

ELECTRICAL SYMBOLS

ELEC ABBV.

PANELBOARDS AND POWER CONNECTIONS

	Flush Mounted Panelboard - See Panel Schedules
	Surface Mounted Panelboard - See Panel Schedules
	Existing Surface Mounted Panelboard - See Panel Schedules
	Transformer as Noted
	Pull Box - Size as Noted
	Junction Box
	Motor Connection #1 - See Equipment Schedule
	Heavy Duty Disconnect Switch with Enclosure to Suit (Size as Indicated in Motor Schedule)
	Manual Starter (Size as Indicated in Motor Schedule)
	Magnetic Starter (Size as Indicated in Motor Schedule)
	Circuit Breaker with Enclosure
	Combination-Starters (Size as Indicated in Motor Schedule)
	Generator Kill Switch
	Miscellaneous Load

Standard Mounting Height to Center of Box (unless noted otherwise on plan) Verify Mounting Heights with All Casework Locations.

RECEPTACLE AND TELEPHONES

	18" Duplex Receptacle
	18" Switched Duplex Receptacle - Lower Half Shall be Switched
	18" Single Receptacle
	18" Fourplex Receptacle
	Special Receptacle
	Duplex Receptacle with Floor Box
	18" Duplex Ground Fault Interrupter Receptacle
	18" Fourplex Ground Fault Interrupter Receptacle
	18" Receptacles on Emergency Power
	Communications outlet and floor box with one four-pair drop.
	18" Telephone Outlet - Provide Jack, one drop, and a 4" x 4" junction box with single gang routing and 1/2" stub-up. W - Wall Telephone Jack, mounted 54" AFF
	18" Combination data and telephone outlet - Provide (2) Jacks, (2) drops, and a 4" x 4" junction box, single gang routing, and 1/2" stub-up.
	18" Data Outlet - Provide one drop with 3/4" stubup and 4" x 4" junction box with single gang routing.

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WIRING AND DEMOLITION

	Conduit and Conductors Concealed in Wall or Ceiling
	Conduit and Conductors Concealed in or Below Floor or Underground
	Conduit and Conductors Exposed
	Home Run to Panelboard, etc. (Numbers Denote Panel and Circuit No.)
	Conduit Turned Down
	Conduit Turned Up
	Conduit or Duct Stub and Cap
	Nurse Call Raceway and/or Wiring
	Speaker Raceway and/or Wiring
	Public Telephone Raceway
	Fire Detection System Raceway and/or Wiring
	Television Raceway and/or Wiring
	Clock and Program Raceway and/or Wiring
	Intercom Raceway and/or Wiring
	Remove Device
	Existing Device to Remain

Cross Lines Denote Quantity of #12 Conductors  
Other Sizes of Conductors are Indicated by Note  
Wiring is Diagrammatic Up and Down Turns are Used Only For Changes in Floor Levels

DEVICE INFORMATION

	E-1 Panel A LP13.5
	Switch L4115a L4115a/90"
	L4115a/60" Panel Mounting Height WP = Weatherproof AC = Above Counter - Center Box 4" Above Backsplash

LIGHTING AND SWITCHES

	Fixture Identification Tag - See Schedule
	Light Fixture - Ceiling Surface Mounted on Pendant
	Light Fixture - Wall Mounted
	Light Fixture - Ceiling Recessed Mounted
	Fluorescent Fixture - Recessed Mounted
	Fluorescent Fixture - Surface Mounted
	Fluorescent Fixture - Wall Mounted
	Exit Light - Ceiling Surface or Pendant Mounted
	Exit Light - Wall Mounted
	Track Light
	Undercounter/Undershelf Light
	Strip Light
	18" Night Light - Wall Fixture
	18" Night Light - Ceiling Fixture
	Post Top Luminaire with Post and Base
	Arm Mounted Luminaire with Post and Base
	Emergency Light - Battery Pack
	48" Time Switch
	48" Single Pole Switch
	48" Three-Way Switch
	48" Four-Way Switch
	48" Key Operated Switch
	48" Dimmer (80 Watt Unless Otherwise Noted)
	48" Motion Sensor - Ceiling Mounted
	48" Motion Sensor - Wall Mounted
	48" Timer Switch

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FIRE ALARM SYSTEMS

	Fire Alarm Control Panel (FACP)
	Fire Alarm Annunciator Panel (FAAP)
	84" Horn Strobe
	84" Alarm Strobe
	42" Manual Pull Station - Recessed
	Smoke Detector
	Heat Detector
	Dust Smoke Detector
	82" Magnetic Door Release
	Tamper Switch
	Flow Alarm
	Fire Alarm Key Switch

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PAGING, INTERCOM AND NURSE CALL

	Calling Mounted Speaker - Recessed
	90" Wall Mounted Speaker - Surface
	90" Wall Mounted Speaker - Recessed
	48" Call System Master Station
	48" Call System Device (See Details)
	90" Wall Mounted Call System Corridor Light
	54" Toilet Call System Device
	48" Staff Assist Station
	48" Staff Tracking Station
	48" Nurse Call Duty Station

Standard Mounting Height to Center of Box (unless noted otherwise on plan) Verify Mounting Heights with All Casework Locations.

MISCELLANEOUS SIGNAL SYSTEMS

	Bell
	Microphone - Floor Box
	48" Microphone - Surface Mounted
	18" Television Outlet
	Television Floor Outlet
	Television Remote Control
	Camera
	Master Clock and Program Device
	96" Clock - Wall Mounted Clock and Recessed Outlet
	Clock - Ceiling Mounted Clock and Recessed Outlet
	Clock - Wall Mounted, Battery Operated
	96" Elapsed Time Indicator
	48" Staff Assist Station
	48" Staff Tracking Station
	48" Keypad
	42" Pushbutton
	42" Handicap Push Button
	42" Card Reader (Proximity)
	Power Supply
	Door Contact
	Electric Door Strike
	Electric Hinge
	Electric Exit Device
	Electric Door Lock
	Electromagnetic Door Lock
	Master Door Intercom and Release Button
	Control Device

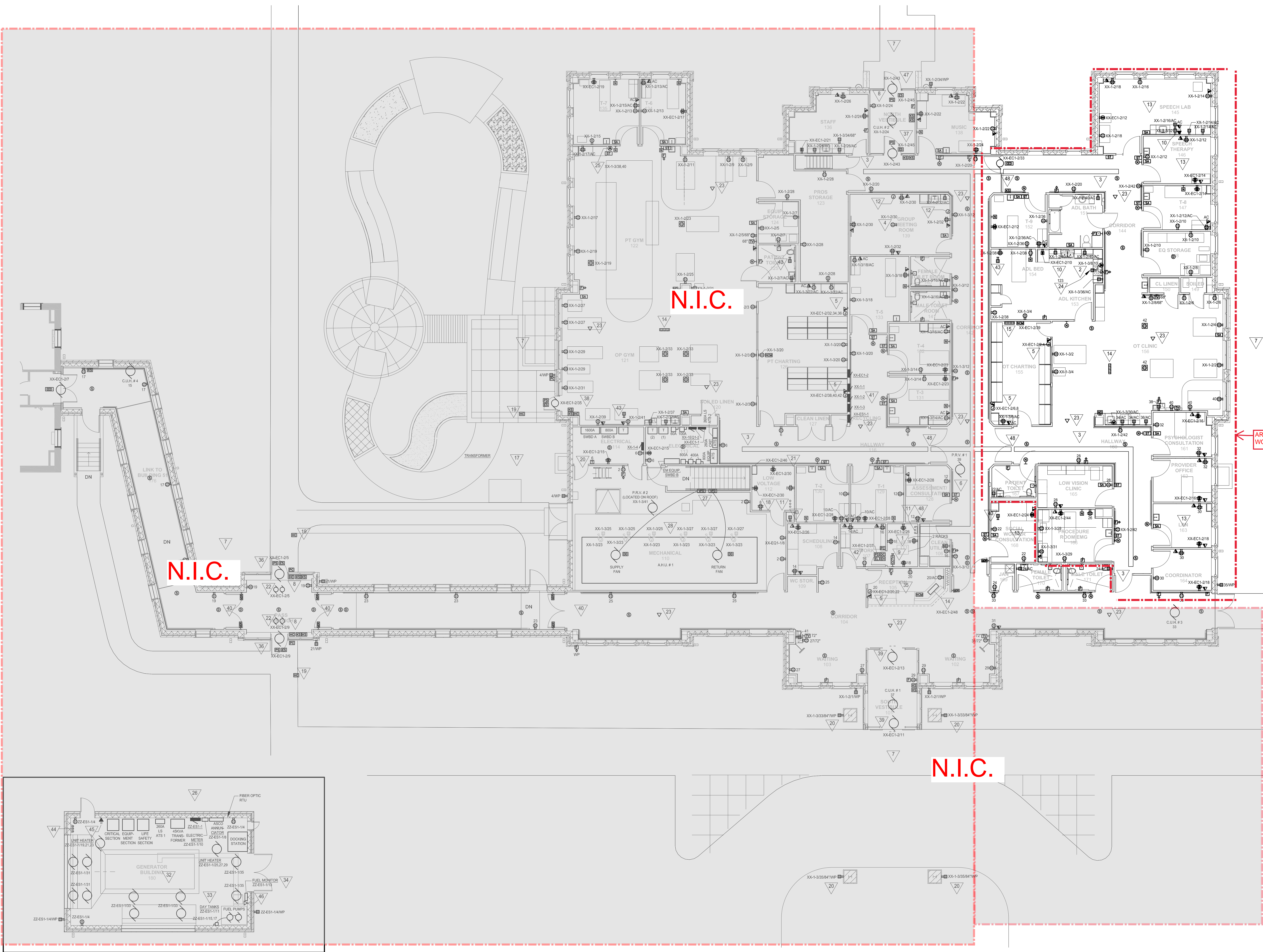
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SCHEMATIC SYMBOLS

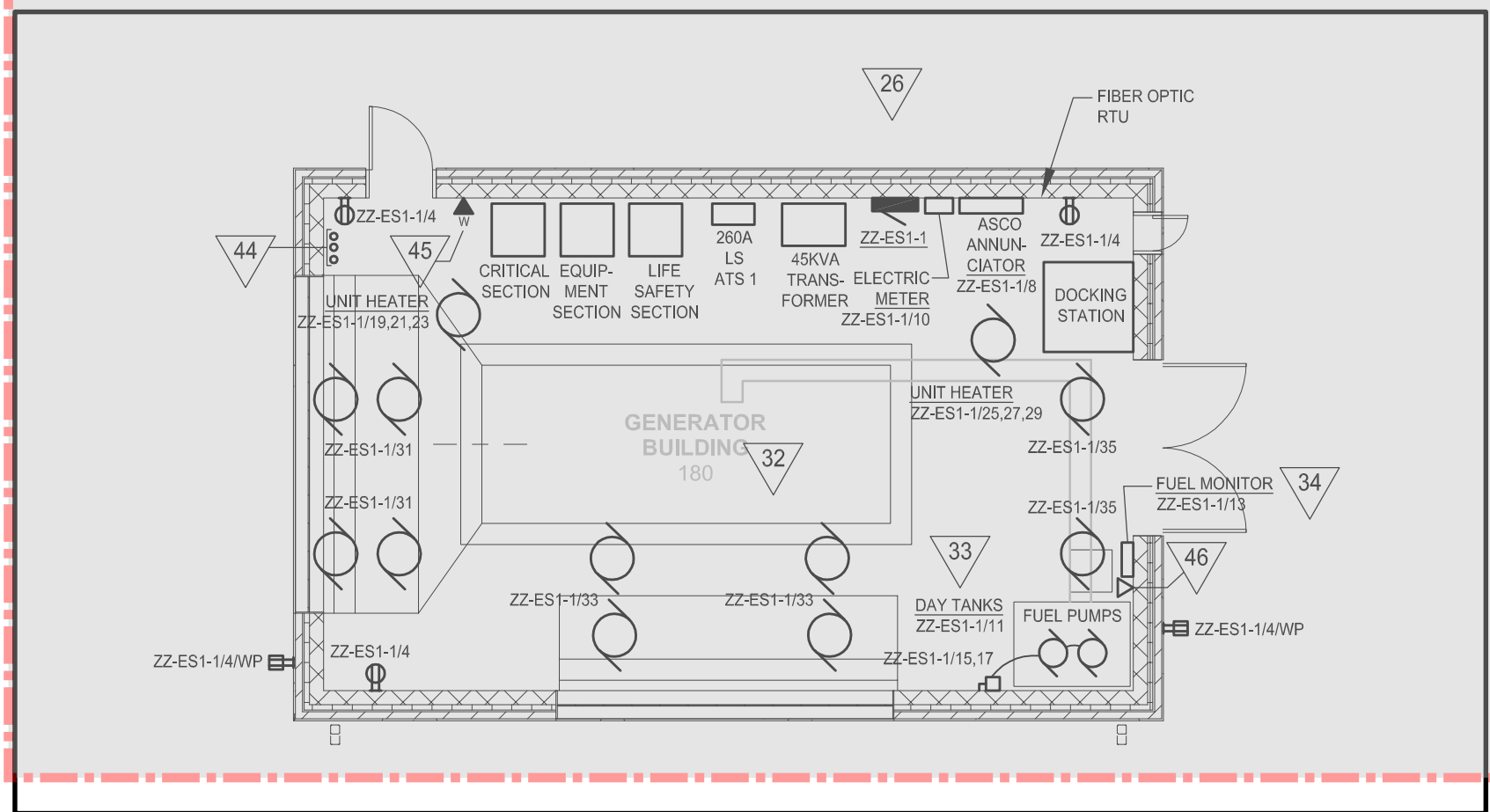
	Generator
	Circuit Breaker
	Primary Overcurrent Protection Device
	Fuse
	Fused Switch
	Transformer
	Panelboard
	Ground
	Utility Meter
	Transient Voltage Surge Suppressor
	Automatic Transfer Switch
	Kirk Key Interlock
	Contact, Normally Open
	Contact, Normally Closed
	Contact, Coil
	Temperature Switch, Normally Open
	Sensorid
	Pilot Light, letter indicates color
	Capacitor
	Pushbutton, Normally Open
	Pushbutton, Normally Closed
	Pushbutton, Mushroom Head
	Terminal Block

A	AMPERE
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFF	ABOVE FINISH FLOOR
AFO	ABOVE FINISH GRADE
AC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AS	AMP SWITCH
AT	AMP TRIP
ARCH	ARCHITECT
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
BLDG	BUILDING
C	CONDUIT
CAM	CAMERA
CAT	CATALOG, CATEGORY
CAV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CC	CIRCUIT
CCT	CIRCUIT
COT	CIRCUIT
COL	COLUMN
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DISC	DISCONNECT
DIV	DIVISION
DWG	DRAWING
DT	DUST TIGHT
E	WIRED ON EMERGENCY CIRCUIT
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRIC METALLIC TUBING
EOL	END OF LINE
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
F	FLASH
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FDN	FOUNDATION
FIA	FULL LOAD AMPERES
FMC	FLEXIBLE METALLIC CONDUIT
G	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
HP	HORSE POWER
HV	HIGH VOLTAGE
HIAC	HEATING, VENTILATING AND AIR CONDITIONING
HZ	HERTZ (CYCLES PER SECOND)
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
ICML	THOUSAND CIRCULAR MILS
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
LS	LIMIT SWITCH
LGT	LIGHTING
LV	LOW VOLTAGE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MISC	MISCELLANEOUS
MLD	MAIN LUG ONLY
MSB	MAIN SWITCHBOARD
NTS	EMPTY
NTD	NOT TO SCALE
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
#	NUMBER, GAUGE
NTS	NOT TO SCALE
P	POLE
PB	PULL BOX
PH	PHASE
PNL	PANEL
PP	POWER PANEL
PR	PUR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
PWR	POWER
REC	RECESSED
RECP	RECEPTACLE
RT	RAINTIGHT
SEC	SECONDARY
SP	SPARE
SPL	SPLICE
SS	STAINLESS STEEL
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
TC	TELEPHONE CABINET
TEL	TELEPHONE
TERM	TERMINALS
TR	TAMPER RESISTANT
TYP	TYPICAL
UG	UNDERGROUND
V	VOLT
VT	VAPORTIGHT
W	WATT
WH	WATER-PROOF
WP	WEATHERPROOF
WT	WEATHERTIGHT, WEIGHT
XPM	EXPLOSION PROOF
XP	EXPLOSION PROOF
Z	IMPEDANCE





- GENERAL NOTES:**
- SOME NOTES MAY NOT APPLY TO THIS SHEET.
  - THE MINIMUM CONDUIT SIZE IS 3/4"
  - PROVIDE EMT CONDUIT. FLEXIBLE CONDUIT IS NOT ALLOWED EXCEPT FOR MOTOR AND LIGHTING WHIPS.
  - PROVIDE 4-11/16" X 2-1/8" DEEP CEILING JUNCTION BOXES AND 4-11/16" X 4" DEEP WALL JUNCTION BOXES.
  - FIRE ALARM CONDUITS SHALL BE RED. LV CONDUITS SHALL BE BLUE.
  - CONNECT FIRE ALARM DEVICES TO FIRE ALARM PANEL IN BUILDING 51.
  - PROVIDE CONCRETE PADS FOR GENERATOR TRANSFORMER, SWITCHGEAR SECTIONS, AND DAY TANK.
  - PROVIDE AN AMERICAN MIDWEST POWER DOCKING STATION, OR EQUAL, WITH TWO 2500A CIRCUIT CIRCUIT BREAKERS AND A CROMPTON 07-12PA-PC6 PHASE MONITOR FOR 480V/277V.
  - PROVIDE A 450 GALLON A DAY TANK WITH TWO 1/2 HP PUMPS. PROVIDE CONTROL WIRING.
  - PROVIDE WIRING FOR THE LOW VOLTAGE SECONDARY CHAMBER AND FULL PROTECTION ALARM FOR THE BURNED TANK. CONNECT WIRES TO FUEL MONITOR.
  - PROVIDE POWER AND FIRE ALARM CONNECTIONS FOR ALL SMOKE DAMPERS. SEE MECHANICAL PLANS FOR LOCATIONS.
  - PROVIDE DYNA LOCKS, OR EQUAL, KEYSWITCHES WITH A BEST CORE AND TWO SPARE KEY BLANKS PER SWITCH.
- KEY NOTES:**
- PROVIDE A 3 COPPER GROUND BUS WITH #6 COPPER RUNNING TO THE SERVICE ENTRANCE GROUND BUS.
  - PROVIDE A 50A CONTACTOR AND KEYSWITCH TO LOCK OUT THE RANGE.
  - PROVIDE COOPER B-LINE CEA1H09-12-144 CABLE TRAY.
  - CEILING MOUNTED PROJECTOR
  - PROVIDE POWER AND VOICEDATA FOR SYSTEM FURNITURE. VERIFY LOCATIONS WITH FURNITURE PROVIDER.
  - P.R.V. IS LOCATED ON ROOF
  - ALL CIRCUITS CONNECT TO PANEL XX-1-1 UNLESS NOTED OTHERWISE.
  - PROVIDE JUNCTION BOX AND COVER WITH 3/4" CONDUIT AND DRAWINGS TO RUN FROM DOOR ENTRY AREA TO IT 111. MOUNT JUNCTION BOX AT 54" AFF. THIS CONDUIT IS FOR A FUTURE INTERCOM.
  - CONNECT CCTV CAMERA TO RECORDER IN CLEAN UTILITY 106.
  - PROVIDE LOW VOLTAGE WIRING FROM OWNER FURNISHED ALARM CONTACT TO BAS MONITOR.
  - PROVIDE (3) 4" INTUMESCENT TYPE FIRE RATED SLEEVES IN CEILING. VERIFY LOCATION.
  - PROVIDE A 4" X 4" JUNCTION BOX, SINGLE-GANG MUDRING, AND A 1" CONDUIT STUBUP FOR OVERHEAD PROJECTOR CABLES.
  - PROVIDE A CEILING MOUNTED ANNUNCIATOR LIGHT. CONNECT TO 30-LIGHT ANNUNCIATOR PANEL IN RECEPTION 105. NOTE THAT THE SPEECH LAB AND SPEECH THERAPY LIGHTS CONNECT TO ONE CALL SWITCH.
  - PROVIDE A 10-LIGHT ANNUNCIATOR IN THE CEILING. CONNECT TO A 10-LIGHT ANNUNCIATOR CONTROLLER IN RECEPTION 105.
  - PROVIDE A 30-LAMP CONTROLLER FOR STAFF CALLS.
  - PROVIDE A RIGID STEEL CONDUIT FOR THE TRANSFORMER SECONDARY FEEDERS.
  - THE LOW VOLTAGE ROOM INCLUDES FIRE ALARM PAGING, AND NURSE CALL EQUIPMENT.
  - PROVIDE A BOLLARD FOR THE EXTERIOR HANDICAP PUSH PAD. BOLLARD SHALL BE DARK BRONZE ANODIZED ALUMINUM 4" X 4" X 42" TALL SURFACE MOUNT. WORK ACCESS ABILITY BPS SM PR20 DB OR EQUAL.
  - PROVIDE A 24 HOUR TIMER FOR THE EXTERIOR RECEPTACLES. LOCATE TIME IN 114.
  - RAILROAD HEAD-END CABINET LOCATION.
  - AIR CURTAIN FAN MOTORS SHALL RUN WHEN THEIR RESPECTIVE DOOR OPERATOR OPENS THE DOOR. CONNECT MOTOR CONTROL CIRCUIT TO DOOR OPERATOR CONTACT.
  - PROVIDE AN ABOVE CEILING DATA OUTLET ON A 6" PRETAL FOR "SENSI-TRACK" EQUIPMENT.
  - MOUNT MICROWAVE RECEPTACLE IN CABINET ABOVE RANGE. SEE ARCHITECTURAL ELEVATION.
  - PROVIDE A NEMA 6-20 STRAIGHT BLADE RECEPTACLE FOR HOIST CONTROLLER. MOUNT AT 48" AFF. VERIFY EXACT LOCAL WITH ARETECH 2000 G HOIST INSTALLER.
  - PROVIDE (2) 1-1/2" CONDUITS AND DRAWINGS FROM GENERATOR BUILDING TO REHAB BUILDING IT111 ROOM. PROVIDE (1) 1-1/2" CONDUIT AND DRAWINGS FROM GENERATOR BUILDING TO ELECTRICAL 113 FOR THE ATS CONDUCTORS.
  - PROVIDE VARIABLE FREQUENCY DRIVES WITH INTEGRAL DISCONNECT SWITCHES.
  - PROVIDE POWER FOR (a) AHU LIGHTS AND (b) RECEPTACLES. SEE DETAIL M3041 FOR LOCATIONS. LIGHTS, SWITCHES, AND RECEPTACLES TO BE FURNISHED BY DIV. 23.
  - PROVIDE A HOA SWITCH AND POWER FOR A GLYCOL FEEDER PUMP. MOUNT SWITCH AT 48" AFF. HARDWIRE THE PUMP TO THE HOA.
  - STEAM METER AND WATER METER LOCATIONS.
  - PROVIDE POWER FOR METASYS TEMPERATURE CONTROL PANEL.
  - PROVIDE GENERATOR KILL SWITCH AND GENERATOR ANNUNCIATOR IN GENERATOR BUILDING.
  - CONNECT THE DAY TANK ALARMS TO THE GENERATOR ANNUNCIATOR PANEL.
  - OMN TECH OIL TANK MONITOR. SENSOR WIRING PROVIDED BY DIVISION 23.
  - PROVIDE DURESS BUTTON CONNECTED TO POLICE DISPATCHER.
  - PROVIDE WIRING AS REQUIRED FOR HARDWARE GROUP 8G.
  - PROVIDE WIRING AS REQUIRED FOR HARDWARE GROUP E11A.
  - PROVIDE WIRING AS REQUIRED FOR HARDWARE GROUP E11.
  - PROVIDE WIRING AS REQUIRED FOR HARDWARE GROUP 12G.
  - PROVIDE WIRING AS REQUIRED FOR HARDWARE GROUP 12G.
  - PANELS XX-EC1-2, XX-1-1, XX-2-1, XX-3-1, AND XX-ES1-1 TO BE MOUNTED ABOVE HANDRAIL. MOUNT BOTTOM OF PANELBOARDS ABOVE 36". NOTE THAT THE TOP CIRCUIT BREAKERS IS NOT TO EXCEED 47" AFF.
  - PROVIDE WIRING AS REQUIRED FOR HARDWARE GROUP 9H-3.
  - PROVIDE REBESTAL MOUNTED ROOFTOP FGD RECEPTACLE AND WEATHER PROOF COVER. CONNECT TO CIRCUIT XX-1-144. MOUNT TO SIDEWALL AND EXTEND 30 CENTER OF BOX IS 28" ABOVE CONCRETE DECK. SEE ARCHITECTURAL ROOF PLAN FOR LOCATIONS.
  - PROVIDE (3) 4" CONDUITS FROM INSIDE GENERATOR BUILDING TO EXTERIOR FOR FUTURE CONDUCTORS. STUB OUT 12" FROM BUILDING.
  - PROVIDE CAT 6 CABLE AND OUTLET FOR TELEPHONE. CONNECT TO RTU FIBER PANEL.
  - PROVIDE CAT 6 CABLE AND OUTLET FOR COMPUTER. CONNECT TO RTU FIBER PANEL.
  - PROVIDE WIRE AS REQUIRED FOR HARDWARE GROUP E18.
  - PROVIDE WIRE AS REQUIRED FOR HARDWARE GROUP E18.
  - PROVIDE (3) 4" SLEEVES WITH INTUMESCENT MATERIAL TO PROVIDE FIRE WALL RATING. MOUNT ABOVE CABLE TRAY.



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APPROVED SERVICE LINE DIRECTOR	DATE	APPROVED INFECTION CONTROL NURSE	DATE
APPROVED DEMO COORDINATOR	DATE	APPROVED PATIENT SAFETY	DATE
APPROVED PROJECTS SECTION MANAGER	DATE	APPROVED CHIEF OF POLICE	DATE
APPROVED DIRECTOR FMS	DATE	APPROVED SAFETY MANAGER	DATE

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Brian A. Rice  
 License No. 22913

APPROVED CHIEF OF STAFF	DATE	APPROVED MEDICAL CENTER DIRECTOR	DATE
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**DRAWING TITLE**  
**POWER & SIGNAL**  
**FIRST FLOOR**

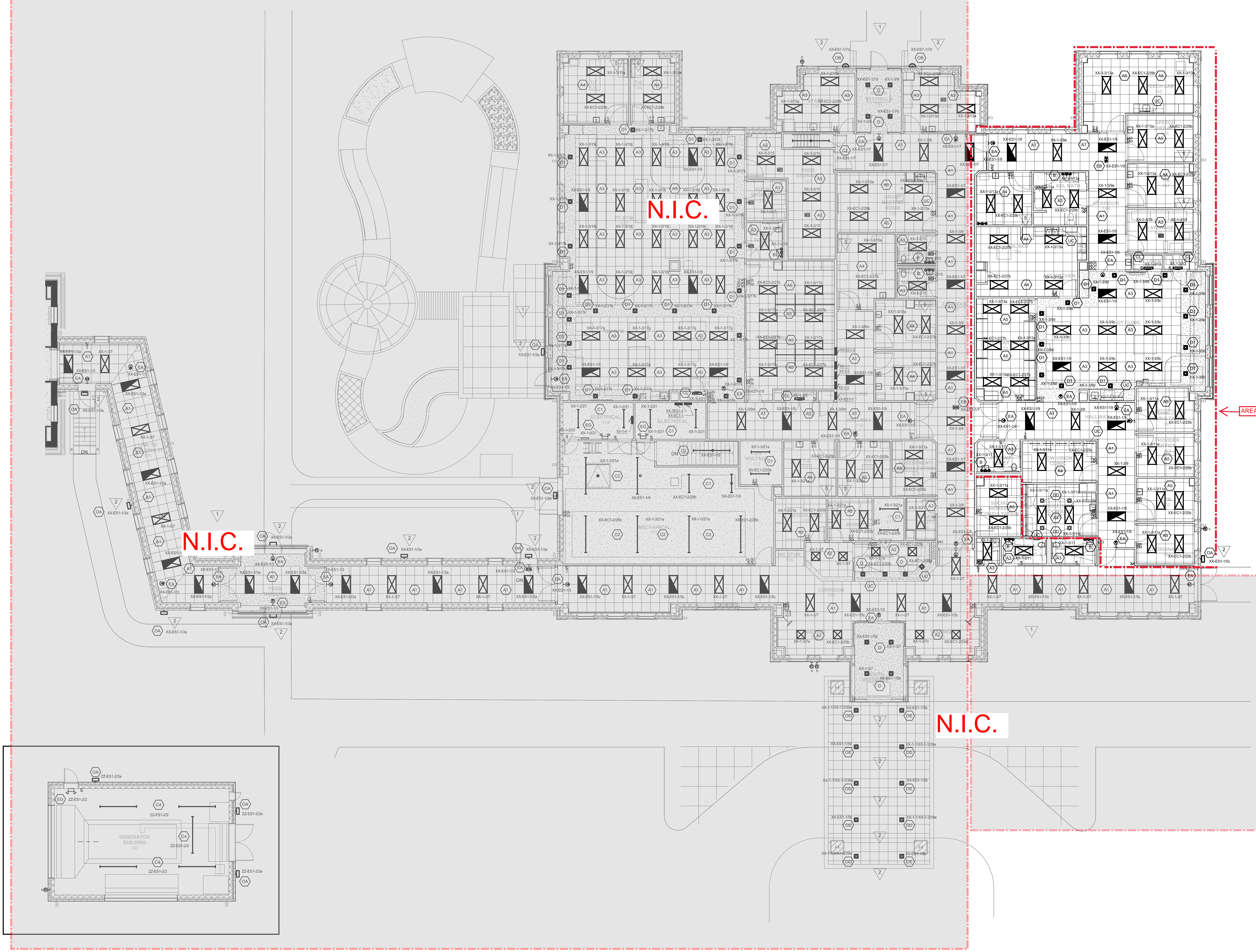
**PROJECT TITLE**  
 RELOCATE REHAB SERVICES 656-16-277  
 St. Cloud VA Health Care System

DATE: 12/03/2018  
 SCALE: 1/8"=1'-0"  
 PROJECT NO.:

DRAWING NO. E101



No.	REVISION	DATE
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- GENERAL LIGHTING NOTES:**
- A. SOME NOTES MAY NOT APPLY TO THIS SHEET.
  - B. NOT ALL LUMINAIRES ARE IDENTIFIED BY TYPE. WHEN A LUMINAIRE IS NOT IDENTIFIED IT SHALL BE THE SAME AS THOSE IDENTIFIED AROUND IT. CONTACT ELECTRICAL ENGINEER WITH QUESTIONS.
  - C. NOT ALL LUMINAIRE SWITCHES ARE IDENTIFIED. WHEN A SWITCH LEG IS NOT INDICATED THE LUMINAIRE SHALL BE PLACED ON THE SWITCH FOR THAT SPACE. IF NO SWITCH EXISTS THE LUMINAIRE WILL NOT BE SWITCHED. EMERGENCY EGRESS LIGHTING SHALL NOT BE SWITCHED.
  - D. WALL-MOUNTED EXIT SIGNS SHALL BE MOUNTED 6" ABOVE THE DOOR, WHEREVER POSSIBLE.
  - E. VERIFY MOUNTING HEIGHTS WITH ARCHITECTURAL ELEVATIONS.
  - F. PROVIDE A "POWER PLUG" TYPE LUMINAIRE DISCONNECT FOR EVERY BALLASTED LIGHT TO MEET NEW NEC CODE 410.130(B).

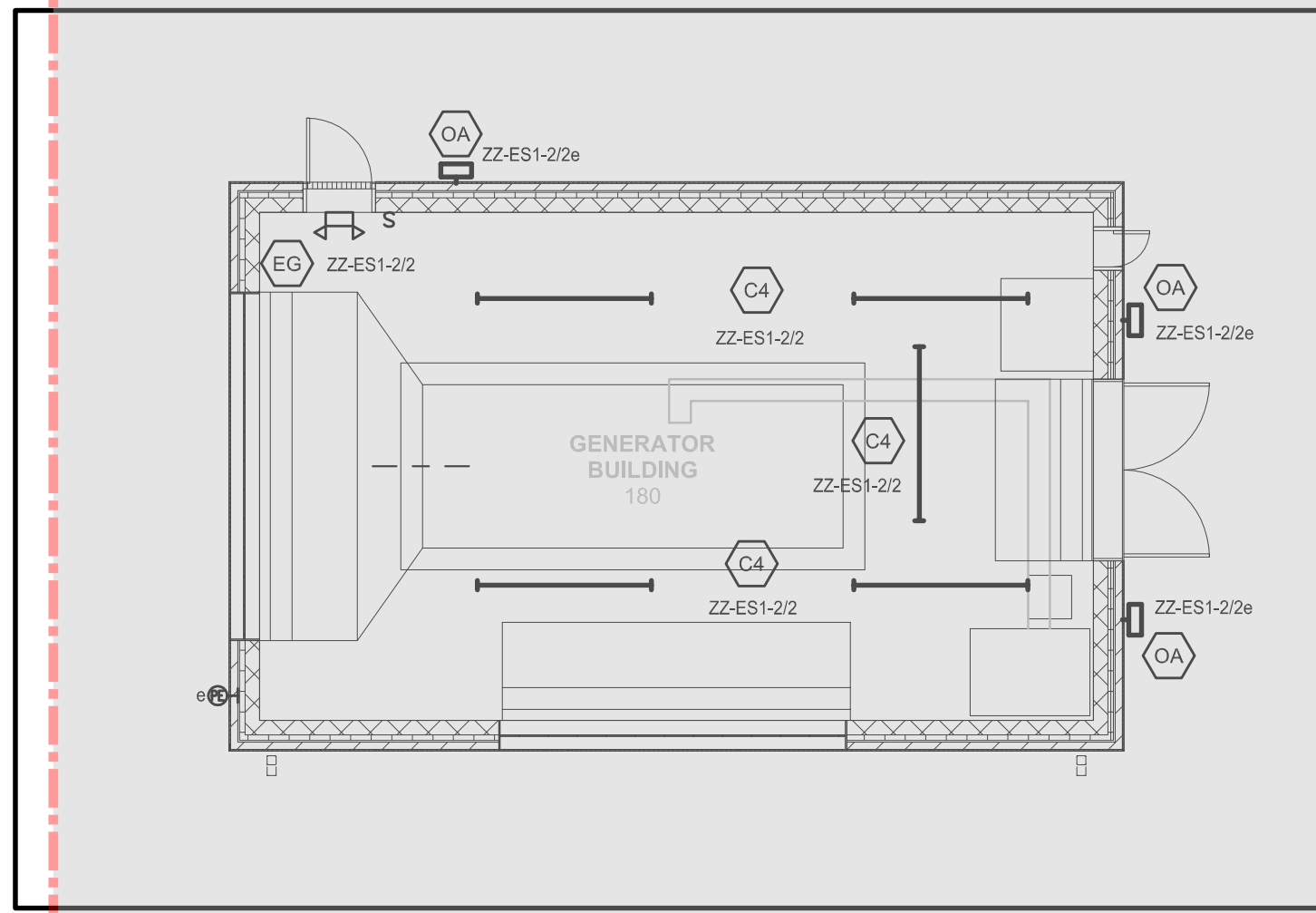
- KEY NOTES:**
- ▽ CONNECT LIGHTS TO PANEL XX-1-1 UNLESS NOTED OTHERWISE.
  - ▽ CONNECT EXTERIOR LIGHTS TO PHOTOELECTRIC CELL. PROVIDE PHOTO CELL AND SHIELD. MOUNT PHOTOCELL AT EL. 107'-6".
  - ▽ PROVIDE LIGHT SWITCH "x" TO CONTROL UNDERCABINET LIGHTS LOCATED IN REGISTRATION DESK.
  - ▽ LIGHTING CONTACTOR FOR 480V/1P PARKING LOT LIGHTS. PROVIDE WITH TEST SWITCH.
  - ▽ PROVIDE 120V LOCAL POWER FOR SYSTEMS FURNITURE LIGHT. VERIFY LOCATION WITH FURNITURE PROVIDER.

AREA OF WORK

N.I.C.

N.I.C.

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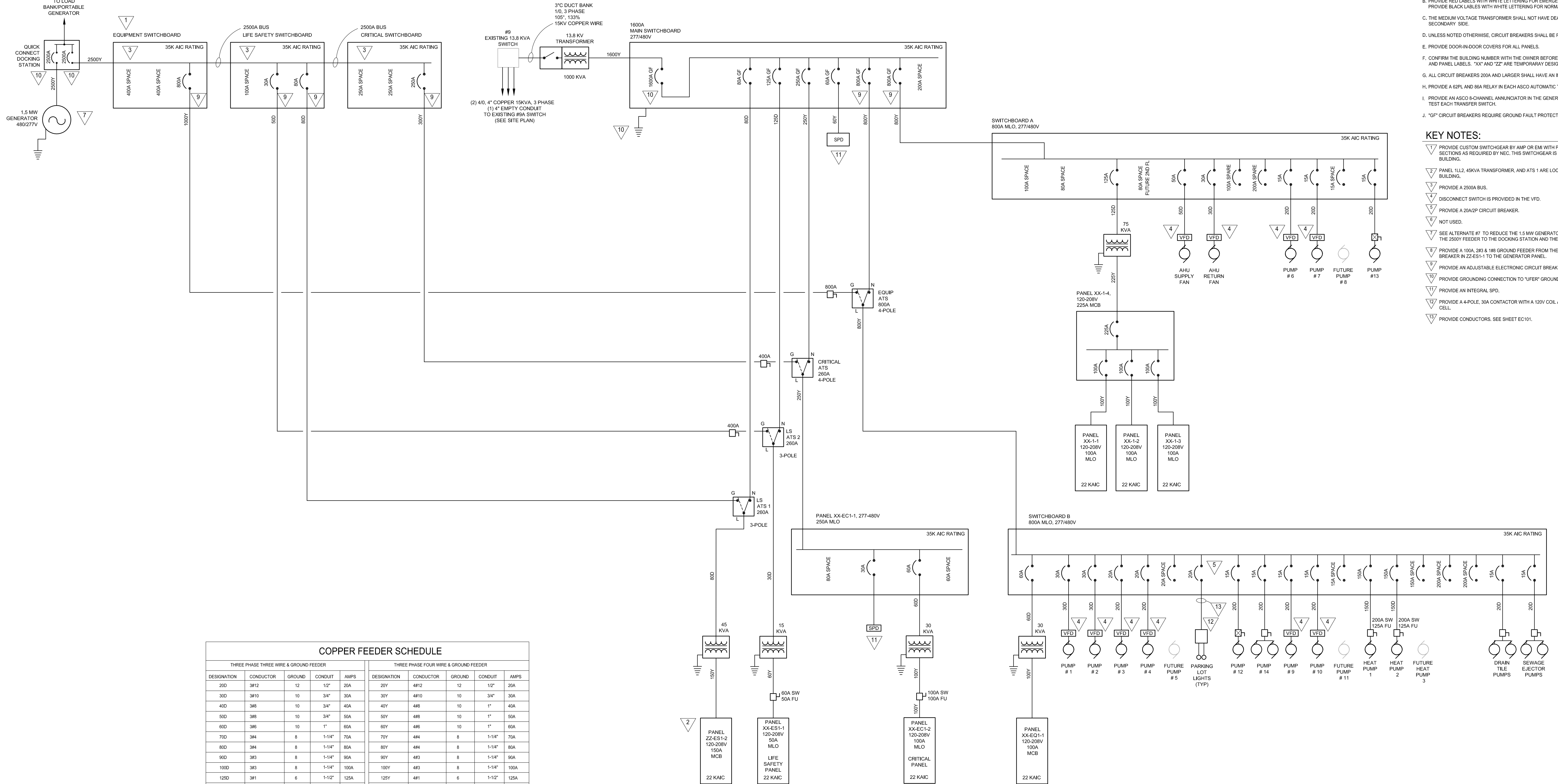
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Brian A. Rice License No. 22913

APPROVED SERVICE LINE DIRECTOR	DATE	APPROVED INFECTION CONTROL NURSE	DATE
APPROVED GEMS COORDINATOR	DATE	APPROVED PATIENT SAFETY	DATE
APPROVED PROJECTS SECTION MANAGER	DATE	APPROVED CHIEF OF POLICE	DATE
APPROVED DIRECTOR FMS	DATE	APPROVED SAFETY MANAGER	DATE

DRAWING TITLE	DATE
<b>LIGHTING FIRST FLOOR</b>	12/03/2018
APPROVED CHIEF OF STAFF	DATE
APPROVED MEDICAL CENTER DIRECTOR	DATE

PROJECT TITLE	DATE
RELOCATE REHAB SERVICES 656-16-277	12/03/2018
St. Cloud VA Health Care System	PROJECT NO.
BUILDING NO.	CHECKED BY
LOCATION	DRAWING NO.
VA MEDICAL CENTER	E201
ST. CLOUD, MN 56303	





THREE PHASE THREE WIRE & GROUND FEEDER						THREE PHASE FOUR WIRE & GROUND FEEDER					
DESIGNATION	CONDUCTOR	GROUND	CONDUIT	AMPS	AMPS	DESIGNATION	CONDUCTOR	GROUND	CONDUIT	AMPS	AMPS
200	3#12	12	1-1/2"	20A	20Y	4#12	12	1-1/2"	20A	20Y	20Y
300	3#10	10	3/4"	30A	30Y	4#10	10	3/4"	30A	30Y	30Y
400	3#8	10	3/4"	40A	40Y	4#8	10	1"	40A	40Y	40Y
500	3#8	10	3/4"	50A	50Y	4#8	10	1"	50A	50Y	50Y
600	3#6	10	1"	60A	60Y	4#6	10	1"	60A	60Y	60Y
700	3#4	8	1-1/4"	70A	70Y	4#4	8	1-1/4"	70A	70Y	70Y
800	3#4	8	1-1/4"	80A	80Y	4#4	8	1-1/4"	80A	80Y	80Y
900	3#3	8	1-1/4"	90A	90Y	4#3	8	1-1/4"	90A	90Y	90Y
1000	3#3	8	1-1/4"	100A	100Y	4#3	8	1-1/4"	100A	100Y	100Y
1250	3#1	6	1-1/2"	125A	125Y	4#1	6	1-1/2"	125A	125Y	125Y
1500	3#1/0	6	1-1/2"	150A	150Y	4#1/0	6	2"	150A	150Y	150Y
1750	3#2/0	6	1-1/2"	175A	175Y	4#2/0	6	2"	175A	175Y	175Y
2000	3#3/0	6	2"	200A	200Y	4#3/0	6	2"	200A	200Y	200Y
2250	3#4/0	4	2"	225A	225Y	4#4/0	4	2-1/2"	225A	225Y	225Y
2500	3#250	4	2-1/2"	250A	250Y	4#250	4	2-1/2"	250A	250Y	250Y
3000	3#350	4	2-1/2"	300A	300Y	4#350	4	3"	300A	300Y	300Y
4000	3#500	3	3"	400A	400Y	4#500	3	3-1/2"	400A	400Y	400Y
5000	(2)3#4250	(2) 2	(2) 2-1/2"	500A	500Y	(2)4#4250	(2) 2	(2) 3"	500A	500Y	500Y
6000	(2)3#3000	(2) 1	(2) 3"	600A	600Y	(2)4#3000	(2) 1	(2) 3"	600A	600Y	600Y
8000	(2)3#1500	(2) 1/0	(2) 3"	800A	800Y	(2)4#1500	(2) 1/0	(2) 3-1/2"	800A	800Y	800Y
10000	(4)3#950	(4) 2/0	(4) 3-1/2"	1000A	1000Y	(4)4#950	(4) 2/0	(4) 3"	1000A	1000Y	1000Y
12000	(4)3#850	(4) 3/0	(4) 3"	1200A	1200Y	(4)4#850	(4) 3/0	(4) 3"	1200A	1200Y	1200Y
16000	(5)3#400	(5) 4/0	(5) 3"	1600A	1600Y	(5)4#400	(5) 4/0	(5) 3-1/2"	1600A	1600Y	1600Y
18000*	(4)3#600	(4) 4/0	(4) 3-1/2"	1800A	1800Y*	(4)4#600	(4) 4/0	(4) 4"	1800A	1800Y	1800Y
20000	(6)3#400	(6) 250	(6) 3"	2000A	2000Y	(6)4#400	(6) 250	(6) 3-1/2"	2000A	2000Y	2000Y
25000	(7)3#600	(7) 350	(7) 3"	2500A	2500Y	(7)4#600	(7) 350	(7) 3-1/2"	2500A	2500Y	2500Y
30000	(8)3#850	(8) 400	(8) 3-1/2"	3000A	3000Y	(8)4#850	(8) 400	(8) 4"	3000A	3000Y	3000Y
40000	(11)3#950	(11)500	(11)3-1/2"	4000A	4000Y	(11)4#950	(11)500	(11)4"	4000A	4000Y	4000Y

\* SPECIAL APPLICATION FOR A 1800A SERVICE ENTRANCE THAT ALLOWS THE USE OF FOUR CONDUITS. THIS ELIMINATES THE NEED FOR A CABLE CONNECTION CABINET SINCE FOUR CONDUITS WILL FIT INTO A PAD MOUNT TRANSFORMER.  
 (1) DO NOT INSTALL GROUND WIRE WITH THIS CONDUCTOR.

- GENERAL NOTES:**
- A. PROVIDE "TED FROM" INFORMATION ON ALL PANELS AND SWITCHBOARDS.
  - B. PROVIDE RED LABELS WITH WHITE LETTERING FOR EMERGENCY PANELS AND GEAR. PROVIDE BLACK LABELS WITH WHITE LETTERING FOR NORMAL PANELS AND GEAR. SECONDARY SIDE.
  - C. THE MEDIUM VOLTAGE TRANSFORMER SHALL NOT HAVE DEAD FRONTS ON THE SECONDARY SIDE.
  - D. UNLESS NOTED OTHERWISE, CIRCUIT BREAKERS SHALL BE RATED AT 10KAC.
  - E. PROVIDE DOOR-IN-DOOR COVERS FOR ALL PANELS.
  - F. CONFIRM THE BUILDING NUMBER WITH THE OWNER BEFORE PRINTING SWITCHGEAR AND PANEL LABELS. "XX" AND "ZZ" ARE TEMPORARY DESIGNATIONS.
  - G. ALL CIRCUIT BREAKERS 200A AND LARGER SHALL HAVE AN INJECTION PORT.
  - H. PROVIDE A 6SPN AND 8A RELAY IN EACH ASCO AUTOMATIC TRANSFER SWITCH.
  - I. PROVIDE AN ASCO 8-CHANNEL ANNUNCIATOR IN THE GENERATOR BUILDING TO USE TO TEST EACH TRANSFER SWITCH.
  - J. "GF" CIRCUIT BREAKERS REQUIRE GROUND FAULT PROTECTION.

- KEY NOTES:**
- ▽ PROVIDE CUSTOM SWITCHGEAR BY AMP OR EMI WITH PHYSICAL SEPARATION BETWEEN SECTIONS AS REQUIRED BY NEC. THIS SWITCHGEAR IS LOCATED IN THE GENERATOR BUILDING.
  - ▽ PANEL LL2, 48KVA TRANSFORMER, AND AT5 1 ARE LOCATED IN THE GENERATOR BUILDING.
  - ▽ PROVIDE A 2500A BUS.
  - ▽ DISCONNECT SWITCH IS PROVIDED IN THE VFD.
  - ▽ PROVIDE A 20A/2P CIRCUIT BREAKER.
  - ▽ NOT USED.
  - ▽ SEE ALTERNATE #7 TO REDUCE THE 1.5 MW GENERATOR TO A 500KW SIZE. MAINTAIN THE 2500Y FEEDER TO THE DOCKING STATION AND THE 2300A BUS SIZE.
  - ▽ PROVIDE A 100A, 2P, 4-1P GROUND FEEDER FROM THE TWO-POLE, 100A CIRCUIT BREAKER IN Z2-ES-1 TO THE GENERATOR PANEL.
  - ▽ PROVIDE AN ADJUSTABLE ELECTRONIC CIRCUIT BREAKER.
  - ▽ PROVIDE GROUNDING CONNECTION TO "UFER" GROUNDING ELECTRODE.
  - ▽ PROVIDE AN INTEGRAL SPD.
  - ▽ PROVIDE 4-4-POLE, 30A CONTACTOR WITH A 120V COIL AND A 120V PHOTO ELECTRIC CELL.
  - ▽ PROVIDE CONDUCTORS, SEE SHEET EC101.

No.	REVISION	DATE

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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
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APPROVED SERVICE LINE DIRECTOR	DATE	APPROVED INFECTION CONTROL NURSE	DATE
APPROVED GEMS COORDINATOR	DATE	APPROVED PATIENT SAFETY	DATE
APPROVED PROJECTS SECTION MANAGER	DATE	APPROVED CHIEF OF POLICE	DATE
APPROVED DIRECTOR FMS	DATE	APPROVED SAFETY MANAGER	DATE

DRAWING TITLE		PROJECT TITLE		DATE
<b>ONE-LINE DIAGRAM</b>		RELOCATE REHAB SERVICES 656-16-277		12/03/2018
APPROVED CHIEF OF STAFF		BUILDING NO.	CHECKED BY	PROJECT NO.
APPROVED MEDICAL CENTER DIRECTOR		VA MEDICAL CENTER	DRAWN	E300



PANELBOARD SCHEDULE PANEL: ZZ-ES1-1. LOCATION: GENERATOR BUILDING 180. VOLTAGE: 120/208 PH: 3. WIRE: 4. MOUNTING: SURFACE. MAIN: 150A MCB. SOURCE: LS SECTION. Includes table with 41 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 23.8; TOTAL 3 PHASE AMPS 66.1.

PANELBOARD SCHEDULE PANEL: XX-EC1-1. LOCATION: ELECTRICAL 113. VOLTAGE: 480/277 PH: 3. WIRE: 4. MOUNTING: SURFACE. MAIN: 250 MLO. SOURCE: MAIN SWITCHBOARD. Includes table with 42 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 17.1; TOTAL 3 PHASE AMPS 20.6.

PANELBOARD SCHEDULE PANEL: XX-1-2. LOCATION: HALLWAY 116. VOLTAGE: 208/120 PH: 3. WIRE: 4. MOUNTING: RECESSED. MAIN: 100A MLO. SOURCE: XX-1-4. Includes table with 54 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 20.6; TOTAL 3 PHASE AMPS 57.3.

PANELBOARD SCHEDULE PANEL: XX-ES1-1. LOCATION: HALLWAY 116. VOLTAGE: 208/120 PH: 3. WIRE: 4. MOUNTING: RECESSED. MAIN: 50A MLO. SOURCE: LS SECTION. Includes table with 41 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 6.78; TOTAL 3 PHASE AMPS 18.8.

PANELBOARD SCHEDULE PANEL: XX-EC1-2. LOCATION: HALLWAY 116. VOLTAGE: 208/120 PH: 3. WIRE: 4. MOUNTING: RECESSED. MAIN: 100A MLO. SOURCE: XX-EC1-1. Includes table with 54 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 23.1; TOTAL 3 PHASE AMPS 64.3.

PANELBOARD SCHEDULE PANEL: XX-1-3. LOCATION: HALLWAY 116. VOLTAGE: 208/120 PH: 3. WIRE: 4. MOUNTING: RECESSED. MAIN: 100 MLO. SOURCE: XX-1-4. Includes table with 54 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 30.6; TOTAL 3 PHASE AMPS 85.1.

PANELBOARD SCHEDULE PANEL: XX-EQ1-1. LOCATION: ELECTRICAL 113. VOLTAGE: 120/208 PH: 3. WIRE: 4. MOUNTING: SURFACE. MAIN: 100A MCB. SOURCE: MAIN SWITCHBOARD. Includes table with 42 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 1.2; TOTAL 3 PHASE AMPS 3.33.

PANELBOARD SCHEDULE PANEL: XX-1-1. LOCATION: HALLWAY 116. VOLTAGE: 208/120 PH: 3. WIRE: 4. MOUNTING: RECESSED. MAIN: 100A MLO. SOURCE: XX-1-4. Includes table with 49 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 17.9; TOTAL 3 PHASE AMPS 49.9.

PANELBOARD SCHEDULE PANEL: XX-1-4. LOCATION: ELECTRICAL 114. VOLTAGE: 208/120 PH: 3. WIRE: 4. MOUNTING: SURFACE. MAIN: 225A MCB. SOURCE: SW80 A. Includes table with 54 rows of equipment details and summary values: DEMAND 0.8, 0.8, 0.7, 1.25; TOTAL KW WITH DEMAND 19.8; TOTAL 3 PHASE AMPS 192.

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Approval and signature blocks for SERVICE LINE DIRECTOR, GEM COORDINATOR, PROJECTS SECTION MANAGER, DIRECTOR FMS, INFECTION CONTROL NURSE, PATIENT SAFETY, CHIEF OF POLICE, SAFETY MANAGER, CHIEF OF STAFF, MEDICAL CENTER DIRECTOR, and PROJECT TITLE: RELOCATE REHAB SERVICES 656-16-277.



