

# E-Comm 9-1-1

Helping to Save Lives and Protect Property

**SITE NAME: BOWEN ISLAND**

**SITE ID: NBI**

**LOCATION: BOWEN ISLAND, BC**

**LEGAL : TBD**

## DRAWING LIST:

- |      |                               |      |   |
|------|-------------------------------|------|---|
| S101 | TITLE PAGE                    | S601 | ANTENNA MOUNT DETAILS                     |
| S201 | GENERAL NOTES                 | S602 | M/W ANTENNA MOUNT DETAILS                 |
| S202 | ANTENNA DETAILS               | E101 | ELECTRICAL SPECIFICATIONS AND SINGLE LINE |
| S301 | SITE LAYOUT                   | E102 | SCHEDULES AND ENTRY PANEL DETAILS         |
| S302 | EQUIPMENT SHELTER PLAN        | E201 | GROUNDING DEMOLITION LAYOUT               |
| S401 | SOUTHEAST TOWER ELEVATION     | E202 | PROPOSED GROUNDING LAYOUT                 |
| S501 | BATTERY RACK MOUNTING DETAILS |      |   |

No.:	Date:	Description:
	2016.04.08	ISSUED FOR CLIENT REVIEW
Revisions:		
Date:	APR 2016	Drawing:
Scale:	NA	<b>S101</b>
Drawn:	SR	
Checked:	GF	
Project:	215421	Of

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Project: **BOWEN ISLAND**  
BOWEN ISLAND, BC  
Site ID: **NBI**  
**E-Comm 9-1-1**  
Helping to Save Lives and Protect Property

Sheet Title:  
**TITLE PAGE**

## GENERAL NOTES

NOTES, PLANS, DETAILS AND E-Comm 9-1-1 SPECIFICATIONS SHALL BE READ AS ONE DOCUMENT.

## APPLICABLE PROJECT CODES:

THIS SECTION INDICATES CODES APPLICABLE TO THE DESIGN OF THE NEW STRUCTURES AS PRESENTED IN THE DRAWINGS. THIS SECTION ALSO APPLIES TO THE DESIGN OF STRUCTURAL COMPONENTS WHICH ARE THE RESPONSIBILITY OF OTHERS TO BE DESIGNED BY SPECIALTY STRUCTURAL ENGINEERS. THE GOVERNING BUILDING CODE SHALL BE:

- THE BRITISH COLUMBIA BUILDING CODE, 2012 EDITION
- ANTENNAS, TOWERS, AND ANTENNA SUPPORTING STRUCTURES CSA S37-13

FOR THE DESIGN OF STRUCTURAL SYSTEMS ONLY, THE SUPPLEMENT TO THE NATIONAL BUILDING CODE OF CANADA 2010 EDITION SHALL BE USED WHERE IT COMPLIMENTS THE ABOVE MENTIONED GOVERNING CODES. THE EXISTING STRUCTURE HAS BEEN CHECKED TO ENSURE THAT THE LOCALIZED EFFECTS OF THE NEW STRUCTURES MEET CURRENT CODE REQUIREMENTS.

## GENERAL

- GS-SAYERS DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL, SURVEY AND OTHER DRAWINGS AND SPECIFICATIONS. SPECIFICATIONS SHALL CONTROL OVER THESE DRAWINGS AND GENERAL NOTES ONLY WHERE THE SPECIFICATION PROVIDES FOR MORE STRINGENT REQUIREMENT. PORTIONS OF THE INFORMATION SHOWN ON THE DRAWINGS IS BASED ON EXISTING DRAWINGS PREPARED BY ... (SHELTER) AND ... (TOWER).
- USE THESE DRAWINGS ONLY FOR THE PURPOSES SPECIFICALLY NOTED IN THE REVISION COLUMN. DO NOT CONSTRUCT BY THESE DRAWINGS UNLESS INDICATED: "FOR CONSTRUCTION". THE TERM "ISSUED FOR BUILDING PERMIT" INDICATES THAT THE DRAWINGS ARE COMPLETE FOR ALL KEY STRUCTURAL DESIGN ELEMENTS HOWEVER FINAL COORDINATION AND INSTRUCTIONS FOR CONSTRUCTION MAY NOT BE COMPLETE.
- GS-SAYERS IS PRIME CONSULTANT AND REGISTERED COORDINATING PROFESSIONAL FOR THE PROJECT AND IS RESPONSIBLE FOR GENERAL COORDINATION OF THE DRAWINGS. DISCREPANCIES AND INCOMPATIBILITIES IN THE DRAWINGS SHALL BE REPORTED TO GS-SAYERS
- THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS IN THE FIELD TO SUIT EXISTING CONDITIONS. HE SHALL SITE MEASURE AND CONTROL THE PRODUCTION OF WORK ON SITE AND ELSEWHERE TO FULFILL THE INTENT OF THE DRAWINGS. NOTIFY THE ENGINEER OF ANY DIMENSIONAL VARIATION FROM THE PLANS.
- SITE CONDITIONS AND CHANGES: CONTRACTOR (S) SHALL RECORD AND REPORT ANY VARIATIONS IN EXISTING CONDITIONS WHICH MAY EFFECT THE STRUCTURE (BUILDINGS, BUILDING COMPONENTS, PROPERTY LINES, SOIL CONDITIONS, ETC.). THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN SITE CONDITIONS DICTATE A CHANGE FROM THE DESIGN DRAWINGS. ENGINEER IS TO PROVIDE WRITTEN APPROVAL OF ALL CHANGES. CONTRACTORS ARE ENCOURAGED TO SUBMIT REQUESTS FOR CHANGES WHERE SUCH CHANGE CAN RESULT IN MORE EFFICIENT CONSTRUCTION WITH THE SAME OR BETTER PRODUCT. EACH REQUEST SHOULD BE ACCOMPANIED BY A SKETCH INDICATING THE CHANGE TO THE DRAWINGS, WHICH MAY BE REVIEWED OR MODIFIED BY THE ENGINEER. CHARGES FOR EXTRAS TO THE CONTRACT MUST BE BROUGHT TO THE ENGINEERS ATTENTION BEFORE THE WORK PROCEEDS. ADEQUATE TIME MUST BE ALLOWED FOR REVIEW AND APPROVAL OF EXTRAS BY GS-SAYERS. WORK WHICH PROCEEDS PRIOR TO APPROVAL BY THE CONSULTANT MIGHT NOT BE GRANTED EXTRA PAYMENT.
- DO NOT CUT OR DRILL INTO STRUCTURAL MEMBERS, OR CUT REBAR PROJECTIONS WITHOUT FIRST CONTACTING AND OBTAINING THE PERMISSION OF GS-SAYERS. WHEN THE DRAWINGS INDICATE THAT NEW OPENINGS ARE REQUIRED IN A CONCRETE STRUCTURE, ALL SUCH AREAS ARE TO BE X-RAYED TO CONFIRM REBAR LOCATIONS AND CONDUIT LOCATIONS PRIOR TO MAKING THE OPENINGS. IN OTHER BUILDING TYPES ALL REQUIRED OPENINGS ARE TO BE MADE TO AVOID STRUCTURAL MEMBERS. NOTIFY THE ENGINEER IF CONFLICTS ARISE.

- WHERE INDICATED: "CONFIRM" OR "CONFIRM ON SITE" - INDICATES THAT THE CONTRACTOR SHALL CONFIRM AND REPORT TO THE ENGINEER THE INFORMATION REQUESTED IN THE ASSOCIATED NOTE.
- ALL CONSTRUCTION MUST CONFORM TO THE LATEST VERSION OF THE E-Comm 9-1-1 MASTER SPECIFICATION. THIS INCLUDES THE SPECIFIC REQUIREMENTS FOR SHELTERS, FENCING, LEASEHOLD IMPROVEMENTS, ANTENNA MOUNTS, AND TOWERS.
- FIELD REVIEW: THE CONTRACTOR(S) SHALL GIVE NOTICE THAT APPROPRIATE PORTIONS OF THE WORK ARE COMPLETE AND AVAILABLE FOR FIELD REVIEW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE FIELD REVIEW INSPECTIONS IN A TIMELY MANNER SUITABLE TO THE METHODS AND SCHEDULE OF CONSTRUCTION. INSPECTIONS ARE TYPICALLY REQUIRED OF ALL CONCRETE POURS PRIOR TO PLACING, ALL STRUCTURAL FRAMING BEFORE COVERING UP AND ALL CONNECTIONS BEFORE COVERING UP. THE ENGINEER SHALL BE GIVEN AT LEAST 24 HR. ADVANCE NOTICE TO INSPECT THE PLACEMENT OF REINFORCEMENT IN ALL CONCRETE POURS. INSPECTIONS SHALL BE DURING NORMAL WORKING HOURS ONLY. INSPECTIONS REQUIRING SUBSTANTIAL TRAVEL TIME MUST BE GIVEN ADEQUATE NOTICE. SEE NOTE BELOW REGARDING SOIL INSPECTIONS.
- A MATERIALS CONSULTANT MAY BE REQUIRED FOR THE REVIEW OF CONTRACTOR SUPPLIED MATERIALS SUCH AS CONCRETE OR ROCK ANCHORS. THIS CONSULTANT IS ENGAGED BY THE OWNER AS REQUESTED BY THE ENGINEER. ALL TEST RESULTS TO BE FORWARDED TO THE ENGINEER.

## WORKSAFE BC:

- THE GENERAL CONTRACTOR AND SUBCONTRACTORS ARE RESPONSIBLE TO ADMINISTER AND PROVIDE FOR ALL MATTERS RELATED TO THE WORKERS SAFETY INCLUDING AUTHORITIES ADMINISTERING GOVERNMENTAL LAWS AND BYLAWS PERTAINING TO WORKER SAFETY INCLUDING BUT NOT LIMITED TO SITE SAFETY, TEMPORARY AND ANCILLARY WORKS, TRAINING, AND CONTROL OF THE WORK AND WORK PROCESSES. THE CONTRACTORS SHALL ENSURE COMPLIANCE WITH WORKERS HEALTH AND SAFETY REGULATIONS AND GOOD WORK PRACTICES AND WHERE NECESSARY OR PRUDENT SHALL PROVIDE ENGINEERING EXPERTISE TO CONFIRM SUCH COMPLIANCE.

## DESIGN PARAMETERS:

DESIGN SUPERIMPOSED LOADS:

SPECIFIED LIVE LOADS (kPa):

2.4	GROUND SNOW LOAD
0.3	RAIN LOAD

SPECIFIED DEAD LOADS (kPa):

REFER TO THE EQUIPMENT SHELTER LAYOUT FOR SPECIFIC LOADING

SEISMIC: FOR "ELEMENTS OF STRUCTURES" ONLY, SECTION 4.1.8.18  
 $S_a(0.2) = 1.0$ ,  $PGA = 0.50$   $I_e = 1.5$

WIND PRESSURE:  $q_{(z)} = 0.34$  kPa  $q_{(z)} = 0.44$  kPa

TWIST AND TILT: MAXIMUM ALLOWABLE IS  $\pm 0.6^\circ$  FOR MICROWAVE ANTENNAS AND  $2^\circ$  FOR PANEL ANTENNAS, AT FULL WIND SPEED.

## STRUCTURAL STEEL

- STEEL SHALL BE NEW AND G40.21W STRUCTURAL GRADE UNLESS NOTED OR OTHERWISE APPROVED PRIOR TO CONSTRUCTION. CLASSIFICATION OF SECTIONS TO BE AS FOLLOWS:
 

HOLLOW STRUCTURAL STEEL TUBING	G40.21 W 350W
WIDE FLANGE SECTIONS	G40.21 W 350W
CHANNELS, ANGLES, PLATES, RODS, MISC	G40.21 W 300W
PIPE SECTIONS	ASTM A53 (241 MPa)
- STRUCTURAL STEEL FABRICATOR TO INCLUDE ALL STEEL ELEMENTS SHOWN ON THE STRUCTURAL DRAWINGS AND AS REQUIRED TO CONSTRUCT THE WORK TO THE INTENT OF THE STRUCTURAL DRAWINGS TO AND INCLUDING ANGLE SIZES OF 19mm, PLATE THICKNESS OF 3mm AND ROD SIZE OF 10mm DIA. UNLESS NOTED OTHERWISE.
- CONNECTIONS**
  - ALL CONNECTIONS SHALL BE SHOP WELDED AND FIELD BOLTED UNLESS OTHERWISE SHOWN OR APPROVED. ALL BOLTS SHALL BE A325 BOLTS, 19mm DIAMETER MINIMUM (UNO) AND SHALL BE BEARING BOLTS WITH THREADS EXCLUDED FROM THE SHEAR PLANE. PROVIDE TWO BOLTS MINIMUM (UNO).
  - ALL ASPECTS OF CONNECTIONS BETWEEN STEEL MEMBERS ARE TO BE DESIGNED AND DETAILED BY THE STEEL FABRICATOR UNLESS SPECIFICALLY SPECIFIED ON THE DRAWINGS. ALL CONNECTIONS WHICH ARE NOT SPECIFICALLY CALLED UP ARE TO BE DESIGNED BY THE STEEL FABRICATOR FOR REVIEW AND APPROVAL BY THE ENGINEER.
  - ALL WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W59.1 AND SHALL BE UNDERTAKEN ONLY BY A COMPANY APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA STANDARD W47.1. ALL WELDING SHALL BE SHIELDED METAL-ARC WELDING METHOD IN ACCORDANCE WITH CSA SPECIFICATIONS.
  - THE FABRICATOR MANUFACTURER SHALL SUBMIT STRUCTURAL STEEL SHOP DRAWINGS AND ANCHOR BOLT LAYOUT FOR REVIEW TO THE ENGINEER SHOWING ALL REQUIRED STRUCTURAL STEEL DETAILS PRIOR TO THE COMMENCEMENT OF FABRICATION. SEE "SHOP DRAWING SUBMITTALS".
- ALL STEEL MEMBERS, ELEMENTS AND BOLTS EXPOSED PERMANENTLY TO THE ELEMENTS SHALL BE HOT DIPPED GALVANIZED. ALL FIELD DAMAGE OR FIELD WELDING IS TO BE TOUCHED UP WITH TWO LIBERAL COATS OF "GALVICON".
- STEEL IN EXTERIOR CONDITIONS SHALL BE SEAL WELDED ALL AROUND CONTACTING STEEL SURFACES UNLESS OTHER SUITABLE METHOD OF SEALING THE STEEL IS ACCEPTED BY THE MATERIALS CONSULTANT.
- PROVIDE WEEP HOLES FOR RELIEF OF MOISTURE FROM HOLLOW STEEL MEMBERS WHICH MAY BE SUBJECT TO FREEZING. HOLES TO BE AT LOW POINT OF MEMBERS TO ALLOW DRAINING.
- GROUT UNDER BASE PLATES OF COLUMNS WITH A NON-SHRINK FLOWABLE GROUT, TARGET MACHINE BASE OR SIMILAR, CAST UNDER HYDRAULIC HEAD. ENSURE FULL AREA IS GROUTED. PROVIDE 25mm UNLESS NOTED.

## TOWER DESIGN NOTES:

THE TOWER DESIGN HAS BEEN REVIEWED TO THE REQUIREMENTS OF CSA S37-131 FOR THE PROPOSED ANTENNA LOADING SHOWN ON THESE DRAWINGS.

## ANTENNA PINWHEEL NOTES:

- THE CONTRACTOR IS RESPONSIBLE TO FIELD CONFIRM DIMENSIONS AND LAYOUT OF ALL EXISTING AND PROPOSED PARTS FOR FINAL TOWER CONFIGURATION PRIOR TO FABRICATION. SUBMIT SHOP DRAWINGS OF ANTENNA MOUNT FRAMING INDICATING CONNECTION TO TOWER.

	2016.04.08	ISSUED FOR CLIENT REVIEW
No.:	Date:	Description:
Revisions:		
Date:	APR 2016	Drawing:
Scale:	NA	<b>S201</b>
Drawn:	SR	
Checked:	GF	
Project:	215421	Of

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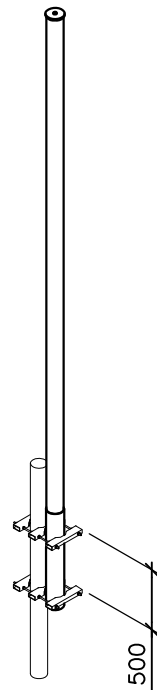
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Project: Bowen Island Site ID: **NBI**  
**BOWEN ISLAND**  
 BOWEN ISLAND, BC

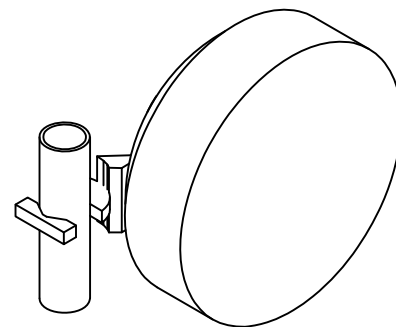
**E-Comm 9-1-1**  
 Helping to Save Lives and Protect Property

Sheet Title:  
**GENERAL NOTES**

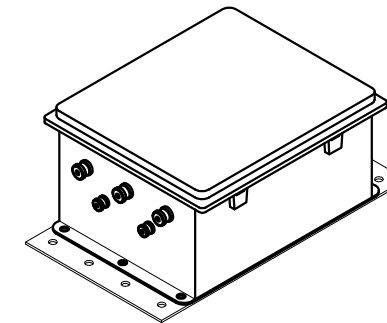


ANT. TYPE: SINCLAIR  
 MODEL: SC479-HF1LDF (D03 E5765)  
 HEIGHT: 173.4" (4404mm)  
 BASE HT: 24" (610mm)  
 DIAMETER: 3.5" (89mm)  
 WEIGHT: 34lbs (15.44kg)

USE SINCLAIR CLAMP TYPE 006B



MW1 FACING 107.85° TO VVW  
 ANT. TYPE: ANDREW  
 MODEL: HP4-107  
 DIAMETER: 1.2mØ  
 WEIGHT: TBD



TYPE: BIRD  
 MODEL: 432  
 HEIGHT: 14"  
 WIDTH: 12"  
 DEPTH: 7"  
 WEIGHT: 25lbs

**1** ANTENNA DETAILS  
 - NTS

**2** TOWER TOP AMPLIFIER  
 - NTS

No.:	Date:	Description:
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Project: **BOWEN ISLAND**  
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**E-Comm 9-1-1**  
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Sheet Title:  
**ANTENNA DETAILS**

North Shore Emergency Management Office  
Metro Vancouver

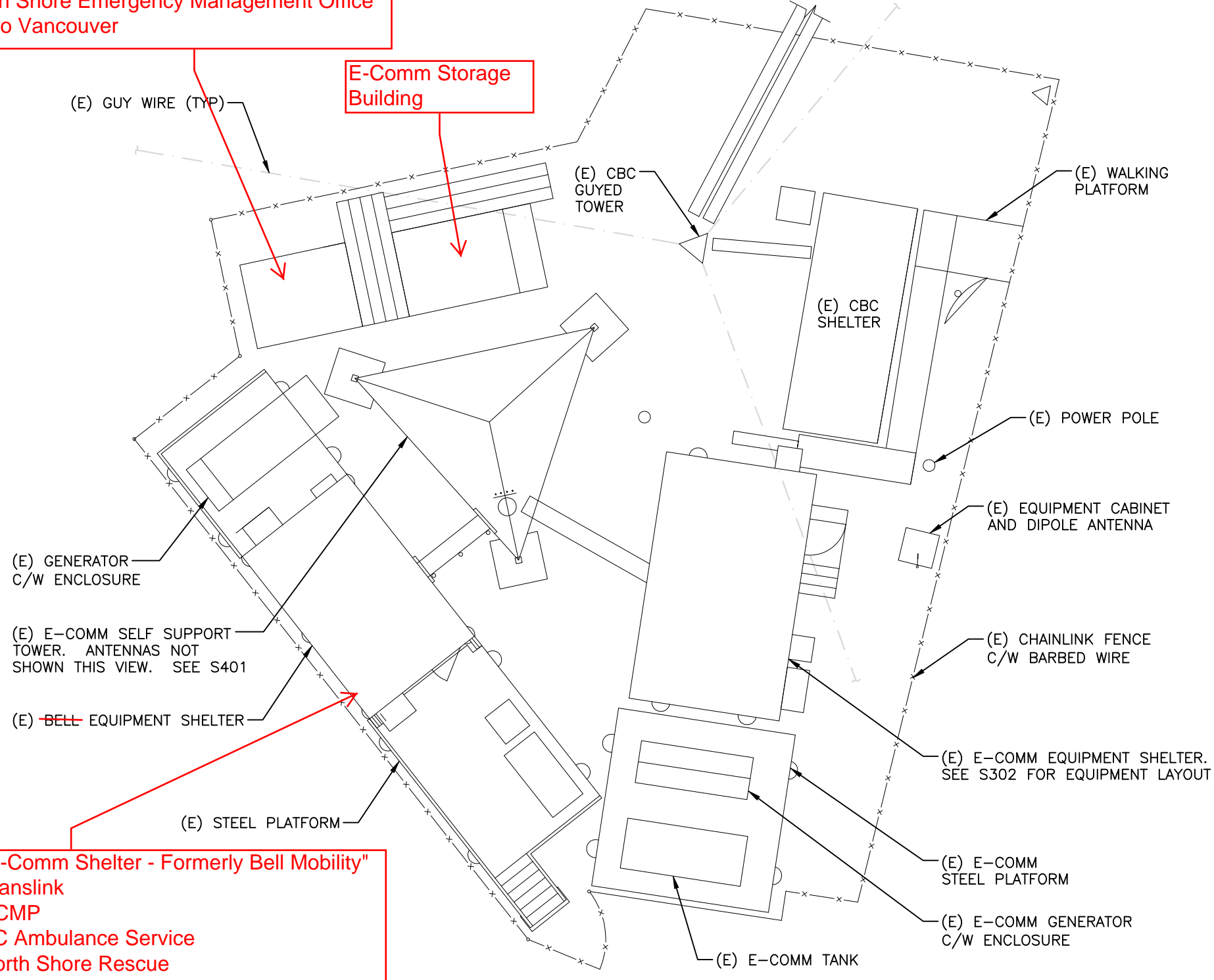
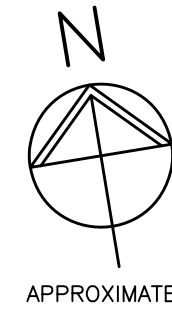
E-Comm Storage  
Building

**NOTES:**

- SITE PLAN INFORMATION WAS OBTAINED FROM DRAWINGS PREPARED BY GS-SAYERS ENGINEERING DATED MAY 12, 2005. THIS DRAWING DOES NOT REPRESENT A SURVEY AND IS APPROXIMATE ONLY.

**LEGEND:**

- ★ - INDICATES PARTICULAR ATTENTION SHOULD BE GIVEN TO WHAT IS NOTED ON THE DRAWING
- (E) - DENOTES EXISTING
- (TYP) - DENOTES TYPICAL



"E-Comm Shelter - Formerly Bell Mobility"  
Translink  
RCMP  
BC Ambulance Service  
North Shore Rescue

1 SITE LAYOUT  
1:125

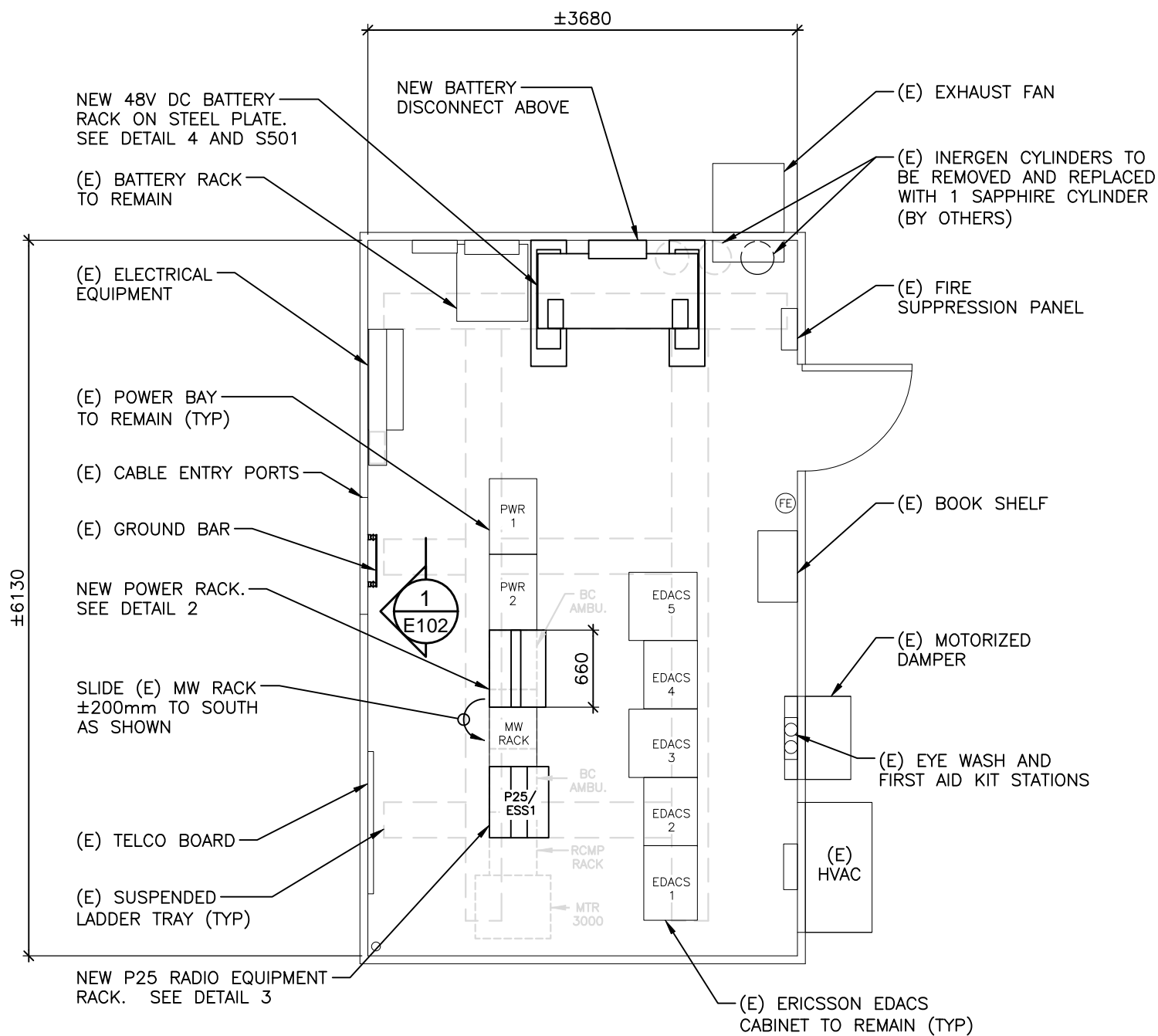
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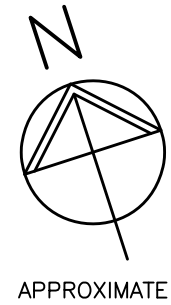
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BOWEN ISLAND, BC  
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Sheet Title:  
**SITE LAYOUT**

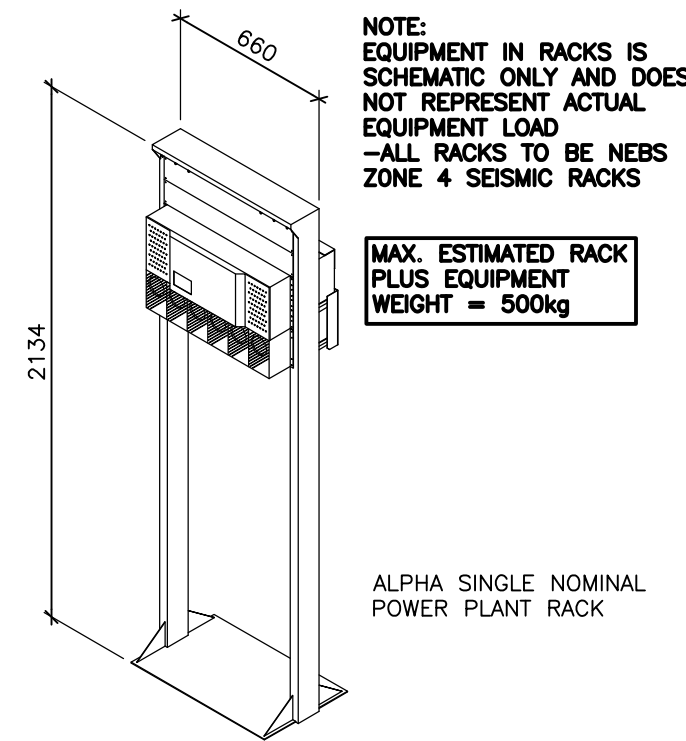


NOTE:  
EXISTING BC AMBULANCE, RCMP  
AND MTR3000 RACKS (SHOWN  
DASHED) TO BE RELOCATED TO  
(E) BELL EQUIPMENT SHELTER

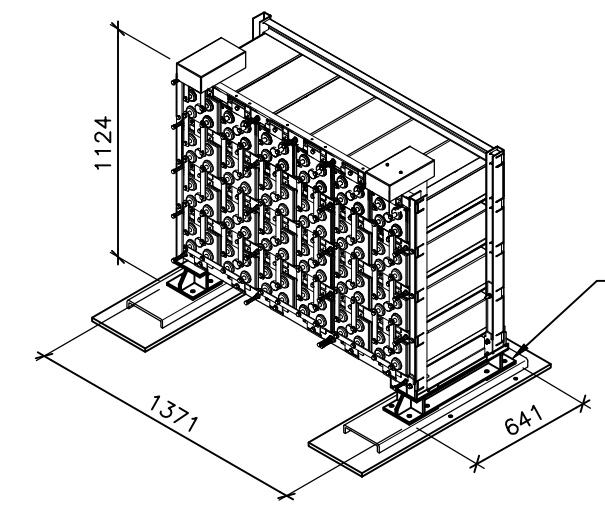
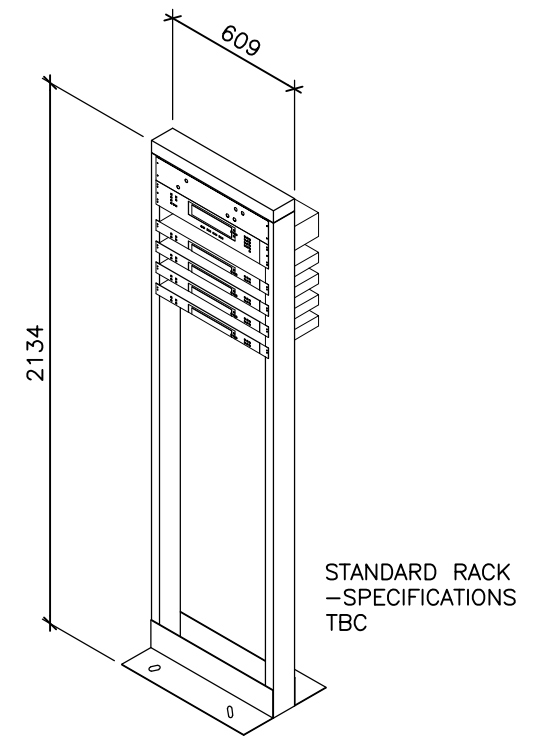
**1** EQUIPMENT SHELTER PLAN  
S301 1:50



**2** POWER RACK  
ISOMETRIC  
NTS



**3** P25 RACK  
ISOMETRIC  
NTS



**4** 48V BATTERY RACK  
ISOMETRIC  
NTS

MAX. ESTIMATED  
RACK AND BATTERY  
WEIGHT = 1,700kg  
TOTAL = 1,700kg  
  
ENERSYS DDm85-21  
1 STACK -6 CELLS  
WIDE x 4 CELLS HIGH

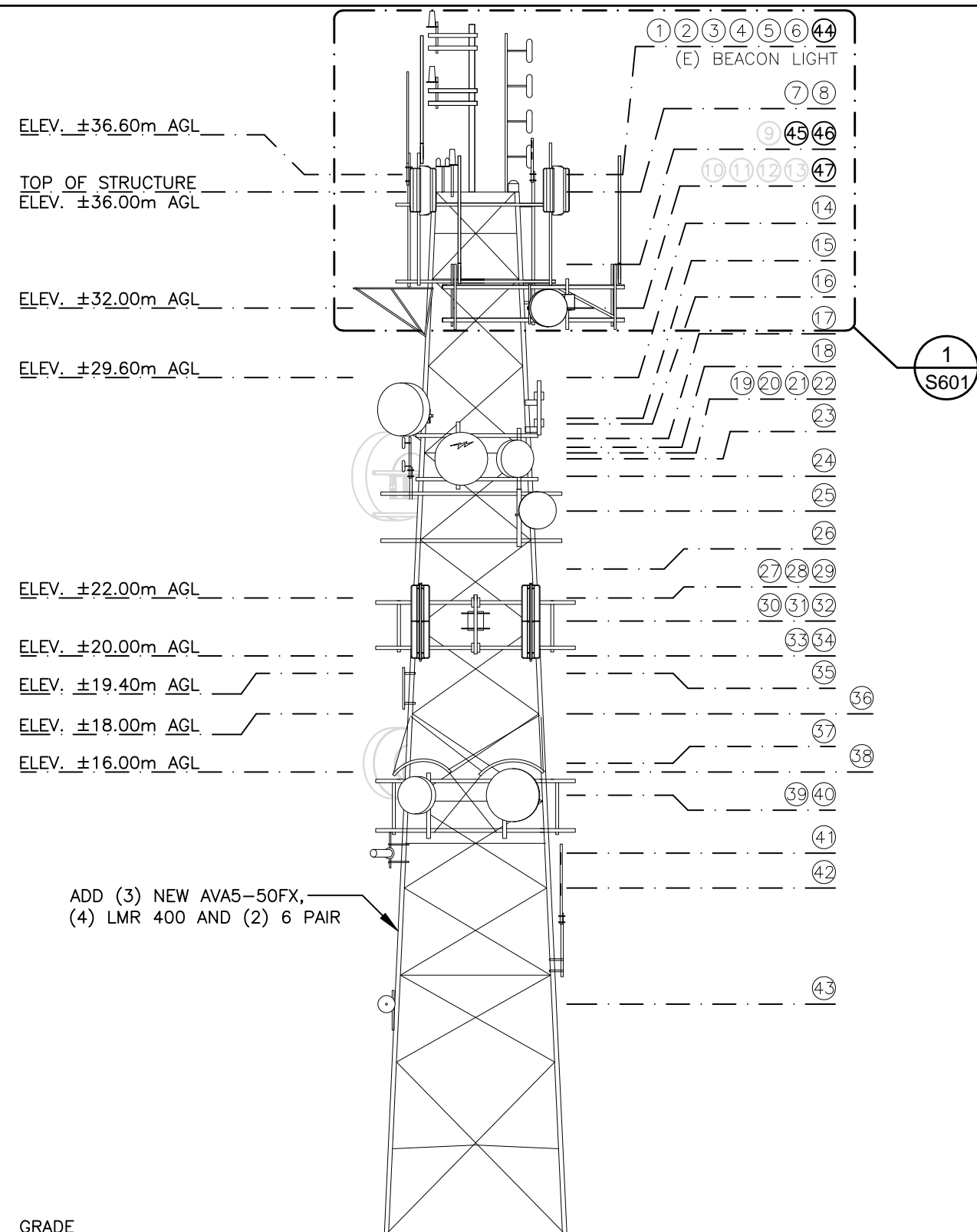
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**EQUIPMENT SHELTER PLAN**

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Date:	APR 2016	Drawing:
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Drawn:	SR	
Checked:	GF	
Project:	215421	Of



### ANTENNA TABLE

ANT. POS. No.	ANTENNA ID LABEL	MOUNT HEIGHT AGL(m)	EXISTING ANTENNA TYPE	PROPOSED ANTENNA TYPE	AZIMUTH (°)	LINE TYPE	STATUS
1	E-COMM	36.60	DB812KXT	-	OMNI	-	FUTURE
2	BC AMBULANCE	36.60	SRL-210C-4	-	120	(E) LDF5-50A	EXISTING
3	E-COMM	36.60	DB567	-	OMNI	-	FUTURE
4	EMERGENCY MTG BC	36.60	SRL-310G	-	145	(E) LDF4-50A	EXISTING
5	METRO VANCOUVER	36.60	SL11-940/DT2	-	OMNI	(E) LDF4-50A	FUTURE
6	METRO VANCOUVER	36.60	SL11-940/DT2	-	OMNI	(E) LDF4-50A	EXISTING
7	E-COMM	36.00	SRL-411C-4	-	90	(E) LDF7-50A	EXISTING
8	E-COMM	36.00	SRL-411C-4	-	90	(E) LDF5-50A	EXISTING
9	BELL	33.50	SP-E5017 T4	-	230	(E) LDF6-50A	REMOVED
10	BELL	32.00	(2) SP-E5017 T4	-	40	2-(E) LDF6-50A	REMOVED
11	BELL	32.00	(2) SP-E5017 T4	-	300	2-(E) LDF6-50A	REMOVED
12	BELL	32.00	SP-E5017 T4	-	230	(E) LDF6-50A	REMOVED
13	BELL	32.00	VHP4-107	-	142	(E) EW90	REMOVED
14	E-COMM	29.60	VHP6-142	-	139	EW132	FUTURE
15	RCMP	28.20	SC433	-	OMNI	(E) LDF4-50A	EXISTING
16	RCMP	28.00	SY307R	-	0	(E) LDF5-50A	EXISTING
17	BELL	27.50	ML18-0.6HP	-	105	(E) LDF4-50A	REMOVED
18	RCMP	27.20	PR450	-	270	(E) LDF5-50A	EXISTING
19	MICROCELL	27.00	(2) RR33-20-02	-	250	-	FUTURE
20	MICROCELL	27.00	(2) RR33-20-02	-	35	-	FUTURE
21	MICROCELL	27.00	(2) RR33-20-02	-	300	-	FUTURE
22	ROGERS	27.00	VHP4-142	-	95	(E) EW90	EXISTING
23	ROGERS	26.80	UHX6-107	-	117	2-(E) EW90	EXISTING
24	ROGERS	26.20	HPX10-58W	-	249	2-(E) EW63	EXISTING
25	ROGERS	25.00	HSX4-144	-	105.62	2-(E) LDF2-50	EXISTING
26	SCRD	23.00	SY415	-	249	-	FUTURE
27	E-COMM	22.00	VHP6-142	-	-	-	FUTURE
28	E-COMM	22.00	VHP6-142	-	-	-	FUTURE
29	SCRD	22.00	SV227	-	306	-	FUTURE
30	INIT	21.20	TTA	-	-	(E) LDF4-50A	EXISTING
31	INIT	21.20	SE419-A	-	120	(E) LDF5-50A	EXISTING
32	INIT	21.20	SE419-A	-	120	(E) LDF5-50A	EXISTING
33	SCRD	20.00	SY415	-	249	(E) LMR 1200	FUTURE
34	E-COMM	20.00	UHX8-65	-	23	2-(E) EW63	FUTURE
35	E-COMM	19.40	VHP6-142	-	-	-	REMOVED
36	E-COMM	18.00	VHP4-142	-	23	-	FUTURE
37	ROGERS	16.30	HPX8-58W	-	249	2-(E) EW63	EXISTING
38	E-COMM	16.00	VHP6-142	-	297	-	FUTURE
39	INIT	15.20	SD6-103A	-	117	(E) EW90	EXISTING
40	INIT	15.20	SD4-107A	-	133	(E) EW90	EXISTING
41	RCMP	13.20	SY307	-	130	(E) LDF4-50A	EXISTING
42	RCMP	12.00	SRL-210C-2	-	105	(E) RG8	EXISTING
43	WEST VAN POLICE	8.00	P3F-52-N7A	-	120	(E) LDF4-50A	EXISTING
44	Tx	36.60	-	SC479-HF1LDF (D03 E5765)	OMNI	AVA5-50FX	ADD
45	RxA	33.50	-	SC479-HF1LDF (D03 E5765)	OMNI	AVA5-50FX	ADD
46	RxB	33.50	-	SC479-HF1LDF (D03 E5765)	OMNI	AVA5-50FX	ADD
47	MW1 TO VWV	32.00	-	HP4-107	107.85	(2) LMR400	ADD

GRADE 0m

1

## SOUTHEAST TOWER ELEVATION

1:200

	2016.04.08	ISSUED FOR CLIENT REVIEW
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Revisions:		
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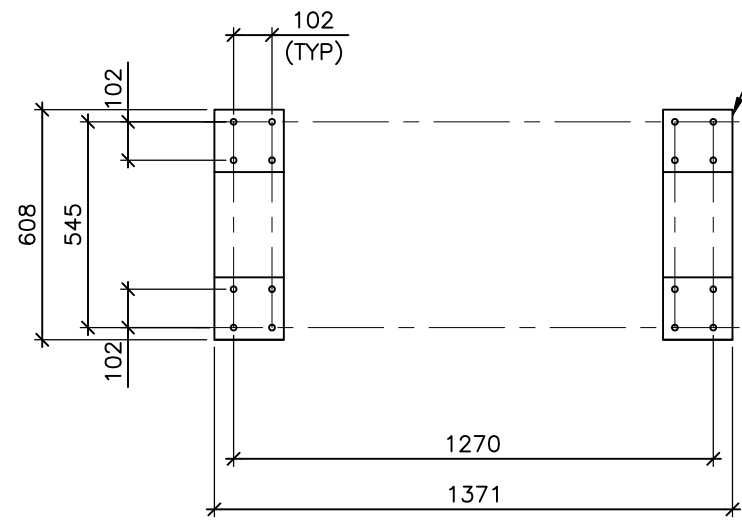
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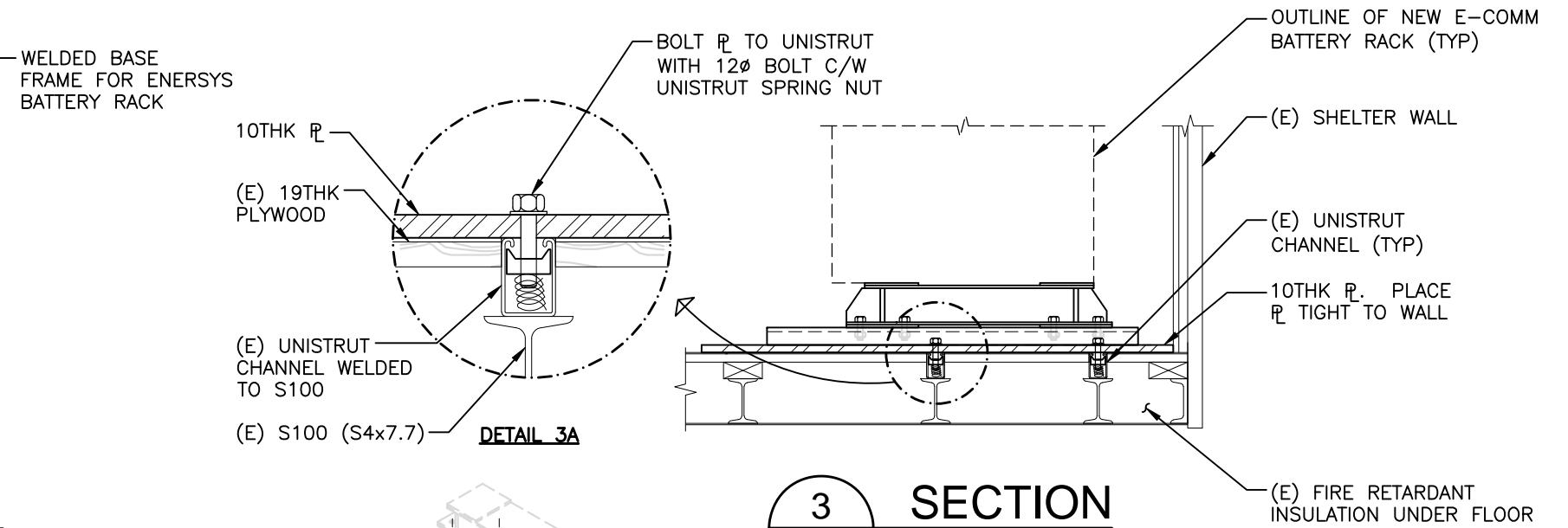
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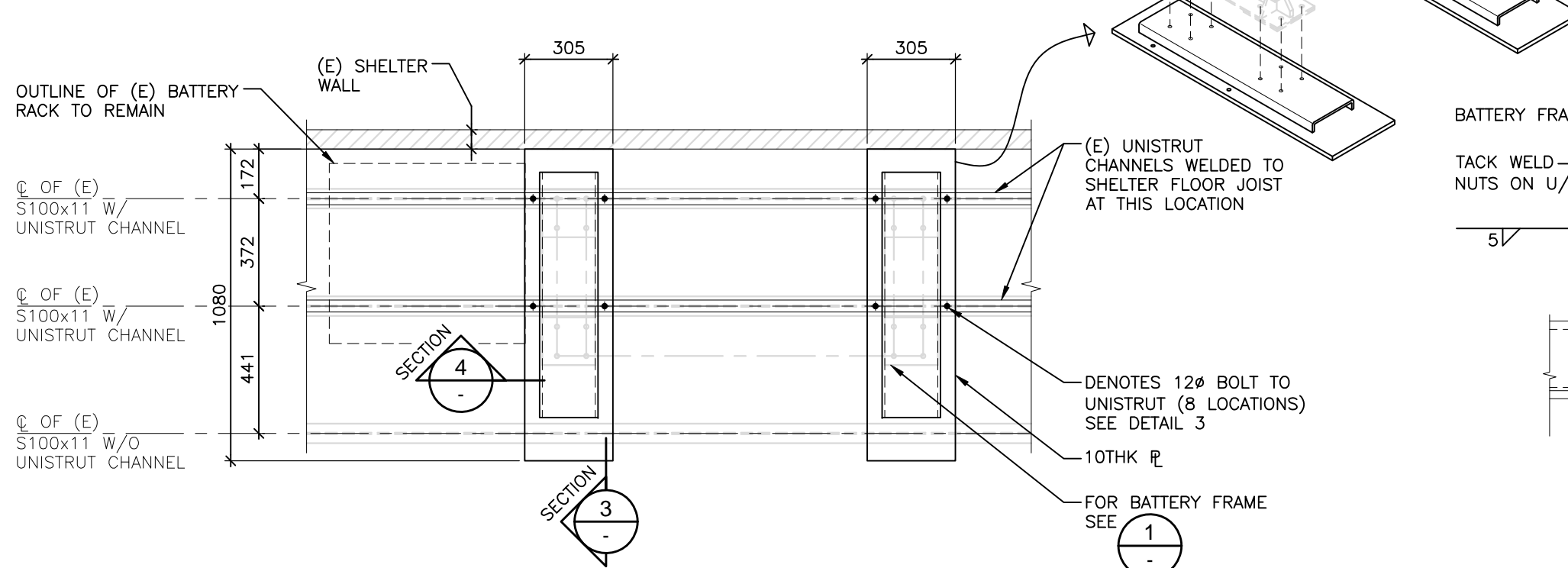
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**SOUTHEAST TOWER ELEVATION**



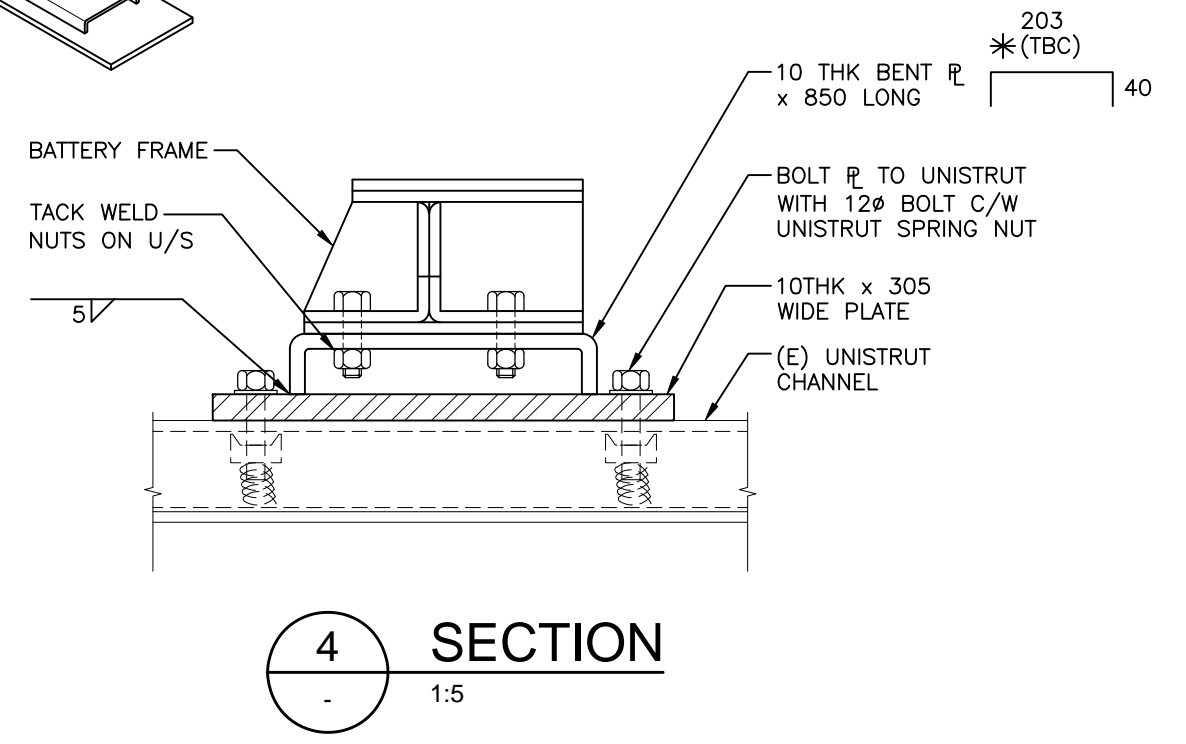
**1 BOLTING LAYOUT**  
S302 1:20



**3 SECTION**  
- 1:15



**2 BATTERY RACK MOUNTING LAYOUT**  
S302 1:20



**4 SECTION**  
- 1:5

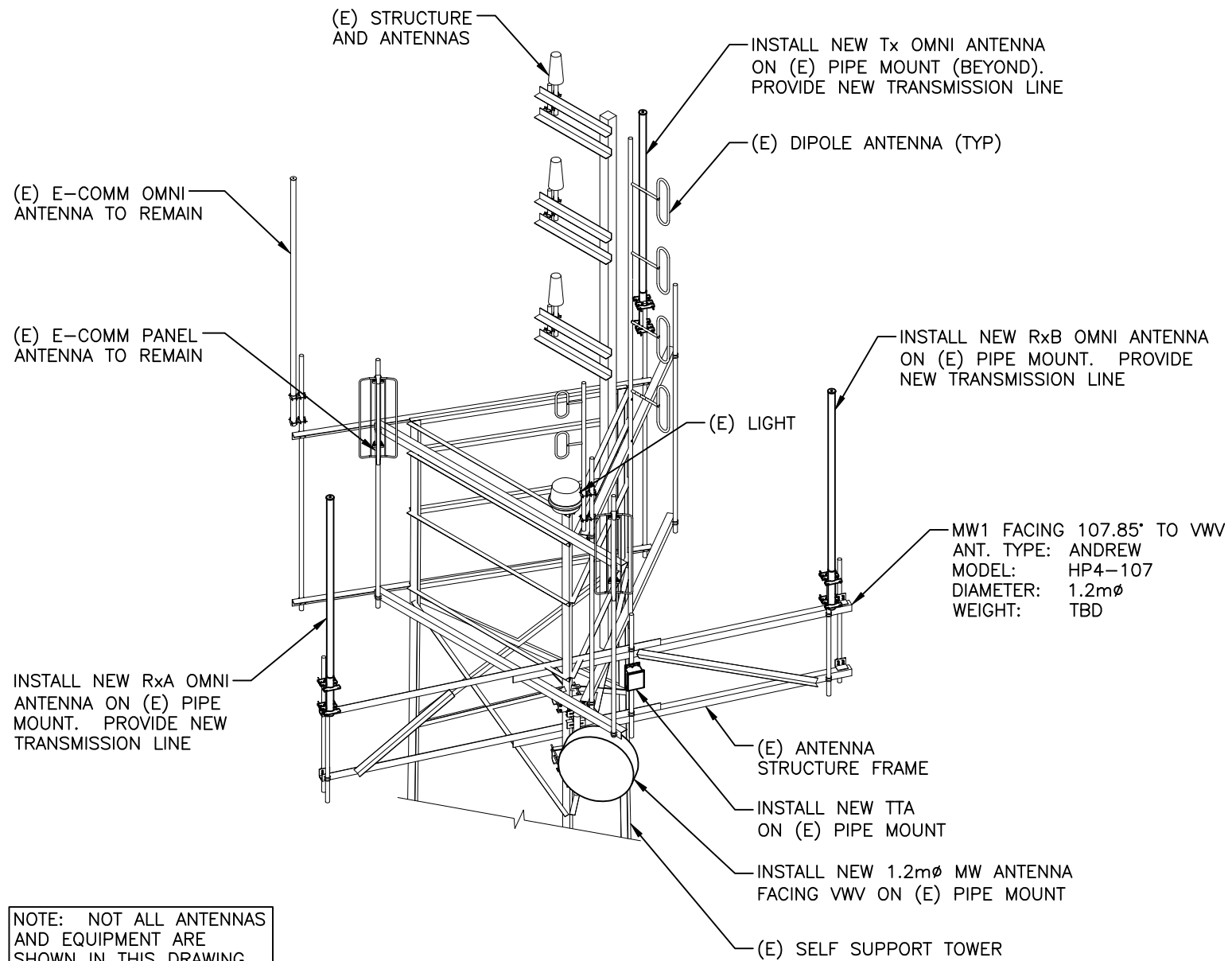
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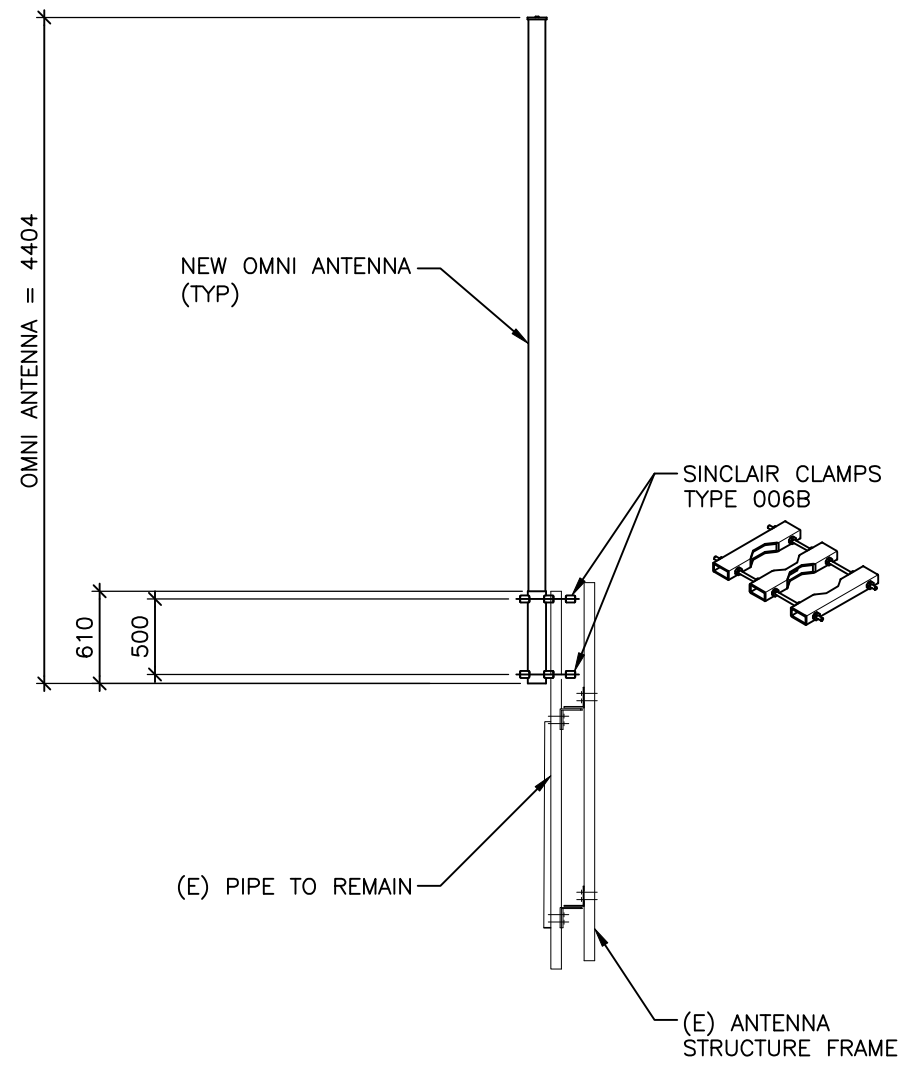
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Sheet Title:  
**BATTERY RACK MOUNTING DETAILS**



NOTE: NOT ALL ANTENNAS AND EQUIPMENT ARE SHOWN IN THIS DRAWING

**1** ANTENNA ISOMETRIC  
S401 1:50



**2** ANTENNA MOUNT DETAILS  
- 1:50

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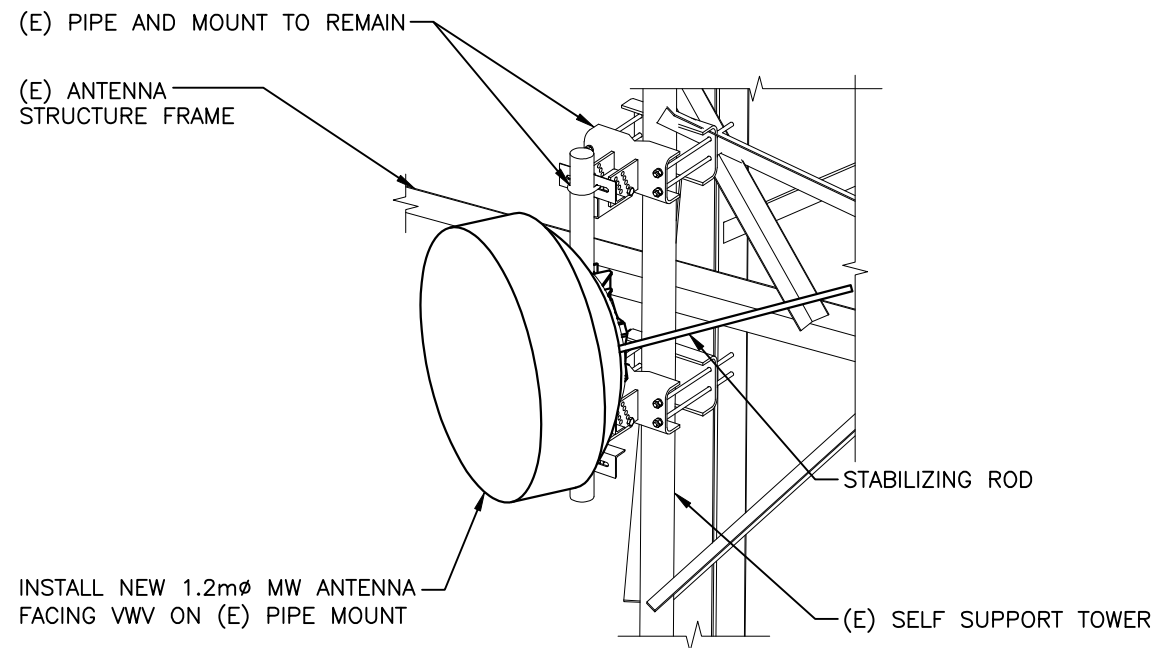
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Sheet Title:  
**ANTENNA MOUNT DETAILS**





1
M/W MOUNT ISOMETRIC  
S401
NTS

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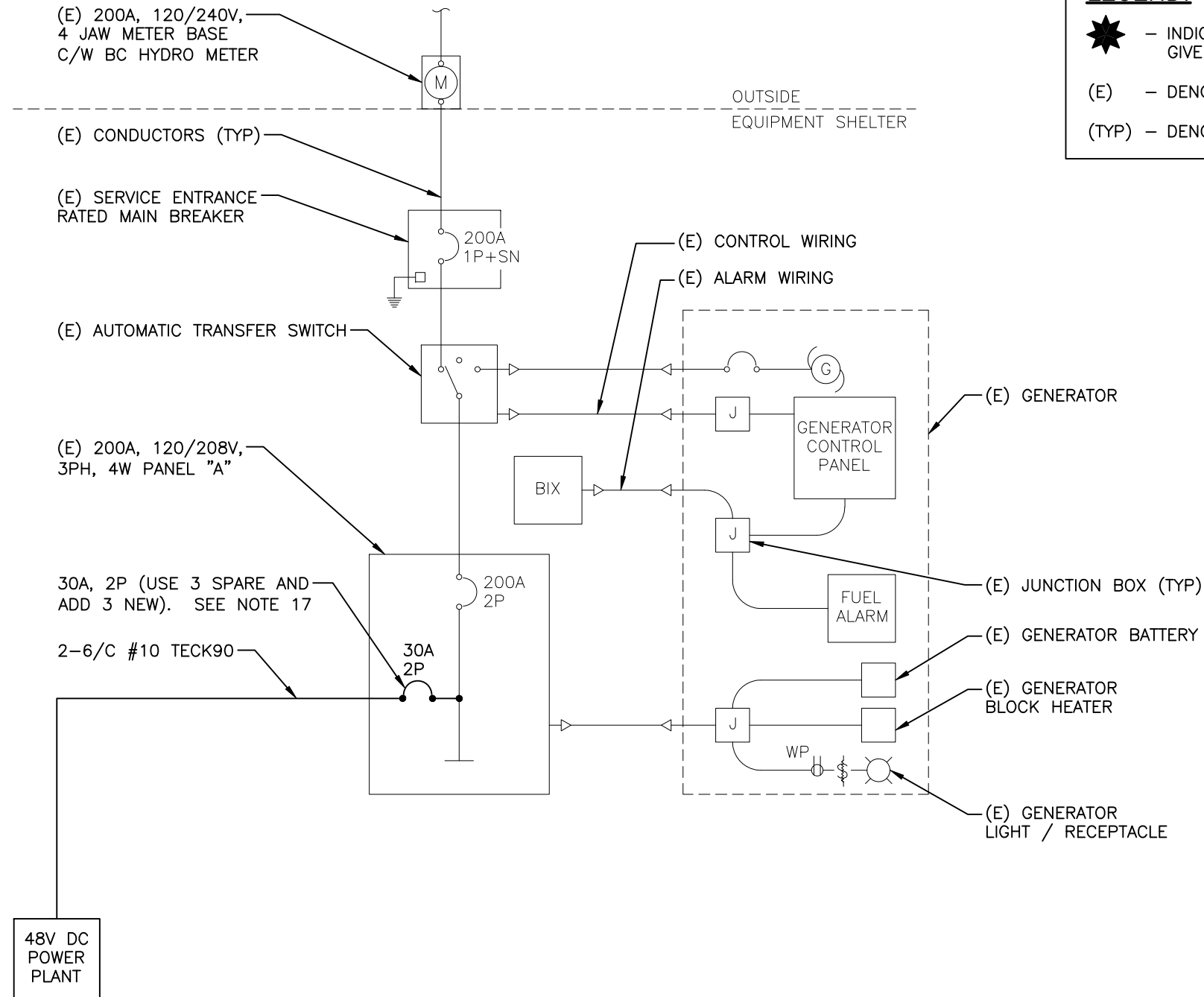
Sheet Title:  
**M/W ANTENNA MOUNT DETAILS**

**GENERAL ELECTRICAL**

1. ALL WORK TO COMPLY WITH THE LATEST ADOPTED PROVINCIAL BUILDING CODE, THE 2012 CANADIAN ELECTRICAL CODE (CEC), ANY BULLETINS ISSUED BY THE LOCAL JURISDICTION, E-COMM SPECIFICATIONS AND APPLICABLE UTILITY GUIDELINES.
2. OBTAIN ALL NECESSARY ELECTRICAL PERMITS AND PAY ALL FEES AS REQUIRED TO COMPLETE THE ELECTRICAL WORK. UPON PROJECT COMPLETION AND PRIOR TO REQUESTING A FINAL INSPECTION, DELIVER A COPY OF THE FINAL ELECTRICAL INSPECTION CERTIFICATE TO THE ENGINEER.
3. REVIEW THE ELECTRICAL DRAWINGS IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS PROVIDED FOR THE PROJECT. PRIOR TO CONSTRUCTION, PERFORM ON-SITE VERIFICATION OF THE EXISTING SITE AND ELECTRICAL SYSTEM (AS APPLICABLE) AND REPORT ANY DISCREPANCIES TO THE ENGINEER. FIELD MEASUREMENTS AND EXACT RACEWAY ROUTING ARE THE RESPONSIBILITY OF THE CONTRACTOR.
4. PROVIDE ALL LABOUR AND MATERIALS NECESSARY TO PROVIDE A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.
5. OBTAIN LOCATES PRIOR TO ANY EXCAVATION AND PROTECT ALL BURIED UTILITIES. REINSTATE ALL DISTURBED SURFACES TO PRE-CONSTRUCTION CONDITIONS.
6. ENSURE ALL EXTERIOR WALL PENETRATIONS ARE WATERTIGHT.
7. PROVIDE A (2) 3mm NYLON PULL CORDS IN ALL CONDUITS.
8. PROVIDE A SEPARATE BONDING CONDUCTOR IN ALL POWER RACEWAYS.
9. PRIOR TO ORDERING EQUIPMENT, PROVIDE SHOP DRAWINGS (2 SETS) FOR ALL ELECTRICAL EQUIPMENT SPECIFIED FOR APPROVAL.
10. ALL ELECTRICAL EQUIPMENT TO BE CSA OR ULC MARKED.
11. ALL POWER WIRING TO BE 600V RW90 STRANDED COPPER UNLESS NOTED OTHERWISE.
12. ALL EQUIPMENT RATED 60A OR MORE TO BE LISTED FOR USE WITH 75°C CONDUCTORS MIN.
13. ALL ELECTRICAL DISTRIBUTION EQUIPMENT TO BE SUPPLIED WITH APPROPRIATE ENCLOSURES WHEN LOCATED WITHIN SPRINKLERED AREAS.
14. PROVIDE NAMEPLATES IN ACCORDANCE WITH NAMEPLATE SCHEDULE. NAMEPLATES TO BE PHENOLIC PLASTIC LAMINATE WITH MACHINE ENGRAVED LETTERS (BLACK PLATE AND WHITE LETTERS) U.N.O. ATTACH NAMEPLATES WITH SELF TAPPING SCREWS OR RIVETS.
15. LEAVE ALL AREAS IN A CLEAN STATE AT CONSTRUCTION COMPLETION. TOUCH UP PAINT ALL DISTURBED SURFACES.
16. PROVIDE A COMPLETE SET OF AS-BUILT REDLINES AT PROJECT COMPLETION.
17. REARRANGE CIRCUITING OF ALL PANELBOARDS INVOLVED WITH PROJECT TO ENSURE A BALANCED LOAD ACROSS ALL PHASES.
18. ALL NEW OVERCURRENT DEVICES AND ELECTRICAL EQUIPMENT TO HAVE AN A.I.C. RATING GREATER THAN THE AVAILABLE FAULT CURRENT THEY MAY BE SUBJECTED TO (10kA MIN).
19. VERTICAL CONDUCTORS TO BE SUPPORTED AT INTERVALS AS SPECIFIED IN CEC RULE 12-120 AND TABLE 21.
20. WHERE CONDUITS/DUCTS TRANSITION FROM BELOW GRADE TO VERTICAL, PROVIDE (ABOVE GRADE) EXPANSION JOINTS IN ACCORDANCE WITH CEC RULE 12-012 (12).
21. WHEN EQUIPMENT MODIFICATIONS ARE REQUIRED TO FACILITATE CONDUCTOR CONNECTIONS TO AN EXISTING SWITCHBOARD, SPLITTER, BUS DUCT ETC, IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE NECESSARY MANUFACTURER, CSA OR THIRD PARTY APPROVALS TO THE SATISFACTION OF LOCAL ELECTRICAL INSPECTION.

**LEGEND:**

- ★ - INDICATES PARTICULAR ATTENTION SHOULD BE GIVEN TO WHAT IS NOTED ON THE DRAWING
- (E) - DENOTES EXISTING
- (TYP) - DENOTES TYPICAL



**GROUNDING**

1. COMPLY WITH E-COMM'S SPECIFIC SITE GROUNDING REQUIREMENTS FILE NAME: ESM\_1.3.3\_BONDING AND GROUNDING\_V00-02.
2. ALL INSULATED GROUND CABLES TO HAVE TWH INSULATION.
3. ALL GROUNDING TO COMPLY WITH THE 2012 CEC, ANY BULLETINS ISSUED BY THE LOCAL JURISDICTION AND UTILITY GUIDELINES (WHEN APPLICABLE).
4. ENSURE ALL GROUNDING CONNECTIONS ARE CLEAN AND FREE OF PAINT AND DIRT AT THEIR MATING SURFACES. USE SUITABLE ANTIOXIDANT GREASE (PENETROX OR EQUAL) AT ALL MECHANICAL CONNECTIONS.
5. INSTALL ALL GROUNDING CONNECTIONS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ENSURE CORRECT TORQUE IS ACHIEVED WHERE APPLICABLE.
6. ALL GROUND BAR CONNECTIONS TO BE TWO HOLE LUG LONG BARREL COMPRESSION TYPE. GROUND BARS ARE TO BE 6mm TINNED COPPER.
7. ALL UNDERGROUND GROUND CONNECTIONS TO BE CADWELD U.N.O.
8. MINIMUM BEND RADIUS FOR GROUND CABLES IS 200mm.
9. ALL NEW ANTENNA MOUNTS (AND ANY EXISTING UNGROUNDED ECOMM ANTENNA MOUNTS) ARE TO BE BONDED TO EXISTING TOWER GROUND RISER WITH #2/0 TW GREEN. USE BURNDY TYPE GAR CONNECTORS FOR ANTENNA MOUNT CONNECTIONS AND USE COMPRESSION CONNECTIONS BETWEEN CONDUCTORS. ALL NEW TRANSMISSION LINES ARE TO BE GROUNDED NEAR ANTENNAS/TTA'S AND JUST PRIOR TO SHELTER ENTRY. TTA'S ARE TO BE BONDED TO TOWER GROUND RISER WITH #6 TW GREEN.

**1 SINGLE LINE DIAGRAM**  
- NTS

No.:	2016.04.08	ISSUED FOR CLIENT REVIEW
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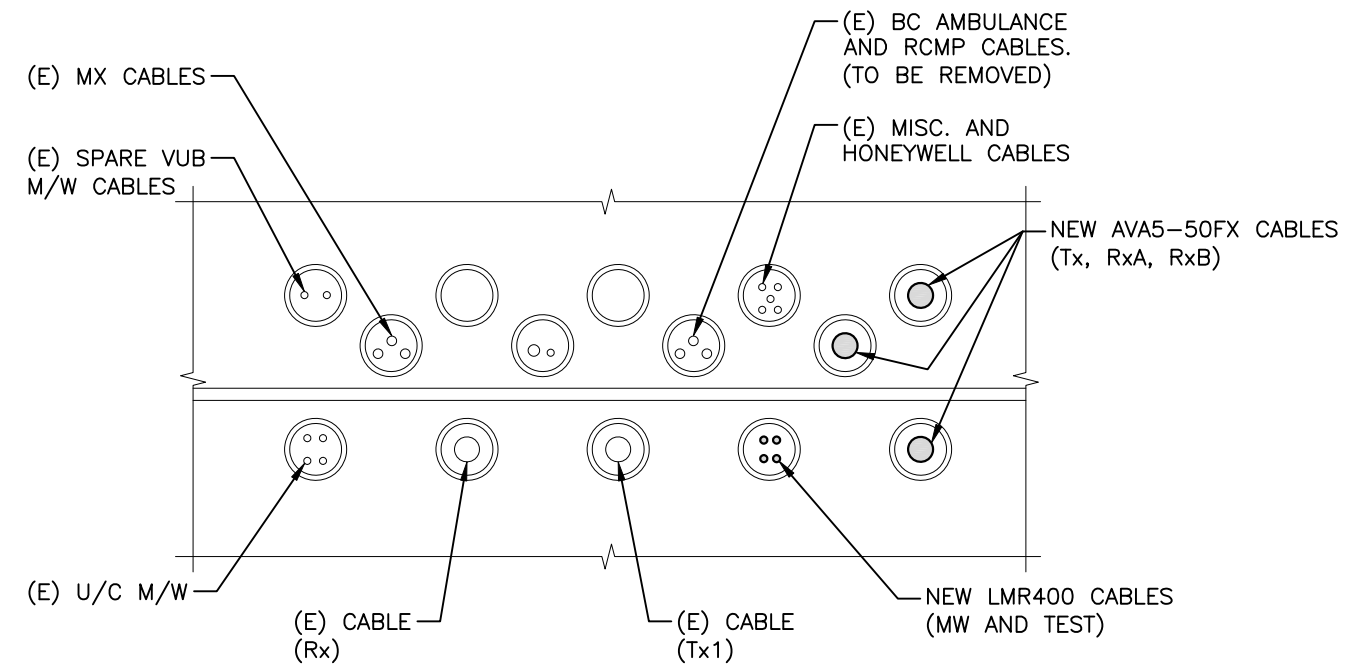
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Site ID: **NBI**  
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Sheet Title:  
**ELECTRICAL SPECIFICATIONS AND SINGLE LINE**

**PANEL SCHEDULE "A"**  
200A, 120/240V, 3PH, 4W

1	FIRE ALARM	15A	15A	GEN. LIGHT & BLK HTR	2
3	RECEPTACLES	15A	15A	GEN. BATTERY CHARGER	4
5	LIGHTING	15A	20A	GVRD (SHELTER) 500 MEG	6
7	TOWER LT'S (STROBE)	15A	20A	GVRD SCADA (SHELTER)	8
9	RECTIFIER	30A	15A	SPARE	10
11			15A	SPARE	12
13	RECTIFIER	30A	15A	SPARE	14
15					16
17	RECTIFIER	30A			18
19			30A	<b>NEW RECTIFIER</b>	20
21	<b>NEW RECTIFIER</b>	30A			22
23	<b>USE EXISTING</b>		30A	<b>NEW RECTIFIER</b>	24
25	<b>NEW RECTIFIER</b>	30A			26
27	<b>USE EXISTING</b>		30A	<b>NEW RECTIFIER</b>	28
29	<b>NEW RECTIFIER</b>	30A			30
31	<b>USE EXISTING</b>		60A	HVAC	32
33					34
35					36
37					38
39			15A	CEILING UTILITY RECEPTACLE	40
41			15A	CEILING UTILITY RECEPTACLE	42

A B C



1
**PROPOSED ANTENNA ENTRY PORT LAYOUT**  
 NTS (INTERIOR VIEW)

	2016.04.08	ISSUED FOR CLIENT REVIEW
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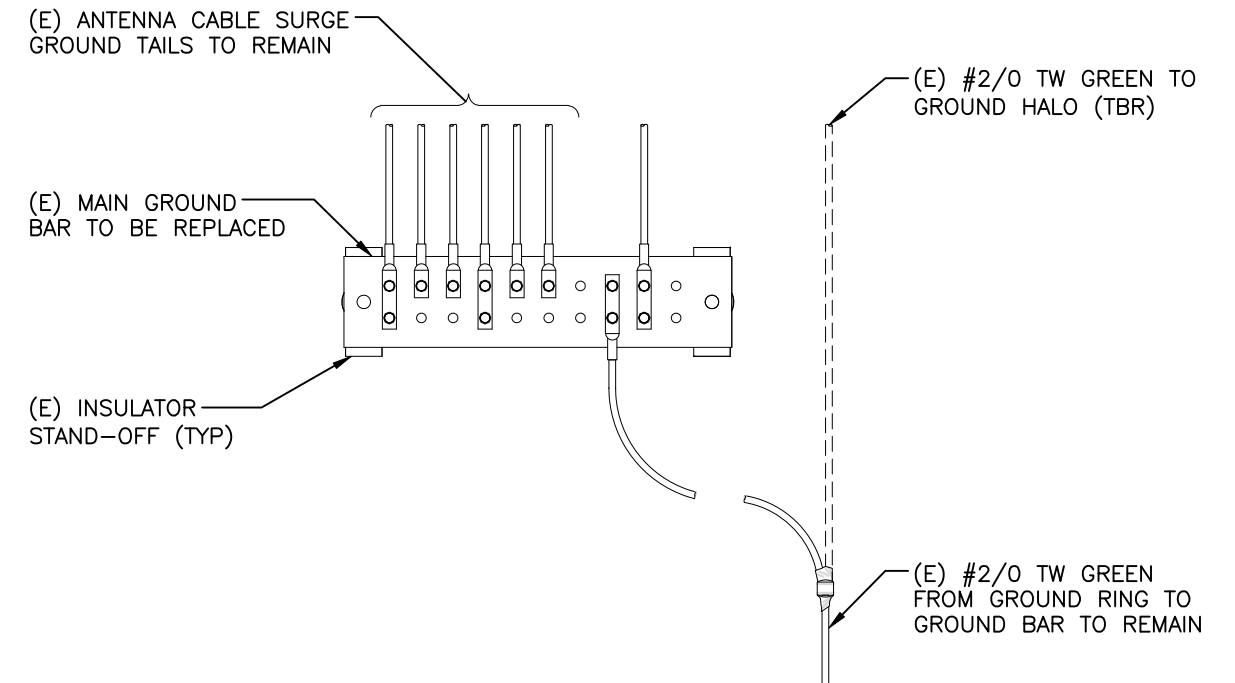
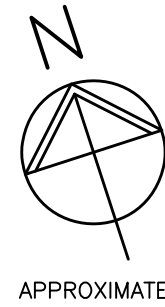
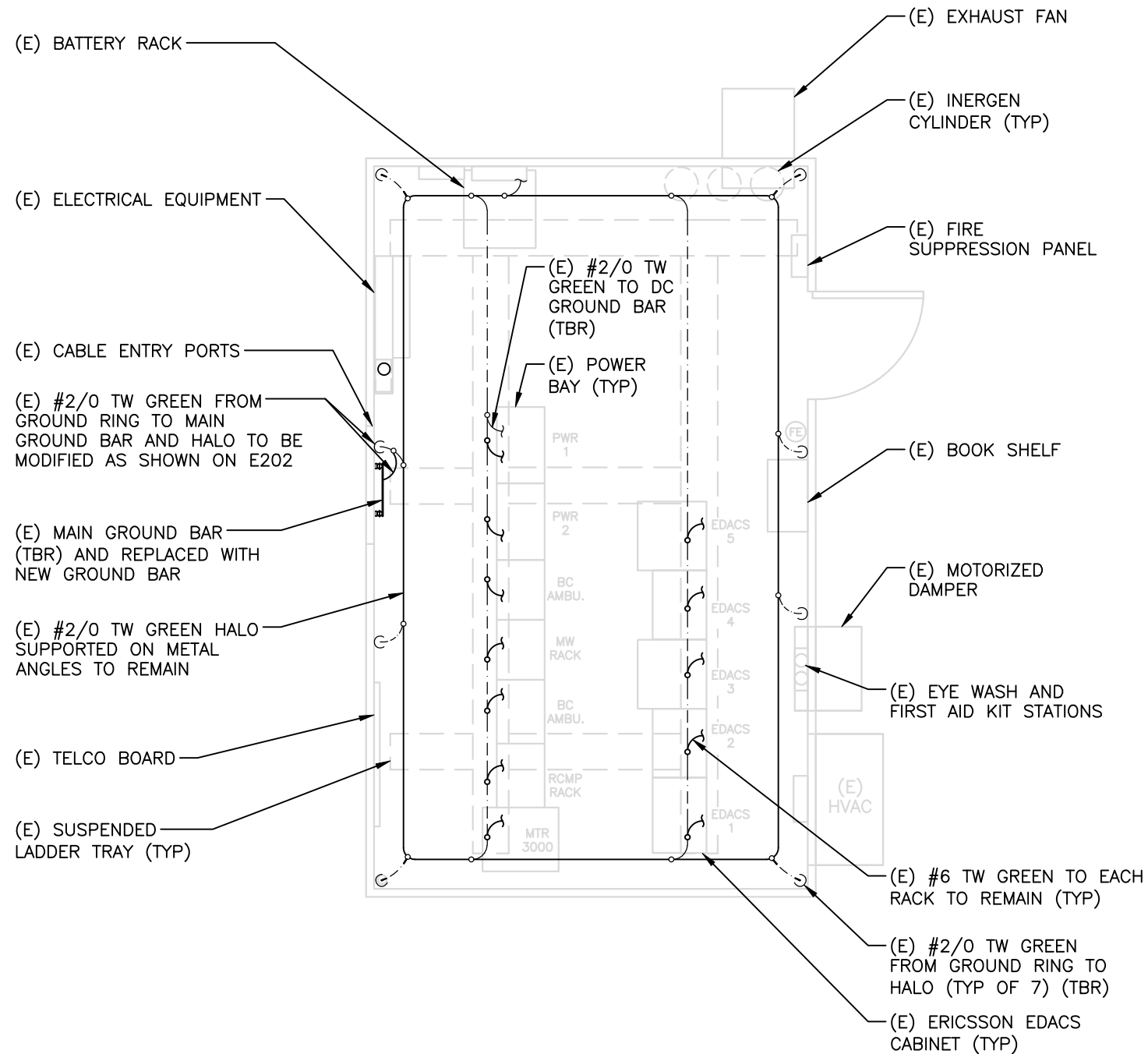
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Sheet Title:  
**SCHEDULES AND ENTRY PANEL DETAILS**

**LEGEND:**

- - COMPRESSION CONNECTOR TAPED WITH GREEN VINYL ELECTRICAL TAPE
- ◻ - SINGLE HOLE LUG CONNECTION
- (TBR) - DENOTES TO BE REMOVED



**2 MAIN GROUND BAR DETAIL**  
- NTS

**1 GROUNDING DEMOLITION LAYOUT**  
- 1:50 (EQUIPMENT SHELTER)

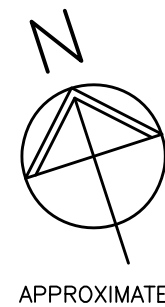
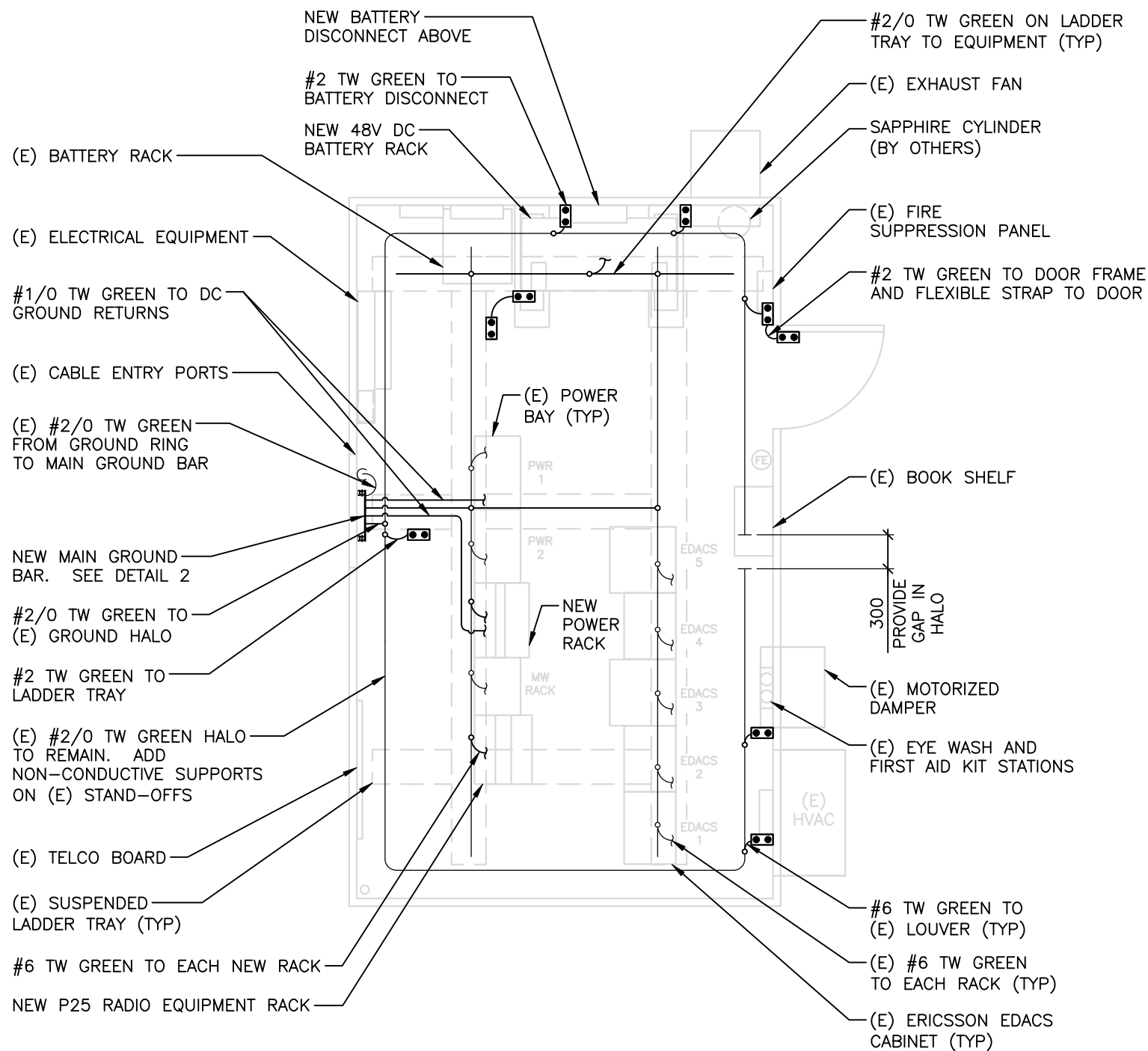
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Sheet Title:  
**GROUNDING DEMOLITION LAYOUT**

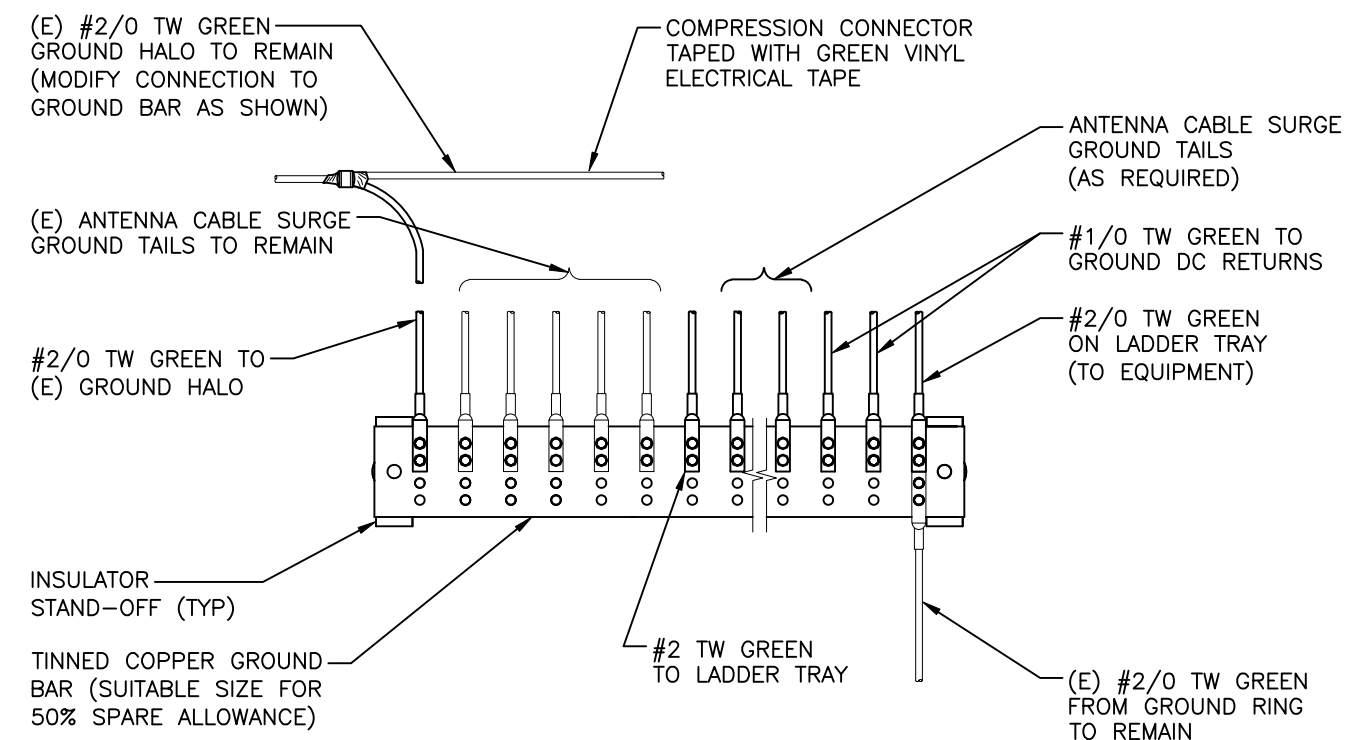


**LEGEND:**

- - COMPRESSION CONNECTOR TAPED WITH GREEN VINYL ELECTRICAL TAPE
- ◻ - 2 HOLE LUG CONNECTION

**NOTES:**

1. SEE E101 FOR GROUNDING SPECIFICATIONS.
2. REPLACE ANY SINGLE HOLE LUG CONNECTIONS WITH 2 HOLE.
3. TAPE (E) HALO WITH GREEN VINYL ELECTRICAL TAPE AT ALL LOCATIONS WHERE CONNECTIONS HAVE BEEN REMOVED/CUT OFF.
4. PROVIDE GAP IN HALO AS SHOWN. LOCATE GAP SO THAT CABLE LENGTHS ARE EQUAL BETWEEN MAIN GROUND BAR AND GAP.



**2 MAIN GROUND BAR DETAIL**  
NTS

**1 GROUNDING DEMOLITION LAYOUT**  
1:50 (EQUIPMENT SHELTER)

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Sheet Title:  
**PROPOSED GROUNDING LAYOUT**