



City of Santa Rosa

Virtual Meeting - See Agenda
for Participation

ZONING ADMINISTRATOR REGULAR MEETING AGENDA AND SUMMARY REPORT - FINAL JULY 21, 2022

**PURSUANT TO GOVERNMENT CODE SECTION 54953(e) AND THE
RECOMMENDATION OF THE HEALTH OFFICER OF THE COUNTY OF
SONOMA, THE ZONING ADMINISTRATOR WILL BE PARTICIPATING IN
THIS MEETING VIA ZOOM WEBINAR.**

**MEMBERS OF THE PUBLIC CAN PARTICIPATE VIRTUALLY AT
WWW.ZOOM.US/JOIN OR BY TOLL FREE TELEPHONE (877) 853-5257;
USING MEETING ID: 881 8032 5979.**

**PUBLIC ACCESSING THE MEETING THROUGH ZOOM CAN PROVIDE
COMMENTS DURING THE PUBLIC COMMENT PERIODS. ADDITIONAL
INFORMATION RELATED TO MEETING PARTICIPATION IS AVAILABLE
AT [HTTPS://SRCITY.ORG/ZONINGADMIN](https://srcity.org/zoningadmin)**

**THE MEETING WILL BE LIVE-STREAMED AT
[HTTPS://WWW.YOUTUBE.COM/CITYOFSANTAROSA](https://www.youtube.com/cityofsantarosa)**

10:30 A.M. - REGULAR SESSION (VIRTUAL MEETING)

1. CALL TO ORDER

2. PUBLIC COMMENT

This is the time when any person may address matters not listed on this agenda, but which are within the subject matter of the jurisdiction. The public may comment on agenda items when the item is called. Each speaker is allowed three minutes.

3. ZONING ADMINISTRATOR BUSINESS

3.1 STATEMENT OF PURPOSE

The Zoning Administrator is appointed by the Planning and Economic Development Director and has the responsibility and authority to conduct public hearings and to take action on applications for all administrative permits and approvals issued by the Department. A determination or decision by the Zoning Administrator may be appealed to the Design Review Board, Cultural Heritage Board, Planning Commission, or City Council as applicable to the decision.

3.2 ZONING ADMINISTRATOR REPORTS

4. CONSENT ITEM(S)

5. SCHEDULED ITEM(S)

5.1 DESIGN REVIEW - 50 OLD COURTHOUSE SQUARE

BACKGROUND: Dish Wireless proposes to collocate six new panel antennas and related equipment on a privately owned rooftop where existing wireless telecommunications equipment is located. The application has been filed by Allison Holleman representing Dish Wireless c/o The CBR Group. File No. PRJ22-006 (DR22-012).

Project Planner: Sheila Wolski

5.2 LANDMARK ALTERATION - 408 BENTON ST

BACKGROUND: To accommodate a kitchen remodel, the project proposed to eliminate one window; replace two windows with similar single/ double hung windows; and replace a fourth window and single French door with a double French door. The project scope also include replacing the tar and gravel roof with asphalt shingles. The application has been filed by Lacey Campbell. File No. LMA22-006

Project Planner: Susie Murray

5.3 LANDMARK ALTERATION - 401 DENTON WAY

BACKGROUND: Replacement of windows on the interior side and rear elevations (windows that are not readily visible from the public right-of-way). Current windows are double hung wood frame windows with single pane glass. Replacement windows will be block frame Tuscan Millgard box windows that will be inserted into the existing wood frame. The application has been filed by Thembi Borrás. File No. LMA22-004

Project Planner: Susie Murray

6. ADJOURNMENT

In compliance with Zoning Code Section 20-62, the decision of the Zoning Administrator is final unless an appeal is filed on a City Appeal Form (<https://srcity.org/DocumentCenter/Index/173>) and associated fees, as noted on the City's Fee Schedule (<https://srcity.org/DocumentCenter/View/16129/Planning--Economic-Development-Department-Fee-Schedule?bidId=>), are paid within 10 calendar days of the action. The time limit will extend to the following business day where the last day falls on a day that the City is not open for business.

The City of Santa Rosa does not discriminate against individuals with disabilities in its employment, services, benefits, facilities, programs, or activities. Requests for accommodations, auxiliary aids, or services necessary to participate in a City program, service, or activity, including printed information in alternate formats, are available by contacting the Recording Secretary at 707-543-3226 (TTY Relay at 711). Requests should be submitted as far in advance as possible, but no later than two business days before the scheduled meeting.

Any writings or documents provided to the Zoning Administrator prior to this meeting regarding any item on this agenda are available for public review at <https://santa-rosa.legistar.com/Calendar.aspx> or in person at the Planning and Economic Development Department, Room 3, City Hall, 100 Santa Rosa Ave, during normal business hours.



City of Santa Rosa

Text File

File Number: 22-343ZA

Agenda Date: 7/21/2022

Version: 1

Status: In Committee

In Control: Zoning Administrator

File Type: ZA- Agenda Item

Agenda Number: 5.1



February 22, 2022

City of Santa Rosa
Planning & Economic Development Department
100 Santa Rosa Ave.
Santa Rosa, CA 95404

City of Santa Rosa
Planning & Economic
Development Department
Feb 23, 2022
RECEIVED

RE: DISH Wireless Reference: SFSFO00280A (50 Old Courthouse Square) APN is 009-013-013.

Dear Planning & Economic Development:

On behalf of DISH Wireless, this letter provides information and an enhanced description to support the application's request to receive Zoning Review and Building Department Approval to locate equipment on an existing wireless facility located on a privately owned rooftop near the referenced location.

The following is a detailed **Project Description** of the facility design, the project's purpose, and justifications to find support of the application.

Project Purpose:

The purpose of this project is to provide new wireless voice and data coverage to the surrounding area. These wireless services include mobile telephone, wireless broadband, emergency 911, data transfers, electronic mail, Internet, web browsing, wireless applications, wireless mapping, and video streaming, etc.

Project Valuation:

This project is valued at \$70,000.00

Location:

DISH Wireless is proposing a new installation on a privately owned rooftop, where existing wireless equipment is located at 50 Old Courthouse Square, Santa Rosa, CA 95404. The property APN is 009-013-013.

DISH Wireless is the applicant and has property owner approval to locate on the existing roof top, allowing DISH Wireless to apply for development review and other applicable planning or building permits in connection with DISH's proposed facility at this location.

Sector Scope of Work

Install (6) Proposed Panel Antennas (2 per sector)
Install (6) Proposed Antenna Mounts (2 per sector)
Install Proposed Jumpers
Install (12) Proposed RRU's (4 per sector)
Install (3) Proposed Over Voltage Protection Device (OVP)
Install (3) Proposed Power and (3) Proposed Fiber Trunk
Install Proposed Cable Tray

The CBR Group, Inc.
2840 Howe Rd. Suite E.
Martinez. CA. 94553



Rooftop Scope of Work

Install (1) Proposed Metal Platform with H-Frame
Install (1) Proposed Cable Ladder Tray or Cable Tray
Install (1) Proposed BBU in Cabinet
Install (1) Proposed Equipment Cabinet
Install (1) Proposed Power Conduit
Install (1) Proposed Telco Conduit
Install (1) Proposed NEMA 3 Telco-Fiber Box
Install (1) Proposed GPS Unit

Antennas/Radios:

The antennas and radios will be located on the rooftop, with the center height of the antennas on the structure at 107' feet. These units serve to run the equipment that interfaces with the DISH Wireless communications network. The drawings and photographic simulations included with this application depicts the design and its appearance on the rooftop.

Justification:

As the community's demands for more capacity with another carrier are increasing exponentially, we are required to go more closely into the areas where people use their phones, such as neighborhoods, urban areas, commercial complexes, and agricultural areas as well. Centrally located sites provide the best capacity for the most people in each community.

This site will increase the bandwidth needed to access data-rich applications like video and internet streaming, uploading, and downloading photos and video, applications in the area to serve existing customers, and future wireless needs.

Construction:

Once all required permits are received, the licensed General Contractor will pick up the permit(s) and ensure that the CUBC requirements for construction are met. Construction will take about 2-3 weeks with minimal disruption to the area.

Maintenance and Monitoring:

After the site construction is complete and the installation is operational, the installation will be an unmanned facility that requires occasional maintenance, about once a month or less, unless the equipment needs repair. All repair and installation work will comply with the City Development Services Department Requirements for conducting work on private property. Also, all non-emergency work may be done during non-peak traffic hours to alleviate traffic congestion.



Safety Standards:

Please note that the Federal Communications Commission (FCC) sets safety guidelines for wireless facilities and due to the location of this type of installation, the emission from this equipment is a small fraction of FCC permitted levels in any publicly-accessible area. See FCC website for additional information at: <http://www.fcc.gov/oet/rfsafety/rf-faqs.html>. Included with our submittal is documentation from a 3rd party engineer stating how the proposed facility will comply with the FCC safety standards.

In conclusion, based on review of the above information and supporting documents included with our application, it is our hope we have provided substantial information to respectfully request City of Santa Rosa's Planning and Building support of the Project thereby recommending application approval. Santa Rosa's Planning and Building approval will deliver DISH's Wireless service to the area that will better serve Santa Rosa's residences, visitors, and possibly emergency service providers who rely on the DISH Wireless network.

If you have questions, please feel free to contact me at 925-699-7460 or Allison@theCBRgroup.com

Sincerely,

The CBR Group, Inc.

Allison Holleman

Allison Holleman
(Authorized Agent for DISH Wireless)

SITE ID: SFSFO00280A

50 Old Courthouse Sq. Santa Rosa, CA 95404
Site Coordinates 38.440356, -122.713068

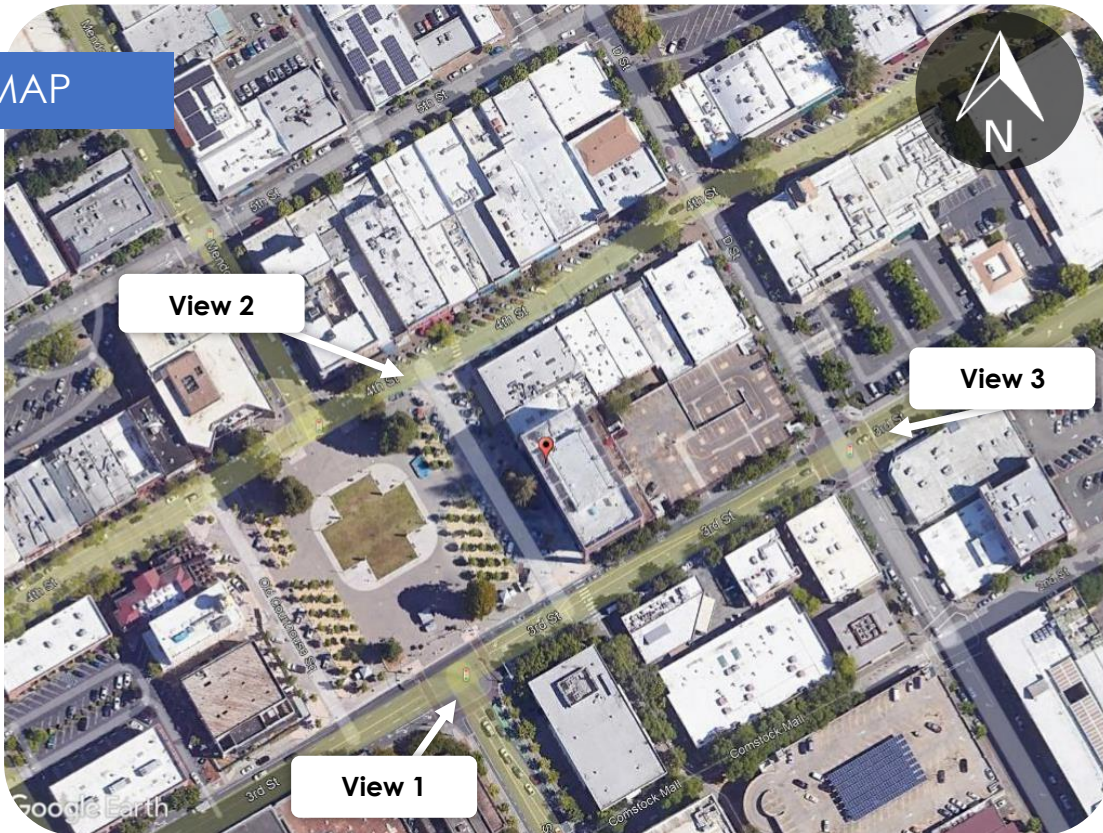


PROPOSED SITE LOCATION SFSFO00280A

City of Santa Rosa
Planning & Economic
Development Department

Feb 23, 2022
RECEIVED

GOOGLE MAP



EXISTING

GAMMA SECTOR



PROPOSED

PROPOSED NEW ANTENNAS AND
SUPPORT EQUIPMENT MOUNTED ON
TOP OF PENTHOUSE.



View 1: Looking Northeast along 3rd St. | Photosim produced 12/09/2021

EXISTING

ALPHA SECTOR



PROPOSED

PROPOSED NEW ANTENNAS AND
SUPPORT EQUIPMENT MOUNTED ON
TOP OF PENTHOUSE (NOT VISIBLE).



View 2: Looking Southeast from 4th St.

| Photosim produced 12/09/2021

SITE ID: SFSFO00280A

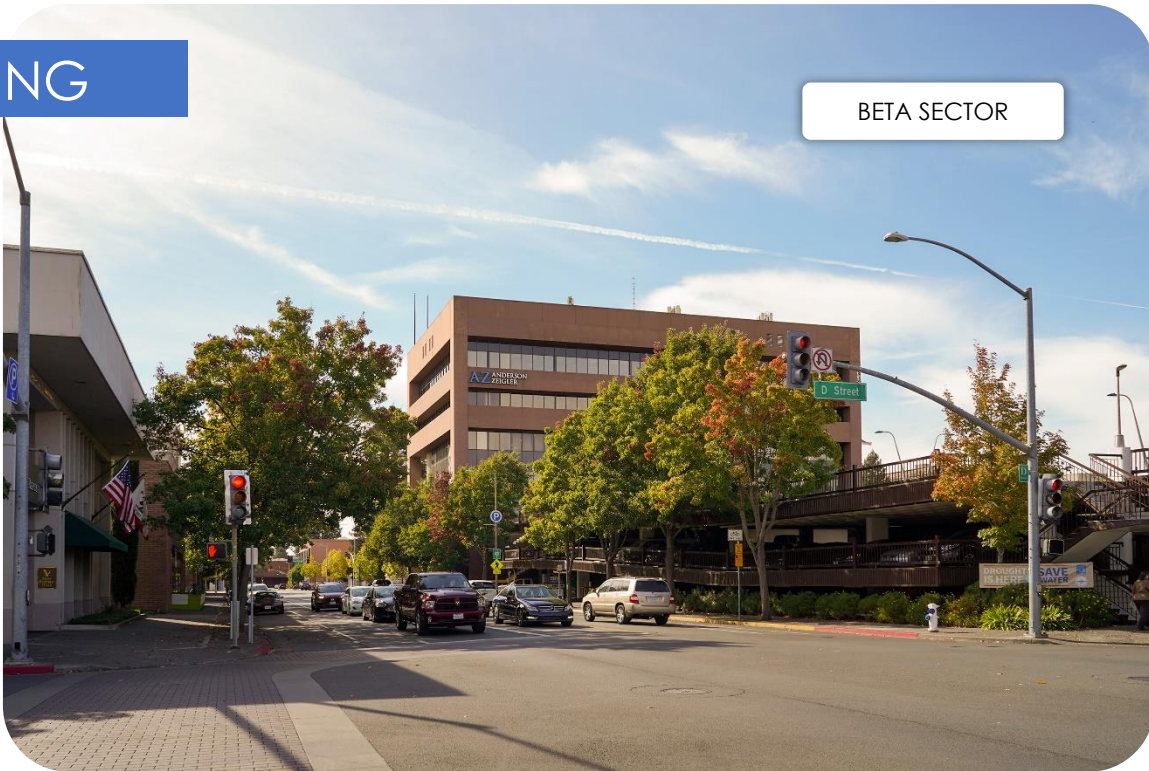
50 Old Courthouse Sq, Santa Rosa, CA 95404

Site Coordinates 38.440356, -122.713068



EXISTING

BETA SECTOR

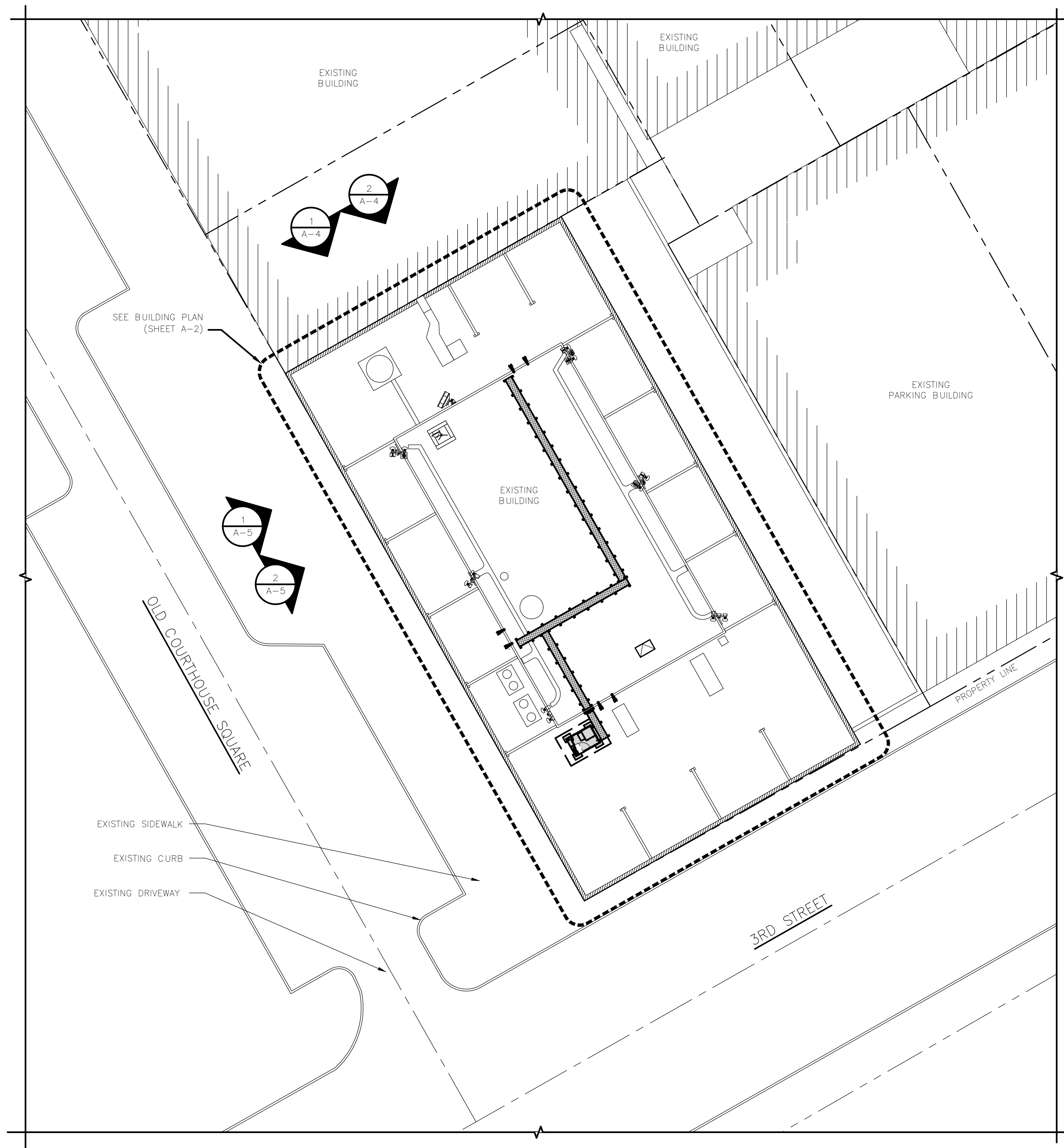


PROPOSED

PROPOSED NEW ANTENNAS AND
SUPPORT EQUIPMENT MOUNTED ON
TOP OF PENTHOUSE.



View 2: Looking West along 3rd St. | Photosim produced 12/09/2021



NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. PROPOSED WORK IS COMPLIANT WITH 6409(a) ELIGIBILITY FACILITIES REQUEST CRITERIA



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www.TheCBRGroup.com

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OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
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JDL/IK	---	---
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RFDS REV #: 11/17/2021 REV 3

ZONING
DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	11/22/2021	90%ZD'S ISSUED FOR REVIEW
B	11/29/2021	100% ZONING DRAWINGS

A&E PROJECT NUMBER

SFSF000280A

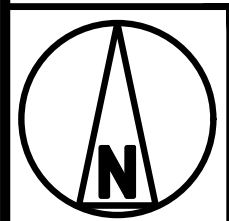
DISH Wireless L.L.C.
PROJECT INFORMATION

SFSF000280A
50 OLD COURTHOUSE SQ.
SANTA ROSA, CA 95404

SHEET TITLE
OVERALL
SITE PLAN

SHEET NUMBER

A-1



OVERALL SITE PLAN



1

EXISTING BUILDING

EXISTING PARKING BUILDING

ALPHA SECTOR
AZIMUTH=0°

SEE ANTENNA PLAN
(SHEET A-3)

10'-0"

EXISTING MICROWAVE DISH,
BY OTHER

58'x1.75' = 101.5 SQ. FT.

HYBRID CABLE LENGTH

58'-0"

EXISTING PENTHOUSE

32'x1.75' = 56 SQ. FT.

32'-0"

HYBRID CABLE LENGTH

21'-9"

SEE ANTENNA PLAN
(SHEET A-3)

ROOFTOP ACCESS HATCH

EXISTING TRANSFORMER

EXISTING VERIZON CABLE TRAY, BY OTHERS

EXISTING VERIZON ANTENNAS, BY OTHERS

SEE ANTENNA PLAN
(SHEET A-3)

22'x1.75' = 38.5 SQ. FT.

22'-0"

13.25'x1.75' = 23.2 SQ. FT.
(CABLE TRAY MOUNTED ON WALL FROM ROOFTOP TO EQUIPMENT AREA)

32'-6"

EXISTING GENERATORS

BETA SECTOR
AZIMUTH=120°

EXISTING BUILDING ROOFTOP

8'-0"

8'x1.75' = 14 SQ. FT.

SEE ENLARGED EQUIPMENT PLATFORM LAYOUT, SEE 1/ A-6

EXISTING 12'-6" HIGH PARAPET WALL

EXISTING PARAPET SUPPORT BEAM, TYP.

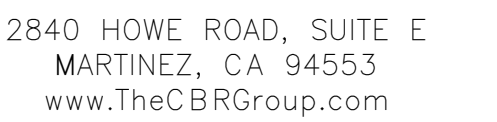
±152'-0"

±79'-6"

GAMMA SECTOR
AZIMUTH=250°

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. UTILITY RUBBER MAT TO BE IN STALLED UNDER ALL DISH Wireless L.L.C. EQUIPMENT THAT IS RESTING ON OR AFFIXED TO ROOF MEMBRANE

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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JDL/IK	---	---

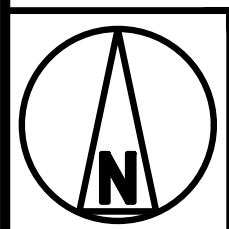
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DISH Wireless L.L.C.
PROJECT INFORMATION

SHEET TITLE
ENLARGED BUILDING
PLAN

A-2



1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS

-
- 4.0'x2.5' = 10 SQ. FT.
- PROPOSED ANTENNA MOUNTED ON
PROPOSED WALL MOUNT (TYP OF
2 PER SECTOR, TOTAL 6)
- PROPOSED WALL MOUNTS
(TYP OF 2 PER SECTOR,
TOTAL 6)
- PROPOSED OVP DEVICE
(TYP OF 1 PER SECTOR, TOTAL 3)
- EXISTING PENTHOUSE WALL

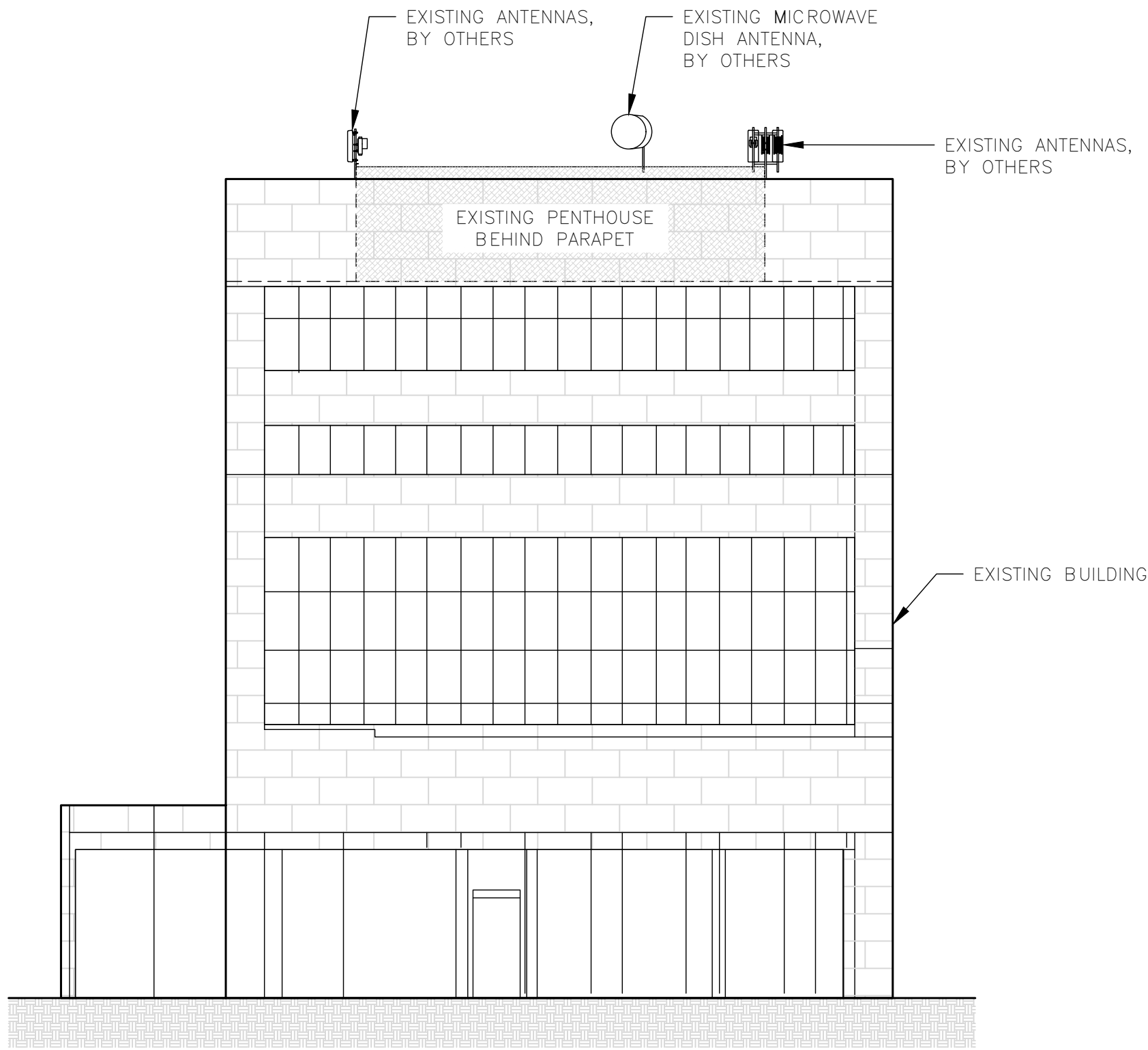
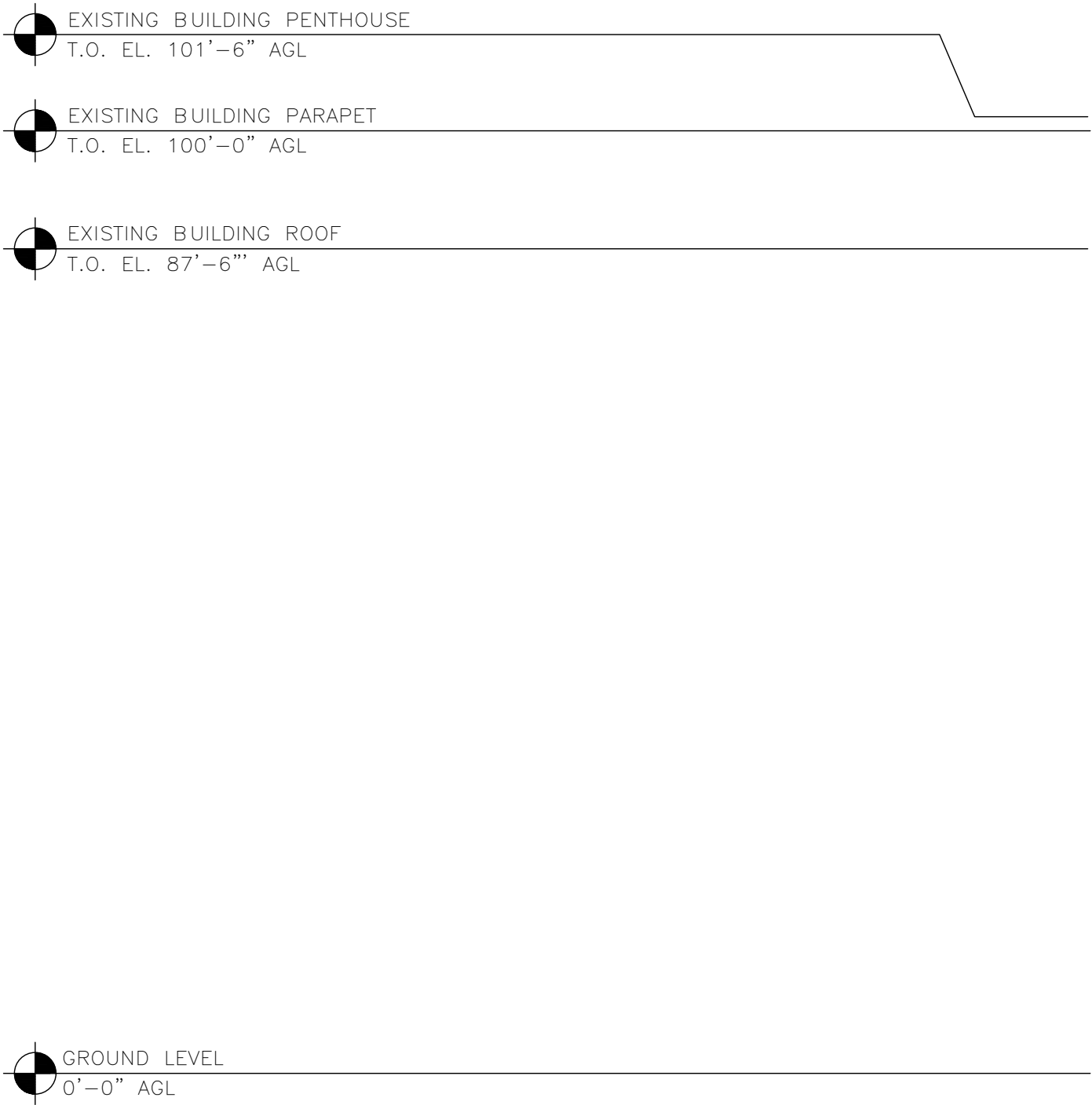
TOTAL AREA FOR ANTENNAS = 29.6 SQ. FT.



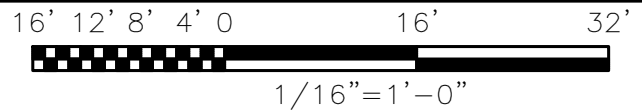
ANTENNA SCHEDULE

4

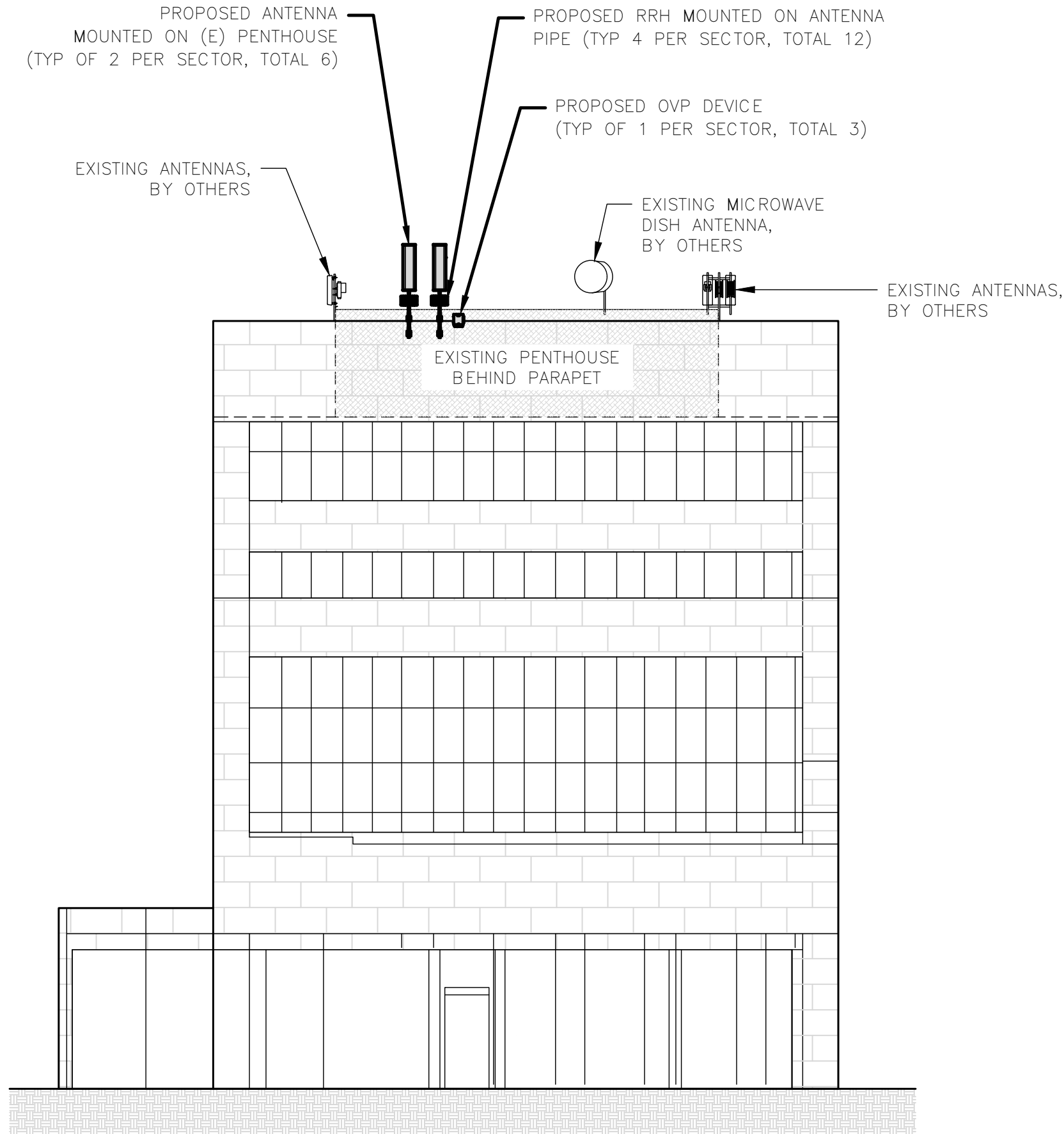
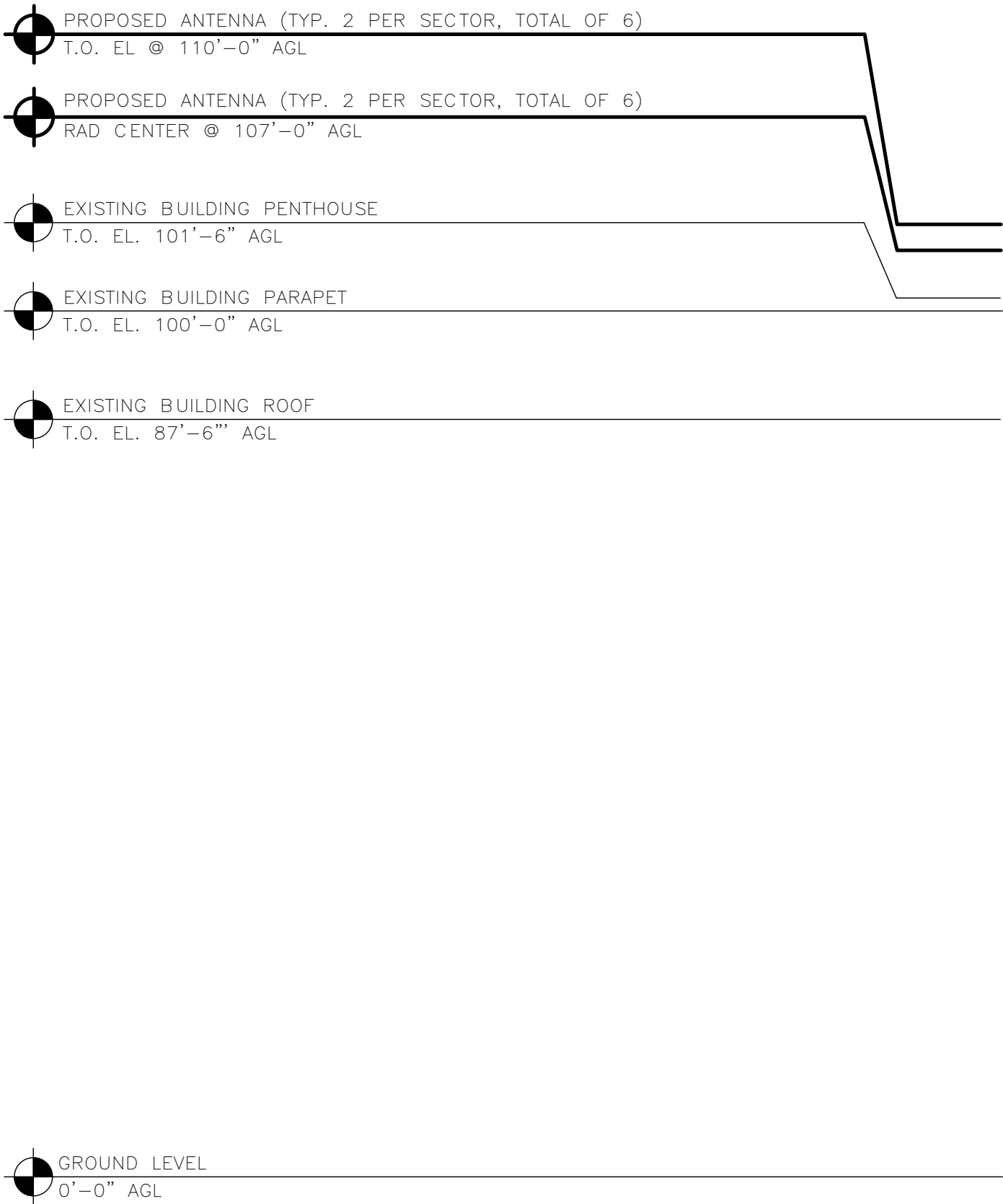




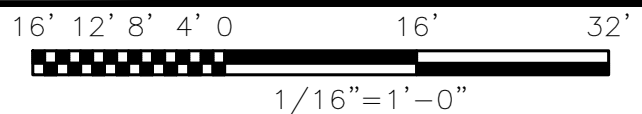
EXISTING NORTHWEST ELEVATION



1



PROPOSED NORTHWEST ELEVATION



2

NOTES

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RFDS REV #: 11/17/2021 REV 3

ZONING DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	11/22/2021	90%ZD'S ISSUED FOR REVIEW
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A&E PROJECT NUMBER

SFSF000280A

DISH Wireless L.L.C.
PROJECT INFORMATION

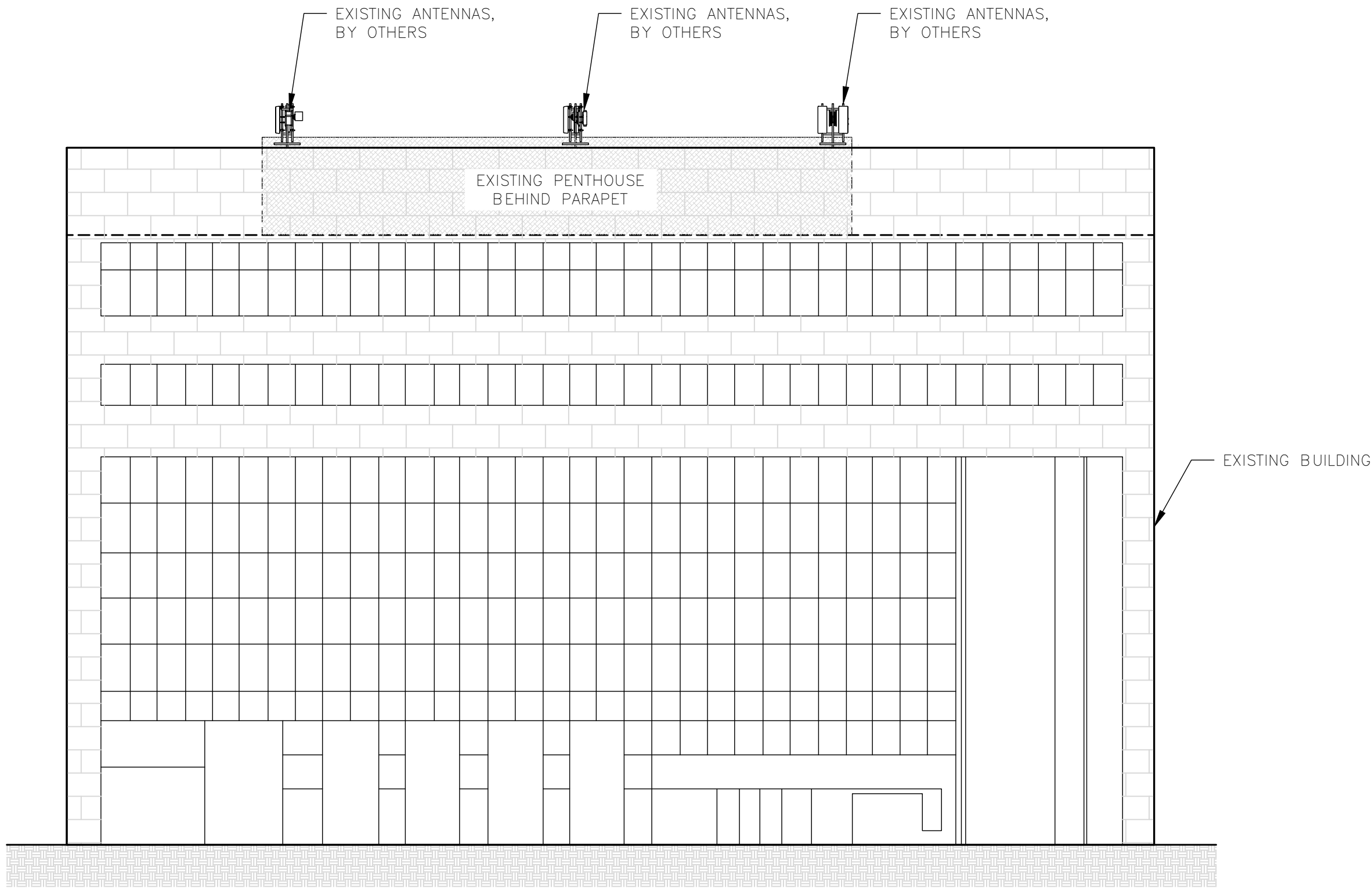
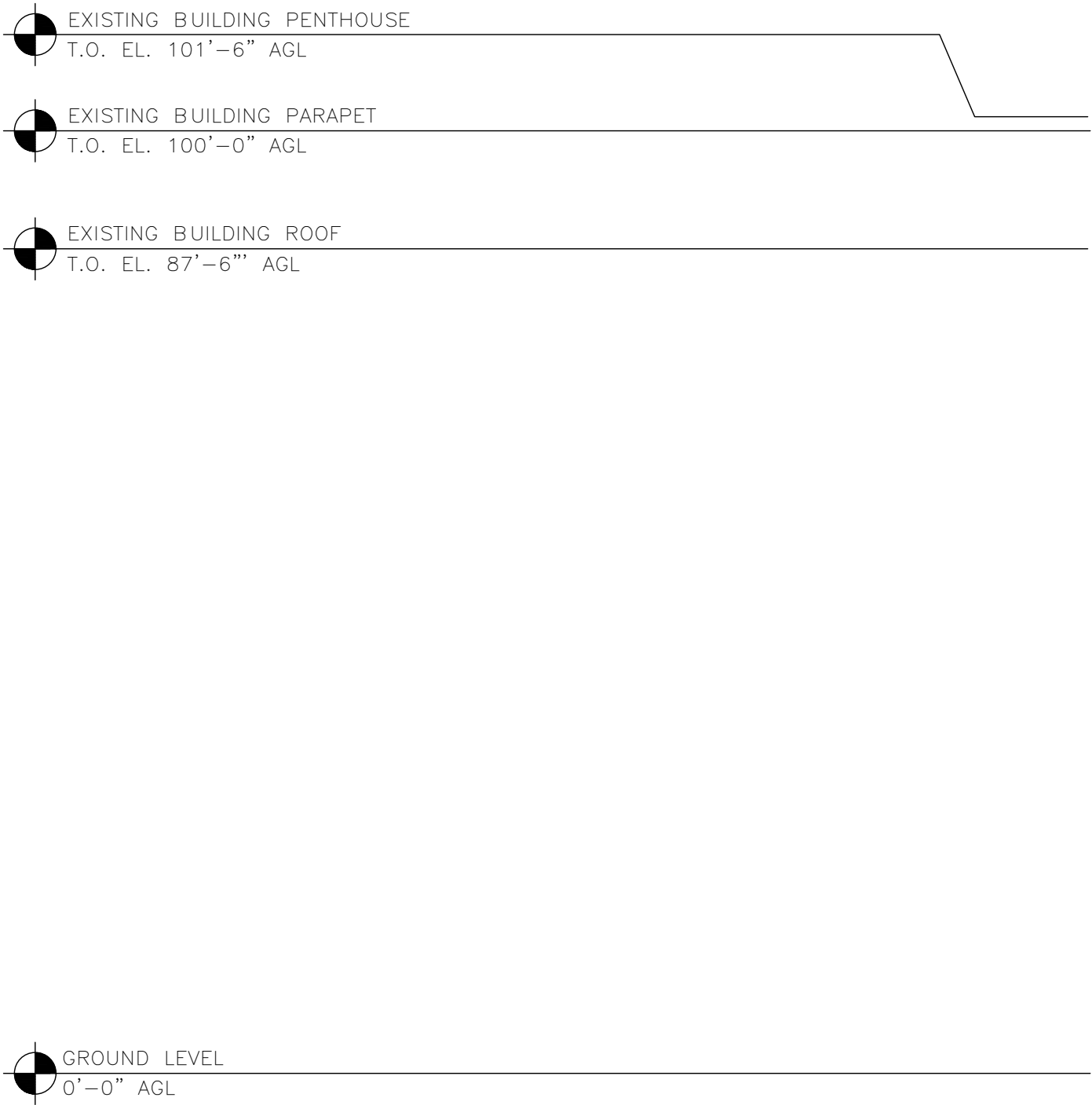
SFSF000280A
50 OLD COURTHOUSE SQ.
SANTA ROSA, CA 95404

SHEET TITLE

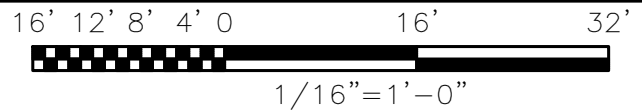
NORTHWEST
ELEVATIONS

SHEET NUMBER

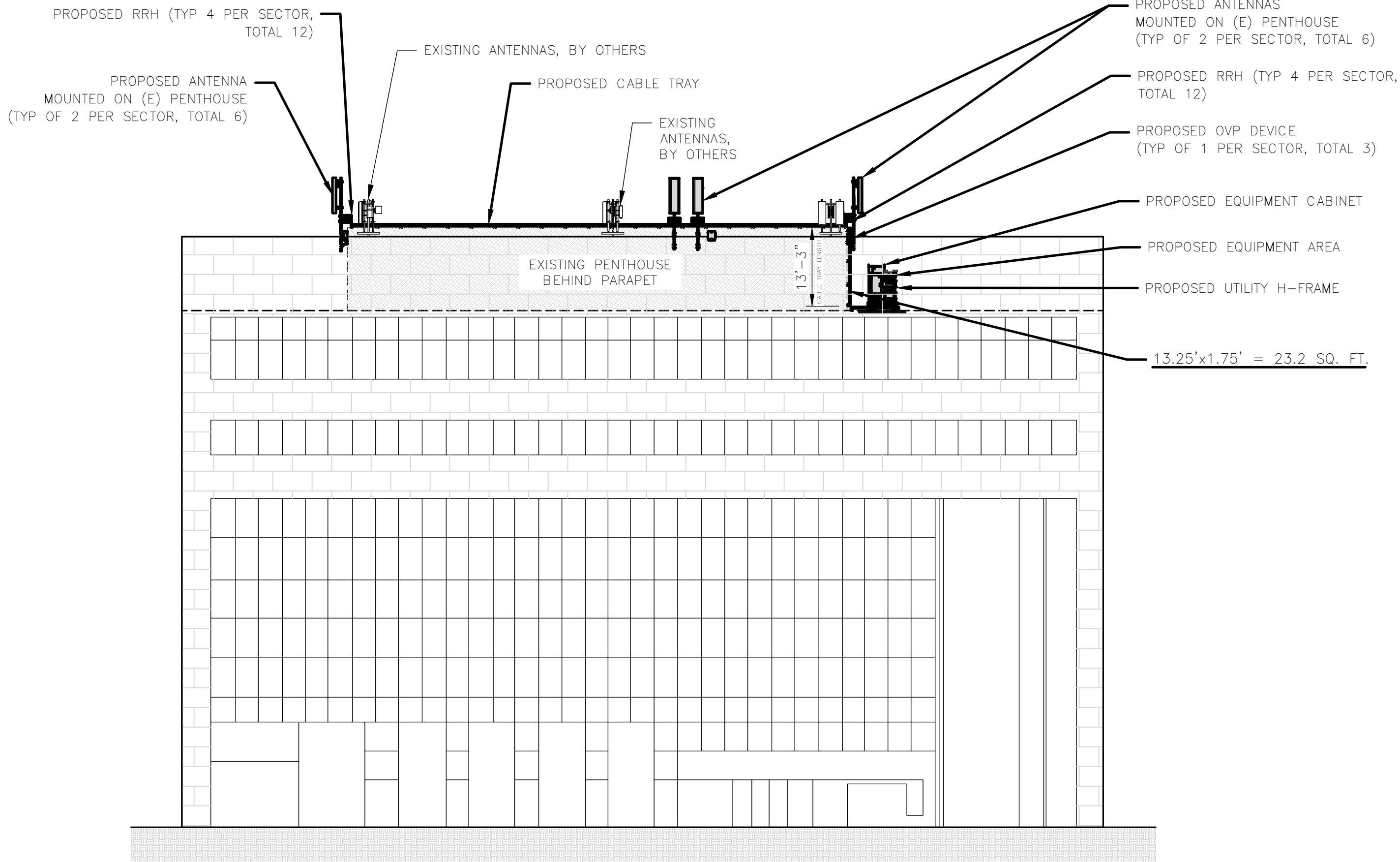
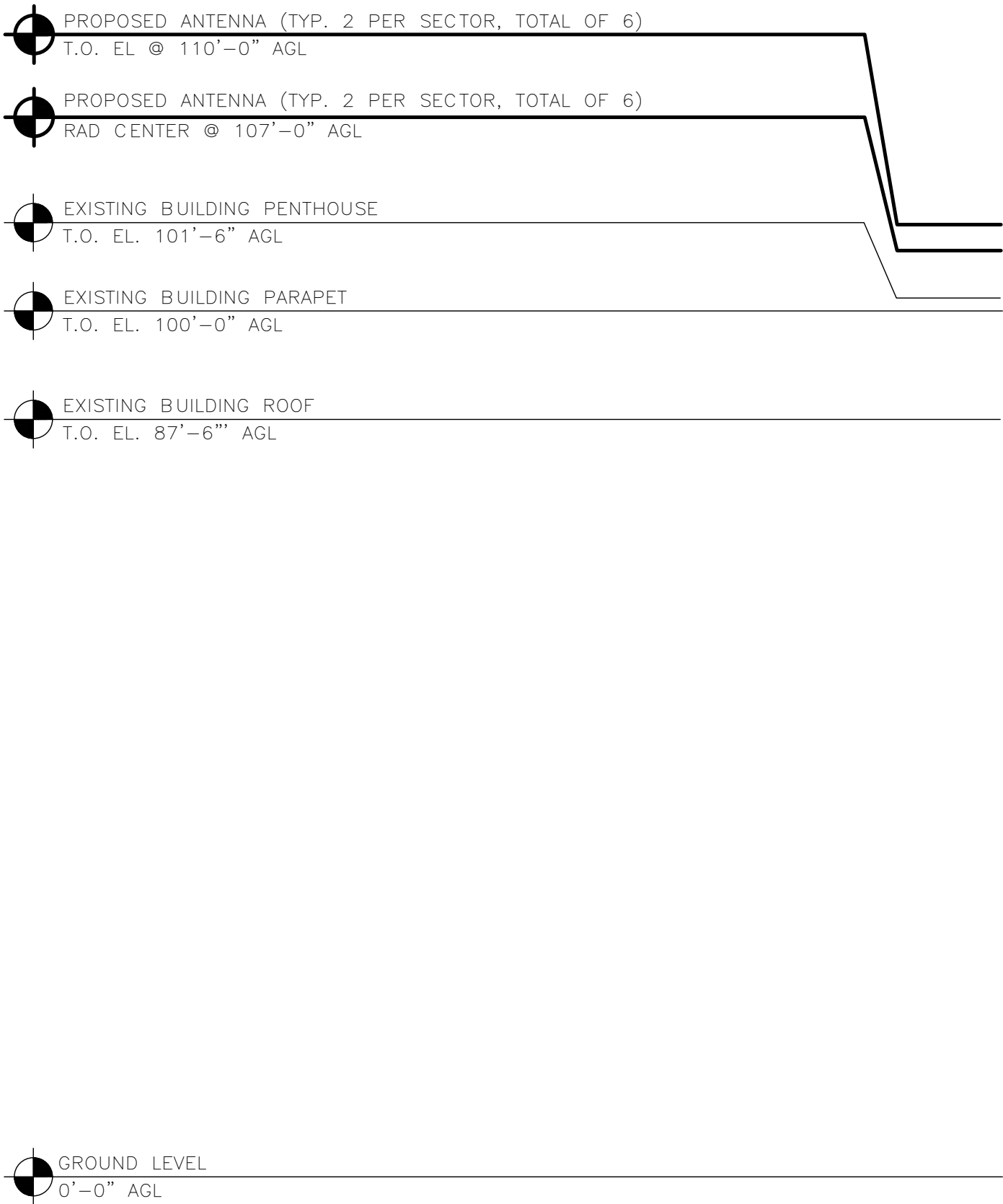
A-4



EXISTING SOUTHWEST ELEVATION



1



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SANTA ROSA, CA 95404

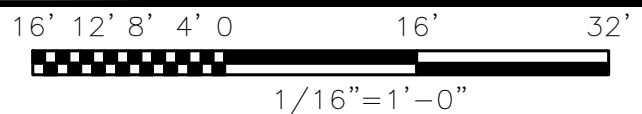
SHEET TITLE

SOUTHWEST
ELEVATIONS

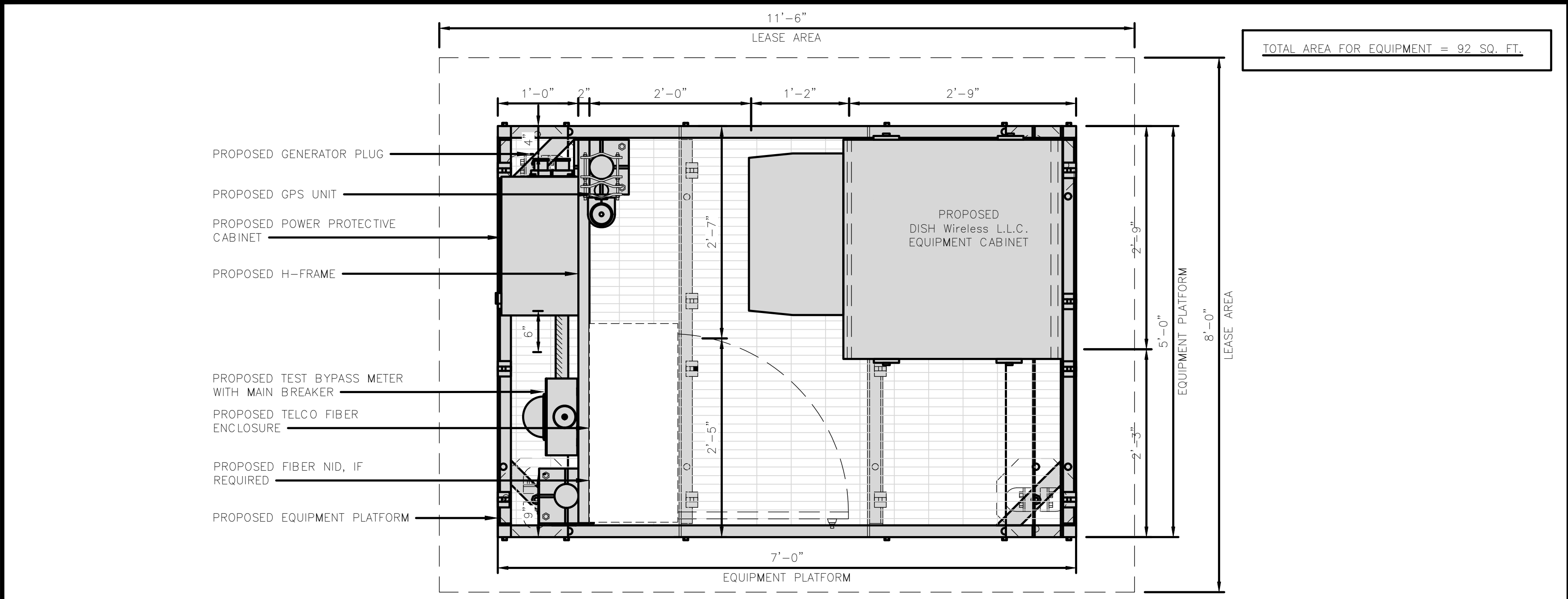
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A-5

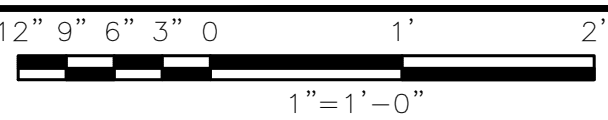
PROPOSED SOUTHWEST ELEVATION



2



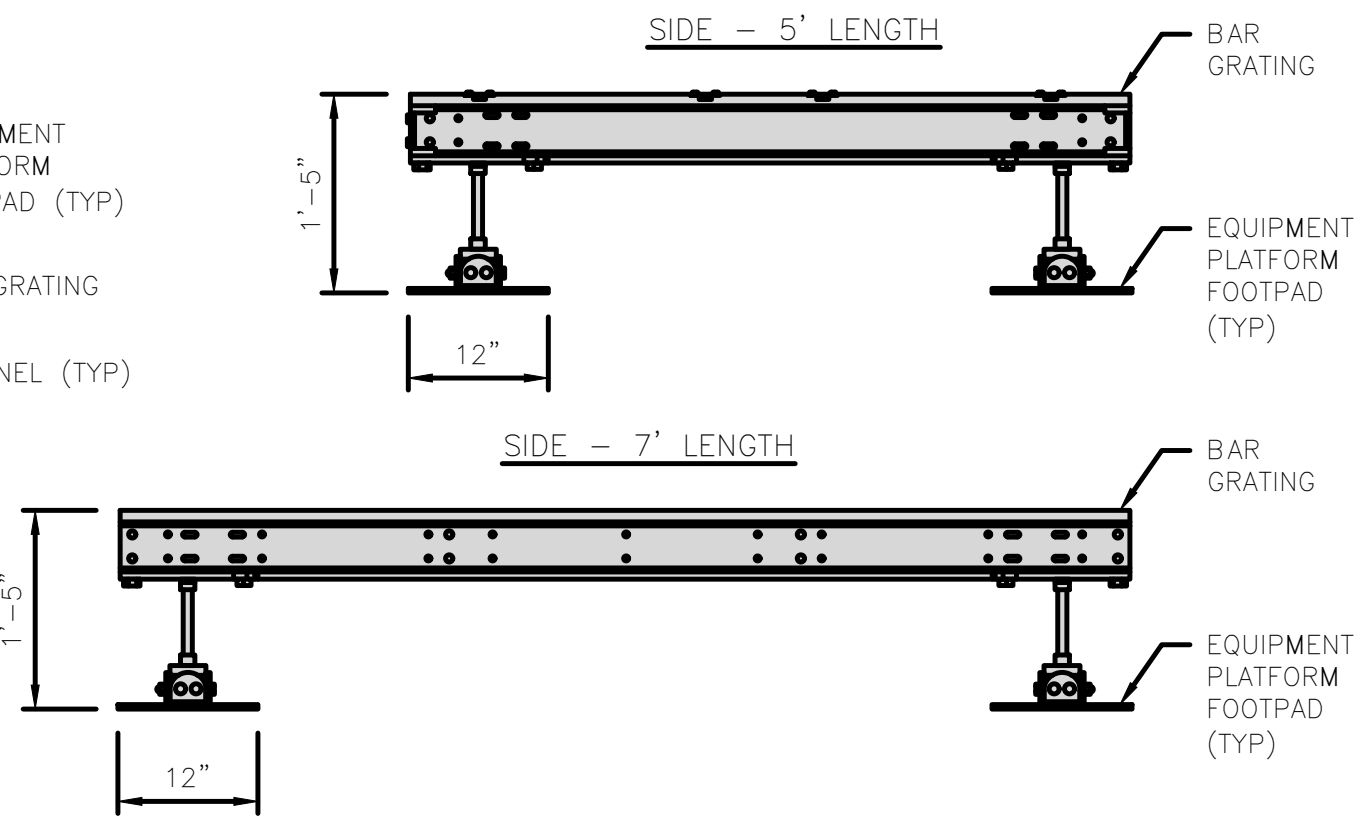
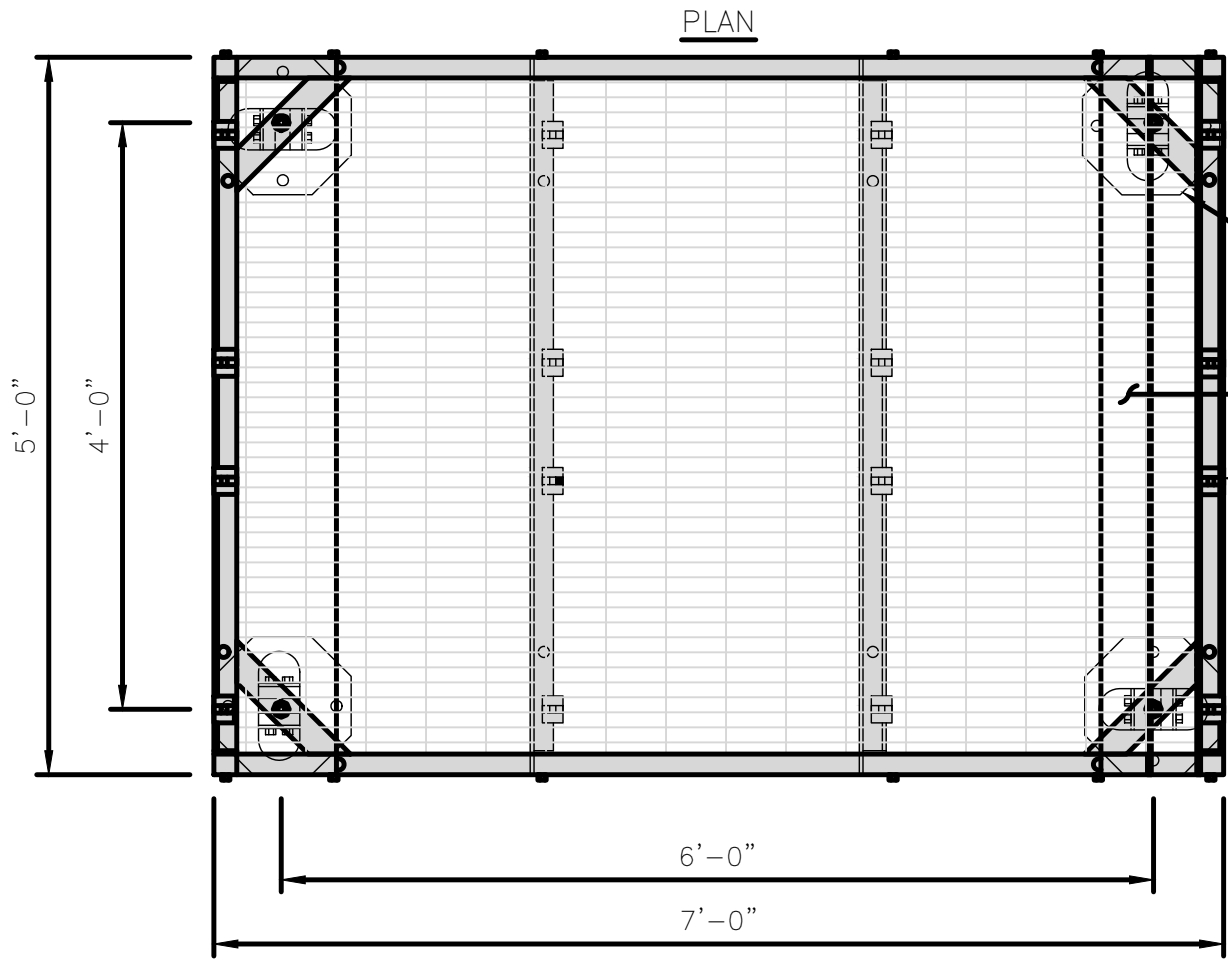
PLATFORM EQUIPMENT PLAN



1

COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

NOTE:
GC TO PROVIDE EXTENDED
THREAD FOR PLATFORM IF
REQUIRED HEIGHT EXCEEDS 17"

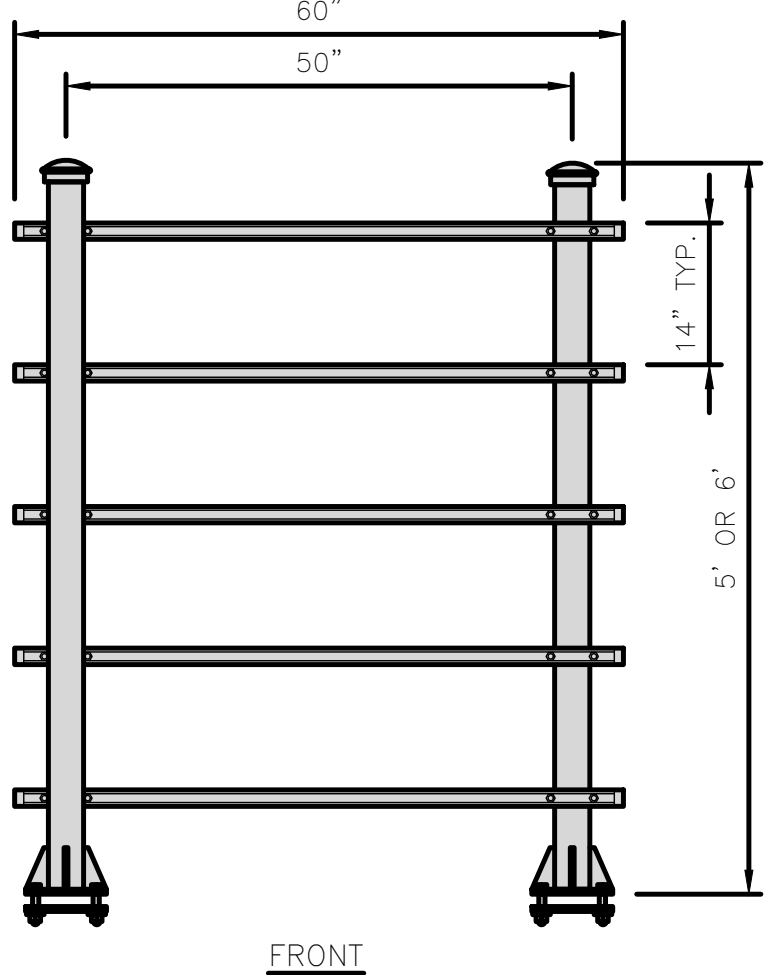
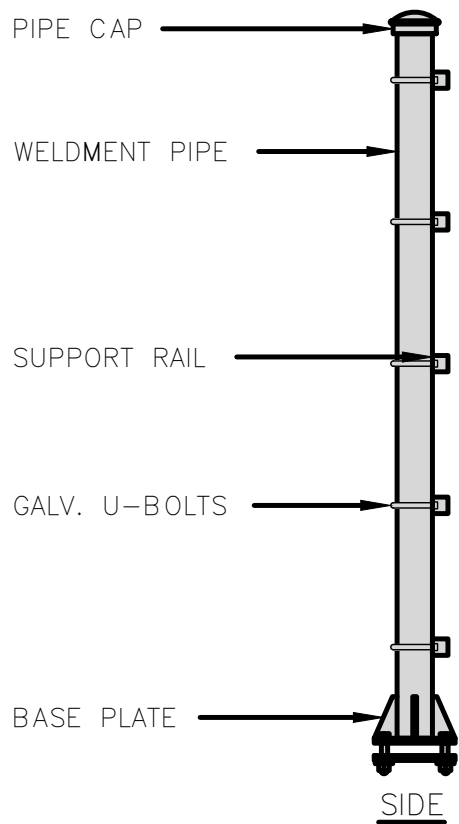


PLATFORM DETAIL

NO SCALE

2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



H-FRAME DETAIL

NO SCALE

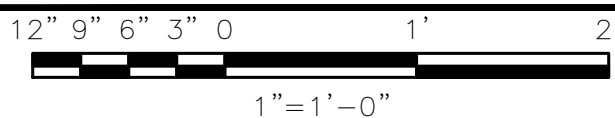
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NOT USED

NO SCALE

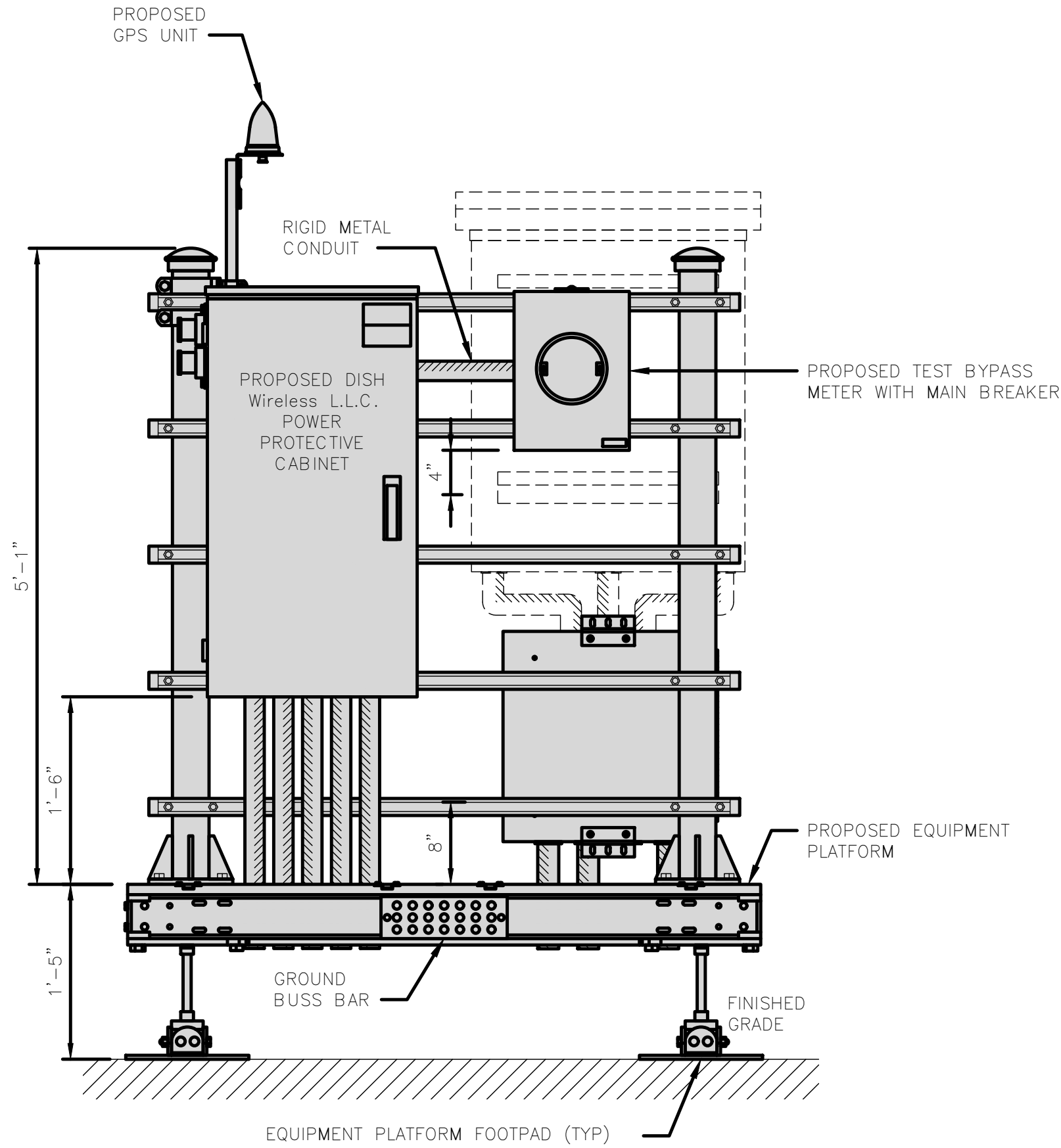
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H-FRAME EQUIPMENT ELEVATION

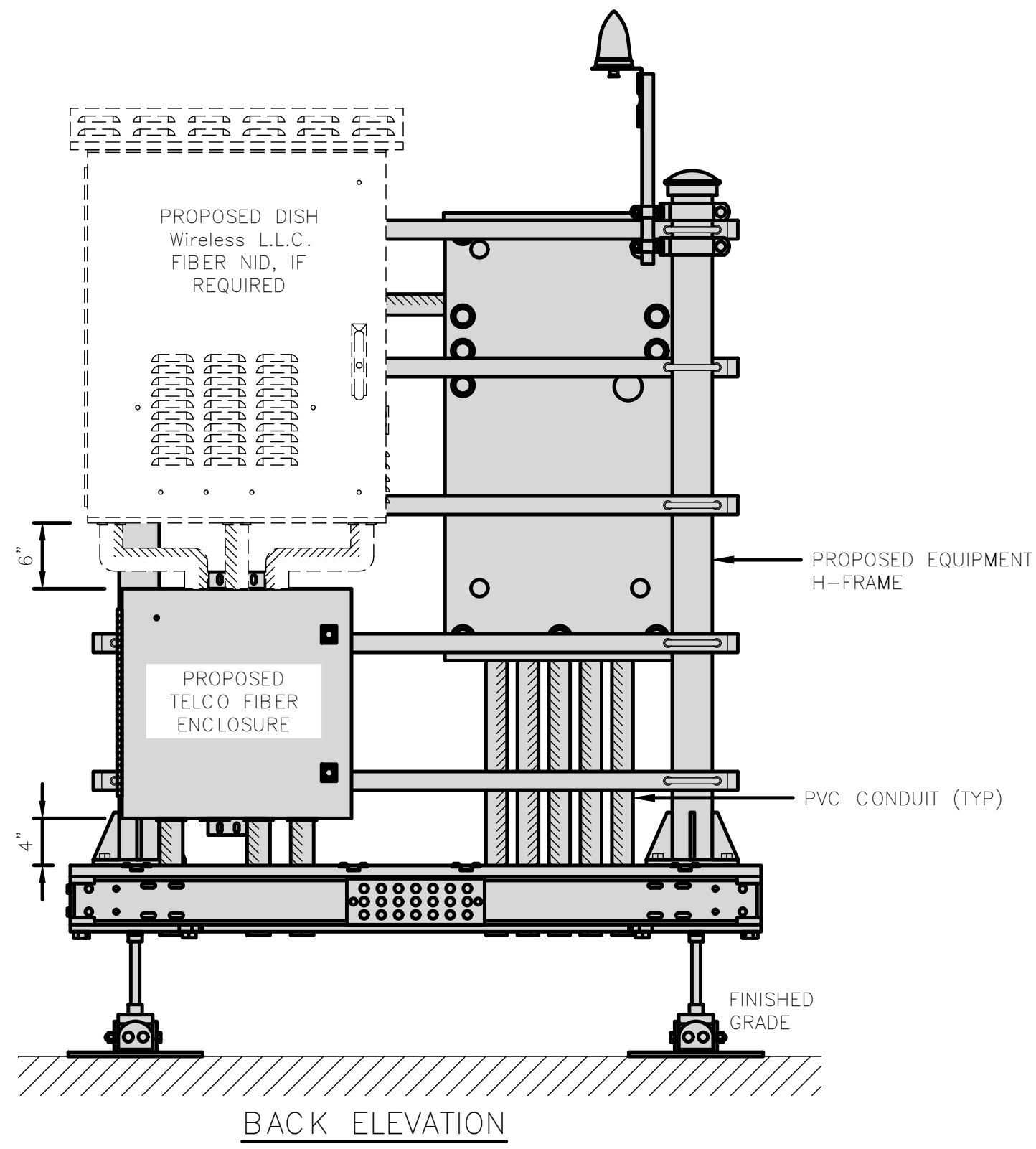


5

NOTE
1. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

THE
CBR
GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
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DISH Wireless L.L.C.
PROJECT INFORMATION

SFSF000280A
50 OLD COURTHOUSE SQ.
SANTA ROSA, CA 95404

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER

A-6

Radio Frequency Safety Predictive Report

Prepared For: DISH Wireless

Site Name: SFSFO00280A
Site ID: SFSFO00280A
Address: 50 Old Courthouse Square
Santa Rosa, CA 95404
County: Sonoma
Latitude: 38.440356
Longitude: -122.713068
Report Type: Theoretical

Additional Site Information

Customer Name: Mike Baxter
Customer Email: michael.baxter@dish.com
Customer Phone: (925) 338-4179
Site Structure Type: Rooftop

Report Information

Report Writer: Kevin Nardi
Report Date: December 17, 2021
Waterford Contact: John Lee
Contact Email: support@waterfordconsultants.com
WC Project Number: RF-21-0158
Reviewed By: David H. Kiser

Compliance Statement

David H. Kiser 2021.12.21
14:04:24 -05'00'

Based on the information provided by the client, this installation **Will Be Compliant** with FCC Rules and Regulations with regard to Human Exposure to Radio Frequency Radiation upon implementation of the recommendations set forth in this report.



Table of Contents

1 General Summary	2
1.1 Area(s) of Study	3
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1 General Summary

DISH Wireless contracted Waterford Consultants, LLC to conduct a **radiofrequency (RF) electromagnetic safety and FCC compliance assessment** of the site located at 50 Old Courthouse Square, Santa Rosa, CA 95404. The compliance framework is derived from the FCC Rules and Regulations for preventing human exposure in excess of the MPE (Maximum Permissible Exposure) limits.

An overview of the applicable FCC Rules and analysis guidelines is presented in Appendix A. The subsequent sections contain information regarding the radio telecommunications equipment installed at this site and the surrounding environment regarding RF Hazard compliance.

As summarized in Section 5 of this report, potentially hazardous conditions were identified, and mitigating action is recommended to achieve or maintain compliance.

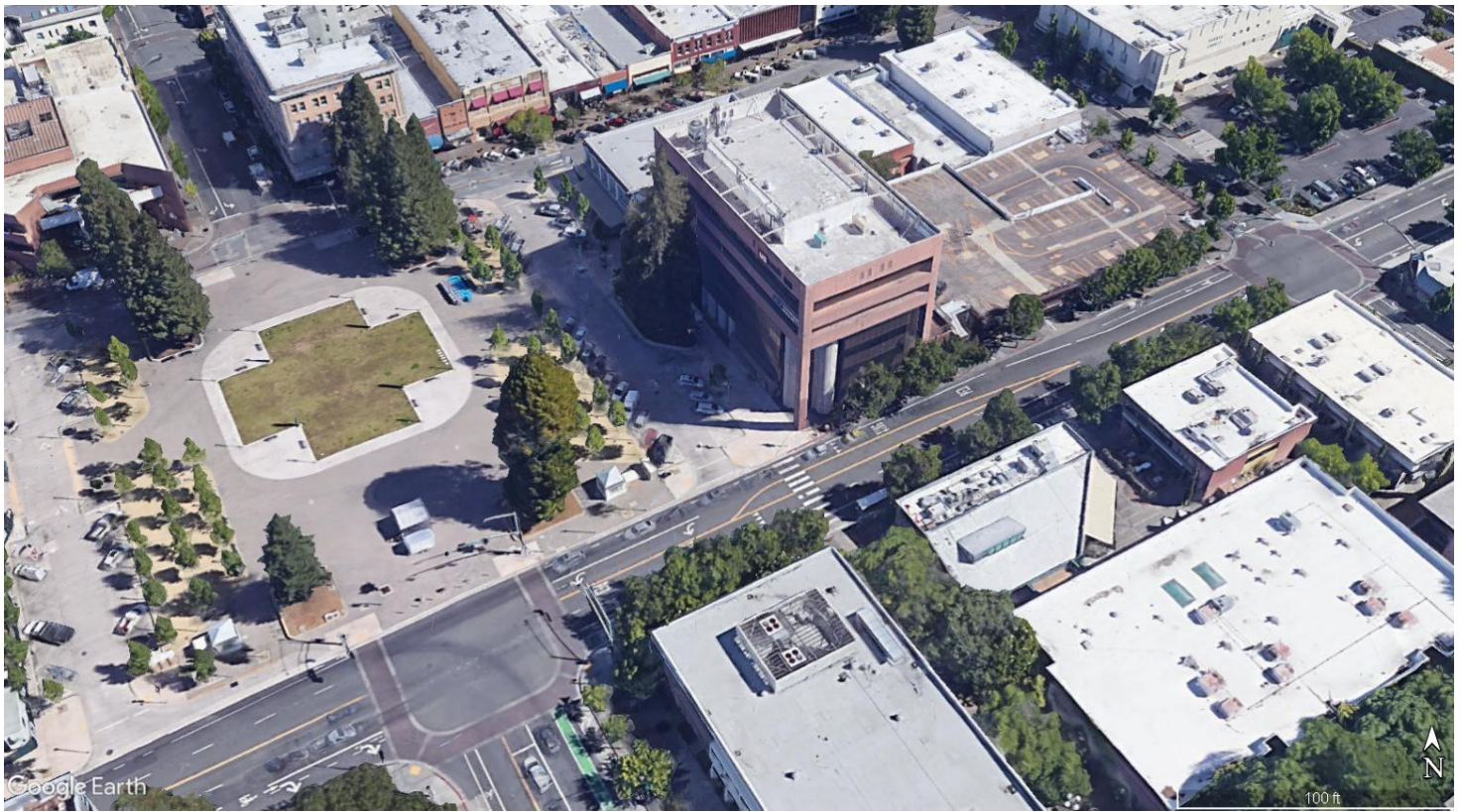
All known RF sources have been included in this analysis. Predictive modeling using worst-case operating parameters for antennas regardless of accessibility is the basis for mitigation recommendations. Similarly, theoretical assessment of antennas mounted in close proximity is used to characterize and mitigate cumulative exposure conditions.

Documents Utilized in this Analysis:

SFSFO00280A_ZD_20211129184157.pdf

RFDS-SFSFO00280A-Preliminary-20211117-v.3_20211117191104.pdf

1.1 Area(s) of Study



Surrounding Environment



Street View Image

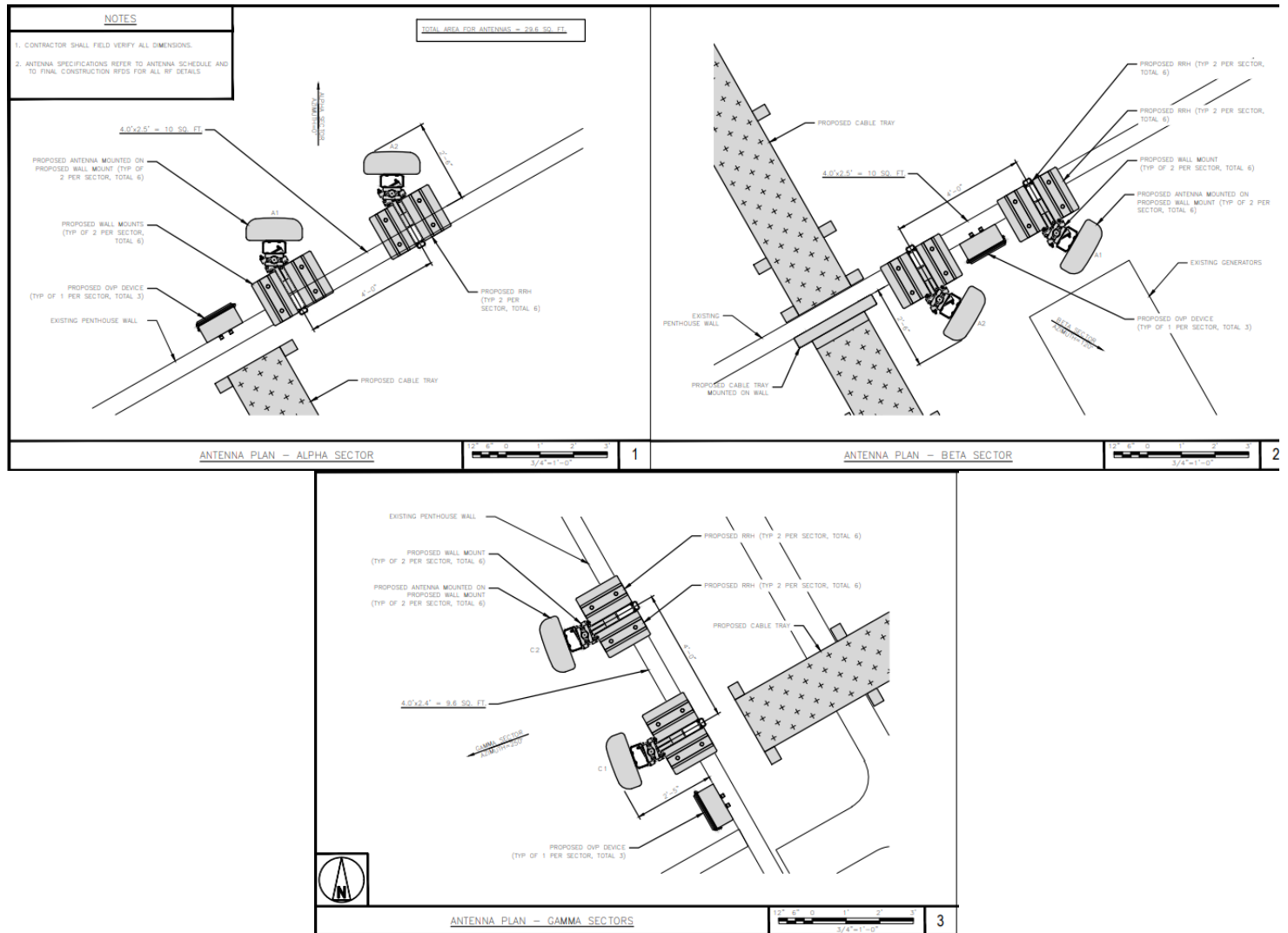
2 Site Details



Installation Design

SITE DETAILS

2.1 Antenna Locations



Installation Design

ANTENNA INVENTORY

3 Antenna Inventory

The operations listed in the following tables have been compiled based on information provided by client.

Ant #	Operator	Antenna Make	Antenna Model	Type	Frequency (MHz)	Az (Deg)	Downtilt (Deg)	Horizontal Beam Width (Deg)	Ant (ft)	Ant Gain (dBd)	TPO (W)	Paths	Loss (dB)	Total ERP (W)	Total EIRP (W)	Antenna Centerline Ground Level (0 ft)
1	Dish Wireless	JMA	MX08FRO665-21 06DT	Panel	600	0	0	59	6	11.25	30	4	0	1600	2625	107
2	Dish Wireless	JMA	MX08FRO665-21 04DT	Panel	2007	0	0	63	6	16.05	40	4	0	6443	10571	107
2	Dish Wireless	JMA	MX08FRO665-21 04DT	Panel	2100	0	0	65	6	16.75	40	4	0	7570	12420	107
3	Dish Wireless	JMA	MX08FRO665-21 03DT	Panel	600	120	0	61	6	11.45	30	4	0	1676	2749	107
4	Dish Wireless	JMA	MX08FRO665-21 02DT	Panel	2007	120	0	62	6	15.75	40	4	0	6013	9866	107
4	Dish Wireless	JMA	MX08FRO665-21 02DT	Panel	2100	120	0	65	6	16.75	40	4	0	7570	12420	107
5	Dish Wireless	JMA	MX08FRO665-21 07DT	Panel	600	250	0	60	6	11.25	30	4	0	1600	2625	107
6	Dish Wireless	JMA	MX08FRO665-21 06DT	Panel	2007	250	0	64	6	16.15	40	4	0	6594	10817	107
6	Dish Wireless	JMA	MX08FRO665-21 06DT	Panel	2100	250	0	66	6	16.75	40	4	0	7570	12420	107
7	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	60	0	65	6	12.3	80	2	0	2711	4448	108
7	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	60	0	60	6	12.6	20	8	0	2938	4821	108
8	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	60	0	69	6	15.7	40	4	0	5875	9638	108
9	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	120	0	64	6	16.2	40	4	0	6701	10993	108
10	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	120	0	65	6	12.3	80	2	0	2711	4448	108
10	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	120	0	60	6	12.6	20	8	0	2938	4821	108
11	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	180	0	69	6	15.7	40	4	0	5875	9638	108
12	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	180	0	64	6	16.2	40	4	0	6701	10993	108
13	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	270	0	65	6	12.3	80	2	0	2711	4448	108
13	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	270	0	60	6	12.6	20	8	0	2938	4821	108
14	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	270	0	69	6	15.7	40	4	0	5875	9638	108
15	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	300	0	64	6	16.2	40	4	0	6701	10993	108
16	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	300	0	65	6	12.3	80	2	0	2711	4448	108

ANTENNA INVENTORY

Ant #	Operator	Antenna Make	Antenna Model	Type	Frequency (MHz)	Az (Deg)	Downtilt (Deg)	Horizontal Beam Width (Deg)	Ant (ft)	Ant Gain (dBd)	TPO (W)	Paths	Loss (dB)	Total ERP (W)	Total EIRP (W)	Antenna Centerline Ground Level (0 ft)
16	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	300	0	60	6	12.6	20	8	0	2938	4821	108
17	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	0	0	69	6	15.7	40	4	0	5875	9638	108
18	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	0	0	64	6	16.2	40	4	0	6701	10993	108
19	Unknown	GENERIC	MICROWAVE 6FT	Microwave	6000	330	0	1.5	6	38.7	0.2	1	0	1462	2399	108

NOTE 1: Waterford Consultants has assumed transmission parameters for co-located RF emitters based on similar installations found at other radio communications sites. Generic antenna models have been used where existing antenna part numbers or radiation patterns are not available. The frequencies presented in this table may have been assumed in order to represent the approximate band of operation and to support a maximum-case calculation of power density.

NOTE 2: Some antennas identified by the SON designation may employ beamsteering technology where RF energy allocated to each customer device is dynamically directed toward their location. In the analysis presented herein, predicted exposure levels are based on all beams at full utilization (i.e. full power) simultaneously focused in any direction. As this condition is unlikely to occur, the actual power density levels at ground and at adjacent structures will be less than the levels reported below.

NOTE 3: No other transmitting antennas are known to be operating in the vicinity of this site.

4 Predicted Emission Levels

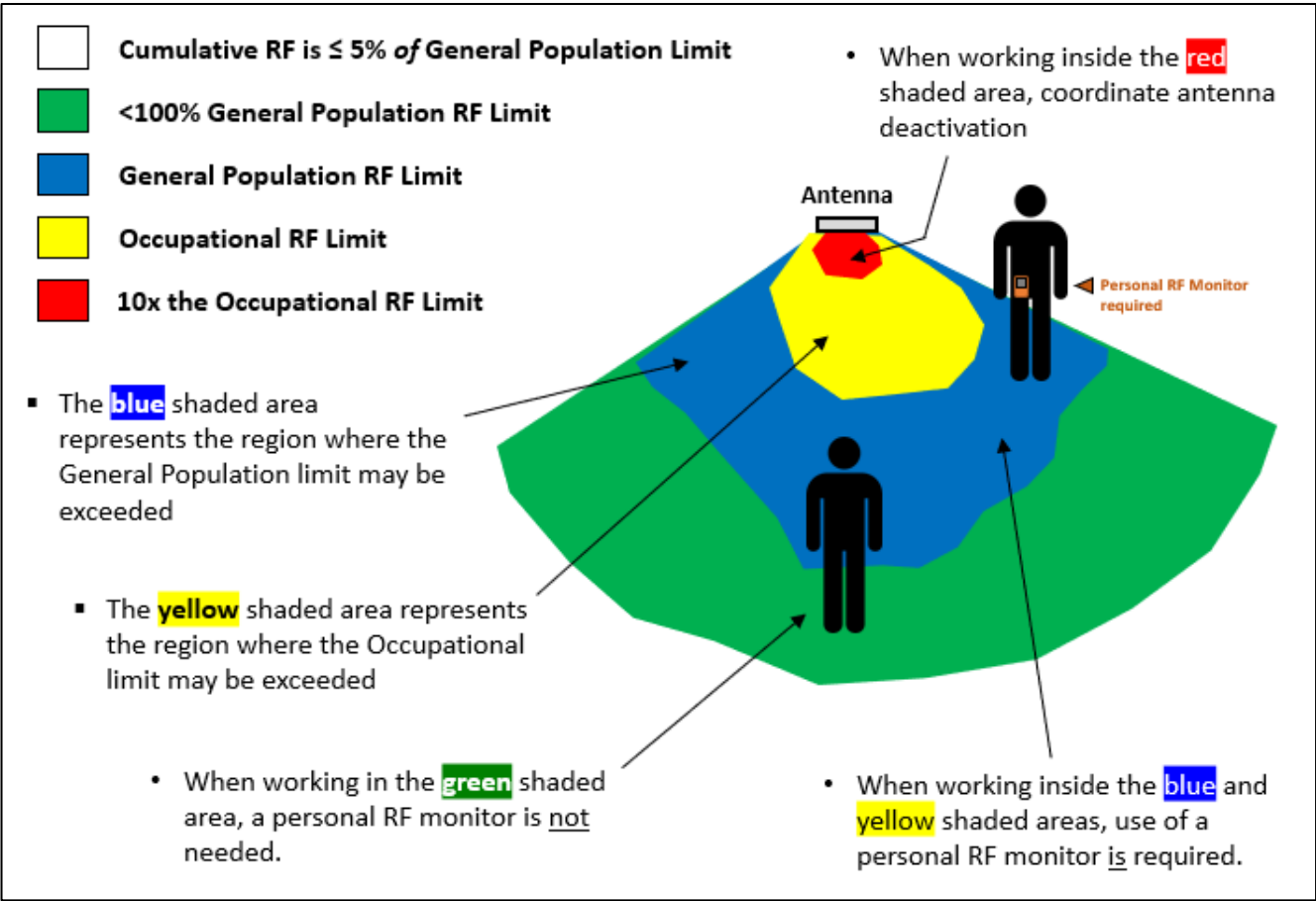
The following plots show the spatial average predicted power density level at any given location as a percentage of the FCC General Population limits. These plots depict the cumulative exposure based on all RF sources listed in the corresponding antenna table.

Exposure to non-ionizing radiation at a given spatial average power density level, during the appropriate time interval, determines hazard. MPE predictions are not dependent on the exposure duration as only the intensity of the exposure is calculated. In this manner, areas of concern are identified and delineated from areas where exposures will not exceed the FCC limits. Recommendations for mitigating these zones are recommended in this report. Rules for access to impacted area are based on policy set by property management.

Predictive MPE plots may be provided for plan view (*top-down*) or section view (*profile*) studies. Profile studies account for antennas that are placed individually with separation that assumes cumulative emissions from other antennas are negligible. Section detail plots depict spatially averaged power MPE conditions at the middle of the six-foot exposure area. Plan view studies may include cumulative analysis where the contributions of nearby antennas may impact exposure conditions and compliance recommendations. The reference plane for each plot is indicated in the caption and legend. For example, "Avg 10 to 16 Feet" appearing in the legend indicates that the top-view plot depicts spatially averaged predicted power densities between 10 and 16 feet which a person could occupy. Plots are produced for each accessible level or walking surface; areas that are not accessible are not shown. Antenna level plots are also created to depict maximum-case exposure conditions at potential elevated work areas. Unless otherwise noted, Ground Level or Main Level represents the default access elevation and is the baseline for antenna centerline reference.

PREDICTED EMISSION LEVELS

What do the shaded colors mean in the RF plots provided in this report?



SUMMARY

- 10X the Occupational RF exposure limit.** When working inside this area, trained personnel with personal protective equipment (PPE) is required; may also require coordinating a scheduled deactivation/outage with operator.
- Occupational RF exposure limit.** When working inside this area, trained personnel with personal protective equipment (PPE) is required; untrained person(s) must be accompanied by trained personnel.
- General Population RF exposure limit.** When working inside this area, trained personnel with personal protective equipment (PPE) is required; untrained person(s) must be accompanied by trained personnel.
- <100% of the General Population RF exposure limit (or <20% of the Occupational RF exposure limit).** When working in this area, personal protective equipment (PPE) is not required. No special action or behavior is required to maintain a safe work environment. This area is safe for continuous exposure.
- Area is outside of General Population and Occupational RF exposure limits (less than 5% of the General Population limits).** When working in this area, personal protective equipment (PPE) is not required. No special action or behavior is required to maintain a safe work environment. This area is also safe for continuous exposure.

PREDICTED EMISSION LEVELS

Scenario: Ground Level 0'



The reference plane for the plot is the Ground Level 0' (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 0.3546% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

Scenario: Ground Level 0'



The reference plane for the plot is the Ground Level 0' (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Adjacent Building Level 30'



The reference plane for the plot is the Adjacent Building Level 30' (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 0.4061% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

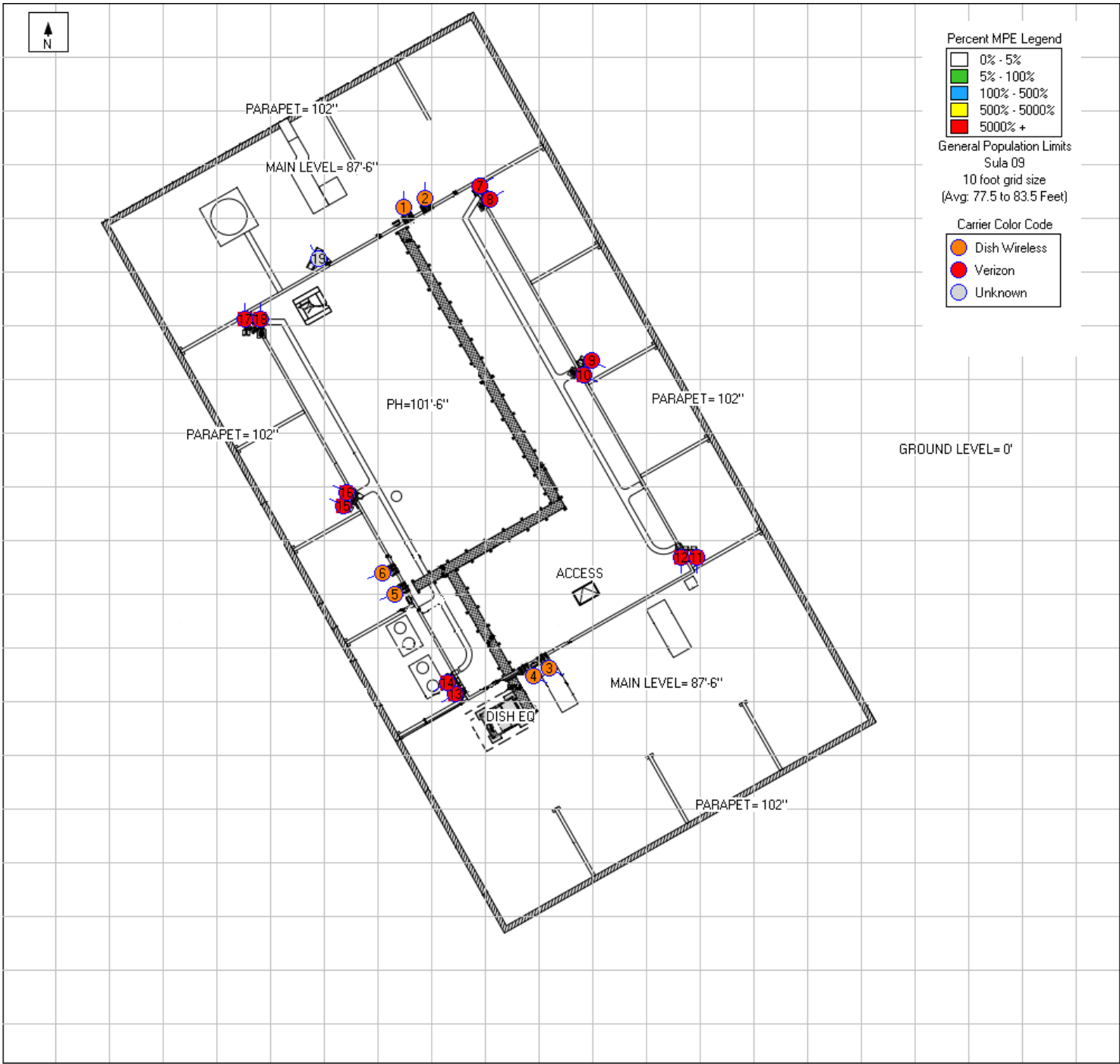
Scenario: Adjacent Building Level 30'



The reference plane for the plot is the Adjacent Building Level 30' (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Top Floor Level 77'-6"

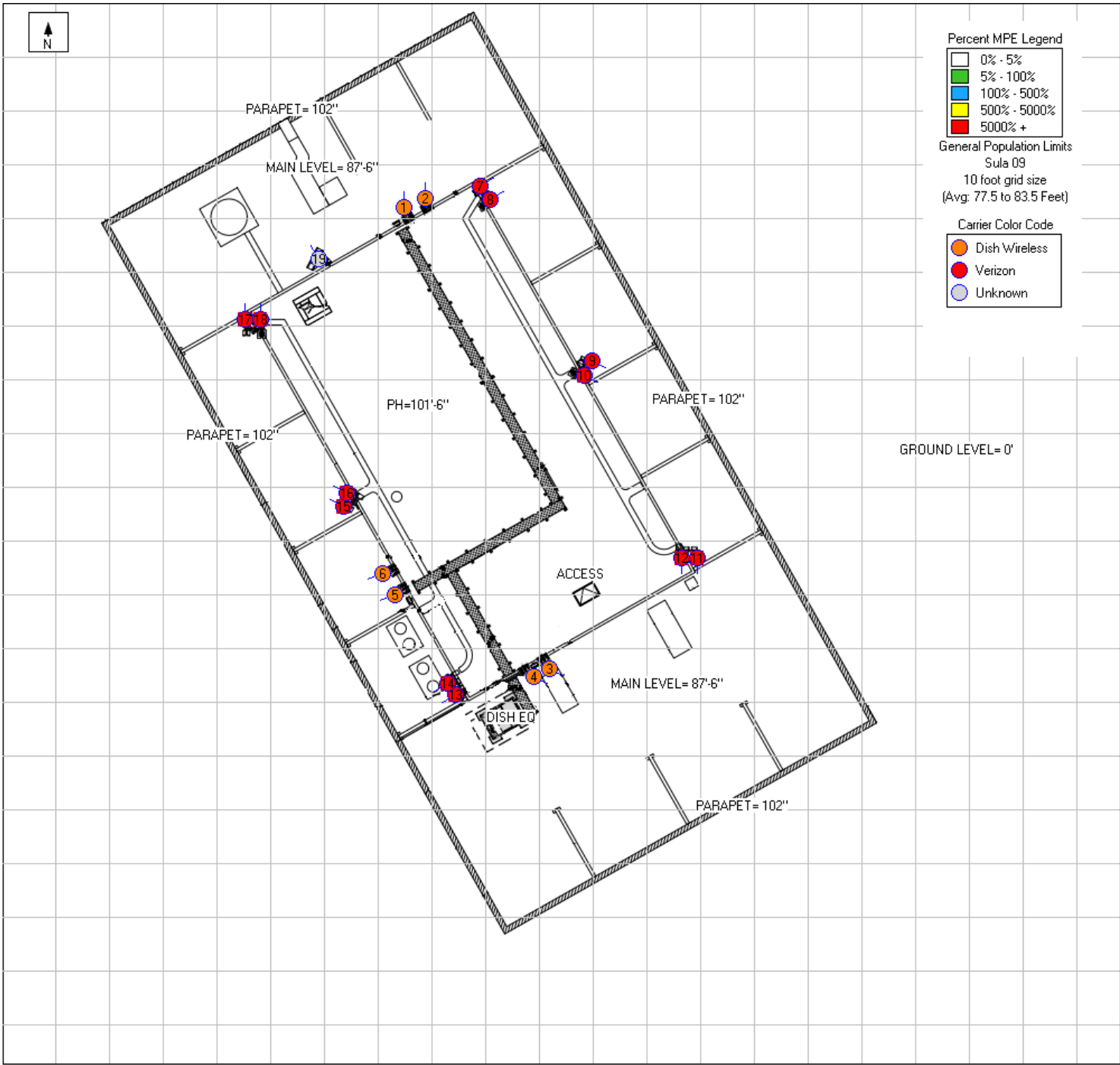


The reference plane for the plot is the Top Floor Level 77'-6" (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 1.3303% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

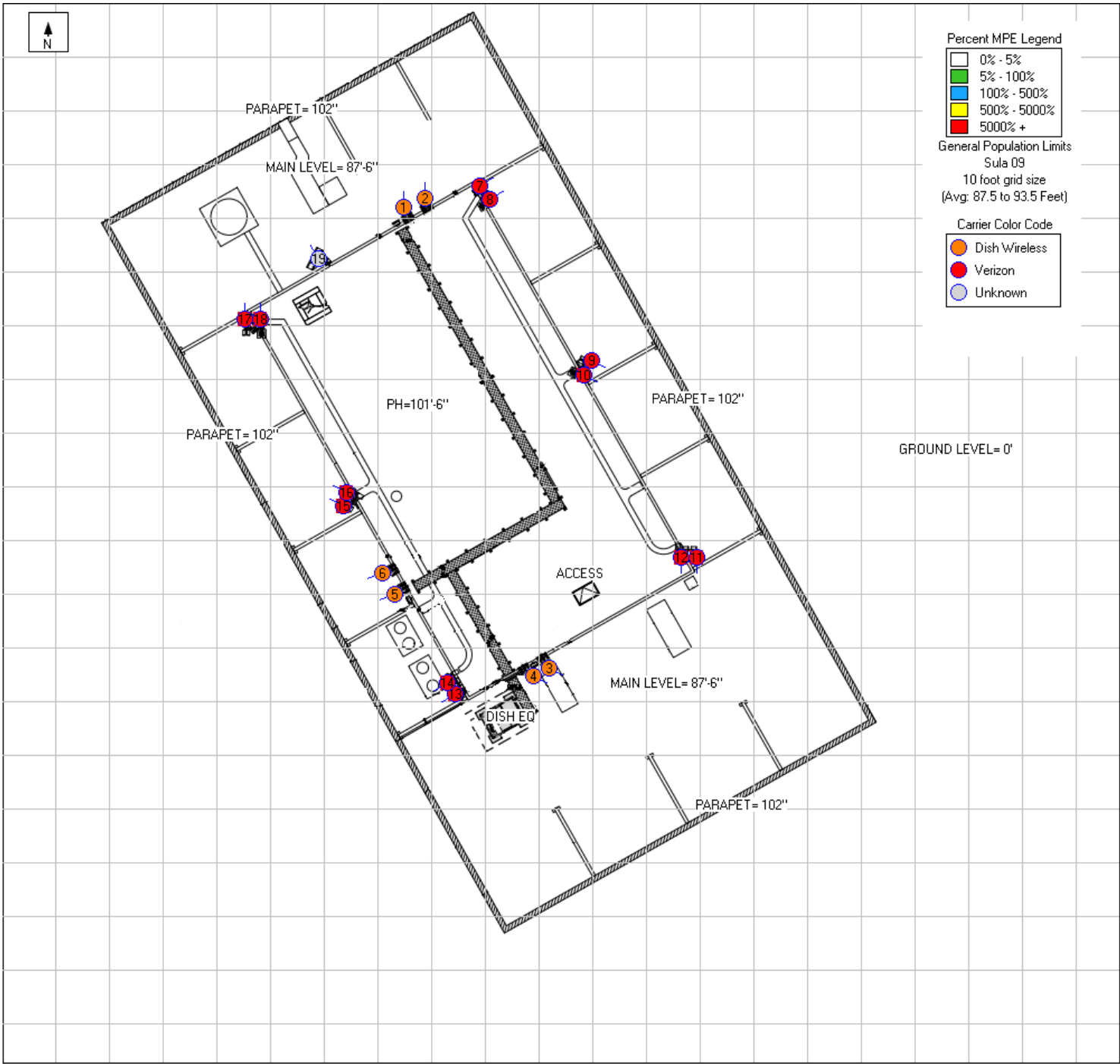
Scenario: Top Floor Level 77'-6"



The reference plane for the plot is the Top Floor Level 77'-6" (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Main Level 87'-6"

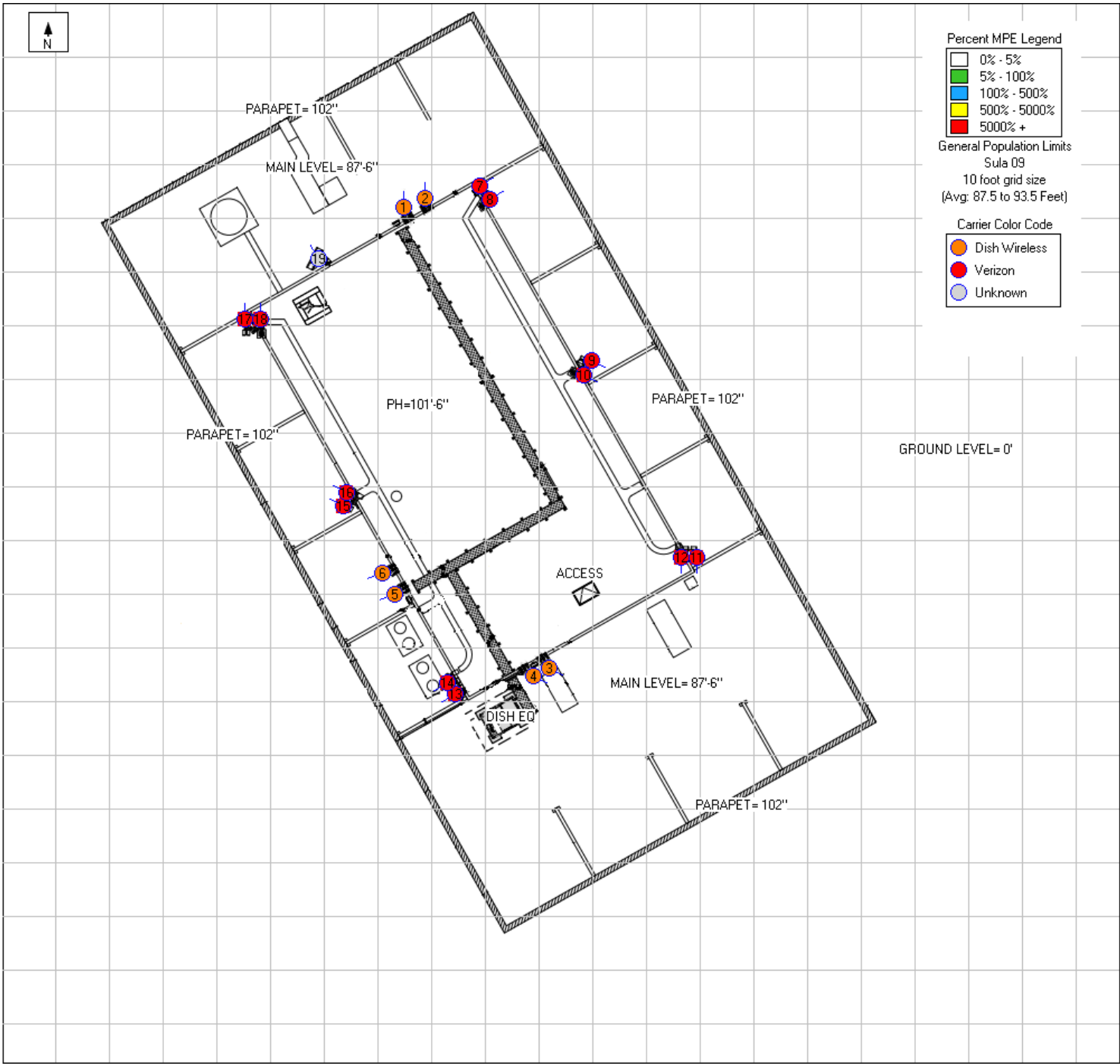


The reference plane for the plot is the Main Level 87'-6" (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 4.3667% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

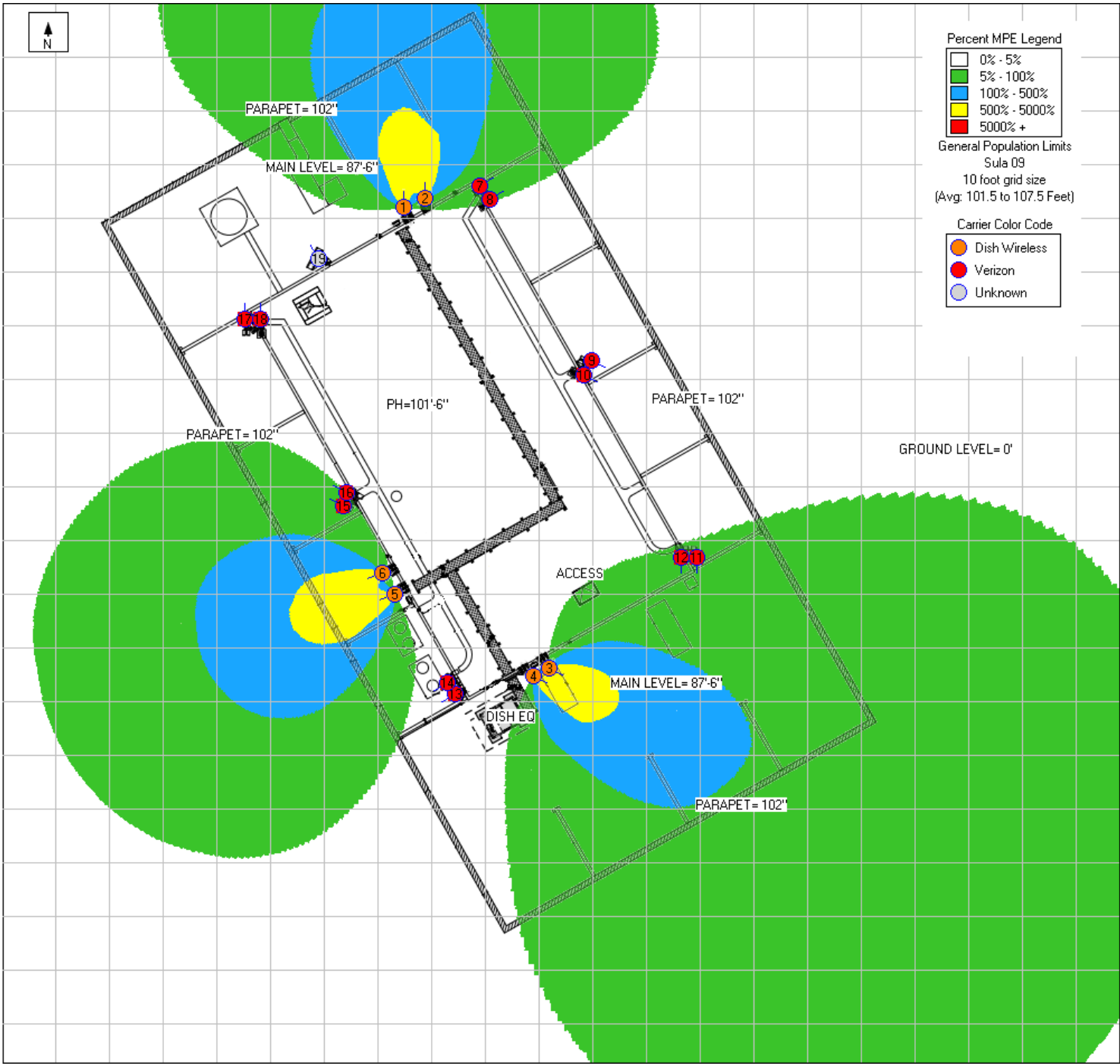
Scenario: Main Level 87'-6"



The reference plane for the plot is the Main Level 87'-6" (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Penthouse Level 101'-6"

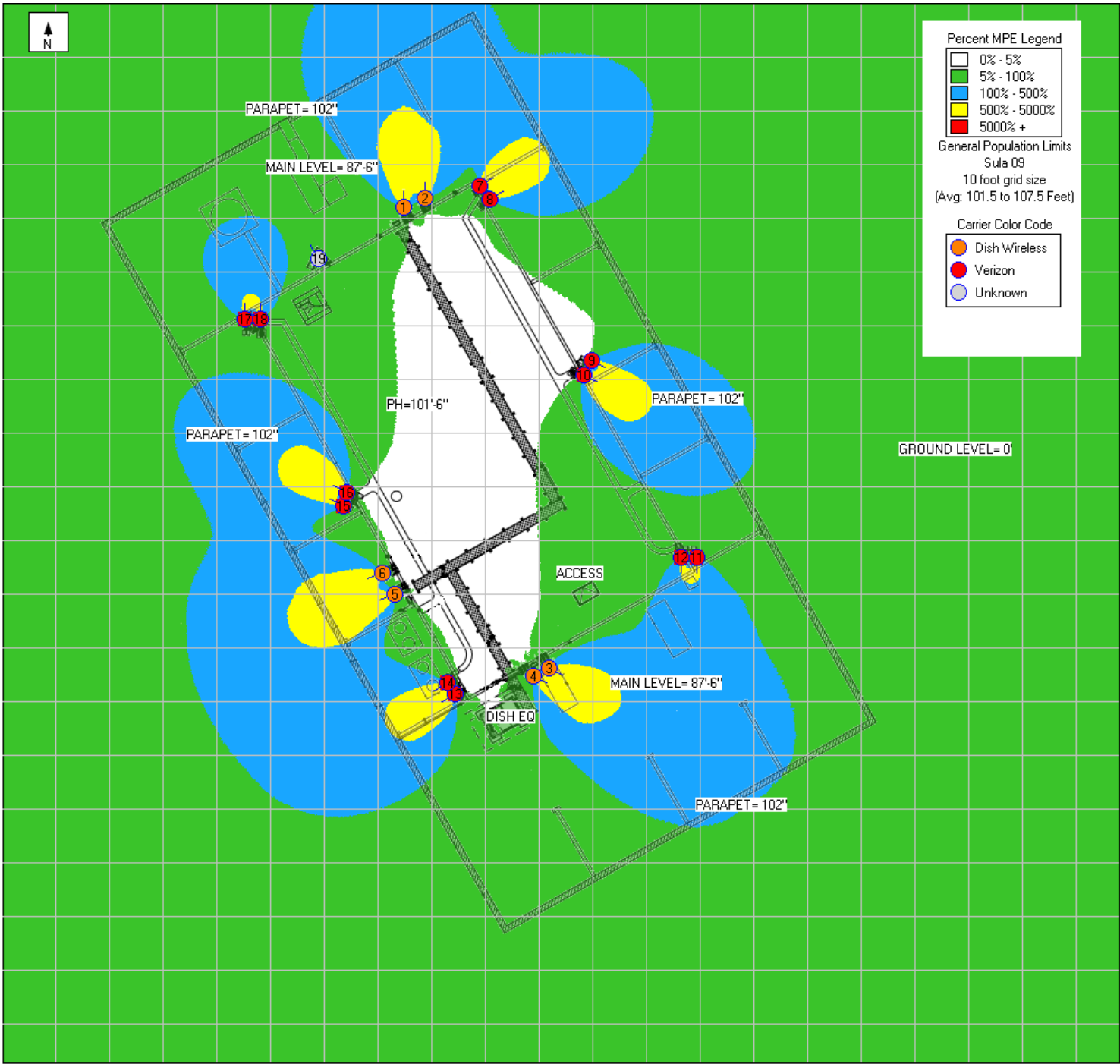


The reference plane for the plot is the Penthouse Level 101'-6" (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 23.4163% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

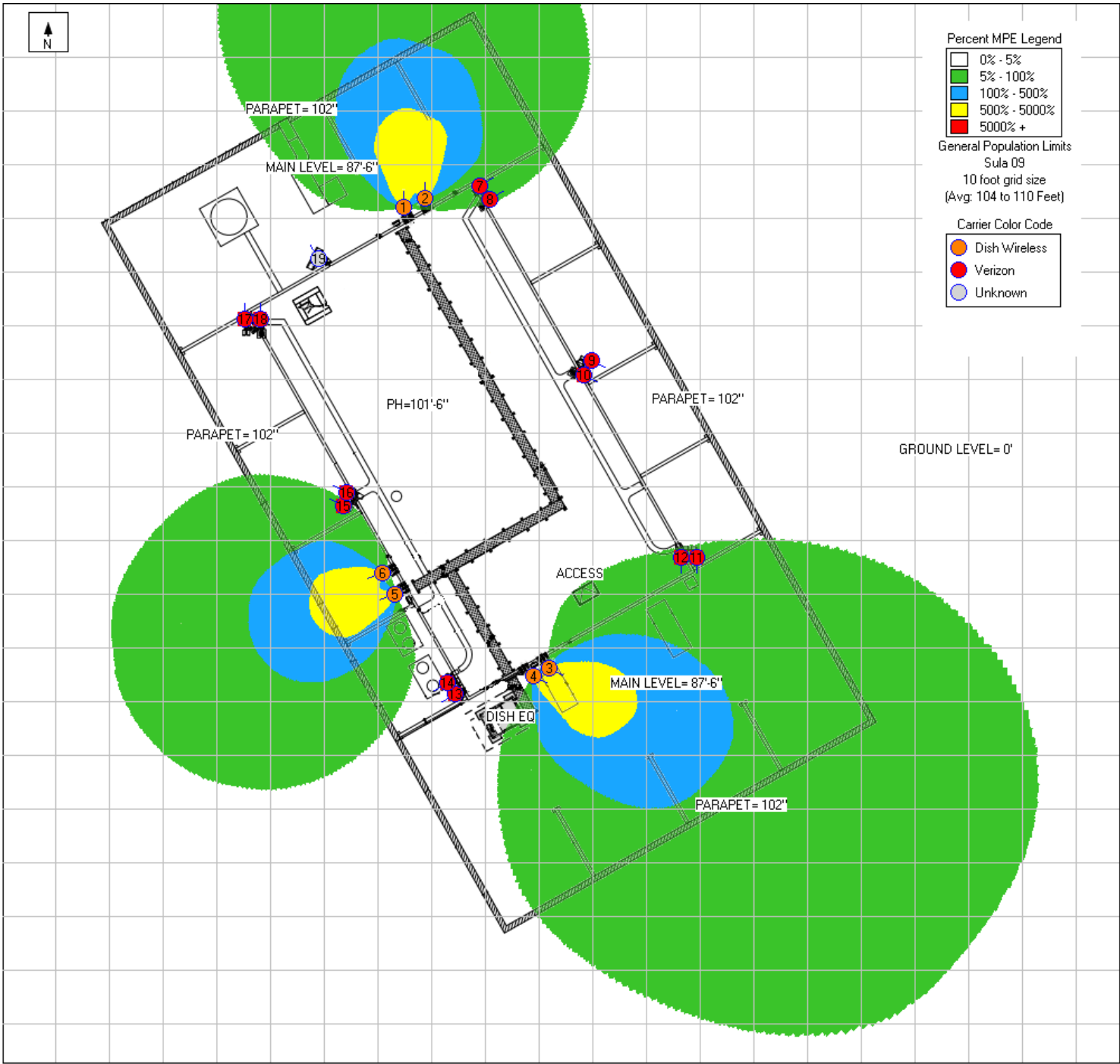
Scenario: Penthouse Level 101'-6"



The reference plane for the plot is the Penthouse Level 101'-6" (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Antenna Level 104'



The reference plane for the plot is the Antenna Level 104' (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 2870.1456% of the FCC General Population limits.

5 Recommendations for Compliance

Predictive modeling indicates that cumulative RF power densities at ground level or adjacent structures as a result of the operations documented herein are below the FCC General Population limits. However, accessible areas near the antennas may exceed the FCC General Population limits.

Work plans near any transmitting antennas should be evaluated with respect to any actions needed to maintain a safe work environment. These actions may include scheduled outages or power reductions. It is recommended that all workers needing to access areas the front of the transmitting antennas listed below be properly trained and certified in the area of RF exposure and safety, as well as have the means to monitor and control their exposure.

Signs should be sized according to OSHA standards to be clearly legible from the separation distance noted and multiple signs may be required to provide notification of potential exposure conditions from all possible approaches to the antenna. Workers must be provided information about the locations of these areas of concern and the meaning of RF alerting signage.

Site Access Location

- NOC and Guideline signs required at all access points.

DISH Wireless Alpha Sector

- Caution signs required.

DISH Wireless Beta Sector

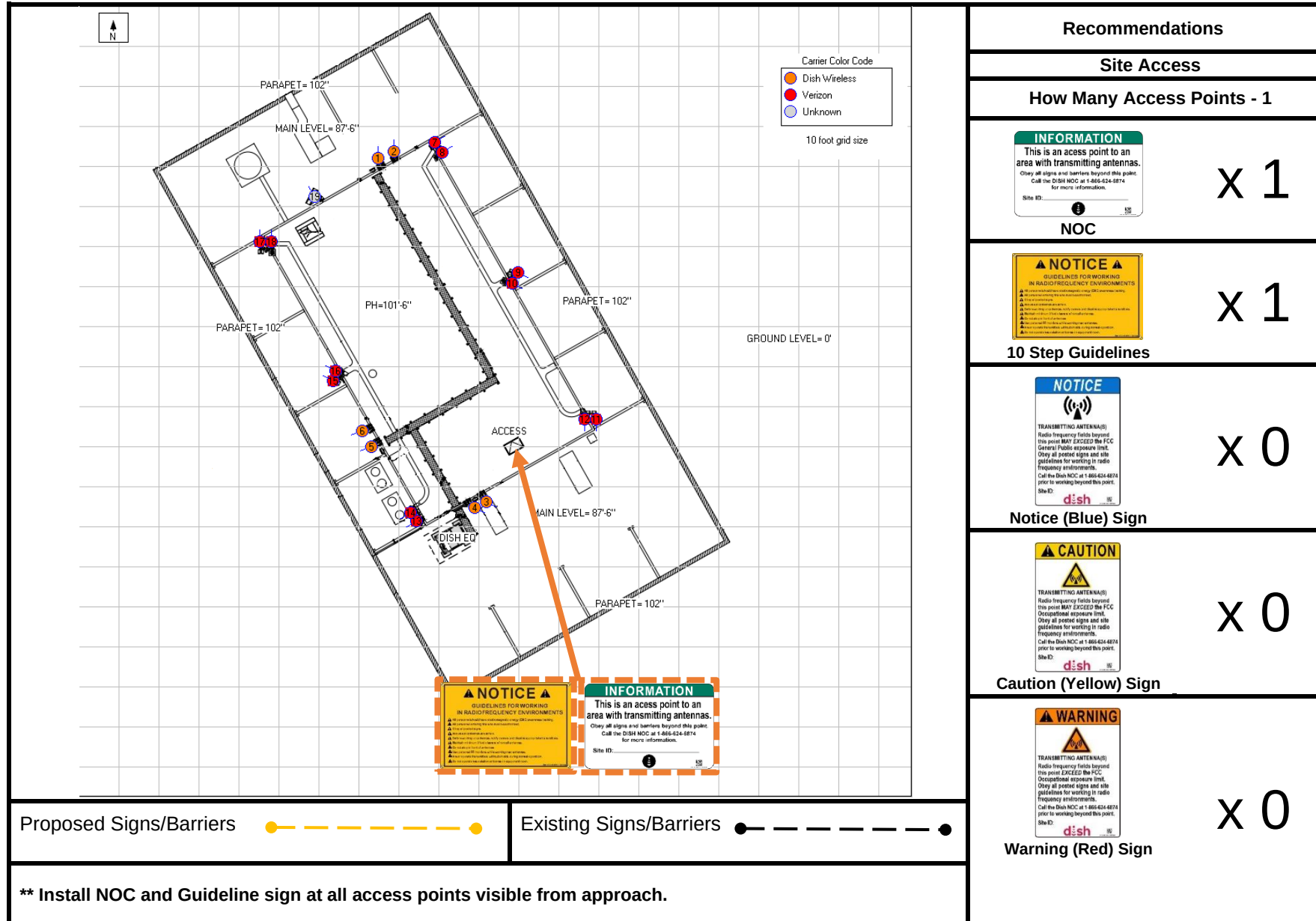
- Caution signs required.

DISH Wireless Gamma Sector

- Caution signs required.

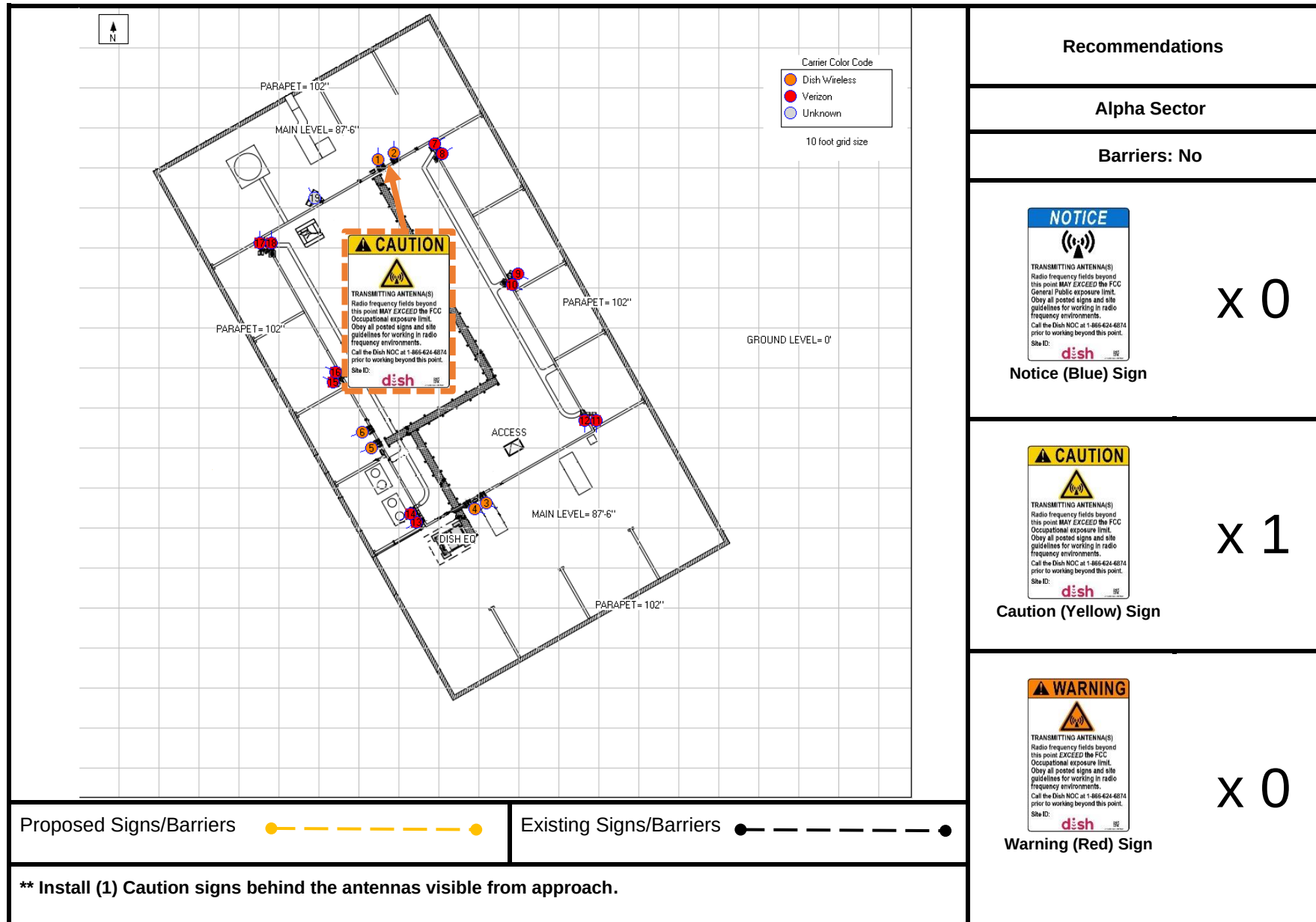
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Site Access)



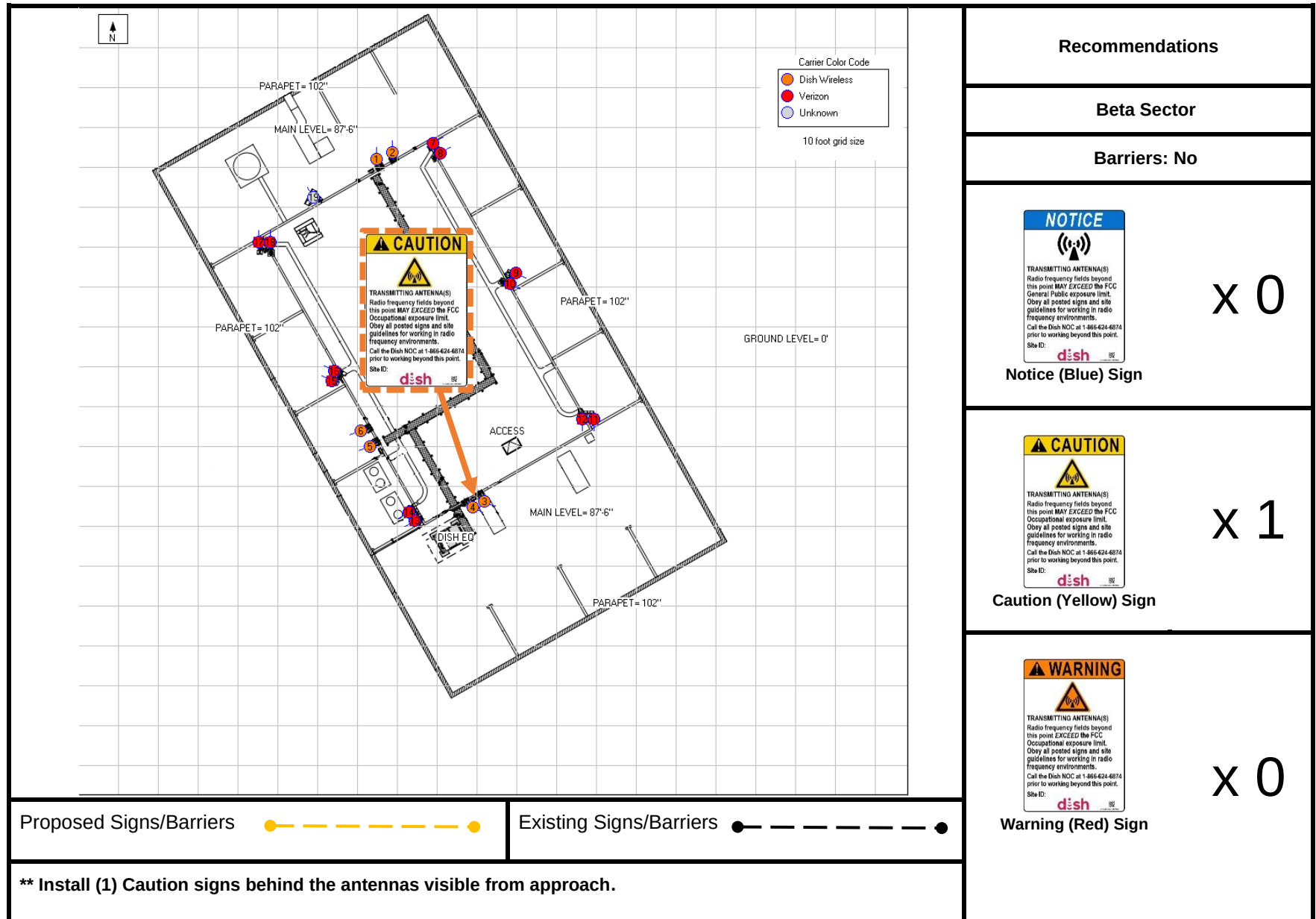
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Alpha Sector)



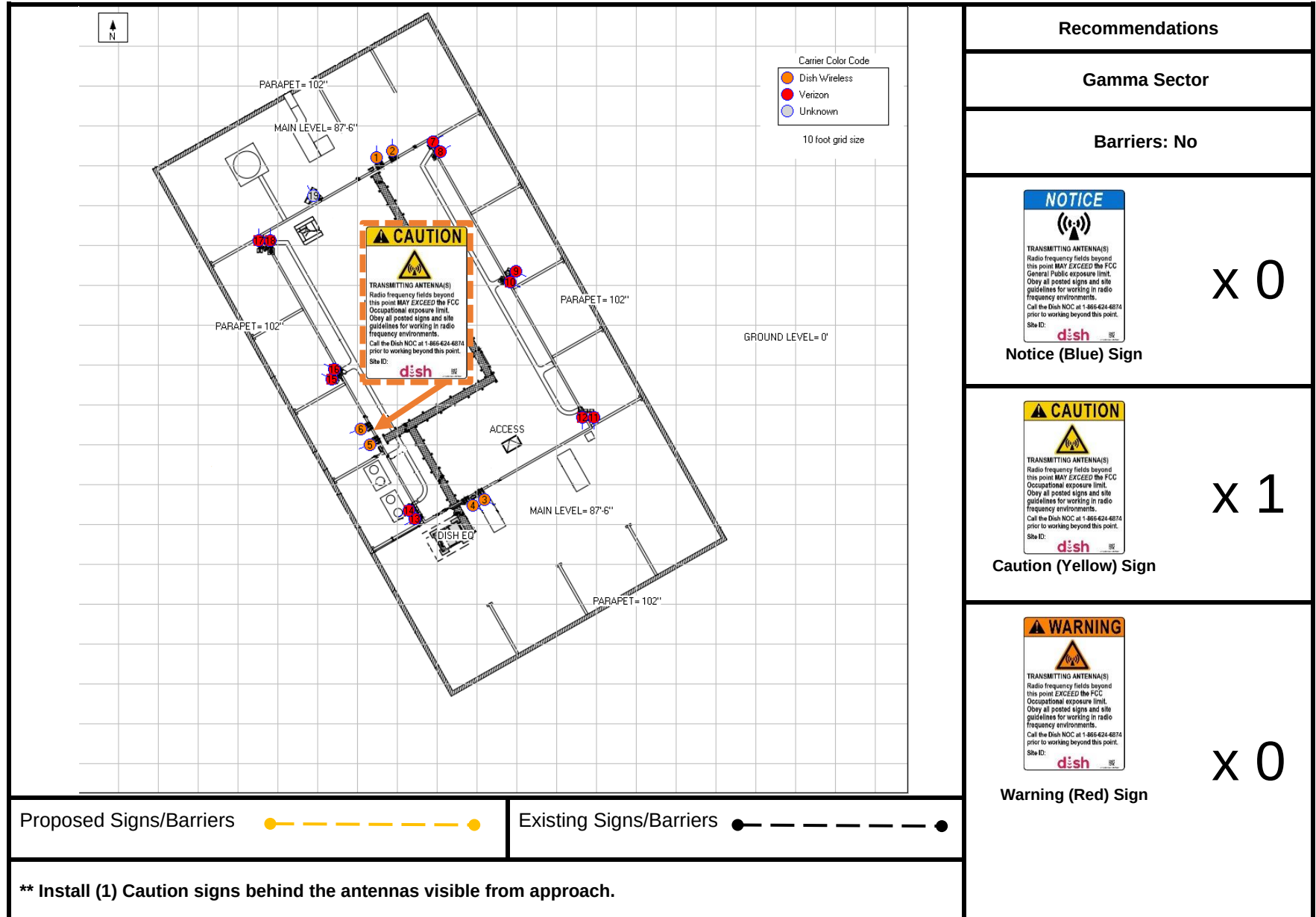
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Beta Sector)



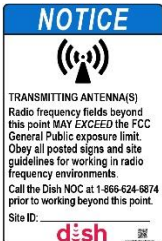
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Gamma Sector)



Mitigation for Compliance

For any area where cumulative RF power density exceeds 100% of the FCC General Population MPE limits, access controls with appropriate RF alerting signage must be established and maintained to restrict access to authorized personnel. Signage must be posted to be visible upon approach from any direction to provide notification of potential conditions within these areas.

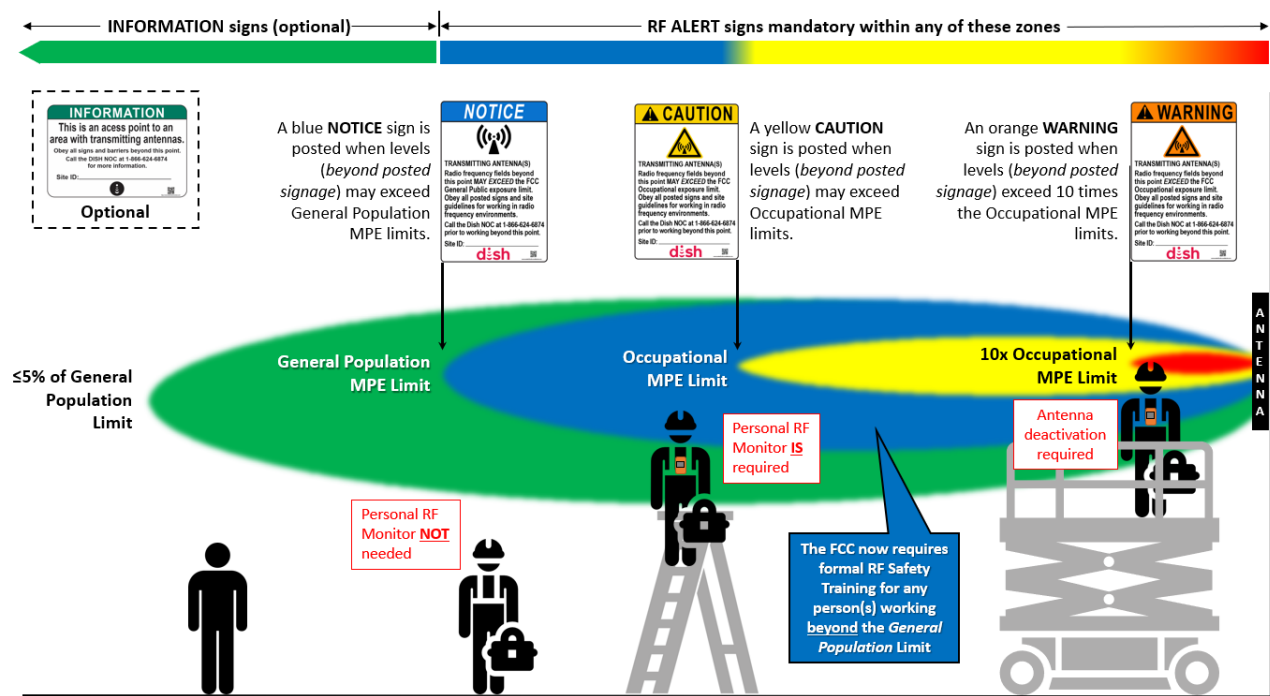
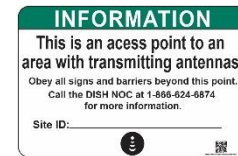
Category 2	Category 3	Category 4
<i>Exceeds General Population Limit; Below Occupational Limit</i>	<i>Exceeds Occupational Limit; Below 10x Occupational Limit</i>	<i>Exceeds 10x Occupational Limit</i>
		

Per FCC requirements for compliance, the following content is required on RF alerting signage:

- RF energy advisory symbol and signal word appropriate for the potential exposure category
- A description of the RF source (e.g., transmitting antennas)
- Behavior necessary to avoid over-exposure (e.g., do not climb tower unless you know that antennas are not energized; stay behind barrier or off of markings)
- Up-to-date contact information (e.g., monitored phone number or email address connected to someone with authority and capability to provide prompt response).
- Any sign attached directly to an antenna must include the separation distance at a font size commensurate with the safe separation distance.

Additional Requirements

- Signage should conform to IEEE C95.2-2018 and the ANSI/NEMA Z535 series of standards.
- RF alerting signs must be legible from a distance of 5 feet from the boundary of the area where the FCC General Population limits are exceeded in accordance with OSHA rules (29 CFR § 1910.145(f)(4)(ii)).
- INFORMATION signs displaying contact information AND GUIDELINES signs are considered *optional* and may be utilized at antenna installations where the FCC limits may not be exceeded.
- Positive access control is required to restrict access to areas where the FCC General Population limits may be exceeded.** Controls such as physical barriers to entry imposed by locked doors, hatches and ladders or other access control mechanisms may be supplemented by alarms that alert the individual and notify site management of a breach in access control.
- Appropriate RF Safety & Awareness Training is required for any person that may encounter *controlled* areas in order to understand the meaning of RF alerting signage, as well as the behaviors necessary to ensure safety.** In order to perform work within restricted area where the General Population limits may be exceeded, workers should be trained in RF safety and equipped with personal protective equipment (e.g. RF personal monitor). Lockout/tagout or scheduled outages may be employed to maintain a safe work environment within these areas. Further, untrained workers should not have access to controlled locations without supervision by trained occupational personnel.



Standard Minimum Font Sizes & Safe Viewing Distances

(Source: ANSI Z535.2-2001 (Table B1))

Minimum Safe Viewing Distance		Minimum Letter Height for FAVORABLE Reading Conditions			Minimum Recommended Sign Size *
(ft)	(m)	(point size)	(in)	(cm)	(in)
≤4	≤1.2	16	0.16	.4	5 x 7
6	1.8	24	0.24	0.6	7 x 10
8	2.4	32	0.32	0.8	8 x 12
10	3.0	40	0.40	1.0	11 x 18
15	4.6	60	0.60	1.5	15 x 24
20	6.1	80	0.80	2.0	19 x 30
30	9.1	120	1.20	3.0	TBD**
40	12.2	160	1.60	4.1	TBD**
60	18.3	240	2.40	6.1	TBD**
80	24.4	320	3.20	8.1	TBD**
100	30.5	400	4.00	10.2	TBD**
125	38.1	500	5.00	12.7	TBD**
150	45.7	600	6.00	15.2	TBD**

* Sign sizes reflect the minimum size(s) needed to meet FCC/OSHA requirements based on (i) the sign content and artwork shown in this section, and (ii) the minimum safe viewing distance, as specified by ANSI and calculated by our RoofMaster™ software.

All minimum safe viewing distances are depicted in the RF modeling diagrams provided in this report.

** Minimum recommended sign sizes are provided herein only for signs that require a minimum safe viewing distance of 0 – 20 feet. Signs requiring a minimum safe viewing distance >20 feet shall be graphically calculated and confirmed by Waterford on a case-by-case basis.

6 Appendix A: Technical Framework

The FCC requires licensees to ensure that new and existing wireless operations do not expose people to hazardous levels of RF electromagnetic energy. Service providers consider compliance with these rules when designing new sites or modifying existing operations that could change the RF environment. The FCC exposure rules have been codified in response to the National Environmental Policy Act of 1969 which requires government agencies to evaluate the impact of their actions on the "quality of the human environment." Documentation of adherence to these rules is typically included in the environmental compliance applications submitted to local authorities responsible for reviewing and approving new or modified telecommunications installations and is maintained by the FCC licensee.

The FCC rules are based on exposure limits established by scientific and engineering organizations that review human health research in this field. At RF frequencies, the electromagnetic waves utilized by cellular sites represent non-ionizing radiation which can be absorbed by the human body. The FCC limits include a 50-fold safety factor above exposure levels where adverse thermal effects may result. By contrast, the energy available in ionizing radiation (e.g. X-rays) is higher and has the ability to permanently damage tissue cells at the molecular level. Unlike ionizing radiation, exposure to non-ionizing radiation does not have cumulative effects and the FCC limits are based on the body's thermoregulation capabilities.

The FCC requires licensees to ensure that persons are not exposed to radiofrequency electromagnetic energy power densities in excess of the Maximum Permissible Exposure ("MPE") limits as set forth in 47 C.F.R. §§ 1.1307(b) and 1.1310. The limits are derived from maximum Specific Absorption Rate (SAR) values of the human body for two tiers of permissible exposure differentiated by the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure.

General Population / uncontrolled exposure limits apply to those situations in which persons may not be aware of the presence of electromagnetic energy, where exposure is not employment-related, or where persons cannot exercise control over their exposure.

Occupational / controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure.

Based on these criteria, the FCC limits for the General Population are associated with continuous exposure conditions and exposure levels below these limits are not hazardous. The FCC General Population limit is 5 times more restrictive than the Occupational limits.

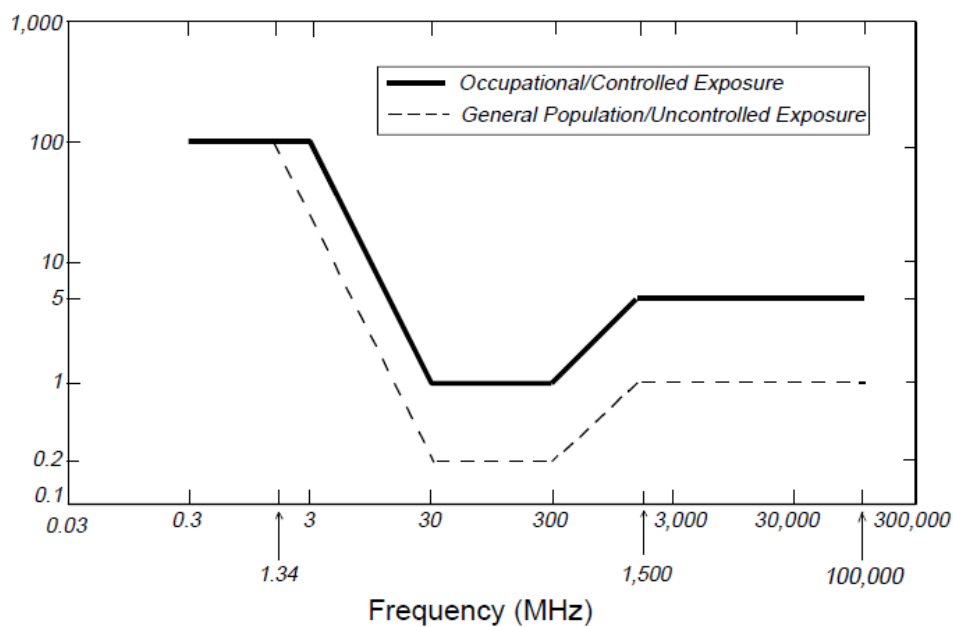
As a practical method of evaluating compliance in deployment scenarios, the FCC has set forth MPE limits shown in Table 1 below which are derived from the *whole-body SAR limits*. Specified in terms of electric field strength, magnetic field strength and equivalent plane-wave power density, compliance may be evaluated through computational or measurement methods provided in the FCC Office of Engineering & Technology Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65). Factors that determine exposure conditions include frequency, operating power, distance, and directivity of the antenna.

Table 1: FCC Exposure Limits (47 C.F.R. § 1.1310)

Frequency (MHz)	Limits for General Population/Uncontrolled Exposure		Limits for Occupational/Controlled Exposure	
	Power Density (mW/cm ²)	Averaging Time (minutes)	Power Density (mW/cm ²)	Averaging Time (minutes)
30-300	0.2	30	1	6
300-1500	f/1500	30	f/300	6
1500-100,000	1.0	30	5.0	6

f=Frequency (MHz)

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



From OET-65

Compliance assessment involves consideration of the cumulative contributions of all wireless operations. The power density resulting from an RF source may be expressed as a percentage of the frequency-specific limits. In scenarios involving multiple RF emitters, the percentage of the FCC limits from each source are *summed* to determine if 100% of the exposure limit has been exceeded at a given location. At these areas of concern, access controls with appropriate RF alerting signage must be established and maintained to restrict access to authorized personnel.

An evaluation of existing environmental conditions may be performed through predictive modeling as set forth in OET-65 or collecting power density measurements. The impact of new or modified wireless operations must be assessed in this cumulative scenario and any area of concern that is accessible to members of the General Population must be mitigated. In situations where the predicted MPE exceeds the General Population threshold in an accessible area as a result of emissions from multiple transmitters, FCC licensees that contribute greater than 5% of the aggregate MPE share responsibility for mitigation.

Based on the computational guidelines set forth in FCC OET Bulletin 65, Waterford Consultants, LLC has developed software to predict the overall Maximum Permissible Exposure possible at any location given the spatial orientation and operating parameters of multiple RF sources. The power density in the *far-field* of an RF source is specified by OET-65 Equation 5 as follows:

$$S = \frac{EIRP}{4 \cdot \pi \cdot R^2} \text{ (mW/cm}^2\text{)}$$

where EIRP is the Effective Radiated Power relative to an isotropic antenna and R is the distance between the antenna and point of study. Additionally, consideration is given to the manufacturers' horizontal and vertical antenna patterns as well as radiation reflection. At any location, the predicted power density in the *far-field* is the spatial average of points within a 0 to 6-foot vertical profile that a person would occupy. *Near-field* power density is based on OET-65 Equation 20 stated as

$$S = \left(\frac{180}{\theta_{BW}} \right) \cdot \frac{100 \cdot P_{in}}{\pi \cdot R \cdot h} \text{ (mW/cm}^2\text{)}$$

where P_{in} is the power input to the antenna, θ_{BW} is the horizontal pattern beamwidth and h is the aperture length.

Exposure conditions in the *near-field* of a microwave dish antenna may vary but the maximum power density is provided by OET-65 Equation 13 as follows:

$$S_{nf} = \frac{16 \cdot \eta \cdot P}{\pi \cdot D^2} \text{ (mW/cm}^2\text{)}$$

where η is aperture efficiency (0.75) and D is the antenna diameter.

Some antennas employ beamforming technology where RF energy allocated to each customer device is dynamically directed toward their location. In this analysis, predicted exposure levels are based on all beams at full utilization (i.e. full power) simultaneously focused in any direction. As this condition is unlikely to occur, the actual power density levels at ground and at adjacent structures are expected to be less than the levels reported. These theoretical results represent worst-case predictions as all RF emitters are assumed to be operating at 100% duty cycle.

7 Appendix B: Qualifications of Waterford Consultants, LLC

With more than 100 team-years of experience, Waterford Consultants, LLC [Waterford] provides technical consulting services to clients in the Radio Communications and antenna locating industry. Waterford retains professional engineers who are placed in responsible charge of the processes for analysis.

Waterford is familiar with 47 C.F.R. § § 1.1307(b)(3) and 1.1310 along with the general Rules, Regulations, and policies of the FCC. Waterford work processes incorporate all specifications of FCC Office of Engineering and Technology, Bulletin 65 (“OET65”), from the website: www.fcc.gov/oet/rfsafety and follow criteria detailed in 47 CFR § 1.1310 “Radiofrequency radiation exposure Limits”.

Within the technical and regulatory framework detailed above, Waterford developed tools according to recognized and generally accepted good engineering practices. Permissible exposure limits are band specific, and the Waterford computerized modeling tools correctly calculate permissible exposure based on the band(s) specified in the input data. Only clients and client representatives are authorized to provide input data through the Waterford web portal. In securing that authorization, clients and client representatives attest to the accuracy of all input data.

Waterford Consultants, LLC attests to the accuracy of the engineering calculations computed by those modeling tools. Furthermore, Waterford attests that the results of those engineering calculations are correctly summarized in this report.

To download an electronic copy of our **Summary of Capabilities** brochure, please clicking the image below



8 Appendix C: RoofMaster

RoofMaster™ is the software package that Waterford Consultants, LLC created to model RF environments associated with multiple emitters where the potential exists for human exposure. Based on the computational guidelines set forth in OET Bulletin 65 from the Federal Communications Commission (FCC), RoofMaster™ considers the operating parameters of specified RF sources to predict the overall Maximum Permissible Exposure possible at a given location. These theoretical results represent worst-case predictions as emitters are assumed to be operating at 100% duty cycle.

From the FCC document:

“The revised OET Bulletin 65 has been prepared to provide assistance in determining whether proposed or existing transmitting facilities, operations or devices comply with limits for human exposure to radiofrequency (RF) fields adopted by the Federal Communications Commission (FCC). The bulletin offers guidelines and suggestions for evaluating compliance.”

http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf

9 Appendix D: Statement of Limiting Conditions

Waterford Consultants, LLC field personnel have visited the site and collected data with regard to the MPE environment. Waterford Consultants will not be responsible for matters of a legal nature that affect the site or property. The property has been analyzed under the premise that it is under responsible ownership and management and our client has the legal right to conduct business at this facility.

Due to the complexity of some wireless sites, Waterford Consultants has created this report utilizing best industry practices and due diligence. Waterford Consultants cannot be held accountable or responsible for anomalies or discrepancies due to actual site conditions (i.e., mislabeling of antennas or equipment, inaccessible cable runs, inaccessible antennas or equipment, etc.) or information or data supplied by Wireless Carrier, the site manager, or their affiliates, subcontractors or assigns.

Waterford Consultants has provided the results of a computer-generated model in this MPE Site Compliance Report to show approximate dimensions of the site, and the model results is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Waterford Consultants' recommendations.

Waterford Consultants will not be responsible for any existing conditions or for any engineering or testing that might be required to discover whether adverse safety conditions exist. Because Waterford Consultants is not expert in the field of mechanical engineering or building maintenance, this MPE Site Compliance Report must not be considered a structural or physical engineering report.

Waterford Consultants obtained information used in this MPE Site Compliance Report from sources that Waterford Consultants considers reliable and believes them to be true and correct. Waterford Consultants does not assume any responsibility for the accuracy of such items that were furnished by other parties.

10 Appendix E: Glossary of Terms

Definitions of the following technical words, terms, and/or phrases reflected in the report provided by Waterford are included as follows:

Compliance assessment	Sometimes referred to as a GAP assessment, it is intended to identify gaps between an existing control environment and what is required for compliance with Federal (FCC) regulations
Controlled exposure limits	Apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.
Cumulative exposure	Cumulative exposure is the total dose resulting from repeated exposures of radiation to an occupationally exposed worker to the same portion of the body, or to the whole body, over a period of time.
Effective Radiated Power (EIRP or ERP)	An IEEE standardized definition of directional radio frequency (RF) power, such as that emitted by a radio transmitter.....It is equal to the input power to the antenna multiplied by the gain of the antenna.
Electromagnetic emissions (EME)	Aka <i>electromagnetic radiation</i> , EME is energy that is propagated through free space or through a material medium in the form of electromagnetic waves, such as radio waves, visible light, and gamma rays.
Far field	The far field is the region in which the field acts as "normal" electromagnetic radiation. In this region, it is dominated by electric or magnetic fields with electric dipole characteristics.
FCC	Federal Communications Commission; an independent agency of the United States government that regulates communications by radio, television, wire, satellite, and cable across the United States. The FCC maintains jurisdiction over the areas of broadband access, fair competition, radio frequency use, media responsibility, public safety, and homeland security
General Population limit	Applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure

IEEE	Institute of Electrical and Electronics Engineers; a professional association for electronic engineering and electrical engineering (and associated disciplines). It was formed in 1963 from the amalgamation of the American Institute of Electrical Engineers and the Institute of Radio Engineers
Ionizing radiation	A type of energy released by atoms that travels in the form of electromagnetic waves (gamma or X-rays) or particles (neutrons, beta or alpha); can penetrate the human body and the radiation energy can be absorbed in tissue. This has the potential to cause harmful effects to people, especially at high levels of exposure
Maximum permissible exposure (MPE)	The FCC's regulations have specific MPE requirements for radiated electric fields, magnetic fields, and power density. MPEs are derived from the Specific Absorption Rate (SAR) at which tissue absorbs RF energy, usually expressed in watts per kilogram (W/kg).
Mitigation for compliance	Actions or activities required for compliance with FCC/OSHA regulations and to ensure a safe working environment. A harmonized and integrated compliance program – one that includes appropriate risk-management activities and controls – will eliminate redundant efforts, enable execution, ensure safety, and facilitate adherence to compliance requirements by the business and governing federal agencies.
Narda/Wave Control	Leading international suppliers of measuring equipment in the EMF / EME Safety, RF Test & Measurement and EMC sectors
Near field	A part of the radiated field that is below distances shorter than the Fraunhofer distance, which is given from the source of the diffracting edge or antenna of longitude or diameter; near field, as the name suggests, is very close to the antenna while far field is further away.
Non-ionizing radiation	Non-ionizing radiation includes the spectrum of ultraviolet (UV), visible light, infrared (IR), microwave (MW), radio frequency (RF), and extremely low frequency (ELF); does not penetrate deep into the tissues but increases the risk of damage to the skin and eyes. Dependent on the energy and exposure time, non-ionizing radiation can cause localized heating, or photochemical reactions can occur with possible permanent harm. Exposure should therefore be minimized.

Occupational limit	Apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure.
OET-65	Bulletin published by the FCC's Office of Engineering & Technology in 1997; establishes guidelines for human exposure to radiofrequency electromagnetic field and achieving FCC compliance
Personal RF monitor	Part of the personal protective equipment (PPE) worn by a person working in areas exposed to radio frequency radiation. A personal RF safety monitor is typically worn either on the torso region of the body or handheld and is required by the occupational safety and health acts of many telecommunication companies
Positive access control	Refers to the practice of restricting entrance to a property, a building, or a room to authorized persons; can be achieved by a human (a guard, bouncer, or receptionist), through mechanical means such as locks and keys, or through technological means such as access control systems
Power density	The amount of power (time rate of energy transfer) per unit volume; power density may also refer to a volume. It is then also called volume power density, which is expressed as W/m ³
Radio frequency (RF)	The oscillation rate of an alternating electric current or voltage or of a magnetic, electric, or electromagnetic field or mechanical system in the frequency range from around 20 kHz to around 300 GHz
Specific Absorption Rate (SAR)	A measure of the rate at which energy is absorbed per unit mass by a human body when exposed to a radio frequency (RF) electromagnetic field. ... It is defined as the power absorbed per mass of tissue and has units of watts per kilogram (W/kg)
Spatial average	The average power density observed when the Narda meter and probe is swept over an entire person (0 – 6 feet) for purposes of comparing with FCC exposure limits
Spatial peak	The maximum power density observed when the Narda meter and probe are swept over an entire person (0 – 6 feet) for purposes of comparing with FCC exposure limits; considered "worst case" – the average will not exceed this value
Uncontrolled exposure limits	Apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure



City of Santa Rosa

Text File

File Number: 22-344ZA

Agenda Date: 7/21/2022

Version: 1

Status: In Committee

In Control: Zoning Administrator

File Type: ZA- Agenda Item

Agenda Number: 5.2

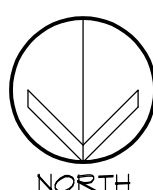
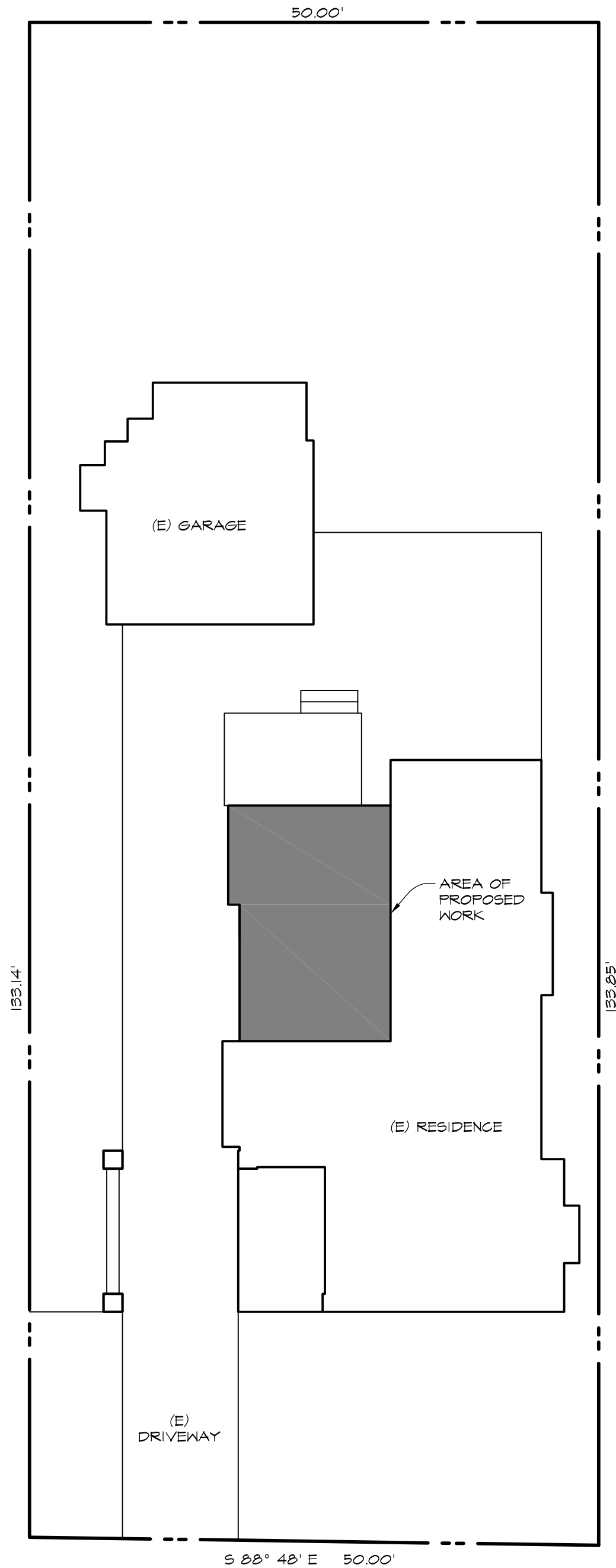
A NEW KITCHEN REMODEL & RE-ROOFING FOR:

LACEY CAMPBELL

SANTA ROSA, CA

SITE PLAN NOTES

- THE PROPERTY LINES SHOWN HEREIN ARE COMPILED FROM RECORDED DATA AND DO NOT REPRESENT A BOUNDARY SURVEY OR THE ACTUAL LOCATION UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL VERIFY ALL PROPERTY LINES, SETBACKS, EASEMENTS, BENCHMARKS, INFORMATION, IMPROVEMENT INFORMATION, DIMENSIONS AND EXISTING CONDITIONS PRIOR TO BEGINNING ANY WORK. NOTIFY DESIGNER OF ANY DISCREPANCIES.
- CONTRACTOR TO MAKE PROVISIONS TO PROTECT EXISTING PLANTS AND TREES TO REMAIN FROM DAMAGE DUE TO CONSTRUCTION WORK AND OR TRAFFIC.



PLOT PLAN

SCALE: 1" = 10'-0"

ABBREVIATIONS

#	AND	JST.	JOIST
/	ANGLE	JT.	JOINT
A#B	ABOVE & BELOW	K.D.	KILN DRIED
A.B.	ANCHOR BOLT	K.F.	KING POST
ABV.	ABOVE	L.B.	LAS BOLT
A.C.	ASPHALTIC CONCRETE	LBS. or #	POUNDS
ADDL.	ADDITIONAL	L.G.	LONG
ADJ.	ADJACENT	L.L.	LIVE LOAD
A.F.F.	ABOVE FINISH FLOOR	L.L.C.	LOCATION
A.L.T.	ALUMINUM	L.T.	LIGHT
ALUM.	ALUMINUM	L.S.L.	LAMINATED STRAND LUMBER
APA.	AMERICAN PLYWOOD	L.V.L.	LAMINATED VENEER LUMBER
APPROX.	APPROXIMATE	MAX.	MAXIMUM
ASTM.	AMERICAN SOCIETY FOR TESTING & MATERIALS	M.B.	MACHINE BOLT
A.Y.C.	ALASKAN YELLOW CEDAR	MECH.	MECHANICAL
BLDG.	BUILDING	MFR.	MANUFACTURER
BLK.	BLOCK (BLOCKING)	M/J.	MALLEABLE IRON WASHER
BLT.	BOLT	MIN.	MINIMUM
BLU.	BELOW	MISC.	MISCELLANEOUS
BM.	BEAM	MIGRO LAM.	METAL
BOT.	BOTTOM	MTL.	METAL
BRG.	BEARING	(N)	NEW
BTWN.	BETWEEN	N/A	NOT APPLICABLE
CANT.	CANTILEVERED	N.I.C.	NOT IN CONTRACT
C.J.	CONTROL JOINT	NO. or #	NUMBER
CL.	CENTERLINE	N.T.S.	NOT TO SCALE
CLS.	CEILING	O/	OVER
CLR.	CLEAR	O.C.	ON CENTER
C.M.U.	CONCRETE MASONRY UNIT	O.D.	OUTSIDE DIAMETER
C.O.	CLEAN OUT	O.F.	OUTSIDE FACE
C.O.L.	COLUMN	O.H.	OVERHANG
COLL.	COLLECTOR	OPG.	OPENING
COMB.	COMBINATION	OPP.	OPPOSITE
COND.	CONDITION	OPT.	OPTIONAL
CONN.	CONNECTION	P.E.N.	PLYWOOD EDGE NAILING
CONSTR.	CONSTRUCTION	PERP.	PERPENDICULAR
CONT.	CONTINUOUS	P.D.F.	POWDER DRIVEN FASTENER
CONTR.	CONTRACTOR	PERF.	PERFORATED
C.P.	COMPLETE PENETRATION	E	FLATE
CSK.	COUNTERSINK	FWD.	PLYWOOD
d	PENNY (NAIL SIZE)	P.P.	PARTIAL PENETRATION
DBL.	DOUBLE	P.R.V.	PRESSURE RELIEF VALVE
DET.	DETAIL	P.S.I.	POUNDS PER SQUARE INCH
D.F.	DOUGLAS FIR	PSL.	PARALLEL STRAND LUMBER
DIA. or Ø	DIAMETER	P.T.D.F.	PRESSURE TREATED DOUGLAS FIR
DIAG.	DIAGONAL	R	RADIUS
DIM.	DIMENSION	R.A.S.	RETURN AIR GRILL
D.L.	DEAD LOAD	REINF.	REINFORCING
DR.	DRAIN	REIT.	RETAINING
D.T.O.	DRAIN TO OUTSIDE	REQD.	REQUIRED
DWG.	DRAWING	RF.	ROOF
(E)	EXISTING	R.H.W.S.	ROUND HEAD WOOD SCREW
EA.	EACH	R.O.	ROUGH OPENING
E.B.	EXPANSION BOLT	RWD.	REDWOOD
E.E.	EACH END	#	SQUARE FEET
E.F.	EACH FACE	sq	SQUARE INCHES
E.S.	EACH SIDE	S.A.D.	SEE ARCHITECTURAL DRAWINGS
EW.	EACH WAY	SCHED.	SCHEDULE
ELEV.	ELEVATION	SEC.	SECTION
EMBD.	EMBEDMENT	SHT.	SHEET
EN.	EDGE NAIL	SHTG.	SHEATHING
ENG.	ENGINEER	SHL.	SHILAR
EQ.	EQUAL	S.M.D.	SEE MECHANICAL DRAWINGS
EXP.	EXPANSION	SP.	SPACE(S)
EXT.	EXTERIOR	SPECS.	SPECIFICATIONS
FDN.	FOUNDATION	SQ.	SQUARE
F.H.W.S.	FLAT HEAD WOOD SCREW	S.S.	SELECT STRUCTURAL
FIN.	FINISHED	STAG.	STAGGERED
FLR.	FLOOR	STD.	STANDARD
F.L.J.	FLOOR JOIST	STIFF.	STIFFENER
F.N.	FACE NAIL	STL.	STEEL
F.O.C.	FACE OF CONCRETE	STR.	STRUCTURAL
F.O.M.	FACE OF MASONRY	S.H.	SHEAR WALL
F.O.P.	FACE OF POST	T4B.	TOP & BOTTOM
F.O.S.	FACE OF STUD	T4G.	TONGUE & GROOVE
FR.	FRAME	THK.	THICKNESS
FRMG.	FRAMING	THRD.	THREADED
FT.	FOOT / FEET	THRU.	THROUGH
FTG.	FOOTING	T.N.	TORNAIL
GA.	GAUGE OR GAGE	T.O.	TOP OF
GALV.	GALVANIZED	T.O.C.	TOP OF CONCRETE
G.I.	GALVANIZED IRON	T.O.P.	TOP OF PLYWOOD
GLB.	GLU-LAMINATED BEAM	T.O.S.	TOP OF STEEL
GR.	GRADE	TS.	TUBE STEEL
GR. BM.	GRADE BEAM	TYP.	TYPICAL
GYP. BD.	GYP. BOARD	UBC.	UNIFORM BUILDING CODE
HDR.	HEADER	U.N.O.	UNLESS NOTED OTHERWISE
HGR.	HANGER	V.B.	VAPOR BARRIER
HORIZ.	HORIZONTAL	VERT.	VERTICAL
H.S.N.S.	HIGH STRENGTH NON-SHRINK	V.I.F.	VERIFY IN FIELD
HT.	HEIGHT	V.T.O.	VENT TO OUTSIDE
I.D.	INSIDE DIAMETER	W/	WITH
I.F.	INSIDE FACE	W/O	WITHOUT
INFO.	INFORMATION	W.D.	WOOD
INSUL.	INSULATION	WP.	WATERPROOF
INT.	INTERIOR	W.P.T.	WORK POINT
		W.S.	WEATHER STRIPPING
		W.T.	WEIGHT
		W.W.F.	WELDED WIRE FABRIC

GENERAL NOTES

- SPECS. AND DRAWINGS INDICATE FIN. STRUCT. CONTR. SHALL BE RESPONSIBLE FOR CONSTR. METHODS, PROCEDURES, AND COND. EXCEPT AS SPECIFICALLY INDICATED OTHERWISE IN THE CONTRACT DOCUMENTS.
- "APPROVED" (SUBSTITUTION OR EQ.) SHALL MEAN AS APPROVED BY THE DESIGNER AND THE BLDG. DEPT. OR AGENCY HAVING JURISDICTION.
- CONTR. SHALL BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE PLANS. W/O WRITTEN CONFIRMATION FROM THE DESIGNER / ENG. AND BEAR ALL EXPENSES INCURRED BY ANY AND ALL MODIFICATIONS.
- DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS SHALL GOVERN. PLEASE CALL THIS OFFICE AT (707) 242-6569 TO RESOLVE ANY QUESTIONS OR DISCREPANCIES RELATING TO THESE PLANS.
- ALL METAL CONNECTORS ARE MANUFACTURED BY "SIMPSON STRONG-TIE" U.N.O.

SPECIAL CONTR. NOTE

- THE CONTR. SHALL VERIFY THE AVAILABILITY OF ALL PRODUCTS BEFORE PROCEEDING W/ CONSTR. ESPECIALLY THOSE ITEMS AFFECTING ROUGH OPENING DIMS. OR OTHER DIMS. ON THE PLANS. ALL MFR'D, MAT., COMPONENTS, FASTENERS, ASSEMBLIES, ETC. SHALL BE HANDLED AND INSTALLED IN CONFORMANCE W/ MFRS. SPECS. & INSTRUCTIONS.
- CONTRACTOR SHALL HAVE AND FAMILIARIZE HIMSELF, SUBCONTRACTOR, AND HIS PERSONNEL. READABLE COPIES OF ALL APPLICABLE INSTALLATION M.S.D.S. (MATERIAL SAFETY DATA SHEETS), AND SAFETY MANUALS.

EXISTING FRAMING NOTE

IN THE EVENT THAT OPENING ANY EXISTING FRAMING REVEALS DIFFERING OR UNANTICIPATED CONDITION SUCH AS, BUT NOT LIMITED TO: DRY ROT, SAGGING OR BOWING FRAMING MEMBERS, WATER DAMAGE, BEAMS, POSTS, HOLDOWNS, SHEAR FRAMES, INADEQUATE OR CRACKED OR MISSING FDNs, OR ANY INADEQUATE OR UNSAFE CONSTRUCTION METHODS, IT SHOULD BE BROUGHT TO THE ATTN. OF THE DESIGNER TO BE RESOLVED PRIOR TO ANY MODIFICATIONS.

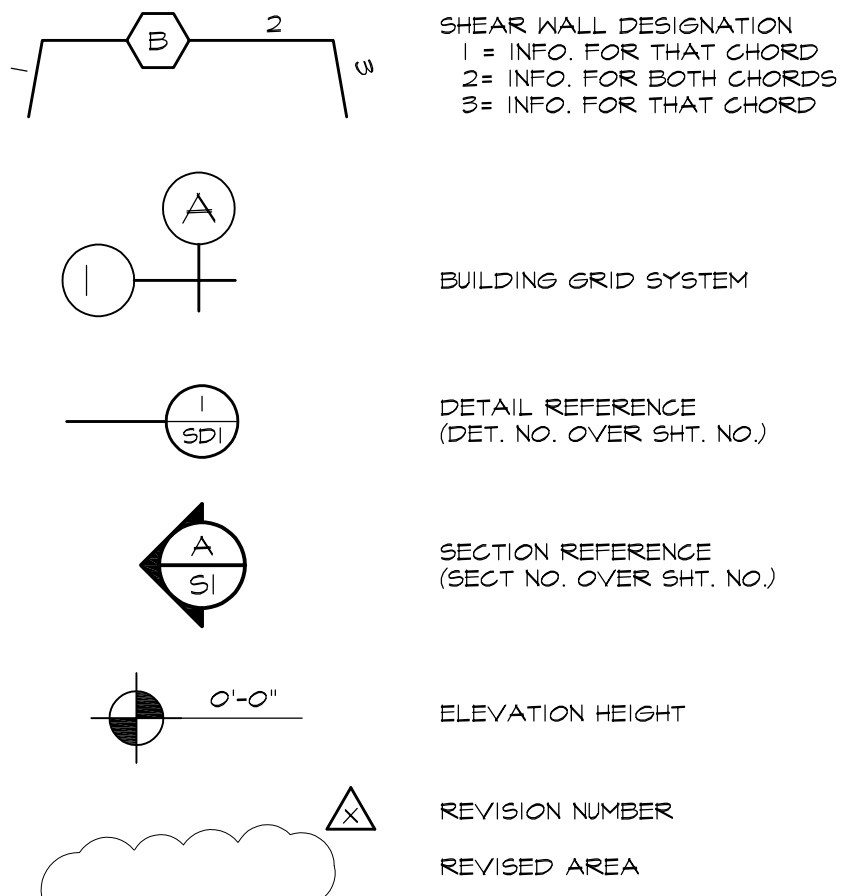
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CODES	
2019 CBC, CRC, CPC, CMC, CEC, CFC, CBES & CALGREEN	
BUILDING TYPE	WATER SOURCE
UBC: V-B	CITY
OCCUPANCY	SEWER SYSTEM
UBC: R-3	CITY
LEGAL DESCRIPTION	# OF BEDROOMS
A.P.N.: 180-760-033	NA

AREA TAKE-OFF

BUILDING AREAS
NO CHANGE TO EXISTING SQUARE FOOTAGE

SYMBOLS



SHEET INDEX

- | | |
|----|-------------------------|
| C | COVER SHEET & PLOT PLAN |
| A1 | FLOOR PLANS |
| A2 | EXISTING ELEVATIONS |
| A3 | NEW ELEVATIONS |

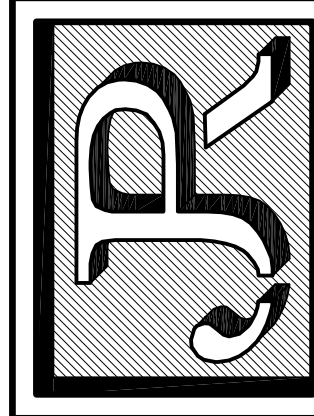
REVISIONS

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City of Santa Rosa
Planning & Economic
Development Department
Mar 9, 2022
RECEIVED

A NEW KITCHEN REMODEL & RE-ROOFING FOR:
LACEY CAMPBELL
408 BENTON STREET
SANTA ROSA, CA

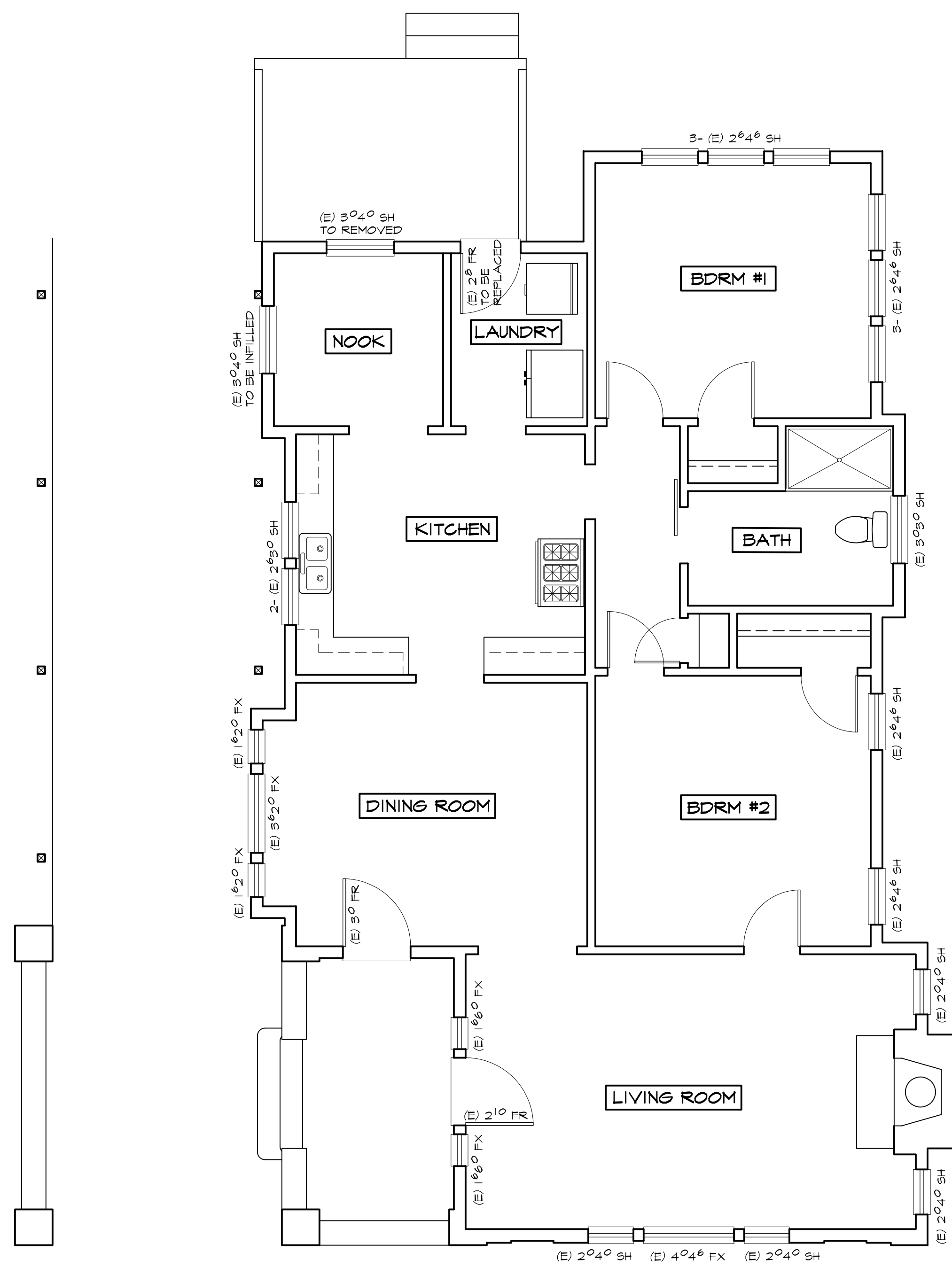
PABROS
DESIGNS & DRAFTING
JEFF PABROS
1504 LUPINE DRIVE
SANTA ROSA, CA 95401
(707) 242-6569
E-MAIL: jrp@pabro.net



JOB :
DRAWN : JR

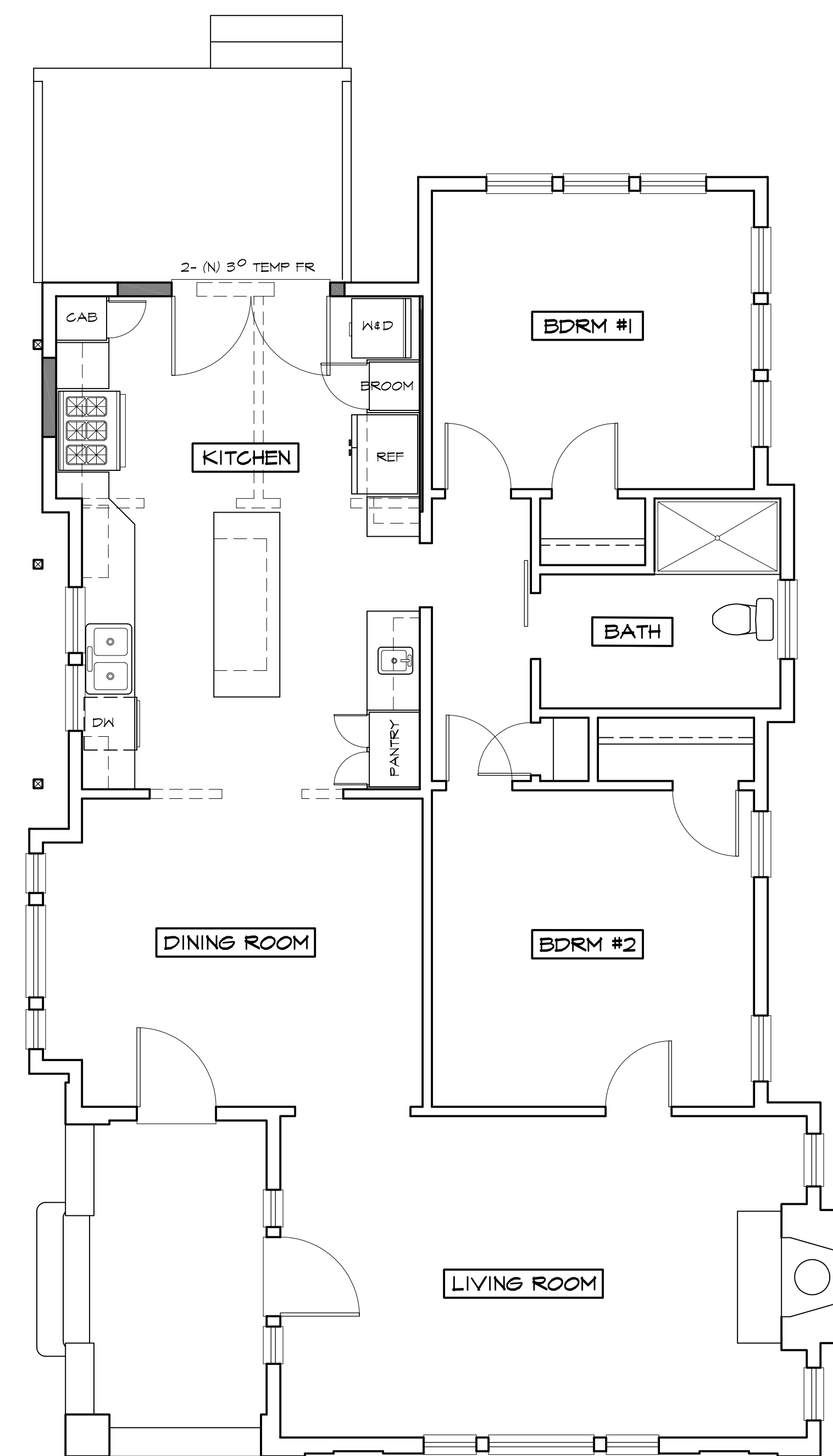
PLOT DATE: 02/24/01/14/15
SHEET #:

C



EXISTING FLOOR PLAN

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PROPOSED PLAN

SCALE: 1/4" = 1'-0"

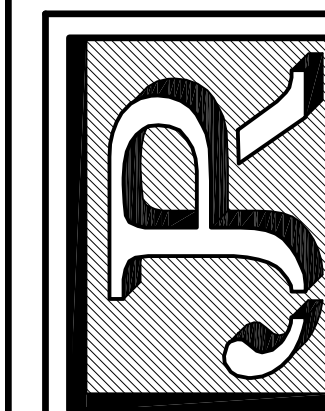
WALL SCHEDULE	
	(E) WALL TO REMAIN
	(E) WALL TO BE REMOVED
	(N) WALL

REVISION	

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NEW VENTURE MODEL & RE-ROOFING FOR:
LACEY CAMPBELL
408 BENTON STREET
CANTON, MA 01921

PABROS
DESIGNS & DRAFTING
JEFF PABROS
1504 LUPINE DRIVE
SANTA ROSA, CA. 95401
PHONE & FAX:
(707) 292-6569

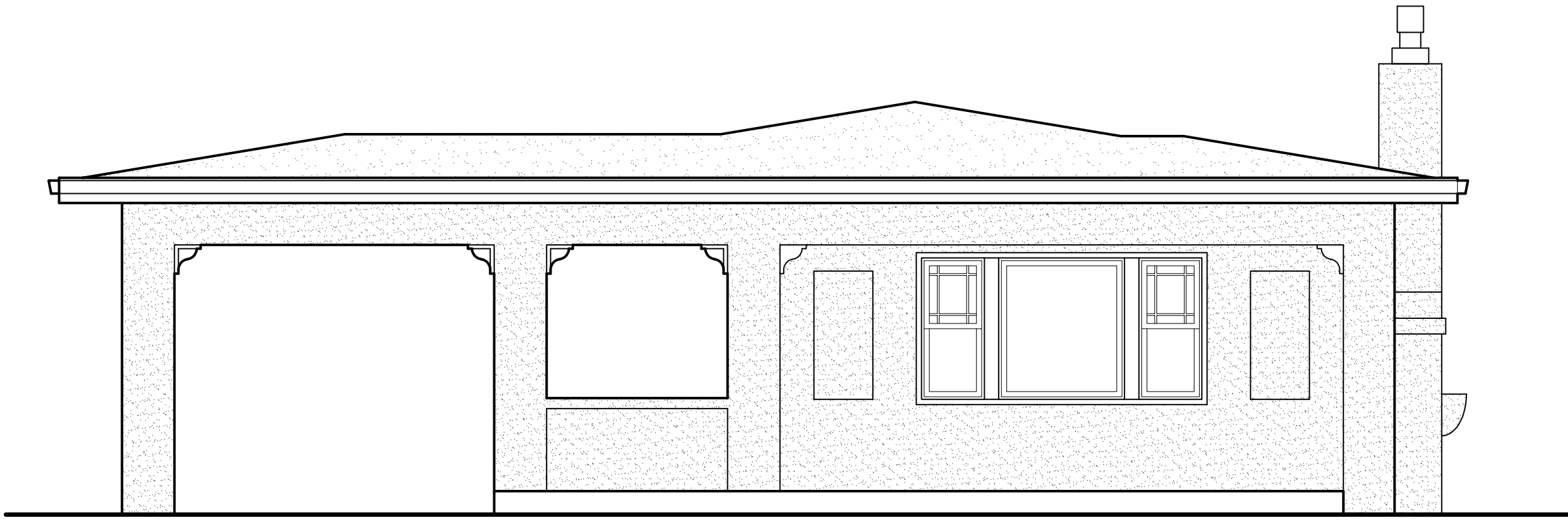


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DRAWN : JR

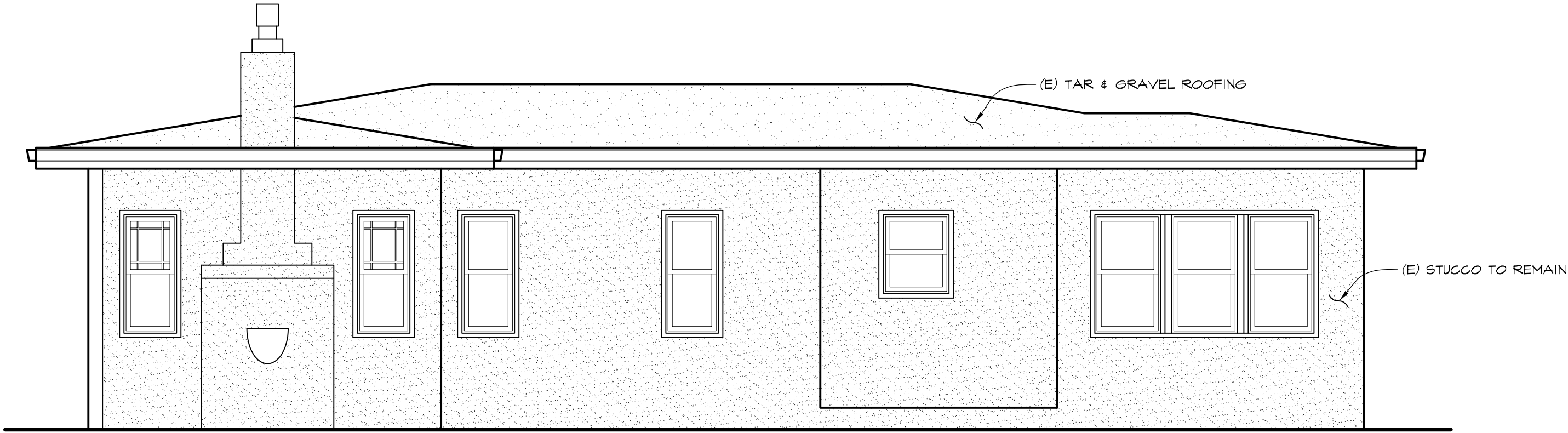
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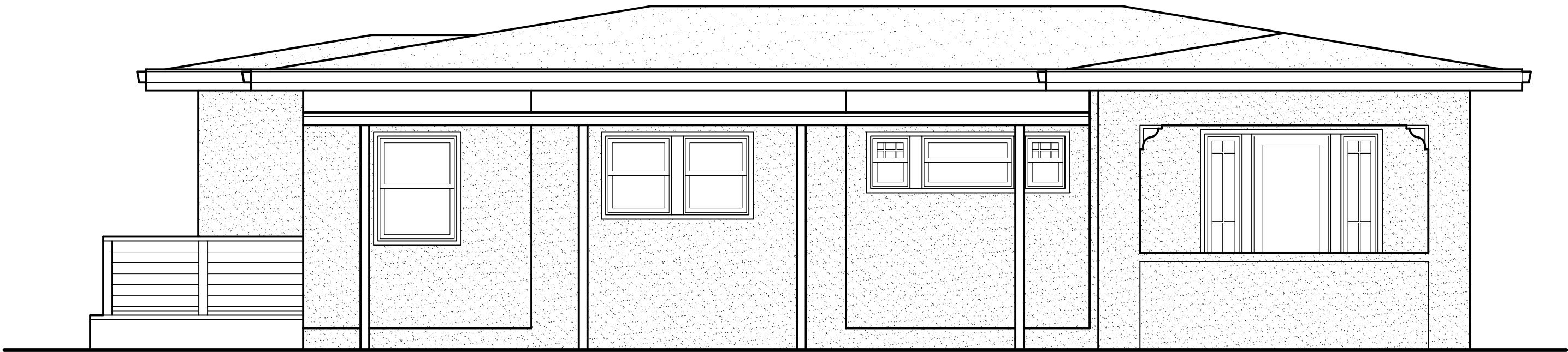
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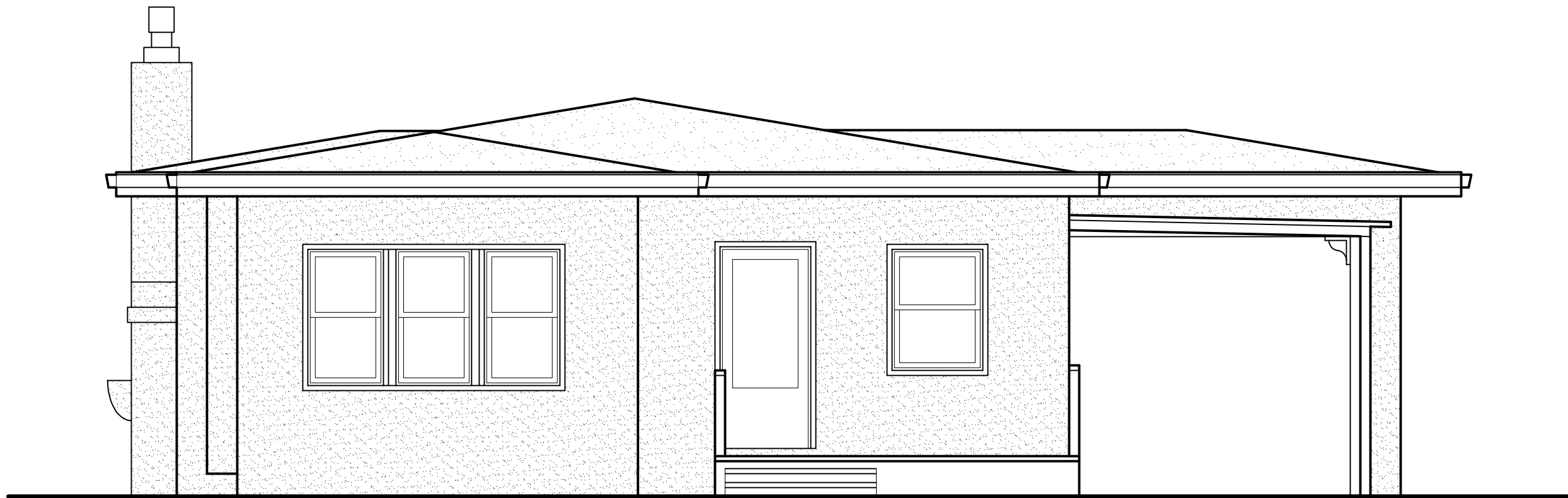
(E) RIGHT ELEVATION

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(E) LEFT ELEVATION

SCALE: 1/4" = 1'-0"



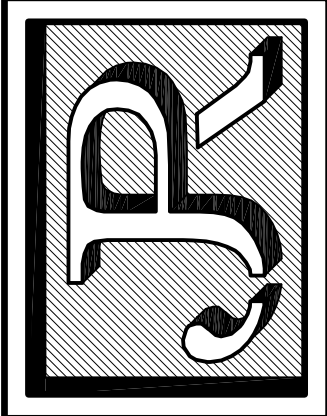
(E) REAR ELEVATION

SCALE: 1/4" = 1'-0"

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A NEW KITCHEN REMODEL & RE-ROOFING FOR:
LACEY CAMPBELL
408 BENTON STREET
SANTA ROSA, CA

PABROS
DESIGNS & DRAFTING
JEFF PABROS
1504 LUPINE DRIVE
SANTA ROSA, CA 95401
(707) 342-6564
E-MAIL: jrp@pabros.net



JOB :
DRAWN : JR

PLOT DATE: 10.30.00.25.45
SHEET #:

A2



OLD TOWN GRAY

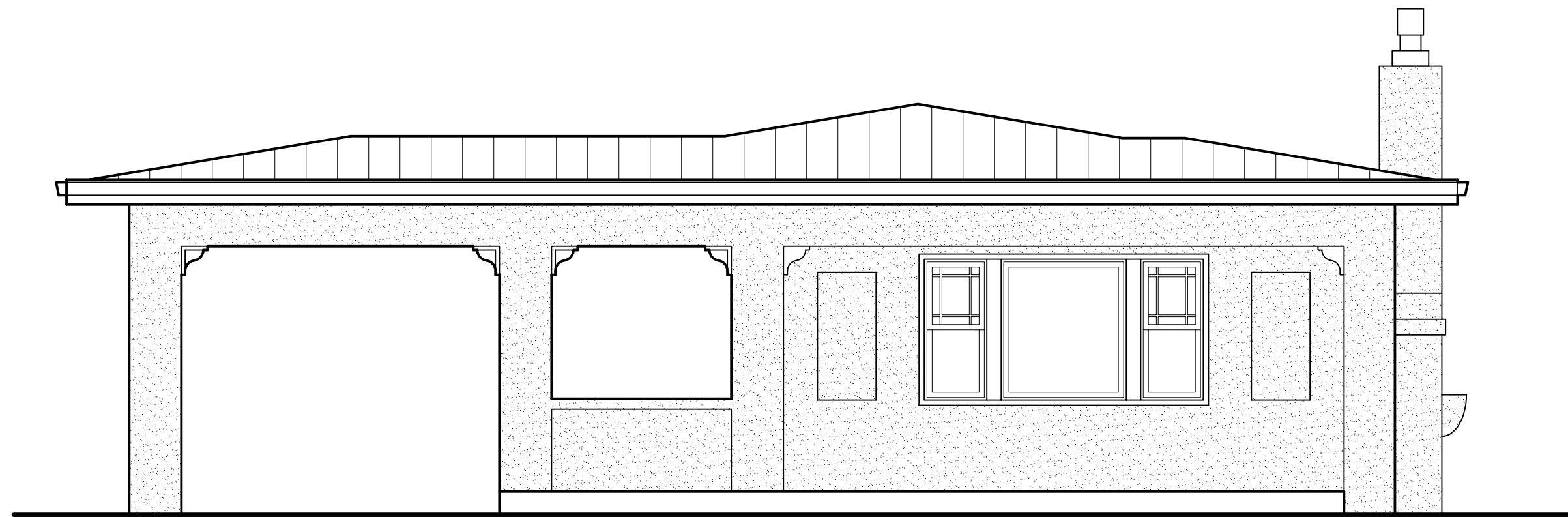


SLATE GRAY

COLOR SAMPLES BY "METAL SALES"
FINAL COLOR TO BE DETERMINED BASED ON AVAILABILITY

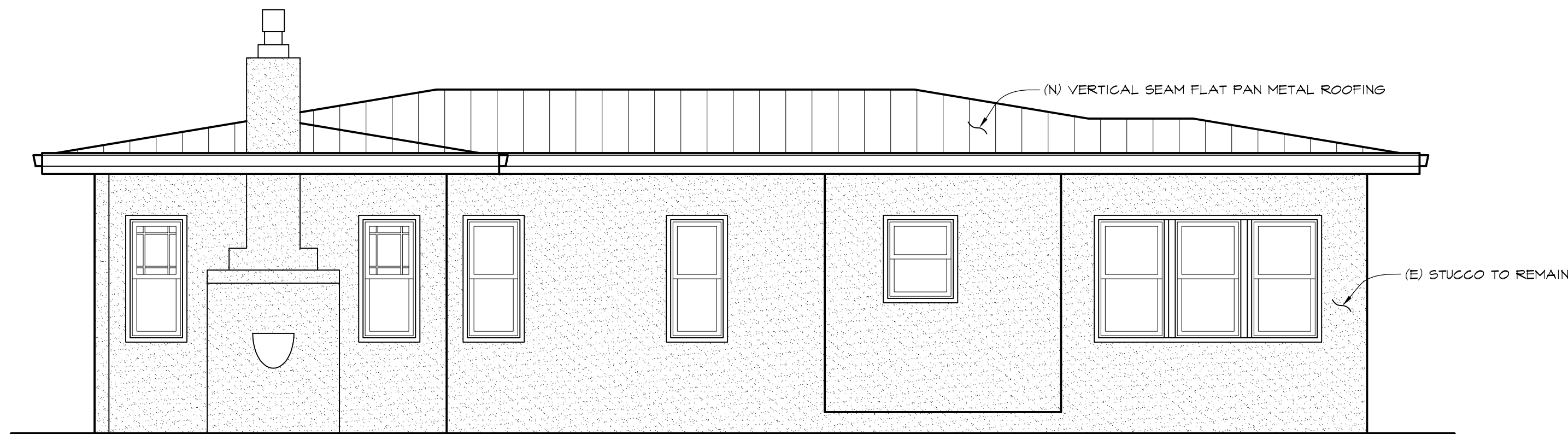
(N) METAL ROOFING COLOR

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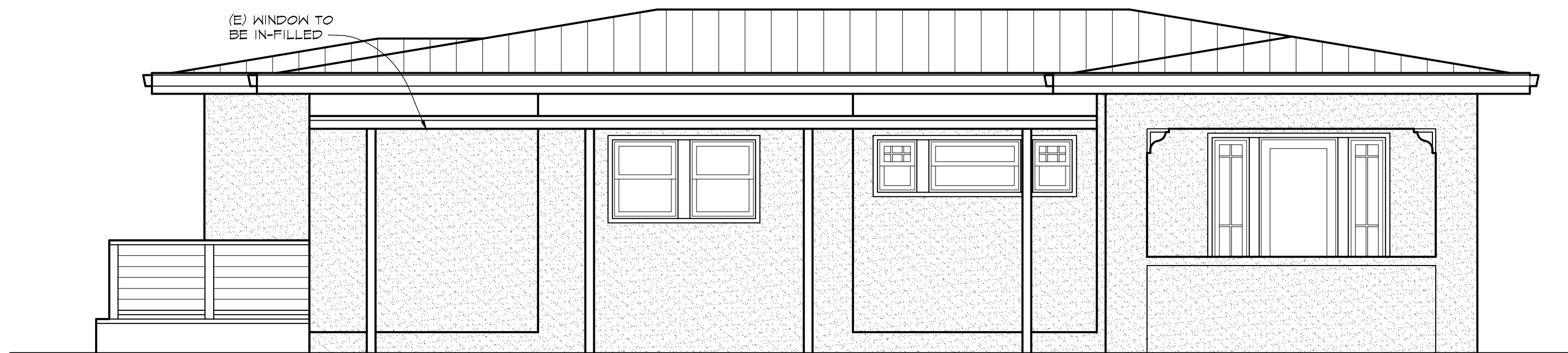
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SCALE: 1/4" = 1'-0"



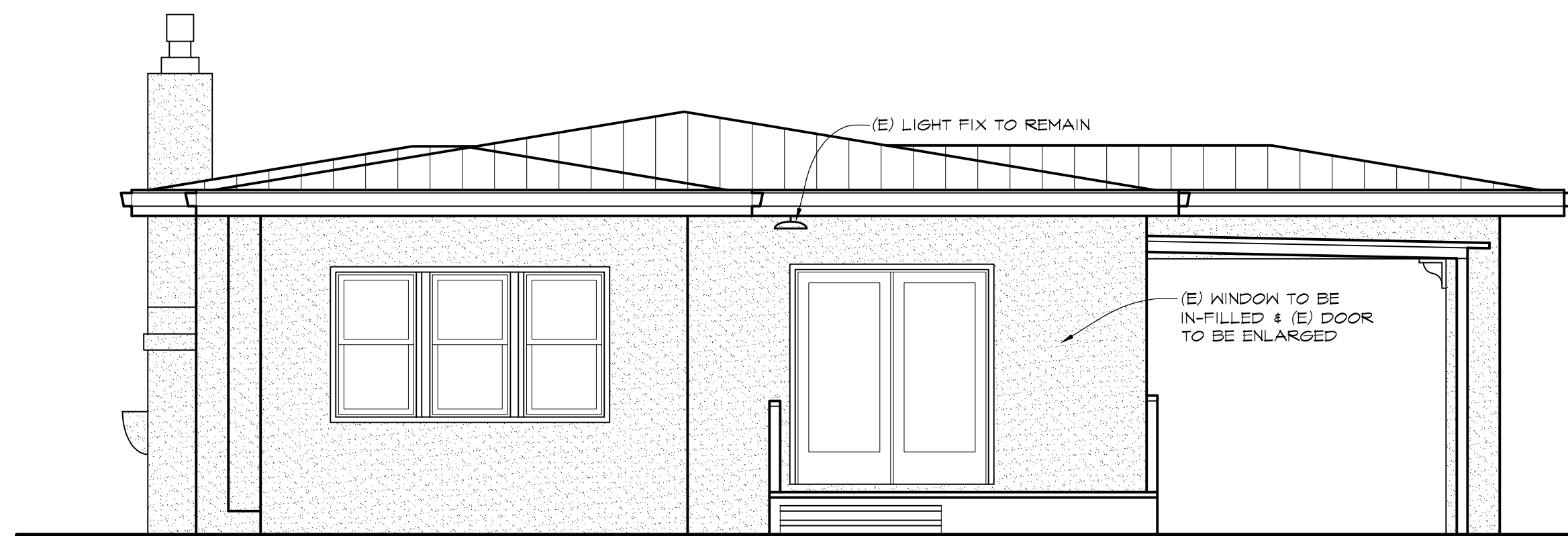
(N) RIGHT ELEVATION

SCALE: 1/4" = 1'-0"



(N) LEFT ELEVATION

SCALE: 1/4" = 1'-0"



(N) REAR ELEVATION

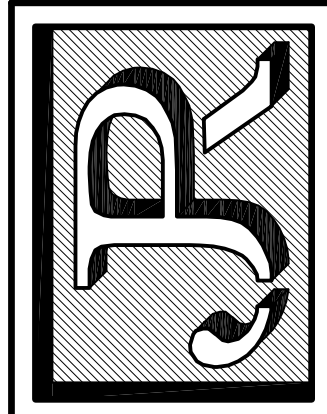
SCALE: 1/4" = 1'-0"

REVISIONS

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408 BENTON STREET
SANTA ROSA, CA

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1504 LUPINE DRIVE
SANTA ROSA, CA 95401
(707) 342-6564
E-MAIL: jrp@pabros.net



JOB :
DRAWN : JR

PLOT DATE: 10.30.00.25.45
SHEET #:

A3

RESOLUTION NO. INSERT ZA RESO NO.

**RESOLUTION OF THE ZONING ADMINISTRATOR OF THE CITY OF SANTA ROSA
APPROVING MINOR LANDMARK ALTERATION PERMIT FOR EXTERIOR
MODIFICATIONS FOR THE PROPERTY LOCATED AT 408 BENTON STREET,
SANTA ROSA, APN: 180-760-033, FILE NO. LMA22-006**

WHEREAS, on May 8, 2022, a Landmark Alteration application was submitted for the proposed project including replacement of two windows, the elimination of a third window, the change from a single French door and fourth window to a set of double French doors, and reroofing the home with an alternative roofing material; and

WHEREAS, the Zoning Code is silent as to what level of Landmark Alteration Permit is required for changing the roof material for a structure that is identified as a contributor to a preservation district; and

WHEREAS, on May 18, 2022, the Cultural Heritage Board reviewed the plans to change the roof material from tar and gravel to asphalt shingle as a concept item. The Board was unanimous in its support to allow asphalt shingle; and

WHEREAS, the Santa Rosa Zoning Administrator has completed review of the Minor Landmark Alteration Permit application to allow the proposed project described above; and

WHEREAS, the Minor Landmark Alteration Permit approval to allow the proposed project is based on the project description and official approved exhibit date stamp received May 8, 2022, and supplemental project narrative, date stamped received July 5, 2022, in which the roofing material is changed to asphalt shingle; and

WHEREAS, the matter has been properly noticed as required by Section 20-58.020.D.2.a and no request for a public hearing has been received;

NOW, THEREFORE, BE IT RESOLVED that in accordance with Section 20-58.060.F, the Zoning Administrator of the City of Santa Rosa finds and determines that:

1. The proposed exterior changes are consistent with applicable zoning standards except as directed by Zoning Code Section 20-12.020 in that the proposed changes are allowed through the approval of a Landmark Alteration.
2. The proposed exterior changes implement the General Plan and any applicable specific plan in that the property is located in an area designated Low Density Residential on the General Plan Land Use Diagram and the proposed changes to residential dwelling are consistent with residential development.
3. The proposed exterior changes are consistent with the original architectural style and details of the building in that the materials, including French doors, single/double-hung

windows and asphalt shingle roofing materials were selected and designed to be consistent with the home's original architecture.

4. The proposed exterior changes are compatible with any adjacent or nearby landmark structures or preservation district structures that have been identified as contributors to the respective district in that the area of change for windows and doors are not readily visible from the public right-of-way. On May 18, 2022, the change in roofing material, from tar and gravel to asphalt shingle, was reviewed by the Cultural Heritage Board as a concept item. The Board was unanimous in its support in the change of materials.
5. The proposed exterior changes are consistent and/or compatible with the textures, materials, fenestration, decorative features and details of the time period of the building's construction in that the double/single-hung windows, the double French door, and asphalt shingles have been selected/designed to be consistent with the period the structure was constructed.
6. The proposed exterior changes will not destroy or adversely affect important architectural features in that the existing windows, door and roofing material are not readily visible from the public right-of-way and all changes are allowed through the approval a Landmark Alteration.
7. The proposed exterior changes are consistent with applicable Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings (2017 Revision) in that the changes will not result in a change from the structure original residential use; the replacement materials have been selected/designed to be consistent with those materials used in or around 1925, when the home was constructed.
8. The proposed project has been reviewed in compliance with the California Environmental Quality Act (CEQA) and qualifies for a Class 1 exemption under CEQA Guidelines Section 15301 in that it involves the minor alteration to an existing structure.

This entitlement would not be granted but for the applicability and validity of each and every one of the below conditions and that if any one or more of the below conditions is invalid, this entitlement would not have been granted without requiring other valid conditions for achieving the purposes and intent of such approval. The approval of the project is contingent upon compliance with all the conditions listed below. Use shall not commence until all conditions of approval have been complied with. Additional permits and fees are/may be required. **It is the responsibility of the applicant to pursue and demonstrate compliance.**

Conditions of Approval

1. Plans submitted for building permit must be consistent with the plans approved by the Zoning Administrator, date stamped received May 8, 2022, and supplemental project narrative date stamped received on July 5, 2022.
2. Construction hours shall be limited to 8:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. Saturday. No construction is permitted on Sunday and holidays.

3. Comply with all applicable federal, state, and local codes. Failure to comply may result in issuance of a citation and/or revocation of approval.
4. Comply with the latest adopted ordinances, resolutions, policies, and fees adopted by the City Council at the time of building permit review and approval.

This Minor Landmark Alteration Permit is hereby approved on July 21, 2022. If conditions have not been met or if work has not commenced within 24 months from the approval date, this approval shall automatically expire and be invalid unless an application for extension is filed prior to expiration. This approval is subject to appeal within ten calendar days from the date of approval.

APPROVED: _____
 INSERT ZA NAME, ZONING ADMINISTRATOR



City of Santa Rosa

Text File

File Number: 22-345ZA

Agenda Date: 7/21/2022

Version: 1

Status: In Committee

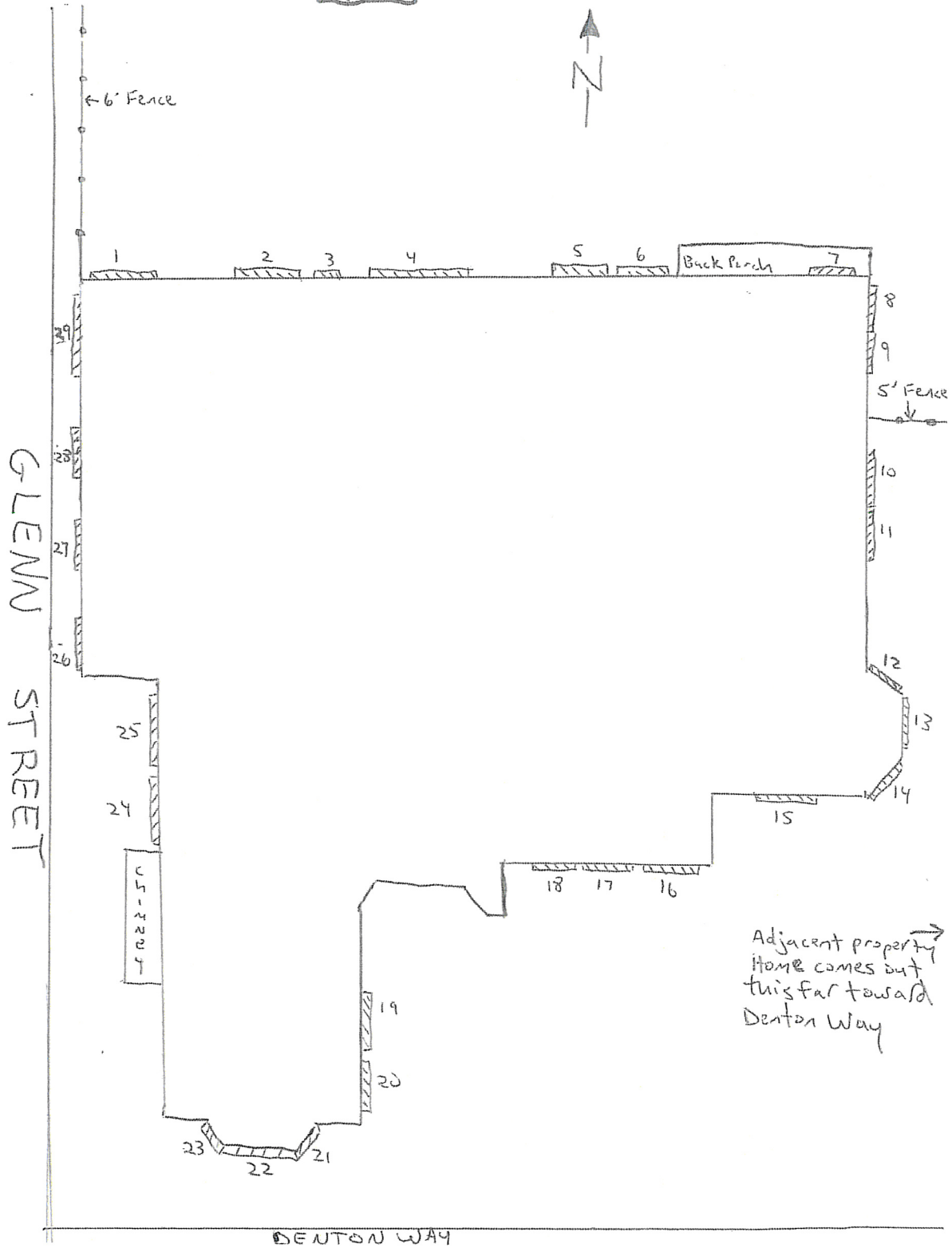
In Control: Zoning Administrator

File Type: ZA- Agenda Item

Agenda Number: 5.3

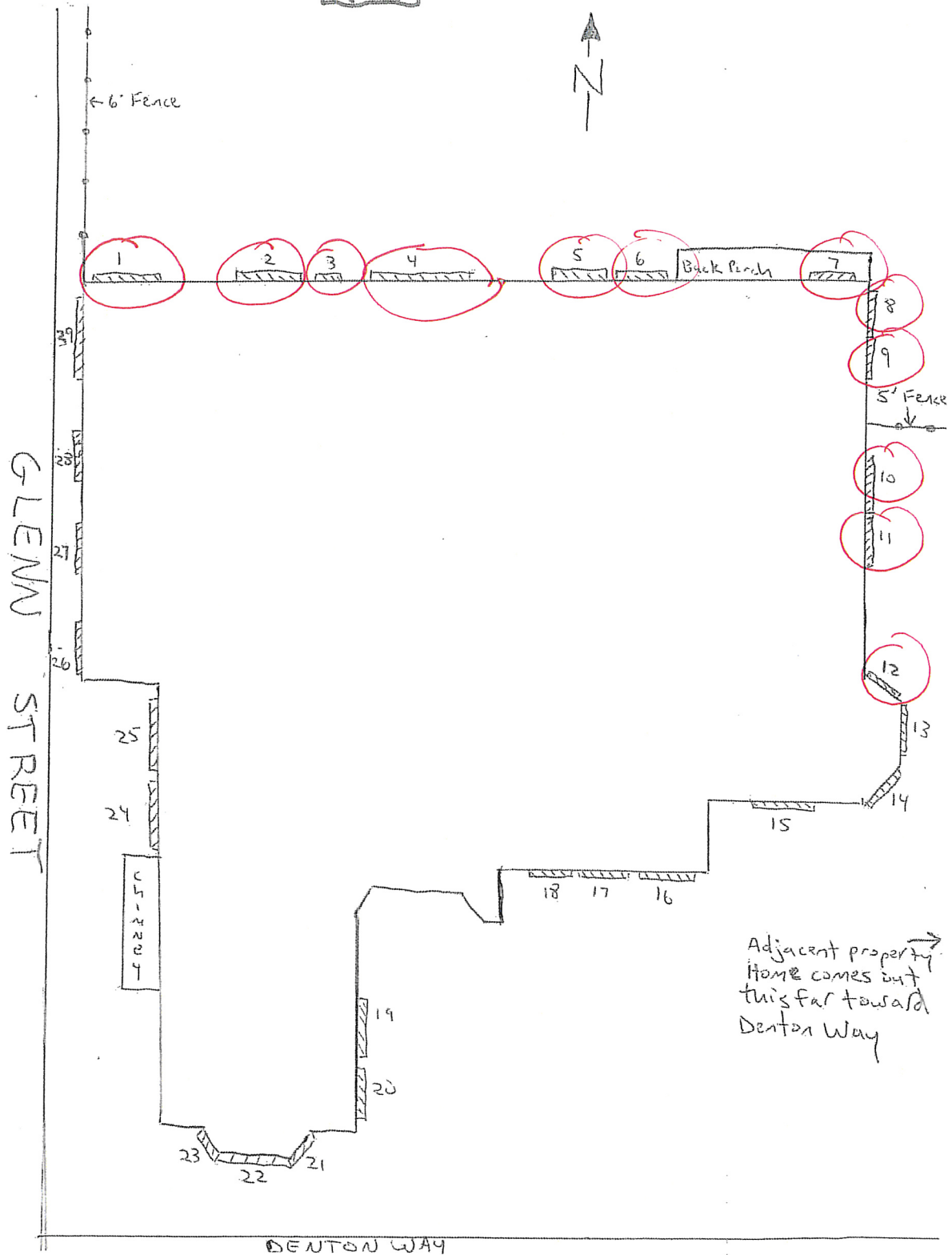
Window schematic

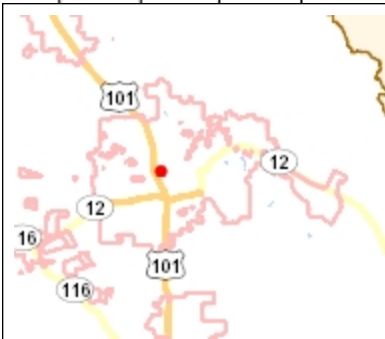
Window = 



Window schematic

Window = 





**401 Denton Street
Landmark Alteration
LMA22-004**



7/5/2022

Scale 1: 1,200

0 Miles 0.02

ROBERT E. ANDERSON103 MORRIS STREET, SUITE N, SEBASTOPOL, CALIFORNIA 95472
TEL.(707) 823-7802 e-mail: arkitekt@sonic.net**ARCHITECT**

FAX (707) 823-5636

May 14, 2022

**MINOR LANDMARK ALTERATION PERMIT APPLICATION
RESIDENCE @ 401 DENTON WAY, SANTA ROSA, CALIFORNIA****INTRODUCTION**

The Owners of 401 Denton Way, Thembi Borrás and John Ramaley have asked me to provide my professional evaluation of their recent application to make minor modifications to the exterior of their residence. I have reviewed the Owners' proposal to install eleven replacement windows and to remove one exterior door on the rear and interior side of their residence; and I have given specific attention given to evaluating the architectural impact of the proposed modifications.

I am a registered architect in the State of California with 46 years of experience practicing throughout Sonoma County; with additional registration with the National Council of Architectural Registration Boards (NCARB).

EXISTING WINDOW CONDITION

The existing wood sash shows deterioration of the adhesive utilized in the original joinery, making the sash units unstable for re-glazing. When the individual window panels are removed from the opening and the putty, glazing points and glass are removed, the deteriorated joints at the corners of each panel will become more apparent. Additionally, the profile of the original millwork appears to be too narrow to accommodate the much wider thickness of dual glazing. Even if the existing wood sash could be successfully re-glazed with more energy-efficient dual glazing the windows are likely to experience substantial air leakage at their perimeters, reducing the thermal benefit of the higher R-value of the new glazing.

1. CONSISTENCY WITH APPLICABLE ZONING STANDARDS

The application is for window replacement only, and is consistent with applicable zoning standards except the portion of Zoning Code Section 20-12.020 that references allowed material for replacement window sash. It should be noted the proposal to utilize replacement sash that retains the existing wood window frames will result in windows of identical size, color and function as the existing windows.

2. IMPLEMENTATION OF THE GENERAL PLAN AND/OR APPLICABLE SPECIFIC PLANS

In addition to the proposal to replace the windows and remove a door on the two sides of the residence not visible from the public way, the application also includes a proposal to replace the windows readily visible from Denton Way and Glenn Street with fiberglass-clad wood windows of the same location, size and configuration as the existing windows. This portion of the work is consistent with prior approvals of the Cultural Heritage Board that implement the establishment of the historic district.

3. CONSISTENCY WITH THE ORIGINAL ARCHITECTURAL STYLE AND DETAILS OF THE BUILDING

The application does not alter the architectural style or details of the building.

4. COMPATIBILITY OF THE PROPOSAL WITH OTHER ADJACENT OR NEARBY LANDMARK OR PRESERVATION DISTRICT STRUCTURES

The replacement windows, whether single-hung, double hung or fixed glazing are proposed to be the same size and function as the existing windows, maintaining the proportion of each window or window grouping as well as the ratio of existing window area to wall surface. This proposed like-for-like replacement allows the basic window forms when used both individually and in pairs to maintain the compatibility of this residence with surrounding preservation district structures.

5. THE CONSISTENCY AND/OR COMPATIBILITY OF THE PROPOSED FENESTRATION WITH THE TIME PERIOD

For this particular application, the most critical factor to maintaining consistency with the most common fenestration used at the time the residence was built is the proposal to continue with the use of single-hung and double-hung windows that emphasize the vertical dimension of each window. The use of white vinyl sash at the proposed locations will not be inconsistent with the appearance and basic architectural feel of the white-painted wood sash used for fenestration of the original residence.

The Owners' proposal to remove an existing door on the interior side yard and to finish the surface of the closed opening with exterior cement plaster to match the existing surrounding will maintain the overall architectural appearance of the residence.

6. WILL THE PROPOSED REPLACEMENT WINDOW INSERTS DESTROY OR ADVERSELY AFFECT IMPORTANT ARCHITECTURAL FEATURES OF THE RESIDENCE

The window replacement proposal does not relocate or re-orient the window openings or change the overall composition of the elevations, nor does the application propose to alter or remove any important architectural features of the original construction of the residence.

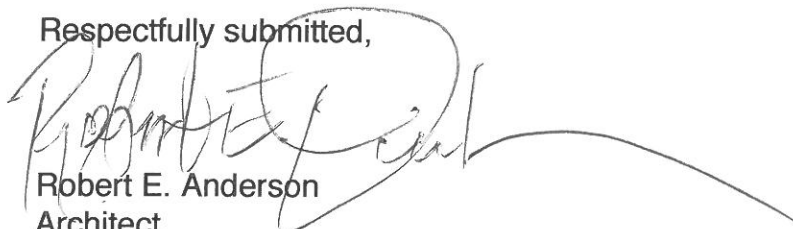
7. CONSISTENCY WITH APPLICABLE SECRETARY OF THE INTERIOR'S STANDARDS FOR TREATMENT OF HISTORIC PROPERTIES

In the sections of the referenced standards addressing windows, the standards suggest using wood sash for replacing existing wood assemblies. However, the document does make reference to the acceptability of alternate window options on "rear or other secondary, less visible elevations". The eleven windows in the application to use white vinyl replacement sash inserts at the rear and interior side yard is consistent with that position. The Owners have specifically chosen to use insert replacement windows on these two elevations. The use of inserts retains the existing wood window frames, interior and exterior trim and the "blind stop" around the perimeter of the frame; allowing a future owner to replace the vinyl inserts with wood windows if they choose.

MY PROFESSIONAL OPINION OF THE ARCHITECTURAL IMPACT OF THE PROPOSED REPLACEMENT WINDOWS INCLUDING ELIMINATION OF THE EXISTING DOOR

Since visibility from the public way is a primary concern with any alteration in the District, it's my opinion the proposed window replacement and door removal will have no substantive impact on the architectural character of the residence as seen from the public way. The combination of solid fencing 6 feet tall and heavy foliage make the interior side and rear yard elevations virtually invisible from vehicular or pedestrian traffic on Denton Way or Glenn Street.

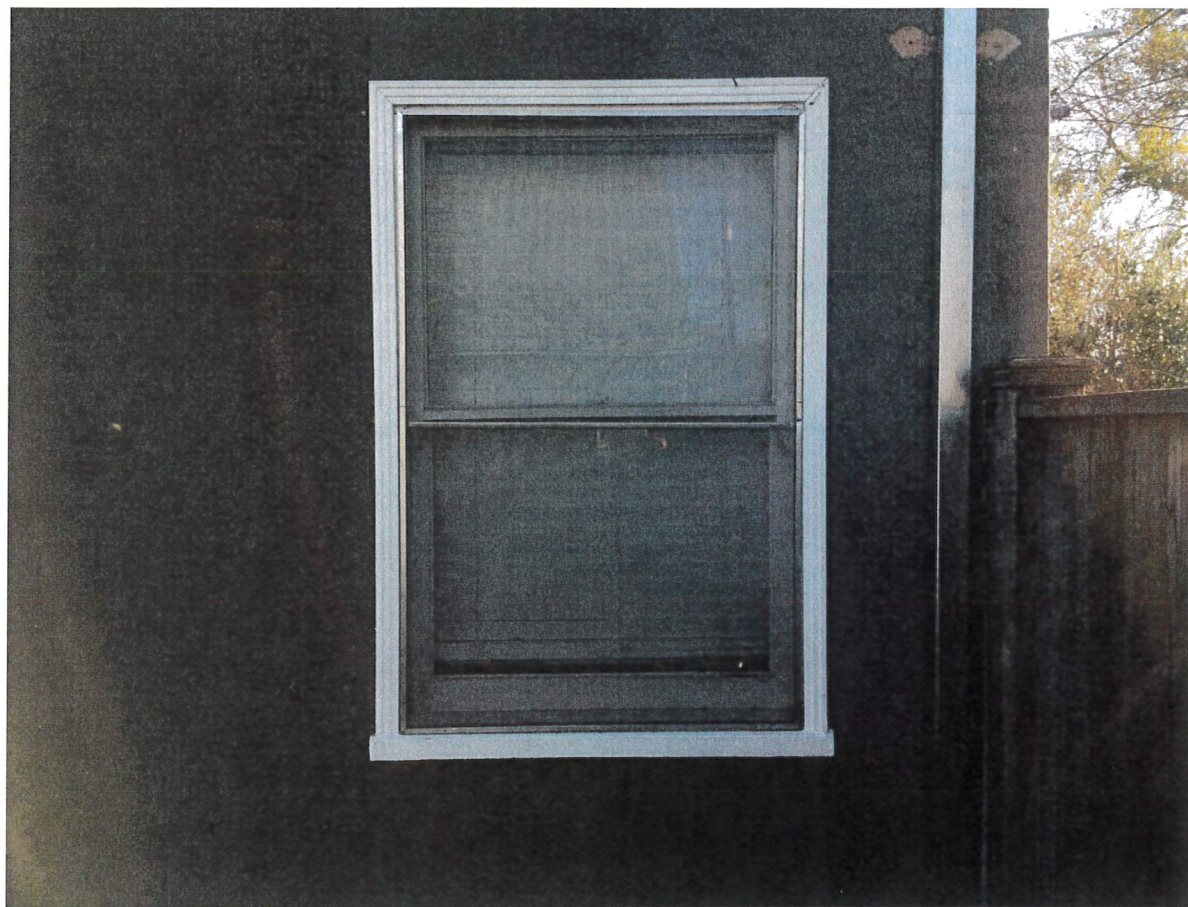
Respectfully submitted,



Robert E. Anderson
Architect

CA Registration No. C-8731
NCARB No. 47172

Window 1 – Bedroom window. 6 foot tall fence to right. On the other side of fence is Glenn St.



Window 2 – Bedroom window



Window 3 – Bedroom closet window



Window 4 – Bathroom window



Windows 5 and 6 – Bedroom windows



Window 7 – Back porch window. Kitchen on interior.



Windows 8 and 9 – Kitchen windows facing back yard and neighbors house behind lemon trees and 6 foot tall fence.





Window 7 in foreground, Windows 8 and 9 in middle, and 10 and 11 in background. Window 12 is barely visible behind the camelia



Windows 5 and 6 to far right, then, following left, back door, window 7, windows 8 and 9, far background left.





From right to left, Windows 1 and 2, (Bedroom Windows), Window 3 (small window - closet), Window 4 (Bathroom window, with red tape)







Enlargement of photo - Windows 10 and 11, from sidewalk along Denton Way (picture blown up)





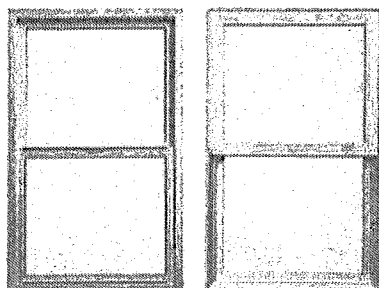


MILGARD TUSCANY WHITE VINYL BLOCK FRAME SLOPE SILL WITH LOW-E GLASS

- Tuscan Series can be used for new construction or retrofit applications as it offers block frame and Z-bar frames in addition to nail fins.
- Awning and Casement Hardware - Tuscan Series awning and casement windows come with folding nesting hardware
- The block frame style is a window frame profile without a nail fin. The block frame allows an installer to insert the replacement window into the existing frame, without disturbing the home's internal or external wall surfaces. Installation method includes carefully drilling through the jamb.
- Tuscan - windows currently meet or exceed ENERGY STAR® performance in all climate zones with a 0.35 u-factor or lower. Specialty glass options are available upon request which can help achieve as much as a 26% improvement in u-factor. Specialty glass options for privacy, noise abatement and aesthetics are available upon request.
- Screen - Milgard's exclusive PureView® screen frames are cambered aluminum, assembled with rigid nylon corner clips. Rolled pull rail provides simple installation and removal. Screens come standard with matching frame color.
- Windows using block frame design for impact to exterior stucco. Windows can be removed from the interior with only removal of interior jams and can be easily replaced back to wood.

Single Hung and Double Hung Window

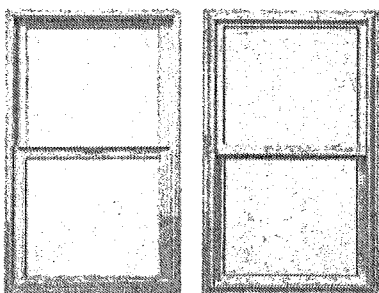
Single Hung



On the Tuscany Series and Montecito® Series single hung window, the bottom sash slides upward—the top sash is permanently fixed. The double hung window gives you its unique high and low ventilation with both sashes operable. They can be ordered as individual windows, in double or triple wide combinations or even with a center fixed lite.

The Tuscany Series and Montecito Series vinyl single and double hung windows offer the outstanding insulating properties, low maintenance, and contemporary aesthetic appeal only vinyl can provide. Available in white, tan, and clay (select regions), as well as premium painted exteriors. The windows will maintain their color and shape and can be constructed to your exact size specifications, subject to engineering review.

Double Hung



Please also see:

- Single and Double Hung Hardware
- Premium Exterior Vinyl Finishes
- Full Lifetime Warranty
- Energy Packages
- Accessories

Single Hung Window

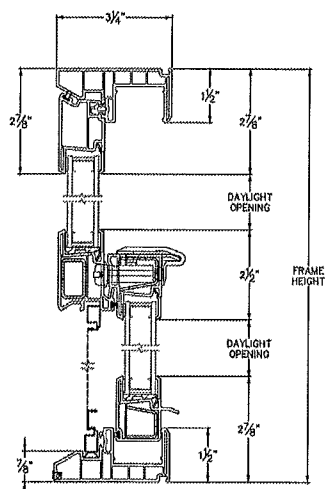
Block Frame

(Tuscany only)

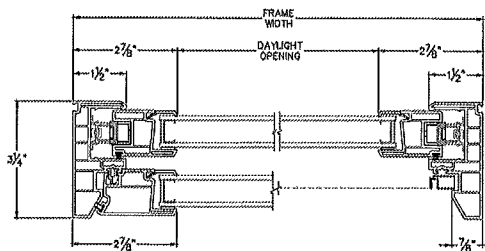
CAD File Scale	View	File Name	Units
NTS	Horizontal & Vertical	3220T-02 SH	Inch

More Technical Documents can be found at milgard.com/professionals
Due to continual research and development, details may be changed at any time. ©2019 Milgard Mfg.

SINGLE HUNG
SERIES 8220



HEAD & SILL



JAMBS

Parcel Map. Ridgway Historic District. Neighborhood Context Map 1

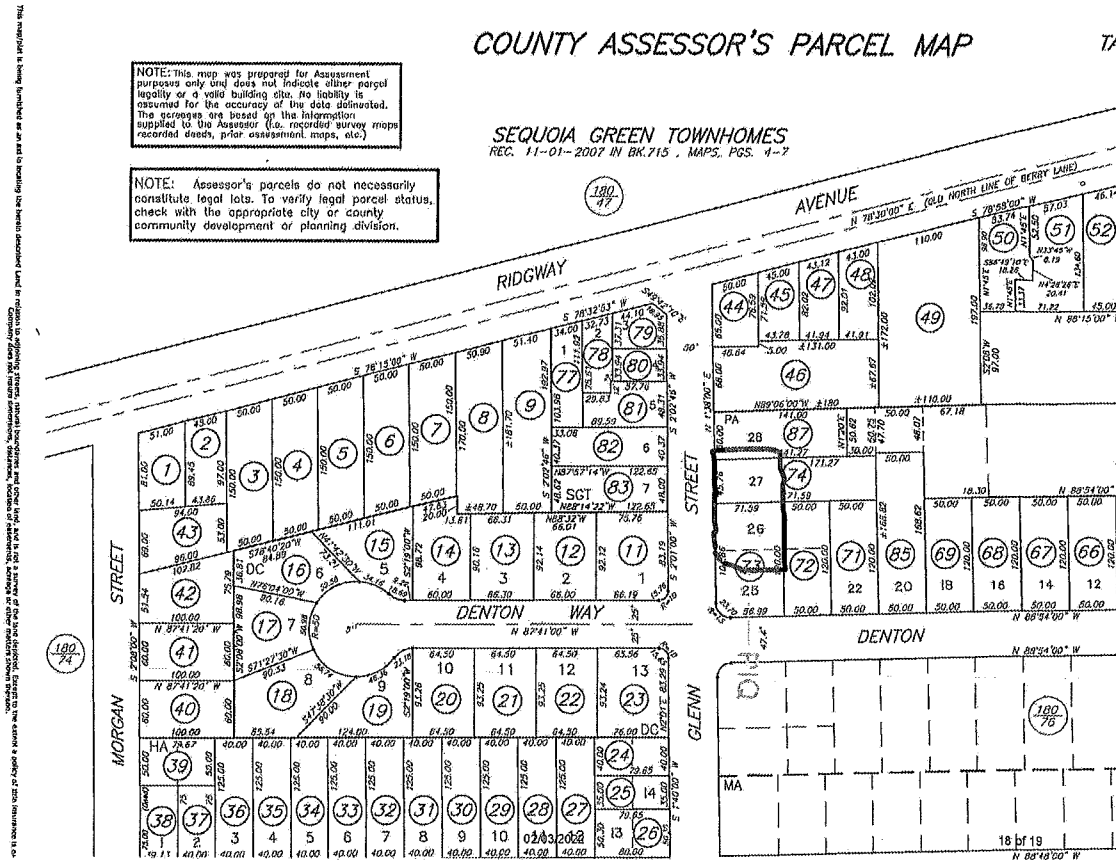
COUNTY ASSESSOR'S PARCEL MAP

TA

NOTE: This map was prepared for Assessment purposes only and does not indicate either parcel legality or a valid building site. No liability is assumed for the accuracy of the data delineated. The easements are based on the information supplied to the Assessor (i.e., recorded survey maps, recorded deeds, prior assessment maps, etc.)

NOTE: Assessor's parcels do not necessarily constitute legal lots. To verify legal parcel status, check with the appropriate city or county community development or planning division.

SEQUOIA GREEN TOWNHOMES
REC. 11-01-2007 IN BK. 715, MAPS, PGS. 4-7



Radio Frequency Safety Predictive Report

Prepared For: DISH Wireless

Site Name: SFSFO00280A
Site ID: SFSFO00280A
Address: 50 Old Courthouse Square
Santa Rosa, CA 95404
County: Sonoma
Latitude: 38.440356
Longitude: -122.713068
Report Type: Theoretical

Additional Site Information

Customer Name: Mike Baxter
Customer Email: michael.baxter@dish.com
Customer Phone: (925) 338-4179
Site Structure Type: Rooftop

Report Information

Report Writer: Kevin Nardi
Report Date: December 17, 2021
Waterford Contact: John Lee
Contact Email: support@waterfordconsultants.com
WC Project Number: RF-21-0158
Reviewed By: David H. Kiser

Compliance Statement

David H. Kiser 2021.12.21
14:04:24 -05'00'

Based on the information provided by the client, this installation **Will Be Compliant** with FCC Rules and Regulations with regard to Human Exposure to Radio Frequency Radiation upon implementation of the recommendations set forth in this report.



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1 General Summary

DISH Wireless contracted Waterford Consultants, LLC to conduct a **radiofrequency (RF) electromagnetic safety and FCC compliance assessment** of the site located at 50 Old Courthouse Square, Santa Rosa, CA 95404. The compliance framework is derived from the FCC Rules and Regulations for preventing human exposure in excess of the MPE (Maximum Permissible Exposure) limits.

An overview of the applicable FCC Rules and analysis guidelines is presented in Appendix A. The subsequent sections contain information regarding the radio telecommunications equipment installed at this site and the surrounding environment regarding RF Hazard compliance.

As summarized in Section 5 of this report, potentially hazardous conditions were identified, and mitigating action is recommended to achieve or maintain compliance.

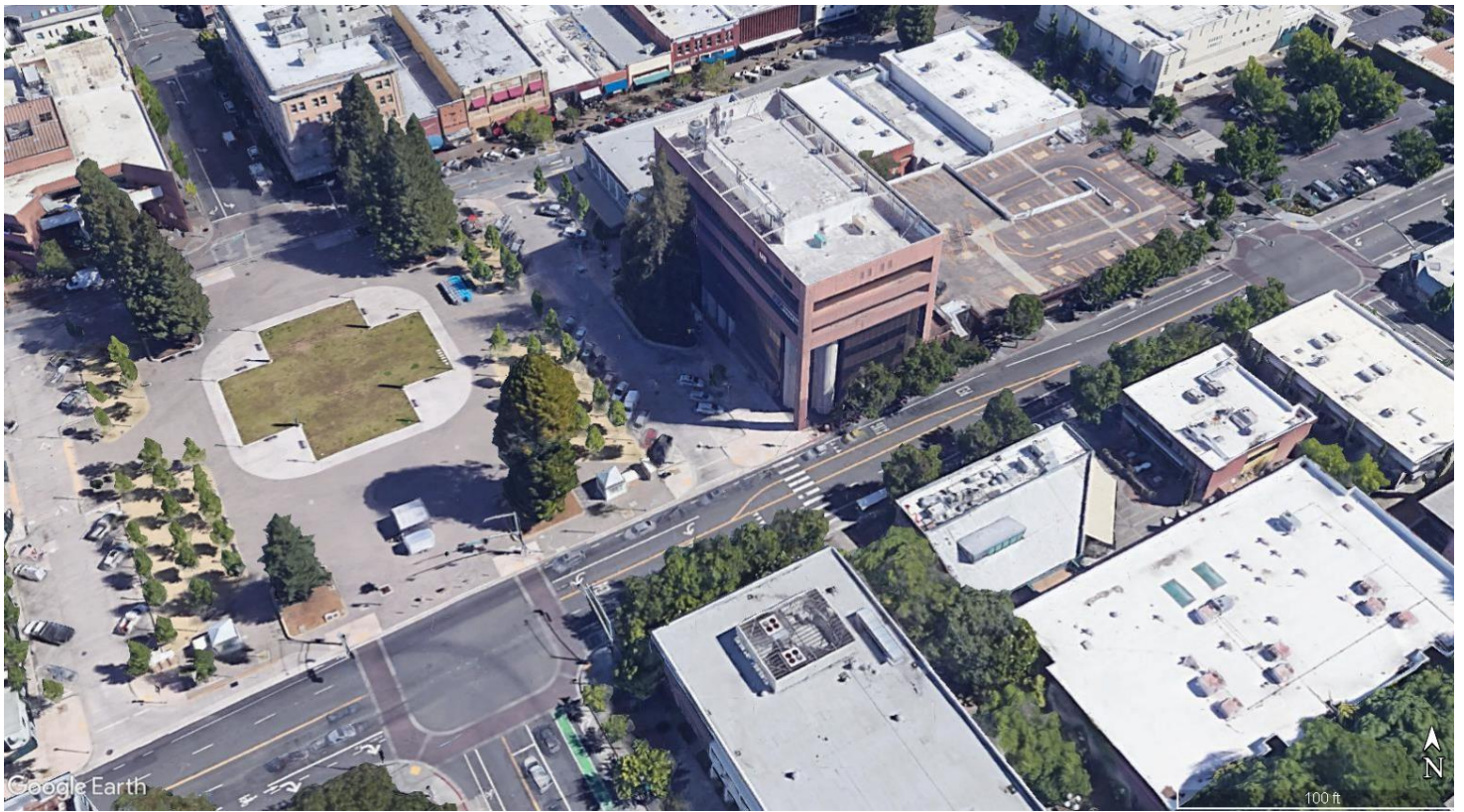
All known RF sources have been included in this analysis. Predictive modeling using worst-case operating parameters for antennas regardless of accessibility is the basis for mitigation recommendations. Similarly, theoretical assessment of antennas mounted in close proximity is used to characterize and mitigate cumulative exposure conditions.

Documents Utilized in this Analysis:

SFSFO00280A_ZD_20211129184157.pdf

RFDS-SFSFO00280A-Preliminary-20211117-v.3_20211117191104.pdf

1.1 Area(s) of Study



Surrounding Environment



Street View Image

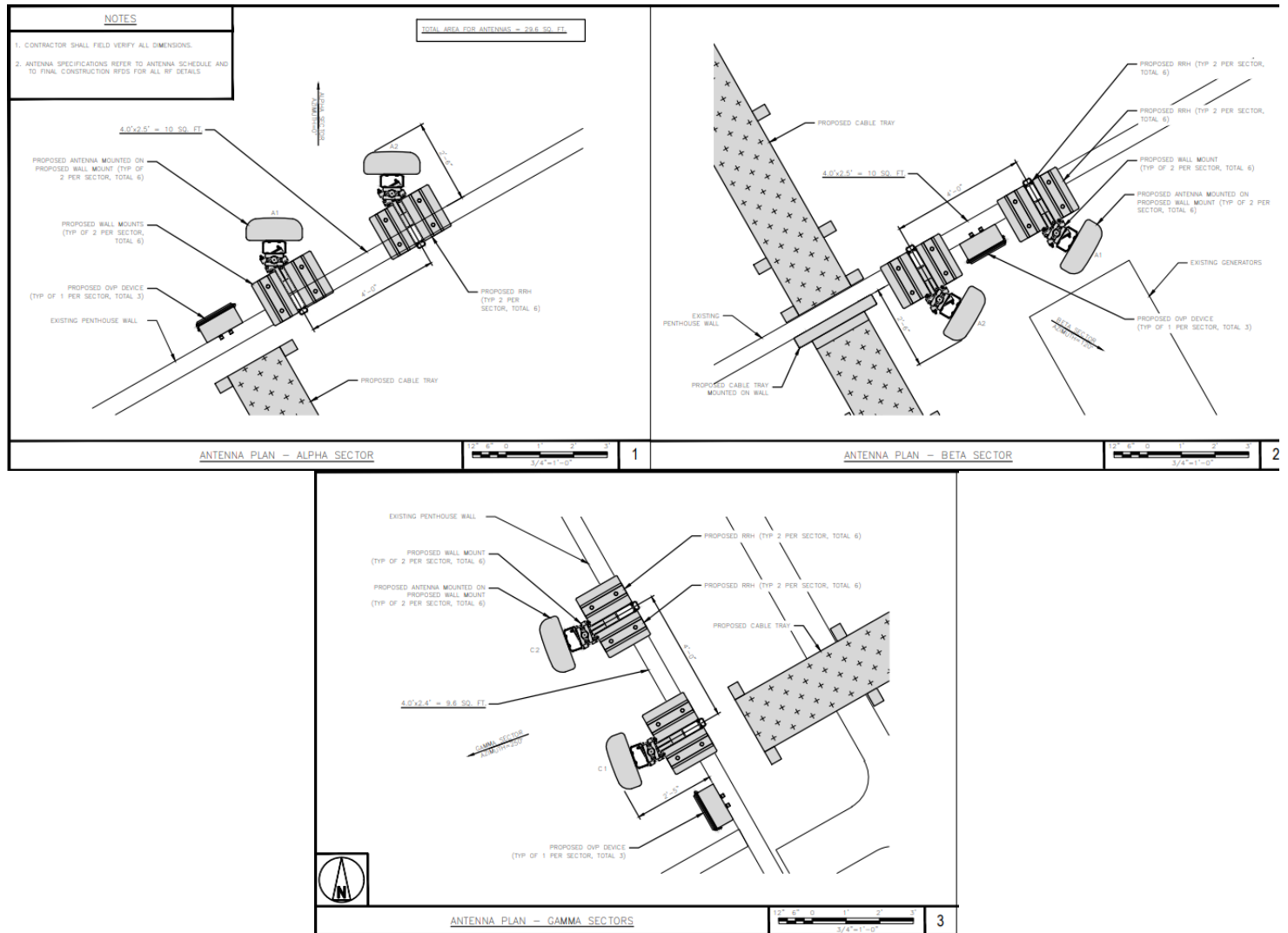
2 Site Details



Installation Design

SITE DETAILS

2.1 Antenna Locations



Installation Design

ANTENNA INVENTORY

3 Antenna Inventory

The operations listed in the following tables have been compiled based on information provided by client.

Ant #	Operator	Antenna Make	Antenna Model	Type	Frequency (MHz)	Az (Deg)	Downtilt (Deg)	Horizontal Beam Width (Deg)	Ant (ft)	Ant Gain (dBd)	TPO (W)	Paths	Loss (dB)	Total ERP (W)	Total EIRP (W)	Antenna Centerline Ground Level (0 ft)
1	Dish Wireless	JMA	MX08FRO665-21 06DT	Panel	600	0	0	59	6	11.25	30	4	0	1600	2625	107
2	Dish Wireless	JMA	MX08FRO665-21 04DT	Panel	2007	0	0	63	6	16.05	40	4	0	6443	10571	107
2	Dish Wireless	JMA	MX08FRO665-21 04DT	Panel	2100	0	0	65	6	16.75	40	4	0	7570	12420	107
3	Dish Wireless	JMA	MX08FRO665-21 03DT	Panel	600	120	0	61	6	11.45	30	4	0	1676	2749	107
4	Dish Wireless	JMA	MX08FRO665-21 02DT	Panel	2007	120	0	62	6	15.75	40	4	0	6013	9866	107
4	Dish Wireless	JMA	MX08FRO665-21 02DT	Panel	2100	120	0	65	6	16.75	40	4	0	7570	12420	107
5	Dish Wireless	JMA	MX08FRO665-21 07DT	Panel	600	250	0	60	6	11.25	30	4	0	1600	2625	107
6	Dish Wireless	JMA	MX08FRO665-21 06DT	Panel	2007	250	0	64	6	16.15	40	4	0	6594	10817	107
6	Dish Wireless	JMA	MX08FRO665-21 06DT	Panel	2100	250	0	66	6	16.75	40	4	0	7570	12420	107
7	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	60	0	65	6	12.3	80	2	0	2711	4448	108
7	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	60	0	60	6	12.6	20	8	0	2938	4821	108
8	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	60	0	69	6	15.7	40	4	0	5875	9638	108
9	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	120	0	64	6	16.2	40	4	0	6701	10993	108
10	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	120	0	65	6	12.3	80	2	0	2711	4448	108
10	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	120	0	60	6	12.6	20	8	0	2938	4821	108
11	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	180	0	69	6	15.7	40	4	0	5875	9638	108
12	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	180	0	64	6	16.2	40	4	0	6701	10993	108
13	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	270	0	65	6	12.3	80	2	0	2711	4448	108
13	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	270	0	60	6	12.6	20	8	0	2938	4821	108
14	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	270	0	69	6	15.7	40	4	0	5875	9638	108
15	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	300	0	64	6	16.2	40	4	0	6701	10993	108
16	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	700	300	0	65	6	12.3	80	2	0	2711	4448	108

ANTENNA INVENTORY

Ant #	Operator	Antenna Make	Antenna Model	Type	Frequency (MHz)	Az (Deg)	Downtilt (Deg)	Horizontal Beam Width (Deg)	Ant (ft)	Ant Gain (dBd)	TPO (W)	Paths	Loss (dB)	Total ERP (W)	Total EIRP (W)	Antenna Centerline Ground Level (0 ft)
16	Verizon	COMMSCOPE	NHH-65B-R2B 02DT	Panel	850	300	0	60	6	12.6	20	8	0	2938	4821	108
17	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	1900	0	0	69	6	15.7	40	4	0	5875	9638	108
18	Verizon	COMMSCOPE	NHH-65B-R2B 00DT	Panel	2100	0	0	64	6	16.2	40	4	0	6701	10993	108
19	Unknown	GENERIC	MICROWAVE 6FT	Microwave	6000	330	0	1.5	6	38.7	0.2	1	0	1462	2399	108

NOTE 1: Waterford Consultants has assumed transmission parameters for co-located RF emitters based on similar installations found at other radio communications sites. Generic antenna models have been used where existing antenna part numbers or radiation patterns are not available. The frequencies presented in this table may have been assumed in order to represent the approximate band of operation and to support a maximum-case calculation of power density.

NOTE 2: Some antennas identified by the SON designation may employ beamsteering technology where RF energy allocated to each customer device is dynamically directed toward their location. In the analysis presented herein, predicted exposure levels are based on all beams at full utilization (i.e. full power) simultaneously focused in any direction. As this condition is unlikely to occur, the actual power density levels at ground and at adjacent structures will be less than the levels reported below.

NOTE 3: No other transmitting antennas are known to be operating in the vicinity of this site.

4 Predicted Emission Levels

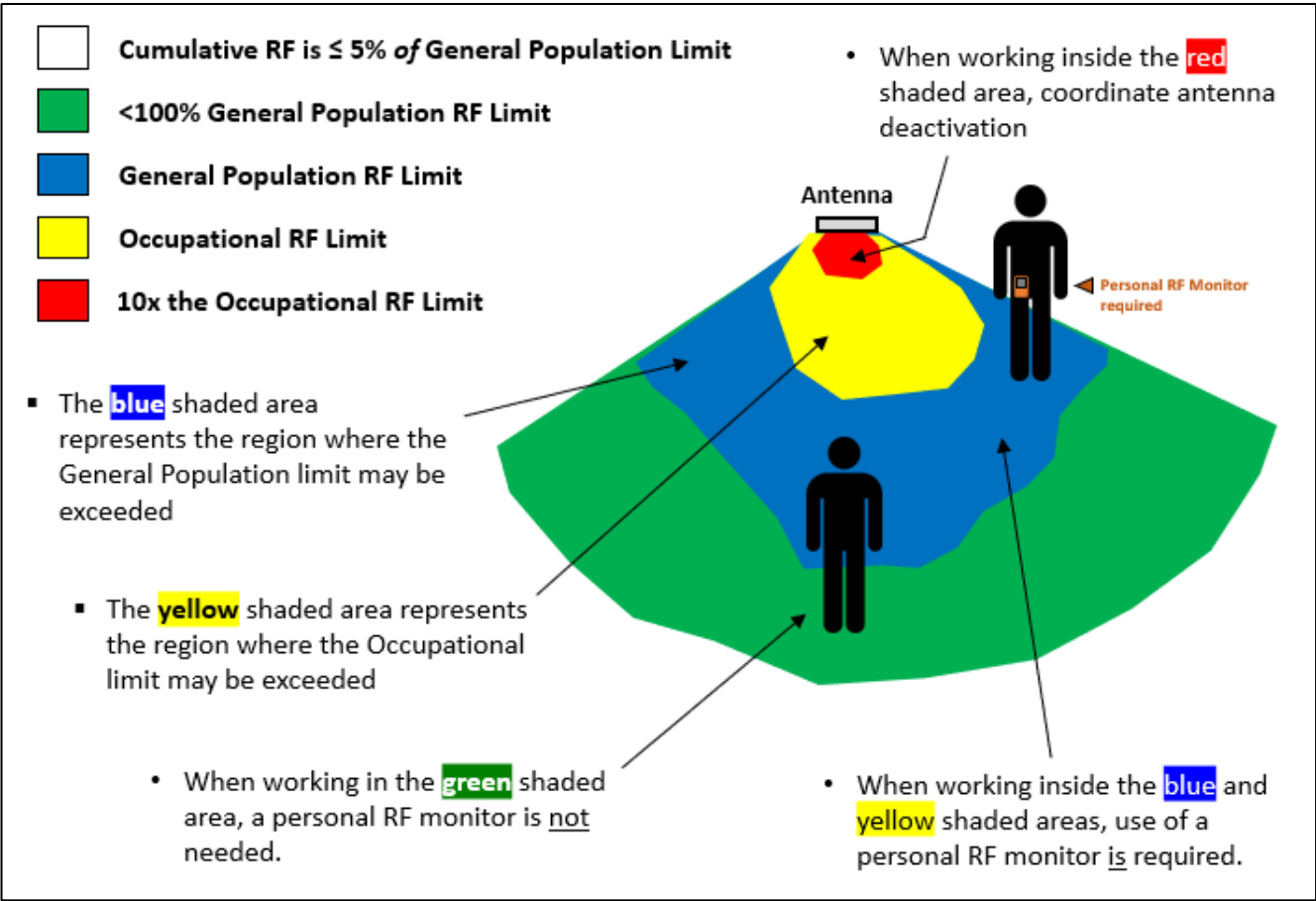
The following plots show the spatial average predicted power density level at any given location as a percentage of the FCC General Population limits. These plots depict the cumulative exposure based on all RF sources listed in the corresponding antenna table.

Exposure to non-ionizing radiation at a given spatial average power density level, during the appropriate time interval, determines hazard. MPE predictions are not dependent on the exposure duration as only the intensity of the exposure is calculated. In this manner, areas of concern are identified and delineated from areas where exposures will not exceed the FCC limits. Recommendations for mitigating these zones are recommended in this report. Rules for access to impacted area are based on policy set by property management.

Predictive MPE plots may be provided for plan view (*top-down*) or section view (*profile*) studies. Profile studies account for antennas that are placed individually with separation that assumes cumulative emissions from other antennas are negligible. Section detail plots depict spatially averaged power MPE conditions at the middle of the six-foot exposure area. Plan view studies may include cumulative analysis where the contributions of nearby antennas may impact exposure conditions and compliance recommendations. The reference plane for each plot is indicated in the caption and legend. For example, "Avg 10 to 16 Feet" appearing in the legend indicates that the top-view plot depicts spatially averaged predicted power densities between 10 and 16 feet which a person could occupy. Plots are produced for each accessible level or walking surface; areas that are not accessible are not shown. Antenna level plots are also created to depict maximum-case exposure conditions at potential elevated work areas. Unless otherwise noted, Ground Level or Main Level represents the default access elevation and is the baseline for antenna centerline reference.

PREDICTED EMISSION LEVELS

What do the shaded colors mean in the RF plots provided in this report?



SUMMARY

10X the Occupational RF exposure limit. When working inside this area, trained personnel with personal protective equipment (PPE) is required; may also require coordinating a scheduled deactivation/outage with operator.

Occupational RF exposure limit. When working inside this area, trained personnel with personal protective equipment (PPE) is required; untrained person(s) must be accompanied by trained personnel.

General Population RF exposure limit. When working inside this area, trained personnel with personal protective equipment (PPE) is required; untrained person(s) must be accompanied by trained personnel.

$<100\%$ of the General Population RF exposure limit (or $<20\%$ of the Occupational RF exposure limit). When working in this area, personal protective equipment (PPE) is not required. No special action or behavior is required to maintain a safe work environment. This area is safe for continuous exposure.

Area is outside of General Population and Occupational RF exposure limits (less than 5% of the General Population limits). When working in this area, personal protective equipment (PPE) is not required. No special action or behavior is required to maintain a safe work environment. This area is also safe for continuous exposure.

PREDICTED EMISSION LEVELS

Scenario: Ground Level 0'



The reference plane for the plot is the Ground Level 0' (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 0.3546% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

Scenario: Ground Level 0'



The reference plane for the plot is the Ground Level 0' (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Adjacent Building Level 30'



The reference plane for the plot is the Adjacent Building Level 30' (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 0.4061% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

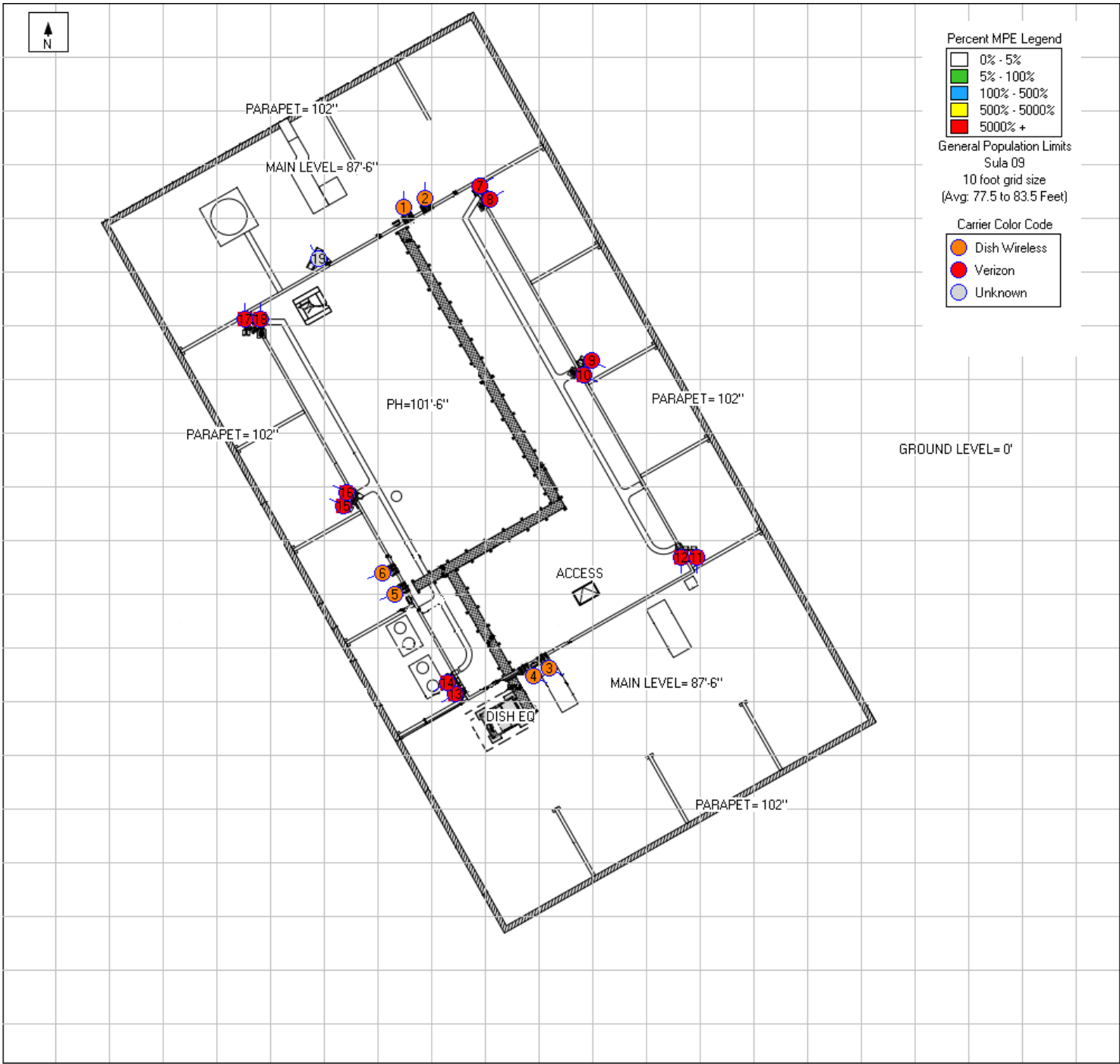
Scenario: Adjacent Building Level 30'



The reference plane for the plot is the Adjacent Building Level 30' (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Top Floor Level 77'-6"

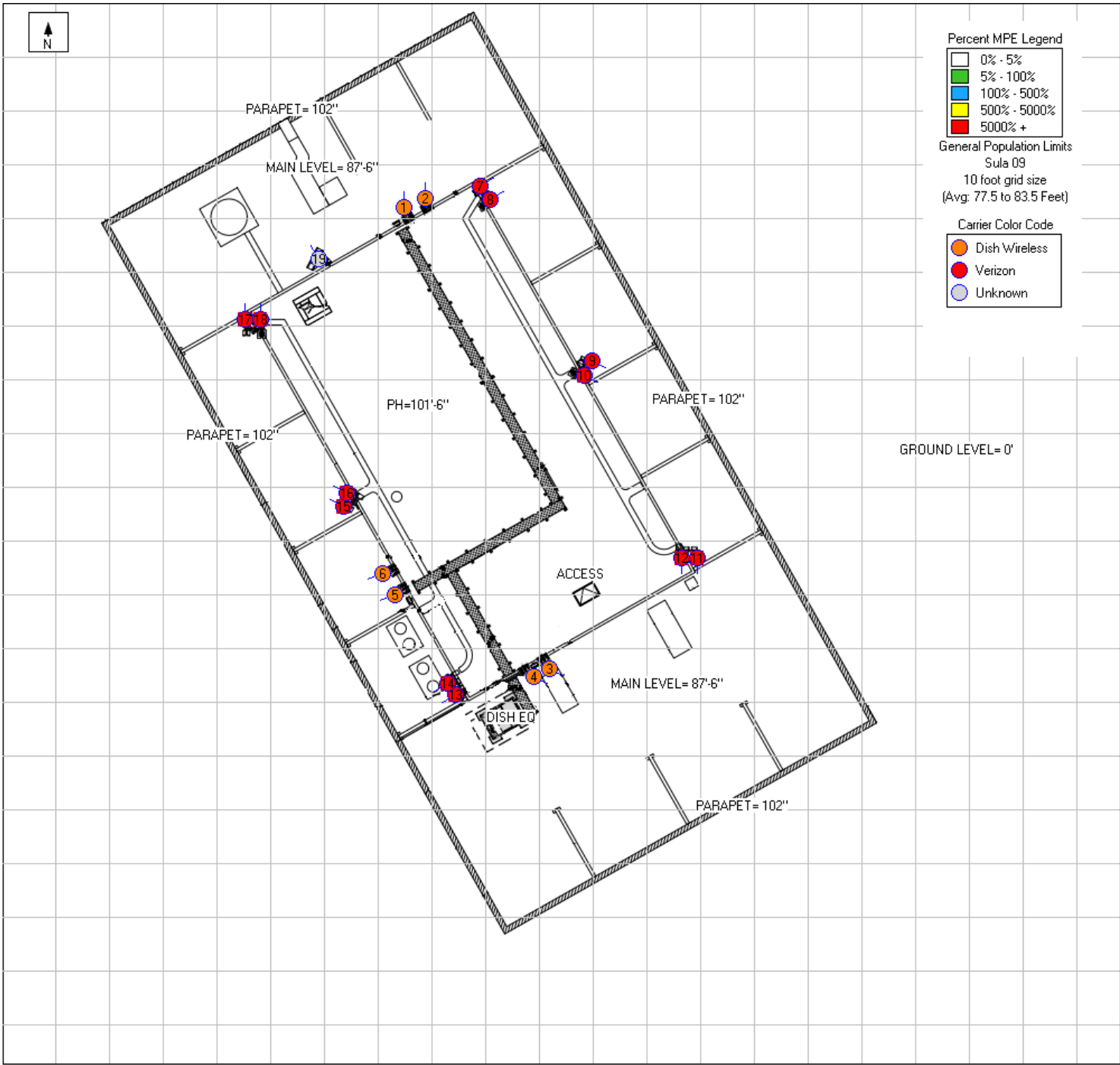


The reference plane for the plot is the Top Floor Level 77'-6" (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 1.3303% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

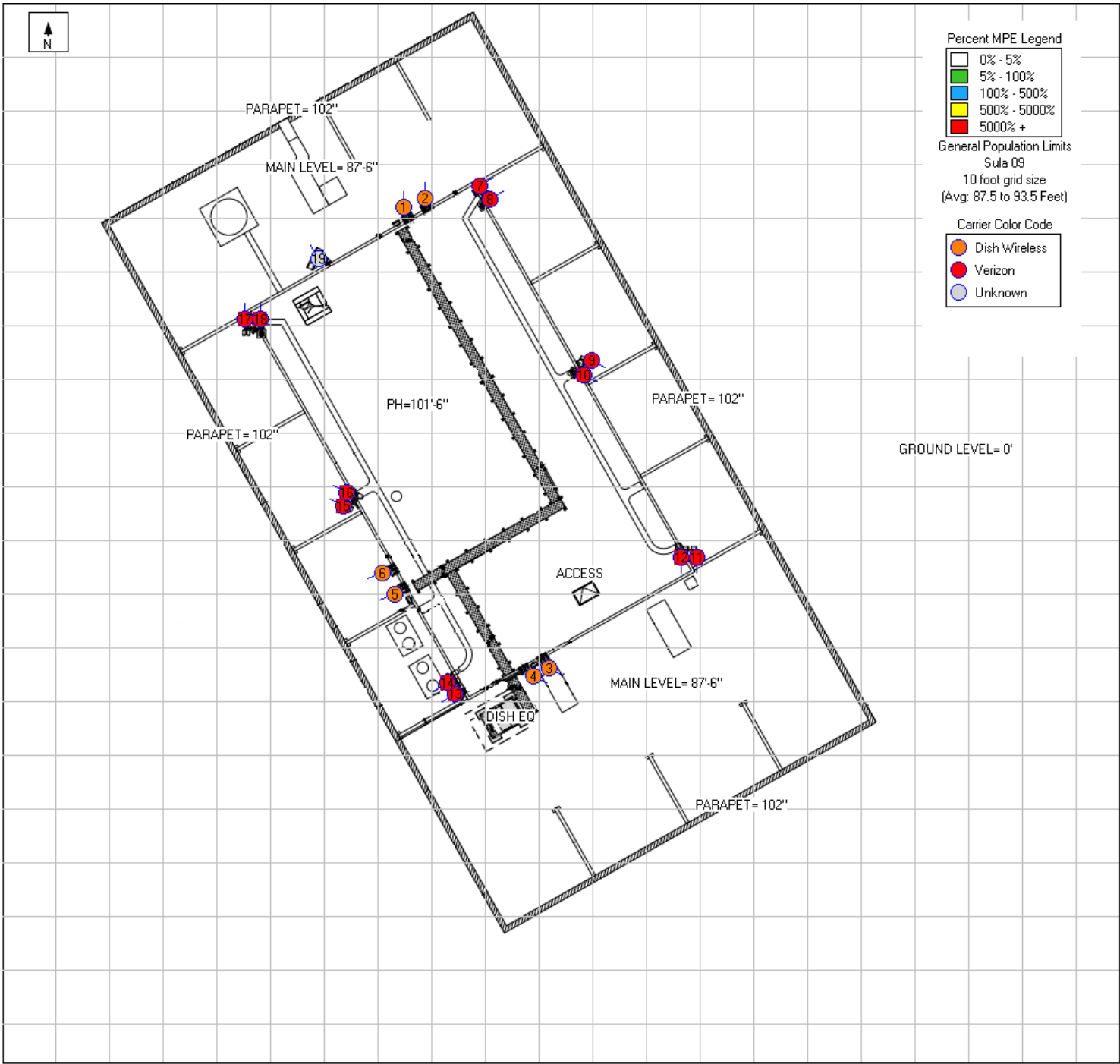
Scenario: Top Floor Level 77'-6"



The reference plane for the plot is the Top Floor Level 77'-6" (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Main Level 87'-6"

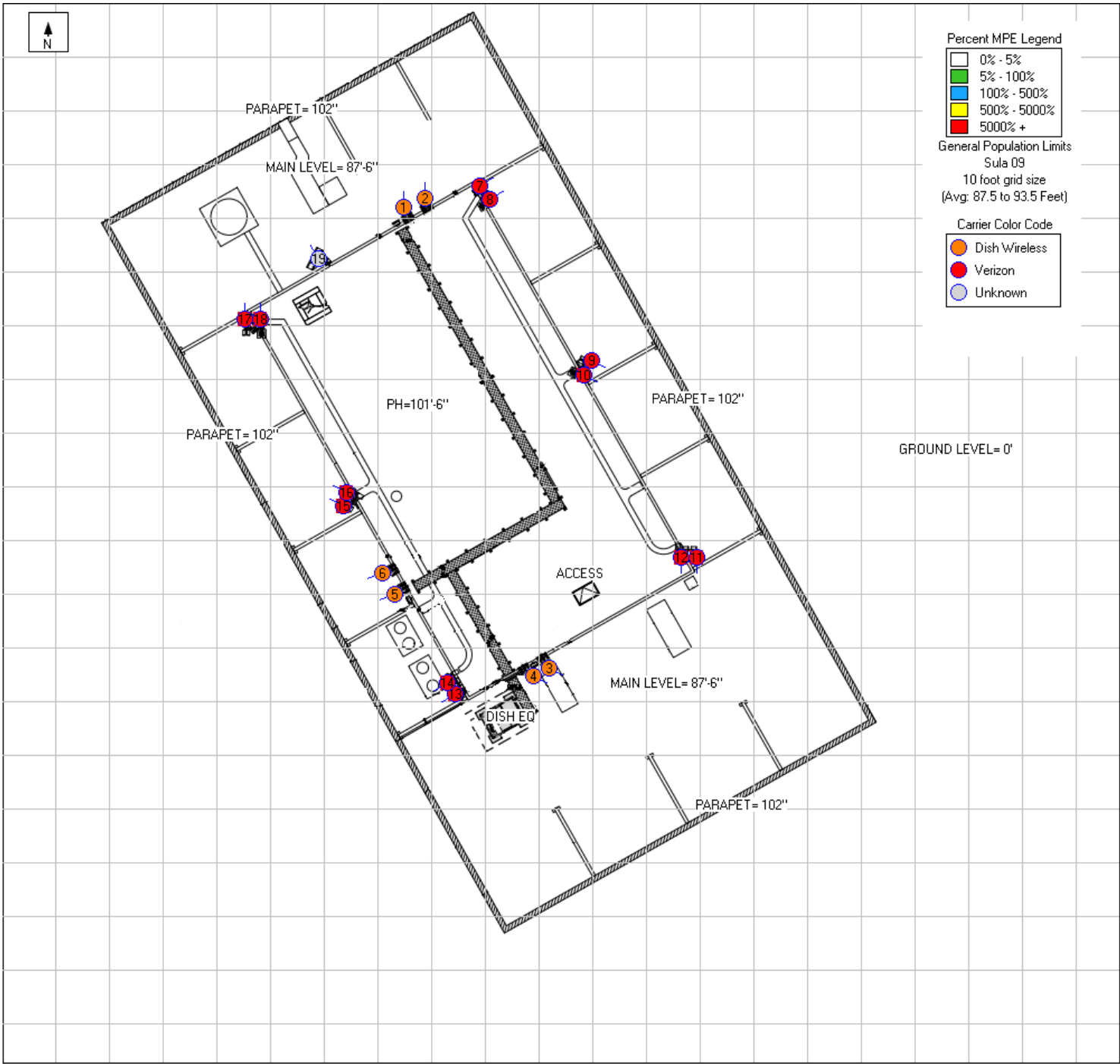


The reference plane for the plot is the Main Level 87'-6" (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 4.3667% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

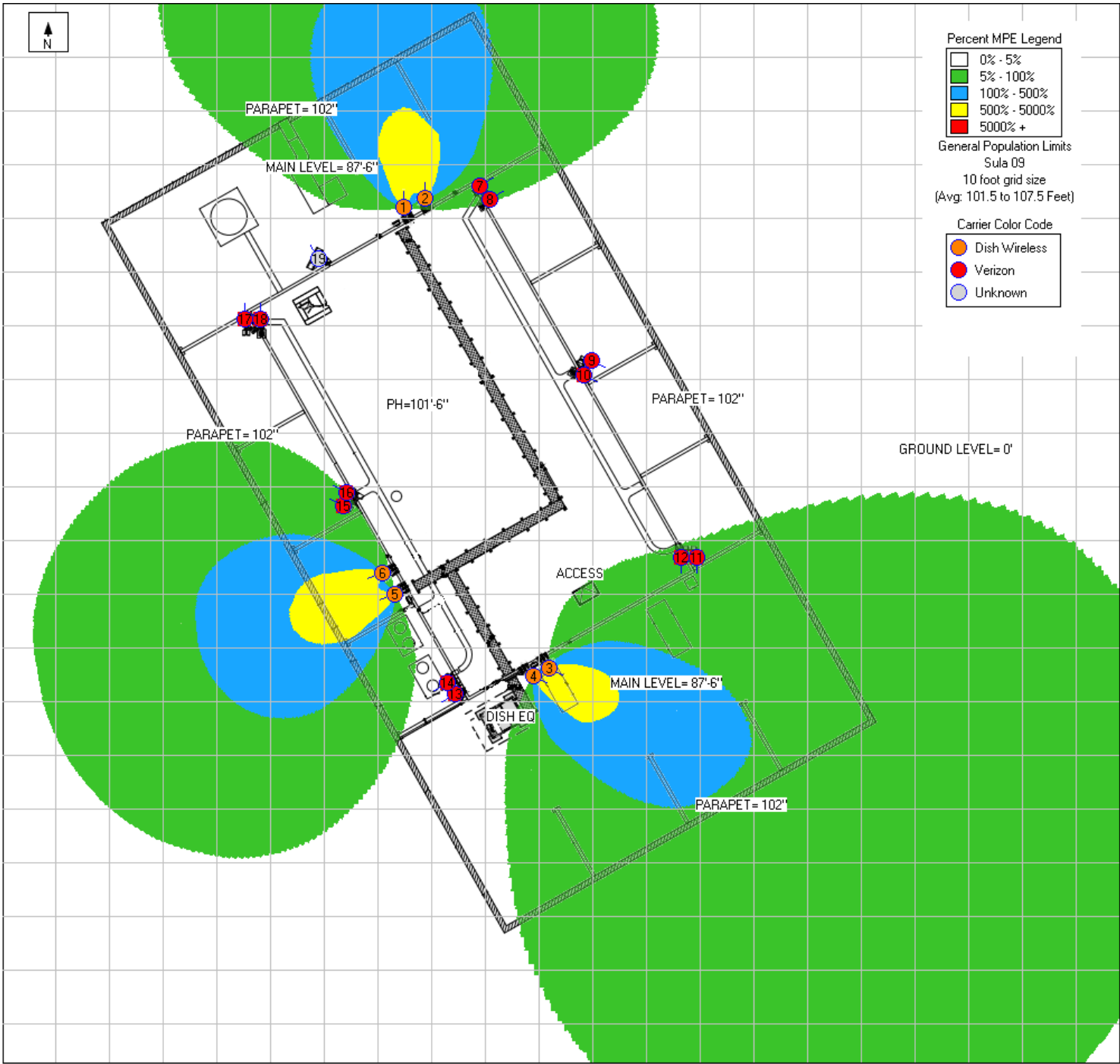
Scenario: Main Level 87'-6"



The reference plane for the plot is the Main Level 87'-6" (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Penthouse Level 101'-6"

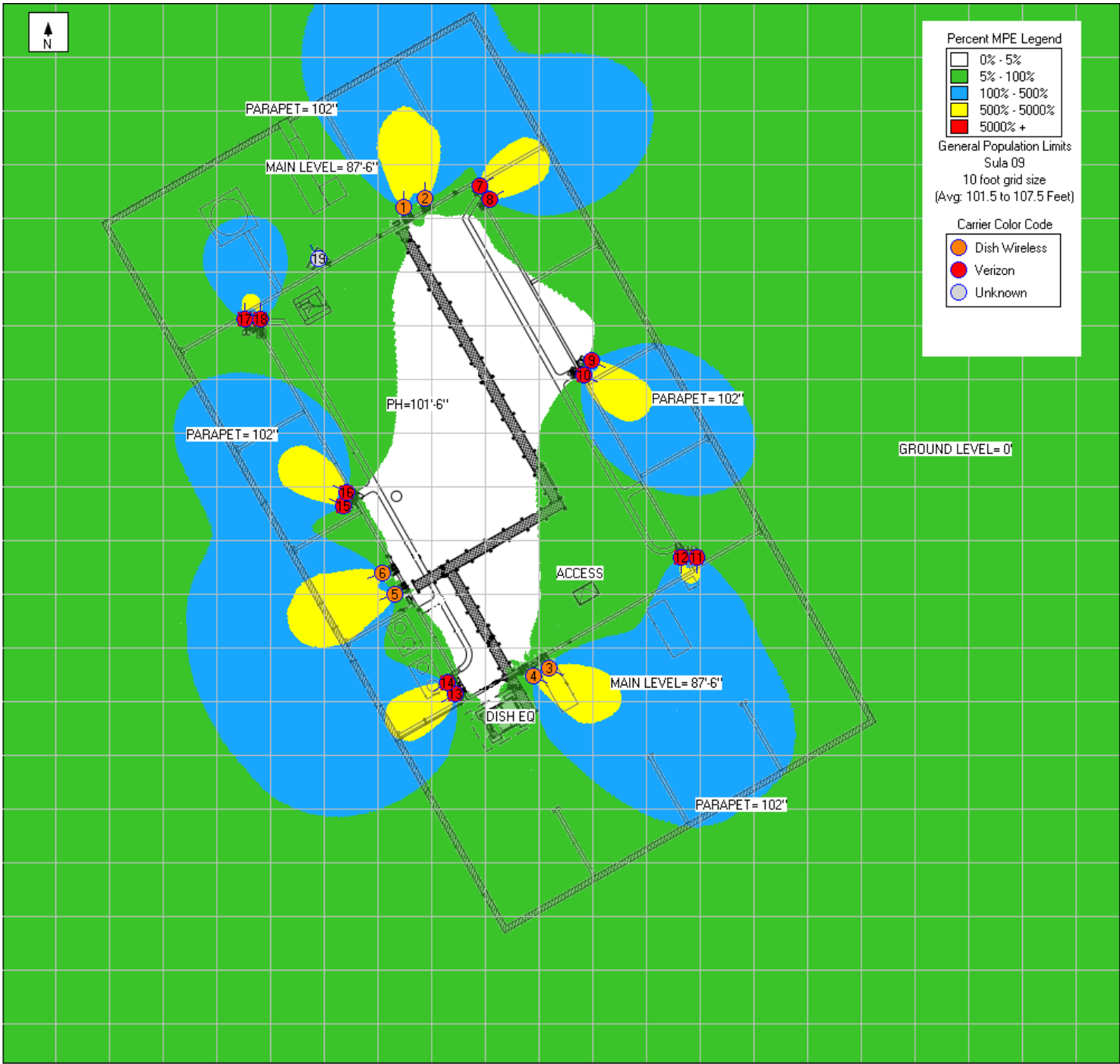


The reference plane for the plot is the Penthouse Level 101'-6" (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 23.4163% of the FCC General Population limits.

PREDICTED EMISSION LEVELS

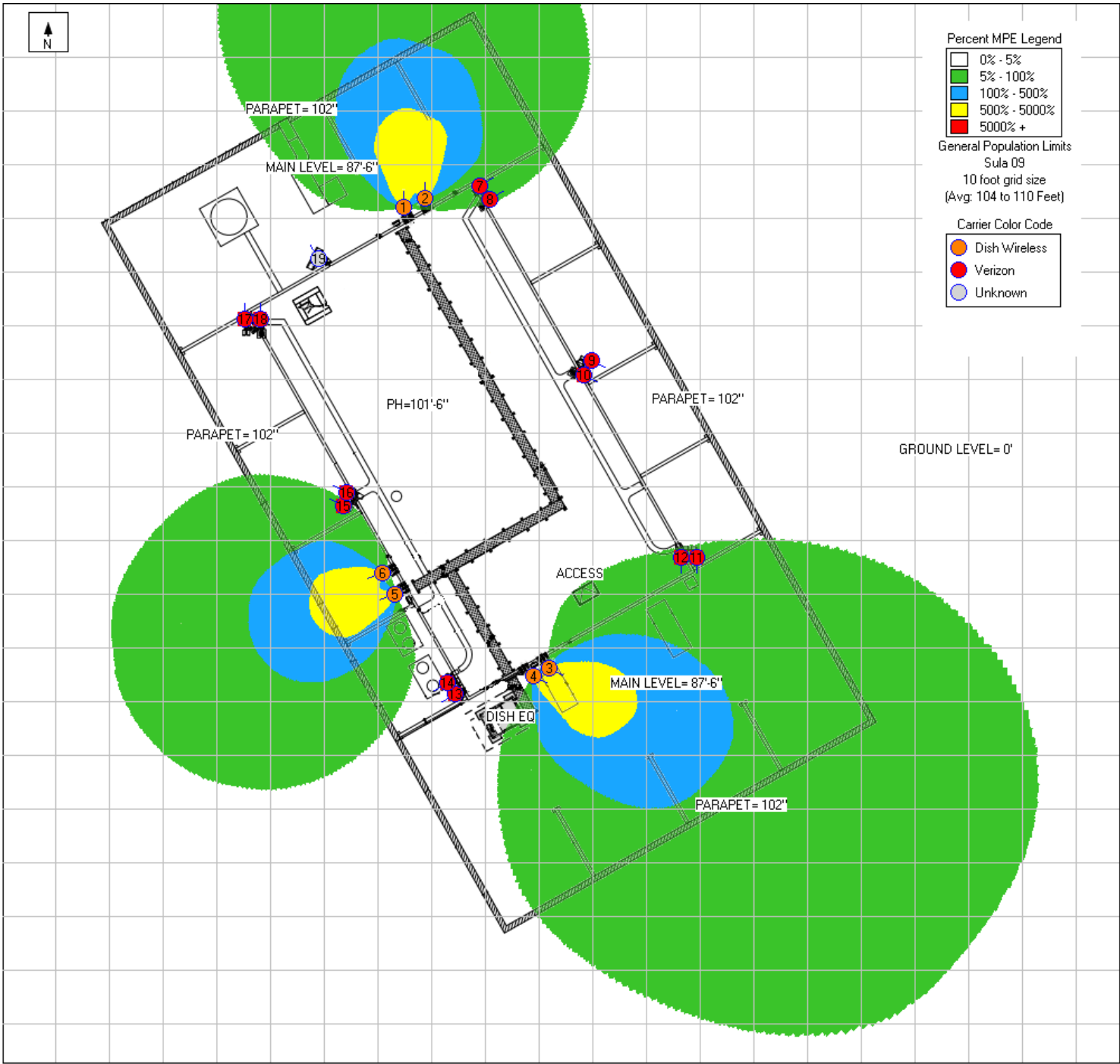
Scenario: Penthouse Level 101'-6"



The reference plane for the plot is the Penthouse Level 101'-6" (All Carriers).

PREDICTED EMISSION LEVELS

Scenario: Antenna Level 104'



The reference plane for the plot is the Antenna Level 104' (DISH Wireless Only).

Assessment: Based on consideration of all operations, the maximum predicted cumulative MPE is 2870.1456% of the FCC General Population limits.

5 Recommendations for Compliance

Predictive modeling indicates that cumulative RF power densities at ground level or adjacent structures as a result of the operations documented herein are below the FCC General Population limits. However, accessible areas near the antennas may exceed the FCC General Population limits.

Work plans near any transmitting antennas should be evaluated with respect to any actions needed to maintain a safe work environment. These actions may include scheduled outages or power reductions. It is recommended that all workers needing to access areas the front of the transmitting antennas listed below be properly trained and certified in the area of RF exposure and safety, as well as have the means to monitor and control their exposure.

Signs should be sized according to OSHA standards to be clearly legible from the separation distance noted and multiple signs may be required to provide notification of potential exposure conditions from all possible approaches to the antenna. Workers must be provided information about the locations of these areas of concern and the meaning of RF alerting signage.

Site Access Location

- NOC and Guideline signs required at all access points.

DISH Wireless Alpha Sector

- Caution signs required.

DISH Wireless Beta Sector

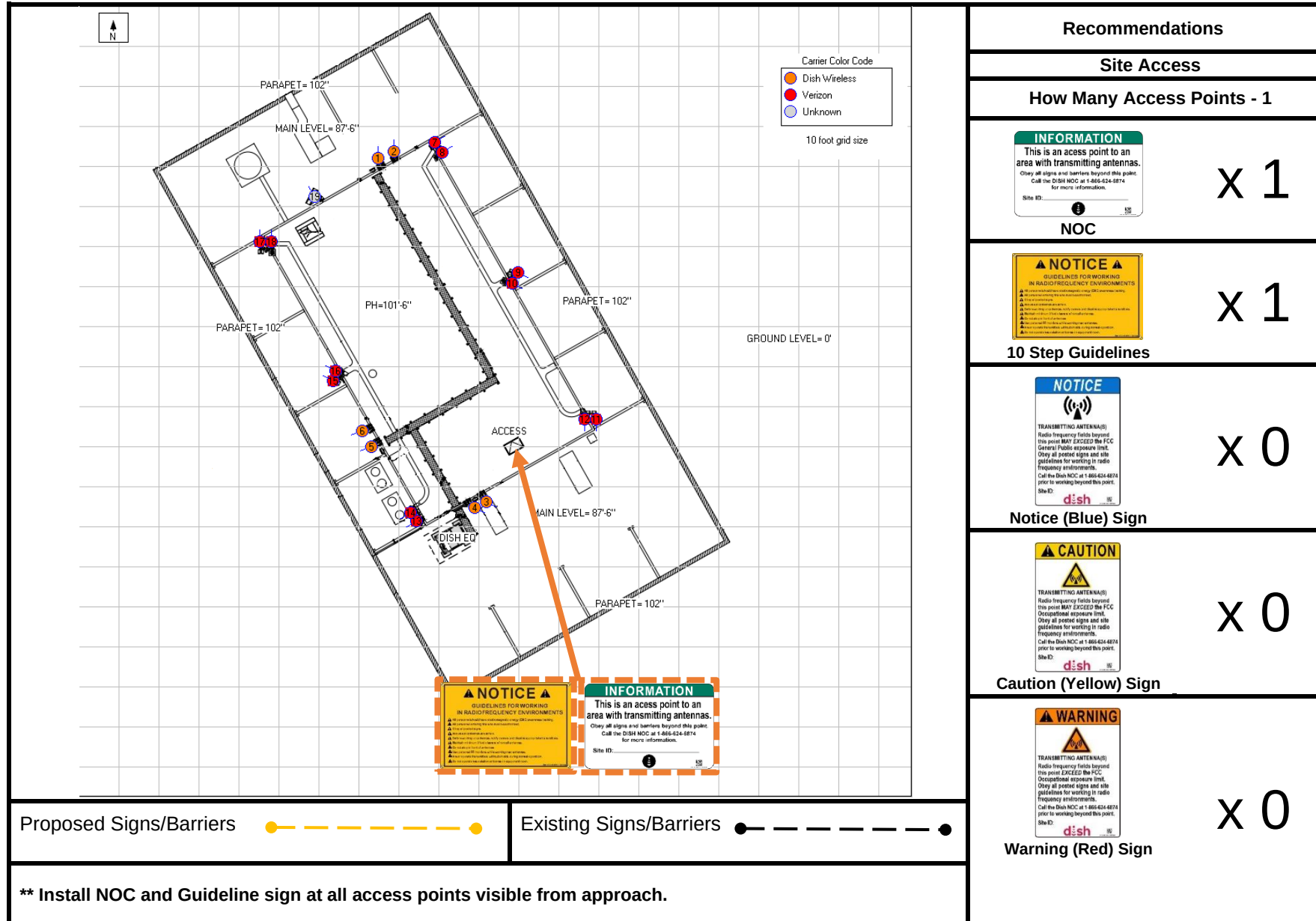
- Caution signs required.

DISH Wireless Gamma Sector

- Caution signs required.

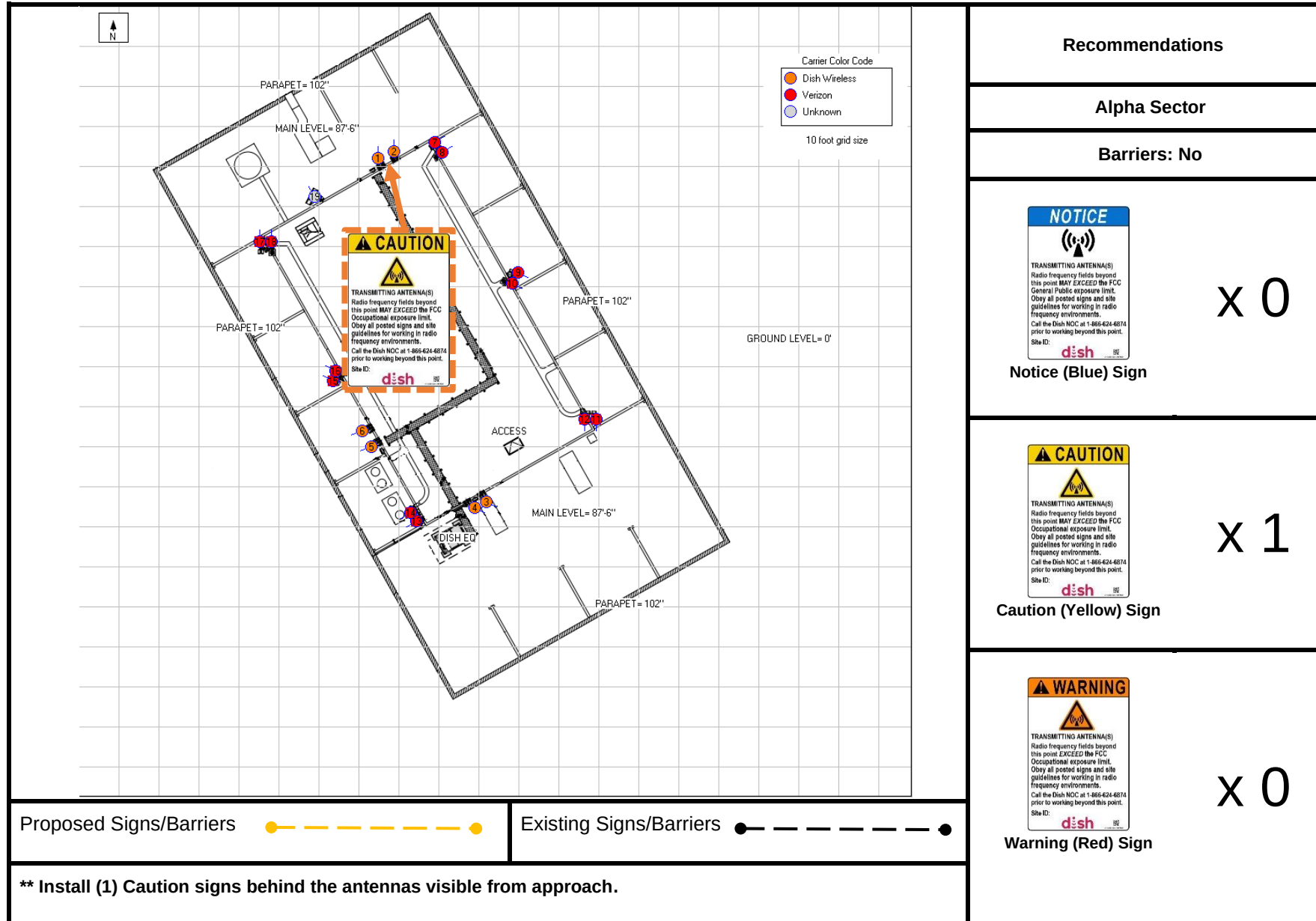
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Site Access)



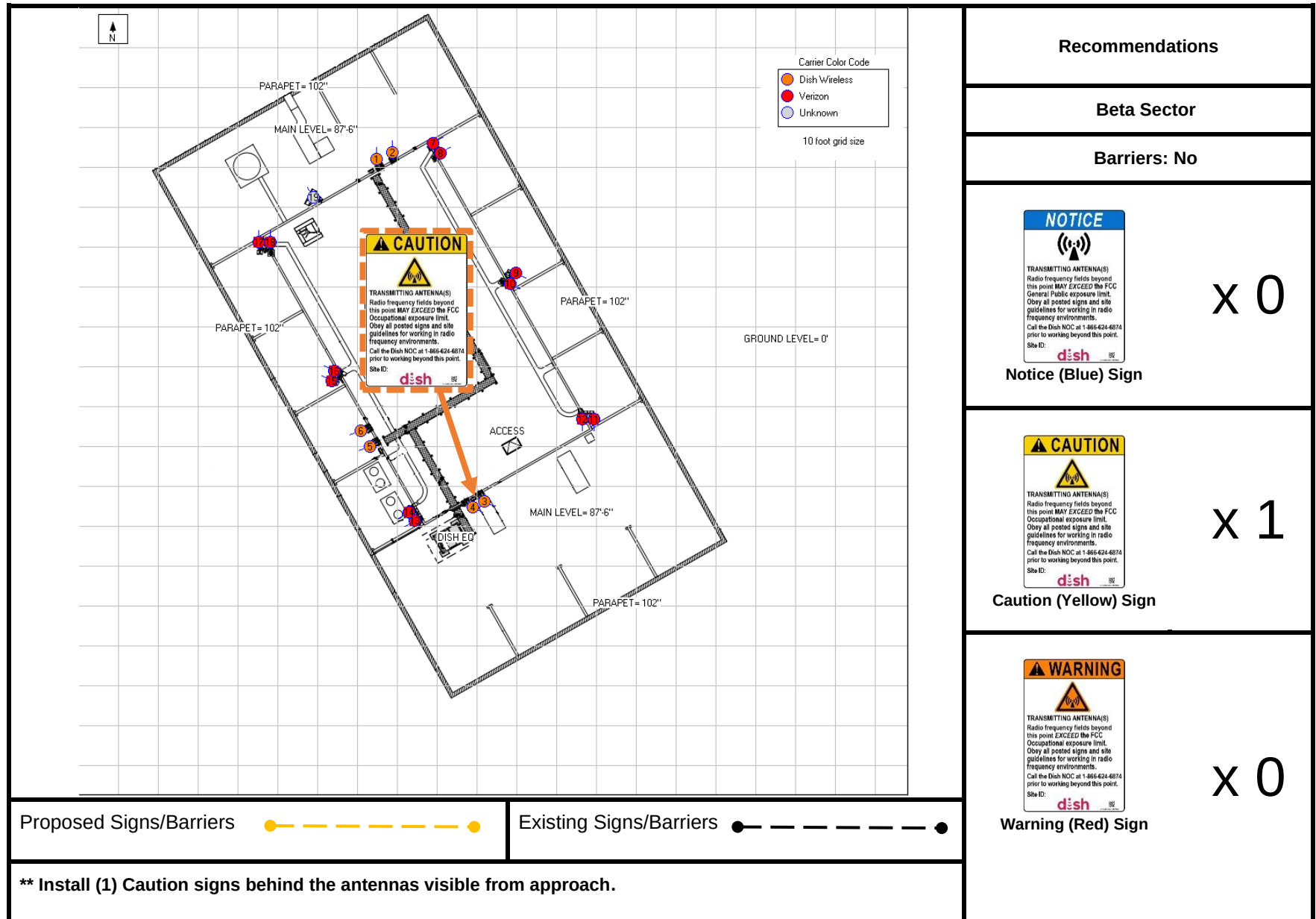
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Alpha Sector)



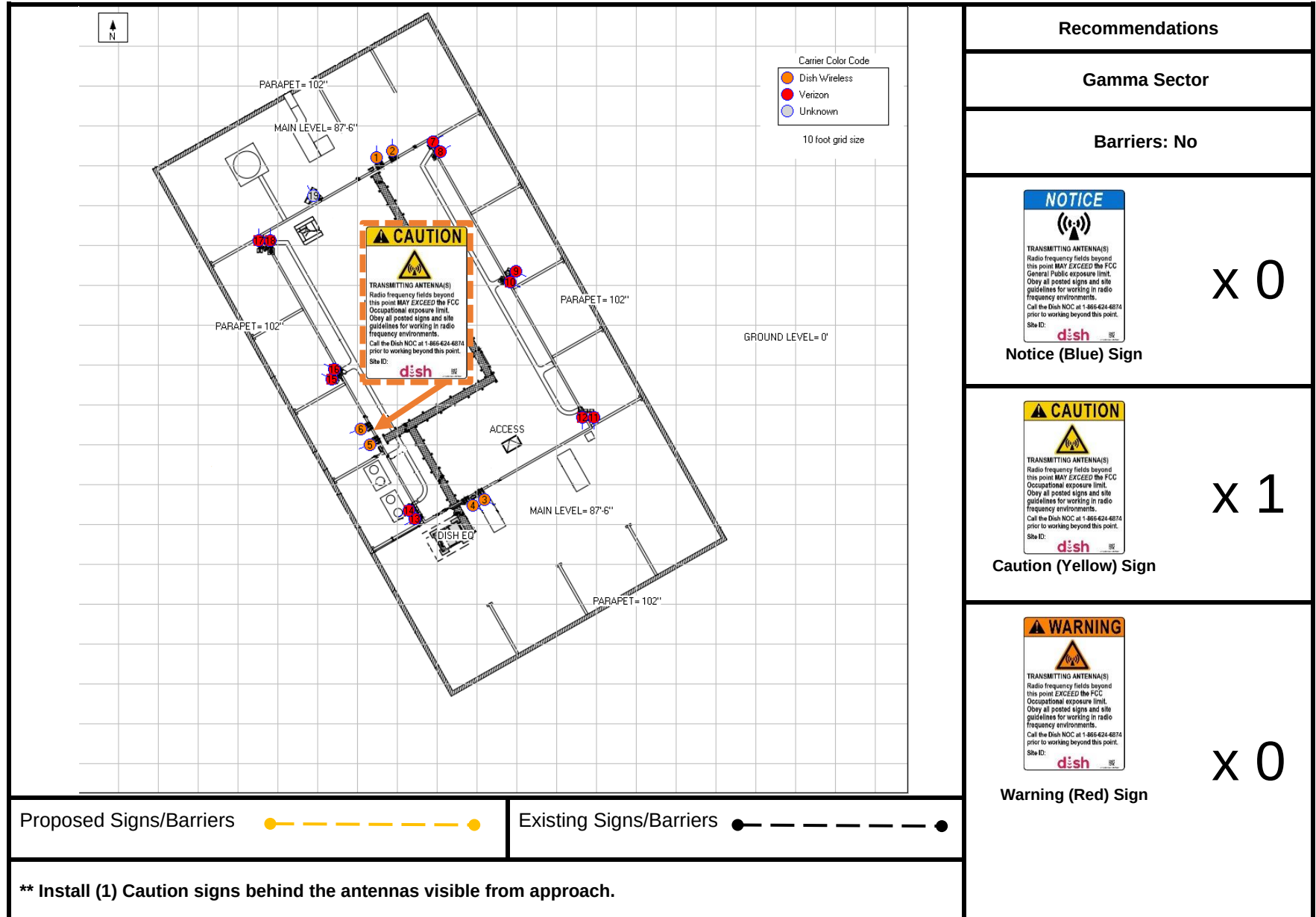
RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Beta Sector)



RECOMMENDATIONS FOR COMPLIANCE

Compliance Requirement Diagram (Gamma Sector)



Mitigation for Compliance

For any area where cumulative RF power density exceeds 100% of the FCC General Population MPE limits, access controls with appropriate RF alerting signage must be established and maintained to restrict access to authorized personnel. Signage must be posted to be visible upon approach from any direction to provide notification of potential conditions within these areas.

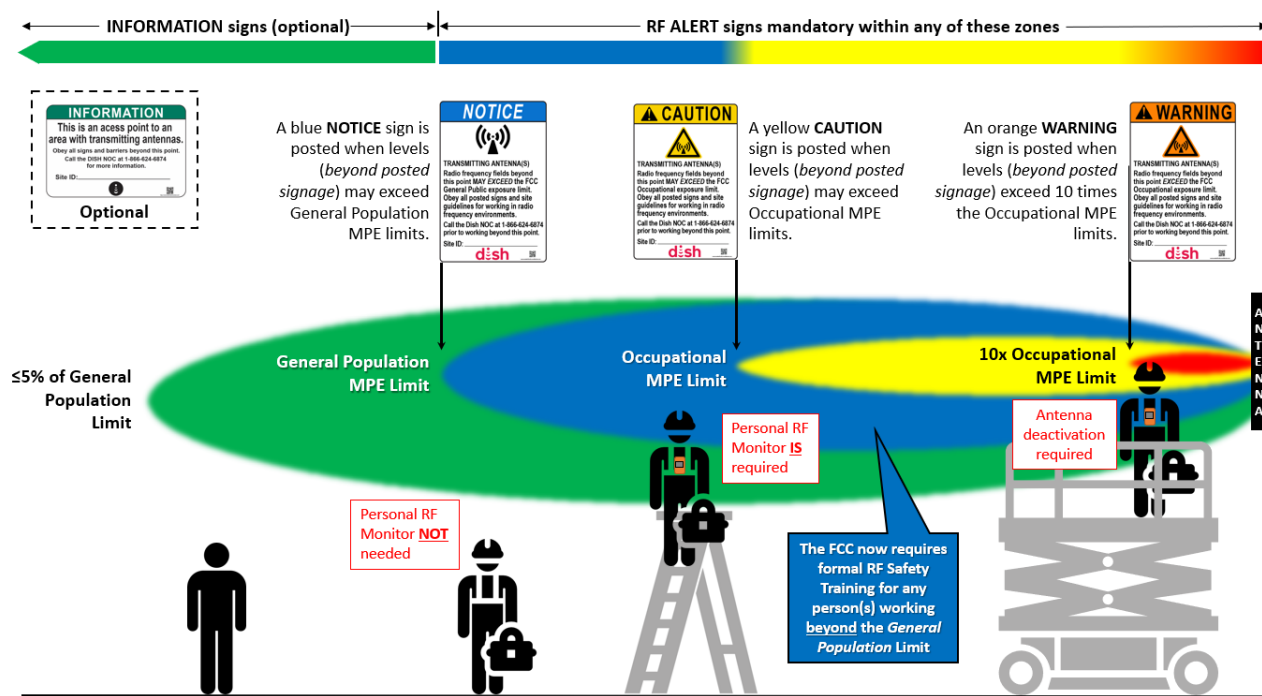
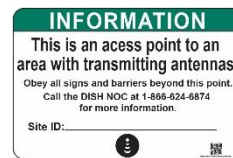
Category 2	Category 3	Category 4
<i>Exceeds General Population Limit; Below Occupational Limit</i>	<i>Exceeds Occupational Limit; Below 10x Occupational Limit</i>	<i>Exceeds 10x Occupational Limit</i>
		

Per FCC requirements for compliance, the following content is required on RF alerting signage:

- RF energy advisory symbol and signal word appropriate for the potential exposure category
- A description of the RF source (e.g., transmitting antennas)
- Behavior necessary to avoid over-exposure (e.g., do not climb tower unless you know that antennas are not energized; stay behind barrier or off of markings)
- Up-to-date contact information (e.g., monitored phone number or email address connected to someone with authority and capability to provide prompt response).
- Any sign attached directly to an antenna must include the separation distance at a font size commensurate with the safe separation distance.

Additional Requirements

- Signage should conform to IEEE C95.2-2018 and the ANSI/NEMA Z535 series of standards.
- RF alerting signs must be legible from a distance of 5 feet from the boundary of the area where the FCC General Population limits are exceeded in accordance with OSHA rules (29 CFR § 1910.145(f)(4)(ii)).
- INFORMATION signs displaying contact information AND GUIDELINES signs are considered *optional* and may be utilized at antenna installations where the FCC limits may not be exceeded.
- Positive access control is required to restrict access to areas where the FCC General Population limits may be exceeded.** Controls such as physical barriers to entry imposed by locked doors, hatches and ladders or other access control mechanisms may be supplemented by alarms that alert the individual and notify site management of a breach in access control.
- Appropriate RF Safety & Awareness Training is required for any person that may encounter *controlled* areas in order to understand the meaning of RF alerting signage, as well as the behaviors necessary to ensure safety.** In order to perform work within restricted area where the General Population limits may be exceeded, workers should be trained in RF safety and equipped with personal protective equipment (e.g. RF personal monitor). Lockout/tagout or scheduled outages may be employed to maintain a safe work environment within these areas. Further, untrained workers should not have access to controlled locations without supervision by trained occupational personnel.



Standard Minimum Font Sizes & Safe Viewing Distances

(Source: ANSI Z535.2-2001 (Table B1))

Minimum Safe Viewing Distance		Minimum Letter Height for FAVORABLE Reading Conditions			Minimum Recommended Sign Size *
(ft)	(m)	(point size)	(in)	(cm)	(in)
≤4	≤1.2	16	0.16	.4	5 x 7
6	1.8	24	0.24	0.6	7 x 10
8	2.4	32	0.32	0.8	8 x 12
10	3.0	40	0.40	1.0	11 x 18
15	4.6	60	0.60	1.5	15 x 24
20	6.1	80	0.80	2.0	19 x 30
30	9.1	120	1.20	3.0	TBD**
40	12.2	160	1.60	4.1	TBD**
60	18.3	240	2.40	6.1	TBD**
80	24.4	320	3.20	8.1	TBD**
100	30.5	400	4.00	10.2	TBD**
125	38.1	500	5.00	12.7	TBD**
150	45.7	600	6.00	15.2	TBD**

* Sign sizes reflect the minimum size(s) needed to meet FCC/OSHA requirements based on (i) the sign content and artwork shown in this section, and (ii) the minimum safe viewing distance, as specified by ANSI and calculated by our RoofMaster™ software.

All minimum safe viewing distances are depicted in the RF modeling diagrams provided in this report.

** Minimum recommended sign sizes are provided herein only for signs that require a minimum safe viewing distance of 0 – 20 feet. Signs requiring a minimum safe viewing distance >20 feet shall be graphically calculated and confirmed by Waterford on a case-by-case basis.

6 Appendix A: Technical Framework

The FCC requires licensees to ensure that new and existing wireless operations do not expose people to hazardous levels of RF electromagnetic energy. Service providers consider compliance with these rules when designing new sites or modifying existing operations that could change the RF environment. The FCC exposure rules have been codified in response to the National Environmental Policy Act of 1969 which requires government agencies to evaluate the impact of their actions on the "quality of the human environment." Documentation of adherence to these rules is typically included in the environmental compliance applications submitted to local authorities responsible for reviewing and approving new or modified telecommunications installations and is maintained by the FCC licensee.

The FCC rules are based on exposure limits established by scientific and engineering organizations that review human health research in this field. At RF frequencies, the electromagnetic waves utilized by cellular sites represent non-ionizing radiation which can be absorbed by the human body. The FCC limits include a 50-fold safety factor above exposure levels where adverse thermal effects may result. By contrast, the energy available in ionizing radiation (e.g. X-rays) is higher and has the ability to permanently damage tissue cells at the molecular level. Unlike ionizing radiation, exposure to non-ionizing radiation does not have cumulative effects and the FCC limits are based on the body's thermoregulation capabilities.

The FCC requires licensees to ensure that persons are not exposed to radiofrequency electromagnetic energy power densities in excess of the Maximum Permissible Exposure ("MPE") limits as set forth in 47 C.F.R. §§ 1.1307(b) and 1.1310. The limits are derived from maximum Specific Absorption Rate (SAR) values of the human body for two tiers of permissible exposure differentiated by the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure.

General Population / uncontrolled exposure limits apply to those situations in which persons may not be aware of the presence of electromagnetic energy, where exposure is not employment-related, or where persons cannot exercise control over their exposure.

Occupational / controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure.

Based on these criteria, the FCC limits for the General Population are associated with continuous exposure conditions and exposure levels below these limits are not hazardous. The FCC General Population limit is 5 times more restrictive than the Occupational limits.

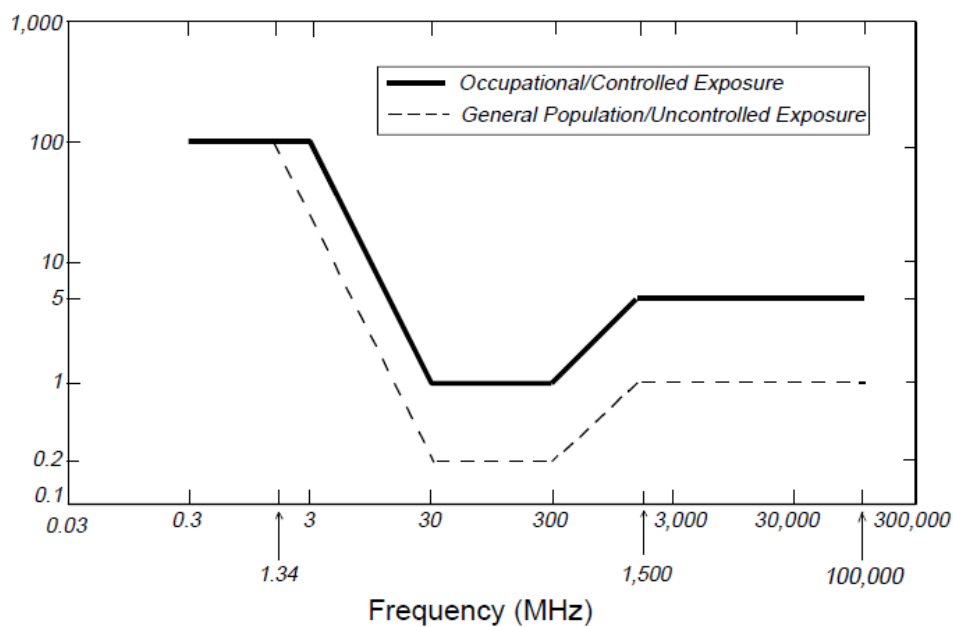
As a practical method of evaluating compliance in deployment scenarios, the FCC has set forth MPE limits shown in Table 1 below which are derived from the *whole-body SAR limits*. Specified in terms of electric field strength, magnetic field strength and equivalent plane-wave power density, compliance may be evaluated through computational or measurement methods provided in the FCC Office of Engineering & Technology Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65). Factors that determine exposure conditions include frequency, operating power, distance, and directivity of the antenna.

Table 1: FCC Exposure Limits (47 C.F.R. § 1.1310)

Frequency (MHz)	Limits for General Population/Uncontrolled Exposure		Limits for Occupational/Controlled Exposure	
	Power Density (mW/cm ²)	Averaging Time (minutes)	Power Density (mW/cm ²)	Averaging Time (minutes)
30-300	0.2	30	1	6
300-1500	f/1500	30	f/300	6
1500-100,000	1.0	30	5.0	6

f=Frequency (MHz)

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)
Plane-wave Equivalent Power Density



From OET-65

Compliance assessment involves consideration of the cumulative contributions of all wireless operations. The power density resulting from an RF source may be expressed as a percentage of the frequency-specific limits. In scenarios involving multiple RF emitters, the percentage of the FCC limits from each source are *summed* to determine if 100% of the exposure limit has been exceeded at a given location. At these areas of concern, access controls with appropriate RF alerting signage must be established and maintained to restrict access to authorized personnel.

An evaluation of existing environmental conditions may be performed through predictive modeling as set forth in OET-65 or collecting power density measurements. The impact of new or modified wireless operations must be assessed in this cumulative scenario and any area of concern that is accessible to members of the General Population must be mitigated. In situations where the predicted MPE exceeds the General Population threshold in an accessible area as a result of emissions from multiple transmitters, FCC licensees that contribute greater than 5% of the aggregate MPE share responsibility for mitigation.

Based on the computational guidelines set forth in FCC OET Bulletin 65, Waterford Consultants, LLC has developed software to predict the overall Maximum Permissible Exposure possible at any location given the spatial orientation and operating parameters of multiple RF sources. The power density in the *far-field* of an RF source is specified by OET-65 Equation 5 as follows:

$$S = \frac{EIRP}{4 \cdot \pi \cdot R^2} \text{ (mW/cm}^2\text{)}$$

where EIRP is the Effective Radiated Power relative to an isotropic antenna and R is the distance between the antenna and point of study. Additionally, consideration is given to the manufacturers' horizontal and vertical antenna patterns as well as radiation reflection. At any location, the predicted power density in the *far-field* is the spatial average of points within a 0 to 6-foot vertical profile that a person would occupy. *Near-field* power density is based on OET-65 Equation 20 stated as

$$S = \left(\frac{180}{\theta_{BW}} \right) \cdot \frac{100 \cdot P_{in}}{\pi \cdot R \cdot h} \text{ (mW/cm}^2\text{)}$$

where P_{in} is the power input to the antenna, θ_{BW} is the horizontal pattern beamwidth and h is the aperture length.

Exposure conditions in the *near-field* of a microwave dish antenna may vary but the maximum power density is provided by OET-65 Equation 13 as follows:

$$S_{nf} = \frac{16 \cdot \eta \cdot P}{\pi \cdot D^2} \text{ (mW/cm}^2\text{)}$$

where η is aperture efficiency (0.75) and D is the antenna diameter.

Some antennas employ beamforming technology where RF energy allocated to each customer device is dynamically directed toward their location. In this analysis, predicted exposure levels are based on all beams at full utilization (i.e. full power) simultaneously focused in any direction. As this condition is unlikely to occur, the actual power density levels at ground and at adjacent structures are expected to be less than the levels reported. These theoretical results represent worst-case predictions as all RF emitters are assumed to be operating at 100% duty cycle.

7 Appendix B: Qualifications of Waterford Consultants, LLC

With more than 100 team-years of experience, Waterford Consultants, LLC [Waterford] provides technical consulting services to clients in the Radio Communications and antenna locating industry. Waterford retains professional engineers who are placed in responsible charge of the processes for analysis.

Waterford is familiar with 47 C.F.R. § § 1.1307(b)(3) and 1.1310 along with the general Rules, Regulations, and policies of the FCC. Waterford work processes incorporate all specifications of FCC Office of Engineering and Technology, Bulletin 65 (“OET65”), from the website: www.fcc.gov/oet/rfsafety and follow criteria detailed in 47 CFR § 1.1310 “Radiofrequency radiation exposure Limits”.

Within the technical and regulatory framework detailed above, Waterford developed tools according to recognized and generally accepted good engineering practices. Permissible exposure limits are band specific, and the Waterford computerized modeling tools correctly calculate permissible exposure based on the band(s) specified in the input data. Only clients and client representatives are authorized to provide input data through the Waterford web portal. In securing that authorization, clients and client representatives attest to the accuracy of all input data.

Waterford Consultants, LLC attests to the accuracy of the engineering calculations computed by those modeling tools. Furthermore, Waterford attests that the results of those engineering calculations are correctly summarized in this report.

To download an electronic copy of our **Summary of Capabilities** brochure, please clicking the image below



8 Appendix C: RoofMaster

RoofMaster™ is the software package that Waterford Consultants, LLC created to model RF environments associated with multiple emitters where the potential exists for human exposure. Based on the computational guidelines set forth in OET Bulletin 65 from the Federal Communications Commission (FCC), RoofMaster™ considers the operating parameters of specified RF sources to predict the overall Maximum Permissible Exposure possible at a given location. These theoretical results represent worst-case predictions as emitters are assumed to be operating at 100% duty cycle.

From the FCC document:

“The revised OET Bulletin 65 has been prepared to provide assistance in determining whether proposed or existing transmitting facilities, operations or devices comply with limits for human exposure to radiofrequency (RF) fields adopted by the Federal Communications Commission (FCC). The bulletin offers guidelines and suggestions for evaluating compliance.”

http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf

9 Appendix D: Statement of Limiting Conditions

Waterford Consultants, LLC field personnel have visited the site and collected data with regard to the MPE environment. Waterford Consultants will not be responsible for matters of a legal nature that affect the site or property. The property has been analyzed under the premise that it is under responsible ownership and management and our client has the legal right to conduct business at this facility.

Due to the complexity of some wireless sites, Waterford Consultants has created this report utilizing best industry practices and due diligence. Waterford Consultants cannot be held accountable or responsible for anomalies or discrepancies due to actual site conditions (i.e., mislabeling of antennas or equipment, inaccessible cable runs, inaccessible antennas or equipment, etc.) or information or data supplied by Wireless Carrier, the site manager, or their affiliates, subcontractors or assigns.

Waterford Consultants has provided the results of a computer-generated model in this MPE Site Compliance Report to show approximate dimensions of the site, and the model results is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Waterford Consultants' recommendations.

Waterford Consultants will not be responsible for any existing conditions or for any engineering or testing that might be required to discover whether adverse safety conditions exist. Because Waterford Consultants is not expert in the field of mechanical engineering or building maintenance, this MPE Site Compliance Report must not be considered a structural or physical engineering report.

Waterford Consultants obtained information used in this MPE Site Compliance Report from sources that Waterford Consultants considers reliable and believes them to be true and correct. Waterford Consultants does not assume any responsibility for the accuracy of such items that were furnished by other parties.

10 Appendix E: Glossary of Terms

Definitions of the following technical words, terms, and/or phrases reflected in the report provided by Waterford are included as follows:

Compliance assessment	Sometimes referred to as a GAP assessment, it is intended to identify gaps between an existing control environment and what is required for compliance with Federal (FCC) regulations
Controlled exposure limits	Apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.
Cumulative exposure	Cumulative exposure is the total dose resulting from repeated exposures of radiation to an occupationally exposed worker to the same portion of the body, or to the whole body, over a period of time.
Effective Radiated Power (EIRP or ERP)	An IEEE standardized definition of directional radio frequency (RF) power, such as that emitted by a radio transmitter.....It is equal to the input power to the antenna multiplied by the gain of the antenna.
Electromagnetic emissions (EME)	Aka <i>electromagnetic radiation</i> , EME is energy that is propagated through free space or through a material medium in the form of electromagnetic waves, such as radio waves, visible light, and gamma rays.
Far field	The far field is the region in which the field acts as "normal" electromagnetic radiation. In this region, it is dominated by electric or magnetic fields with electric dipole characteristics.
FCC	Federal Communications Commission; an independent agency of the United States government that regulates communications by radio, television, wire, satellite, and cable across the United States. The FCC maintains jurisdiction over the areas of broadband access, fair competition, radio frequency use, media responsibility, public safety, and homeland security
General Population limit	Applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure

IEEE	Institute of Electrical and Electronics Engineers; a professional association for electronic engineering and electrical engineering (and associated disciplines). It was formed in 1963 from the amalgamation of the American Institute of Electrical Engineers and the Institute of Radio Engineers
Ionizing radiation	A type of energy released by atoms that travels in the form of electromagnetic waves (gamma or X-rays) or particles (neutrons, beta or alpha); can penetrate the human body and the radiation energy can be absorbed in tissue. This has the potential to cause harmful effects to people, especially at high levels of exposure
Maximum permissible exposure (MPE)	The FCC's regulations have specific MPE requirements for radiated electric fields, magnetic fields, and power density. MPEs are derived from the Specific Absorption Rate (SAR) at which tissue absorbs RF energy, usually expressed in watts per kilogram (W/kg).
Mitigation for compliance	Actions or activities required for compliance with FCC/OSHA regulations and to ensure a safe working environment. A harmonized and integrated compliance program – one that includes appropriate risk-management activities and controls – will eliminate redundant efforts, enable execution, ensure safety, and facilitate adherence to compliance requirements by the business and governing federal agencies.
Narda/Wave Control	Leading international suppliers of measuring equipment in the EMF / EME Safety, RF Test & Measurement and EMC sectors
Near field	A part of the radiated field that is below distances shorter than the Fraunhofer distance, which is given from the source of the diffracting edge or antenna of longitude or diameter; near field, as the name suggests, is very close to the antenna while far field is further away.
Non-ionizing radiation	Non-ionizing radiation includes the spectrum of ultraviolet (UV), visible light, infrared (IR), microwave (MW), radio frequency (RF), and extremely low frequency (ELF); does not penetrate deep into the tissues but increases the risk of damage to the skin and eyes. Dependent on the energy and exposure time, non-ionizing radiation can cause localized heating, or photochemical reactions can occur with possible permanent harm. Exposure should therefore be minimized.

Occupational limit	Apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure.
OET-65	Bulletin published by the FCC's Office of Engineering & Technology in 1997; establishes guidelines for human exposure to radiofrequency electromagnetic field and achieving FCC compliance
Personal RF monitor	Part of the personal protective equipment (PPE) worn by a person working in areas exposed to radio frequency radiation. A personal RF safety monitor is typically worn either on the torso region of the body or handheld and is required by the occupational safety and health acts of many telecommunication companies
Positive access control	Refers to the practice of restricting entrance to a property, a building, or a room to authorized persons; can be achieved by a human (a guard, bouncer, or receptionist), through mechanical means such as locks and keys, or through technological means such as access control systems
Power density	The amount of power (time rate of energy transfer) per unit volume; power density may also refer to a volume. It is then also called volume power density, which is expressed as W/m ³
Radio frequency (RF)	The oscillation rate of an alternating electric current or voltage or of a magnetic, electric, or electromagnetic field or mechanical system in the frequency range from around 20 kHz to around 300 GHz
Specific Absorption Rate (SAR)	A measure of the rate at which energy is absorbed per unit mass by a human body when exposed to a radio frequency (RF) electromagnetic field. ... It is defined as the power absorbed per mass of tissue and has units of watts per kilogram (W/kg)
Spatial average	The average power density observed when the Narda meter and probe is swept over an entire person (0 – 6 feet) for purposes of comparing with FCC exposure limits
Spatial peak	The maximum power density observed when the Narda meter and probe are swept over an entire person (0 – 6 feet) for purposes of comparing with FCC exposure limits; considered "worst case" – the average will not exceed this value
Uncontrolled exposure limits	Apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure