



SITE NAME: SUTRO TOWER
SITE ID: CA-SFO0551
AUGMENT ID: CA-SFO0551M15.1 &M15.2 &M15.3
ADDRESS: 1 LA AVANZADA ST.
 SAN FRANCISCO, CA 94131
JURISDICTION: SAN FRANCISCO COUNTY
SITE TYPE: TRANSMISSION TOWER
PROJECT: MICROWAVE SWEEPBACK



APPLICABLE CODES

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

2013 CALIFORNIA ADMINISTRATIVE CODE (CAC)

2013 CALIFORNIA BUILDING CODE (CBC), VOLUME 1 & 2 (2012 EDITION INTERNATIONAL BUILDING CODE WITH 2013 CALIFORNIA AMENDMENTS)

2013 CALIFORNIA ELECTRICAL CODE (2011 EDITION NATIONAL ELECTRICAL CODE WITH 2013 CALIFORNIA AMENDMENTS)

2013 CALIFORNIA MECHANICAL CODE (CMC) (2012 EDITION IAPMO UNIFORM MECHANICAL CODE WITH 2013 CALIFORNIA AMENDMENTS)

2013 CALIFORNIA ENERGY CODE (2013 CALGREEN, CALIFORNIA CODE OF REGULATIONS, PART 6, TITLE 24)

2013 CALIFORNIA FIRE CODE (CFC) (2012 EDITION OF INTERNATIONAL FIRE CODE WITH 2010 CALIFORNIA AMENDMENTS)

2013 CALIFORNIA GREEN CODE

2013 CALIFORNIA REFERENCES STANDARDS CODE CITY/COUNTY ZONING ORDINANCES



PROJECT SUMMARY

SITE NAME: SUTRO TOWER

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SITE ADDRESS: 1 LA AVANZADA ST.
 SAN FRANCISCO, CA 94131

COUNTY: SAN FRANCISCO

ZONING JURISDICTION: SAN FRANCISCO COUNTY
ZONING CLASSIFICATION: RH-1(D)
PARCEL ID#: 2724003

SOURCE OF LAT/LONG: SITERRA
LATITUDE: N 37.755128°
LONGITUDE: W -122.452907°
GROUND ELEVATION: 1125' AMSL

PROPERTY OWNER:
COMPANY: SUTRO TOWER INC
CONTACT: VICE PRESIDENT & COO ERICK DAUSMAN
PH: (415) 681-8851
ADDRESS: 1 LA AVANZADA ST.
 SAN FRANCISCO, CA 94131

SHEET INDEX

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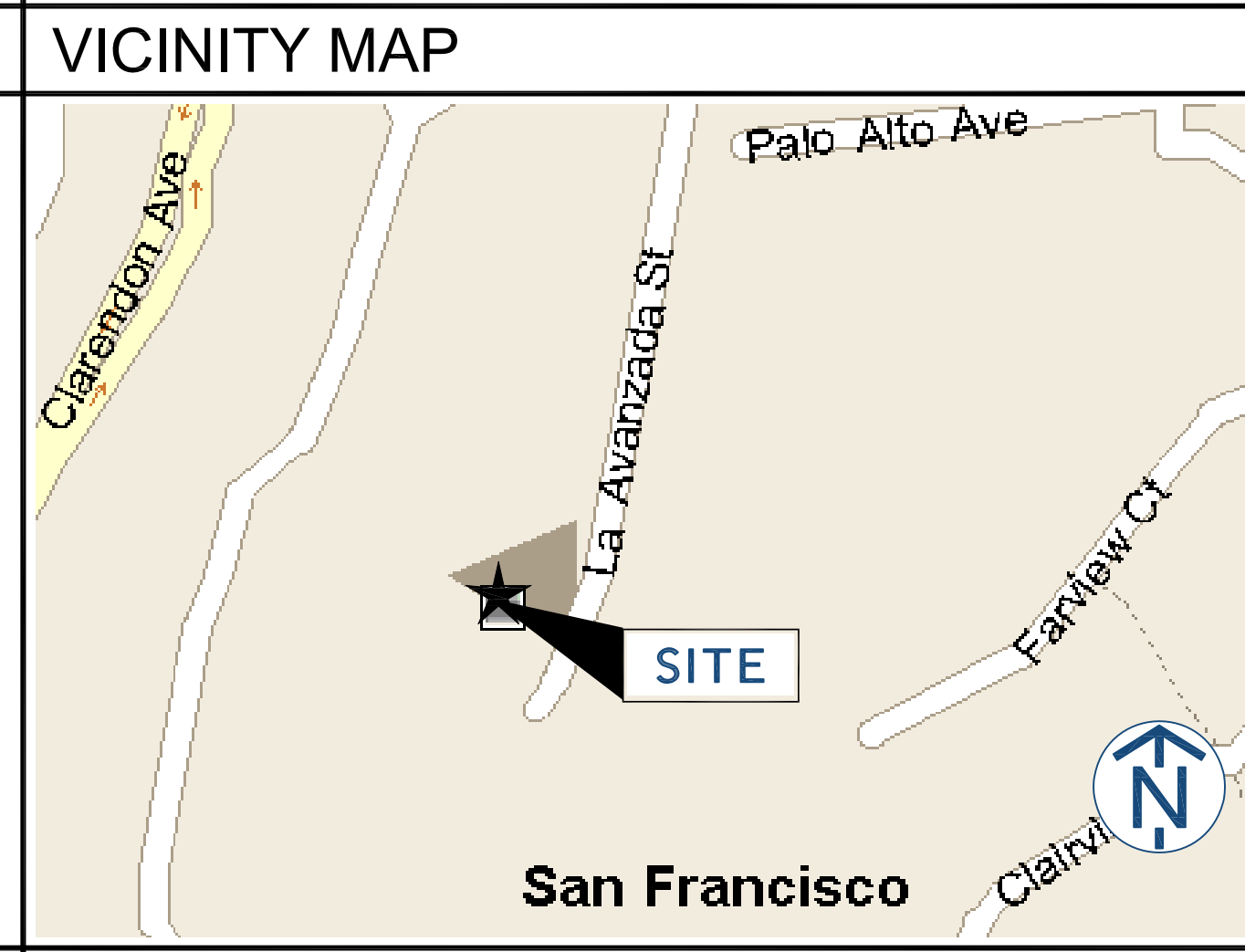
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A	9/4/15	REV A	MP
B	9/24/15	REV B	KR
C	10/2/15	REV C	KR
O	11/4/15	FINAL	KR

PROJECT DESCRIPTION

THE SCOPE OF WORK CONSISTS OF MODIFYING THE EXISTING WIRELESS INSTALLATION:

- REMOVE AND REPLACE (3) EXISTING BACKHAUL DISH ANTENNAS WITH (3) NEW BACKHAUL DISH ANTENNAS
- REMOVE AND REPLACE (3) EXISTING RADIOS WITH (3) NEW RADIOS
- REMOVE AND REPLACE (3) EXISTING COAX CABLES WITH (3) NEW 1/2" CNT400 COAX CABLES

NOTE: DRAWING SCALES ARE FOR 24"x36" SHEETS UNLESS OTHERWISE NOTED.



SITE ACQUISITION:
COMPANY: SAC WIRELESS
CONTACT: JOVAN ZISTAKIS
EMAIL: Jovan.Zistakis@sacw.com
PH: (312) 971-7850

A & E FIRM:
COMPANY: FULLERTON ENGINEERING CONSULTANTS, INC.
CONTACT: SIYKA TODOROVA
EMAIL: stodorova@fullertonengineering.com
OFFICE: (847) 292-0200 EX (234)

CERTIFICATION STATEMENT:

I HEREBY CERTIFY THAT THESE DRAWING WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

SITE NAME	SUTRO TOWER
SITE I.D.	CA-SFO0551
AUGMENT I.D.	CA-SFO0551M15.1 &M15.2 &M15.3
SITE ADDRESS	1 LA AVANZADA ST. SAN FRANCISCO, CA 94131

SIGNATURE BLOCK

APPROVAL	SIGNATURE	DATE
SITE ACQ. MGR		
CONSTRUCTION MGR		
PLANNING CONS.		
RF MGR		
RF ENGINEER		
PROPERTY OWNER		

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE.



PROJECT TEAM

 6100 SPRINT PARKWAY OVERLAND PARK, KS 66251 APPLICANT	 540 W MADISON, 16TH FLOOR CHICAGO, IL 60661 PROJECT MANAGER	 9600 W. BRYN MAWR AVE., SUITE 200 ROSEMONT, ILLINOIS 60018 TEL: 847-292-0200 FAX: 847-292-0206 BER# 0407005874 www.FullertonEngineering.com ENGINEER
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SHEET NAME	TITLE SHEET
SHEET NUMBER	T-1

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SITE ADDRESS			
1 LA AVANZADA ST. SAN FRANCISCO, CA 94131			
SHEET NAME			
RF- EME COMPLIANCE REPORT			
SHEET NUMBER			
Z-1			

RF-EME Compliance Report Site No. CA-SF0551
EBI Project No. 6215005339 1 La Avanzada Street, San Francisco, California

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Sprint to conduct radio frequency electromagnetic (RF-EME) modeling for Sprint Site CA-SF0551 located at 1 La Avanzada Street in San Francisco, California to determine RF-EME exposure levels from proposed Sprint wireless communications equipment at this site. As described in greater detail in Section 11.0 of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. 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.

This report contains a detailed summary of the RF EME analysis for the site.

This document addresses the compliance of Sprint's proposed transmitting facilities independently at the site.

Modeling results included in this report are based on drawings dated October 7, 2015 as provided to EBI Consulting. Subsequent changes to the drawings or site design may yield changes in the MPE levels or FCC Compliance recommendations.

Maximum Permissible Exposure (MPE) Summary			
Location	% of FCC General Public/Uncontrolled Exposure Limit	% of FCC Occupational/Controlled Exposure Limit	Power Density (mW/cm ²)
Sprint Equipment (Panel Antennas)			
Ground	1.60	0.32	0.00853

Statement of Compliance

Based on worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to Sprint's proposed equipment in the area that exceed the FCC's occupational and/or general public exposure limits at this site. As such, the proposed Sprint project is in compliance with FCC rules and regulations.

Signage is recommended at the site as presented in Section 9.0. Posting of the signage brings the site into compliance with FCC rules and regulations.

EBI Consulting • 21 B Street • Burlington, MA 01803 • 1.800.786.2346

RF-EME Compliance Report Site No. CA-SF0551
EBI Project No. 6215005339 1 La Avanzada Street, San Francisco, California

1.0 LOCATION OF ALL EXISTING ANTENNAS AND FACILITIES AND EXISTING RF LEVELS

Sprint proposes the replacement of three (3) backhaul dish antennas on a tower in San Francisco, California. Additionally, there are three (3) existing Sprint panel antennas and ten (10) backhaul dish antennas that are proposed to remain unchanged. The proposed modification will result in a total of thirteen (13) Sprint backhaul dish antennas at the site and three (3) existing panel antennas.

There are no collocated carriers on the tower based on the provided construction drawings. However, review of aerial photographs indicate that numerous additional antennas are located on the tower occupied by Sprint and at ground level surrounding the tower.

2.0 LOCATION OR ALL APPROVED (BUT NOT INSTALLED) ANTENNAS AND FACILITIES AND EXPECTED RF LEVELS FROM THE APPROVED FACILITIES

There are no antennas or facilities that are approved and not installed based on information provided to EBI and Sprint at the time of this report.

3.0 NUMBER AND TYPES OF WIRELESS TELECOMMUNICATION SITES (WTS) WITHIN 100 FEET OF THE PROPOSED SITE

There appears to be at least one Wireless Telecommunication Service (WTS) site within 100 feet of the proposed site. However, this equipment was not included in the analysis due to a lack of available information regarding the antenna installations. Review of aerial photographs indicate that numerous additional antennas are located on the tower occupied by Sprint and at ground level surrounding the tower.

4.0 LOCATION AND NUMBER OF THE SPRINT ANTENNAS AND BACK-UP FACILITIES PER STRUCTURE AND NUMBER AND LOCATION OF OTHER TELECOMMUNICATION FACILITIES ON THE PROPERTY

Sprint proposes the replacement of three (3) backhaul dish antennas on a tower in San Francisco, California. Additionally, there are three (3) existing Sprint panel antennas and ten (10) backhaul dish antennas that are proposed to remain unchanged. The proposed modification will result in a total of thirteen (13) Sprint backhaul dish antennas at the site and three (3) existing panel antennas. In each sector, there is proposed to be one panel antenna transmitting in the 800 MHz and the 1900 MHz frequency ranges. The Sector A antenna will be oriented 120° from true north. The Sector B antenna will be oriented 200° from true north. The Sector C antenna will be oriented 315° from true north. The bottoms of the Sector A, B and C panel antennas will be approximately 173 feet above ground level.

The proposed microwave dishes will be oriented 90.222°, 107.919°, and 111.680° from true north. The proposed dishes will be 352 feet above the ground level.

There are no collocated carriers on the tower based on the provided construction drawings. However, review of aerial photographs indicate that numerous additional antennas are located on the tower occupied by Sprint and at ground level surrounding the tower. This equipment was not included in the analysis due to a lack of available information regarding the antenna installations.

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RF-EME Compliance Report Site No. CA-SF0551
EBI Project No. 6215005339 1 La Avanzada Street, San Francisco, California

5.0 POWER RATING FOR ALL EXISTING AND PROPOSED BACKUP EQUIPMENT SUBJECT TO THE APPLICATION

The operating power of each frequency of panel antennas, for modeling purposes, was assumed to be the following:

Sprint Operating Powers Per Sector		
Frequency (MHz)	Power (Watts)	# of Transmitters
800	20	1
1900	20	6

Additional transmitter information used in the modeling of Sprint antennas is summarized in the RoofView® export file presented in Appendix C.

6.0 TOTAL NUMBER OF WATTS PER INSTALLATION AND THE TOTAL NUMBER OF WATTS FOR ALL INSTALLATIONS ON THE STRUCTURE

The Effective Radiated Power (ERP) for each carrier and frequency is summarized below:

Effective Radiated Power (ERP) per Frequency	
Frequency (MHz)	ERP (Watts)
Sprint 800	1,946
Sprint 1900	11,676

7.0 PREFERRED METHOD OF ATTACHMENT OF PROPOSED ANTENNA WITH PLOT OR ROOF PLAN INCLUDING: DIRECTIONALITY OF ANTENNAS, HEIGHT OF ANTENNAS ABOVE NEAREST WALKING SURFACE, DISCUSS NEARBY INHABITED BUILDINGS

Based on the information provided to EBI, the proposed antennas are to be pipe-mounted to the existing tower and operating in the directions, frequencies, and heights mentioned in section 4.0 above. The facility is located atop a hill. There are residential structures approximately 175 feet west and southeast of the tower.

8.0 ESTIMATED AMBIENT RADIO FREQUENCY FIELDS FOR THE PROPOSED SITE

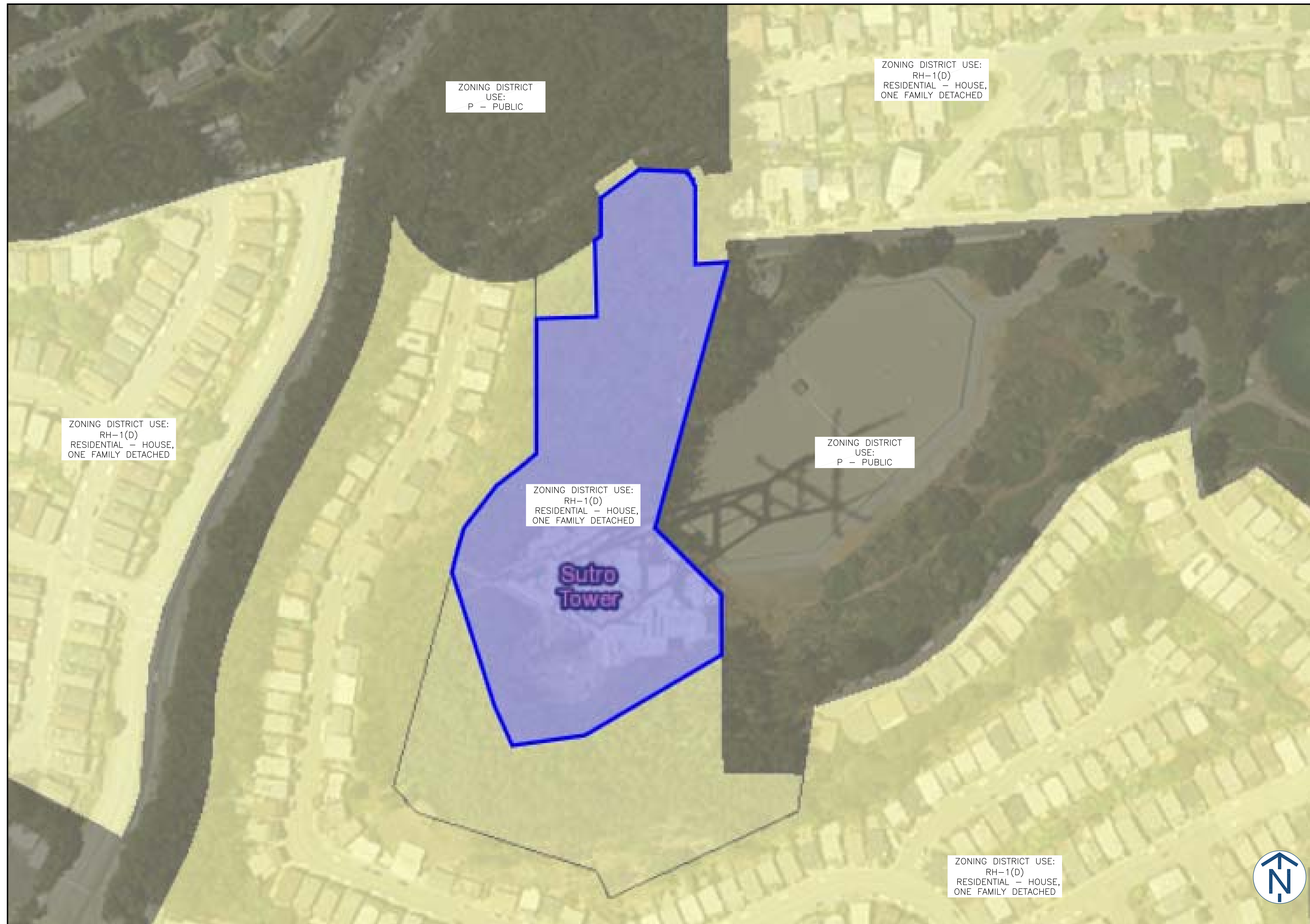
Based on worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to Sprint's proposed equipment in the area that exceed the FCC's occupational and/or general public exposure limits at this site. As such, the proposed Sprint project is in compliance with FCC rules and regulations.

Maximum Permissible Exposure (MPE) Summary			
Location	% of FCC General Public/Uncontrolled Exposure Limit	% of FCC Occupational/Controlled Exposure Limit	Power Density (mW/cm ²)
Sprint Equipment			
Ground	1.60	0.32	0.00853

The inputs used in the modeling are summarized in the RoofView® export file presented in Appendix C.

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SITE NAME

SUTRO TOWER

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CA-SFO0551

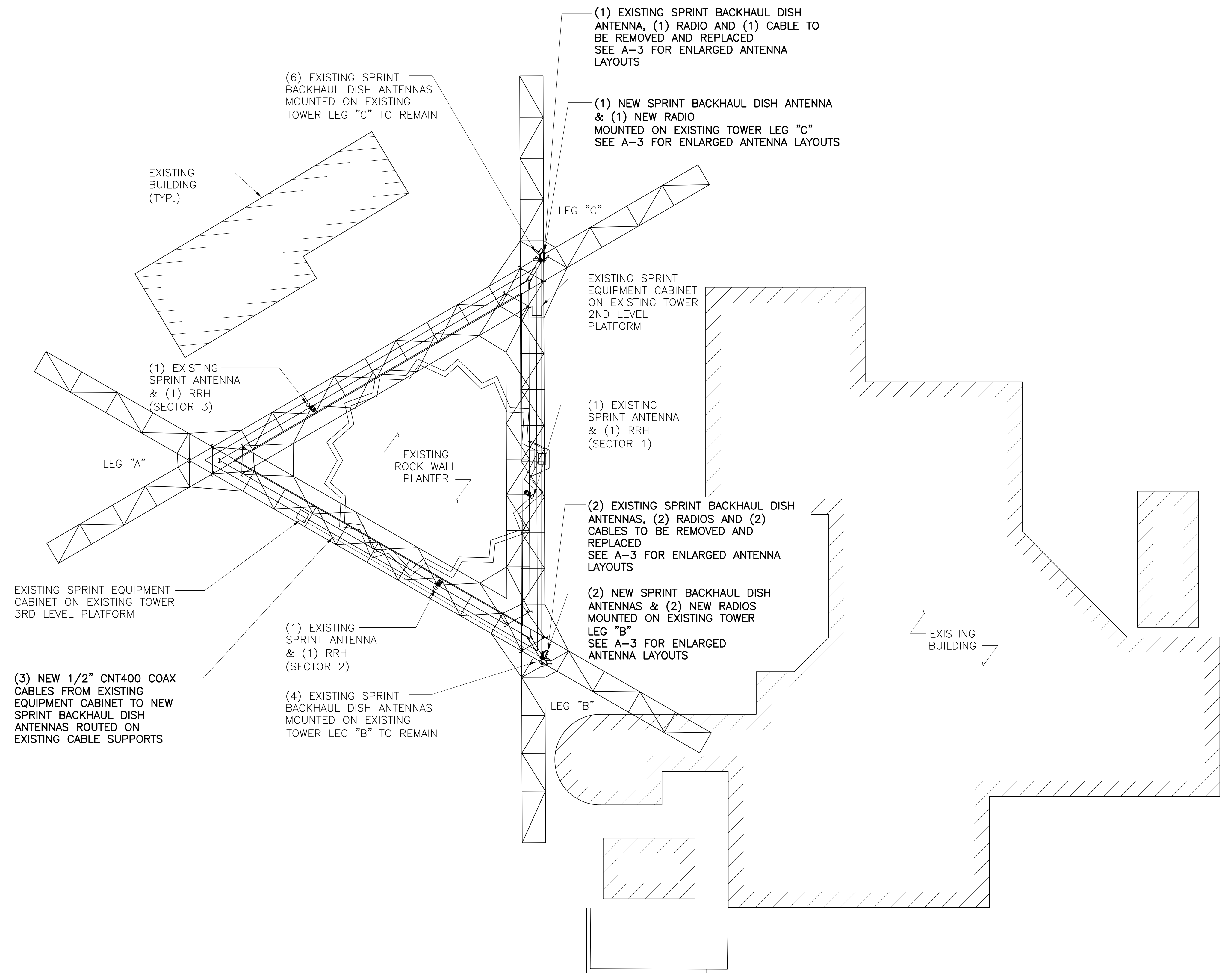
AUGMENT I.D.
**CA-SFO0551M15.1
 &M15.2 &M15.3**

SITE ADDRESS
**1 LA AVANZADA ST.
 SAN FRANCISCO, CA 94131**

SHEET NAME
ZONING MAP

SHEET NUMBER
Z-2

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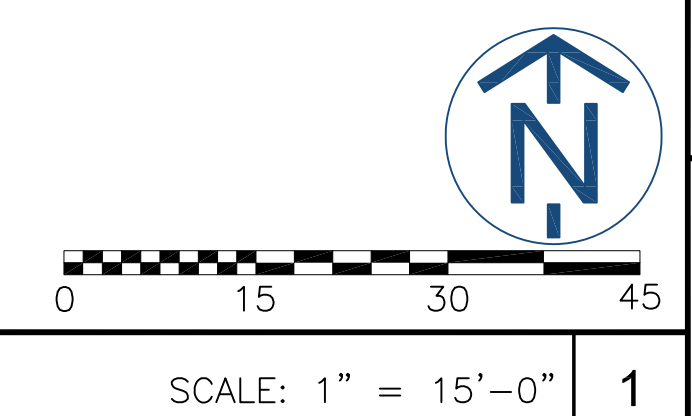
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CA-SFO0551M15.1 & M15.2 & M15.3
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**1 LA AVANZADA ST.
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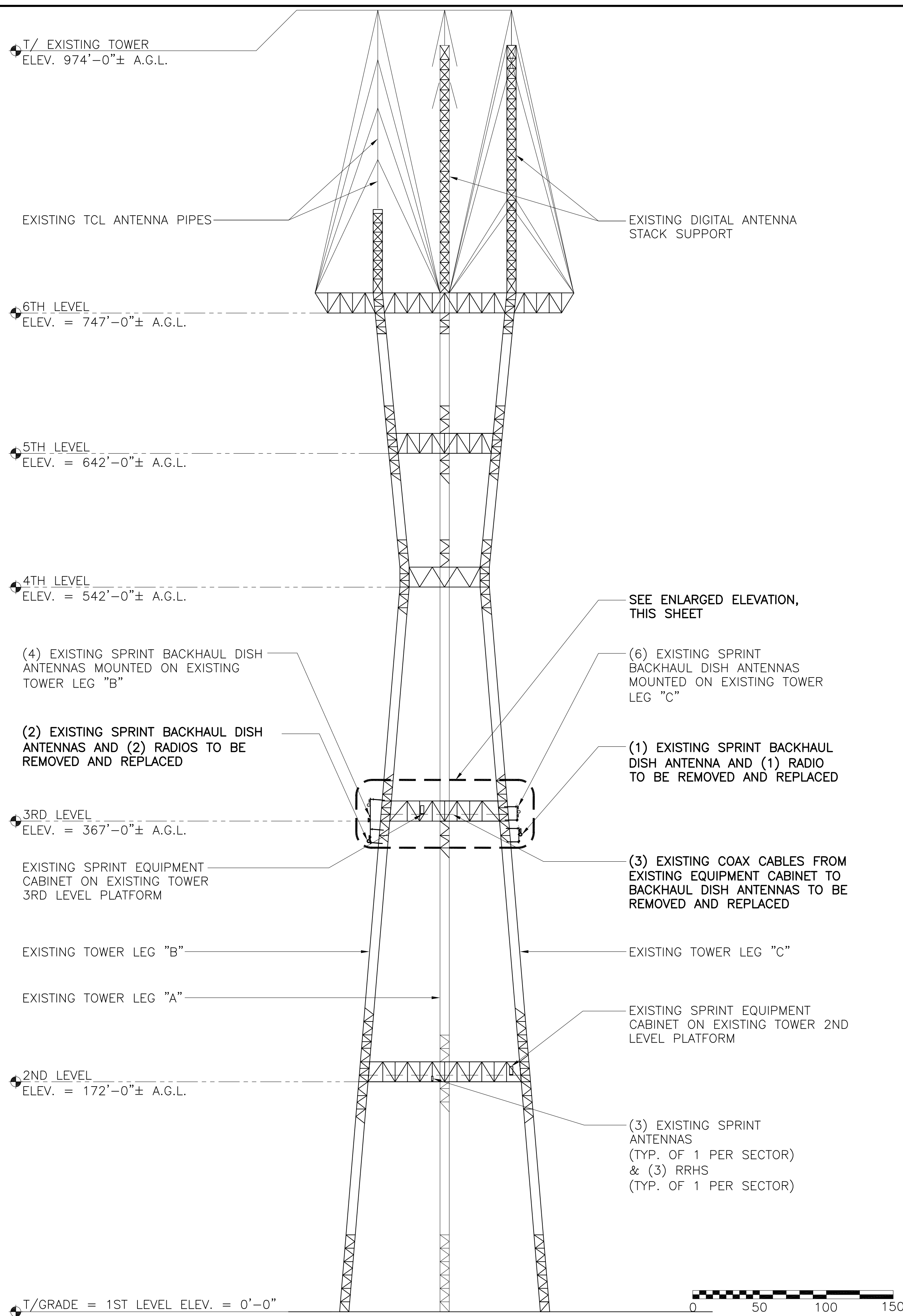
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ENLARGED SITE PLAN

SHEET NUMBER
A-1.1

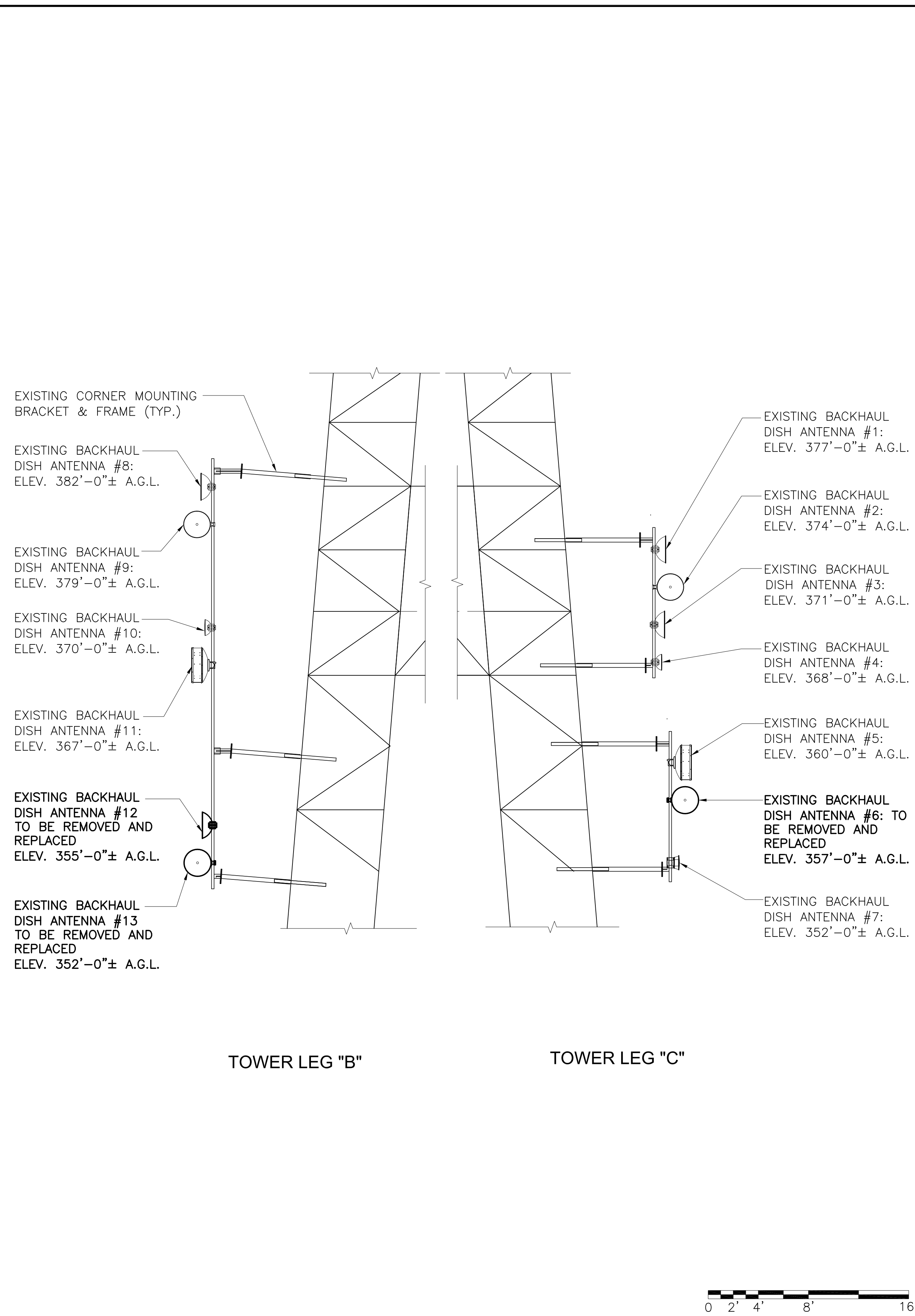
ENLARGED SITE PLAN



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EXISTING TOWER EAST ELEVATION SCALE: 1" = 50'-0" 1



EXISTING TOWER EAST ENLARGED ELEVATION SCALE: 3/16" = 1'-0" 2

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SITE NAME
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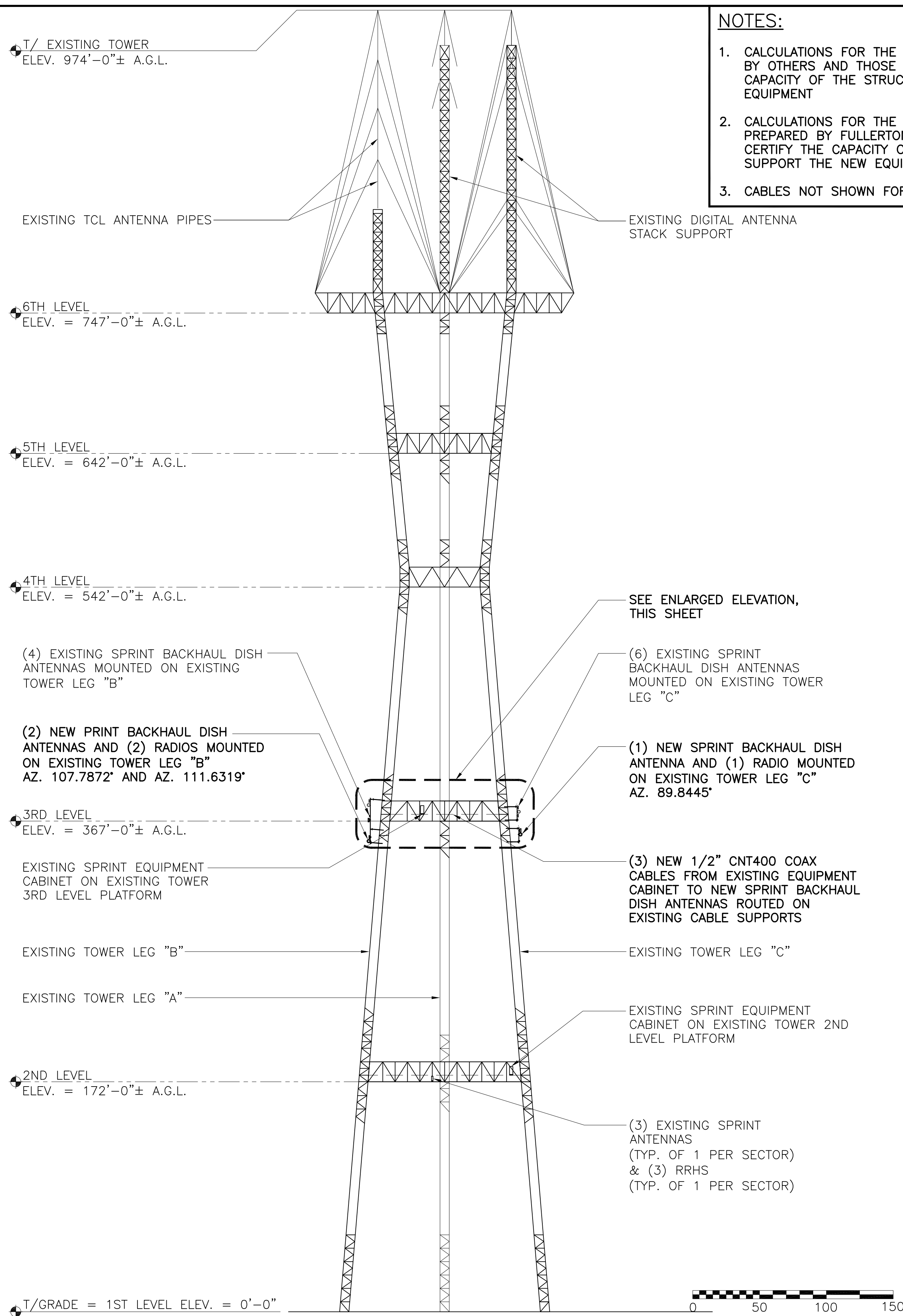
SITE I.D.
CA-SFO0551

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SITE ADDRESS
**1 LA AVANZADA ST.
SAN FRANCISCO, CA 94131**

SHEET NAME
EXISTING EAST TOWER ELEVATIONS

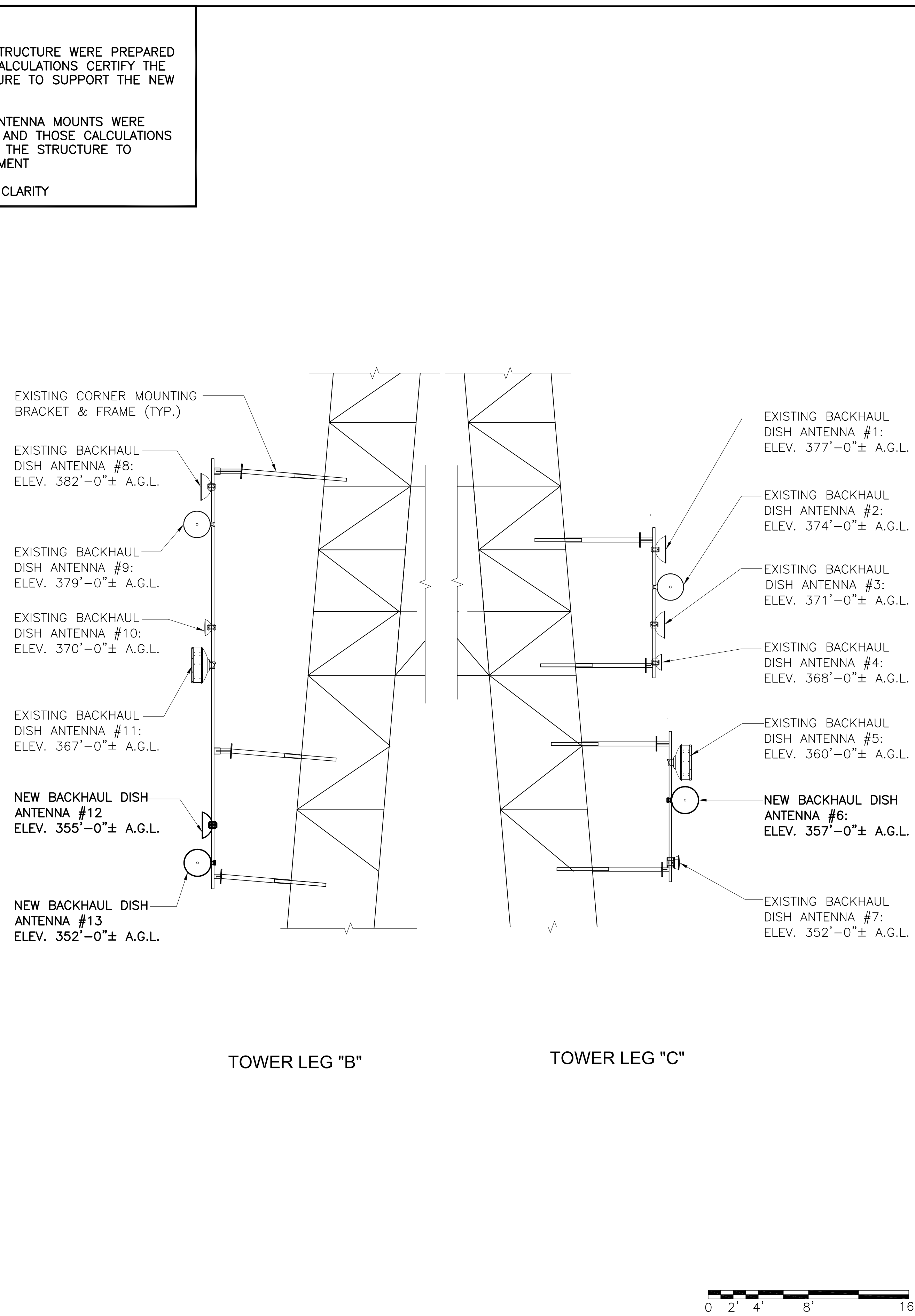
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NOTES:

1. CALCULATIONS FOR THE STRUCTURE WERE PREPARED BY OTHERS AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CALCULATIONS FOR THE ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
3. CABLES NOT SHOWN FOR CLARITY



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SHEET NAME	
NEW EAST TOWER ELEVATIONS	
SHEET NUMBER	
A-2.1	

NEW TOWER EAST ELEVATION SCALE: 1" = 50'-0" 1

NEW TOWER EAST ENLARGED ELEVATION SCALE: 3/16" = 1'-0" 2

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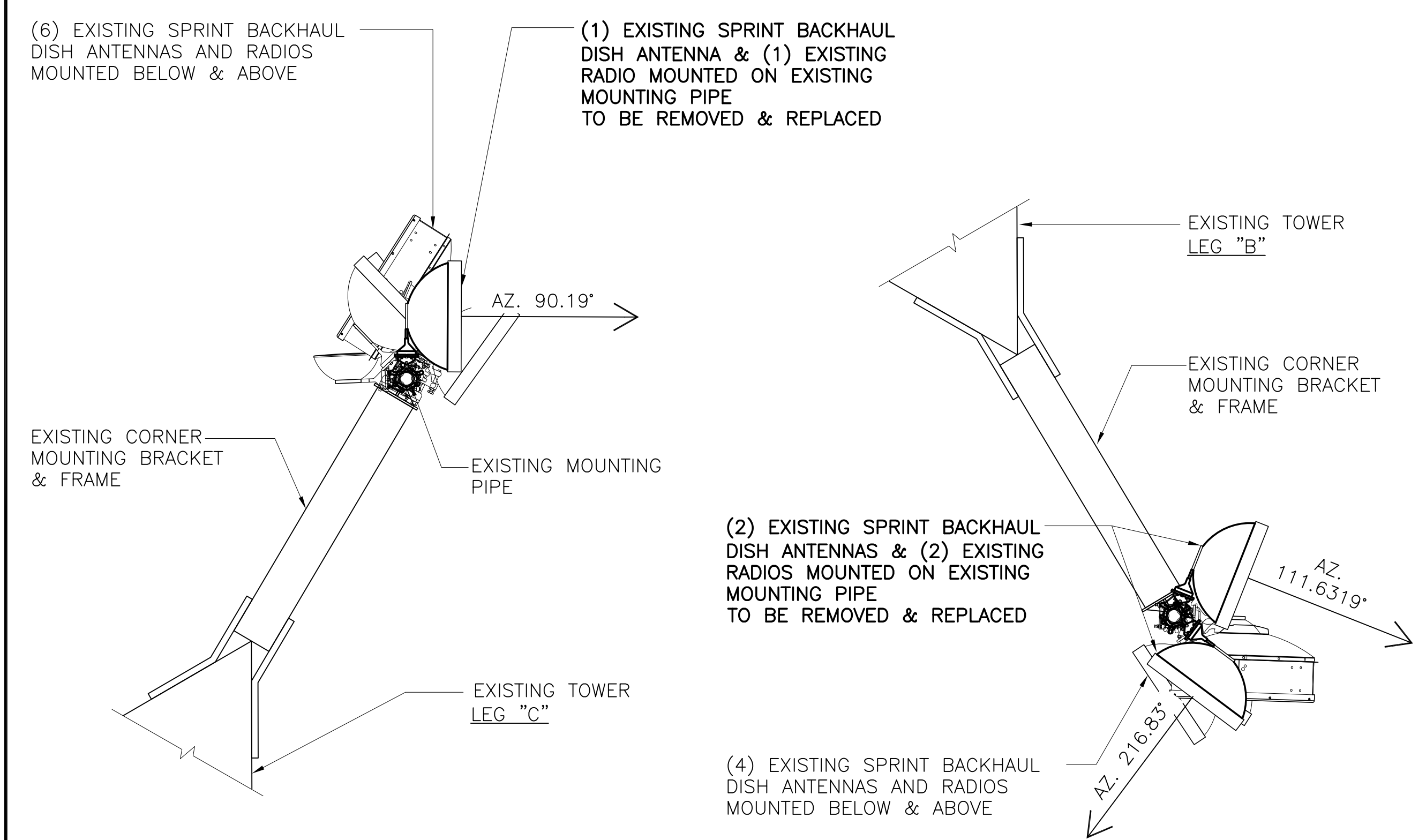
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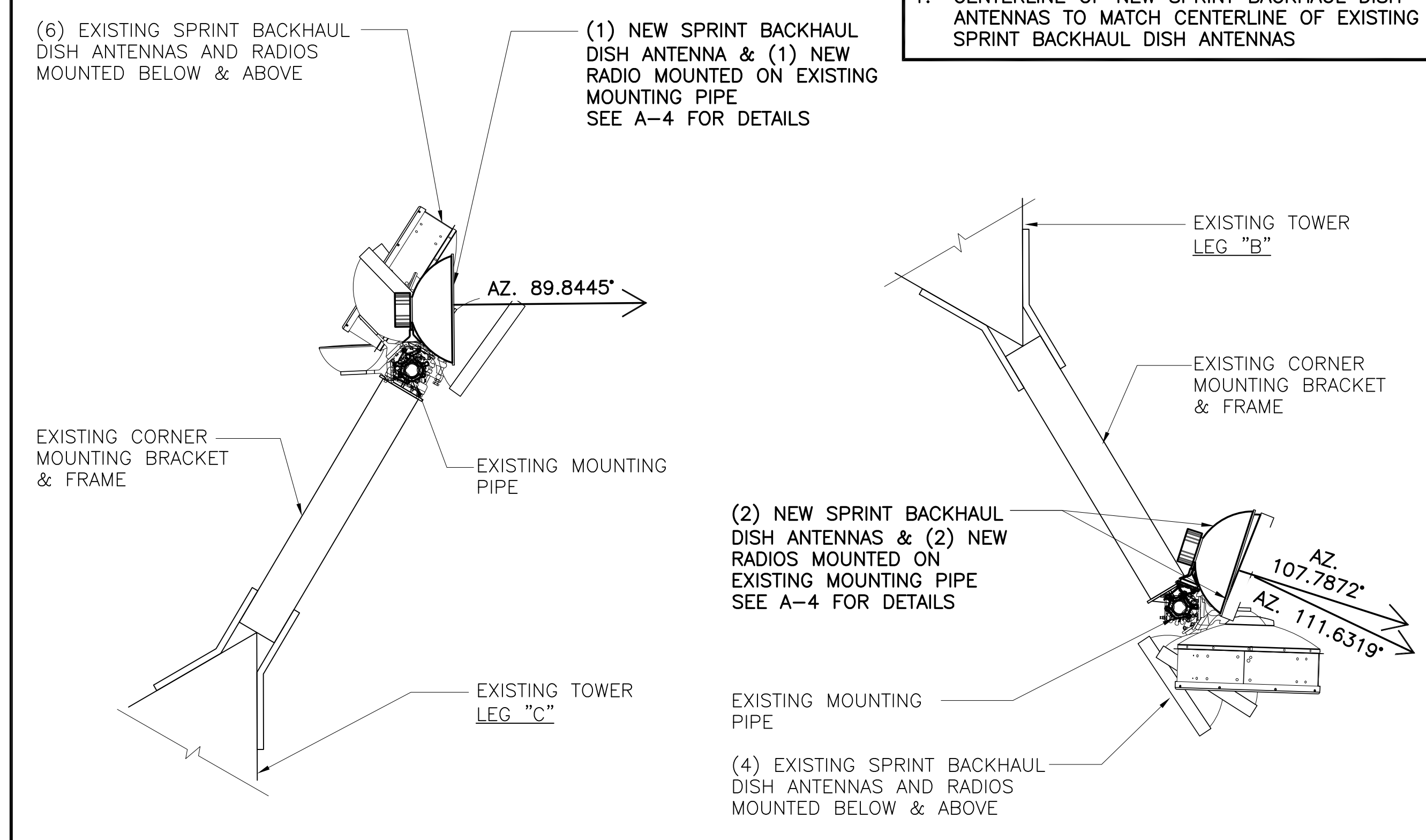
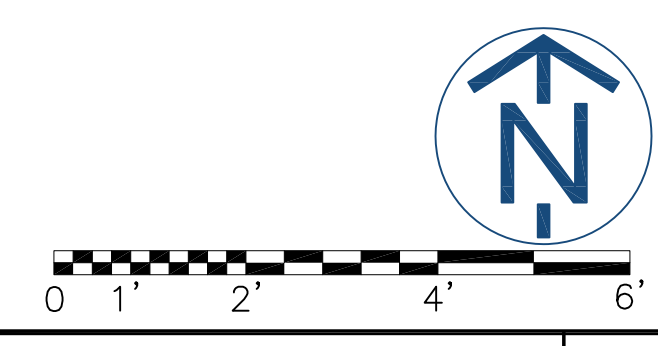
NOTE:
 1. CENTERLINE OF NEW SPRINT BACKHAUL DISH ANTENNAS TO MATCH CENTERLINE OF EXISTING SPRINT BACKHAUL DISH ANTENNAS

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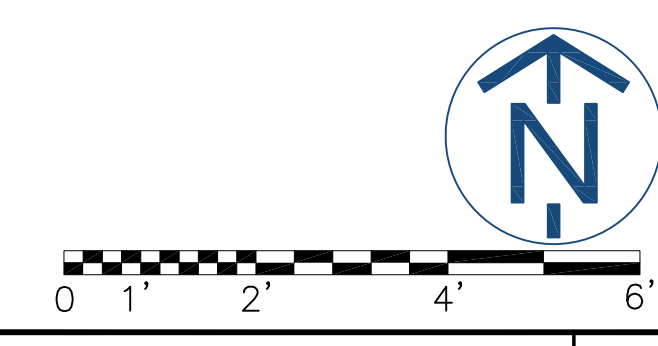
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TOWER LEG "C"



TOWER LEG "B"

TOWER LEG "C"



EXISTING ANTENNA LAYOUT

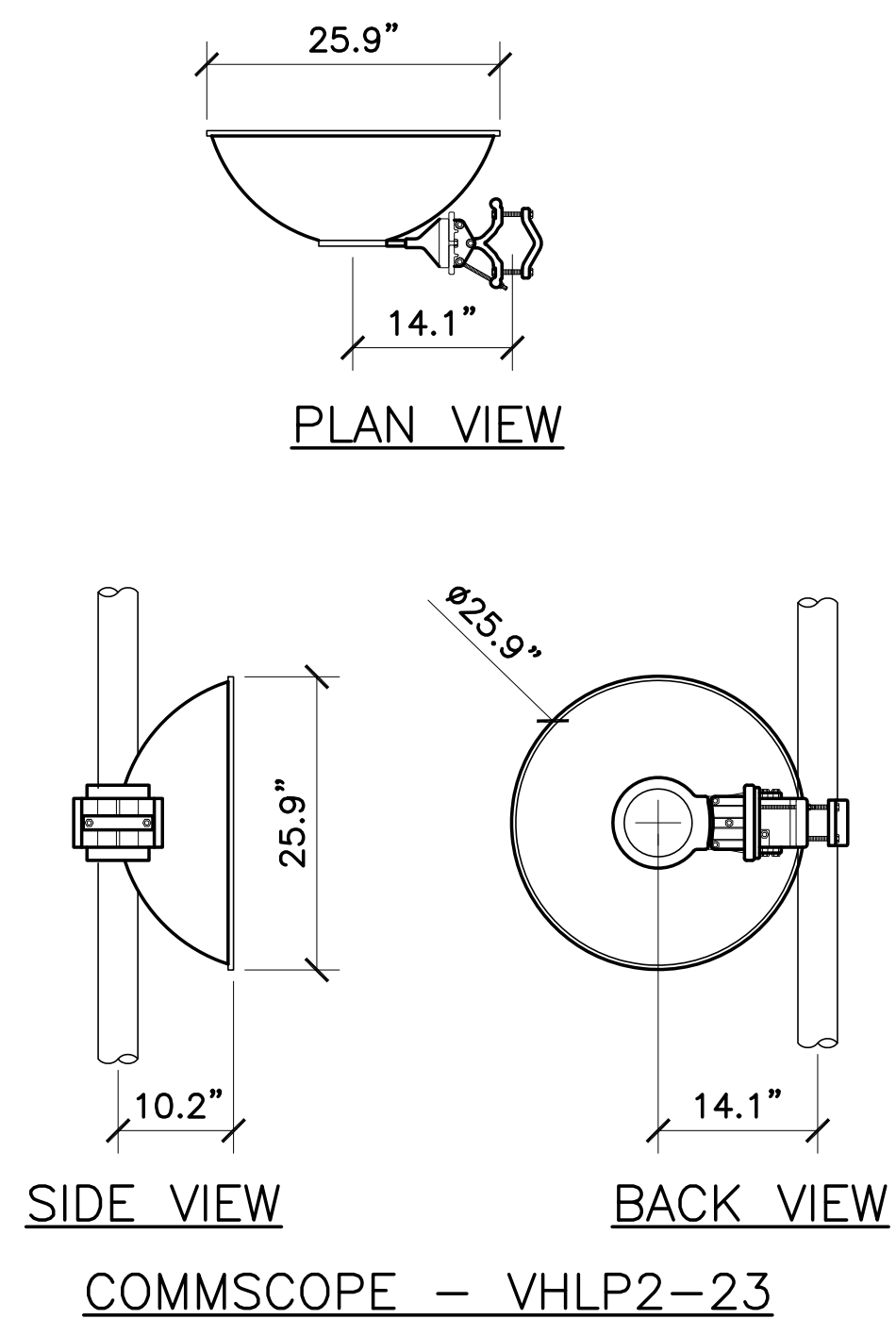
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NEW ANTENNA LAYOUT

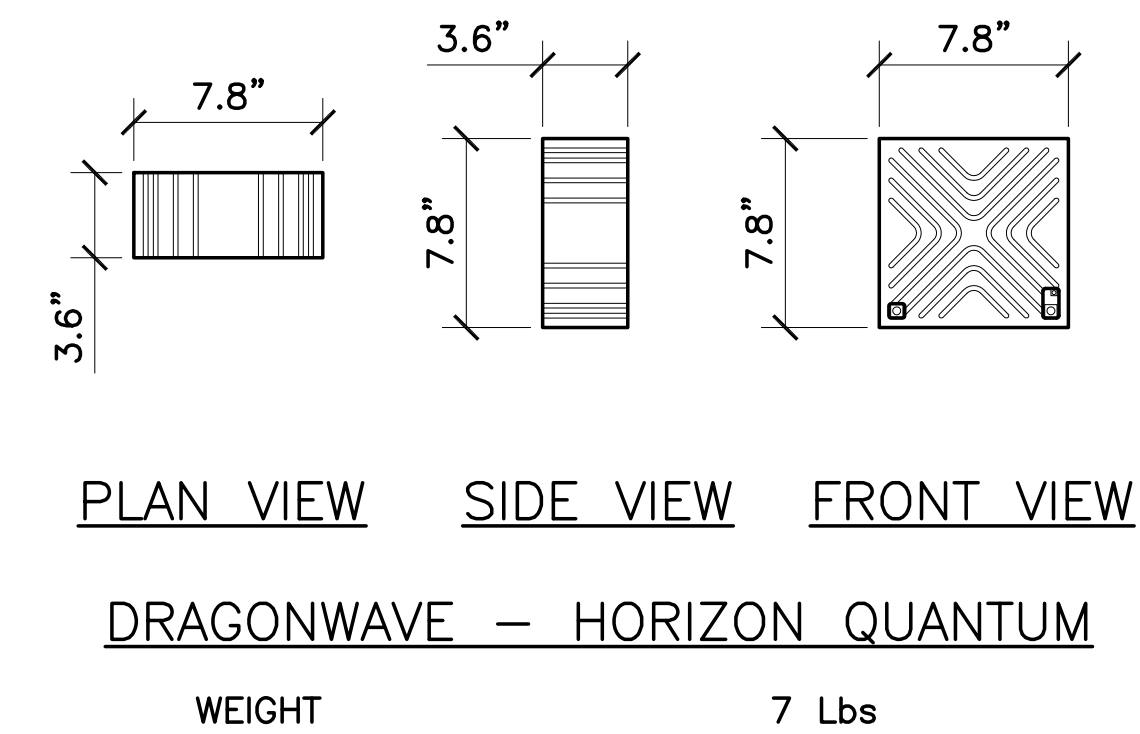
SCALE: 1/2" = 1'-0" 2

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SITE ADDRESS	1 LA AVANZADA ST. SAN FRANCISCO, CA 94131
SHEET NAME	ANTENNA LAYOUTS
SHEET NUMBER	A-3

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OPERATING FREQUENCY BAND 21.200-23.600 GHz
 DIAMETER, NOMINAL .6 m (2 FT)
 NET WEIGHT 25 Lbs



PLAN VIEW SIDE VIEW FRONT VIEW
 DRAGONWAVE - HORIZON QUANTUM
 WEIGHT 7 Lbs

Sprint
 6100 SPRINT PARKWAY
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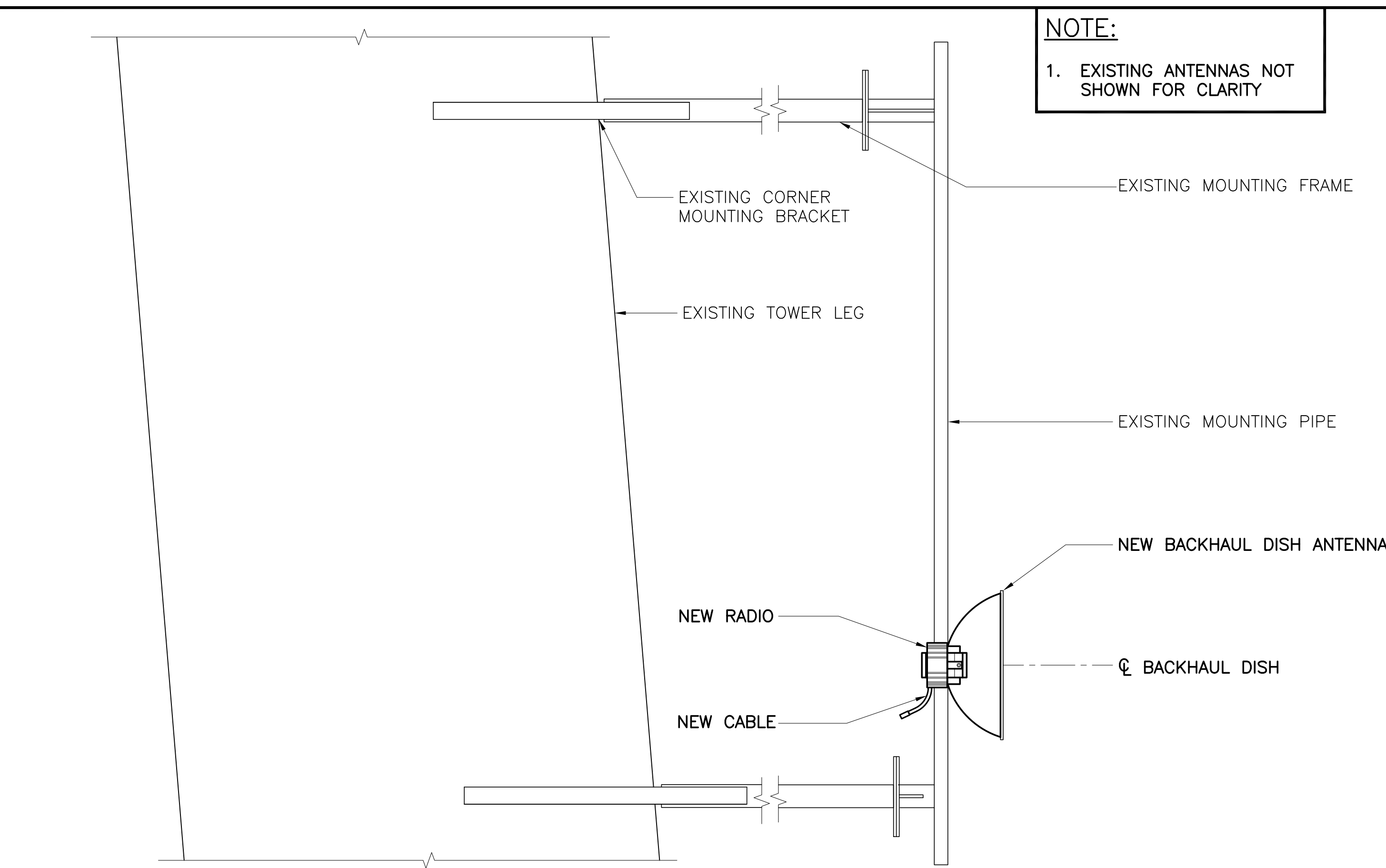
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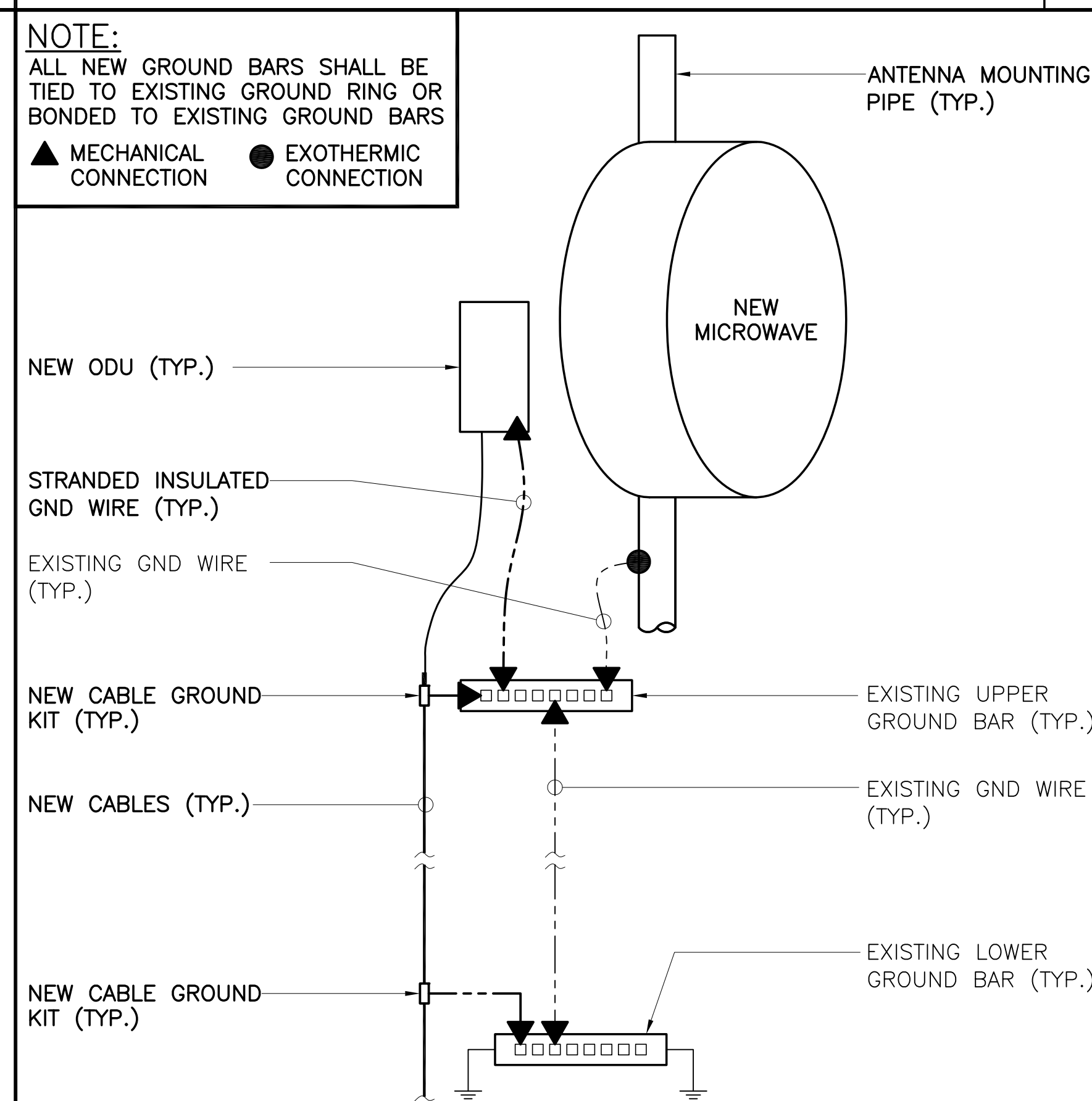
MICROWAVE DISH DETAIL AND SPECIFICATION

SCALE: N.T.S. 1



ODU SPECIFICATION

SCALE: 3/4" = 1'-0" 2



TYPICAL ANTENNA AND RADIO MOUNTING DETAIL

SCALE: N.T.S. 3

GROUNDING DETAIL

SCALE: N.T.S. 4

SITE NAME
SUTRO TOWER

SITE I.D.
CA-SFO0551

AUGMENT I.D.
CA-SFO0551M15.1 & M15.2 & M15.3

SITE ADDRESS
**1 LA AVANZADA ST.
 SAN FRANCISCO, CA 94131**

SHEET NAME
**MICROWAVE, ODU
 DETAILS AND
 SPECIFICATIONS**

SHEET NUMBER
A-4

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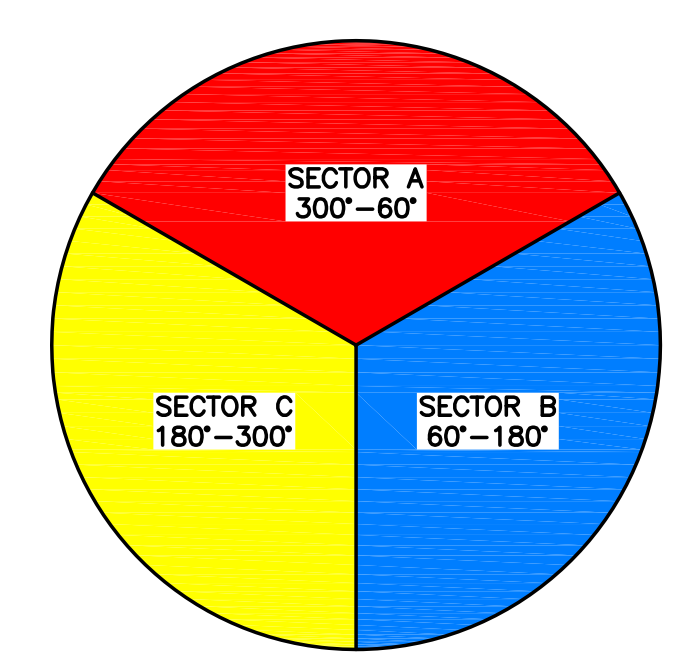
NEW EQUIPMENT SCHEDULE									
MICROWAVE MODEL #	ODU		RAD CENTER (FT)	AZIMUTH (DEG)	TILT (DEG)	CABLE + 20%			
	QTY	MODEL #				QTY	TYPE	LENGTH (FT)	DIA (IN)
COMMSCOPE VHLP2-23	1	DRAGONWAVE QUANTUM	357	89.8445	-	1	(1) NEW CNT400 COAX	450	1/2
COMMSCOPE VHLP2-23	1	DRAGONWAVE QUANTUM	355	107.7872	-	1	(1) NEW CNT400 COAX	450	1/2
COMMSCOPE VHLP2-23	1	DRAGONWAVE QUANTUM	352	111.6319	-	1	(1) NEW CNT400 COAX	450	1/2

CHECKED BY:	ST		
APPROVED BY:	MB		
#	DATE	DESCRIPTION	INT.
A	9/4/15	REV A	MP
B	9/24/15	REV B	KR
C	10/2/15	REV C	KR
O	11/4/15	FINAL	KR

NEW EQUIPMENT SCHEDULE

SCALE: N.T.S. 1

MARKING METHOD COLORED BANDS	MARKING METHOD NUMBER OF BANDS
RED	SMALLEST # IN THIS RANGE = R1 NEXT LARGER # = R2
BLUE	SMALLEST # IN THIS RANGE = B1 NEXT LARGER # = B2
YELLOW	SMALLEST # IN THIS RANGE = Y1 NEXT LARGER # = Y2



NOTES:
LABEL EACH ANTENNA ABOVE THE DOWN-TILT KNOB ON THE DOWN-TILT OUTER CAP WITH COLORED TAPE, LABEL AS FOLLOWS:
RED: RFU_1
BLUE: RFU_2
YELLOW: RFU_3
ETHERNET CABLES SHALL BE PLACED INSIDE INNER DUCT AND ATTACHED TO TOWER

CABLE MARKING COLOR CONVENTION TABLE

	A1-1	A1-2	A2-1	A2-2	A3-1	A3-2	A4-1	A4-2
ALPHA, A, X, #1 SECTOR ANTENNA	+45 RED RED	-45 RED RED	+45 RED RED	-45 RED RED	+45 RED RED	-45 RED RED	+45 RED RED	-47 RED RED
BETA, B, Y, #2 SECTOR ANTENNA	+45 BLUE BLUE	-45 BLUE BLUE	+45 BLUE BLUE	-45 BLUE BLUE	+45 BLUE BLUE	-45 BLUE BLUE	+45 BLUE BLUE	-47 BLUE BLUE
GAMMA, C, Z, #3 SECTOR ANTENNA	+45 YELLOW YELLOW	-45 YELLOW YELLOW	+45 YELLOW YELLOW	-45 YELLOW YELLOW	+45 YELLOW YELLOW	-45 YELLOW YELLOW	+45 YELLOW YELLOW	-47 YELLOW YELLOW

SITE NAME	SUTRO TOWER
SITE I.D.	CA-SFO0551
AUGMENT I.D.	CA-SFO0551M15.1 &M15.2 &M15.3
SITE ADDRESS	1 LA AVANZADA ST. SAN FRANCISCO, CA 94131
SHEET NAME	COLOR CODING AND TABLES
SHEET NUMBER	A-5

COLOR CODING

SCALE: N.T.S. 2

NOT USED

SCALE: N.T.S. 3

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