

Case File Number: PLN22051

May 4, 2022

<b>Location:</b>	<b>2943 MacArthur Boulevard. (See map on reverse)</b>
<b>Assessor’s Parcel Number:</b>	<b>028 091602000</b>
<b>Proposal:</b>	To place a screened Macro Telecommunication Facility on the rooftop of an existing residential building. There will be six new antennas and two new radio cabinets on the front, rear and side of the building which faces a commercial lot, as well as a new equipment box (70 square feet).
<b>Applicant:</b>	Tom Swarner for Dish Wireless.
<b>Phone Number:</b>	(510) 435-3595
<b>Owner:</b>	Michael W. Marr
<b>Case File Number:</b>	PLN22051
<b>Planning Permits Required:</b>	Major Conditional Use Permits (CUP) for a Macro Telecommunication Facility on a private parcel in a residential zone; and Regular Design Review (DR) for a Macro Telecommunication Facility
<b>General Plan:</b>	Urban Residential
<b>Zoning:</b>	RU-4 Urban Residential Zone.
<b>Environmental Determination:</b>	Exempt per the State CEQA Guidelines Section 15301 – Minor alterations to existing facilities; Section 15303- Construction of Small Structures and Section 15183 – Projects Consistent with a Community Plan, General Plan, or Zoning
<b>Historic Status:</b>	F3
<b>City Council District:</b>	4
<b>Status:</b>	Pending
<b>Staff Recommendation:</b>	Approval per the Conditions of Approval
<b>Finality of Decision:</b>	Appealable to City Council within 10 days
<b>For Further Information:</b>	Contact case planner Rebecca Wysong at <b>(510) 238-3123</b> or <a href="mailto:rwysong@oaklandca.gov">rwysong@oaklandca.gov</a>

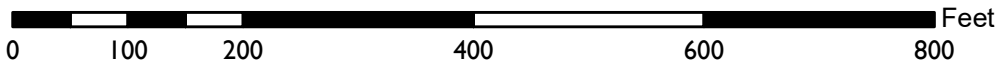
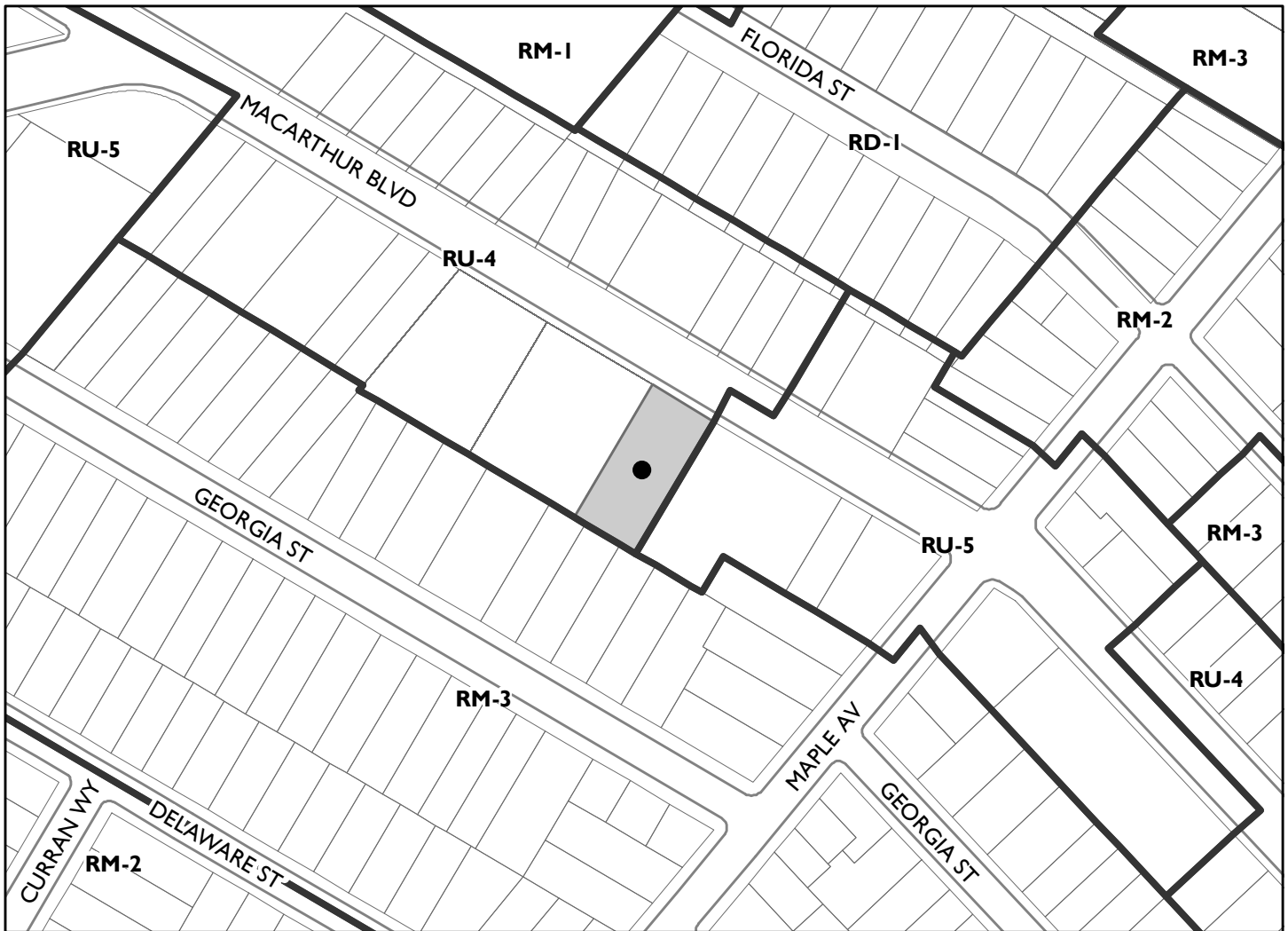
**SUMMARY**

The proposed project is to install a wireless Macro Telecommunications Facility involving six new antennas, two radios and associated equipment cabinet concealed within four new enclosures located on the roof of a four-story residential building.

The site is located within the Urban Residential - 4 (RU-4) Zone. A Major Conditional Use Permit (CUP) and Regular Design Review (DR) are required to install a Macro Telecommunications Facility on a building located in a Residential Zone. In addition, special CUP and Design Review findings are required as discussed further in the *Key Issues and Impacts* and *Findings* sections of this report.

The project meets all of the telecommunication regulation requirements and applicable findings for approval (see Findings section). The proposal will provide enhanced telecommunications service to support the residential, commercial and civic uses in the neighborhood. Therefore, staff recommends approval of the project subject to the attached conditions of approval.

# CITY OF OAKLAND PLANNING COMMISSION



Case File: PLN2205 I  
Applicant: Tom Swarner/Dish Wireless  
Address: 2943 MacArthur Boulevard  
Zone: RU-4

**BACKGROUND**

**Limitations on Local Government Zoning Authority under the Telecommunications Act of 1996.**

Section 704 of the Telecommunications Act of 1996 (TCA) provides federal standards for the siting of “Personal Wireless Services Facilities.” “Personal Wireless Services” include all commercial mobile services (including personal communications services (PCS), cellular radio mobile services, and paging); unlicensed wireless services; and common carrier wireless exchange access services.

Under Section 704, local zoning authority over personal wireless services is preserved such that the FCC is prevented from preempting local land use decisions; however, local government zoning decisions are still restricted by several provisions of federal law. Under Section 253 of the TCA, no state or local regulation or other legal requirement can prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.

Further, Section 704 of the TCA imposes limitations on what local and state governments can do. Section 704 prohibits any state and local government action which unreasonably discriminates among personal wireless providers. Local governments must ensure that its wireless ordinance does not contain requirements in the form of regulatory terms or fees which may have the “effect” of prohibiting the placement, construction, or modification of personal wireless services.

Section 704 also preempts any local zoning regulation purporting to regulate the placement, construction and modification of personal wireless service facilities on the basis, either directly or indirectly, of the environmental effects of radio frequency emissions (RF) of such facilities, which otherwise comply with FCC standards in this regard. See, 47 U.S.C. 332(c) (7) (B) (iv) (1996). This means that local authorities may not regulate the siting or construction of personal wireless facilities based on RF standards that are more stringent than those promulgated by the FCC.

Section 704 mandates that local governments act upon personal wireless service facility siting applications to place, construct, or modify a facility within a reasonable time. 47 U.S.C.332(c) (7) (B) (ii). See FCC Shot Clock ruling setting forth “reasonable time” standards for applications deemed complete. Section 704 also mandates that the FCC provide technical support to local governments in order to encourage them to make property, rights-of-way, and easements under their jurisdiction available for the placement of new spectrum-based telecommunications services. This proceeding is currently at the comment stage.

For more information on the FCC’s jurisdiction in this area, contact Steve Markendorff, Chief of the Broadband Branch, Commercial Wireless Division, Wireless Telecommunications Bureau, at (202) 418-0640 or e-mail "smarkend@fcc.gov".

**PROPERTY DESCRIPTION**

The subject property is an approximately 10,530 square foot parcel with an existing four-story residential building. The subject property is located on the block of MacArthur Boulevard between Coolidge and Maple Avenues. The project site is adjacent to single-family residences, multi-family residences and retail stores in the rear of the property as well as across the street. On one side of the property is another multi-family residence and on the other side of the property is a commercial facility.

**PROJECT DESCRIPTION**

The applicant, Tom Swarner for Dish Wireless, is proposing to install six new antennas, and two new radios, with associated equipment cabinets concealed within four new antenna lease area enclosures located on the roof of a residential building (*See Attachment C*).

**GENERAL PLAN ANALYSIS**

The subject property is located within the “Urban Residential” designation of the Land Use and Transportation Element (LUTE) of the General Plan. The Urban Residential land use classification is intended to create, maintain and enhance areas of the City that are appropriate for multi-unit, mid-rise or high-rise residential structures in locations with good access to transportation and other services.

The proposal will provide an essential telecommunication service to the community and the City of Oakland at large, including emergency services such as police, fire department and emergency response teams. The proposed unmanned wireless telecommunication facility will not adversely affect and detract from the urban residential characteristics of the neighborhood. The visual impacts will be mitigated by concealing the antennas and radios within enclosures and on the roof. Furthermore, the proposed project meets LUTE Objective N2: Encourage adequate civic, institutional and educational facilities located within Oakland, appropriately designed and sited to serve the community.

Staff finds the proposal to be in conformance with the objectives of the General Plan by servicing the community with enhanced telecommunications capability.

**ZONING ANALYSIS**

The subject property is located in the RU-4 Urban Residential Zone. The intent of the RU-4 Zone is to create, maintain, and enhance areas of the City that are appropriate for multi-unit, mid-rise, and high-rise residential structures on the City's major corridors.

Section 17.19.040 of the Oakland Planning Code requires a Conditional Use Permit to install a Macro Telecommunication facility in the RU-4 Zone. Furthermore, pursuant to Sections 17.128.025(B), 17.134.020(A)(3)(g) and 17.136.040(A)(10) of the Oakland Planning Code, a Major Conditional Use Permit and Regular Design Review is required for any telecommunication facility in or within one hundred (100) feet of the boundary of any Residential Zone. The required findings for a Major Conditional Use Permit and Regular Design Review are listed and included in staff's evaluation as part of this report.

**ENVIRONMENTAL DETERMINATION**

The California Environmental Quality Act (CEQA) Guidelines lists the projects that qualify as categorical exemptions from environmental review. The proposed project is categorically exempt from the environmental review requirements pursuant Section 15301: minor alterations to existing facilities, Section 15303: construction of small structures, and Section 15183: projects consistent with a General Plan or Zoning.

## KEY ISSUES AND IMPACTS

### 1. Special Conditional Use Permit and Design Review criteria

Section 17.128.070 of the City of Oakland Planning Code requires special design review and CUP criteria to hat the facilities are appropriately concealed and will not affect neighborhood character. The required additional Findings are included in staff's evaluation as part of the *Findings* section in the report.

### 2. Project Site

Section 17.128.110 of Oakland's Telecommunication Regulations indicate that new wireless facilities shall generally be located on designated properties or facilities in the following order of preference:

- A. Co-located on an existing structure or facility with existing wireless antennas.
- B. City owned properties or other public or quasi-public facilities.
- C. Existing commercial or industrial structures in non-residential zones (excluding all HBX Zones and the D-CE3 and D-C-4 Zones).
- D. Existing commercial or industrial structures in residential zones, HBX Zones, or the D-CE-3 or D-CE-4 Zones.
- E. Other non-residential uses in residential zones, HBX Zones, or the D-CE-3 or D-CE-4 Zones.
- F. Residential uses in non-residential zones. (excluding all HBX Zones and the D-CE-3 and D- CE-4 Zones).
- G. Residential uses in residential zones, HBX Zones, or the D-CE-3 or D-CE-4 Zones.

\*Facilities located on an A, B or C ranked preferences do not require a site alternatives analysis.

Since the proposed project involves installation new antennas on an existing residential structure within an RU-4 Zone, the proposed project meets (G) and hence a site alternatives analysis is required and enclosed (*See Attachment D*).

Written evidence must indicate why each higher preference design alternative cannot be used. Such evidence shall be in sufficient detail that independent verification could be obtained if required by the City of Oakland Zoning Manager. Evidence should indicate if the reason an alternative was rejected was technical (e.g. incorrect height, inability to cover required area) or for other concerns (e.g. inability to get lease with owners).

City of Oakland Planning staff has reviewed the applicant's written evidence of alternative sites analysis and determined that the site selected conforms to the telecommunication regulation requirements. In addition, Planning staff agrees that no other sites are more suitable.

### 3. Project Design

Section 17.128.120 of the City of Oakland Telecommunications Regulations indicates that new wireless facilities shall generally be designed in the following order of preference:

- A. Building or structure mounted antennas completely concealed from view.
- B. Building or structure mounted antennas set back from roof edge, not visible from public right-of way.
- C. Building or structure mounted antennas below roof line (facade mount, pole mount) visible from public right of-way, painted to match existing structure.
- D. Building or structure mounted antennas above roof line visible from public right of-way.
- E. Monopoles.
- F. Towers.

\* Facilities designed to meet an A or B ranked preference does not require a site design alternatives analysis. Facilities designed to not meet A through B ranked preference, inclusive, must submit a site design alternatives analysis as part of the required application materials.

Since the proposed project involves installation new antennas on an existing residential structure within an RU-4 Zone, the proposed project meets (C) and hence a design alternatives analysis is required. Site design alternatives analysis shall, at a minimum, consist of:

- Written evidence must indicate why each higher preference design alternative cannot be used. Such evidence shall be in sufficient detail that independent verification could be obtained if required by the City of Oakland Zoning Manager. Evidence should indicate if the reason an alternative was rejected was technical (e.g. incorrect height, interference from existing RF sources, inability to cover required area) or for other concerns (e.g. inability to provide utilities, construction or structural impediments).

City of Oakland Planning staff has reviewed the applicant’s written evidence of alternative design analysis (*See Attachment E*) and determined that the site selected conforms to the telecommunication regulation requirements. In addition, Planning staff agrees that no other designs are more suitable.

**4. Project Radio Frequency Emissions Standards**

Section 17.128.130 of the City of Oakland Telecommunication Regulations require that the applicant submit the following verifications including requests for modifications to existing facilities:

- a.* The Telecommunications regulations require that the applicant submit written documentation demonstrating that the emission from the proposed project are within the limits set by the Federal Communications Commission.
- b.* Prior to final building permit sign off, an RF emissions report indicating that the site is actually operating within the acceptable thresholds as established by the Federal government or any such agency who may be subsequently authorized to establish such standards.

In the document (*See Attachment G*) prepared by EBI Consulting, the proposed project was evaluated for compliance with appropriate guidelines limiting human exposure to radio frequency electromagnetic fields. According to the report, the project will comply with the prevailing standards for limiting public exposure to radio frequency energy. The proposed site will operate within the current acceptable thresholds as established by the Federal Government or any such agency that may be subsequently authorized to establish such standards and, therefore, will not cause a significant impact on the environment.

Additionally, staff recommends that prior to the final building permit sign off; the applicant submits certified RF emissions report stating that the facility is operating within acceptable thresholds established by the regulatory federal agency.

**CONCLUSION**

The proposal will provide an essential telecommunication services to the community and the City of Oakland at large. It will also be available to emergency services such as Police, Fire and Health response teams. The new telecommunication facility will not have significant visual impacts on the operating characteristic of the existing residential building. The proposed project meets all of the required findings for approval. Therefore, staff recommends approval of the project subject to the attached Conditions.

**RECOMMENDATIONS:**


1. Affirm staff's environmental determination, and
2. Approve the Major Conditional Use Permit and Design Review application subject to the attached Findings and Conditions of Approval.

Prepared by:

*Rebecca Wysong*

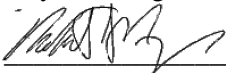
Rebecca Wysong  
Planner I

Reviewed by:



Robert Merkamp,  
Zoning Manager

Approved for forwarding to the  
City Planning Commission:

 for

Edward Manasse, Deputy Director  
Bureau of Planning

**ATTACHMENTS:**

- A. Findings
- B. Conditions of Approval
- C. Project Plan
- D. Alternative site selection/ Alternative design
- E. Photo simulations
- F. EBI Consulting RF Emissions Report
- G. Proof of Publication

**FINDINGS FOR APPROVAL**

This proposal meets the required findings under Sections 17.134.050 (General Use Permit criteria); Section 17.128.060 (C) (Additional CUP criteria); 17.136.050 (B) (Non-Residential Design Review criteria); and 17.128.060(B) (Additional Design Review criteria) as set forth below. Required findings are shown in **bold** type; reasons proposal satisfies them are shown in normal type.

**SECTION 17.134.050 – GENERAL USE PERMIT FINDINGS:**

**A. That the location, size, design, and operating characteristics of the proposed development will be compatible with, and will not adversely affect, the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to harmony in scale, bulk, coverage, and density; to the availability of civic facilities and utilities; to harmful effect, if any upon desirable neighborhood character; to the generation of traffic and the capacity of surrounding streets; and to any other relevant impact of the development.**

The purpose of the project is to enhance wireless telecommunications service in the area. The installation of new antennas will not adversely affect the operating characteristics or livability of the existing area because the proposed antennas will be screened behind enclosures that are painted and textured to match the building aesthetics and located on the roof of the residential building. The facility will be unmanned and will not create additional vehicular traffic in the area.

**B. That the location, design, and site planning of the proposed development will provide a convenient and functional living, working, shopping, or civic environment, and will be as attractive as the nature of the use and its location and setting warrant.**

The location, design and site planning of the proposal will provide enhanced telecommunication service for the area, with increased connectivity and access to emergency services. The proposal will be located on the roof on an existing building, visually will resemble other rooftop mechanical equipment and will be screened behind enclosures. The proposal will not affect the use of the existing residential building and is not expected to negatively affect the overall quality and character of the neighborhood.

**C. That the proposed development will enhance the successful operation of the surrounding area in its basic community functions, or will provide an essential service to the community or region.**

The proposed development will enhance the successful operation of the surrounding area in its basic community function and will provide an essential service to the community or region. This will be achieved by improving the functional use of the site by providing a regional telecommunications facility for the community and will be available to the police, fire services, and the public safety organizations and the general public.

**D. That the proposal conforms to all applicable design review criteria set forth in the Design Review Procedure of Chapter 17.136 of the Oakland Planning Code.**

The proposal conforms with all significant aspects of the Design Review criteria, as well as the additional design criteria, as outlined below.

**E. That the proposal conforms in all significant respects with the Oakland General Plan and with any other applicable plan or development control map which has been adopted by the City Council.**

The Urban Residential land use classification is intended to create, maintain and enhance areas of the City that are appropriate for multi-unit, mid-rise or high-rise residential structures in locations with good access to transportation and other services.



The proposed unmanned wireless telecommunication facility will not adversely affect and detract from the urban residential characteristics of the neighborhood. The proposed project will have minimal effect on the existing structure and surrounding area as the antennas and radios will be located on the roof and screened from view and painted to match the materials of the building.

Furthermore, the proposed project meets LUTE Objective N2: Encourage adequate civic, institutional and educational facilities located within Oakland, appropriately designed and sited to serve the community. The proposal will provide a convenient and necessary civic service to the residents, neighbors, emergency personnel and the region at large.

**SECTION 17.128.070(C) ADDITIONAL CONDITIONAL USE PERMIT CRITERIA FOR MACRO FACILITIES**

**1. The project must meet the special design review criteria listed in subsection B of this section (17.128.070B):**

The proposed project meets the special design review criteria listed in section 17.128.070B (see below).

**2. The proposed project must not disrupt the overall community character:**

The proposed telecommunications facility is located on the roof, visually looks like other rooftop mechanical equipment, and is fully screened from public view. Therefore, the proposal will not disrupt the overall community character surrounding the subject site.

**17.136.050(B) – NONRESIDENTIAL DESIGN REVIEW CRITERIA:**

**1. That the proposal will help achieve or maintain a group of facilities which are well related to one another and which, when taken together, will result in a well-composed design, with consideration given to site, landscape, bulk, height, arrangement, texture, materials, colors, and appurtenances; the relation of these factors to other facilities in the vicinity; and the relation of the proposal to the total setting as seen from key points in the surrounding area. Only elements of design which have some significant relationship to outside appearance shall be considered, except as otherwise provided in Section 17.136.060;**

The proposed six new antennas are located on top of the roof and will be camouflaged by the existing roof parapets and the proposed screening walls and enclosures on top of the building. Visually, the enclosures will be typical of other rooftop mechanical equipment and will be painted and textured to match the existing building materials. Photo simulations submitted for the project show the view of the proposed antennas and screen, as seen from the street, with minimum visual impacts. Therefore, the proposal will not have significant impacts on the operating characteristics of the existing residential building and surrounding neighborhood.

**2. That the proposed design will be of a quality and character which harmonizes with, and serves to protect the value of, private and public investments in the area;**

See the Findings above.

**3. That the proposed design conforms in all significant respects with the Oakland General Plan and with any applicable design review guidelines or criteria, district plan, or development control map which have been adopted by the Planning Commission or City Council.**

See Finding #E above.

**Section 17.128.070(B) DESIGN REVIEW CRITERIA FOR MACRO FACILITIES**

**1. Antennas should be painted and/or textured to match the existing structure:**

The proposed screening enclosures are compatible with the existing building material and blends in with the architectural style of the residential building. The enclosures will be painted and texturized to match the existing building.

**2. Antennas mounted on architecturally significant structures or significant architectural details of the building should be covered by appropriate casings which are manufactured to match existing architectural features found on the building:**

The existing building is not an architecturally significant building. The structure was built in the mid-1980s and is composed of blocky volumes of stucco with a standing seam metal roof. The proposed antennas, radios and associated equipment are located on the roof of the building, screened and visually resemble other rooftop mechanical equipment and roof access elements.

**3. Where feasible, antennas can be placed directly above, below or incorporated with vertical design elements of a building to help in camouflaging:**

The proposed antennas, radios and associated equipment are located on the roof of the building, screened and visually resemble other rooftop mechanical equipment and roof access elements. In viewing the photo simulations, the proposed enclosures look similar to the other blocky volumes on the building.

**4. Equipment shelters or cabinets shall be screened from the public view by using landscaping, or materials and colors consistent with surrounding backdrop:**

The proposed screening enclosures are compatible with the existing building material and blend in with the architectural style of the building. The cabinets are placed in a manner on the rooftop to not be visible from the public right of way.

**5. Equipment shelters or cabinets shall be consistent with the general character of the area.**

See above Findings.

**6. For antennas attached to the roof, maintain a 1:1 ratio for equipment setback; screen the antennas to match existing air conditioning units, stairs, or elevator towers; avoid placing roof mounted antennas in direct line with significant view corridors.**

The placement of the antennas and associated equipment located on the roof of residential building blends in with the existing roof design and meets the 1:1 ratio for equipment setback from the edge of building roof line.

**7. That all reasonable means of reducing public access to the antennas and equipment has been made, including, but not limited to, placement in or on buildings or structures, fencing, anti-climbing measures and anti-tampering devices.**

The proposed panel antennas and associated equipment will be mounted on the roof of the building and will not be accessible to the public due to its location.

**CONDITIONS OF APPROVAL PLN22051****STANDARD CONDITIONS:****1. Approved Use**

- a. The project shall be constructed and operated in accordance with the authorized use as described in the approved application materials, and the approved plans dated **March 11<sup>th</sup>, 2022** and submitted on **March 23<sup>rd</sup>, 2022** as amended by the following conditions of approval and mitigation measures, if applicable (“Conditions of Approval” or “Conditions”).
- b. This action by the City Planning Commission (“this Approval”) includes the approvals set forth below. This Approval includes: **Installation of a Wireless Telecommunications facility on the rooftop of an existing residential building involving six (6) new antennas, two (2) radios and associated equipment cabinet concealed within four (4) new enclosures located on the roof of a four-story residential building.**

**2. Effective Date, Expiration, Extensions and Extinguishment**

This Approval shall become effective immediately, unless the Approval is appealable, in which case the Approval shall become effective in ten calendar days unless an appeal is filed. Unless a different termination date is prescribed, this Approval shall expire **two years** from the Approval date, or from the date of the final decision in the event of an appeal, unless within such period all necessary permits for construction or alteration have been issued, or the authorized activities have commenced in the case of a permit not involving construction or alteration. Upon written request and payment of appropriate fees submitted no later than the expiration date of this Approval, the Director of City Planning or designee may grant a one-year extension of this date, with additional extensions subject to approval by the approving body. Expiration of any necessary building permit or other construction-related permit for this project may invalidate this Approval if said Approval has also expired. If litigation is filed challenging this Approval, or its implementation, then the time period stated above for obtaining necessary permits for construction or alteration and/or commencement of authorized activities is automatically extended for the duration of the litigation.

**3. Compliance with Other Requirements**

The project applicant shall comply with all other applicable federal, state, regional, and local laws/codes, requirements, regulations, and guidelines, including but not limited to those imposed by the City’s Bureau of Building, Fire Marshal, and Public Works Department. Compliance with other applicable requirements may require changes to the approved use and/or plans. These changes shall be processed in accordance with the procedures contained in Condition #4.

**4. Minor and Major Changes**

- a. Minor changes to the approved project, plans, Conditions, facilities, or use may be approved administratively by the Director of City Planning
- b. Major changes to the approved project, plans, Conditions, facilities, or use shall be reviewed by the Director of City Planning to determine whether such changes require submittal and approval of a revision to the Approval by the original approving body or a new independent permit/approval. Major revisions shall be reviewed in accordance with the procedures required for the original permit/approval. A new independent permit/approval shall be reviewed in accordance with the procedures required for the new permit/approval.

**5. Compliance with Conditions of Approval**

- a. The project applicant and property owner, including successors, (collectively referred to hereafter as the “project applicant” or “applicant”) shall be responsible for compliance with all the Conditions of Approval and

any recommendations contained in any submitted and approved technical report at his/her sole cost and expense, subject to review and approval by the City of Oakland.

b. The City of Oakland reserves the right at any time during construction to require certification by a licensed professional at the project applicant's expense that the as-built project conforms to all applicable requirements, including but not limited to, approved maximum heights and minimum setbacks. Failure to construct the project in accordance with the Approval may result in remedial reconstruction, permit revocation, permit modification, stop work, permit suspension, or other corrective action.

c. Violation of any term, Condition, or project description relating to the Approval is unlawful, prohibited, and a violation of the Oakland Municipal Code. The City of Oakland reserves the right to initiate civil and/or criminal enforcement and/or abatement proceedings, or after notice and public hearing, to revoke the Approval or alter these Conditions if it is found that there is violation of any of the Conditions or the provisions of the Planning Code or Municipal Code, or the project operates as or causes a public nuisance. This provision is not intended to, nor does it, limit in any manner whatsoever the ability of the City to take appropriate enforcement actions. The project applicant shall be responsible for paying fees in accordance with the City's Master Fee Schedule for inspections conducted by the City or a City-designated third-party to investigate alleged violations of the Approval or Conditions.

**6. Signed Copy of the Approval/Conditions**

A copy of the Approval letter and Conditions shall be signed by the project applicant, attached to each set of permit plans submitted to the appropriate City agency for the project, and made available for review at the project job site at all times.

**7. Blight/Nuisances**

The project site shall be kept in a blight/nuisance-free condition. Any existing blight or nuisance shall be abated within 60 days of approval, unless an earlier date is specified elsewhere.

**8. Indemnification**

a. To the maximum extent permitted by law, the project applicant shall defend (with counsel acceptable to the City), indemnify, and hold harmless the City of Oakland, the Oakland City Council, the Oakland Redevelopment Successor Agency, the Oakland City Planning Commission, and their respective agents, officers, employees, and volunteers (hereafter collectively called "City") from any liability, damages, claim, judgment, loss (direct or indirect), action, causes of action, or proceeding (including legal costs, attorneys' fees, expert witness or consultant fees, City Attorney or staff time, expenses or costs) (collectively called "Action") against the City to attack, set aside, void or annul this Approval or implementation of this Approval. The City may elect, in its sole discretion, to participate in the defense of said Action and the project applicant shall reimburse the City for its reasonable legal costs and attorneys' fees.

b. Within ten (10) calendar days of the filing of any Action as specified in subsection (a) above, the project applicant shall execute a Joint Defense Letter of Agreement with the City, acceptable to the Office of the City Attorney, which memorializes the above obligations. These obligations and the Joint Defense Letter of Agreement shall survive termination, extinguishment, or invalidation of the Approval. Failure to timely execute the Letter of Agreement does not relieve the project applicant of any of the obligations contained in this Condition or other requirements or Conditions of Approval that may be imposed by the City.

**9. Severability**

The Approval would not have been granted but for the applicability and validity of each and every one of the specified Conditions, and if one or more of such Conditions is found to be invalid by a court of competent jurisdiction this Approval would not have been granted without requiring other valid Conditions consistent with achieving the same purpose and intent of such Approval.

**10. Graffiti Control**

Requirement:

During construction and operation of the project, the project applicant shall incorporate best management practices reasonably related to the control of graffiti and/or the mitigation of the impacts of graffiti. Such best management practices may include, without limitation:

- i. Installation and maintenance of landscaping to discourage defacement of and/or protect likely graffiti-attracting surfaces.
  - ii. Installation and maintenance of lighting to protect likely graffiti-attracting surfaces.
  - iii. Use of paint with anti-graffiti coating.
  - iv. Incorporation of architectural or design elements or features to discourage graffiti defacement in accordance with the principles of Crime Prevention Through Environmental Design (CPTED).
  - v. Other practices approved by the City to deter, protect, or reduce the potential for graffiti defacement.
- c. The project applicant shall remove graffiti by appropriate means within seventy-two (72) hours. Appropriate means include the following:
- i. Removal through scrubbing, washing, sanding, and/or scraping (or similar method) without damaging the surface and without discharging wash water or cleaning detergents into the City storm drain system.
  - ii. Covering with new paint to match the color of the surrounding surface.
  - iii. Replacing with new surfacing (with City permits if required).

When Required: Ongoing

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

**11. Construction-Related Permit(s)**

Requirement: The project applicant shall obtain all required construction-related permits/approvals from the City. The project shall comply with all standards, requirements and conditions contained in construction-related codes, including but not limited to the Oakland Building Code and the Oakland Grading Regulations, to ensure structural integrity and safe construction.

When Required: Prior to approval of construction-related permit

Initial Approval: Bureau of Building

Monitoring/Inspection: Bureau of Building

**12. Construction Days/Hours**

Requirement: The project applicant shall comply with the following restrictions concerning construction days and hours:

- a. Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pier drilling and/or other extreme noise generating activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m.
- b. Construction activities are limited to between 9:00 a.m. and 5:00 p.m. on Saturday. In residential zones and within 300 feet of a residential zone, construction activities are allowed from 9:00 a.m. to 5:00 p.m. only within the interior of the building with the doors and windows closed. No pier drilling or other extreme noise generating activities greater than 90 dBA are allowed on Saturday.
- c. No construction is allowed on Sunday or federal holidays.

Construction activities include, but are not limited to, truck idling, moving equipment (including trucks, elevators, etc.) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.

Any construction activity proposed outside of the above days and hours for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case-by-case basis by the

City, with criteria including the urgency/emergency nature of the work, the proximity of residential or other sensitive uses, and a consideration of nearby residents'/occupants' preferences. The project applicant shall notify property owners and occupants located within 300 feet at least 14 calendar days prior to construction activity proposed outside of the above days/hours. When submitting a request to the City to allow construction activity outside of the above days/hours, the project applicant shall submit information concerning the type and duration of proposed construction activity and the draft public notice for City review and approval prior to distribution of the public notice.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

### 13. Construction Noise

Requirement: The project applicant shall implement noise reduction measures to reduce noise impacts due to construction. Noise reduction measures include, but are not limited to, the following:

- a. Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.
- b. Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- c. Applicant shall use temporary power poles instead of generators where feasible.
- d. Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.
- e. The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

### 14. Extreme Construction Noise

#### *a. Construction Noise Management Plan Required*

Requirement: Prior to any extreme noise generating construction activities (e.g., pier drilling, pile driving and other activities generating greater than 90dBA), the project applicant shall submit a Construction Noise Management Plan prepared by a qualified acoustical consultant for City review and approval that contains a set of site-specific noise attenuation measures to further reduce construction impacts associated with extreme noise generating activities. The project applicant shall implement the approved Plan during construction. Potential attenuation measures include, but are not limited to, the following:

- i. Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- ii. Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;

- iii. Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;
- iv. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and
- v. Monitor the effectiveness of noise attenuation measures by taking noise measurements.

When Required: Prior to approval of construction-related permit

Initial Approval: Bureau of Building

Monitoring/Inspection: Bureau of Building

**b. *Public Notification Required***

Requirement: The project applicant shall notify property owners and occupants located within 300 feet of the construction activities at least 14 calendar days prior to commencing extreme noise generating activities. Prior to providing the notice, the project applicant shall submit to the City for review and approval the proposed type and duration of extreme noise generating activities and the proposed public notice. The public notice shall provide the estimated start and end dates of the extreme noise generating activities and describe noise attenuation measures to be implemented.

When Required: During construction

Initial Approval: Bureau of Building

Monitoring/Inspection: Bureau of Building

**15. Operational Noise**

Requirement: Noise levels from the project site after completion of the project (i.e., during project operation) shall comply with the performance standards of chapter 17.120 of the Oakland Planning Code and chapter 8.18 of the Oakland Municipal Code. If noise levels exceed these standards, the activity causing the noise shall be abated until appropriate noise reduction measures have been installed and compliance verified by the City.

When Required: Ongoing

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

**16. Construction Activity in the Public Right-of-Way**

**a. *Obstruction Permit Required***

Requirement: The project applicant shall obtain an obstruction permit from the City prior to placing any temporary construction-related obstruction in the public right-of-way, including City streets and sidewalks.

When Required: Prior to approval of construction-related permit

Initial Approval: Bureau of Building

Monitoring/Inspection: Bureau of Building

**b. *Traffic Control Plan Required***

Requirement: In the event of obstructions to vehicle or bicycle travel lanes, the project applicant shall submit a Traffic Control Plan to the City for review and approval prior to obtaining an obstruction permit. The project applicant shall submit evidence of City approval of the Traffic Control Plan with the application for an obstruction permit. The Traffic Control Plan shall contain a set of comprehensive traffic control measures for auto, transit, bicycle, and pedestrian detours, including detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. The project applicant shall implement the approved Plan during construction.

When Required: Prior to approval of construction-related permit

Initial Approval: Public Works Department, Transportation Services Division

Monitoring/Inspection: Bureau of Building

**c. Repair of City Streets**

Requirement: The project applicant shall repair any damage to the public right-of way, including streets and sidewalks caused by project construction at his/her expense within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to approval of the final inspection of the construction-related permit. All damage that is a threat to public health or safety shall be repaired immediately.

When Required: Prior to building permit final

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

**17. Construction and Demolition Waste Reduction and Recycling**

Requirement: The project applicant shall comply with the City of Oakland Construction and Demolition Waste Reduction and Recycling Ordinance (chapter 15.34 of the Oakland Municipal Code) by submitting a Construction and Demolition Waste Reduction and Recycling Plan (WRRP) for City review and approval, and shall implement the approved WRRP. Projects subject to these requirements include all new construction, renovations/alterations/modifications with construction values of \$50,000 or more (except R-3 type construction), and all demolition (including soft demolition) except demolition of type R-3 construction. The WRRP must specify the methods by which the project will divert construction and demolition debris waste from landfill disposal in accordance with current City requirements. The WRRP may be submitted electronically at [www.greenhalosystems.com](http://www.greenhalosystems.com) or manually at the City’s Green Building Resource Center. Current standards, FAQs, and forms are available on the City’s website and in the Green Building Resource Center.

When Required: Prior to approval of construction-related permit

Initial Approval: Public Works Department, Environmental Services Division

Monitoring/Inspection: Public Works Department, Environmental Services Division

**PROJECT SPECIFIC CONDITIONS**

**18. Radio Frequency Emissions**

Requirement: A RF emissions report shall be submitted to the Planning Bureau indicating that the site is actually operating within the acceptable thresholds as established by the Federal government or any such agency who may be subsequently authorized to establish such standards.

When Required: Prior to final building permit inspection sign-off

Initial Approval: N/A

Monitoring/Inspection: N/A

**19. Camouflage**

Requirement: The antenna and equipment shall be painted, texturized to match existing structure.

When Required: Prior to a final inspection

Initial Approval: N/A

**20. Height Limitation**

***Ongoing.***

The maximum height of the screening enclosure shall be 10 feet. Any height beyond 10 feet would compromise the appropriate scale and proportionality with the existing building mass.





DISH Wireless L.L.C. SITE ID:

**SFSFO00959B**

DISH Wireless L.L.C. SITE ADDRESS:

**2943 MACARTHUR BLVD  
OAKLAND, CA 94602**

**CALIFORNIA - CODE COMPLIANCE**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2019 CALIFORNIA BUILDING CODE (CBC)/2018 IBC
MECHANICAL	2019 CALIFORNIA MECHANICAL CODE (CMC)/2018 UMC
ELECTRICAL	2019 CALIFORNIA ELECTRICAL CODE (CEC)/2017 NEC

**SHEET INDEX**

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL SITE PLAN
A-2	ENLARGED BUILDING PLAN
A-3	ANTENNA PLAN, ELEVATION AND SCHEDULE
A-4	NORTH AND SOUTH ELEVATIONS
A-5	EAST AND WEST ELEVATIONS
A-6	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-7	EQUIPMENT DETAILS
A-8	EQUIPMENT DETAILS
A-9	EQUIPMENT DETAILS

**SCOPE OF WORK**

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

- ROOFTOP ANTENNA SCOPE OF WORK:**
- INSTALL (6) PROPOSED PANEL ANTENNAS (2 PER SECTOR, TOTAL OF 6)
  - INSTALL (2) PROPOSED WALL MOUNTS (TOTAL OF 2)
  - INSTALL (2) PROPOSED NON-PENETRATED SLED MOUNT (TOTAL OF 2)
  - INSTALL PROPOSED JUMPERS
  - INSTALL (12) PROPOSED RRU's (4 PER SECTOR)
  - INSTALL (3) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) (1 PER SECTOR)
  - INSTALL (3) PROPOSED DC POWER CABLES
  - INSTALL (3) PROPOSED FIBER CABLES
  - INSTALL (2) PROPOSED 10'-6"H x 8'-0"W x 2'-6"D SCREEN WALL FOR ALPHA BETA SECTORS (PAINTED AND TEXTURED TO MATCH EXISTING BUILDING)
  - INSTALL (1) PROPOSED 13'-6"H x 8'-0"W x 2'-6"D SCREEN WALL FOR GAMMA SECTOR (PAINTED AND TEXTURED TO MATCH EXISTING BUILDING)
  - INSTALL PROPOSED CABLE LADDER TRAY OR CABLE TRAY
- ROOFTOP EQUIPMENT 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
  - INSTALL (1) PROPOSED 4'-0"Hx11'-0"W SCREEN WALL FOR EQUIPMENT PLATFORM

**SITE PHOTO**



**UNDERGROUND SERVICE ALERT**  
UTILITY NOTIFICATION CENTER OF CALIFORNIA  
(800) 642-2444  
WWW.CALIFORNIA811.ORG  
CALL 2-14 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION



**GENERAL NOTES**

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

**SITE INFORMATION**

PROPERTY OWNER: C FUND LLC  
ADDRESS: 2943 MACARTHUR BLVD  
OAKLAND, CA 94602  
SITE TYPE: ROOFTOP  
COUNTY: ALAMEDA  
LATITUDE (NAD 83): 37.797637  
LONGITUDE (NAD 83): -122.206109  
ZONING JURISDICTION: CITY OF OAKLAND  
ZONING DISTRICT: RU-4  
PARCEL NUMBER: 28-916-20  
OCCUPANCY GROUP: U  
CONSTRUCTION TYPE: V-B  
POWER COMPANY: PG&E  
TELEPHONE COMPANY: AT&T INTERNET SERVICES

**PROJECT DIRECTORY**

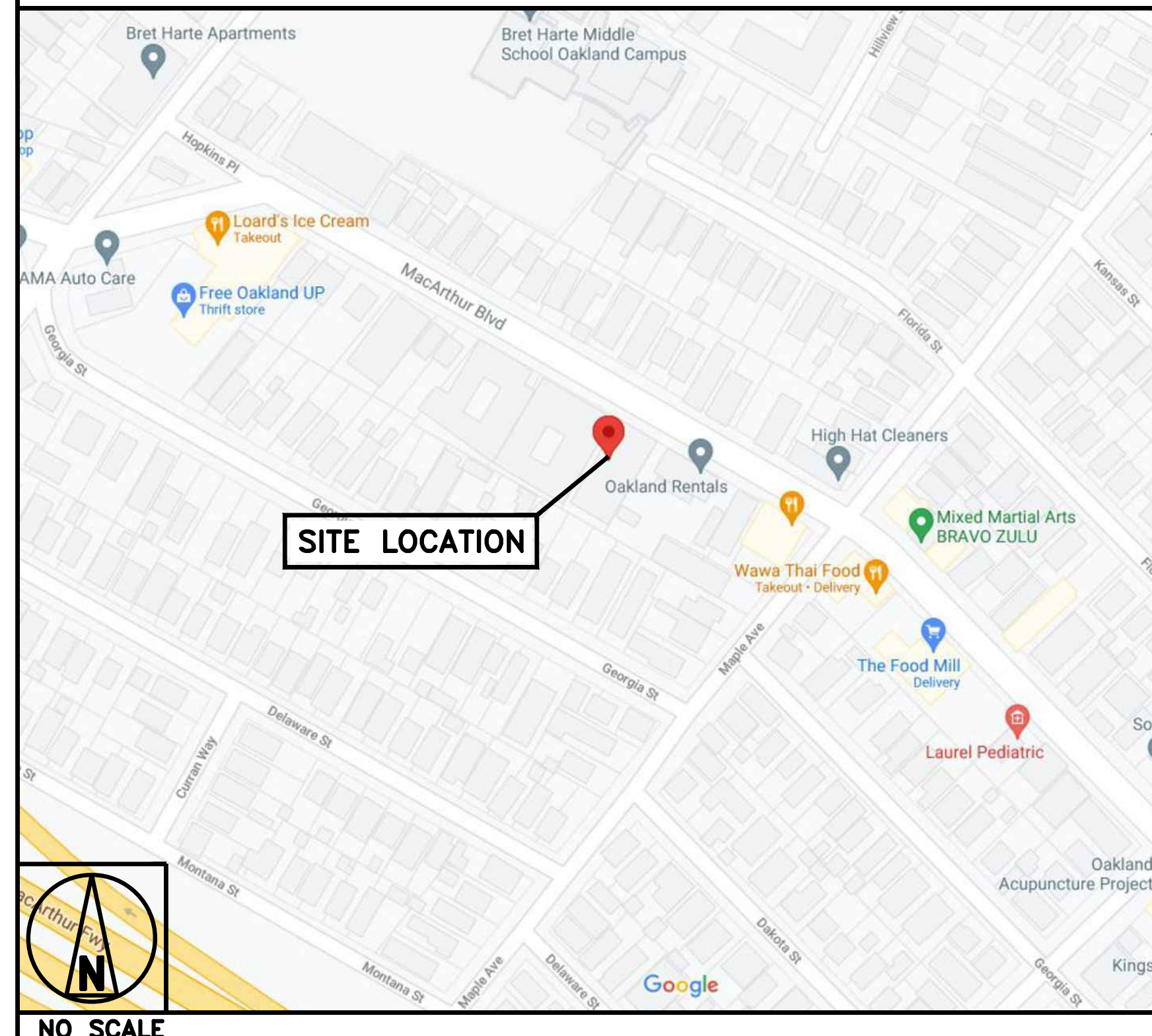
APPLICANT: DISH Wireless L.L.C.  
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120  
SITE DESIGNER: NEXIUS SOLUTIONS, INC.  
2595 NORTH DALLAS PKWY, SUITE 300  
FRISCO, TX 75034  
(972) 581-9888

**DIRECTIONS**

**DIRECTIONS FROM SAN FRANCISCO INTERNATIONAL AIRPORT (SFO):**

1. START OUT GOING EAST ON AIRPORT ACCESS RD.
2. TURN SLIGHT LEFT TOWARD US-101/1-380/1-280
3. TURN SLIGHT LEFT ONTO AIRPORT ACCESS RD.
4. TAKE THE I-380 W RAMP TOWARD SAN BRUNO/1-280.
5. MERGE ONTO US-101 N TOWARD SAN FRANCISCO.
6. MERGE ONTO I-80 E VIA EXIT 433B TOWARD BAY BRIDGE.
7. MERGE ONTO I-580 E VIA EXIT 8B TOWARD CA-24/HAYWARD-STOCKTON.
8. TAKE THE FRUITVALE AVE EXIT, EXIT 23.
9. STAY STRAIGHT TO GO ONTO HAROLD ST.
10. TURN LEFT ONTO COOLIDGE AVE.
11. TURN SLIGHT RIGHT ONTO MACARTHUR BLVD.
12. 37.797637,-122.206109, 2943 MACARTHUR BLVD IS ON THE LEFT.

**VICINITY MAP**



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

**Attachment C**

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
MC	MDC	MDC

RFDS REV #: REV 2 - 8/25/21

**ZONING DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/21/2021	ISSUED FOR REVIEW
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D	03/11/2022	PER DISH REDLINES

A&E PROJECT NUMBER  
SFSFO00959B

DISH Wireless L.L.C.  
PROJECT INFORMATION

SFSFO00959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
TITLE SHEET

SHEET NUMBER

**T-1**

**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.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

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DRAWN BY:	CHECKED BY:	APPROVED BY:
MC	MDC	MDC

RFDS REV #: REV 2 - 8/25/21

**ZONING DOCUMENTS**

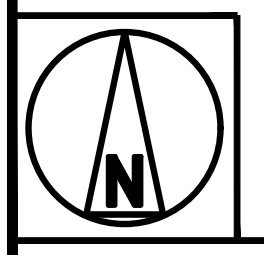
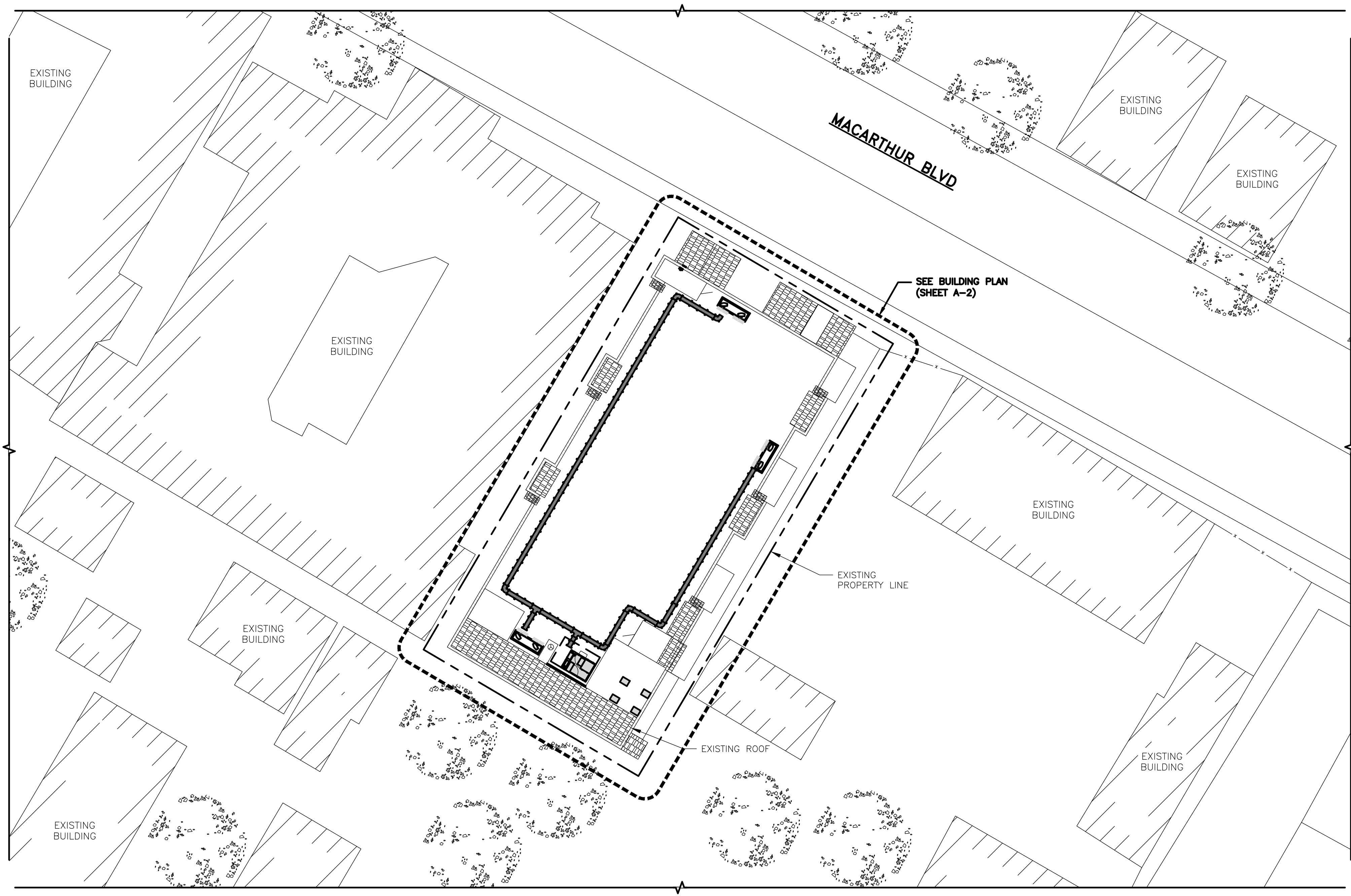
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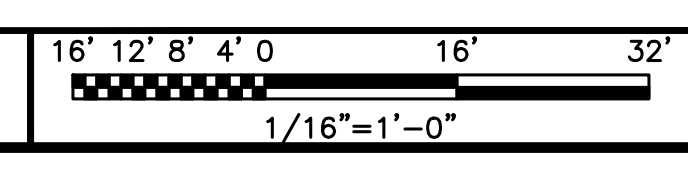
DISH Wireless L.L.C.  
PROJECT INFORMATION  
**SFSF000959B**  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
**OVERALL SITE PLAN**

SHEET NUMBER  
**A-1**



**OVERALL SITE PLAN**



**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. UTILITY RUBBER MAT TO BE 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



2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

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DRAWN BY: CHECKED BY: APPROVED BY:

MC MDC MDC

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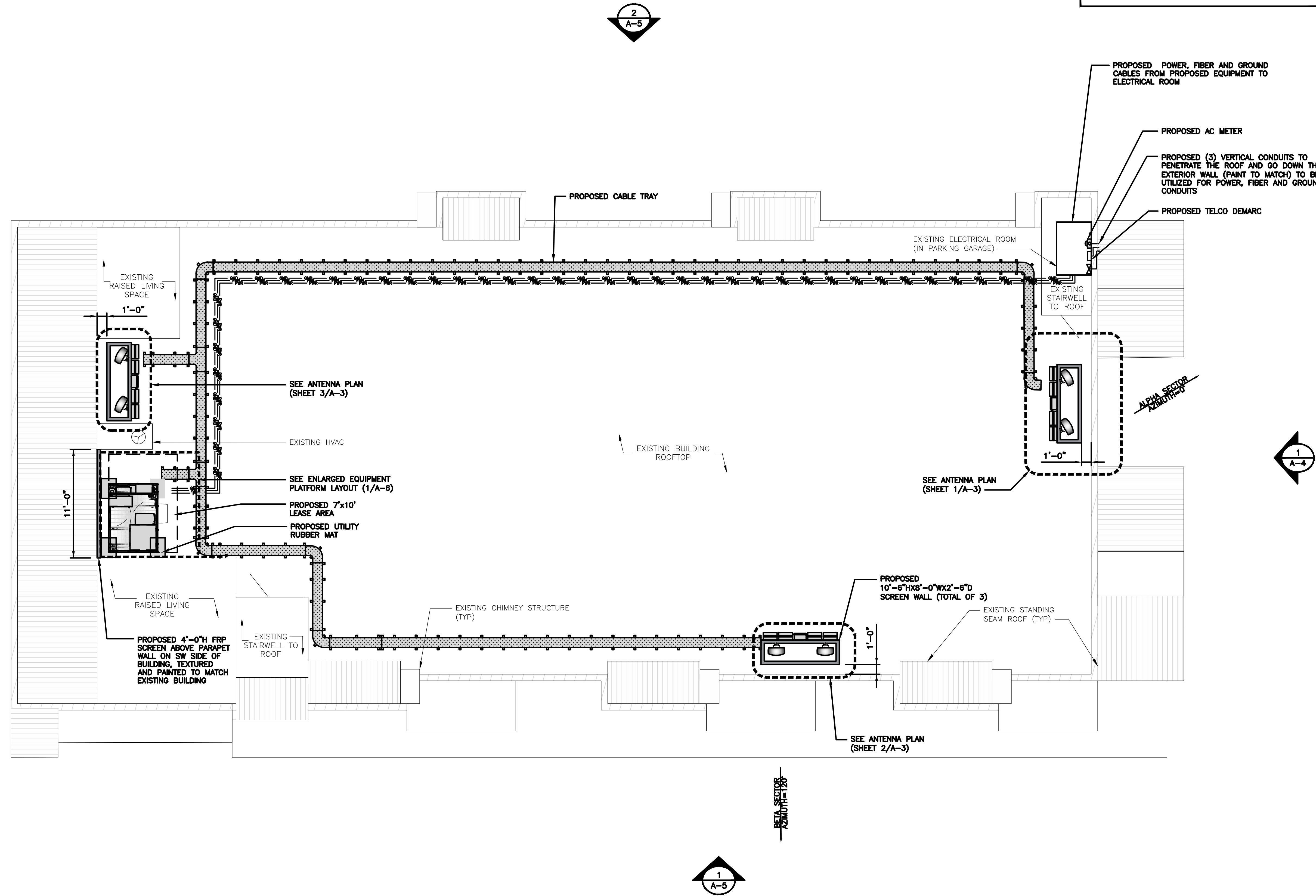
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PROJECT INFORMATION  
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OAKLAND, CA 94602

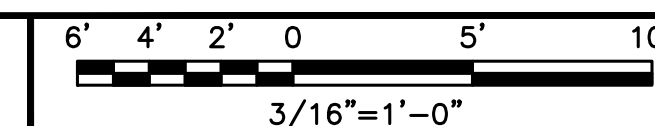
SHEET TITLE  
ENLARGED BUILDING PLAN

SHEET NUMBER

**A-2**

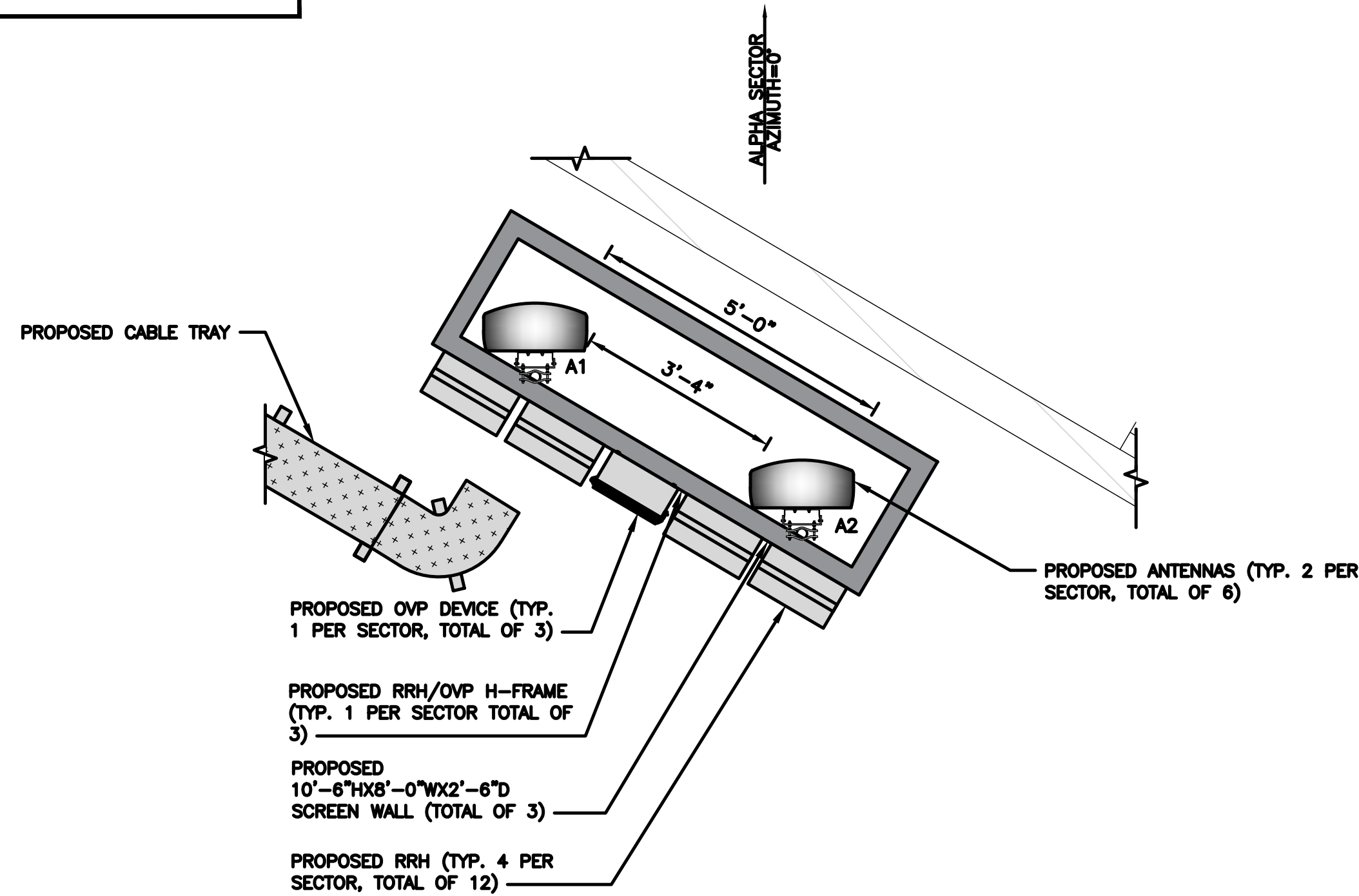


**ENLARGED BUILDING PLAN**

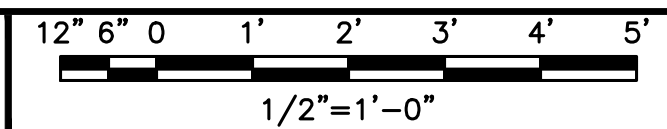


**NOTES**

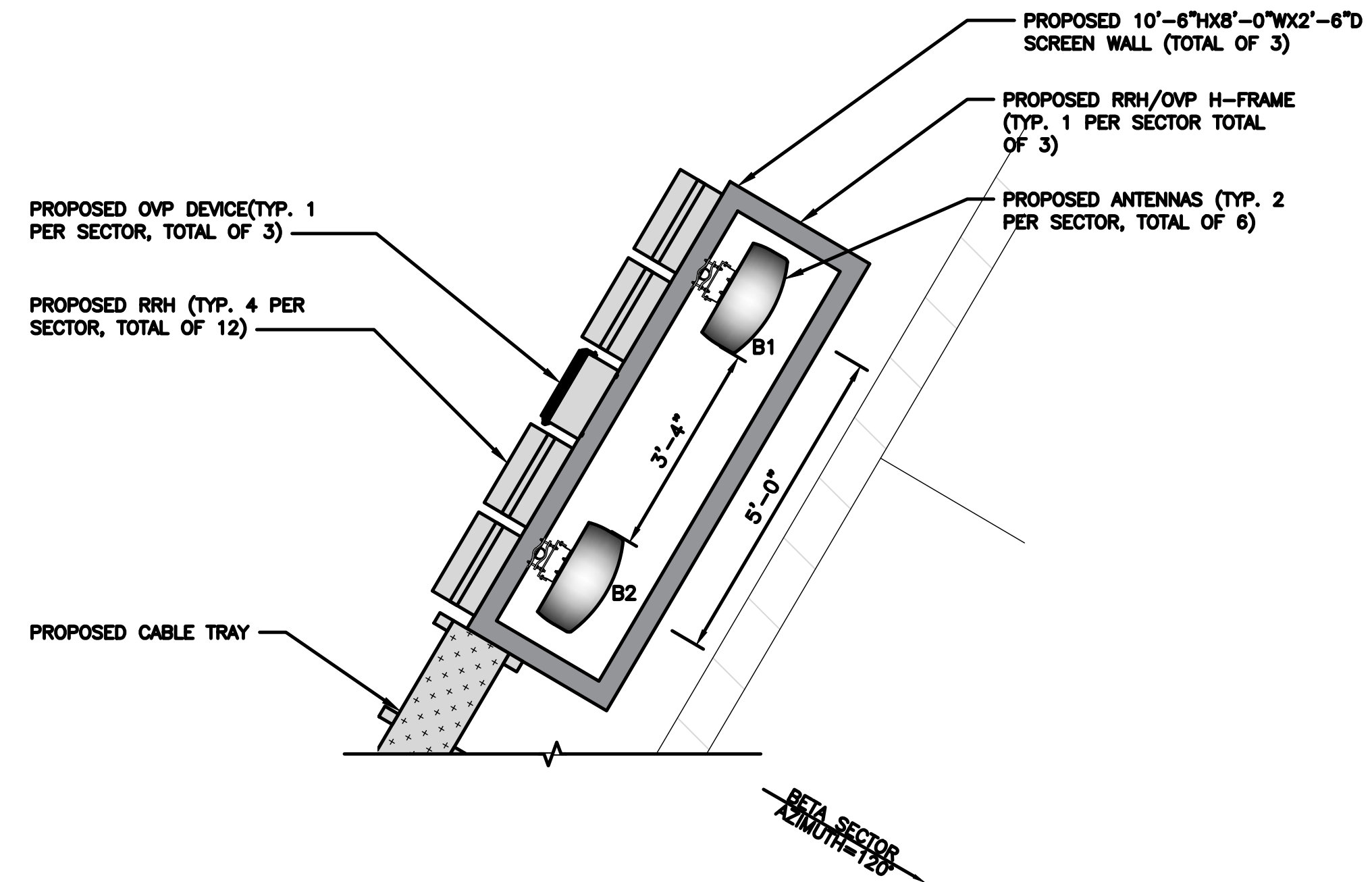
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.



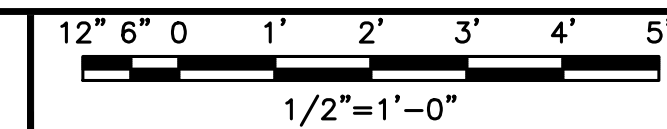
**ANTENNA PLAN – ALPHA SECTOR**



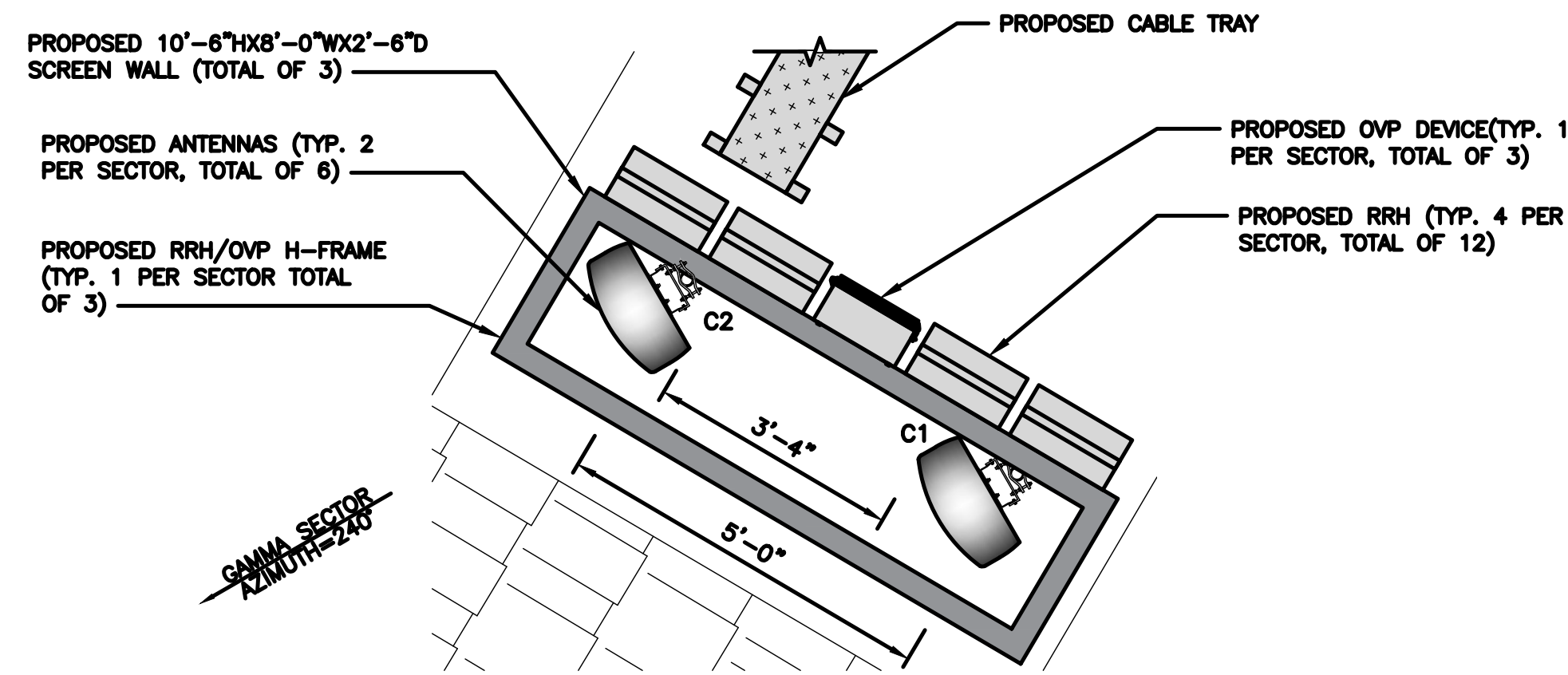
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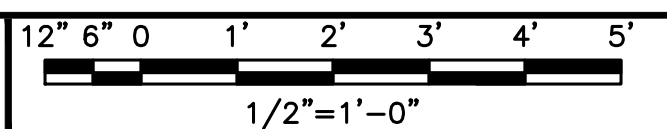
**ANTENNA PLAN – BETA & GAMMA SECTOR**



2



**ANTENNA PLAN – GAMMA SECTOR**



3

SECTOR	POSITION	ANTENNA					TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA – MX08FRO665–21	n66 n70 n71	72.0" x 20.0"	0°	44'–0"	DC–C06C08–07FT_BAWG FT–LCULCU–D8SMA–107FT
	A2	PROPOSED	JMA – MX08FRO665–21	n66 n70 n71	72.0" x 20.0"	0°	44'–0"	DC–C06C08–07FT_BAWG FT–LCULCU–D8SMA–107FT
BETA	B1	PROPOSED	JMA – MX08FRO665–21	n66 n70 n71	72.0" x 20.0"	120°	44'–0"	DC–C06C08–10FT_BAWG FT–LCULCU–D8SMA–10FT
	B2	PROPOSED	JMA – MX08FRO665–21	n66 n70 n71	72.0" x 20.0"	120°	44'–0"	DC–C06C08–10FT_BAWG FT–LCULCU–D8SMA–10FT
GAMMA	C1	PROPOSED	JMA – MX08FRO665–21	n66 n70 n71	72.0" x 20.0"	240°	47'–0"	DC–C06C08–9FT_BAWG FT–LCULCU–D8SMA–9FT
	C2	PROPOSED	JMA – MX08FRO665–21	n66 n70 n71	72.0" x 20.0"	240°	47'–0"	DC–C06C08–9FT_BAWG FT–LCULCU–D8SMA–9FT
SECTOR	POSITION	RRH		NOTES				
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY					
ALPHA	A1	MTI – G060708–50–02B	n71	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.				
	A1	MTI – G2021–49–02B	n66   n70					
	AB	MTI – G060708–50–02B	n71					
BETA	B1	MTI – G060708–50–02B	n71					
	B1	MTI – G2021–49–02B	n66   n70					
	B2	MTI – G060708–50–02B	n71					
GAMMA	C1	MTI – G060708–50–02B	n71					
	C1	MTI – G2021–49–02B	n66   n70					
	C2	MTI – G060708–50–02B	n71					
	C2	MTI – G2021–49–02B	n66   n70					

**ANTENNA SCHEDULE**

NO SCALE

4



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

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DRAWN BY: CHECKED BY: APPROVED BY:  
MC MDC MDC

RFDS REV #: REV 2 – 8/25/21

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DISH Wireless L.L.C.  
PROJECT INFORMATION  
SFSF000959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
ANTENNA PLAN,  
ELEVATION AND SCHEDULE

SHEET NUMBER

**A-3**

- TOP OF PROPOSED FRP SCREEN  
RAD CENTER ● 47'-0" AGL
- EXISTING TOP OF STAIRWELL  
45'-0" AGL
- (4) PROPOSED ANTENNA (TYPICAL 2 PER SECTOR, TOTAL OF 6)  
RAD CENTER ● 44'-0" AGL
- EXISTING BUILDING PARAPET  
42'-0" AGL
- EXISTING BUILDING ROOF  
36'-6" AGL

EXISTING RAISED LIVING SPACE AND STAIRWELL PENTHOUSE LOCATED AT SW SIDE OF BUILDING, SHOWN HERE IN ELEVATION ONLY

PROPOSED 10'-6"H x 8'-0"W x 2'-6"D SCREEN WALL (TOTAL OF 2) PAINTED AND TEXTURED TO MATCH EXISTING BUILDING

PROPOSED BETA ANTENNAS (TYP. 2 PER SECTOR, TOTAL OF 6)

PROPOSED OVP DEVICE (TYP. 2 PER SECTOR, TOTAL OF 6)

PROPOSED RRH (TYP. 4 PER SECTOR, TOTAL OF 12)

PROPOSED RRH/OVP H-FRAME (TYP. 1 PER SECTOR TOTAL OF 3)

RADIO EQUIPMENT LOCATED AT SW SIDE OF BUILDING, SHOWN HERE IN ELEVATION ONLY

PROPOSED 4'-0"H FRP SCREEN ABOVE PARAPET WALL ON SW SIDE OF BUILDING, TEXTURED AND PAINTED TO MATCH EXISTING BUILDING

PROPOSED 10'-6"H x 8'-0"W x 2'-6"D SCREEN WALL (TOTAL OF 2) PAINTED AND TEXTURED TO MATCH EXISTING BUILDING

PROPOSED OVP DEVICE (TYP. 2 PER SECTOR, TOTAL OF 6)

PROPOSED RRH (TYP. 4 PER SECTOR, TOTAL OF 12)

PROPOSED ALPHA ANTENNAS (TYP. 2 PER SECTOR, TOTAL OF 6)

EXISTING STANDING SEAM ROOF

EXISTING TREES

PROPOSED (3) VERTICAL CONDUITS TO PENETRATE THE ROOF AND GO DOWN THE EXTERIOR WALL (PAINT TO MATCH) TO BE UTILIZED FOR POWER, FIBER AND GROUND CONDUITS

EXISTING ELECTRICAL ROOM (IN PARKING GARAGE)

PROPOSED AC METER

PROPOSED TELCO DEMARC

EXISTING GRADE  
0'-0" AGL

**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.

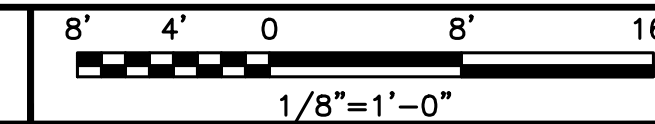


5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

**BUILDING NORTHEAST ELEVATION**



1

- TOP OF PROPOSED FRP SCREEN  
50'-0" AGL
- (2) PROPOSED ANTENNA  
RAD CENTER ● 47'-0" AGL
- EXISTING TOP OF STAIRWELL  
45'-0" AGL
- (4) PROPOSED ANTENNA (TYPICAL 2 PER SECTOR, TOTAL OF 6)  
RAD CENTER ● 44'-0" AGL
- EXISTING BUILDING PARAPET  
42'-0" AGL
- EXISTING BUILDING ROOF  
36'-6" AGL

PROPOSED 13'-6"H x 8'-0"W x 2'-6"D SCREEN WALL (TOTAL OF 1) PAINTED AND TEXTURED TO MATCH EXISTING BUILDING

PROPOSED GAMMA ANTENNAS (TYP. 2 PER SECTOR, TOTAL OF 6)

PROPOSED RRH/OVP H-FRAME (TYP. 1 PER SECTOR TOTAL OF 3)

PROPOSED OVP (TYP. 2 PER SECTOR, TOTAL OF 6)

PROPOSED RRH (TYP. 4 PER SECTOR, TOTAL OF 12)

RADIO EQUIPMENT LOCATED AT SW SIDE OF BUILDING, SHOWN HERE IN ELEVATION ONLY

PROPOSED 4'-0"H FRP SCREEN ABOVE PARAPET WALL ON SW SIDE OF BUILDING, TEXTURED AND PAINTED TO MATCH EXISTING BUILDING

PROPOSED 10'-6"H x 8'-0"W x 2'-6"D SCREEN WALL (TOTAL OF 2) PAINTED AND TEXTURED TO MATCH EXISTING BUILDING

PROPOSED RRH/OVP H-FRAME (TYP. 1 PER SECTOR TOTAL OF 3)

PROPOSED RRH (TYP. 4 PER SECTOR, TOTAL OF 12)

PROPOSED OVP DEVICE (TYP. 2 PER SECTOR, TOTAL OF 6)

PROPOSED BETA ANTENNAS (TYP. 2 PER SECTOR, TOTAL OF 6)

EXISTING RAISED LIVING SPACE AND STAIRWELL PENTHOUSE LOCATED AT SW SIDE OF BUILDING, SHOWN HERE IN ELEVATION ONLY

**NOTES**

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MC MDC MDC

RFDS REV #: REV 2 - 8/25/21

**ZONING DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/21/2021	ISSUED FOR REVIEW
B	08/17/21	PER DISH REDLINES
C	10/12/21	PER DISH REDLINES
D	03/11/2022	PER DISH REDLINES

A&E PROJECT NUMBER  
SFSF000959B

DISH Wireless L.L.C.  
PROJECT INFORMATION

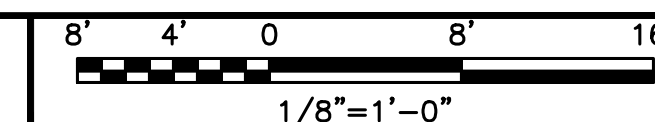
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2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
NORTH AND SOUTH  
ELEVATIONS

SHEET NUMBER

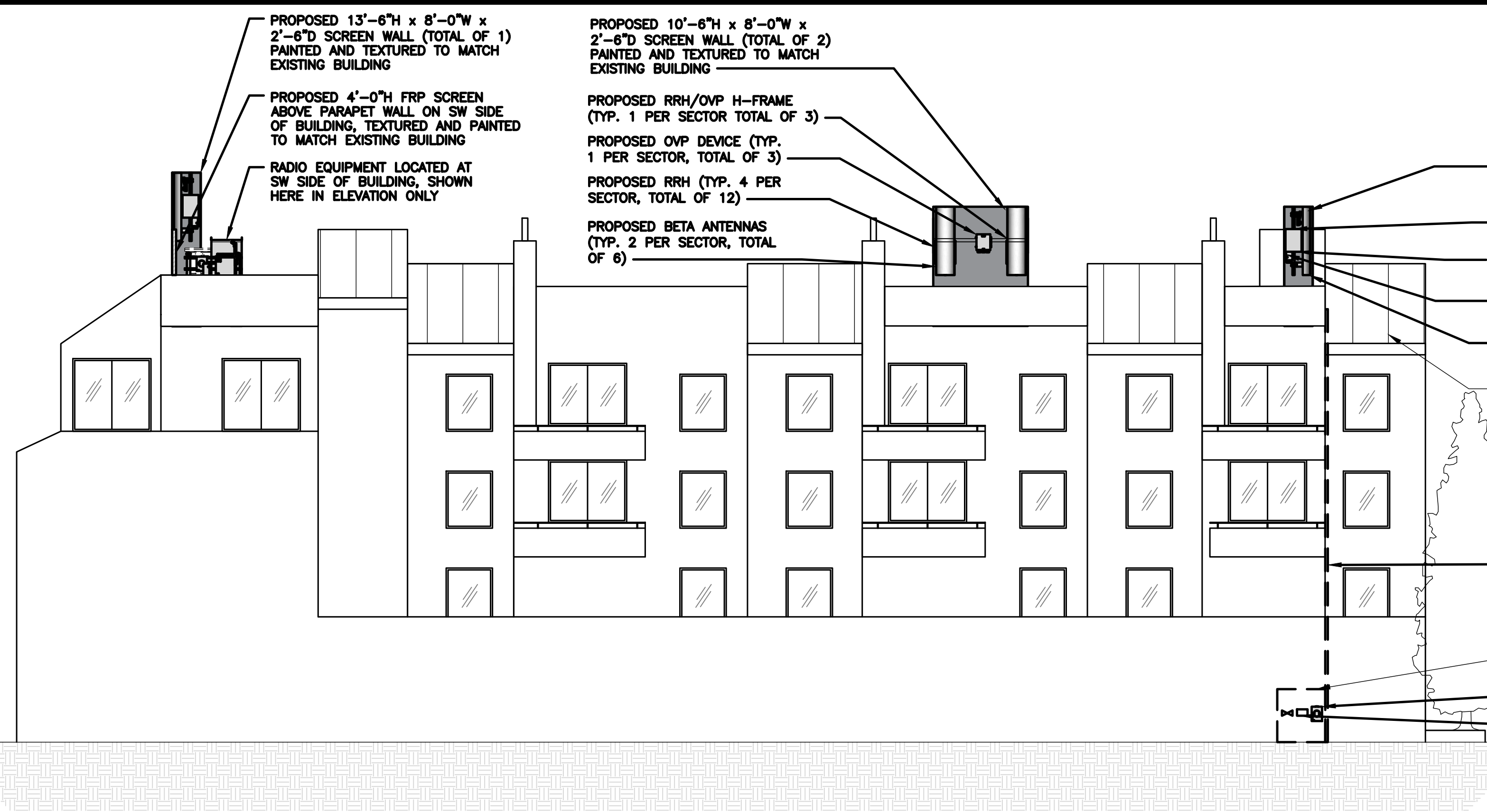
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**BUILDING SOUTHWEST ELEVATION**



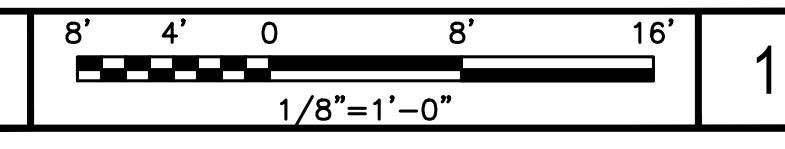
2

- TOP OF PROPOSED FRP SCREEN (GAMMA)  
50'-0" AGL
- (2) PROPOSED ANTENNAS (TYP 2 PER SECTOR, TOTAL OF 6)  
RAD CENTER ● 47'-0" AGL
- TOP OF PROPOSED FRP SCREEN (ALPHA & BETA)  
47'-0" AGL
- EXISTING TOP OF STAIRWELL  
45'-0" AGL
- (4) PROPOSED ANTENNA (TYPICAL 2 PER SECTOR, TOTAL OF 6)  
RAD CENTER ● 44'-0" AGL
- EXISTING BUILDING PARAPET  
42'-0" AGL
- EXISTING BUILDING ROOF  
36'-6" AGL
- EXISTING GRADE  
0'-0" AGL

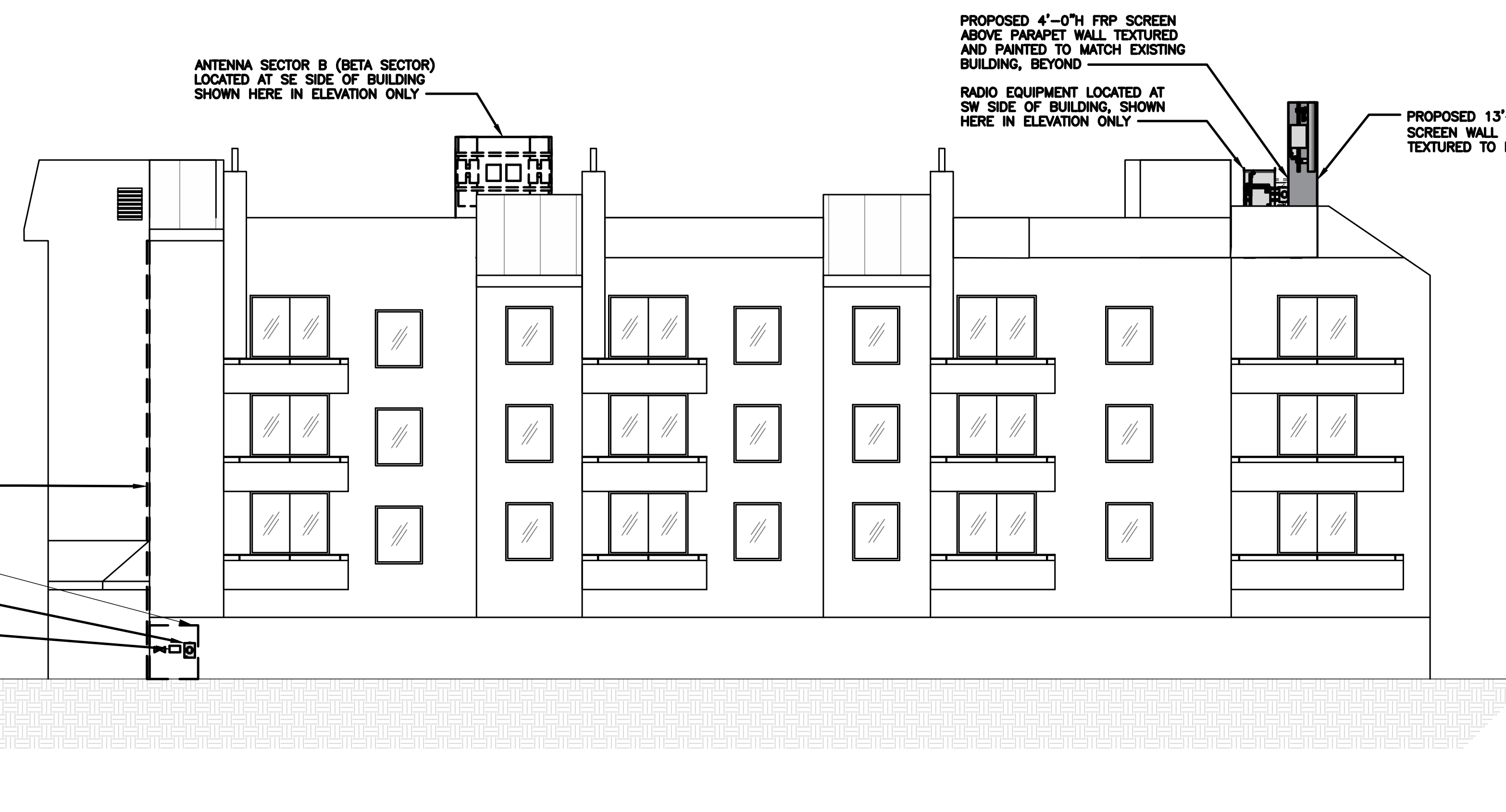


- NOTES**
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  2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.

**BUILDING SOUTHEAST ELEVATION**

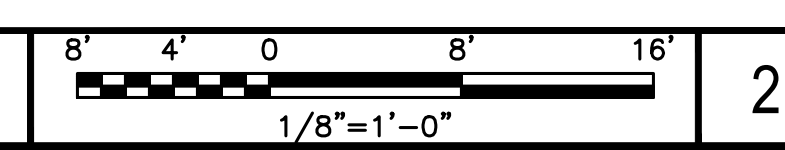


- TOP OF PROPOSED FRP SCREEN (GAMMA)  
50'-0" AGL
- (2) PROPOSED ANTENNAS (TYP 2 PER SECTOR, TOTAL OF 6)  
RAD CENTER ● 47'-0" AGL
- TOP OF PROPOSED FRP SCREEN (ALPHA & BETA)  
47'-0" AGL
- EXISTING TOP OF STAIRWELL  
45'-0" AGL
- (4) PROPOSED ANTENNA (TYPICAL 2 PER SECTOR, TOTAL OF 6)  
RAD CENTER ● 44'-0" AGL
- EXISTING BUILDING PARAPET  
42'-0" AGL
- EXISTING BUILDING ROOF  
36'-6" AGL
- EXISTING GRADE  
0'-0" AGL



- NOTES**
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**BUILDING NORTHWEST ELEVATION**



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MC	MDC	MDC

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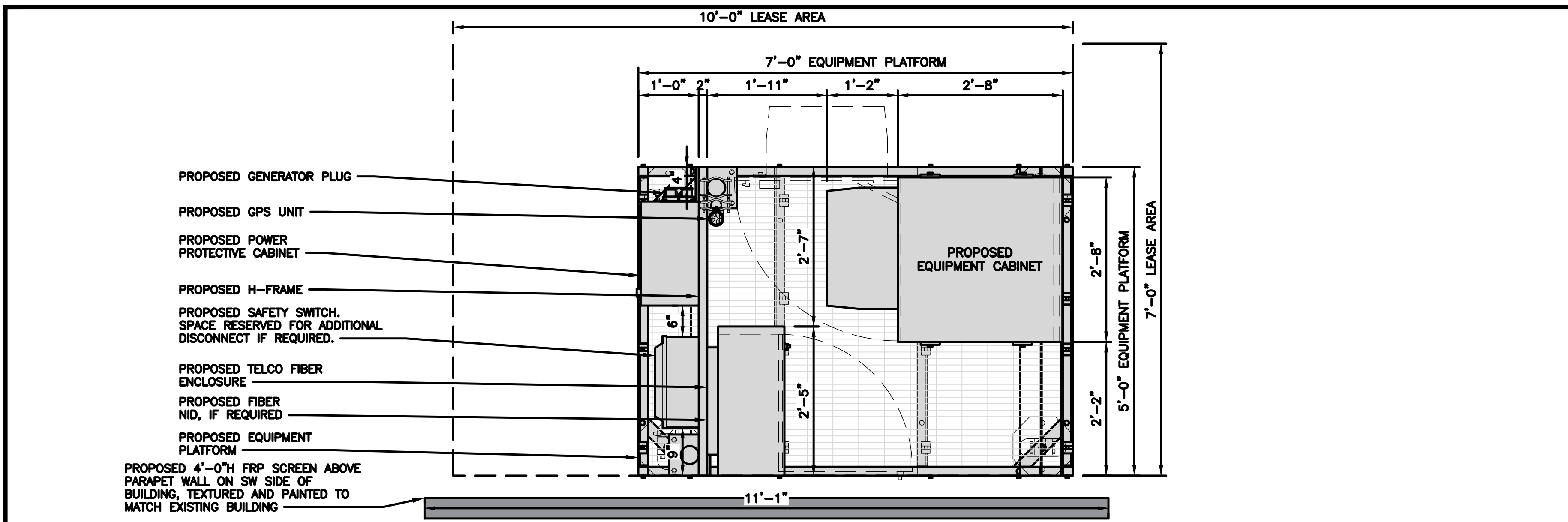
SUBMITTALS		
REV	DATE	DESCRIPTION
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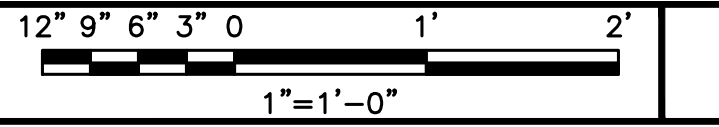
DISH Wireless L.L.C.  
PROJECT INFORMATION  
SFSF00959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
**EAST AND WEST ELEVATIONS**

SHEET NUMBER  
**A-5**



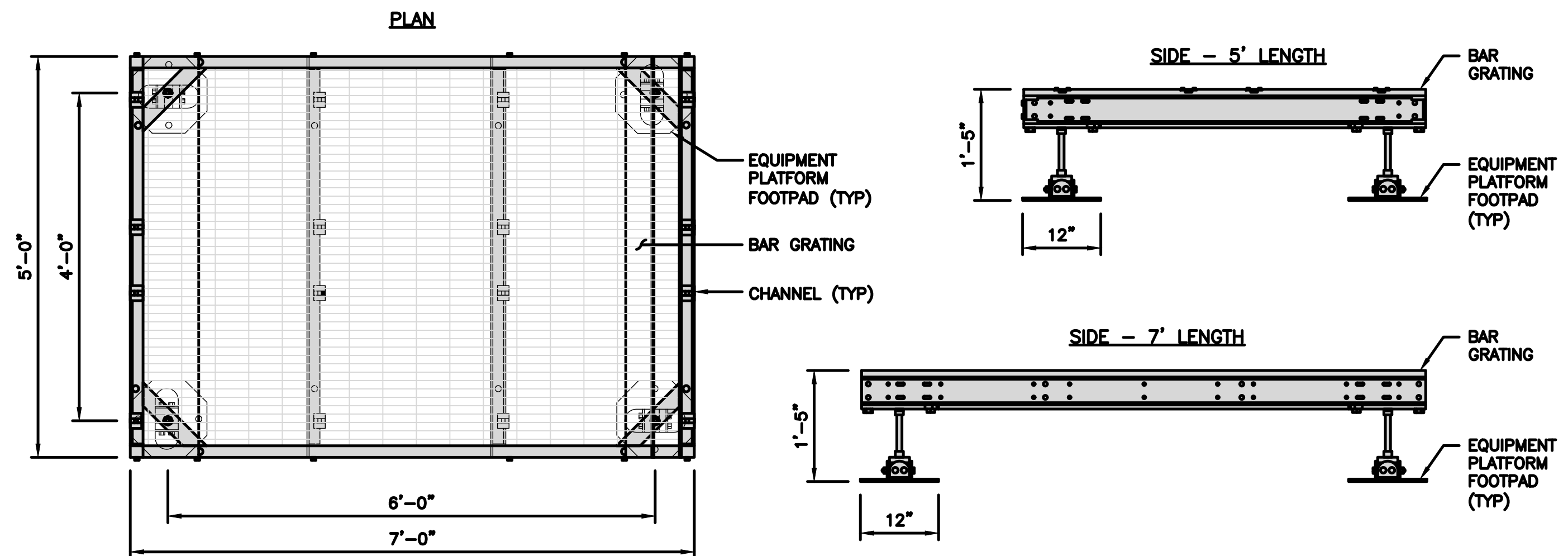
PLATFORM EQUIPMENT PLAN



1

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

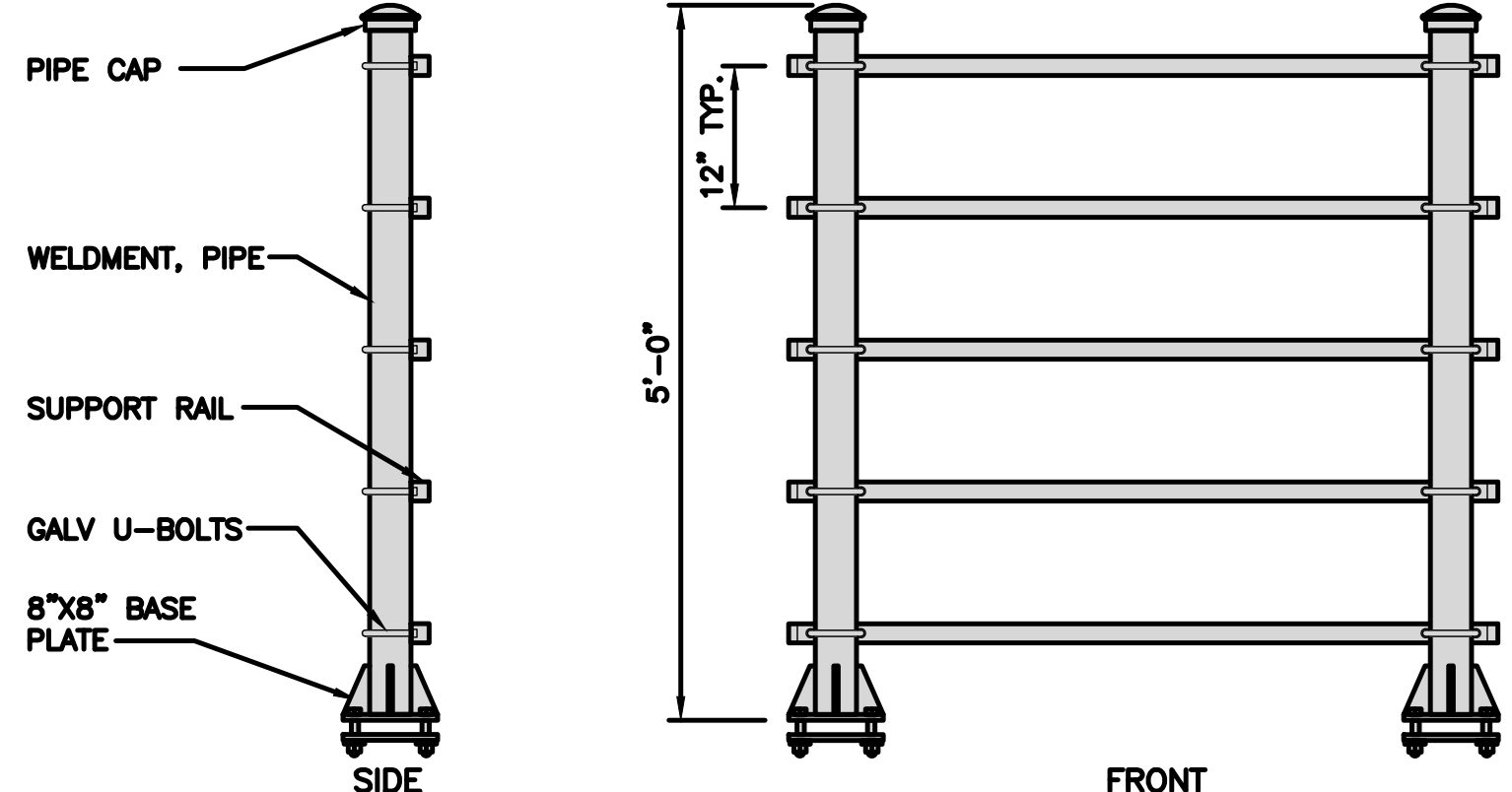
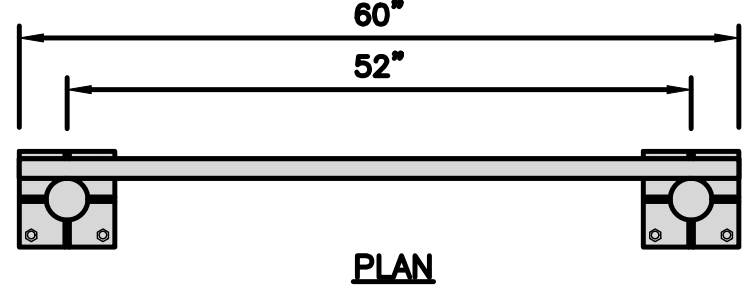
NOTE:  
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL

NO SCALE 2

<b>KENWOOD T1701KT5-5S H-FRAME</b>	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS



H-FRAME DETAIL

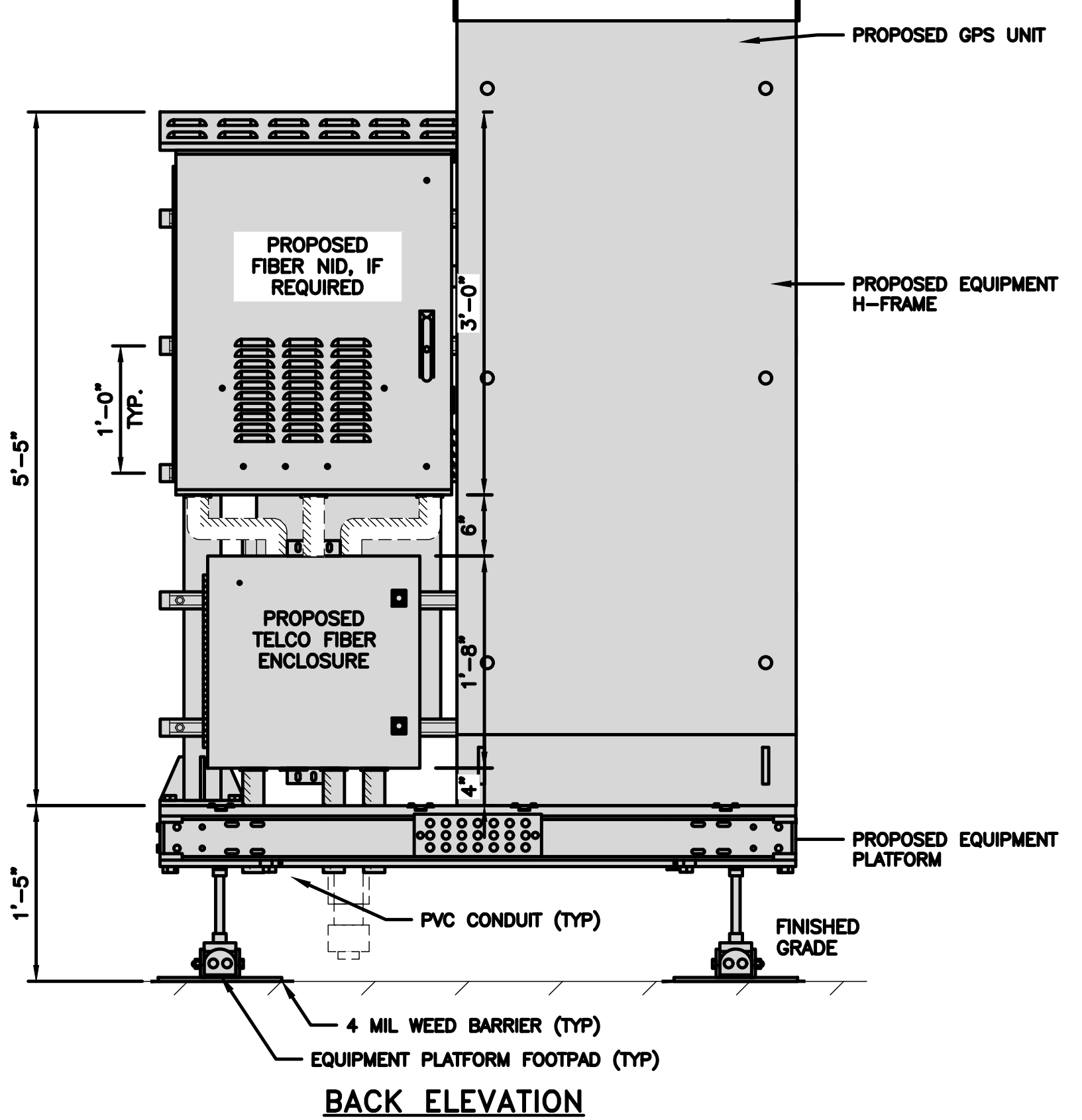
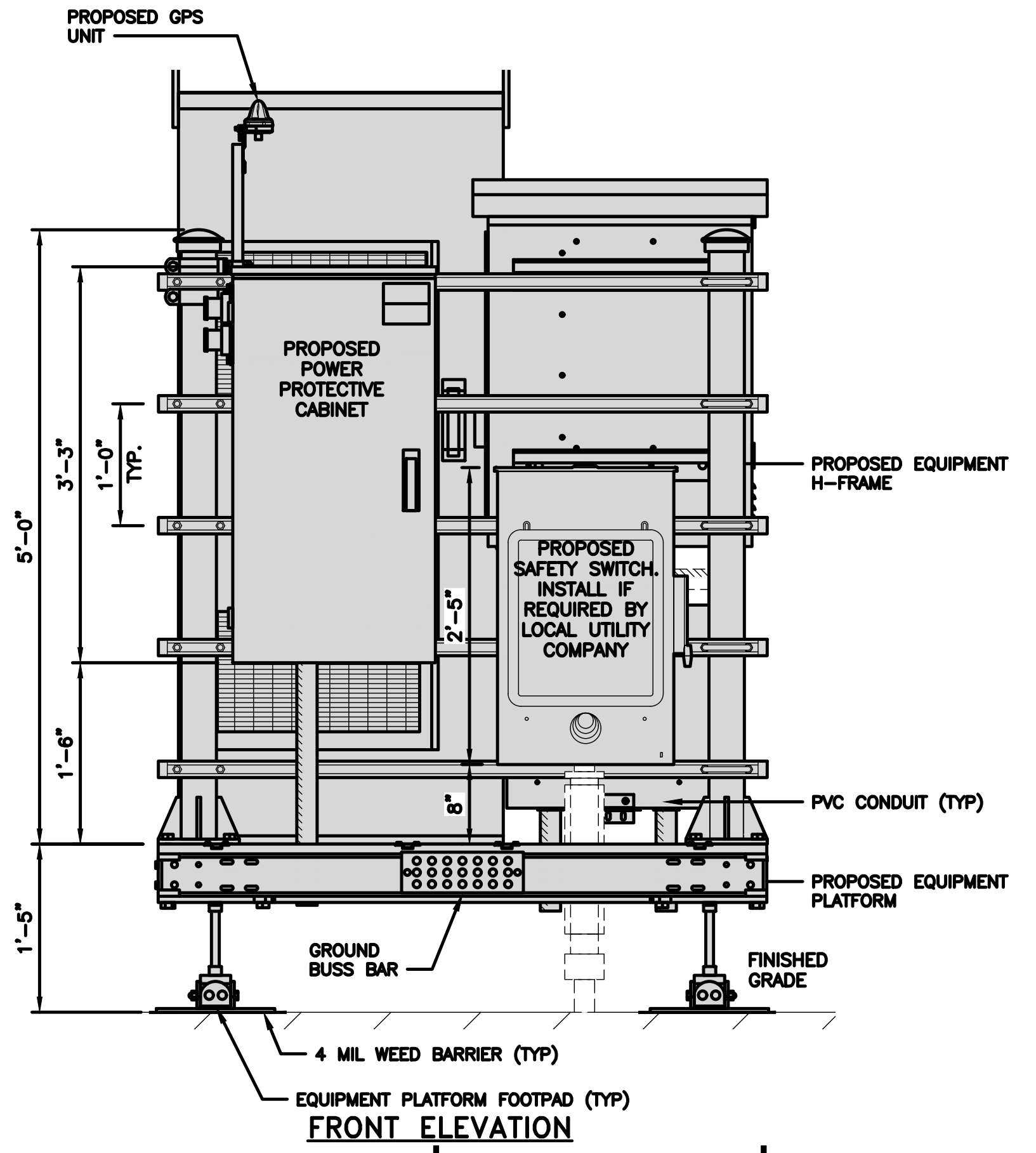
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NOT USED

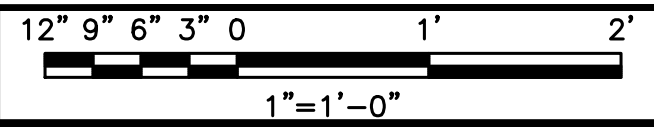
NO SCALE 4

NOTE

1. EQUIPMENT CABINET OMITTED FOR CLARITY



H-FRAME EQUIPMENT ELEVATION



5



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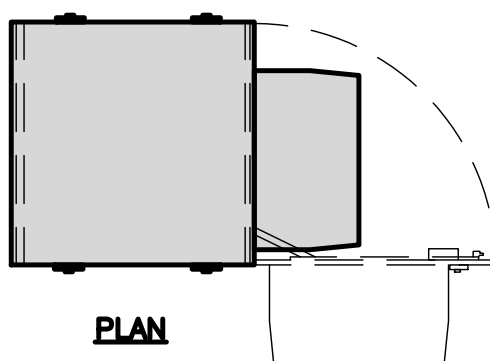
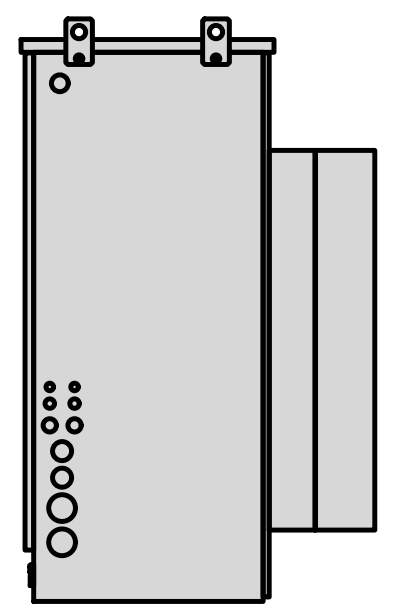
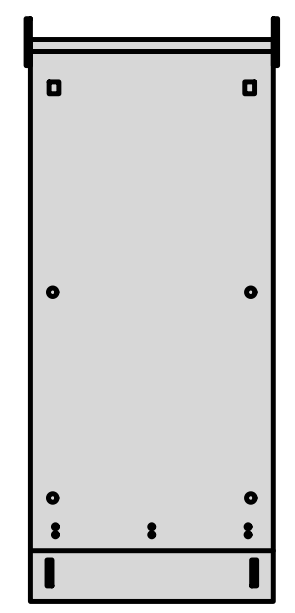
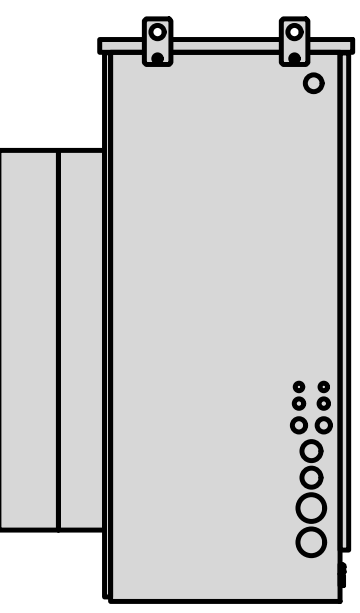
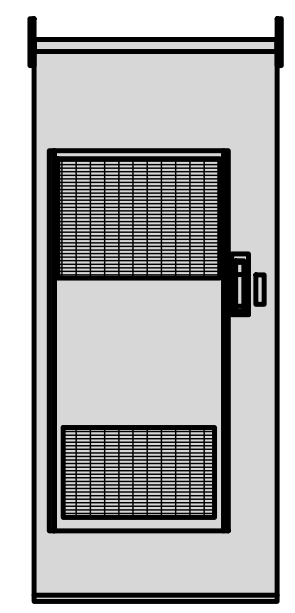
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PROJECT INFORMATION  
SFSF000959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

A-6

<b>CHARLES INDUSTRY HEX CUBE-PM639155N4</b>	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	-48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS

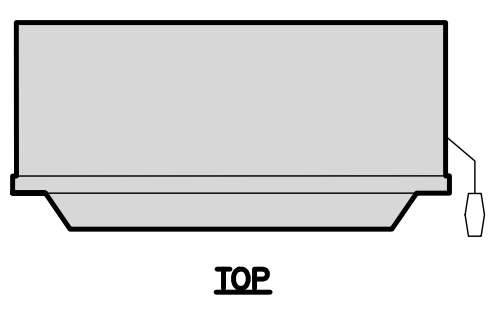
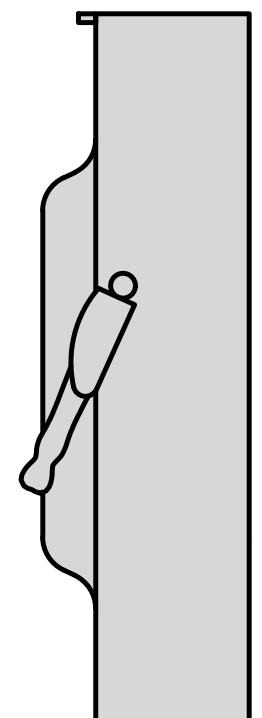
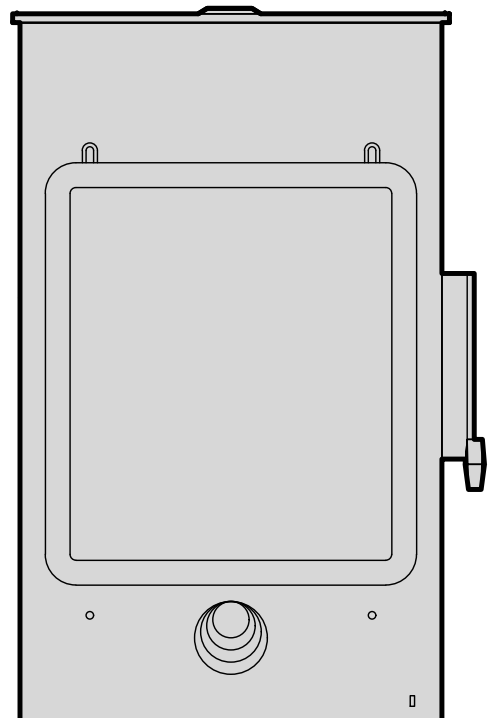






**CABINET DETAIL**

NO SCALE

1

<b>SQUARE D SAFETY SWITCHES D224NRB</b>	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875

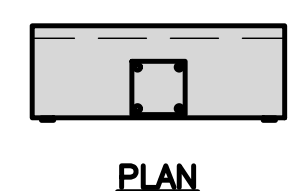
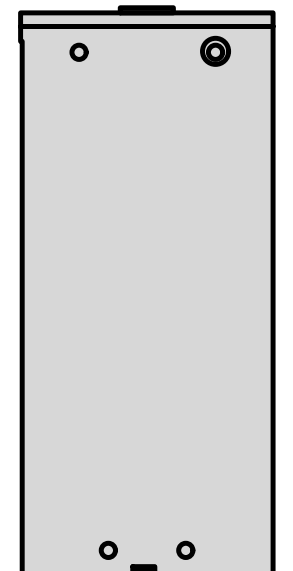
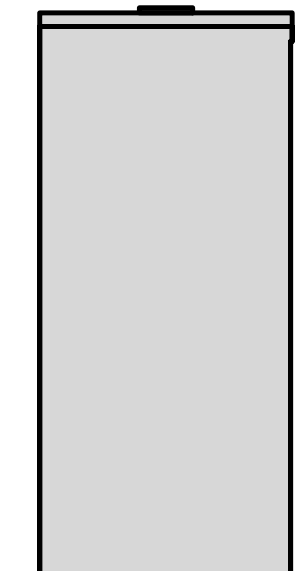
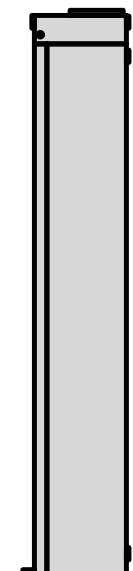




**SAFETY SWITCH DETAIL**

NO SCALE

2

<b>GE BREAKER PANEL TLM1220RCUP</b>	
ENCLOSURE DIM (HxWxD)	29"x13"x5"
TOTAL WEIGHT (EMPTY)	26 LBS
MAX VOLTAGE/MAX AMPS	240V/200A
ENCLOSURE RATING	OUTDOOR NEMA 3R

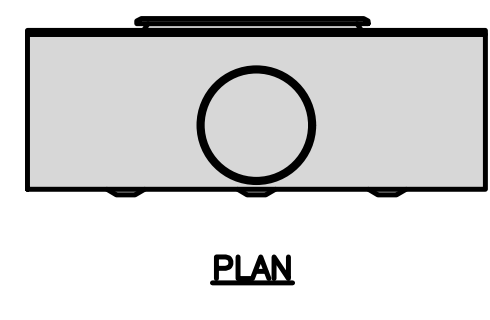
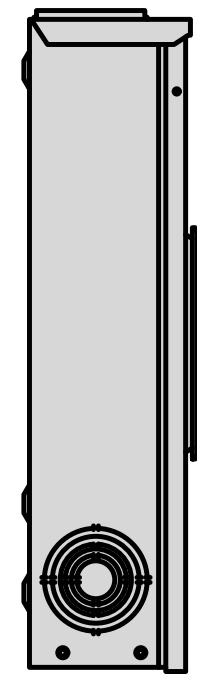
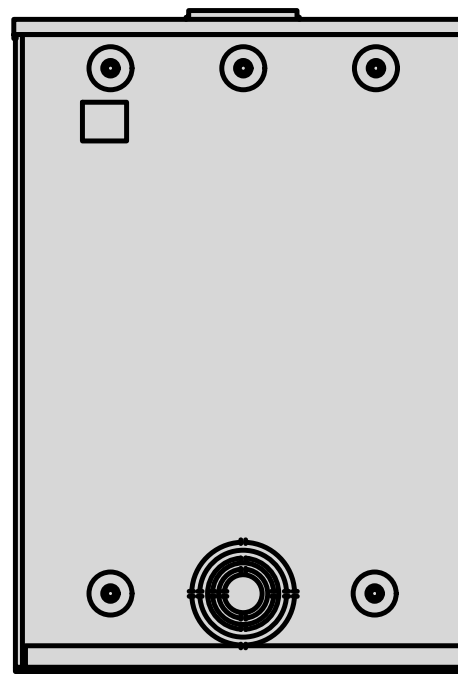
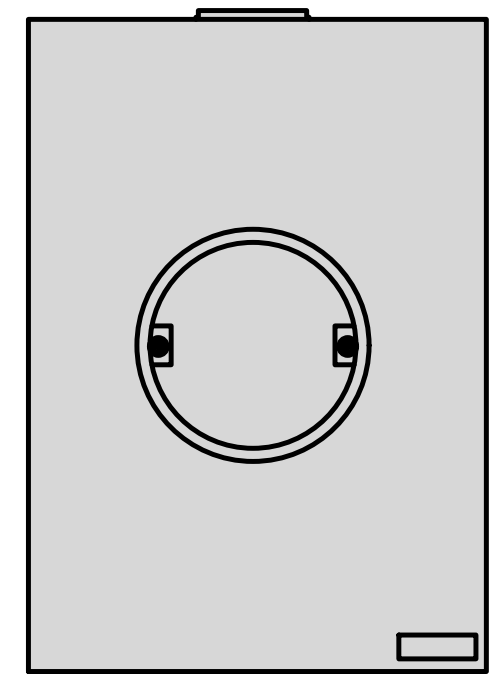





**BREAKER PANEL DETAIL**

NO SCALE

3

<b>EATON METER SOCKET WITH BYPASS 79903855153</b>	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	19 1/8"x13 1/4"x5"
MAIN AMPERE RATING	200A
WEIGHT	TBD

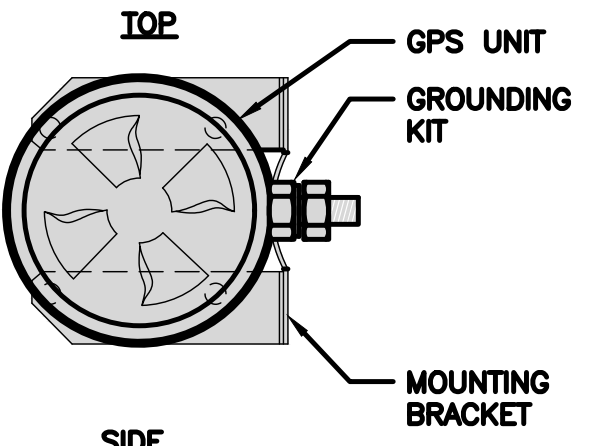
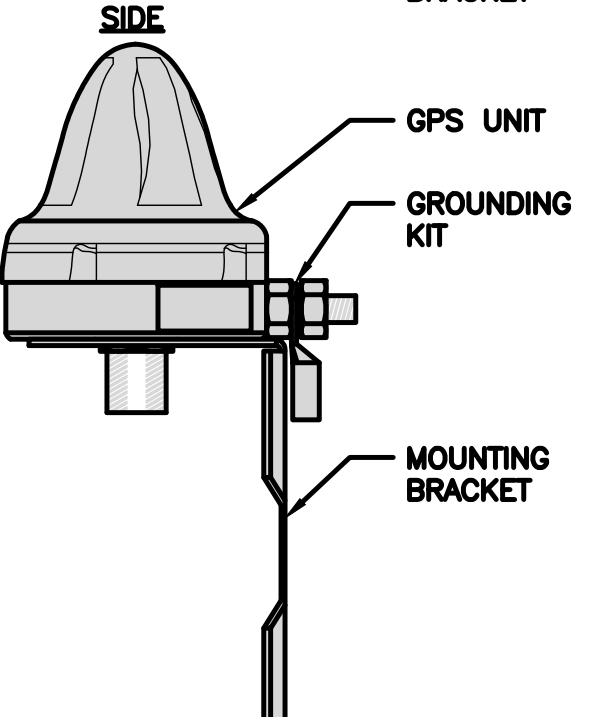
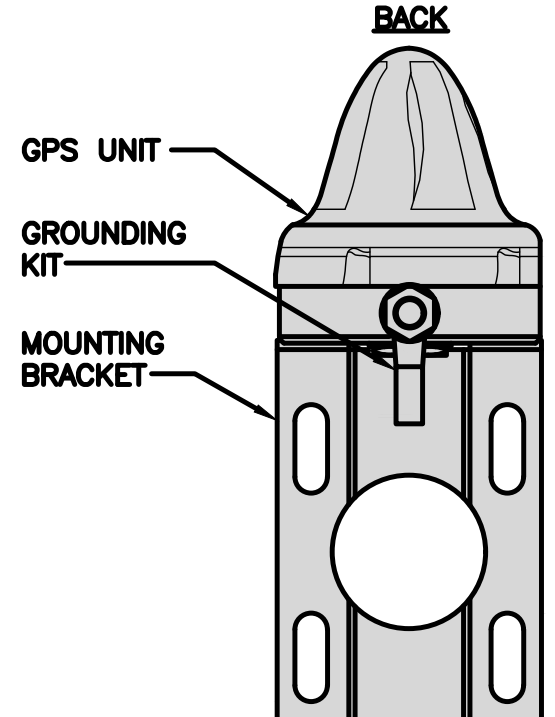





**METER SOCKET DETAIL**

NO SCALE

4

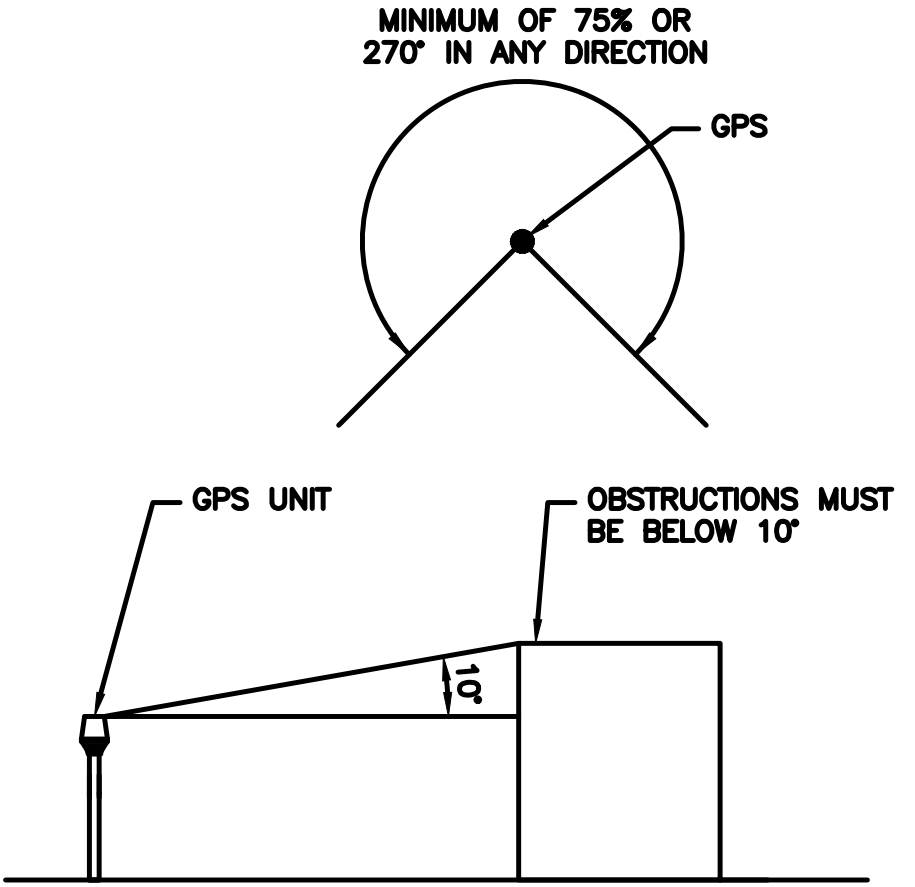
<b>ROSENBERGER GPSGLONASS-36-N-S</b>	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz

**GPS ANTENNA DETAIL**

NO SCALE

5



**GPS MINIMUM SKY VIEW REQUIREMENTS**

NO SCALE

6

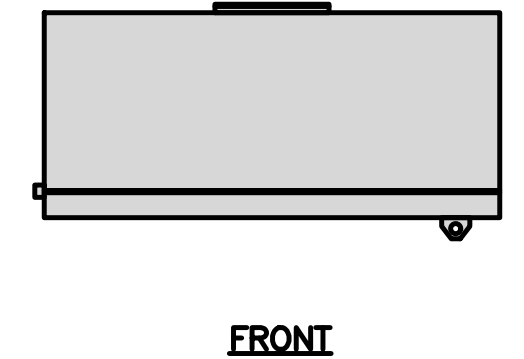
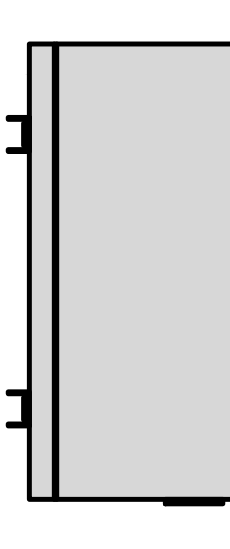
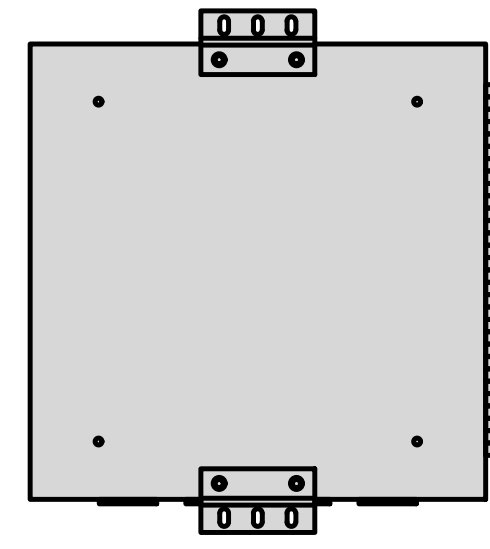
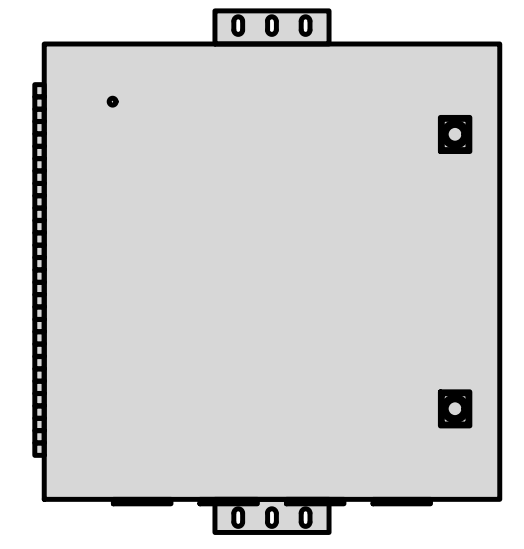
**NOT USED**

**NOT USED**

NO SCALE

7

<b>CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE</b>	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

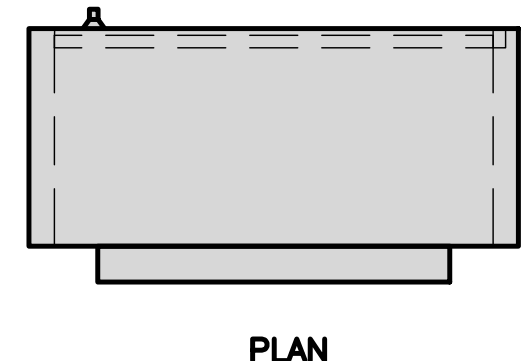
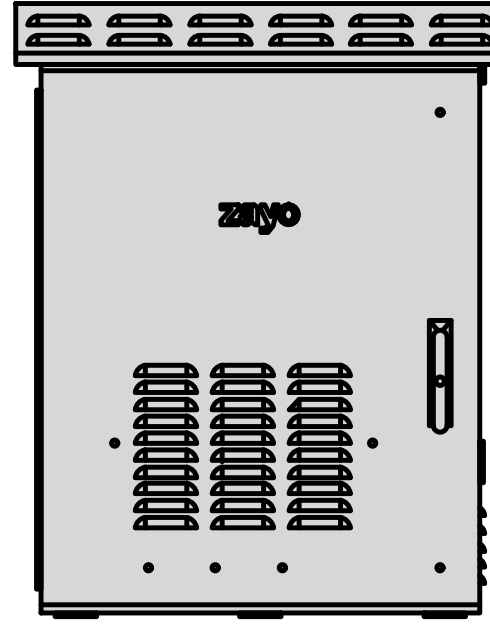
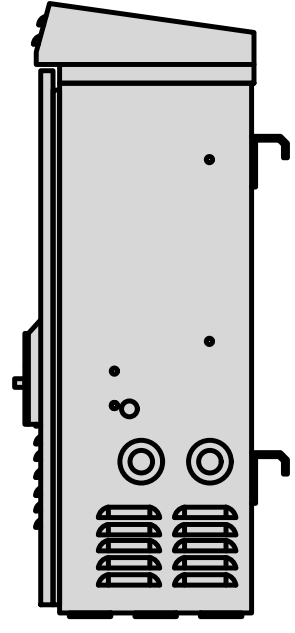
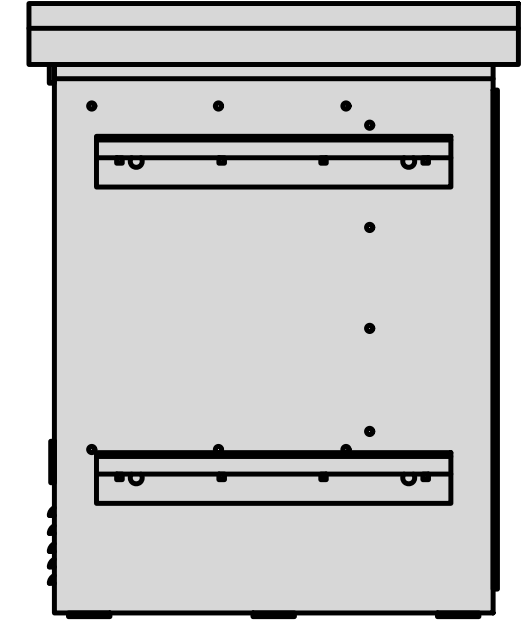





**FIBER TELCO ENCLOSURE DETAIL**

NO SCALE

8

<b>ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)</b>	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, -48VDC

**NETWORK INTERFACE UNIT DETAIL**

NO SCALE

9



5701 SOUTH SANTA FE DRIVE  
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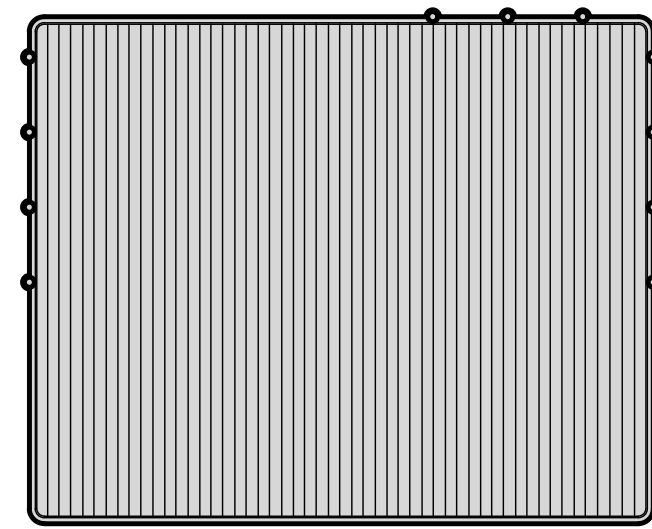
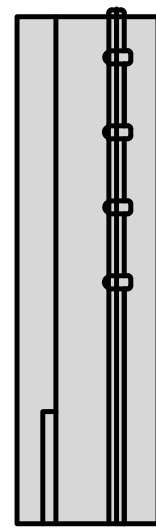
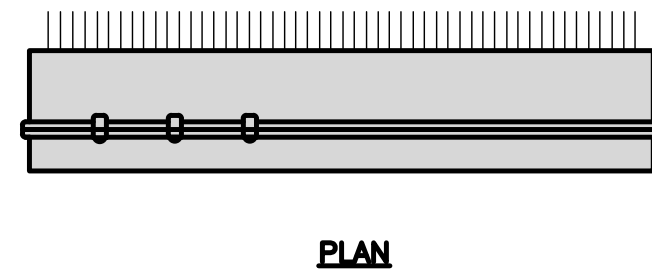
DISH Wireless L.L.C.  
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SFSF000959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-7**



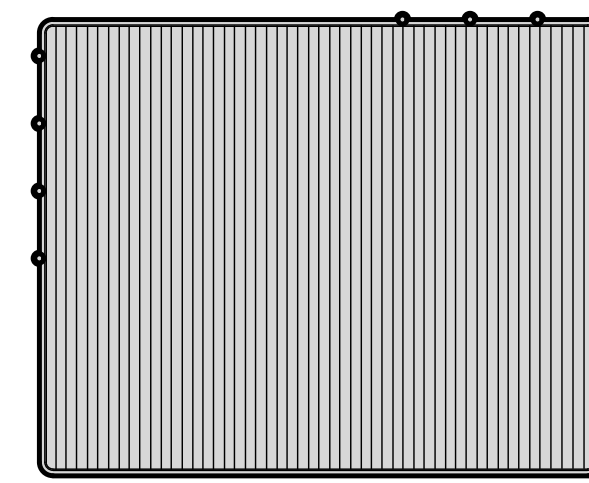
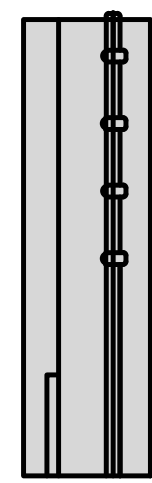
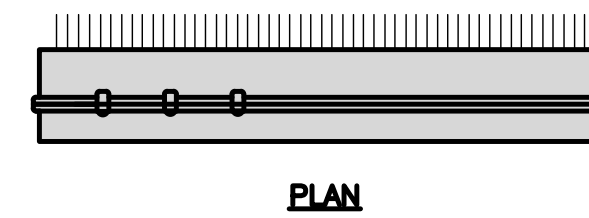
<b>MTI 2021RRH-49-02B 4x80W RRH</b>	
DIMENSIONS (HxWxD) (IN)	16.93"x13.89"x9.84"
TOTAL WEIGHT (KG/LB)	38.9kg/85.98lb
POWER SUPPLY VOLTAGE	-48Vdc (NOMINAL)



SIDE

FRONT

<b>MTI G060708RRH-50-02B 4x40W RRH</b>	
DIMENSIONS (HxWxD) (IN)	16.93"x13.89"x11.1"
TOTAL WEIGHT (KG/LB)	43.9kg/97lb
POWER SUPPLY VOLTAGE	-48Vdc (NOMINAL)

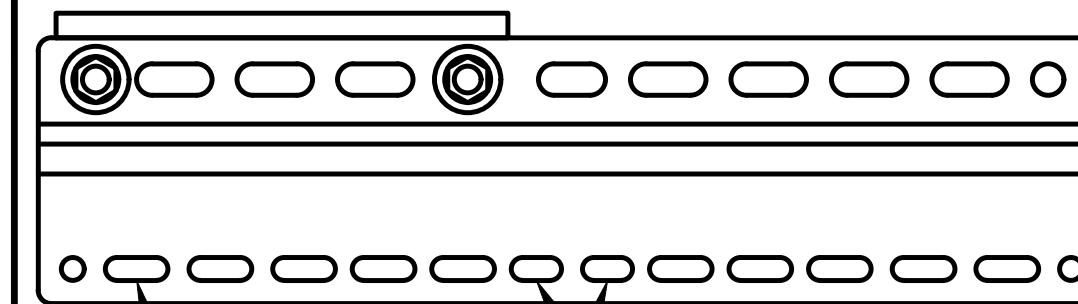


SIDE

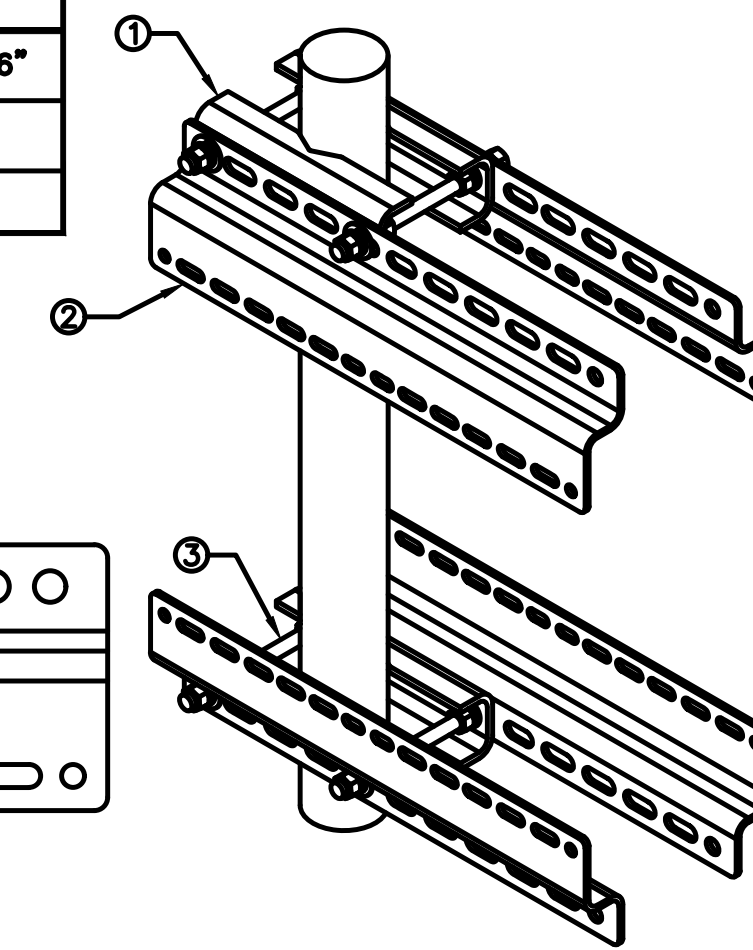
FRONT

<b>SABRE INDUSTRIES RRU BRACKET MOUNT C10123155</b>	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



11MM x 30MM SLOTS  
40MM ON CENTER  
11MM x 24MM SLOTS



REMOTE RADIO HEAD DETAIL

NO SCALE

1

REMOTE RADIO HEAD DETAIL

NO SCALE

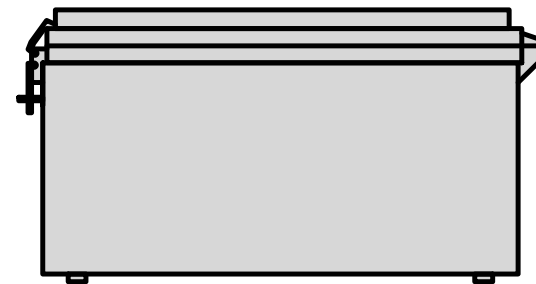
2

REMOTE RADIO MOUNT DETAIL

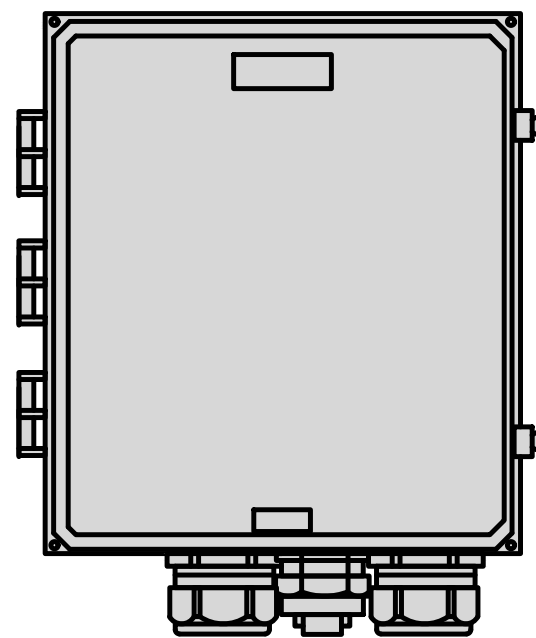
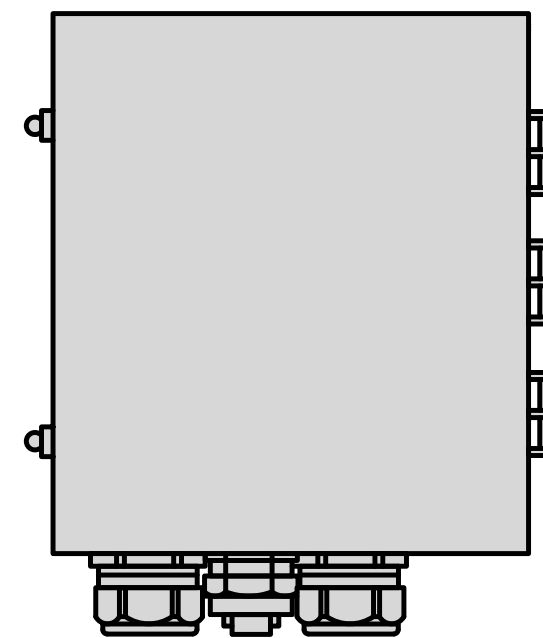
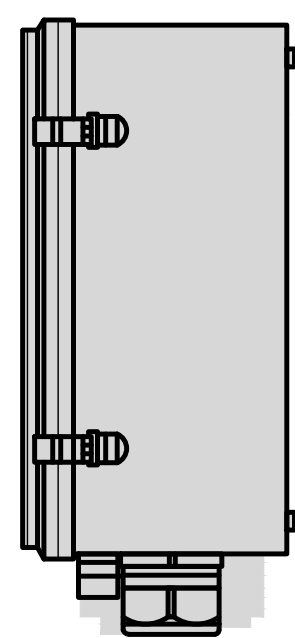
NO SCALE

3

<b>RAYCAP RDIDC-4045-PF-48 SURGE PROTECTION DEVICE (OVP)</b>	
DIMENSIONS (HxWxD)	14" x 16" x 8"
WEIGHT	21.85 LBS



PLAN



SIDE

BACK

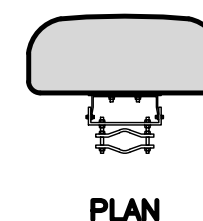
FRONT

SURGE PROTECTION DEVICE DETAIL (OVP)

NO SCALE

4

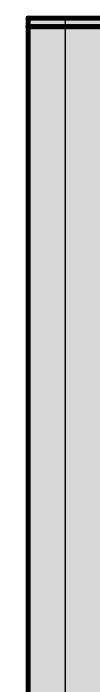
<b>JMA WIRELESS MX08FR0665-21 ANTENNA</b>	
DIMENSIONS (HxWxD)	72.8"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



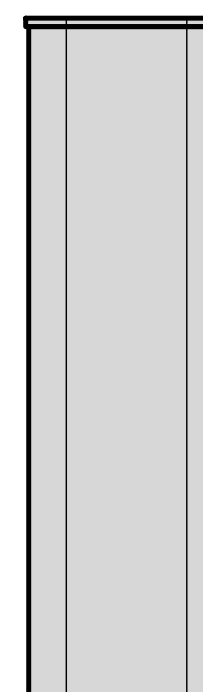
PLAN



BACK



SIDE



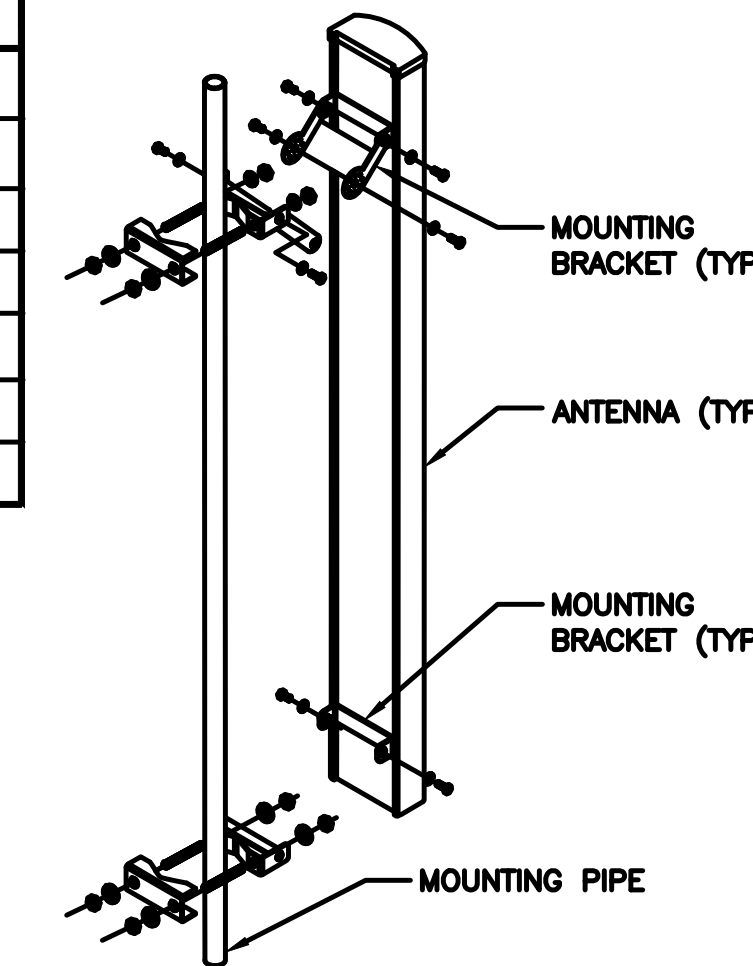
FRONT

ANTENNA DETAIL

NO SCALE

5

<b>M04 MOUNTING BRACKET HPA-33R-BUU-H4-K</b>	
WIDTH	5" (135mm)
DEPTH	2" (51mm)
HEIGHT	8" (213mm)
TOTAL WEIGHT (WITH BRACKETS)	1.5 LBS (15.50 Kg)
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1X8-PIN DAISY CHAIN

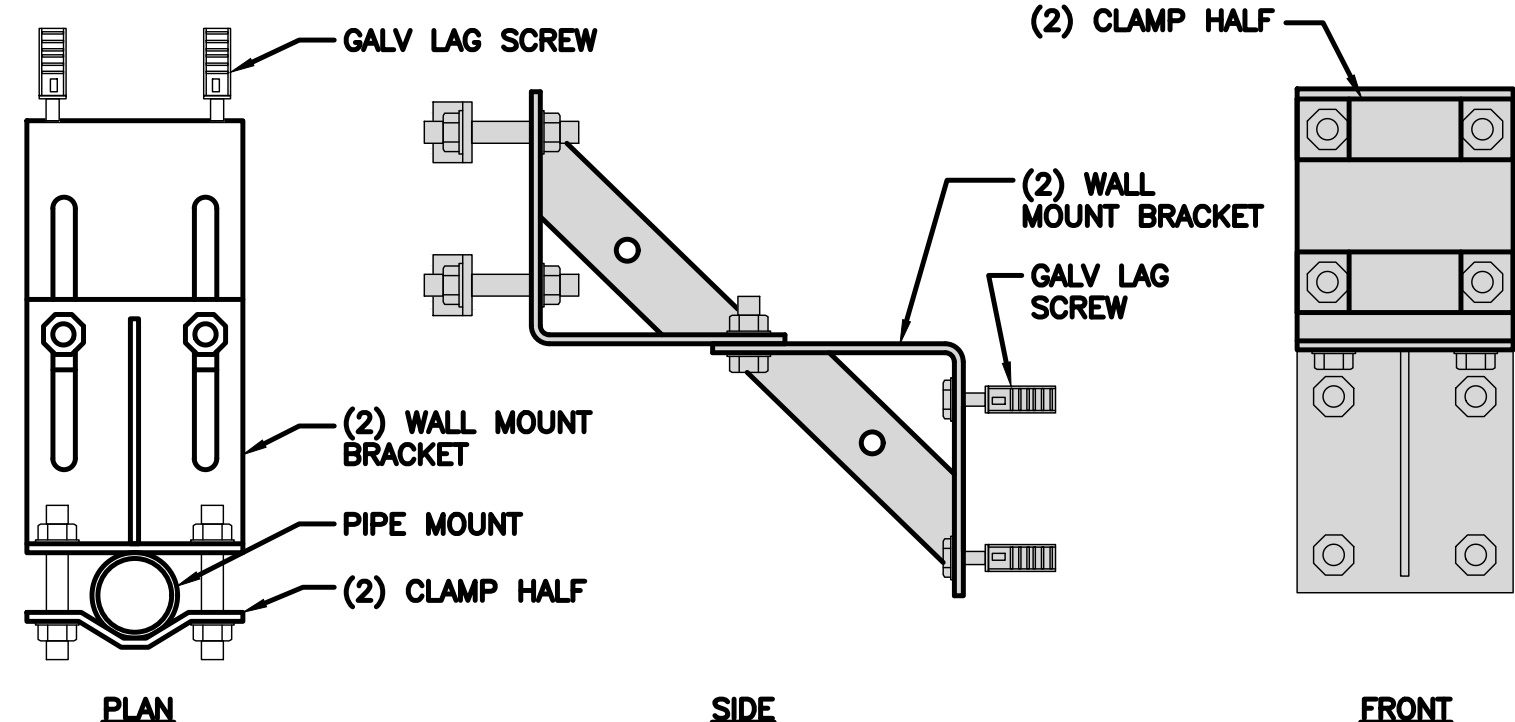


ANTENNA MOUNTING DETAIL

NO SCALE

6

<b>SITEPRO1 WMU-12S UNIVERSAL ADJUSTABLE WALL MOUNT</b>	
STANDOFF	7" - 12"
DIMENSIONS (HxWxD)	14"x 6"x 7"-12"
WEIGHT	16.09 LBS



PLAN

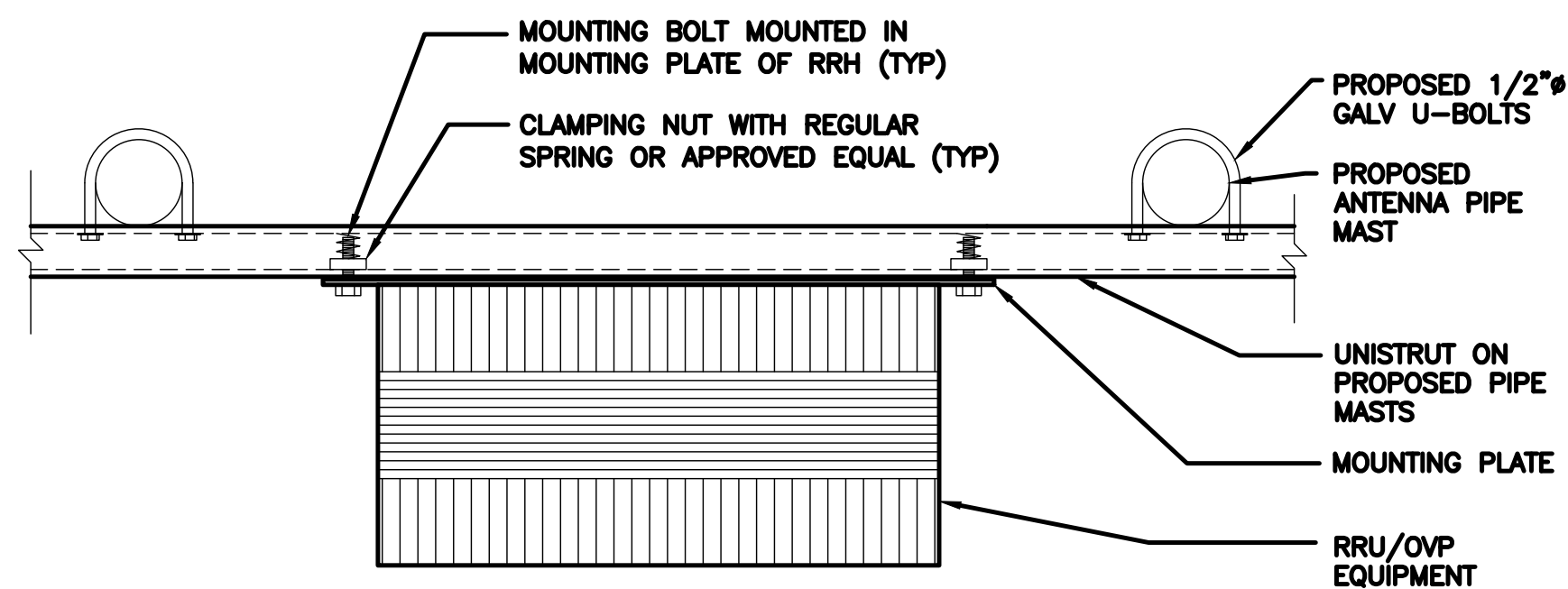
SIDE

FRONT

ANTENNA WALL MOUNT DETAIL

NO SCALE

7

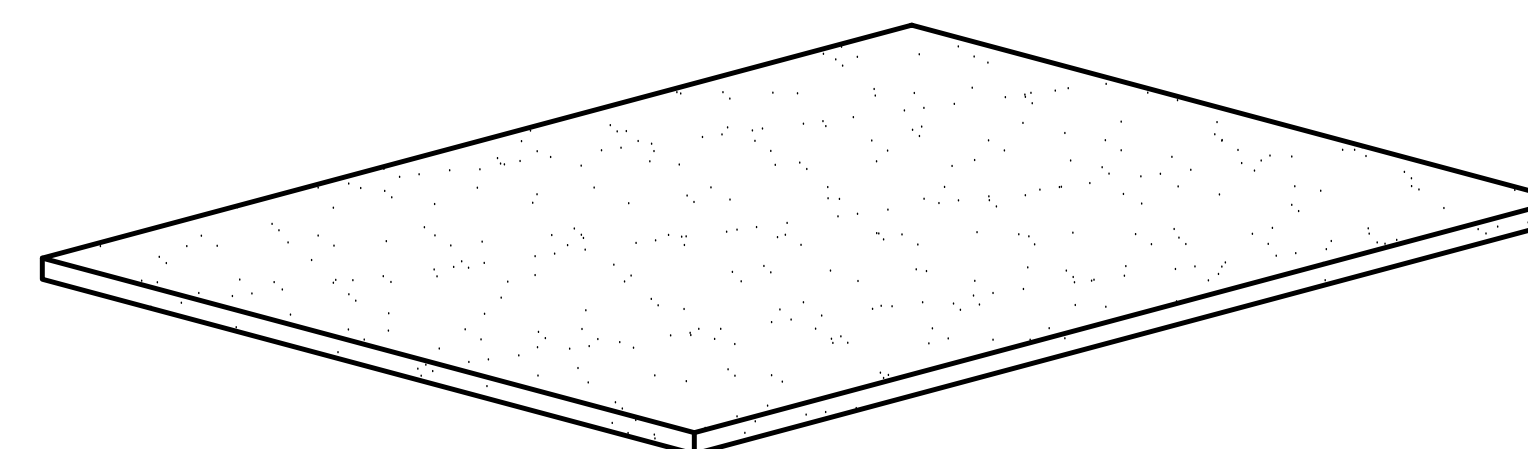


RRH/OVP UNISTRUT WALL MOUNT DETAIL

NO SCALE

8

<b>UTILITY RUBBER MAT, BLACK</b>	
DIMENSIONS	4'x 3'x 1/2"
WEIGHT/ VOLUME	36.5 LB AVERAGE
MATERIAL	100% RECYCLE RUBBER



UTILITY RUBBER MAT DETAIL

NO SCALE

9

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**NEXIUS**

2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

MC MDC MDC

RFDS REV #: REV 2 - 8/25/21

**ZONING  
DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/21/2021	ISSUED FOR REVIEW
B	08/17/21	PER DISH REDLINES
C	10/12/21	PER DISH REDLINES
D	03/11/2022	PER DISH REDLINES

A&E PROJECT NUMBER

SFSF000959B

DISH Wireless L.L.C.  
PROJECT INFORMATION

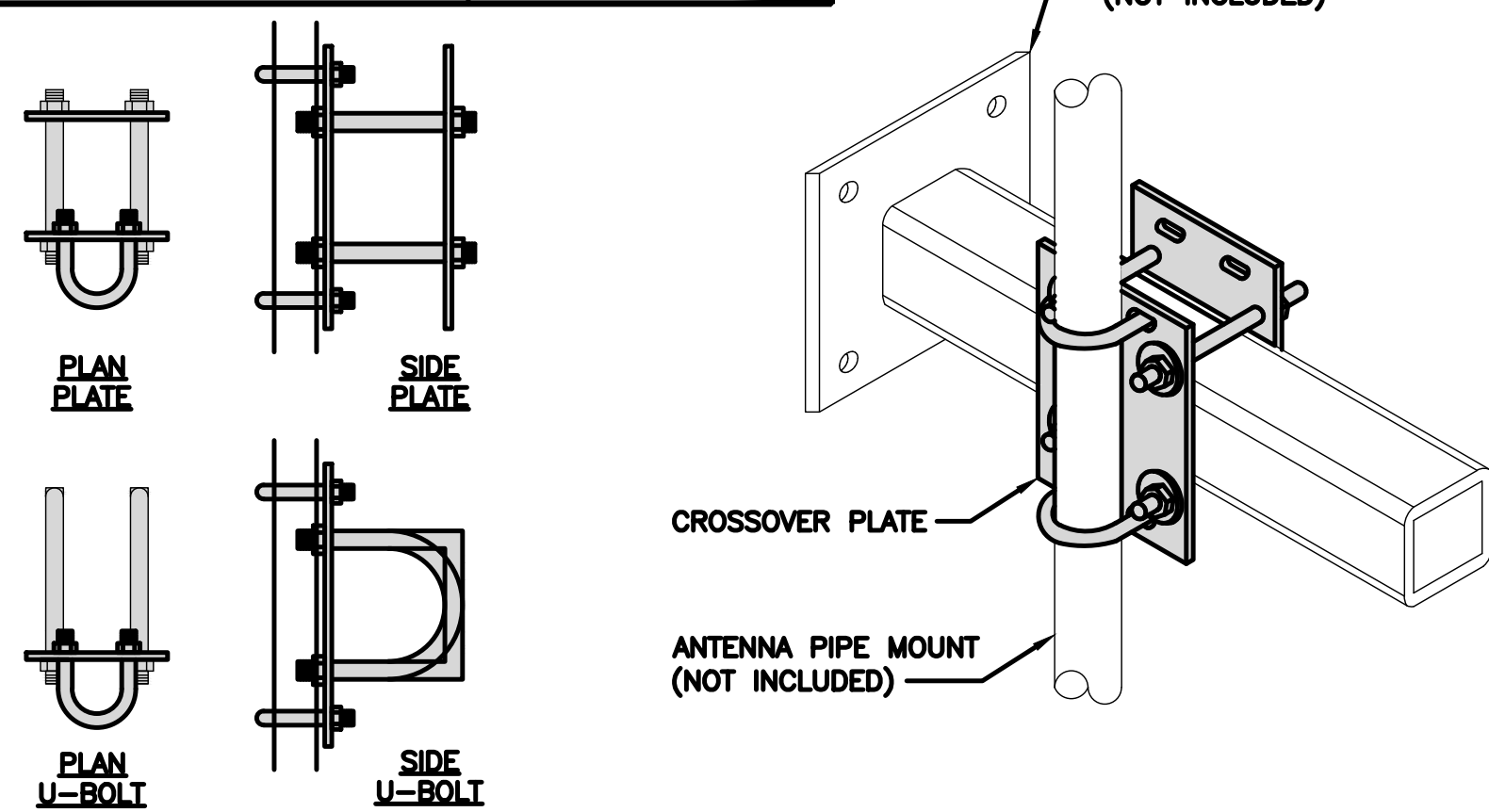
SFSF000959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER

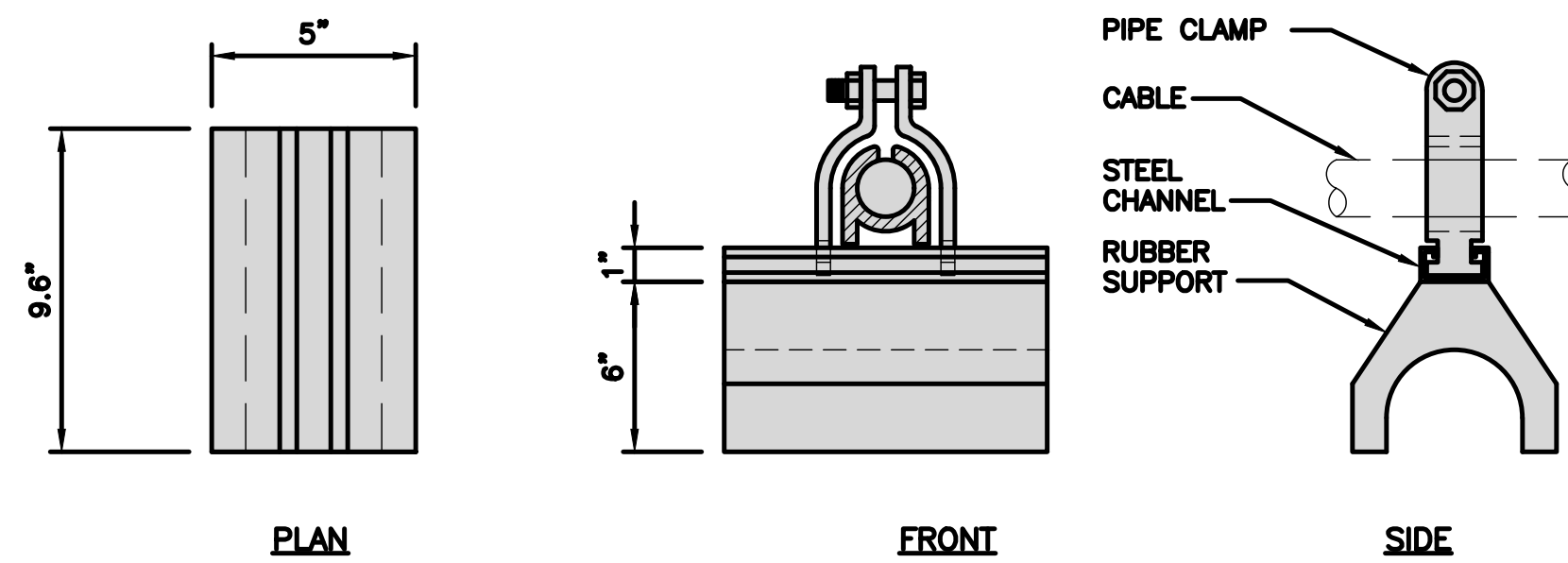
**A-8**

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS



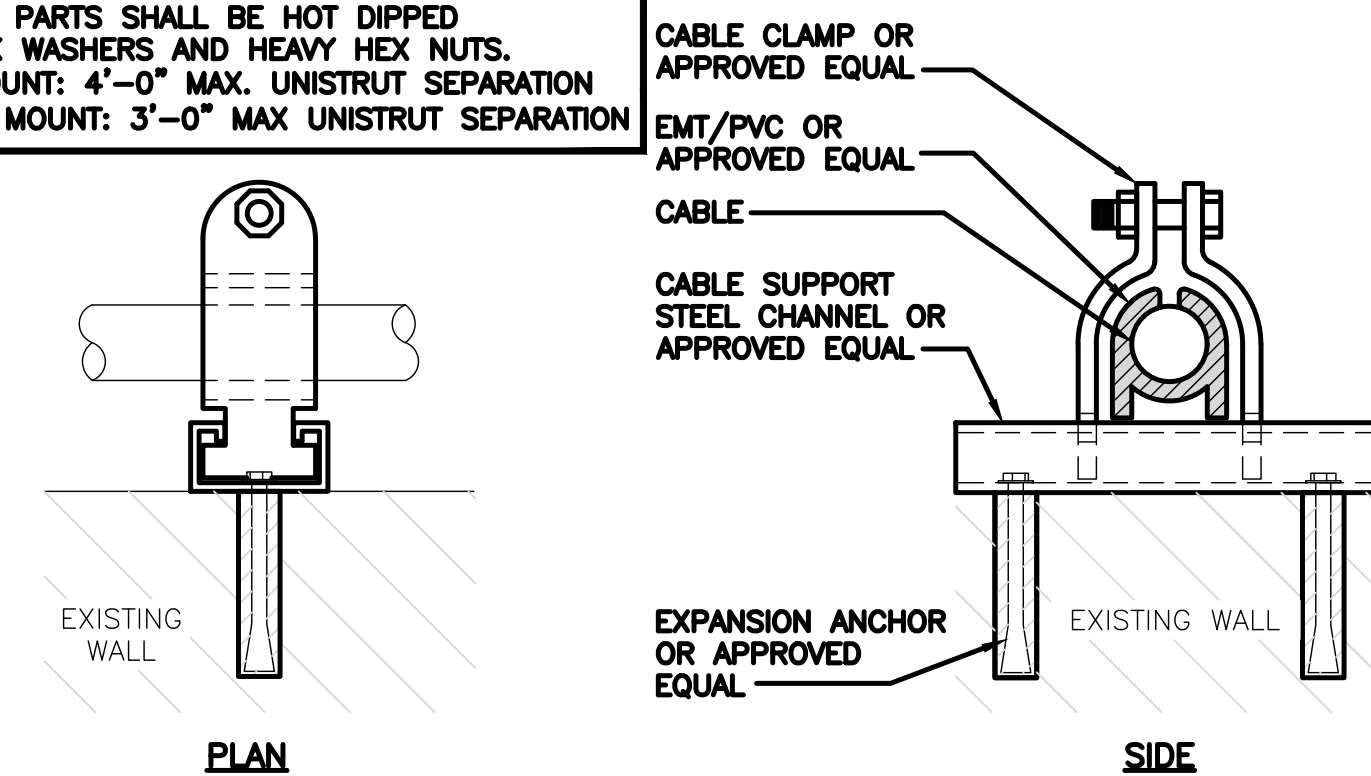
DURA-BLOK DB10 ROOFTOP CABLE SUPPORT	
DIMENSIONS (HxWxL)	5"x6"x9.6"
WEIGHT/ VOLUME	5.28 LBS
ULTIMATE LOAD CAPACITY	500 LBS

NOTE: NON-PENETRATING



CABLE WALL MOUNT SUPPORT	
UNISTRUT TYPE	GRAINGER P1000T
UNISTRUT DIMENSIONS (HxWxL)	1 5/8"x 1 5/8"x 12"
WEIGHT/ VOLUME	1.85 LB PER FOOT
ULTIMATE LOAD CAPACITY	718.5 LB

NOTES:  
 1. ALL HARDWARE AND PARTS SHALL BE HOT DIPPED GALVANIZED WITH LOCK WASHERS AND HEAVY HEX NUTS.  
 2. VERTICAL CABLE MOUNT: 4'-0" MAX. UNISTRUT SEPARATION  
 3. HORIZONTAL CABLE MOUNT: 3'-0" MAX UNISTRUT SEPARATION



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2595 NORTH DALLAS PARKWAY  
SUITE 300  
FRISCO, TX 75034

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DRAWN BY:	CHECKED BY:	APPROVED BY:
MC	MDC	MDC

RFDS REV #: REV 2 - 8/25/21

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DISH Wireless L.L.C.  
PROJECT INFORMATION

SFSF000959B  
2943 MACARTHUR BLVD  
OAKLAND, CA 94602

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER

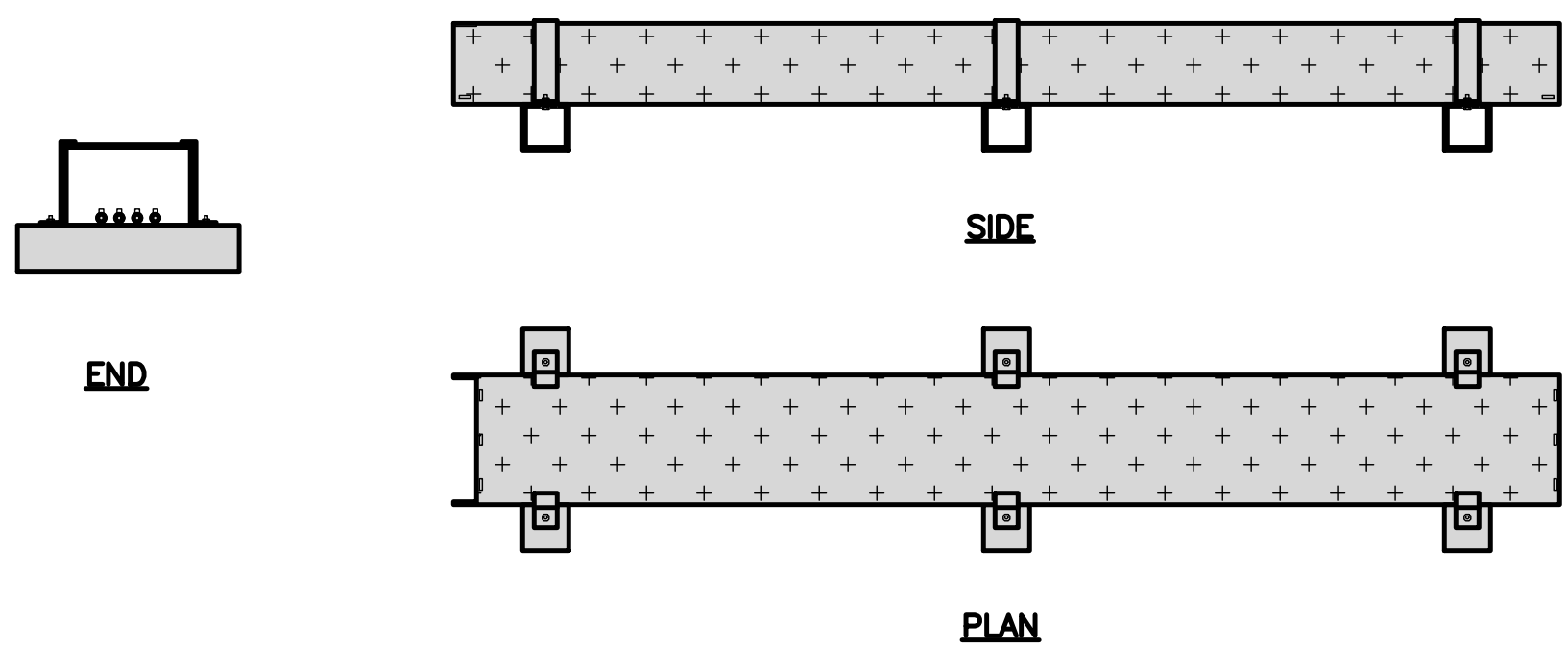
**A-9**

RRH/OVP MOUNT DETAIL NO SCALE 1

ROOFTOP CABLE SUPPORT DETAIL NO SCALE 2

CABLE WALL MOUNT SUPPORT DETAIL NO SCALE 3

COMMSCOPE RT-CB4D ROOFTOP COVER KIT		MOUNTING		NON-PENETRATING	
DIMENSIONS (HxWxL)	7"x 11.25"x 96"	INCLUDED PRODUCTS:	RTCB4D.01 CHANNEL (1)	MT-F1598 SLEEPERS (3)	RTCUH HARDWARE
WEIGHT/ VOLUME	85.98 LBS		RTHC.01 HOLD-DOWN CLAMPS (6)		
CABLE RUN (QTY)	4				



ROOFTOP CABLE TRAY DETAIL NO SCALE 4

NOT USED NO SCALE 5

NOT USED NO SCALE 6

NOT USED NO SCALE 7

NOT USED NO SCALE 8

NOT USED NO SCALE 9

## **Dish Wireless Service Description**

### **Engineering Design Justification and Alternatives Analysis**

City of Oakland Planning Department

Project #/Name: SFSFO00959B / 2943 MacArthur Blvd Building  
Primary Site Address: 2943 MacArthur Blvd, Oakland CA 94602  
APN: 028-916-20

#### **Service and Project Description:**

##### **Project Purpose**

Dish Wireless is in the process of deploying its “greenfield” 5G communications network (new network where none has existed before) enabling the community to access information technology by using latest technology voice and data services from any remote non-wire line location.

The Federal Communications Commission (FCC) has mandated that a fourth major wireless carrier be brought to market in order to offer greater consumer choice. Dish Wireless was selected as the most innovative communications leader to provide 5G service (5G broadband service-"5G New Radio" capable of providing Enhance Mobile Broadband-eMBB functionality) to cover 70% of pops in each licensed area/region by June 14, 2023 including the greater San Francisco Bay Area.

It will implement a service that offers the highest digital quality and reliability at the most affordable rate in order to satisfy customer demand for access and low price. The antenna facility at this location will provide expanded quality wireless service for the businesses and residents surrounding the 2943 MacArthur Blvd building including higher data speeds as part of a network that will give the area expanded wireless technology, ease of information access and more efficient direct communications for local business, personal and emergency services.

#### **Project Specific Radio Frequency (RF) Engineering Statement**

##### **Location, Design and Height Justification**

Dish Wireless designs and builds its wireless network to satisfy the highest customer service standards and ensure customers receive the most reliable coverage and in-building service quality.

##### **Location Need:**

The proposed site located on the 2943 MacArthur building rooftop is intended to improve in-building and highest quality voice and data connectivity to office, retail and residential subscribers along the MacArthur Blvd business corridor and surrounds, prioritizing high speed 5G broadband data services. In-building service is critical as people increasingly use their mobile phones as their primary communications tool (landlines at residences have decreased significantly) and rely on all their mobile devices for an array of tasks including Emergency911, GPS, web access, text, IM and more.

5G is capable of delivering data download speeds up to 10 times faster than industry-average 4G LTE speeds to reach 1Gbps and eventually as much as 10 Gbps speeds and further propel machine (M2M) technology to the next level. 5G also offers lower latency, or the processing time it takes to move data through a network, such as how long it takes to start downloading a webpage or file once you've sent the request.

Lower latency helps to improve the quality of personal wireless services and uses spectrum more efficiently than other technologies, creating more space to carry data traffic and services, delivering a better overall network experience. Compare faster 5G latency rates of less than 1 millisecond to slower 4G rates of 200 milliseconds.

**Height Need:**

Maximum RAD (antenna centerline) height, antenna quantity and array configuration line of sight as shown in the drawings is necessary in order to meet the objectives as stated in the Dish Wireless RF Statement above. The 2943 MacArthur building is the only candidate available in the area around MacArthur Blvd/Maple Ave intersection at an acceptable height for optimal performance and any height reduction from the proposed 47' overall (44' RAD) AGL would compromise the maximum network connectivity, coverage and capacity objectives.

**Site Search and Acquisition Process**

**Overview:**

The Dish Wireless Engineering and Site Acquisition groups have conducted a thorough network design review based on an initial service need and improvement analysis in any specific area; in this case the MacArthur business environment around Maple Avenue as one of the design nodes for the overall interconnected MacArthur Blvd commercial corridor. Following engineering group direction, a service need designation and an optimum height analysis, the Dish Wireless Site Development team initiates a potential candidate search within that specific area, surveying compatible locations by the following design and land use traits: 1.) Existing co-locatable telecom facility structures, 2.) Jurisdiction, utility and public service owned properties, 3.) Compatible commercial land uses, and 4.) Existing and proposed architecturally compatible structures for integrated stealth design. The traits can be re-prioritized according to the existing compatible environmental, real estate and zoning opportunities in a specific area.

The following candidate analysis was completed for this subject application:

# Attachment

**Alternative Site Analysis Summary:**

- Need 44' RAD in order to optimize the best line of site and most in-building coverage.
- Initial prime candidate Food Mill Building was lost (see details below).
- Other commercial/office use buildings had height deficiencies.
- Current 2943 MacArthur prime candidate provides ample height compared to lower adjacent buildings SW down MacArthur Blvd.
- Current candidate offers design opportunity capable of ample screening and blending.
- Current candidate offers best service capability for In-building performance (indoor environs coverage for voice and data).

**Subject Candidate A: 2943 MacArthur Apartment Building**

Address: 2943 MacArthur Blvd, Oakland, CA 94602

The subject installation is proposed to be located within the RU-4 urban residential zoning designation on the SE side of MacArthur Blvd. This is a mixed-use commercial neighborhood next to the important MacArthur Blvd travel and business corridor containing many commercial and retail services. Dish Wireless proposes to improve wireless coverage and capacity services with state-of-the-art technology for commercial, residential and emergency response users. Most other buildings around the MacArthur/Maple intersection were disqualified by engineers due to low RAD height opportunities.

The subject of this application, 2943 MacArthur Blvd building, was selected following a thorough analysis of all other qualified buildings in the area and additional information was gathered on the other possible candidates below prior to final selection with maximum RAD height and physical line of sight considerations as important factors.

**Previous Candidate A: Food Mill Store Building**

Address: 3033 MacArthur Blvd, Oakland, CA 94602

- Proposed rooftop screen-integrated antenna configuration with outdoor screened rooftop equipment.
- Reason for Site Development/Acquisition Disqualification: following a lengthy Property Owner-Dish Wireless negotiation and design review, Property Owner ultimately rejected the project proposal. This initial primary candidate was disqualified due to lease contract, space and constructability issues.

**Candidate C: 2917 MacArthur Apartment Building**

Address: 2917 MacArthur Blvd, Oakland, CA

- Proposed rooftop screen-integrated antenna configuration with outdoor screened rooftop equipment.
- Reason for Engineering Disqualification: Dish Wireless Engineers rejected this candidate due to signal and coverage blockage to the east and SE by the adjacent taller primary subject 2943 MacArthur building, negatively affecting MacArthur Blvd line of site ability. Engineering analysis conclusion was negative due to antenna performance issues.
- Reason for Site Development/Acquisition Disqualification: Following a failed engineering analysis, the Dish Wireless Site Development Team disqualified this candidate.

**Candidate D: 2901 MacArthur Apartment Building**

Address: 2901 MacArthur Blvd, Oakland, CA

- Proposed rooftop screen-integrated antenna configuration with outdoor screened rooftop equipment.
- Reason for Engineering Disqualification: Dish Wireless Engineers rejected this candidate due to lower height issues, signal and coverage blockage to the south, east and SE by the adjacent taller 2917 MacArthur Blvd building and primary subject 2943 MacArthur building, negatively affecting MacArthur Blvd line of site ability. Engineering analysis conclusion was negative due to antenna performance issues.
- Reason for Site Development/Acquisition Disqualification: Following a failed engineering analysis, the Dish Wireless Site Development Team disqualified this candidate.

**Conclusion: The proposed Dish Wireless integrated rooftop design at the 2943 MacArthur Bldg preserves architectural integrity through screening and blending and offers the best location for a macro site design. Dish's peak antenna performance in this location will coalesce the Dish Wireless-MacArthur Blvd network and deliver full communication services to the community providing greater consumer choice, higher call volume, greater call quality, maximized data speed and capacity that will enhance wireless communications dependability for residential, commercial and emergency services.**

# VISUAL ANALYSIS

PROPOSED WIRELESS TELECOMMUNICATIONS FACILITY

SITE ID: SFSFO00959B

SITE ADDRESS: 2943 MACARTHUR BLVD, OAKLAND, CA 94602

# Attachment E

## \_02 LETTER OF METHODOLOGY

PROPOSED WIRELESS TELECOMMUNICATIONS INSTALLATION

CLIENT: DISH WIRELESS, LLC.

SITE NAME: SFSFO00959B

The following is a description of the methods used by Nexius in preparing the Visual Analysis of a post construction, Dish Wireless Installation for the site located at 2943 MacArthur Boulevard, Oakland, CA 94602.

The proposed facility installation consists of six panel antennas (two per sector), twelve RRU's (four per sector), three over voltage protection devices (one per sector), three antenna shrouds, one metal platform and necessary equipment cabinets, conduits, cables and mounting equipment.

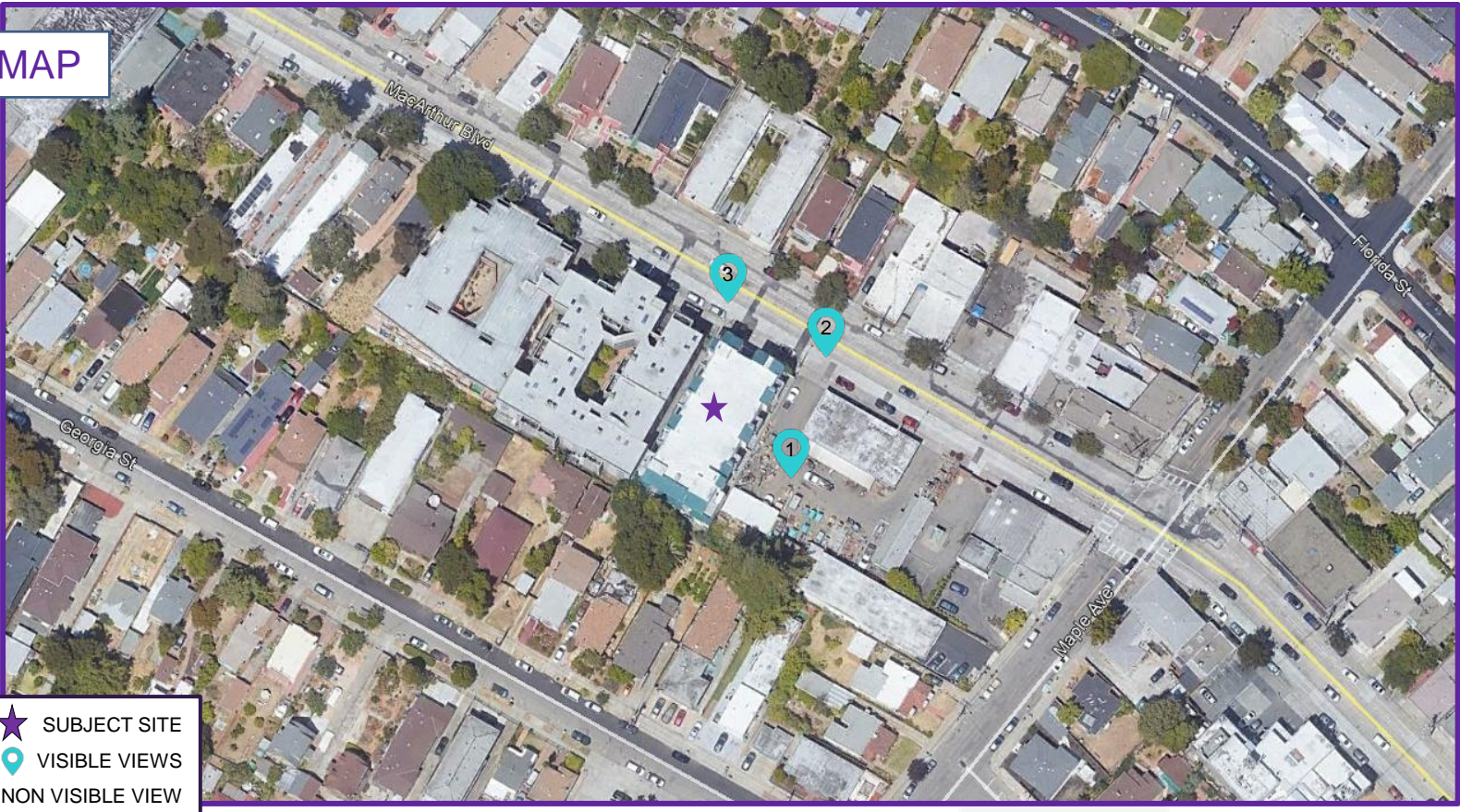
A site visit was made, and photographs were taken from specific locations around the Facility. The actual weather condition was sunny, and visibility was within acceptable levels to conduct the Visual Analysis.

Using technical and mechanical specification documents we built and arranged the equipment using Autodesk 3ds Max software. Autodesk 3ds Max allows us to add a daylight system that calculates which direction the sun will point according to the date and time of day in which the photographs were taken. The next step involves loading a map with the photo-location points into Autodesk 3ds Max. Virtual cameras are then inserted into the scene and placed according to where the photo-locations lay. These cameras represent the photographer who took the photographs and take into consideration the average height at which the camera would have been held by an average 5'-6' person. Due to the cameras being located correctly they automatically calculate the exact distance and perspective of the proposed equipment. This generates simulated 3D views of the proposed equipment from the photographer's viewpoint. Once these simulated viewpoints are created in Autodesk 3ds Max, realistic lighting, shadows and materials are rendered upon the proposed equipment. The result is multiple images that depict the proposed equipment placed "inside" the photograph of the existing environment.

The new images created by 3ds Max are imported into Adobe Photoshop and laid over the existing image. These images are then brought into Microsoft PowerPoint and each view is labeled accordingly based upon the information provided by the field technician. The final product results in high quality "before and after" images that accurately depict the addition of future equipment, not yet built, to existing photographs.

NOTE: These photo simulations are intended to represent modifications relative to a person observing the aesthetics of the proposed telecommunications installation. Therefore, they are inherently approximate in nature and should not be used as an exact, scaled engineering drawing.

# MAP



SUBJECT SITE  
 VISIBLE VIEWS  
 NON VISIBLE VIEW



# VIEW 1- EXISTING CONDITION: LOOKING NORTHWEST

\_04



# VIEW 1- PROPOSED CONDITION: LOOKING NORTHWEST

\_05



# VIEW 2- EXISTING CONDITION: LOOKING SOUTHWEST

\_06



## VIEW 2- PROPOSED CONDITION: LOOKING SOUTHWEST

\_07



# VIEW 3- EXISTING CONDITION: LOOKING SOUTH

\_08



# VIEW 3- PROPOSED CONDITION: LOOKING SOUTH

\_09



Thank you  
Let's PowerUP

n e x i u s

# Radio Frequency - Electromagnetic Energy (RF-EME) Jurisdictional Report

Site No. SFSFO00959B  
2943 MacArthur Blvd  
Oakland, California 94602  
37° 47' 51.49" N, -122° 12' 22.00" W NAD83

EBI Project No. 6221007217  
March 16, 2022



Prepared for:  
Dish Wireless

Prepared by:  
 **EBI Consulting**  
environmental | engineering | due diligence

# Attachment F



## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b> .....	<b>1</b>
<b>1.0 INTRODUCTION</b> .....	<b>2</b>
<b>2.0 SITE DESCRIPTION</b> .....	<b>2</b>
<b>3.0 WORST-CASE PREDICTIVE MODELING</b> .....	<b>3</b>
<b>4.0 MITIGATION/SITE CONTROL OPTIONS</b> .....	<b>4</b>
<b>5.0 SUMMARY AND CONCLUSIONS</b> .....	<b>5</b>
<b>6.0 LIMITATIONS</b> .....	<b>5</b>

## APPENDICES

**APPENDIX A CERTIFICATIONS**

**APPENDIX B RADIO FREQUENCY ELECTROMAGNETIC ENERGY SAFETY / SIGNAGE PLANS**

**APPENDIX C FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS**

### REFERENCE DOCUMENTS (NOT ATTACHED)

**CDs:** SFSFO00959B\_ZD90\_20220316\_REV D

**RFDS:** RFDS-SFSFO00959B-PRELIMINARY-20210825-V.2\_20210825160320

## EXECUTIVE SUMMARY

### Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Dish Wireless to conduct radio frequency electromagnetic (RF-EME) modeling for Dish Wireless Site SFSFO00959B located at 2943 MacArthur Blvd in Oakland, California to determine RF-EME exposure levels from proposed Dish Wireless communications equipment at this site. As described in greater detail in Appendix C of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for the general public and for occupational activities. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

### Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, the worst-case emitted power density may exceed the FCC's general public limit within approximately 118 feet of DISH's proposed antennas at the main roof level. Modeling also indicates that the worst-case emitted power density may exceed the FCC's occupational limit within approximately 28 feet of DISH's proposed antennas at the main roof level. Additionally, there are areas where workers who may be elevated above the rooftop or ground may be exposed to power densities greater than the occupational limits. Therefore, workers should be informed about the presence and locations of antennas and their associated fields.

At the nearest rooftop level walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the DISH antennas is approximately **759.75** percent of the FCC's general public limit (**151.95** percent of the FCC's occupational limit).

The composite exposure level from all carriers on this site is approximately **759.75** percent of the FCC's general public limit (**151.95** percent of the FCC's occupational limit) at the rooftop level nearest walking/working surface to each antenna.

Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only DISH has the ability to lockout/tagout the facility, or to authorize others to do so.

The top occupied floor of the building was also simulated for compliance of in-building occupants. The FCC's general public exposure limit will not be exceeded inside the top occupied floor of the building below the antennas. Therefore no mitigation measures are required for in-building occupants.

## 1.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per second (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 5000 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size or health.

## 2.0 SITE DESCRIPTION

This project site includes the following proposed wireless telecommunication antennas on a rooftop located at 2943 MacArthur Blvd in Oakland, California.

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Total Power Input (Watts)	Gain (dBd)*	Total ERP (Watts)	Total EIRP (Watts)
1	Dish	JMA	MX08FRO665-21 02DT 600	600	0	0	62	6.0	120	17.45	5945.40	9750.46
1	Dish	JMA	MX08FRO665-21 02DT 2007	2007	0	0	62	6.0	160	22.65	26249.44	43049.08
1	Dish	JMA	MX08FRO665-21 02DT 2100	2100	0	0	65	6.0	160	22.65	26249.44	43049.08
2	Dish	JMA	MX08FRO665-21 02DT 600	600	0	0	62	6.0	120	17.45	5945.40	9750.46
2	Dish	JMA	MX08FRO665-21 02DT 2007	2007	0	0	62	6.0	160	22.65	26249.44	43049.08
2	Dish	JMA	MX08FRO665-21 02DT 2100	2100	0	0	65	6.0	160	22.65	26249.44	43049.08
3	Dish	JMA	MX08FRO665-21 02DT 600	600	120	0	62	6.0	120	17.45	5945.40	9750.46
3	Dish	JMA	MX08FRO665-21 02DT 2007	2007	120	0	62	6.0	160	22.65	26249.44	43049.08
3	Dish	JMA	MX08FRO665-21 02DT 2100	2100	120	0	65	6.0	160	22.65	26249.44	43049.08
4	Dish	JMA	MX08FRO665-21 02DT 600	600	120	0	62	6.0	120	17.45	5945.40	9750.46
4	Dish	JMA	MX08FRO665-21 02DT 2007	2007	120	0	62	6.0	160	22.65	26249.44	43049.08
4	Dish	JMA	MX08FRO665-21 02DT 2100	2100	120	0	65	6.0	160	22.65	26249.44	43049.08
5	Dish	JMA	MX08FRO665-21 02DT 600	600	240	0	62	6.0	120	17.45	5945.40	9750.46
5	Dish	JMA	MX08FRO665-21 02DT 2007	2007	240	0	62	6.0	160	22.65	26249.44	43049.08
5	Dish	JMA	MX08FRO665-21 02DT 2100	2100	240	0	65	6.0	160	22.65	26249.44	43049.08
6	Dish	JMA	MX08FRO665-21 02DT 600	600	240	0	62	6.0	120	17.45	5945.40	9750.46
6	Dish	JMA	MX08FRO665-21 02DT 2007	2007	240	0	62	6.0	160	22.65	26249.44	43049.08

6	Dish	JMA	MX08FRO665-21 02DT 2100	2100	240	0	65	6.0	160	22.65	26249.44	43049.08
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- Note there are 2 Dish Wireless antennas per sector at this site. For clarity, the different frequencies for each antenna are entered on separate lines.
- Gain includes antenna and combiner.

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Penthouse	Z-Height Lower Penthouse	Z-Height Main Roof	Z-Height Top Floor	Z-Height Adjacent Building Roof	Z-Height Ground
1	Dish	53.8	36.1	44.0	1.0	4.0	7.5	17.5	32.0	44.0
2	Dish	57.9	33.5	44.0	1.0	4.0	7.5	17.5	32.0	44.0
3	Dish	64.9	1.7	44.0	1.0	4.0	7.5	17.5	32.0	44.0
4	Dish	62.8	5.5	44.0	1.0	4.0	7.5	17.5	32.0	44.0
5	Dish	5.2	50.9	47.0	4.0	7.0	10.5	20.5	35.0	47.0
6	Dish	0.9	48.6	47.0	4.0	7.0	10.5	20.5	35.0	47.0

- Note the Z-Height represents the distance from the antenna centerline in feet.

The above tables contain an inventory of proposed Dish Wireless antennas and other carrier antennas if sufficient information was available to model them. Note that EBI uses an assumed set of antenna specifications and powers for unknown and other carrier antennas for modeling purposes. The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered uncontrolled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Appendix C. Appendix B presents a site safety plan that provides a plan view of the rooftop with antenna locations.

### 3.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical MPE modeling using RoofMaster™ software to estimate the worst-case power density at the site’s nearby broadcast levels resulting from operation of the antennas. RoofMaster™ is a widely-used predictive modeling program that has been developed by Waterford Consultants to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications Commission (FCC) Office of Engineering & Technology (OET) Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields” (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

For this report, EBI utilized antenna and power data provided by Dish Wireless and compared the resultant worst-case MPE levels to the FCC’s occupational/controlled exposure limits outlined in OET Bulletin 65. The assumptions used in the modeling are based upon information provided by Dish Wireless and information gathered from other sources. Elevations of walking/working surfaces were estimated based on elevations provided and available aerial imagery. Sector orientation assignments were made assuming coverage is directed to areas of site. Changes to antenna mount heights or placement will impact

site compliance. The parameters used for modeling are summarized in the Site Description antenna inventory table in Section 2.0.

There are no other wireless carriers with equipment installed at this site.

Based on worst-case predictive modeling, the worst-case emitted power density may exceed the FCC's general public limit within approximately 16 feet of Dish Wireless's Sector A antennas on the penthouse roof level, within approximately 12 feet of Dish Wireless's Sector B antennas on the lower penthouse roof level, and within approximately 4 feet of Dish Wireless's Sector A and C antennas on the main roof level. Modeling also indicates that the worst-case emitted power density may exceed the FCC's occupational limit within approximately 10 feet of Dish Wireless's Sector A antennas on the penthouse rooftop level, within approximately 3 feet of Dish Wireless's Sectors C antennas on the lower penthouse level, and within approximately 4 feet of Dish Wireless's Sectors A antennas on the main roof level. At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the Dish Wireless antennas is approximately 759.75 percent of the FCC's general public limit (151.95 percent of the FCC's occupational limit). The composite exposure level from all carriers on this site is approximately 759.75 percent of the FCC's general public limit (151.95 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

The Site Safety Plan also presents areas where Dish Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

The inputs used in the modeling are summarized in the Site Description antenna inventory table in Section 2.0. A graphical representation of the RoofMaster™ modeling results is presented in Appendix B. Microwave dish antennas are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage. The maximum power density generated by all carrier antennas, including microwaves and panel antennas, is included in the modeling results presented within this report.

#### **4.0 MITIGATION/SITE CONTROL OPTIONS**

EBI's modeling indicates that there are areas in front of the Dish Wireless antennas that exceed the FCC standards for general public and occupational exposure. In order to alert people accessing the rooftop, a Guidelines sign and an NOC Information are recommended for installation at each access point to the rooftop. Caution signs are recommended for installation behind the Dish Wireless Sector A, B, and C antennas and on the barriers in front of the Dish Wireless Sectors A and B antennas. Additionally, there are areas on the penthouse and lower penthouse levels that exceed the FCC standards for general public and occupational exposure. Caution signs are recommended for installation on any approaching sides of the penthouse and lower penthouse. These signs must be placed in a conspicuous manner so that they are visible to any person approaching the barrier from any direction.

Barriers are recommended for installation when possible to block access to the areas in front of the antennas that exceed the FCC general public and/or occupational limits. Barriers may consist of rope, chain, or fencing. Painted stripes should only be used as a last resort. One 5-foot barrier is recommended in front of the Dish Wireless Sector A and B antennas. There are no barriers recommended on the penthouse or lower penthouse levels because they are within 6 feet of a parapet less than 39 inches in height.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the rooftop should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage and installation of the recommended barriers, and signify their understanding of the Site Safety Plan.

To reduce the risk of exposure, EBI recommends that access to areas associated with the active antenna installation be restricted and secured where possible.

Implementation of the signage and installation of the recommended barriers recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

## **5.0 SUMMARY AND CONCLUSIONS**

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Dish Wireless Site Number SFSFO00959B located at 2943 MacArthur Blvd in Oakland, California to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, the worst-case emitted power density may exceed the FCC's general public limit within approximately 118 feet of Dish Wireless's proposed antennas at the main roof level. Modeling also indicates that the worst-case emitted power density may exceed the FCC's occupational limit within approximately 28 feet of Dish Wireless's proposed antennas at the main roof level.

Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only Dish Wireless has the ability to lockout/tagout the facility, or to authorize others to do so.

## **6.0 LIMITATIONS**

This report was prepared for the use of Dish Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

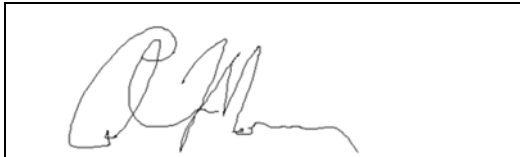
# **Appendix A**

## **Certifications**

## Preparer Certification

I, Colin Mounce, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified “occupational” under the FCC regulations.
- I am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.

A rectangular box containing a handwritten signature in black ink. The signature appears to be 'C. Mounce'.



Reviewed and Approved by:



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sealed 17mar2022

Michael McGuire  
Electrical Engineer  
[mike@h2dc.com](mailto:mike@h2dc.com)

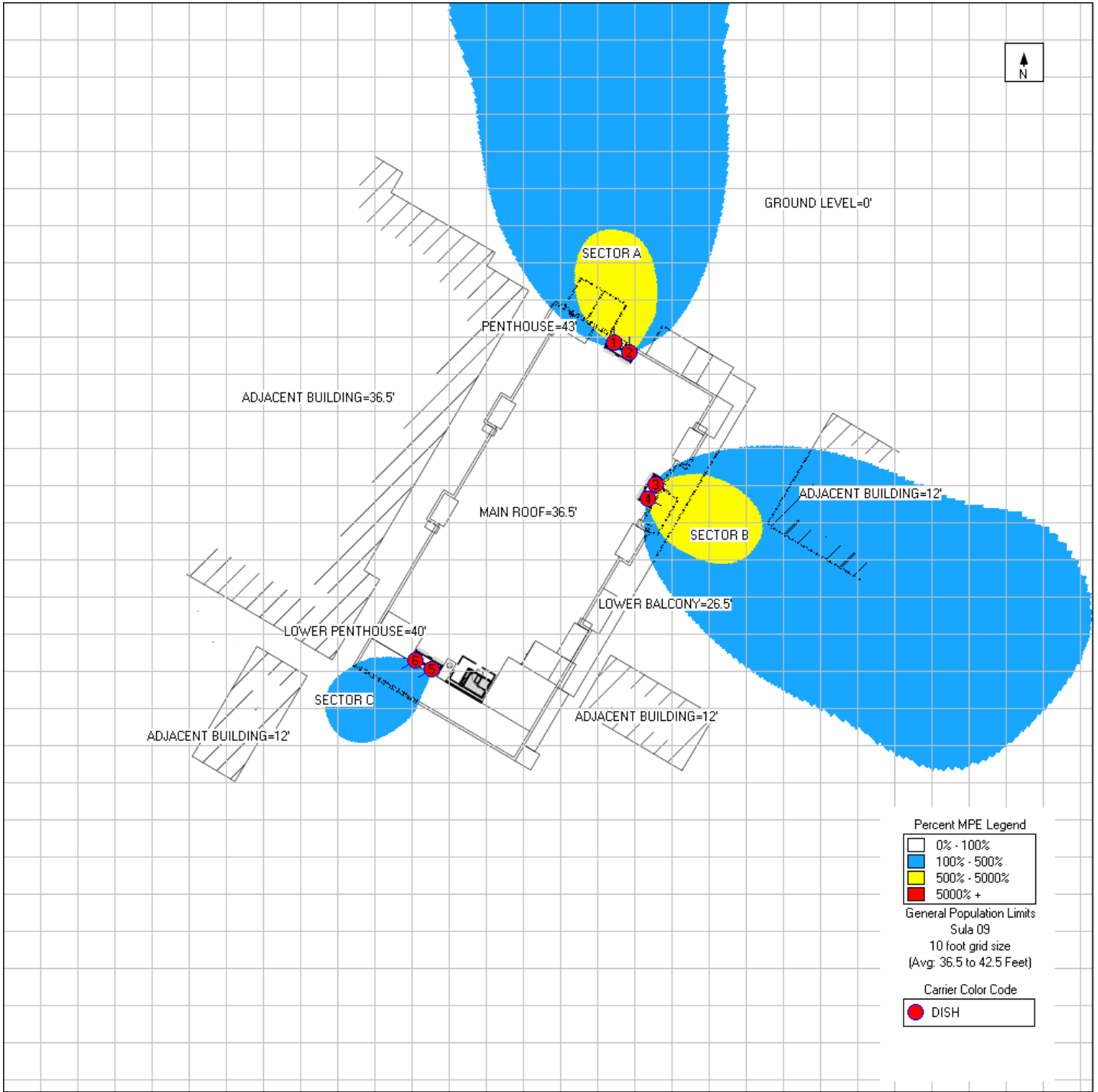
Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the building and related structures, as well as the impact of the antennas and broadcast equipment on the structural integrity of the building, are specifically excluded from EBI's scope of work.

**Appendix B**

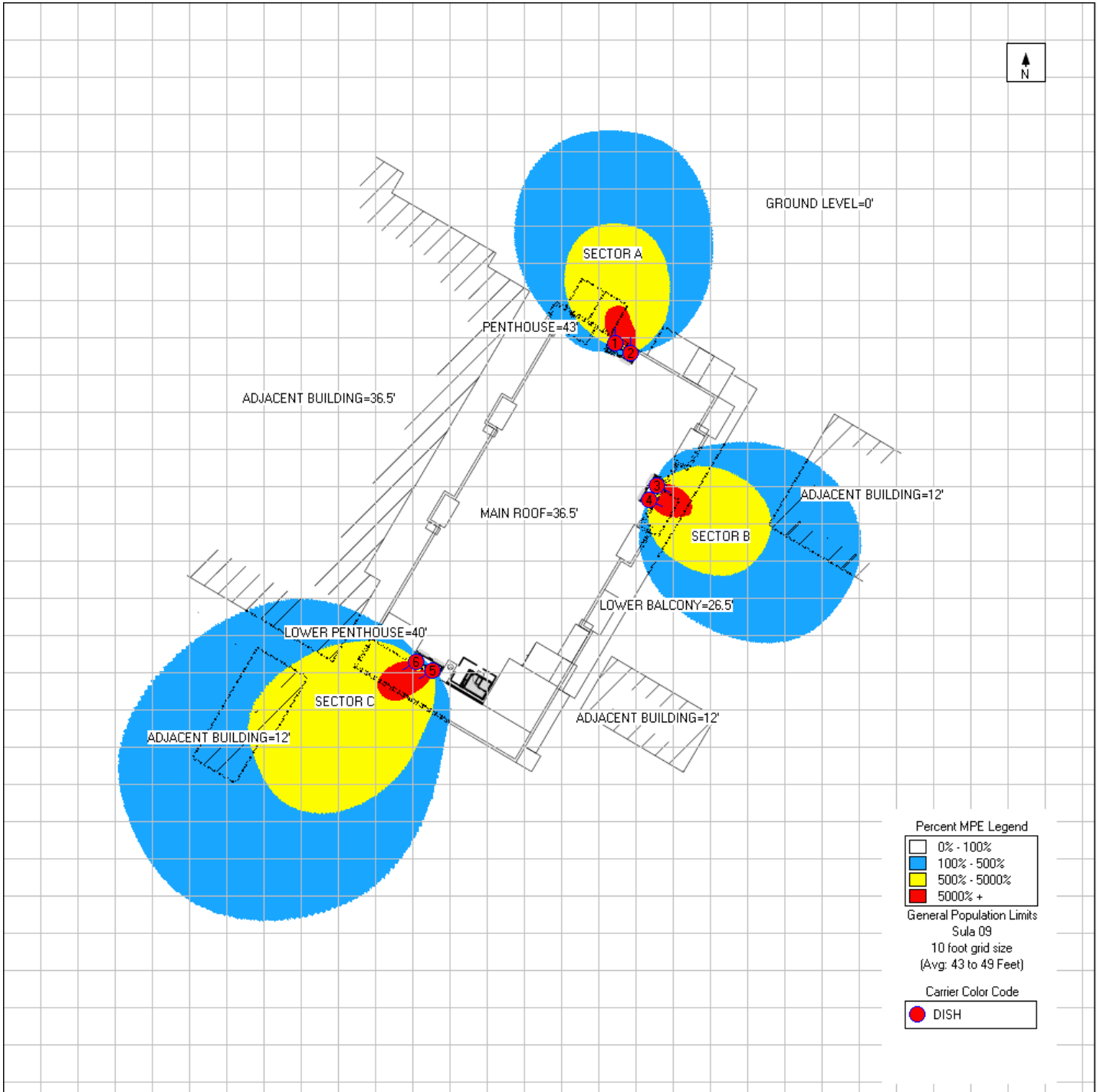
**Radio Frequency Electromagnetic Energy**

**Safety Information and Signage Plans**

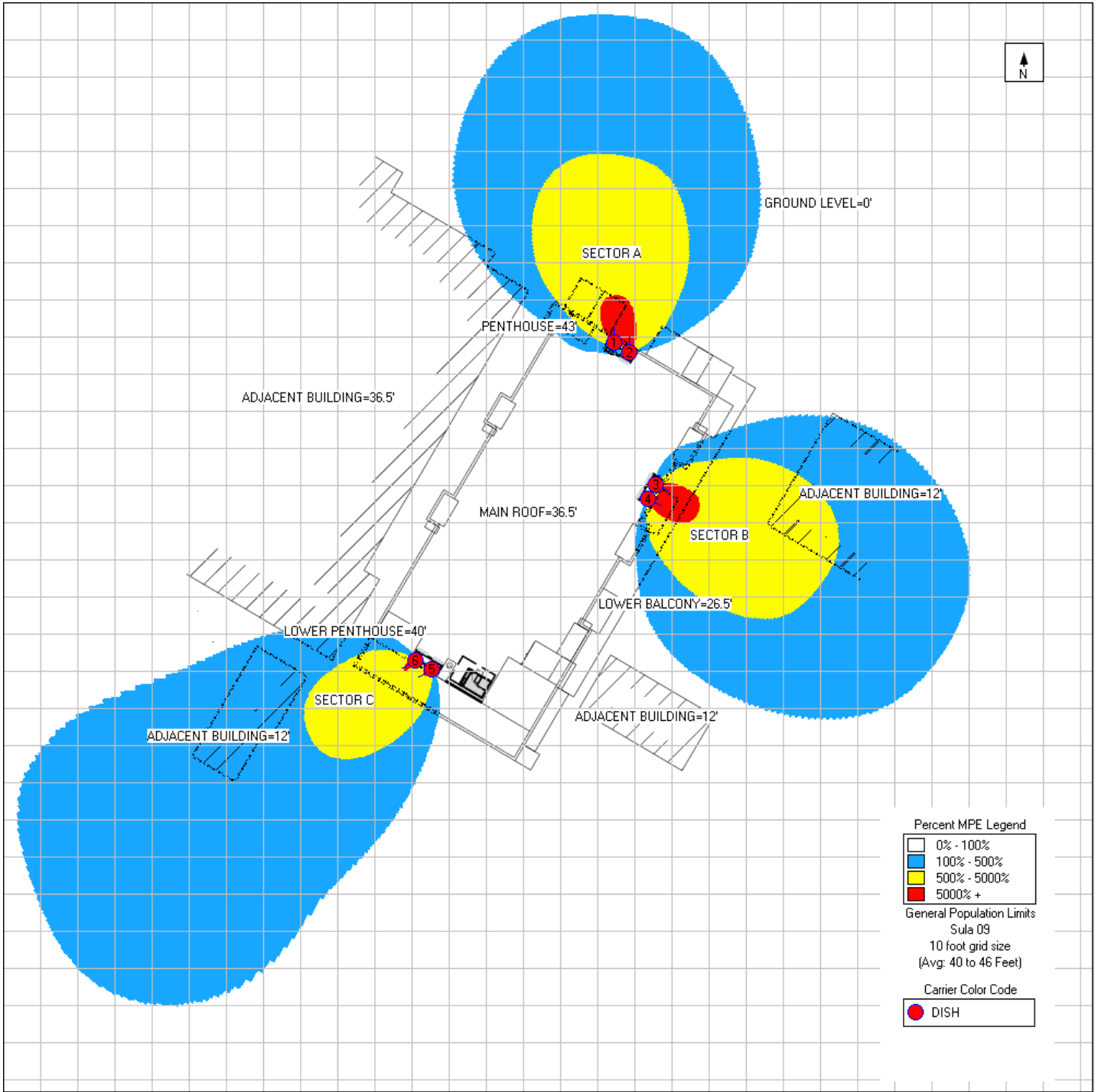
### Nearest Walking Surface (Main Roof Level) Simulation



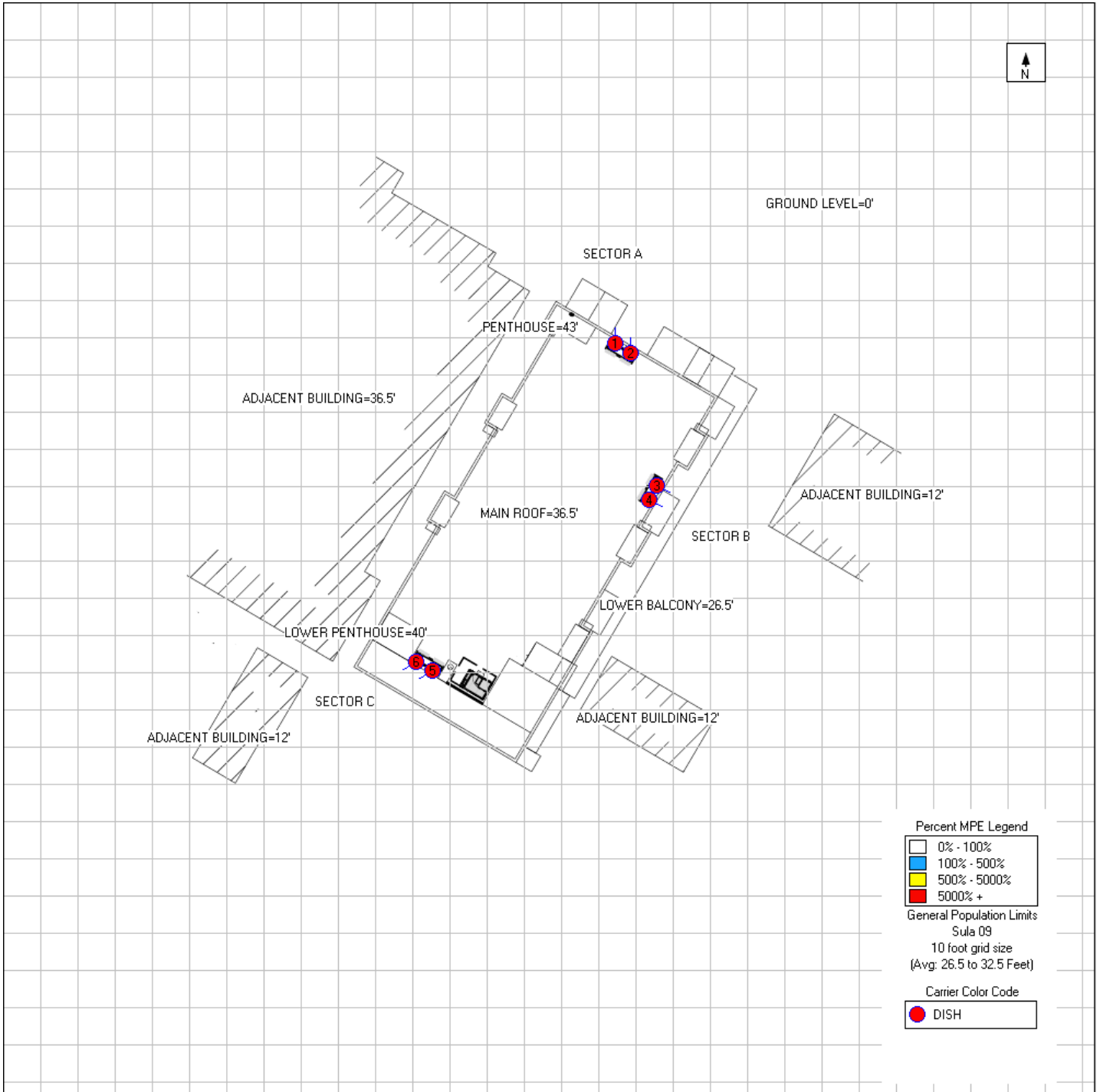
### Penthouse Level Simulation



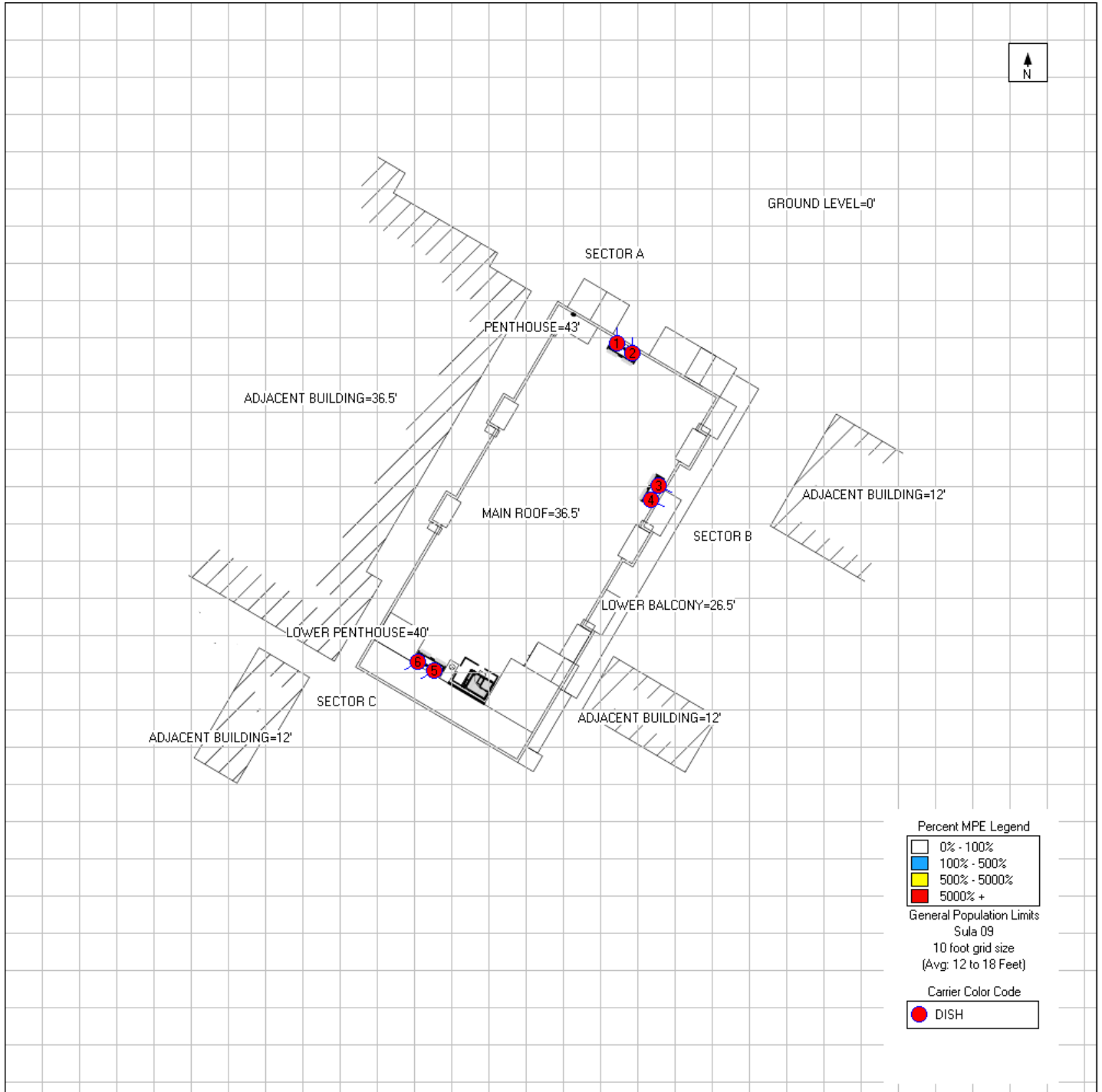
### Lower Penthouse Level Simulation



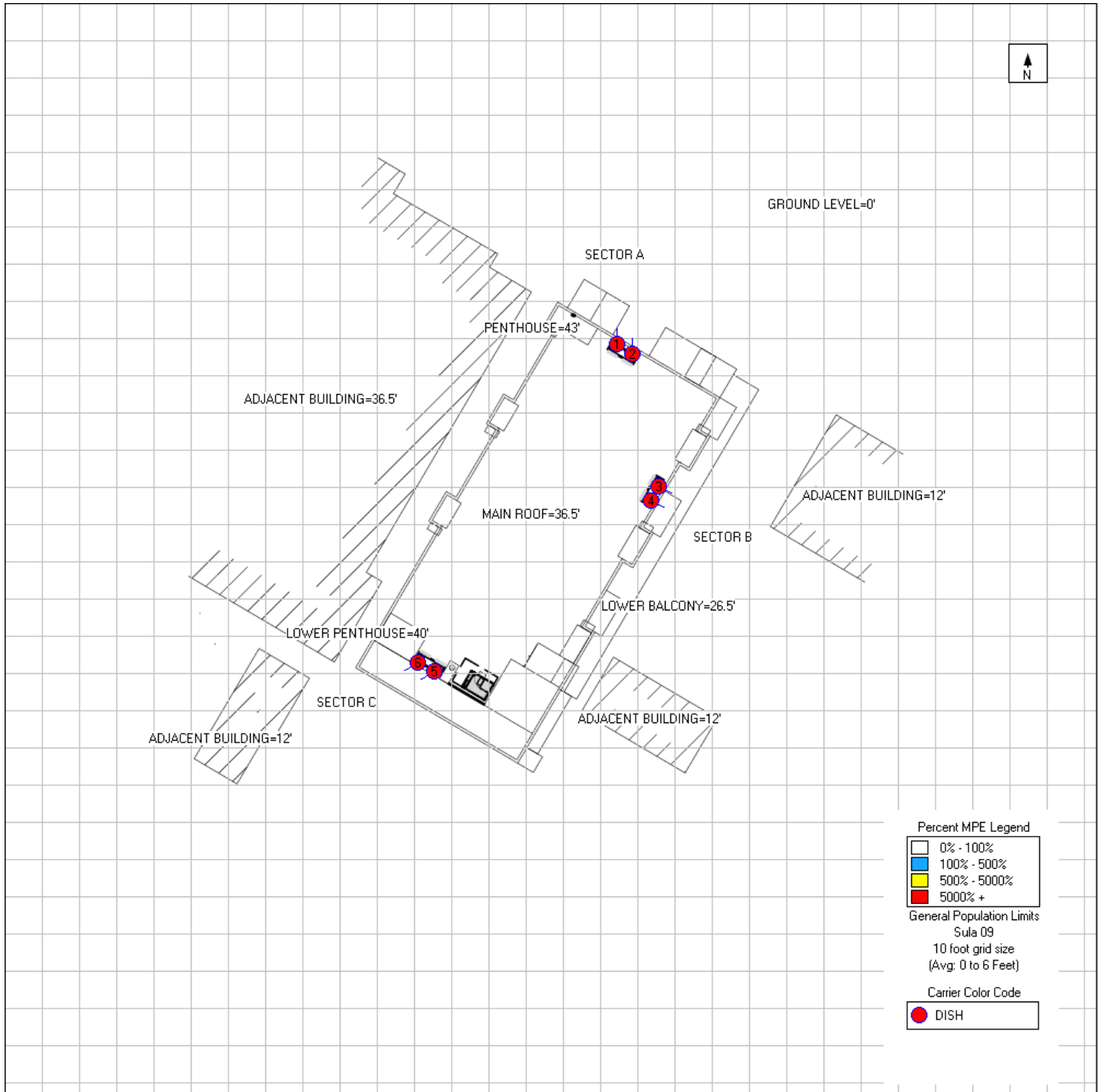
### Top Occupied Floor Level Simulation



## Adjacent Building Roof Level Simulation

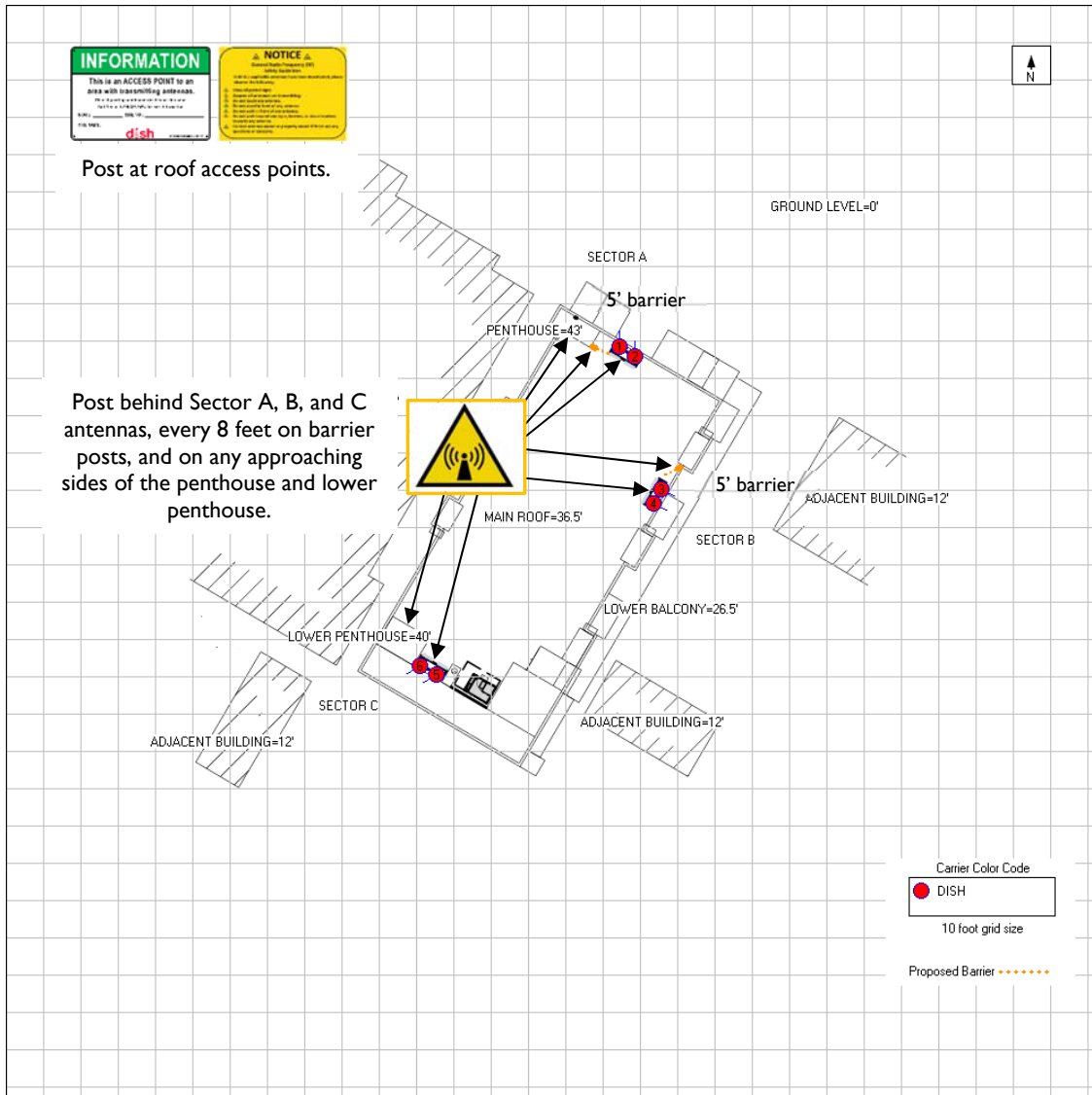







### Ground Level Simulation





## Dish Wireless Safety (Signage) Plan



Sign	Posting Instructions	Required Signage / Mitigation
	<b>NOC Information</b> Information signs are used to provide contact information for any questions or concerns for personnel accessing the site.	Securely post at the main rooftop access door and every point of access to the site in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	<b>Guidelines</b> Informational sign used to notify workers that there are active antennas installed and provide guidelines for working in RF environments.	Securely post at the main rooftop access door and every point of access to the site in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	<b>Notice</b> Used to notify individuals they are entering an area where the power density emitted from transmitting antennas may exceed the FCC's MPE limit for the general public or occupational exposures.	Signage not required.
	<b>Caution</b> Used to notify individuals that they are entering a hot spot where either the general public or occupational FCC's MPE limit is or could be exceeded.	Post behind Sector A, B, and C antennas. Post every 8 feet on barrier posts. Post on any approaching sides of penthouse and lower penthouse.
	<b>Warning</b> Used to notify individuals that they are entering a hot zone where the occupational FCC's MPE limit has been exceeded by 10x.	Signage not required.

# **Appendix C**

## **Federal Communications Commission (FCC) Requirements**

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

**Occupational/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. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general public/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

**General public/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. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

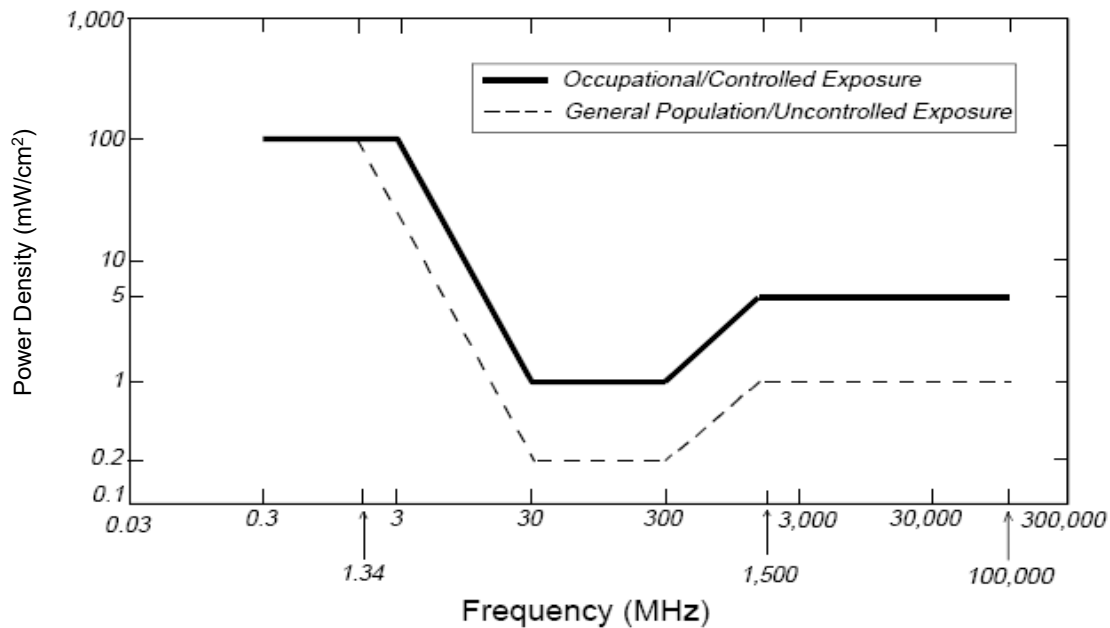
Table I and Figure I (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm<sup>2</sup>). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm<sup>2</sup>) and an uncontrolled MPE of 1 mW/cm<sup>2</sup> for equipment operating in the 1900 MHz frequency range. For the Dish Wireless equipment operating at 600 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm<sup>2</sup> and an uncontrolled MPE of 0.57 mW/cm<sup>2</sup>. For the Dish Wireless equipment operating at 1900 MHz, the FCC's occupational MPE is 5.0 mW/cm<sup>2</sup> and an uncontrolled MPE limit of 1.0 mW/cm<sup>2</sup>. These limits are considered protective of these populations.

Table I: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)  
 \* Plane-wave equivalent power density

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



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Microwave (Point-to-Point)	5,000 - 80,000 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Broadband Radio (BRS)	2,600 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Wireless Communication (WCS)	2,300 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Advanced Wireless (AWS)	2,100 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Cellular Telephone	870 MHz	2.90 mW/cm <sup>2</sup>	0.58 mW/cm <sup>2</sup>
Specialized Mobile Radio (SMR)	855 MHz	2.85 mW/cm <sup>2</sup>	0.57 mW/cm <sup>2</sup>
Long Term Evolution (LTE)	700 MHz	2.33 mW/cm <sup>2</sup>	0.47 mW/cm <sup>2</sup>
Most Restrictive Frequency Range	30-300 MHz	1.00 mW/cm <sup>2</sup>	0.20 mW/cm <sup>2</sup>

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

### FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.