

ELECTRICAL NOTES

SITE NOTES

1. VERIFY LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES IN AREA OF WORK AND COORDINATE SAME WITH NEW UNDERGROUND WORK AS REQUIRED.
2. ALL WORK ASSOCIATED WITH THE UNDERGROUND INCOMING ELECTRIC SERVICE SHALL BE COORDINATED AND SCHEDULED WITH CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE.
3. ALL UNDERGROUND BRANCH CIRCUITS SHALL BE ROUTED WITHIN MINIMUM 1" SCHEDULE 40 PVC CONDUIT AND #10 AWG WIRE SIZE, COVER REQUIREMENTS PER NEC TABLE 300.5.
4. ALL SITE UNDERGROUND CONDUIT PENETRATIONS THRU BUILDING FOUNDATION WALLS SHALL BE SLEEVED AND SEALED WITH A WATERPROOF UL LISTED SEALANT.
5. ALL SITE UNDERGROUND CONDUITS SHALL PASS ABOVE AND CLEAR OTHER SITE UTILITIES OR OBSTRUCTIONS INCLUDING STORM, SEWER, GAS BY 12" MINIMUM, UNLESS OTHERWISE NOTED.
6. PROVIDE TRENCHING AND BACKFILL FOR ELECTRICAL SITE WORK.
7. TRENCH BOTTOMS SHALL BE SMOOTH, FLAT, AND WITHOUT SURFACE IRREGULARITIES, OTHERWISE PROVIDE A SUFFICIENT QUANTITY OF BEDDING MATERIAL TO PROVIDE THE REQUIRED SURFACE. BEDDING MATERIAL SHALL NOT CONTAIN ROCKS LARGER THAN 1-1/2" DIAMETER IN THEIR LARGEST DIMENSION. BEDDING MATERIAL SHALL FILL ALL VOIDS AND BE CLEAR OF ANY DEBRIS AND ORGANIC MATERIAL.
8. REFER TO ELECTRICAL SITE PLAN FOR LOCATIONS OF VA-OWNED SERVICE ELECTRIC MANHOLES. CONFIRM EXACT LOCATION IN THE FIELD PRIOR TO BID

LIGHTING NOTES

1. FOR EXACT LOCATION OF RECESSED LUMINAIRES, SEE ARCHITECTURAL REFLECTED CEILING PLANS AND FOR EXACT LOCATION OF WALL MTD. LUMINAIRES, SEE ARCHITECTURAL ELEVATIONS AND DETAILS.
2. ALL EXIT SIGNS, EMERGENCY BATTERY PACK UNITS AND GENERATOR TRANSFER DEVICES ON NORMAL POWER CIRCUITS SHALL BE CONNECTED AHEAD OF ANY LOCAL SWITCHING. PROVIDE CIRCUIT BREAKER LOCK-ON DEVICES ON ANY CIRCUIT CONTAINING EMERGENCY LOADS.
3. PROVIDE CONTROL WIRING BETWEEN OCCUPANCY SENSORS AND POWER PACKS PER MANUFACTURER'S RECOMMENDATIONS.
4. PROVIDE WIRING BETWEEN OCCUPANCY SENSOR POWER PACK RELAY AND MECHANICAL EQUIPMENT.
5. INSTALL SURFACE MOUNTED EMERGENCY LIGHTING FIXTURES AND/OR EXIT SIGNS ON EITHER WALL OR CEILING SURFACE AS DIRECTED BY THE ARCHITECT. FIELD VERIFY MOUNTING LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
6. PROVIDE LUMINAIRES AS SHOWN ON THE ELECTRICAL AND ARCHITECTURAL DRAWINGS. VERIFY EXACT LOCATIONS OF LUMINAIRES WITH ARCHITECTURAL REFLECTED CEILING PLANS. COORDINATE LUMINAIRE HOUSINGS AND TRIMS WITH CEILING TYPE. PROVIDE REQUIRED ACCESSORIES FOR VARIOUS CEILING TYPES.
7. LIGHTING CONTROLS SHALL BE LOCATED AT OR NEAR DOORS. INSTALL ON SIDE OPPOSITE HINGE. REFER TO ARCHITECTURAL DETAILS FOR EXACT LOCATION. VERIFY FINAL DOOR HINGE LOCATION IN FIELD PRIOR TO INSTALLATION.
8. ALL INCANDESCENT LAMPS SHALL BE RATED 130 VOLT AND ALL INCANDESCENT LUMINAIRES SHALL BE EQUIPPED WITH THERMAL PROTECTION.
9. LUMINAIRE SUBSTITUTIONS SHALL INCLUDE THE FOLLOWING INFORMATION FOR ENGINEER'S APPROVAL: LUMINAIRE PRODUCT DATA SHEETS, PHOTOMETRIC DATA, POINT BY POINT CALCULATIONS OF FOOT-CANDLE LEVELS ON A PER ROOM BASIS.

POWER NOTES

1. FOR EXACT LOCATION OF ELECTRICAL EQUIPMENT, SEE ARCHITECTURAL ELEVATIONS AND DETAILS.
2. PROVIDE AND MAINTAIN ELECTRICAL SAFETY AND WORKING CLEARANCES IN FRONT OF AND AROUND ALL ELECTRICAL PANELS AND DISTRIBUTION EQUIPMENT IN ACCORDANCE WITH NEC ARTICLE 110.
3. FOR MECHANICAL EQUIPMENT TYPE, ELECTRICAL REQUIREMENTS AND CIRCUIT INFORMATION, REFER TO MECHANICAL EQUIPMENT SCHEDULE.
4. FIELD VERIFY EXACT LOCATION OF ALL MECHANICAL AND PLUMBING EQUIPMENT PROVIDED BY OTHER TRADES PRIOR TO ROUGH-IN. COORDINATE INSTALLATION AND WIRING REQUIREMENTS, INCLUDING EXACT LOCATION OF POINT OF CONNECTION, WITH THE EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
5. DISTRIBUTION EQUIPMENT SHALL FIT IN AREA SHOWN ON THE FLOOR PLANS WITH ALL NEC REQUIRED WORKING SPACE AND SAFETY CLEARANCES MAINTAINED.
6. PROVIDE RELATED DISCONNECT SWITCHES AND FINAL POWER CONNECTIONS FOR ELEVATOR MACHINE AND CAB LIGHTING PER MFR'S REQUIREMENTS AS WELL AS LOCAL, STATE AND NATIONAL CODES. IN ADDITION, ALL RELATED ELECTRICAL EQUIPMENT LOCATED LESS THAN 4 FT. ABOVE PIT FLOORS SHALL BE WEATHERPROOF AND IDENTIFIED FOR USE IN WET LOCATIONS PER LATEST EDITION OF ASME A17.1 INCLUDING ADDENDA AND ANY AMENDMENTS.
7. MOUNT EQUIPMENT SAFETY SWITCHES DIRECTLY ON UNIT SERVED WHERE REQUIRED. SWITCHES SHALL BE ACCESSIBLE AND MTD. SUCH THAT DOOR HINGE OPENS AT LEAST 90 DEGREES WITHOUT OBSTRUCTION.
8. PROVIDE PRINTED DIRECTORIES FROM A COMPUTER AND PRINTER FOR ALL PANELBOARDS. DIRECTORIES SHALL REPRESENT FINAL INSTALLED CONDITIONS AND ROOM NUMBERS.
9. VERIFY EQUIPMENT FAULT CURRENT INTERRUPTING CAPACITY REQUIREMENTS PRIOR TO ORDERING ANY RELATED ELECTRICAL DISTRIBUTION EQUIPMENT.
10. THE EQUIPMENT GROUNDING BUS OF ALL PANELBOARDS SERVING THE SAME PATIENT AREAS SHALL BE BONDED TOGETHER BY AN INSULATED COPPER GROUNDING CONDUCTOR, MINIMUM SIZE #10 AWG.
11. EQUIPMENT INTERRUPTING RATINGS INDICATED ON THE DRAWINGS ARE BASED ON PRELIMINARY INFORMATION AND ARE SHOWN FOR BIDDING PURPOSES ONLY. VERIFY EQUIPMENT INTERRUPTING CAPACITY REQUIREMENTS PRIOR TO ORDERING ANY RELATED ELECTRICAL DISTRIBUTION EQUIPMENT.
12. CABINETS SHALL BE OF SUFFICIENT SIZE TO ALLOW A GUTTER SPACE OF AT LEAST 6" ON SIDES, TOP AND BOTTOM, CONSTRUCTED OF CODE GAUGE STEEL, GALVANIZED TRIMS PRIMED FOR FINISH PAINTING BY OTHERS. DOORS AND TRIMS SHALL EACH BE IN ONE PIECE SO DESIGNATED THAT DOORS WILL OPEN 180 DEGREES. TRIMS SHALL BE FASTENED TO BACK BOXES BY SCREWS.
13. SAFETY SWITCHES SHALL BE FUSIBLE OR NON-FUSIBLE AS NOTED, NEMA 1, HEAVY DUTY, EXTERNALLY OPERATED WHERE NOT FURNISHED WITH STARTING EQUIPMENT AND AT ALL OTHER POINTS REQUIRED BY CODE. FUSES SHALL BE BUSSMAN, GOULD OR LITTELFUSE CURRENT LIMITING TYPE, MINIMUM 200,000 AIC. ENCLOSED CIRCUIT BREAKERS SHALL HAVE A MINIMUM 10,000 AIC FOR 208Y/120V SYSTEMS AND A MINIMUM OF 14,000 AIC FOR 480Y/277V SYSTEMS UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. LIGHT SOLID LINES DENOTE EXISTING EQUIPMENT TO REMAIN. DARK SOLID LINES DENOTE NEW AND/OR RELOCATED EQUIPMENT. DARK DASHED LINES DENOTE EXISTING EQUIPMENT TO BE DEMOLISHED.
2. ALL ELECTRICAL WORK SHALL BE IN STRICT COMPLIANCE WITH THE 2009 INTERNATIONAL ELECTRICAL CODE.
3. PERFORM WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CONTRACTOR ASSOCIATION (NECA) "STANDARD OF INSTALLATION".
4. "FURNISH" SHALL BE DEFINED AS TO SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION AND SIMILAR OPERATIONS. "INSTALL" SHALL BE DEFINED AS WORK WHICH INCLUDES THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION AND SIMILAR OPERATIONS. "PROVIDE" SHALL BE DEFINED AS TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE. "WIRING" SHALL BE DEFINED AS TO BE ALL INCLUSIVE OF RACEWAYS, CONDUCTORS, JUNCTION BOXES, SAFETY SWITCHES AND MAKING FINAL CONNECTIONS.
5. CAREFULLY EXAMINE THE SITE AND COMPARE THE DRAWINGS WITH EXISTING ELECTRICAL INSTALLATIONS. BE THOROUGHLY AWARE OF ALL EXISTING CONDITIONS WITHIN THE SCOPE OF THE ELECTRICAL WORK. BY THE ACT OF SUBMITTING A BID, THE CONTRACTOR SHALL HAVE DEEMED TO HAVE MADE SUCH EXAMINATION AND TO HAVE ACCEPTED SUCH CONDITIONS AND TO HAVE MADE ALLOWANCE THEREFORE IN PREPARING HIS BID.
6. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. SIZE AND LOCATION OF EQUIPMENT AND WIRING ARE SHOWN TO SCALE WHERE POSSIBLE, BUT MAY BE DISTORTED FOR CLARITY ON THE DRAWINGS. FINAL LOCATIONS OF OUTLETS AND EQUIPMENT SHALL BE AS SHOWN IN ENLARGED DETAILS OR AS APPROVED BY THE ARCHITECT.
7. IT IS NOT INTENDED THAT THE PLANS INDICATE ALL THE NECESSARY BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL HIS WORK TO CONFORM TO THE STRUCTURE, MAINTAIN HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
8. PROVIDE NEMA RATED, SCREW-COVER PULL BOXES IN CONDUIT RUNS LONGER THAN 100 FEET AND AS REQUIRED TO LIMIT THE NUMBER OF BENDS TO NO MORE THAN THREE (3) OR 270 DEGREES TOTAL. SIZE PULL BOXES IN ACCORDANCE WITH NEC, ARTICLE 314.28. DOCUMENT ON RECORD DRAWINGS, SIZE AND LOCATION OF PULL BOXES USED IN FEEDER CONDUIT RUNS.
9. TEMPORARY ELECTRICAL SERVICE, LIGHTING, AND RELATED WIRING SHALL BE PROVIDED IN ACCORDANCE WITH OSHA REQUIREMENTS FOR THE USE OF ALL TRADES DURING CONSTRUCTION.
10. VERIFY LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH ARCHITECTURAL DRAWINGS AND INTERIOR DETAILS AND FINISHES. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS, AND MECHANICAL EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE, AND CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
11. CHECK ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT TO BE INSTALLED BY OTHERS. PROVIDE WIRING AND NECESSARY ELECTRICAL ADJUSTMENTS TO EQUIPMENT CONFORMING WITH SPECIFIED REQUIREMENTS OF THE EQUIPMENT.
12. ALL COMPONENTS SHOWN ON RELATED PLANS BUT, NOT ON RISER DIAGRAMS SHALL BE CONSIDERED INCLUDED UNDER CONTRACT WORK.
13. PROVIDE ALL NECESSARY EXCAVATING AND BACKFILLING FOR RELATED ELECTRICAL WORK.
14. NO MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS SHALL BE INSTALLED WITHIN RACEWAYS UNLESS DERATING FACTORS IN NEC ARTICLE 310 ARE APPLIED.
15. RACEWAYS SHALL BE INSTALLED CONCEALED IN FINISHED AREAS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

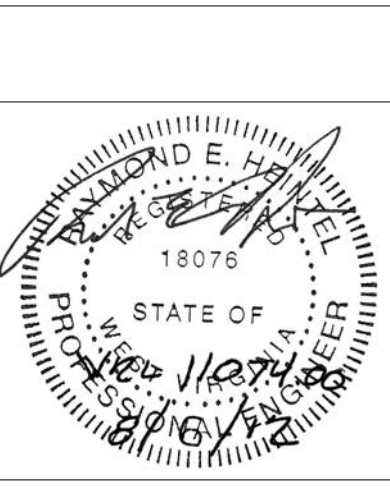
16. CONNECT RACEWAYS TO MOTOR TERMINAL BOXES WITH FLEXIBLECONDUIT, MINIMUM 18" LENGTH AND 50% SLACK. DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
17. CONDUCTORS SHALL BE COPPER, SIZES AS INDICATED ON DRAWINGS AND SHALL NOT BE LESS THAN #12 AWG. ALL #8 AWG WIRE AND LARGER SHALL BE STRANDED. ALL #10 AWG WIRE AND SMALLER SHALL BE STRANDED OR SOLID. VOLTAGE RATING OF INSULATION SHALL BE 600 VOLTS.
18. TYPE THHN/THWN INSULATION SHALL BE USED FOR ALL BRANCH CIRCUIT WIRING. THE AMPACITIES OF THHN WIRE SHALL BE BASED ON THE ALLOWABLE AMPACITIES OF THW WIRE.
19. CONDUCTORS FOR BRANCH CIRCUITS SHALL BE SIZED TO PREVENT VOLTAGE DROP FROM EXCEEDING 3 PERCENT AT THE FARTHEST OUTLET OF POWER, HEATING, AND LIGHTING LOADS, OR COMBINATIONS OF SUCH LOADS. THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST OUTLET SHALL NOT EXCEED 5 PERCENT.
20. ALL WIRING SHALL BE IDENTIFIED BY CIRCUIT NUMBERS IN ALL CABINETS, BOXES, WIRING TROUGH, ENCLOSURES, SPLICE OR TERMINATION POINTS, ETC.
21. ALL CIRCUITS SHALL BE PROTECTED WITH 20 AMPERE, SINGLE POLE BOLT-ON TYPE CIRCUIT BREAKERS UON. CIRCUIT BREAKERS SERVING HVAC LOADS SHALL BE "HACR" RATED AND THOSE SWITCHING LIGHTING LOADS SHALL BE "HID" RATED.
22. LOCATIONS FOR WIRING DEVICES SHALL BE SUBJECT TO MODIFICATIONS PRIOR TO ROUGH-IN AND AT NO ADDITIONAL COST TO OWNER.
23. HEIGHTS OF WIRING DEVICES ARE DEFINED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE AS PER ARCHITECTURAL DWGS, EXCEPT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, MOLDINGS, BREAKS IN WALL SURFACE, MASONRY GROUT LINES, OR WHERE IN VIOLATION OF CODE.
25. HEIGHTS OF FIRE ALARM AUDIO AND VISUAL APPLIANCES ARE DEFINED FROM FINISHED FLOOR TO TOP OF DEVICE.
26. PROVIDE REQUIRED EXPANSION/DEFLECTION FITTINGS AT LOCATIONS WHERE CONDUIT PASSES THRU EXPANSION JOINTS. FITTINGS SHALL ALLOW SEISMIC MOVEMENT REQUIRED BY STRUCTURAL ENGINEER.
27. PROVIDE 24" MINIMUM HORIZONTAL SEPARATION BETWEEN OUTLET BOXES INSTALLED ON OPPOSITE SIDES OF A COMMON WALL SO AS TO MAINTAIN ACOUSTICAL INTEGRITY OF WALL AND FIRE RATING. PROVIDE UL LISTED FIRE RATED SEALS FOR ALL RACEWAY PENETRATIONS THRU FIRE RATED WALLS, SLABS, AND CEILINGS IN ACCORDANCE WITH NEC 300.21. PROPOSED FIRE-STOP MATERIAL AND SYSTEM SHALL BE SUBMITTED TO THE LOCAL FIRE INSPECTOR OR AHJ FOR APPROVAL PRIOR TO INSTALLATION.
28. CONNECT ALL ELECTRONIC DOOR DEVICES PROVIDED UNDER DIVISION 8. COORDINATE MOUNTING LOCATIONS AND WIRING REQUIREMENTS WITH DOOR HARDWARE SUPPLIER.
29. GROUNDING OF THE ELECTRICAL SYSTEM SHALL BE BY MEANS OF AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, INSTALLED WITH FEEDER AND BRANCH CIRCUIT CONDUCTORS IN ALL CONDUITS WHETHER OR NOT INDICATED ON DRAWINGS. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250.122. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL TELEPHONE AND CATV SERVICE CONDUITS.
30. CLEAN UP RESULTANT DEBRIS FROM THIS WORK AND REMOVE FROM THE SITE. DISCONNECT AND REMOVE ALL TEMPORARY POWER INCLUDING BUT, NOT NECESSARILY LIMITED TO PANELS, FIXTURES, BOXES AND WIRING.
31. TEST FOR GROUNDS AND SHORTS, TO INSURE PROPER OPERATION OF ELECTRICAL EQUIPMENT. REPAIR OR REPLACE FAULTY EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
32. DEMONSTRATE TO THE OWNER'S SATISFACTION THE PROPER OPERATION OF EACH SYSTEM COMPRISING THIS CONTRACT BEFORE FINAL PAYMENT. GUARANTEE FOR ONE YEAR AFTER FINAL ACCEPTANCE BY OWNER OF ALL WORKMANSHIP AND MATERIALS FURNISHED.
33. BALANCE LOADS ON ALL BRANCH CIRCUIT PANELBOARDS, SUCH THAT VARIATION IN AMPERES PER PHASE READINGS WILL NOT EXCEED 5% UNDER NORMAL OPERATING CONDITIONS. SPECIAL CARE SHALL BE TAKEN DURING LOAD BALANCE TO ASSURE THAT REVERSE ROTATION OF MOTORS IS NOT CAUSED. SUBMIT LOAD BALANCING REPORT TO ENGINEER FOR APPROVAL.
34. PROVIDE A MINIMUM OF ONE (1) SET OF FULL SIZE, REDLINED RECORD DRAWINGS TO ARCHITECT OR OWNER. THESE DRAWINGS SHALL SHOW EXACT EQUIPMENT LOCATIONS, CONCEALED FEEDER ROUTINGS, AND SHALL INDICATE THE "AS-BUILT" CONDITION.

Revisions:	Date

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Drawing Title	ELECTRICAL NOTES		
Approved: Project Director			

Project Title	RELOCATE DEMENTIA UNIT	
Project Number	VA PN 613-207	
Building Number	513	
Location	VAMC MARTINSBURG	
Date	08/06/2012	
Checked	GSL	
Drawn	DRW	
Drawing Number	E-002	
Dwg.	of	--

Office of  
Construction  
and Facilities  
Management

Department of  
Veterans Affairs