

ABBREVIATIONS

Table of abbreviations including AC (Alternating Current), AFF (Above Finished Floor), AFC (Above Finished Grade), AIC (Amperes Interrupting Capacity Symm), A (Ampere), AMP (Ampere), ANN (Fire Alarm Annunciator), ATS (Automatic Transfer Switch), AV (Audio/Visual), BATT (Battery), BLDG (Building), BRKR (Breaker), C (Conduit), CB (Circuit Breaker), CFS (Combination Fire Smoke Damper), CIR (Circuit), OKT (Circuit Only with Pull Rope), COM (Common), COMM (Communication), CONN (Connect), CONT (Continue), CT (Current Transformer), CU (Copper), DB (Direct Buried), DEF (Dual Element Fuse), DISC (Disconnect), DN (Down), DPDT (Double-Pole Double-Throw), DPST (Double-Pole Single-Throw), EM (Emergency), EMT (Electrical Metallic Tubing), EMT (Emergency), ENCL (Enclosure), EOL (End of Line), EQIP (Equipment), EX (Existing), EXST (Existing), F (Fuse), FACP (Fire Alarm Control Panel), FLA (Full Load Amperes), FLEX (Flexible Metallic Tubing), G (Ground), GND (Ground), GND (Ground), GFI (Ground Fault Circuit Interrupter), HD (High Intensity Discharge), HOA (Hand-Off-Auto Switch), HP (Horsepower), HZ (Hertz), HPF (High Power Factor), IC (Interrupting Capacity in Amps RMS), IS (Isolated Ground), J (Junction Box), JB (Junction Box), J-BOX (Junction Box), K (Kilo), KCMIL (Thousand Circular Mills), KVA (Kilovolt-Ampere), KW (Kilowatt), KWH (Kilowatt-Hour), KVAR (Kilovolt-Ampere Reactive), LCL (Long Continuous Load), LRA (Locked Rotor Amp), LIT (Lighting), LV (Low Voltage), M (Magnetic Starter Coil), M (Motor), M (Meter), MCC (Motor Control Center), MCM (Thousand Circular Mills), MTO (Mounting), MTS (Manual Transfer Switch), N (Neutral), NC (Normally Closed), NEC (National Electric Code), NF (Non-Fused), NIC (Not in Contract), NO (Normally Open), NTS (Not to Scale), 2P (2 Pole, Similar for Other Qty), PB (Pullbox), PNL (Panel), PT (Potential Transformer), PVC (Polyvinyl Chloride), PWR (Power), PH (Phase), SCA (Short Circuit Amps), SQ FT (Square Feet), SW (Switch), SWBD (Switchboard), SWGR (Switchgear), TC (Time Clock), TEL (Telephone), TEMP (Temporary), XMR (Transformer), TMR (Transformer), TYP (Typical), UG (Underground), UON (Unless Otherwise Noted), UPS (Uninterruptible Power System), VFD (Variable Frequency Drive), WP (Weatherproof), WT (Watertight).

SYMBOLS

Table of symbols for lighting, including FLOOR, CEILING, WALL, and LIGHTING. Symbols include rectangles for fluorescent luminaires, circles for strip luminaires, and various symbols for surface-mounted and recessed-mounted luminaires.

Table of symbols for switching, including FLOOR, CEILING, WALL, and SWITCHING. Symbols include circles for manual motor starters, squares for switches, and various symbols for 2-single pole and 3-single pole switches.

Table of symbols for power, including FLOOR, CEILING, WALL, and POWER. Symbols include circles for simplex receptacles, squares for duplex receptacles, and various symbols for quadruplex and special receptacles.

Table of symbols for special receptacle schedule, including LETTER, RATING, NEMA, and SPECIAL RECEPTACLE SCHEDULE. Lists receptacle types like 125V, 14, 30A, 2P, 3W and 250V, 14, 50A, 2P, 3W.

Table of symbols for grounding system, including FLOOR, CEILING, WALL, and GROUNDING SYSTEM. Symbols include rectangles for ground plates, circles for ground buses, and various symbols for ground rods and exothermic connections.

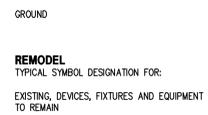
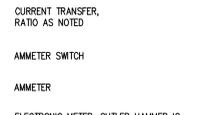
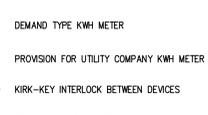
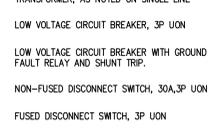
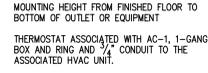
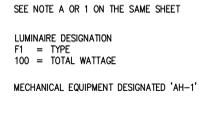
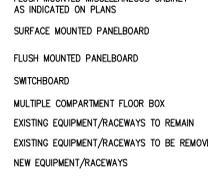
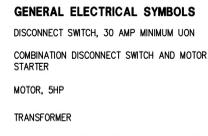
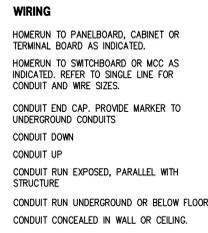
Table of wire and conduit sizes, including NUMBER OF WIRES AND CONDUIT SIZE. Lists wire counts and conduit sizes for various applications, such as 3 #12, 1/2" C and 8 #2 #10, 1/2" C.

Table of wire and conduit sizes for dedicated neutral systems, including NUMBER OF WIRES AND CONDUIT SIZE DEDICATED NEUTRAL SYSTEMS. Lists wire counts and conduit sizes for dedicated neutral systems, such as 2 #12, 2 #12N, 1 #12G, 1/2" C.

Table of wire and conduit sizes for general use, including NUMBER OF WIRES AND CONDUIT SIZE. Lists wire counts and conduit sizes for general use, such as 10N, 1" and 10N, 1 1/2" C.

GENERAL NOTES

- A. IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS THAT A COMPLETE AND WORKABLE ELECTRICAL INSTALLATION BE PROVIDED FOR ALL THE EQUIPMENT DESCRIBED OR SHOWN AS BEING IN THIS CONTRACT. TOWARD THIS END FURNISH ALL LABOR AND TOOLS NECESSARY AND FURNISH AND INSTALL ALL APPARATUS, MATERIALS, AND EQUIPMENT IN A FASHION COMPLYING WITH ALL APPLICABLE CODES, INCLUDING ITEMS REQUIRED BUT NOT NORMALLY SHOWN, SUCH AS LAMPS, COUPLINGS, HANGERS, BRACKETS, CLAMPS, BOXES, CONNECTORS AND HARDWARE.
B. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SUBMITTALS, TESTING, START-UP, TRAINING AND PROJECT CLOSEOUT.
C. ARRANGE FOR ALL INSPECTIONS PER THE VA REQUIREMENTS.
D. COMPLY WITH 2014 NATIONAL ELECTRICAL CODE. NOTHING IN THESE PLANS AUTHORIZES DEVIATION FROM APPLICABLE CODES.
E. ALL ELECTRICAL EQUIPMENT SHALL BE UL APPROVED.
F. PROVIDE A CODE APPROVED DISCONNECT SWITCH WITHIN SIGHT OF EVERY MOTOR. FOR LOCATION OF DISCONNECT SWITCH, COORDINATE WITH MECHANICAL CONTRACTOR TO DETERMINE THE BEST LOCATION ON SITE TO SUIT THE PURPOSE WHILE REMAINING ACCESSIBLE. FUSIBLE SWITCH IS TO BE READILY ACCESSIBLE.
G. THE ELECTRICAL CONTRACTOR SHALL REVIEW MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THEIR SCOPE OF SUPPLY AND INSTALLATION AND SHALL COORDINATE WITH THE GENERAL CONTRACTOR IN ORDER TO PROVIDE A FINAL PRODUCT WHICH IS COMPLETE AND FUNCTIONAL. CONDUIT, AND ONLY WIRING OVER 110V FOR CONTROL SHALL BE BY ELECTRICAL CONTRACTOR. REFER TO THE MECHANICAL PLANS FOR WIRING DIAGRAMS.
H. MOTOR HP RATINGS AND ENCLOSURES SHOWN ARE WHAT IS EXPECTED. THIS INFORMATION IS FOR GUIDANCE ONLY AND DOES NOT LIMIT THE EQUIPMENT SIZE. VERIFY WITH THE SUPPLIERS OF EQUIPMENT FOR MOTOR SIZES, VOLTAGE AND PHASE. NOTIFY THE ENGINEER WHEN MOTOR FURNISHED SIGNIFICANTLY DIFFERS FROM THE EXPECTED RATING INDICATED. MAKE THE NECESSARY ADJUSTMENTS TO WIRING, CONDUIT, DISCONNECT SWITCH, MOTOR STARTER, AND OTHER AFFECTED DEVICES AND MATERIAL TO ACCOMMODATE MOTORS ACTUALLY INSTALLED.
I. COORDINATE ROUTING OF FEEDERS AND HOMERUNS IN COOPERATION WITH OTHER TRADES TO SIMPLIFY INSTALLATION.
J. DO NOT PENETRATE STRUCTURAL ITEMS WITHOUT PRIOR APPROVAL OF STRUCTURAL ENGINEER.
K. INSTALL EXPOSED CONDUITS PARALLEL AND AT RIGHT ANGLES TO NEARBY SURFACES AND STRUCTURAL MEMBERS.
L. ALL CONDUCTORS SHALL BE COPPER, TYPE THWN/THHN 90 DEGREE INSULATION. ALL LUGS SHALL BE 75 DEGREE RATED, MINIMUM.
M. USE OF NONMETALLIC SHEATHED CABLE (NM OR NMC), ARMORED CABLE (AC), METAL CLAD CABLE (MCC) OR FLEXIBLE ALUMINUM CONDUIT IS NOT ALLOWED.
N. USE OF SEALTIGHT IS NOT ALLOWED EXCEPT FOR FINAL CONNECTION TO VIBRATING EQUIPMENT.
O. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LUMINAIRE AND OTHER CEILING MOUNTED DEVICE LOCATIONS AND TRIM REQUIREMENTS.
P. VERIFY OUTLET HEIGHT ON EACH WALL WITH THE ARCHITECTURAL DRAWINGS.
Q. INSTALL GREEN INSULATED COPPER GROUNDING CONDUCTOR AND CONNECT TO EACH OUTLET, ENCLOSURE, DEVICE, LUMINAIRE, ETC. THE RACEWAYS SHALL NOT BE RELIED UPON FOR EQUIPMENT GROUNDING.
R. PROVIDE BARRIER BETWEEN NORMAL AND EMERGENCY POWER WHEN INSTALLED IN THE SAME ENCLOSURE.
S. LABEL RECEPTABLES, J-BOXES, DISCONNECT SWITCHES AND CONTROL APPARATUS WITH THEIR SERVING CIRCUIT NUMBERS.
T. GANG DEVICES OCCURRING IN THE SAME LOCATION. SET DEVICES NOT GANGED IN THE SAME PLATE AT THE SAME HEIGHT WITH EQUAL SPACING BETWEEN EACH PLATE.
U. COORDINATE THE ELECTRICAL WORK WITH OTHER TRADES. NOT LIMITED TO SECURITY, AND INFORMATION SERVICES FOR SCOPE OF SUPPLY AND SERVICE.
V. PROVIDE FIRE STOPPING AT ALL CONDUIT PENETRATIONS OF CEILINGS AND RATED WALLS.
W. SUPPORT THE LUMINAIRES AND CEILING MOUNTED DEVICES TO THE STRUCTURAL MEMBERS. INSTALL TWO SUPPLEMENTARY SAFETY CHAINS FOR PENDENT MOUNTED LUMINAIRES.
X. NO SPlicing OF FEEDERS OR BRANCH CIRCUITS SHALL BE DONE WITHOUT PRIOR APPROVAL.
Y. INSTALL WIRING AS INDICATED ON PLANS. DO NOT COMBINE HOMERUNS WITHOUT PRIOR APPROVAL.
Z. PROVIDE NEMA TP-1 RATED TRANSFORMERS FOR UNITS RATED 15 TO 1000 KVA 600 VOLTS AND BELOW.
AA. EXISTING CONDITIONS AS SHOWN IS BASED ON LIMITED SITE OBSERVATION AND AVAILABLE EXISTING PLANS. THIS CONTRACTOR IS TO VERIFY ON SITE AND REFLECT THE ACTUAL CONDITIONS ON AS-BUILT DOCUMENTS.
BB. FOR ALL NEW PANELBOARDS, PROVIDE AND INSTALL WARNING SIGNS PER NEC 110.16.
CC. THIS CONTRACTOR SHALL INCLUDE ALL COSTS TO ENGAGE THE LIGHTING CONTROL SYSTEM'S REPRESENTATIVE WITH VA ON SITE TO PROVIDE COMPLETE PROGRAMMING TO MEET ALL THE VA'S REQUIREMENTS. THE PROGRAMMING IS FOR BOTH EXISTING EMERGENCY AND NORMAL POWER LIGHTING CONTROL SYSTEMS WHICH ARE LOCATED IN THE PHASE I B2 LEVEL ELECTRICAL ROOM.



CONSTRUCTION DOCUMENTS 100%

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Drawing Title: ELECTRICAL ABBREVIATIONS, SYMBOLS AND GENERAL NOTES

Approved: Project Director

Project Title: PARKING GARAGE #2 VA MEDICAL CENTER SAN DIEGO

Location: SAN DIEGO, CA 92161

Date: 03/22/2016 Checked: Drawn: E 101 Dwg. of

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



- SHEET NOTES:**
- 1 PROVIDE AND INSTALL INSIDE THE TR CABINET BY THE TEL/DATA SYSTEM CONTRACTOR. VERIFY THE EXACT LOCATION.
  - 2 REDUCE WIRE SIZE TO #12 BEFORE TERMINATING AT RECEPTACLE(S).
  - 3 WIRE CIRCUIT THROUGH CONTACT IN ELOPA.
  - 4 WIRE CIRCUIT THROUGH CONTACT IN LCPA.
  - 5 CONNECT TO EMERGENCY PHONE.
  - 6 MOUNT LUMINAIRE VERTICALLY IN THE HOSTWAY.
  - 7 DELETE THE CIRCUIT 5 STUB-UP FOR THE ADD ALTERNATE OPTION.
  - 8 DELETE THE CIRCUIT 11 STUB-UP FOR THE ADD ALTERNATE OPTION.

FUTURE PHASE III  
STRUCTURE  
(NOT A PART)

### B1 LEVEL ELECTRICAL PLAN

SCALE: 1/16" = 1'-0"



CONSTRUCTION DOCUMENTS 100%

**CONSULTANTS:**



**ARCHITECT / ENGINEERS:**

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Drawing Title  
**B1 LEVEL ELECTRICAL PLAN**

Approved: Project Director

Project Title  
**PARKING GARAGE #2  
VA MEDICAL CENTER SAN DIEGO**

Location  
**SAN DIEGO, CA 92161**

Date  
**03/22/2016**

Project Number  
**664-332**

Drawing Number  
**ES.102**

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Construction  
and Facilities  
Management



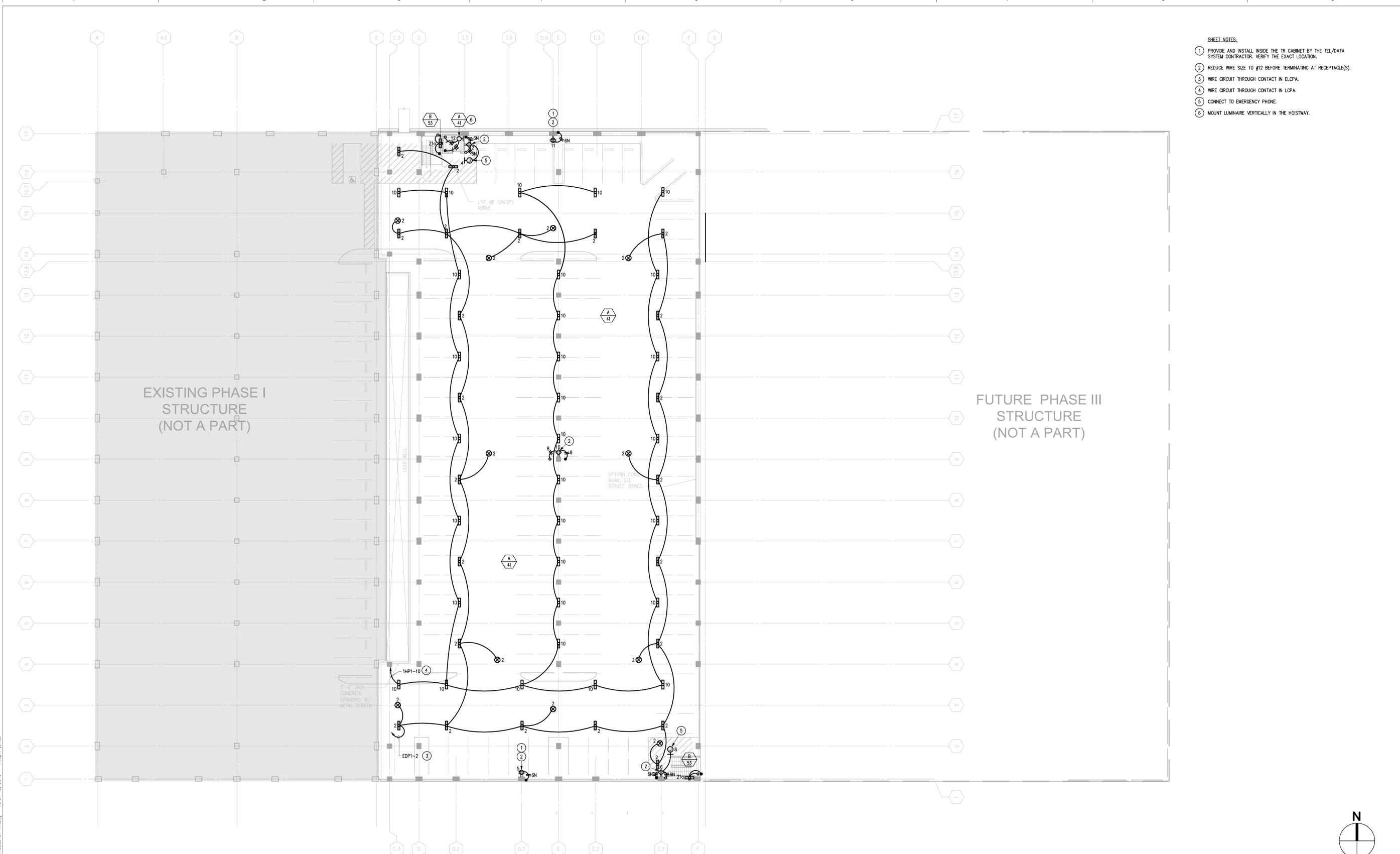
Revisions: \_\_\_\_\_ Date \_\_\_\_\_

VA FORM 08-6231

Scale bars for various drawing scales: three eighths inch = one foot, one quarter inch = one foot, one eighth inch = one foot, one half inch = one foot, three quarters inch = one foot, one inch = one foot, one and one half inches = one foot, one and one half inches = one foot, three inches = one foot.



- SHEET NOTES:**
- 1 PROVIDE AND INSTALL INSIDE THE TR CABINET BY THE TEL/DATA SYSTEM CONTRACTOR. VERIFY THE EXACT LOCATION.
  - 2 REDUCE WIRE SIZE TO #12 BEFORE TERMINATING AT RECEPTACLE(S).
  - 3 WIRE CIRCUIT THROUGH CONTACT IN ELOPA.
  - 4 WIRE CIRCUIT THROUGH CONTACT IN LOPA.
  - 5 CONNECT TO EMERGENCY PHONE.
  - 6 MOUNT LUMINAIRE VERTICALLY IN THE HOISTWAY.



**FIRST LEVEL ELECTRICAL PLAN (ADD ALTERNATE)**  
 SCALE: 1/16" = 1'-0"

**CONSTRUCTION DOCUMENTS 100%**

**CONSULTANTS:**



**ARCHITECT / ENGINEERS:**



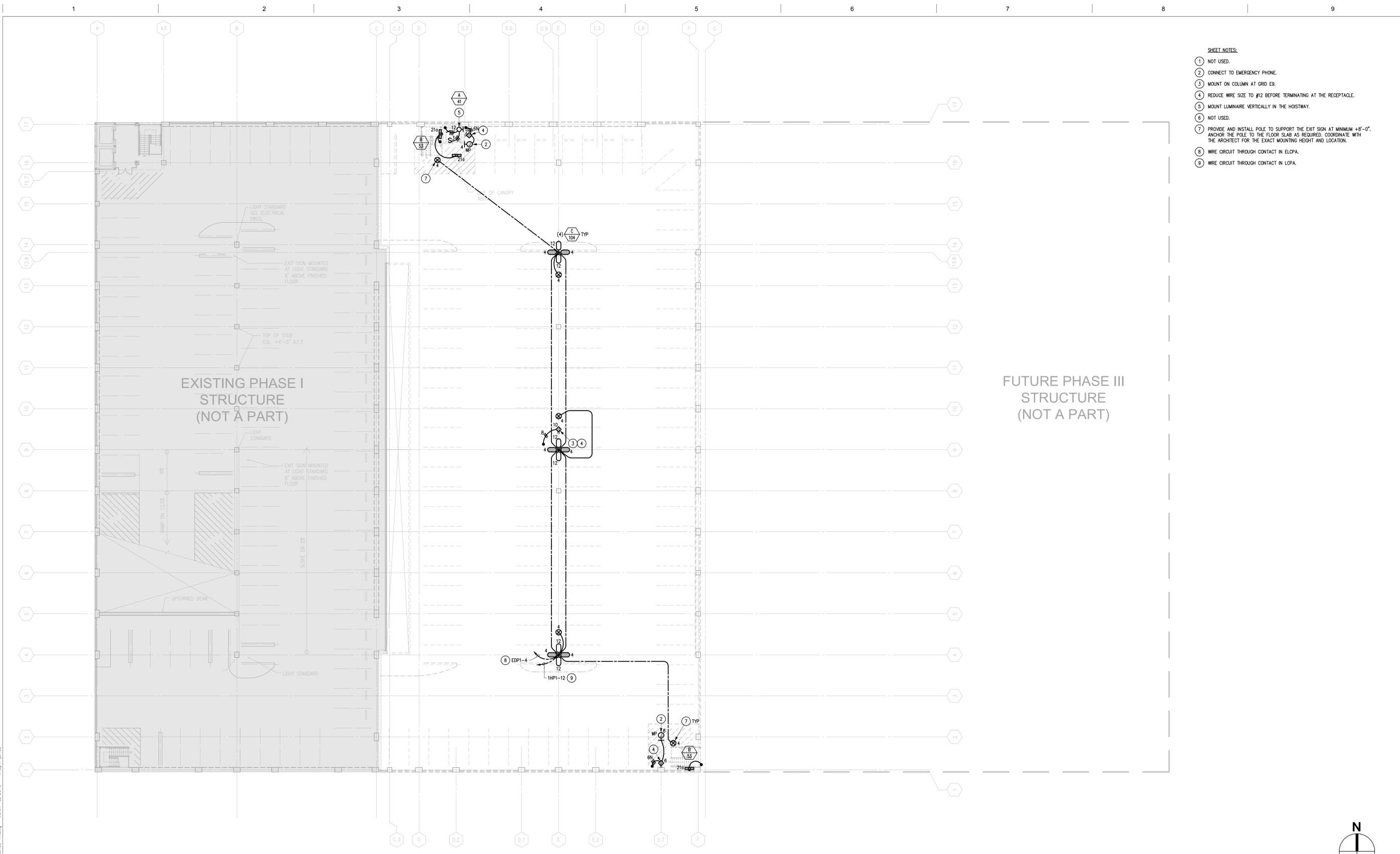
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| Approved: Project Director |  |  |

|                   |  |       |
|-------------------|--|-------|
| Project Title     | <b>PARKING GARAGE #2 VA MEDICAL CENTER SAN DIEGO</b> |       |
| Project Number    | <b>664-332</b>                                       |       |
| Location          | <b>SAN DIEGO, CA 92161</b>                           |       |
| Date              | Checked  | Drawn |
| <b>03/22/2016</b> |  |       |
| Drawing Number    | <b>ES.104-A1</b>                                     |       |
| Dwg. of           |  |       |



three inches = one foot  
 one and one half inches = one foot  
 one inch = one foot  
 three quarters inch = one foot  
 one half inch = one foot  
 three eighths inch = one foot  
 one quarter inch = one foot  
 one eighth inch = one foot

- SHEET NOTES:**
- 1 NOT USED.
  - 2 CONNECT TO EMERGENCY PHONE.
  - 3 MOUNT ON COLUMN AT GRID E9.
  - 4 REDUCE WIRE SIZE TO #12 BEFORE TERMINATING AT THE RECEPTACLE.
  - 5 MOUNT LUMINAIRE VERTICALLY IN THE HOISTWAY.
  - 6 NOT USED.
  - 7 PROVIDE AND INSTALL POLE TO SUPPORT THE EXIT SIGN AT MINIMUM +8'-0". ANCHOR THE POLE TO THE FLOOR SLAB AS REQUIRED. COORDINATE WITH THE ARCHITECT FOR THE EXACT MOUNTING HEIGHT AND LOCATION.
  - 8 WIRE CIRCUIT THROUGH CONTACT IN E/CPA.
  - 9 WIRE CIRCUIT THROUGH CONTACT IN L/CPA.



**SECOND (ROOF) LEVEL ELECTRICAL PLAN (ADD ALTERNATE)**

SCALE: 1/16" = 1'-0"

**CONSTRUCTION DOCUMENTS 100%**

**CONSULTANTS:**



**ARCHITECT / ENGINEERS:**



Drawing Title  
**ADD ALTERNATE  
 SECOND (ROOF) LEVEL ELECTRICAL PLAN**

Approved: Project Director

Project Title  
**PARKING GARAGE #2  
 VA MEDICAL CENTER SAN DIEGO**

Location  
**SAN DIEGO, CA 92161**

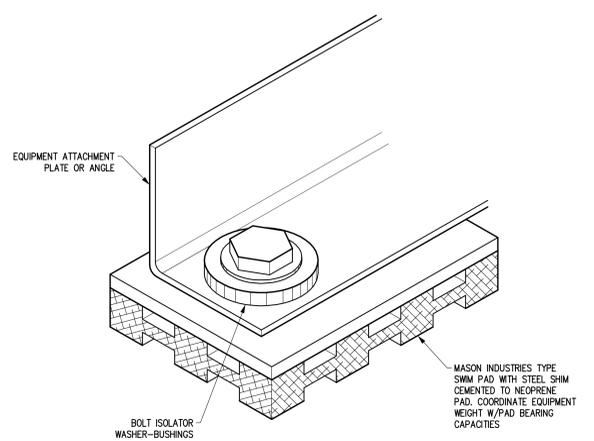
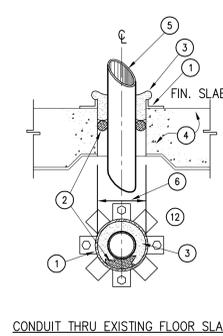
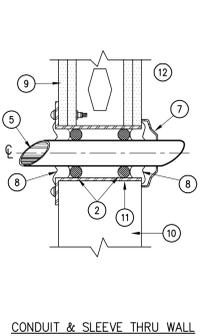
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Drawing Number  
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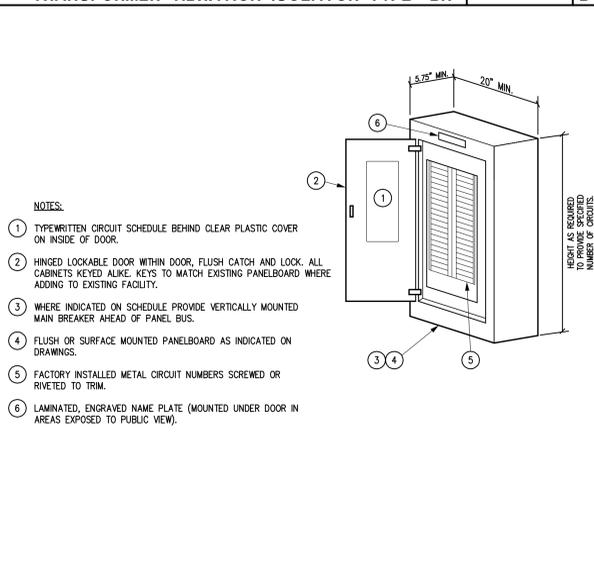
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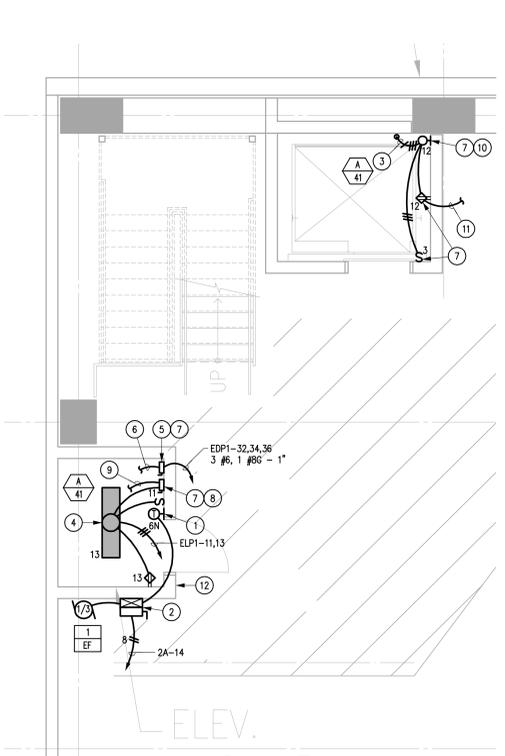
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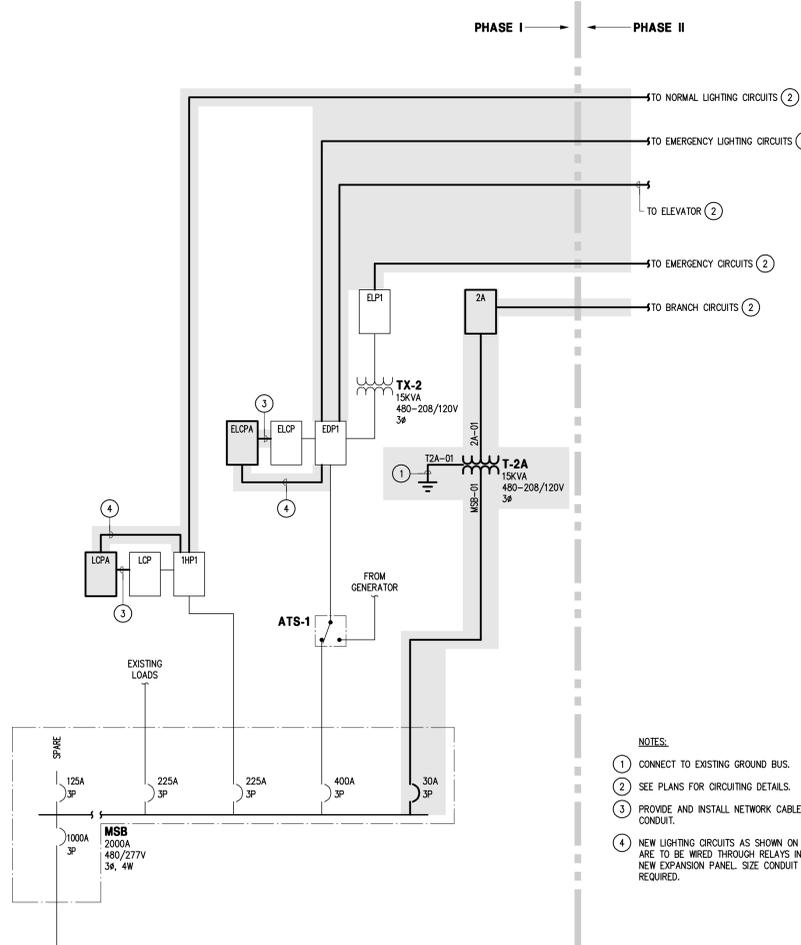
**TRANSFORMER VIBRATION ISOLATOR TYPE "BR"** NTS **B4**



**TYPICAL PANELBOARD** NTS **D4**



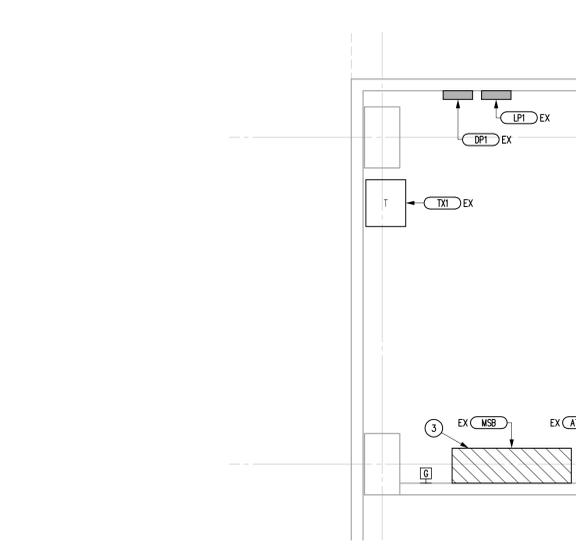
**PARTIAL B2 LEVEL ENLARGED PLAN** 1/4" = 1'-0" **D5**



**PARTIAL EXISTING SINGLE LINE DIAGRAM** NONE **D7**

| FEEDER SCHEDULE |      |                |                            |   |   |    |                   |     |     |             |      |
|-----------------|------|----------------|----------------------------|---|---|----|-------------------|-----|-----|-------------|------|
| CIRCUIT         | CODE | RACEWAY INCHES | TOTAL NUMBER OF CONDUCTORS |   |   |    | MOTOR INFORMATION |     | FLA | LENGTH FEET | VD % |
|                 |      |                | O                          | N | G | IG | STARTER           | OCF |     |             |      |
| 2A-01           | F450 | (1) 1-1/4      | 3                          | 1 | 1 | 1  | -                 | -   | -   | 5           | 0.02 |
| MSB-01          | F30  | (1) 3/4        | 3                          | 1 | 1 | 1  | -                 | -   | -   | 40          | 0.30 |
| 12A-01          | F606 | (1) 3/4        | -                          | - | - | 1  | -                 | -   | -   | -           | -    |

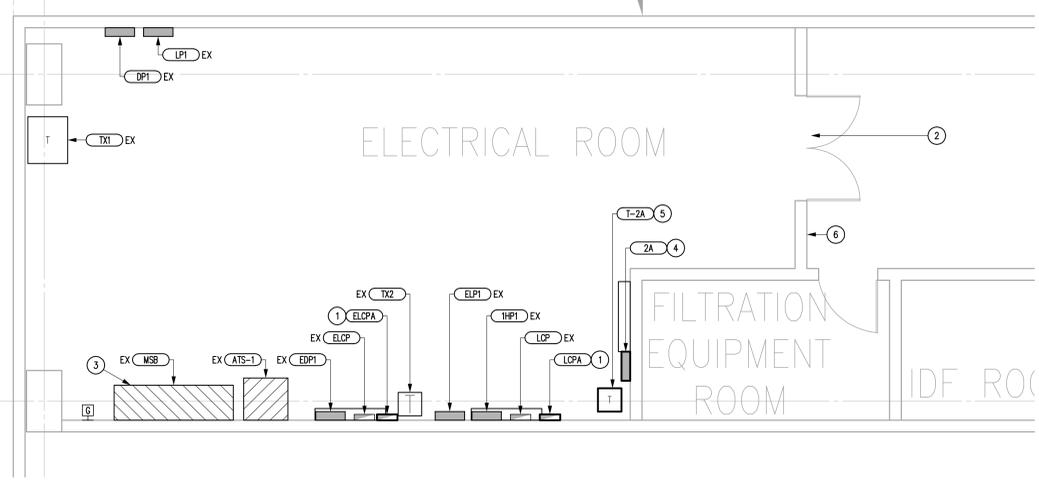
**TYPICAL THROUGH PENETRATION FIRE STOPPING SYSTEM** NTS **D2**



**TYPICAL THROUGH PENETRATION FIRE STOPPING SYSTEM** NTS **D2**

**PARTIAL B2 LEVEL ENLARGED PLAN** 1/4" = 1'-0" **D5**

**PARTIAL EXISTING SINGLE LINE DIAGRAM** NONE **D7**



**PHASE 1 ELECTRICAL ROOM ENLARGED PLAN** 1/4" = 1'-0" **F1**

- NOTES:
- PROVIDE AND INSTALL 8-RELAY EXPANSION PANEL, OTHER HARDWARE AS REQUIRED, AND CAT-5 CABLE IN CONDUIT BETWEEN THE EXISTING LIGHTING CONTROL PANEL AND THE NEW PANEL. PROVIDE COMPLETE PROGRAMMING FOR ALL NEW LIGHTING CIRCUITS TO MEET THE OWNER'S REQUIREMENTS. ILC APPENDIX # ILC-API-08-08-X-0-SRI-NC-B.
  - PROVIDE AND INSTALL CONDUIT EXPANSION JOINT AT CEILING GAP AS REQUIRED.
  - PROVIDE AND INSTALL NEW CIRCUIT BREAKER IN EXISTING SPACE.
  - SEE DETAIL D4, THIS SHEET FOR INSTALLATION REQUIREMENTS.
  - SEE DETAIL B4, THIS SHEET FOR INSTALLATION REQUIREMENTS.
  - SEE DETAIL D2, THIS SHEET FOR INSTALLATION REQUIREMENTS.

**PARTIAL EXISTING SINGLE LINE DIAGRAM** NONE **D7**

| E7 |     |    | E8 |     |    | E9 |     |    |
|----|-----|----|----|-----|----|----|-----|----|
| -  | NTS | E7 | -  | NTS | E8 | -  | NTS | E9 |
| F7 |     |    | F8 |     |    | F9 |     |    |
| -  | NTS | F7 | -  | NTS | F8 | -  | NTS | F9 |

**CONSTRUCTION DOCUMENTS 100%**

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**Drawing Title**  
SINGLE LINE DIAGRAM AND ELECTRICAL DETAILS

Approved: Project Director

**Project Title**  
PARKING GARAGE #2  
VA MEDICAL CENTER SAN DIEGO

**Project Number**  
664-332

**Location**  
SAN DIEGO, CA 92161

**Date**  
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**Drawing Number**  
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Office of Construction and Facilities Management

Department of Veterans Affairs

