

CONSTRUCTION DRAWINGS FOR KAUAI ISLAND, HAWAII

SITE NAME:

KUKUI 180-FT GUYED TOWER - KAUAI, HI

SITE COORDINATES:

N22° 03' 10.33" W159° 39' 41.63" (WGS84)

PROJECT NUMBER:

22028.10 - 180-GUYED TOWER CONSTRUCTION SUPPORT

SITE ADDRESS:

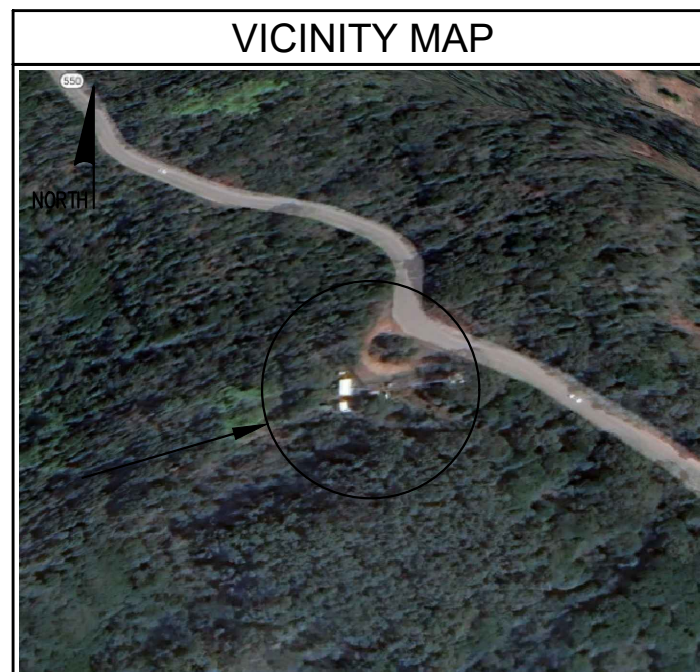
NEAR KOKEE RD (SR 550)
WAIMEA KAUAI COUNTY (HI7)
HAWAII (HI) 96796



PO BOX 82417
KENMORE, WA 98028-0417
TEL (Office): 425-640-2266
TEL (Cell): 206-619-4886

KUKUI TOWER
KAUAI, HI

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APPROVALS		
DISCIPLINE	SIGNATURE	DATE
LAND USE		
PRE CONSTRUCTION INSPECTION		
ZONING/ PERMITTING		
CONSTRUCTION (AS-BUILT)		
LESSEE		

PROJECT TEAM
APPLICANT: VINCE KROG STATE RADIO ENGINEER OFFICE OF ENTERPRISE TECHNOLOGY SERVICES 1151 PUNCHBOWL ST., ROOM B20 HONOLULU, HI 96813
CONTRACTOR: TO BE DETERMINED
PROJECT MANAGER: TO BE DETERMINED
CONSULTANTS: TOWER ENGINEERING COMPANY PO BOX 82417, KENMORE, WA 98028-0417 (206) 619-4886
TOWER OWNER: STATE OF HAWAII HONOLULU, HI

PROJECT DOCUMENTS
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ADDRESS
NEAR KOKEE RD (SR 550) WAIMEA KAUAI COUNTY (HI7) HAWAII (HI) 96796

LEGAL DESCRIPTION
TO BE DETERMINED

PROJECT SUMMARY
THE PROPOSED PLANS ARE FOR THE CORRODED GUY WIRE REPLACEMENT (ALL GUY LEVELS, THREE DIRECTIONS) INCLUDING ALL CONNECTIONS AND DIAGONAL REPLACEMENT FOR THE TOWER SECTION BETWEEN 104' AND 162' LEVELS.

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

REV	DATE	DESCRIPTION
PREPARED BY		
YK		2/8/23
CHECKED BY		
JA		2/8/23
ENGINEER REVIEW		
MB		2/8/23
PROJECT NUMBER		

22028.10
COVER SHEET
CS 1 OF 6 SHEETS

GENERAL NOTES

PROJECT AND SITE INFORMATION

PROJECT NAME: KUKUI SITE: GUY WIRE REPLACEMENT
 PROJECT NO.: 22028.10
 CLIENT NAME: ENTERPRISE TECHNOLOGY SERVICES
 SITE LOCATION: NEAR KOKEE RD (SR 550), WAIMEA KAUAI COUNTY (HI7)
 HAWAII (HI) 96796

PROJECT DESCRIPTION

THE PROPOSED PLANS ARE FOR THE CORRODED GUY WIRE REPLACEMENT (ALL GUY LEVELS, THREE DIRECTIONS) INCLUDING ALL CONNECTIONS AND DIAGONAL REPLACEMENT FOR THE TOWER SECTION BETWEEN 104' AND 162' LEVELS.

APPLICABLE CODES AND STANDARDS

ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS, UNLESS NOTED OTHERWISE:

- ANSI/TIA-222-H-1: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
- ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS
- IBC: INTERNATIONAL BUILDING CODE
- AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION
- AWS: AMERICAN WELDING SOCIETY, STRUCTURAL WELDING CODE
- ANSI/TIA-322: LOADING, ANALYSIS, AND DESIGN CRITERIA RELATED TO THE INSTALLATION, ALTERATION AND MAINTENANCE OF COMMUNICATION STRUCTURES
- ANSI/ASSE A10.48: CRITERIA FOR SAFETY PRACTICES WITH THE CONSTRUCTION, DEMOLITION, MODIFICATION AND MAINTENANCE OF COMMUNICATION STRUCTURES
- ACI: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

DESIGN CRITERIA

MINIMUM ANSI/TIA-222-H-1 REQUIREMENTS

CITY, STATE: WAIMEA KAUAI COUNTY, HAWAII
 BASIC WIND SPEED: 200 MPH (3-SECOND GUST)
 BASIC WIND SPEED WITH ICE: 0 MPH
 DESIGN ICE THICKNESS: 0 INCH

SITE SPECIFIC REQUIREMENTS:

STRUCTURE CLASS: III
 EXPOSURE CATEGORY: B
 TOPOGRAPHIC CATEGORY: I
 TOPOGRAPHIC FEATURE: FLAT TOP RIDGE
 CREST HEIGHT, H: 2920 FEET

GENERAL

THESE GENERAL NOTES ARE TO BE USED AS A SUPPLEMENT TO THE SPECIFICATIONS (IF ANY). ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THE SPECIFICATIONS, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ENGINEER, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK.

GENERAL PRACTICE: ALL METHODS, MATERIALS, AND WORKMANSHIP SHALL FOLLOW THE DICTATES OF GOOD CONSTRUCTION PRACTICE, AND SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND SAFETY REGULATIONS.

ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN THE GENERAL TYPE OF CONSTRUCTION REQUIRED.

MEANS & METHODS, SITE SAFETY: CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE CONTRACTORS WORK. THE STRUCTURAL ENGINEER HAS NO OVERALL SUPERVISORY AUTHORITY OR ACTUAL AND/OR DIRECT RESPONSIBILITY FOR THE SPECIFIC WORKING CONDITIONS AT THE SITE AND/OR FOR ANY HAZARDS RESULTING FROM THE ACTIONS OF ANY TRADE CONTRACTOR. THE STRUCTURAL ENGINEER HAS NO DUTY TO INSPECT, SUPERVISE, NOTE, CORRECT, OR REPORT ANY HEALTH OR SAFETY DEFICIENCIES TO THE OWNER, CONTRACTORS, OR OTHER ENTITIES OR PERSONS AT THE PROJECT SITE. NO ACTIONS BY THE ENGINEER SHALL BE INTERPRETED TO SUPERSEDE THE CONTRACTOR'S RESPONSIBILITY FOR MEANS AND METHODS AND SITE SAFETY.

SUBMITTALS: COMPLETE, ACCURATE AND FULLY DEVELOPED SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO ANY FABRICATION OR CONSTRUCTION FOR ALL STRUCTURAL ITEMS.

SUBSTITUTIONS: CONTRACTOR-INITIATED CHANGES SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER OF RECORD (EOR) FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES ONLY INDICATED ON SHOP DRAWINGS WILL NOT SATISFY THIS REQUIREMENT.

DETAILS: DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND THE STRUCTURAL ENGINEER. ALL TYPICAL NOTES AND DETAILS SHOWN ON DRAWINGS SHALL APPLY, UNLESS NOTED OTHERWISE. TYPICAL DETAILS MAY NOT NECESSARILY BE INDICATED ON THE PLANS BUT SHALL STILL APPLY AS SHOWN OR DESCRIBED IN THE DETAILS. WHERE TYPICAL DETAILS ARE NOTED IN THE PLANS, THE SPECIFIED TYPICAL DETAIL SHALL BE USED. WHERE NO TYPICAL DETAIL IS NOTED, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CHOOSE THE APPROPRIATE TYPICAL DETAIL FROM THOSE PROVIDED OR REQUEST ADDITIONAL INFORMATION. THE CONTRACTOR SHALL SUBMIT ALL PROPOSED ALTERNATE TYPICAL DETAILS TO THOSE PROVIDED WITH RELATED CALCULATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO SHOP DRAWING PRODUCTION AND FIELD USE.

MANUFACTURED DESIGN ELEMENTS: MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII, AND SUBMITTED TO THE EOR FOR APPROVAL PRIOR TO FABRICATION.

DIMENSIONS: DO NOT SCALE DRAWINGS. UTILIZE ONLY NOTED DIMENSIONS AND FOR DIMENSIONS NOT NOTED, CONTRACTOR SHALL REQUEST CLARIFICATION OF DIMENSIONS NOT SHOWN.

EXISTING DIMENSIONS: CONTRACTOR SHALL VERIFY ALL LEVELS, DIMENSIONS, AND EXISTING CONDITIONS IN THE FIELD BEFORE PROCEEDING. DIMENSIONS OF EXISTING CONDITIONS MAY BE BASED ON RECORD DRAWINGS AND ARE TO BE FIELD-VERIFIED BY THE CONTRACTOR. DIMENSIONS NOTED AS PLUS OR MINUS (\pm) INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE. IN CASE OF DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, OR OF ANY CONFLICTS OR EXCESSIVE VARIATIONS FROM INDICATED DIMENSIONS, THE CONTRACTOR SHALL OBTAIN DIRECTION FROM THE EOR BEFORE PROCEEDING. CONTRACTOR SHALL NOTIFY THE EOR OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO INSTALLATION OR FABRICATION. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS--DO NOT SCALE DRAWINGS.

STABILITY DURING CONSTRUCTION: THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE SPECIFIED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO: JOB SITE SAFETY; ERECTION MEANS, METHODS, AND SEQUENCES; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES; AND SHORING AND BRACING OF STRUCTURAL MEMBERS, ANTENNAS, EXISTING CONSTRUCTION OR SOIL EXCAVATIONS.

TEMPORARY SHORING: SHALL BE ABLE TO RESIST THE LOADS ON THE STRUCTURE DURING CONSTRUCTION PER SEI/ASSE STANDARD NO. 37-02 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION." TEMPORARY SHORING AND BRACING SHALL NOT BE REMOVED UNTIL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND MATERIALS HAVE ACHIEVED DESIGN STRENGTH.

STRUCTURAL OBSERVATION: CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STRUCTURAL STEEL

STEEL MATERIALS (MINIMUM GRADES)

BASE PLATES, CONNECTION MATERIALS, EMBEDDED ITEMS, AND MISC. STEEL	ASTM A36, Fy = 36 KSI
AISC WIDE-FLANGE SHAPES	ASTM A992 OR A572, GRADE 50
SQUARE/RECTANGULAR STRUCTURAL TUBE	ASTM A500 GRADE B, Fy = 46 KSI
ROUND STRUCTURAL TUBE	ASTM A500 GRADE B, Fy = 42 KSI
STRUCTURAL PIPE	ASTM A53 GRADE B, Fy = 35 KSI
CHANNELS, ANGLES, OTHER SHAPES	ASTM A36, Fy = 36 KSI

STRUCTURAL STEEL: FABRICATION AND ERECTION SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 22 OF THE IBC.

EXPOSED (GALVANIZED) STEEL: ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. GALVANIZED SURFACE TO BE PROPERLY PREPPED FOR PAINTING.

CAMBER: ALL MEMBERS SHALL BE ERECTED WITH RESIDUAL MILL CAMBER OR FABRICATED CAMBER IN THE UP POSITION. CAMBER SPECIFIED IN THE CONTRACT DOCUMENTS IS TO BE ACHIEVED AT THE SITE AFTER SHIPPING AND HANDLING.

SUBMITTALS: THE CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL INCLUDING CONNECTION DETAILS TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO THE START OF FABRICATION.

HIGH STRENGTH BOLTS

BOLT MATERIAL:	ASTM A325X
HIGH STRENGTH BOLTS	ASTM A325X OR A307
U-BOLTS	

TYPICAL BOLTED CONNECTIONS: ALL NEW CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED. ALL BOLTED BEAM CONNECTIONS SHALL HAVE A MINIMUM OF (2) BOLTS.

MODIFICATIONS: BOLTS SHALL NOT BE RE-USED. ANY MEMBER BEING REPLACED SHALL BE PROVIDED WITH NEW BOLTS OF THE SAME SIZE AND GRADE, OR APPROVED EQUIVALENT, EXCEPT AS NOTED. ALL BOLTS SHALL BE INSTALLED WITH SPACING AND EDGE DISTANCE ACCORDING TO THE TIA-222-H-1.

TIGHTENING: ALL BOLTS SHALL BE FULLY TIGHTENED TO THE SNUG-TIGHT CONDITION AS SPECIFIED IN THE AISC SPECIFICATION, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS."

NUT LOCKING DEVICES: SHALL BE PROVIDED ON ALL BOLTS.

EXPOSURE: ALL FASTENERS AND HARDWARE USED IN AN EXTERIOR APPLICATION SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM STANDARD A153 (HOT-DIPPED) OR ASTM STANDARD B695 CLASS 50 (MECHANICAL).

EQUIPMENT LOCATION

CONTRACTOR IS RESPONSIBLE FOR ARRANGING LOCATION OF ALL EQUIPMENT AND TAKING PROPER PRECAUTIONS TO AVOID DAMAGE TO EQUIPMENT. REPAIR OF DAMAGE TO THE EQUIPMENT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

CONDITION OF RESPONSIBILITY

CUSTOMER HEREBY AGREES AND ACKNOWLEDGES THAT TOWER ENGINEERING COMPANY (TEC) SHALL HAVE NO LIABILITY WHATSOEVER TO CUSTOMER OR TO OTHERS FOR ANY WORK OR SERVICES PERFORMED IN CONNECTION WITH THE FABRICATION, ERECTION, AND EQUIPMENT INSTALLATION, INCLUDING BUT NOT LIMITED TO ANY SERVICES RENDERED FOR CUSTOMER OR FOR OTHERS BY RIGGERS, ERECTORS OR OTHER SUBCONTRACTORS. CUSTOMER ACKNOWLEDGES AND AGREES THAT ANY RIGGERS, ERECTORS OR SUBCONTRACTORS RETAINED OR EMPLOYED BY CUSTOMER SHALL BE SOLELY RESPONSIBLE TO CUSTOMER AND TO OTHERS FOR THE QUALITY OF WORK PERFORMED BY THEM AND THAT TEC SHALL HAVE NO LIABILITY OR RESPONSIBILITY WHATSOEVER AS A RESULT OF ANY NEGLIGENCE OR BREACH OF CONTRACT BY SUCH RIGGER, ERECTOR OR SUBCONTRACTOR.

INSTALLING GUYS AND PLUMBING LINES

THE TOWER IS DESIGNED FOR INITIAL TENSION AS SPECIFIED IN THE ERECTION DRAWINGS. IT IS IMPORTANT THAT THE GUYS BE TENSIONED ACCURATELY TO ASSURE THE STIFFNESS OF THE TOWER.

UNEVEN TERRAIN, TEMPERATURE, PLUMBNESS OF THE TOWER AND WIND ARE FACTORS WHICH AFFECT GUY TENSIONS. IF THE TOWER SITE IS LEVEL AND THE ANCHOR DISTANCES ARE EQUAL, THE TENSIONS IN ALL THREE GUYS AT A LEVEL WILL BE EQUAL WHEN THE TOWER IS PLUMB. IF THE TERRAIN OF THE TOWER SITE IS UNEVEN, THE GUYS ARE NOT PERFECTLY SYMMETRICAL AND TENSIONS IN GUYS VARY IN THE THREE DIRECTIONS. FOR THIS REASON INITIAL GUY TENSIONS ARE SPECIFIED IN ONE DIRECTION ONLY. THE TOWER SHOULD BE PLUMBED WITH THE SPECIFIED TENSIONS IN THE GIVEN GUY DIRECTION.

WIND LOAD ON THE TOWER AND GUYS CHANGES THE TENSION IN ALL GUYS; THEREFORE, PLUMB THE TOWER IN CALM WEATHER ONLY.

IN CHANGING OUT GUYS, WORK SHOULD PROCEED IN ONE GUY DIRECTION AT A TIME. A TEMPORARY GUY **MUST BE INSTALLED** BEFORE REMOVING EXISTING GUY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THE TEMPORARY GUY AND ITS CONNECTIONS ARE ADEQUATELY DESIGNED FOR THE LOADS IMPOSED ON IT.

THE PLUMBING OF A TOWER OR CHECKING ALIGNMENT OF A TOWER SHOULD BE PERFORMED IN ACCORDANCE WITH THE ANSI/TIA/EIA STANDARD 222-H.

PAINTING

ALL EXPOSED STEEL SURFACES SHALL BE PAINTED PER THESE GENERAL NOTES, INCLUDING ALL NEW STEEL.

SURFACE PREPARATION: ALL SURFACES TO BE PAINTED SHALL BE PREPARED PER SSPC SPECIFICATIONS 1 AND 2 (SSPC-SP-1 & SSPC-SP-2):

- SSPC-SP-1: SOLVENT CLEANING, REMOVE ALL VISIBLE OIL, GREASE, SOIL, DRAWING AND CUTTING COMPOUNDS AND OTHER SOLUBLE CONTAMINANTS;
- SSPC-SP-2: HAND TOOL CLEANING, REMOVE ALL LOOSE MILL SCALE, LOOSE RUST AND OTHER DETRIMENTAL FOREIGN MATTER.

PRODUCTS: PAINTS SHALL CONSIST OF THE FOLLOWING:

- PRIME COAT: SHERWIN-WILLIAMS MACROPOXY 646FC B58-600, A 2-COMPONENT HIGH SOLIDS EPOXY PRIMER FOR GALVANIZED METAL;
- FINISH COAT: SHERWIN-WILLIAMS ACROLON 218 HS POLYURETHANE B65-600/650 SERIES;
- OR APPROVED EQUAL.

COLOR: THE FINISH COATS COLOR SHALL BE DETERMINED AT THE OWNER'S DISCRETION.

APPLICATION: ALL EXPOSED STEEL SURFACES SHALL BE PAINTED AS FOLLOWS:

- PREPARE SURFACE PER SURFACE PREPARATION;
- APPLY ONE (1) PRIME COAT OF MACROPOXY 646FC B58-600 BY ROLLER OR SPRAY EQUIPMENT TO A WET FILM THICKNESS OF APPROXIMATELY 4.0 - 7.0 MILLS TO PRODUCE A DRY FILM THICKNESS (DFT) OF 3.0 - 5.0 MILS;
- APPLY ONE (1) FINISH COAT OF ACROLON 218 HS POLYURETHANE B65-600/650 SERIES BY ROLLER OR SPRAY EQUIPMENT TO A WET FILM THICKNESS OF APPROXIMATELY 4.5 - 9.0 MILLS TO PRODUCE A DFT OF 3.0 - 6.0 MILS.

FOLLOW ALL MANUFACTURER RECOMMENDATIONS, PAYING SPECIAL ATTENTION TO CURE TIME AND ENSURING THAT NO COAT IS APPLIED ON WET OR NON-CURED SURFACES.



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REV	DATE	DESCRIPTION
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PREPARED BY

YK	2/8/23
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CHECKED BY

JA	2/8/23
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ENGINEER REVIEW

MB	2/8/23
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PROJECT NUMBER

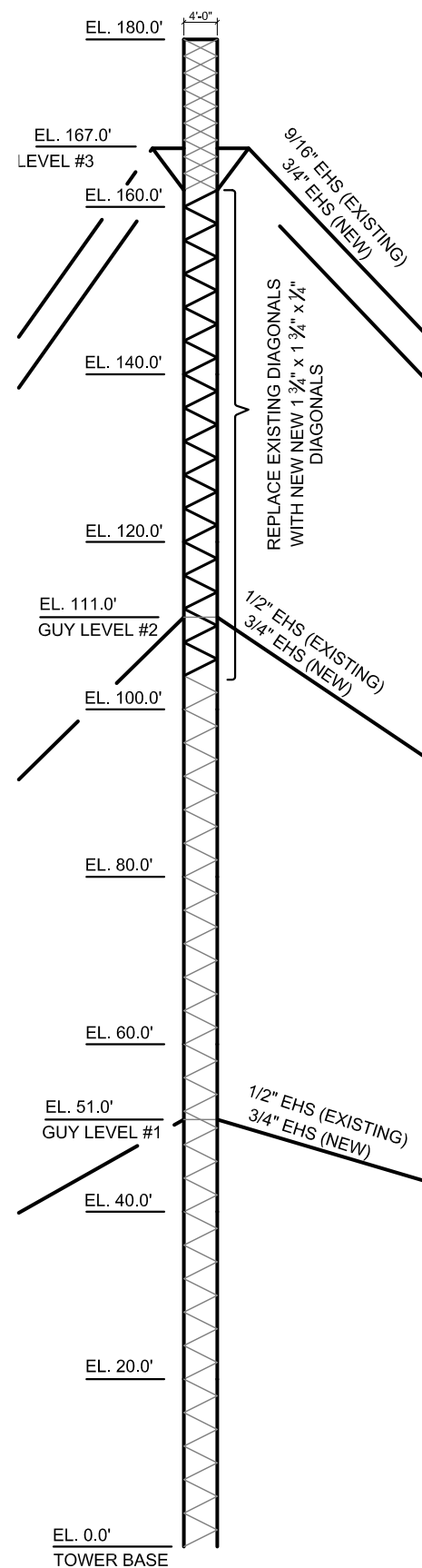
22028.10

GENERAL NOTES

S-1
 2 OF 6 SHEETS



TOWER PICTURE



TOWER ELEVATION

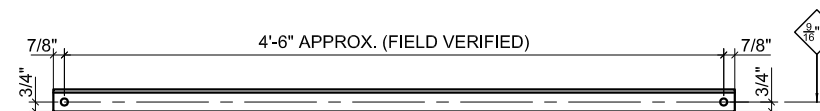
WORK DESCRIPTION:

1. THIS DRAWING IS FOR COST ESTIMATE ONLY (NOT FOR CONSTRUCTION).
2. A TEMPORARY GUY MUST BE INSTALLED PRIOR TO REMOVING EXISTING GUY TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE TOWER.
3. RIG THE TOWER PER APPROVED RIGGING PLAN.
4. SUPPLY AND REPLACE EXISTING GUY WIRES AT ALL LEVELS, THREE DIRECTIONS, WITH NEW WIRES PER SHEETS S-3 AND S-4. OLD GUY WIRES TO BE DISPOSED OF OFF SITE.
5. REPLACE EXISTING L 1 1/2" x 1 1/2" x 3/16" DIAGONAL MEMBERS BETWEEN THE 104-FT AND 162-FT LEVELS WITH NEW L 1 3/4" x 1 3/4" x 1/4" DIAGONALS PER TABLE BELOW:

DIAGONAL REPLACEMENT					
ELEVATION	BAYS	EXISTING DIAG. SIZE (A36)	NEW DIAG. SIZE (A36)	DIAG. BOLTS *	REAMING REQ'D
104' - 162'	29	L 1 1/2" x 1 1/2" x 3/16"	L 1 3/4" x 1 3/4" x 1/4"	1/2"φ x 1 1/2" A325X	NO

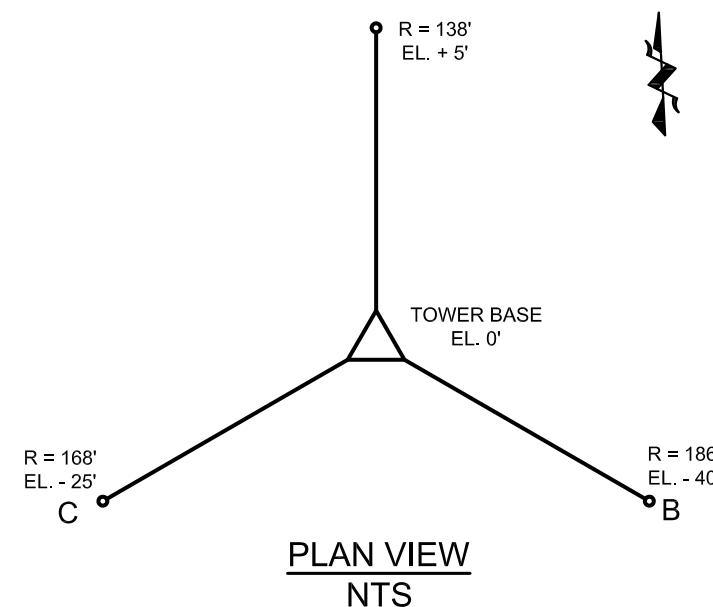
* ALL BOLTS REQUIRE (1) HARDENED WASHER AND (1) ANCO LOCKNUT EACH

NOTES:
 A TEMPORARY BRACE SYSTEM MUST BE INSTALLED PRIOR TO REMOVING ANY DIAGONAL TO MAINTAIN STRUCTURAL INTEGRITY OF THE TOWER.
 REMOVE AND REPLACE ONLY ONE DIAGONAL AT A TIME.



TYPICAL NEW DIAGONAL DETAIL - (87) REQUIRED
 L 1 3/4" X 1 3/4" X 1/4"

6. PLUMB AND TENSION THE TOWER. SEE THE GUY-TENSIONING CHART ON SHEET S-5.
7. MAKE SURE ALL ANCHORS ARE GROUNDED PER ENGINEERING REQUIREMENTS.
8. DE-RIG TOWER, CLEAN UP SITE, AND DEMOBILIZE.



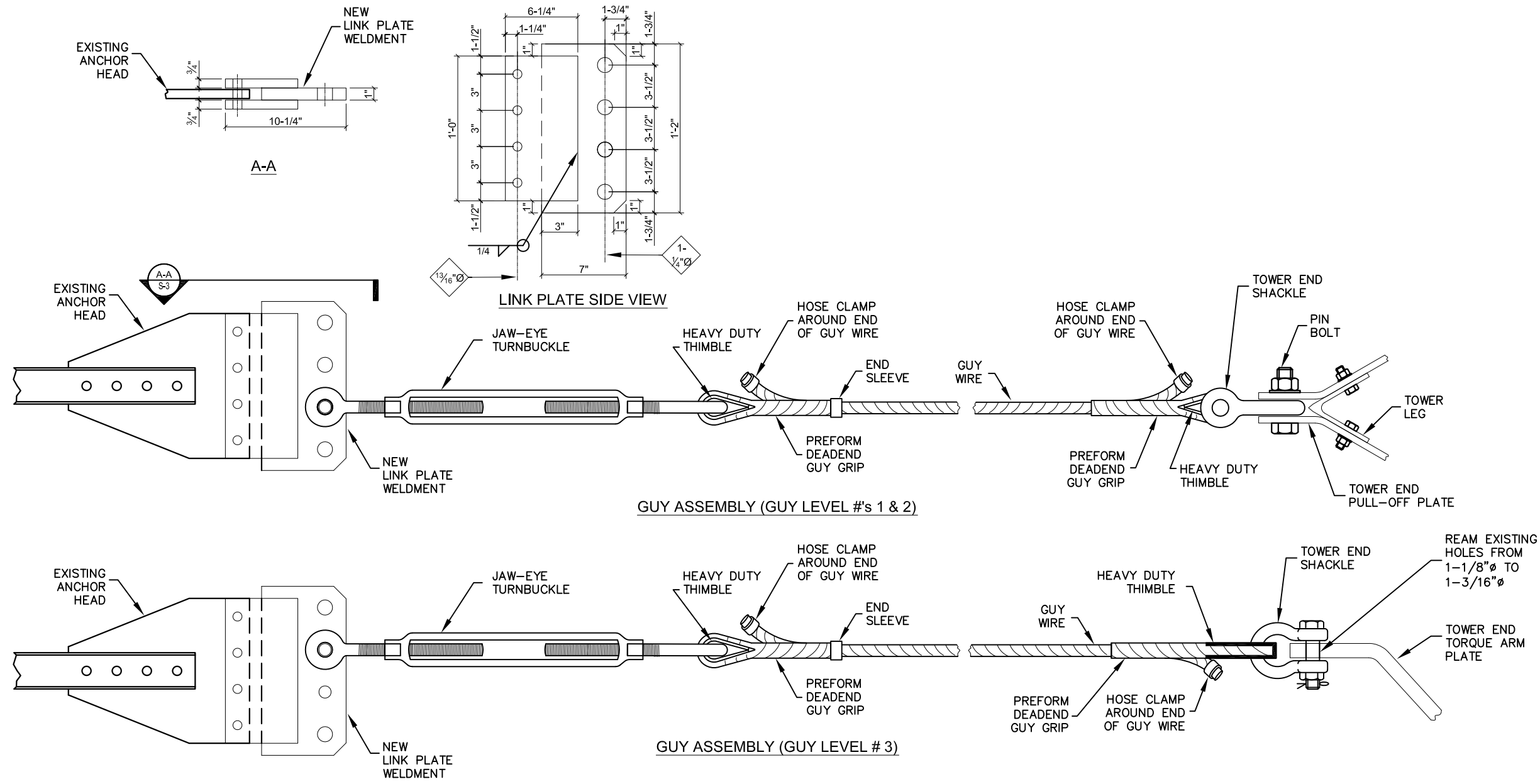
PLAN VIEW
 NTS

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YK	2/8/23	
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GUY #	GUY ELEVATION	LABEL	GUY ANCHOR RADIUS	NEW GUY SIZE	ACTUAL LENGTH	SUPPLIED LENGTH	PREFORMED DEAD-END SIZE	PREFORMED DEAD-END PART#	HEAVY DUTY THIMBLE SIZE	CROSBY THIMBLE PART #	TURNBUCKLE SIZE	CROSBY TURNBUCKLE PART #	PIN BOLT SIZE (A325)	TOWER END SHACKLE SIZE	TOWER END CROSBY SHACKLE PART #
1	51'-0"	A	138'	3/4"Ø EHS	143.16'	193'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	7/8"Ø x 3 1/4"	1"	1019551
1	51'-0"	B	186'	3/4"Ø EHS	204.83'	254'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	7/8"Ø x 3 1/4"	1"	1019551
1	51'-0"	C	168'	3/4"Ø EHS	182.14'	232'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	7/8"Ø x 3 1/4"	1"	1019551
2	111'-0"	A	138'	3/4"Ø EHS	172.04'	222'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	7/8"Ø x 3 1/4"	1"	1019551
2	111'-0"	B	186'	3/4"Ø EHS	237.59'	287'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	7/8"Ø x 3 1/4"	1"	1019551
2	111'-0"	C	168'	3/4"Ø EHS	214.18'	264'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	7/8"Ø x 3 1/4"	1"	1019551
3L	167'-0"	A	138'	3/4"Ø EHS	210.57'	260'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	-	1"	1019551
3R	167'-0"	A	138'	3/4"Ø EHS	210.57'	260'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	-	1"	1019551
3L	167'-0"	B	186'	3/4"Ø EHS	275.81'	325'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	-	1"	1019551
3R	167'-0"	B	186'	3/4"Ø EHS	275.91'	325'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	-	1"	1019551
3L	167'-0"	C	168'	3/4"Ø EHS	252.80'	302'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	-	1"	1019551
3R	167'-0"	C	168'	3/4"Ø EHS	252.80'	302'	3/4"	BG-2112	7/8"	1037791	1-1/4 x 18 J/E	1032279	-	1"	1019551

NOTES:

A TEMPORARY GUY MUST BE INSTALLED BEFORE REMOVING EXISTING GUY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THE TEMPORARY GUY AND ITS CONNECTION ARE ADEQUATELY DESIGNED FOR THE LOADS IMPOSED ON IT.

REV	DATE	DESCRIPTION

PREPARED BY

YK 2/8/23

CHECKED BY

JA 2/8/23

ENGINEER REVIEW

MB 2/8/23

PROJECT NUMBER

22028.10

GUY WIRE REPLACEMENT DETAILS

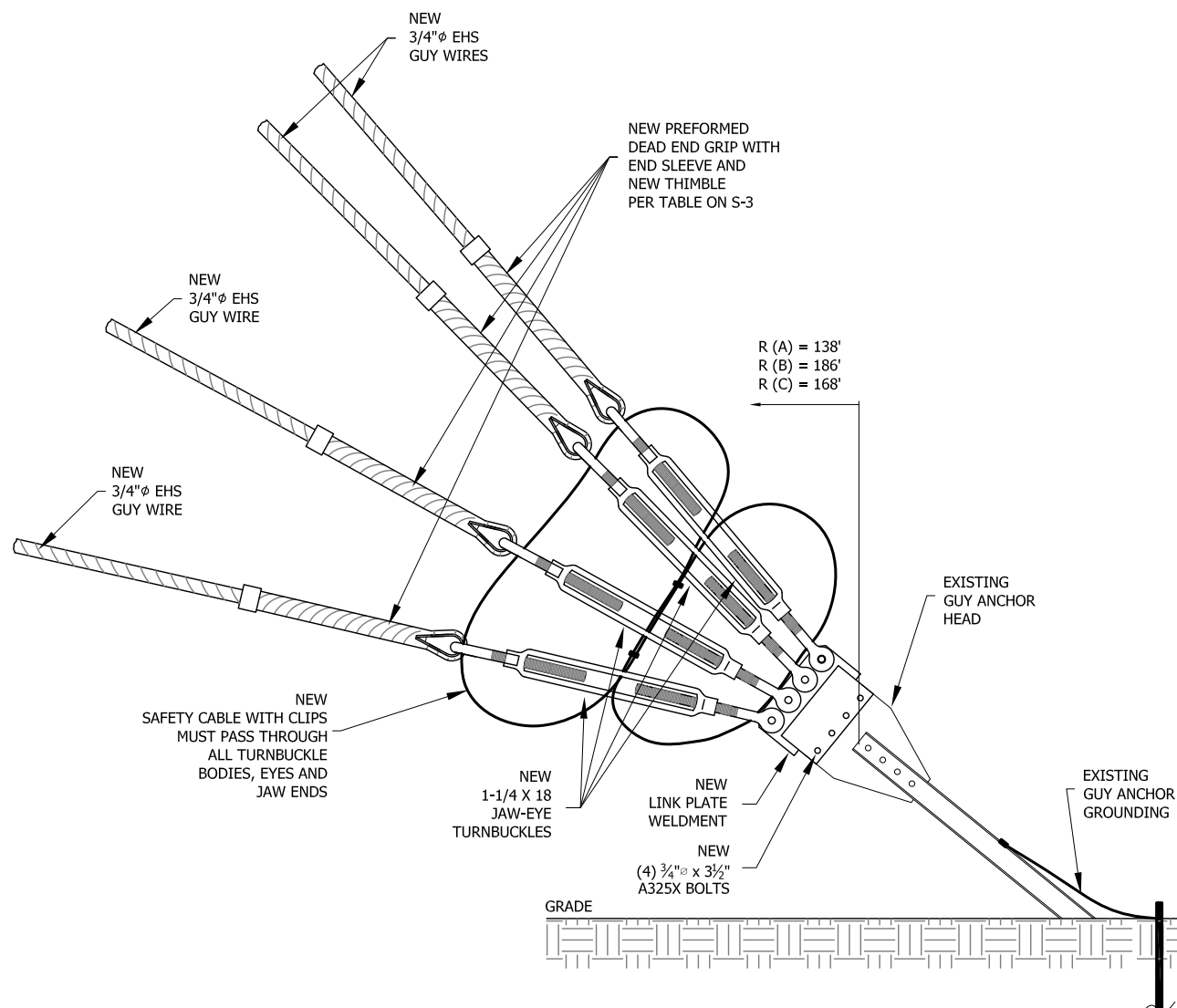
S-3

4 OF 6 SHEETS

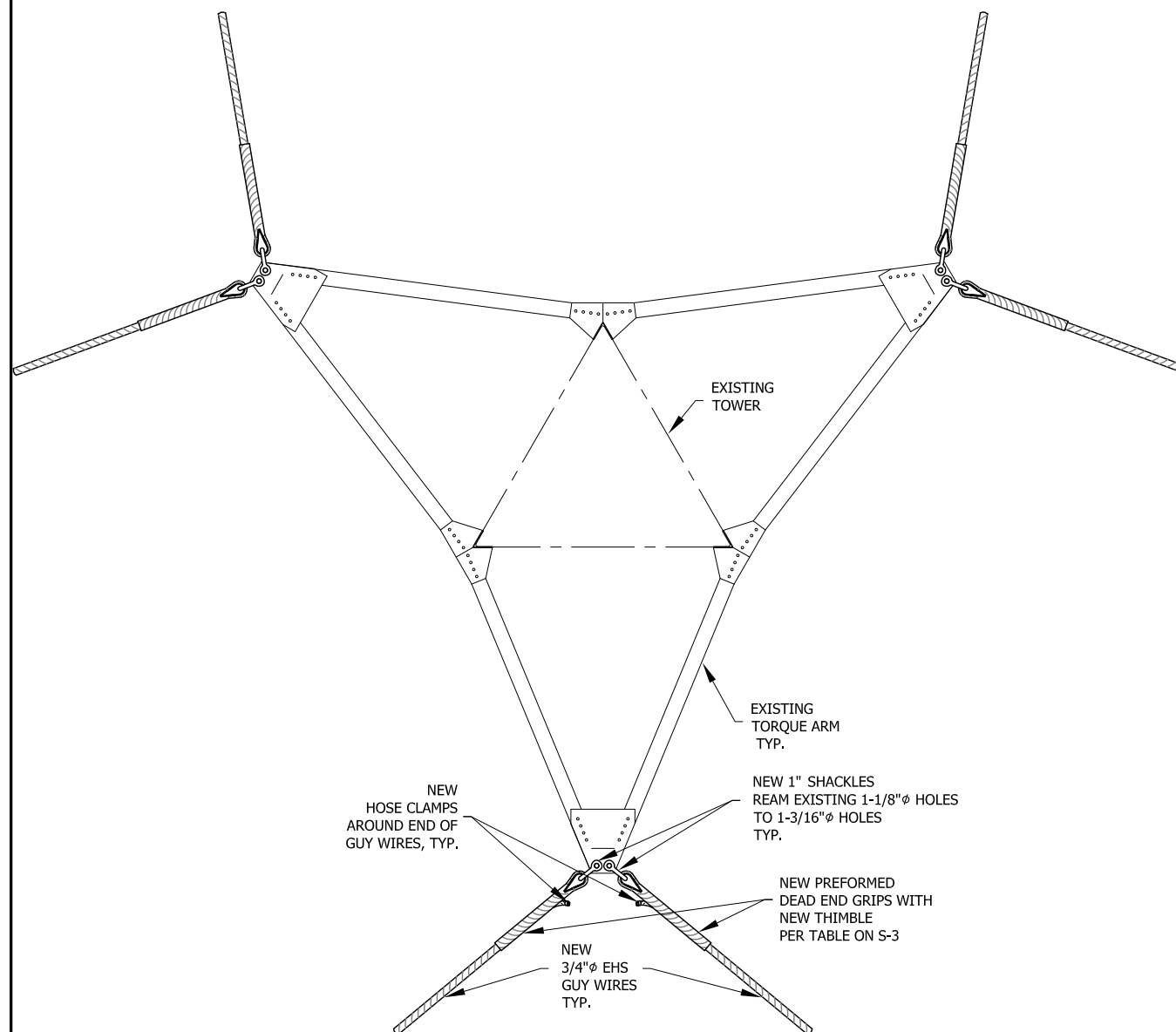
KUKUI TOWER

KAUAI, HI

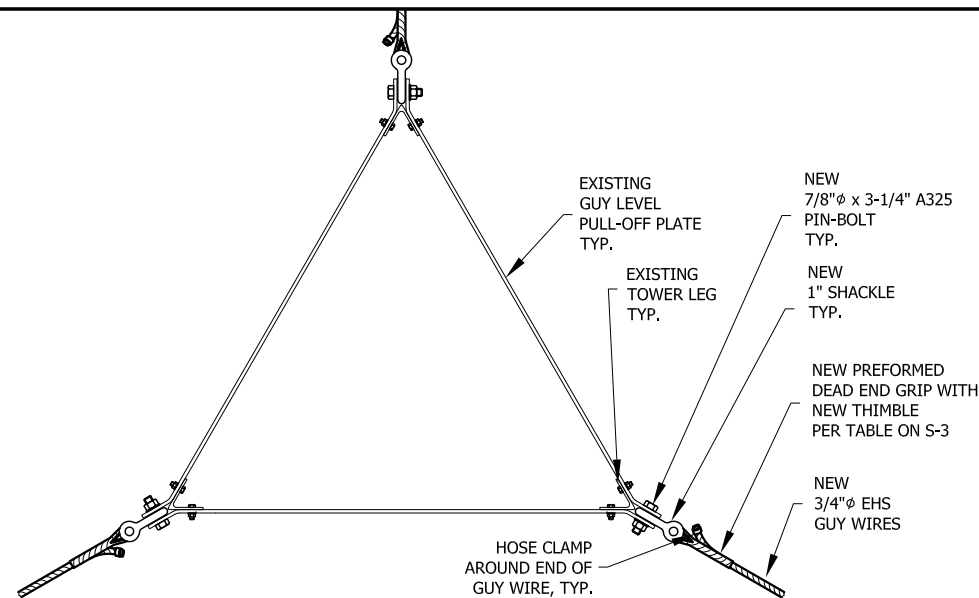
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TYPICAL GUY ANCHOR DETAIL SCALE: NTS 1



GUY LEVEL PLAN VIEW AT 167' SCALE: NTS 2



GUY LEVEL PLAN VIEW AT 51' AND 111' SCALE: NTS 3



GUY LEVEL PICTURE AT 51' SCALE: NTS 4



GUY LEVEL PICTURE AT 167' SCALE: NTS 5

REV	DATE	DESCRIPTION

PREPARED BY

YK 2/8/23

CHECKED BY

JA 2/8/23

ENGINEER REVIEW

MB 2/8/23

PROJECT NUMBER

22028.10

GUY WIRE REPLACEMENT DETAILS



PO BOX 82417
 KENMORE, WA 98028-0417
 TEL (Office): 425-640-2266
 TEL (Cell): 206-619-4886

KUKUI TOWER

KAUAI, HI

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Guy-Tensioning Information

Guy Elevation <i>ft</i>		<i>H</i> <i>ft</i>	<i>V</i> <i>ft</i>	<i>Temperature At Time Of Tensioning</i>													
				<i>0 F</i>		<i>20 F</i>		<i>40 F</i>		<i>60 F</i>		<i>80 F</i>		<i>100 F</i>		<i>120 F</i>	
				<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>	<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>	<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>	<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>	<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>	<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>	<i>Initial Tension</i> <i>lb</i>	<i>Intercept</i> <i>ft</i>
167	A	134.80	162.00	10645	2.40	10224	2.49	9803	2.60	9384	2.71	8966	2.84	8550	2.98	8135	3.13
	B	182.77	207.00	10718	4.07	10271	4.25	9827	4.44	9384	4.65	8943	4.88	8505	5.12	8070	5.40
	C	164.78	192.00	10682	3.43	10248	3.58	9815	3.74	9384	3.91	8955	4.09	8527	4.29	8102	4.52
111	A	135.69	106.00	12874	1.33	12231	1.40	11589	1.47	10948	1.56	10309	1.66	9671	1.76	9036	1.89
	B	183.69	151.00	12784	2.54	12170	2.67	11558	2.81	10948	2.97	10340	3.14	9736	3.34	9134	3.55
	C	165.69	136.00	12792	2.07	12176	2.17	11561	2.29	10948	2.41	10337	2.56	9728	2.71	9123	2.89
51	A	135.69	46.00	12155	0.98	11228	1.06	10304	1.15	9384	1.26	8469	1.40	7563	1.57	6668	1.78
	B	183.69	91.00	11835	2.05	11013	2.20	10196	2.38	9384	2.58	8580	2.82	7785	3.11	7006	3.45
	C	165.69	76.00	11918	1.61	11070	1.73	10224	1.87	9384	2.04	8550	2.24	7726	2.48	6915	2.77

NOTES:

1. DURING THE INITIAL GUY TENSIONING PROCEDURES AND AT THE TIME OF INSPECTION, THE GUY TENSIONS SHOULD BE IN ACCORDANCE WITH THE VALUES SHOWN ABOVE. USE THE TEMPERATURE WHICH ACTUALLY EXISTS AT THE TIME THE TENSION IS BEING CHECKED. FOR TEMPERATURES OTHER THAN THOSE SHOWN ABOVE, INTERPOLATE OR EXTRAPOLATE OTHER VALUES.
2. TOWER PLUMBING AND INITIAL TENSIONING OF GUYS SHOULD BE DONE ONLY IN CALM WEATHER.
3. GUY #1 IS BOTTOM GUY; GUY #2 IS NEXT, ETC.
4. USE DIRECT METHOD FOR DETERMINING GUY TENSIONS IN ACCORDANCE WITH ENGINEERING REQUIREMENTS.
5. TENSION TOLERANCES ± 10%.
6. AFTER RETENSIONING FINAL SET OF GUYS GO BACK AND RECHECK ALL LEVELS AND RETENSION WHERE REQUIRED.
7. AFTER RETENSIONING IS COMPLETE, CHECK TOWER VERTICAL ALIGNMENT AND ADJUST WHERE REQUIRED.

REV	DATE	DESCRIPTION

PREPARED BY

YK	2/8/23
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CHECKED BY

JA	2/8/23
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ENGINEER REVIEW

MB	2/8/23
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**GUY WIRE
TENSIONING
CHART**

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6 OF 6 SHEETS