# Department of Veterans Affairs
# Southern Arizona VA Health Care System

# VA PROJECT 678-11-103
# EMERGENCY POWER DISTRIBUTION PHASE IV

## SAVAHCS
## 3601 S. 6th Ave.
## Tucson, Az 85723

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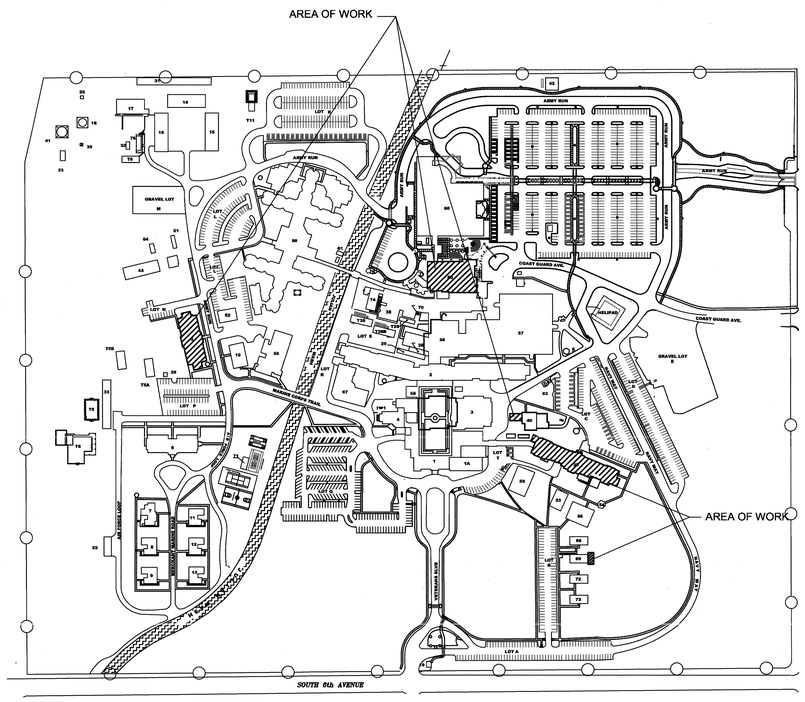


1 LOCATION MAP
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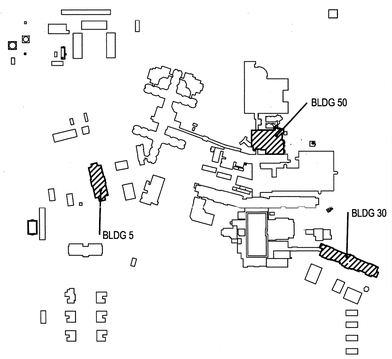
**BUILDING SCHEDULE**

| | | | |
|---|---|---|---|
| 1 | ADMINISTRATION | 41 | WATER TANK (200,000 gallons) |
| 2 | HOSPITAL BLDG. | 42 | PRIMARY SWITCHGEAR |
| 3 | PATIENT DINING & CANTEEN | 43 | MAINT. SHOP/STORAGE |
| 4 | AUDITORIUM, PATIO CONFER., LIBRARY | 44 thru 49 | UNASSIGNED NUMBERS |
| 5 | FACIL. MGMT, RESOUR. MGMT, CHILD CARE | 50 | LSU/SURGICAL SUB-SPECIALTY CLINICS |
| 6 | RESEARCH | 51 | STORAGE (MRO SHOPS) |
| 7 | BEHAVIORAL SCIENCE | 52 | RESEARCH |
| 8 | SOUTHWEST BLIND REHAB | 53 | HUMAN RESOURCE MGMT |
| 9 | SOUTHWEST BLIND REHAB | 54 | RAMADA |
| 10 | RESEARCH | 55 | A/C CHILLER TOWER for BLDG 50 |
| 11 | SOUTHWEST BLIND REHAB | 56 | ANIMAL RESEARCH FACILITY |
| 12 | SOUTHWEST BLIND REHAB | 57 | RAD, SPD, RENAL, DENT, SURG, IRMS |
| 13 | VOC- REHAB PROGRAM | 58 | SERVICE OFFICERS |
| 14 | WAREHOUSE | 59 | BEHAVIORAL SCIENCE |
| 15 | GARAGE, WAREHOUSE | 60 | NURSING HOME CARE UNIT |
| 16 | LAUNDRY, STORAGE | 61 | ELEC. GEN. for BLDG 60 (EMRG) |
| 17 | BOILER PLANT | 62 | ACCESS BRIDGE |
| 18 | WATER TANK (100,000 gallons) | 63 | OXYGEN TANKS |
| 19 | GATE HOUSE | 64 | RESEARCH ANIMAL BARNS & PENS |
| 20 | FLAG POLE | 65 | TOILET & STORAGE (DEMOLISHED MAR-04) |
| 21 | ACCESS BRIDGE | 66 | BEHAVIORAL SCIENCE |
| 22 | QUARTERS GARAGE | 67 | BEHAVIORAL SCIENCE |
| 23 | WELL NO. 3 | 68 | TELEPHONE LINKED CARE (TLC) |
| 24 | UNASSIGNED | 69 | ELIGIBILITY & ENROLLMENT CENTER |
| 25 | WELL NO. 1 | 70 | PATIENT SMOKING SHELTER |
| 26 | PUMP HOUSE & PIT | 71 | RECREATION FACILITY |
| 27 | UNASSIGNED | 72 | BUSINESS OFFICE |
| 28 | C.T. SCANNER | 73 | BUSINESS OFFICE |
| 29 | M.R.I. | 74 | AUDIOLOGY |
| 30 | SOUTHWEST BLIND REHAB | 75 | ANIMAL FACILITY (RESEARCH) |
| 31 | STORAGE SHED (Engineering) | 76 | HAZMAT STORAGE |
| 32 | VACANT | 80 | AMBULATORY CARE ADDITION |
| 33 | RESEARCH ANIMAL | T-5A | PROJECTS |
| 34 | UNASSIGNED | T-5B | FACILITIES |
| 35 | WELL NO. 2 (Abandoned) | T-8 | PAINT SHOP |
| 36 | UNASSIGNED | T-11 | STORAGE, ENGINEERING |
| 37 | OXYGEN STORAGE | T-26 | MED. SVC,CARDIOLOGY SEC. |
| 38 | CLINICAL BUILDING | T-38 | ADMINISTRATIVE OFFICES |
| 39 | UNASSIGNED | T-38B | ADMINISTRATIVE OFFICES |
| 40 | A/C & MECH. EQUIP. BLDG. | | |




KEYPLAN
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| Revisions | Date |
|---|---|
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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER 17029 ROGER B. HARWELL 12/11/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title
**COVER SHEET, LOCATION MAP, & INDEX OF DRAWINGS**

Approved: Chief Facilities Management

Project Title
Emergency Power Distribution Phase 4
Bldgs 5, 30, 50

Building Number: **

Checked: **RBM**

Drawn: **MY**

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

Project No. 678-11-103

DRAWING NO. **GI-1**

Dwg. 1 of 18

Office of Facilities

Department of Veterans Affairs

## GENERAL CONSTRUCTION SCHEDULE

BLDG 5: CONTRACTOR SHALL DEVELOP FOR VA APPROVAL A DETAILED METHOD OF PROCEDURE AND SCHEDULE WHICH MINIMIZES THE INTERRUPTION TO BUILDING OPERATIONS. BUILDING 5 MUST REMAIN OPERATIONAL WEEKDAYS 6 A.M. TO 6 P.M. NIGHTS AND WEEKENDS ARE AVAILABLE FOR POWER OUTAGE FOR INSTALLATION OF NEW ATS & CONNECTIONS.

1. INSTALL NEW GENERATOR & ATS. PULL CABLES FROM GENERATOR BREAKER TO ATS PER ONE-LINE.
2. DISCONNECT AND RELOCATE CABLES FROM SWITCHBOARD 5-DP TO ATS NORMAL SIDE.
3. INSTALL NEW CABLES FROM LOAD SIDE OF ATS TO SWITCHBOARD 5-DP MAIN BREAKER.

BLDG 30:

1. REPLACEMENT OF PANELS EFFECTING CLINICAL OR ADMINISTRATIVE AREAS TO BE ACCOMPLISHED DURING OFF HOURS & WEEKENDS IN OCCUPIED AREAS. PROVIDE TEMPORARY POWER AS REQUIRED DURING REPLACEMENT. POWER TO ELEVATORS SHALL BE PROVIDED AT ALL TIMES.
2. CABLE REPLACEMENT FROM BUILDING 40 TO BUILDING 30 CAN BE ACCOMPLISHED DURING NORMAL HOURS. PULL CABLE ONE FEEDER AT A TIME. PROVIDE TEMPORARY GENSET POWER TO REPLACE POWER FEED TO PANELS EM2-3, EM1A-3, AND EM1B-3.

BLDG 50: REPLACEMENT OF PANELS CAN BE ACCOMPLISHED DURING OFF HOURS AND WEEKENDS IN OCCUPIED AREA. PROVIDE TEMPORARY POWER AS REQUIRED DURING REPLACEMENT.

## ITEMS & DEDUCTS

1. ITEM 1. ALL WORK.
2. ITEM 2 (DEDUCT ITEM 1 ◇) ALL OF THE WORK IN ITEM 1 EXCEPT DEDUCT:
   A) BUILDING 30 300 KVA TRANSFORMER 30-T-EM2-3.
3. ITEM 3 (DEDUCT ITEM 2 ◇◇) ALL THE WORK IN ITEM 2 EXCEPT DEDUCT:
   A) CABLING FROM EM-1B BLDG 40 TO NEW 100 AMP DISCONNECT THAT FEEDS 30-T-EM1B-3 IN BLDG 30;
   B) CABLING FROM EM-1A BLDG 40 TO NEW 100A DISCONNECT THAT FEEDS 30-T-EM1A-3 IN BLDG 30.

## SINGLE-LINE DIAGRAM LEGEND

EXISTING / NEW

FUSED DISCONNECT SWITCH

NON-FUSED DISCONNECT SWITCH

TRANSFORMER

200/3 — CIRCUIT BREAKER

POWER MONITORING METER

AFC — AVAILABLE FAULT CURRENT IN RMS SYMMETRICAL (CALCULATED) AT POINTS IDENTIFIED ON ONE-LINES F1, F2, ETC.

## SYMBOLS-ABBREVIATIONS

(E) EXISTING

(N) NEW

NIC NOT IN CONTRACT

30 — INSTANTANEOUS CURRENT (SNAP SHOT AMPS) MEASERED BY VA.

100 — PEAK CURRENT (AMPS) RECORDED BY VA.

40 — CONNECTED LOAD IN KVA

PANEL — NEW PANEL, OR NEW PANEL REPLACING EXISTING PANEL

PANEL — EXISTING PANEL

REMOVE EXISTING WIRE & CONDUIT. CONDUIT MAY BE ABANDONED IN PLACE IF IT IS UNDER THE CONCRETE SLAB, IN WALLS, ETC.

EXISTING CONDUIT WITH EXISTING WIRING AND/OR NEW WIRING AS NOTED IN KEYNOTES

NEW WIRE IN NEW CONDUIT OR NEW WIRE IN EXISTING CONDUIT

CIRCUIT BREAKER ENCLOSURE

◇ ITEM 2 – DEDUCT

◇◇ ITEM 3 – DEDUCT

## PLAN DRAWING LEGEND

NEW FEEDER (WIRE & CONDUIT) OR NEW CABLE IN EXISTING CONDUIT PER SUMBOLS A & B

EXISTING FEEDER

NEW UNDERGROUND CONDUIT

EXISTING UNDERGROUND CONDUIT

EXISTING WATER LINE

EXISTING SEWER LINE

ABANDONED GAS LINE

HPS — EXISTING HIGH PRESSURE STEAM

(N) PANELBOARD

(E) PANELBOARD

(N) DISCONNECT

(E) DISCONNECT

SES SERVICE ENTRANCE SWITCH

NIC NOT IN CONTRACT

SWBD SWITCHBOARD

MDP MAIN DISTRIBUTION PANEL

MDS MAIN DISTRIBUTION SWITCHBOARD

MSB MAIN SWITCHBOARD

ID IDENTIFICATION

EMH ELECTRIC MANHOLE

(E) EXISTING

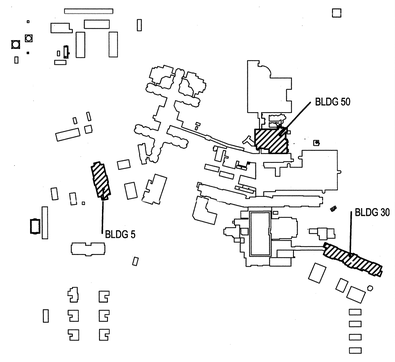
(N) NEW

XFMR TRANSFORMER

AFC AVAILABLE FAULT CURRENT IN RMS SYMMETRICAL

## GENERAL NOTES

1. PROVIDE TEMPORARY POWER WHEN POWER TO LIFE SAFETY, CRITICAL, AND EQUIPMENT BRANCHES ARE INTERRUPTED TO MINIMIZE OUTAGE TIME. KEEP OUTAGES ON LIFE SAFETY, CRITICAL, & EQUIPMENT BRANCHES SEPARATE. CONVERT/REPLACE ONE BRANCH PANEL AT TIME.
2. OUTAGES EFFECTING BRANCH PANEL CIRCUITS MUST BE SCHEDULED WITH VA. KEEP SPECIAL SYSTEM CIRCUITS ENERGIZED UNTIL FINAL TIE-IN AND LOAD TRANSFERRED TO NEW PANEL. OUTAGE TIME FOR FIRE PROTECTION CONTROL SYSTEM CANNOT EXCEED BATTERY CAPACITY. PROVIDE BACKUP CONTROL POWER IF OUTAGE EXCEEDS THE BATTERY CAPACITY. VERIFY THE FIRE PROTECTION CONTROL CIRCUITS BEFORE DISABLING. VERIFY AND ALLOW TIME FOR BATTERY RECHARGE IN SCHEDULING NEXT OUTAGE. IDENTIFY THESE CIRCUITS BEFORE TRANSFERRING. CHECK BATTERY LIFE BEFORE INTERRUPTING.
3. LOSS OF HVAC TO ADMINISTRATIVE AREA SHALL BE SCHEDULED WITH OWNER. OUTAGE TO BE SCHEDULED IN ACCORDANCE WITH VA NEEDS. PATIENT AREA HVAC OUTAGE IS LIMITED TO NO MORE THAN 4 HOURS PER DAY IN THE WINTER. OUTAGE TO OCCUR IN DAY TIME AND NO MORE THAN 2 HOURS PER DAY IN THE SUMMER. OUTAGE TO OCCUR AT NIGHT TIME.
4. CABLE PULLS TO BE SCHEDULED DURING OFF HOURS IN OCCUPIED AREAS.
5. ALL MATERIALS TO BE NEW AND BEAR THE U.L. SEAL.
6. ALL ELECTRICAL CONDUCTORS TO BE INSTALLED IN CONDUIT SYSTEMS, METALLIC TYPE WHERE ABOVE GRADE.
7. THE USE OF MC & AC CABLE IS PROHIBITED.
8. ALL CONDUCTORS AND BUSSES TO BE COPPER NOT ALUMINUM.
9. ANY FLEXIBLE CONDUIT USED FOR CONNECTION TO NEW PANELS TO BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) WITH SEPARATE EQUIPMENT GROUNDING CONDUCTOR (EGC) WITH CIRCUIT CONDUCTORS. GROUNDING & BONDING SHALL BE DONE PER NEC ART. 350.60.
10. WORK REQUIRING OUTAGES IN ADMINISTRATIVE AND CLINICAL AREAS TO BE SCHEDULED DURING NON-OCCUPANCY HOURS.
11. BRANCH PANEL DEMOLITION AND REPLACEMENT ON FLOORS TO BE DONE DURING NON-OCCUPANCY HOURS.
12. WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION CONTRACTOR TO PROVIDE A THERMAGRAPHIC SURVEY OF ALL NEW CONNECTIONS. CORRECT DEFICIENCIES AND REPORT TO COTR.
13. ONLY ONE EMERGENCY ELECTRICAL BRANCH SHALL BE OUT OF SERVICE AT ANY TIME.
14. LOADS WHICH ARE SERVED BY A UPS AND WHICH ARE INTERRUPTED MUST BE SUPPLIED BY A TEMPORARY UPS SOURCE
15. ALL NEW PANELS TO HAVE FACTORY INSTALLED LOCKS KEYED TO EXISTING LOCK SYSTEM WITH REMOVABLE CORES. CYLINDERS TO BE 7-PIN TYPE MANUFACTURED BY 'BEST'. VA WILL PERFORM THE KEYING.
16. DISPOSAL OF TEMPORARY ELECTRICAL GEAR PROCURED BY CONTRACTOR TO BE CONTRACTOR'S RESPOSIBILITY UNLESS VA ACCEPTS OWNERSHIP. FOR THE EQUIPMENT WHICH VA ACCEPTS, CONTRACTOR TO DELIVER TO LOCATION SELECTED BY VA.
17. LABEL ALL EQUIPMENT WITH THE "FED FROM" POWER SOURCE INDICATING LOCATION OF POWER SOURCE ON LABEL.
18. INSTALLED SPARE BREAKERS TO BE LEFT IN OPEN POSITION.
19. OUTAGE EFFECTING TELECOMMUNICATIONS SERVICES TO BE ONLY BETWEEN MIDNIGHT AND 6:00 AM.
20. CONTRACTOR TO SWEEP ALL UNDERGROUND DUCT CONDUITS PER SPECS BEFORE PULLING NEW CABLES.
21. VERIFY AND RECORD ELECTRICAL PHASING AND ROTATION PRIOR TO DISCONNECTING/RECONNECTING ANY POWER SOURCES.
22. CONTRACTOR TO COMPLY WITH VA INFECTION CONTROL REQUIREMENTS. THIS INCLUDES ENCLOSURES WITH STEP-OFF MATS DURING WALL CUTTING OPERATIONS.
23. NO SPLICES ARE ALLOWED FOR ALL NEW CABLE PULLS.




KEYPLAN
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| Revisions | Date |
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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

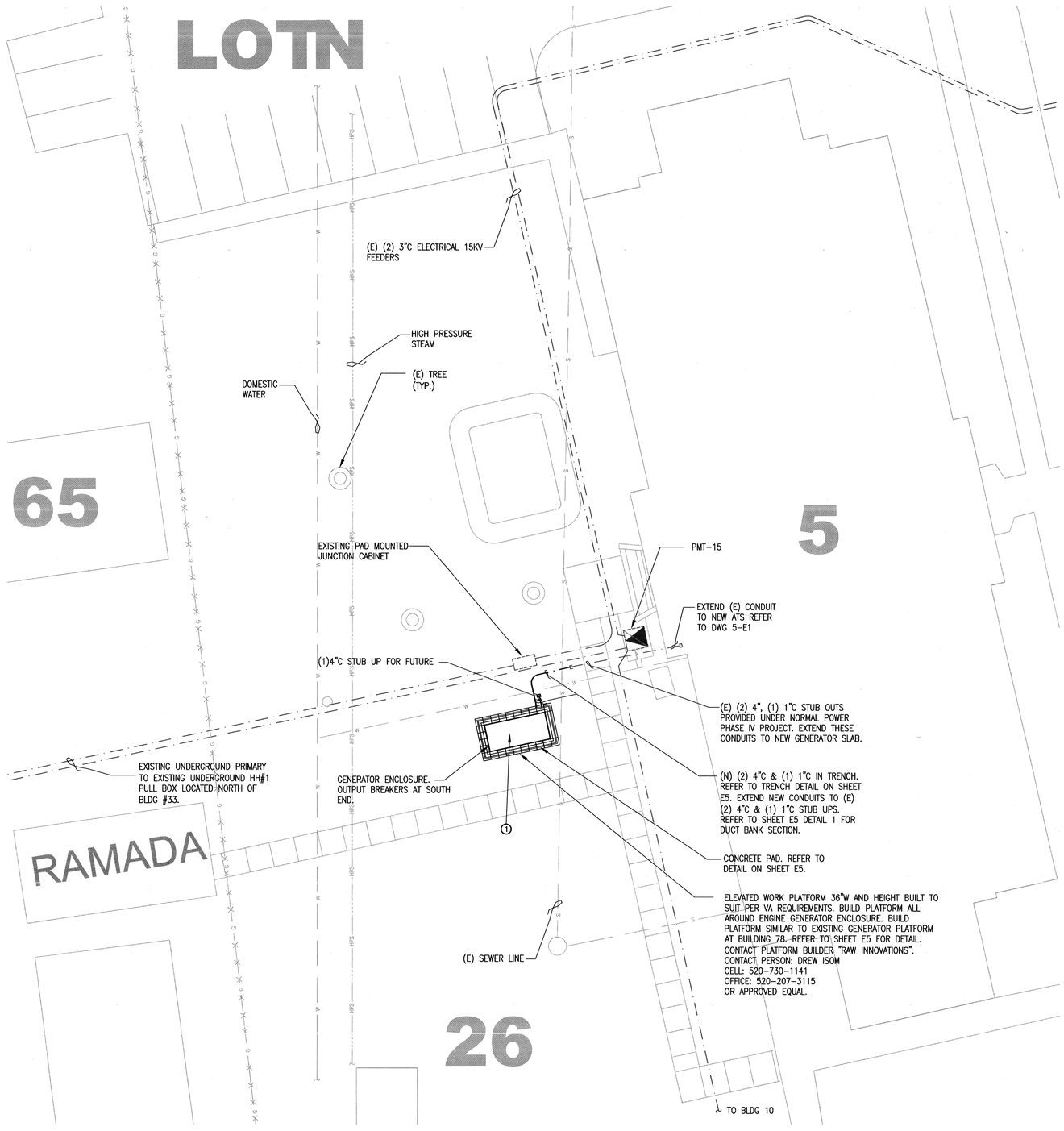
REGISTERED PROFESSIONAL ENGINEER (CIVIL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A.
EXPIRES 3/31/12

| | | | |
|---|---|---|---|
| Approved: Director | Drawing Title: SYMBOLS LEGEND. GENERAL NOTES. | Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50 | Date: 12/21/2009 |
| | | | Project No.: 678-11-103 |
| Approved: Associate Director | Approved: Chief Facilities Management | Building Number: -- / Checked: RBH / Drawn: MY | DRAWING NO.: E1 |
| | | Location: SAVAHCS TUCSON, AZ. 85723 | Dwg. 2 of 18 |

Office of Facilities
Department of Veterans Affairs

## KEYNOTES

1. CONTRACTOR TO PROVIDE DIMENSIONED SKETCH SHOWING EXACT CONCRETE PAD LAYOUT AND LOCATION WITH REFERENCE TO LOCATION OF BUILDING 5, EXISTING UNDERGROUND UTILITIES & WALKWAY TO ARCHITECT/ENGINEER FOR REVIEW & APPROVAL.




PARTIAL ELECTRICAL SITE PLAN

1" = 10'

0 5' 10' 20'

## BUILDING SCHEDULE

| | |
|---|---|
| 1 | ADMINISTRATION |
| 2 | HOSPITAL BLDG. |
| 3 | PATIENT DINING & CANTEEN |
| 4 | AUDITORIUM, PATIO CONFER., LIBRARY |
| 5 | FACIL. MGMT, RESOUR. MGMT, CHILD CARE |
| 6 | RESEARCH |
| 7 | BEHAVIORAL SCIENCE |
| 8 | SOUTHWEST BLIND REHAB |
| 9 | SOUTHWEST BLIND REHAB |
| 10 | RESEARCH |
| 11 | SOUTHWEST BLIND REHAB |
| 12 | SOUTHWEST BLIND REHAB |
| 13 | VOC- REHAB PROGRAM |
| 14 | WAREHOUSE |
| 15 | GARAGE, WAREHOUSE |
| 16 | LAUNDRY, STORAGE |
| 17 | BOILER PLANT |
| 18 | WATER TANK (100,000 gallons) |
| 19 | GATE HOUSE |
| 20 | FLAG POLE |
| 21 | ACCESS BRIDGE |
| 22 | QUARTERS GARAGE |
| 23 | WELL NO. 3 |
| 24 | UNASSIGNED |
| 25 | WELL NO. 1 |
| 26 | PUMP HOUSE & PIT |
| 27 | UNASSIGNED |
| 28 | C.T. SCANNER |
| 29 | M.R.I. |
| 30 | SOUTHWEST BLIND REHAB |
| 31 | STORAGE SHED (Engineering) |
| 32 | NUCLEAR MEDICINE STORAGE |
| 33 | RESEARCH ANIMAL |
| 34 | UNASSIGNED |
| 35 | WELL NO. 2 (Abandoned) |
| 36 | UNASSIGNED |
| 37 | OXYGEN STORAGE |
| 38 | CLINICAL BUILDING |
| 39 | UNASSIGNED |
| 40 | A/C & MECH. EQUIP. BLDG. |
| 41 | WATER TANK (200,000 gallons) |
| 42 | PRIMARY SWITCHGEAR |
| 43 | MAINT. SHOP/STORAGE |
| 44 | UNASSIGNED |
| 45 | UNASSIGNED |
| 46 | UNASSIGNED |
| 47 | UNASSIGNED |
| 48 | UNASSIGNED |
| 49 | UNASSIGNED |
| 50 | AMBULATORY CARE |
| 51 | RESEARCH - ANIMAL PENS |
| 52 | RESEARCH |
| 53 | HUMAN RESOURCE MGMT |
| 54 | RAMADA |
| 55 | A/C CHILLER TOWER for BLDG 50 |
| 56 | ANIMAL RESEARCH FACILITY |
| 57 | RAD, SPD, RENAL, DENT, SURG, IRMS |
| 58 | SERVICE OFFICERS |
| 59 | BEHAVIORAL SCIENCE |
| 60 | NURSING HOME CARE UNIT |
| 61 | ELEC. GEN. for BLDG 60 (EMRG) |
| 62 | ACCESS BRIDGE |
| 63 | OXYGEN TANKS |
| 64 | RESEARCH ANIMAL BARN & PENS |
| 65 | TOILET & STORAGE |
| 66 | BEHAVIORAL SCIENCE |
| 67 | BEHAVIORAL SCIENCE |
| 68 | H.B.H.C. |
| 69 | ELIGIBILITY & ENROLLMENT CENTER |
| 70 | PATIENT SMOKING SHELTER |
| 71 | RECREATION FACILITY |
| 72 | BUSINESS OFFICE |
| 73 | BUSINESS OFFICE |
| 80 | AMBULATORY CARE ADDITION |
| | HELIPAD |
| T-5A | PROJECTS |
| T-5B | FACILITIES |
| T-8 | PAINT SHOP |
| T-11 | STORAGE, ENGINEERING |
| T-26 | MED. SVC,CARDIOLOGY SEC. |

| Revisions | Date |
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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822


REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) CERTIFICATE NO. 17029 ROGER B. HARWELL 14 MAY 2009 ARIZONA U.S.A.
EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title
**ELECTRICAL UTILITIES PARTIAL SITE PLAN FOR BLDG 5**

Approved: Chief Facilities Management

Project Title
Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: SITE
Checked: RBH
Drawn: MY
Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009
Project No. 678-11-103
DRAWING NO. E2
Dwg. 3 of 18

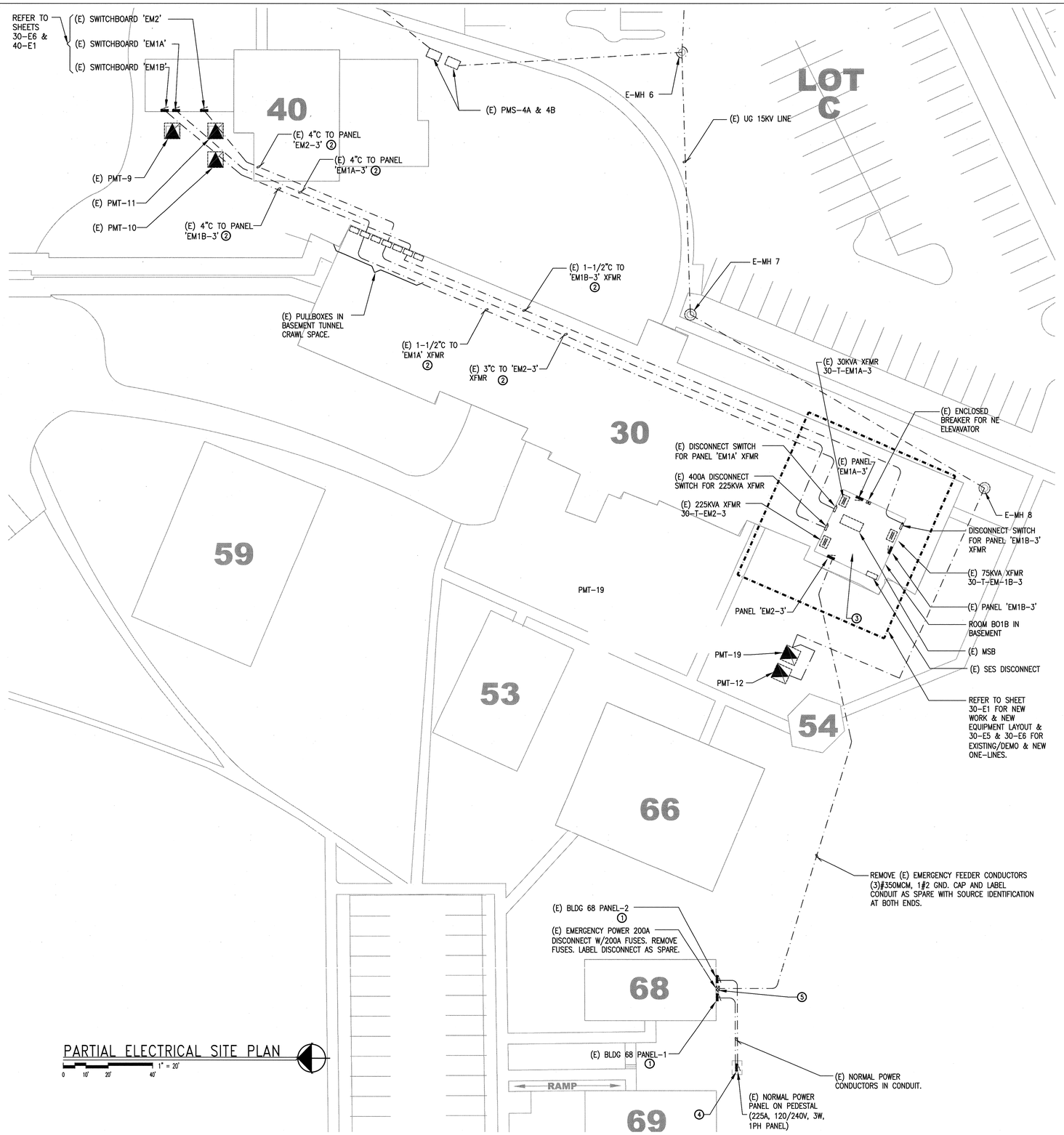
Office of Facilities
Department of Veterans Affairs

## GENERAL NOTES

1. REFER TO SHEET E1 FOR SYMBOLS LEGEND. REFER TO SHEETS 40-E1, 30-E5 & 30-E6 FOR EXISTING & NEW FEEDER SIZES.

## ○ KEYNOTES

1. BUILDING 68. RECONNECT EXISTING NORMAL POWER CONDUCTORS CAPPED IN PANELS BACK TO LINE SIDE OF EXISTING MAIN 100A/2P BREAKERS.
2. REPLACE EXISTING CONDUCTORS WITH NEW. REFER TO ONE-LINE SHEET 30-E6 FOR NEW CONDUCTORS SIZES.
3. REFER TO ONE-LINES SHEETS 30-E5 & 30-E6 FOR DEMO AND NEW WORK IN THIS AREA.
4. BUILDING 68. PROVIDE AND INSTALL (2) 100A, 2P BREAKERS IN EXISTING PANEL SPACES 14, 16 & 18, 20. CONNECT EXISTING CAPPED PANEL 1 AND PANEL 2 CIRCUIT CONDUCTORS TO NEW BREAKERS.
5. BUILDING 68. DISCONNECT 120V 1P FIRE ALARM CIRCUIT FROM THE PANEL AND RELOCATE TO EXISTING SPARE UNUSED BREAKER IN PANEL 2.




PARTIAL ELECTRICAL SITE PLAN

1" = 20'

0 10' 20' 40'

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| T-5B | FACILITIES |
| T-8 | PAINT SHOP |
| T-11 | STORAGE, ENGINEERING |
| T-26 | MED. SVC,CARDIOLOGY SEC. |

| Revisions | Date |
|---|---|
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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822


REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **ELECTRICAL UTILITIES. PARTIAL SITE PLAN FOR BLDGS 30 & 68**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: SITE | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

Project No. 678-11-103

DRAWING NO. E3

Dwg. 4 of 18

Office of Facilities

Department of Veterans Affairs

# PANEL SCHEDULES

BUILDING 50 PANELS

PANEL 'EL1EB' — 225A MLO 120/208V, 3ø, 4W, WITH 42 CKTS
(28) 20A, 1P BREAKERS USED,
(14) 20A, 1P SPARES.

PANEL 'EL1A' — 100A MLO, 120/208V, 3ø, 4W, WITH 42 CKTS
(28) 20A, 1P BREAKERS, USED,
(1) 40A, 2P – DATA ROOM,
(1) 20A, 1P – FIRE ALARM CIRCUIT (CKT #20),
(2) 20A, 1P – RADIO & COMM. (CKTS #22 & #24),
(9) 20A, 1P SPARES.

BUILDING 30 PANELS

PANEL 'EM2–3' ② — 800A WITH 800A MAIN, 120/208V, 3ø, 4W. REFER TO ONE–LINE NEW WORK FOR BREAKER INFORMATION.

PANEL '1E' ②③ — 100A, 100A MAIN, 120/208V, 3ø, 4W WITH 30 CKTS
(13) 20A, 1P BREAKERS, USED,
(11) 20A, 1P SPARES,
(6) 20A, 1P SPACES.

PANEL '2E' ③ — 100A MLO, 120/208V, 3ø, 4W, WITH 30 CKTS
(12) 20A, 1P USED,
(12) 20A, 1P SPARES,
(6) 20A, 1P SPACES.

PANEL '1EC' ③ — 100A MLO, 120/208V, 3ø, 4W WITH 30 CKTS
(17) 20A, 1P BREAKERS, USED,
(12) 20A, 1P SPARES,
(7) 20A, 1P SPACES.

PANEL '2EC' ③ — 100A MLO, 120/208V, 3ø, 4W WITH 30 CKTS
(2) 20A, 3P BREAKERS, USED,
(10) 20A, 1P SPARES,
(18) 20A, 1P SPACES.

PANEL 'EM1A–3' ①② — 225A W/ 150A MAIN, 120/208V, 3ø, 4W WITH 30 CKTS
(2) 100A, 3P BREAKER, USED,
(3) 20A, 1P BREAKERS, USED,
(3) 3P SPACES,
(12) 20A, 1P SPARES.

*PANEL 'EM1B–3' ①② — 225A, W/200A MAIN, 120/208V, 3ø, 4W WITH 42 CKTS
(2) 100A, 3P BREAKER, USED,
(4) 20A, 2P BREAKERS, USED,
(1) 40A, 2P BREAKERS, USED,
(10) 20A, 1P SPARES,
(3) 3P SPACES,
(7) 20A, 1P SPACES.

## ○ PANEL SCHEDULE KEYNOTES

1. PROVIDE DISTRIBUTION TYPE PANEL SQ–D I–LINE OR APPROVED EQUAL.
2. PROVIDE COORDINATION STUDY. STUDY SHALL SHOW COORDINATION BETWEEN MAIN BREAKER WITH FEEDER BREAKERS.
3. PANELS TO BE FLUSH MOUNTED.

# LOAD CALCULATION

BUILDING 30

PANEL 'EM2–3' (120/208V, 3ø, 4W)

| | | |
|---|---|---|
| △ (E) LOAD | | = 177A |
| CODE LOAD | | = 177x1.25=222A |
| △ (E) LOADS REMOVED (B68) | | = 60A |
| REMAINING LOAD | | = 162A |
| △ (N) LOAD ADDED (30MCC) | | = 228A |
| MCC CODE LOAD | | = 228x1.25=285A |
| TOTAL LOAD | | = 447A(162+285) |

BUILDING 50

NO NEW LOADS ADDED OR REMOVED

BUILDING 5

STANDBY GENERATOR SIZING FOR BUILDING 5

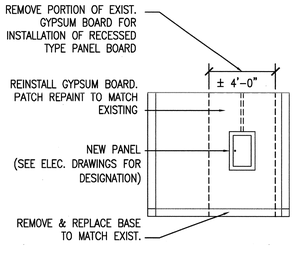
| | | |
|---|---|---|
| * TOTAL (E) LOAD | | = 321A @ 208V, 3ø |
| CODE LOAD | = 321Ax1.25 | = 402A @ 208V, 3ø |
| REQUIRED STANDBY POWER IN KVA | | = 145KVA |
| REQUIRED STANDBY POWER IN KW | | = 130KW @ 0.9 P.F. |
| △ BLDG 10 LOAD (FUTURE) | | = 22KW W/CODE LOAD |
| TOTAL LOAD | = 130+22 | = 152KW |

GENERATOR SIZED TO 200KW

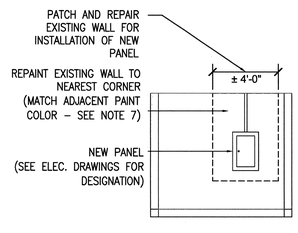
△ LOADS ARE RECORDED BY VA
* INSTANTANEUS SNAP SHOT LOAD (MUST BE VALIDATED)

# GENERAL NOTES

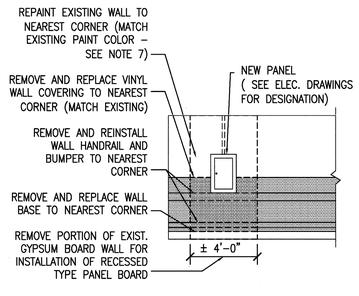
1. ALL CABLE PULLS TO BE SCHEDULED DURING OFF HOURS & COORDINATED WITH VA.
2. ANY FLEXIBLE CONDUIT USED FOR CONNECTION TO NEW PANELS TO BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) WITH SEPARATE EQUIPMENT GROUNDING CONDUCTOR (EGC) WITH CIRCUIT CONDUCTORS. GROUNDING AND BONDING SHALL BE DONE PER NEC ART. 350.60.
3. WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION CONTRACTOR TO DO A THERMOGRAPHIC SURVEY OF ALL NEW CONNECTIONS. CORRECT DEFICIENCIES AND REPORT TO COTR.
4. CONTRACTOR TO RETURN ALL REMOVED PANELBOARDS WITH BREAKERS TO VA ELCTRICAL MAINTENANCE DEPARTMENT IF REQUESTED BY VA.
5. ARC FLASH STUDY:
   - ARC FLASH STUDY FOR THE PROJECT COVERING ALL ELECTRICAL EQUIPMENT AND SCOPE FURTHER DEFINED ON THE PROJECT DOCUMENTS AND SPECIFICATIONS. ALL STUDIES SHALL BE PERFORMED BY THE ELECTRICAL EQUIPMENT MANUFACTURER.
   - THE LATEST VERSION OF SKM POWERTOOLS WILL BE USED FOR THE SYSTEM ANALYSIS.
   - INCLUDE AND NOTE STUDY ASSUMPTIONS AND INFORMATION REGARDING SOFTWARE.
   - ON–SITE COLLECTION OF ALL REQUIRED DATA SHALL BE PROVIDED BY PROJECT ELECTRICAL CONTRACTOR.
   - STUDIES SHALL BE IN ACCORDANCE WITH ANSI/IEEE STANDARDS.
   - ARC FLASH STUDY SHALL BE PER LATEST EDITION OF NFPA–760E, NFPE 70E 2000 EDITION AND IEEE 1584.
   - INCLUDE ALL REQUIRED NOTES REGARDING THE ADEQUACY OF THE EQUIPMENT.
   - INCLUDE SPECIFIC RECOMMENDATIONS, IF ANY.
   - PROVIDE FIVE (5) COPIES OF ALL CALCULATIONS ON A CD, WITH ONE (1) COPY BEING PROVIDED TO THE A/E. PROVIDE ONE (1) HARD COPY TO THE OWNER.
   - STUDY SHALL INCLUDE ALL ELECTRICAL EQUIPMENT INDICATED AS NEW ON THE SINGLE–LINE DIAGRAM AND AS DEEMED NECESSARY PER THE LOCAL AUTHORITY HAVING JURISDICTION.
   - MANUFACTURER SHALL PROVIDE A TYPICAL ARC FLASH INFORMATIONAL WARNING LABEL FOR REVIEW AND APPROVAL WITH SUBMITTALS. ALL LABELS SHALL BE APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO INSTALLATION OF EQUIPMENT.
6. PERSONNEL PROTECTION EQUIPMENT (PPE) LEVELS SHALL BE NOTED/IDENTIFIED/LABELED ON ALL ELECTRICAL EQUIPMENT IDENTIFICATION LABELS. ARC FLASH LEVELS SHALL IDENTIFY THE FOLLOWING:
   a. LIST ARC FLASH BOUNDARIES (AFB).
   b. DISTANCE.
   c. LEVEL.
   d. CALORIES/CM².
7. REFER TO GENERAL NOTES ON PLAN DRAWINGS FOR ADDITIONAL INFORMATION REGARDING PANELS, WIRES, ETC.
8. CONTRACTOR TO SHOW BRANCH CIRCUIT DESIGNATION IN PANELBOARD ON AS–BUILTS.
9. LABEL ALL EMERGENCY PANELS IN RED & LABEL SOURCE AND LOCATION.
10. CONTRACTOR TO IDENTIFY ON AS–BUILTS ALL EXISTING BRANCH CIRCUIT WIRING WITH CLOTH INSULATION.
11. ALL NEW PANELS SHALL BE PROVIDED WITH SHORT CIRCUIT RATING NOT LESS THAN SPECIFIED IN SPECIFICATIONS 26–24–16.
12. INSTALLED SPARE BREAKERS TO BE LEFT IN OPEN POSITION.




1A **PANEL ELEVATION (RECESSED TYPE)** 1/4" = 1'-0"




1B **PANEL ELEVATION (SURFACE TYPE)** 1/4" = 1'-0"



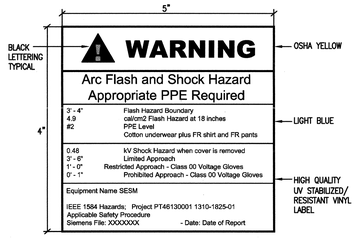

1C **PANEL ELEVATION** 1/4" = 1'-0"

1 **ARCHITECTURAL PAINT & REPAIR DETAILS FOR PANEL INSTALLATION**

## PANEL INSTALLATION NOTES

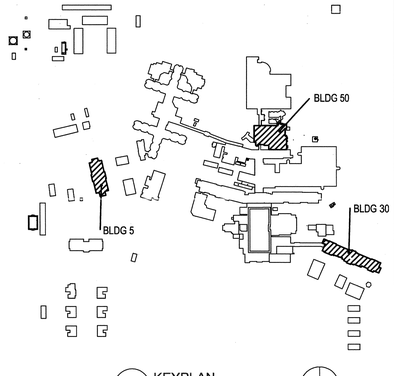
(FOR DETAILS 1A, 1B, 1C)

1. PATCH AND REPAIR WALL AS REQUIRED FOR INSTALLATION OF NEW PANEL, NEW RELOCATED PANEL, REPLACEMENT PANEL OR NEW DISCONNECT. FINISH AND PAINT TO MATCH ADJACENT SURFACES. VERIFY WHERE APPLICABLE ON PLANS.
2. CORE DRILL EXISTING SLAB/WALL FOR CONDUIT, PROVIDE SLEEVES WITH FIRESTOP INSULATION AND SEALANT. VERIFY WHERE APPLICABLE ON PLANS.
3. REMOVE CAREFULLY AND REINSTALL EXISTING CEILING PANELS FOR INSTALLATION OF NEW ELECTRICAL CONDUIT. REPLACE CEILING IF BROKEN DURING CONSTRUCTION. VERIFY WHERE APPLICABLE ON PLANS.
4. PROVIDE CONDUIT OVERHEAD WITH PROPER SUPPORTS AND CABLES WITH NUMBER & SIZES AS INDICATED IN ELECTRICAL DRAWINGS. CONTRACTOR TO VERIFY IN FIELD EXISTING CONDITION TO AVOID INTERFERENCE IN CONDUIT ROUTING. VERIFY WHERE APPLICABLE ON PLANS.
5. CLOSE UP ALL RATED WALLS WITH PENETRATIONS WITH UL APPROVED FIRE SAFING INSULATION & FIRESTOP SEALANT ASSEMBLY.
6. WHERE EXISTING PANELS ARE REPLACED WITH NEW PANELS WITH TYPE AND SIZE AS SPECIFIED ON ONE–LINE DIAGRAM. INSTALL REPLACEMENT PANELS IN EXISTING PANEL LOCATIONS, UNLESS SHOWN AT DIFFERENT LOCATIONS. REPLACEMENT PANELS SHALL HAVE SAME PANEL LABEL AS EXISTING PANELS. IF RELOCATED TO DIFFERENT LOCATIONS THE EXISTING PANELS SHALL BE USED AS JUNCTION BOXES FOR BRANCH CIRCUIT CONNECTIONS LABEL THEM AS JUNCTION FOR PANEL ____. COORDINATE WITH OWNER EXACT LOCATIONS FOR NEW PANELS. REPLACE ALL EXISTING DOORS WITH NEW BEST LOCKS FACTORY INSTALLED.
7. CONTRACTOR SHALL PAINT TO A NATURAL TERMINATION POINT SO THAT EXISTING SURFACE BLENDS WITH NEW WITHOUT LEAVING VISIBLE DIVISION LINE.




## ARC FLASH WARNING LABEL DETAIL

REFER TO GENERAL NOTES THIS SHEET FOR ARC FLASH STUDY.

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| Revisions | Date |
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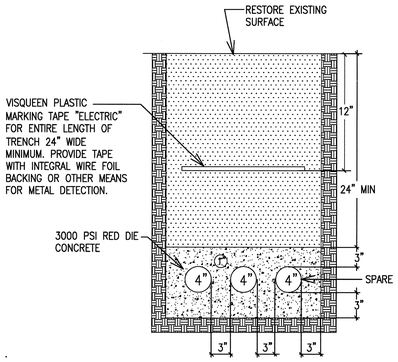
GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (Structural) 17029 ROGER B. HARWELL Date 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

| | | | | |
|---|---|---|---|---|
| Approved: Director | Drawing Title: **DETAILS, PANEL SCHEDULES, AND LOAD CALCULATIONS BLDGS 30 AND 50** | Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50 | Date: 12/21/2009 | |
| Approved: Associate Director | Approved: Chief Facilities Management | Building Number | Checked: RBH / Drawn: MY | Project No. 678-11-103 |
| | | Location: SAVAHCS TUCSON, AZ. 85723 | DRAWING NO. **E4** Dwg.5 of 18 | |

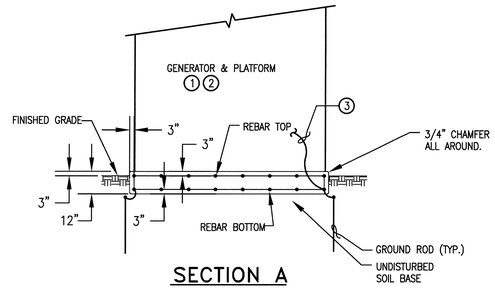
Office of Facilities — Department of Veterans Affairs



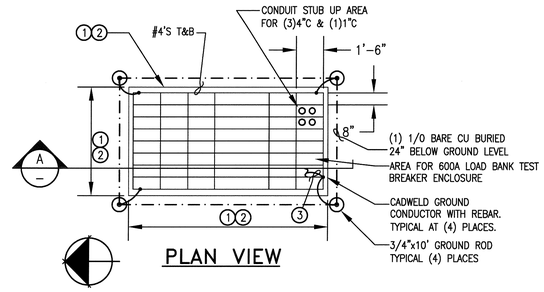

1 **DUCTBANK DETAIL (REFER TO DWG E2)**

## DUCTBANK NOTES

1. PROVIDE REINFORCING RODS ON TOP OF DUCTS WHEN CROSSING OTHER UTILITIES OR ROADWAYS.
2. EXCAVATION TO BE BY HAND.




## SECTION A




## PLAN VIEW

## KEYNOTES

1. PAD DIMENSIONS: COORDINATE WITH GENERATOR MANUFACTURER AND PLATFORM BUILDER TO SIZE CONCRETE PAD TO ACCOMMODATE GENERATOR WITH BELLY TANK AND ADDITIONAL SPACE REQUIRED FOR PLATFORM SUPPORT.
2. CONCRETE PAD SHALL BE SIZED TO ACCOMMODATE THE PLATFORM SUPPORTS THAT SHALL BE ANCHORED TO CONCRETE PAD.
3. PROVIDE 10' OF (1) 1/0 BARE COPPER GROUNDING CONDUCTOR ABOVE THE PAD FOR GENERATOR GROUNDING.

2 **EXTG VA TUCSON BLDG 78 GENERATOR WITH PLATFORM**

1. THIS IS SHOWN FOR INFORMATION ONLY. CONTRACTOR TO PROVIDE SIMILAR PLATFORM FOR GENERATOR AT BUILDING 5.
2. THE HEIGHT OF THE PLATFORM AROUND THE GENERATOR SHALL BE BUILT TO SUIT VA REQUIREMENTS. COORDINATE WITH VA FOR HEIGHT REQUIREMENTS.
3. REFER TO SPECIFICATIONS FOR PLATFORM STEEL & PAINT.

## GENERATOR DATA (APPROXIMATE)

SIZE 200KW, 120/208V, 3Ø, 4W, WP ENCLOSURE WITH BELLYTANK.
ENCLOSURE TO BE KEYED WITH VA LOCKS.

TOTAL WEIGHT W/O FUEL = 4500 LBS
FUEL 500 GAL = 3500 LBS

TOTAL W/FUEL = 8000 LBS (CONCRETE PAD LOAD)

APPROXIMATE PAD SIZE: 10'-0"Lx6'-0"Wx12"THICK.
FUEL CONSUMPTION: 16.4 GAL/HR APPROX.

## GENERATOR PAD NOTES

- 3000 PSI CONCRETE @ 28 DAYS
- METAL TROWEL FINISH
- SEAL CONCRETE
- #4 DEFORMED REBAR (TYP.)
- AGGREGATE BASE COURSE COMPACTED TO MINIMUM OF 95% OF MAXIMUM DENSITY BY ASTM D698
- SCARIFY TOP 8" AND RECOMPACT TO MINIMUM OF 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D 698

3 **GENERATOR PAD DETAIL**
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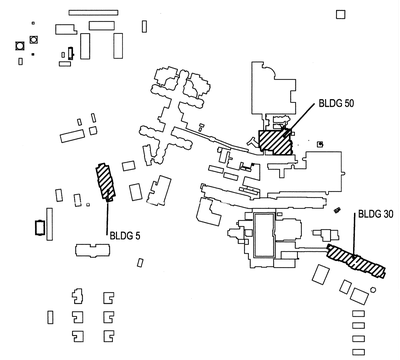


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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (CIVIL) 17029 ROGER B. HARWELL ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **DETAILS - GENERATOR & MISCELLANEOUS**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

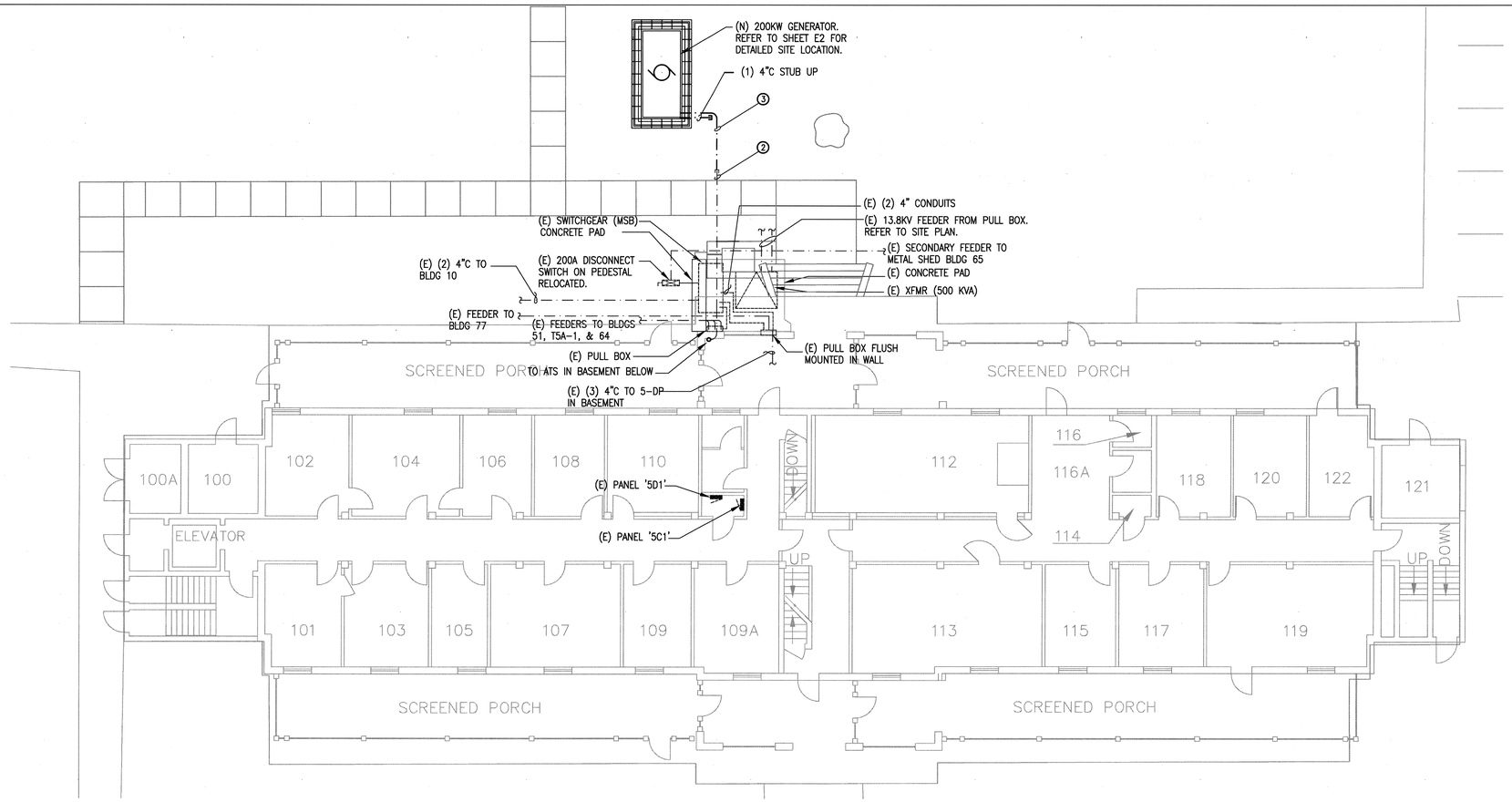
Project No. 678-11-103

DRAWING NO. E5

Dwg.6 of 18

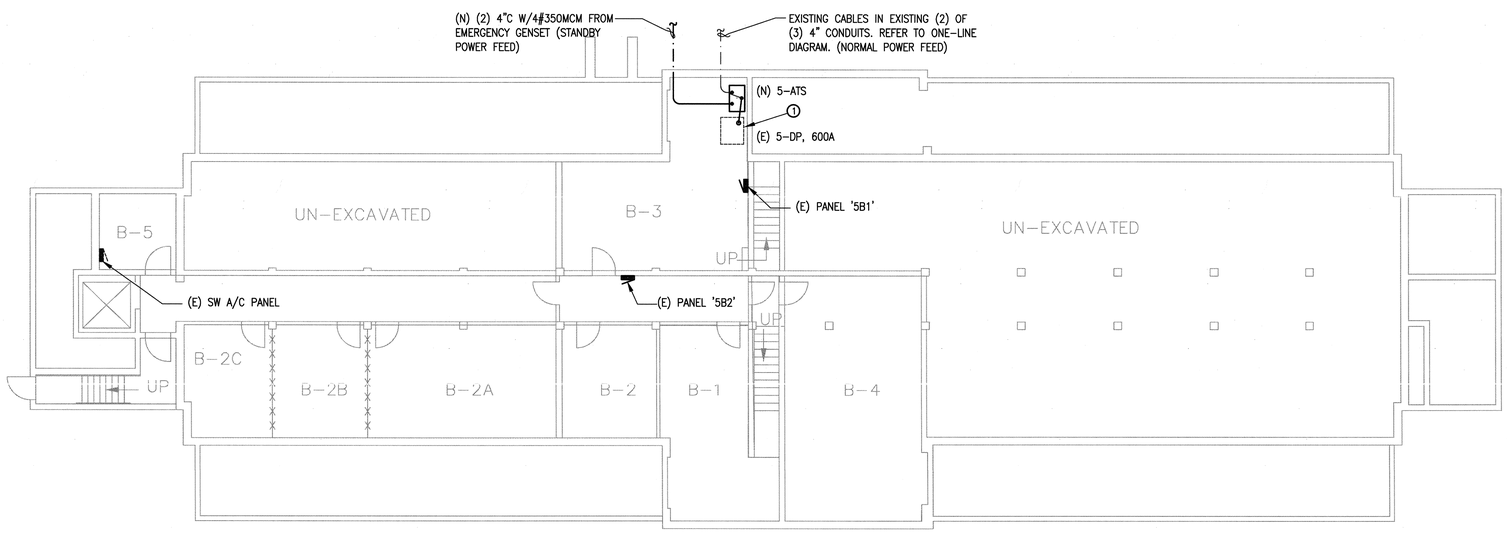
Office of Facilities

Department of Veterans Affairs




## 1st FLOOR PLAN

0 4' 8' 16' 1/8" = 1'-0"




## BASEMENT FLOOR PLAN

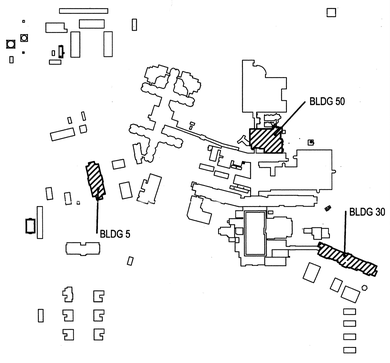
0 4' 8' 16' 1/8" = 1'-0"

## GENERAL NOTES

1. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## KEYNOTES

1. NOTE TO VA: NEW SWBD CURRENTLY UNDER CONSTRUCTION (PHASE 4 NORMAL POWER) NEEDS TO BE LOCATED WHERE SHOWN TO ACCOMMODATE NEW ATS LOCATION.
2. EXISTING (2) 4"C, (1) 1"C STUB OUTS. EXTEND THESE CONDUITS IN NEW GENERATOR LOCATION PER NOTE 3.
3. NEW (2) 4", (1) 1"C. REFER TO SITE PLAN SHEET E2.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 3/31/12 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG. 5 BASEMENT & 1st FLOOR PLAN STANDBY POWER**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 5 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

Project No. 678-11-103

DRAWING NO. **5-E1**

Dwg. 7 of 18

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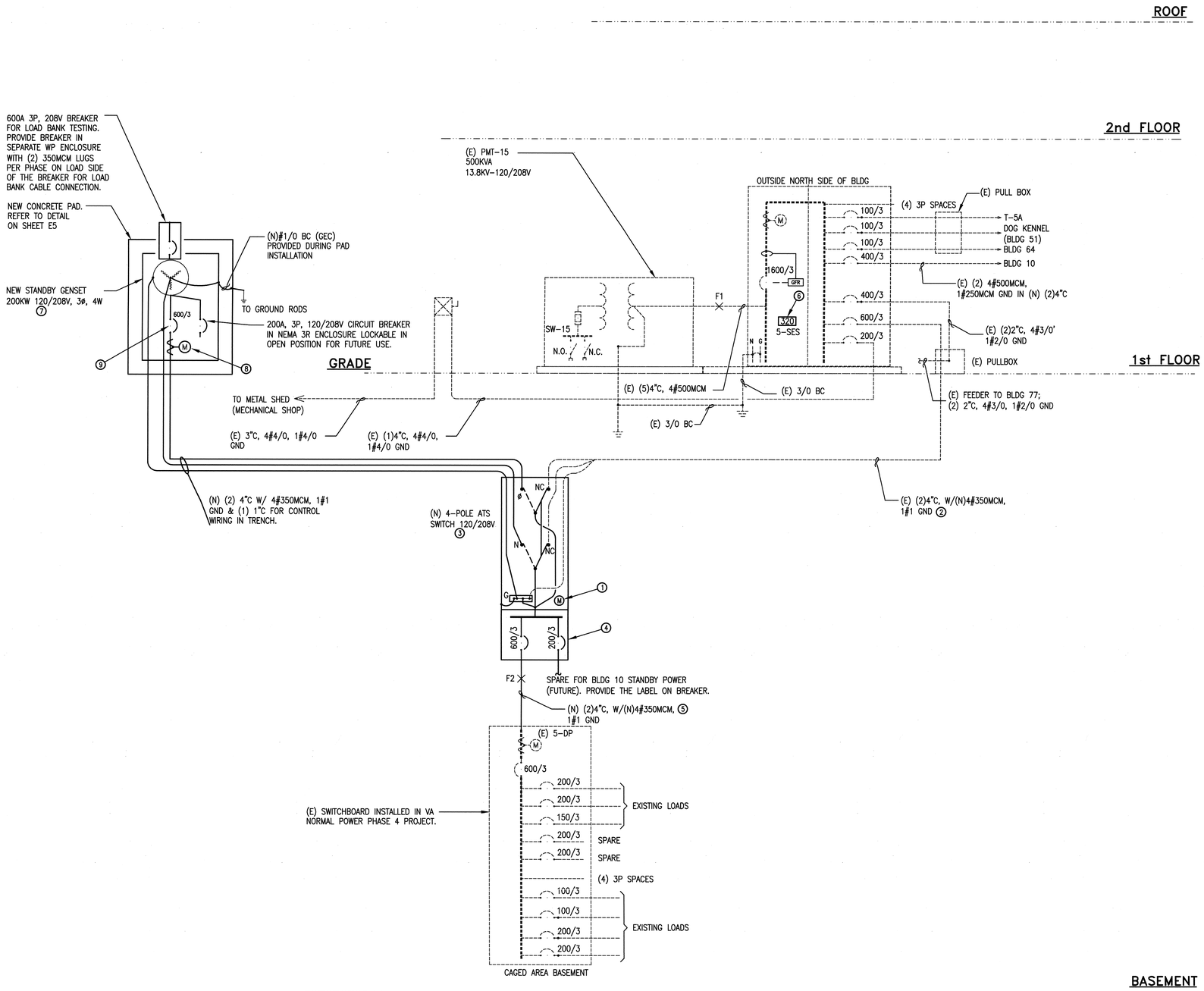
Department of Veterans Affairs




## GENERAL NOTES

1. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## KEYNOTES

1. PROVIDE LOCAL DEMAND READ OUT METER PER SPECIFICATIONS SECTION 26 27 13.
2. EXISTING CONDUCTORS TO PANEL '5-DP' TO BE DISCONNECTED AND RE-ROUTED TO NEW ATS.
3. NEW ATS 600A, 120/208V, 3ø, 4W, 4-POLE NEMA 1, CLOSED TRANSITION WITH REVERSE POWER PROTECTION TO PREVENT FLOW TO UTILITY AND ISOLATION/BYPASS SWITCH, OPEN/CLOSED SELECTOR SWITCH TO SELECT OPEN OR CLOSED TRANSITION AND ADDITIONAL MANUAL TEST SWITCH FOR CONTINUOUS TESTING. THIS IS IN ADDITION TO TEST SWITCHES PROVIDED BY SUPPLIER. REFER TO SPECIFICATIONS 26 36 23 FOR ADDITIONAL DETAILS.
4. PROVIDE BREAKERS AS PART OF THE ATS.
5. REUSE EXISTING CONDUIT.
6. RECORDED PEAK LOAD, NOT INCLUDING BLDG 10 OR BLDG 64.
7. NEW STANDBY GENSET TO HAVE REVERSE POWER PROTECTION PER SPECIFICATION (AMPS) SEPARATE BREAKER FOR LOAD BANK TESTING, 24 HOURS AS MINIMUM BELLY TANK @ FULL LOAD OPERATION AND WEATHER PROTECTION ENCLOSURE.
8. PROVIDE GENSET ELECTRICAL METERING AND CONNECT TO JCI GATEWAY.
9. PROVIDE CIRCUIT BREAKER WITH ELECTRONIC TRIP UNIT LONG TIME (LT), INSTANTANEOUS (IT).

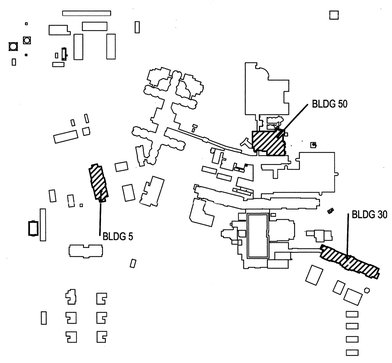
## AVAILABLE FAULT CURRENT (AFC)

F1 = 25397 A RMS SYM

F2 = 22206 A RMS SYM

## LIST OF NEW & REPLACEMENT PANELS (THIS SHEET ONLY)

- NONE.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A.
EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG. 5 1-LINE DIAGRAM NORMAL AND STANDBY POWER**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 5 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

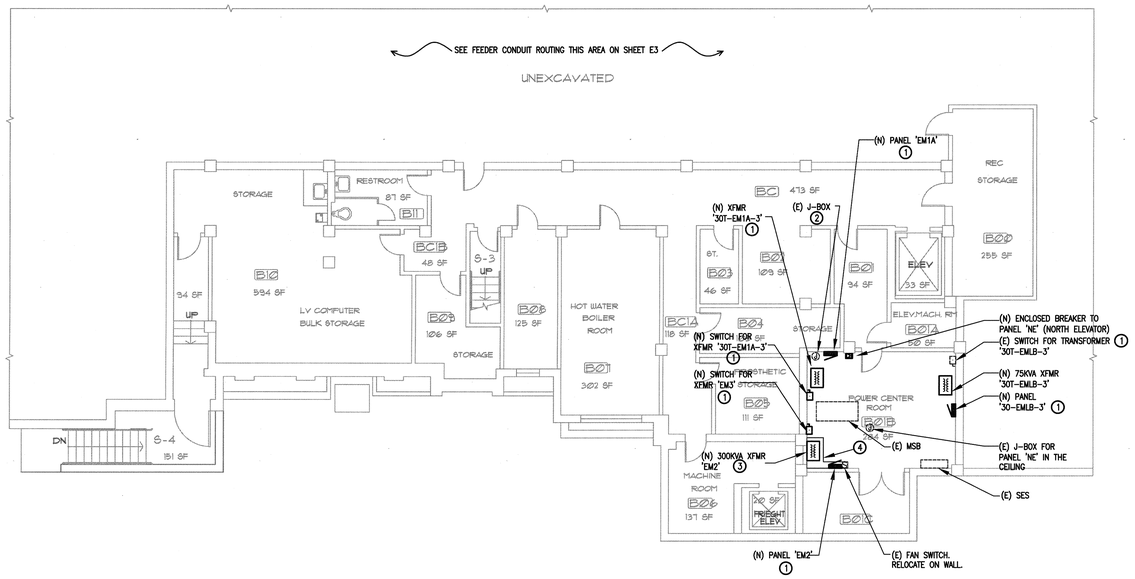
Project No. 678-11-103

DRAWING NO. **5-E2**

Dwg. 8 of 18

Office of Facilities

Department of Veterans Affairs




## BASEMENT FLOOR PLAN

1/8" = 1'-0"

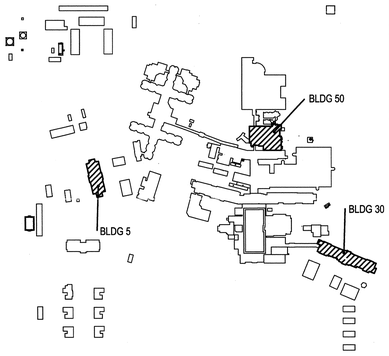
0 4' 8' 16'

## GENERAL NOTES

1. REFER TO EXISTING AND NEW ONE-LINES SHEETS 30-E5 & 30-E6 FOR EXISTING, DEMO, AND NEW WORK.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.
3. REFER TO SHEET 30-E1 (E) EQUIPMENT LAYOUT.

## ○ KEYNOTES

1. NEW EQUIPMENT REPLACING EXISTING. SIZES AS INDICATED ON BLDG. 30 ONE-LINE DIAGRAM DRAWINGS AND PANEL SCHEDULES.
2. REMOVE (E) J-BOX.
3. REPLACE EXISTING 225 KVA TRANSFORMER WITH NEW 300 KVA TRANSFORMER. PROVIDE NEW TRANSFORMER TO FIT IN EXISTING TRANSFORMER SPACE WITHOUT COMPROMISING THE CODE CLEARANCES.
4. PROVIDE CONCRETE HOUSEKEEPING PAD MIN. OF 3" THICK, LENGTH & WIDTH AS PER EQUIPMENT MANUFACTURER'S REQUIREMENTS. LEAVE 6" BEYOND THE EDGE OF THE EQUIPMENT ALL AROUND. PROVIDE ONE CONTINUOUS PAD TO ACCOMMODATE BOTH DISTRIBUTION PANELBOARD AND TRANSFORMER.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Approved: Chief Facilities Management

Drawing Title: **BLDG. 30 BASEMENT PLAN EMERGENCY POWER**

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 30 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

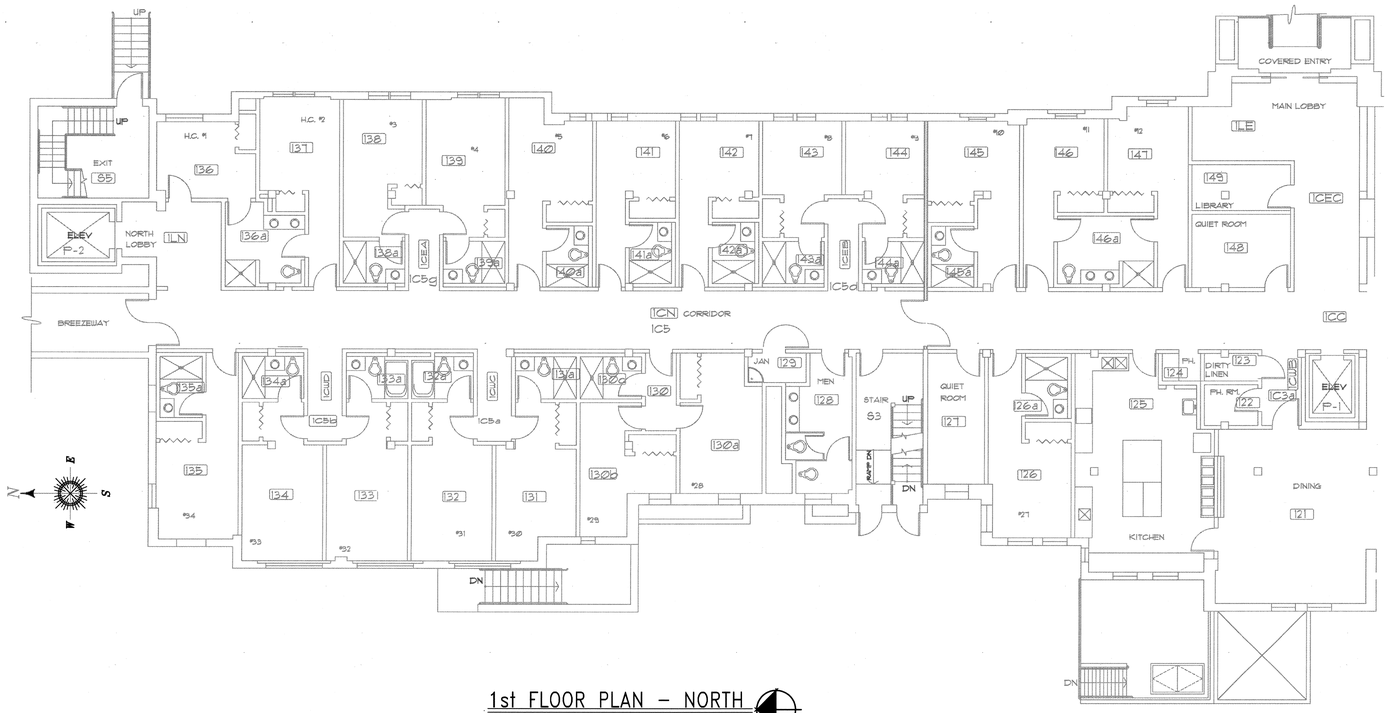
Project No. 678-11-103

DRAWING NO. **30-E1**

Dwg. 9 of 18

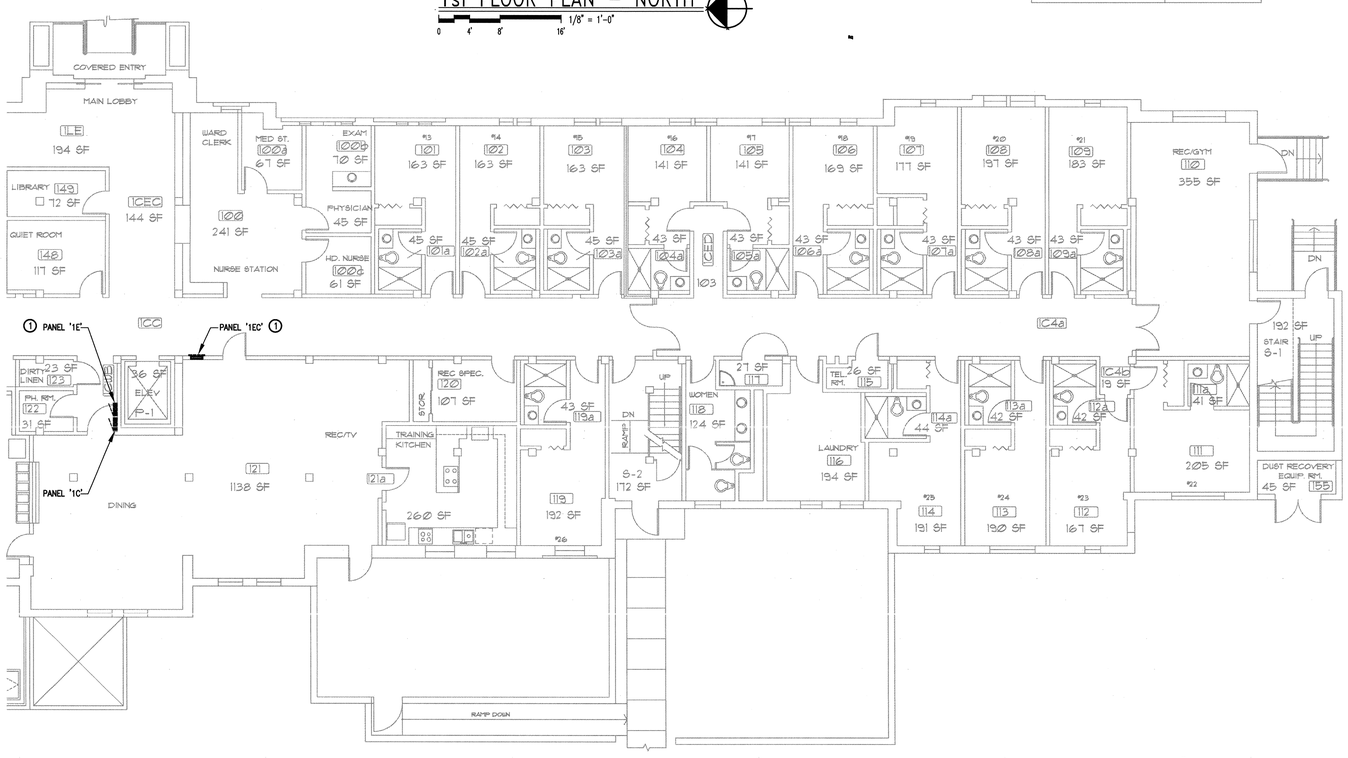
Office of Facilities

Department of Veterans Affairs




1st FLOOR PLAN – NORTH

1/8" = 1'-0"




1st FLOOR PLAN – SOUTH

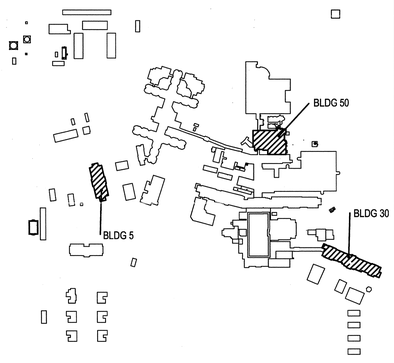
1/8" = 1'-0"

## GENERAL NOTES

1. REFER TO EXISTING AND NEW ONE-LINES FOR EXISTING AND DEMO WORK.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## ○ KEYNOTES

1. REPLACE WITH NEW. SIZE AS INDICATED ON ONE-LINE DRAWINGS AND SCHEDULES. PROVIDE ONE ¾ INCH SPARE CONDUIT FROM PANEL BOARD TO ACCESS ABOVE-CEILING SPACE FOR EACH SET OF THREE SPARE CIRCUITS AND FOR EACH SET OF THREE PANEL SPACES. PANELS TO BE FLUSH MOUNTED.

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2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG. 30 1st FLOOR PLAN EMERGENCY POWER**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 30 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

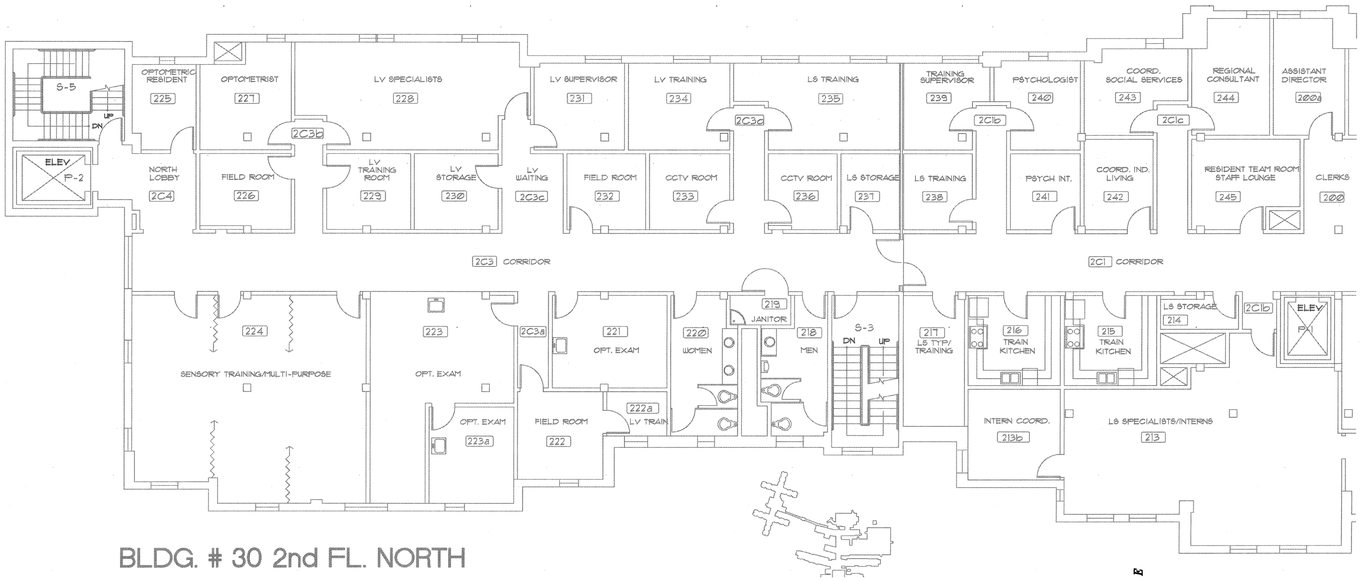
Project No. 678-11-103

DRAWING NO. 30-E2

Dwg. 10 of 18

Office of Facilities

Department of Veterans Affairs

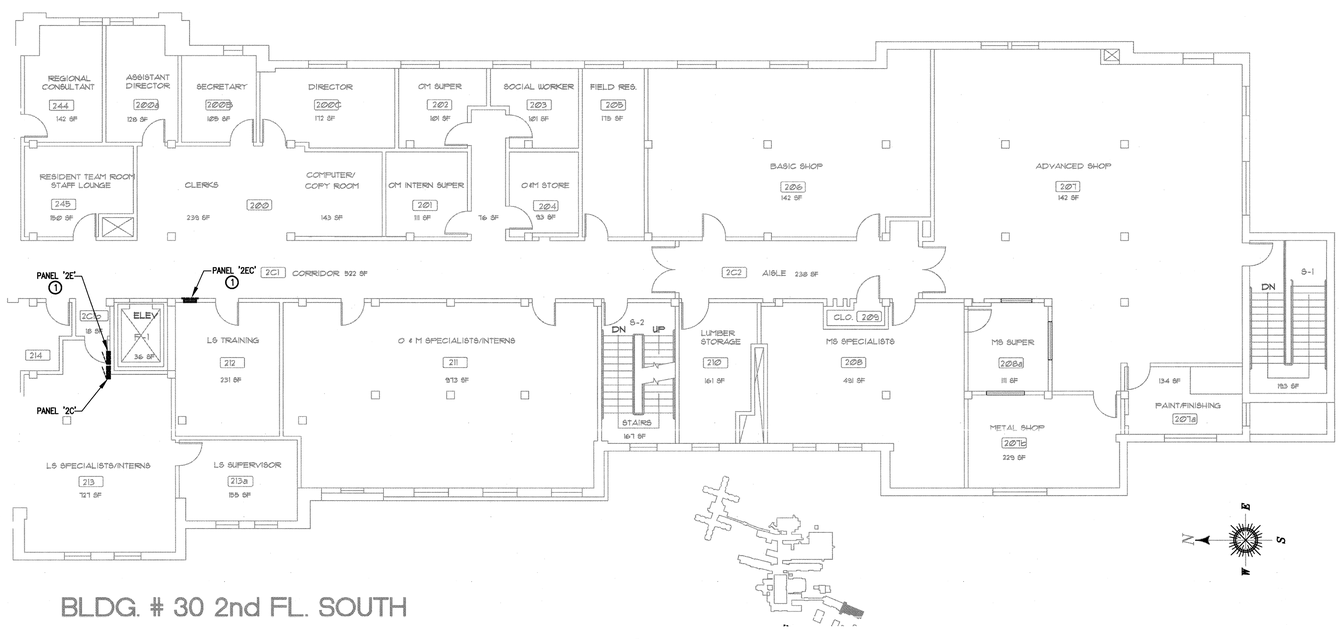



BLDG. # 30 2nd FL. NORTH

2nd FLOOR PLAN – NORTH

1/8" = 1'-0"

0 4' 8' 16'




BLDG. # 30 2nd FL. SOUTH

2nd FLOOR PLAN – SOUTH

1/8" = 1'-0"

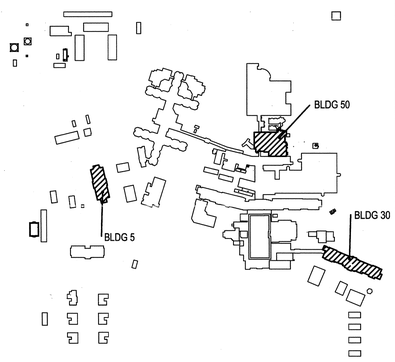
0 4' 8' 16'

## GENERAL NOTES

1. REFER TO EXISTING AND NEW ONE-LINES FOR EXISTING AND DEMO WORK.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## ○ KEYNOTES

1. REPLACE WITH NEW. SIZE AS INDICATED ON ONE-LINE DRAWINGS AND SCHEDULES. PROVIDE ONE ¾ INCH SPARE CONDUIT FROM PANEL BOARD TO ACCESS ABOVE-CEILING SPACE FOR EACH SET OF THREE SPARE CIRCUITS AND FOR EACH SET OF THREE PANEL SPACES. PANELS TO BE FLUSH MOUNTED.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A.
EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG. 30 2nd FLOOR PLAN EMERGENCY POWER**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 30 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

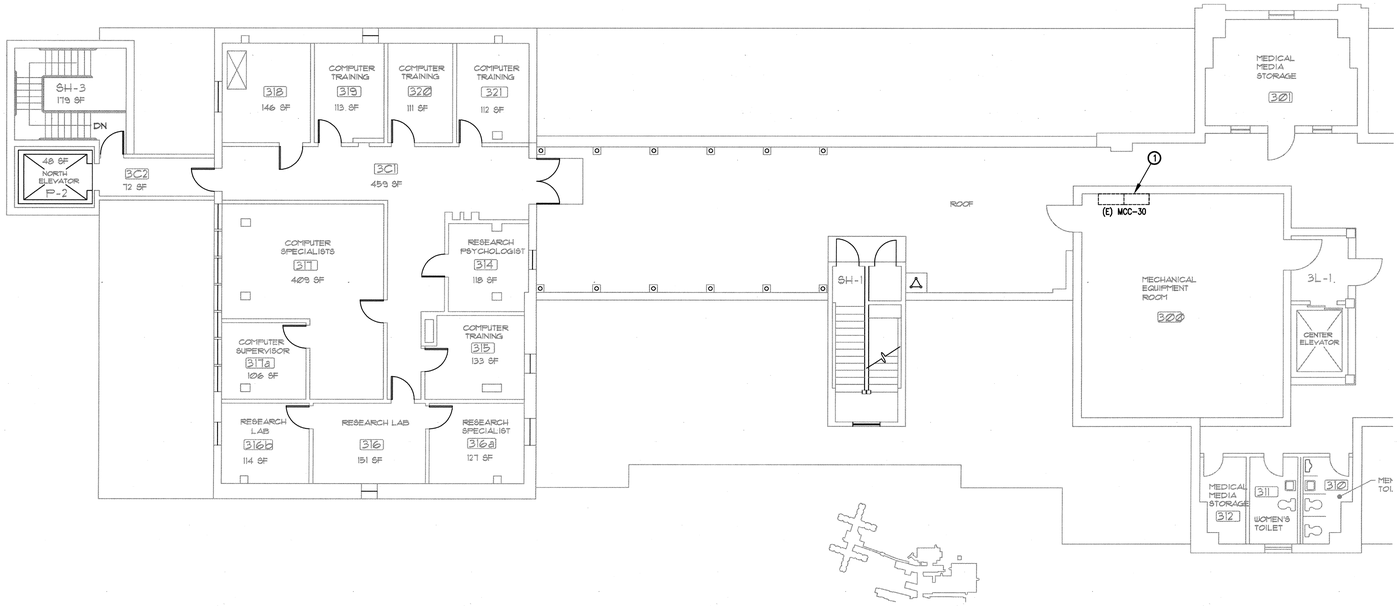
Project No. 678-11-103

DRAWING NO. **30-E3**

Dwg. 11 of 18

Office of Facilities

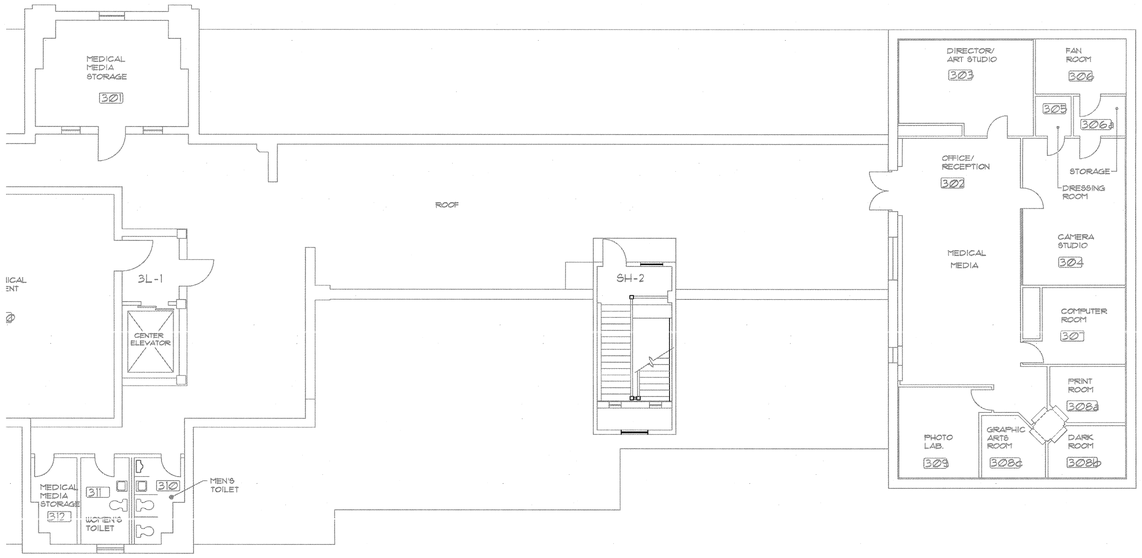
Department of Veterans Affairs




3rd FLOOR PLAN – NORTH

1/8" = 1'-0"

0 4' 8' 16'




3rd FLOOR PLAN – SOUTH

1/8" = 1'-0"

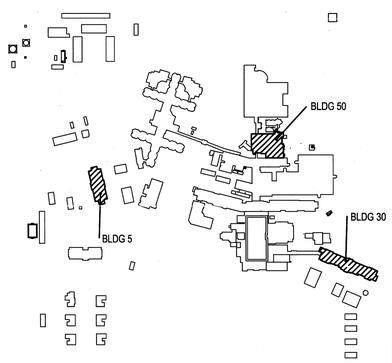
0 4' 8' 16'

## GENERAL NOTES

1. REFER TO EXISTING AND NEW ONE-LINES FOR EXISTING AND DEMO WORK.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## KEYNOTES

1. NO NEW WORK. MCC LOCATION SHOWN FOR REFERENCE ONLY.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

17029 ROGER B. HARWELL
EXPIRES 3/31/12

| | | | |
|---|---|---|---|
| Approved: Director | Drawing Title: **BLDG. 30 3rd FLOOR PLAN EMERGENCY POWER** | Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50 | Date: 12/21/2009 |
| Approved: Associate Director | Approved: Chief Facilities Management | Building Number: 30 / Checked: RBH / Drawn: MY | Project No.: 678-11-103 |
| | | Location: SAVAHCS TUCSON, AZ. 85723 | DRAWING NO.: 30-E4 Dwg. 12 of 18 |

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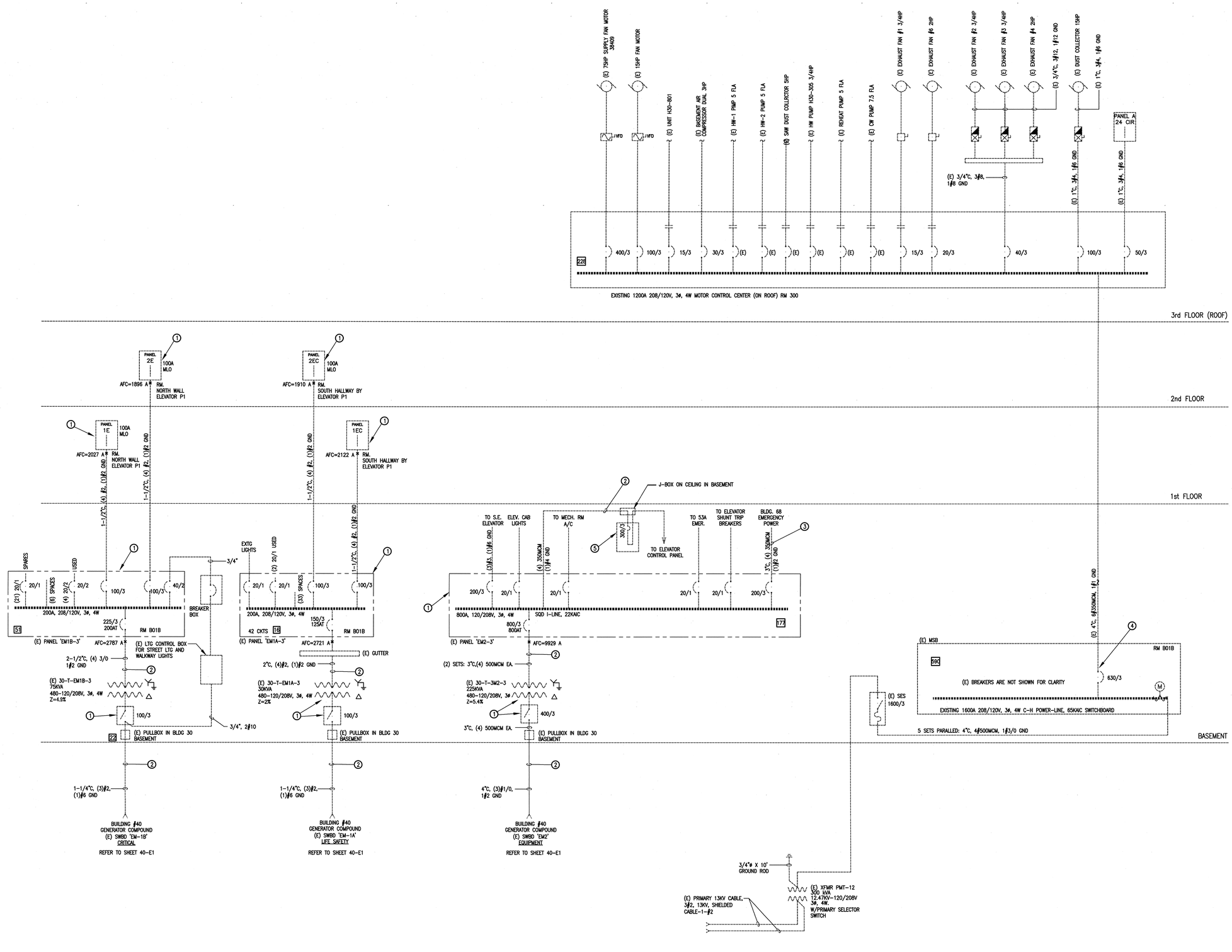
Department of Veterans Affairs

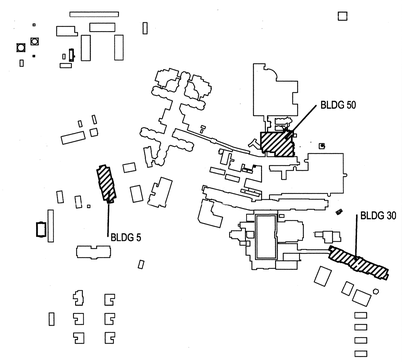



## GENERAL NOTES

1. REFER TO SHEET 30-E6 FOR NEW WORK ONE-LINE DIAGRAM.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## ○ KEYNOTES

1. REPLACE EXISTING EQUIPMENT WITH NEW PER NEW WORK ONE-LINE SHEET 30-E6 AND EQUIPMENT SCHEDULES ON SHEET E4.
2. REPLACE (E) FEEDERS WITH NEW PER NEW WORK ONE-LINE SHEET 30-E6.
3. REMOVE EXISTING CONDUCTORS FROM PANEL TO BLDG 68 EMERGENCY PANEL. CONDUIT TO REMAIN AS SPARE. CAP CONDUIT AT BOTH ENDS. LABEL CONDUIT AT BOTH ENDS AS "FROM & TO".
4. DISCONNECT EXISTING CABLES FROM BREAKER AND RELOCATE TO NEW DISTRIBUTION PANEL 'EM2-3'. REFER TO SHEET 30-E6 FOR DETAILS.
5. REMOVE EXISTING ENCLOSED CIRCUIT BREAKER.

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REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARDWELL 12/21/09 ARIZONA U.S.A.
EXPIRES 3/31/12

Approved: Director
Approved: Associate Director
Approved: Chief Facilities Management

Drawing Title: **BLDG. 30 EMERGENCY POWER ONE-LINE DIAGRAM (EXISTING/DEMO)**

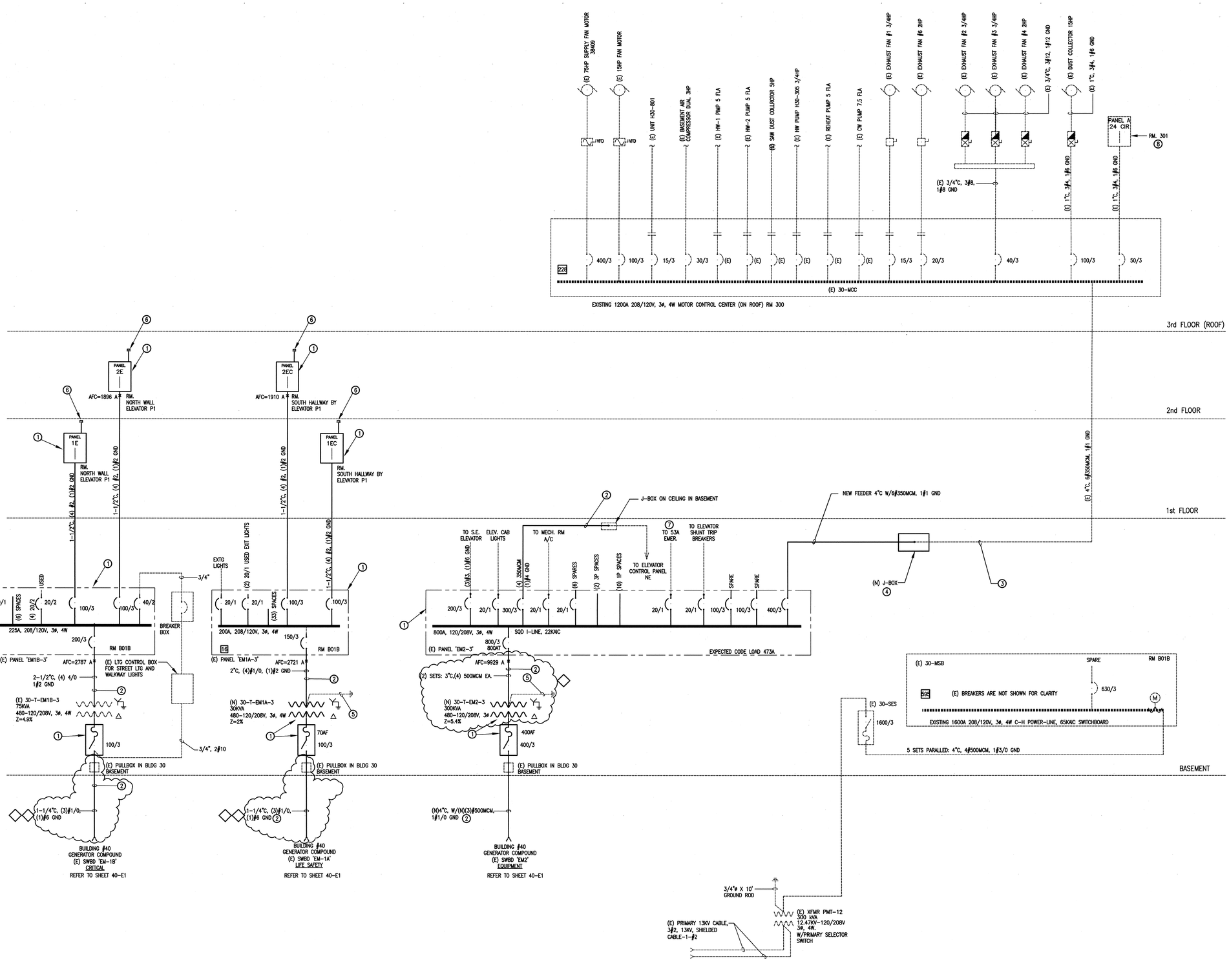
Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 30 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009
Project No. 678-11-103
DRAWING NO. 30-E5
Dwg.13 of 18

Office of Facilities
Department of Veterans Affairs




## GENERAL NOTES

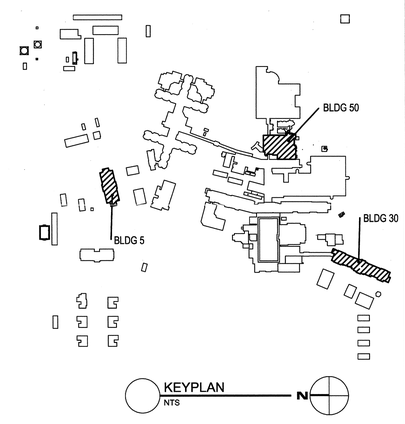
1. REFER TO E4 FOR NEW PANEL SCHEDULES.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.
3. REFER TO SHEETS 30-E2, 30-E3, AND 30-E4 FOR EXISTING AND NEW EQUIPMENT LOCATIONS.
4. REFER TO SHEET E1 FOR ITEMS AND DEDUCTS (◇◇).

## ○ KEYNOTES

1. NEW EQUIPMENT REPLACING EXISTING. SIZES PER EQUIPMENT SCHEDULES.
2. NEW CONDUCTORS REPLACING EXISTING SIZES AS NOTED NO SPLICES. USE ONLY XHHW INSULATED CONDUCTORS PER SPECS FROM BLDG 40 TO BLDG 30 FOR CRITICAL (30-T-EM1B-3) AND LIFE SAFETY (30-T-EM1A-3) FEEDS.
3. IF THE CABLE IS NOT LONG ENOUGH TO REACH THE BREAKER IN NEW PANEL 'EM2-3', EXTEND WITH NEW CONDUCTORS AS NECESSARY, SPLICE WITH EXISTING FEEDER IN NEW J-BOX.
4. INSTALL J-BOX WHERE PRACTICAL IN THE ELECTRICAL ROOM.
5. RECONNECT NEW TRANSFORMERS TO EXISTING GROUNDING ELECTRODE CONDUCTORS (GEC). IF NONE EXIST INSTALL 1/C #1/0 B.C. TO BUILDING STRUCTURE.
6. PROVIDE ONE 3/4" SPARE CONDUIT FROM PANELBOARD TO ACCESS ABOVE CEILING SPACE FOR EACH SET OF 3 SPARE CIRCUITS AND FOR EACH SET OF 3 PANEL SPACES.
7. SWITCH BUILDING 53A TO NORMAL POWER BEFORE DEENERGIZING PANEL '30-EM2-3'.
8. MEDIA (TV) SERVERS IN ROOM 301 FED FROM PANEL 'A' TO BE KEPT IN SERVICE. DURING NORMAL HOURS. AVAILABLE OUTAGE TIME IS FROM 12 A.M. TO 6 A.M. COORDINATE WITH VA.

## LIST OF NEW REPLACEMENT & NEW PANELS (THIS SHEET ONLY)

1. REPLACEMENT PANELS:
   1E, 2E, 1EC, & 2EC, EM1B-3, EM1A-3, EM2-3.
2. NEW PANELS:
   NONE.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

17029 ROGER B. HASWELL 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director
Approved: Associate Director
Approved: Chief Facilities Management

Drawing Title: **BLDG. 30 EMERGENCY POWER ONE-LINE DIAGRAM (NEW WORK)**

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

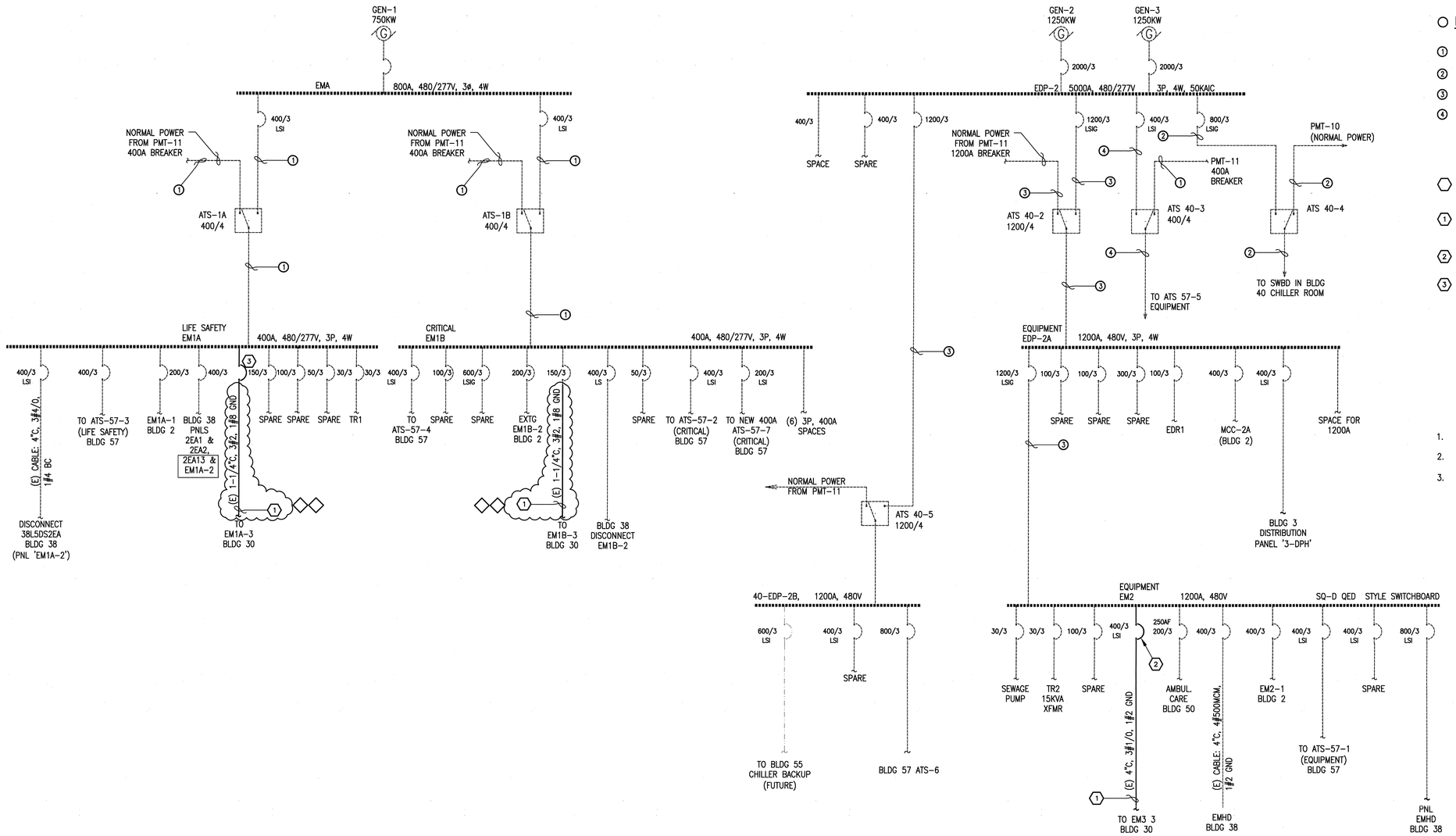
Date: 12/21/2009
Project No. 678-11-103

Building Number: 30 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

DRAWING NO. **30-E6**
Dwg.14 of 18

Office of Facilities
Department of Veterans Affairs




## 1 BUILDING 40 EMERGENCY POWER PARTIAL ONE-LINE DIAGRAM (EXISTING & NEW)

NOT TO SCALE

## KEYNOTES - EXISTING

1. 4#600MCM, 1#2 GND, 4"C.
2. (2) SETS: 4#600MCM, 1#2 GND, 4"C EACH SET.
3. (3) SETS: 4#600MCM, 1#4/0 GND, 4"C EACH SET.
4. 4#500MCM, 1#1/0 GND, 3-1/2"C.

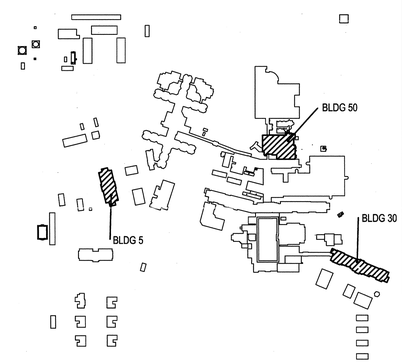
} EXISTING CABLES SHOWN FOR INFORMATION ONLY

## KEYNOTES - NEW WORK

1. NEW CABLES REPLACING EXISTING (SHOWN EXISTING CONDUCTORS SIZE). REFER TO ONE-LINE DIAGRAM 30-E6 FOR NEW SIZES. REFER TO SHEET E3 FOR FEEDER ROUTING.
2. NEW BREAKER REPLACING EXISTING 150A, 3P BREAKER.
3. REPLACE EXISTING 100 AMP BREAKER WITH 150 AMP BREAKER.

## GENERAL NOTES

1. REFER TO SHEET E1 FOR SYMBOLS LEGEND.
2. REFER TO SHEETS E3 FOR EXISTING FEEDERS ROUTING.
3. REFER TO SHEET E1 FOR ITEMS AND DEDUCTS (◇◇).

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG 40 EMERGENCY POWER ONE-LINE DIAGRAM EXISTING/ DEMO/ NEW WORK**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 40 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

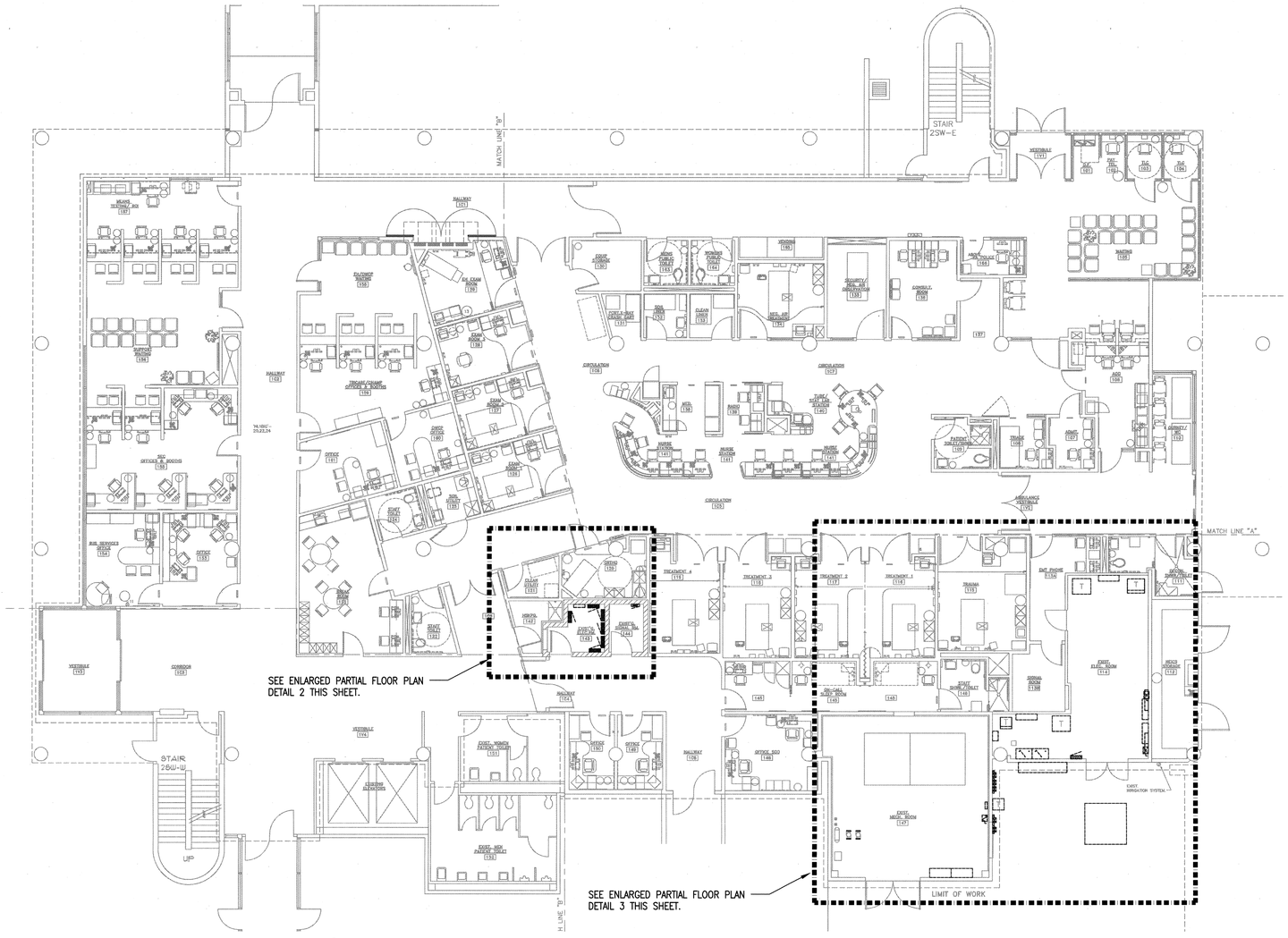
Project No. 678-11-103

DRAWING NO. **40-E1**

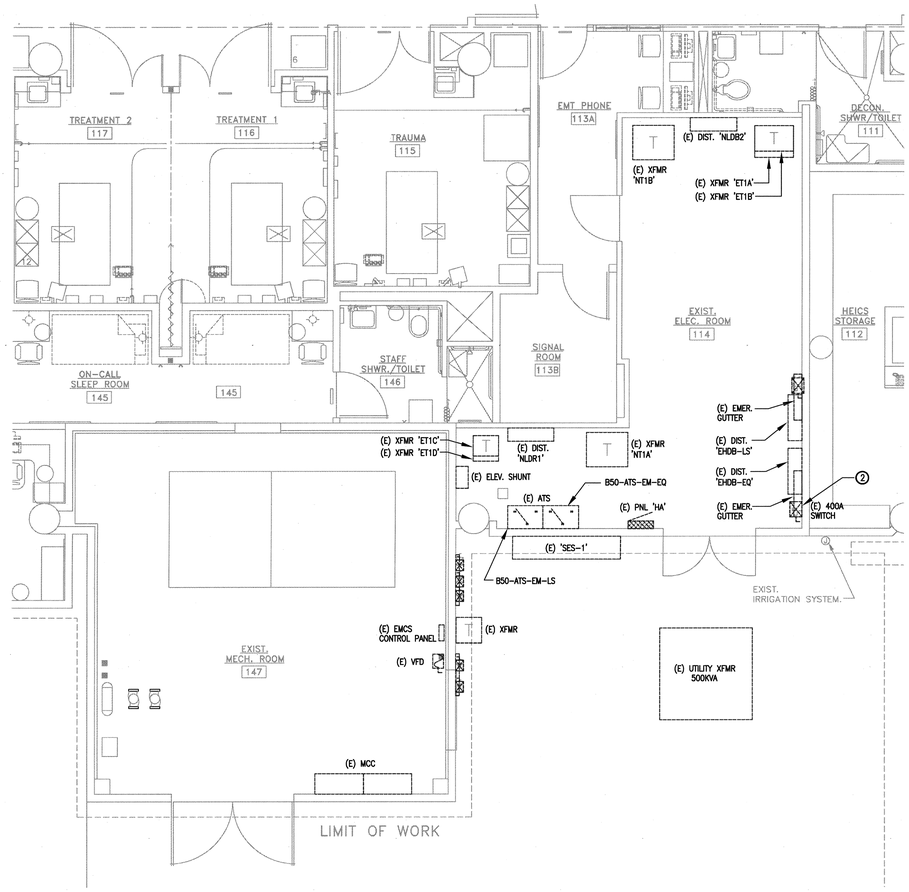
Dwg. 15 of 18

Office of Facilities

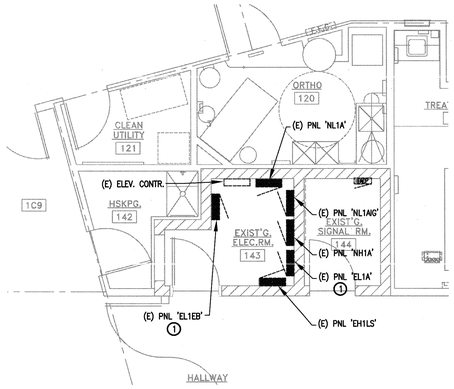
Department of Veterans Affairs




1 1st FLOOR PLAN
1/8" = 1'-0"
0 4' 8' 16'




3 PARTIAL 1st FLOOR PLAN
1/4" = 1'-0"
0 2' 4' 8'



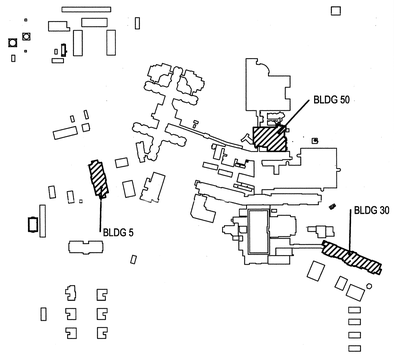

2 PARTIAL 1st FLOOR PLAN
1/4" = 1'-0"
0 2' 4' 8'

## GENERAL NOTES

1. REFER TO ONE-LINE DIAGRAM SHEET 50-E3 FOR DEMO & NEW WORK.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.
3. ACCESS TO ELECTRICAL ROOM 114 THRU EXTERIOR DOORS ONLY, NOT THRU BUILDING.

## KEYNOTES

1. REPLACE EXISTING PANEL WITH NEW. SIZES AS INDICATED ON ONE-LINE & SCHEDULES.
2. REPLACE (E) 400A SWITCH. REFER TO ONE-LINE FOR SIZES.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL 12/21/09 ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG. 50 1st FLOOR PLAN EMERGENCY POWER**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 50 | Checked: RBH | Drawn: MY

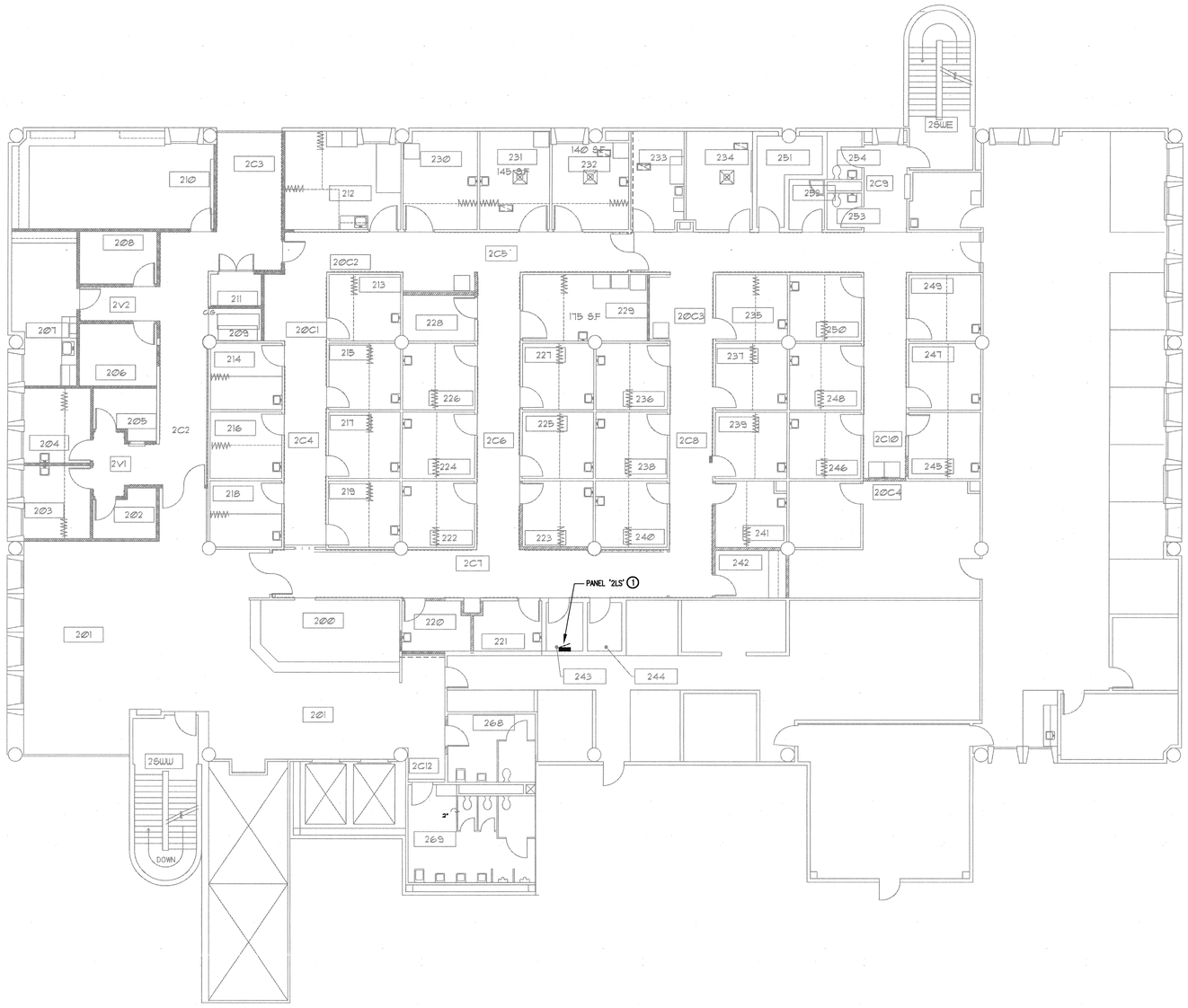
Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

Project No. 678-11-103

DRAWING NO. **50-E1**
Dwg. 16 of 18

Office of Facilities
Department of Veterans Affairs




2nd FLOOR PLAN

1/8" = 1'-0"

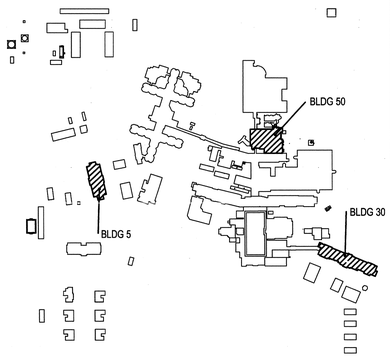
0 4' 8' 16'

## GENERAL NOTES

1. REFER TO SHEET E1 FOR SYMBOLS LEGEND.

## KEYNOTES

1. NO NEW WORK IN THIS AREA. PANEL SHOWN FOR REFERENCE ONLY.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (CIVIL) 17029 ROGER B. HARWELL ARIZONA U.S.A.
EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title
**BLDG. 50 2nd FLOOR PLAN**
**EMERGENCY POWER**

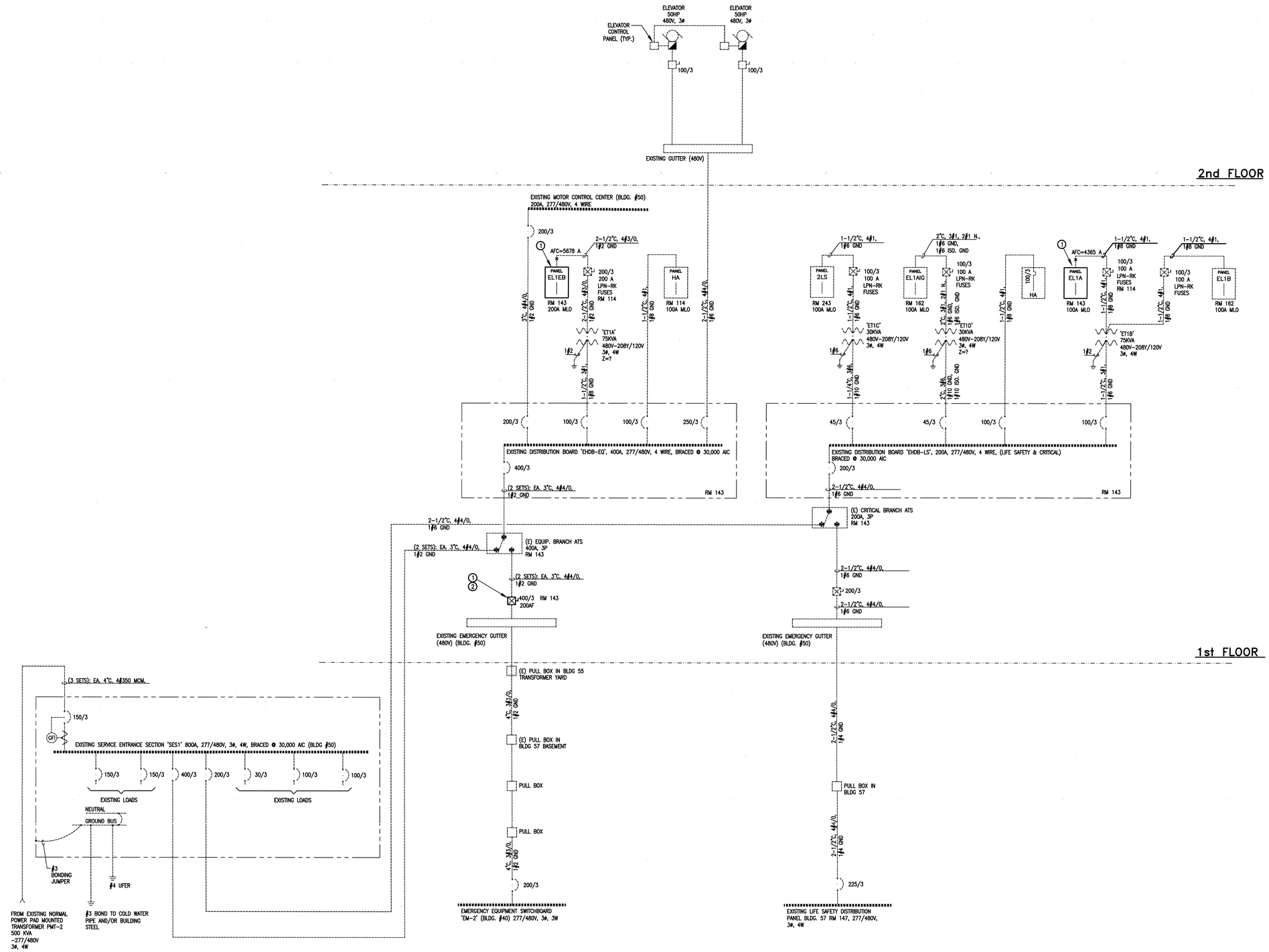
Approved: Chief Facilities Management

Project Title
Emergency Power Distribution
Phase 4
Bldgs 5, 30, 50

Building Number: 50
Checked: RBH
Drawn: MY
Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009
Project No. 678-11-103
DRAWING NO. **50-E2**
Dwg. 17 of 18

Office of Facilities
Department of Veterans Affairs




## GENERAL NOTES

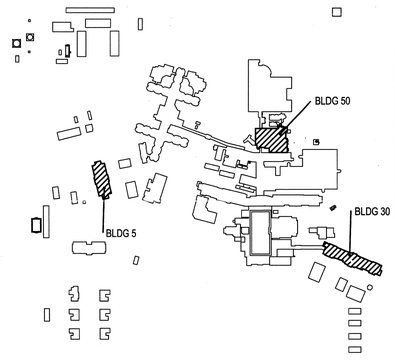
1. REFER TO SHEET E4 FOR PANEL SCHEDULES.
2. REFER TO SHEET E1 FOR SYMBOLS LEGEND.
3. ALL NEW WORK THIS ONE-LINE IS IDENTIFIED WITH KEYNOTES.

## ○ KEYNOTES

1. NEW EQUIPMENT REPLACING EXISTING, SIZE AS INDICATED.
2. CORRECT CABLE COLOR LABELING INSIDE THE SWITCH FOR THE CABLES CONNECTED TO ATS TO COMPLY WITH SPECIFICATIONS.

## LIST OF NEW REPLACEMENT & NEW PANELS (THIS SHEET ONLY)

1. REPLACEMENT PANELS:
   EL1EB, EL1A.
2. NEW PANELS:
   NONE.

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GLHN ARCHITECTS & ENGINEERS, INC.
2939 E. BROADWAY, TUCSON, ARIZONA 85716 520/881-4546 FAX 795-1822

REGISTERED PROFESSIONAL ENGINEER (ELECTRICAL) 17029 ROGER B. HARWELL ARIZONA U.S.A. EXPIRES 3/31/12

Approved: Director

Approved: Associate Director

Drawing Title: **BLDG. 50 ONE-LINE DIAGRAM EMERGENCY POWER**

Approved: Chief Facilities Management

Project Title: Emergency Power Distribution Phase 4 Bldgs 5, 30, 50

Building Number: 50 | Checked: RBH | Drawn: MY

Location: SAVAHCS TUCSON, AZ. 85723

Date: 12/21/2009

Project No.: 678-11-103

DRAWING NO.: **50-E3**

Dwg.18 of 18

Office of Facilities

Department of Veterans Affairs