R&H CONSTRUCTION

SUBMITTAL COVER SHEET

To: Karen Lange
Waterleaf Architecture
419 SW 11th Ave. Suite 200
Portland, OR 97205

From: Kai Sakamoto
R&H Residential Construction Co.
2019 NW Wilson Street
Portland, OR 97209

Project: 2019.515. - Fuller Station

Submittal No. 270530-101 -- Distributed Antenna System

Specification Section: **270530 - Interior Communications Pathways**
Subcontractor/Supplier: **Merit Electric of Spokane Inc**

Quantity Sent: **1**
Revision No.: **0**
Return to R&H by: **09/22/2021**

R&H Review Status: **No Exceptions Taken**
Comments: Submittal includes distributed antenna system product data and shop drawings.

REVIEW IS ONLY TO VERIFY GENERAL CONFORMANCE AND COMPLIANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. SUBCONTRACTOR OR SUPPLIER IS RESPONSIBLE FOR DIMENSIONS, ERRORS AND OMISSIONS IN THESE DRAWINGS OR LISTS WHICH HE SHALL CONFIRM AND CORRELATE AT THE JOBSITE WITH HIS WORK OR FABRICATION AND WITH THAT OF OTHER TRADES AFFECTED BY HIS WORK. HE SHALL BE RESPONSIBLE FOR ANY DEVIATION FROM THE CONTRACT DOCUMENTS OR THESE DRAWINGS OR LISTS UNLESS HE HAS OBTAINED WRITTEN APPROVAL TO DO SO, AND SHALL BE RESPONSIBLE FOR THE SATISFACTORY COMPLETION OF HIS WORK.

By: Kai Sakamoto

Date: 09/08/2021

No Exception Taken
MFIA, Inc
Gary Adovnik
Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: Dimensions, which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.
09/14/2021

Submittal No. Emergency Responder Radio Coverage System

Fuller Station

Merit Electric

Contract #: 30495

AWS Project #: 10443

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System

June 1, 2021

SUBCONTRACTOR

Amplified Wireless Solutions, Inc.

5760 SE Gaitgill Court

Milwaukie, OR 97267

For Review and Approval Stamping

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

LIST OF REQUIRED SUBMITTALS

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System

Section	Para. No.	Item Description	Submitted Herein	Submitted Previously	Future Submittal	Close Out Document
27 53 19	1.1	Certificates	X			
27 53 19	2.1	Test Equipment	X			
27 53 19	3.1	Statement of Work	X			
27 53 19	4.1	Acceptance Test Plan	X			
27 53 19	5.1	Shop Drawings	X			
27 53 19	6.1	RF Link Budget	X			
27 53 19	7.1	Drawings for Donor Antenna and Grounding	X			
27 53 19	8.1	Product Data Sheets	X			
27 53 19	9.1	Maintenance Service Contract			X	
27 53 19	10.1	Permit Drawings/Letter of Authorization			X	

The undersigned, acting on behalf of Amplified Wireless Solutions, Inc., certifies that this submittal (Submittal No. Emergency Responder Radio Coverage System) has been reviewed and is approved; products have been verified as being as specified, field measurements and field construction criteria have been or will be coordinated, and the submittal is in compliance with the contract.

NAME OF SUBCONTRACTOR: Amplified Wireless Solutions, Inc.

AUTHORIZED SIGNATURE: _____

TITLE OR POSITION: Operations Manager

DATE: June 1, 2021

AMPLIFIED WIRELESS SOLUTIONS, INC

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

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Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 1

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 1.1 Certificates

iBWAVE DESIGN CERTIFIED LEVEL 2

iBWAVE CERTIFICATION PROGRAM
iBWAVE DESIGN

Aaron Baxter

Participated and successfully completed **Level 2**.
This certification is valid until 2021-06-09

CONGRATULATIONS ON YOUR SUCCESSFUL COMPLETION.

Bicsi®

18.00 for Event ID: OV-IBW-CAN-0216-2

2018-06-10

Date

iBwave Learning Center

Georges Kechichian, Senior Vice-President, Engineering, iBwave Solutions Inc.

iBwave

iBwave Solutions Inc. T +1 514 397 0606 F +1 514 409 2499, 7075, Robert-Joncas, Suite 95, Montreal, Qc H4M 2Z2 Canada, info@ibwave.com www.ibwave.com

Comba

keeps you connected

THIS IS TO CERTIFY THAT

Amplified Wireless Solutions

HAS SUCCESSFULLY COMPLETED THE REQUIRED TRAINING,
AND IS CERTIFIED TO INSTALL AND COMMISSION
COMBA CRITICALPOINT™ PUBLIC SAFETY EQUIPMENT

Augustin Chang, President

1/2018

Date

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 2

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 2.1 Test Equipment

490 Jarvis Drive, Morgan Hill, CA 95037-2809, USA Phone: 1-800-ANRITSU Fax: 408-776-8024

Certificate of Calibration
Standard Calibration

The product listed below has been calibrated in accordance with the documented procedures and is certified in compliance with ISO/IEC 17025 and ANSI/NCSL Z540.1. Accuracy of test equipment and standards is traceable to national and/or international standards, national metrology institutes (e.g., NIST, NPL, NMIJ, NIM), or derived from ratio type self calibration techniques.

The Anritsu suggested calibration interval is 12 months*.
Based on that interval, the Calibration Due Date is 04-February-2022.

Model:	S412E	Customer Id:	10131040
Serial Number:	1804035	Customer:	AMPLIFIED WIRELESS SOLUTIONS 11227 SW 27TH AVENUE PORTLAND, OR 97219
Calibration Date:	04-February-2021	Issue Date:	04-February-2021
Repair Order:	CW018770	Customer PO:	AMEX 1123 SULLIVAN
Temperature:	24 °C (limit 18°C to 28°C)	Calibrated By:	ANRITSU AMERICAS SALES COMPANY 490 JARVIS DRIVE MORGAN HILL, CA 95037-2809
Rel. Humidity:	24.6 % (limit 10% to 80% Non Condensing)		
Test Procedure:	GPRG 73256		
Procedure Rev:	5.70		
Subcontractor Used:	No		

Calibrated on-site at customer's location? ☐

As Received Condition	As Shipped Condition
Physical Condition: Good	
Within Tolerance: Yes	Within Tolerance: Yes
See note below if Out of Tolerance and/or describe physical condition if poor:	See note below if a Limited Cal was performed or the product was returned un-repaired:

Certificate Number: US00158768

Calibrated By: RON POTTER

Signature: RA Potter

Approved By: Sean Grisier,

Signature: Sean Grisier

* *This suggestion is based on Anritsu's global experience with this product. Your application may require a different calibration interval due to factors such as required accuracy, control limits, connector wear or other factors in your measurement process.*

Anritsu is accredited to ISO17025 through A2LA and registered to ISO9001 by NQA.

CERTIFICATE of ACHIEVEMENT

This is to certify that

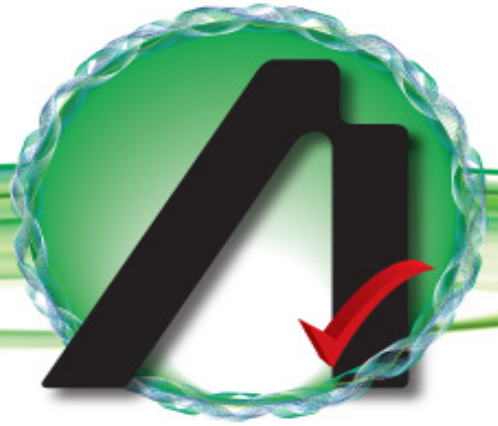
Jim Muzynoski

has completed the online course

Site Master Line Sweep Online Prep for In-Person Training

June 21, 2017

Course Grade: 85.95 %



Anritsu

YApGTmYMQk

This certificate proves completion of online coursework. It is NOT equivalent to Anritsu Certification.

Cut Along This Line

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

General Radiotelephone Operator License

ATTN: JAMES D MUZYNOSKI
MUZYNOSKI, JAMES D
5760 SE GAITGILL COURT
MILWAUKIE, OR 97267

FCC Registration Number (FRN): 0026458026

Special Conditions / Endorsements

NONE

Grant Date	Effective Date	Print Date	Expiration Date
05-03-2017	05-03-2017	05-03-2017	

File Number	Serial Number
0007759940	PG00054949

THIS LICENSE IS NOT TRANSFERABLE

(Licensee's Signature)

FCC 605-FRC - May 2007

Cut Along This Line

Licensee: This is your radio authorization in sizes suitable for your wallet and for framing. Carefully cut the documents along the lines as indicated and sign immediately upon receipt. They are not valid until signed.

The Commission suggests that the wallet size version be laminated (or another similar document protection process) after signing. The Commission has found under certain circumstances, laser print is subject to displacement.

Cut Along This Line

Cut Along This Line

Serial Number	Grant Date	Expiration Date
PG00054949	05-03-2017	

FCC Registration Number (FRN)
0026458026

ATTN: JAMES D MUZYNOSKI
MUZYNOSKI, JAMES D
5760 SE GAITGILL COURT
MILWAUKIE, OR 97267

General Radiotelephone Operator License

FCC 605-FRC - May 2007

Fold Here

File Number	Print Date	Effective Date
0007759940	05-03-2017	05-03-2017

THIS LICENSE IS NOT TRANSFERABLE
Special Conditions / Endorsements:
NONE

(Licensee's Signature)
FEDERAL COMMUNICATIONS COMMISSION

Cut Along This Line

Cut Along This Line

Conditions:
Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

Conditions:
Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 3

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 3.1 Statement of Work

Scope of Work:

To provide a custom designed solution to enhance the indoor Public Safety radio coverage with a distributed antenna system to improve radio frequency signal loss caused by materials inside a building.

A single donor antenna is mounted on the roof and pointed in the direction of the desired donor site which is tuned to the desired frequency (See Design Notes for city specific requirements). The frequencies are then carried through the 1/2" coaxial cable to the bi-directional amplifier (BDA). The Class A BDA filters and amplifies the desired frequencies through 1/2" coaxial cable and indoor antennas installed in strategic locations along with antennas to attain higher than the required -95 dBm over 95% of the coverage area.

Code:

International Fire Code Section 510

Applicable Provisions of NFPA 72, National Fire Alarm Signaling Code

Building Information:

Building Name: Fuller Station

Address: 9608 SE Fuller Road, Happy Valley, OR

Number of Floors: 6

Total Square Feet: 128,468

Design Notes:

New Construction

Delivered Audio Quality (DAQ):

This radio coverage system provides a minimum quality level of 3.4 (DAQ "3.4") on each floor of the building.

Supported Frequencies and Channels

This Design Supports:

806-824 MHz and 851-869 MHz

C800 Frequencies as required

DAS System has 20 dB of isolation

Cable and Component Testing

Perform and record a sweep test of every cable section using an FDR sweep, by utilizing a 50 ohm load terminator on the end of each cable.

Test all sections of cable with 2 connectors at common frequency bands for application (765-855 MHz Etc. to cover 700/800 frequencies)

On test results no return loss at any connector along the cable segment shall be greater than 20 db. If more a cable check needs to be done on the run for bends or tears if present replace bad section and re -test cable.

General Notes and Procedures

1. Plans are not scaled and for outline only, unless otherwise noted.

2. Before submission of pre-construction drawings, the site will be visited and confirmed that the work will be completed as presented before construction begins.

3. All equipment and materials will be installed in accordance with the manufacturer recommendations unless indicated otherwise or where dictated local codes or regulations are needed.

4. All work performed and materials installed shall be in accordance with all applicable codes, regulations and city ordinances, mechanical and electrical systems will be installed in accordance with all city and state municipal and utility company specifications.

5. The project manager will supervise and direct the work with great attention to detail. Also be solely responsible for all construction methods, techniques and procedures and for coordinating all portions of the project with the site and landlord's authorized contact.

6. All construction shall be in accordance with the City of Happy Valley municipal code and all adopted state codes including addendums specifically set forth by the City of Happy Valley.

7. Details are intended to show final result of design. Minor modifications may be required as project is installed.

8. As a general rule, the project manager will keep the area clean, hazard free and dispose of garbage properly.

9. Penetrations of roof membranes shall be patched/flashed and made watertight to protect the property owner.

10. All circuits to be used to power the DAS shall be approved by the electrical engineer for 120V power for the DAS and provide #2 bare copper ground at the head-end equipment location.

11. All wall mounted DAS equipment will be securely mounted on 3/4" backboard.

12. Attach J hooks to 1/2" cabling at 4' minimum sections when not installed in conduit or in supported raceways.

13. Bend radius of 1/2" coax has a minimum of 10"

14. Provide fire stopped pathways between floors for vertical risers from equipment IDF closets to antenna raceway.

15. Any or all sleeves or penetrations through a fire rated wall will be sealed with Hilti firestop assembly or equivalent.

16. Antenna placement and cable routing is a design schematic only. The actual antenna install location is to be within 10' of design drawing.

17. Secondary backup capable of 24 hour runtime per City of Happy Valley Fire Code.

18. It is the installers responsibility to follow and abide by the code and policy requirements set forth by the City of Happy Valley fire codes.

19. The BDA is capable of providing a minimum of 12 channels in the 700/800 MHz band.

20. Frequencies used by City of Happy Valley may change as a result of FCC order, or other operational requirements of City of Happy Valley. In the event of such frequency change and upon notification by the municipality, the building owner shall modify or expand the DAS at their own expense.

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 4

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 4.1 Acceptance Test Plan

ACCEPTANCE TEST PLAN

AMPLIFIED WIRELESS SOLUTIONS

"Bringing amplification of the outside world into your everyday environment"

1. ACCEPTANCE TEST PLAN

1.1. Equipment Setup

This section I intended to provide a guideline for the setup of the test equipment. This setup may change based on the make and model number being used to perform tests. When conflicts arise between this document and the manufacturers recommended testing procedures, the manufacturers requirements shall be utilized.

- Spectrum analyzer with unity gain (0dB, frequency specific) dipole receive antenna shall be used for acceptance testing.
- The test equipment shall have been calibrated within 1 year of the test date.
- Test equipment shall be allowed to stabilize in test environment prior to calibration for a minimum of thirty minutes. Any change in temperature can void the calibration.
- Signal generator must be connected to the Head end downlink (TX) interface via tested and approved coaxial cabling and connectors. The control channel from the base station can be used as a signal source as well.
- Verify that all remote units for the area under test are ON.

1.2. Acceptance Test Procedure

Acceptance test procedure. Where an emergency responder radio coverage system is required, and upon completion of installation, the building owner shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 90 percent. The test procedure shall be conducted as follows:

- Each floor of the building shall be divided into a grid of 20 approximately equal test areas.
- The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system.
- Failure of not more than two nonadjacent test areas shall not result in failure of the test.
- In the event that three of the test areas fail the test, to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than four nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 90-percent coverage requirement.
- A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered failure of that test area. Additional test locations shall not be permitted.

- The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building owner so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building owner shall be required to rerun the acceptance test to reestablish the gain values.
- As part of the installation a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and subsequent annual inspections.

1.3. Documentation

This section I intended to provide a guideline for the testing documentation. The guidelines listed below may be changed to meet specific requirements of the project or the Authority Having Jurisdiction (AHJ).

- Test frequency and power must be recorded corresponding to the date and time of each site walk measurement.
- Test results shall be saved with frequency span +/- 20 MHz relative to the center/measured frequency.
- Each floor of the building shall be divided into a grid of 20 approximately equal test areas. Each grid will be labelled on the prints numbered 01-20
- Test results shall be saved in native format with the file name indicating the floor, grid number tested and an alphanumeric identifier if multiple tests are made in the same grid:
    - Example: The second test in Grid 15 on Floor 3 shall be labeled, FL3-15-B. FL3 identifies it as the 3rd floor, 15 identifies Grid 15 and B identifies it as the second test.
- Upon completion of testing all test results and prints shall be saved and submitted in PDF format.

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 5

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 5.1 Shop Drawings

Emergency Responder Radio Coverage System (ERRCS) for Fuller Station

9608 SE Fuller Road
Happy Valley, OR 97086

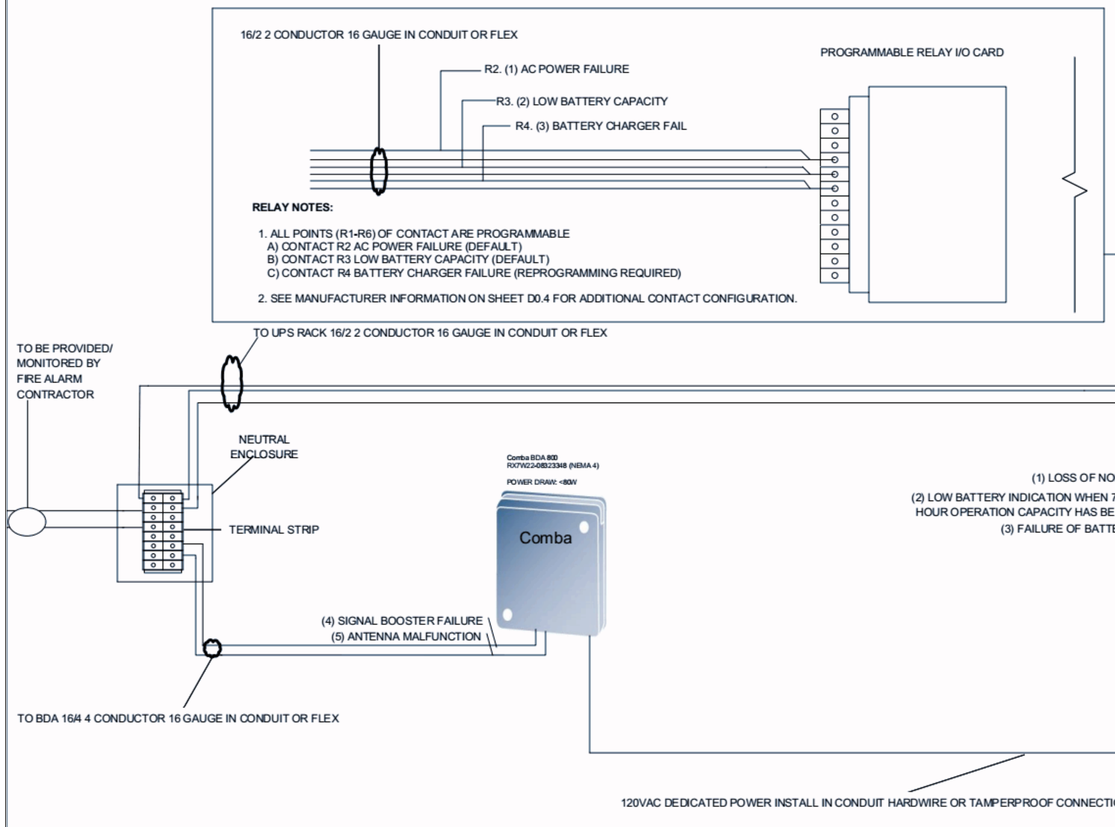
Revision history

Project name
Fuller Station

Designer name
Aaron Baxter

Plan name
Cover Sheet

6/1/2021



NUMBERED CONTACTS
(1) AC POWER FAILURE
(2) LOW BATTERY CAPACITY
(3) BATTERY CHARGER FAILURE
(4) SIGNAL BOOSTER FAIL
(5) ANTENNA MALFUNCTION

Comba BBU Product Submittals

Mechanical		
Dimensions, H x W x D	in(mm)	29.4 x 23.8 x 12.0 (747 x 605 x 305)
Weight (without bracket)	lb(kg)	44.1(20) (not include batteries)
Knockouts		7/8-inch hole for 1/2-inch conduit x 8
Operating Temperature	°F (°C)	-27 to 131 (-33 to 55)
Operating Humidity		≤ 95%
Enclosure Environmental Class		UL50E Type 4
Electrical and Battery		
Power Supply (Input)	VAC	100-240/47-63Hz
Power Supply (Output)	VDC	-48V
Power Supply (Maximum Charging Current)	A	10
Heat Dissipation	BTU/hr	143.3
Battery Amp/Hour, Quantity		55AH (Neata NT12-55AH) x 4
Battery Weight	lb(kg)	36.2(16.4)
Total Battery Electrolyte	Pounds	29.6
Total Battery Content	Gallons	3.17932
Battery Backup Capacity		min. 24 Hour for 100W or min. 12 Hour for 200W
Alarms		
Dry Contact Outputs		7
External Alarms Inputs		4
Maximum Input for Dry Contact Port		24VDC, 3A

DETAIL NOTES:

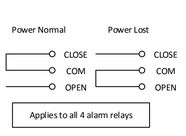
1. FIRE ALARM CONTRACTOR TO OBTAIN A SEPARATE FIRE PERMIT FOR THE INTERCONNECTION OF ERRCS AND FIRE ALARM

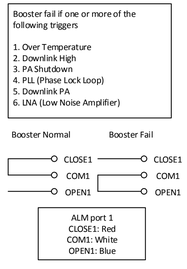
2. ZONE ID'S OF ERRCS MONITORING
   A) AC POWER FAILURE – NORMALLY OPEN
   B) LOW BATTERY CAPACITY – NORMALLY OPEN
   C) BATTERY CHARGER FAILURE – NORMALLY OPEN
   D) SIGNAL BOOSTER FAIL – NORMALLY CLOSED
   E) ANTENNA MALFUNCTION – NORMALLY CLOSED

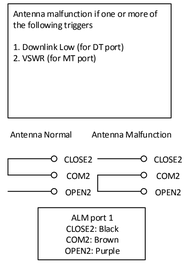
BDA / BATTERY BACKUP / RELAY WIRING DETAIL

Baseline Power Draw: 80 Watts
A buffer of 20%: 100 Watts
Estimated Runtime: 1440.00 Minutes

ELECTROLYTE CAPACITY CALCULATION:
ELECTROLYTES PER BATTERY: 1.575 Gal
TOTAL ELECTROLYTE (4 BATTERIES): 6.30 Gal







Revision history

Project name
Fuller Station

Designer name
Aaron Baxter

Plan name
Battery Backup Runtime Calculations

6/1/2021

Scope of Work:

To provide a custom designed solution to enhance the indoor Public Safety radio coverage with a distributed antenna system to improve radio frequency signal loss caused by materials inside a building.

A single donor antenna is mounted on the roof and pointed in the direction of the desired donor site which is tuned to the desired frequency (See Design Notes for city specific requirements). The frequencies are then carried through the 1/2" coaxial cable to the bi-directional amplifier (BDA). The Class A BDA filters and amplifies the desired frequencies through 1/2" coaxial cable and indoor antennas installed in strategic locations along with antennas to attain higher than the required -95 dBm over 95% of the coverage area.

Code:

International Fire Code Section 510

Applicable Provisions of NFPA 72, National Fire Alarm Signaling Code

Building Information:

Building Name: Fuller Station

Address: 9608 SE Fuller Road, Happy Valley, OR

Number of Floors: 6

Total Square Feet: 128,468

Design Notes:

New Construction

Delivered Audio Quality (DAQ):

This radio coverage system provides a minimum quality level of 3.4 (DAQ "3.4") on each floor of the building.

Supported Frequencies and Channels

This Design Supports:

806-824 MHz and 851-869 MHz

C800 Frequencies as required

DAS System has 20 dB of isolation

Cable and Component Testing

Perform and record a sweep test of every cable section using an FDR sweep, by utilizing a 50 ohm load terminator on the end of each cable.

Test all sections of cable with 2 connectors at common frequency bands for application (765-855 MHz Etc. to cover 700/800 frequencies)

On test results no return loss at any connector along the cable segment shall be greater than 20 db. If more a cable check needs to be done on the run for bends or tears if present replace bad section and re -test cable.

General Notes and Procedures

1. Plans are not scaled and for outline only, unless otherwise noted.

2. Before submission of pre-construction drawings, the site will be visited and confirmed that the work will be completed as presented before construction begins.

3. All equipment and materials will be installed in accordance with the manufacturer recommendations unless indicated otherwise or where dictated local codes or regulations are needed.

4. All work performed and materials installed shall be in accordance with all applicable codes, regulations and city ordinances, mechanical and electrical systems will be installed in accordance with all city and state municipal and utility company specifications.

5. The project manager will supervise and direct the work with great attention to detail. Also be solely responsible for all construction methods, techniques and procedures and for coordinating all portions of the project with the site and landlord's authorized contact.

6. All construction shall be in accordance with the City of Happy Valley municipal code and all adopted state codes including addendums specifically set forth by the City of Happy Valley.

7. Details are intended to show final result of design. Minor modifications may be required as project is installed.

8. As a general rule, the project manager will keep the area clean, hazard free and dispose of garbage properly.

9. Penetrations of roof membranes shall be patched/flashed and made watertight to protect the property owner.

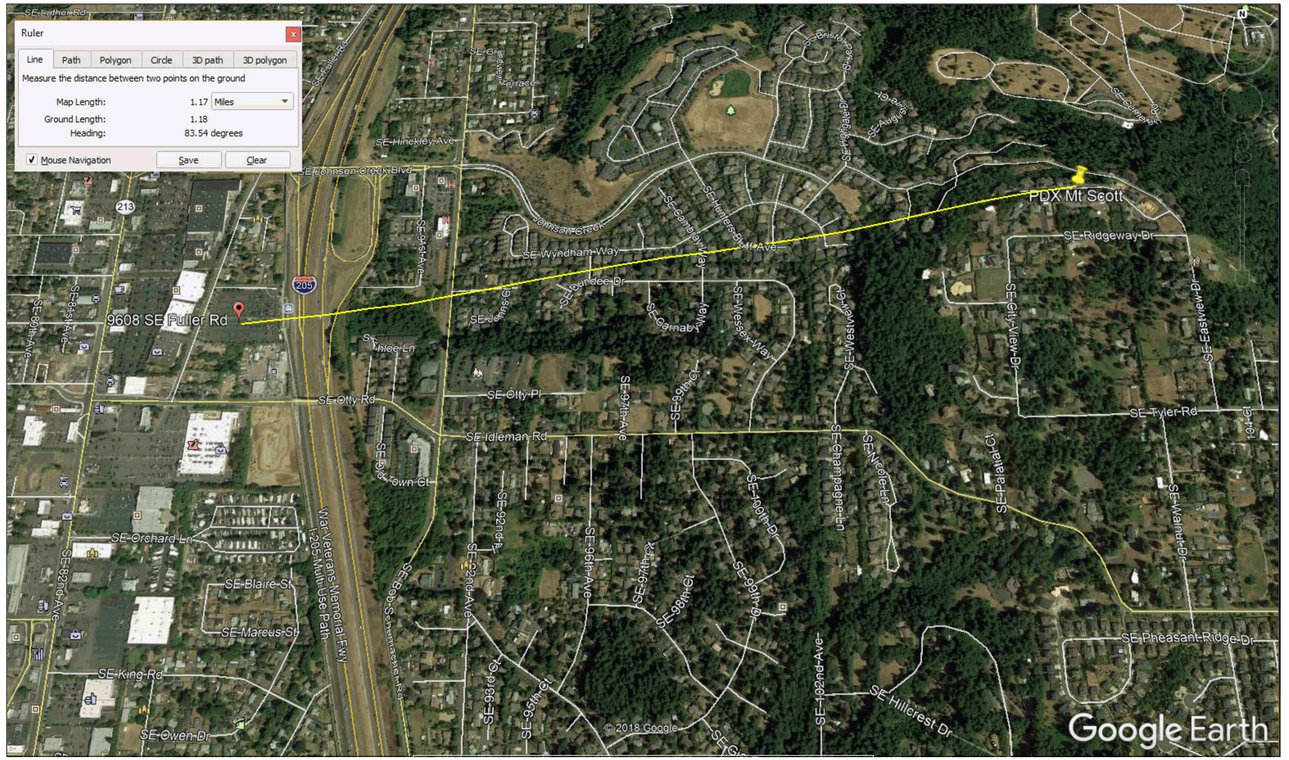
10. All circuits to be used to power the DAS shall be approved by the electrical engineer for 120V power for the DAS and provide #2 bare copper ground at the head-end equipment location.

11. All wall mounted DAS equipment will be securely mounted on 3/4" backboard.

12. Attach J hooks to 1/2" cabling at 4' minimum sections when not installed in conduit or in supported raceways.

13. Bend radius of 1/2" coax has a minimum of 10"

DONOR SITE INFORMATION



700 & 800 MHz (PUBLIC SAFETY) DONOR SITE INFORMATION

14. Provide fire stopped pathways between floors for vertical risers from equipment IDF closets to antenna raceway.

15. Any or all sleeves or penetrations through a fire rated wall will be sealed with Hilti firestop assembly or equivalent.

16. Antenna placement and cable routing is a design schematic only. The actual antenna install location is to be within 10' of design drawing.

17. Secondary backup capable of 24 hour runtime per City of Happy Valley Fire Code.

18. It is the installers responsibility to follow and abide by the code and policy requirements set forth by the City of Happy Valley fire codes.

19. The BDA is capable of providing a minimum of 12 channels in the 700/800 MHz band.

20. Frequencies used by City of Happy Valley may change as a result of FCC order, or other operational requirements of City of Happy Valley. In the event of such frequency change and upon notification by the municipality, the building owner shall modify or expand the DAS at their own expense.

MASTER CROSS REFERENCE LIST

	WCCCA Central Simulcast Site 1 10.1.1.X			C800 Central Simulcast Site 2 10.1.2.X			C800 East Simulcast Site 3 10.1.3.X			WCCCA West Simulcast Site 4 10.1.4.X			Mountain Top IR Site 5 10.1.5.X			Goat Mtn IR Site 7 10.1.7.X			Goat Mtn P25 Site 8 10.1.8.X	
CH	Repeater Output	Repeater Input	CH	Repeater Output	Repeater Input	CH	Repeater Output	Repeater Input	CH	Repeater Output	Repeater Input	CH	Repeater Output	Repeater Input	CH	Repeater Output	Repeater Input	CH	Repeater Output	Repeater Input
X			X			X			X			X			X			X		
1	860.7375	815.7375	1	853.7625	808.7625	1	853.5125	808.5125	1	853.8750	808.8750	1	853.9250	808.9250	1	854.4125	809.4125	1	854.4875	809.4875
2	860.2375	815.2375	2	853.2625	808.2625	2	852.9875	807.9875	2	853.4125	808.4125	2	853.2125	808.2125	2	854.2125	809.2125	2	854.2625	809.2625
3	859.7375	814.7375	3	852.8625	807.8625	3	852.8375	807.8375	3	852.6250	807.6250	3	852.9375	807.9375	3	854.0125	809.0125	3	854.0375	809.0375
4	859.2375	814.2375	4	852.4375	807.4375	4	852.7250	807.7250	4	852.3375	807.3375	4	852.4125	807.4125	4	852.0500	807.0500	4	852.2625	807.2625
5	858.2375	813.2375	5	852.1875	807.1875	5	851.9375	806.9375	5	851.8750	806.8750	5	852.7000	807.7000	5	851.1000	806.1000			
6	857.2375	812.2375	6	852.1625	807.1625	6	853.0500	808.0500	6	852.8875	807.8875									
7	856.2375	811.2375	7	851.8500	806.8500	7	853.7375	808.7375												
8	855.9625	810.9625	8	851.4875	806.4875															
9	855.2375	810.2375	9	851.3000	806.3000															
10	854.9875	809.9875	10	851.2375	806.2375															
11	853.7875	808.7875																		
12	853.5375	808.5375											SIMPLEX 1	853.4375						
13	853.4875	808.4875											SIMPLEX 2	851.0375						
14	853.2875	808.2875											SIMPLEX 3	851.9500						
15	853.2375	808.2375											SIMPLEX 4	851.1750						
16	852.9625	807.9625											MAYDAY	853.3875						

Revision history

Project name
Fuller Station

Designer name
Aaron Baxter

Plan name
Donor Site Information

6/1/2021

ROOF

Cables legend
- ICA12-50JPL
- LCF12-50J
- RG-142 NM-NM-3'
- #6 Ground Wire

800 Public Safety
800 MHz - SMR
Digital
Sector 1
Nb. of ch.: 16

YAGI +11
ANT R.1

CBL1
360.68 ft

(2 hour rated)
chase with 2" EMT
conduit to the Roof

F6

This Floor Not Covered

F5

CBL2
70.49 ft
ANT 5.4
JMP3
ANT 5.3
JMP2
ANT 5.2

Comba 8 dB
SPT1
CBL3
22.63 ft
Comba 7 dB
SPT2
CBL5
88.15 ft
Comba 5 dB
SPT3
CBL4
81.50 ft
ANT 5.1

F4

CBL23 51.31 ft

This Floor Not Covered

F3

SPT15 Comba 8 dB
CBL22
16.06 ft
Comba 8 dB
SPT4
CBL6
70.49 ft
ANT 3.4
CBL7
22.63 ft
Comba 8 dB
SPT5
JMP5
ANT 3.3
CBL9
88.40 ft
Comba 5 dB
SPT6
JMP4
ANT 3.2
CBL8
81.50 ft
ANT 3.1

F2

CBL21 19.46 ft

SPT14 Comba 8 dB
CBL20
14.88 ft
Comba 8 dB
SPT7
CBL10
70.48 ft
ANT 2.4
CBL11
22.63 ft
Comba 7 dB
SPT8
JMP7
ANT 2.3
CBL13
88.14 ft
Comba 5 dB
SPT9
JMP6
ANT 2.2
CBL12
81.49 ft
ANT 2.1

F1

CBL19 23.49 ft

MSC1

(2 Hour Rated) Room with
FACP connections for Alarming

JMP1

800

RPT1

SPT13 Comba 8 dB
CBL18
18.64 ft
Comba 5 dB
SPT12
JMP9
ANT 1.3
CBL16
21.70 ft
Comba 5 dB
SPT10
CBL17
93.12 ft
ANT 1.4
CBL15
66.45 ft
Comba 5 dB
SPT11
JMP8
ANT 1.2
CBL14
82.07 ft
ANT 1.1

JMP10

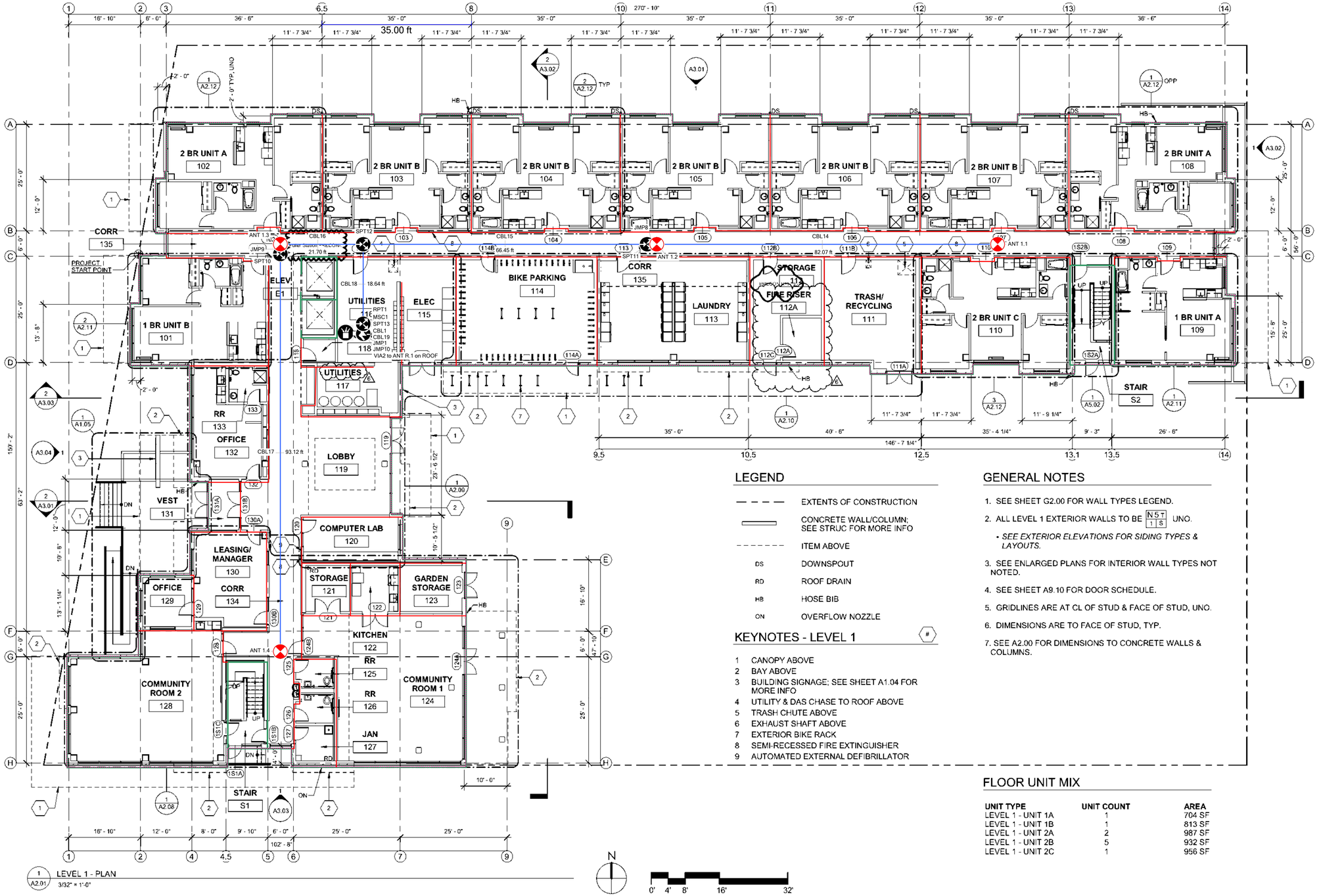
Revision history

Project name
Fuller Station

Designer name
Aaron Baxter

Plan name
Design plan

6/1/2021



LEVEL 1 - PLAN
3/32" = 1'-0"

LEGEND

- - - -	EXTENTS OF CONSTRUCTION
═══	CONCRETE WALL/COLUMN; SEE STRUC FOR MORE INFO
- - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN
HB	HOSE BIB
ON	OVERFLOW NOZZLE

KEYNOTES - LEVEL 1

1 CANOPY ABOVE
2 BAY ABOVE
3 BUILDING SIGNAGE; SEE SHEET A1.04 FOR MORE INFO
4 UTILITY & DAS CHASE TO ROOF ABOVE
5 TRASH CHUTE ABOVE
6 EXHAUST SHAFT ABOVE
7 EXTERIOR BIKE RACK
8 SEMI-RECESSED FIRE EXTINGUISHER
9 AUTOMATED EXTERNAL DEFIBRILLATOR

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 1 EXTERIOR WALLS TO BE N5T 1S UNO.
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.
7. SEE A2.00 FOR DIMENSIONS TO CONCRETE WALLS & COLUMNS.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
LEVEL 1 - UNIT 1A	1	704 SF
LEVEL 1 - UNIT 1B	1	813 SF
LEVEL 1 - UNIT 2A	2	987 SF
LEVEL 1 - UNIT 2B	5	932 SF
LEVEL 1 - UNIT 2C	1	956 SF

Pictograms legend: Antenna, Miscellaneous, Repeater, Riser, Splitter, Via

Cables legend: ICA12-50JPL, LCF12-50J, RG-142 NM-NM-3'

FULLER STATION HOUSING

FOR CONSTRUCTION

9730 SE Fuller Road
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fx 503 273 8691
architecture, interiors & plc

REGISTERED ARCHITECT · WILLIAM S. BAILEY · PORTLAND, OR · STATE OF OREGON

PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

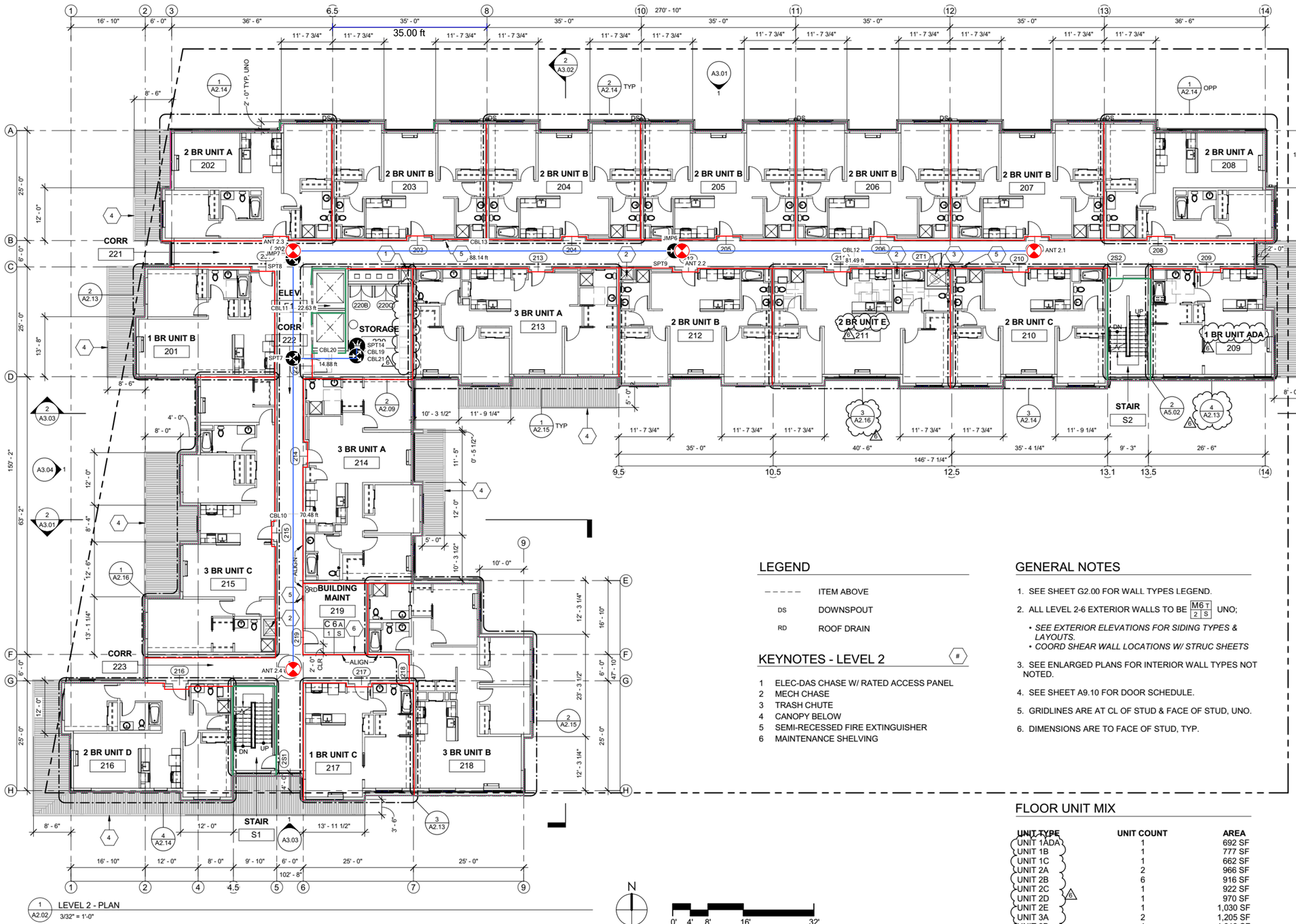
REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 1 - PLAN

A2.01

Revision history
Project name: Fuller Station
Designer name: Aaron Baxter
Plan name: F1
6/1/2021



1 LEVEL 2 - PLAN
A2.02
3/32" = 1'-0"

Pictograms legend
- Antenna
- Riser
- Splitter

Cables legend
- ICA12-50JPL
- RG-142 NM-NM-3'

LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 2

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 CANOPY BELOW
5 SEMI-RECESSED FIRE EXTINGUISHER
6 MAINTENANCE SHELVING

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1ADA	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D (6)	1	970 SF
UNIT 2E	1	1,030 SF
UNIT 3A	2	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

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PORTLAND, OR
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PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 2 - PLAN

A2.02

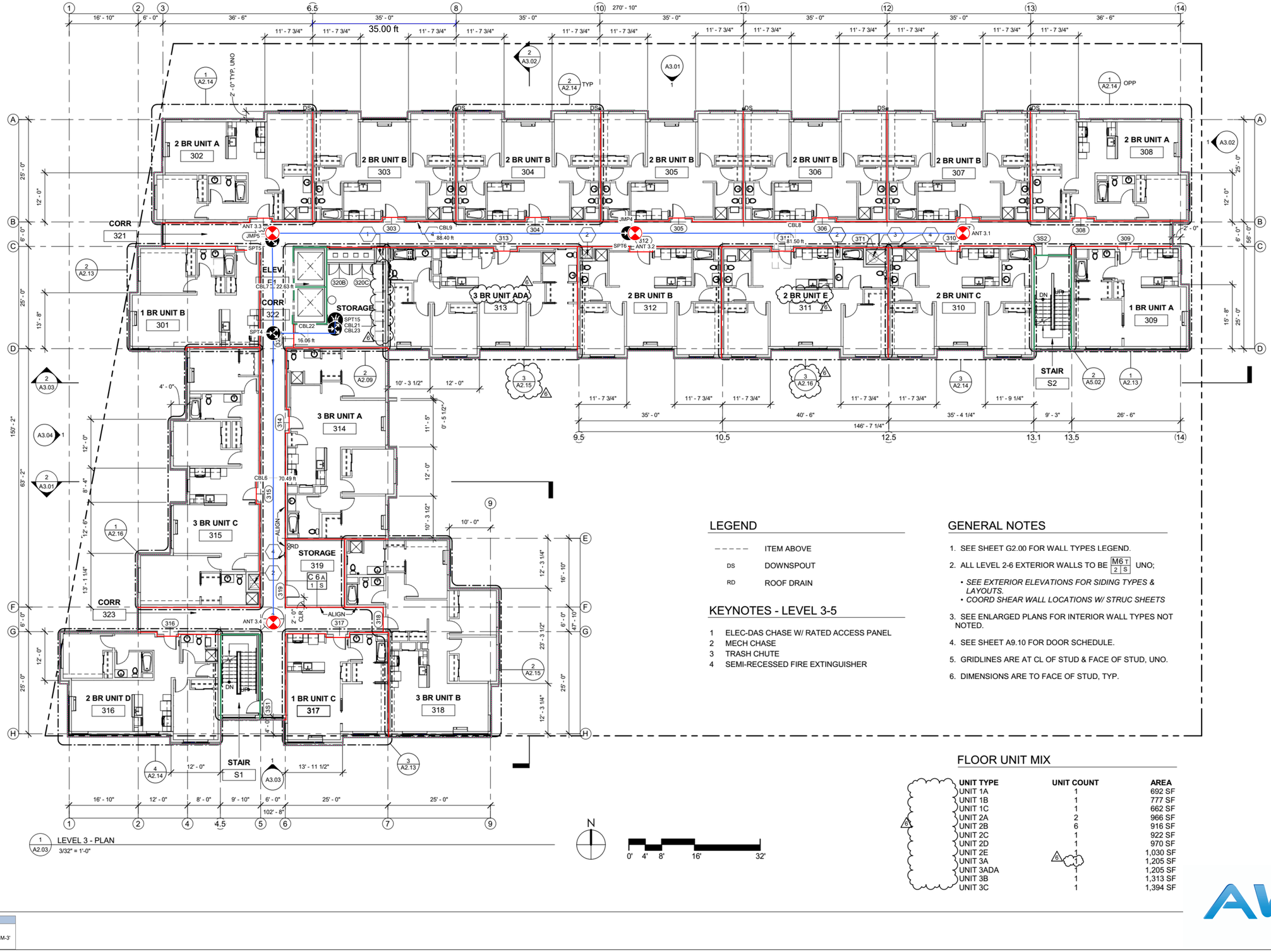
Revision history

Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: F2

6/1/2021



LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 3-5

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 SEMI-RECESSED FIRE EXTINGUISHER

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T / 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1A	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D	1	970 SF
UNIT 2E	1	1,030 SF
UNIT 3A	1	1,205 SF
UNIT 3ADA	1	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

Pictograms legend: Antenna, Riser, Splitter

Cables legend: ICA12-50JPL, RG-142 NM-NM-3'

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SHEET ISSUE DATE: DEC 4, 2019

REVISIONS:

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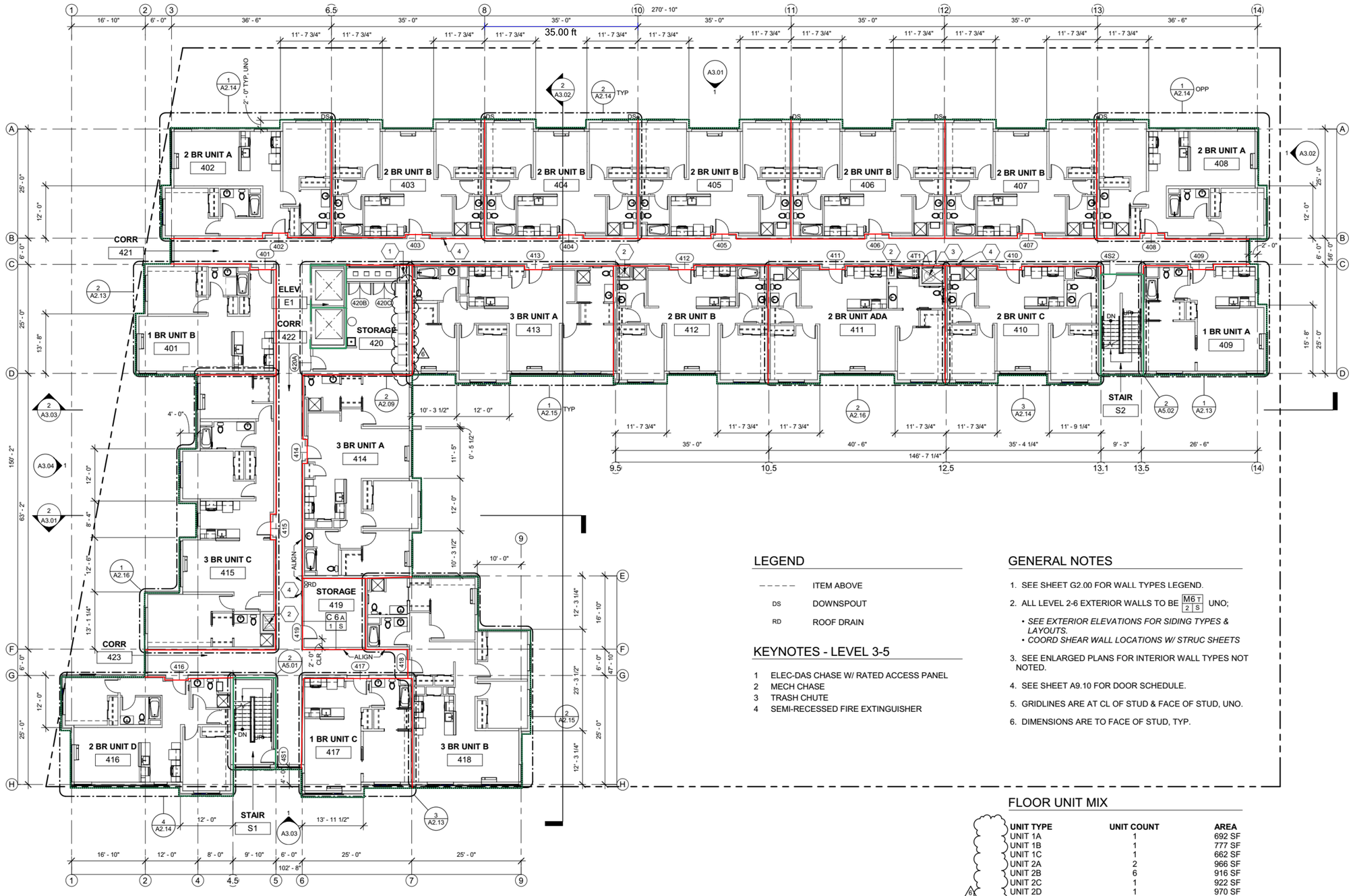
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 3 - PLAN

A2.03

Revision history
Project name: Fuller Station
Designer name: Aaron Baxter
Plan name: F3
6/1/2021

This Floor Not Covered



1 A2.04 LEVEL 4 - PLAN
3/32" = 1'-0"

N

0' 4' 8' 16' 32'

LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 3-5

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 SEMI-RECESSED FIRE EXTINGUISHER

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T / 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1A	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D	1	970 SF
UNIT 2ADA	1	1,030 SF
UNIT 3A	2	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

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FULLER STATION HOUSING

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PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 4 - PLAN

A2.04

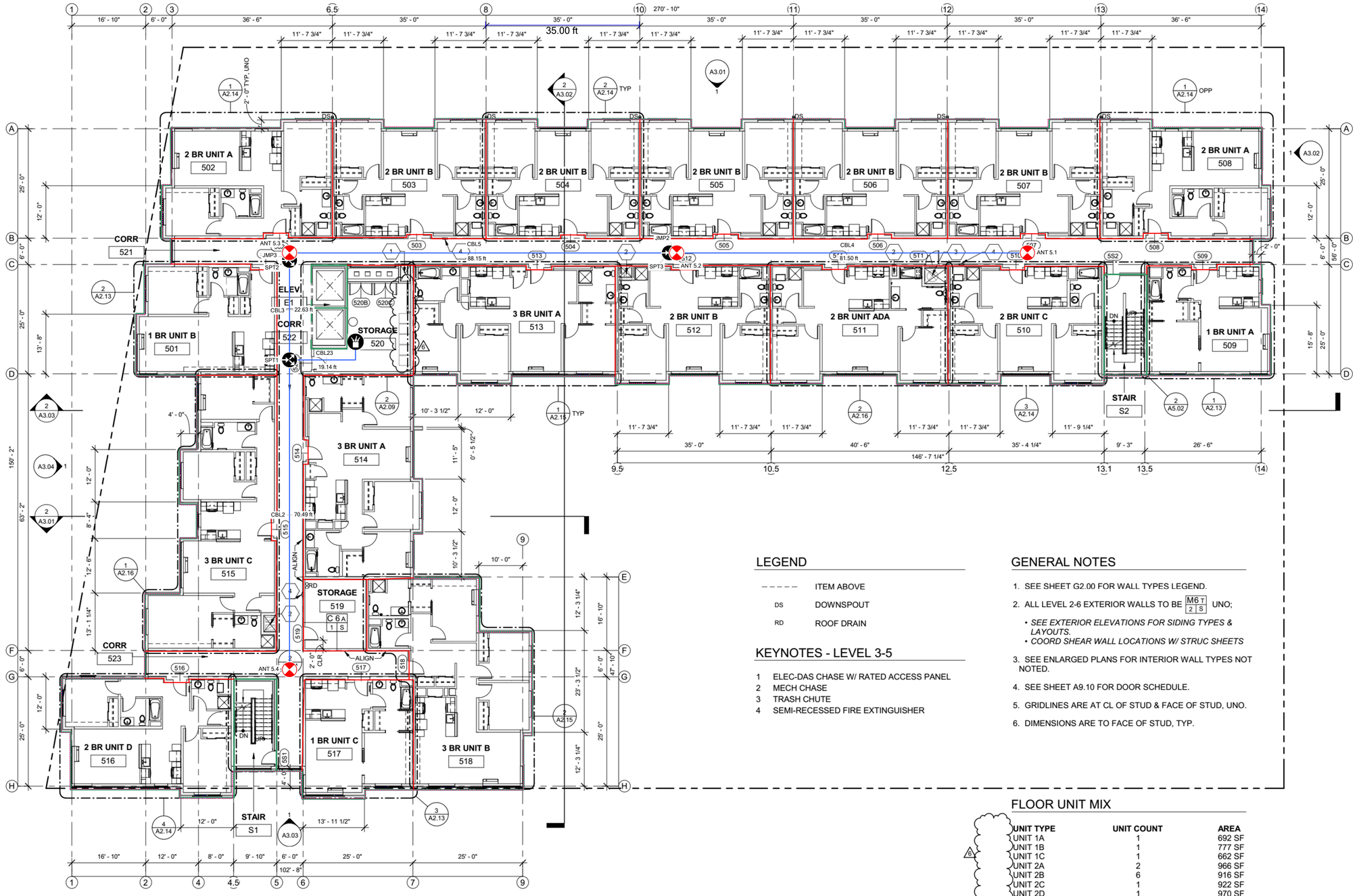
Revision history

Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: F4

6/1/2021



LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 3-5

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 SEMI-RECESSED FIRE EXTINGUISHER

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1A	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D	1	970 SF
UNIT 2ADA	1	1,030 SF
UNIT 3A	2	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

Pictograms legend: Antenna, Riser, Splitter

Cables legend: ICA12-50JPL, RG-142 NM-NM-3'

1 A2.05 LEVEL 5 - PLAN
3/32" = 1'-0"

0' 4' 8' 16' 32'

AWS
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FULLER STATION HOUSING

FOR CONSTRUCTION

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PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 5 - PLAN

A2.05

Revision history

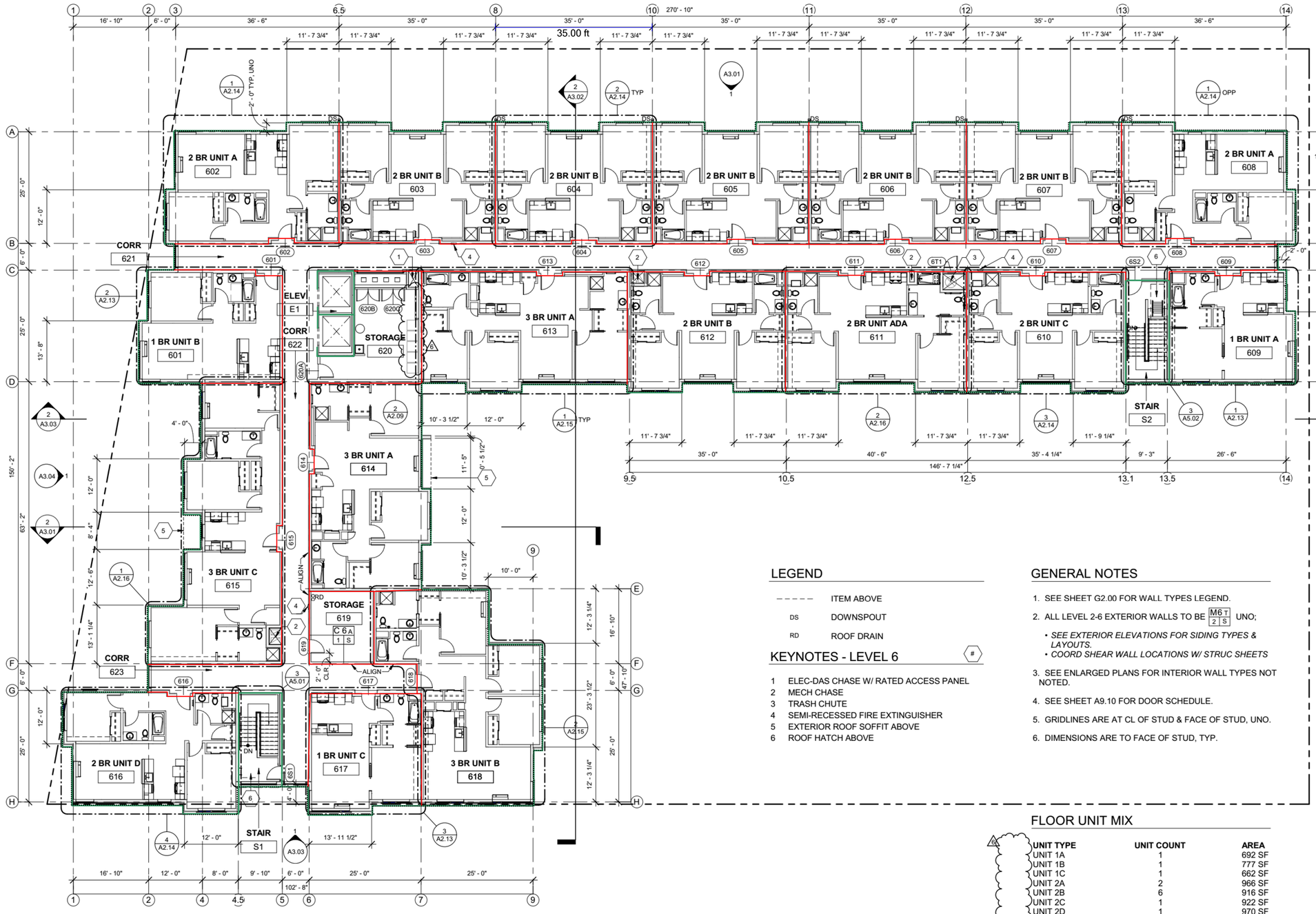
Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: F5

6/1/2021

This Floor Not Covered



1 A2.06 LEVEL 6 - PLAN
3/32" = 1'-0"

N

0' 4' 8' 16' 32'

LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 6

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 SEMI-RECESSED FIRE EXTINGUISHER
5 EXTERIOR ROOF SOFFIT ABOVE
6 ROOF HATCH ABOVE

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

6

UNIT TYPE	UNIT COUNT	AREA
UNIT 1A	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D	1	970 SF
UNIT 2ADA	1	1,030 SF
UNIT 3A	2	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

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FULLER STATION HOUSING

FOR CONSTRUCTION

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REGISTERED ARCHITECT WILLIAM S. BAILEY PORTLAND, OR STATE OF OREGON

PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 6 - PLAN

A2.06

AWS

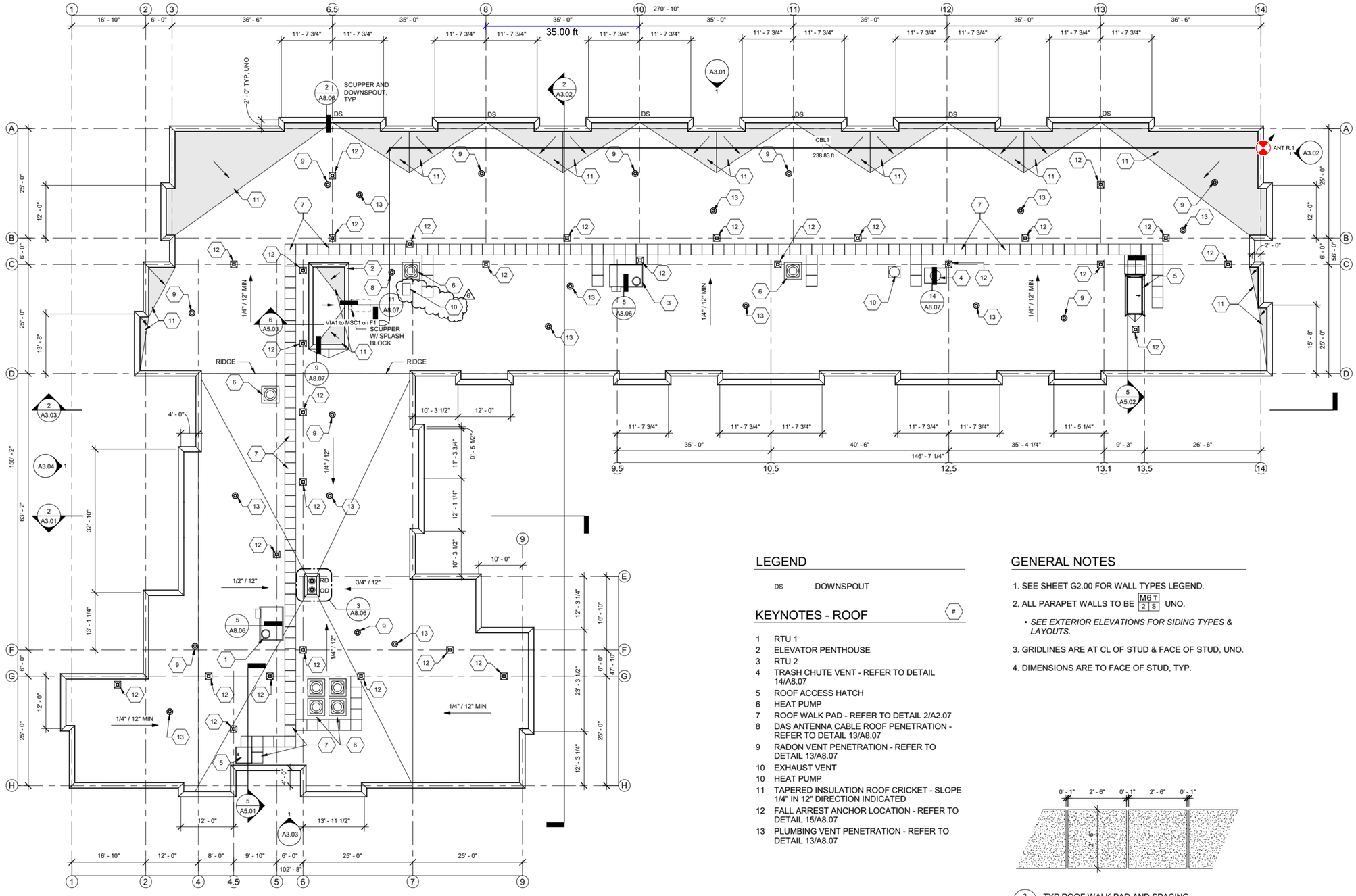
Revision history

Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: F6

6/1/2021



LEGEND

DS DOWNSPOUT

KEYNOTES - ROOF

#	
1	RTU 1
2	ELEVATOR PENTHOUSE
3	RTU 2
4	TRASH CHUTE VENT - REFER TO DETAIL 14/A8.07
5	ROOF ACCESS HATCH
6	HEAT PUMP
7	ROOF WALK PAD - REFER TO DETAIL 2/A2.07
8	DAS ANTENNA CABLE ROOF PENETRATION - REFER TO DETAIL 13/A8.07
9	RADON VENT PENETRATION - REFER TO DETAIL 13/A8.07
10	EXHAUST VENT
10	HEAT PUMP
11	TAPERED INSULATION ROOF CRICKET - SLOPE 1/4" IN 12" DIRECTION INDICATED
12	FALL ARREST ANCHOR LOCATION - REFER TO DETAIL 15/A8.07
13	PLUMBING VENT PENETRATION - REFER TO DETAIL 13/A8.07

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL PARAPET WALLS TO BE M6 T / 2 S UNO.
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
3. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
4. DIMENSIONS ARE TO FACE OF STUD, TYP.

2 A2.07 TYP ROOF WALK PAD AND SPACING 1/2" = 1'-0"

Pictograms legend
- Antenna
- Offair
- Via

Cables legend
- LCF12-50J

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Portland OR 97205
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REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

ROOF - PLAN

A2.07

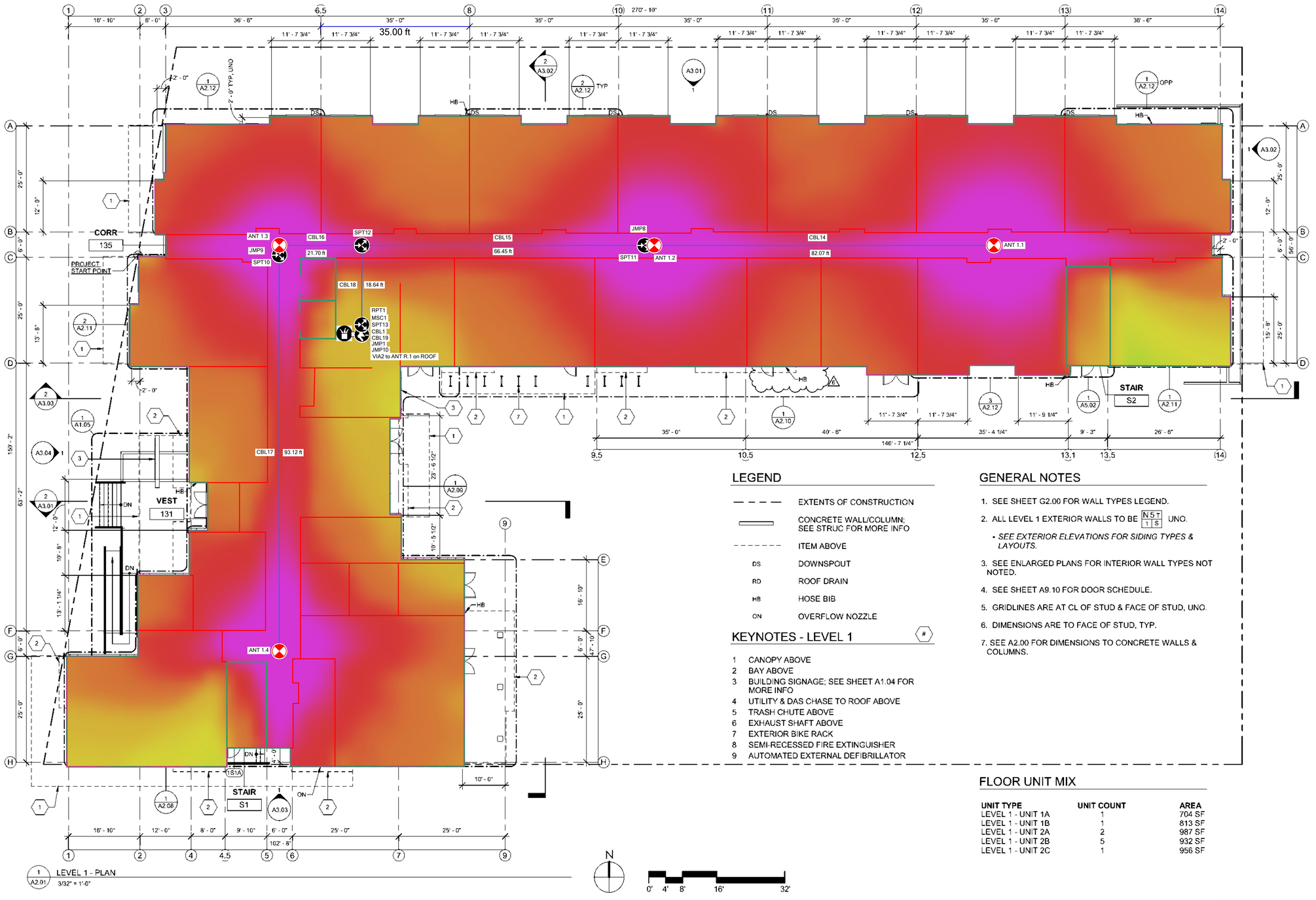
Revision history

Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: ROOF

6/1/2021



1 A2.01 LEVEL 1 - PLAN
3/32" = 1'-0"

N
0' 4' 8' 16' 32'

LEGEND

- - - -	EXTENTS OF CONSTRUCTION
═══	CONCRETE WALL/COLUMN; SEE STRUC FOR MORE INFO
- - - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN
HB	HOSE BIB
ON	OVERFLOW NOZZLE

KEYNOTES - LEVEL 1

1 CANOPY ABOVE
2 BAY ABOVE
3 BUILDING SIGNAGE; SEE SHEET A1.04 FOR MORE INFO
4 UTILITY & DAS CHASE TO ROOF ABOVE
5 TRASH CHUTE ABOVE
6 EXHAUST SHAFT ABOVE
7 EXTERIOR BIKE RACK
8 SEMI-RECESSED FIRE EXTINGUISHER
9 AUTOMATED EXTERNAL DEFIBRILLATOR

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 1 EXTERIOR WALLS TO BE N S T / 1 S UNO.
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.
7. SEE A2.00 FOR DIMENSIONS TO CONCRETE WALLS & COLUMNS.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
LEVEL 1 - UNIT 1A	1	704 SF
LEVEL 1 - UNIT 1B	1	813 SF
LEVEL 1 - UNIT 2A	2	987 SF
LEVEL 1 - UNIT 2B	5	932 SF
LEVEL 1 - UNIT 2C	1	956 SF

Pictograms legend
- Antenna
- Miscellaneous
- Repeater
- Riser
- Splitter
- Via

Cables legend
- ICA12-50JPL
- LCF12-50J
- RG-142 NM-NM-3'

Indoor prediction legend
Power [dBm]
- >-40.00 (7.1%)
- >-50.00 (43.2%)
- >-55.00 (77.6%)
- >-60.00 (93.8%)
- >-65.00 (98.9%)
- >-75.00 (100.0%)
- >-80.00 (100.0%)
- >-85.00 (100.0%)
- >-95.00 (100.0%)
- >-100.00 (100.0%)

800 Public Safety - 800 MHz - SMR - Digital
Min -95.00 dBm: 100.0 % >= 100.0 %

FULLER STATION HOUSING

FOR CONSTRUCTION

9730 SE Fuller Road
Happy Valley, Oregon, 97086

REGISTERED ARCHITECT · WILLIAM S. BAKER · PORTLAND, OR · STATE OF OREGON

PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

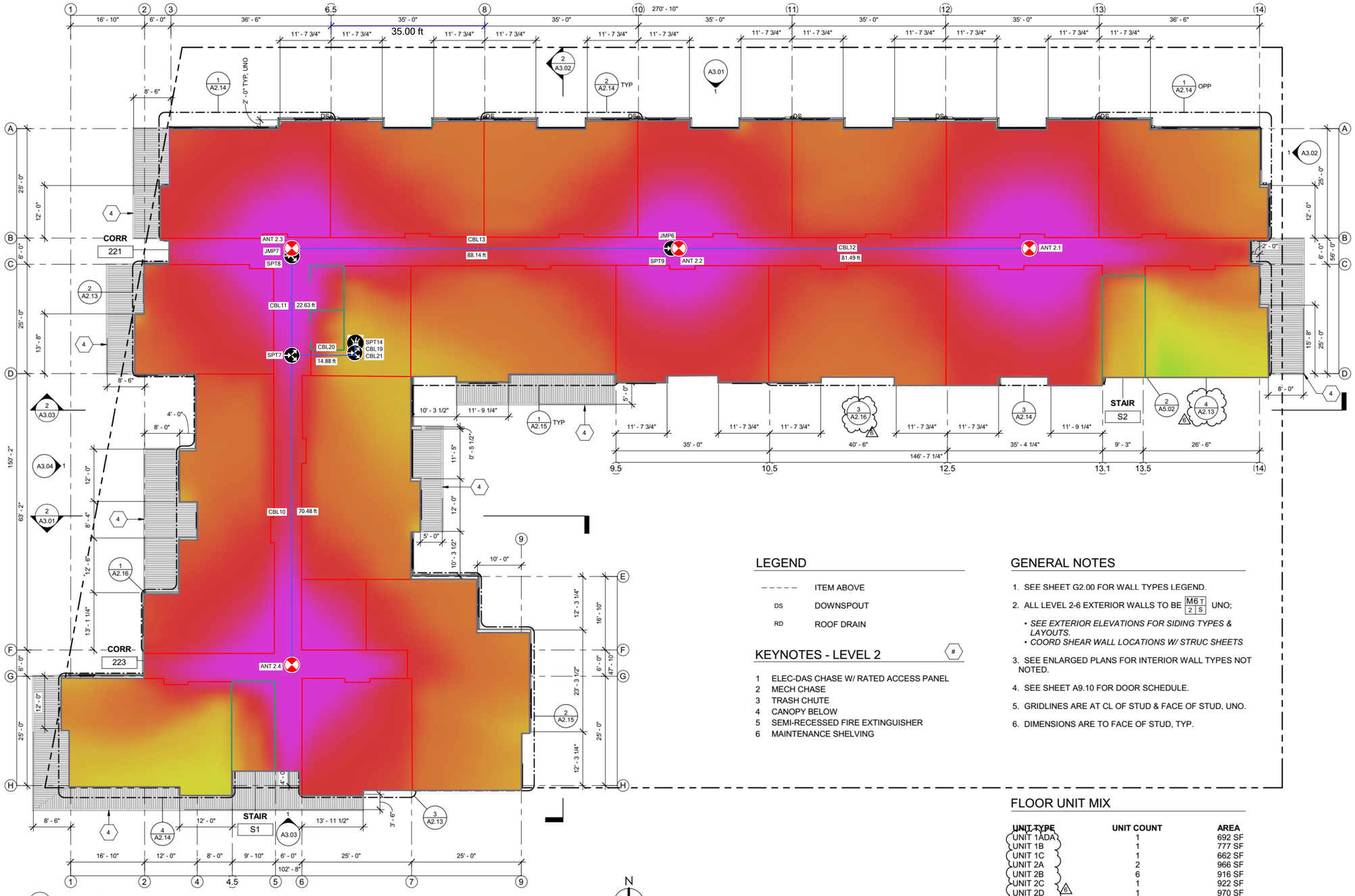
REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 1 - PLAN

A2.01

Revision history
Project name: Fuller Station
Designer name: Aaron Baxter
Plan name: F1
6/1/2021



1 A2.02 LEVEL 2 - PLAN
3/32" = 1'-0"

Pictograms legend
- Antenna
- Riser
- Splitter

Cables legend
- ICA12-50JPL
- RG-142 NM-NM-3'

Indoor prediction legend
Power [dBm]
- >-40.00 (6.6%)
- >-50.00 (42.1%)
- >-55.00 (79.8%)
- >-60.00 (95.8%)
- >-65.00 (98.7%)
- >-75.00 (100.0%)
- >-80.00 (100.0%)
- >-85.00 (100.0%)
- >-95.00 (100.0%)
- >-100.00 (100.0%)

800 Public Safety - 800 MHz - SMR - Digital
Min -95.00 dBm; 100.0 % >= 100.0 %

LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 2

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 CANOPY BELOW
5 SEMI-RECESSED FIRE EXTINGUISHER
6 MAINTENANCE SHELVING

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1ADA	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D (6)	1	970 SF
UNIT 2E	1	1,030 SF
UNIT 3A	2	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

FULLER STATION HOUSING

FOR CONSTRUCTION

9730 SE Fuller Road
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waterleaf
419 SW 11th Ave
Suite 200

REGISTERED ARCHITECT
WILLIAM S. BAILEY
PORTLAND, OR
STATE OF OREGON

PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

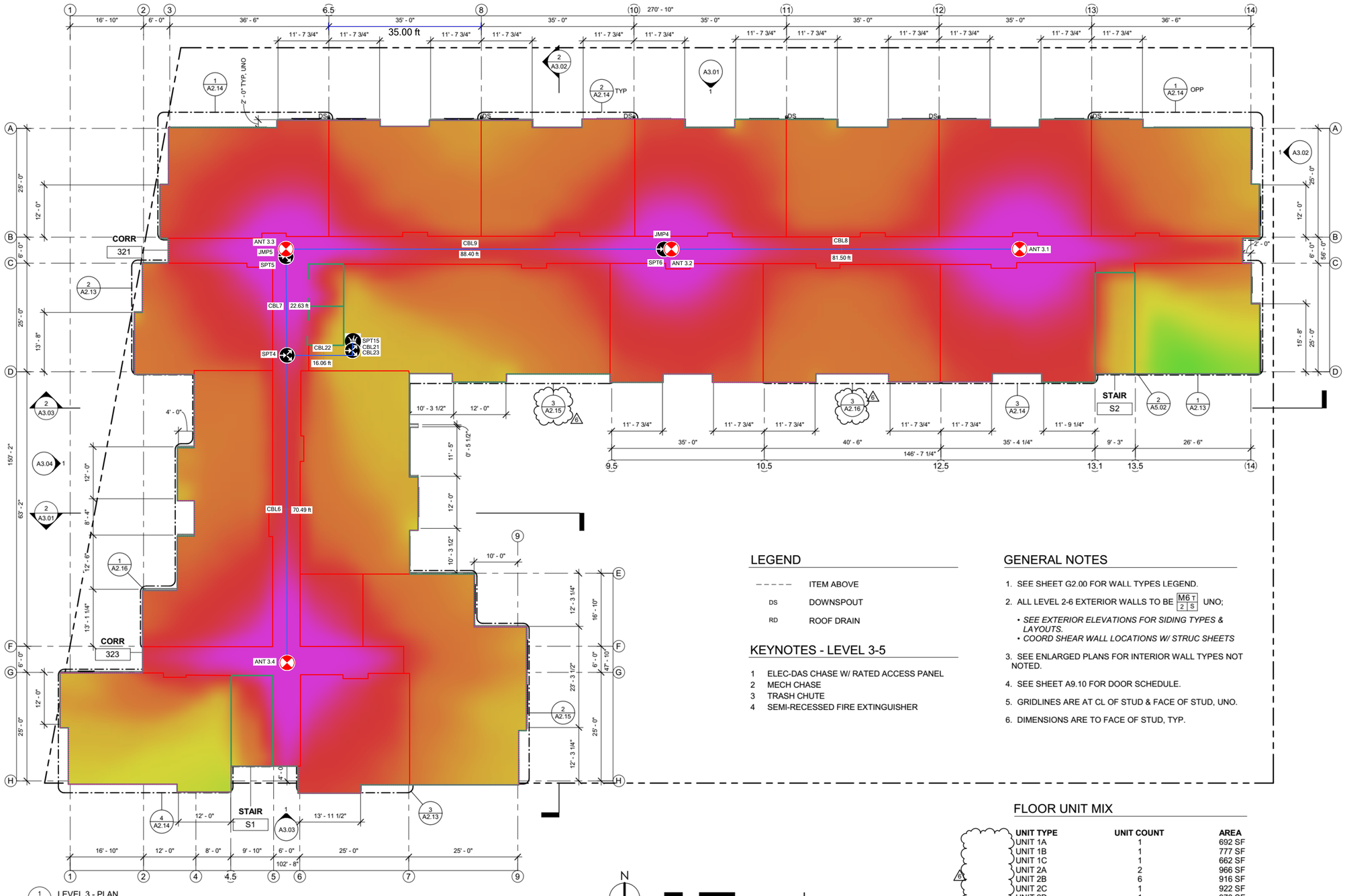
REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 2 - PLAN

A2.02

Revision history
Project name: Fuller Station
Designer name: Aaron Baxter
Plan name: F2
6/1/2021



1 LEVEL 3 - PLAN
A2.03 3/32" = 1'-0"

N

0' 4' 8' 16' 32'

Indoor prediction legend

Power [dBm]

- >-40.00 (5.0%)
- >-50.00 (33.4%)
- >-55.00 (69.0%)
- >-60.00 (93.8%)
- >-65.00 (97.8%)
- >-75.00 (100.0%)
- >-80.00 (100.0%)
- >-85.00 (100.0%)
- >-95.00 (100.0%)
- >-100.00 (100.0%)

800 Public Safety - 800 MHz - SMR - Digital

Min -95.00 dBm: 100.0 % >= 100.0 %

LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 3-5

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 SEMI-RECESSED FIRE EXTINGUISHER

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1A	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D	1	970 SF
UNIT 2E	1	1,030 SF
UNIT 3A	1	1,205 SF
UNIT 3ADA	1	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

Pictograms legend
- Antenna
- Riser
- Splitter

Cables legend
- ICA12-50JPL
- RG-142 NM-NM-3'

FULLER STATION HOUSING

FOR CONSTRUCTION

9730 SE Fuller Road
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waterleaf
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REGISTERED ARCHITECT
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PROJECT #: 1617.00
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REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 3 - PLAN

A2.03

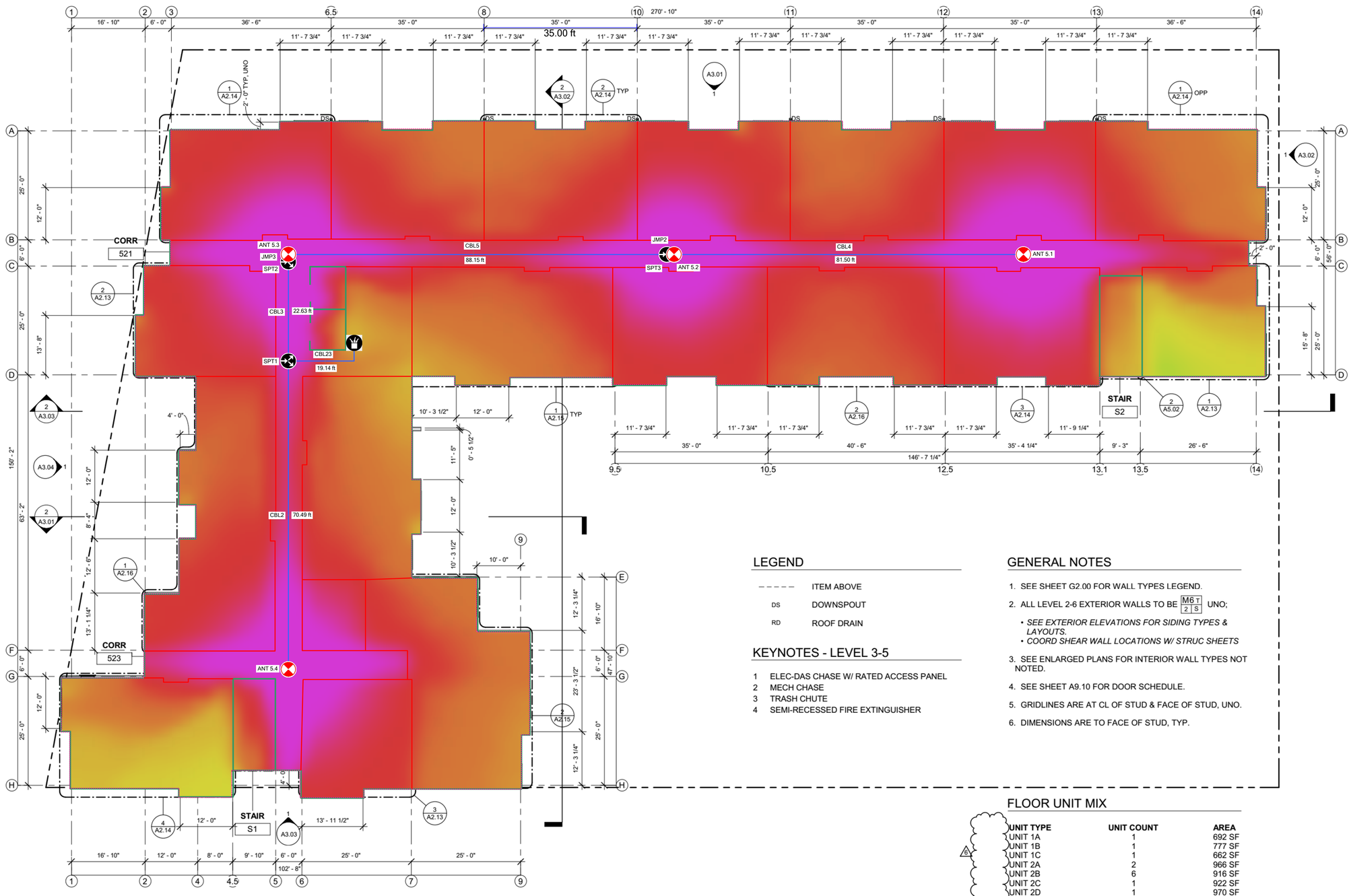
Revision history

Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: F3

6/1/2021



1 LEVEL 5 - PLAN
A2.05
3/32" = 1'-0"

0' 4' 8' 16' 32'

Pictograms legend
- Antenna
- Riser
- Splitter

Cables legend
- ICA12-50JPL
- RG-142 NM-NM-3'

LEGEND

- - - - -	ITEM ABOVE
DS	DOWNSPOUT
RD	ROOF DRAIN

KEYNOTES - LEVEL 3-5

1 ELEC-DAS CHASE W/ RATED ACCESS PANEL
2 MECH CHASE
3 TRASH CHUTE
4 SEMI-RECESSED FIRE EXTINGUISHER

GENERAL NOTES

1. SEE SHEET G2.00 FOR WALL TYPES LEGEND.
2. ALL LEVEL 2-6 EXTERIOR WALLS TO BE M6 T / 2 S UNO;
   - *SEE EXTERIOR ELEVATIONS FOR SIDING TYPES & LAYOUTS.*
   - *COORD SHEAR WALL LOCATIONS W/ STRUC SHEETS*
3. SEE ENLARGED PLANS FOR INTERIOR WALL TYPES NOT NOTED.
4. SEE SHEET A9.10 FOR DOOR SCHEDULE.
5. GRIDLINES ARE AT CL OF STUD & FACE OF STUD, UNO.
6. DIMENSIONS ARE TO FACE OF STUD, TYP.

FLOOR UNIT MIX

UNIT TYPE	UNIT COUNT	AREA
UNIT 1A	1	692 SF
UNIT 1B	1	777 SF
UNIT 1C	1	662 SF
UNIT 2A	2	966 SF
UNIT 2B	6	916 SF
UNIT 2C	1	922 SF
UNIT 2D	1	970 SF
UNIT 2ADA	1	1,030 SF
UNIT 3A	2	1,205 SF
UNIT 3B	1	1,313 SF
UNIT 3C	1	1,394 SF

FULLER STATION HOUSING

FOR CONSTRUCTION

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waterleaf
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REGISTERED ARCHITECT
WILLIAM S. BAILEY
PORTLAND, OR
STATE OF OREGON

PROJECT #: 1617.00
SHEET ISSUE DATE: DEC 4, 2019

REVISIONS:

#	DESCRIPTION	DATE
1	PLAN REVIEW	10/16/2020
2	ADDENDUM 1	10/16/2020
6	Revision 6 / ASI 1	03/12/2021

LEVEL 5 - PLAN

A2.05

Revision history

Project name: Fuller Station

Designer name: Aaron Baxter

Plan name: F5

6/1/2021

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 6

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 6.1 RF Link Budget

Link Budget Report

Project name: Fuller Station
Design company:
Project creation date: 6/1/2021
Designer: Aaron Baxter

DAS link budget report

ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 1.1												
ANT 1.1 (dBd)	CELLMAX-O-CPUSE	-	-0.14	4.14	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-72.95	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	276.10	-	-	-	-	-	-	-	-	-
CBL14	ICA12-50JPL	82.07	-1.87	4.28	-	-	-	-	-	-	-	-
SPT11	DC-R05-ON300C(XH)	-	-2.10	6.15	-	-	-	-	-	-	-	-
CBL15	ICA12-50JPL	66.45	-1.53	8.25	-	-	-	-	-	-	-	-
SPT12	DC-R05-ON300C(XH)	-	-2.10	9.79	-	-	-	-	-	-	-	-
CBL18	ICA12-50JPL	18.64	-0.50	11.89	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-8.00	12.39	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 1.2												
ANT 1.2 (dBd)	CELLMAX-O-CPUSE	-	-0.14	2.54	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-74.55	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	240.78	-	-	-	-	-	-	-	-	-
JMP8	RG-142 NM-NM-3'	Jumper	-0.57	2.68	-	-	-	-	-	-	-	-
SPT11	DC-R05-ON300C(XH)	-	-5.00	3.25	-	-	-	-	-	-	-	-
CBL15	ICA12-50JPL	66.45	-1.53	8.25	-	-	-	-	-	-	-	-
SPT12	DC-R05-ON300C(XH)	-	-2.10	9.79	-	-	-	-	-	-	-	-
CBL18	ICA12-50JPL	18.64	-0.50	11.89	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-8.00	12.39	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 1.3												
ANT 1.3 (dBd)	CELLMAX-O-CPUSE	-	-0.14	0.61	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-76.48	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	204.04	-	-	-	-	-	-	-	-	-
JMP9	RG-142 NM-NM-3'	Jumper	-0.57	0.75	-	-	-	-	-	-	-	-
SPT10	DC-R05-ON300C(XH)	-	-5.00	1.32	-	-	-	-	-	-	-	-
CBL16	ICA12-50JPL	21.70	-0.57	6.32	-	-	-	-	-	-	-	-
SPT12	DC-R05-ON300C(XH)	-	-5.00	6.89	-	-	-	-	-	-	-	-
CBL18	ICA12-50JPL	18.64	-0.50	11.89	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-8.00	12.39	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 1.4												
ANT 1.4 (dBd)	CELLMAX-O-CPUSE	-	-0.14	1.97	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-75.12	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	229.24	-	-	-	-	-	-	-	-	-
CBL17	ICA12-50JPL	93.12	-2.11	2.11	-	-	-	-	-	-	-	-
SPT10	DC-R05-ON300C(XH)	-	-2.10	4.22	-	-	-	-	-	-	-	-
CBL16	ICA12-50JPL	21.70	-0.57	6.32	-	-	-	-	-	-	-	-
SPT12	DC-R05-ON300C(XH)	-	-5.00	6.89	-	-	-	-	-	-	-	-
CBL18	ICA12-50JPL	18.64	-0.50	11.89	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-8.00	12.39	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 2.1												
ANT 2.1 (dBd)	CELLMAX-O-CPUSE	-	-0.14	2.87	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-74.22	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	247.66	-	-	-	-	-	-	-	-	-
CBL12	ICA12-50JPL	81.49	-1.86	3.01	-	-	-	-	-	-	-	-
SPT9	DC-R05-ON300C(XH)	-	-2.10	4.87	-	-	-	-	-	-	-	-
CBL13	ICA12-50JPL	88.14	-2.00	6.97	-	-	-	-	-	-	-	-
SPT8	DC-R07-ON300C(XH)	-	-1.40	8.97	-	-	-	-	-	-	-	-
CBL11	ICA12-50JPL	22.63	-0.59	10.37	-	-	-	-	-	-	-	-
SPT7	DC-R08-ON300C(XH)	-	-1.20	10.96	-	-	-	-	-	-	-	-
CBL20	ICA12-50JPL	14.88	-0.42	12.16	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-6.00	12.58	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 2.2												
ANT 2.2 (dBd)	CELLMAX-O-CPUSE	-	-0.14	1.26	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-75.83	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	215.75	-	-	-	-	-	-	-	-	-
JMP6	RG-142 NM-NM-3'	Jumper	-0.57	1.40	-	-	-	-	-	-	-	-
SPT9	DC-R05-ON300C(XH)	-	-5.00	1.97	-	-	-	-	-	-	-	-
CBL13	ICA12-50JPL	88.14	-2.00	6.97	-	-	-	-	-	-	-	-
SPT8	DC-R07-ON300C(XH)	-	-1.40	8.97	-	-	-	-	-	-	-	-
CBL11	ICA12-50JPL	22.63	-0.59	10.37	-	-	-	-	-	-	-	-
SPT7	DC-R08-ON300C(XH)	-	-1.20	10.96	-	-	-	-	-	-	-	-
CBL20	ICA12-50JPL	14.88	-0.42	12.16	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-6.00	12.58	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 2.3												
ANT 2.3 (dBd)	CELLMAX-O-CPUSE	-	-0.14	2.66	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-74.43	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	243.26	-	-	-	-	-	-	-	-	-
JMP7	RG-142 NM-NM-3'	Jumper	-0.57	2.80	-	-	-	-	-	-	-	-
SPT8	DC-R07-ON300C(XH)	-	-7.00	3.37	-	-	-	-	-	-	-	-
CBL11	ICA12-50JPL	22.63	-0.59	10.37	-	-	-	-	-	-	-	-
SPT7	DC-R08-ON300C(XH)	-	-1.20	10.96	-	-	-	-	-	-	-	-
CBL20	ICA12-50JPL	14.88	-0.42	12.16	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-6.00	12.58	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 2.4												
ANT 2.4 (dBd)	CELLMAX-O-CPUSE	-	-0.14	2.40	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-74.69	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	237.86	-	-	-	-	-	-	-	-	-
CBL10	ICA12-50JPL	70.48	-1.62	2.54	-	-	-	-	-	-	-	-
SPT7	DC-R08-ON300C(XH)	-	-8.00	4.16	-	-	-	-	-	-	-	-
CBL20	ICA12-50JPL	14.88	-0.42	12.16	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-6.00	12.58	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 3.1												
ANT 3.1 (dBd)	CELLMAX-O-CPUSE	-	-0.14	1.82	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-75.27	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	226.35	-	-	-	-	-	-	-	-	-
CBL8	ICA12-50JPL	81.50	-1.86	1.96	-	-	-	-	-	-	-	-
SPT6	DC-R05-ON300C(XH)	-	-2.10	3.82	-	-	-	-	-	-	-	-
CBL9	ICA12-50JPL	88.40	-2.01	5.92	-	-	-	-	-	-	-	-
SPT5	DC-R08-ON300C(XH)	-	-1.20	7.93	-	-	-	-	-	-	-	-
CBL7	ICA12-50JPL	22.63	-0.59	9.13	-	-	-	-	-	-	-	-
SPT4	DC-R08-ON300C(XH)	-	-1.20	9.72	-	-	-	-	-	-	-	-
CBL22	ICA12-50JPL	16.06	-0.45	10.92	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-5.00	11.36	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 3.2												
ANT 3.2 (dBd)	CELLMAX-O-CPUSE	-	-0.14	0.21	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-76.88	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	197.19	-	-	-	-	-	-	-	-	-
JMP4	RG-142 NM-NM-3'	Jumper	-0.57	0.35	-	-	-	-	-	-	-	-
SPT6	DC-R05-ON300C(XH)	-	-5.00	0.92	-	-	-	-	-	-	-	-
CBL9	ICA12-50JPL	88.40	-2.01	5.92	-	-	-	-	-	-	-	-
SPT5	DC-R08-ON300C(XH)	-	-1.20	7.93	-	-	-	-	-	-	-	-
CBL7	ICA12-50JPL	22.63	-0.59	9.13	-	-	-	-	-	-	-	-
SPT4	DC-R08-ON300C(XH)	-	-1.20	9.72	-	-	-	-	-	-	-	-
CBL22	ICA12-50JPL	16.06	-0.45	10.92	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-5.00	11.36	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 3.3												
ANT 3.3 (dBd)	CELLMAX-O-CPUSE	-	-0.14	0.42	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-76.67	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	200.72	-	-	-	-	-	-	-	-	-
JMP5	RG-142 NM-NM-3'	Jumper	-0.57	0.56	-	-	-	-	-	-	-	-
SPT5	DC-R08-ON300C(XH)	-	-8.00	1.13	-	-	-	-	-	-	-	-
CBL7	ICA12-50JPL	22.63	-0.59	9.13	-	-	-	-	-	-	-	-
SPT4	DC-R08-ON300C(XH)	-	-1.20	9.72	-	-	-	-	-	-	-	-
CBL22	ICA12-50JPL	16.06	-0.45	10.92	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-5.00	11.36	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 3.4												
ANT 3.4 (dBd)	CELLMAX-O-CPUSE	-	-0.14	1.15	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-75.94	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	213.80	-	-	-	-	-	-	-	-	-
CBL6	ICA12-50JPL	70.49	-1.62	1.29	-	-	-	-	-	-	-	-
SPT4	DC-R08-ON300C(XH)	-	-8.00	2.92	-	-	-	-	-	-	-	-
CBL22	ICA12-50JPL	16.06	-0.45	10.92	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-5.00	11.36	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 5.1												
ANT 5.1 (dBd)	CELLMAX-O-CPUSE	-	-0.14	3.77	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-73.33	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	267.35	-	-	-	-	-	-	-	-	-
CBL4	ICA12-50JPL	81.50	-1.86	3.91	-	-	-	-	-	-	-	-
SPT3	DC-R05-ON300C(XH)	-	-2.10	5.76	-	-	-	-	-	-	-	-
CBL5	ICA12-50JPL	88.15	-2.00	7.86	-	-	-	-	-	-	-	-
SPT2	DC-R07-ON300C(XH)	-	-1.40	9.87	-	-	-	-	-	-	-	-
CBL3	ICA12-50JPL	22.63	-0.59	11.27	-	-	-	-	-	-	-	-
SPT1	DC-R08-ON300C(XH)	-	-1.20	11.85	-	-	-	-	-	-	-	-
CBL23	ICA12-50JPL	51.31	-1.21	13.05	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-2.10	14.26	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 5.2												
ANT 5.2 (dBd)	CELLMAX-O-CPUSE	-	-0.14	2.15	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-74.94	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	232.90	-	-	-	-	-	-	-	-	-
JMP2	RG-142 NM-NM-3'	Jumper	-0.57	2.29	-	-	-	-	-	-	-	-
SPT3	DC-R05-ON300C(XH)	-	-5.00	2.86	-	-	-	-	-	-	-	-
CBL5	ICA12-50JPL	88.15	-2.00	7.86	-	-	-	-	-	-	-	-
SPT2	DC-R07-ON300C(XH)	-	-1.40	9.87	-	-	-	-	-	-	-	-
CBL3	ICA12-50JPL	22.63	-0.59	11.27	-	-	-	-	-	-	-	-
SPT1	DC-R08-ON300C(XH)	-	-1.20	11.85	-	-	-	-	-	-	-	-
CBL23	ICA12-50JPL	51.31	-1.21	13.05	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-2.10	14.26	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 5.3												
ANT 5.3 (dBd)	CELLMAX-O-CPUSE	-	-0.14	3.56	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-73.54	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	262.61	-	-	-	-	-	-	-	-	-
JMP3	RG-142 NM-NM-3'	Jumper	-0.57	3.70	-	-	-	-	-	-	-	-
SPT2	DC-R07-ON300C(XH)	-	-7.00	4.27	-	-	-	-	-	-	-	-
CBL3	ICA12-50JPL	22.63	-0.59	11.27	-	-	-	-	-	-	-	-
SPT1	DC-R08-ON300C(XH)	-	-1.20	11.85	-	-	-	-	-	-	-	-
CBL23	ICA12-50JPL	51.31	-1.21	13.05	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-2.10	14.26	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

DAS link budget report												
ID	Model	Length (feet)	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
ANT 5.4												
ANT 5.4 (dBd)	CELLMAX-O-CPUSE	-	-0.14	3.29	-	-	-	-	-	-	-	-
MS RSSI [dBm]	-	-	-73.80	-	-	-	-	-	-	-	-	-
MS signal range [feet]	-	-	256.77	-	-	-	-	-	-	-	-	-
CBL2	ICA12-50JPL	70.49	-1.62	3.43	-	-	-	-	-	-	-	-
SPT1	DC-R08-ON300C(XH)	-	-8.00	5.05	-	-	-	-	-	-	-	-
CBL23	ICA12-50JPL	51.31	-1.21	13.05	-	-	-	-	-	-	-	-
SPT15	DC-R05-ON300C(XH)	-	-2.10	14.26	-	-	-	-	-	-	-	-
CBL21	ICA12-50JPL	19.46	-0.52	16.36	-	-	-	-	-	-	-	-
SPT14	DC-R06-ON300C(XH)	-	-1.70	16.88	-	-	-	-	-	-	-	-
CBL19	ICA12-50JPL	23.49	-0.61	18.58	-	-	-	-	-	-	-	-
SPT13	DC-R08-ON300C(XH)	-	-1.20	19.19	-	-	-	-	-	-	-	-
JMP10	RG-142 NM-NM-3'	Jumper	-0.57	20.39	-	-	-	-	-	-	-	-
RPT1	RX7W22-08AA3348	-	88.30	20.96	-	-	-	-	-	-	-	-
JMP1	RG-142 NM-NM-3'	Jumper	-0.57	-67.35	-	-	-	-	-	-	-	-
MSC1	CGXZ-36NFNF-A	-	-0.10	-66.78	-	-	-	-	-	-	-	-
CBL1	LCF12-50J	360.68	-7.68	-66.68	-	-	-	-	-	-	-	-
Donor (ANT R.1)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	-	11.00	-59.00	-	-	-	-	-	-	-	-

System link budget											
Downlink	Model	800 MHz - SMR - Digital - Sector 1 Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)	Gain/loss (dB)	(dBm)
OffAir1 (800 MHz - SMR - Digital - Sector 1)											
Isotropic offset	-	2.15	-59.00	-	-	-	-	-	-	-	-
OffAir- Donor Gain (dBd)	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	8.85	-61.15	-	-	-	-	-	-	-	-
Measured RSSI	-	-	-70.00	-	-	-	-	-	-	-	-
Power out	-	-	-59.00	-	-	-	-	-	-	-	-

System legend
800 Public Safety / Digital / 800 MHz - SMR / PS - NPSPAC / Sector number:1 / Nb. of channels: 16 / Nb. of sources: 1

Calculation legend
800 MHz - SMR - Digital - Sector 1 / MS RSSI [dBm] (at 98.43 [feet]) / MS signal range [feet] (for -85.00 [dBm])

Cable Routing Report

Project name: Fuller Station
Design company:
Project creation date: 6/1/2021
Designer: Aaron Baxter

ID	Cable from (Source side)			Cable to (Mobile side)			Cable Info			Length (feet)	
	Part ID	Part conn	Floor	Part ID	Part conn	Floor	Type	Model	Manufacturer	Est. + 20 %	Measured
JMP1	MSC1	Equipment	F1	RPT1	In	F1	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL21	SPT14	Through	F2	SPT15	Common	F3	Coaxial	ICA12-50JPL	RFS	23.35	
CBL20	SPT14	Tap	F2	SPT7	Common	F2	Coaxial	ICA12-50JPL	RFS	17.85	
CBL19	SPT13	Through	F1	SPT14	Common	F2	Coaxial	ICA12-50JPL	RFS	28.19	
CBL18	SPT13	Tap	F1	SPT12	Common	F1	Coaxial	ICA12-50JPL	RFS	22.36	
JMP10	RPT1	Out	F1	SPT13	Common	F1	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL17	SPT10	Through	F1	ANT 1.4	Ant	F1	Coaxial	ICA12-50JPL	RFS	111.74	
CBL16	SPT12	Tap	F1	SPT10	Common	F1	Coaxial	ICA12-50JPL	RFS	26.04	
CBL15	SPT12	Through	F1	SPT11	Common	F1	Coaxial	ICA12-50JPL	RFS	79.74	
JMP9	SPT10	Tap	F1	ANT 1.3	Ant	F1	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL14	SPT11	Through	F1	ANT 1.1	Ant	F1	Coaxial	ICA12-50JPL	RFS	98.48	
JMP8	SPT11	Tap	F1	ANT 1.2	Ant	F1	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL13	SPT8	Through	F2	SPT9	Common	F2	Coaxial	ICA12-50JPL	RFS	105.77	
JMP7	SPT8	Tap	F2	ANT 2.3	Ant	F2	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL12	SPT9	Through	F2	ANT 2.1	Ant	F2	Coaxial	ICA12-50JPL	RFS	97.78	
CBL22	SPT15	Tap	F3	SPT4	Common	F3	Coaxial	ICA12-50JPL	RFS	19.28	
CBL11	SPT7	Through	F2	SPT8	Common	F2	Coaxial	ICA12-50JPL	RFS	27.15	
CBL10	SPT7	Tap	F2	ANT 2.4	Ant	F2	Coaxial	ICA12-50JPL	RFS	84.58	
CBL9	SPT5	Through	F3	SPT6	Common	F3	Coaxial	ICA12-50JPL	RFS	106.08	
JMP5	SPT5	Tap	F3	ANT 3.3	Ant	F3	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL8	SPT6	Through	F3	ANT 3.1	Ant	F3	Coaxial	ICA12-50JPL	RFS	97.80	
CBL7	SPT4	Through	F3	SPT5	Common	F3	Coaxial	ICA12-50JPL	RFS	27.16	
JMP4	SPT6	Tap	F3	ANT 3.2	Ant	F3	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	

ID	Cable from (Source side)			Cable to (Mobile side)			Cable Info			Length (feet)	
	Part ID	Part conn	Floor	Part ID	Part conn	Floor	Type	Model	Manufacturer	Est. + 20 %	Measured
CBL6	SPT4	Tap	F3	ANT 3.4	Ant	F3	Coaxial	ICA12-50JPL	RFS	84.58	
CBL5	SPT2	Through	F5	SPT3	Common	F5	Coaxial	ICA12-50JPL	RFS	105.78	
JMP3	SPT2	Tap	F5	ANT 5.3	Ant	F5	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL4	SPT3	Through	F5	ANT 5.1	Ant	F5	Coaxial	ICA12-50JPL	RFS	97.80	
CBL3	SPT1	Through	F5	SPT2	Common	F5	Coaxial	ICA12-50JPL	RFS	27.16	
JMP2	SPT3	Tap	F5	ANT 5.2	Ant	F5	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL2	SPT1	Tap	F5	ANT 5.4	Ant	F5	Coaxial	ICA12-50JPL	RFS	84.58	
CBL1	ANT R.1	Ant	ROOF	MSC1	Antenna	F1	Coaxial	LCF12-50J	RFS	432.82	
JMP6	SPT9	Tap	F2	ANT 2.2	Ant	F2	Coaxial	RG-142 NM-NM-3'	Tessco Technologies	Jumper	
CBL23	SPT15	Through	F3	SPT1	Common	F5	Coaxial	ICA12-50JPL	RFS	61.57	

Total (feet) :

Estimated*	Measured
0.00	0.00

*Only rows with a measured length are considered

Estimated	Measured**
1,867.64	1,867.64

**Rows without a measured length use the estimated length

Equipment List Report

Project name: Fuller Station
Project creation date: 6/1/2021
Design company:
Designer: Aaron Baxter

Type	Manufacturer	Model	Description	Qty
Antenna	Cellular Specialties, Inc	CSI-AY/746-896/11 (11dBi Yagi 746-896MHz)	Yagi Antenna Public Safety 700/800 (746-896MHz) 11 dBi	1
Antenna	CommScope	CELLMAX-O-CPUSE	Cell-Max In-Building Antenna System - Omnidirectional Inbuilding Antenna, 698–960 MHz and 1710–2700 MHz - N-Female	16
Cable	Tessco Technologies	RG-142 NM-NM-3'	Teflon Jumper Cable 3' RG142 N-Male / N-Male - Dual Silver Shields - Brown Tinted FEP Jacked	10
Cable	RFS	LCF12-50J	CELLFLEX - 1/2" Low-Loss Foam Coaxial Cable, Halogene Free, Polyethylen, PE, not Flame Retardant	600
Cable	RFS	ICA12-50JPL	ClearFillLine - 1/2in Low Loss Air Dialectric Cable - Plenum Rated/ Indoor/ Outdoor Usage/ Color Blue UV rated to ASTM G155 Meets/ Exceeds: Steiner Tunnel Test Method UL 910, NFC 820-53 (a) CMP, NFPA 262	1600
Connector	RFS	NM-LCF12-D01	N Male OMNI FIT Connector for LCF12-50 Cable	60
Connector	RFS	NF-LCF12-D01	N Female OMNI FIT Connector for LCF12-50 Cable	3
Power Supply	Comba	CPBBUV1-48055-UL	DC Power battery backup	1
Miscellaneous	PolyPhaser	CGXZ-36NFNF-A	400-1200 MHz Lightning Protector	1
Repeater	Comba	RX7W22-08AA3348	(N.America)(PS BDA)(Class A) 800MHz Public Safety Bi-Directional Amplifier 2W	1
Splitter	Comba	DC-R08-ON300C(XH)	(N.America)(Passive) 8 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm.	5
Splitter	Comba	DC-R07-ON300C(XH)	(N.America)(Passive) 7 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm.	2
Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm.	7

Splitter	Comba	DC-R06-ON300C(XH)	(N.America)(Passive) 6 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm.	1
Miscellaneous	Rohn	FRMMAT	Non Pen roof mount Mat	1
Miscellaneous	Rohn	FRM	Non Pen roof mount	1
Miscellaneous	Tessco Technologies	415105	Universal Ground Bar	1
Miscellaneous	Tessco Technologies	41669	Standard Grounding Kit 1/2" Coax	1
Panel	DAS Alert	Model: 1221-A	DAS Annunciator Panel	1
Attenuator	MECA Electronics	603-10-1	Type - N, DC-6GHz, 10dB Attenuator, 5 Watts	1

Cross-Reference

Project name: Fuller Station
Design company:
Project creation date: 6/1/2021
Designer: Aaron Baxter

ID	Type	Manufacturer	Model	Description	Floor
SPT10	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F1
SPT11	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F1
SPT12	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F1
SPT13	Splitter	Comba	DC-R08-ON300C(XH)	(N.America)(Passive) 8 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F1

ID	Type	Manufacturer	Model	Description	Floor
SPT7	Splitter	Comba	DC-R08-ON300C(XH)	(N.America)(Passive) 8 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F2
SPT8	Splitter	Comba	DC-R07-ON300C(XH)	(N.America)(Passive) 7 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F2
SPT9	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F2
SPT14	Splitter	Comba	DC-R06-ON300C(XH)	(N.America)(Passive) 6 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F2
SPT4	Splitter	Comba	DC-R08-ON300C(XH)	(N.America)(Passive) 8 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F3

ID	Type	Manufacturer	Model	Description	Floor
SPT5	Splitter	Comba	DC-R08-ON300C(XH)	(N.America)(Passive) 8 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F3
SPT6	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F3
SPT15	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F3
SPT1	Splitter	Comba	DC-R08-ON300C(XH)	(N.America)(Passive) 8 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F5
SPT2	Splitter	Comba	DC-R07-ON300C(XH)	(N.America)(Passive) 7 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300C(XH)-DS-0-0-3	F5

ID	Type	Manufacturer	Model	Description	Floor
SPT3	Splitter	Comba	DC-R05-ON300C(XH)	(N.America)(Passive) 5 dB Directional Coupler, 698-2700 MHz, N-Female Connectors 300W and PIM less than -153dBc @ 2x43dBm. Corresponding datasheet: - DC-Rxx-ON300M(XH)-DS-0-0-3	F5

Total of 15 Parts

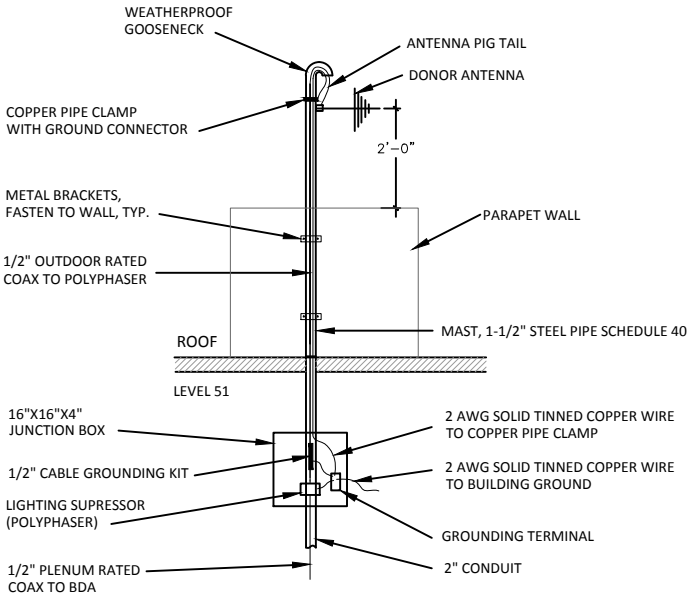
Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 7

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 7.1 Drawings for Donor Antenna and Grounding

Shall be included in Shop Drawings



NOTES:

1. LIGHTNING PROTECTION TO DONOR ANTENNA IN ACCORDANCE WITH NFPA 780 TO COMPLY WITH NFPA 72:26.6.2.3.3
2. ANTENNA INSTALLATION SHALL MEET THE SOUTH FLORIDA BUILDING CODE FOR WIND SURVIVABILITY AT NO LESS THAN 132 MPH

DAS
TYP. DONOR ANTENNA, LIGHTNING SUPRESSION AND GROUNDING DETAILS

NOT TO SCALE

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 8

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System

Para. No. 8.1 Product Data Sheets

Donor Antenna/Indoor Antenna
Donor Antenna Cable/Indoor Plenum Rated Cable
Male Cable Connector/Female Cable Connector
Lightning Protector
24 Hour Battery Backup
800 MHz Amplifier
Coax Bias-Tee/DAS Annunciator Panel

746-896 MHz Yagi Antenna (11 dBi)

Model Numbers

- CSI-AY/746-896/11

Frequency Range

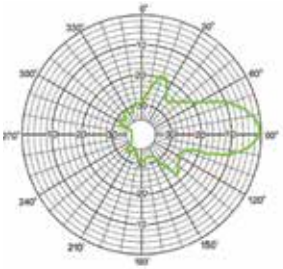
- 746-896 MHz

Features & Benefits

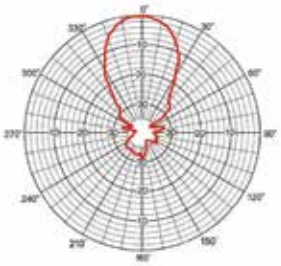
- 11 dBi Gain
- 8 Elements
- Hermetically Sealed Driven Element
- Rugged Lightweight Design
- Stainless Steel Hardware
- Broad Bandwidth

746-896 MHz Yagi Antenna, 11 dBi

Radiation Patterns



Vertical



Horizontal

Electrical Specifications

Gain	11 dBi
VSWR	<1.7:1
Horizontal Beamwidth	48°
Vertical Beamwidth	42°
Polarization	Vertical
Maximum Input Power	100 Watts
Electrical Downtilt	0°
Front-back Ratio	>16 dB

Specifications subject to change without notice.

Mechanical Specifications

Number of Elements	8
Connector	N-Female
Lightning Protection	Direct Ground
Rated Wind Speed	134 mph (200 kph)
Dimensions	33.1 x 8 x 2.2 in
Antenna Weight	1.76 lbs
Mounting Hardware	U-Bolt
Included Mounting Hardward Fits 1 7/8" OD Pipe	

WESTELL

Product Specifications

COMMSCOPE®

CELLMAX-O-CPUSE

Cell-Max™ Omni In-building Antenna, 698–960 MHz and 1710–2700 MHz

- This product is part of the CommScope Wired for Wireless® Solution

Electrical Specifications

Frequency Band, MHz	**698–800**	**800–960**	**1710–2700**
Gain, dBi	2.0	2.0	5.0
Beamwidth, Horizontal, degrees	360	360	360
VSWR | Return Loss, dB	1.8 | 10.9	1.5 | 14.0	1.5 | 14.0
Input Power per Port, maximum, watts	50	50	50
Polarization	Vertical	Vertical	Vertical
Impedance	50 ohm	50 ohm	50 ohm

General Specifications

Antenna Type	Omni
Application	Indoor
Operating Frequency Band	1710 – 2700 MHz | 698 – 960 MHz
Brand	Cell-Max™
Mount Type	Thru-hole ceiling mount (optional)
Package Quantity	1
Pigtail Cable	KSR195, plenum rated

Mechanical Specifications

Color	White
Pigtail Length	315.0 mm | 12.4 in
Radome Material	ABS, UV resistant
RF Connector Interface	N Female

Environmental Specifications

Operating Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Relative Humidity	Up to 100%

Dimensions

Height	85.00 mm | 3.35 in
Outer Diameter	186.0 mm | 7.3 in
Net Weight	0.3 kg | 0.7 lb

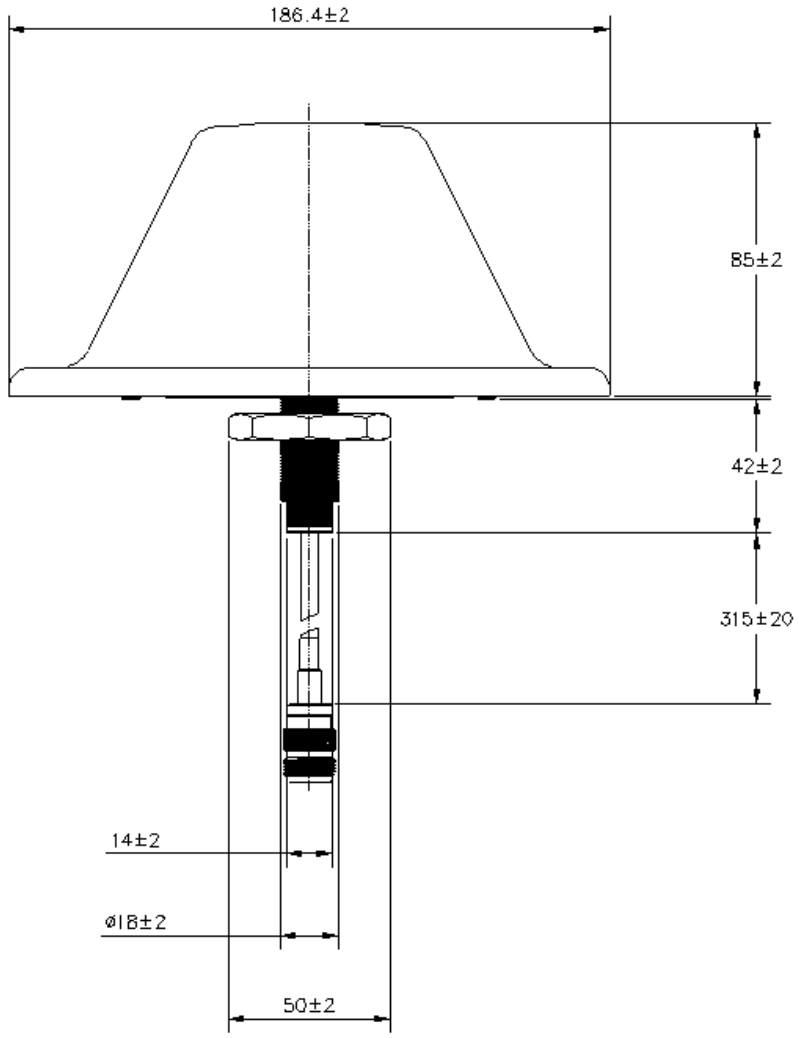
Packed Dimensions

Height	135.00 mm | 5.31 in
Length	195.0 mm | 7.7 in
Width	195.0 mm | 7.7 in
Shipping Weight	0.4 kg | 0.9 lb

Product Specifications

CELLMAX-O-CPUSE

Outline Drawing



Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

RADIO FREQUENCY SYSTEMS
The Clear Choice®

1/2" CELLFLEX® Low-Loss Foam-Dielectric Coaxial Cable

CELLFLEX® 1/2" low loss flexible cable

FEATURES / BENEFITS

1/2" CELLFLEX® Low-Loss Foam Dielectric Coaxial Cable

- **Low Attenuation**
  The low attenuation of CELLFLEX® coaxial cable results in highly efficient signal transferin your RF system.
- **Complete Shielding**
  The solid outer conductor of CELLFLEX® coaxial cable creates a continuous RFI/EMI shield that minimizes system interference.
- **Low VSWR**
  Special low VSWR versions of CELLFLEX® coaxial cables contribute to low system noise.
- **Outstanding Intermodulation Performance**
  CELLFLEX® coaxial cable□s solid inner and outer conductors virtually eliminate intermods. Intermodulation performance is also confirmed with state-of-the-art equipment at the RFS factory.
- **High Power Rating**
  Due to their low attenuation, outstanding heat transfer properties and temperature stabilized dielectric materials, CELLFLEX® cable provides safe long term operating life at high transmit power levels.
- **Wide Range of Application**
  Typical areas of application are: feedlines for broadcast and terrestrial microwave antennas, wireless cellular, PCS and ESMR base stations, cabling of antenna arrays, and radio equipment interconnects.

Technical Features

APPLICATIONS		
Applications		OEM jumpers, Main feed transitions to equipment, GPS lines
STRUCTURE		
Cable Type		Foam-Dielectric, Corrugated
Size		1/2"
Jacket Option		Black
Inner Conductor	mm (in)	4.8 (0.19) Copper-Clad Aluminum Wire
Dielectric	mm (in)	11.9 (0.47) Foam Polyethylene
Outer Conductor	mm (in)	13.8 (0.54) Corrugated Copper
Jacket	mm (in)	15.8 (0.62) Polyethylene, PE
ELECTRICAL SPECIFICATIONS		
Impedance	Ω	50 +/- 1
Maximum Frequency	GHz	8.8
Velocity	%	88
Capacitance	pF/m (pF/ft)	76 (23.2)
Inductance	µH/m (µH/ft)	0.19 (0.058)
Peak Power Rating	kW	38
RF Peak Voltage	Volts	1950
Jacket Spark	Volt RMS	8000
Inner Conductor dc Resistance	Ω/1000 m (Ω/1000 ft)	1.57 (0.48)
Outer Conductor dc Resistance	Ω/1000 m (Ω/1000 ft)	2.7 (0.82)
Return Loss (VSWR) Performance		Standard
Maximum Return Loss	dB (VSWR)	Contact RFS for your VSWR performance specification for your required frequency band.
Phase Stabilized		Phase stabilized and phase matched cables and assemblies are available upon request.
Temperature & Power		Standard
MECHANICAL SPECIFICATIONS		
Cable Weight	kg/m (lb/ft)	0.2 (0.14)
Minimum Bending Radius, Single Bend	mm (in)	70 (3)
Minimum Bending Radius, Repeated Bends	mm (in)	125 (5)
Bending Moment	Nm (lb*ft)	6.5 (4.79)
Tensile Strength	N (lb)	1100 (247)
Recommended / Maximum Clamp Spacing	m (ft)	0.6 / 1 (2 / 3.25)

RADIO FREQUENCY SYSTEMS
The Clear Choice®

1/2" CELLFLEX® Low-Loss Foam-Dielectric Coaxial Cable

ATTENUATION AND POWER RATING

Frequency MHz	Attenuation dB/100m	Attenuation dB/100ft	Power kW
0.5	0.15	0.045	38.00
1	0.21	0.064	38.00
1.5	0.26	0.079	32.90
2	0.30	0.091	28.50
10	0.67	0.204	12.70
20	0.95	0.29	8.93
30	1.17	0.356	7.26
50	1.51	0.462	5.63
88	2.02	0.616	4.21
100	2.16	0.658	3.93
108	2.24	0.684	3.79
150	2.66	0.81	3.19
174	2.87	0.875	2.96
200	3.08	0.94	2.76
300	3.81	1.16	2.23
400	4.43	1.35	1.92
450	4.71	1.44	1.80
500	4.98	1.52	1.71
512	5.04	1.54	1.69
600	5.48	1.67	1.55
700	5.95	1.81	1.43
750	6.17	1.88	1.38
800	6.39	1.95	1.33
824	6.49	1.98	1.31
894	6.78	2.07	1.25
900	6.80	2.07	1.25
925	6.90	2.10	1.23
960	7.04	2.15	1.21
1000	7.20	2.19	1.18
1250	8.12	2.48	1.05
1400	8.64	2.63	0.983
1500	8.97	2.73	0.947
1700	9.61	2.93	0.884
1800	9.91	3.02	0.857
2000	10.50	3.20	0.809
2100	10.80	3.29	0.787
2200	11.10	3.38	0.765
2400	11.60	3.54	0.732
2500	11.90	3.62	0.714
2600	12.20	3.70	0.696
2700	12.40	3.78	0.685
3000	13.20	4.01	0.644
3500	14.40	4.38	0.59
4000	15.50	4.72	0.548
5000	17.60	5.37	0.483
6000	19.60	5.97	0.433
7000	21.40	6.54	0.397
8000	23.20	7.07	0.366
8800	24.60	7.49	0.345

Attenuation at 20°C (68°F) cable temperature; tolerance +/- 5% max.; Mean power rating at 40°C (104°F) ambient temperature

TESTING AND ENVIRONMENTAL

Fire Performance	Halogene Free
Installation Temperature	-40 to 60 (-40 to 140) °C(°F)
Storage Temperature	-70 to 85 (-94 to 185) °C(°F)
Operation Temperature	-50 to 85 (-58 to 185) °C(°F)

External Document Links

Notes

Phase stabilized versions available upon request.

RADIO FREQUENCY SYSTEMS
The Clear Choice®

1/2" ClearFill®Line Plenum-Rated Air-Dielectric Coaxial Cable for In-Building Applications

ClearFill®Line 1/2" low loss air dielectric cable, Plenum-rated, CMP

FEATURES / BENEFITS

- **Supports Multiple RF Signals**
- **Complete Shielding**
  The solid outer conductor of the ClearFill®Line coaxial cable creates a continuous RFI/EMI shield that minimizes system interference.
- **Outstanding Intermodulation Performance**
  RFS coaxial cable's solid inner and outer conductors virtually eliminate intermods. Intermodulation performance is also confirmed with state-of-the-art equipment at the RFS factory.
- **Wide Range of Applications**
  Typical areas of application are: feedlines for plenum-space installations within occupied buildings or structures.

1/2" Plenum-Rated In-Building Cable

Technical Features

APPLICATIONS		
Applications		Plenum In-Building
STRUCTURE		
Cable Type		Air-Dielectric, Corrugated
Size		1/2"
Inner Conductor	mm (in)	4.8 (0.19) Copper-Clad Aluminum Wire
Dielectric	mm (in)	11.8 (0.464) Extruded Polyethylene
Outer Conductor	mm (in)	13.8 (0.54) Corrugated Copper
Jacket	mm (in)	15.93 (0.627) Plenum Rated / color blue
ELECTRICAL SPECIFICATIONS		
Impedance	Ω	50 +/- 1
Maximum Frequency	GHz	6
Velocity	%	91
Capacitance	pF/m (pF/ft)	76 (23.2)
Inductance	µH/m (µH/ft)	0.19 (0.058)
Peak Power Rating	kW	40
RF Peak Voltage	Volts	2000
Jacket Spark	Volt RMS	8000
Inner Conductor dc Resistance	Ω/1000 m (Ω/1000 ft)	1.48 (0.45)
Outer Conductor dc Resistance	Ω/1000 m (Ω/1000 ft)	1.9 (0.58)
Return Loss (VSWR) Performance		24.3 (1.13) @ 698-960 MHz 24.3 (1.13) @ 1700-2155 MHz 18 (1.29) @ 4400-5900 MHz
Maximum Return Loss	dB (VSWR)	19 (1.25) in other specified bands
Temperature & Power		High Power Rating
MECHANICAL SPECIFICATIONS		
Cable Weight	kg/m (lb/ft)	0.37 (0.25)
Minimum Bending Radius, Single Bend	mm (in)	125 (5)
Minimum Bending Radius, Repeated Bends	mm (in)	254 (10)
Bending Moment	Nm (lb*ft)	4.1 (3)
Tensile Strength	N (lb)	1112 (250)
Recommended / Maximum Clamp Spacing	m (ft)	0.5 / 0.9 (1.8 / 3)

RADIO FREQUENCY SYSTEMS
The Clear Choice®

1/2" ClearFill®Line Plenum-Rated Air-Dielectric Coaxial Cable for In-Building Applications

ATTENUATION AND POWER RATING

Frequency MHz	Attenuation dB/100m	Attenuation dB/100ft	Power kW
0.5	0.15	0.045	40.00
1	0.21	0.064	34.30
1.5	0.26	0.079	27.90
2	0.30	0.091	24.20
10	0.67	0.204	10.70
20	0.95	0.291	7.55
30	1.17	0.358	6.15
50	1.52	0.465	4.74
88	2.04	0.622	3.53
100	2.18	0.665	3.30
108	2.27	0.692	3.17
150	2.70	0.822	2.67
174	2.92	0.889	2.47
200	3.14	0.957	2.30
300	3.89	1.19	1.85
400	4.54	1.39	1.59
450	4.84	1.48	1.49
500	5.13	1.56	1.41
512	5.19	1.58	1.39
600	5.66	1.73	1.28
700	6.16	1.88	1.17
750	6.40	1.95	1.13
800	6.64	2.02	1.09
824	6.75	2.06	1.07
894	7.06	2.15	1.02
900	7.08	2.16	1.02
925	7.19	2.19	1.01
960	7.34	2.24	0.986
1000	7.51	2.29	0.964
1250	8.52	2.60	0.851
1400	9.08	2.77	0.799
1500	9.45	2.88	0.768
1700	10.20	3.09	0.713
1800	10.50	3.20	0.693
2000	11.20	3.40	0.65
2100	11.50	3.50	0.633
2200	11.80	3.59	0.618
2300	12.10	3.69	0.603
2400	12.40	3.78	0.588
2500	12.70	3.87	0.575
2600	13.00	3.96	0.562
2700	13.30	4.05	0.549
3000	14.10	4.31	0.519
3500	15.50	4.73	0.474
3600	15.80	4.81	0.465
4000	16.80	5.13	0.438
4500	18.10	5.51	0.408
5000	19.30	5.88	0.383
5500	20.40	6.23	0.364
6000	21.60	6.58	0.344

Attenuation at 20°C (68°F) cable temperature; tolerance +/- 5% max.; Mean power rating at 40°C (104°F) ambient temperature

TESTING AND ENVIRONMENTAL

Fire Performance	Flame Retardant, Plenum Rated
Flame Retardant Jacket Specifications	Meets/Exceeds Steiner Tunnel Test Method UL 910, NEC 820-53 (a) CMP, NFPA-262.
Regulatory Compliance	NEC Article 800 Communication Circuits ETL Listed to UL444 Canadian CSA C.22.2/FT6
Installation Temperature	-20 to 60 (-4 to 140) °C(°F)
Storage Temperature	-40 to 85 (-40 to 185) °C(°F)
Operation Temperature	-40 to 85 (-40 to 185) °C(°F)

External Document Links

Notes

Ventev - 3' DAS jumper using RG-142 plenum cable N M;N M

TESSCO SKU : 364739 Mfg Part #: RGS142NMNM-3 Qty/UOM : 1 EACH UPC: 888063647390

For wireless networking professionals demanding value and availability, Ventev's 3' N Male; N Male antenna extension cable uses RG-142 series Low Loss/RG type cable and is terminated w/ high performance 50 Ohm RF connectors and weatherproofed w/ heat shrink. Built by a manufacturer-certified technicians, this jumper is 100% tested prior to shipment. Built by a manufacturer-certified technicians, this antenna extension is tested prior to shipment for 100 percent customer satisfaction and guaranteed performance.

RF Connectors N Male / N Male

Cable Length 3 ft

Mfg. Warranty 2 Years

Wireless Solutions Jumpers are built by manufacturer certified technicians. All jumpers using crimp connectors include heatshrink . Each jumper is tested prior to shipment for 100% customer satisfaction and guaranteed performance.

PRODUCT DATASHEET

NM-LCF12-D01

RADIO FREQUENCY SYSTEMS
The Clear Choice®

N Male Connector for 1/2" Coaxial Cable, OMNI FIT™ Premium, Straight, Polymer claw and compression sealing

OMNI FIT™ high performance connectors are designed for use with both CELLFLEX® (copper) and CELLFLEX® Lite (aluminium) cables. They are designed specifically to provide the highest quality connector-cable interface while simplifying and speeding up connector attachment. All RFS connectors are fully tested for mechanical and electrical compliance to industry specifications.
The 7-16 connector is the most rugged RF connection meeting all requirements even under the most severe environmental conditions. Sealing against outer conductor and jacket by means of the polymer claw and 360° compression fit. Multifunctional, self-lubricating HighTech polymer assembly locks on cable corrugation, avoids electrochemical potential differences and compression-fits to the jacket.

OMNI FIT™ Premium Connectors

FEATURES / BENEFITS

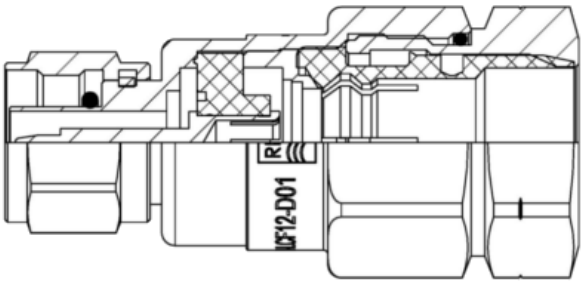
Ultra high PIM performance i.e. reduced interference leading to high customer satisfaction

Technical Features

GENERAL SPECIFICATIONS		
Transmission Line Type		Coaxial Cable
Cable Size		1/2"
Cable Type		Foam Dielectric
Model Series		LCF12-50 Series
Connector Interface		N
Connector Type		OMNI FIT™ PREMIUM Straight
Sealing Method		Polymer claw + 360° Compression
Gender		Male
ELECTRICAL SPECIFICATIONS		
Nominal Impedance	Ohm	50
3rd Order IM Product @ 2x20 Watts	dBc	-156 ; typical -162
Maximum Frequency	GHz	6.0
VSWR, Return Loss	VSWR (dB)	0 < f ≤ 1.0 GHz: 1.02 (40.0) 1.0 < f ≤ 2.7 GHz: 1.03 (36.6) 2.7 < f ≤ 3.7 GHz: 1.06 (30.7)
MECHANICAL SPECIFICATIONS		
Plating Outer/Inner		NiTin/Silver
Length	mm (in)	64.05 (2.52)
Outer Diameter	mm (in)	29 (1.14)
Weight	kg (lb)	0.11 (0.24)
Inner Contact Attachment		Basket
Outer Contact Attachment		360° clamping
ACCESSORIES		
Wrench size front	mm (in)	18
Wrench size rear	mm (in)	26
Trimming Tool		TRIM-SET-L12-D01 TRIM-LCF12-D01-A
TESTING AND ENVIRONMENTAL		
Waterproof Level		IP68

RADIO FREQUENCY SYSTEMS
The Clear Choice®

N Male Connector for 1/2" Coaxial Cable, OMNI FIT™ Premium, Straight, Polymer claw and compression sealing



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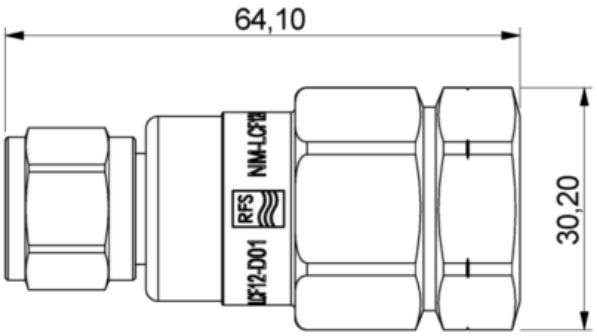

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External Document Links	Notes
Installation Instruction	

RADIO FREQUENCY SYSTEMS
The Clear Choice®

N Female Connector for 1/2" Coaxial Cable, OMNI FIT™ Premium, Straight, Polymer claw and compression sealing

OMNI FIT™ high performance connectors are designed for use with both CELLFLEX® (copper) and CELLFLEX® Lite (aluminium) cables. They are designed specifically to provide the highest quality connector-cable interface while simplifying and speeding up connector attachment. All RFS connectors are fully tested for mechanical and electrical compliance to industry specifications.
The 7-16 connector is the most rugged RF connection meeting all requirements even under the most severe environmental conditions. Sealing against outer conductor and jacket by means of the polymer claw and 360° compression fit. Multifunctional, self-lubricating HighTech polymer assembly locks on cable corrugation, avoids electrochemical potential differences and compression-fits to the jacket.

OMNI FIT™ Premium Connectors

FEATURES / BENEFITS

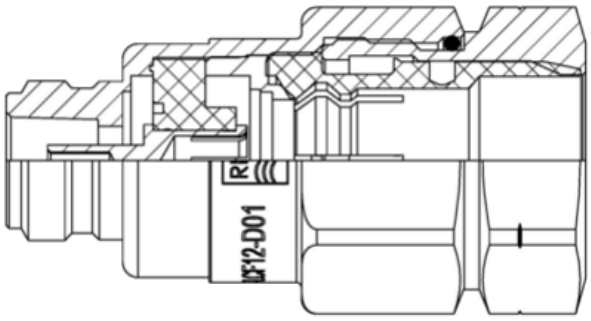
- Ultra high PIM performance i.e. reduced interference leading to high customer satisfaction
- Two-piece design i.e. visual inspection of interlocking leads to improved installation security
- OMNI FIT™ concept i.e. streamlined order management and reduced stock level
- Watertight sealing in mated and unmated condition, i.e. reduced efforts during installation and improved security during operation
- Unique NiTin plating i.e. extreme resistance against corrosion even under hardest climatic and environmental circumstances
- Multi-thread (Tristart) design i.e. simplified and accelerated tightening process
- RoHS (EU) and CRoHS (China) compliant i.e. can be used on a global basis

Technical Features

GENERAL SPECIFICATIONS		
Transmission Line Type		Coaxial Cable
Cable Size		1/2"
Cable Type		Foam Dielectric
Model Series		LCF12-50 Series
Connector Interface		N
Connector Type		OMNI FIT™ PREMIUM Straight
Sealing Method		Polymer claw + 360° Compression
Gender		Female
ELECTRICAL SPECIFICATIONS		
Nominal Impedance	Ohm	50
3rd Order IM Product @ 2x20 Watts	dBc	-156 ; typical -162
Maximum Frequency	GHz	6.0
VSWR, Return Loss	VSWR (dB)	0 < f ≤ 1.0 GHz: 1.02 (40.0) 1.0 < f ≤ 2.7 GHz: 1.03 (36.6) 2.7 < f ≤ 3.7 GHz: 1.06 (30.7)
MECHANICAL SPECIFICATIONS		
Plating Outer/Inner		NiTin/Silver
Length	mm (in)	57.1 (2.25)
Outer Diameter	mm (in)	26 (1.02)
Weight	kg (lb)	0.1 (0.22)
Inner Contact Attachment		Basket
Outer Contact Attachment		360° clamping
ACCESSORIES		
Wrench size front	mm (in)	27 (1-1/16)
Wrench size rear	mm (in)	27 (1-1/16)
Trimming Tool		TRIM-SET-L12-D01 TRIM-LCF12-D01-A
TESTING AND ENVIRONMENTAL		
Waterproof Level		IP68

RADIO FREQUENCY SYSTEMS
The Clear Choice®

N Female Connector for 1/2" Coaxial Cable, OMNI FIT™ Premium, Straight, Polymer claw and compression sealing



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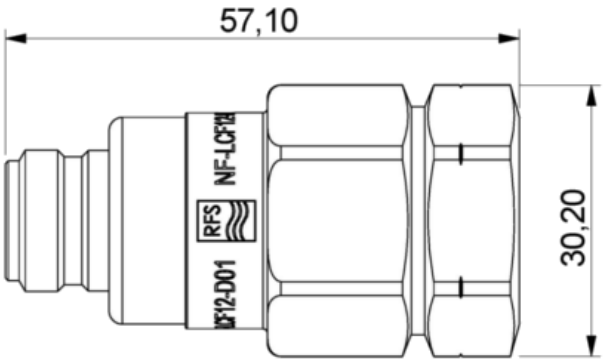

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External Document Links	Notes
Installation Instruction	

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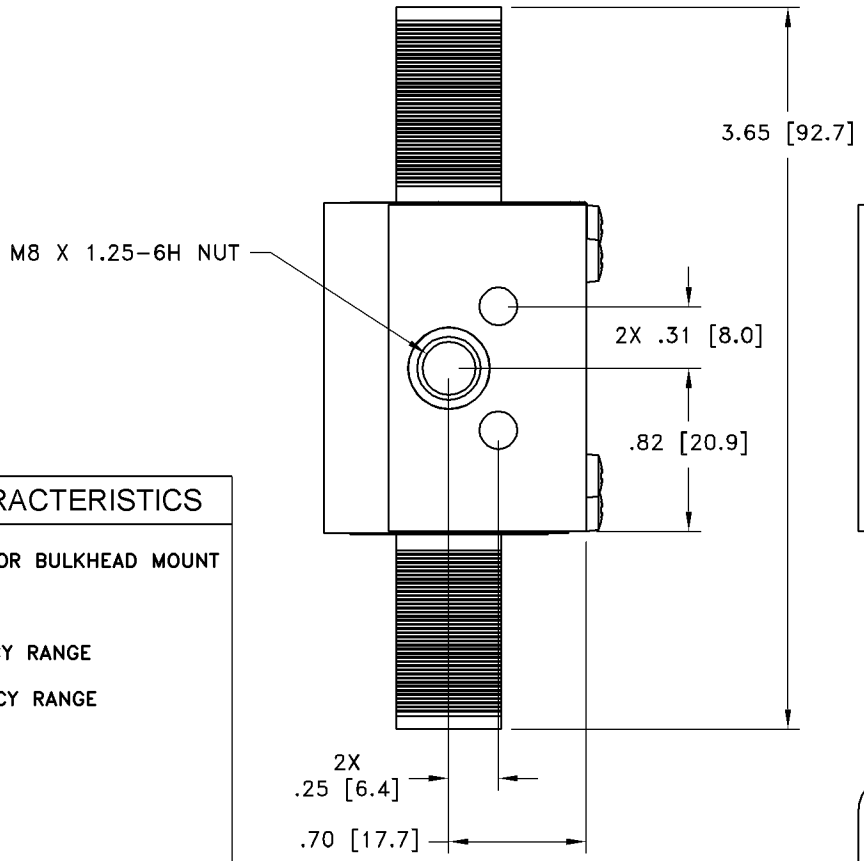
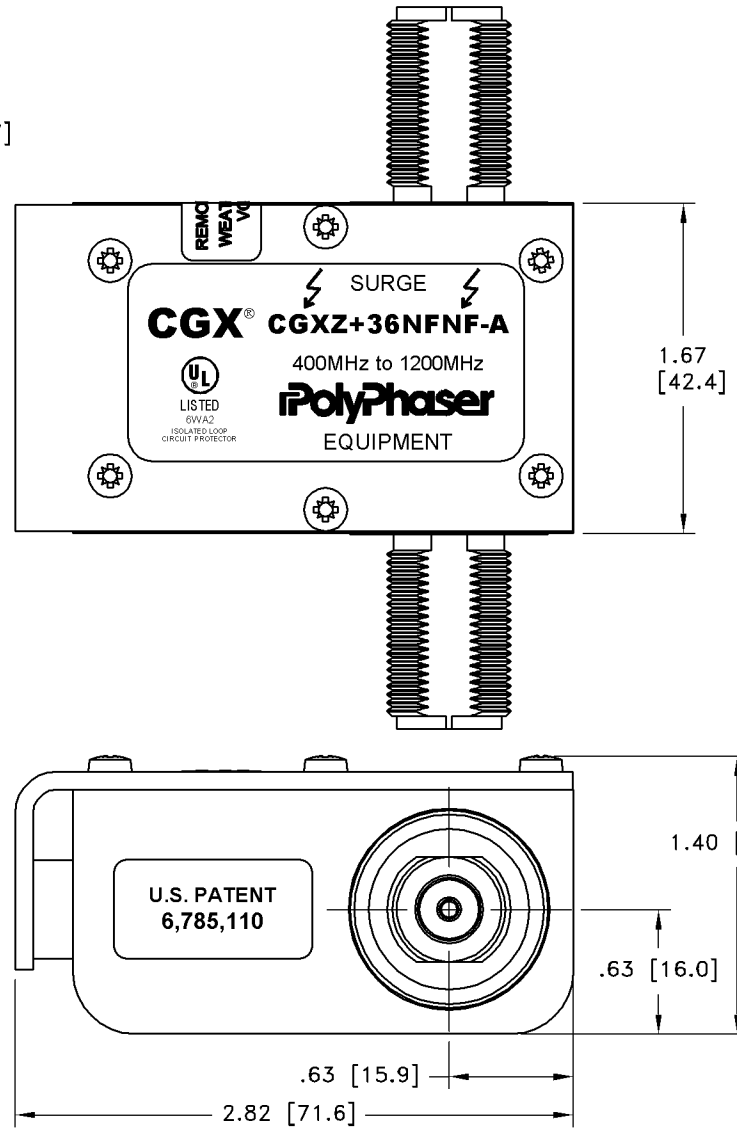
REVISIONS				
REV LTR	DATE	ENG	MKTG	Q.A.
B	05/18/07 SH	KCB	CP	LJ





MAXIMUM CHARACTERISTICS

APPLICATION:
WEATHERIZED, FLANGE OR BULKHEAD MOUNT

FREQUENCY RANGE:
400MHz TO 1200MHz

VSWR:
≤1.1:1 OVER FREQUENCY RANGE

INSERTION LOSS:
≤0.1dB OVER FREQUENCY RANGE

POWER:
300 WRMS AVERAGE

TURN ON:
+40Vdc

TURN ON TIME:
4ns FOR 2kV/ns

MAX. SURGE:
20kA IEC 61000-4-5 8/20µs WAVEFORM

THROUGHPUT ENERGY:
≤1500µJ FOR 3kA, 8/20µs WAVEFORM

USER VOLTAGE:
+36Vdc MAX

USAGE CURRENT:
≤4.0A CONTINUOUS

RELATIVE HUMIDITY:
TO 95%

ENVIRONMENTAL:
MEETS IEC 60529 IP67
MEETS BELLCORE #TA-NWT-000487 PROCEDURE 4.11, WIND DRIVEN (120MPH) RAIN INTRUSION TEST.

TEMPERATURE:
-50°C TO +85°C STORAGE/OPERATING

CUSTOMER APPROVAL: _____ DATE: _____

ALL DIMENSIONS SHOWN ABOVE ARE FOR REFERENCE ONLY.

DRAFTER R. SWART	DATE 02/07/06	PolyPhaser P.O. BOX 9000 MINDEN, NV 89423 TEL: 775-782-2511 FAX: 775-782-4476				
MECH ENGINEER R. DUNNING	DATE 04/24/06	DWG NO/PART NO/DESCRIPTION				
ELEC ENGINEER K. BARTEL	DATE 04/24/06	CGXZ+36NFNF-A CUSTOMER PRINT				
MARKETING S. DOTTER	DATE 04/24/06					
QUALITY DEPT R. MATHEUS	DATE 04/24/06	CAGE CODE 61114	FILE NAME -C1	SCALE 1/1	SHEET 1 OF 1	

NFPA-Compliant Public Safety Radio Enhancement System Monitoring Unit and Annunicator Panel

NFPA MEMBER

DASalert Models 1221-A & 1221-B

Meets NFPA-72 (2010, 2013 & 2016) and current NFPA-1221 codes for a

Dedicated Annunciator and Monitoring Panel

Displays Status of:

- **BDA**
- **Donor Antenna**
- **AC Power**
- **Battery Capacity**
- **Battery Charger**
- **System Status**

Includes Form-C relay contacts to interface with any fire alarm system

Monitors communications link for integrity

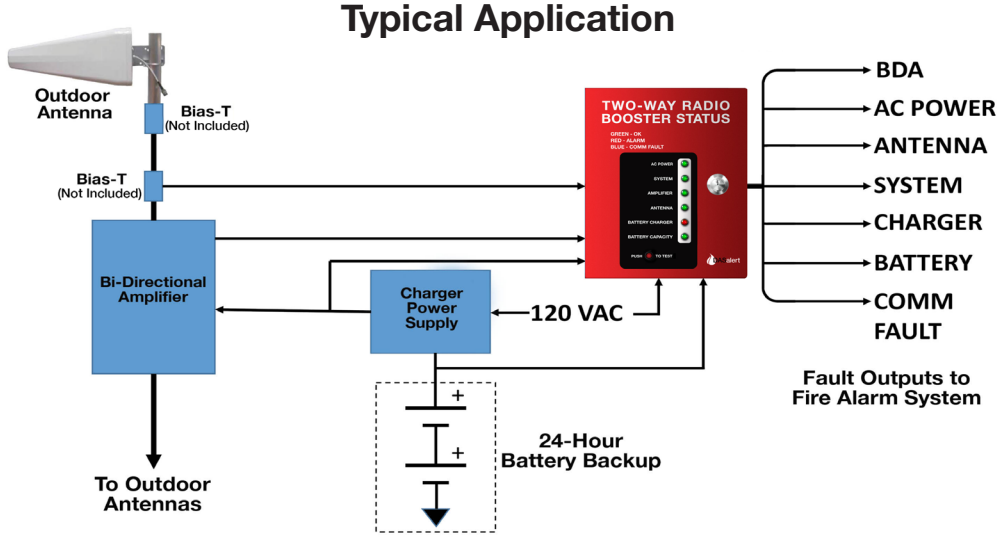
Includes independent circuitry to check antenna, AC power, battery capacity, charger and overall system status

Mates with or augments monitoring of any BDA, antenna, charger, battery or UPS

Low cost, easy to install and program
Small size NEMA-4: 10”H x 8”W x 4”D

Backed up by internal battery (included)

Model 1221-A Monitor and Annunciator Panel Typical Application



Code Requirements

The current edition of the NFPA 1221 fire code (shown below) and NFPA-72 (2010, 2013 & 2016) describe the requirements for monitoring the performance of Public Safety in-building two-way Radio Enhancement Systems with a dedicated panel. This panel is required to be located in the fire command center but some jurisdictions require that it be located in the same room as the Radio Enhancement System.

These panels are designed to meet all these requirements. In addition, Model 1221-A contains additional circuitry to enhance and augment the alarm sensing capabilities of the BDA and the DAS backup emergency power supply if they are not code compliant.

Fault Signaling Relays

Some DAS components are not configured with the appropriate Form-C alarm relays that can interface properly with all Fire Alarm Systems. This unit provides these alarm relays. They can be programmed to mate with any Fire Alarm System with their 'normally OFF' or 'normally ON' states for any 'fail safe' convention that is required by the Fire Alarm System.

Enclosure & Power Requirements

The enclosure is NEMA-4 rated consistent with the other requirements of the code and a small backup battery (included) inside the panel provides over 24 hours of service if this is needed to supplement loss of primary power. Primary power is provided by an AC socket-mounted 15 VDC power supply (included).

Communication Integrity

Per code, fault detection cables between the Radio Enhancement System and the panel are monitored to detect open circuits or short circuits to ground. If this condition is detected the panel will trigger a fault alarm to the Fire Alarm System signaling the loss of communications integrity.

Antenna Monitoring (Model 1221-A)

If the bi-directional amplifier (BDA) in the Radio Enhancement System does not have the capability to monitor donor antenna faults, the panel can provide this by adding external Bias-Ts in line with the antenna. The panel will detect common faults such as open circuits, short circuits, disconnected or severed cables leading to the antenna without impacting the RF performance of the system.

Installation

This panel provides an economical easy-to-install solution to meeting the code requirements and the flexibility to interface with and augment, if required, the fault detection and alarm signaling capabilities of a large variety of standard components used in these systems. The small size and light-weight enclosure can be wall-mounted into any installation.

Model Comparison

Module	Model 1221 A	Model 1221 B
Annunciator System with FORM-C relay outputs to main fire alarm installation	✓	✓
Alternative Donor Antenna Failure Sense Module (Bias-T fittings not included)	✓	
Alternative DAS Battery Capacity Sense Module	✓	
Alternative DAS Battery Charger Failure Sense Module	✓	
Annunciator System Backup Battery (8 Ahr)	✓	✓
Annunciator System Power Supply and Battery Charger	✓	✓
Price	$1499.00	$999.00

Models 1221A and 1221B Module Descriptions

Annunciator System with FORM-C relay outputs to main fire alarm system
(Models 1221A & Model 1221B)

This is the basic annunciator system that accepts ALARM signaling from external relays contained in the DAS equipment. The system accepts relay signaling indicating the following alarms:

- Loss of AC Power
- Amplifier Problems
- Antenna Problems
- DAS Battery Capacity below 30%
- DAS Battery Charger Fail
- Communications Faults
- Summary System Alarm

The annunciator system provides FORM-C dry relay contacts to provide alarm signaling with any fire alarm installation. The system will operate with DAS installations that include multiple amplifiers, antennas and power sources, and includes circuitry to detect communications faults (open or short circuits) with the DAS equipment.

Annunciator System Backup Battery

Both models are shipped with an 8 Ahr rechargeable SLA battery that mounts inside the enclosure to provide over 24 hours of backup power.

Annunciator System Power Supply and Charger

Both models are shipped with an external 15 VDC power supply and battery charger that can be connected to any 120 VAC power outlet. The battery charger includes indicators that show the health of the panel's backup battery. The need to replace this battery can be signaled to the building's main fire alarm system.

Alternative Donor Antenna Failure Sense Module
(Model 1221-A only)

This module provides a means of detecting open circuit, short circuits, disconnected, severed or lose connector problems in the antenna feed from the donor. This circuitry utilizes external bias-T fittings (not included). Multiple antennas can be connected in parallel to the same monitoring port.

Model 1221A should be used if your amplifier or other components in your installation do not have the means of detecting donor antenna problems.

Alternative DAS Battery Capacity Sense Module
(Model 1221-A only)

If your installation has a backup battery to provide emergency DAS power in the event of an AC power failure it must be monitored to detect when it has less than 30 % capacity left to power the system when primary power is lost.

Model 1221A should be used if your emergency power unit does not have this capability.

Alternative DAS Battery Charger Failure Sense Module
(Model 1221-A only)

If your installation has a backup battery to provide emergency DAS power in the event of an AC power failure, the battery charger must be monitored to detect if it has failed or is degraded.

Model 1221A should be used if your charger unit does not have this capability.

Excerpted from NFPA 2012 (2016 Edition): Similar requirements in NFPA-72 (2010, 2013, 2016)

Standard for Installation, Maintenance, and Use of Emergency Services Communications System

9.6.13.2 Dedicated Panel.

(1) A dedicated monitoring panel shall be provided within the fire command center to annunciate the status of all RF emitting devices and system component locations. The monitoring panel shall provide visual and labeled indications of the following for each system component and RF emitting device:

(a) Normal ac power
(b) Loss of normal ac power
(c) Battery charger failure
(d) Low battery capacity (to 70 percent depletion)
(e) Donor antenna malfunction
(f) Active RF emitting device malfunction
(g) System component malfunction

(2) The communications link between the dedicated monitoring panel and the two-way radio communications enhancement system must be monitored for integrity.

Specifications

Dimensions	10” x 8” x 4”	**Fault inputs from Radio Enhancement System**	Donor Antenna OK / Fail
Weight	11.7 lbs		Amplifier OK / Fail
			Charger OK / Fail
			Battery Capacity OK / Low
			AC Power ON / OFF
Form C Dry Relay Outputs to Fire Alarm System	AC Power		
	System (Summary Alarm)	**Analog Inputs**	Donor Antenna Sense
	Amplifier (BDA)		DAS Battery +/-
	Antenna		
	Battery Charger	**Certifications**	UL: E194432, ETL: 4001276
	Battery Capacity		
	Communications Fault	**Power**	15 VDC (180 ma) from supplied Power Supply

Tappers, DN-x1FN series

Public Safety, Unequal Splitters
147 - 960 MHz, N connectors
Rev. A

- Split ratios from 100:1 to 2:1
- Covers all Public Safety bands: VHF, UHF, TETRA, and 700-900 MHz bands
- Low Specified PIM
- 500 W Avg Power Rating
- Minimal RF Insertion Loss
- RoHS compliant
- High Reliability, IP67

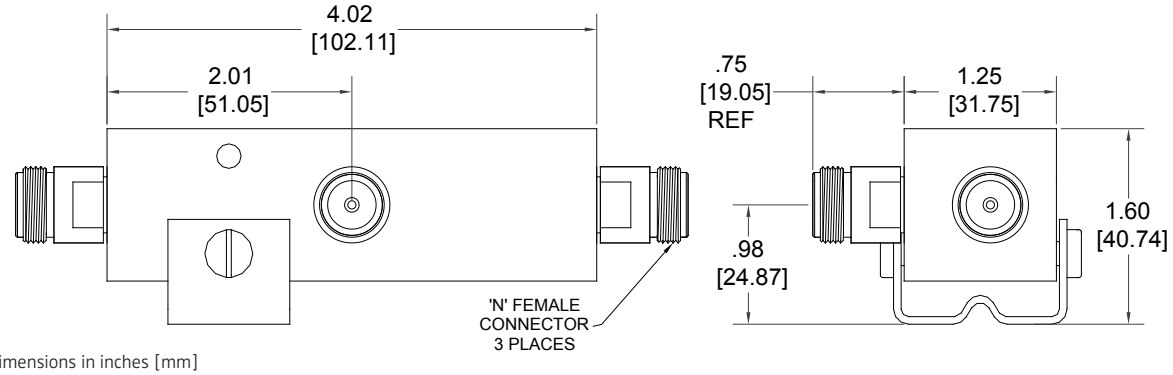
LOW PIM

Microlab DN-x1FN series of Tappers unevenly split high power RF signals in fixed ratios from 100:1 to 2:1 with minimal reflections or loss. The Tappers cover VHF, UHF, TETRA, and 700 - 900 MHz Public Safety bands. The innovative asymmetric design ensures an excellent input VSWR and coupling flatness across the specified bands.

The lightweight design allows easy attachment to a wall using the supplied bracket. Designed with only a few solder joints and an air dielectric, loss is minimized and reliability enhanced. See DN-x4 series for similar Tappers with broader bandwidth and multiple connector options.

Frequency Bands:	Bands specified below
Dissipative Loss:	<0.1 dB (main line)
Power Rating:	500W avg., 3 kW peak
Impedance:	50Ω nominal
Intermod. (PIM):	-161 dBc (2 tones at +43 dBm)
Environment:	IP67, -35°C to +75°C
Connectors:	N(f) trimetal
Housing Finish:	Passivated Aluminum
Weight, nom:	14 oz (380 g)
Mounting:	Bracket supplied

Model Number	Ratio, nom. (dB Inequality between Outputs)	Output Split Main/Branch dB	Coupling to Branch arm, dB 147-200 MHz	200-250 MHz	250-380 MHz	380-520 MHz	698-960 MHz	Input VSWR Max 147-380 MHz	380-960 MHz
DN-31FN	2:1/3.0dB	-1.8/-4.8	-6.3±0.7	-5.8±0.6	-5.4±0.6	-5.1±0.6	-4.8±0.5	1.40:1	1.30:1
DN-51FN	4:1/6.0dB	-1.0/-7.0	-8.1±0.7	-7.6±0.6	-7.3±0.6	-7.0±0.6	-6.5±0.5	1.30:1	1.25:1
DN-71FN	10:1/10dB	-0.4/-10.4	-11.0±0.8	-10.7±0.7	-10.3±0.7	-10.1±0.7	-9.9±0.5	1.20:1	1.20:1
DN-91FN	30:1/15dB	-0.1/-15.1	-16.0±0.8	-15.6±0.8	-15.5±0.8	-15.2±0.8	-15.4±0.5	1.20:1	1.20:1
DN-01FN	100:1/20dB	-0.1/-20.1	-20.3±1.0	-20.1±1.0	-20.0±1.0	-20.1±1.0	-20.1±0.8	1.20:1	1.20:1



Dimensions in inches [mm]

Note: Specifications are subject to change without prior notification.

01DEC2015

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Tel: (973) 386-9696 • sales@microlab.fxr.com • www.microlab.fxr.com • Fax: (973) 386-9191

CriticalPoint™ Public Safety Bi-Directional Amplifier

RX-7W22 PS 700/800MHz BDA
UL2524 Compliant

Features

- Digital/programmable utilizing FPGA
- Supports public safety 700/800MHz in single band or dual band version
- Supports P25 P1/P2 digital and conventional analog communications simultaneously
- Supports FirstNet™ LTE band 14
- Single band versions include license to switch from original band to alternate band
- Single band can be upgraded to dual band via license key
- Each band supports up to 32 narrow band filters (Class A)
- Each band supports up to 3 wide band filters (Class B)
- Channelized Auto Level Control (ALC) / Channelized uplink squelch (Class A)
- **NetProtect** Uplink PA shutdown during no traffic periods to minimize noise being introduced to the network (Class A)
- Built-in mandatory isolation test to prevent BDA oscillation
- Auto shutdown with alarm upon oscillation detection
- Web based GUI for intelligent configuration, SNMP supported
- NFPA compliant dry contact alarms, NEMA 4X enclosure
- **Complies with NFPA 1221 2016 / 2019 edition, IFC 2018 Section 510**
- **FCC: PX8RX-7W22-A (Class A), PX8RX-7W22-B (Class B)**
- **UL 2524 Compliant**

Specifications

Electrical			**700MHz**	**800MHz**
Total Output Power, Downlink		dBm	33/27	33/27
Total Output Power, Uplink		dBm	27	
Maximum System Gain		dB	90	90
Gain Adjustment Range (1dB step)		dB	0-30	0-30
Pass Band Ripple, p-p		dB	≤ 5	≤ 5
Uplink Noise Figure		dB	≤ 5	≤ 5
Intermodulation		dBm	≤ -13	≤ -13
Spurious	9kHz to 1GHz	dBm	FCC Compliance	FCC Compliance
	1GHz to 12.75GHz	dBm		
Maximum RF Input Power without Damage		dBm	10	10
Maximum RF Input Power without Overdrive		dBm	-20	-20
ALC Range		dB	60	60
Input VSWR			≤ 1.5	≤ 1.5
Impedance		Ω	50	50

DS-Control: 0-0-2 / 0919

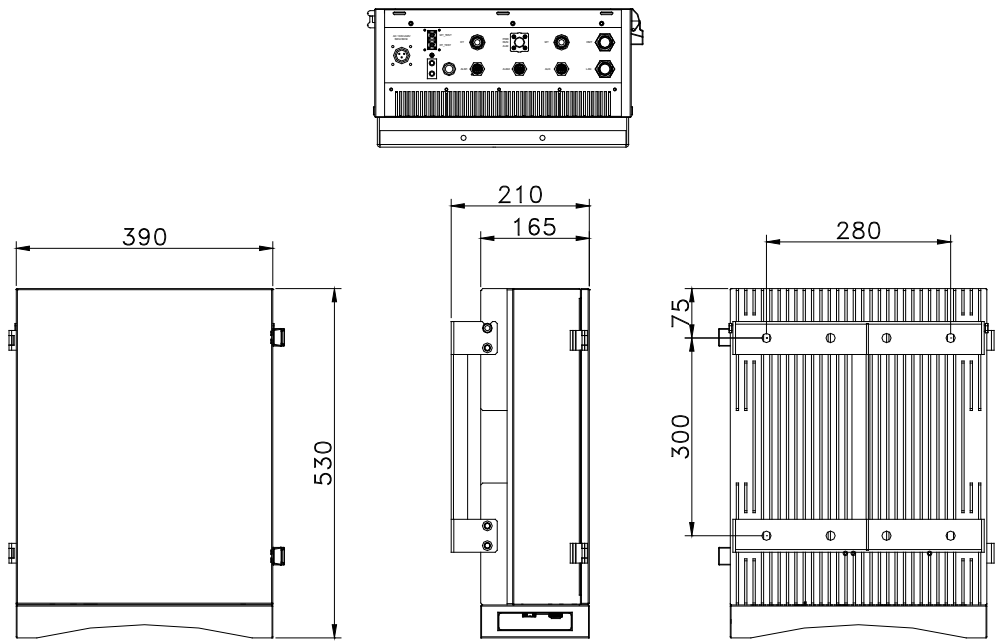
Class A				
Frequency Range, Uplink		MHz	US: 788-805	806-824
Frequency Range, Downlink		MHz	US: 758-775	851-869
Filter Bandwidth		KHz	12.5/25/75+10MHz (LTE)	12.5/25/75
Number of Filters			US: 32+1 (LTE)	32
System Group Delay	Bandwidth: 12.5KHz	μsec	≤ 35	≤ 35
	Bandwidth: 25KHz		≤ 27	≤ 27
	Bandwidth: 75KHz		≤ 15	≤ 15
	Bandwidth: 10MHz (LTE)		≤ 6.5	NA
Out-of-Band Suppression	Bandwidth: 12.5KHz	dBc	≥ 80 @ filter center + 75KHz	≥ 80 @ filter center + 75KHz
	Bandwidth: 25KHz		≥ 80 @ filter center + 75KHz	≥ 80 @ filter center + 75KHz
	Bandwidth: 75KHz		≥ 80 @ filter center + 200KHz	≥ 80 @ filter center + 200KHz
	Bandwidth: 10MHz (LTE)		≥ 45 @ filter edge + 0.6MHz ≥ 60 @ filter edge + 1MHz	NA

Class B			
Frequency Range, Uplink	MHz	US: 788-805	US:806-817
Frequency Range, Downlink	MHz	US: 758-775	US:851-862
Filter Bandwidth	MHz	0.2-10	0.2-10
Number of Filters		3	3
System Group Delay	μsec	≤ 6.5	≤ 6.5
Out-of-Band Suppression	dBc	≥ 45 @ filter edge + 0.6MHz ≥ 60 @ filter edge + 1MHz	≥ 45 @ filter edge + 0.6MHz ≥ 60 @ filter edge + 1MHz

Mechanical			
Dimensions, H x W x D		in(mm)	20.9 x 15.4 x 8.3 (530 x 390 x 210)
Weight (without bracket)		lb(kg)	50.7 (23)
		VDC	-40 ~ -58
Power Consumption	Single band	W	80 (33dBm), 75 (27dBm)
	Dual band	W	100 (33dBm), 90 (27dBm)
Enclosure Cooling			Convection
RF Connectors			N-Female
Test Port			SMA, -22dB
Maximum Input for Dry Contact Port			24VDC, 1A / 110VAC, 0.5A
Operating Temperature		ºF (ºC)	-27 to +140 (-33 to +60)
Operating Humidity			≤ 95%
Environmental Class			NEMA 4X
MTBF		hr	≥ 100,000 @ 77 ºF

Note: Typical specifications at room temperature,

Outline Drawing



Part Numbers

Configuration	33dBm DC Class A	27dBm DC Class A	33dBm DC Class B	27dBm DC Class B
Single band 700MHz	RX07V1-A3348-UL	RX07V1-A2748-UL	RX07V1-B3348-UL	/
Single band 800MHz	RX08V1-A3348-UL	RX08V1-A2748-UL	RX08V1-B3348-UL	/
Dual band 700/800MHz	RX78V1-A3348-UL	RX78V1-A2748-UL	RX78V1-B3348-UL	RX78V1-B2748-UL
License				
Dual Band (700/800MHz) License	RX7W22-L783233		RX7W22-L78B333	

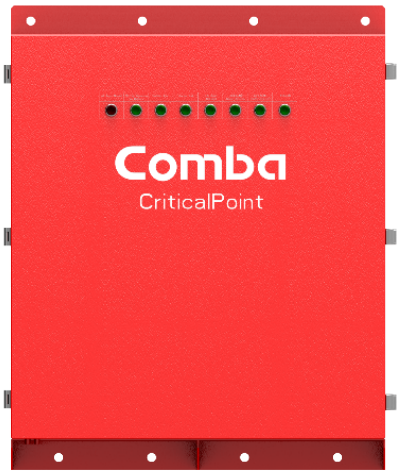
CriticalPoint™ Public Safety Battery Backup Unit

CPBBUV1-48055-UL
UL2524 Compliant

Comba keeps you connected

Features

- Provides an uninterruptible DC -48V power supply to Public Safety equipment
- Supports minimum 24 hours backup power for 100W equipment or minimum 12 hours backup power for 200W equipment
- Supports alarms:
  - AC Fail Alarm
  - Battery Low Alarm
  - Charger Fail Alarm
- Supports 4 external alarms from other Public Safety equipment
- Supports 7 dry contact output to additional annunciator panel / fire panel
- Supports LED displays for all dry contact alarms in front panel
- Supports outlets for EPO (Emergency Power Off) switch
- Supports local monitoring and control through RJ45 port
- **UL 2524 Compliant**



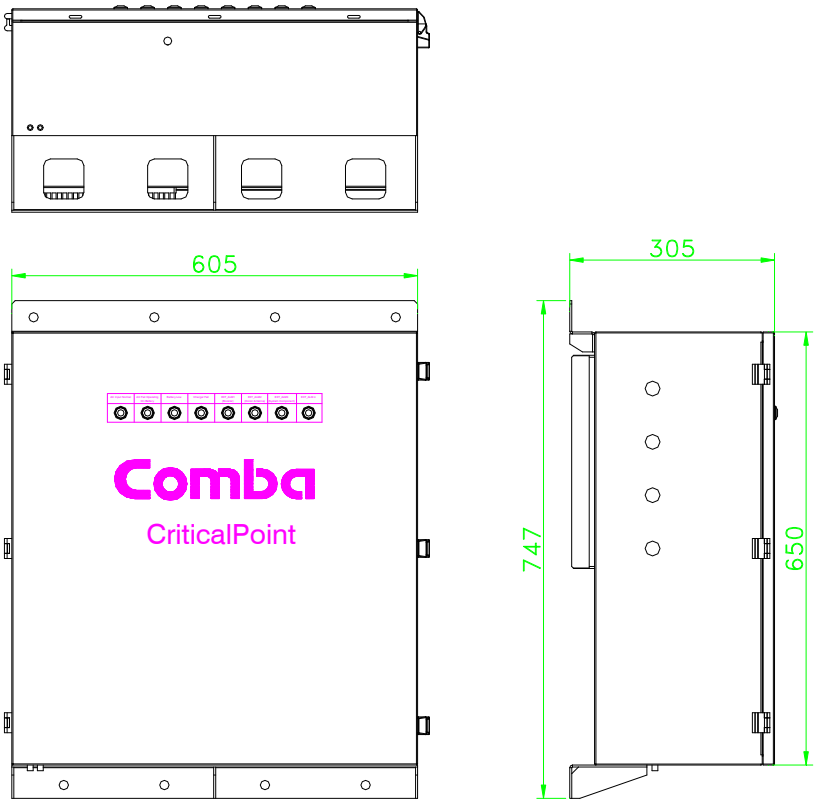
Specifications

Mechanical		
Dimensions, H x W x D	in(mm)	29.4 x 23.8 x 12.0 (747 x 605 x 305)
Weight (without bracket)	lb(kg)	44.1(20) (not include batteries)
Knockouts		7/8-inch hole for 1/2-inch conduit x 8
Operating Temperature	°F (°C)	-27 to 131 (-33 to 55)
Operating Humidity		≤ 95%
Enclosure Environmental Class		UL50E Type 4
Electrical and Battery		
Power Supply (Input)	VAC	100-240/47-63Hz
Power Supply (Output)	VDC	-48V
Power Supply (Maximum Charging Current)	A	10
Heat Dissipation	BTU/hr	143.3
Battery Amp/Hour, Quantity		55AH (Neata NT12-55AH) x 4
Battery Weight	lb(kg)	36.2(16.4)
Total Battery Electrolyte	Pounds	29.6
Total Battery Content	Gallons	3.17932
Battery Backup Capacity		min. 24 Hour for 100W or min. 12 Hour for 200W
Alarms		
Dry Contact Outputs		7
External Alarms Inputs		4
Maximum Input for Dry Contact Port		24VDC, 3A

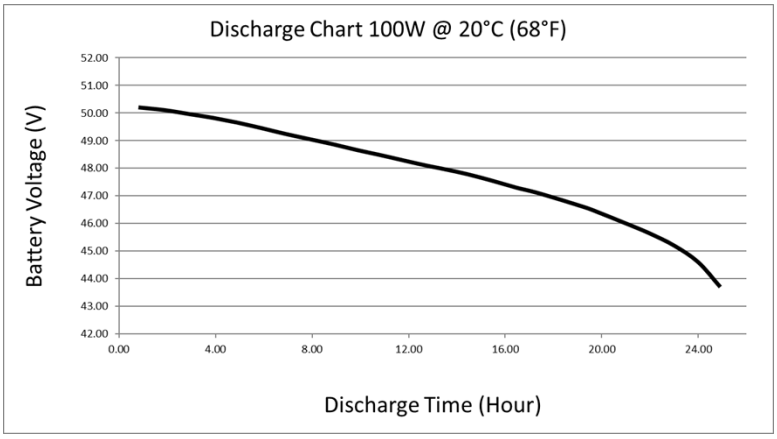
Note: Typical specifications at room temperature,

DS-Control: 0-0-2 / 0919

Outline Drawing



Discharge Chart



Part Numbers

Part Number	Description
CPBBUV1-48055-UL	100-240VAC Input / -48VDC Output, 55AH batteries, UL2524 compliant

DS-Control: 0-0-2 / 0919

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 9

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System
Para. No. 9.1 Maintenance Service Contract

Item shall be included as part of future submittal package.

Submittal No. Emergency Responder Radio Coverage System
Fuller Station
Merit Electric
Contract #: 30495
AWS Project #: 10443

TAB # 10

Distributed Antenna System

Specification Section: Emergency Responder Radio Coverage System

Para. No. 10.1 Permit Drawings/Letter of Authorization

Item shall be included as part of future submittal package.
Shall be provided once shop drawings have been approved and submitted to the AHJ for Approval