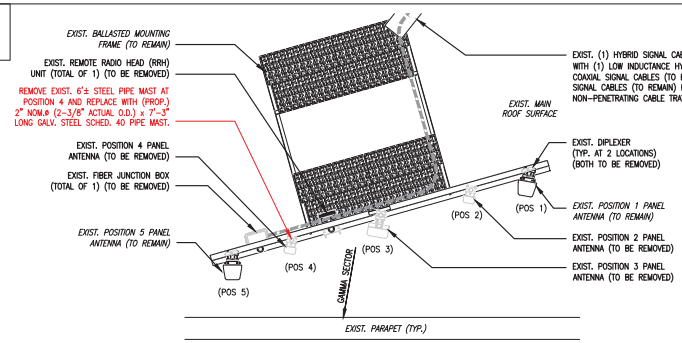


EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
APPROXIMATE TRUE NORTH
2E / A02

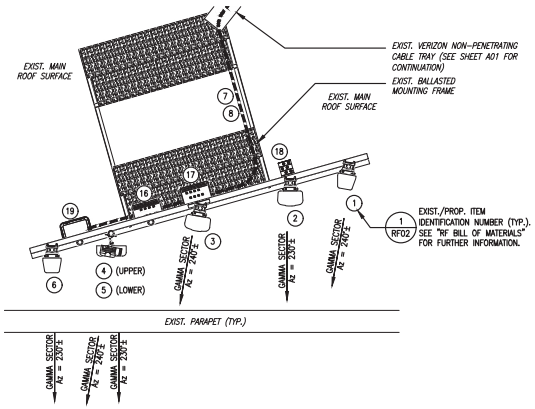


PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
APPROXIMATE TRUE NORTH
2P / A02

GAMMA SECTOR



EXIST. ANTENNA ORIENTATION PLAN
SCALE: 3/8"= 1'-0"
APPROXIMATE TRUE NORTH
3E / A02



PROP. ANTENNA ORIENTATION PLAN
SCALE: 3/8" = 1'-0"
APPROXIMATE TRUE NORTH
3P / A02

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ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
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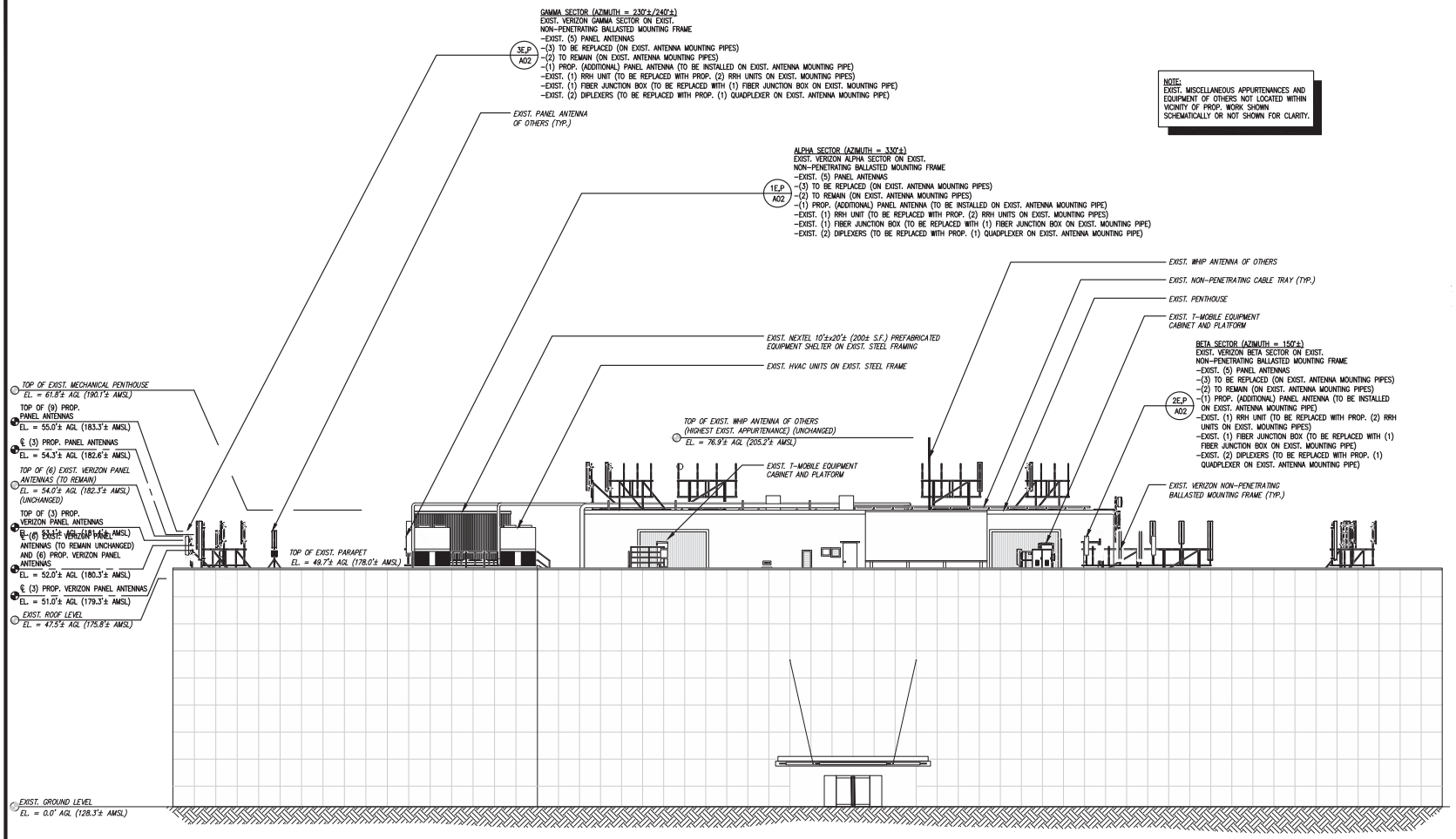
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
ANTENNA ORIENTATION PLANS

DRAWING NO:
A02

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
3/8" = 1'-0"	DRAWN BY: CMC	467305
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	
1508.101	12/10/19	



SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE) 1 A03

SCALE: 3/32" = 1'-0"

0 10'-8" 21'-4" 32'-0"

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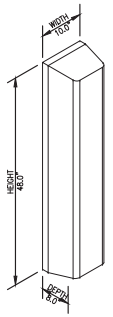
PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
SOUTHEAST (FRONT) BUILDING ELEVATION (ALONG WEST PUTNAM AVENUE)

DRAWING NO:
A03

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
3/32" = 1'-0"	DRAWN BY: CMC	
	CHECKED BY: GRS	467305
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	
1508.101	12/10/19	



ITEM 1

CDMA (850 MHz)

DIMENSIONS: 48.0"H x 10.0"W x 8.0"D
WEIGHT: 12.0 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: EXISTING (TO REMAIN)

ITEM 2

LTE (700/850/1900 MHz) PANEL ANTENNA

DIMENSIONS: 72.0"H x 13.8"W x 8.2"D
WEIGHT: 68.6 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

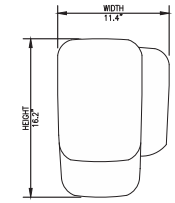
STATUS: PROPOSED (REPLACEMENT)

ITEM 3

LTE (700/850/2100 MHz) PANEL ANTENNA

DIMENSIONS: 72.0"H x 13.8"W x 8.2"D
WEIGHT: 68.6 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

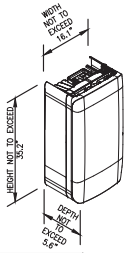


ITEM 4

(BAND 48 (3.5 GHz)) NR AU ANTENNA

DIMENSIONS: 16.2"H x 11.4"W x 5.5"D
WEIGHT: 23.1 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)



ITEM 5

VZS01 ANTENNA

MAX. DIMENSIONS: 35.2"H x 16.1"W x 5.6"D
MAX. WEIGHT: 87.1 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (ADDITIONAL)

ITEM 6

CDMA (850 MHz)

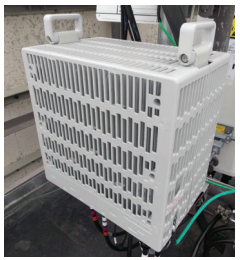
DIMENSIONS: 48.0"H x 10.0"W x 8.0"D
WEIGHT: 12.0 LBS EACH
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: EXISTING (TO REMAIN)

PANEL ANTENNA SPECIFICATIONS (FINAL CONFIGURATION)

SCALE: N.T.S.

1 RF01



ITEM 16

LTE/CDMA (700/850 MHz) REMOTE RADIO HEAD UNIT

DIMENSIONS: 15.5"H x 15.9"W x 10.0"D
WEIGHT: 70.3 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

ITEM 17

PCS-AWS (1900/2100 MHz) REMOTE RADIO HEAD UNIT

DIMENSIONS: 15.4"H x 15.8"W x 12.0"D
WEIGHT: 84.4 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (ADDITIONAL)

REMOTE RADIO HEAD (RRH) UNIT SPECIFICATIONS (FINAL CONFIGURATION)

SCALE: N.T.S.

2 RF01

ITEM 18

(700/850 MHz) QUADPLEXER

DIMENSIONS: 6.4"H x 6.9"W x 9.6"D
WEIGHT: 20.7 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

TYPICAL QUADPLEXER DIMENSIONS

SCALE: N.T.S.

3 RF01

Procedure

Mounting Procedures

4.1 A mounting base is delivered with the unit. The base allows either wall/ladder or pole mounted installation. See picture to identify the holes for each installation method.

4.2 ***Option 1: Pole Mount***
Using supplied hardware, mount Bracket to 2" to 4" diameter pole.

4.3 ***Option 2: Unistrut***

4.4 ***Option 3: Monopole***
Use 1" stainless steel bands (not supplied) through slots on bracket to mount to Monopole.

Gland/Insert Definitions

5.1 See picture to identify Base Gland Assembly Definitions.

Assembled in unit as shipped:

Qty	Connector Size	Pos	Insert P/N	Insert Hole	Cable Type
2	M75	A	190-0760	42mm	6x12 RL
4	M75	B	190-0738	3x 16.5mm	1x2

Included in kit shipped with unit:

Qty	Connector Size	Insert P/N	Insert Hole	Cable Type	Purpose	Pos
2	M75	190-0760	42mm	6x12 RL	2 glands fit 1 each 6/12 hyb	B
2	M75	190-0747	2x 24.5mm	2x12 DC	2 glands fit 2 each #6 12 cond DC	B
1	M75	190-0905	2x 10.5mm	2x12 Fiber	1 gland fit 2 x 12 fiber trnk	B
1	M75	190-0912	2x 9.5mm	2 ETH	1 gland fits 2 ethernet cable	B

ITEM 19

FIBER JUNCTION BOX

DIMENSIONS: 29.58"H x 16.5"W x 12.6"D
WEIGHT: 32.0 LBS
QUANTITY: 1 PER SECTOR, TOTAL OF 3

STATUS: PROPOSED (REPLACEMENT)

TYPICAL FIBER JUNCTION BOX DIMENSIONS, SCHEMATIC AND MOUNTING PROCEDURE

SCALE: N.T.S.

4 RF01

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ENGINEER/LAND SURVEYOR DATE

REVISIONS

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8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:

GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:

ANTENNA DETAILS AND ANCILLARY EQUIPMENT SPECIFICATIONS

DRAWING NO:

RF01

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
AS SHOWN	DRAWN BY: CMC	
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	467305
1508.101	12/10/19	

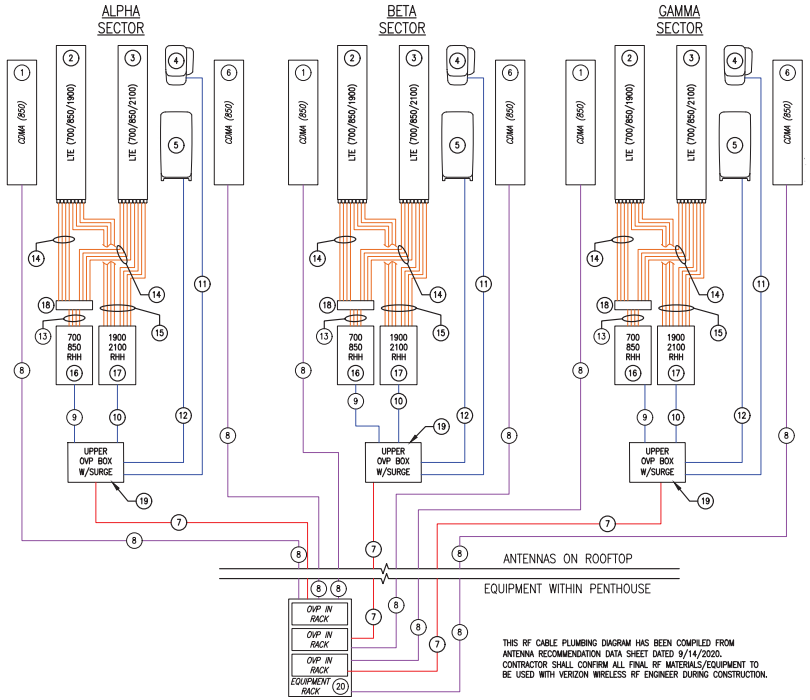
RF BILL OF MATERIALS (PROP. (FINAL) CONFIGURATION)

SITE NAME: GREENWICH SOUTHWEST CT — A = ALPHA SECTOR B = BETA SECTOR G = GAMMA SECTOR

ITEM (SEE PLAN)	DESCRIPTION	BAND	QTY	STATUS	CABLE LENGTH/UNIT SIZE	COMMENTS
1	*EXIST. PANEL ANTENNA (TO REMAIN)*	*850*	*3 TOTAL (A,B,G)*	*EXIST.*	*48.0"H x 10.0"W x 8.0"D (12.0 lbs, each)*	*MOUNTED TO EXIST. PIPE MAST*
2	PROP. PANEL ANTENNA (REPLACEMENT)	700/850/1900	3 TOTAL (A,B,G)	PROP.	72.0"H x 13.8"W x 8.2"D (63.3 lbs, each)	MOUNT TO EXIST. PIPE MAST
3	PROP. PANEL ANTENNA (REPLACEMENT)	700/850/2100	3 TOTAL (A,B,G)	PROP.	72.0"H x 13.8"W x 8.2"D (63.3 lbs, each)	MOUNT TO EXIST. PIPE MAST
4	PROP. PANEL ANTENNA (REPLACEMENT)	BAND 48	3 TOTAL (A,B,G)	PROP.	16.2"H x 11.4"W x 5.5"D (23.1 lbs, each)	MOUNT TO EXIST. PIPE MAST
5	PROP. PANEL ANTENNA (ADDITIONAL)	3700–3980	3 TOTAL (A,B,G)	PROP.	35.2"H x 16.1"W x 5.6"D (87.1 lbs, each)	MOUNT TO EXIST. PIPE MAST
6	*EXIST. PANEL ANTENNA (TO REMAIN)*	*850*	*3 TOTAL (A,B,G)*	*EXIST.*	*48.0"H x 10.0"W x 8.0"D (12.0 lbs, each)*	*MOUNTED TO EXIST. PIPE MAST*
7	6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE (MAIN LINE)	–	3 TOTAL (1 PER SECTOR)	PROP.	190'±(A), 105'±(B), 195'±(G)	ROUTE ALONG ROOFTOP OF EXIST. BUILDING TO PROP. FIBER JUNCTION BOXES
8	*15/8"ø COAXIAL SIGNAL CABLE (MAIN LINE)*	–	*6 TOTAL (2 PER SECTOR)*	*EXIST.*	*EXIST.*	*ROUTED ALONG ROOFTOP OF EXIST. BUILDING TO EXIST. CDMA ANTENNAS*
9	*1x1 HYBRID SIGNAL CABLE (JUMPER)*	–	*3 TOTAL (1 PER SECTOR)*	*EXIST.*	*EXIST.*	ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. RRH UNITS
10	1x1 HYBRID SIGNAL CABLE (JUMPER)	–	3 TOTAL (1 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. RRH UNITS
11	1x1 HYBRID SIGNAL CABLE (JUMPER)	–	3 TOTAL (1 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM EXIST. UPPER OVP BOXES TO PROP. "NR AU" PANEL ANTENNA
12	1x2 HYBRID SIGNAL CABLE (JUMPER)	–	3 TOTAL (1 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. UPPER OVP BOXES TO PROP. VZS01 ANTENNAS
13	*½"ø COAXIAL CABLE (JUMPER)*	–	*12 TOTAL (4 PER SECTOR)*	*EXIST.*	*5 FT. EACH*	ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. QUADPLEXERS
14	½"ø COAXIAL CABLE (JUMPER)	–	24 TOTAL (8 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. QUADPLEXERS TO PROP. ANTENNAS
15	½"ø COAXIAL CABLE (JUMPER)	–	24 TOTAL (8 PER SECTOR)	PROP.	20 FT. MAX. EACH	ROUTE FROM PROP. REMOTE RADIO HEAD (RRH) UNITS TO PROP. ANTENNAS
16	REMOTE RADIO HEAD (RRH) UNIT	700/850	3 TOTAL (A,B,G)	PROP.	15.5"H x 15.9"W x 10.0"D (70.3 lbs, each)	MOUNT TO EXIST. PIPE MAST
17	REMOTE RADIO HEAD (RRH) UNIT	1900/2100	3 TOTAL (A,B,G)	PROP.	15.4"H x 15.8"W x 12.0"D (84.4 lbs, each)	MOUNT TO EXIST. PIPE MAST
18	QUADPLEXER	700/850	3 TOTAL (A,B,G)	PROP.	6.4"H x 6.9"W x 9.6"D (20.7 lbs, each)	MOUNT TO EXIST. PIPE MAST
19	UPPER OVP BOX WITH SURGE	–	3 TOTAL (A,B,G)	PROP.	29.58"H x 16.5"W x 12.6"D (32.0 lbs, each)	MOUNT TO EXIST. BALLASTED ANTENNA MOUNTING FRAME
20	*LOWER OVP BOX/RACK*	–	–	–	–	*EQUIPMENT CABINET/ROOM INTERFACE*

THIS RF BILL OF MATERIALS (BOM) HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 9/14/2020. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF BILL OF MATERIALS (FINAL CONFIGURATION) — 1 RF02
SCALE: NONE



THIS RF CABLE PLUMBING DIAGRAM HAS BEEN COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 9/14/2020. CONTRACTOR SHALL CONFIRM ALL FINAL RF MATERIALS/EQUIPMENT TO BE USED WITH VERIZON WIRELESS RF ENGINEER DURING CONSTRUCTION.

RF CABLE PLUMBING DIAGRAM (FINAL CONFIGURATION) — 2 RF02
SCALE: NO SCALE

LEGEND

- RED — (##) = HYBRID CABLE (MAIN LINE)
- PURPLE — (##) = COAXIAL CABLE (MAIN LINE)
- BLUE — (##) = 1x1 HYBRID CABLE (JUMPER)
- ORANGE — (##) = 1/2"ø COAXIAL CABLE (JUMPER)
- GREEN — (##) = RET CONTROL CABLE(S) (JUMPER)

RADIO FREQUENCY (RF) DESIGN NOTES:
1) ALL RADIO FREQUENCY (RF) DESIGN INFORMATION CONTAINED ON THIS SHEET IS SHOWN SCHEMATICALLY.

2) THE GENERAL CONTRACTOR SHALL CONFIRM ALL RF DESIGN ELEMENTS SHOWN (INCLUDING BUT NOT LIMITED TO PANEL ANTENNA MODELS & ARRANGEMENT, AZIMUTHS, REMOTE RADIO HEAD (RRH) UNIT MODELS & ARRANGEMENT AND CABLING DIAGRAMS/SCHEMATICS) WITH THE VERIZON WIRELESS RF ENGINEER AT THE TIME OF CONSTRUCTION.

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STATE OF CONNECTICUT — CLEMENT J. SALE — No. 26876 — LICENSED PROFESSIONAL ENGINEER
ENGINEER/LAND SURVEYOR DATE

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PROJECT NAME:
GREENWICH SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
RF BILL OF MATERIALS AND RF CABLE PLUMBING DIAGRAM

DRAWING NO:
RF02

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
AS SHOWN	DRAWN BY: CMC	
	CHECKED BY: GRS	
CEA PROJECT NO.:	ORIGINAL ISSUE DATE:	467305
1508.101	12/10/19	

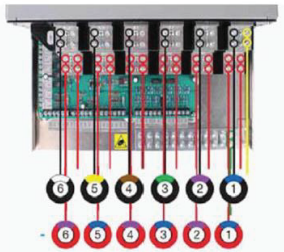
Line Color Code	Band	Tx/Rx	Color Pairs	Sector	Main Line Cable Length/Information
BR	850	Tx0/Rx0	Blue + Red	ALPHA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 190'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
BY	850	Tx1/Rx1	Blue + Yellow		
BG	1900 CDMA	Tx0/Rx0	Blue + Green		
BBG	1900 CDMA	Tx1/Rx1			
BP	700	Tx0/Rx0	Blue + Purple		
BBP	700	Tx1/Rx1			
BBBP	700	Tx2/Rx2			
BBBBP	700	Tx3/Rx3			
BBr	AWS	Tx0/Rx0	Blue + Brown		
BBBr	AWS	Tx1/Rx1			
BBBBr	AWS	Tx2/Rx2			
BBBBBr	AWS	Tx3/Rx3			
BGG	1900 LTE	Tx0/Rx0	Blue + Green		
BBGG	1900 LTE	Tx1/Rx1			
BBBGG	1900 LTE	Tx2/Rx2			
BBBBGG	1900 LTE	Tx3/Rx3			
WR	850	Tx0/Rx0	White + Red	BETA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 105'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
WY	850	Tx1/Rx1	White + Yellow		
WG	1900 CDMA	Tx0/Rx0	White + Green		
WWG	1900 CDMA	Tx1/Rx1			
WP	700	Tx0/Rx0	White + Purple		
WWP	700	Tx1/Rx1			
WWWP	700	Tx2/Rx2			
WWWWP	700	Tx3/Rx3			
WBr	AWS	Tx0/Rx0	White + Brown		
WWBr	AWS	Tx1/Rx1			
WWWBr	AWS	Tx2/Rx2			
WWWWBr	AWS	Tx3/Rx3			
WGG	1900 LTE	Tx0/Rx0	White + Green		
WWGG	1900 LTE	Tx1/Rx1			
WWWGG	1900 LTE	Tx2/Rx2			
WWWWGG	1900 LTE	Tx3/Rx3			
OR	850	Tx0/Rx0	Orange + Red	GAMMA	CABLE LENGTH PROVIDED BELOW IS APPROXIMATE IN NATURE AND REFLECTED AS AN ADJUSTED VALUE TO PROVIDE ADEQUATE LENGTH. ANY FIELD MEASUREMENTS OF ANTICIPATED CABLE LENGTH IS ENCOURAGED IN AN EFFORT TO REDUCE SLACK AND TO OPTIMIZE DESIGN. SUCH FIELD MEASUREMENTS MAY SUPERCEDE THE LENGTH PROVIDED BELOW AT THE DISCRETION OF THE GENERAL CONTRACTOR 195'± (ONE (1) PROPOSED (REPLACEMENT) 6x12 LOW INDUCTANCE HYBRID SIGNAL CABLE) EXISTING (TWO (2) 1⅝"ø COAXIAL SIGNAL CABLES)
OY	850	Tx1/Rx1	Orange + Yellow		
OG	1900 CDMA	Tx0/Rx0	Orange + Green		
OOG	1900 CDMA	Tx1/Rx1			
OP	700	Tx0/Rx0	Orange + Purple		
OOP	700	Tx1/Rx1			
OOOP	700	Tx2/Rx2			
OOOOP	700	Tx3/Rx3			
OBr	AWS	Tx0/Rx0	Orange + Brown		
OOBr	AWS	Tx1/Rx1			
OOOBr	AWS	Tx2/Rx2			
OOOOBr	AWS	Tx3/Rx3			
OGG	1900 LTE	Tx0/Rx0	Orange + Green		
OOGG	1900 LTE	Tx1/Rx1			
OOOGG	1900 LTE	Tx2/Rx2			
OOOOGG	1900 LTE	Tx3/Rx3			

LINE COLOR CODE SPECIFICATIONS (1 / RF03)

Hybrid Cable on Rooftops and Water tanks

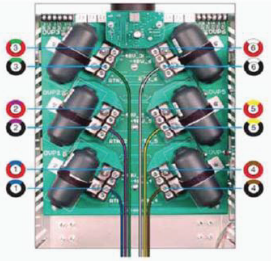
Hybrid Cable 1

Sector	Identification Color	-48V	RTN
700 Alpha	Blue		
AWS Alpha	Violet		
PCS Alpha	Green		
850 Alpha	Brown		
Spare	Yellow		
Spare	White		



Hybrid Cable 2

Sector	Identification Color	-48V	RTN
700 Beta	Blue		
AWS Beta	Violet		
PCS Beta	Green		
850 Beta	Brown		
Spare	Yellow		
Spare	White		



Hybrid Cable 3

Sector	Identification Color	-48V	RTN
700 Gamma	Blue		
AWS Gamma	Violet		
PCS Gamma	Green		
850 Gamma	Brown		
Spare	Yellow		
Spare	White		

HYBRID CABLE COLOR CODE SPECIFICATIONS (2 / RF03)

verizon
" Because Better Matters "

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SALE
No. 16876
LICENSED
PROFESSIONAL ENGINEER
ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
4	REVISED PER SBA COMMENTS	3/30/20
5	ADDED ELECTRIC SUB-METER NOTE	4/28/20
6	REVISED RF LANGUAGE	5/6/20
7	REVISED PER 1A FINDINGS	9/22/20
8	REVISED CONTROL POINT	9/24/20
9	REVISED PER (9/14/20) RFDS	2/12/21

PROJECT NAME:
GREENWICH
SOUTHWEST CT
WEXFORD PLAZA
411 WEST PUTNAM AVENUE
GREENWICH, CT 06830

DRAWING TITLE:
RF COLOR CODE SPECIFICATIONS

DRAWING NO:
RF03

SCALE:	DESIGNED BY: CMC	VZW LOCATION CODE:
N/A	DRAWN BY: CMC	467305
CEA PROJECT NO.:	CHECKED BY: GRS	
1508.101	ORIGINAL ISSUE DATE: 12/10/19	

Appendix B – Mount Analysis

Site Name/Number:	**Greenwich Southwest CT**
Site Address:	**411 West Putnam Avenue, Greenwich, CT 06830**
CEA Job Number:	**1508.101**
Date:	**March 16, 2021**

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

Appurtenances Attached to Ballast Frame:

	Decibel DB844G65ZAXY	Commscope JAHH-65B-R3B	Commscope JAHH-65B-R3B	Samsung CBRS RT4401-48A	Samsung 64T64R MMU	Decibel DB844G65ZAXY	RRH 700-850 mHz	RRH 1900-2100 mHz	Quadplexer	Fiber Junction Box
Depth, d =	8.0 in	8.2 in	8.2 in	5.5 in	5.6 in	8.0 in	10.0 in	12.0 in	9.6 in	12.6 in
Width, w =	10.0 in	13.8 in	13.8 in	11.4 in	16.1 in	10.0 in	15.9 in	15.8 in	6.9 in	16.5 in
Height, h =	48.0 in	72.0 in	72.0 in	16.2 in	35.2 in	48.0 in	15.5 in	15.4 in	6.4 in	30.0 in
Height ARL =	6.8 ft	5.8 ft	5.8 ft	8.1 ft	4.1 ft	6.8 ft	4.4 ft	4.1 ft	3.5 ft	4.4 ft
Weight =	12 lbs	68 lbs	68 lbs	23 lbs	87 lbs	12 lbs	70 lbs	85 lbs	21 lbs	32 lbs

Design Code: ASCE 7

Z (Above Ground Level) =	54 ft	54 ft	54 ft	54 ft	54 ft	54 ft	54 ft	54 ft	54 ft	54 ft	
Height of Projection Area =	4.0 ft	6.0 ft	6.0 ft	1.4 ft	2.9 ft	4.0 ft	1.3 ft	1.3 ft	0.5 ft	2.5 ft	
Width of Projection Area =	0.8 ft	1.2 ft	1.2 ft	1.0 ft	1.3 ft	0.8 ft	1.3 ft	1.3 ft	0.6 ft	1.4 ft	
Af (Projected Area of Gross) =	3.3 s.f.	6.9 s.f.	6.9 s.f.	1.3 s.f.	3.9 s.f.	3.3 s.f.	1.7 s.f.	1.7 s.f.	0.3 s.f.	3.4 s.f.	
Reference Wind Velocity, V =	100 mph	100 mph	100 mph	100 mph	100 mph	100 mph	100 mph	100 mph	100 mph	100 mph	
Exposure =	B	B	B	B	B	B	B	B	B	B	Section 6.5.6.3
G (Gust effect factor) =	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Section 6.5.8
Cf (Force Coeficient) =	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	Fig 6-20 to 6-23
K_z (Exposure Coefficients) =	1	1	1	1	1	1	1	1	1	1	6.5.6.6, Table 6-3
K_1 (Multiplier) =	0	0	0	0	0	0	0	0	0	0	Figure 6-2
K_2 (Multiplier) =	0	0	0	0	0	0	0	0	0	0	Figure 6-2
K_3 (Multiplier) =	0	0	0	0	0	0	0	0	0	0	Figure 6-2
K_{zt} (Topographic Factor) : $(1+K_1*K_2*K_3)^2$ =	1	1	1	1	1	1	1	1	1	1	Section 6.5.7.2
Kd =	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Table 6-4
I (Importance Factor) =	1	1	1	1	1	1	1	1	1	1	Table 6-2
q_z = .00256*K_z*K_{zt}*K_d*V^2*I (psf) =	21.8 psf	21.8 psf	21.8 psf	21.8 psf	21.8 psf	21.8 psf	21.8 psf	21.8 psf	21.8 psf	21.8 psf	psf, Section 6.5.10
Reference Wind Pressure, *p* =	25.9 psf	25.9 psf	25.9 psf	25.9 psf	25.9 psf	25.9 psf	25.9 psf	25.9 psf	25.9 psf	25.9 psf	
F, lbs =	**86**	**179**	**179**	**33**	**102**	**86**	**44**	**44**	**8**	**89**	

Required Minimum Ballast:

Ballast Frame Geometry

Frame width =	6.67 ft
Frame depth =	5.67 ft
Centroid of front ballast to toe, d_f =	1.33 ft
Centroid of rear ballast to toe, d_r =	7.00 ft
Frame Footprint Area =	55.56 ft^2
Weight of steel frame =	425 lbs

Safety Factor for Overturning = 2.1

Total Appurtenance Wgt = 478 lbs

Let W_t = total ballast required, lbs
Let W_f = 0.4 W_t
Let W_r = 0.6 W_t

For Stability;

$M_{causing} <= M_{resisting}$

$M_{causing} <= M_{frame\ wgt} + M_{rear\ ballast} + M_{front\ ballast}$

$M_{causing} <= M_{frame\ wgt} + 0.6\ (W_t)(d_r) + 0.4\ (W_t)(d_f)$

Solving for Wt;

$$\frac{M_{causing} - M_{frame\ wgt}}{0.60\ d_r + 0.40\ d_f} <= W_t$$

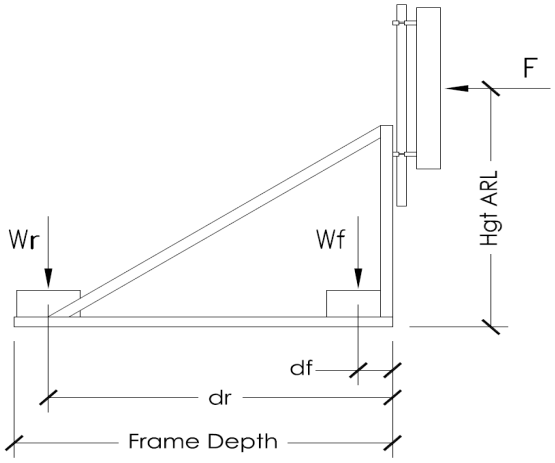
(min total ballast req'd)

$$\frac{9{,}125.4}{4.73} <= W_t$$

$M_{causing}$ = 9,690.6 ft-lbs
$M_{frame\ wgt}$ = 565.3 ft-lbs
0.6 d_r = 4.20 ft
0.4 d_f = 0.53 ft

Min. Total Ballast Req'd (W_t) = 1928 lbs < = W_t

Min. Front Ballast Req'd (W_f) = 771 lbs = 23 Solid 8x4x16 blocks
Min. Rear Ballast Req'd (W_r) = 1157 lbs = 35 Solid 8x4x16 blocks
Total Loaded Frame Weight = 2831 lbs



Frame Geometry

Appendix C– Photos


CAUTION


CAUTION
CAUTION


CAUTION


CAUTION


CAUTION

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil • Structural • Land Surveying

June 2, 2021

verizon

Mr. Andrew Leone
20 Alexander Drive
Wallingford, CT 06492

RE:

Antenna Model Clarification Letter
Verizon Site Name: Greenwich Southwest CT (Location Code: 467305)
Site Address: 411 West Putnam Avenue, Greenwich, CT 06830
CEA Job Number: 1508.101

Dear Mr. Leone:

The purpose of this letter is to clarify the antenna nomenclature contained within the various documents (Construction Drawings, Mount Structural Analysis and Structural Evaluation Letter) provided to your office/VZW by Chappell Engineering Associates, LLC (CEA) pertaining to the proposed upgrades Verizon Wireless (VZW) intends to pursue at their above referenced wireless telecommunications site. One of the proposed antennas is historically referenced by multiple interchangeable names (e.g. "Licensed Sub-6", "L-Sub6", "VZS01" and "MT6407-77A") per the specifications of the antenna that have been provided to our office by VZW. All such designations refer to the 64T64RMMU antenna as manufactured by Samsung Electronics.

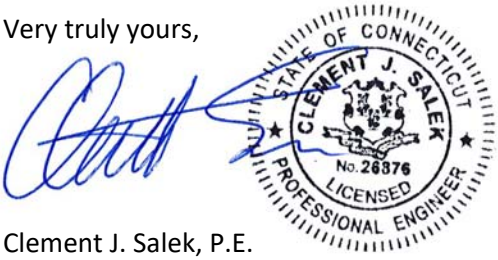
For design purposes, the following weight and dimensions have been utilized throughout all design documents that we have provided to your office/VZW representing a "worst case" design approach…

Weight: 87.1 lbs +/-
Dimensions: 35.2"+/-H x 16.1"+/-W x 5.5"+/-D

This weight and these dimensions have been provided to our office by VZW. In the event that the weight or any dimension exceeds the values listed above, revised documents would need to be prepared accordingly and re-submitted by our office.

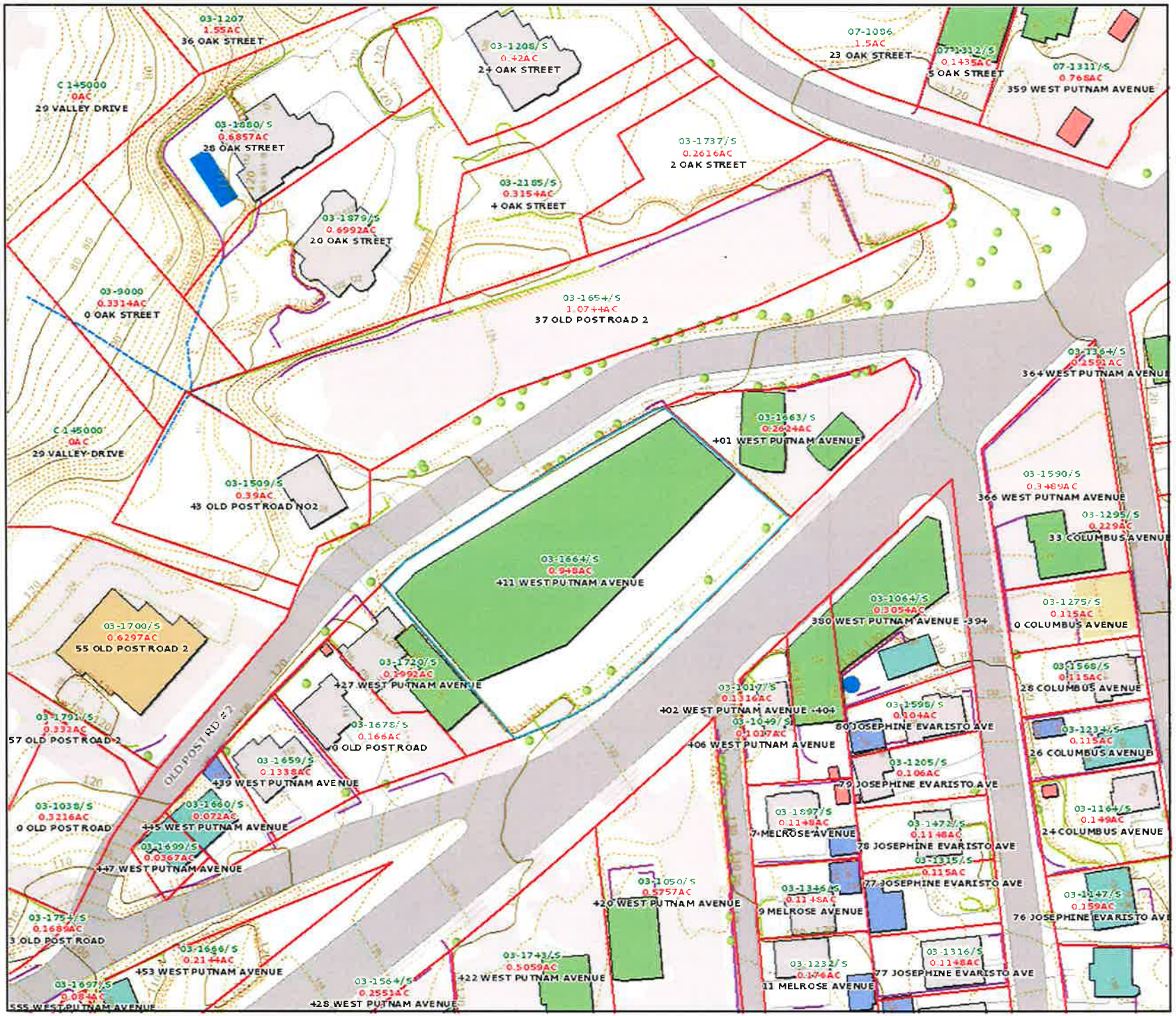
If you have any questions regarding this matter, please do not hesitate to call our office

Very truly yours,



Clement J. Salek, P.E.
Chappell Engineering Associates, LLC
CJS/GRS

ATTACHMENT 4



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ADMINISTRATIVE INFORMATION

PARCEL NUMBER
03-1664/S

Parent Parcel Number

Property Address
WEST PUTNAM AVENUE 0411

Neighborhood
2200 WEST PUTNAM

Property Class
212 General Office

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	03	
Section & Plat	103	
Routing Number	9073N0043	

Site Description

Topography:

Public Utilities:
Sewer, Electric

Street or Road:

Neighborhood:

Zoning:
GB General Business

Legal Acres:
0.9480

OWNERSHIP

WEST PUTNAM OWNER LLC
216 E 45TH ST STE 1200
NEW YORK, NY 10017

LOT NO 32 & 33 WEST PUTNAM AVE N-43

Tax ID 214/252 Printed 12/18/2019 Card No. 1 of 1

TRANSFER OF OWNERSHIP

Date		
06/24/2016	411 PROPERTIES LLC Bk/Pg: 7086, 288	$51500000
04/22/2005	FLORIDA SHERWOOD FOREST LTD Bk/Pg: 4902, 307	$32257000
03/15/2002	SOFI IV 411 PUTNAM LLC Bk/Pg: 3810, 325	$23494750
09/08/1997	WEST PUTNAM ASSOC Bk/Pg: 2966, 220	$17250000
07/16/1991	WEST PUTNAM ASSOC Bk/Pg: 2144, 140	$233500

COMMERCIAL

VALUATION RECORD

Assessment Year		10/01/2015	10/01/2015	10/01/2016	10/01/2016	10/01/2017	10/01/2018	10/01/2019
Reason for Change		2015 Prelim	2015 Final	2016 List	2016 BAA	2017 List	2018 List	2019 List
VALUATION	L	3347000	3347000	3347000	3347000	3347000	3347000	3347000
Market	B	48274800	48274800	48274800	48274800	48274800	48990300	45488800
	T	51621800	51621800	51621800	51621800	51621800	52337300	48835800
VALUATION	L	2342900	2342900	2342900	2342900	2342900	2342900	2342900
70% Assessed	B	33792360	33792360	33792360	33792360	33792360	34293210	31842160
	T	36135260	36135260	36135260	36135260	36135260	36636110	34185060

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				41294.88	81.05	81.05	3347000		3347000

APS: 03-1654/S
BA16: Sustain
BP15: 15-0978; Tenant: Contrian Capital, $188,000 elec & int alt
BP18: BP16-3911, Tenant Fitout $719,000
CTST: 2016 GL, 2017 GL & 2018 GL
DBA: Wexford Plaza
GEN: Supported by parking deck and garage on 03-1654/s.
P: 110 spaces
SALE: 3/15/02 vol 3810 pg 325 sale includes 03-1654/s. Recorded sp of $23,494,750 reflects reduction for specific liability. Effective sp = $23,607,000. Verified arm's length. 4/05 sale w/ 03-1654/s cmfrmd arm's length w/ tot sp = $32,257,000. Indicated sp is allocated value (88%).

Permit Number / Type	FilingDate	Est. Cost / Est. SqFt	Field Visit

Supplemental Cards

TRUE TAX VALUE 3347000

Supplemental Cards
TOTAL LAND VALUE 3347000

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

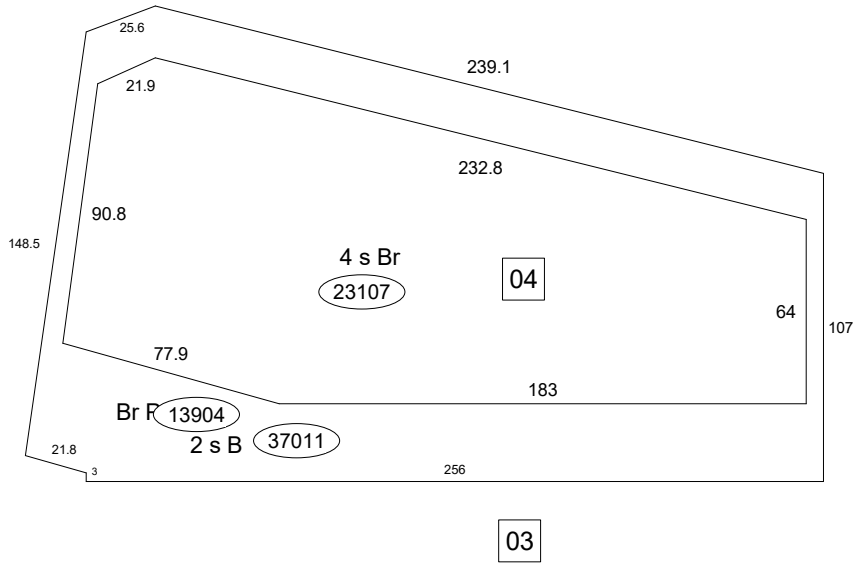
	B	1	2	U
Frame		Yes	Yes	Yes
Brick	Yes			
Metal				
Guard				

FRAMING

	B	1	2	U
R Conc	3701	0	0	0
F Prf	70321	23107	23107	46214

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	74022	4621	4621	9242
Sprink	74022	4621	4621	9242



Item Description	Units	Cost	Total	Pct
M & S Cost Database Date: 01/2015				
Base Cost	92428	216.05	19969069	
Exterior Walls	92428	57.64	5327552	
Heating & Cooling	18484	34.04	629196	
Sprinklers	18484	7.60	140480	
Basic Structure Cost	92428	282.02	26066297	
Unfinished Basement	74022	59.44	4399868	
Heating & Cooling	74022	20.17	1493285	
Sprinklers	74022	4.67	345534	
Building Cost New	92428	349.52	32304984	
Physical	0	0.00	777656	2.41
Depreciated Cost	92428	341.10	31527328	
Rounded Total	0	0.00	31527300	
Total Exterior Features Value				
Depreciated Ext Features				
Total Before Adjustments			31527300	
Neighborhood Adjustment			15763700	50.00
TOTAL VALUE			47291000	

(LCM: 150.00)

SPECIAL FEATURES

Description	Value
C : Remod 2009	

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	GENOFF	0.00		Exe	1973	2005	VG	0.00	N	0.00	23107	0	0	0	150	100	47291000
03	PENTMECH	0.00	1	Avg	1971	1995	GD	70.00	N	105.00	2940	308700	0	0	100	100	308700
04	ELEVCOM	6.00	2E	Avg+	1973	2000	VG	169000	N	304200	2@ 0	608400	0	0	100	100	608400
05	BRP	0.00		Exe	2009	2009	AV	0.00	N	0.00	0	806360	3	0	100	100	782200

Data Collector/Date	Appraiser/Date	Neighborhood	Supplemental Cards
TD 06/13/2017	TOG 10/01/2015	Neigh 2200 AV	

TOTAL IMPROVEMENT VALUE 48990300

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

GREENWICH SW

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 06/28/2021 US POSTAGE $002.89 ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		

USPS JUN 28 2021 OLD STATE HOUSE STATION 06106

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Fred Camillo, First Selectman Town of Greenwich 101 Field Point Road Greenwich, CT 06830				
2.	Katie DeLuca, Director Planning and Zoning Town of Greenwich 101 Field Point Road Greenwich, CT 06830				
3.	West Putnam Owner LLC 411 West Putnam Avenue Greenwich, CT 06830				
4.					
5.					
6.					