

0 1/2" 1" 2"
SCALE: 1/8" = 1'-0"

22" x 34" PRINT IS THE FULL SCALE
FORMAT. ANY SIZE OTHER THAN
THAT IS AT REDUCED SCALE.

NOTE: EXISTING TOWER HEIGHT IS 100' A.G.L.
THE FAA APPROVED HEIGHT IS 130' A.G.L.

EXISTING OTHER CARRIER ANTENNAS

LESSEE ANTENNA LEVEL.
FOR PROPOSED ANTENNA
CONFIGURATION, SEE
DETAIL 2/ANT101

PROPOSED LESSEE ANTENNAS
& MOUNTING PLATFORM, SEE
ANT502 FOR MOUNT DETAILS.

EXISTING OTHER CARRIER ANTENNAS

EXISTING OTHER CARRIER ANTENNAS

EXISTING 100' MONOPOLE TOWER

PROPOSED WAVE GUIDE & ICE
BRIDGE FROM EQUIPMENT
SHELTER TO ANTENNA TOWER

PROPOSED LESSEE
EQUIPMENT SHELTER

± 65 L.F. OF FENCING, PROPOSED FENCING TO BE
6" TALL BLACK CHAIN-LINK WITH BLACK FENCE
SCREEN TO MATCH EXISTING. SEE DETAIL ON
SHEET C502 AND MATERIAL DATA ON SHEET C503
(PARTIALLY SHOWN FOR CLARITY)

EXISTING OTHER
CARRIER ICE BRIDGE

EXISTING OTHER CARRIER
EQUIPMENT PLATFORM

EXISTING 6" TALL CHAIN-LINK FENCE
(PARTIALLY SHOWN FOR CLARITY)

GRADE

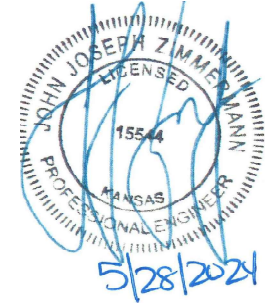
DISTANCE TO TOP OF EXISTING MONOPOLE TOWER = 75'-0" A.G.L.
DISTANCE TO CENTER OF PROPOSED LESSEE ANTENNAS = 100'-0"± A.G.L.

OVERALL STRUCTURE HEIGHT = 100'-0"± A.G.L.

1 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



2 PROPOSED SHELTER RENDERING
SCALE: N.T.S.



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680 BUSSE HIGHWAY
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FAX: 847-698-6401

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KCYC HERITAGE SQUARE
LOCATION CODE: 661221
15201 MURLEN
OLATHE, KS 66062

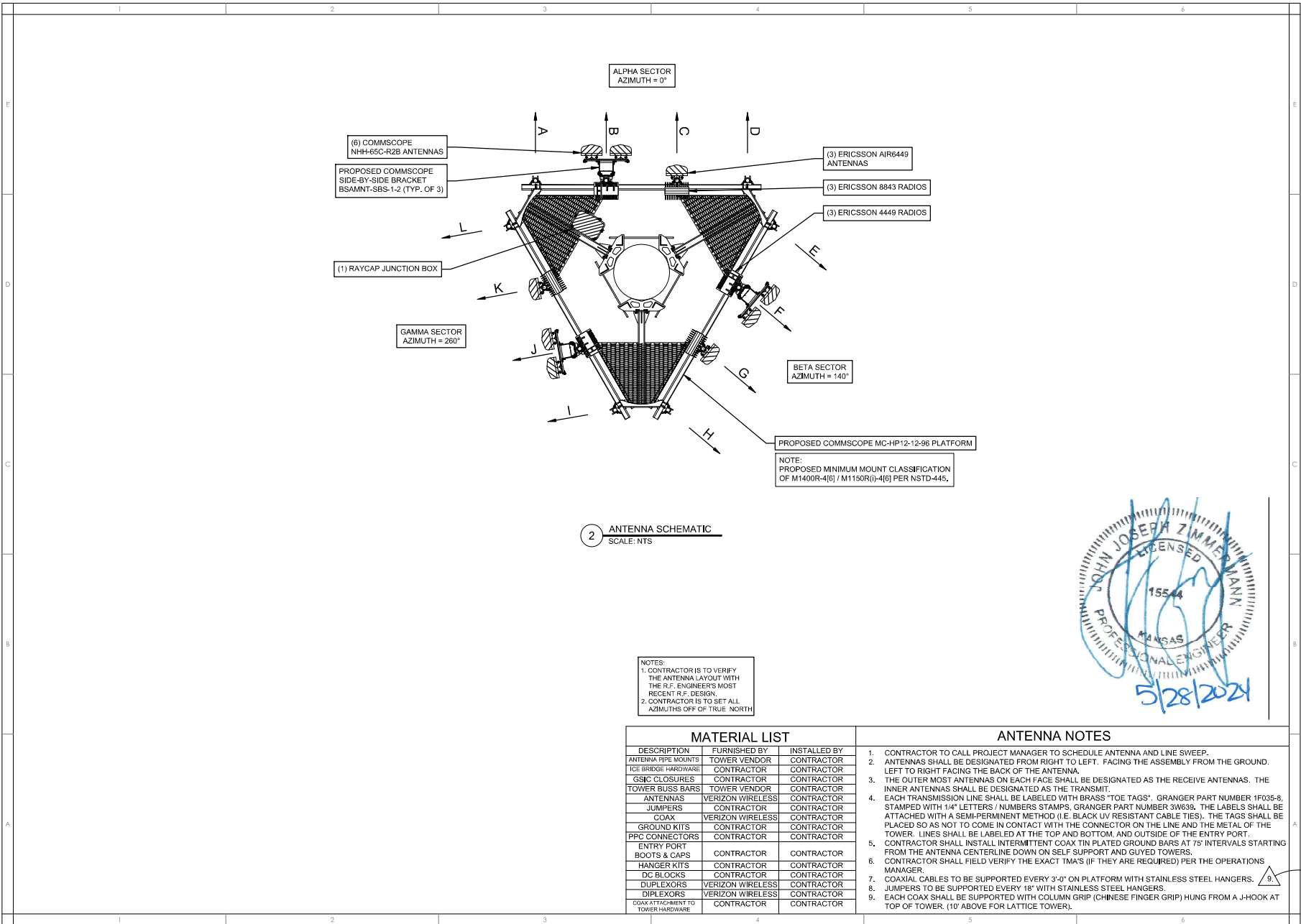
NO.	DESCRIPTION	DATE
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4	ISSUED FOR PERMIT	09/29/22
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7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 15881
DRAWING NO.: 15881-2
DESIGNED BY: JAZ
DRAWN BY: JCB
CHECKED BY: JAZ
COMPILE: 2017

**ISSUED
FOR
REVIEW**

**SITE ELEVATION &
ANTENNA SCHEMATIC**

ANT101



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100% SUBMISSION		06/19/22

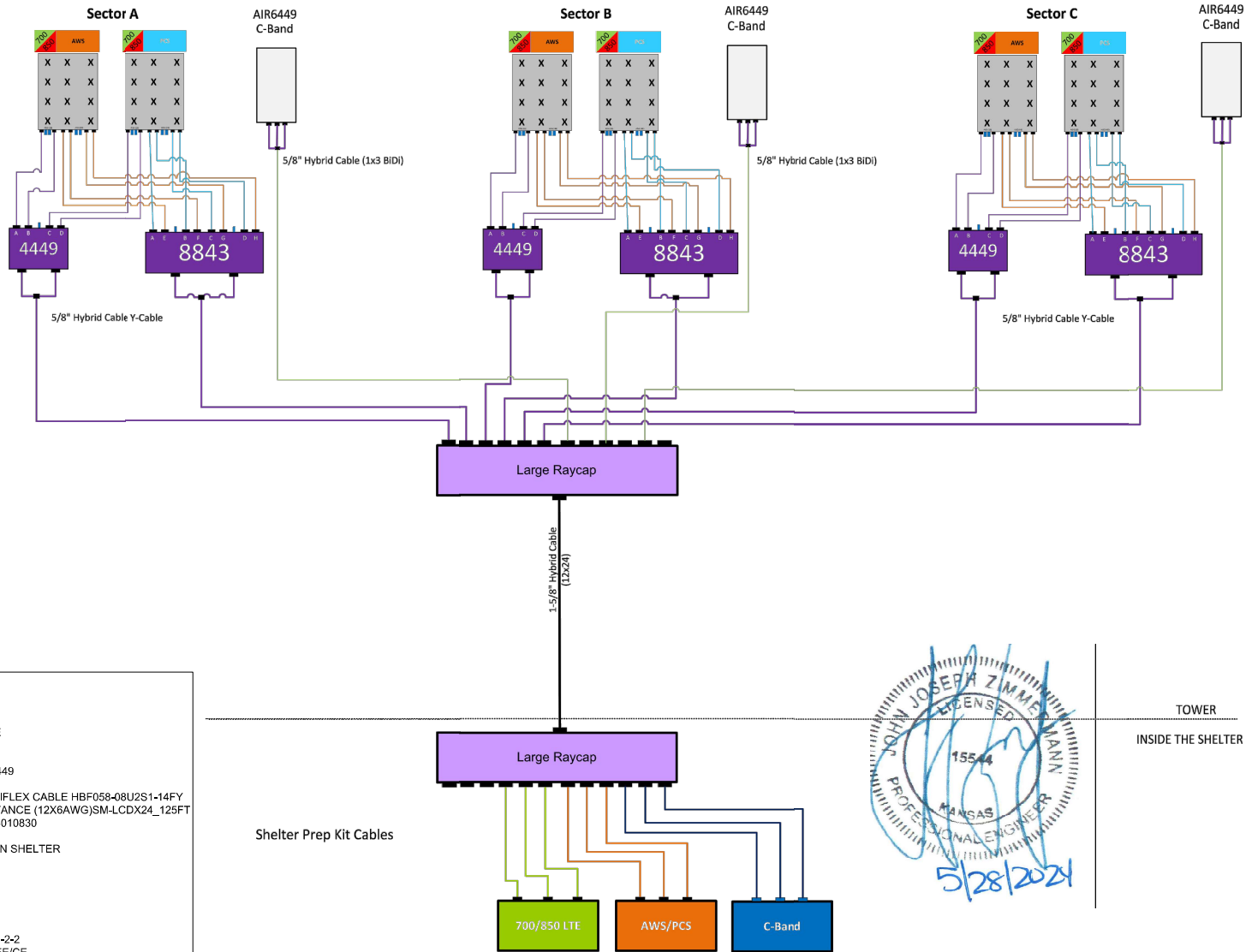
PROJECT: 150801
CADDWG: N/A / COMBINED 2
DESIGNED BY: AAY
DRAWN BY: CCB
CHECKED BY: AAY
COMBINED: 2017

**ISSUED
FOR
REVIEW**

**SITE ELEVATION &
ANTENNA SCHEMATIC**
ANT101

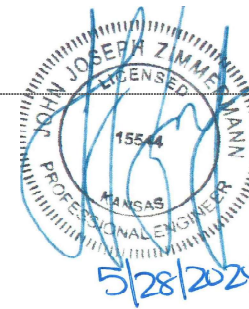
Arrangement of
Antennas may not
match arrangement on
the tower

700 LTE / AWS LTE / PCS LTE / 850 LTE / 850 NR / C-Band



RF PARTS LIST

- 6 - COMMSCOPE NHH-65C-R2B
- 3 - ERICSSON 4449 FOR 700 AND 850 LTE
- 3 - ERICSSON 8843 FOR AWS
- 3 - ERICSSON 5G AIR6449 FOR C-BAND
- 3 - 1X3 BIDI HYBRID JUMPERS FOR AIR6449
- 36 - 1/2" RF JUMPERS
- 6 - RFS 5/8"± (8AWG Y-CABLE) RFS HYBRIFLEX CABLE HBF058-08U2S1-14FY
- 1 - H+S_MLC-HYBRID 12X24 LOW INDUCTANCE (12X6AWG)SM-LCDX24_125FT
- 1 - LKF RETCONFIGURATIONMGT = CXC4010830
- 1 - LKF RETCASCADING = CXC4010622
- 2 - RFS DB-C1-12C-24AB-0Z, 1 ON TOP 1 IN SHELTER
- 1 - 6601
- 1 - 6630
- 1 - BBU 6648 FOR C-BAND
- 1 - SHELTER PREP CABLES
- 1 - ANCILLARY CABLING KITS
- 1 - POWER SUPPLY AND FIBER TRAY
- 3 - COMMSCOPE BRACKET BSAMNT-SBS-2-2
- UP-CONVERTER REQ'D MODEL TBD BY EE/CE



TOWER
INSIDE THE SHELTER



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OLATHE, KS 66062

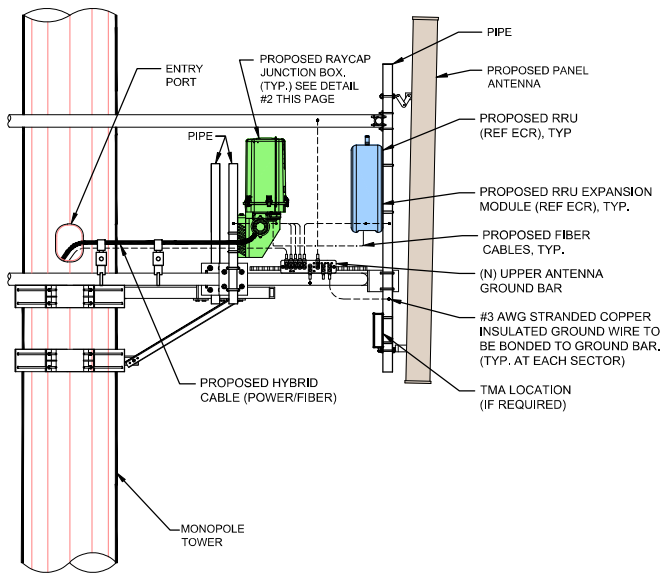
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NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 15544
DRAWING: ANT501-01-01
DESIGNED BY: JAZ
DRAWN BY: JCB
CHECKED BY: JAZ
COMPILED: 2017

**ISSUED
FOR
REVIEW**

**ANTENNA PLUMBING
DIAGRAM &
RF PARTS LIST**

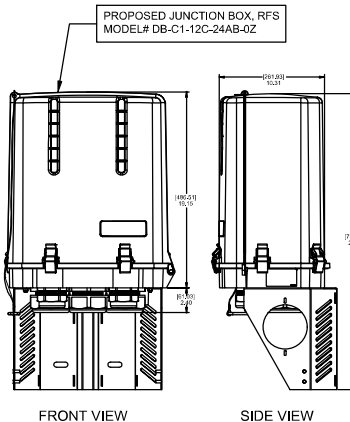
ANT501



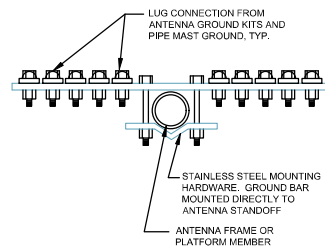
1 ANTENNA, RRU & RAYCAP JUNCTION BOX MOUNTING DETAIL
SCALE: N.T.S.

SPECIFICATIONS DC SURGE PROTECTION FOR RRU/INTEGRATED ANTENNA RADIO HEAD
APPLICATION: TOWER / BASE / ROOFTOP / ROOFTOP DISTRIBUTION MODELS
WEIGHT: 32LBS (14.51 KG)

[mm]
INCHES

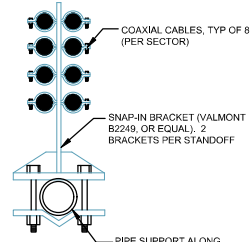


2 RAYCAP JUNCTION BOX DETAIL
SCALE: N.T.S.



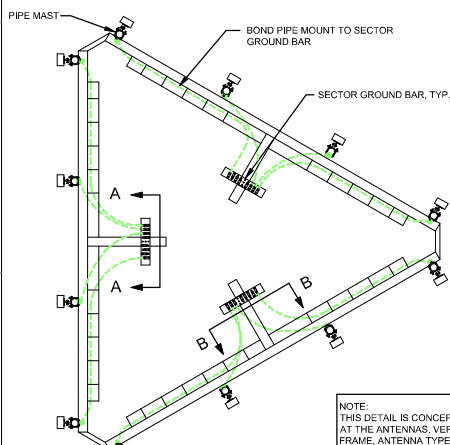
SECTION A-A

3 GROUND BAR AT SECTOR
N.T.S.

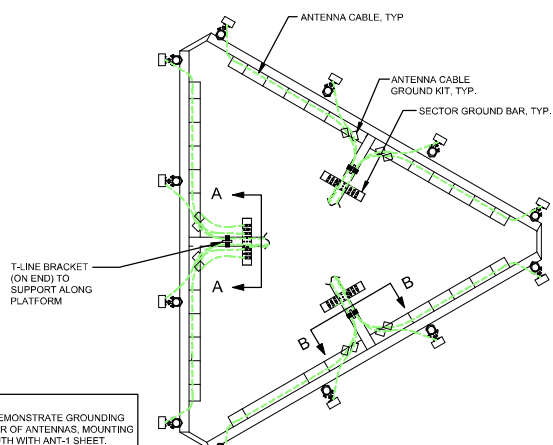


SECTION B-B

4 SNAP-IN BRACKET AT ANTENNA MOUNT
N.T.S.

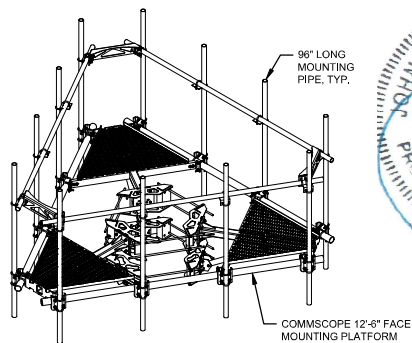


5 PIPE MAST GROUNDING AT ANTENNA ELEVATION
N.T.S.



6 ANTENNA CABLE GROUNDING AT ANTENNA ELEVATION
N.T.S.

ORDERING INFORMATION
MANUFACTURER: COMMSCOPE
PART #: MC-HP12M-12-96
DETAILS: HIGH CAPACITY CO-LOCATION PLATFORM KIT, 12'-6" FACE, KIT INCLUDES (12) 2-3/8" O.D., 96" LONG MOUNTING PIPES.



7 ANTENNA MOUNTING PLATFORM DETAIL
SCALE: N.T.S.

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LOCATION CODE: 661221
15201 MURLEN
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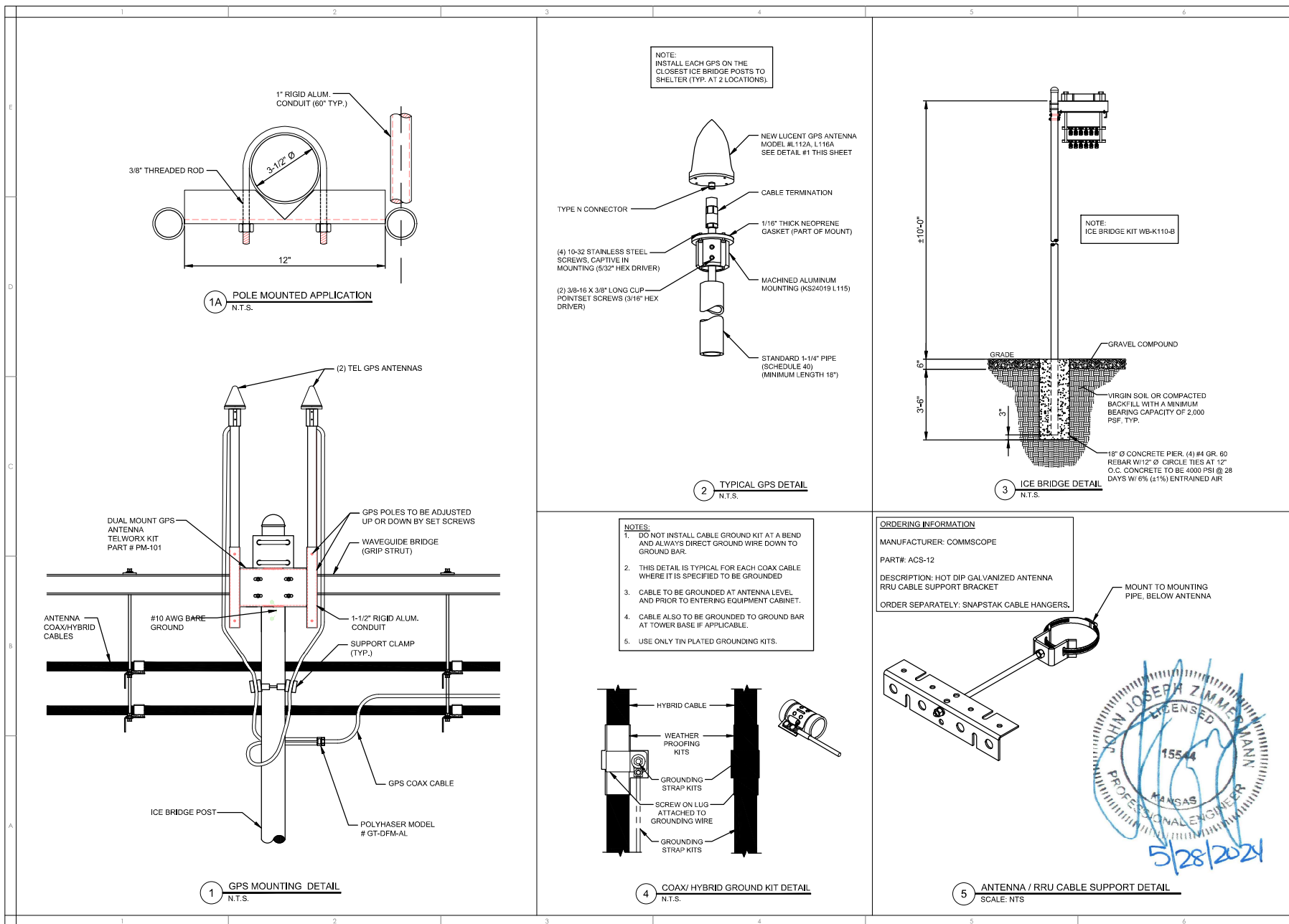
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NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 150801
DRAWING: ANT502-150801-2
DESIGNED BY: JAY
DRAWN BY: CCB
CHECKED BY: JAY
COMPILE: 2017

ISSUED
FOR
REVIEW

ANTENNA MOUNTING
DETAILS

ANT502



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15201 MURLEN
OLATHE, KS 66062



















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100% SUBMISSION		06/19/22

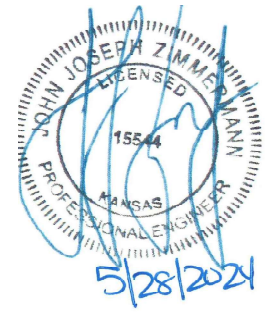
PROJECT: 158801
DRAWING: ANTENNA MOUNTING
DESIGNED BY: JAY
DRAWN BY: CCB
CHECKED BY: JAY
COMPILED: 2017

ISSUED FOR REVIEW

ANTENNA MOUNTING DETAILS

ANT503

1	2	3	4	5	6
<div data-bbox="58 332 315 868">  NORTH  BUILDING SECTION 1 SHEET A300  WALL SECTION 2 SHEET A300  EXTERIOR ELEVATION 3 SHEET A300  INTERIOR ELEVATION 4 SHEET A300  FIRE EXTINGUISHER  KEY NOTE NUMBER  WALL TYPE  STRUCTURAL COLUMN GRID LINES AND INDICATOR  DATUM OR WORKING POINT </div> <div data-bbox="58 893 315 1364"> <p>5 ARCHITECTURAL SYMBOLS N/A</p> <p>— — — — — EXISTING SANITARY</p> <p>— — — — — EXISTING WOOD FENCE</p> <p>— — — — — EXISTING UTILITY OVERHEAD</p> <p>— — — — — EXISTING WATER LINE</p> <p>— — — — — EXISTING CHAIN LINK FENCE</p> <p>— — — — — PROPERTY LINE</p> <p>— — — — — SITE SETBACKS</p> <p>— — — — — ITEM TO BE DEMOLISHED</p> </div> <div data-bbox="58 1388 315 1437"> <p>4 LINE TYPES N/A</p> </div>		<div data-bbox="346 349 525 706">  FIRE LANE  OPEN SPACE  ICE BRIDGE  CONCRETE  ASPHALT  GRATING  LANDSCAPING  ROCK SURFACING </div> <div data-bbox="346 722 525 1088"> <p>3 MATERIALS N/A</p> <p>===== EXISTING WALL</p> <p>===== WALL TO BE REMOVED</p> <p>===== CONCRETE WALL</p> <p>===== METAL WALL</p> <p>===== CMU WALL</p> <p>===== BRICK WALL</p> </div> <div data-bbox="346 1112 525 1364"> <p>2 WALL LEGEND N/A</p> <p>⊙ EXIT LIGHT</p> <p>⬜ SURFACE MOUNT 1x4 FIXTURE</p> <p>⌋ WALL MOUNTED FIXTURE</p> </div> <div data-bbox="346 1388 525 1437"> <p>1 LIGHTING LEGEND N/A</p> </div>		<p>ARCHITECTURAL GENERAL NOTES:</p> <ol style="list-style-type: none"> COORDINATION: <ol style="list-style-type: none"> EACH DIVISION SHALL COMPLY WITH THE G001 PROJECT GENERAL NOTES AS IF CONTAINED HEREIN. SUBMIT COORDINATION DRAWINGS TO THE CONTRACTOR FOR REVIEW AND APPROVAL. PRIOR TO COMMENCEMENT OF WORK, EACH DIVISION IS RESPONSIBLE FOR THE COORDINATION OF ALL RELATED DIVISIONS WHOSE WORK INTERFACES WITH THEIR OWN. DO NOT SCALE DRAWINGS: THE CONTRACTORS SHALL USE DIMENSIONS SHOWN ON THE DRAWINGS AND ACTUAL FIELD MEASUREMENT. NOTIFY THE AE PROJECT MANAGER IF ANY DISCREPANCIES ARE FOUND PRIOR TO PROCEEDING WITH WORK. DIMENSIONS: <ol style="list-style-type: none"> THOROUGHLY REVIEW ALL PLANS AND SPECIFICATIONS. VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE STARTING WORK. NOTIFY ARCHITECT OF ANY DISCREPANCIES. EXTERIOR DIMENSIONS ARE TO FACE OF EXTERIOR WALLS. DIMENSIONS ON PLANS ARE TO FINISH FACE OR CENTERLINE OF COLUMNS UNLESS NOTED OTHERWISE. DIMENSIONS TO DOOR OPENINGS ARE TO R.O. IN MASONRY & CONCRETE AND TO JAMB OPENING IN STUDWALLS. VERIFY DOOR SIZE W/ SCHEDULE. EXITS: ALL EXIT DOORS SHALL BE ABLE TO BE OPENED FROM THE INSIDE WITHOUT USE OF KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. ALL EXIT SIGNS SHALL HAVE LETTERS SIX (6) INCHES HIGH MINIMUM, AND SHALL CONFORM WITH APPLICABLE CODES. REFER TO FLOOR PLANS FOR EXIT SIGN LOCATIONS. COORDINATE POWER W/ DIVISION 26. LOUVERS AND WINDOWS: INSTALL PER MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. WHERE DETAILED, PROVIDE ALL ADDITIONAL MATERIALS SHOWN OR NOTED. VERIFY ALL OPENING SIZES, BOTH NEW AND EXISTING. PRIOR TO ORDERING, PROVIDE SPACE FOR FLASHING AS DETAILED. PROVIDE GALVANIC ISOLATION BETWEEN DISSIMILAR MATERIALS. FINISHES: <ol style="list-style-type: none"> PAINT ALL PAINTABLE ITEMS ATTACHED TO WALLS, CEILING, OR COLUMNS EXCEPT DUCTWORK AND FLEXIBLE AND/OR MOVABLE PARTS. CONCEAL ALL PIPE AND CONDUIT WHERE WALL FURRING IS PROVIDED. PRIME ALL MATERIALS WITH MATERIAL COMPATIBLE WITH SUBSTRATE. SEE FINISH SCHEDULE AND FINISH NOTES. OFFSET STUDS WHERE REQUIRED, SO THE FINISH WALL SURFACES WILL BE FLUSH. PROVIDE GALVANIC ISOLATION BETWEEN DISSIMILAR METALS. CEILING SUSPENSION SYSTEMS SHALL BE STABILIZED AGAINST LATERAL MOVEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE IBC, GOVERNING EDITION, SEE S500. CEILING HEIGHTS ARE FROM CONCRETE FLOOR SLAB TO GRID AT ACOUSTICAL TILE CEILING, OR FINISH O HARD CEILING. ALL INTERIOR WOOD BLOCKING SHALL BE FIRE TREATED. WEATHERPROOFING: <ol style="list-style-type: none"> ALL EXTERIOR WALL OPENINGS, FLASHING, COUNTERFLASHING AND EXPANSION JOINTS SHALL BE CONSTRUCTED IN SUCH A MANNER AS TO MAKE IT WEATHERPROOF. THE JUNCTION OF THE ROOF AND VERTICAL SURFACES SHALL BE FLASHED AND COUNTERFLASHED IN A MANNER TO MAKE THEM WEATHERPROOF. PROVIDE FOR ALL TEMPORARY WEATHERPROOFING DURING THE COURSE OF WORK TO ASSURE PROTECTION AND FULL OPERATION OF THE EXISTING FACILITY. BUILDING AND EQUIPMENT: <ol style="list-style-type: none"> MAINTAIN AREAS FREE OF DEBRIS ACCUMULATION. KEEP WORK AREAS NEAT AND ORDERLY AS MUCH AS REASONABLY POSSIBLE. MEANS OF EGRESS AREAS MAINTAINED FREE AND CLEAR AT ALL TIMES. CONTRACTOR TO REMOVE ALL MATERIALS NOT RELATED TO THE FINISHED PRODUCT FROM THE SITE. DO NOT BURY ON SITE. BLOCKING: PROVIDE SOLID BLOCKING FOR ALL WALL MOUNTED FIXTURES, DEVICES & EQUIPMENT. COORD. W/ ALL DIVISIONS OF THE SPECIFICATIONS TO VERIFY LOCATION REQUIRED. FIRESTOPPING: TO BE PROVIDED BY SINGLE CONTRACTOR FOR ALL TRADES USING A SINGLE MANUFACTURER'S PRODUCTS (SM OR HILT). IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE EXACT EXTENT OF WORK, COORDINATION, TEMPORARY FACILITIES, UTILITIES, ETC. NECESSARY TO COMPLETE THIS PROJECT AS INDICATED IN THE CONTRACT DOCUMENTS. IF THERE ARE ANY CONFLICTS OR DEVIATIONS FROM PLAN DURING CONTRACTOR'S DISCOVERY, THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE VERIZON REPRESENTATIVE AND DESIGNER. ALL RECESSED PANELS MOUNTED IN FIRE RATED WALLS SHALL BE OF FIRE RATED CONSTRUCTION TO MATCH RATING OF WALL. (i.e. TRAP PRIMERS, F.E. CABINETS, etc.) 	
1	2	3	4	5	6



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KCYC HERITAGE SQUARE

LOCATION CODE: 661221

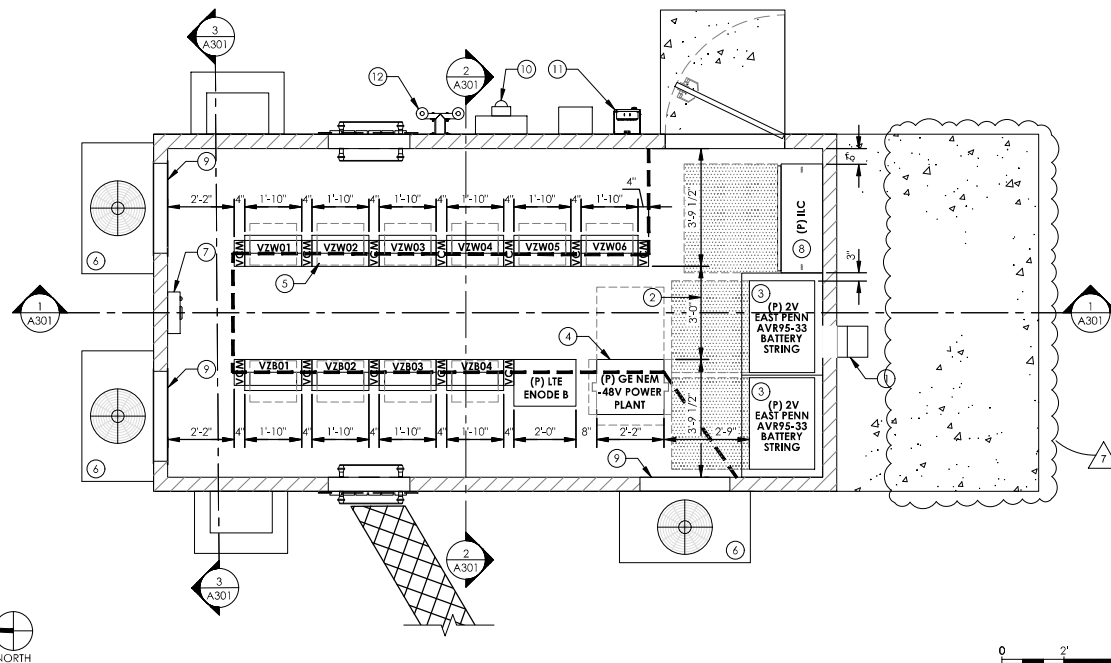
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100% SUBMISSION		06/19/22

PROJECT: 158891	ISSUED FOR REVIEW
DRAWING NO./COMBINE #	
DRAWN BY: JCB	
CHECKED BY: JCB	
DATE: 2022	

GENERAL NOTES & LEGEND

A001



1 PROPOSED FLOOR PLAN
22' x 34' SCALE: 1/2" = 1'-0" 11" x 17" SCALE: 1/4" = 1'-0"

KEY:	
VCM	VERTICAL CABLE MANAGEMENT
VZW	VERIZON WIRELESS RACK
VZB	VERIZON BUSINESS RACK
→	AIR FLOW DIRECTION

NOTE:
ALL WALL (INTERIOR OR EXTERIOR) OPENINGS
CREATED, UNCOVERED OR DISCOVERED
DURING HVAC UPGRADE SHALL BE REPAIRED TO
EQUAL OR BETTER CONDITION.

HVAC NOTE:
24"x32" CLEARANCE REQUIRED AT SUPPLY AND
RETURN VENTS. FOR FUTURE UNITS G.C. TO TAPE
OFF FUTURE RESERVED AREA AS SHOWN.

KEY NOTES:

- (P) EXHAUST FAN; RE: 01/M101.
(SUPPLIED BY SHELTER MANUFACTURER)
- DIMENSIONS LOCATE FRONT FACE OF
PROPOSED AND EXISTING EQUIPMENT; HOLD
THIS DIMENSION.
- (P) 2V EAST PENN AVR95-33 BATTERY STRING
- (P) DC POWER PLANT
- (P) EQUIPMENT RACK, TYP.
- (P) 5-TON AIRSYS UNICOOL WALL PACK UNIT
- (P) AIRSYS MULTI-UNIT CONTROLLER FOR HVAC
- (P) 400 AMP INTERIOR ILC
(SUPPLIED BY SHELTER MANUFACTURER)
- (P) WALL PENETRATION; RE: 02/S301
- (P) 400A METER WITH SERVICE DISCONNECT
(FURNISHED BY G.C.)
- (P) PORTABLE GENERATOR CAMLOCK BOX
- (P) GPS ANTENNAS

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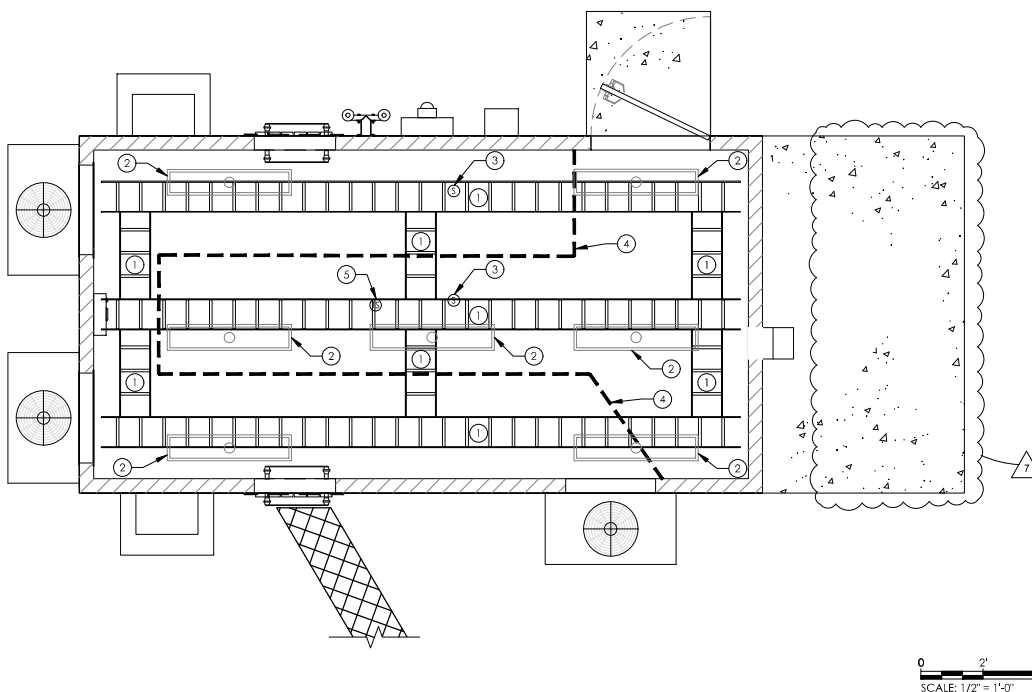
PROJECT: 15544
DRAWING: A101
DESIGNED BY: JAZ
DRAWN BY: CCB
CHECKED BY: JAZ
COMPILED: 2017

**ISSUED
FOR
REVIEW**

**PROPOSED FLOOR
PLAN**

A101





1 REFLECTED CEILING PLAN
22' x 34' SCALE: 1/2" = 1'-0"
11' x 17' SCALE: 1/4" = 1'-0"

KEY NOTES:

- 1 (P) CABLE LADDER.
(SUPPLIED BY SHELTER MANUFACTURER)
- 2 (P) FLUORESCENT FIXTURES.
(SUPPLIED BY SHELTER MANUFACTURER)
- 3 (P) SMOKE DETECTOR.
(SUPPLIED BY SHELTER MANUFACTURER)
- 4 (P) SIMPLEX SOFT WALL AIR SEPARATION
CURTAIN TO BE INSTALLED
(FURNISHED BY G.C.)
- 5 (P) REMOTE TEMPERATURE SENSOR
(FURNISHED BY G.C.)

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THE DRAWING WAS PREPARED SOLELY FOR THE USE OF
VERIZON WIRELESS AND MUST ONLY BE USED BY VERIZON
WIRELESS EMPLOYEES, CONTRACTORS AND VENDORS
WHILE PERFORMING THE WORK SHOWN ON THE
DRAWING. ANY OTHER USE OF THE DRAWING IS
FORBIDDEN.

TERRA
600 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-698-6400
FAX: 847-698-6401

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KCYC HERITAGE SQUARE
LOCATION CODE: 661221
15201 MURLIN
OLATHE, KS 66062

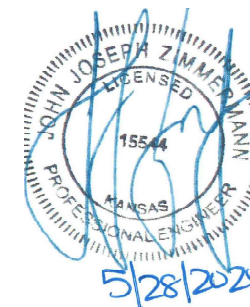
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100% SUBMISSION		06/10/22

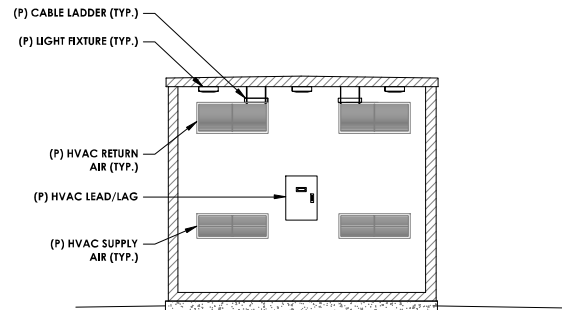
PROJECT: 15881
DRAWING NO.: 15881-01
DESIGNED BY: JAZ
DRAWN BY: CCB
CHECKED BY: JAZ
COMPILED: 2017

**ISSUED
FOR
REVIEW**

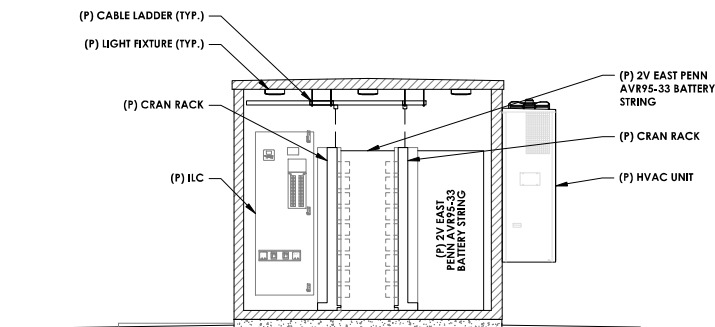
**REFLECTED CEILING
PLAN**

A111

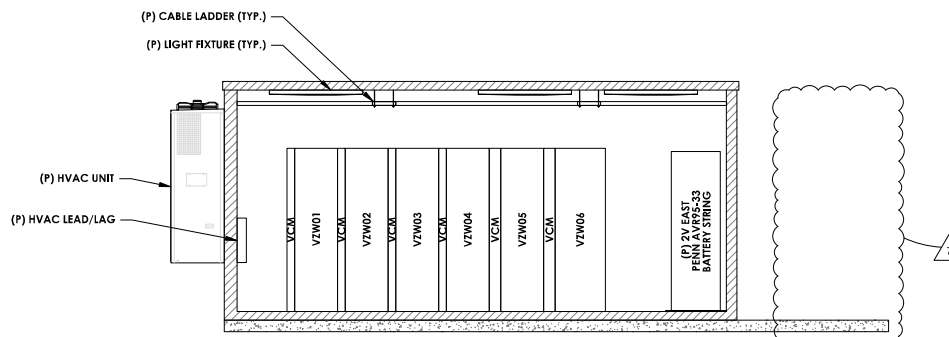




③ BUILDING SECTION
22' x 34' SCALE: 3/8" = 1'-0" 11" x 17" SCALE: 1/4" = 1'-0"



② BUILDING SECTION
22' x 34' SCALE: 3/8" = 1'-0" 11" x 17" SCALE: 3/16" = 1'-0"



① EXTERIOR ELEVATION
22' x 34' SCALE: 3/8" = 1'-0" 11" x 17" SCALE: 3/16" = 1'-0"

NOTES:

1. ALL WALL (INTERIOR OR EXTERIOR) OPENINGS CREATED, UNCOVERED OR DISCOVERED DURING HVAC UPGRADE SHALL BE REPAIRED TO EQUAL OR BETTER CONDITION.
2. 24"X32" CLEARANCE REQUIRED AT SUPPLY AND RETURN VENTS. FOR FUTURE UNITS G.C. TO TAPE OFF FUTURE RESERVED AREA AS SHOWN.

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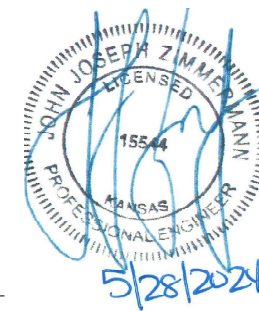
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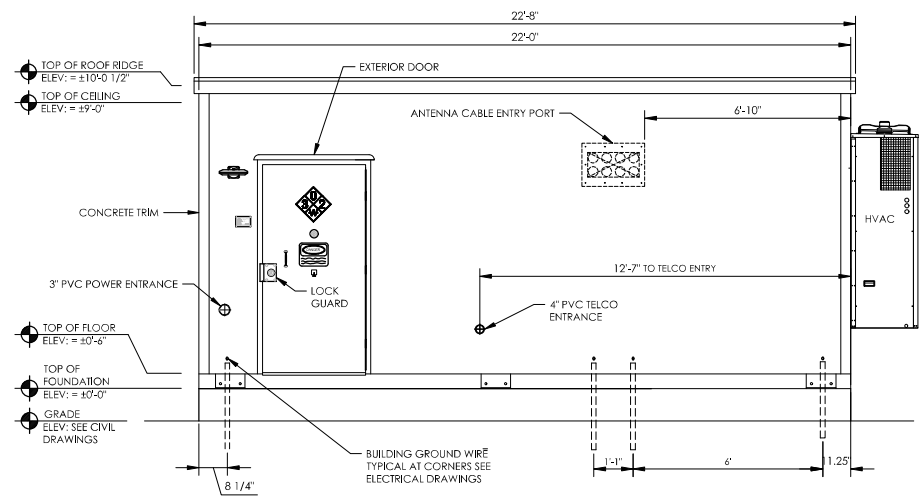
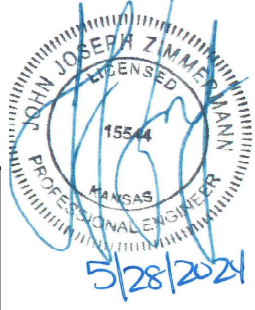
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PROJECT: 150801 CADD/NOI/COMPLIANCE DESIGNED BY: JAY DRAWN BY: CEB CHECKED BY: JAY COMPILED: 2017	ISSUED FOR REVIEW
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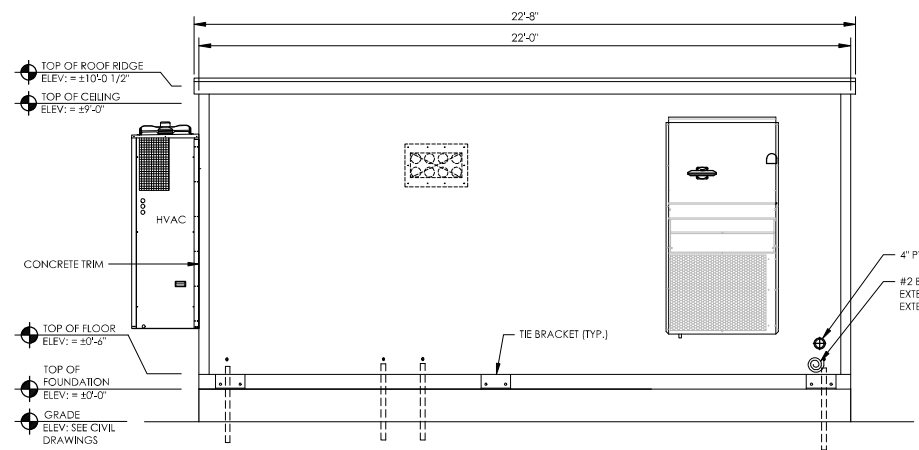
ELEVATIONS & SECTIONS

A301

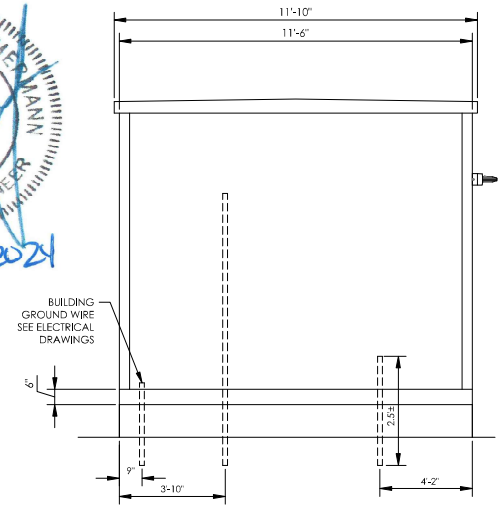




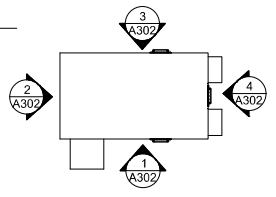
1 ELEVATION - EQUIPMENT ENCLOSURE
N.T.S.



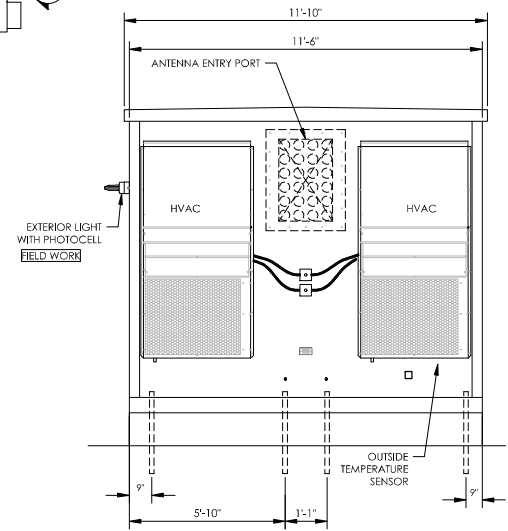
3 ELEVATION - EQUIPMENT ENCLOSURE
N.T.S.



2 ELEVATION - EQUIPMENT ENCLOSURE
N.T.S.



ELEVATION KEY



4 ELEVATION - EQUIPMENT ENCLOSURE
N.T.S.



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LOCATION CODE: 661221
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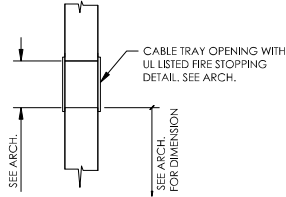
PROJECT: 158891	ISSUED FOR REVIEW
CADDING AND CONSTRUCTION	
DRAWN BY: A302	
CHECKED BY: A302	
DATE: 06/19/22	

ELEVATIONS

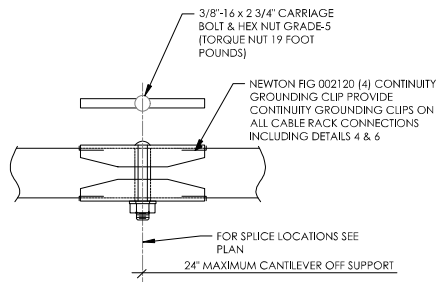
A302

CABLE RACK NOTES:

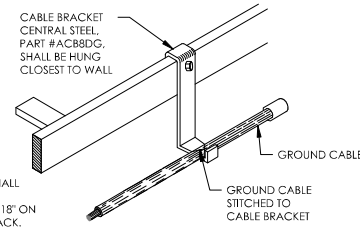
- CABLE RACKS SHALL BE LADDER TYPE STEEL STRUCTURES CONSISTING OF TWO 2-INCH X 3/8 INCH RECTANGULAR SOLID SIDE RAILS CALLED STRINGERS, BETWEEN THESE STRINGERS, WELDED ON 9-INCH CENTERS, WITH CROSS MEMBERS, CALLED STRAPS, CABLE RACK CROSS MEMBERS STRAPS MAY BE CHANNEL OR BAR.
- WHEN CABLE RACK STRAPS OR OTHER FRAMEWORK DETAILS INTERFERE WITH THE REQUIRED PLACEMENT OF CLAMPING DETAILS, THE CABLE RACK SHALL BE CUT BACK TO SUCH A POINT THAT THE STRAPS WILL NOT INTERFERE WITH THE CLAMPING DETAILS. CABLE RACK CLAMPING DETAILS SHALL NOT BE CUT OR MODIFIED. CORNER CLAMPS MAY BE REVERSED WHEN NECESSARY TO AVOID INTERFERENCE WITH CABLE RACK STRINGERS OR STRAPS.
- THE GAP AT THE CABLE RACK JUNCTION POINTS SHALL NOT EXCEED 1/8 INCH BETWEEN THE CABLE RACK STRINGERS, SPLICE BOLTS AND OR JUNCTION OF CABLE RACK STRINGERS.
- CABLE RACK SPLICES SHALL NOT BE CANTILEVERED MORE THAN 24 INCHES PAST A SUPPORT. SPLICES SHALL BE SINGLE BOLT WITH TOP AND BOTTOM PLATES AND INSTALLED WITH BONDING CLAMPS TOP AND BOTTOM PER DETAIL. SPLICE BOLTS SHALL HAVE A UNIFORM TORQUE APPLIED PER MANUFACTURER'S RECOMMENDATIONS. OTHER SPLICES DESIGNED TO PROVIDE ELECTRICAL BONDING MAY BE APPROVED FOR USE BY THE CABLE RACK DESIGN ENGINEER.
- CABLE RACKS SUPPORTED ON AUXILIARY FRAMING SHALL BE SECURED WITH J-BOLTS FASTENING BOLTS AT EACH SUPPORT POINT. A SPANNER J-BOLT SHALL BE USED WHEN THE USE OF A J-BOLT WILL NOT BE APPLICABLE DUE TO AN OBSTRUCTION, AS EXAMPLE WHEN THE CABLE RACK STRAP FALLS DIRECTLY ABOUT THE ATTACHMENT POINT OF THE AUXILIARY FRAMING.
- THE ENDS OF CABLE RACK SECTIONS SHALL BE PROTECTED WITH FINISHING CAPS OR CLOSING BARS.
- VERTICAL CHANGES OF CABLE RACKS IN EXCESS OF 3 INCHES SHALL BE MADE VIA 45 DEGREE INCLINES TO AVOID SHARP CABLE BENDS, PER THE DETAILS. CABLE TRAYS FOR PRIMARY AND SECONDARY CABLES SHALL HAVE 45 DEGREE BEND HARDWARE DRILLED AND BOLTED IN FINAL POSITION.
- CABLE RACK SHALL BE YELLOW ZINC AND ATTACHMENT HARDWARE FINISH SHALL BE YELLOW ZINC AND COATED WITH A CHROMATE SEALER.
- PROVIDE MANUFACTURER'S INFORMATION FOR APPROVAL OF SELECTED CABLE RACK SYSTEM AND HARDWARE.
- CABLES SHALL BE PROTECTED BY ANOTHER EXTRA STRENGTH CONDUIT TO BE 1/2 INCH MIN. THICK ON YELLOW T23641.



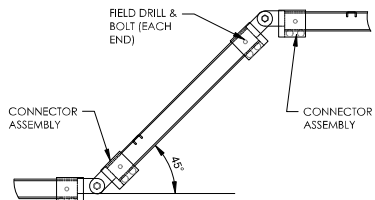
10 TYP. SECTION AT CABLE TRAY WALL PENETRATION
NOT TO SCALE



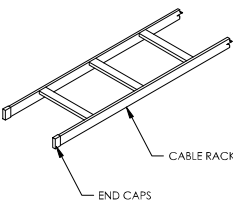
9 STAND, CABLE RACKING-SPLICE & ELEC. BONDING
NOT TO SCALE



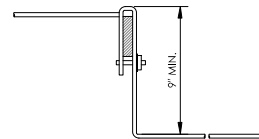
8 TYPICAL CABLE BRACKETS
NOT TO SCALE



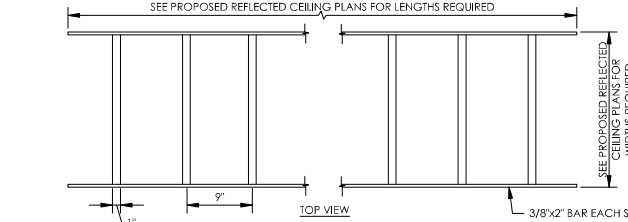
11 TYP. VERTICAL OFFSET IN HORIZONTAL RACKS
NOT TO SCALE



7 CABLE RACK END CAPS
NOT TO SCALE

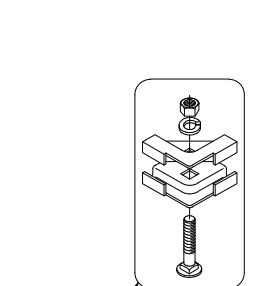


6 CABLE BRACKET DETAIL
NOT TO SCALE

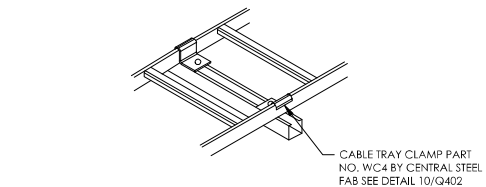


4 STAND CONNECT TO AUX. FRAMING CONN. AT EACH SUPPORT
NOT TO SCALE

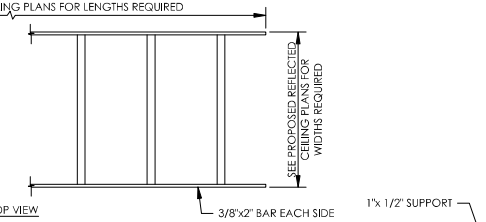
3 CABLE RACKING DETAIL
NOT TO SCALE



5 HORIZONTAL TEE SPLICE KIT
NOT TO SCALE

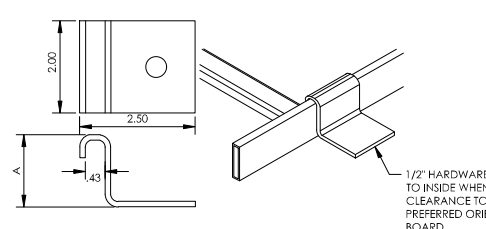


4 STAND CONNECT TO AUX. FRAMING CONN. AT EACH SUPPORT
NOT TO SCALE

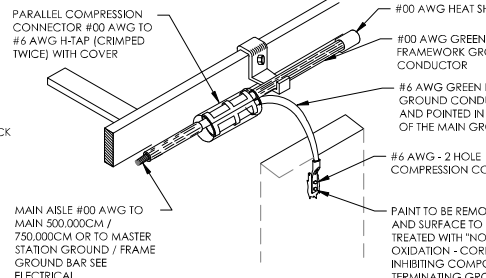


4 STAND CONNECT TO AUX. FRAMING CONN. AT EACH SUPPORT
NOT TO SCALE

3 CABLE RACKING DETAIL
NOT TO SCALE



2 WALL CLAMP DETAIL
NOT TO SCALE



1 TYPICAL FRAME GROUND DETAIL
NOT TO SCALE



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100% SUBMISSION		06/19/22

PROJECT: 158891
DRAWING: CABLE TRAY DETAILS
DESIGNED BY: AAY
DRAWN BY: CCB
CHECKED BY: AAY
COMPILE: 2017

ISSUED FOR REVIEW

CABLE TRAY DETAILS

A501

ANCHORAGE:

- ALL ANCHORS SHALL HAVE A CURRENT ICC ES EVALUATION REPORT
- ADHESIVE ANCHORS SHALL CONSIST OF ALL-THREAD ANCHOR ROD, NUT, WASHER AND EPOXY INJECTION GEL OR ADHESIVE CAPSULE SYSTEM. STATE MATERIAL TYPE AND STRENGTH FOR ANCHOR RODS
- NOTATIONS ON DRAWINGS RELATING TO EXPANSION, SLEEVE, FLUSH OR ADHESIVE ANCHORS AND OTHER CONNECTING DEVICES REFER TO CONNECTORS MANUFACTURED BY HILTI. EQUIVALENT DEVICES BY OTHER MANUFACTURERS MAY BE SUBSTITUTED PROVIDED THAT THEY HAVE ICC ES EVALUATION REPORT FOR EQUAL OR GREATER LOAD CAPACITIES AND ARE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER.
- ALL ANCHORS SHALL HAVE A CURRENT ICC ES EVALUATION REPORT

CONCRETE:

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF AMERICAN CONCRETE INSTITUTE ACI 318 AND ACI 301.
- ALL CONCRETE SHALL BE NORMAL WEIGHT AND SHALL ACHIEVE A COMPRESSIVE STRENGTH, $f'_c = 4000$ PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. CEMENT SHALL CONFORM TO ASTM C150 TYPE II.
- MIX AND DELIVER CONCRETE IN ACCORDANCE WITH ASTM C94, ALTERNATE NO. 2. CONTRACTOR SHALL SUBMIT MIX DESIGN TO THE ENGINEER FOR REVIEW PRIOR TO PLACEMENT OF CONCRETE.
- MAXIMUM AGGREGATE SIZE SHALL NOT EXCEED 3/4".
- SLUMP OF CONCRETE SHALL BE 2" TO 5".
- NO ADMIXTURES SHALL BE USED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER.
- ALL CONSTRUCTION AND EXPANSION JOINTS SHALL BE INSTALLED PER THE DRAWINGS.
- ALL EXPOSED CORNERS OF CONCRETE WORK SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE.
- UNLESS NOTED OTHERWISE ALL REINFORCING STEEL SHALL BE LAPPED PER ACI CODE - 318.
- ALL FORMWORK SHALL BE RIGID, TIGHT, LEVEL, PLUMB AND SUFFICIENTLY SHORED TO RESIST CONSTRUCTION LOAD CONDITIONS.
- CURING OF CONCRETE SHALL BE PER ACI 308, STANDARD PRACTICE FOR CURING CONCRETE.
- PLACE CONCRETE IN ACCORDANCE WITH ACI 304.
- HOT WEATHER CONCRETE SHALL BE PER ACI 305R. COLD WEATHER CONCRETING SHALL BE PER ACI 306R.
- PRIOR TO THE PLACEMENT OF THE CONCRETE, THE CONTRACTOR SHALL PROVIDE A MINIMUM 24 HOUR WRITTEN NOTICE TO THE OWNER'S REPRESENTATIVE AND THE TESTING AGENCY.
- PROVIDE TEST CYLINDERS FOR EQUIPMENT SLAB AND FOUNDATION AS FOLLOWS:
1 CYLINDER AT 7 DAYS 1 CYLINDER AT 28 DAYS

STRUCTURAL STEEL, MISC. METAL:

- THE FABRICATION AND ERECTION OF STEEL SHALL CONFORM WITH "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" LATEST ADDITION.
- STRUCTURAL STEEL AND FASTENERS SHALL MEET THE FOLLOWING ASTM STANDARD SPECIFICATION.

	ASTM SPEC.	YIELD
A. WIDE FLANGE BEAMS	A992	50 KSI
B. STEEL PLATES, ANGLES, CHANNELS, AND ALL OTHER STEEL U.N.O.	A36	36 KSI
C. PIPE	A53 GR.B	35 KSI
D. HSS RECTANGULAR	A500 GR.B	46 KSI
E. HSS ROUND	A500 GR.B	42 KSI
F. BOLTS	A325	--
G. THREADED RODS	A36	--

- ALL NEW EXTERIOR STRUCTURAL STEEL AND FASTENERS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND ASTM A153.
- THE STRUCTURAL STEEL FABRICATOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
- ALL WELDS SHALL BE PREQUALIFIED.
- WELDED CONNECTIONS SHALL BE MADE BY CERTIFIED WELDERS AND SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1. ELECTRODES SHALL BE E70 SERIES. ALL STEEL SURFACES SHALL BE PREPARED FOR FIELD WELDING PER AWS. AFTER WELDING ALL WELDED SURFACES SHALL BE WIRE BRUSHED AND COATED WITH COLD GALVANIZING COMPOUND.
- CONNECTION SHALL BE DESIGNED BY THE ENGINEER OF RECORD.

DEMOLITION:

- ALL DEMOLITION SHALL BE CARRIED ON IN SUCH A MANNER AS NOT TO DAMAGE EXISTING ELEMENTS WHICH ARE TO REMAIN A PART OF THE FINISHED STRUCTURE.
- EXISTING ELEMENTS SHALL BE PROTECTED TO THE FULLEST EXTENT POSSIBLE TO REDUCE SUCH DAMAGE TO A MINIMUM.
- ALL ELEMENTS OF THE STRUCTURE WHICH ARE TO REMAIN AND WHICH ARE DAMAGED DURING DEMOLITION WORK SHALL BE REPLACED AT NO ADDED COST.

FOUNDATIONS:

- MINIMUM BEARING BELOW LOWEST ADJACENT FINAL FINISH FLOOR OR GRADE. EXPOSED SOIL SHALL BE INSPECTED FOR COMPLIANCE WITH THE SOILS REPORT
- FOOTING DEPTHS ARE MINIMUM DIMENSIONS, AND MAY BE CHANGED BY THE SOILS ENGINEER
- ALL RETAINING WALLS SHALL HAVE FREE DRAINING OR GRAVELY BACKFILL, OR DRAINAGE MATTING, FULL HEIGHT OF WALL.
- ALL WALKWAYS AND OTHER EXTERIOR SLABS ON GRADE MAY NOT BE SHOWN ON THE STRUCTURAL PLANS. SEE CIVIL AND ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT, UNLESS SHOWN OTHERWISE.
- THE OWNER HAS CAUSED A GEOTECHNICAL EXPLORATION TO BE PERFORMED AT THE SITE. COPIES OF THE REPORT ARE AVAILABLE TO THE CONTRACTOR FOR REFERENCE ONLY. NEITHER THE OWNER NOR THE ENGINEER GUARANTEE THE ACCURACY OR THE VALIDITY OF THE DATA CONTAINED THEREIN, NOR DO THEY ASSUME ANY RESPONSIBILITY FOR THE CONTRACTOR'S USE OF INTERPRETATION OF THE DATA CONTAINED THEREIN. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONTENTS OF THE ABOVE REFERENCED REPORT PRIOR TO SUBMITTAL OF HIS BIDS.
- THE CONTRACTOR SHALL EXCAVATE 8" BELOW GRADE AND SPRAY WITH WEED CONTROL AND PLACE GEOTEXTILE FABRIC, CLASS 2 AGGREGATE BASE AND CLEAN ROCK AROUND ENTIRE FENCE AREA.
- ENGINEERED FILL SHOULD CONSIST OF ENVIRONMENTALLY CLEAN APPROVED MATERIAL, FREE OF LUMPS, FROZEN SOIL, TOPSOIL OR OTHER DELETERIOUS MATERIAL.
- ALL FILL MATERIALS REQUIRING COMPACTION SHALL BE PLACED IN LIFTS NOT EXCEEDING 9 INCHES AND COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D 1557 (MODIFIED PROCTOR) FILL MATERIALS NOT REQUIRING COMPACTION SHALL BE PLACED IN LIFTS NOT TO EXCEED 12".
- CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND BRACING FOR THE EXCAVATION WORK IN ACCORDANCE WITH THE APPLICABLE SAFETY ORDINANCES.
- LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT.
- CONTRACTOR IS RESPONSIBLE FOR ALL COLD WEATHER EQUIPMENT SUCH AS GROUND THAWING EQUIPMENT AND FROST TEETH EQUIPPED TRENCHERS TO AVOID COLD WEATHER DELAYS. THESE SHALL BE INCLUDED IN THE ORIGINAL BID FOR THIS PROJECT. CHANGE ORDER REQUESTS AFTER CONSTRUCTION HAS STARTED SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING COSTS ASSOCIATED WITH THIS PROJECT. WHETHER WATER IS SHOWN AS BEING PRESENT ON THE SOIL REPORT OR NOT, DEWATERING COSTS MUST BE INCLUDED IN THE ORIGINAL BID FOR THIS PROJECT. CHANGE ORDER REQUESTS AFTER CONSTRUCTION HAS STARTED SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE.

REINFORCING STEEL:

- REINFORCING STEEL SHALL CONFORM TO ASTM A-615 OR A-706, GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185.
- DOWELS BETWEEN FOOTINGS AND WALLS OR COLUMNS SHALL BE THE SAME GRADE, SIZE AND SPACING AS THE VERTICAL REINFORCING
- WELDING OF REINFORCEMENT IS PROHIBITED

GENERAL NOTES:

COORDINATION

- EACH DIVISION SHALL COMPLY WITH THE G001 PROJECT GENERAL NOTES AS IF CONTAINED HEREIN.
- CONTRACTOR SHALL SUBMIT COORDINATION DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ASSEMBLY AND COORDINATION OF WORK WITHIN ALL DIVISIONS AND TRADES INTO A SINGLE PACKAGE.
- THE STRUCTURE IS DESIGNED TO BE STABLE AND SELF-SUPPORTING AT THE COMPLETION OF CONSTRUCTION. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY TO DETERMINE THE METHOD AND MEANS OF CONSTRUCTION, ERECTION PROCEDURE, AND SEQUENCE TO ENSURE THE STABILITY AND SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS, AND THE ADEQUACY OF TEMPORARY OR INCOMPLETE CONNECTIONS DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF ANY TEMPORARY OR INCOMPLETE CONNECTIONS DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF ANY TEMPORARY BRACING OR GUYS THAT MIGHT BE NECESSARY. SUCH MATERIAL IS NOT INDICATED ON THE DRAWINGS. IF APPLIED, THEY SHALL BE REMOVED, AS CONDITIONS PERMIT, AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR.
- IT IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF THIS WORK.
- DO NOT SCALE DRAWINGS; THE CONTRACTOR SHALL USE DIMENSIONS SHOWN ON THE DRAWINGS AND ACTUAL FIELD MEASUREMENT. NOTIFY THE AE PROJECT MANAGER IF ANY DISCREPANCIES ARE FOUND PRIOR TO PROCEEDING WITH WORK.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE EXACT EXTENT OF WORK, COORDINATION, DEMOLITION, TEMPORARY CONSTRUCTION, TEMPORARY FACILITIES, UTILITIES, ECT. NECESSARY TO COMPLETE THIS PROJECT AS INDICATED IN THE CONTRACT DOCUMENTS.
- DETAILS AND NOTES SHALL TAKE PRECEDENCE OVER GENERAL NOTES. IF A CONFLICT EXISTS, THE MOST STRINGENT SHALL APPLY.
- MANUFACTURED MATERIALS SHALL BE APPROVED BY THE CHECKING AGENCY PRIOR TO THEIR USE.
- ALL STRUCTURAL SYSTEMS ARE TO BE COMPOSED OF MANUFACTURED COMPONENTS TO BE FIELD ERECTED SHALL BE APPROVED BY THE CHECKING AGENCY PRIOR TO THEIR USE.
- ALL REFERENCED SPECIFICATIONS, CODES, AND STANDARDS SHALL BE THE LATEST APPROVED ISSUE, UNLESS NOTED OTHERWISE.

DESIGN CRITERIA:

CODE: 2018 INTERNATIONAL BUILDING CODE

ROOF SNOW LOAD - PER APPROPRIATE CODE SECTION	
GROUND SNOW LOAD, PG	20 PSF BASIC
FLAT ROOF SNOW LOAD, PF	20 PSF
SNOW EXPOSURE FACTOR, CE	1.0
IMPORTANCE FACTOR, IS	1.0
THERMAL FACTOR, CT	1.0
FLOOR - PER APPROPRIATE CODE SECTION AND NSTD 389	
BATTERY AND RECTIFIER	6250 LBS
GENERATOR AND TANK	3250 LBS

WIND DESIGN - PER APPROPRIATE CODE SECTION

BASIC WIND SPEED - 3 SECOND GUST	110	MPH
EXPOSURE CATEGORY	C	
IMPORTANCE FACTOR, IW	1.0	
MAXIMUM WIND VELOCITY (THREE-SECOND GUST)	CORNER UPLIFT DESIGN PRESSURE	REQUIRED FM RATING
85 MPH	33 PSF	75
90 MPH	37 PSF	75
110 MPH	55 PSF	120
120 MPH	65 PSF	135

SEISMIC DESIGN - PER APPROPRIATE CODE SECTION

BASIC LATERAL FORCE RESISTING SYSTEM - PROVIDE CODE DEFINED SYSTEM

SHORT PERIOD ACCELERATION, $S_S = 0.096g$		SITE COEFFICIENT, $F_A = 1.6$
MAXIMUM CONSIDERED EARTHQUAKE, $S_{MS} = 0.153g$		
DAMPED SHORT PERIOD ACCELERATION, $S_{DS} = 0.102g$		
ONE SECOND PERIOD ACCELERATION, $S_1 = 0.069g$		SITE COEFFICIENT, $F_V = 2.4$
MAXIMUM CONSIDERED EARTHQUAKE, $S_{M1} = 0.166g$		
DAMPED ONE SECOND PERIOD ACCELERATION, $S_{D1} = 0.111g$		
RESPONSE MODIFICATION FACTOR, $R = 4.0$		
SEISMIC RESPONSE COEFFICIENT, $C_S = 0.059$		
FUNDAMENTAL BUILDING PERIOD, $T = 0.011$		
IMPORTANCE FACTOR, $I_S = 1.5$		
SEISMIC OCCUPANCY CATEGORY - IV		
SEISMIC DESIGN CATEGORY - B		
SITE CLASS D		

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LOCATION CODE: 661221
15201 MURLEN
OLATHE, KS 66062

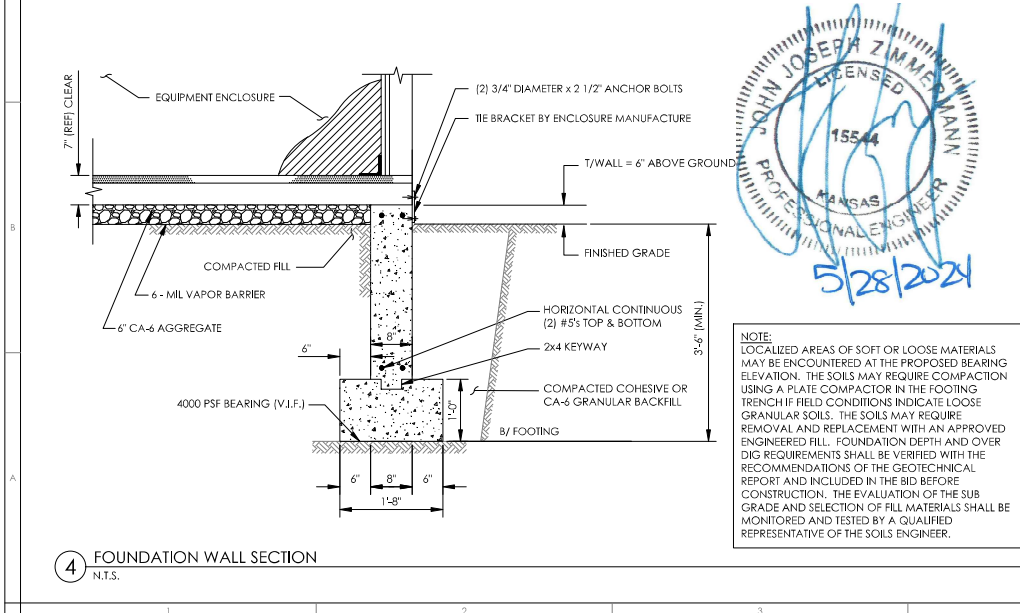
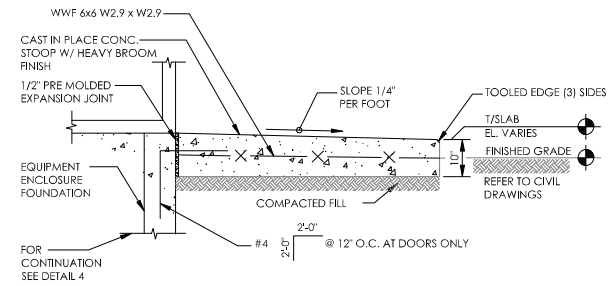
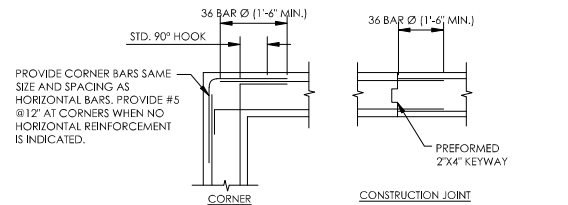
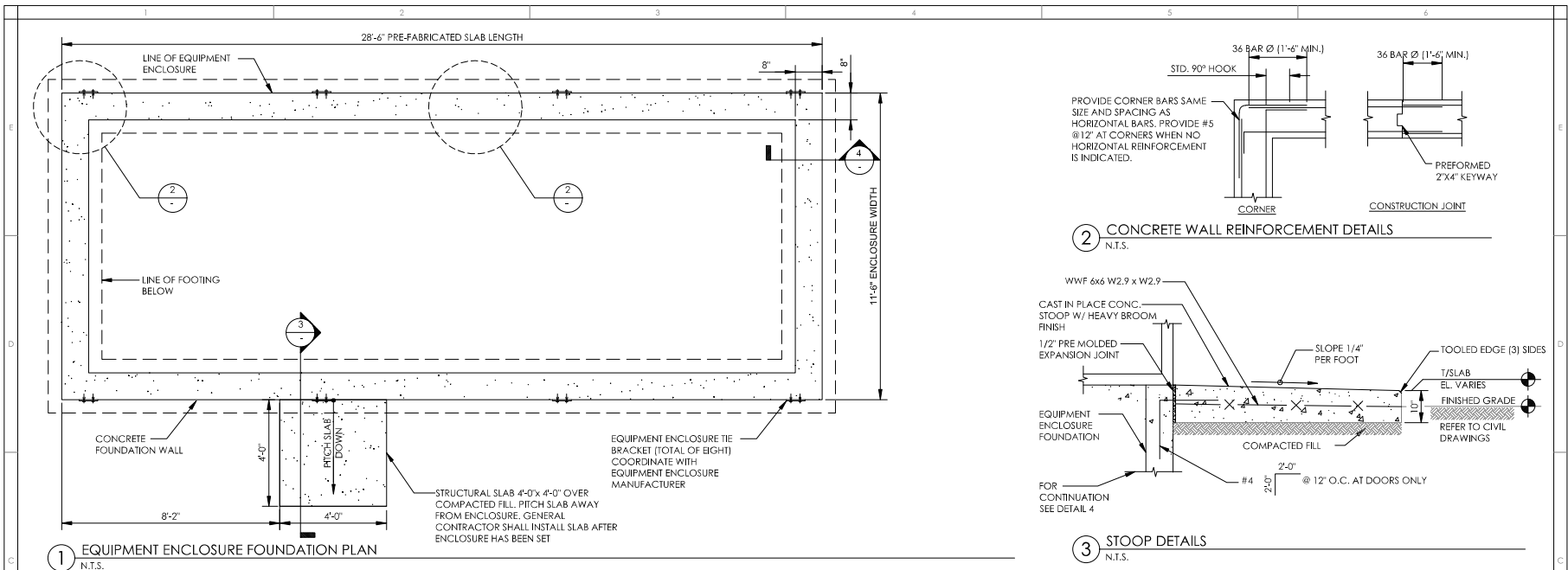
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6	UPDATED PER CLIENT COMMENTS	02/16/23
7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 158081
DRAWING NO.: 158081-01
DESIGNED BY: AAY
DRAWN BY: CCB
CHECKED BY: AAY
CONTRNO: 2017

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FOR
REVIEW**

**STRUCTURAL GENERAL
NOTES**

S001



- A. EQUIPMENT ENCLOSURE FOUNDATION**
- REFER TO CIVIL DRAWINGS FOR ORIENTATION OF THE FOUNDATIONS.
 - EQUIPMENT ENCLOSURE FOUNDATION IS DESIGNED FOR THE FOLLOWING LOADS:
ENCLOSURE DEAD LOAD: 70,000 LBS.
ROOF LIVE LOAD: 30 PSF
FLOOR LIVE LOAD: 150 PSF
 - THE CONTRACTOR SHALL NOTIFY THE CLIENT'S GEOTECHNICAL ENGINEER TO COORDINATE HAVING A FIELD REPRESENTATIVE ON SITE FOR TESTING AND INSPECTION.
 - FOOTINGS SHALL BEAR ON VIRGIN SOIL OR COMPACTED FILL MATERIAL CAPABLE OF SUPPORTING A MINIMUM SOIL BEARING PRESSURE OF 4000 PSF.
 - SUBGRADE PREPARATION:
 - REMOVE ALL SOILS CONTAINING TOPSOIL: ORGANIC MATERIALS, AND/OR FILL MATERIALS FROM WITHIN AREA OF ENCLOSURE FOUNDATION.
 - PROOF ROLL RESULTING SUBGRADE WITH A HEAVILY LOADED SINGLE AXLE ROLLER OR SIMILAR VEHICLE. (20 TON LOAD). CONTRACTOR SHALL UNDERCUT AND REPLACE WITH ENGINEERED FILL. ALL LOOSE SOFT OR UNSTABLE AREAS REVEALED DURING PROOFROLLING AS DIRECTED BY THE TESTING AGENCY. CONTRACTOR SHALL INCLUDE ANTICIPATED UNDERCUT AND REPLACEMENT AS INDICATED IN THE GEOTECHNICAL REPORT AS PART OF THE BID.
 - BACKFILL AND COMPACT THE AREA WITHIN THE BUILDING FOUNDATION, BETWEEN RESULTANT SUBGRADE AND FOUNDATION WALL WITH APPROVED GRANULAR MATERIAL.
 - FOUNDATION WALLS SHALL BE BACKFILLED EVENLY ON EACH SIDE OF THE WALL OR WALLS SHALL BE ADEQUATELY BRACED BY THE CONTRACTOR UNTIL FLOOR SLAB HAS BEEN PLACED AND CURED FOR 72 HOURS MINIMUM.
 - ENCLOSURE SHALL NOT BE SET UNTIL FOUNDATION HAS BEEN CURED FOR 72 HOURS MINIMUM.
 - CONTRACTOR TO ENSURE FOUNDATION IS POURED TO MEET FLATNESS LEVEL TOLERANCES AS INDICATED IN ACI 4.5.6 AND 4.5.7.
- B. EQUIPMENT ENCLOSURE**
- THE EQUIPMENT ENCLOSURE IS A PRE-FABRICATED BUILDING MANUFACTURED BY FIBREBOND, MINDEN, LOUISIANA.
- THE EQUIPMENT ENCLOSURE BUILDING SHALL BE FURNISHED AND INSTALLED BY THE OWNER UNDER SEPARATE CONTRACT PER THE OWNER AND MANUFACTURER SPECIFICATIONS.
- C. CONCRETE NOTES**
- ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 AND ACI 301, LATEST EDITION. THESE DOCUMENTS SHALL BE AVAILABLE IN THE FIELD OFFICE.
 - EXCEPT WHERE OTHERWISE INDICATED, CONCRETE SHALL BE NORMAL WEIGHT AND WITH MINIMUM 28-DAY COMPRESSIVE STRENGTHS OF $F_c = 4000$ PSI. ALL EXTERIOR EXPOSED CONCRETE SHALL BE AIR ENTRAINED.
 - REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

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6	UPDATED PER CLIENT COMMENTS	02/16/23
7	REVISED PER CROWN COMMENTS	02/07/24

PROJECT: 156081	ISSUED FOR REVIEW
DRAWING NO.: FOUNDATION 2	
DRAWN BY: AAY	
CHECKED BY: CCB	
DATE: 06/14/22	

FOUNDATION DETAILS

S101

MECHANICAL GENERAL NOTES:

1. COORDINATION:
 - A. EACH DIVISION SHALL COMPLY WITH THE G001 PROJECT GENERAL NOTES AS IF CONTAINED HEREIN.
 - B. CONTRACTOR SHALL SUBMIT COORDINATION DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ASSEMBLY AND COORDINATION OF WORK WITHIN ALL DIVISIONS AND TRADES INTO A SINGLE PACKAGE.
2. DO NOT SCALE DRAWINGS:

THE CONTRACTORS SHALL USE DIMENSIONS SHOWN ON THE DRAWINGS AND ACTUAL FIELD MEASUREMENT. NOTIFY THE AE PROJECT MANAGER IF ANY DISCREPANCIES ARE FOUND PRIOR TO PROCEEDING WITH WORK.
3. ALL ROOM THERMOSTATS, HUMIDISTATS, SENSORS, ETC., SHALL BE MOUNTED 5'-0" AFF (UNLESS OTHERWISE NOTED) AND CLEAR OF ANY BLOCKAGE OR DAMAGE FROM DOORS.
4. ALL DUCTWORK CONNECTIONS TO AIR HANDLING UNITS, EXHAUST FANS, AND GENERATORS SHALL BE FLEXIBLE CONNECTIONS, IN ACCORDANCE WITH ASHRAE, IMC, ETC.
5. ALL MOTORIZED DAMPERS SHALL BE LOW LEAKAGE AIRFOIL AMCA CLASS 1 A DAMPERS.
6. ALL DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH ASHRAE, IMC, ETC.
7. DDC CONTRACTOR TO PROVIDE AND INSTALL CONTROL WIRING AND CONDUIT PER ELECTRICAL FOR ALL VAV CONTROLLERS, UNIT CONTROLLERS VFD'S, MOTORIZED DAMPERS AND FIRE/SMOKE DAMPERS.
8. COORDINATE APPROPRIATE CORRESPONDING DAMPER SIZE WITH DUCT SIZE. SEE SPECIFICATIONS.
9. CONDENSATE AND HUMIDIFIER PIPING ABOVE SENSITIVE EQUIPMENT OR RUNNING THROUGH EQUIPMENT SPACES SHALL BE IN CONTAINMENT PIPING.
10. ALL CONDENSATE PIPING SHALL SLOPE 1/8" PER 1'-0".
11. PROVIDE SECONDARY DRAIN PAN AND PIPING UNDER FAN COIL UNITS.
12. VERIFY ALL DIMENSIONS & CONDITIONS IN THE FIELD. NOTIFY AE PROJECT MANAGER OF ANY DISCREPANCIES. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, ELBOWS, ETC., WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF WORK. PROVIDE ADDITIONAL BENDS AND/OR OFFSETS AS REQUIRED TO COMPLETE WORK AT NO ADDITIONAL COST.
13. COORDINATION OF WORK WITH OTHER TRADES EMPLOYED IN THE PROJECT IS MANDATORY. CAREFULLY EXAMINE THE SPACE AVAILABLE TO DETERMINE FINAL ROUTING AND ELEVATIONS OF SERVICES. SHOULD REARRANGEMENT OR RE-ROUTING OF LINES OR PIPING BE NECESSARY, PROVIDE FOR APPROVAL THE SIMPLEST LAYOUT POSSIBLE FOR THAT PARTICULAR PORTION OF THE WORK.
14. THE EXISTENCE OF ANY PIPING, DUCTS OR OTHER SERVICE FACILITIES ARE SHOWN IN A GENERAL WAY ONLY. THE CONTRACTOR SHALL VISIT THE SITE AND MAKE EXACT DETERMINATION OF THE EXISTENCE OF ANY SUCH FACILITIES PRIOR TO THE SUBMISSION OF HIS BID.
15. ALL TELECOMMUNICATIONS EQUIPMENT TO REMAIN ON-LINE AND FUNCTIONING AT ALL TIMES. CONTRACTOR TO PROTECT & MAINTAIN POWER TO ALL EQUIPMENT SCHEDULED TO REMAIN FOR THE DURATION OF CONSTRUCTION.
16. SCHEDULE ALL WORK OVER, NEAR OR AFFECTING NETWORK EQUIPMENT WITH VZW ON-SITE WORK FORCE PERSONNEL. COMPLETE "METHODS OF PROCEDURE" FOR WORK AS DIRECTED BY VZW IN ACCORDANCE WITH VZW STANDARDS.
17. CONTRACTOR TO REMOVE ALL MATERIALS NOT RELATED TO THE FINISHED PRODUCT FROM THE SITE. (DO NOT BURY ON SITE).
18. MAINTAIN AREAS FREE OF DEBRIS ACCUMULATION. KEEP WORK AREAS NEAT AND ORDERLY IN AS MUCH AS REASONABLY POSSIBLE.
19. CONTRACTOR IS RESPONSIBLE FOR ALL ERECTION, BRACING & SHORING OF EXISTING AND NEW EQUIPMENT OR MATERIALS UNTIL SUCH TIME IT IS PERMANENTLY SUPPORTED OR IS READY FOR REMOVAL DURING CONSTRUCTION, WHETHER SCHEDULED FOR DEMOLITION OR REUSE.
20. PROVIDE EQUIPMENT PROTECTION ABOVE ALL NETWORK EQUIPMENT AS REQUIRED. ALL PROTECTION SHALL BE COORDINATED WITH VZW PERSONNEL TO ENSURE THAT THE PROTECTION WILL NOT BLOCK ACCESS TO EQUIPMENT OR CAUSE OVER HEATING. PROVIDE TEMPORARY COOLING AS REQUIRED. CONTRACTOR TO SUBMIT DESIGN OF ALL TEMPORARY DUST BARRIERS TO ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION.
21. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE EXACT EXTENT OF WORK, COORDINATION, DEMOLITION, TEMPORARY CONSTRUCTION, TEMPORARY FACILITIES, UTILITIES, ETC. NECESSARY TO COMPLETE THIS PROJECT AS INDICATED IN THE CONTRACT DOCUMENTS.
22. LINED DUCT PROHIBITED IN EQUIPMENT AREAS.

	NEW DUCTWORK
	EXISTING DUCTWORK
	DEMO DUCTWORK
	DUCT DOWN IN PLAN
	DUCT UP IN PLAN
	MOTORIZED DAMPER
	BACKDRAFT DAMPER
	BALANCING DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	CONCENTRIC TRANSITION
	ECCENTRIC TRANSITION
	ELBOW (WITH TURNING VANES)
	DUCT WITH LINING
	CEILING MOUNTED RETURN
	CEILING SUPPLY DIFFUSER

	WALL MOUNTED THERMOSTAT
	PRESSURE SENSOR
	HEAT DETECTOR
	SMOKE DETECTOR
	HAND-OFF-AUTO SWITCH
	VERRIDE SWITCH
	KEYNOTE
	NEW EQUIPMENT
	EXISTING EQUIPMENT
	DEMOLITION EQUIPMENT

2 DUCTWORK SYMBOLS
N/A

1 MECHANICAL LEGEND
N/A

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OLATHE, KS 66062

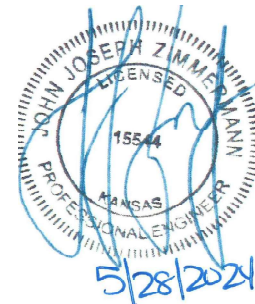
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7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 158891
DRAWING: 158891-01
DESIGNED BY: JAY
DRAWN BY: CEB
CHECKED BY: JAY
COMPILE: 2017

**ISSUED
FOR
REVIEW**

**MECHANICAL
GENERAL NOTES**


M001





0 2'

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



SEQUENCE OF OPERATIONS:

1. EQUIPMENT DESCRIPTION:

- WALL MOUNTED AIR CONDITIONING UNITS (WPUs) CONSIST OF A VARIABLE SPEED COMPRESSOR WITH AIRSIDE ECONOMIZER, REFER TO MULTI-UNIT CONTROLLER SETTING SCHEDULE FOR TEMPERATURE SETPOINTS.
- THE UNITS PROVIDE N+1 COOLING CAPACITY FOR CRITICAL EQUIPMENT.
- THE UNITS SHALL BE CONTROLLED BY A FACTORY-PROGRAMMED MULTI-UNIT CONTROLLER.
- UNITS SHALL BE FACTORY WIRED WITH INTERNAL SERVICES AND INTERLOCKS.
- ALL COOLING DECISIONS SHALL BE MADE BY INTERNAL CONTROL ALGORITHMS WITHIN THE MULTI-UNIT CONTROLLER.

2. SCHEDULES:

- THE UNITS SHALL BE ENABLED TO RUN 24 HOURS A DAY, 7 DAYS A WEEK, AND 365 DAYS A YEAR.

3. CONTROL SYSTEM (ASMUC.6 CONTROLLER)

- CONTROLLER BOX FACTORY-PROGRAMMED SETPOINTS SHALL BE CONFIGURABLE ON-SITE OR REMOTELY TO MEET SPECIFIC NEEDS. SETTINGS SHALL BE RETAINED IN THE EVENT OF A POWER LOSS.
- WPUS SHALL INCLUDE SECONDARY INTEGRATED CONTROL MODULES, UPON LOSS OF SIGNAL FROM CONTROLLER WPUS SHALL COOL INDEPENDENTLY USING THE LAST GIVEN CONTROLLER SETTINGS AND INFORMATION FROM ONBOARD TEMPERATURE AND HUMIDITY SENSORS AND TRANSMIT ALARM TO OWNER.
- LEAD UNIT SHALL TURN ON AT MAIN SETPOINT +2 (CONFIGURABLE UNDER "SETPOINTS" IN THE CONTROL CONFIGURATION MENU).
- LEAD UNIT SHALL TURN OFF AT 6 DEGREES BELOW ITS TURN ON POINT (CONFIGURABLE UNDER "SETPOINTS" IN THE CONTROL CONFIGURATION MENU).

4. ECONOMIZER FREE COOLING (FC) OPERATION

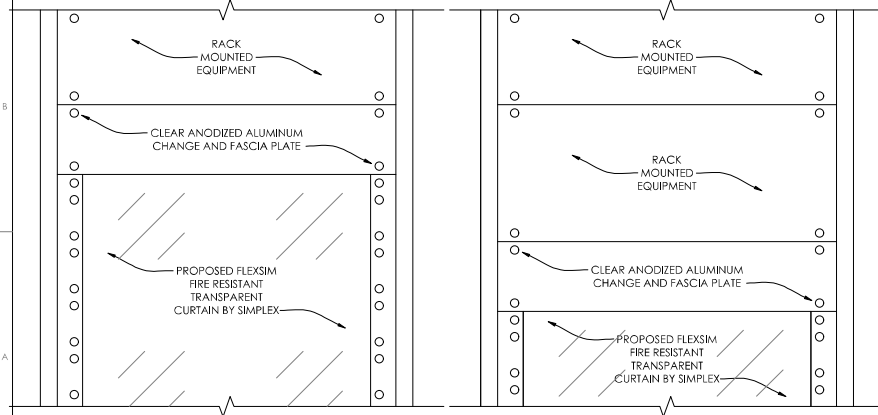
- FC SHALL OPEN OUTSIDE DAMPER UPON WHEN TEMPERATURE DIFFERENTIAL BETWEEN INDOOR AND OUTDOOR AIR EXCEEDS DIFFERENTIAL SETPOINT. INITIALLY TO BE PROGRAMMED AT 3.6°F AND WHEN OUTDOOR HUMIDITY IS BELOW SETPOINT, INITIALLY TO BE PROGRAMMED AT 85%.
- DURING FC THE COMPRESSOR SHALL NOT ENGAGE UNTIL THE INDOOR TEMPERATURE HAS REACHED PREPROGRAMMED LEVEL ABOVE THE SETPOINT.
- SUPPLY FAN SHALL MODULATE TO MAINTAIN INDOOR AIR TEMPERATURE WITHIN 2°F OF SETPOINT.
- IF TEMPERATURE SETPOINT CAN NOT BE MAINTAINED WITH SUPPLIED OUTSIDE AIR ONLY, COMPRESSOR SHALL MODULATE TO PROVIDE ADDITIONAL COOLING AS NEEDED.
- FC OUTDOOR DAMPER SHALL MODULATE TO KEEP THE SUPPLY AIR TEMPERATURE ABOVE 51.8°F. DAMPER SHALL CLOSE WHEN SUPPLY TEMPERATURE IS BELOW 51.8°F.
- OUTSIDE AIR DAMPER SHALL CLOSE WHEN THE HUMIDITY EXCEEDS SETPOINT, INITIALLY SET TO 85%, OR IF THE AFPD DUST SENSOR TRIGGERS A PROTECTION EVENT.
- WHEN ENGAGED IN PARTIAL FREE COOLING MODE THE DAMPER MAY REMAIN OPEN WHEN THE COMPRESSOR IS ENGAGED, PROVIDED THAT THE OUTDOOR TEMPERATURE IS LOWER THAN THE INDOOR TEMPERATURE.
- FOR SHELTERS WITHOUT A SECONDARY PRESSURE RELIEF (E.G. A BAROMETRIC LOUVRE), PARTIAL FREE COOLING MODE SHALL BE DISABLED.

5. EXHAUST FAN

- EXHAUST FAN SHALL RUN CONTINUOUSLY, UPON FAN FAILURE OR LOSS OF POWER, UNIT SHALL GENERATE ALARM.

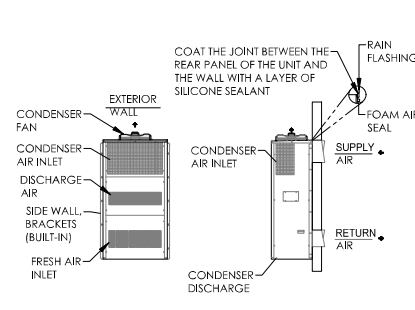
8 SEQUENCE OF OPERATIONS

NOT TO SCALE
NOTE: USE CONTAINMENT CURTAIN TO BLOCK EMPTY SPACES IN EQUIPMENT RACK.



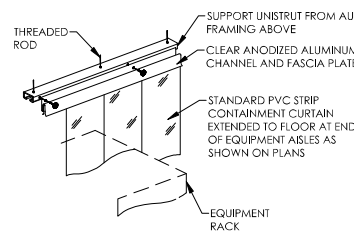
7 RACK-MOUNTED CONTAINMENT CURTAIN

NOT TO SCALE



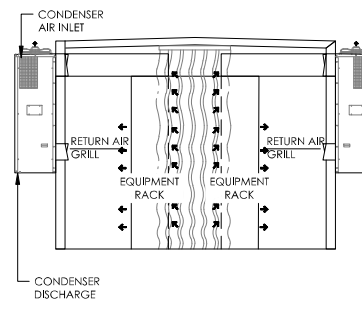
6 AIRSYS INSTALLATION DETAIL

NOT TO SCALE



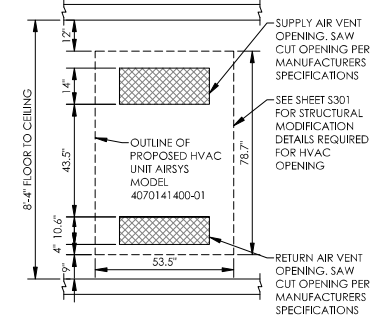
5 CONTAINMENT CURTAIN

NOT TO SCALE



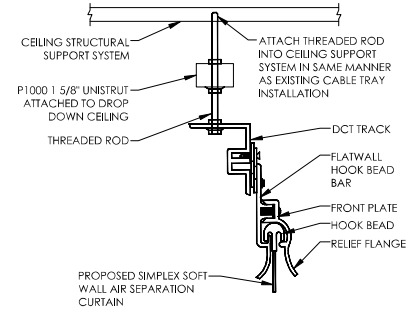
4 AIRFLOW SCHEMATIC

NOT TO SCALE



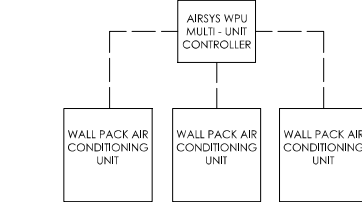
3 RETURN VENT OPENINGS

22" x 34" SCALE: 1/2" = 1'-0" 11" x 17" SCALE: 1/4" = 1'-0"



2 SIMPLEX SOFTWALL AIR CURTAIN

22" x 34" SCALE: 1/2" = 1'-0" 11" x 17" SCALE: 1/4" = 1'-0"



NOTES:

- AIRSYS MULTI-UNIT CONTROLLER TO BE INSTALLED WITH REMOTE-TEMPERATURE SENSOR IN HOT AISLE.

1 AIRSYS CONTROLLER LEAD / LAG OPERATION

NOT TO SCALE

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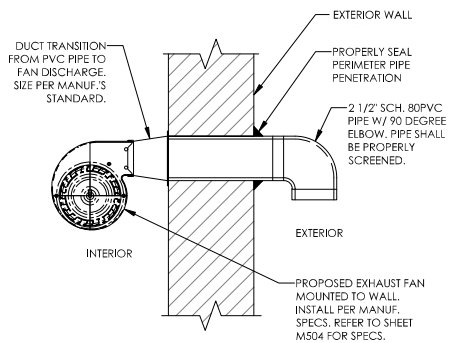
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NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 150891
DRAWING: M501-01-01-02
DESIGNED BY: AAY
DRAWN BY: CCB
CHECKED BY: AAY
COMPILED: 2017

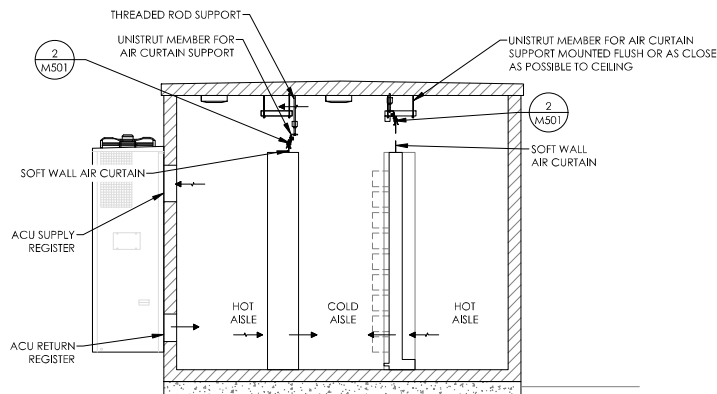
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MECHANICAL
DETAILS

M501

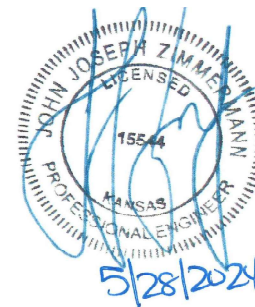


3 EXHAUST FAN INSTALLATION DETAIL
NOT TO SCALE



2 CURTAIN INSTALLATION AND AIRFLOW DIAGRAM
22" X 34" SCALE: 1/2" = 1'-0"
11" X 17" SCALE: 1/4" = 1'-0"

1 AIRSYS CONTROLLER DIAGRAM
NOT TO SCALE



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100% SUBMISSION		06/19/22

PROJECT: 15881
CADD: 2024-06-19
DESIGNED BY: AWT
DRAWN BY: CCB
CHECKED BY: AWT
COMPILE: 2024

**ISSUED
FOR
REVIEW**

**MECHANICAL
DETAILS**

M502

WALL PACK UNIT (WPU) SCHEDULE																	
TAG	LOCATION	MIN TOTAL CAPACITY (BTUH)	MAX TOTAL CAPACITY (BTUH)	MIN SENS. CAPACITY (BTUH)	MAX SENS. CAPACITY (BTUH)	COOLING	CFM	ELECTRICAL			EDB °F	EWB °F	HEAT		WEIGHT (LBS)	REMARKS	BASIS OF DESIGN
								VOLT/ Ø/HZ	MCA	MOCP			KW	STAGES			
WPU-1	SHELTER	38200	65200	36800	63000	3 - 6 Ton/Variable	2200	240 / 1 / 60	45	60	95	72	5	1	858	1,2,3	AIRSYS 15V1T4M
WPU-2	SHELTER	38200	65200	36800	63000	3 - 6 Ton/Variable	2200	240 / 1 / 60	45	60	95	72	5	1	858	1,2,3	AIRSYS 15V1T4M
WPU-3	SHELTER	38200	65200	36800	63000	3 - 6 Ton/Variable	2200	240 / 1 / 60	45	60	95	72	5	1	858	1,2,3	AIRSYS 15V1T4M
NOTES:	1. COOLING CAPACITY IS BASED ON AMBIENT TEMPERATURE OF 95 F AND 72 F RETURN TEMPERATURE.																
	2. UNIT UTILIZES R410A REFRIGERANT.																
	3. UNIT TO BE PROVIDED WITH FACTORY MOUNTED ECONOMIZER.																
	4. WPUs TO REMAIN OPERATIONAL DURING SMOKE / FIRE SIGNAL																
	5. UNITS TO BE CONTROLLED BY SUPPLY AIR TEMPERATURE																

AIRSYS MULTI-CONTROLLER LEAD/ LAG COMMANDS		
MODBUS PARAMETER	LEAD UNIT	LAG UNIT
ROOM TEMPERATURE SET-POINT	79 DEG F	82 DEG F
COOLING DIFFERENTIAL	3	3
WPU CONTROLLER SETTING REQUIREMENTS		
SETTING	LEAD UNIT	LAG UNIT
LEAD/ LAG CHANGEOVER	7 DAYS	7 DAYS
COOLING SETPOINT	79 DEG F	79 DEG F
HEATING SETPOINT	50 DEG F	50 DEG F
CONTINUOUS BLOWER	ON	OFF
MINIMUM COMPRESSOR RUNTIME	3 MINUTES	3 MINUTES
MINIMUM UNIT OFF TIME	5 MINUTES	5 MINUTES
AVERAGE MULTIPLE SENSORS	YES	YES

FAN SCHEDULE												
TAG	AREA SERVED	FAN FUNCTION	TYPE/ DRIVE	CFM	SP INCHES	MOTOR			VIB ISO	DISCONN SWITCH	NOTES	BASIS OF DESIGN
						VOLTAGE/ PHASE	HP	RPM				
EF-1	EQUIPMENT ROOM	HYDROGEN EXHAUST	DIRECT	25	0.1	110/1	-	-	X	Y	1	DAYTON #1TDN3
NOTES:	1, FAN TO RUN CONTINUOUSLY.											

REGISTER SCHEDULE					
TAG	TYPE	MATERIAL	FINISH	MANUFACTURER	MODEL
SR-3	DUCT-MOUNTED ADJUSTABLE SUPPLY REGISTER	AL	MFR STANDARD	TITUS	272FL
NOTES:					



1 MECHANICAL SCHEDULES
NOT TO SCALE

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LOCATION CODE: 661221
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PROJECT: 158891
DRAWING NO: 158891-01
DESIGNED BY: JAZ
DRAWN BY: CCB
CHECKED BY: JAZ
COMPILED: 2017

ISSUED
FOR
REVIEW

MECHANICAL
SCHEDULES

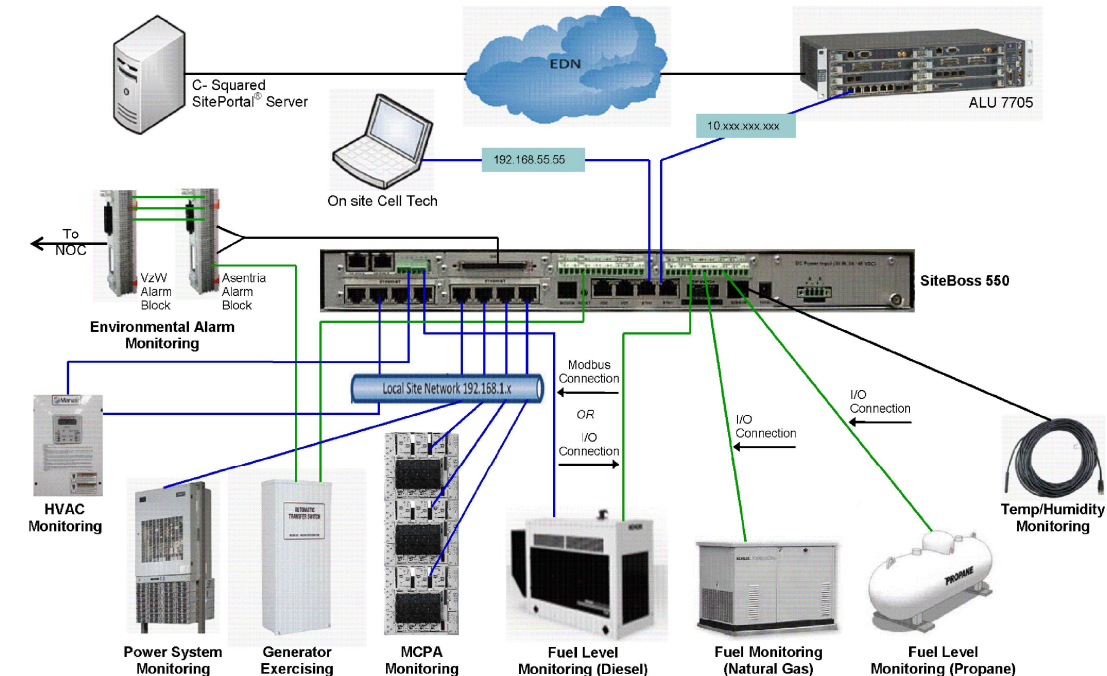
M503

BUILDING AUTOMATION GENERAL NOTES:

1. THESE NOTES SHALL COMPLEMENT THE DIVISION 1 SPECIFICATIONS. THE DIVISION 1 SPECIFICATIONS SHALL TAKE PRIORITY OVER THESE NOTES WHEN NECESSARY.
2. DIVISION 25 IS COMPOSED OF BOTH THESE DRAWINGS AND THE ASSOCIATED DIVISION 25 CONTROL M SPECIFICATIONS. BOTH DRAWINGS AND SPECIFICATIONS ARE AN INTEGRAL PART OF THE CONTRACT DOCUMENTS. SPECIFICATIONS AND DRAWINGS ARE COMPLEMENTARY, AND AS SUCH, ITEMS CALLED FOR IN ONE SHALL BE CONSTRUED AS REQUIRED BY BOTH DRAWINGS AND SPECIFICATIONS. THE GENERAL CONDITIONS (DIV 01) ARE ALSO INCLUDED IN THESE CONTRACT DOCUMENTS. REFER TO G SHEETS FOR ADDITIONAL REQUIREMENTS.
3. THE CONTRACT DRAWINGS INDICATE APPROXIMATE LOCATIONS OF EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE ACTUAL COMPONENT LOCATIONS BASED UPON THE INTENT OF THE DESIGN, SPECIFICATIONS, AND DRAWINGS. MODIFICATION OF PANEL LOCATIONS SHALL BE APPROVED BY ARCHITECT AND COORDINATED WITH ELECTRICAL TRADES.
4. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL COMPONENT, MATERIALS, EXACT CABLE ROUTINE, CONDUIT, AND OTHER CONSIDERATIONS THAT MAY BE REQUIRED FOR PROPER SYSTEM OPERATION.
5. ALL MATERIAL AND EQUIPMENT USED IN THIS INSTALLATION SHALL BE NEW, AND SHALL HAVE THE APPROPRIATE UL LISTING AND FACTORY MUTUAL (FM) APPROVAL. ALL MATERIALS SHALL COMPLY WITH ALL APPLICABLE LOCAL AND NATIONAL CODES, STANDARDS, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
6. CONTRACTOR SHALL PERFORM ALL WORK AND INSTALL ALL COMPONENTS IN A PROFESSIONAL AND WORKMANLIKE MANNER. ALL FINISH WORK TO BE TRUE, LEVEL, AND PLUMB. ALL JOINTS TO BE TIGHT AND CLEAN.
7. ALL WORK SHALL BE PERFORMED IN FULL COMPLIANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES, STANDARDS AND ALL APPLICABLE AMENDMENTS, WHERE REQUIRED BY THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL ISSUE PUBLIC NOTICES.
8. ALL EIA-485 MS/TP SEGMENTS SHALL BE DOUBLY TERMINATED BUS TOPOLOGY. PROVIDE CONDUIT AS REQUIRED IN DIVISION 25 SPECIFICATIONS AND WIRE ROUTES TO ACCOMMODATE.
9. DEVICES SHALL BE INTERCONNECTED AS SHOWN ON THE NETWORK ARCHITECTURE DIAGRAM.
10. 22 AWG BELDEN 3106A OR EQUIVALENT BE UTILIZED FOR ALL MSTP/BACNET NETWORK WIRING. CAT5E OR CAT6 SHALL BE USED FOR BACNET IP.
11. ALL CONTROL M LOCAL OPERATING NETWORK WIRING INCLUDING BUT NOT LIMITED TO MS/TP AND MODBUS NETWORK CABLE SHALL INCLUDE ONE DESIGNATED SPARE CABLE TO BE PULLED ALONG SIDE THE PRIMARY CABLE.
12. USE 18 GAUGE, STRANDED, SHIELDED, TWISTED PAIR WIRE FOR ALL TWO CONDUCTOR SENSOR WIRING.
13. SPICING OF COMMUNICATION CABLE BETWEEN DEVICES IS NOT ALLOWED.
14. ALL INTELLIGENT CONTROLLERS RESIDING ON THE BACNET NETWORK SHALL BE BTL COMPLIANT FOR COMPLETE INTEROPERABILITY.
15. INSTALL THE QU OF EIA-485 MS/TP / ETHERNET JACKS AS INDICATED ON THE FLOOR PLAN AND ARCHITECTURE DIAGRAM. EXACT PLACEMENT MAY VARY FROM WHAT IS SHOWN. NETWORK JACKS SHOULD BE LOCATED TO ALLOW EASY ACCESS TO FIELD BUS FOR TROUBLESHOOTING OF DIGITAL CONTROLLERS. INSTALL JACKS WITHIN DCP, NCP OR OTHER ENCLOSURE. THERMOSTATS WITH INTEGRAL MS JACKS MAY BE USED HOWEVER MAY NOT USE THE MS BUS FOR TRANSMISSION OF TEMPERATURE/HUMIDITY DATA TO ASSOCIATED EQUIPMENT (VAV BOX, AHU, ETC.).
16. INSTALL NETWORK TERMINATORS WITHIN CONTROL PANELS OF ADJACENT END OF LINE CONTROLLERS.
17. CONTROL PANELS SHALL HAVE SUFFICIENT QUANTITY OF CONTROLLERS, CONTROL POINTS, AND NETWORK VARIABLE RESOURCE COUNT TO SUPPORT BOTH THE PHYSICAL AND NETWORK I/O REQUIREMENTS OF EACH DEVICE DESIGNATED FOR THAT PANEL.
18. STAND ALONE OPERATION IS REQUIRED FOR ALL EQUIPMENT. SEQUENCE OF OPERATION MUST NOT BE DEPENDENT ON LOCAL OPERATING NETWORK COMMUNICATIONS EXCLUDING OUTSIDE AIR CONDITIONS VARIABLES REQUIRED FOR USE BY MULTIPLE CONTROLLERS. EACH PIECE OF MECHANICAL EQUIPMENT MUST BE CONTROLLED BY A SINGLE BACNET CONTROLLER. REMOTE I/O MODULES SHALL NOT BE ALLOWED FOR CONTROL POINTS OR POINTS WHICH ARE REQUIRED TO ACHIEVE THE SEQUENCE OF OPERATION WITHOUT THE USE OF A BAC NET ROUTER AND SEPARATE SUB NET.
19. CONTROL PANELS SHOWN ON DRAWING ARE SCHEMATIC ONLY AND ARE NOT TO SCALE. CONTROLS CONTRACTOR SHALL PROVIDE PANELS AS NECESSARY TO HOUSE THE REQUIRED CONTROL EQUIPMENT. CONTRACTOR SHALL COORDINATE EXACT PLACEMENT OF PANELS WITH SURROUNDING EQUIPMENT.
20. CONTROLS CONTRACTOR SHALL VERIFY NODE COUNT PER NETWORK AND CONFORM TO THE ARCHITECTURE GUIDELINES SPECIFIED BY THE MANUFACTURER OF THE NETWORK CONTROLLER AND BY ANSI / ASHRAE BACNET STANDARDS 135.
21. INSTALL THE CENTER OF ALL CONTROL PANELS AT 60" TYPICAL ELEVATION WHEN FEASIBLE.
22. GROUND ALL SHIELDS AT ONE END ONLY TO AVOID GROUND LOOPS. TERMINATE GROUND CONDUCTORS FIRST. TERMINATE AT EQUIPMENT WHEN FEASIBLE.
23. INDICATED ROUTING OF EIA-485 MS/TP NETWORK WIRING IS SCHEMATIC IN ROUTING ONLY. ACTUAL ROUTING OF WIRING SHALL BE DETERMINED IN THE FIELD BY CONTROLS CONTRACTOR. RESTORE ALL DISRUPTED SURFACES BACK TO ORIGINAL FINISHED CONDITIONS. THE CONTRACTOR SHALL PROVIDE LABOR AND MATERIAL FOR ALL DRYWALL, FLOOR, CONCRETE, CARPET, PAINT AND SIMILAR "FINISH" SURFACES AFFECTED BY THE SCOPE OF THIS PROJECT.
24. FIELD VERIFY ALL THERMOSTAT LOCATIONS FOR FIELD CONFLICTS INCLUDING UNFORESEEN WALL SPACE RESTRICTIONS, WIRING RESTRICTIONS, AND THERMAL INTERFERENCE FROM EQUIPMENT AND OR SUNLIGHT. NOTIFY OWNER OF ALL CONFLICTS PRIOR TO INSTALLATION.
25. THE TERMS CONTRACTOR, SI CONTRACTOR, AND CONTROLS CONTRACTOR SHALL BE CONSTRUED ON THE SAME CONTRACTOR FOR THE SCOPE DEFINED IN THE BAS DRAWINGS AND DIVISION 25 SPECIFICATIONS.

BUILDING AUTOMATION GENERAL NOTES CONT.:

26. ALL BAS CONTROL DEVICES INCLUDING NETWORK CONTROLLERS, DIGITAL CONTROL PANELS, 24V POWER SUPPLIES, AND WORKSTATIONS SHOWN ON BAS00 TO BE ON THE CRITICAL COMMUNICATION BUS SHALL BE ON CRITICAL/INVERTER POWER CIRCUITS.
27. ALL WIRING SHALL BE IN 3/4" EMT REGARDLESS OF LOCATION.
28. ALL CONTROLLERS AND RELATED CONTROL EQUIPMENT USED TO CONTROL DAMPERS, FANS, AND AHUS DURING SMOKE CONTROL SEQUENCES SHALL BE UL 864/ULUL LISTED FOR SMOKE CONTROL UL 555 DAMPERS SHALL BE PURCHASED WITH APPROVED UL LISTED ACTUATORS.
29. ALL DAMPER ACTUATORS SHALL BE BELIMO.
30. CRITICAL POINTS AND ALARMS SHALL BE WIRED NORMALLY CLOSED SO THAT A LOSS OF POWER WILL INDICATE AN ALARM CONDITION OR RELEASE TO NORMAL OPERATION.
31. CONTRACTOR SHALL COORDINATE EQUIPMENT PURCHASES WITH THE POINT LISTS IN THESE DOCUMENTS. CONTRACTOR SHALL BE REQUIRED TO ADD HARDWARE AND LOGIC TO MEET THE POINTS IN THESE DOCUMENTS.
32. ALL NEW CONDUIT AND WIRING SHALL NOT BE RAN OVER TECHNICAL SPACES. UTILIZE HALLWAYS AND NON-TECHNICAL SPACES FOR ROUTING OF ALL NEW CONDUIT AND WIRE PATHS.
33. THE DIVISION 25 CONTRACTOR SHALL PROVIDE CONTROL RELAYS, AND MAKE 120V POWER CONNECTIONS TO COMBINATION FIRE/SMOKE DAMPERS PROVIDED BY OTHERS. POWER WIRING HOME RUNS AND DISCONNECTS FOR DAMPERS ARE PROVIDED BY DIVISION 26. THE CONTROL OF THE COMBINATION FIRE/SMOKE DAMPERS IS BY THE B.A.S.
34. THE BAS CONTRACTOR SHALL BE REQUIRED TO PROVIDE 120V POWER TO ALL FIELD DEVICES (ACTUATORS, SENSORS, ETC.) WHICH REQUIRE SUCH POWER.
35. THE BAS CONTRACTOR IS 100% RESPONSIBLE FOR PROVIDING OR COORDINATING WITH PURCHASING TRADE THE SUPPLY OF NETWORK OR RELAY INTERFACE CARDS, GATEWAYS, MICROPROCESSORS, ETC. TO ACCOMPLISH THE CONTROL AND MONITORING INTENT OF THOSE DRAWINGS.



1 HUB DESIGN EXAMPLE
NOT TO SCALE

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06/13/22

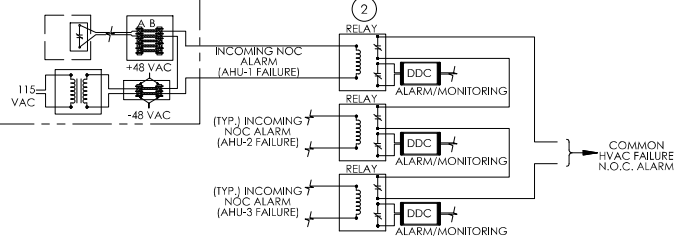
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CADD: 158081-000-000-000-000
DESIGNED BY: JAY
DRAWN BY: CCB
CHECKED BY: JAY
COMPILE: 2017

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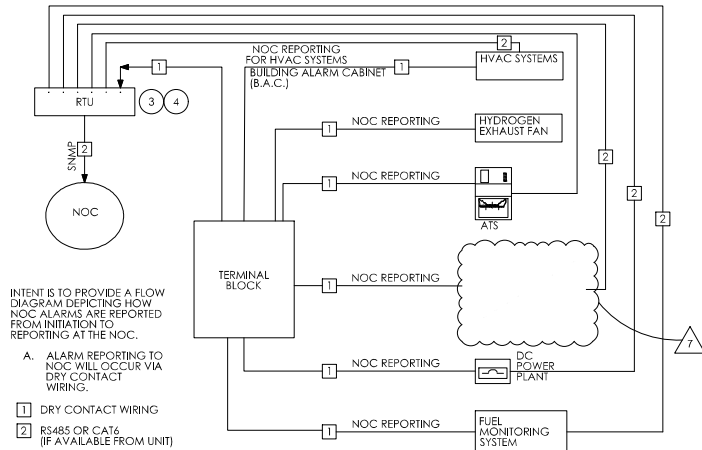
BUILDING
AUTOMATION
GENERAL NOTES

BA001

TYPICAL POINT OF DRY-CONTACT
LOCATED IN THE FIELD



2 TYPICAL NOC ALARM CONSOLIDATION DIAGRAM
NOT TO SCALE



INTENT IS TO PROVIDE A FLOW
DIAGRAM DEPICTING HOW
NOC ALARMS ARE REPORTED
FROM INITIATION TO
REPORTING AT THE NOC.

A. ALARM REPORTING TO
NOC WILL OCCUR VIA
DRY CONTACT
WIRING.

- 1 DRY CONTACT WIRING
2 RS485 OR CAT6
(IF AVAILABLE FROM UNIT)

1 TYPICAL NOC REPORTING FLOW DIAGRAM DRY CONTACT WIRING
NOT TO SCALE

NOC ALARMING SUMMARY

SYSTEM	ALARM DESCRIPTION	SEVERITY AT NOC		SUPPLEMENTARY NOTES
		MAJOR	CRITICAL	
ROOM SENSORS	HIGH TEMPERATURE (SET TO 89° F)	X		COMMON ALARM TRIGGERED BY ANY SENSOR
	LOW TEMPERATURE (SET TO 45° F)	X		
WALL PACK UNITS	UNIT FAILURE		X	PROVIDE SINGLE UNIT FAILURE ALARM
	HIGH PRESSURE LOCKOUT	X		
	LOW PRESSURE LOCKOUT	X		
	FREEZE CONDITIONS	X		
HYDROGEN EXHAUST FAN	UNIT FAILURE	X		
FIRE PROTECTION & FIRE SUPPRESSION	1ST ALARM ANY SPACE		X	
	2ND ALARM ANY SPACE		X	
	FIRE ALARM SYSTEM TROUBLE		X	
INTERGRATED LOAD CENTER	ATS NOT IN AUTO MODE	X		
	NORMAL SOURCE NOT AVAILABLE		X	
	ATS ON EMERGENCY POWER SOURCE	X		
	NORMAL SOURCE SURGE PROTECTION FAILURE	X		PROVIDE COMMON SPD DEVICE FAILURE ALARM
	EMERGENCY SOURCE SURGE PROTECTION FAILURE	X		
	BATTERY VOLTAGE BELOW LV-2 THRESHOLD		X	
	BATTERY VOLTAGE BELOW LV-1 THRESHOLD		X	
	BATTERY VOLTAGE EXCEEDS A THRESHOLD		X	
	BYPASS NOT AVAILABLE	X		
	INVERTER FAILURE		X	
DC POWER PLANT	ONE RECTIFIER NOT SUPPLYING DC POWER	X		
	MULTIPLE RECTIFIERS NOT SUPPLYING DC POWER		X	

KEY NOTES:

- 1 INTENT OF RELAY: WIRE RELAY INTERFACE SUCH THAT WHEN MONITORED EQUIPMENT IS NOT IN ALARM THE FOLLOWING CONDITIONS WILL RESULT: THE RELAY COIL SHALL BE ENERGIZED AND THE OUTPUT TO THE SNMP GATEWAY SHALL BE OPEN. IN THE EVENT OF AN ALARM, A CUT FIELD WIRE, OR LOSS OF 24V POWER TO THE COIL, THE RELAY COIL SHALL DE-ENERGIZE TO INDICATE AN ALARM TO THE SNMP GATEWAY. WHEN MONITORED EQUIPMENT IS NOT IN ALARM, CUSTOMER SHALL BE ABLE TO SHORT THE PINS AT THE SWITCH EQUIPMENT TO SIMULATE A TEST ALARM THROUGH THEIR SUPERVISION EQUIPMENT.
- 2 CONTRACTOR TO PROVIDE RELAY LOGIC, AS REQUIRED TO PRODUCE THE COMMON ALARMS LISTED IN THE HARDWARE POINTS LIST. FOR EXAMPLE: CONTRACTOR SHALL PROVIDE RELAY LOGIC TO INDICATE CRAC COMMON FAILURE UPON LOSS OF CONTROL OF THE UNITS FANS, VALVES, DAMPERS, OR SAFETIES, OR TO PRODUCE ONE COMMON HVAC FAILURE ALARM WHEN ANY UNIT FAILS.
- 3 SNMP GATEWAY DEVICE SHALL TRANSMIT SNMP TRAPS TO VERIZON'S NOC WHEN A COMMON ALARM IS INDICATED. TO BE CONFIGURED AND TESTED BY CONTRACTOR.
- 4 REMOTE MONITORING USED AS BASIS OF DESIGN. SUBSTITUTIONS MUST BE APPROVED BY OWNER.

GENERAL NOTES:

1. NOC ALARMS SHALL BE TRANSMITTED BY EQUIPMENT TYPE ACCORDING TO THE SUMMARY ON THIS SHEET. THE NUMBER OF ALARMS TRANSMITTED TO THE NOC SHALL BE MINIMIZED WHERE POSSIBLE WHILE ENSURING THAT ALL CRITICAL ALARMS ARE COMMUNICATED PROPERLY.
2. NOC ALARMS SHALL BE TRANSMITTED ACCORDING TO THE ALARM SEVERITY SPECIFIED. REFER TO VZW STANDARDS NSTD398 AND NDIR49 FOR MORE INFORMATION.
3. REFER TO NSTD3298 FOR SPECIFIC INFORMATION REGARDING FORMATTING OF SNMP TRAPS TO NNOC.
4. "HEART BEAT" COMMUNICATIONS MUST BE MAINTAINED BETWEEN THE NOC AND THE REMOTE MONITORING ALARM SITE MANAGEMENT SYSTEM. COORDINATE WITH VZW.



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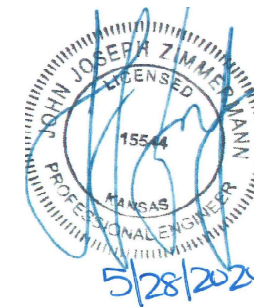
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BUILDING
AUTOMATION NOC
ALARM

BA501

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION 24782-000-3PS-EG00-00001. USE OF OTHER METHODS MUST BE PRE-APPROVED BY CONTRACTOR IN WRITING.
3. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO ITS EQUIPMENT.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
8. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
9. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
10. EACH INTERIOR BTS CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH #6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH #2 AWG SOLID TIN-PLATED COPPER WIRE.
11. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE EXTERIOR UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2-HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM VERIZON MARKET REPRESENTATIVE.
13. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
14. ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
15. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP BTS EQUIPMENT AND STRUCTURAL STEEL.
16. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO HOLED MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
17. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
18. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
19. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
20. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH #2 SOLID AWG TIN-PLATED COPPER GROUND CONDUCTOR.
21. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.



COMMON V2W DC PLANT RECTIFIER REQUIREMENTS			
RECTIFIER	INPUT FLA CURRENT AT 240 VAC (EACH RECTIFIER)	2 RECT / BRANCH CIRCUIT (PREFERRED APPROACH)	1 RECT / BRANCH CIRCUIT (ALT APPROACH)
VERTIV 3500W (r48-3500E3 or sim)	15.5 AMPS	40A/2P (or 45A/2P) #8 THHN	30A/2P #10 THHN
GE 75A (NE075AC48xxxx or sim)	22 AMPS (MAX)	60A/2P #6 THHN	30A/2P #10 THHN
OTHER - COORD W/ VENDOR	REFER TO CUT SHEETS	REFER TO CUT SHEETS	REFER TO CUT SHEETS

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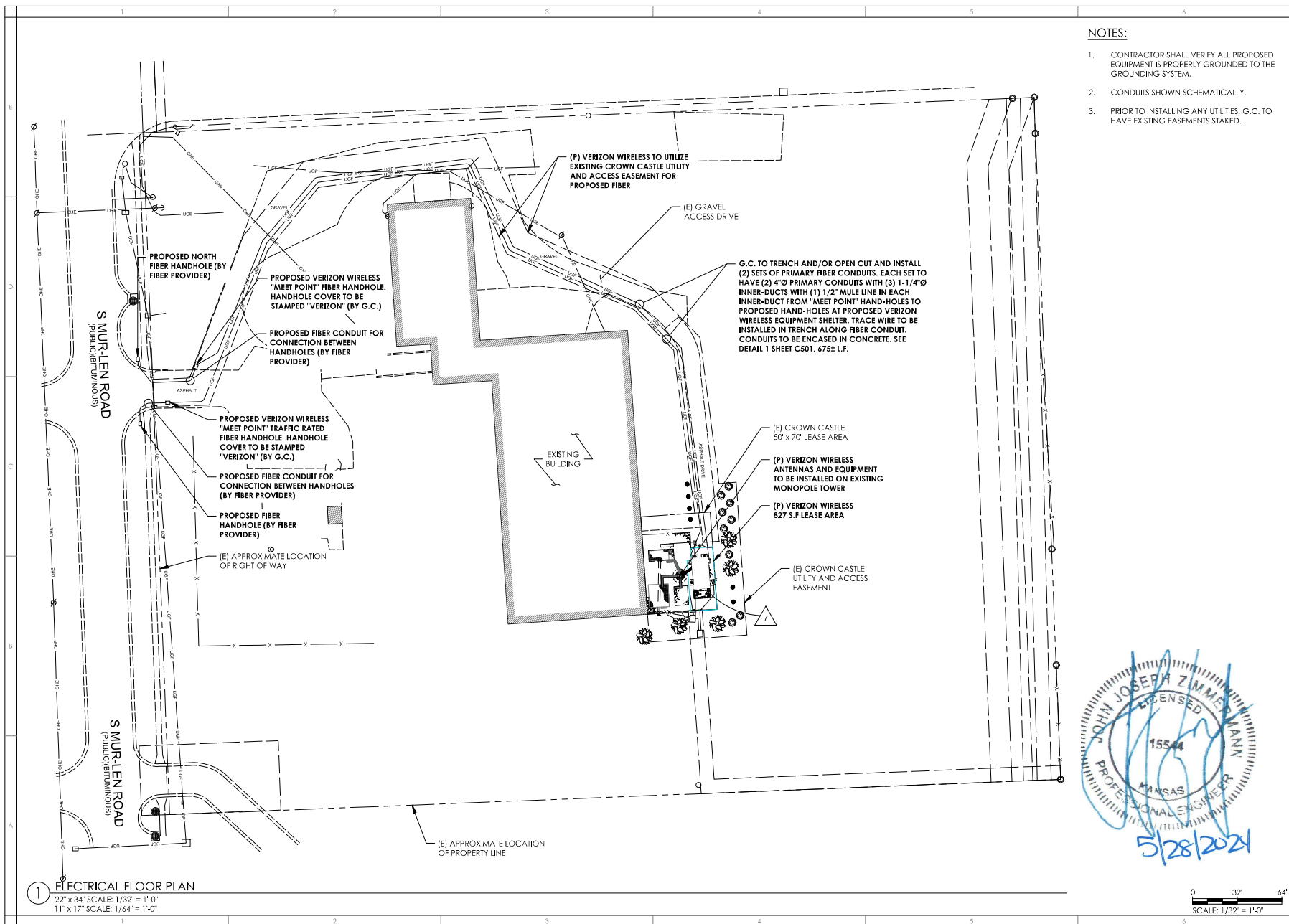
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PROJECT: 156001 DRAWING NO.: 156001-01 DESIGNED BY: JAY DRAWN BY: CCB CHECKED BY: JAY CONTRNO: 2017	ISSUED FOR REVIEW
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**ELECTRICAL
GENERAL NOTES**

E002



THE DRAWING WAS PREPARED SOLELY FOR THE USE OF VERIZON WIRELESS AND MUST ONLY BE USED BY VERIZON WIRELESS EMPLOYEES, CONTRACTORS AND VENDORS WHILE PERFORMING THE WORK SHOWN ON THE DRAWING. ANY OTHER USE OF THE DRAWING IS PROHIBITED.



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 LOCATION CODE: 661221
 15201 MUR-LEN
 OLATHE, KS 66062

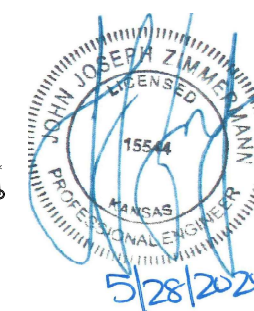
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2	REVISED PER CLIENT COMMENTS	08/02/22
3	REVISED FIBER ROUTE	08/24/22
4	ISSUED FOR PERMIT	09/29/22
5	REVISED TRANSFORMER LOCATION	01/30/23
6	UPDATED PER CLIENT COMMENTS	02/16/23
7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 158001
 DRAWING NO: 158001-01
 DESIGNED BY: JAY
 DRAWN BY: CCB
 CHECKED BY: JAY
 COMPILED: 2017

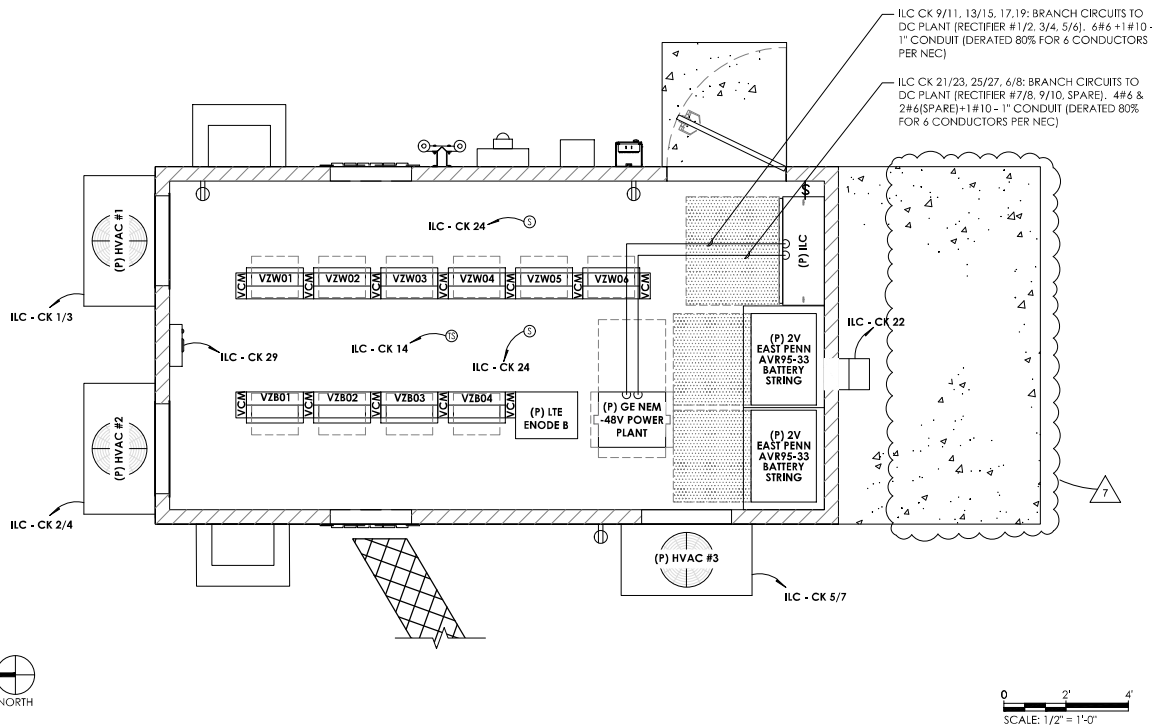
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ENLARGED UTILITY ROUTING PLAN

E101



0 32' 64'
 SCALE: 1/32" = 1'-0"



1 ELECTRICAL FLOOR PLAN
22' x 34" SCALE: 1/2" = 1'-0" 11" x 17" SCALE: 1/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING & PROPOSED EQUIPMENT ARE PROPERLY GROUNDED TO THE GROUNDING SYSTEM.
2. CONDUITS SHOWN SCHEMATICALLY.

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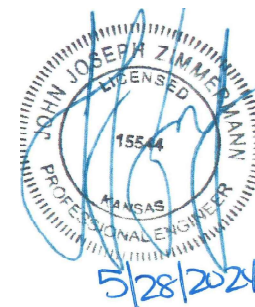
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7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 15881
DRAWING NO.: 15881-2
DESIGNED BY: JAZ
DRAWN BY: CCB
CHECKED BY: JAZ
COMPILE: 2017

**ISSUED
FOR
REVIEW**

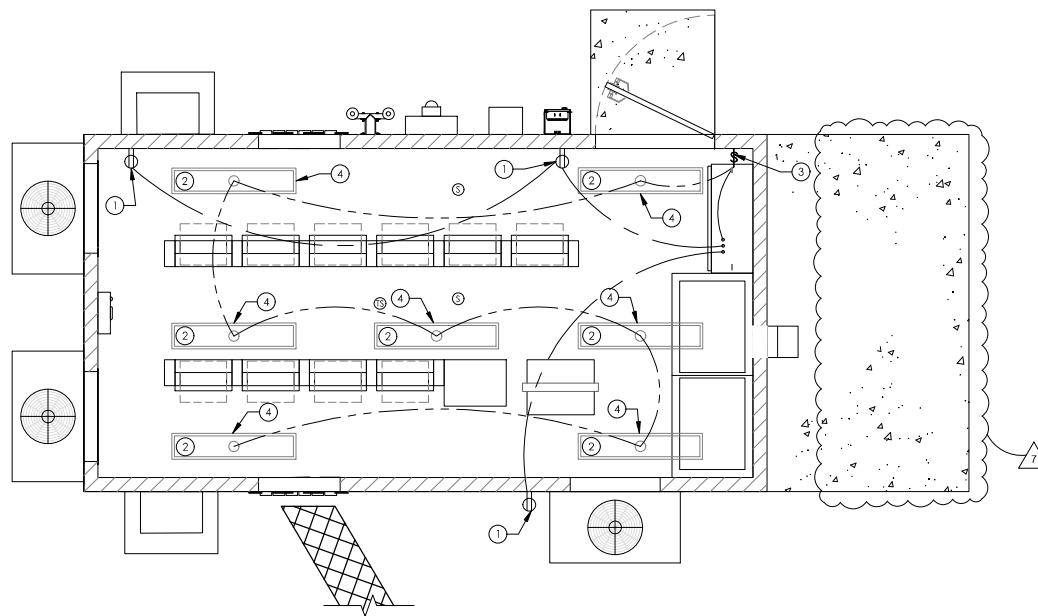
**ELECTRICAL FLOOR
PLAN**

E103





1 POWER AND LIGHTING PLAN
22' x 34' SCALE: 1/2" = 1'-0" 11' x 17' SCALE: 1/4" = 1'-0"

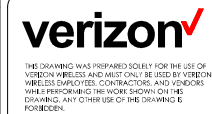
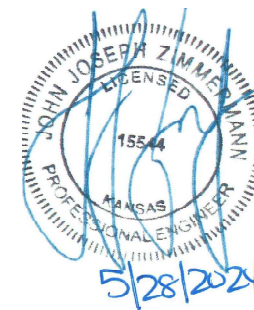


NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING & PROPOSED EQUIPMENT ARE PROPERLY GROUNDED TO THE GROUNDING SYSTEM.
2. CONDUITS SHOWN SCHEMATICALLY.

KEY NOTES:

- 1 120V DUPLEX RECEPTACLE "HUBBLE" #5362-WHITE, SUPPLIED AND INSTALLED BY CONTRACTOR. INSTALL @ 18" A.F.F.
- 2 CEILING SURFACE MOUNTED LED LIGHTS MANUFACTURED BY TEXAS FLUORESCENTS, CATALOG #209 A 232 OR EQUAL, 32W WITH A 2 BULB 18 4" WITH LENS.
- 3 LIGHT SWITCH
- 4 LIGHT FIXTURES TO BE WIRED TO LIGHT SWITCH



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7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 158891 DRAWING NO: 158891-2 DESIGNED BY: JAZ DRAWN BY: CCB CHECKED BY: JAZ COMPILE: 2017	ISSUED FOR REVIEW
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POWER & LIGHTING
PLAN

E104

KEY NOTES:

- ① 4"x20"x1/4" TINNED INSULATED COPPER GROUND BAR, NON ISOLATED W/ 10' LONG #2 AWG TINNED SOLID COPPER WIRE WELDED TAILS (HARGER GBT 14420VW)
- ② PROPOSED #2 AWG STRANDED GREEN INSULATED COPPER WIRE FROM LEAD/LAG CONTROLLER TO THE PROPOSED GROUND SYSTEM, GROUND EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS.
- ③ PROPOSED #2 AWG STRANDED GREEN INSULATED COPPER WIRE FROM PROPOSED EQUIPMENT RACK TO THE PROPOSED GROUNDING SYSTEM, TYPICAL FOR ALL EQUIPMENT RACKS, GROUND PER MANUFACTURER'S SPECIFICATIONS.
- ④ PROPOSED #2 AWG STRANDED GREEN INSULATED COPPER WIRE FROM WALL PACK HVAC UNITS TO THE EXISTING BURIED GROUND RING PER MANUFACTURER'S SPECIFICATIONS.
- ⑤ PROPOSED #2 AWG SBTIC GROUND WIRE FROM THE DC POWER PLANT EQUIPMENT TO THE GROUNDING SYSTEM PER MANUFACTURER'S SPECIFICATIONS.

KEY NOTES:

- ⑥ PROPOSED #2 AWG STRANDED GREEN INSULATED COPPER WIRE FROM PROPOSED BATTERY RACK TO GROUNDING SYSTEM PER MANUFACTURER'S SPECIFICATIONS.
- ⑦ GROUND TOP AND BOTTOM LOUVERS WITH #6 AWG STRANDED GREEN INSULATED TO COPPER WIRE.
- ⑧ PROPOSED #6 AWG STRANDED GREEN INSULATED COPPER WIRE TO CABLE TRAYS PER MANUFACTURER'S SPECIFICATIONS.
- ⑨ #2 TINNED SOLID COPPER CONDUCTOR TO GROUND RING, 2 PLACES
- ⑩ ELECTRICAL SERVICE ENTRY GROUND
- ⑪ TWO #2 LEADS FROM THE EGR TO THE MGB LOCATED IN THE SHELTER, CADWELD EGR & DOUBLE HOLE LUGS IN SHELTER.

NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND UNDERSTAND THE EXTENT OF THE GROUNDING WORK AS INDICATED BY THE CONTACT DOCUMENTS.
2. FIELD LOCATE UNDERGROUND PUBLIC AND OWNER UTILITIES OF ALL TRADES AND GROUNDING PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OR REWORK OF ANY DAMAGED UTILITIES AND GROUNDING SYSTEMS.
3. ALL CONDUIT AND GROUNDING CONDUCTORS SHALL BE A MINIMUM OF 36" BELOW GRADE UNLESS OTHERWISE NOTED.
4. CONNECT TO ALL METALLIC OBJECTS WITHIN 6' OF EXTERIOR BURIED GROUND RING WITH #2 AWG SBTIC GROUND WIRE.
5. CONNECT ALL MECHANICAL EQUIPMENT BASES AND PIPING SUPPORTS TO BURIED GROUND RING WITH #2 SBTIC GROUND WIRE.
6. ALL GROUNDING CONDUCTORS SHALL BE SUPPORTED BY NONMETALLIC SUPPORTS.
7. GROUNDING LEADS FROM BUILDING EXTERIOR, AND CONNECTIONS TO RING ARE SHOWN FOR REFERENCE ONLY. COORDINATE WITH ALL OTHER DIVISION TO ENSURE THAT ALL METALLIC OBJECTS ON BUILDING, AND BUILDING EXTERIOR RECEIVE GROUND CONNECTION. COORDINATE WITH ALL OTHER TRADES.
8. PROVIDE LABELS ON ALL GROUNDING CONDUCTORS IN INSPECTION BOXES INDICATING LEAD NUMBER AND TERMINATION LOCATION AT OPPOSITE END.
9. BOND ALL EXTERIOR METALLIC OBJECTS THAT ARE ATTACHED TO THE BUILDING TO THE EXTERIOR RING VIA A #2 SBTIC.
9. BOND ALL EXTERIOR METALLIC OBJECTS ON THE SITE TO THE EXTERIOR RING VIA A #2 SBTIC.
10. ALL BURIED CONNECTIONS SHALL BE MADE WITH #2 SBTIC.
11. G.C. TO ENSURE THAT SHELTER MANUFACTURER SUPPLIES SHELTER WITH INTERIOR GROUND HALO AND EXISTING INSTALLED CABLE TRAY, CONDUITS, LOUVERS, DOORS, ETC. ARE BONDED TO GROUND SYSTEM. NOTIFY VERIZON WIRELESS IMPLEMENTATION ENGINEER IF THIS IS NOT PERFORMED.

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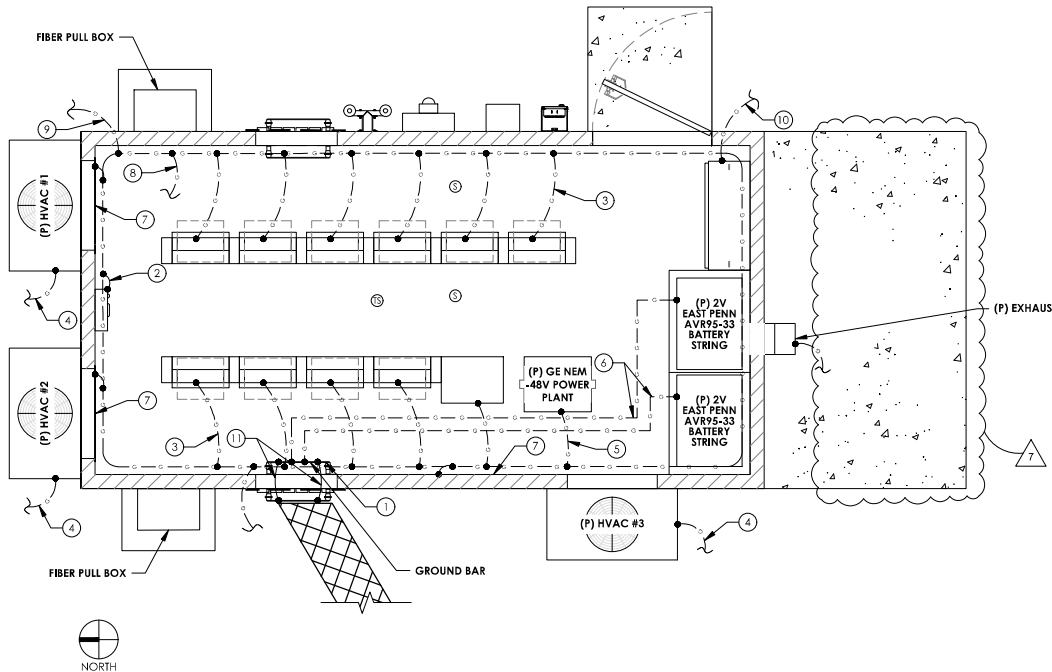
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7	REVISED PER CROWN COMMENTS	02/07/24
NETWORK COMPLIANCE SUBMITTALS		DATE
100% SUBMISSION		06/19/22

PROJECT: 158891
DRAWING: 158891-01-01
DESIGNED BY: AAY
DRAWN BY: CCB
CHECKED BY: AAY
CONDATE: 2017

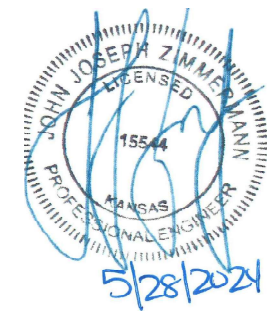
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INTERIOR GROUNDING PLAN

E111



① INTERIOR GROUNDING PLAN
22' x 34' SCALE: 1/2" = 1'-0" 11' x 17' SCALE: 1/4" = 1'-0"



LEGEND	
SYMBOL	DESCRIPTION
	5/8" DIAMETER x 10'-0" LONG COPPER CLAD GROUND ROD (HARGER-SB10)
	5/8" DIAMETER x 10'-0" LONG COPPER CLAD GROUND ROD WITH INSPECTION WELL
-----	#2 AWG T1NND SOLID BARE COPPER WIRE MINIMUM 42" BELOW GRADE (HARGER-L2)
---UE---	UNDERGROUND ELECTRICAL
---UT---	UNDERGROUND TELEPHONE
---F---	UNDERGROUND FIBER
●	EXOTHERMIC WELD
—OE—	OVERHEAD ELECTRICAL SERVICE
—OT—	OVERHEAD TELEPHONE SERVICE

KEY NOTES:

- #2 AWG T1NND SOLID BARE COPPER CONDUCTOR 42" BELOW GRADE (TYPICAL) MINIMUM 24" BENDING RADIUS
- ENCLOSURE GROUND (TYP.) IN 1/2" DIAMETER SCHEDULE 40 PVC CONDUIT
- GROUND EQUIPMENT ENCLOSURE HVAC WITH MECHANICAL CLAMP (SEE DETAIL, SHEET E502).
- #2 AWG T1NND SOLID BARE COPPER CONDUCTOR 42" BELOW GRADE (SEE DETAIL, SHEET E502)
- MAINTAIN TWO FOOT DISTANCE OFF OF STRUCTURES.
- GROUND TELEPHONE SERVICE ENTRANCE (SEE DETAIL, SHEET E502).
- ELECTRIC METER AND ELECTRIC SERVICE GROUNDING (SEE DETAIL SHEET E503), COORDINATE ALTERNATE WITH PM

KEY NOTES:

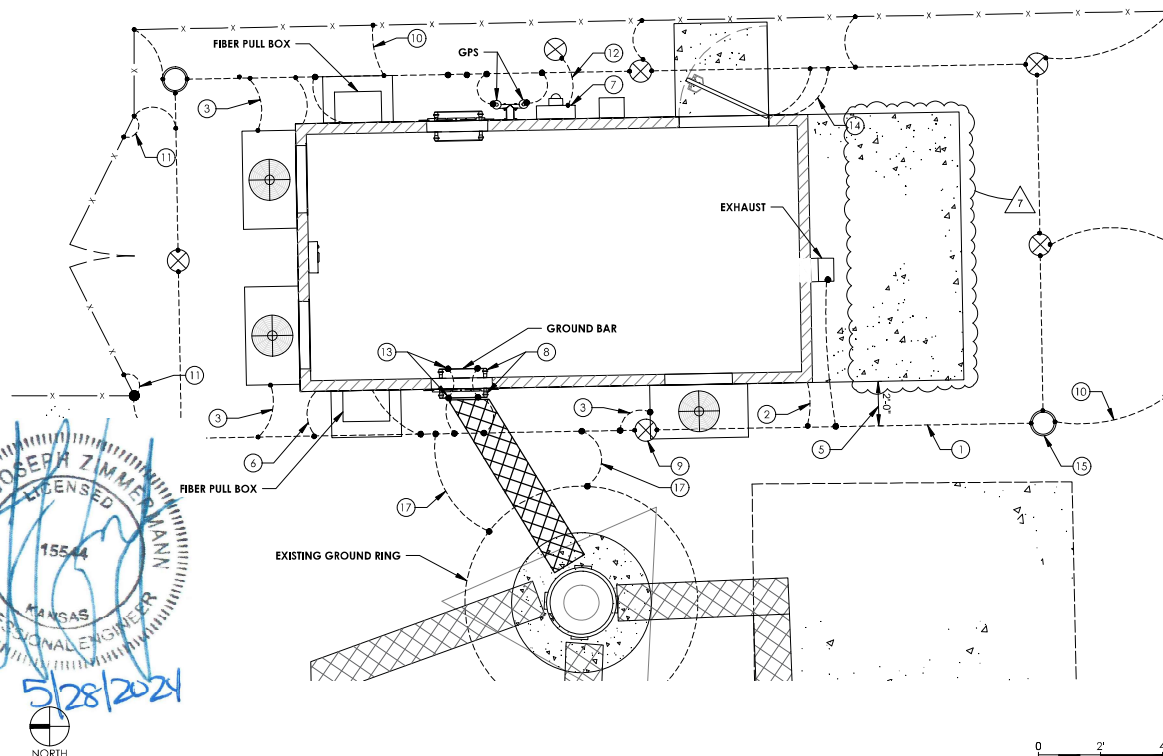
- 4"x20"x1/4" T1NND INSULATED COPPER GROUND BAR, NON ISOLATED WITH 10'-0" LONG #2 AWG T1NND SOLID COPPER WIRE WELDED TAILS (HARGER GBT 14420VW)
- 5/8" DIAMETER x 10'-0" LONG COPPER CLAD GROUND ROD (HARGER-SB10) (SEE DETAIL, SHEET E501) WITH EXOTHERMIC CONNECTION
- GROUND CHAIN LINK FENCE (TYPICAL) EXOTHERMIC CONNECTION (TYPE VS) GROUND FENCE POSTS WITHIN 6 FEET OF ENCLOSURE AND 25 FEET OF TOWER. (SEE DETAIL, SHEET E501)
- GATE JUMPERS (SEE DETAIL, SHEET E501)
- BOND SERVICE DISCONNECT TO GROUND ROD AND EQUIPMENT GROUND RING (SEE DETAIL, SHEET E501)

KEY NOTES:

- TWO #2 LEADS FROM THE EGR TO THE MGB LOCATED IN THE SHELTER. CADWELD AT EGR AND DOUBLE HOLE LUGS IN SHELTER.
- ELECTRIC SERVICE ENTRY GROUND
- INSPECTION WELL (SEE DETAIL, SHEET E501)
- #2 T1NND SOLID COPPER CONDUCTOR TO GROUND RING, 2 PLACES
- BOND TOWER GROUND RING TO EQUIPMENT GROUND RING WITH #2AWG T1NND SOLID COPPER CONDUCTOR IN 2 LOCATIONS.

NOTES:

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND UNDERSTAND THE EXTENT OF THE GROUNDING WORK AS INDICATED BY THE CONTACT DOCUMENTS.
- FIELD LOCATE UNDERGROUND PUBLIC AND OWNER UTILITIES OF ALL TRADES AND GROUNDING PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OR REWORK OF ANY DAMAGED UTILITIES AND GROUNDING SYSTEMS.
- ALL CONDUIT AND GROUNDING CONDUCTORS SHALL BE A MINIMUM OF 36" BELOW GRADE UNLESS OTHERWISE NOTED.
- CONNECT TO ALL METALLIC OBJECTS WITHIN 6' OF EXTERIOR BURIED GROUND RING WITH #2 AWG SBTC GROUND WIRE.
- CONNECT ALL MECHANICAL EQUIPMENT BASES AND PIPING SUPPORTS TO BURIED GROUND RING WITH #2 SBTC GROUND WIRE.
- ALL GROUNDING CONDUCTORS SHALL BE SUPPORTED BY NONMETALLIC SUPPORTS.
- GROUNDING LEADS FROM BUILDING EXTERIOR, AND CONNECTIONS TO RING ARE SHOWN FOR REFERENCE ONLY. COORDINATE WITH ALL OTHER DIVISION TO ENSURE THAT ALL METALLIC OBJECTS ON BUILDING, AND BUILDING EXTERIOR RECEIVE GROUND CONNECTION. COORDINATE WITH ALL OTHER TRADES.
- BOND ALL EQUIPMENT SHELTER EXTERIOR METALLIC OBJECTS THAT ARE ATTACHED TO THE BUILDING TO THE EXTERIOR RING VIA A #2 SBTC.
- BOND ALL EXTERIOR METALLIC OBJECTS ON THE SITE TO THE EXTERIOR RING VIA A #2 SBTC.
- ALL BURIED CONNECTIONS SHALL BE MADE WITH #2 SBTC.
- ALL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE SPLICES, ETC. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTNING PROTECTION SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED (MOLDS, WELDING, METAL TOOLS, ETC.) SHALL BE BY EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES. GROUND CONDUCTOR SHALL HAVE A MINIMUM 24" BENDING RADIUS.
- ALL EXOTHERMIC CONNECTIONS ON GALVANIZED SURFACES SHALL BE CLEANED THOROUGHLY AND COLORED TO MATCH SURFACE WITH (2) TWO COATS OF SHERWIN-WILLIAMS GALVALITE (WHITE) PAINT 830W3 (OR EQUAL) OR SHERWIN-WILLIAMS SILVERBRITE (ALUMINUM) 859S11 (OR EQUAL).
- ALL ELECTRICAL & MECHANICAL GROUND CONNECTIONS SHALL HAVE ANTI-OXIDANT COMPOUND APPLIED TO CONNECTION.
- FENCE/GATE: GROUND FENCE POSTS WITHIN 6 FEET OF ENCLOSURE AND 25 FEET OF TOWER AS INDICATED ON DRAWINGS. GROUND EACH GATE POST AND CORNER POST. GROUND CONNECTIONS TO FENCE POSTS SHALL BE MADE BY THE EXOTHERMIC PROCESS AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES. ALL OTHER CONNECTIONS FOR THE GROUND GRID SYSTEM SHALL BE MADE BY THE EXOTHERMIC PROCESS, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.
- AFTER INSTALLATION OF THE CANOPY AT THE DOOR, GC/EC IS TO BOND THE CANOPY TO THE DOOR FRAME WITH A #2 CONDUCTOR. USE DOUBLE-LUG CONNECTION. PREP AND PAINT SURFACE TO MATCH AFTER INSTALLATION.
- UTILITY COMPANY COORDINATION: ELECTRICAL CONTRACTOR SHALL CONFIRM THAT ALL WORK IS IN ACCORDANCE WITH THE RULES OF THE LOCAL UTILITY COMPANY BEFORE SUBMITTING THE BID. THE CONTRACTOR SHALL CHECK WITH THE UTILITY COMPANIES SUPPLYING SERVICE TO THIS PROJECT AND SHALL DETERMINE FROM THEM ALL EQUIPMENT AND CHARGES WHICH THEY WILL REQUIRE AND SHALL INCLUDE THE COST IN THE BID.
- GROUND TEST: GROUND TESTS SHALL BE PERFORMED AS REQUIRED BY LESSEE STANDARD PROCEDURES. GROUND GRID RESISTANCE SHALL NOT EXCEED 5 OHMS.
- CONTRACTOR SHALL SUBMIT THE GROUND RESISTANCE TEST REPORT AS FOLLOWS:
 - ONE (1) COPY TO OWNER REPRESENTATIVE
 - ONE (1) COPY TO ENGINEER
 - ONE (1) COPY TO KEEP INSIDE EQUIPMENT ENCLOSURE



1 ELECTRICAL GROUNDING PLAN
22" x 34" SCALE: 1/2" = 1'-0" 11" x 17" SCALE: 1/4" = 1'-0"

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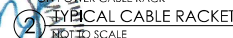
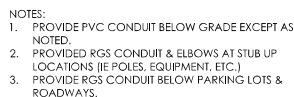
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PROJECT: 158091
DRAWING: E111-000000-02
DESIGNED BY: AAY
DRAWN BY: CCB
CHECKED BY: AAY
COMPILED BY: 2017

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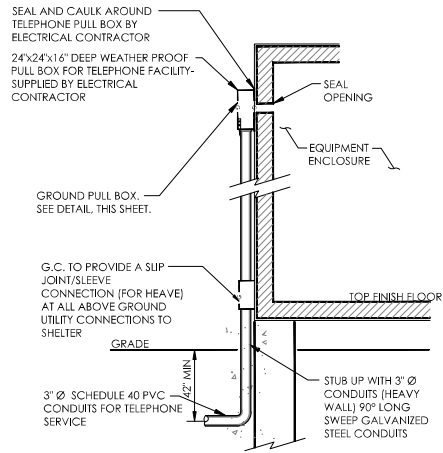
EXTERIOR GROUNDING PLAN

E112

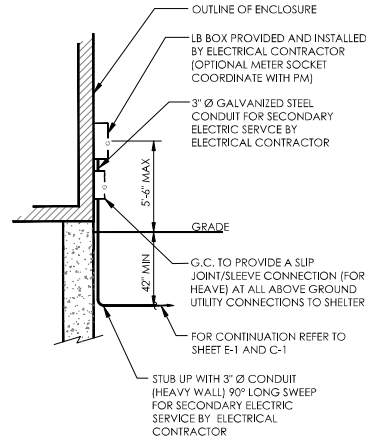


NOTES:
1. USE STANDARD GALVANIZED HARDWARE FOR WALL MOUNT AND CONNECTION OF CHANNELS. SPACE UNITS AT 5'-0" ON CENTER

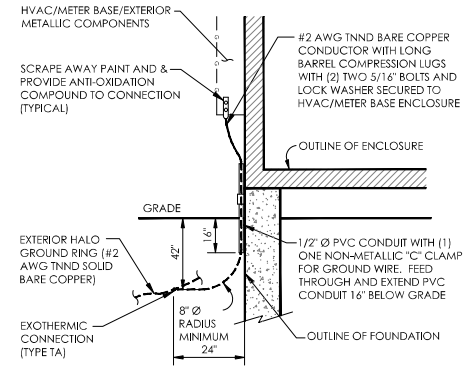




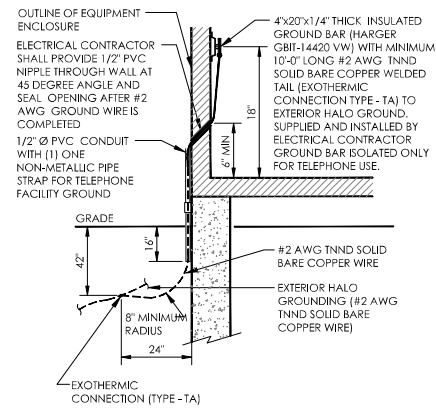
6 TELEPHONE SERVICE ENTRANCE
NOT TO SCALE



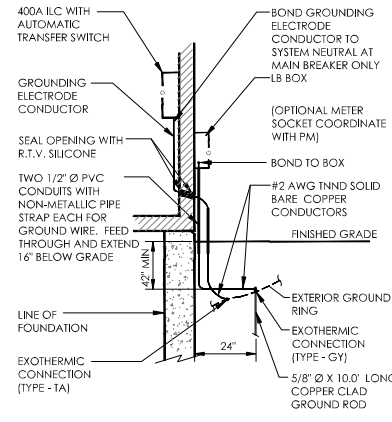
4 UNDERGROUND ELEC. SERVICE DETAIL
NOT TO SCALE



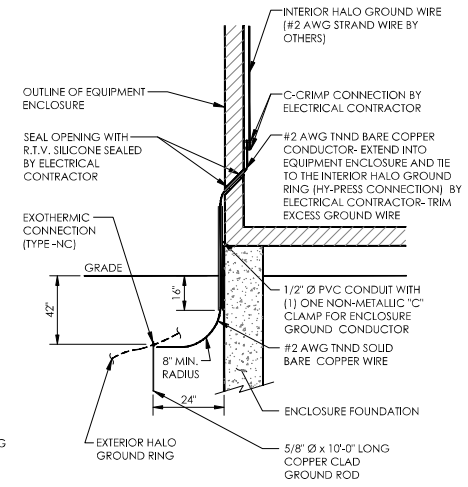
2 HVAC/METER BASE/METALLIC COMPONENTS
GROUNDING DETAIL
NOT TO SCALE



5 TELCO FACILITY GROUND
NOT TO SCALE



3 ELECTRIC SERVICE GROUNDING DETAIL
NOT TO SCALE



1 ENCLOSURE GROUNDING DETAIL
NOT TO SCALE



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PROJECT: 158891
DRAWING NO.: 00000000000000000000
REVISION: 000
DRAWN BY: CCB
CHECKED BY: AAY
COMPILED: 2017

ISSUED FOR REVIEW

GROUNDING DETAILS

E502

KEY NOTES:

- ① COORDINATE METER BOX AND METER LOCATION WITH EXISTING UTILITY.
- ② (P) 60 kW DIESEL GENERATOR, PROVIDE NEW MAIN LINE CIRCUIT BREAKER AS INDICATED, RECONNECT ANCILLARY LOADS.
- ③ COORDINATE WITH LOCAL UTILITY FOR TRANSFORMER UPGRADE AS REQUIRED AND ASSOCIATED ARC FLASH INFORMATION.
- ④ INTEGRATED LOAD CENTER (ILC) IS PREPURCHASED BY VERIZON WIRELESS FOR INSTALLATION, START UP AND TESTING UNDER THIS PROJECT, SOLID NEUTRAL, INTERNAL 2P ATS CONTINUOUS RATING: 400A.
- ⑤ RECTIFIERS (PROPOSED & FUTURE) ARE 75 AMP, MODEL #NE075AC48ATEZ, PEOPLESOT #109163473.
- ⑥ "SECB-1" 400A DISCONNECT SHALL BE A SEPARATELY ENCLOSED SERVICE ENTRANCE RATED CIRCUIT BREAKER, WITH NEUTRAL AND GROUND KITS. PROVIDE ARC FLASH WARNING LABEL FOR SERVICE ENTRANCE BREAKER.

INDICATING NOMINAL SYSTEM VOLTAGE, ARC FLASH BOUNDARY, AND INCIDENT ARC FLASH ENERGY

A. VERIZON FURNISHED INTEGRATED LOAD CENTER (SEE PRE-PURCHASE SCHEDULE)

B. 120/240V, 1P, 3W, 400A, 42 POLE MAIN DISTRIBUTION PANELBOARD.

C. 400A, 2P UTILITY SOURCE BREAKER, WITH NEUTRAL KIT.

D. ONE MECHANICALLY INTERLOCKED 400A, 2P STANDBY SOURCE BREAKER (PERMANENT GEN).

E. NORMAL SOURCE UTILITY INPUT VOLTAGE SENSING RELAY.

F. NORMAL AND STANDBY SOURCE TVSS UNITS.

G. NEMA 1 ENCLOSURE.

H. 42 KAIC RATED (ATS AND ALL BREAKERS).

I. WALL MOUNTED.

- ⑦ INDICATED WIRESIZE IS BASED ON ADJUSTMENT FACTOR OF 0.8 FOR 4-6 CONDUCTORS IN A CONDUIT.
- ⑧ EXTEND BRANCH CIRCUIT WIRING AS INDICATED TO NEW ILC PANEL.

SHEET NOTES:

1. PROVIDE SEPARATE INSULATED GROUNDING CONDUCTOR IN ALL FEEDER & BC.
2. FEEDER CIRCUITS, GROUND LEADS, & DEDICATED EQUIPMENT CIRCUITS SHALL NOT BE SPLICED.
3. VERIFY LASHING REQUIREMENTS FOR SERVICE ENTRANCE & MAIN DISTRIBUTION EQUIPMENT WITH MANUFACTURER. INSTALL LASHING PER MANUFACTURER'S REQUIREMENTS.

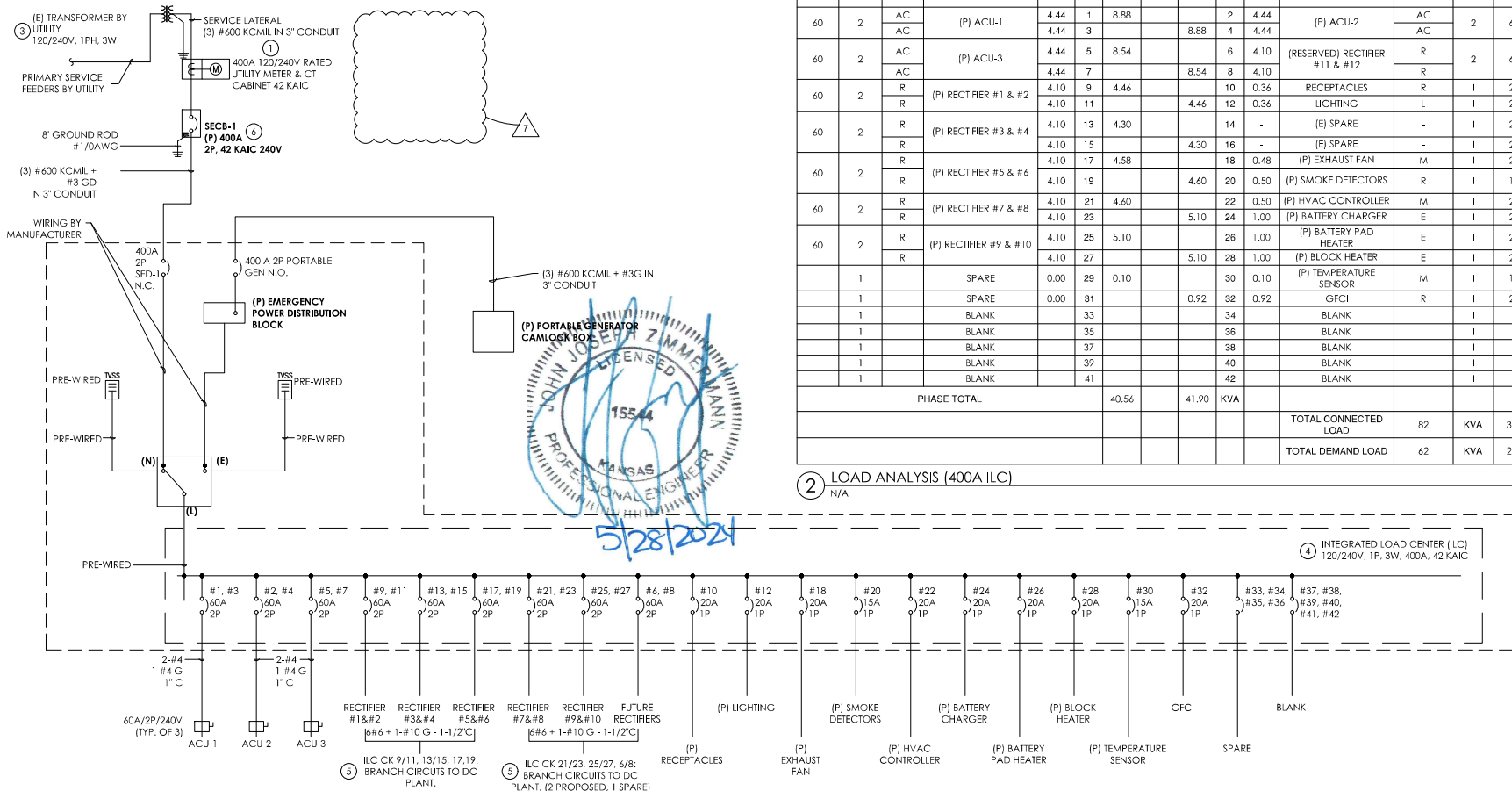
COMPRESSION LUG NOTES:

REFER TO SPECIFICATION SECTION 260519 & NSTDS16 REGARDING REQUIREMENTS FOR A SAMPLE COMPRESSION LUG SUBMITTAL ON ALL PROJECTS. FAILURE TO PROVIDE CORRECT LUGS & SUBMIT A SAMPLE COMPRESSION LUG TO VZW PRIOR TO INSTALLATION OF ANY LUGS MAY RESULT IN REJECTION OF THE INSTALLATION & REPLACEMENT OF ALL LUGS & ASSOCIATED CABLE, WHERE REQUIRED, AT NO COST TO VZW.

PANEL NAME			LOCATION:		VOLTAGE: 240 / 120V 1 Ø						MOUNTING SURFACE					
ILC PANEL			SHELTER		MAIN C/B: 400 AMPS						AVAIL. FAULT CURRENT:					
9/21/17					BUS RATING: 400 AMPS						SHORT CIRCUIT RATING: 42 KAIC					
AMPS	POLES	TYPE	CIRCUIT DESCRIPTION		KVA	CKT	A		B	CKT	KVA	CIRCUIT DESCRIPTION		TYPE	POLES	AMPS
60	2	AC	(P) ACU-1	4.44	1	8.88				2	4.44	(P) ACU-2		2	60	
		4.44		3		8.88	4	4.44	AC							
60	2	AC	(P) ACU-3	4.44	5	8.54				6	4.10	(RESERVED) RECTIFIER #11 & #12	R	2	60	
		4.44		7		8.54	8	4.10	R							
60	2	R	(P) RECTIFIER #1 & #2	4.10	9	4.46				10	0.36	RECEPTACLES	R	1	20	
		4.10		11		4.46	12	0.36	LIGHTING	L	1	20				
60	2	R	(P) RECTIFIER #3 & #4	4.10	13	4.30				14	-	(E) SPARE	-	1	20	
		4.10		15		4.30	16	-	(E) SPARE	-	1	20				
60	2	R	(P) RECTIFIER #5 & #6	4.10	17	4.58				18	0.48	(P) EXHAUST FAN	M	1	20	
		4.10		19		4.60	20	0.50	(P) SMOKE DETECTORS	R	1	15				
60	2	R	(P) RECTIFIER #7 & #8	4.10	21	4.60				22	0.50	(P) HVAC CONTROLLER	M	1	20	
		4.10		23		5.10	24	1.00	(P) BATTERY CHARGER	E	1	20				
60	2	R	(P) RECTIFIER #9 & #10	4.10	25	5.10				26	1.00	(P) BATTERY PAD HEATER	E	1	20	
		4.10		27		5.10	28	1.00	(P) BLOCK HEATER	E	1	20				
1			SPARE	0.00	29	0.10				30	0.10	(P) TEMPERATURE SENSOR	M	1	15	
1			SPARE	0.00	31			0.92	32	0.92	GFCI	R	1	20		
1			BLANK		33					34		BLANK		1		
1			BLANK		35					36		BLANK		1		
1			BLANK		37					38		BLANK		1		
1			BLANK		39					40		BLANK		1		
1			BLANK		41					42		BLANK		1		
PHASE TOTAL						40.56			41.90	KVA						
												TOTAL CONNECTED LOAD	82	KVA	344	
												TOTAL DEMAND LOAD	62	KVA	258	

② LOAD ANALYSIS (400A ILC)

N/A



verizon

THE DRAWING WAS PREPARED SOLELY FOR THE USE OF VERIZON WIRELESS AND MUST ONLY BE USED BY VERIZON WIRELESS EMPLOYEES, CONTRACTORS AND VENDORS WHILE PERFORMING THE WORK SHOWN ON THE DRAWING. ANY OTHER USE OF THE DRAWING IS PROHIBITED.

TERRA
680 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH: 847-698-6400
FAX: 847-698-6401

verizon
KCVC HERITAGE SQUARE
LOCATION CODE: 661221
15201 MURLEN
OLATHE, KS 66062

NO.	DESCRIPTION	DATE
1	ISSUED FOR EOS REVIEW	06/14/22
2	REVISED PER CLIENT COMMENTS	08/02/22
3	REVISED FIBER ROUTE	08/24/22
4	ISSUED FOR FINAL	09/29/22
5	REVISED TRANSFORMER LOCATION	01/30/23
6	UPDATED PER CLIENT COMMENTS	02/16/23
7	REVISED PER CROWN COMMENTS	02/07/24

NETWORK COMPLIANCE SUBMITTALS	DATE
100% SUBMISSION	06/19/22

PROJECT: 15801
DRAWING NO.: 15801-01
DESIGNED BY: JAY
DRAWN BY: CCB
CHECKED BY: JAY
CONDATE: 2017

ISSUED FOR REVIEW

ONE LINE DIAGRAM & LOAD ANALYSIS

E701