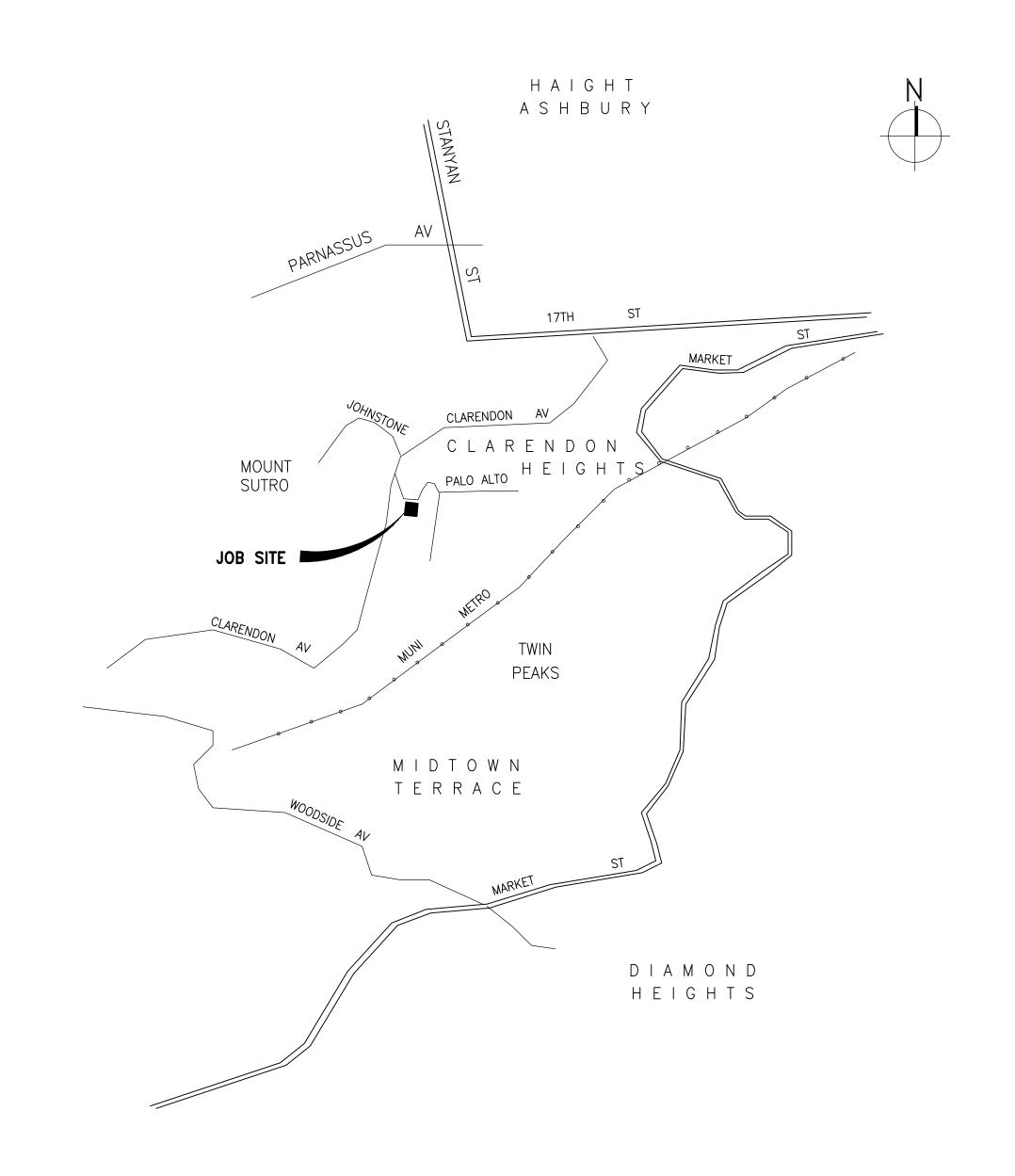
TOWER ANTENNA ADDITIONS SUTRO TOWER SAN FRANCISCO, CALIFORNIA

VICINITY MAP



PROJECT SCOPE:

INSTALLATION OF NEW ANTENNAS AND OTHER EQUIPMENT ON SUTRO TOWER. A LIST OF ALL EQUIPMENT IS PROVIDED ON SHEET S1.0

LIST OF DRAWINGS

SO.0 TITLE SHEET, VICINITY MAP & LIST OF DRAWINGS SO.1 GENERAL NOTES, ABBREVIATIONS & LEGEND

S1.0 TOWER REFERENCE PLAN & ELEVATION S1.1 ANTENNA CUT SHEETS S1.2 ANTENNA CUT SHEETS S1.3 ANTENNA CUT SHEETS

S1.4 ANTENNA CUT SHEETS
S1.5 ANTENNA CUT SHEETS
S2.1 2ND LEVEL FRAMING

S2.1 2ND LEVEL FRAMING S2.2 3RD LEVEL FRAMING S2.3 4TH LEVEL FRAMING S2.4 5TH LEVEL FRAMING

S2.5 6TH LEVEL FRAMING

S3.1 ANTENNA MOUNTS, STACKS "A", "B", AND "C"
S3.2 ANTENNA MOUNTS, STACKS "A", "B", AND "C"
S3.3 NDTV AUXILIARY ANTENNA ELEVATIONS AND SECTIONS
S3.4 AUXILIARY ANTENNA TOP MOUNT LEVEL 4 DETAILS

S5.1 DETAILS

Consulta

O ISSUED FOR PERMIT ROH
No. Date Description By

TOWER ANTENNA
ADDITIONS
SUTRO TOWER

1 LA AVANZADA ST
SAN FRANCISCO
CALIFORNIA

TITLE SHEET
VICINITY MAP
&
LIST OF DRAWINGS

94131

Drawing Title

Commission
067199.06

BW
09/26

Drawn
GV
Approved
ROH

Drawing No.

Drawing No.

Drawing No.

GENERAL

- 1. General notes and typical details apply to all structural features, unless otherwise indicated.
- 2. If certain features are not fully shown or called out on the drawings or in the specifications, their construction shall be of the same character as for similar conditions.
- 3. Dimensions shall not be scaled off of the drawings.
- 4. All work shall conform to minimum standards of the 2010 California Building Code, of any codes listed in the drawings or specifications and of any regulating agencies which have authority over any portion of the work, including the State of California Division of Industrial Safety.
- 5. Openings, pockets, etc. shall not be placed in structural members unless specifically detailed on the structural drawings. Notify the structural engineer when work requires openings, pockets, etc. in structural members not shown on the structural drawings.
- 6. The contractor shall be responsible for coordinating the work of all trades and shall check all dimensions and holes and openings required in structural members. All discrepancies shall be called to the attention of the structural engineer and shall be resolved before proceeding with the work.
- 7. The contract documents represent the finished structure. They do not indicate the method of construction. The contractor shall provide all measures necessary to protect life and property during construction. Such measures shall include, but are not limited to, bracing and shoring for loads due to construction equipment and materials. Observation visits to the site by the structural engineer shall not include inspection of the above items.
- 8. Construction materials shall be spread out if placed on framed floors or roofs. Load shall not exceed the design live load per square foot. Provide adequate shoring where overload is anticipated.
- 9. The contractor shall use extreme caution to protect all conduits, pipes, ducts, architectural finishes and utilities not indicated as being removed from damage during construction and shall restore all damaged or otherwise affected elements to their preconstruction condition, unless otherwise noted.
- 10. The Sutro Tower transmission facilities must remain in operation at all times during the construction period. Contractor shall submit a written work plan indicating the proposed sequence and schedule of work and specific operations to be conducted, to Sutro Tower for review, prior to performing any work on site. The work plan shall be revised and resubmitted on a weekly basis to alert Sutro Tower as to the progress of work accomplished to date and current schedule for performing additional work.
- 11. Sutro Tower is a radio transmission facility and emits high energy radio waves. The contractor shall be responsible for determining and implementing appropriate protective measures for personnel working on
- 12. The contractor shall maintain a fire watch and employ the necessary protective measures when welding near flammable materials.
- 13. The removal, cutting, drilling, etc. of existing work shall be performed with care in order not to jeopardize the structural integrity of the structure. If structural members or mechanical, electrical or architectural features not indicated for removal interferes with the new work, the Engineer shall be notified immediately and prior approval shall be obtained before removal of members.
- 14. The contractor shall promptly repair any damage caused during operations, using materials and workmanship similar to that which was
- 15. All removed items, materials and debris, unless otherwise noted, shall be removed promptly from the site and disposed of in a legal manner.
- 16. Install antenna on masts using manufacturer's standard connection hardware in accordance with manufacturer's specifications.

STRUCTURAL STEEL & MISC. METALS

- 1. Fabrication and erection of structural steel shall be in accordance with the "Code of Standard Practice for Steel Buildings and Bridges" adopted effective March 18, 2005.
- 2. Materials:
- ASTM A572 grade 50 u.o.n. A. Plates: ASTM A500 grade B (fy = 46 ksi) B. Structural steel tubes: C. Structural steel pipes: ASTM A53 grade B (fy = 35 ksi) ASTM A572 grade 50 D. Channel: E. Wide flange: ASTM A992
- 3. All bolts are ASTM A325. Pretensioning is not required.
- 4. Bolt holes in steel shall be $\frac{1}{16}$ inch larger diameter than nominal size of bolt used, unless otherwise noted.
- 5. For bolted connections, provide $1\frac{1}{2}$ inch edge and end distance, unless otherwise noted.
- 6. All welds shall be prequalified or qualified by test in conformance with the "Structural Welding Code — Steel" (AWS D1.1—04) of the American Welding Society. Minimum tensile strength of weld metal shall be 70 ksi typical, unless otherwise noted. Welding electrodes shall be as recommended by their manufacturer for the position and other conditions of actual use.
- 7. Weld symbols shown on the drawings do not necessarily differentiate between shop weld and field welds. When field welds are necessary due to construction procedure or sequence, welds shall be provided and be inspected per specifications. All welds shown as field welds shall be done in the field as indicated.
- 8. All structural steel, miscellaneous metal and connectors exposed to weather shall be hot—dip galvanized after fabrication. Finish paint shall be in accordance with owner's specification.
- 9. No penetrations through structural steel columns, beams or girders are allowed except as indicated on the structural drawings.
- 10. The structural steel fabricator shall furnish shop drawings of all steel for the engineer's review before fabrication.
- 11. A welding procedure specification (W.P.S.) per A.W.S. D1.1 shall be developed by the fabricator/erector and approved by the engineer of record or his designee. The W.P.S. shall include the welding parameters recommended by the electrode manufacturer.
- 12. All complete joint penetration groove welds shall be inspected and tested per City of San Francisco requirements.
- 13. Inspectors are to be S.F. City deputy inspectors and A.W.S. Q.C.I. Certified (a C.W. Inspector), reference A.W.S. D1.1—94, Section 6.1.3.1.

STRUCTURAL INSPECTION, OBSERVATION <u>AND TESTING</u>

- 1. Special Inspection and Testing are required in Sections 1704, 1707 and 1708 of the CBC. The "Statement of Special Inspections," submitted with the permit application, indicates the specific inspections and tests that are required, as well as the persons or firms responsible for this
- 2. All tests and inspections shall be performed by a certified Special Inspector from an independent testing agency who is employed by the Owner (or agent of the Owner) and not the Contractor.
- A. The Special Inspector shall observe the work assigned for conformance with the approved design drawings and specifications.
- B. The Special Inspector shall furnish inspection reports to the building official, Structural Engineer and other designated persons. All discrepancies shall be brought to the immediate attention of the Contractor for correction, then, if uncorrected, to the proper design authority and to the building official.
- C. The Special Inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and applicable standards of quality and workmanship of the CBC.
- 3. Structural Observation is required by Section 1709 of the CBC. Types of work listed in the following table and indicated as requiring "structural observation" shall be observed during periodic site visits by the Structural Engineer. Contractor is responsible for notifying structural engineer 48 hours before work is ready for observation. These visits do not constitute Special Inspection.
- 4. The following types of work requiring special inspection and structural observation are included in this project:

Portions of Structure	Types of Work	Work Included in This Project	Structural Observation Required
	Shop Welding	Х	
Structural Steel	Field Welding	X	Χ
Steel	High—strength bolting	Х	Χ

STATEMENT OF SPECIAL INSPECTIONS

The following tests and inspections are required for this project. The tests and inspections indicated here are the responsibilities of the Owner's Special Inspector, as required by Section 1704 of the Building Code.

STRUCTURAL STEEL WELDING: <u>INSPECTION REQUIREMENTS</u>

- 1. GENERAL: Testing and inspection shall conform to Appendix Q of AISC "Seismic Provisions for Structural Steel Buildings" (AISC 341-05), unless specifically noted otherwise.
- 2. <u>INSPECTION:</u> The following inspection items are required for all welding:
- A. Confirm that applicable and approved Welding Procedure
- Specifications (WPS) are available for all welds to be performed. B. Confirm that filler metal selection conforms to the requirements of
- the approved WPS. C. Inspection of materials handling and storage
- D. Inspection of profile soundness of finished welds
- In addition, continuous inspection of the following items is required, except for shop welds performed in approved shops per CBC 1704.2.2 and single-pass fillet welds not exceeding $\frac{5}{16}$ " weld size:
- E. Inspection of joint fit-up and preparation
- G. Verification of application of preheat H. Verification of interpass temperature control
- are followed

١	В	В	R	Ε	٧	١	Α	Т	ı	0	N	S	

COL.

CONC.

CONN.

CONT.

C.P.

CSK

CTBR.

CTR.

DBA

&	And	JST.	Joist
@ ^ D	At Analas a halb	IZ.	I/:
A.B.	Anchor bolt	K	Kips
ADD'L	Additional	KSI	Kips per Square Inch
AISC	American Institute of	LDC	Davisda
	Steel Construction	LBS.	Pounds
ALT.	Alternate	LL	Live Load
ARCH.	Architect	L.L.H.	Long Leg Horizontal
ASD	Allowable Strength	L.L.V.	Long Leg Vertical
1071	Design	LTWT	Lightweight
ASTM	American Society for	L.V.L.	Laminated Veneer
	Testing and Materials		Lumber
A.W.P.A.	American Wood	1447	
	Preservers Assoc.	MAX.	Maximum
AWS	American Welding	M.B.	Machine Bolt
	Society	MECH.	Mechanical
		MFR.	Manufacturer
BLKG.	Blocking	M.I.	Malleable Iron
BM.	Beam	MIL.	Millimeter
B.N.	Boundary Nail	MIN.	Minimum
BOCA	Building Officials and	MISC.	Miscellaneous
	Code Administrators		
	International, Inc.	(N)	New
BOTT.	Bottom	NO.,#	Number
BRG.	Bearing	N.S.	Near Side
B.S.	Both Sides	N.T.S.	Not to Scale

B.S. BTWN. Between NWT Normalweight California Building Code O.C. On Center C.C. Center to Center 0.D. Outside Diameter CCR California Code of 0.H. Opposite Hand Regulations OPNG. Opening Control Joint OPP. Opposite C.I.P. Cast-in-place Office of Statewide C.L.,₠ Center Line Health Planning and CLG. Development CLR. CMU

Concrete Masonry Unit P.A.F. Powder-Actuated Fasteners PART Concrete Partial Pounds per Cubic Foot PCF Connection PL.,P Continuous Plate Complete Penetration PLY. Plywood Countersink P.P. Partial Penetration Counterbore PSF Pounds per Square Foot Center PSI Pounds per Square Inch

DBL. Demand Critical (Weld) R.D. Roof Drain DET., DETL. REINF. Reinforcing Detail REQ. Douglas Fir Required DIA..ø RF. Diameter R.O. Diagonal Rough Opening RND. Dead Load R.R. DN Remove & Replace Down DO

PWJ

S.A.D.

STAGG'D.

STD.

Plywood Web Joists

See Architectural

Drawings

Staggered

Standard

Stiffener

Structural

SCHED. Drawing(s) SFRS Seismic Force-Resisting System Existing SHT. Sheet SHTG. Sheathing E.F. Each Face

Division of the State

Deformed Bar Anchor

SIM. Similar E.J. Expansion Joint S.M.D. See Mechanical Drawinas ELEV.,EL. Elevation S.O.G. Slab on Grade EMB.,EMBED. Embedment S.P. Southern Pine E.N. Edae Nail SSTL. Stainless Steel EQ.

Equipment

Each Way

Grade

Height

Council

Interior

Inverted

Architect

STIFF. STL. FDN. Foundation STRUCT. F.F. Finish Floor F.G. SYMM.,SYM Symmetrical Finish Grade

EQUIP.

E.W.

F.O.S.

GA.

G.L. GLB

GR.

HDG.

HGR. HK.

HORIZ.

HSS

ICBO

INV.

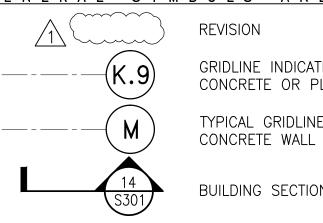
GALV.

FIN. F.O.M. F. Inspection of welding machine settings

FRMG. I. Verification that all applicable requirements of the approved WPS F.S. Far Side FTG. Footing

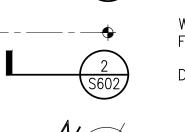
T&B Top and Bottom Face of Concrete T&G Tongue & Groove Face of Masonry T.N. Toe Nail Face of Stud T.O.C. Top of Concrete T.O.S. Top of Steel T.O.W. Top of Wall Tube Steel TYP. Typical Galvanized UBC Uniform Building Code Grid Line U.O.N. Unless Otherwise Noted Glue-Laminated Beam V.I.F., ± Verify in Field Hot-dip Galvanized Horizontal W/O Without High Strength Bolt West Coast Lumber Hollow Structural Inspection Bureau W.P. Sections Workina Point Welded Headed Stud W.H.S. W.T.S. Welded Threaded Stud International Council of W.W.F. Welded Wire Fabric Building Officials WWPA Western Wood Products International Code Association

GENERAL SYMBOLS AND LEGEND



GRIDLINE INDICATING CENTERLINE OF CONCRETE OR PLYWOOD SHEAR WALL TYPICAL GRIDLINE INDICATING FACE OF

BUILDING SECTION OR ELEVATION



WORK POINT, DATUM OR CONTROL POINT, FIN. FLR. ELEVATION, S.A.D. DETAIL REFERENCE

PROJECT NORTH, S.A.D. FOR TRUE NORTH

Engineering of Structures and Building Enclosures Simpson Gumpertz & Heger Inc. The Landmark @ One Market, Suite 600 Los Angeles San Francisco, California 94105 New York 415.495.3700 fax: 415.495.3550 San Francisco vww.sgh.com Washington, DC

SIMPSON GUMPERTZ & HEGER

Consultant

ISSUED FOR PERMIT Description

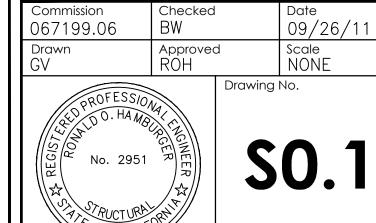
TOWER ANTENNA ADDITIONS SUTRO TOWER 1 LA AVANZADA ST SAN FRANCISCO **CALIFORNIA**

GENERAL NOTES ABBREVIATIONS

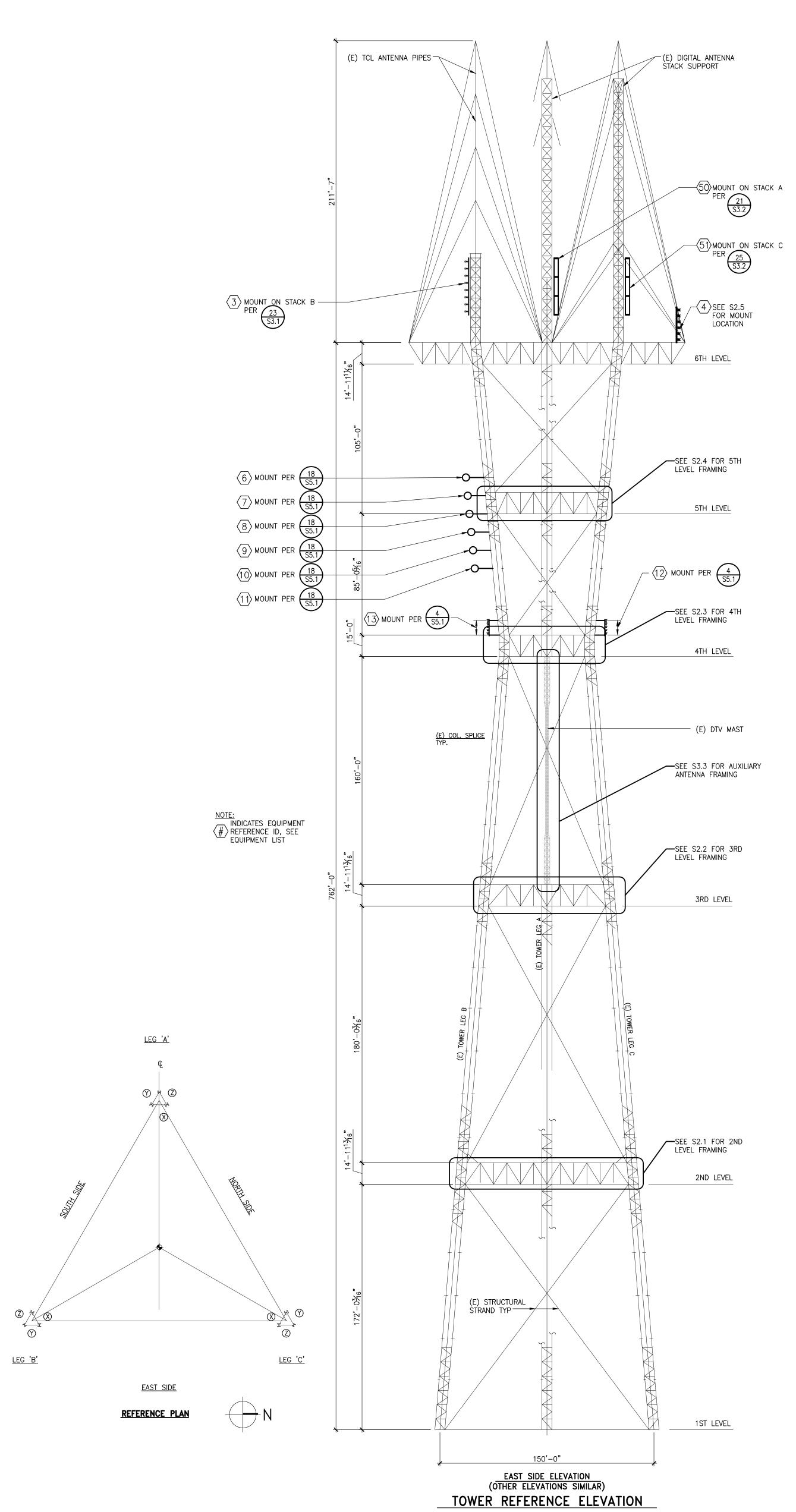
LEGEND

94131

Drawing Title



	Desciption	Height	Weight	Equipment Type Replace Existi	Emission ng Ed	, ,	Customer	Purpose
						1		
2 1	Move KOIT Aux Antenna to Level 5	642	2500	ERI SHPX—6C installed on pole hanging from Level 5	Yes	Need to calc	KOIT-FM	Relocate for better coverage——Also reduces neighborhood RFR
				A d d Alama	F •	1		
<u> </u>		700	1000	Add New	•			Managara and an and a bishara la adian
	KREV Main FM Antenna	762	1000	Antenna Concepts ATI6M on northeast outrigger	Yes	Class A equiv.	KREV FM Radio	Moves main antenna to higher location
	KREV 950 MHz STL Receive	650	50	Andrew KP4F-820 on east face	no	None	KREV FM Radio	Studio to transmitter relay
	Second ENG Receive Antenna for KTVU	670	200	NSI Superquad or Eq.—South Leg	No	None	KTVU-TV	Adds southeast news truck coverage
	Second ENG Receive Antenna for KRON	650	200	NSI Superquad or Eq.—South Leg	No	None	KRON Television	Adds southeast news truck coverage
	Second ENG Receive Antenna for KPIX	640	200	NSI Superquad or Eq.—South Leg	No	None	KPIX Television	Adds southeast news truck coverage
	Second ENG Receive Antenna for KGO	630	200	NSI Superquad or Eq.—South Leg	No	None	KGO Television	Adds southeast news truck coverage
	Second ENG Receive Antenna for KNTV	620	200	NSI Superquad or Eq.—South Leg	No	None	KNTV Television	Adds southeast news truck coverage
	Second ENG Receive Antenna for KFSF	610	200	NSI Superquad or Eq.——South Leg	No	None	KFSF Television	Adds southeast news truck coverage
	North Leg Weather Camera Mount	590	40	Canon BU-46H or Eq.—North Leg	No	None	All 6 TV News stations	Adds mounts for weather coverage to North leg
	South Leg Weather Camera Mount	595	40	Canon BU-46H or Eq.—South Leg	No	None	All 6 TV News stations	Adds mounts for weather coverage to South leg
· 1	Microwave Dish for KMTP	187	400	Andrew 6 foot UHX6-65South Leg	No	None	KMTP Television	Adds microwave STL receiver for KMTP
	Microwave Dish for KCSM	187	400	Andrew 6 foot UHX6-65South Leg	No	None	KCSM Television	Adds microwave STL receiver for KCSM Technology change——Splits receivers from transmitter
	136-174 MHz Receive	657	32	Bird Technologies BA40-41-DIN	No	None	Level 3 and 4 customers	Technology change——Splits receivers from transmitter on Level 3 and 4
,	330-420 MHz Receive	657	11	Bird Technologies BA40-57-DIN	No	None	Level 3 and 4 customers	Technology change——Splits receivers from transmitter on Level 3 and 4
	400-520 MHZ Receive	657	18	Bird Technologies BA8080-67-DIN	No	None	Level 3 and 4 customers	Technology change——Splits receivers from transmitter on Level 3 and 4
-	746-806 MHz Receive	657	8	Bird Technologies COL811-806	No	None	Level 3 and 4 customers	Technology change——Splits receivers from transmitter on Level 3 and 4
) [8	806-860 MHz Receive	657	5	Bird Technologies COL85-870	No	None	Level 3 and 4 customers	Technology change——Splits receivers from transmitter on Level 3 and 4
· •	Bay Bridge Receive	187	200	Andrew 6 foot VHP6-180AEast Face	Yes	+26dBm TP0	All 6 TV News stations	Technology change——New bridge camera feed for all stations to share
2 (San Mateo Bridge Receive	187	200	Andrew 6 foot VHP6-180AEast Face	Yes	+26dBm TPO	All 6 TV News stations	Technology change——New bridge camera feed for all stations to share
5	Richmond San Rafael Receive	187	200	Andrew 6 foot VHP6-180AEast Face	Yes	+26dBm TP0	All 6 TV News stations	Technology change——New bridge camera feed for all stations to share
[Dumbarton Bridge Receive	187	200	Andrew 6 foot VHP6-180AEast Face	Yes	+26dBm TPO	All 6 TV News stations	Technology change——New bridge camera feed for all stations to share
	Carquinis Bridge Receive	657	200	Andrew 6 foot VHP6-180AEast Face	Yes	+26dBm TP0	All 6 TV News stations	Technology change——New bridge camera feed for all stations to share
,	Airport Camera Receive	187	200	Andrew 6 foot VHP6-180AEast Face	Yes	+26dBm TP0	All 6 TV News stations	Technology change——New bridge camera feed for all stations to share
7 [Dish Antenna for BAYWEB Project	550	200	Andrew 6 foot VHP6-180AEast Face	Yes	+30 dBm TPO	Bayweb	Technology change. Public safety agency request.
3 [Dish Antenna for BAYWEB Project	550	200	Andrew 6 foot VHP6-180AEast Face	Yes	+30 dBm TP0	Bayweb	Technology change. Public safety agency request.
] (Dish Antenna for BAYWEB Project	550	200	Andrew 6 foot VHP6-180ASW Face	Yes	+30 dBm TP0	Bayweb	Technology change. Public safety agency request.
) [Dish Antenna for BAYWEB Project	550	200	Andrew 6 foot VHP6-180ASW Face	Yes	+30 dBm TP0	Bayweb	Technology change. Public safety agency request.
1 [Dish Antenna for BAYWEB Project	550	200	Andrew 6 foot VHP6-180ANW Face	Yes	+30 dBm TP0	Bayweb	Technology change. Public safety agency request.
2 [Dish Antenna for BAYWEB Project	550	200	Andrew 6 foot VHP6-180ANW Face	Yes	+30 dBm TP0	Bayweb	Technology change. Public safety agency request.
3 (Golden Gate Bridge Receive	187	50	Andrew 30 inch dish East Face	Yes	+23 dBm TP0	All 6 TV News stations	New bridge camera feed for all stations to share
ļ \	WiFi Antenna, East Face	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
5 1	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
5 1	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
, ,	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
3 1	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
)	WiFi Antenna, Northwest Face	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
) '	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
+	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
· \	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
5 \	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	Dept. of Technology, City and County of	WiFi for low income San Francisco residents
	WiFi Antenna, Southeast Face	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	San Francisco Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	San Francisco Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	San Francisco Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
-	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	San Francisco Dept. of Technology, City and County of San Francisco	WiFi for low income San Francisco residents
	WiFi Antenna	375	50	Ubiquiti Networks M5 MINO Bridge	Yes	+27 dBm TP0	San Francisco Dept. of Technology, City and County of	WiFi for low income San Francisco residents
-	-M Trnaslator Antenna, EMF Radio	375	200	Scala CLFM/2 pointed at 42 and 162	yes	.070 H&V	San Francisco Educational Media Foundation——KLOVE	Translator on 88.9 MHz to improve coverage in San
	<u> </u>			degres—Face mounted Dielectric TELL_24DSC /VP_R 4C190			KNTC Televisoin, Concord	Francisco Improve Bay Area Coverage
	TV Broadcast Antenna, KTNC, Channel 14	800	2000	Dielectric TFU-24DSC/VP-R 4C190	Yes	1,000		
-	TV Broadcast Antenna, KEMO, Channel 32 TV Broadcast Auxiliary Antenna, KEMO	800	2000	RFS DX24D-FR Diplostria TELL 10DSC (VD. B. 40100	Yes	8 KW TPO	KEMO Television, Santa Rosa	Booster to improve San Francisco Coverage
	Channel 14	525	1000	Dielectric TFU-10DSC/VP-R 4C190	Yes	250	KTNC Televison, Condord	Improve Bay Area Coverage
T								



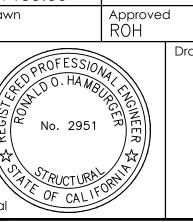
SIMPSON GUMPERTZ & HEGER Engineering of Structures and Building Enclosures Simpson Gumpertz & Heger Inc.
The Landmark @ One Market, Suite 600
San Francisco, California 94105
415.495.3700 fax: 415.495.3550
www.sgh.com Boston Los Angeles New York San Francisco Washington, DC Consultant

ISSUED FOR PERMIT

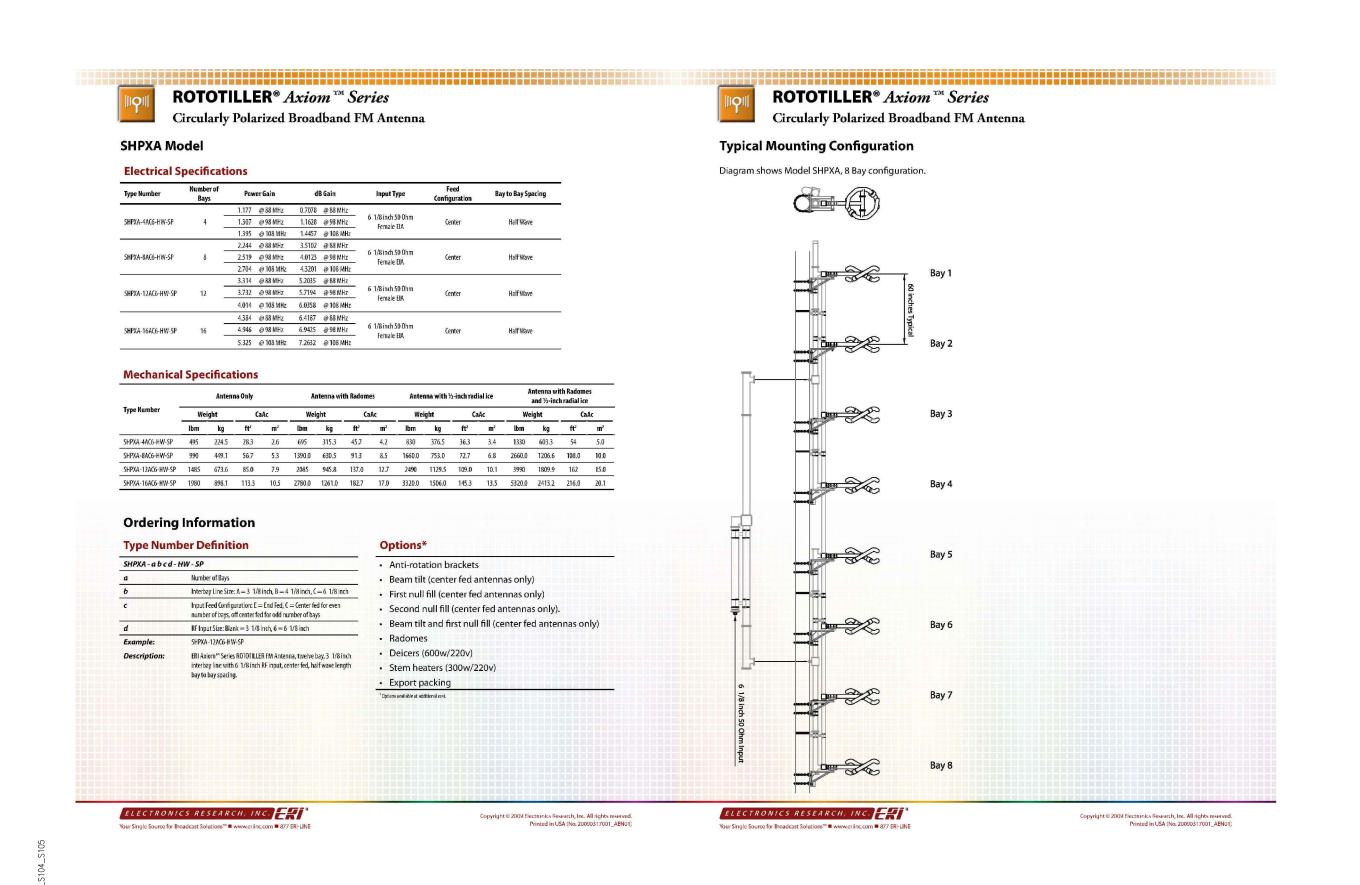
TOWER ANTENNA ADDITIONS SUTRO TOWER 1 LA AVANZADA ST SAN FRANCISCO **CALIFORNIA** 94131

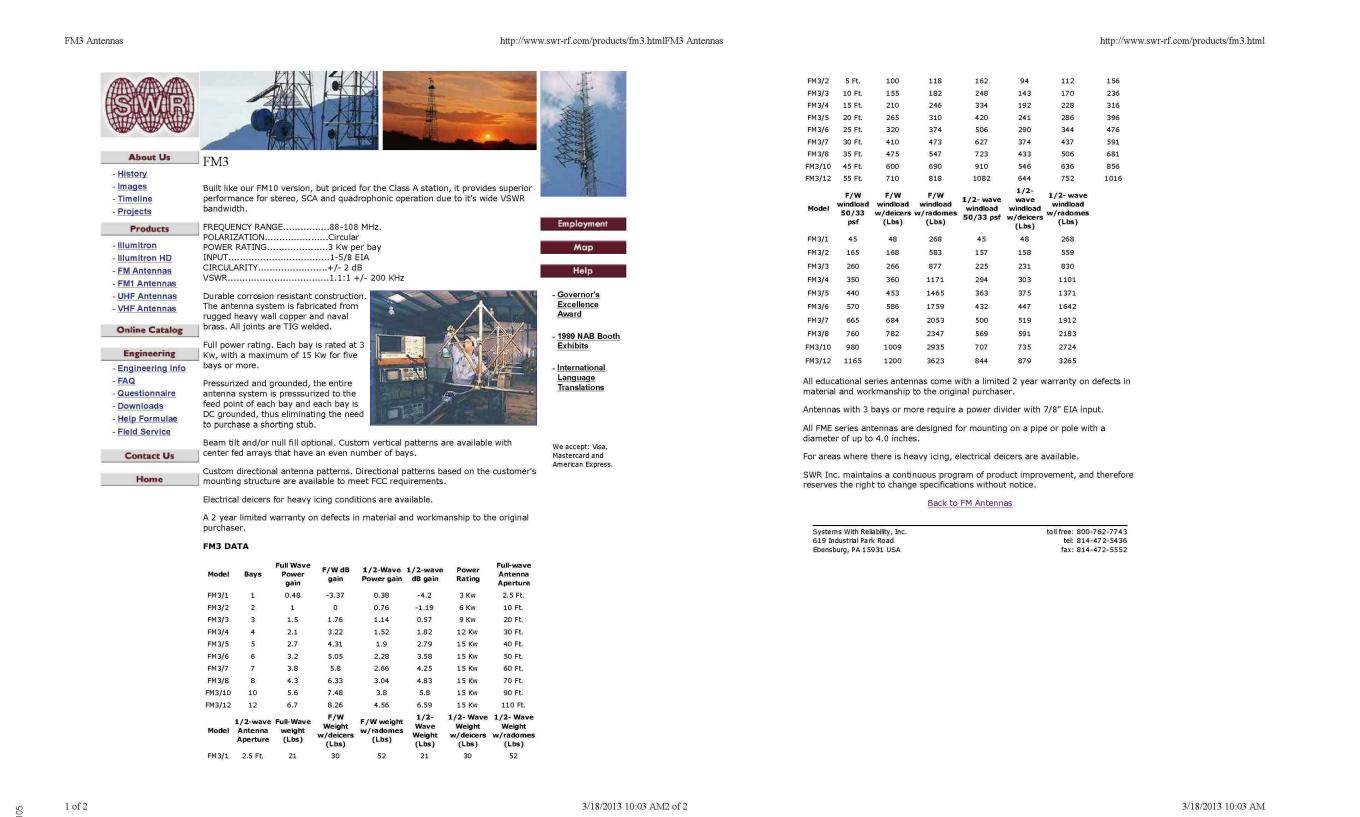
TOWER REFERENCE **PLAN ELEVATION**

Date 09/26/11 Scale 1"=40'-0" Commission 067199.06 Drawn Drawing No.



EQUIPMENT LIST





8 ANTENNA REF #4

3 and 4 ft GRIDPAK® Antennas 820 - 960 MHz Antenna Inputs. All antenna VSWR values are specified with 7/8" EIA connectors. Other optional inputs may result in equal or slightly higher VSWR. Contact Andrew for details. 3 ft GRIDPAK® Antennas 4 ft GRIDPAK® Antennas Regulatory Compliance Cross F/B VSWR Diameter RPE U.S. FCC ETSI ETSI Gain, dBi Beamwidth Pol. Ratio max. ft (m) Number(s) 101 74 78 Class Gain Low Mid-Band Top Horizontal Vertical Disc., dB dB (R.L., dB) NOTE: Antenna shown is horizontally polarized GRIDPAK® Antennas – Unpressurized Single Polarized Antenna Inputs: 7/8" EIA, "F" Flange Female, Type N Female, and 7-16 DIN Female
 KP6F-820
 6 (2.0)
 2994
 B
 Mini-GRIDPAK Antennas – Unpressurized Single Polarized Antenna Inputs: 7/8" EIA, "F" Flange Female, Type N Female, and 7-16 DIN Female MKP-820 6.6 x 3.3 3470 - - - - 18.0 18.2 18.5 20.0 10.0 20 15 1.5 (14.0) 890 - 960 MHz Antenna Inputs. All antenna VSWR values are specified with 7/8" EIA connectors. Other optional inputs may result in equal or slightly higher VSWR. Contact Andrew for details. Pressurization. Feeds are pressurizable to 10 lb/m² (70 kPa). Standard Antennas – Unpressurized Single Polarized Antenna Inputs: 7/8" EIA, "F" Flange Female, Type N Female, and 7-16 DIN Female
 P4F-9
 4 (1.2)
 2311
 B
 18.1
 18.4
 18.7
 19.5
 19.5
 8
 21
 1.3 (17.7)

 P6F-9
 6 (1.8)
 2302
 A
 21.5
 21.9
 22.2
 13.0
 13.0
 12
 24
 1.3 (17.7)

 P8F-9
 8 (2.4)
 2306
 A
 24.0
 24.3
 24.7
 9.2
 9.2
 15
 27
 1.3 (17.7)

 P10F-9
 10 (3.0)
 2308
 A
 26.0
 26.3
 26.6
 7.8
 7.8
 15
 29
 1.3 (17.7)

 P12F-9
 12 (3.7)
 2319
 A
 27.7
 28.0
 28.3
 6.7
 6.7
 15
 30
 1.3 (17.7)

 P15F-9
 15 (4.6)
 2321
 A
 29.6
 29.9
 30.2
 5.3
 5.3
 16
 32

 Antenna Size, ft (m)
 A
 B
 C
 D
 E
 F
 G
 H

 3 (1.0)
 32.3 (950)
 10.9 (278)
 8.1 (205)
 3.6 (92)
 20.5 (520)
 23.1 (587)
 65 (165)
 37.8 (959)

 4 (1.2)
 29.9 (772)
 16.4 (416)
 7.3 (185)
 5.7 (146)
 6.9 (175)
 48.5 (1231)
 51.5 (1309)
 8.3 (232)
 ANDREW. Customer Service Center - Call toll-free from: • U.S.A., Canada and Mexico 1-800-255-1479 Customer Service Center - Call toll-free from: • U.S.A., Canada and Mexico 1-800-255-1479

7 | 6 | 5 \ \ 4 | 3 | Lifting eyes located Hardware Hex Head near vertical seam (x3) 5/16-18x1.25-Projected Surface Area = 21.95 sq.ft. ∕— 53.50ø —̀ Drag coefficient = 2/3View A-A Effective Surface Area = 14.63 sq.ft. System weight = 245 lbs. .375ø — Drain holes 8 places Interface 63.75 ≡ Interface Secondary Mounting → 14.00¢ → .313-18UNC-2Bx .75(max.) Primary Mounting .500-13 __/ on a 7.000 bolt circle 22.00ø ----UNC-28x1.25(max.penetration) equally spaced 8 places on a 10.50¢ bolt circle Note: Not to be used as primary mounting interface. equally spaced

ANTENNA REF #6 TO #11

ANTENNA REF #5

ANTENNA REF #2 AND #3

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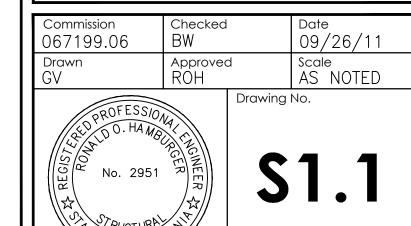
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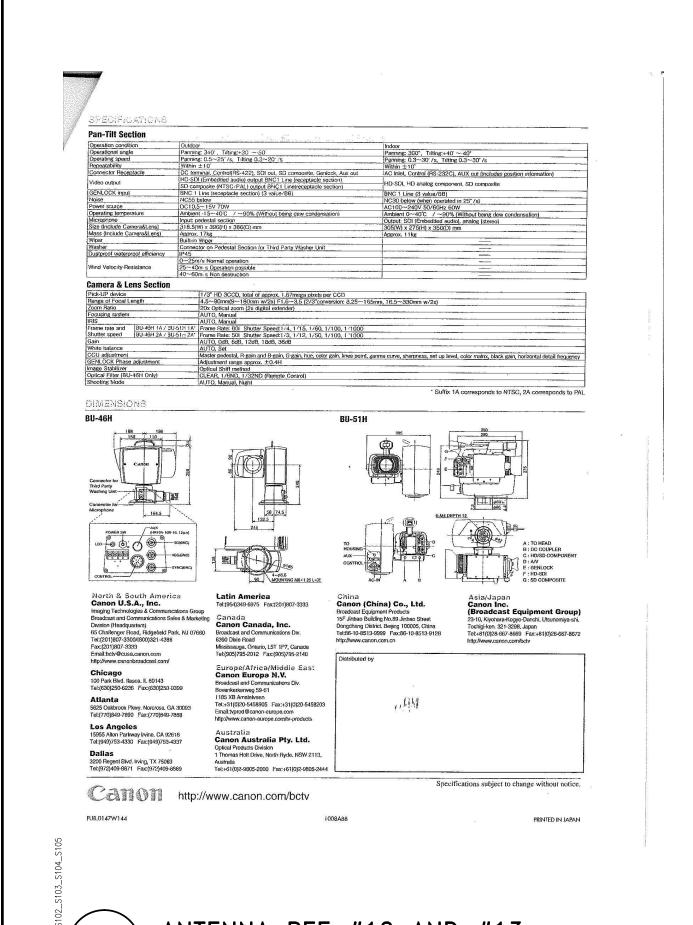
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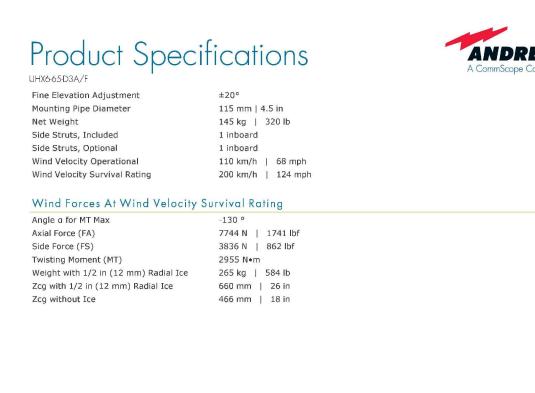
ANTENNA CUT SHEETS

Drawing

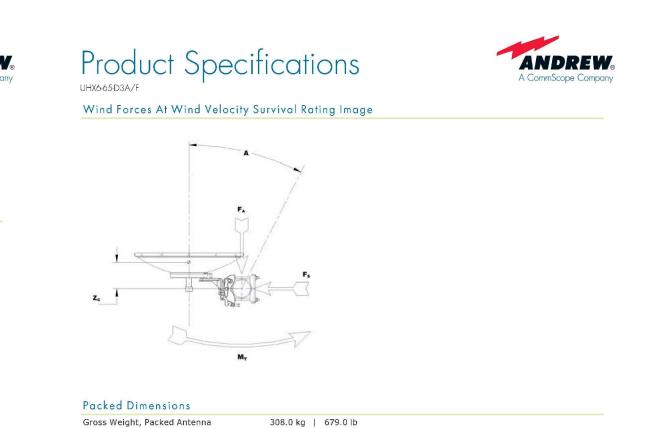








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2120.0 mm | 83.5 in

2070.0 mm | 81.5 in

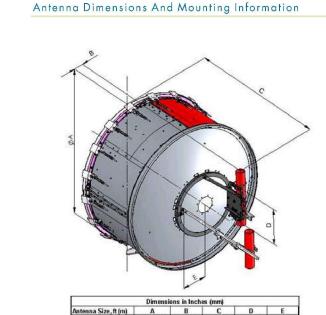
880.0 mm | 34.6 in

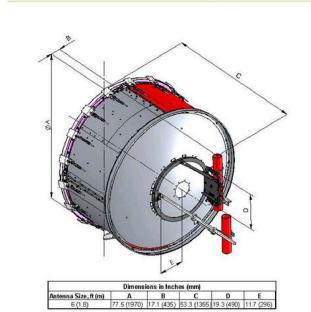
 $3.9 \, m^3$

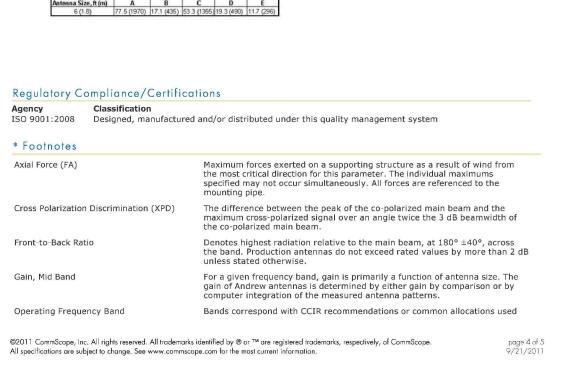
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Volume

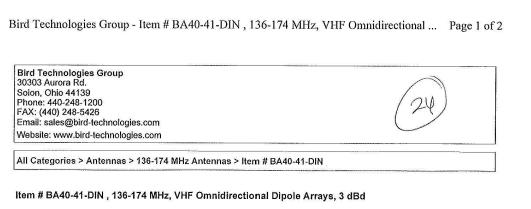
Width

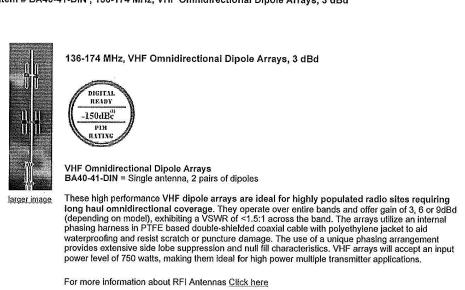












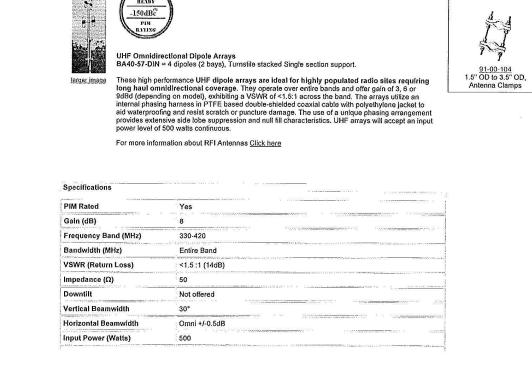
Specifications		
W-0-369- E-3442-	THE CONTROL OF THE CO	
PIM Rated	Yes	DOTATION OF THE PARTY OF THE PA
Gain (dB)	3	
Frequency Band (MHz)	136 - 174	S to the second section of the second section of the second section of the second section section of the second section sec
Bandwidth (MHz)	Entire Band	
VSWR (Return Loss)	<1.5 ;1 (14dB)	2000 STATE OF THE
Impedance (Ω)	. 50	
Downtilt	Not offered	

http://birdtechnologies.thomasnet.com/printitem/all-categories/136-174-mhz-antennas/ba4... 8/17/2011

Vertical Beamwidth	35°
Horizontal Beamwidth	Omni +/-0.5dB
Input Power (Watts)	750
Passive IM 3rd order (2x20W) dBc	-150
Construction & Configuration	4 dipoles (2 bays), Turnstile stacked, Single section support
Length (inches)	138
Weight (lbs.)	32
Shipping Weight (lbs)	192
Shipping Dimensions (inches) [H x W x L]	26 x 26 x 146
Termination	7/16" DIN female with 20" 9142 cable tail
Mounting Area	20" x 2.5" dia. aluminum
Suggested Clamps	91-00-104 (not included)
Projected Area (ft²)	No ice - 4.5, With ice - 7.7
Lateral Thrust @ 100 mph lbs.	111
Wind Gust Rating mph	No ice - 149, With ice - 115
Torque@ 100 mph ft-lbs.	455
RoHS Compliant	Yes

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ANTENNA REF #14 AND #15



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Item # BA40-57-DIN, 330-420 MHz, UHF Omnidirectional Exposed Dipole Antenna, 3 ... Page 1 of 2

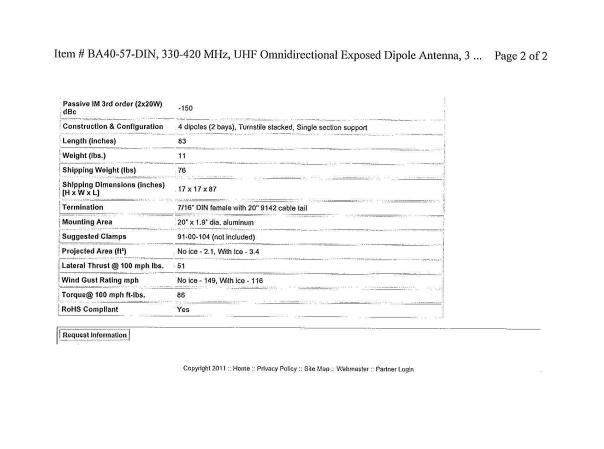
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ANTENNA REF #17

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Item # BA40-57-DIN, 330-420 MHz, UHF Omnidirectional Exposed Dipole Antenna, 3 dBd

330-420 MHz, UHF Omnidirectional Exposed Dipole Antenna, 3 dBd

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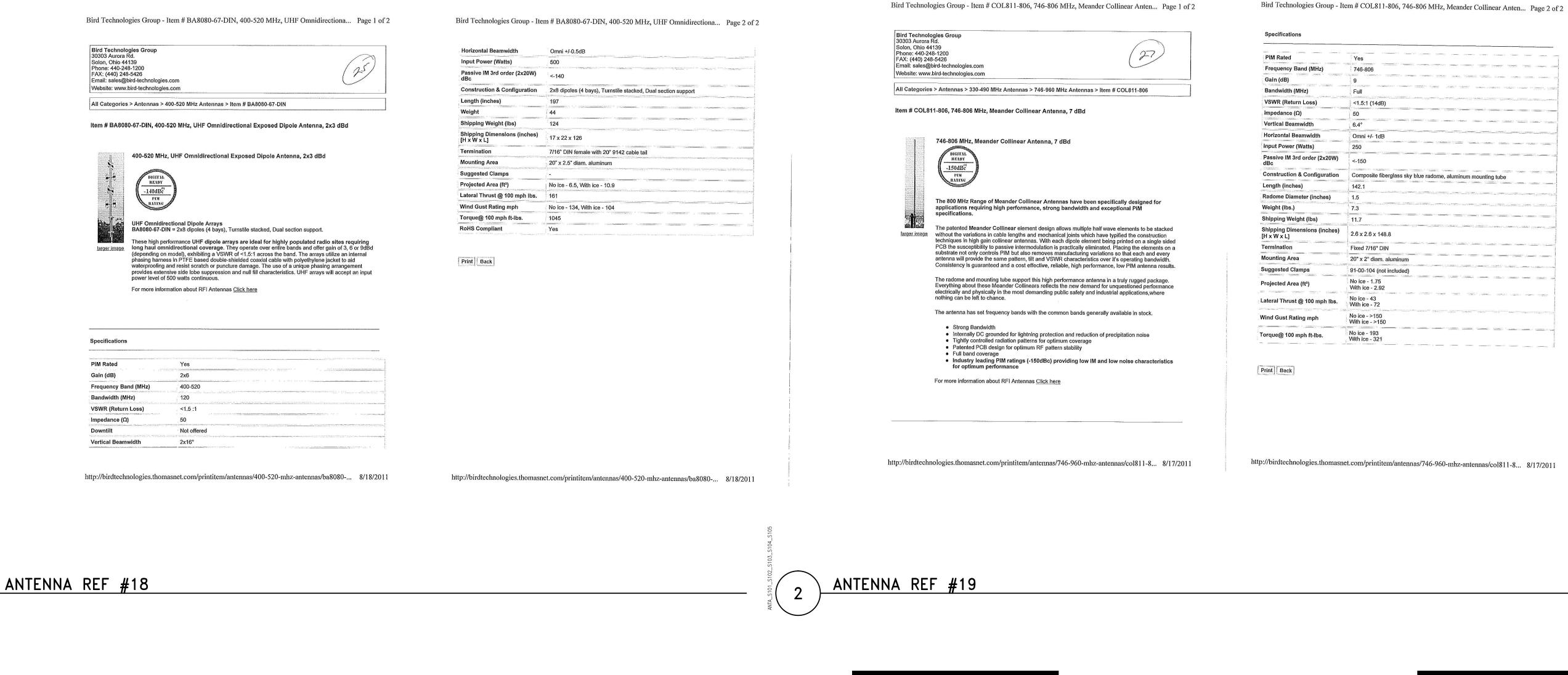
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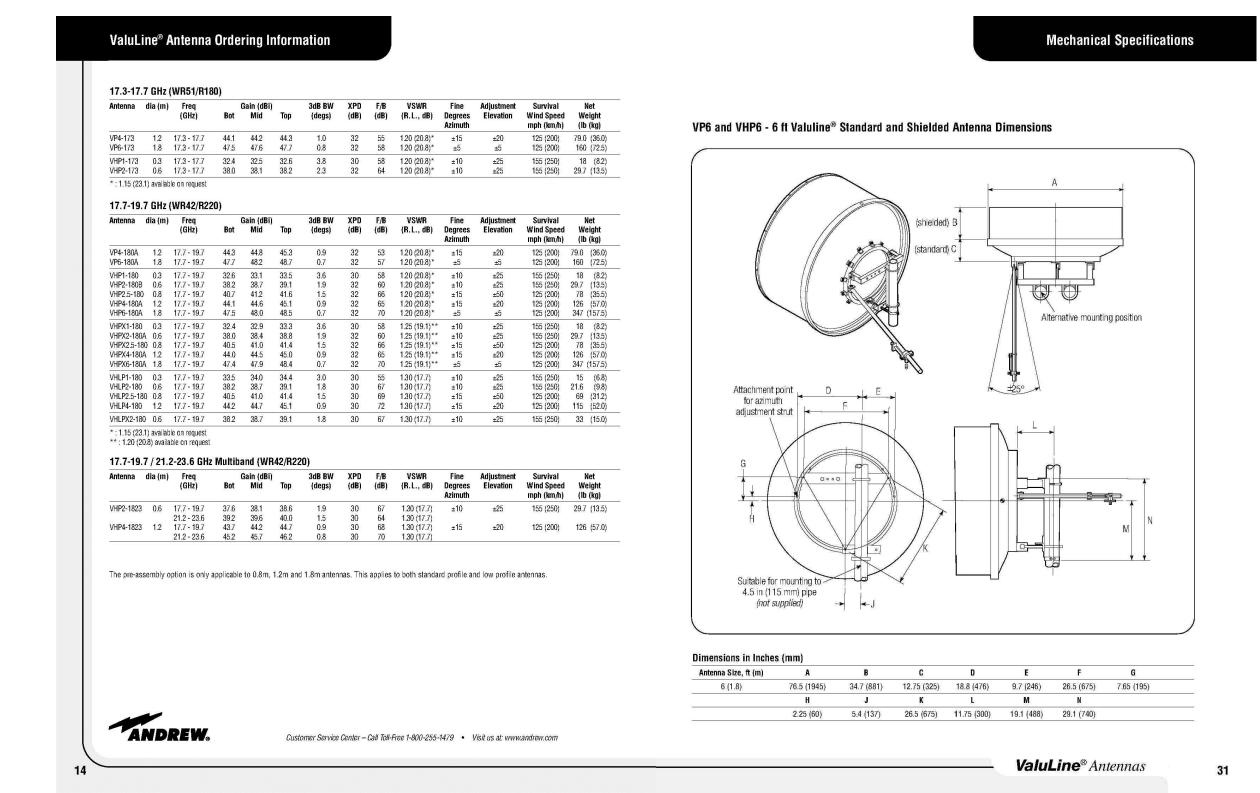
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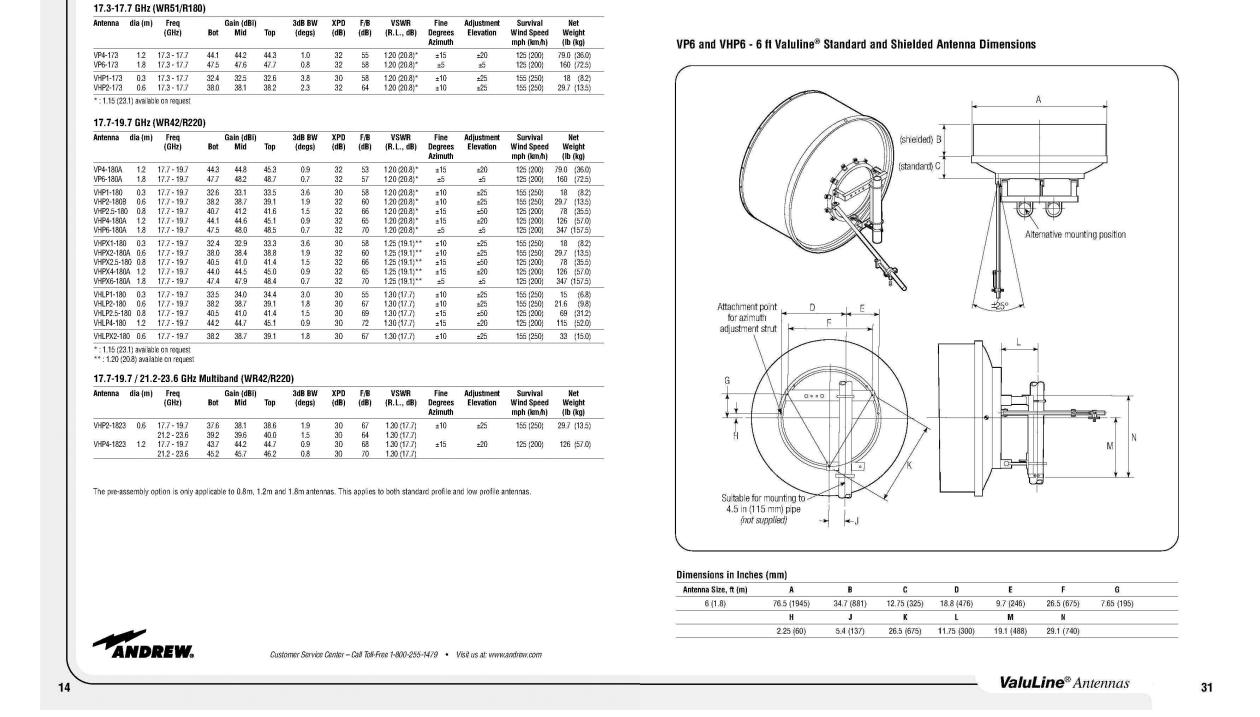
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larger image without the variations in cable lengths and mechanical joints which have typified the construction techniques in high gain collinear antennas. With each dipole element being printed on a single sided PCB the susceptibility to passive intermodulation is practically eliminated. Placing the elements on a substrate not only controls PIM but also removes manufacturing variations so that each and every antenna will provide the same pattern, tilt and VSWR characteristics over it's operating bandwidth. Consistency is guaranteed and a cost effective, reliable, high performance, low PIM antenna results. The radome and mounting tube support this high performance antenna in a truly rugged package. Everything about these Meander Collinears reflects the new demand for unquestioned performance electrically and physically in the most demanding public safety and industrial applications, where nothing can be left to chance. The antenna has set frequency bands with the common bands generally available in stock. Internally DC grounded for lightning protection and reduction of precipitation noise
 Tightly controlled radiation patterns for optimum coverage Patented PCB design for optimum RF pattern stability Full band coverage
 Industry leading PIM ratings (-150dBc) providing low IM and low noise characteristics For more information about RFI Antennas Click here http://birdtechnologies.thomasnet.com/printitem/antennas/746-960-mhz-antennas/col85-87... 8/18/2011

Horizontal Beamwidth Input Power (Watts) Passive IM 3rd order (2x20W) <-150 Construction & Configuration Composite fiberglass sky blue radome, aluminum mounting tube Radome Diameter (inches) Shipping Weight (lbs) Shipping Dimensions (inches) [H x W x L] Termination Fixed 7/16" DIN 20" x 2" diam. aluminum Mounting Area Suggested Clamps 91-00-104 (not included) Projected Area (ft²) Lateral Thrust @ 100 mph lbs. Wind Gust Rating mph Torque@ 100 mph ft-lbs. Print Back

http://birdtechnologies.thomasnet.com/printitem/antennas/746-960-mhz-antennas/col85-87... 8/18/2011

Bird Technologies Group - Item # COL85-870, 806-870 MHz, Meander Collinear Antenn... Page 2 of 2

Specifications

Frequency Band (MHz)

Bandwidth (MHz)

Impedance (Ω)

VSWR (Return Loss)

Vertical Beamwidth

Bird Technologies Group - Item # COL85-870, 806-870 MHz, Meander Collinear Antenn... Page 1 of 2

The 800 MHz Range of Meander Collinear Antennas have been specifically designed for

The patented Meander Collinear element design allows multiple half wave elements to be stacked

applications requiring high performance, strong bandwidth and exceptional PIM

All Categories > Antennas > 400-520 MHz Antennas > 746-960 MHz Antennas > Item # COL85-870

Item # COL85-870, 806-870 MHz, Meander Collinear Antenna, 7 dBd

806-870 MHz, Meander Collinear Antenna, 7 dBd

Bird Technologies Group 30303 Aurora Rd. Solon, Ohio 44139 Phone: 440-248-1200 FAX: (440) 248-5426

Email: sales@bird-technologies.com

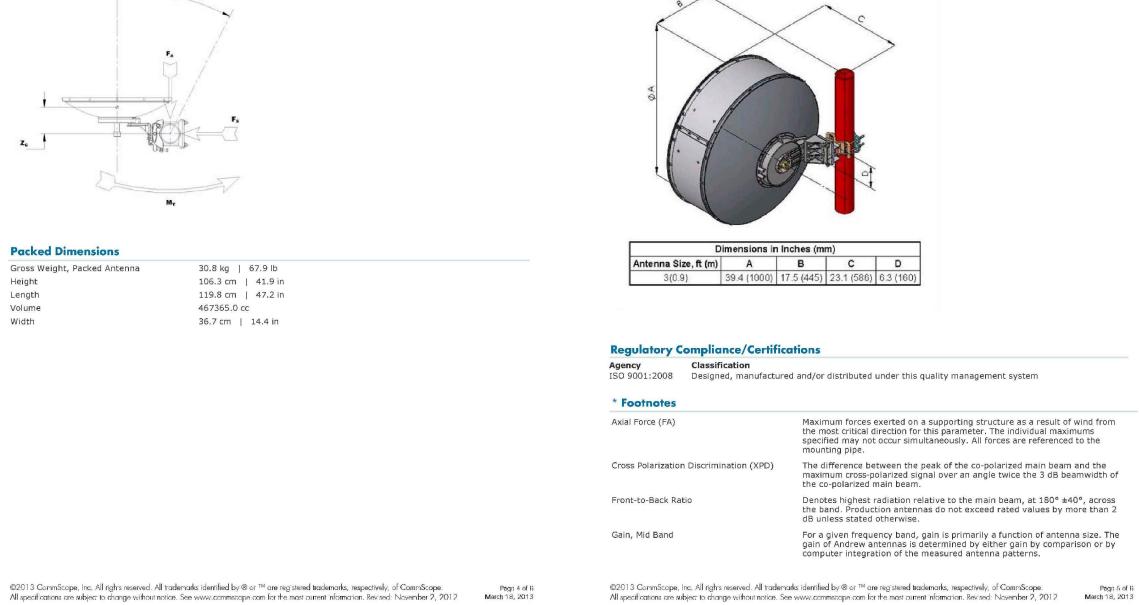
Website: www.bird-technologies.com

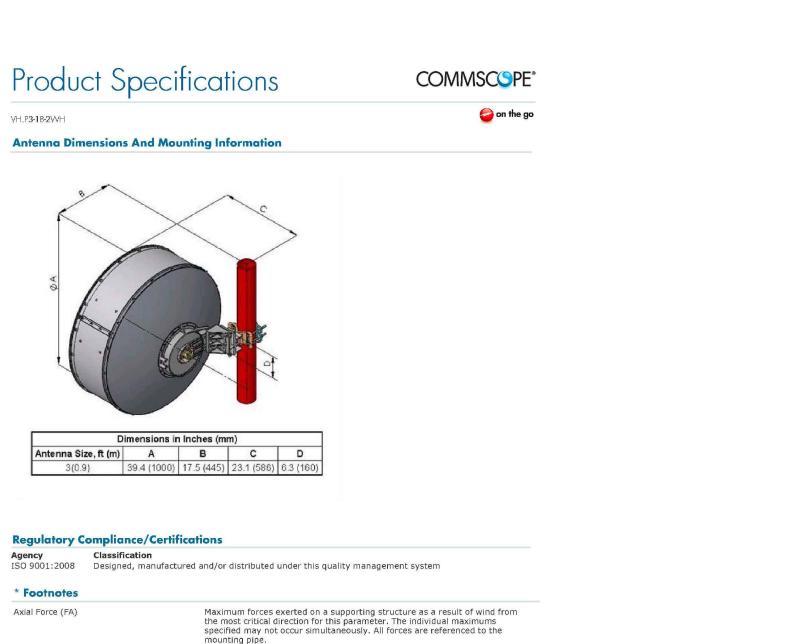
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ANTENNA REF #21 TO #32



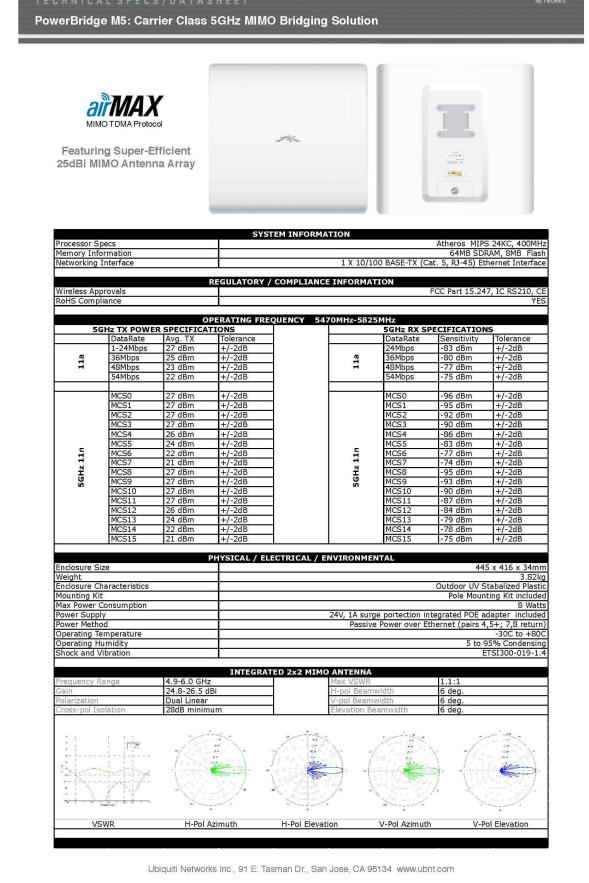




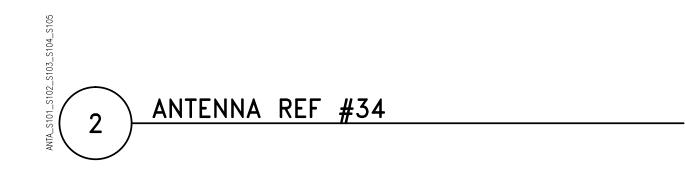


Denotes highest radiation relative to the main beam, at 180° ±40°, across the band. Production antennas do not exceed rated values by more than 2 dB unless stated otherwise.

For a given frequency band, gain is primarily a function of antenna size. The gain of Andrew antennas is determined by either gain by comparison or by computer integration of the measured antenna patterns.



UBIQUITI NETWORKS



Channel 14

21-Jan-12

San Francisco, CA

TFU-24DSC/VP-R C160 SP

1000 kW (30.00 dBk) 250 kW (23.98 dBk)

Peak Gain*: 25.7 (14.10 dB) 6.4 (8.08 dB)

Call Letters

Location

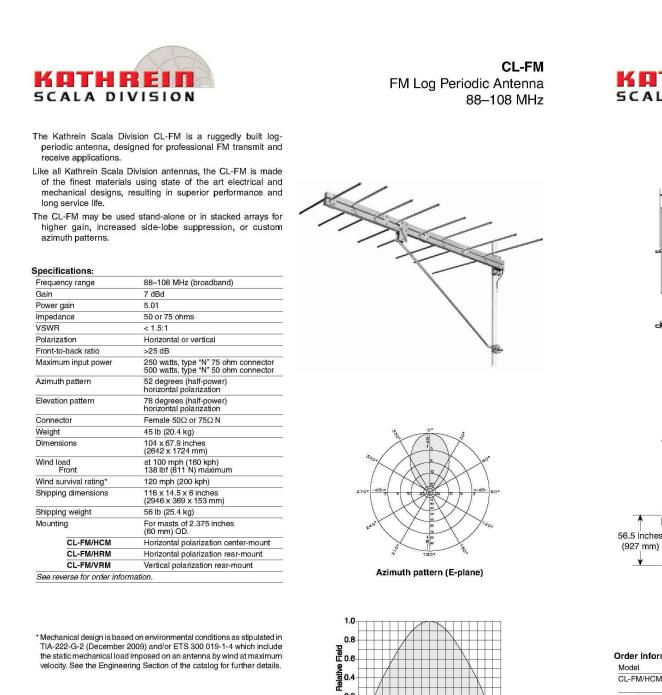
Customer

Location: San Francisco, CA Input Power: 38.9 kW (15.90 dBk)

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Antenna Type

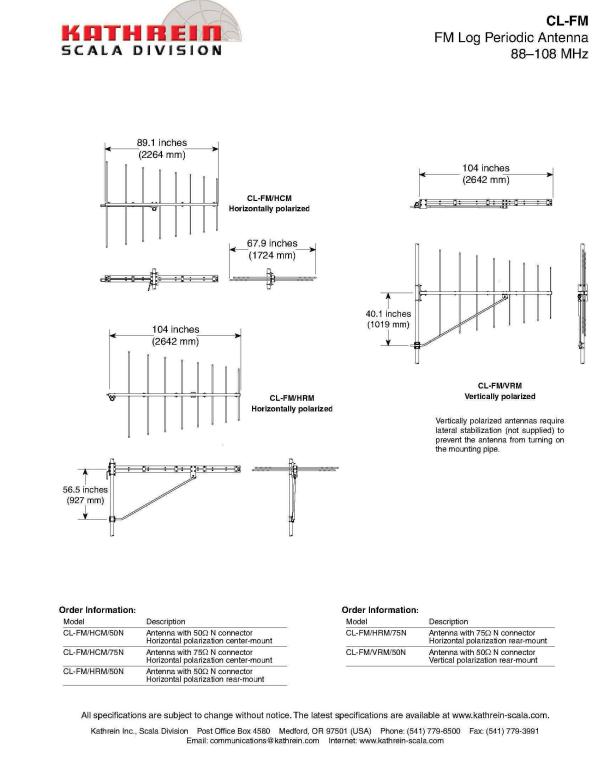
SYSTEM SUMMARY



Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991

Email: communications@kathrein.com Internet: www.kathrein-scala.com

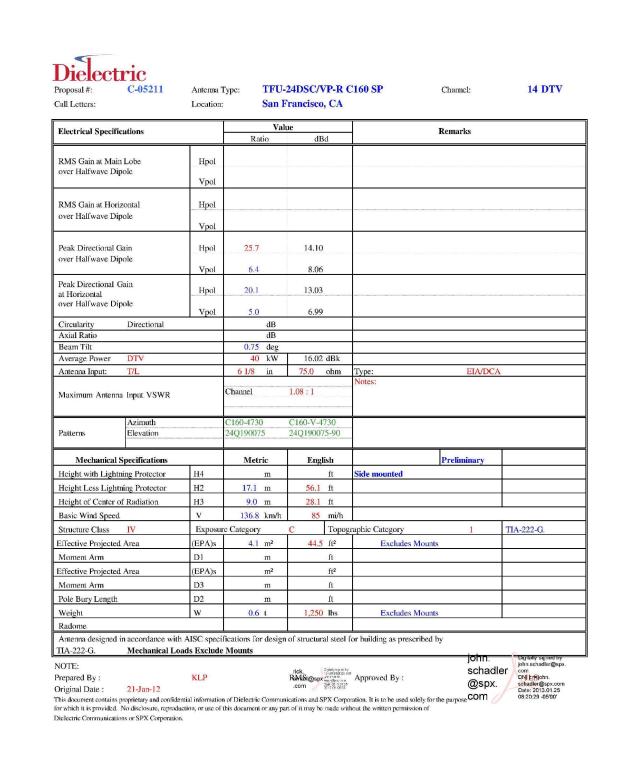
Elevation pattern (H-plane)

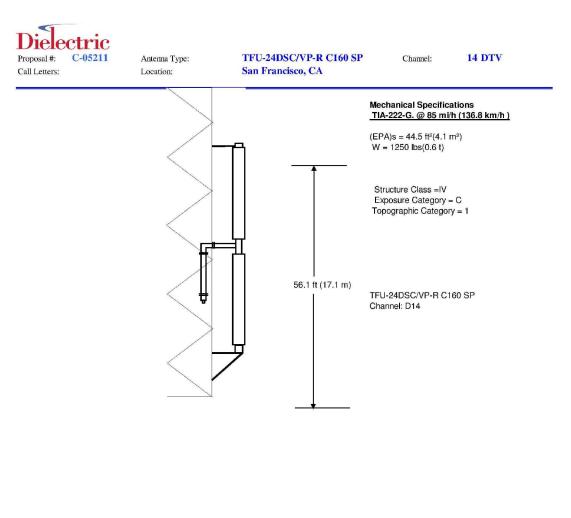


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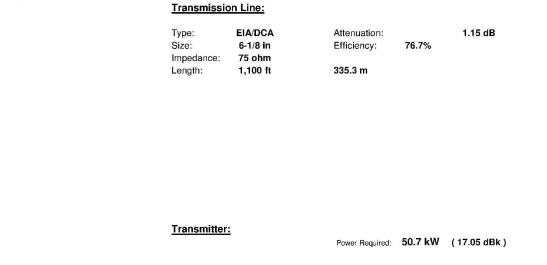


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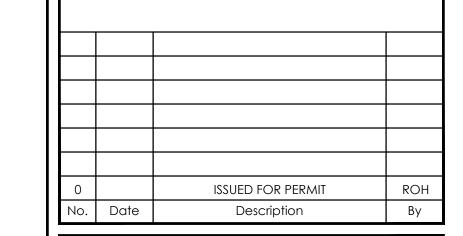
* Gain is with respect to half wave dipole.

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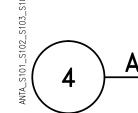
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RoHS Lead-Free

ANTENNA REF #49

Side Force (FS)

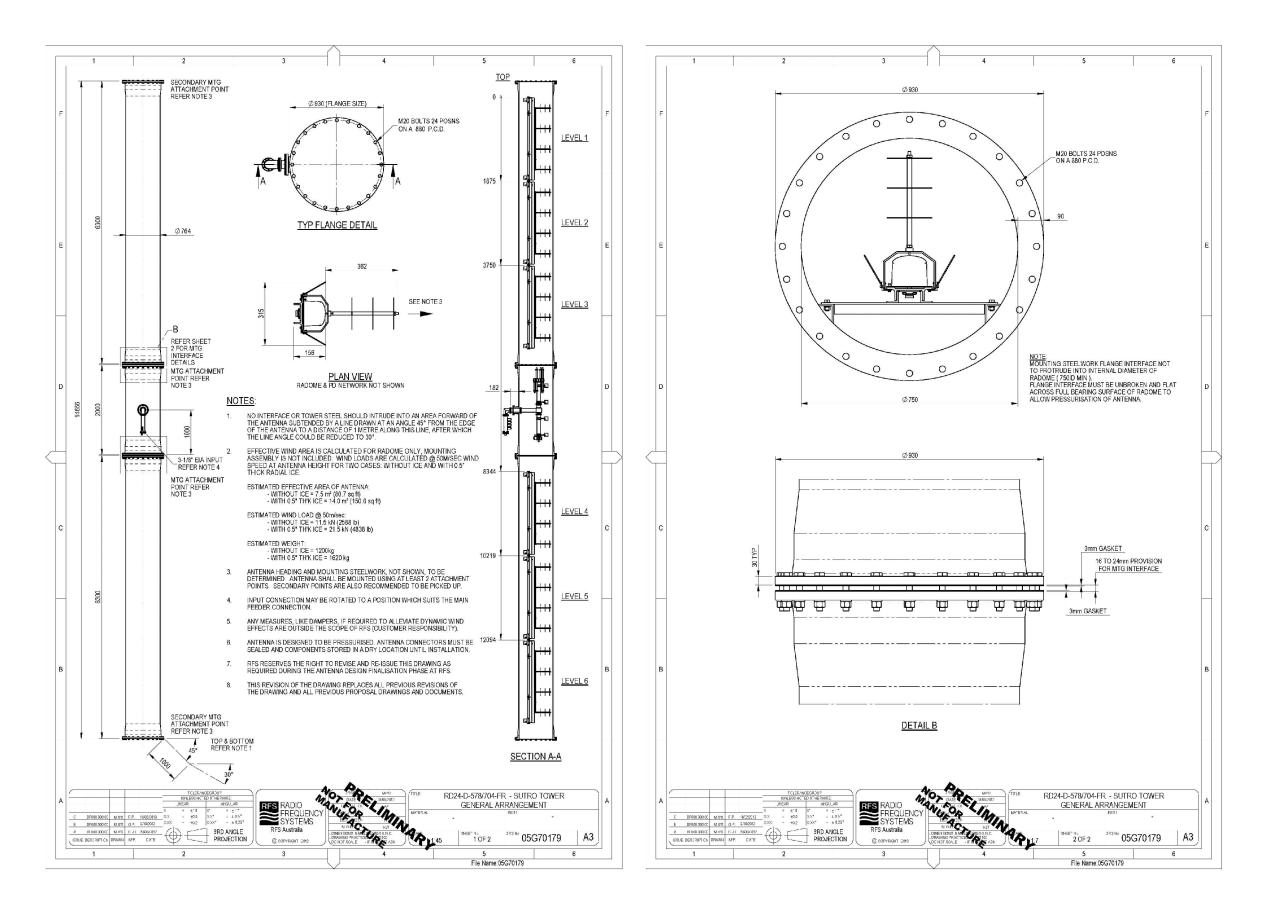
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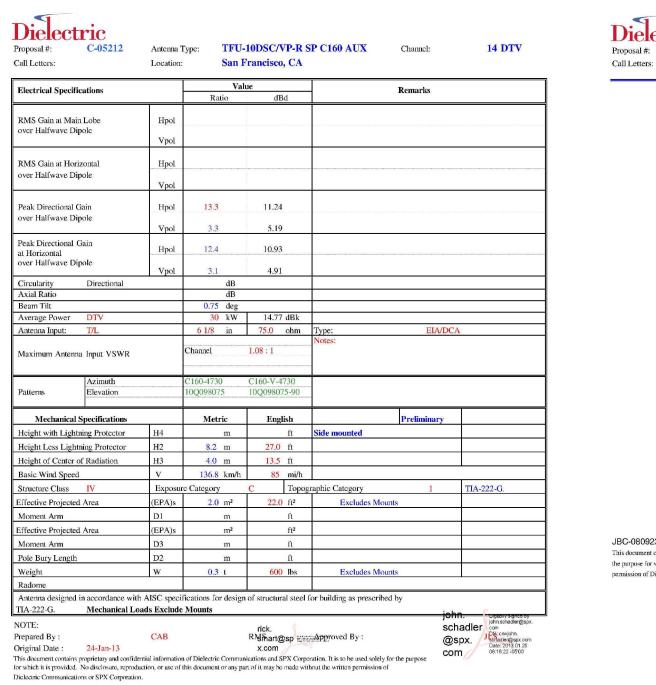
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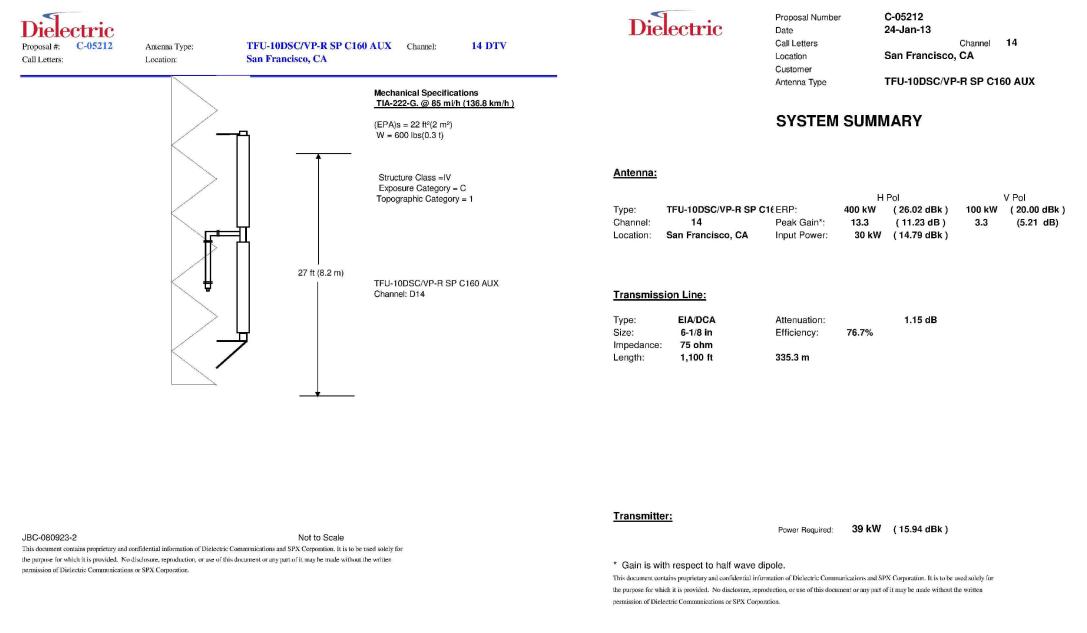
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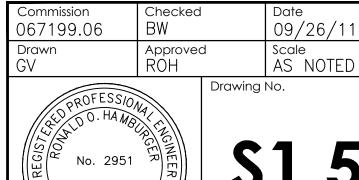
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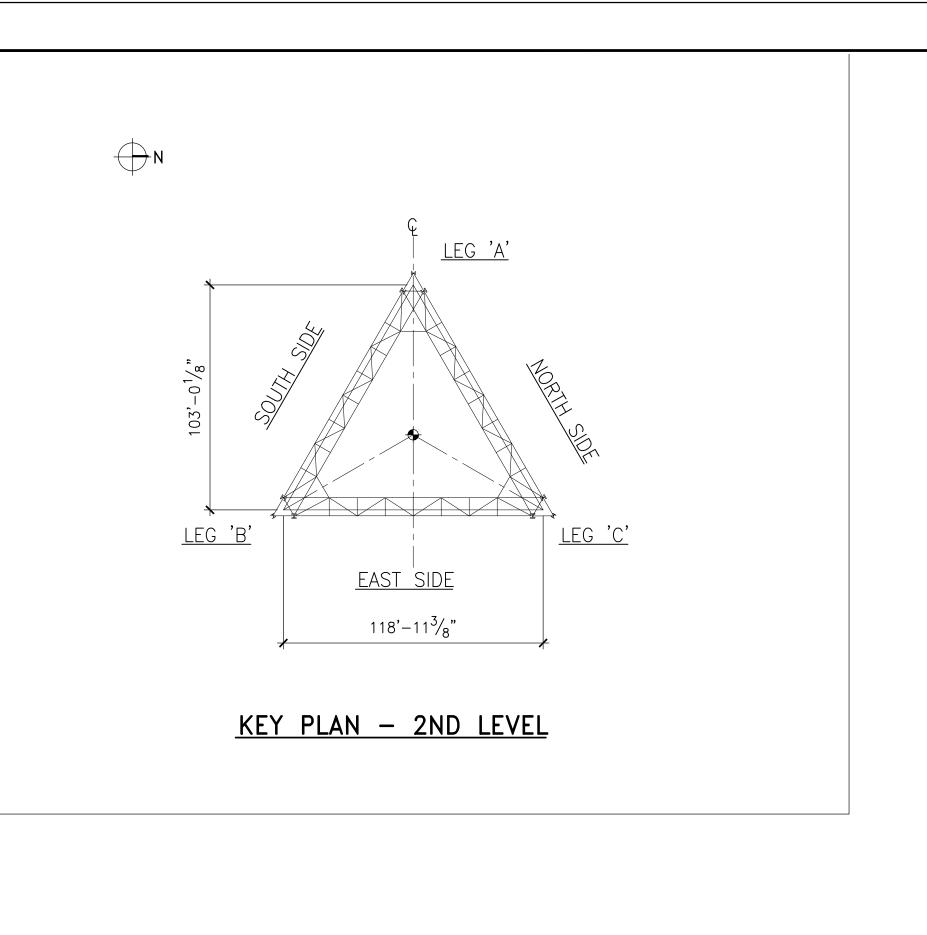
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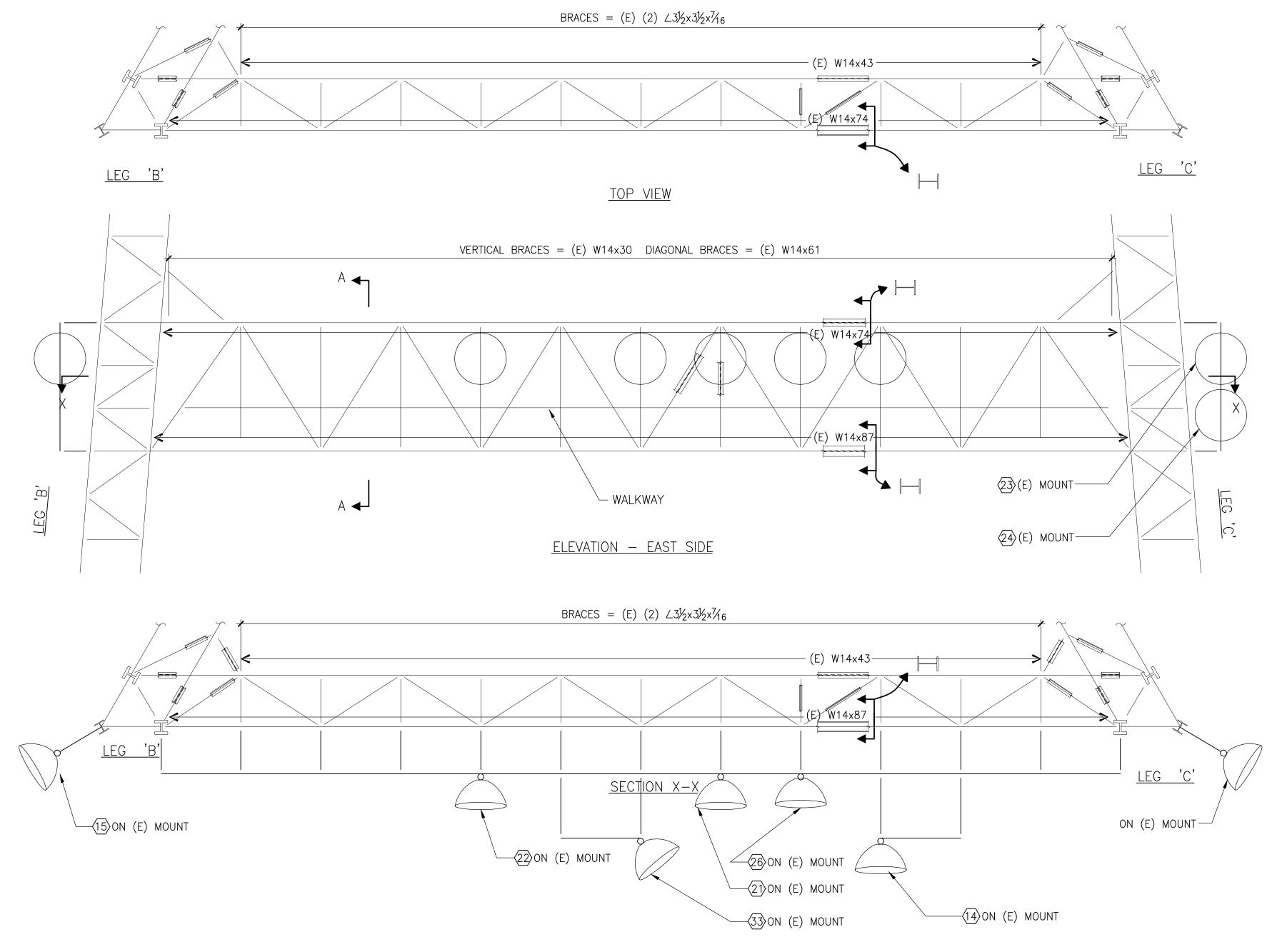
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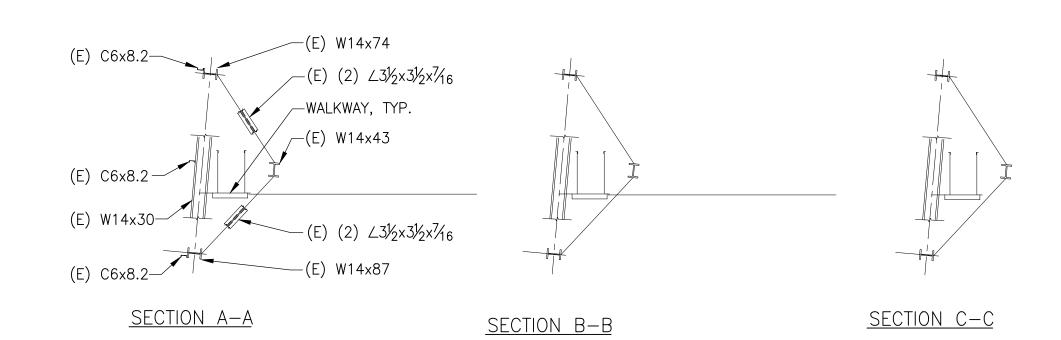
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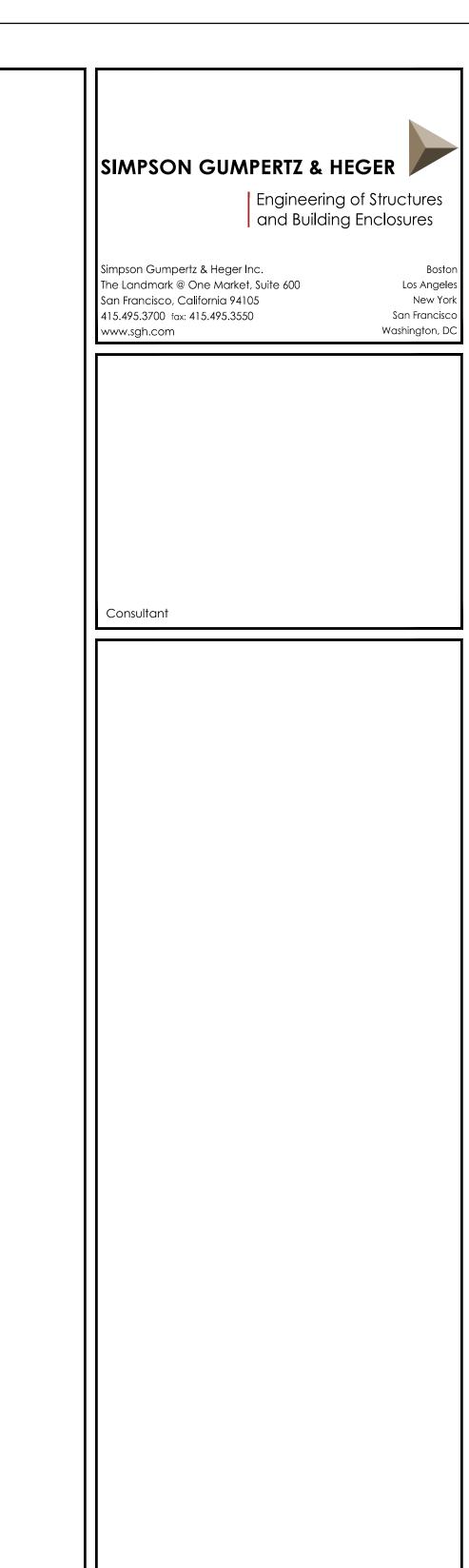


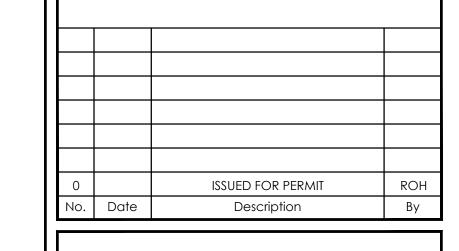






<u> 2ND LEVEL – EAST SIDE</u>





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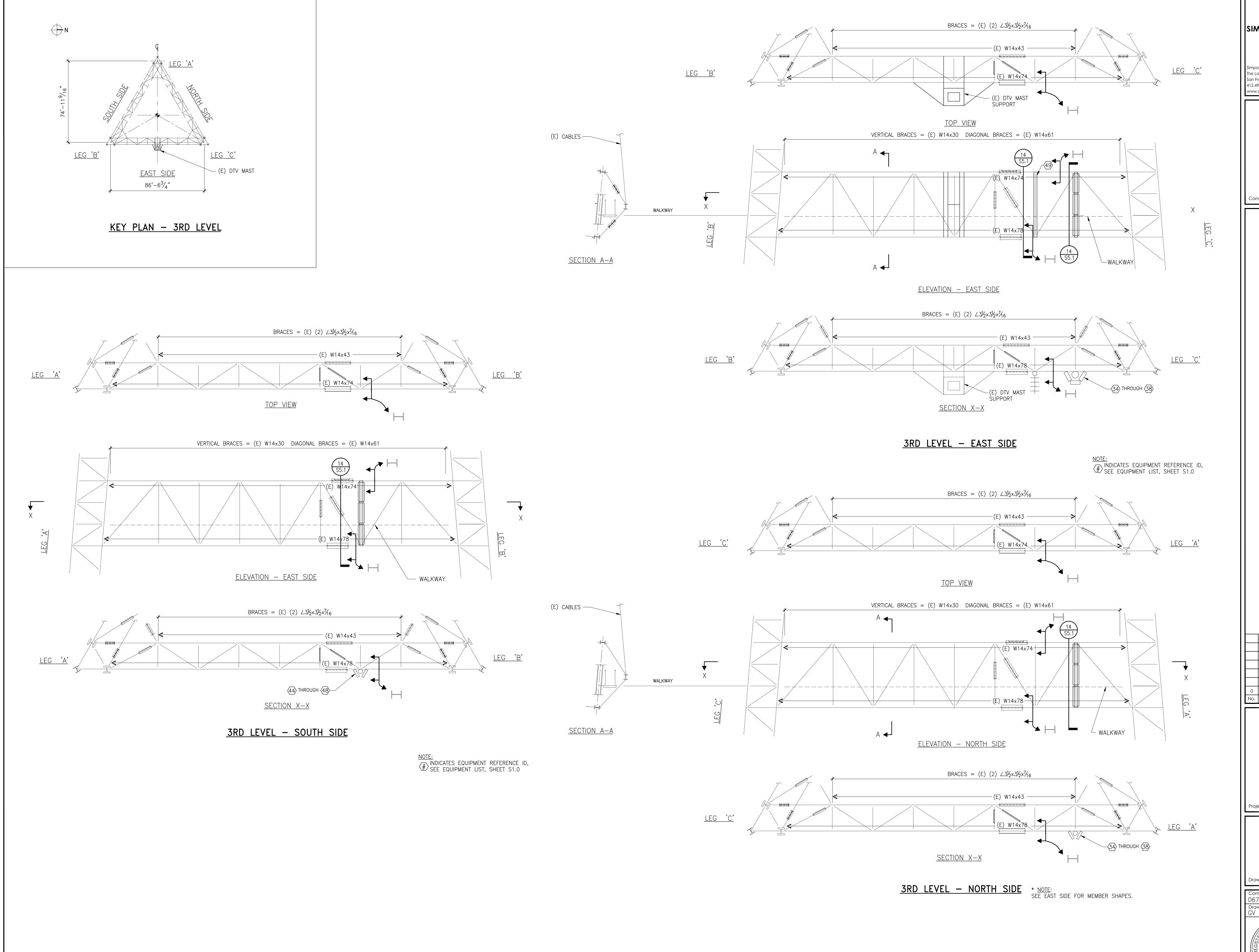
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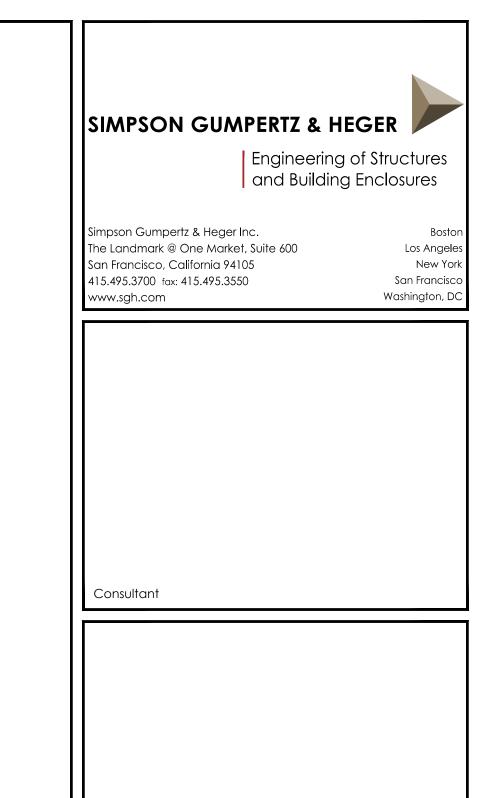
2ND LEVEL FRAMING

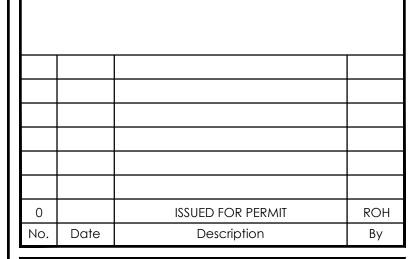
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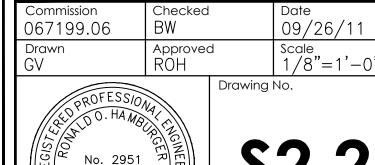


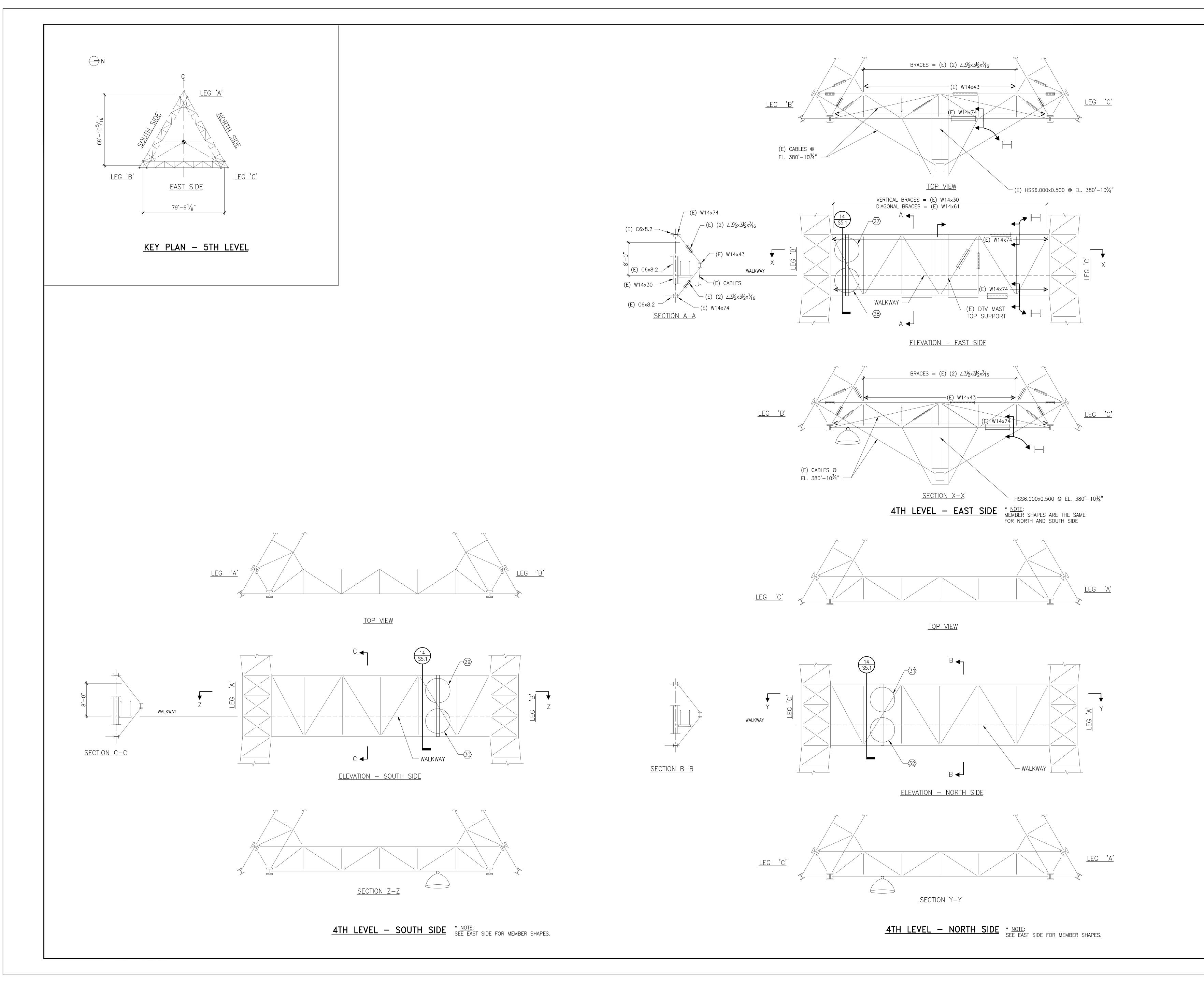




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3RD LEVEL FRAMING





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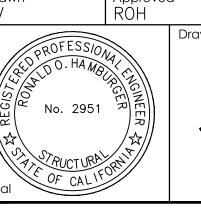
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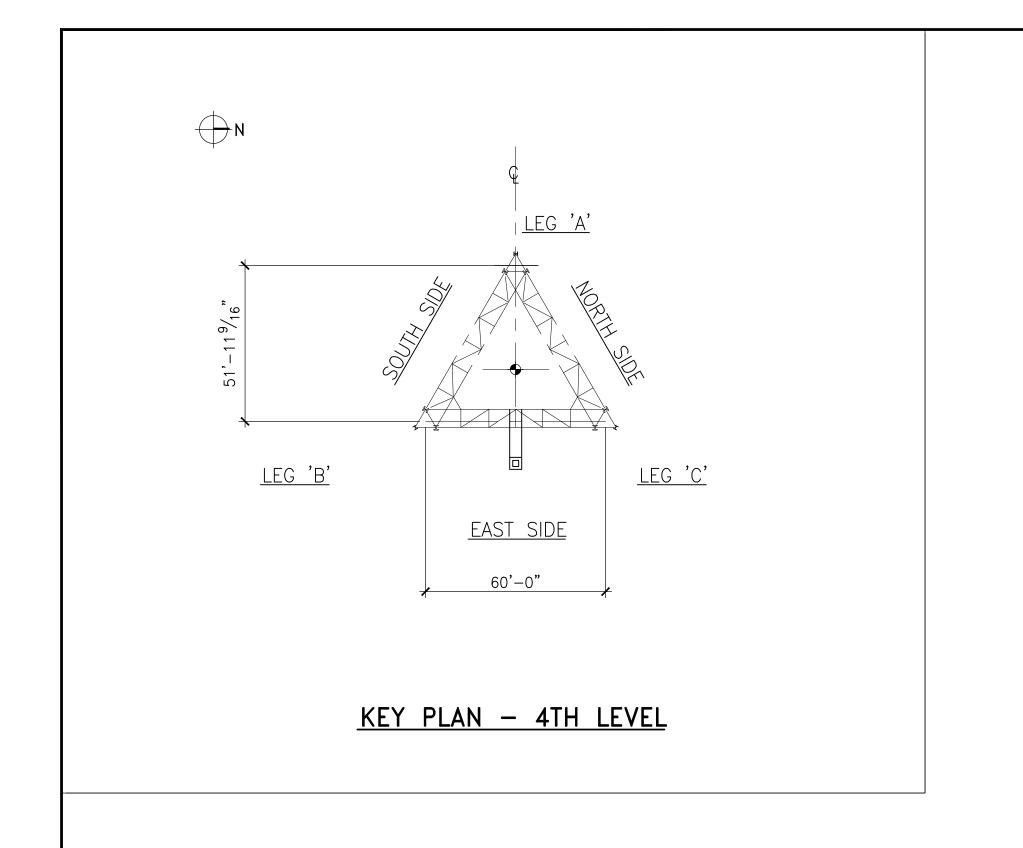
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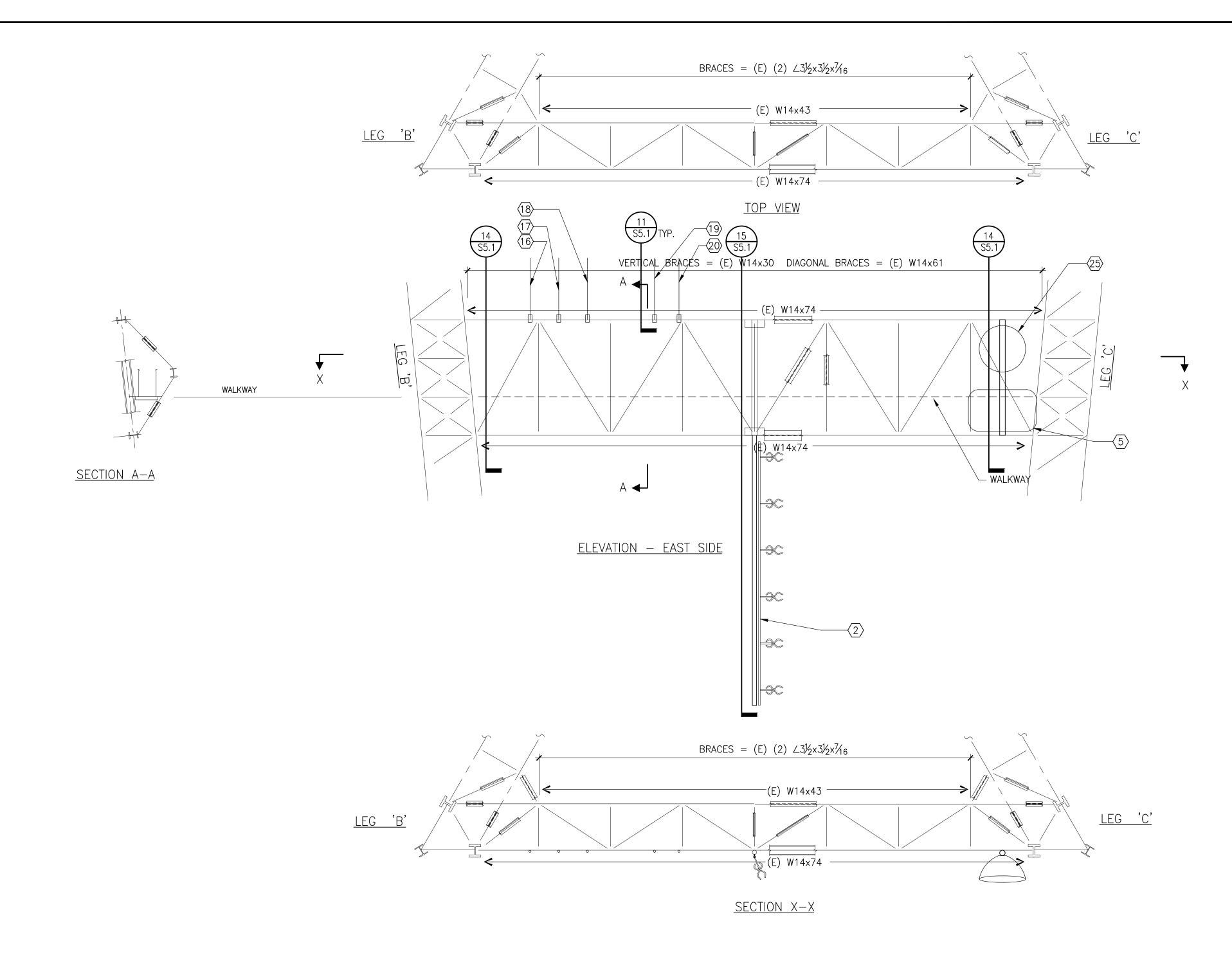
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S2.3





<u>5TH LEVEL - EAST SIDE</u>



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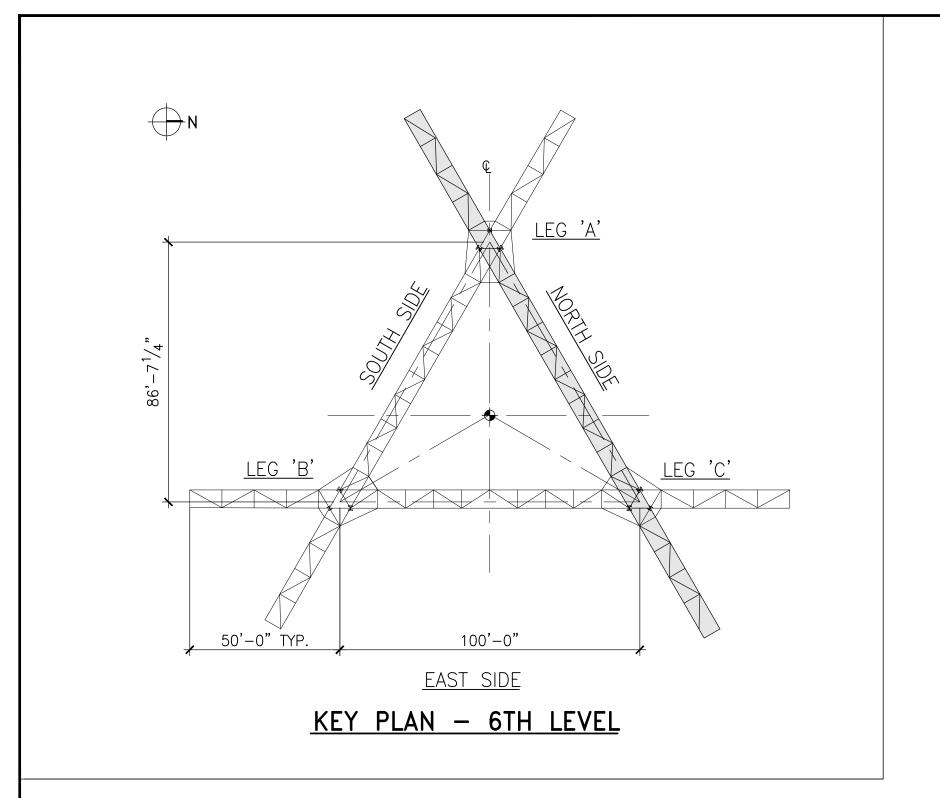
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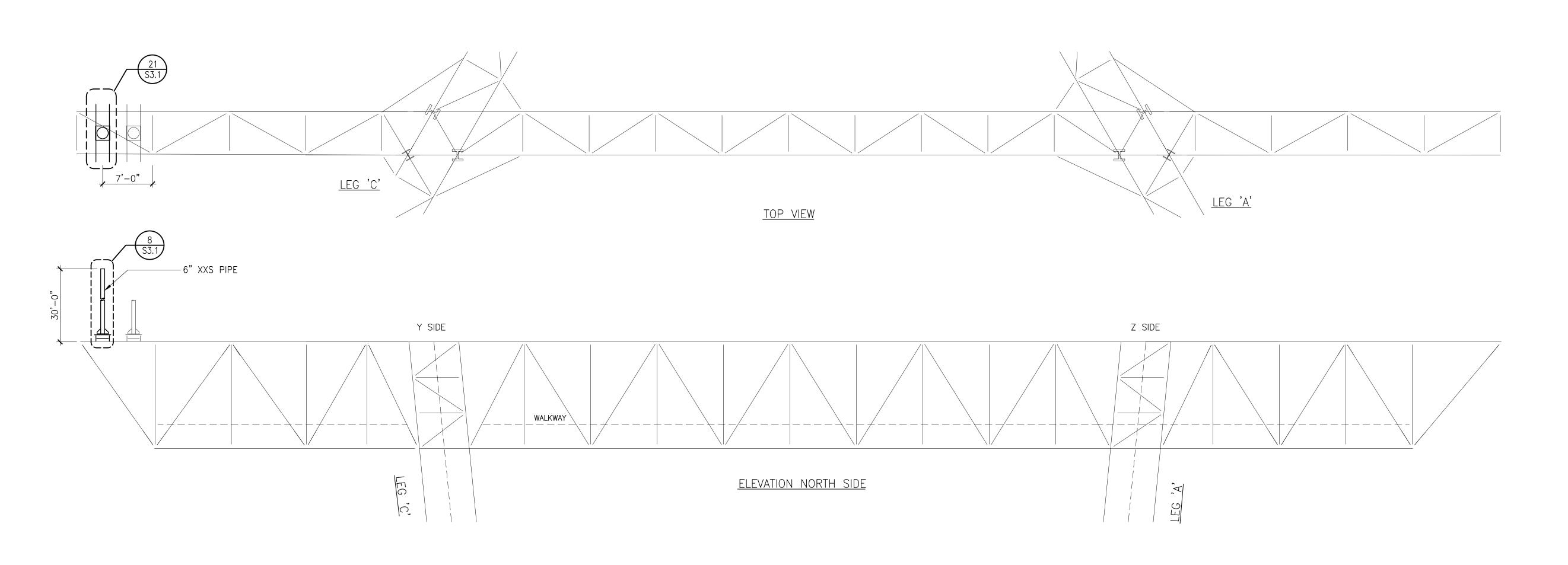
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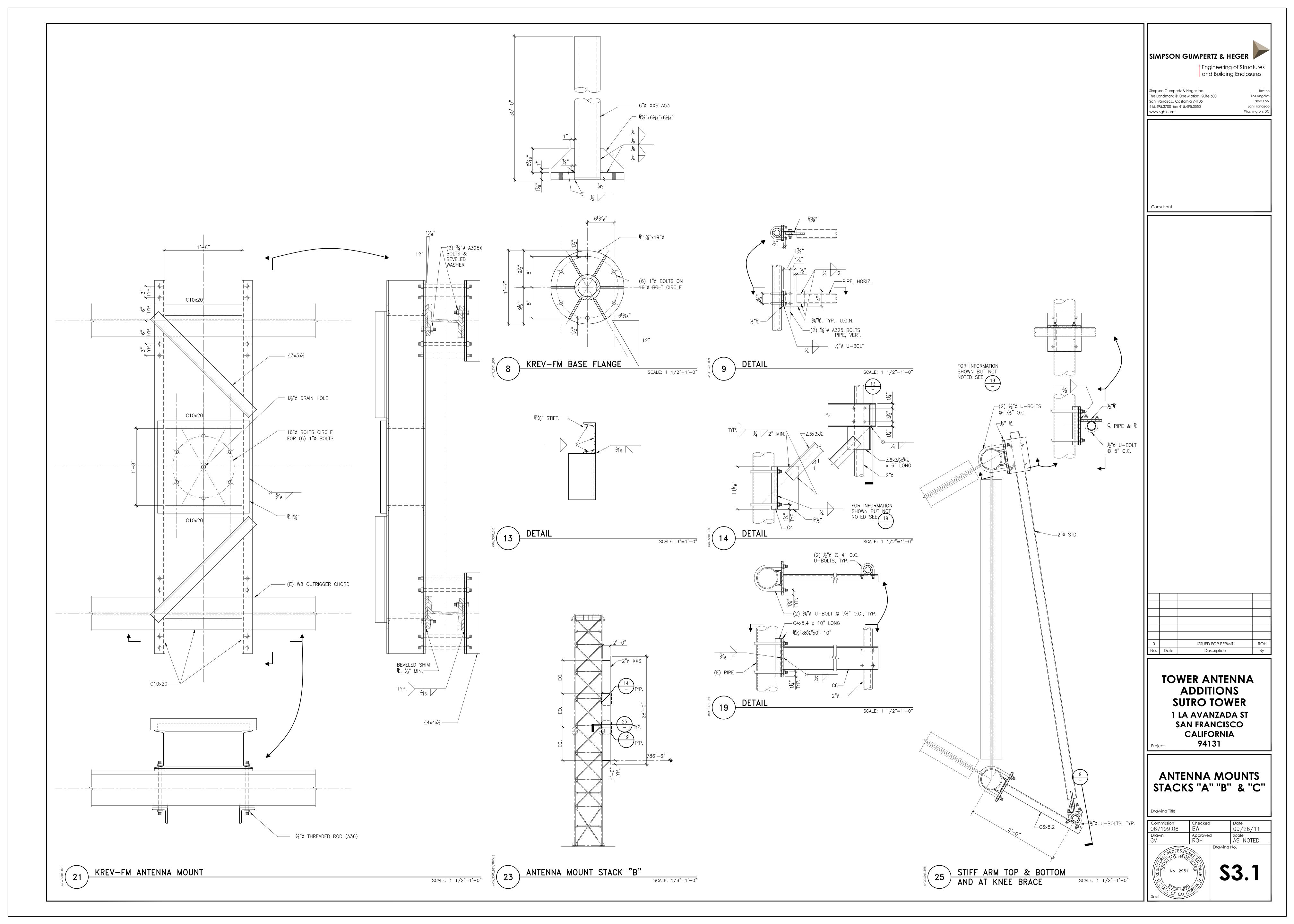
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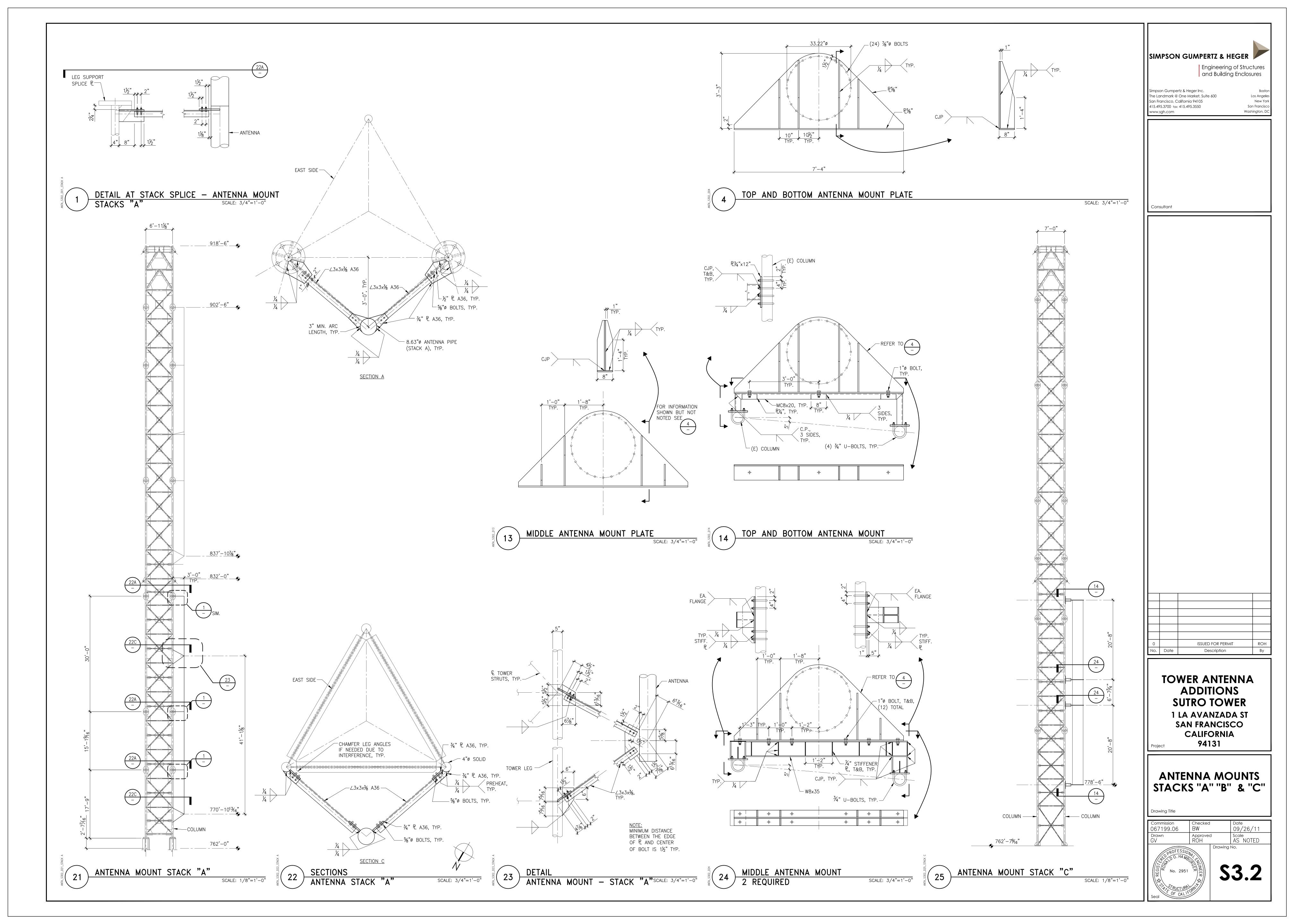
6TH LEVEL FRAMING NORTH SIDE

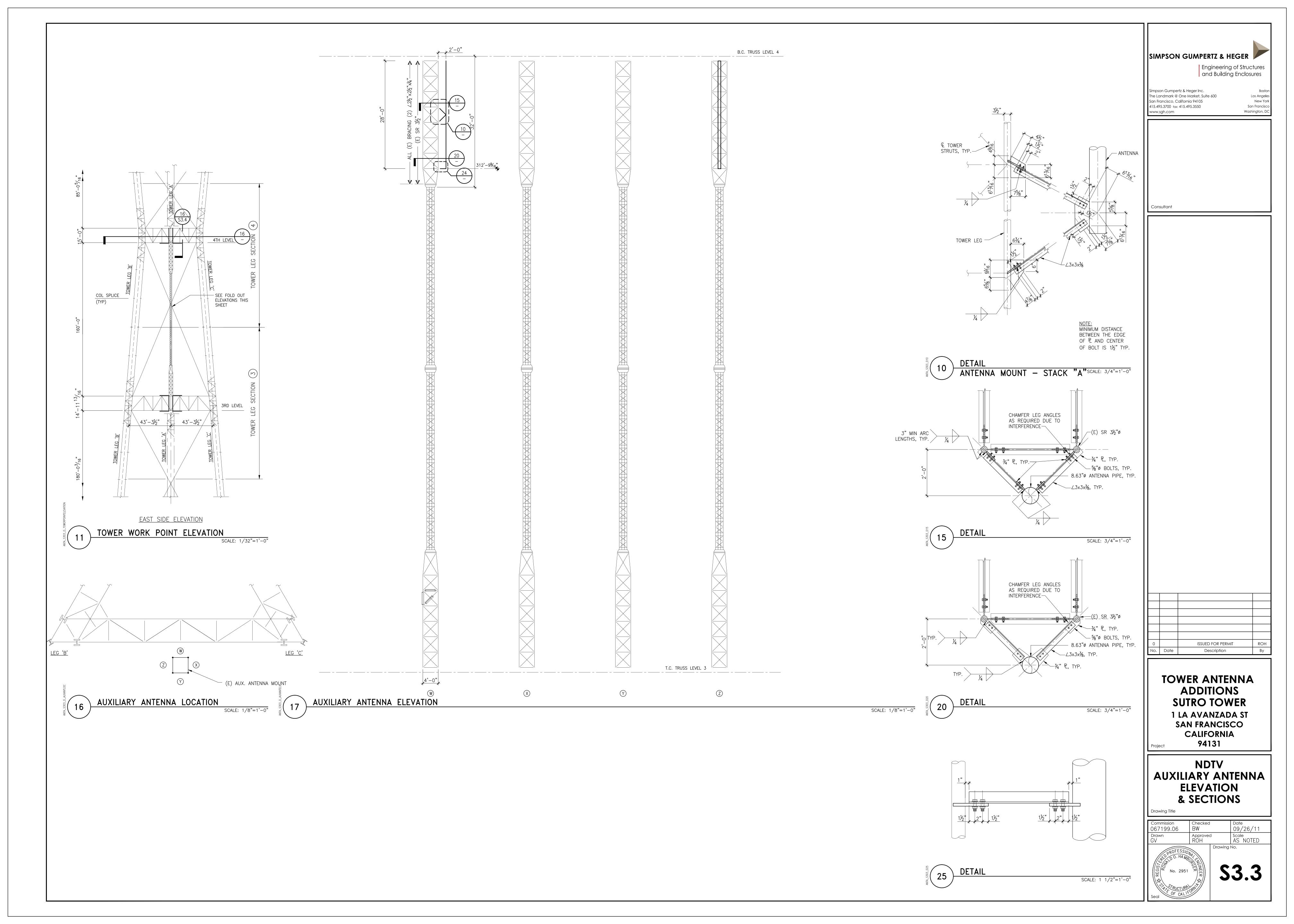
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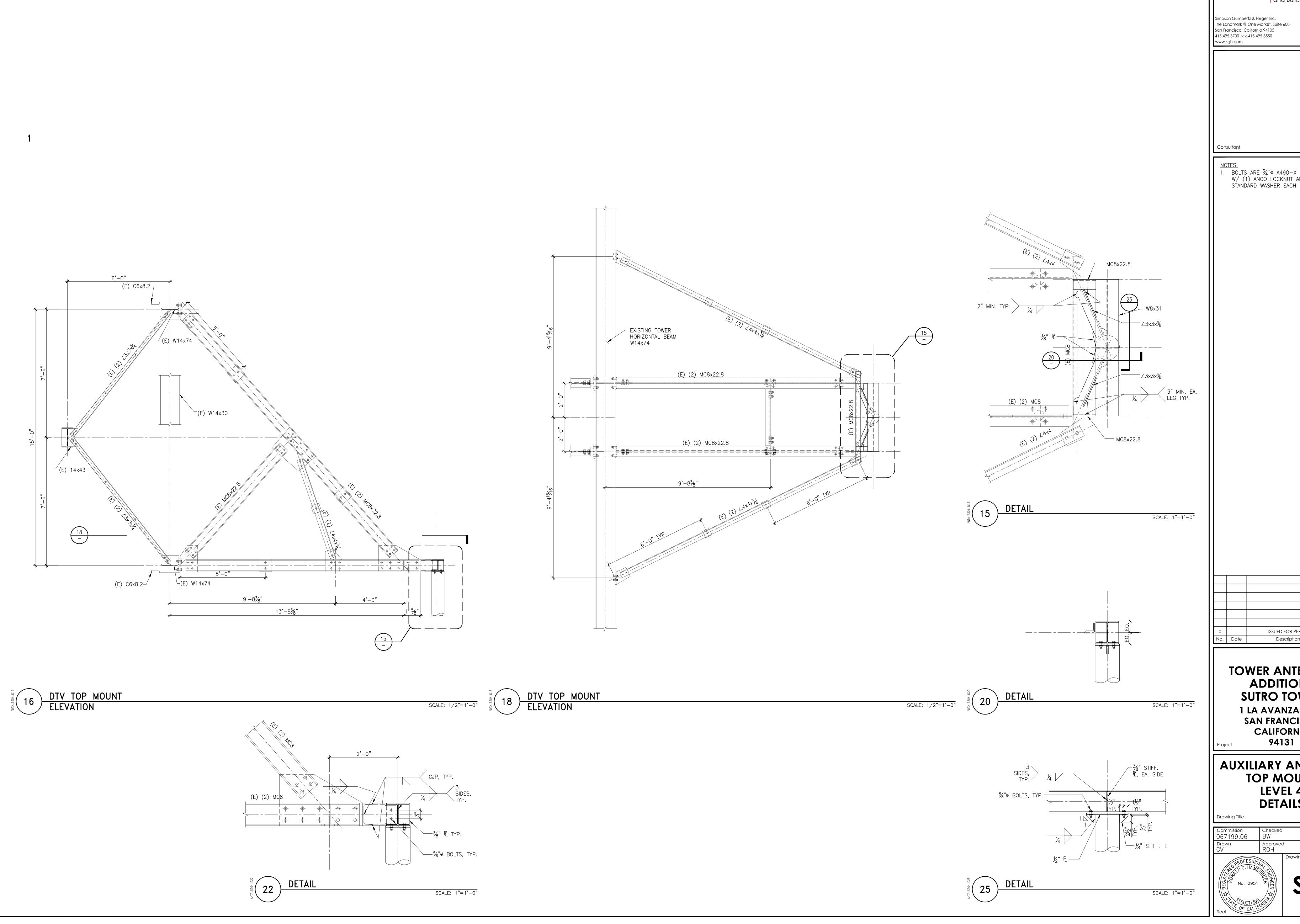
Commission | Checked | BW | 09/26/11 |
Drawn | Approved | ROH | 1/8"=1'-0" |
Drawing No. | Drawing No. |

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Drawing No. | Scale | 1/8"=1'









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CALIFORNIA

AUXILIARY ANTENNA TOP MOUNT LEVEL 4 DETAILS

Date 09/26/11 Scale AS NOTED

