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DWG NO. A258A-0701-E17

SH. REV

SHEET NOTES

1. LIGHT LINES INDICATE EXISTING CONDITIONS AND DARK LINES INDICATE NEW WORK.
2. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.
3. PHOTOGRAPHS INCLUDED IN THIS DRAWING ARE FOR REFERENCE ONLY. THEY MAY NOT PRECISELY DEPICT THE CURRENT CONDITION WITHIN THE MANHOLE.

KEY NOTES

- 1 INSTALL 15KV (N) (GFE), 2 - (3-1/C-500KCML & 4/0 GND EPR CABLE IN (E) 2-4" C.
- 2 PROVIDE ADDITIONAL CABLE SUPPORTS TO ACCOMMODATE NEW CABLES.

FEEDER I.D. TAG	
401	3-1/C, 500KCML, 1#4/0 GND, 15KV

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	P. ALDEN	DATE			
DESIGNED	R. NIZAMOV	DATE			
CHECKED	J. McCUSKER	DATE			
PROJ/MGR	J. McCUSKER	DATE			
REQUESTER	N. HSU	DATE			
R&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S. FRANKEL	DATE			
SIZE	D	CAGE CODE	25307		
SCALE	AS SHOWN	INDEX			
FILE NAME:		258A-E17.DWG 01-30-09			



529A



532B



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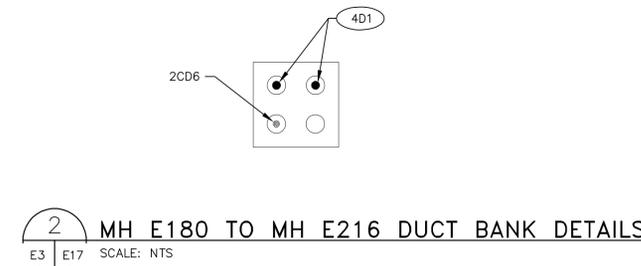
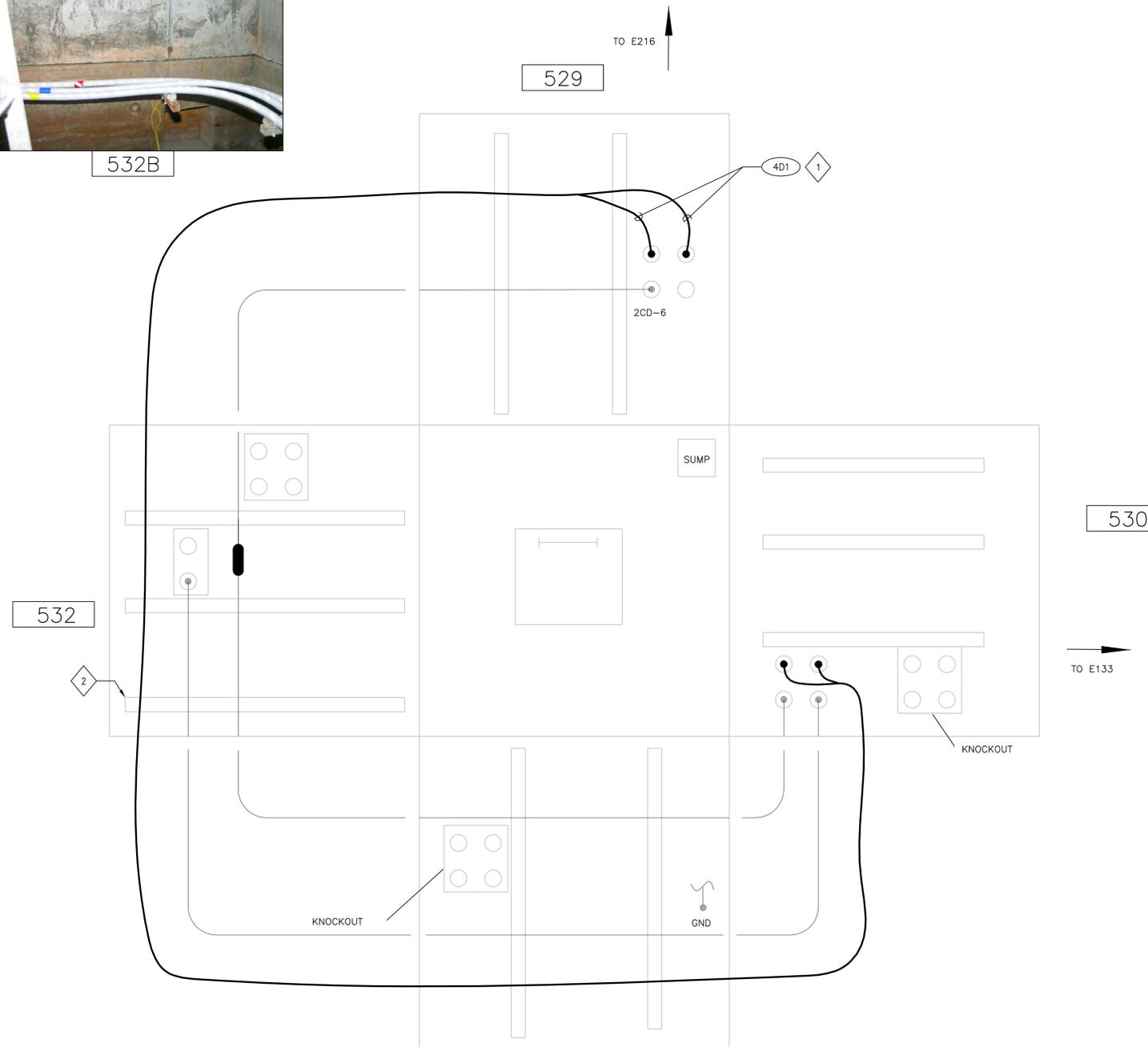
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DWG NO. A258A-0701-E18

SH. 1 REV

SHEET NOTES

- 1. LIGHT LINES INDICATE EXISTING CONDITIONS AND DARK LINES INDICATE NEW WORK.
- 2. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.

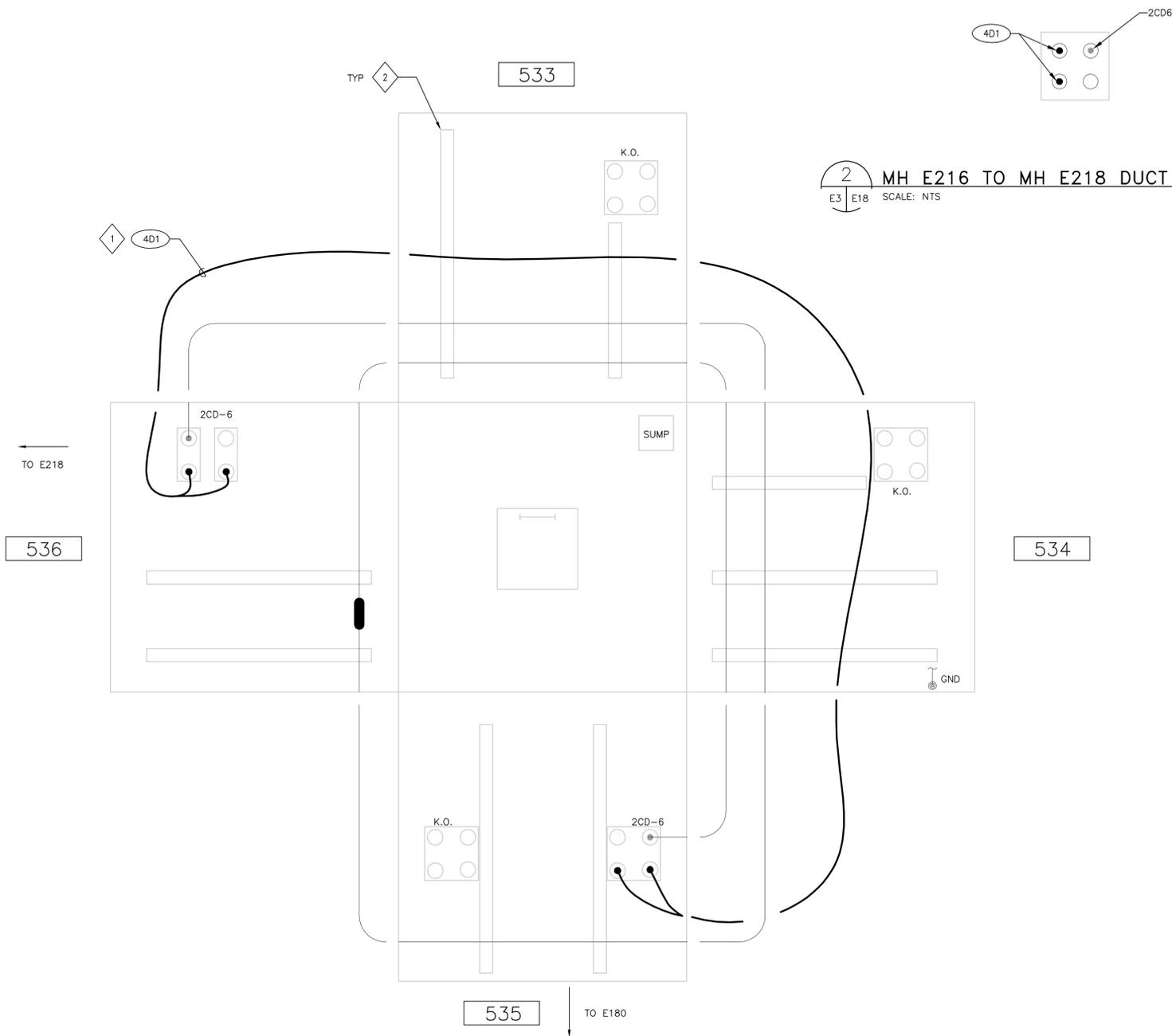
KEY NOTES

- 1 INSTALL (N) FEEDER 4D1, (GFE), 15KV, 2 - (3-1/C-500KCMIL & 4/0 GND) EPR CABLES IN (E) 2-4" C.
- 2 PROVIDE ADDITIONAL CABLE SUPPORTS TO ACCOMMODATE NEW CABLES.

FEEDER I.D. TAG	
4D1	3-1/C, 500KCMIL, 1#4/0 GND, 15KV (2 SETS)

2 MH E216 TO MH E218 DUCT BANK DETAILS
 E3 E18 SCALE: NTS

1 MHE 216
 E3 E18 SCALE: NTS



ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					

DRAWN P. ALDEN	DATE	<p>Ames Research Center Moffett Field, California</p> <p>N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II ELECTRICAL</p> <p>MHE 216 MODIFICATIONS</p>	SIZE D	CAGE CODE 25307	INDEX A	FILE NAME: 258A-E18.DWG	1 REV
DESIGNED R. NIZAMOV	DATE		SCALE AS SHOWN	SHEET 1	OF 1	01-30-09	
CHECKED J. McCUSKER	DATE						
PROJ MGR J. McCUSKER	DATE						
REQUESTER N. HSU	DATE						
R&QA S. FRANKEL	DATE						
SUPERVISOR S. FRANKEL	DATE						

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 DATE: Apr 08, 2010 - 12:28:40 pm

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DWG NO. A258A-0701-E19

SH. REV

SHEET NOTES

1. LIGHT LINES INDICATE EXISTING CONDITIONS AND DARK LINES INDICATE NEW WORK.
2. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.
3. PHOTOGRAPHS INCLUDED IN THIS DRAWING ARE FOR REFERENCE ONLY. THEY MAY NOT PRECISELY DEPICT THE CURRENT CONDITION WITHIN THE MANHOLE.

KEY NOTES

- 1 INSTALL (N) FEEDER 4D1, (GFE), 15KV, 2 - (3-1/C-500KCMIL & 4/0 GND) EPR CABLES IN (E) 2-4" C.
- 2 PROVIDE ADDITIONAL CABLE SUPPORTS TO ACCOMODATE NEW CABLES.

FEEDER I.D. TAG

4D1 3-1/C, 500KCMIL, 1#4/0 GND, 15KV (2 SETS)

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	P.ALDEN	DATE			
DESIGNED	R.NIZAMOV	DATE			
CHECKED	J.McCUSKER	DATE			
PROJ.MGR	J.McCUSKER	DATE			
REQUESTER	N.HSU	DATE			
TR&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			

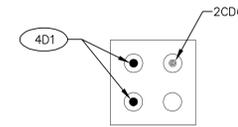
Ames Research Center
Moffett Field, California

N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II
ELECTRICAL

MHE 218 MODIFICATIONS

SIZE	D	CAGE CODE	25307	INDEX		FILE NAME:	258A-0701-E19	REV	1
SCALE	AS SHOWN	INDEX		SHEET	1	OF	1		

FILE NAME: 258A-E19.DWG 01-30-09



2 MH E218 TO MH E219 DUCT BANK DETAILS

E3 E19 SCALE: NTS

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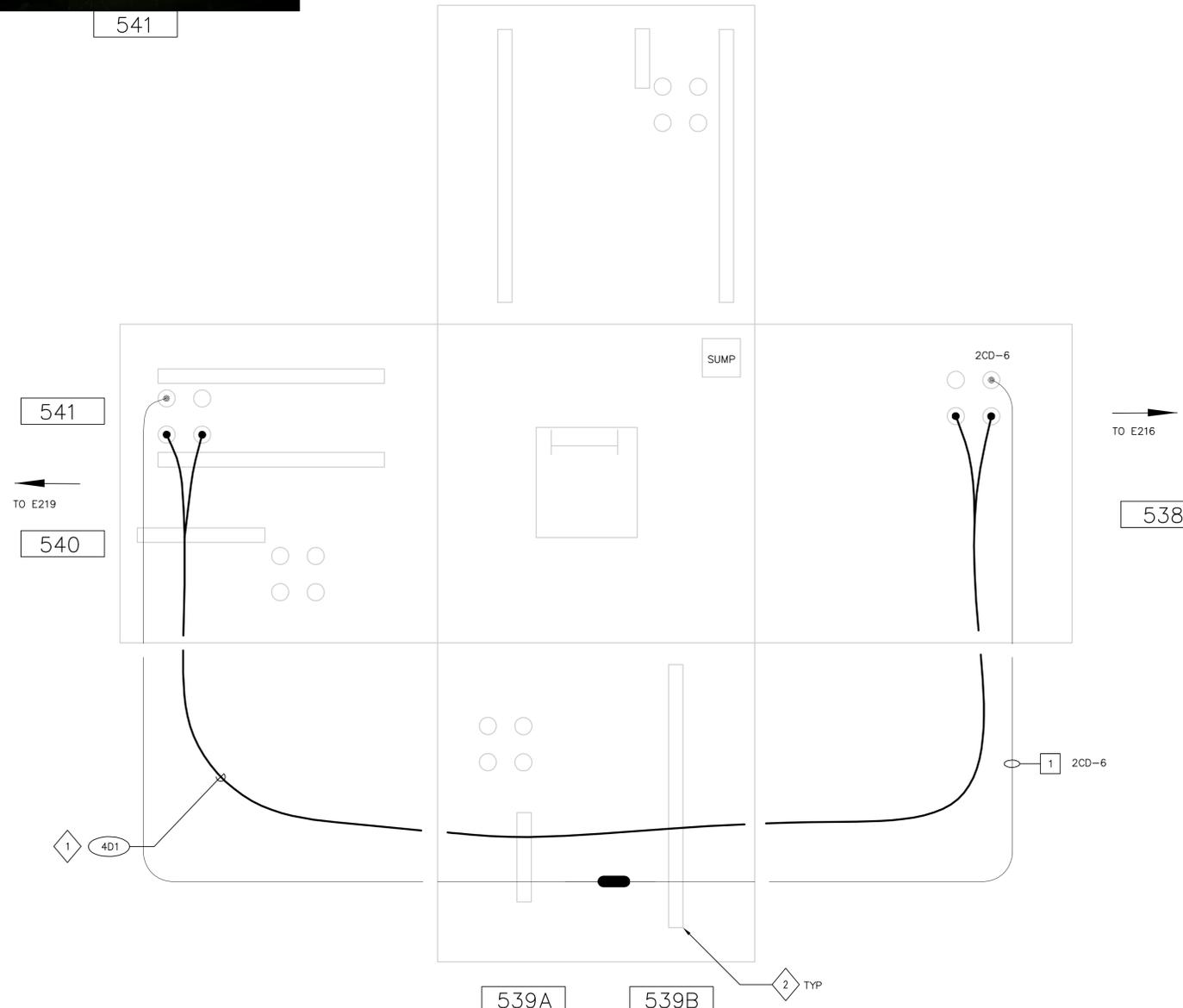
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540



1 MHE 218

E3 E19 SCALE: NTS



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2 TYP

538

TO E219

TO E216

SUMP

2CD-6

1 2CD-6

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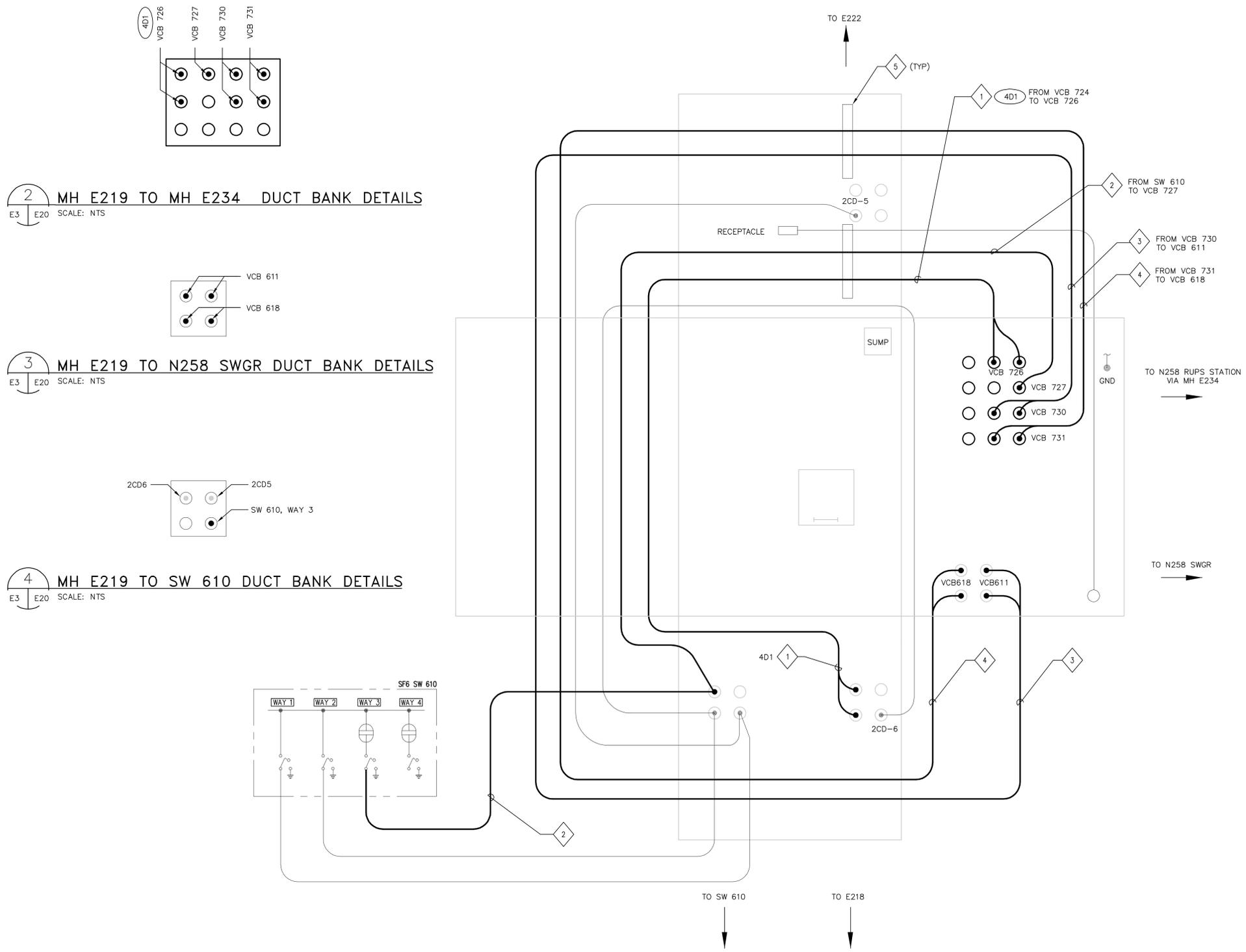
SHEET NOTES

1. LIGHT LINES INDICATE EXISTING CONDITIONS AND DARK LINES INDICATE NEW WORK.
2. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.

KEY NOTES

1. INSTALL NEW FEEDER 4D1, (GFE), 15KV, 2(3-1/C 500 KCMIL & 4/0 GND) EPR CABLES FROM (E) VCB 724 (SYSTEM D SWITCHGEAR IN SUBSTATION N225B) TO (N) VCB 726 (RUPS STATION SWITCHGEAR). PULL CABLES IN (E) 2-4" CONDUIT BETWEEN VAULT 4 AND MH E219 VIA MH E131, MH E132, MH E133, MH E180, MH E216, MH E218, AND IN (E) 2-5" CONDUIT BETWEEN MH E219 AND VCB 726 VIA MH E234.
2. INSTALL (N) (GFE), 3-1/C-500 KCMIL & 4/0 GND CABLE FROM (E) SF6 SW 610 TO (N) VCB 727 (RUPS STATION SWITCHGEAR) IN (E) 4" CONDUIT BETWEEN SW 610 AND MH E219, AND IN (E) 5" CONDUIT BETWEEN MH E219 AND VCB 727 VIA MH E234.
3. INSTALL (N) (GFE), 2-(3-1/C-500 KCMIL & 4/0 GND) CABLES FROM (N) VCB 730 (RUPS STATION SWITCHGEAR) TO (E) VCB 611 (N258 13.8 KV SWITCHGEAR). PULL CABLES IN (E) 2-5" CONDUIT FROM VCB 730 TO MH E219 VIA MH E234 AND IN (E) 2-4" CONDUIT FROM MH E219 TO VCB 611.
4. INSTALL (N) (GFE), 2-(3-1/C-500 KCMIL & 4/0 GND) CABLES FROM (N) VCB 731 (RUPS STATION SWITCHGEAR) TO (E) VCB 618 (N258 13.8 KV SWITCHGEAR). PULL CABLES IN (E) 2-5" CONDUIT FROM VCB 731 TO MH E219 VIA MH E234 AND IN (E) 2-4" CONDUIT FROM MH E219 TO VCB 618.
5. PROVIDE ADDITIONAL CABLE SUPPORTS TO ACCOMMODATE NEW CABLES.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	P. ALDEN	DATE			
DESIGNED	R. NIZAMOV	DATE			
CHECKED	J. McCUSKER	DATE			
PROJ MGR	J. McCUSKER	DATE			
REQUESTER	N. HSU	DATE			
SAFETY	R & QA	DATE			
SUPERVISOR	S. FRANKEL	DATE			
SIZE		CAGE CODE	FILE NAME:		
D		25307	258A-0701-E20		
SCALE		AS SHOWN	INDEX	SHEET	1 OF 1



2 MH E219 TO MH E234 DUCT BANK DETAILS
E3 E20 SCALE: NTS

3 MH E219 TO N258 SWGR DUCT BANK DETAILS
E3 E20 SCALE: NTS

4 MH E219 TO SW 610 DUCT BANK DETAILS
E3 E20 SCALE: NTS

1 MHE 219
E3 E20 SCALE: NTS

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SHEET NOTES:

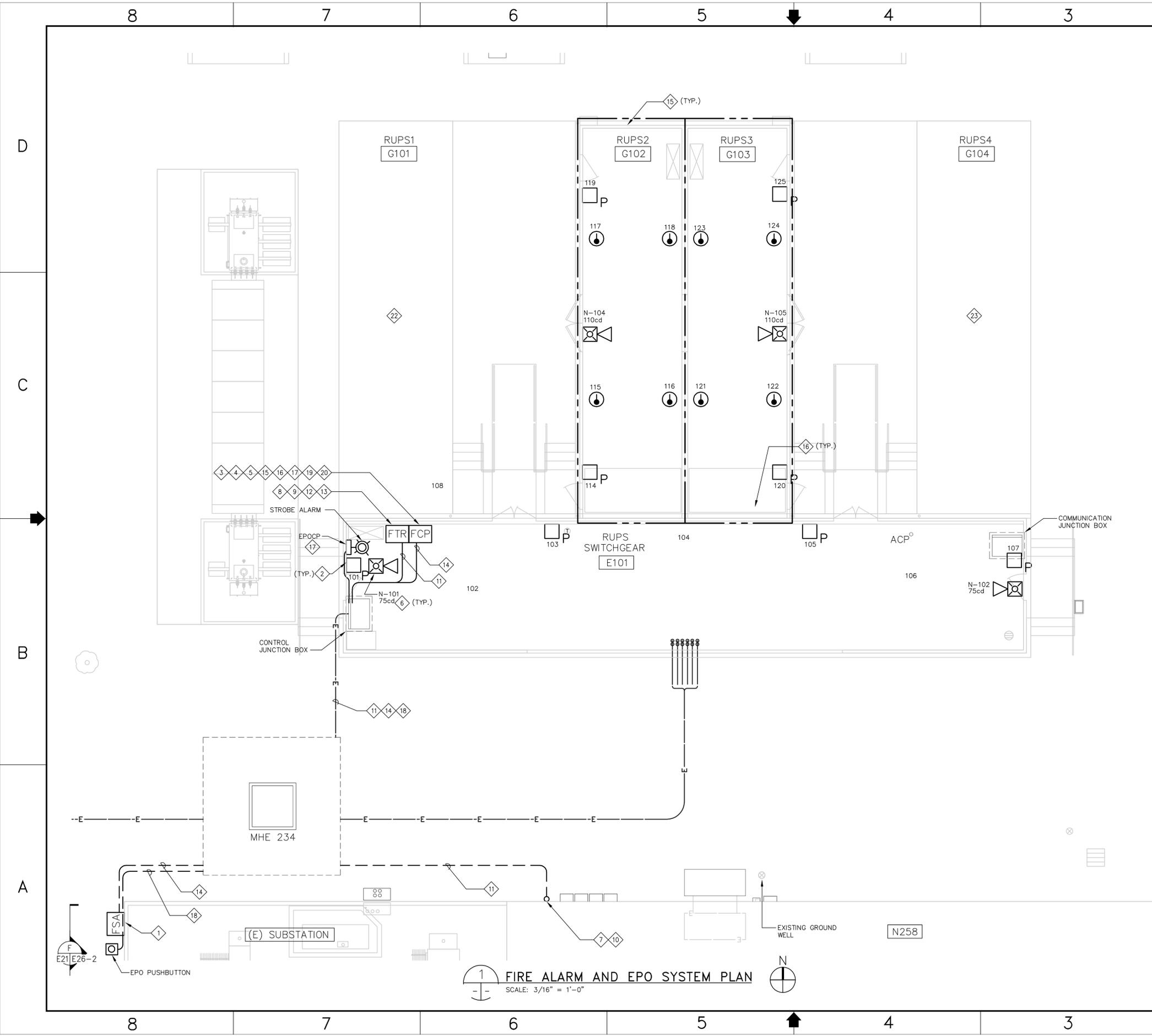
- ALL FIRE ALARM DEVICES SHOWN ARE NEW, UON. PROVIDE CONDUIT, J-BOX AND WIRING FROM ALL NEW FIRE ALARM DEVICES TO THE FIRE ALARM CONTROL PANEL.
- MINIMUM SIZE OF CONDUIT SHALL BE 3/4" FOR INTERIOR INSTALLATION AND 1" FOR UNDERGROUND INSTALLATION.
- LIGHT LINES INDICATE BACKGROUND WORK BY OTHERS AND DARK LINES INDICATE NEW WORK.
- THE NEW FIRE ALARM SYSTEM SHALL BE ADDRESSABLE, CLASS A, FOUR-WIRE, FULLY SUPERVISED CONFORMING TO NASA SPECIFICATIONS SECTION 16 72 20, FIRE ALARM SYSTEM.
- SEE DRAWINGS E1-1, E1-2 & E1-3 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 - GENERAL NOTES
 - ABBREVIATIONS
 - FIRE ALARM SYMBOLS
- SEE DRAWING E22 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 - SCOPE OF WORK
 - SEQUENCE OF OPERATION
 - FIRE ALARM RISER DIAGRAM
- ALL FIRE ALARM CIRCUIT CONDUIT BOXES AND FITTINGS SHALL BE PAINTED RED.
- STROBES SHALL BE SYNCHRONIZED AS PER NFPA 72. NOTIFICATION CIRCUITS AND APPLIANCES SHALL MEET ADAAG REQUIREMENTS.

KEY NOTES:

- PROVIDE SCALED GRAPHIC ANNUNCIATOR PANEL W/ PLASTIC COVER AND FRAME IN NEMA 3R LOCKABLE ENCLOSURE WITH HINGED DOOR AS SHOWN ON DRAWING E23. MOUNT ANNUNCIATOR ON (E) SUBSTATION WALL AT 48" A.F.F. SEE DRAWING E26-2 FOR MOUNTING DETAIL.
- MANUAL PULL STATION SHALL BE INSTALLED WITHIN 5 FEET OF THE DOOR. SEE DRAWING E1-3 FOR INSTALLATION HEIGHT.
- CONTRACTOR SHALL WIRE NEW MICROMIST SYSTEM CONTROLLERS TO THE FIRE ALARM CONTROL PANEL.
- UPON COMPLETION OF HIS WORK, CONTRACTOR SHALL DEVELOP A TEST PROCEDURE AND PERFORM A COMPLETE FUNCTIONAL TEST OF THE FIRE ALARM SYSTEM.
- FIRE ALARM CONTROL PANEL IS FED FROM 208Y/120V PANEL LOCATED IN RUPS SWITCHGEAR ENCLOSURE E101.
- STROBES SHALL BE SYNCHRONIZED AS PER NFPA 72. NOTIFICATION CIRCUITS AND APPLIANCES SHALL MEET ADAAG REQUIREMENTS.
- PROVIDE ANTENNA ASSEMBLY INCLUDING LIGHTNING ARRESTER, CONDUIT WITH MINI RG-8/X TYPE COAXIAL CABLE (CONNECTORS SHALL BE ORDERED SEPARATELY), MOUNTING ASSEMBLY AND GROUNDING CONNECTION. INSTALL (GFE) ANTENNA. SEE ANTENNA INSTALLATION DETAILS ON DRAWING E24.
- INSTALL (GFE) TRANSCEIVER MONACO MODEL BT2-7 (P/N 227-206-56) NEAR THE FIRE ALARM CONTROL PANEL. TRANSCEIVER HOUSING SHALL BE NEMA TYPE 1.
- PROVIDE 20A LOCKABLE SNAP SWITCH FOR USE AS TRANSCEIVER DISCONNECT SWITCH.
- PROVIDE #6 AWG COPPER OR EQUIVALENT BONDING JUMPER FOR CONNECTION BETWEEN ANTENNA GROUNDING ELECTRODE AND THE POWER GROUNDING SYSTEM OF THE BUILDING.
- PROVIDE 2" PVC CONDUIT WITH MINI RG-8/X TYPE COAXIAL CABLE (P/N 620-023-00) FROM TRANSCEIVER TO ANTENNA.
- PROVIDE 3/4" EMT CONDUIT W/2#12 & 1#12G WIRES FOR 120V POWER SUPPLY FOR TRANSCEIVER.
- PROVIDE 3/4" EMT CONDUIT W/4#14 WIRES FOR FIRE ALARM SYSTEM TROUBLE AND ALARM SIGNALS.
- THE NUMBER OF WIRES FROM FIRE ALARM CONTROL PANEL TO GRAPHIC ANNUNCIATOR PANEL TO BE DETERMINED BY THE MANUFACTURER.
- ELECTRICALLY OPERATED OUTLET AIR LOUVERS SHALL BE INTERLOCKED WITH THE FIRE ALARM SYSTEM.
- ELECTRICALLY OPERATED INLET AIR LOUVERS SHALL BE INTERLOCKED WITH THE FIRE ALARM SYSTEM.
- PROVIDE INTERLOCK WIRING AND CONDUIT FOR SHUTDOWN OF HVAC UNIT LOCATED ON THE ROOF OF RUPS SWITCHGEAR ENCLOSURE. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF HVAC.
- PROVIDE 2" PVC CONDUIT WITH 2 # 12 & 1 #12G WIRES FROM EPOCP TO EPO PUSHBUTTON.
- PROVIDE INTERCONNECTION OF FIRE ALARM CONTROL PANEL WITH EPO CONTROL PANEL FOR AUTOMATIC SHUTDOWN OF RUPS STATIONS. SEE DRAWING E26-1 FOR EPO SYSTEM DIAGRAMS.
- HEAT DETECTORS IN RUPS ENCLOSURE SHALL BE CROSS-ZONED IN ORDER TO MEET REQUIREMENTS FOR INSTALLATION OF EPO SYSTEM. ACTIVATION OF ONE HEAT DETECTOR (FACP-1) SHALL TURN ON STROBE ALARM IN ROOM E101 BLDG N258A AND ROOM 227 (COMPUTER CONTROL ROOM) BLDG N258. IF WITHIN A PRESET TIME DELAY OF 2 MINUTES MULTIPLE ZONE ALARM OCCURS (FACP-2) OR IT CAN NOT BE VERIFIED THERE IS NO FIRE AND THE RESET HAS NOT BEEN ACTUATED WITH A KEY, THE CONTINUED ALARM CONDITION WILL ACTIVATE THE FIRE ALARM SYSTEM TO THE LOCAL FIRE DEPARTMENT AND POWER TO RUPS STATIONS WILL BE DISCONNECTED.
- FUTURE INSTALLATION.
- OPTION #1.
- OPTION #2.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					

DRAWN N.NIZAMOVA	DATE	 Ames Research Center Moffett Field, California N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II ELECTRICAL PROPOSED FIRE ALARM & EPO SYSTEM PLAN
DESIGNED N.NIZAMOVA	DATE	
CHECKED J.McCLUSKER	DATE	
PROJ.MGR J.McCLUSKER	DATE	
REQUESTER N.HSU	DATE	
TR&GA	DATE	
SAFETY	DATE	
SUPERVISOR S.FRANKEL	DATE	
SIZE D	CAGE CODE 25307	
SCALE AS SHOWN	INDEX	



1 FIRE ALARM AND EPO SYSTEM PLAN
 SCALE: 3/16" = 1'-0"

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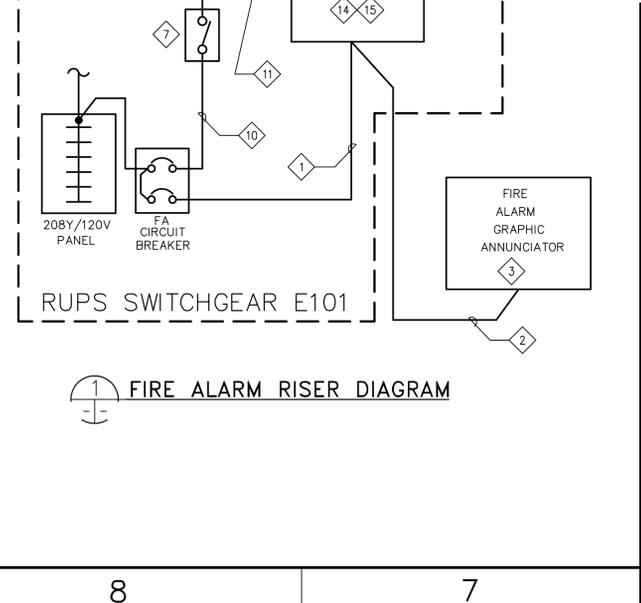
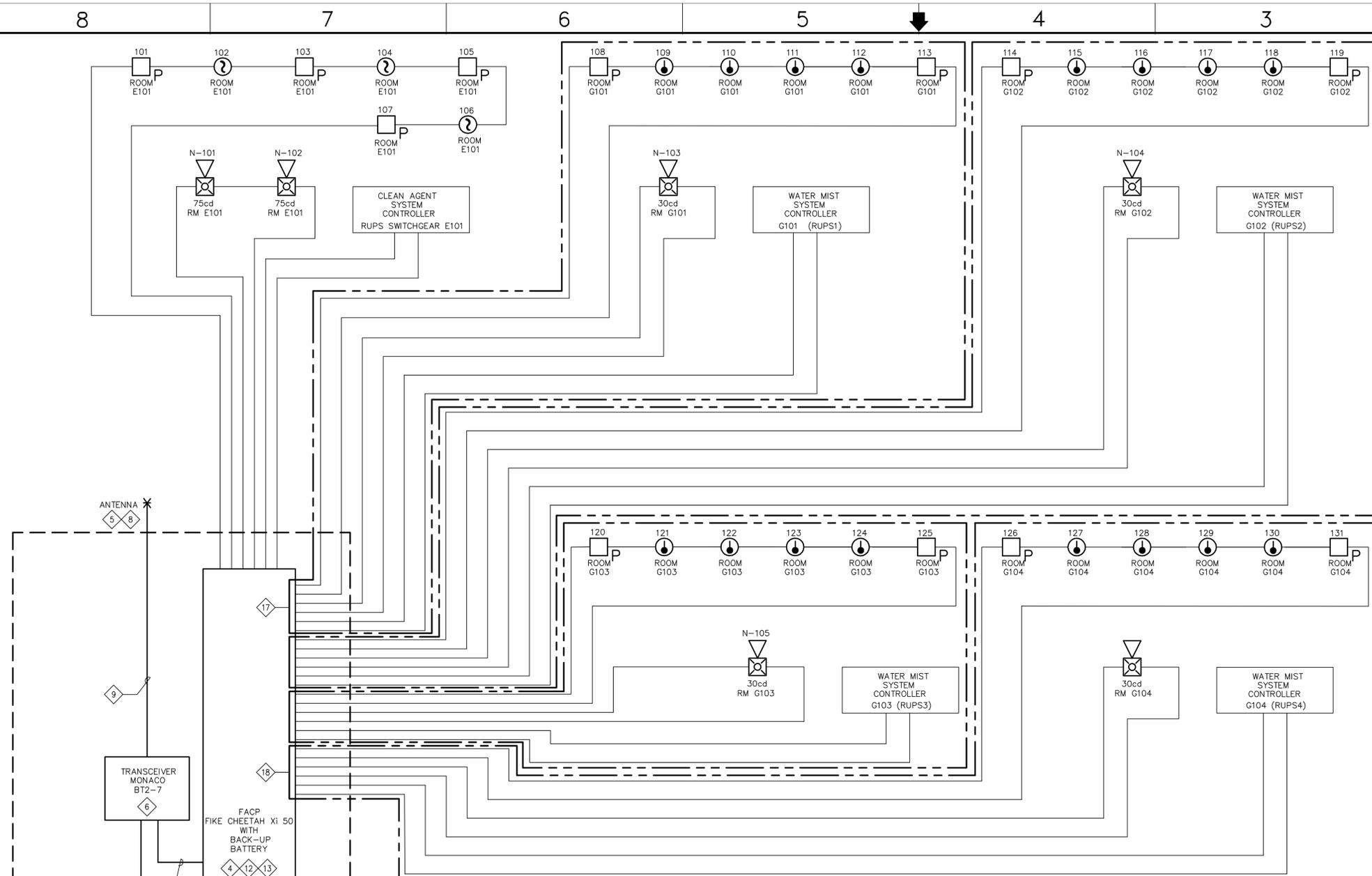
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- ### SHEET NOTES
- ALL FIRE ALARM DEVICES SHOWN ARE NEW, UON. PROVIDE CONDUIT, J-BOX AND WIRING FROM ALL FIRE ALARM DEVICES TO THE FIRE ALARM CONTROL PANEL.
 - MINIMUM SIZE OF CONDUIT SHALL BE 3/4" FOR INTERIOR INSTALLATION AND 1" FOR UNDERGROUND INSTALLATION.
 - LIGHT LINES INDICATE BACKGROUND WORK BY OTHERS AND DARK LINES INDICATE NEW WORK.
 - THE FIRE ALARM SYSTEM SHALL BE ADDRESSABLE, CLASS A, FOUR-WIRE, FULLY SUPERVISED CONFORMING TO NASA SPECIFICATIONS SECTION 16722, FIRE ALARM SYSTEM.
 - SEE DRAWINGS E1-1, E1-2 & E1-3 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 - GENERAL NOTES
 - ABBREVIATIONS
 - FIRE ALARM SYMBOLS
 - SEE DRAWING E21 FOR FIRE ALARM PLAN.
 - ALL FIRE ALARM CIRCUIT CONDUIT BOXES AND FITTINGS SHALL BE PAINTED RED.
 - STROBES SHALL BE SYNCHRONIZED AS PER NFPA 72. NOTIFICATION CIRCUITS AND APPLIANCES SHALL MEET ADAAG REQUIREMENTS.
 - ALL NEW EQUIPMENT SHOWN ON THIS DRAWING ARE BASE BID ITEMS, UON.

- ### KEY NOTES
- PROVIDE (N) 3/4" CONDUIT W/ 2#12 & 1#12G FROM FA CIRCUIT BREAKER TO THE FACP.
 - THE NUMBER OF CONDUITS AND WIRES TO BE DETERMIND BY THE MANUFACTURER.
 - PROVIDE SCALED GRAPHIC ANNUNCIATOR PANEL W/ PLASTIC COVER AND FRAME AS SHOWN ON DRAWING E23.
 - CONTRACTOR SHALL WIRE NEW MICROMIST SYSTEM CONTROLLERS TO THE FIRE ALARM CONTROL PANEL.
 - PROVIDE ANTENNA ASSEMBLY INCLUDING LIGHTNING ARRESTER, CONDUIT WITH MINI RG-8/X TYPE COAXIAL CABLE (CONNECTORS SHALL BE ORDERED SEPARATELY), MOUNTING ASSEMBLY AND GROUNDING CONNECTION. INSTALL (GFE) ANTENNA. SEE ANTENNA INSTALLATION DETAILS ON DRAWING E24.
 - INSTALL (GFE) TRANSCEIVER MONACO MODEL BT2-7 (P/N 227-206-56) NEAR THE FIRE ALARM CONTROL PANEL. TRANSCEIVER HOUSING SHALL BE NEMA TYPE 1.
 - PROVIDE 20A LOCKABLE SNAP SWITCH FOR USE AS TRANSCEIVER DISCONNECT SWITCH.
 - PROVIDE #6 AWG COPPER OR EQUIVALENT BONDING JUMPER FOR CONNECTION BETWEEN ANTENNA GROUNDING ELECTRODE AND THE POWER GROUNDING SYSTEM OF THE BUILDING.
 - PROVIDE 1" PVC CONDUIT WITH MINI RG-8/X TYPE COAXIAL CABLE (P/N 620-023-00) FROM TRANSCEIVER TO ANTENNA.
 - PROVIDE 3/4" EMT CONDUIT WITH 2#12 & 1#12G WIRES FOR 120V POWER SUPPLY FOR TRANSCEIVER.
 - PROVIDE 3/4" EMT CONDUIT WITH 4#14 WIRES FOR FIRE ALARM SYSTEM TROUBLE AND ALARM SIGNALS.
 - PROVIDE INTERLOCK WIRING AND CONDUIT FOR CONTROL OF ELECTRICALLY OPERATED INLET AND OUTLET AIR LOUVERS. SEE MECHANICAL DRAWINGS FOR LOUVER OPERATION REQUIREMENTS.
 - PROVIDE INTERLOCK WIRING AND CONDUIT FOR SHUTDOWN OF HVAC UNIT LOCATED ON THE ROOF OF RUPS SWITCHGEAR ENCLOSURE. SEE MECHANICAL DRAWINGS FOR LOCATION OF HVAC.
 - PROVIDE INTERCONNECTION OF FIRE ALARM CONTROL PANEL WITH EPO CONTROL PANEL FOR AUTOMATIC SHUTDOWN OF RUPS STATIONS. SEE DRAWING E26-1 FOR EPO SYSTEM DIAGRAMS.
 - HEAT DETECTORS IN RUPS ENCLOSURE SHALL BE CROSS-ZONED IN ORDER TO MEET REQUIREMENTS FOR INSTALLATION OF EPO SYSTEM. ACTIVATION OF ONE HEAT DETECTOR (FACP-1) SHALL TURN ON STROBE ALARM IN ROOM E101 BLDG N258A AND ROOM 227 (COMPUTER CONTROL ROOM) BLDG N258. IF WITHIN A PRESET TIME DELAY OF 2 MINUTES MULTIPLE ZONE ALARM OCCURS (FACP-2) OR IT CAN NOT BE VERIFIED THERE IS NO FIRE AND THE RESET HAS NOT BEEN ACTUATED WITH A KEY, THE CONTINUED ALARM CONDITION WILL ACTIVATE THE FIRE ALARM SYSTEM TO THE LOCAL FIRE DEPARTMENT AND POWER TO RUPS STATIONS WILL BE DISCONNECTED.
 - NOT USED.
 - OPTION #1.
 - OPTION #2.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	N.NIZAMOVA	DATE			
DESIGNED	N.NIZAMOVA	DATE			
CHECKED	J.M.CUSKER	DATE			
PROJ.MGR	J.M.CUSKER	DATE			
REQUESTER	N.HSU	DATE			
TR&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			

 Ames Research Center Moffett Field, California					
N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II ELECTRICAL PROPOSED FIRE ALARM RISER DIAGRAM					
SIZE	D	CAGE CODE	25307	REV	1
SCALE	AS SHOWN	INDEX		SHEET	1 OF 1
FILE NAME:		258A-E22.DWG 01-30-09			



- ### SCOPE OF WORK
- PROVIDE FIRE ALARM CONTROL PANEL WITH BATTERY BACK-UP IN RUPS SWITCHGEAR ENCLOSURE E101.
 - PROVIDE FIRE ALARM DEVICES, CONDUIT AND WIRING.
 - PROVIDE 120V, 20A, 1P CIRCUIT BREAKER FOR FIRE ALARM CONTROL PANEL IN RUPS SWITCHGEAR ENCLOSURE E101.
 - PROVIDE 120 VOLT CONNECTION FROM FIRE ALARM CIRCUIT BREAKER TO FIRE ALARM CONTROL PANEL.
 - PROVIDE FIRE ALARM GRAPHIC ANNUNCIATOR ON THE WALL OF (E) SUBSTATION AS SHOWN ON THE DRAWING E21.
 - PROVIDE CONNECTION BETWEEN THE FIRE ALARM CONTROL PANEL AND FIRE ALARM GRAPHIC ANNUNCIATOR.
 - INSTALL (GFE) TRANSCEIVER NEAR THE FIRE ALARM CONTROL PANEL.
 - PROVIDE CONNECTION BETWEEN THE FIRE ALARM CONTROL PANEL AND FIRE ALARM TRANSCEIVER MONACO BT2-7.
 - PROVIDE INTERLOCK WIRING AND CONDUIT FOR CONTROL OF INLET AND OUTLET AIR LOUVERS.
 - PROVIDE INTERLOCK WIRING AND CONDUIT FOR SHUTDOWN OF HVAC UNIT LOCATED ON THE ROOF OF RUPS SWITCHGEAR ENCLOSURE.
 - PROVIDE INTERCONNECTION OF FIRE ALARM CONTROL PANEL WITH EPO CONTROL PANEL FOR AUTOMATIC SHUTDOWN OF RUPS STATIONS.
 - PROVIDE PROGRAMMING OF THE FIRE ALARM CONTROL PANEL.
 - PROVIDE ANTENNA ASSEMBLY INCLUDING LIGHTNING ARRESTER, CONDUIT, CABLE, MOUNTING ASSEMBLY AND GROUNDING CONNECTION AS SHOWN ON THE DRAWINGS E21 & E24.
 - INSTALL (GFE) ANTENNA ON THE WALL OF BUILDING N258.
 - UPON COMPLETION OF THE WORK, DEVELOP A TEST PROCEDURE AND PERFORM A COMPLETE FUNCTIONAL TEST OF THE FIRE ALARM SYSTEM.

- ### SEQUENCE OF OPERATION
- AUTOMATIC OPERATION OF EACH PROTECTED AREA SHALL BE AS FOLLOWS:
- ACTUATION OF ONE (1) DETECTOR, WITHIN THE SYSTEM, SHALL:
 - ILLUMINATE THE 'ALARM' LAMP ON THE CONTROL PANEL FACE.
 - ENERGIZE AN ALARM HORN AND VISUAL INDICATOR.
 - TRANSFER SETS OF 2 AMP RATED AUXILIARY CONTACTS, WHICH CAN PERFORM AUXILIARY SYSTEM FUNCTIONS SUCH AS:
 - TRANSMIT A SIGNAL TO A FIRE ALARM SYSTEM.
 - SHUTDOWN HVAC EQUIPMENT.
 - LIGHT AN INDIVIDUAL LAMP ON GRAPHIC ANNUNCIATOR.
 - ACTUATION OF A 2nd DETECTOR, WITHIN THE SYSTEM, SHALL:
 - ILLUMINATE A 'PRE-DISCHARGE' CONDITION ON THE CONTROL PANEL FACE.
 - ENERGIZE A PREDISCHARGE HORN/STROBE DEVICE.
 - SHUT DOWN THE HVAC SYSTEM AND CLOSE ALL AIR LOUVERS.
 - START TIME-DELAY SEQUENCE (NOT TO EXCEED 60 SECONDS)
 - SYSTEM ABORT SEQUENCE IS ENABLED AT THIS TIME.
 - LIGHT AN INDIVIDUAL LAMP ON THE GRAPHIC ANNUNCIATOR.
 - AFTER COMPLETION OF THE TIME DELAY SEQUENCE, THE HFC-227ea CLEAN AGENT SYSTEM SHALL DISCHARGE AND THE FOLLOWING SHALL OCCUR:
 - ILLUMINATE A 'SYSTEM DISCHARGE' CONDITION ON THE CONTROL PANEL FACE.
 - SHUTDOWN OF ALL POWER TO HIGH VOLTAGE EQUIPMENT.
 - ENERGIZE A VISUAL INDICATOR OUTSIDE THE HAZARD IN WHICH THE DISCHARGE OCCURRED.
 - ENERGIZE A 'SYSTEM FIRED' AUDIBLE DEVICE.
 - THE SYSTEM SHALL BE CAPABLE OF BEING ACTUATED BY MANUAL DISCHARGE DEVICES LOCATED AT EACH HAZARD EXIT. OPERATION OF A MANUAL DEVICE SHALL DUPLICATE THE SEQUENCE DESCRIPTION ABOVE EXCEPT THAT THE TIME DELAY AND ABORT FUNCTIONS SHALL BE BYPASSED. THE MANUAL DISCHARGE STATION SHALL BE OF THE ELECTRICAL ACTUATION TYPE AND SHALL BE SUPERVISED AT THE MAIN CONTROL PANEL.
 - THE SYSTEM SHALL BE CAPABLE OF PROVIDING A 'PRE-ALARM' FEATURE THAT CAN GIVE ADVANCED WARNING OF A POSSIBLE ALARM CONDITION.

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SHEET NOTES

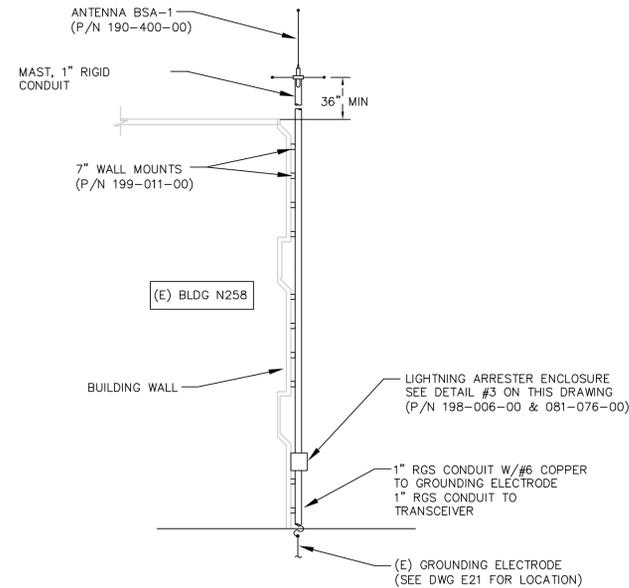
1. ALL ELECTRICAL ITEMS SHALL BE NEW.
2. LIGHT LINES INDICATE BACKGROUND WORK BY OTHERS AND DARK LINES INDICATE NEW ELECTRICAL WORK UON.
3. ALL FIRE ALARM CIRCUIT CONDUIT BOXES AND FITTINGS SHALL BE PAINTED RED.
4. CONTRACTOR SHALL RESTORE, I.E. REPAIR, PATCH AND PAINT ALL AREAS AFFECTED BY THE INSTALLATION OF THE NEW EQUIPMENT TO MATCH THE ADJACENT AREA.
5. ALL EQUIPMENT AND MATERIALS SHALL BE MONACO ENTERPRISES, INC. U.O.N. PART NUMBERS (P/N) REFER TO MONACO ENTERPRISES, INC.
6. BUILDING TRANSCEIVER MONACO MODEL BT2-7 (P/N 227-206-56) LOCATED IN RUPS SWITCHGEAR ENCLOSURE E101 BLDG N258A.
7. MINIMUM SIZE OF CONDUIT SHALL BE 3/4" FOR INTERIOR INSTALLATION AND 1" FOR UNDERGROUND INSTALLATION.
8. SEE DRAWINGS E1-1, E1-2 & E1-3 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 - a) GENERAL NOTES
 - b) ABBREVIATIONS
 - c) FIRE ALARM SYMBOLS
9. SEE DRAWING E22 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 - a) SCOPE OF WORK
 - b) SEQUENCE OF OPERATION
 - c) FIRE ALARM RISER DIAGRAM
10. SEE DRAWING E21 FOR FIRE ALARM PLAN.

KEY NOTES

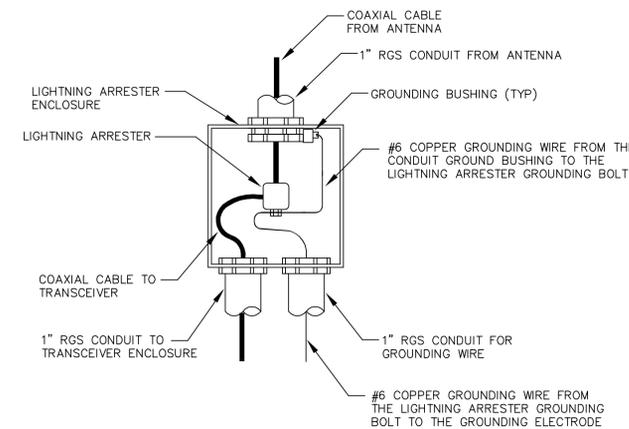
1. PROVIDE ANTENNA ASSEMBLY INCLUDING LIGHTNING ARRESTER, CONDUIT WITH MINI RG-8/X TYPE COAXIAL CABLE (CONNECTORS SHALL BE ORDERED SEPARATELY), MOUNTING ASSEMBLY AND GROUNDING CONNECTION. INSTALL (GFE) ANTENNA
2. PROVIDE #6 AWG COPPER OR EQUIVALENT BONDING JUMPER FOR CONNECTION BETWEEN THE ANTENNA GROUNDING ELECTRODE AND THE POWER GROUNDING SYSTEM OF THE BUILDING.
3. 2" RGS CONDUIT WITH MINI RG-8/X TYPE COAXIAL CABLE (P/N 620-023-00) TO TRANSCEIVER, LOCATED IN ROOM E101 OF BLDG N258A. SEE DRAWING E21



1 PHOTOGRAPHIC DETAIL
SCALE: NTS



2 ANTENNA DETAIL
SCALE: NTS
SIDE VIEW



3 LIGHTNING ARRESTER ENCLOSURE
SCALE: NTS
SECTION VIEW

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	N.NIZAMOVA	DATE			
DESIGNED	N.NIZAMOVA	DATE			
CHECKED	J.McCUSKER	DATE			
PROJ.MGR	J.McCUSKER	DATE			
REQUESTER	N.HSU	DATE			
TR&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			
SIZE	D	CAGE CODE	25307	INDEX	SCALE AS SHOWN
FILE NAME:		258A-E24.DWG			
		01-30-09			

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DWG NO. A258A-0701-E13

SH. 1 REV

SHEET NOTES

- SEE DRAWINGS E1-1, E1-2, E1-3 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 - GENERAL NOTES
 - ABBREVIATIONS
 - FIRE ALARM SYMBOLS
- ALL ELECTRICAL ITEMS SHALL BE NEW UNLESS OTHERWISE NOTED AS EXISTING (E).
- LIGHT LINES INDICATE EXISTING ELECTRICAL CONDITIONS AND BACKGROUND WORK BY OTHER DISCIPLINES, DARK LINES INDICATE NEW ELECTRICAL WORK, UON.
- PRIOR TO COMMENCING ELECTRICAL WORK, COORDINATE WITH ALL OTHER TRADES TO AVOID ANY CONFLICT OR INTERFERENCE WITH ITEMS THAT MAY BE AFFECTED BY ELECTRICAL WORK.
- ALL NEW EQUIPMENT SHOWN ON THIS DRAWING ARE BASE BID ITEMS, UON.

KEY NOTES

- PROVIDE WALL MOUNTED LIGHTING FIXTURE WITH 100W HPS LAMP, CLEAR TEMPERED GLASS, WALL BRACKET, 120V, HOLOPHANE SMST-100HP-12-BK-CL-WB OR EQUAL. MOUNT FIXTURE HIGH ON THE WALL, 14FT A.F.G. ELECTRICAL CONTRACTOR SHALL PROVIDE PHOTOCELL ON THE ROOF OF RUPS SWITCHGEAR ENCLOSURE FACING NORTH TO CONTROL LIGHTING FIXTURES.
- CONNECT LIGHTING FIXTURE TO THE 208Y/120V PANEL LOCATED IN RUPS SWITCHGEAR ENCLOSURE E101 VIA THWN 3-1/C #12 & #12 GND IN 1" PVC SCHEDULE 40 CONDUIT UNDERGROUND AND 3/4" EMT CONDUIT ON THE WALL.
- (E) POLE MOUNTED LIGHTING FIXTURE. SEE DRAWING C2 GENERAL NOTE 3.
- NOT USED.
- OPTION #1.
- OPTION #2.

D

C

B

A

D

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B

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RUPS1
G101

RUPS2
G102

RUPS3
G103

RUPS4
G104

(TYP) 1 2

RUPS
EQUIPMENT YARD
101

RUPS
EQUIPMENT YARD
101

RUPS
SWITCHGEAR
E101

N258A

1 EXTERIOR LIGHTING PLAN
SCALE: 1/4" = 1'-0"



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FILE NAME:
258A-E25.DWG 01-30-09

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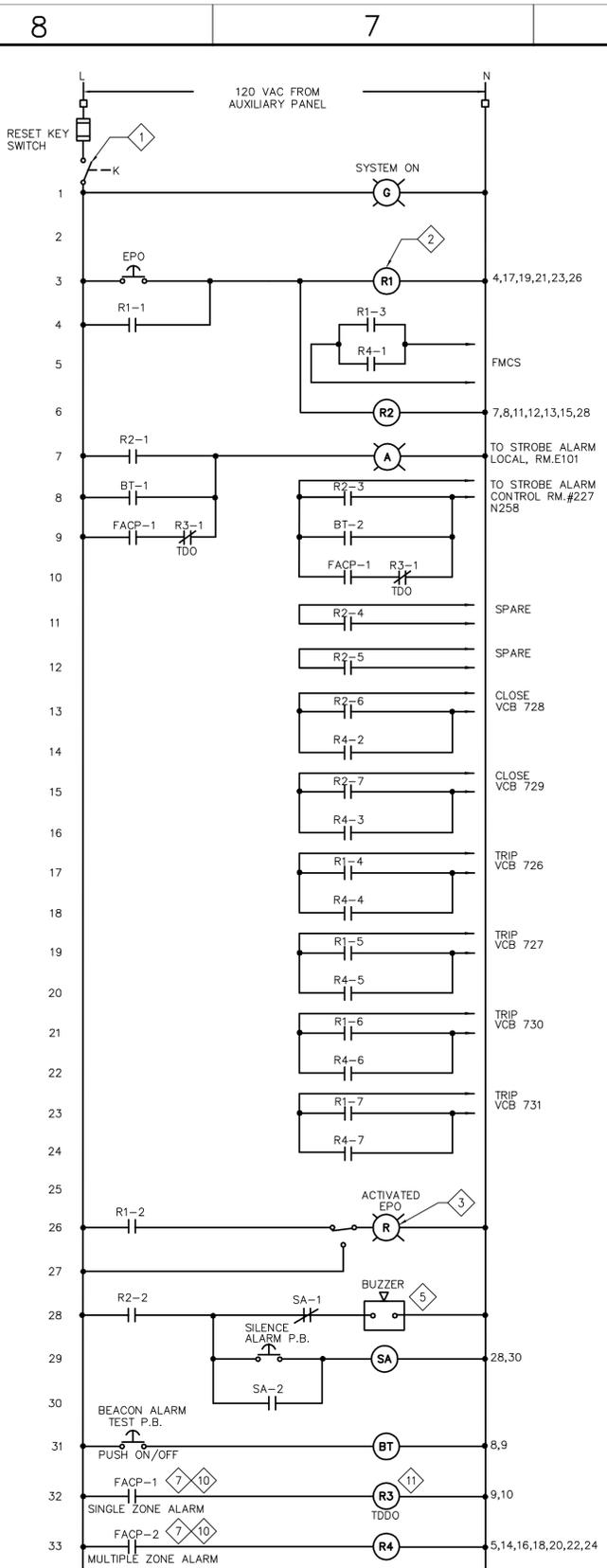
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SHEET NOTES

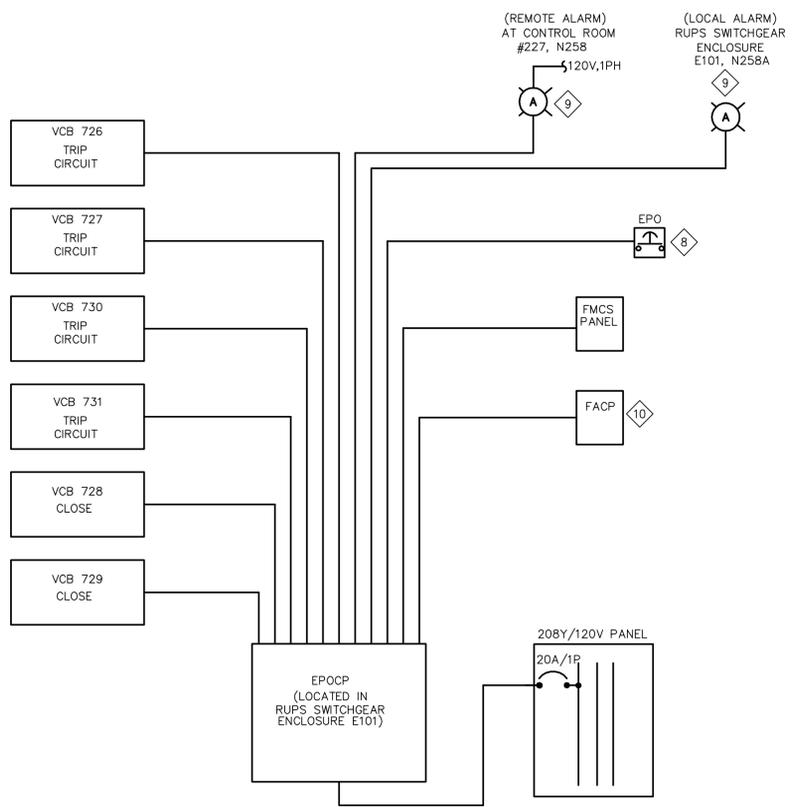
- SEE DRAWINGS E1-1, E1-2, E1-3 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 a) GENERAL NOTES
 b) ABBREVIATIONS
 c) ELECTRICAL SYMBOLS
- ALL ELECTRICAL ITEMS SHALL BE NEW UNLESS OTHERWISE NOTED AS EXISTING (E).
- PRIOR TO COMMENCING ELECTRICAL WORK, COORDINATE WITH ALL OTHER TRADES TO AVOID ANY CONFLICT OR INTERFERENCE WITH ITEMS THAT MAY BE AFFECTED BY ELECTRICAL WORK.
- SEE DRAWING E21 FOR LOCATION OF EPO EQUIPMENT.

KEY NOTES

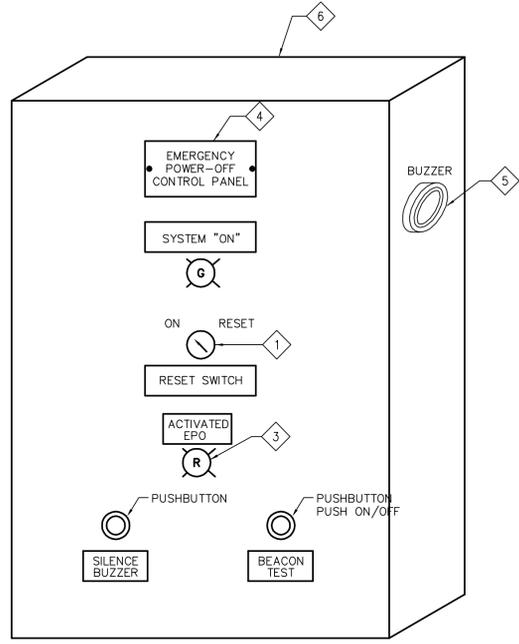
- KEY TYPE, TWO POSITION SELECTOR SWITCH, MOMENTARY CONTACT, LEFT POSITION--'CLOSE' RIGHT POSITION--'OPEN'. KEY REMOVABLE IN 'LEFT' POSITION, SPRING RETURN FROM RIGHT.
- RELAY INDUSTRIAL TYPE WITH INTERCHANGEABLE CONTACT. EACH CONTACT RATED 10 AMPS.
- INDICATING LIGHT - RED LENS, PUSH-TO-TEST TYPE WITH LED LIGHTS.
- NAMEPLATE SHALL BE BLACK WITH WHITE LETTERS BOLTED ON THE CABINET.
- BUZZER MOUNTED INSIDE THE PANEL, EDWARDS #340A-N5 (OR EQUAL), 120VAC. CABINET SHALL BE PROVIDED WITH ADEQUATE HOLE PERFORATIONS FOR PROPER ALARM SOUND EMISSION.
- EPO PANEL ENCLOSURE SHALL BE WALL MOUNTED NEMA I WITH PANEL INSIDE FOR RELAY MOUNTING.
- INSTALLED AT FIRE ALARM CONTROL PANEL.
- SEE DRAWING E21 FOR LOCATION OF EPO CONTROL PANEL & DRAWING E26-2 FOR PUSH BUTTON INSTALLATION DETAIL.
- SEE DRAWING E26-2 FOR STROBE LIGHT INSTALLATION DETAIL.
- FIRE ALARM CONTROL PANEL IS FIKE CHEETAH XI 50. SEE DRAWING E21 FOR LOCATION. ACTIVATION OF ONE HEAT DETECTOR (FACP-1) SHALL TURN ON STROBE ALARM IN ROOM E101 BLDG N258A AND ROOM 227 (COMPUTER CONTROL ROOM) BLDG N258. IF WITHIN A PRESET TIME DELAY OF 2 MINUTES MULTIPLE ZONE ALARM OCCURS (FACP-2) OR IT CAN NOT BE VERIFIED THERE IS NO FIRE AND THE RESET HAS NOT BEEN ACTUATED WITH A KEY, THE CONTINUED ALARM CONDITION WILL ACTIVATE THE FIRE ALARM SYSTEM TO THE LOCAL FIRE DEPARTMENT AND POWER TO RUPS STATIONS WILL BE DISCONNECTED.
- TIMING RELAY, TIME DELAY DROP OFF, 0-5MIN, SIMILAR TO AGASTAT 7022.



A EPOCP SCHEMATIC DIAGRAM
SCALE: NTS



B EPOCP RISER DIAGRAM
SCALE: NTS



C EPOCP PANEL LAYOUT
SCALE: NTS

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	N.NIZAMOVA	DATE			
DESIGNED	N.NIZAMOVA	DATE			
CHECKED	J.McCUSKER	DATE			
PROJ.MGR	J.McCUSKER	DATE			
REQUESTER	N.HSU	DATE			
TR&QA	R&QA	DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			

Ames Research Center Moffett Field, California	
N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II ELECTRICAL	
PROPOSED RUPS EMERGENCY POWER OFF SYSTEM DIAGRAMS	
SIZE D	CAGE CODE 25307
SCALE AS SHOWN	INDEX
FILE NAME: 258A-E26_1.DWG	1 REV 1 OF 2

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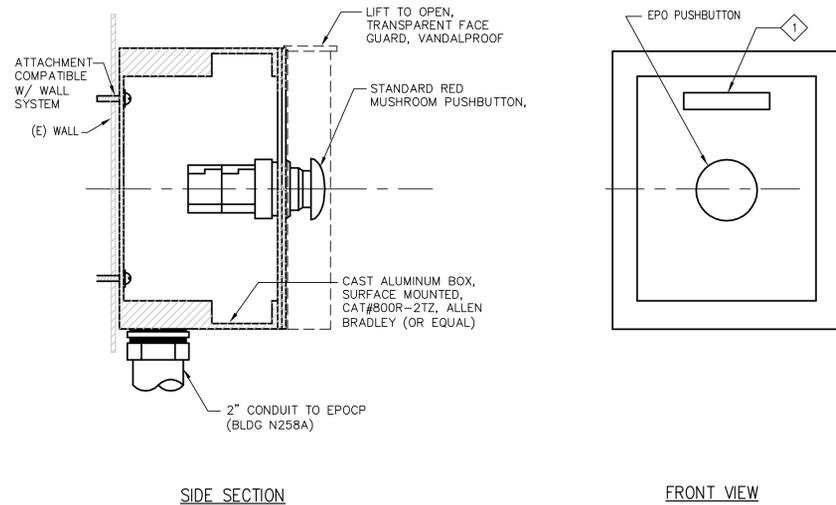
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SHEET NOTES

- SEE DRAWINGS E1-1, E1-2, E1-3 FOR THE FOLLOWING ELECTRICAL INFORMATION:
 a) GENERAL NOTES
 b) ABBREVIATIONS
 c) ELECTRICAL SYMBOLS
- SEE DRAWING E21 FOR LOCATION OF EPO EQUIPMENT.
- PRIOR TO FABRICATION, CONTRACTOR SHALL PROPOSE AND SUBMIT A SAMPLE PLACARD SIGNAGE STYLE FOR APPROVAL TO THE CONTRACTING OFFICER.

KEY NOTES

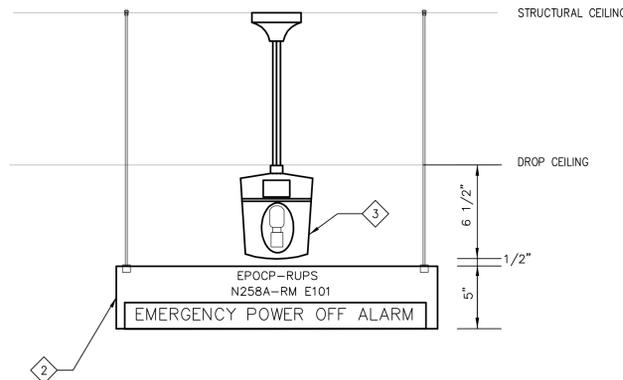
- 1 PROVIDE NAMEPLATE 1"x3"x1/16" THICK FORMICA WITH BEVELED EDGES, BLACK FACE WITH WHITE LETTERS, 3/8" HEIGHT TO READ AS: "EMERGENCY POWER OFF" AS INDICATED ON THE DRAWING.
- 2 PROVIDE SINGLE FACE PLACARD, BLACK FACE WITH WHITE LETTERS, 1" HEIGHT TO READ AS: "EMERGENCY POWER OFF ALARM" AS INDICATED ON THE DRAWING.
- 3 PROVIDE STROBE LIGHT, 3/4" NPT PIPE MOUNT, 2,000,000 PEAK CANDLE POWER, WITH CAST DOME GUARD PAINTED GRAY, 120V, 1AMPS, MINIMUM 60 FLASHES PER MINUTE, AMBER LENS, EQUAL TO SIGNAL GUYS AST-2. INSTALL AS SHOWN ON THE DRAWING IN CONTROL ROOM 227, BLDG N258 AND IN ROOM E101, BLDG N258A ABOVE EMERGENCY POWER OFF CONTROL PANEL.



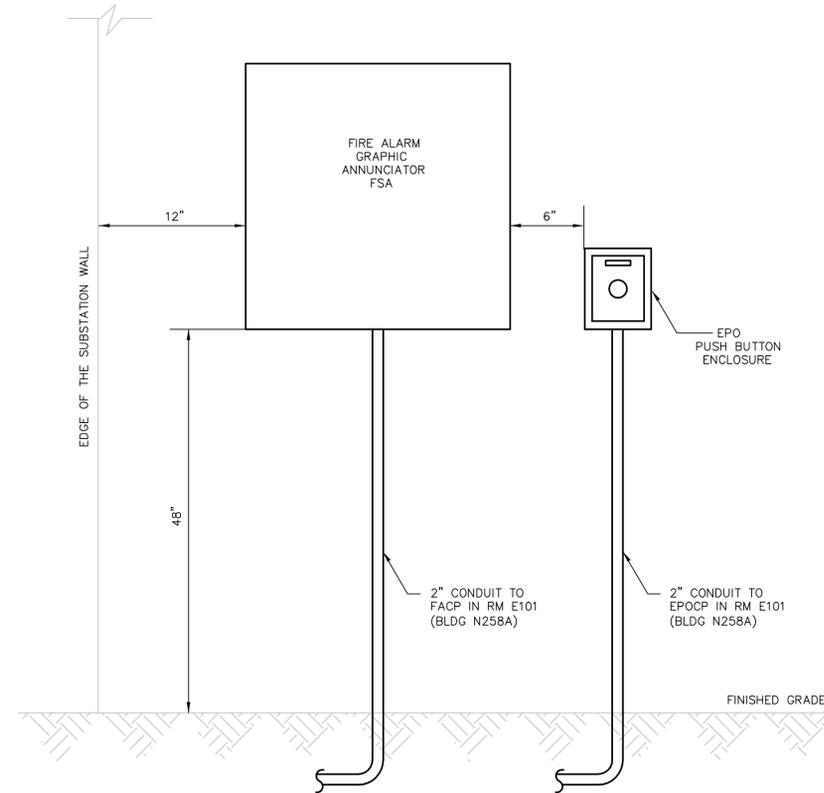
SIDE SECTION

FRONT VIEW

D EPO PUSHBUTTON MOUNTING DETAIL
 E21 | E26-2 SCALE: NTS



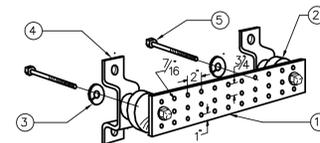
E STROBE LIGHT IN RM 227, N258 MOUNTING DETAIL
 SCALE: NTS



F GRAPHIC ANNUNCIATOR & EPO PUSHBUTTON ELEVATION
 E21 | E26-2 SCALE: NTS

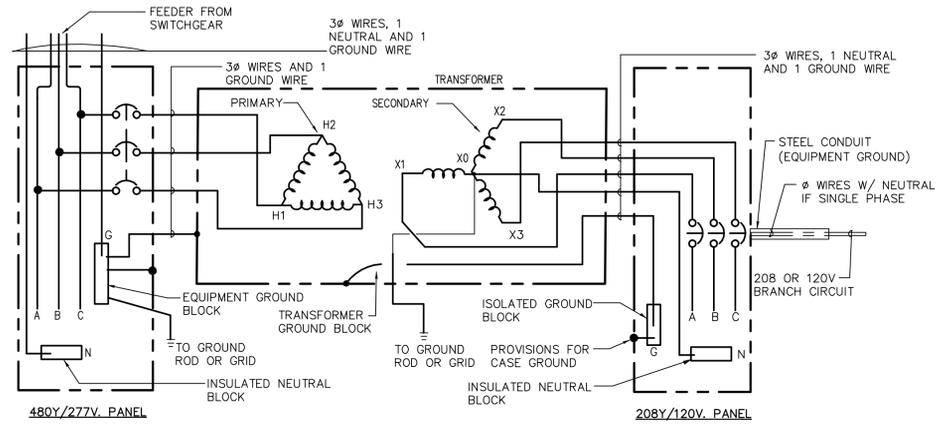
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CHECKED	J.McCLUSKER	DATE			
PROJ.MGR	J.McCLUSKER	DATE			
REQUESTER	N.HSU	DATE			
TR&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			

Ames Research Center Moffett Field, California	
N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II ELECTRICAL	
PROPOSED RUPS EMERGENCY POWER OFF SYSTEM DIAGRAMS	
SIZE	D
CAGE CODE	25307
INDEX	A
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SHEET	2 OF 2

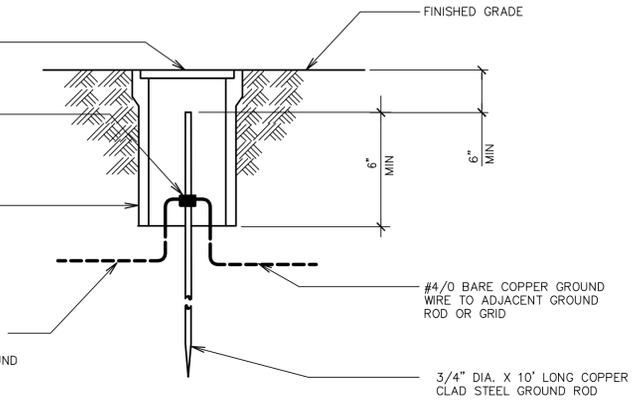


- NOTES:
 A. PROVIDED BY ELECTRICAL CONTRACTOR.
 ① COPPER GROUND BAR, 1/4" X 4" X 20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 (OR EQUAL). HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
 ② INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 (OR EQUAL).
 ③ 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 (OR EQUAL).
 ④ WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056 (OR EQUAL).
 ⑤ 5/8-11 X 1" H.H.C. BOLTS, NEWTON INSTRUMENT CO. CAT. NO. 3012-1 (OR EQUAL).
 B. PROVIDE #4/0 BARE CU. WIRE WITH NEMA 2-HOLE CONNECTOR FROM MAIN BUILDING GROUND (MBG) BUS BAR TO MAIN COMPUTER GROUND (MCG) BUS BAR.

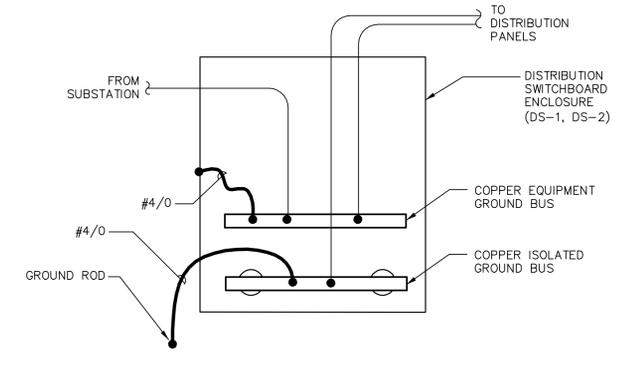
3 GROUND BUS BAR DETAIL
 SCALE: 3"=1'-0"



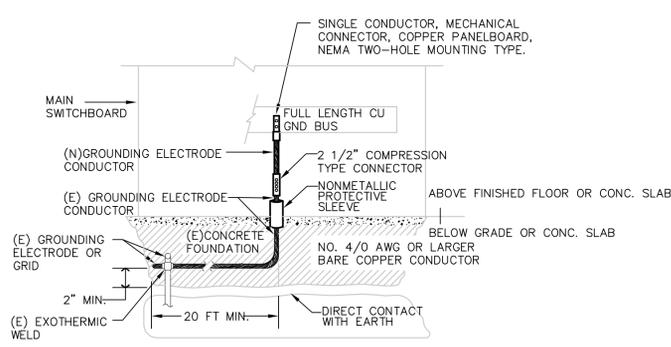
2 TRANSFORMER GROUNDING SYSTEM WIRING DIAGRAM
 SCALE: 1"=1'-0"



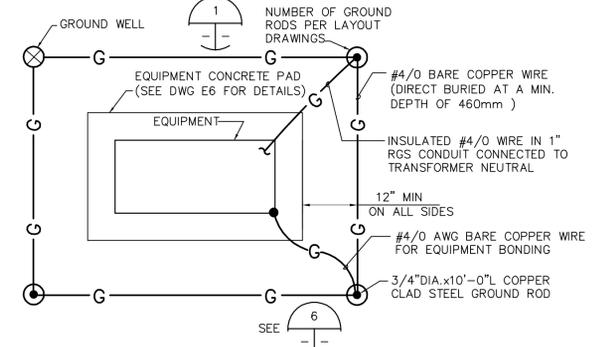
1 DETAIL-GROUND WELL
 SCALE: 1"=1'-0"



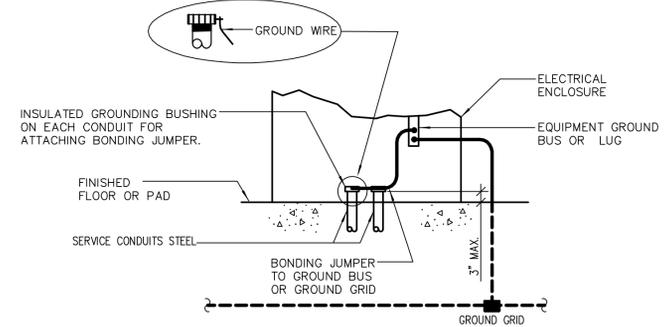
7 TYPICAL DISTRIBUTION SWITCHBOARD GROUNDING DETAIL
 SCALE: NTS



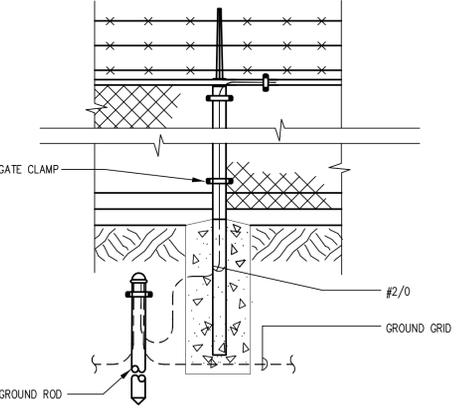
6 GROUND BUS BAR DETAIL
 SCALE: 3"=1'-0"



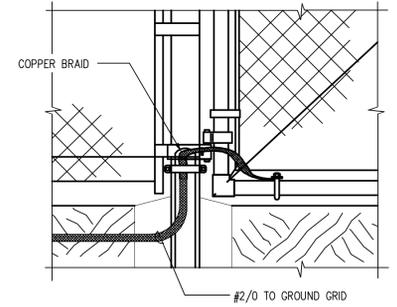
5 TYPICAL - NEW EQUIPMENT PAD GROUNDING DETAILS
 SCALE: 6"=1'-0"



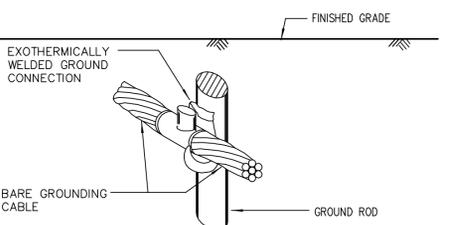
4 (TYPICAL FOR BOXES, CABINETS) CONDUIT GROUND CONNECTION DETAIL
 SCALE: 1"=1'-0"



10 FENCE GROUNDING DETAIL
 SCALE: 1"=1'-0"



9 GATE GROUNDING DETAIL
 SCALE: 1"=1'-0"



8 DETAIL-GROUND CABLE CONNECTION TO GROUND ROD
 SCALE: 1"=1'-0"

NOTES:
 EXOTHERMICALLY WELDED GROUND CONNECTION SHALL BE SIZED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS FOR CABLE SIZE AND ROD USED, AS SHOWN ON PLANS.

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REVISIONS					
DRAWN	P. ALDEN	DATE			
DESIGNED	R. NIZAMOV	DATE			
CHECKED	J. McCUSKER	DATE			
PROJ MGR	J. McCUSKER	DATE			
REQUESTER	N. HSU	DATE			
SAFETY	S. FRANKEL	DATE			
SIZE		CAGE CODE	SCALE AS NOTED		
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SCALE AS NOTED		INDEX	SHEET 1 OF 1		
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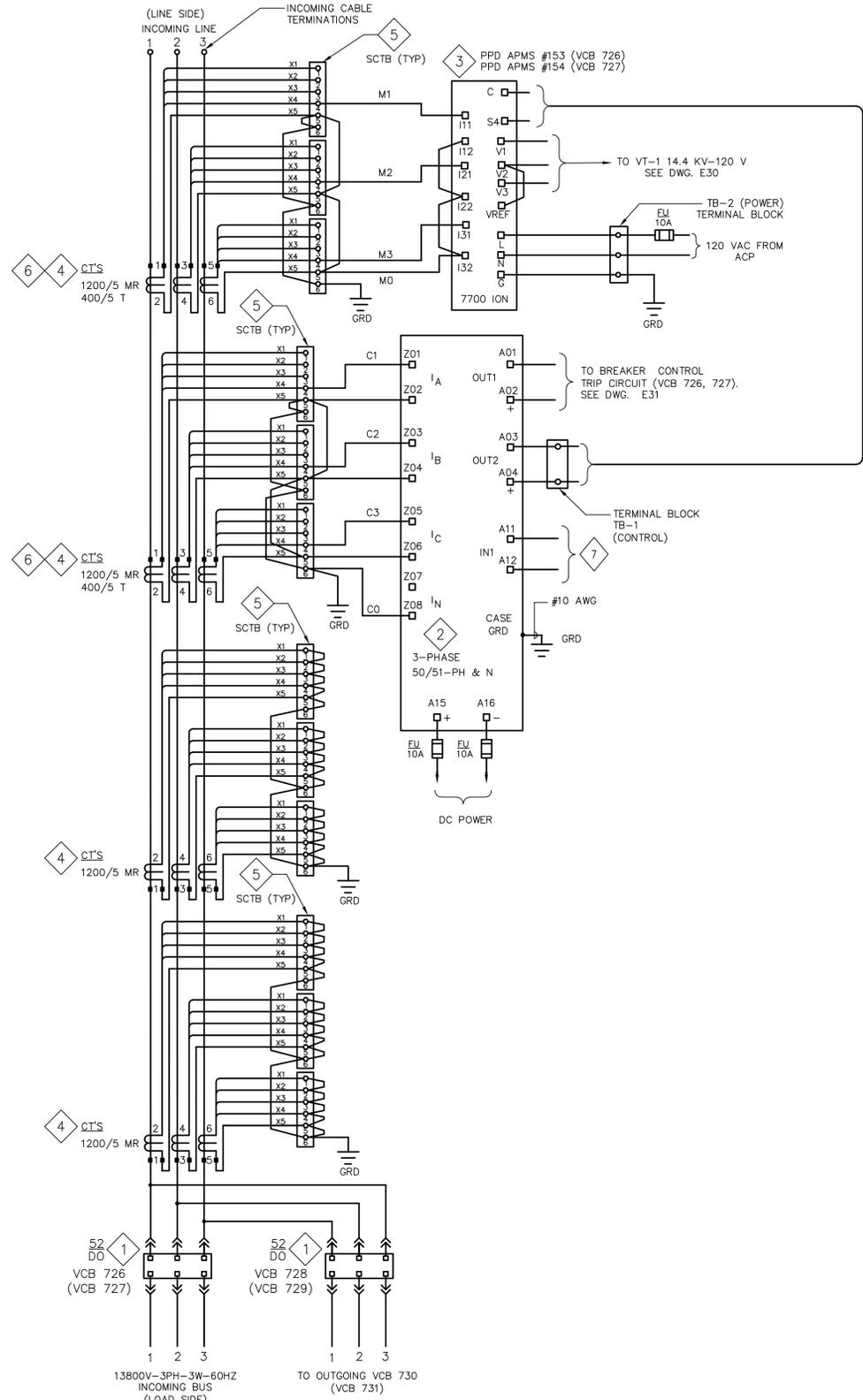
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SHEET NOTES

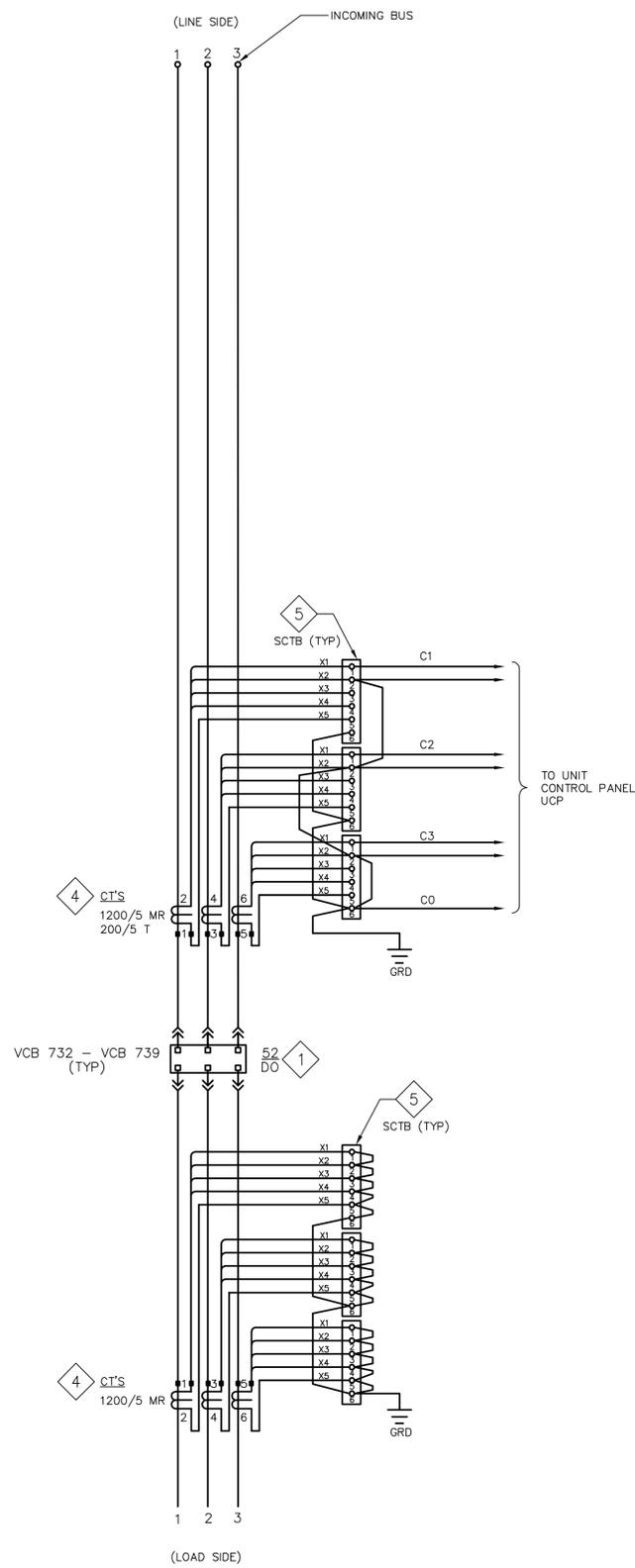
1. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.

KEY NOTES

- 1 PROVIDE NEW 15 KV VACUUM CIRCUIT BREAKER (VCB) AND ACCESSORIES PER SPECIFICATIONS.
- 2 INSTALL NEW (GFE) SEL-551C CONNECTORIZED, DC POWERED PROTECTIVE RELAY.
- 3 INSTALL NEW (GFE) 3 PHASE DIGITAL POWER METERS POWER MANAGEMENT # 10N7550. METERS SHALL BE MOUNTED ON THE FRONT PANEL OF INCOMING VCB 726 AND VCB 727.
- 4 PROVIDE MULTIRATIO WINDOW TYPE CURRENT TRANSFORMERS. ALL CT'S SHALL BE C200 ACCURACY AND WITH CONTINUOUS THERMAL CURRENT RATING FACTOR 2.0 AT 30°C AMBIENT TEMPERATURE.
- 5 PROVIDE HEAVY DUTY SIX-CIRCUIT SHORTING TERMINAL BLOCK (SCTB), BUCHANAN 6HD OR SIMILAR.
- 6 CT SET VCB 726-1 (VCB 727-1). EXACT LOCATION OF THESE CT'S DEPENDS ON THE ACTUAL VCB BUSWORK AND SHALL BE DETERMINED BY RUPS DESIGNER.
- 7 PROVIDE CONNECTION OF SEL-551C TERMINALS A11 AND A12 TO VCB 726 (VCB 727) CONTACTS 52a (BREAKER STATUS).



2 TYPICAL INCOMING (VCB 726 & VCB 727) AND BYPASS (VCB 728 & VCB 729) BREAKERS THREE LINE DIAGRAM
SCALE: N.T.S.



2 TYPICAL UNIT VCB THREE LINE DIAGRAM
SCALE: N.T.S.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN		R.NIZAMOV		DATE	
DESIGNED		R.NIZAMOV		DATE	
CHECKED		J.McCUSKER		DATE	
PROJ.MGR		J.McCUSKER		DATE	
REQUESTER		N.HSU		DATE	
R&QA		J.McCUSKER		DATE	
SAFETY		J.DEHKORDI		DATE	
SUPERVISOR		S.FRANKEL		DATE	
PROTECTION ENGINEER		J.DEHKORDI		DATE	
SIZE	D	CAGE CODE	25307		
SCALE	AS SHOWN		INDEX	SHEET 1 OF 1	
FILE NAME: 258A-E29.DWG 01-30-09					

Ames Research Center
Moffett Field, California

N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II
ELECTRICAL

TYPICAL VCB THREE LINE
DIAGRAM

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 Version: 17.1s (LMS Tech) User: smai
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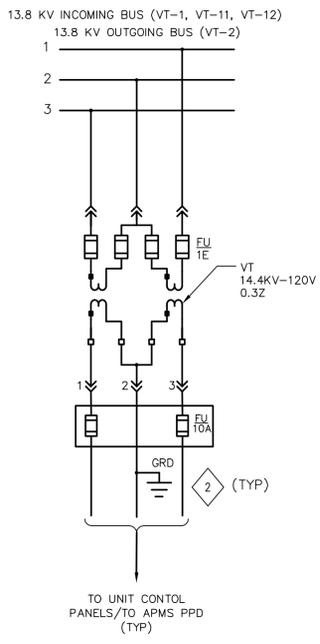
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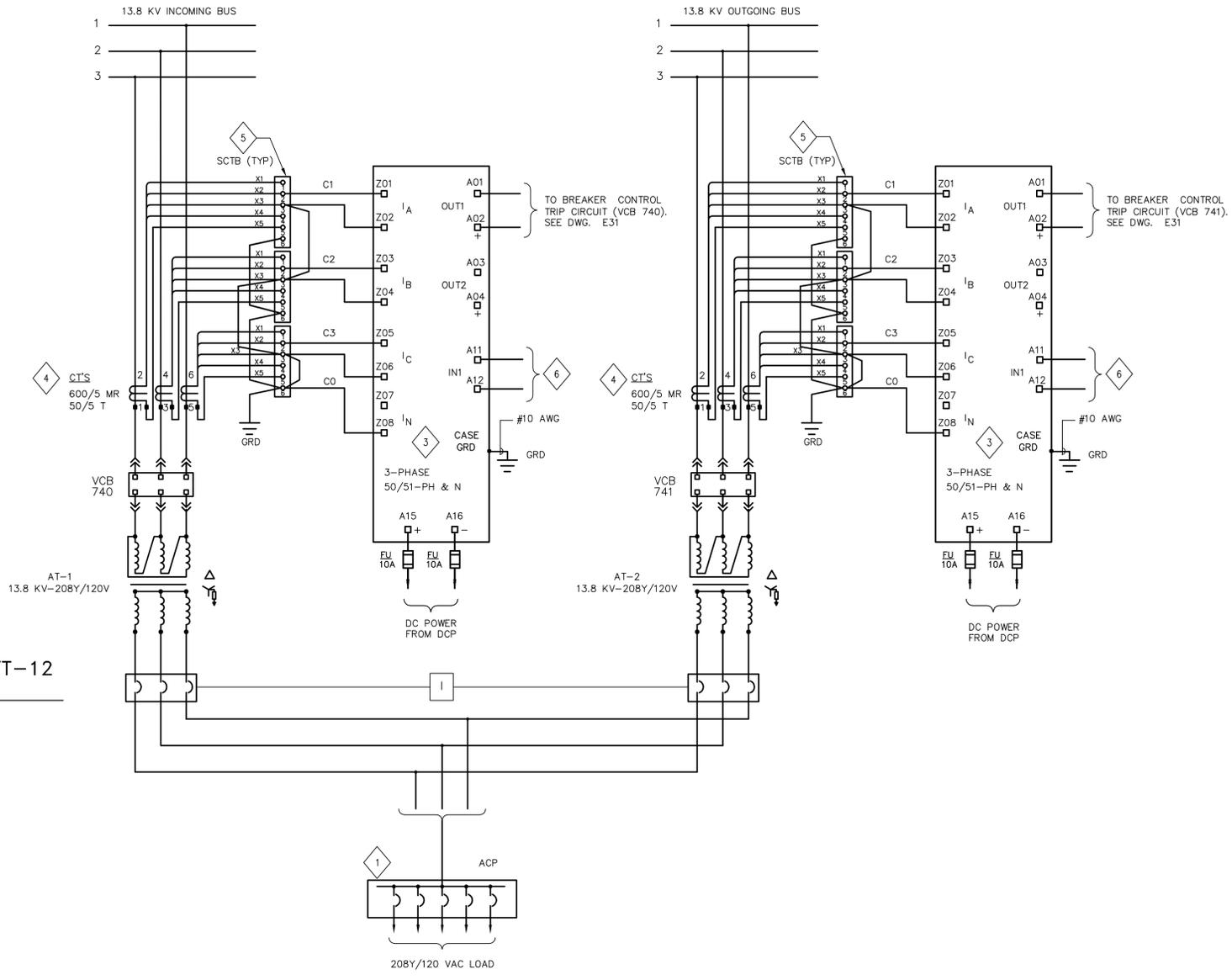
1. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.

KEY NOTES

- 1 ALTERNATE CURRENT PANEL (ACP) NORMALLY SHALL BE POWERED FROM AUXILIARY TRANSFORMER AT-1. BACK-UP POWER SUPPLY FOR ACP SHALL BE PROVIDED FROM AT-2.
- 2 VOLTAGE TRANSFORMER SECONDARY WIRES SHALL NOT BE LESS THAN #12 AWG.
- 3 INSTALL NEW (GFE) SEL-551C CONNECTORIZED, DC POWERED PROTECTIVE RELAY.
- 4 PROVIDE MULTIRATIO WINDOW TYPE CURRENT TRANSFORMERS. ALL CT'S SHALL BE C200 ACCURACY AND WITH CONTINUOUS THERMAL CURRENT RATING FACTOR 2.0 AT 30°C AMBIENT TEMPERATURE.
- 5 PROVIDE HEAVY DUTY SIX-CIRCUIT SHORTING TERMINAL BLOCK (SCTB), BUCHANAN 6HD OR SIMILAR.
- 6 PROVIDE CONNECTION OF SEL-551C TERMINALS A11 AND A12 TO VCB 740 CONTACTS 52a (BREAKER STATUS).



1 TYPICAL VT-1, VT-2, VT-11, AND VT-12 COMPARTMENTS THREE LINE DIAGRAM
SCALE: N.T.S.



2 TYPICAL AUXILIARY TRANSFORMERS THREE LINE DIAGRAM
SCALE: N.T.S.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	R.NIZAMOV	DATE			
DESIGNED	R.NIZAMOV	DATE			
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REQUESTER	N.HSU	DATE			
R&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			
PROTECTION ENGINEER	J.DEHKORDI	DATE			
SIZE	D	CAGE CODE	25307	INDEX	A
SCALE	AS SHOWN	FILE NAME:	258A-E30.DWG	SHEET	1 OF 1

Ames Research Center
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N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II
ELECTRICAL

TYPICAL VT's AND AT's
THREE LINE DIAGRAM

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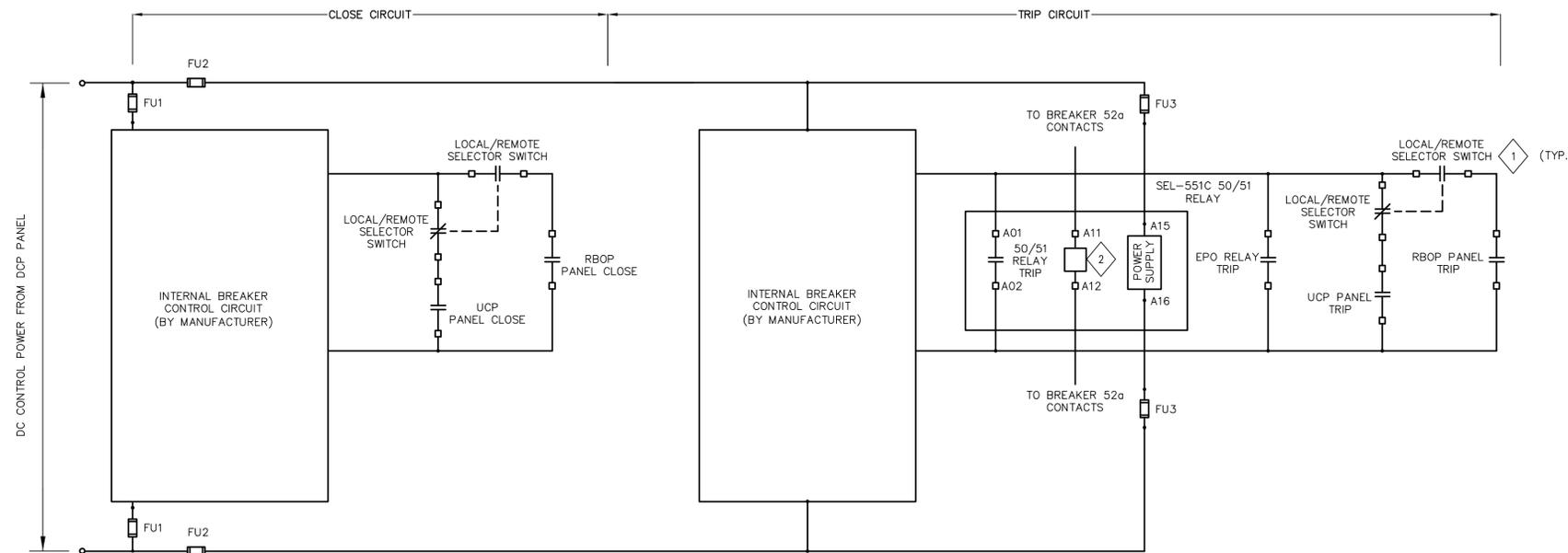
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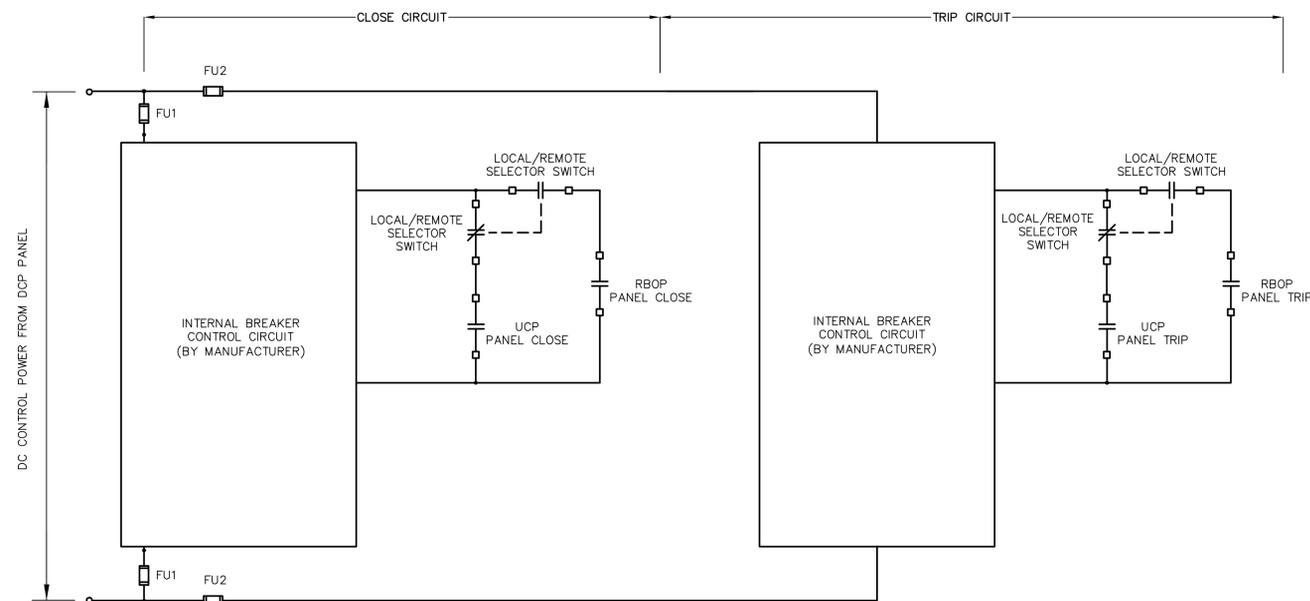
1. LIGHT LINES INDICATE EXISTING CONDITIONS AND DARK LINES INDICATE NEW WORK.
2. SEE DRAWING E1 FOR GENERAL ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS.

KEY NOTES

- 1 LOCAL/REMOTE SELECTOR SWITCHES ARE TYPICALLY LOCATED ON THE CIRCUIT BREAKER COMPARTMENT FRONT DOOR OF THE SWITCHGEAR.
- 2 BREAKER STATUS DISPLAY ON THE SEL-551C SCREEN.



1 TYPICAL INCOMING & OUTGOING VCB CONTROL DIAGRAM
SCALE: N.T.S.



2 TYPICAL RUPS UNIT VCB CONTROL DIAGRAM
SCALE: N.T.S.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	P. ALDEN	DATE			
DESIGNED	R. NIZAMOV	DATE			
CHECKED	J. McCUSKER	DATE			
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REQUESTER	N. HSU	DATE			
R&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S. FRANKEL	DATE			
SIZE	D	CAGE CODE	25307	INDEX	A
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		DATE	03-13-09		

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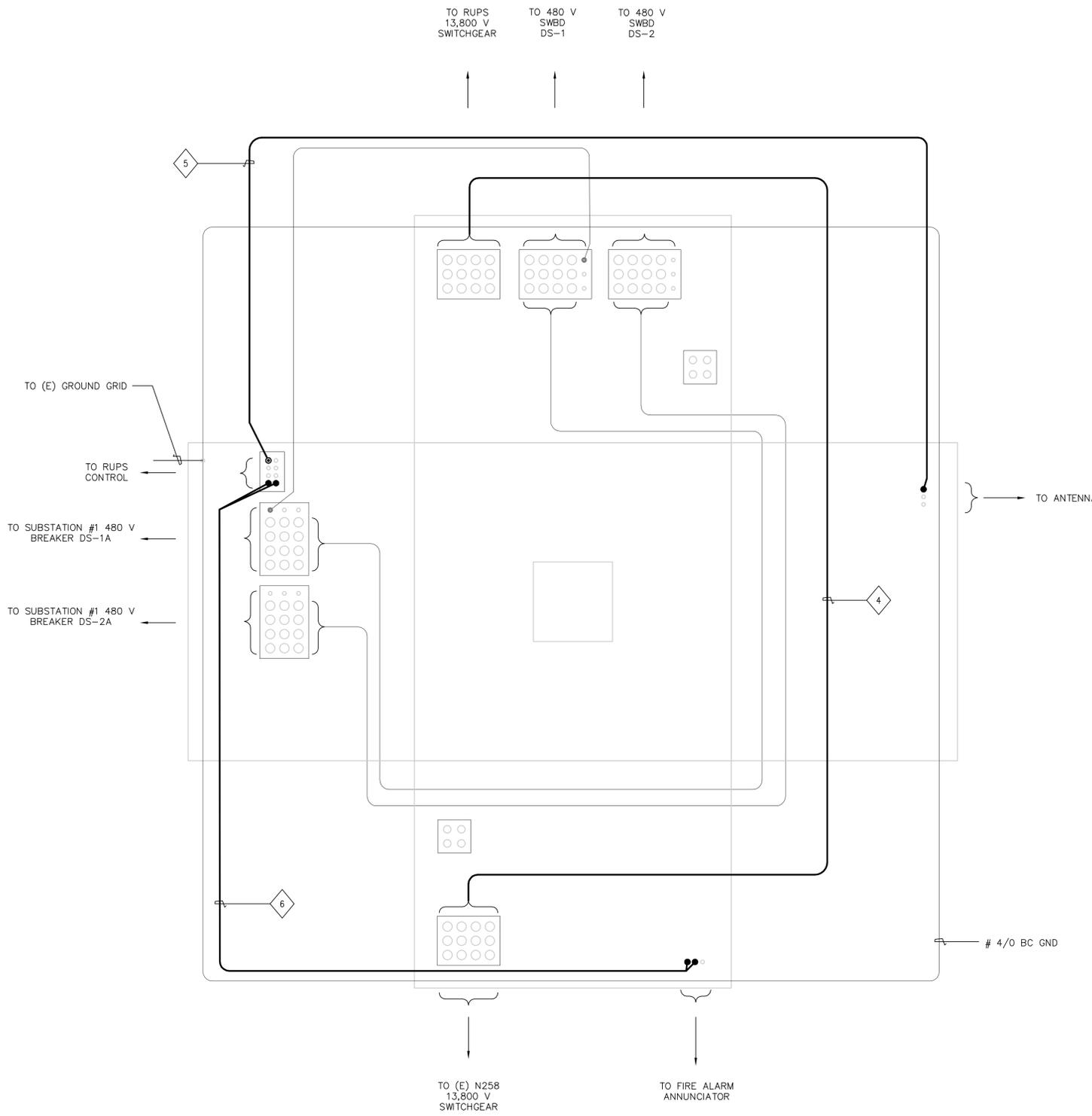
DWG NO. A258A-0701-E32 SH. 1 REV A

SHEET NOTES

1. DARK LINES INDICATE NEW INSTALLATION, LIGHT LINES REPRESENT FUTURE CABLE INSTALLATION.

KEY NOTES

- 1 NOT USED.
- 2 NOT USED.
- 3 NOT USED.
- 4 PROVIDE 7 SETS OF 3-1/C-500KCMIL & #4/0 GND, 13.8KV, EPR, 133% INSULATION CABLES. SEE SHEET NOTE 3 ON E3 SHEET 1 FOR ADDITIONAL DETAILS.
- 5 PROVIDE RG-8/X COAXIAL CABLE.
- 6 PROVIDE CONTROL CABLES TO FSA/EPO.
- 7 NOT USED.
- 8 NOT USED.



1 MANHOLE MHE 234 MODIFICATIONS
 E3 E32 SCALE: NTS

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					
DRAWN	P. ALDEN	DATE			
DESIGNED	R. NIZAMOV	DATE			
CHECKED	J. McCUSKER	DATE			
PROJ MGR	J. McCUSKER	DATE			
REQUESTER	N. HSU	DATE			
R&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S. FRANKEL	DATE			
SIZE	D	CAGE CODE	25307	INDEX	FILE NAME: 258A-E32.DWG
SCALE	AS SHOWN	INDEX		SHEET	1 OF 1

Ames Research Center
 Moffett Field, California

N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II
 ELECTRICAL

MHE 234 MODIFICATIONS

DATE: 01-30-09

DWG: P:\ARE\258A\N258 Electrical\Supply Reliability Improvement\500_CAD\Sheet\258A-E32.DWG
 DATE: Apr 06, 2010 - 12:33:43 pm
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GENERAL NOTES

- 1. DESIGN AND INSTALLATION OF FIRE PROTECTION AND FIRE ALARM SYSTEMS SHALL CONFORM TO NFPA 750, NFPA 2001, NFPA 72, NEC, AND SPECIFIED HEREIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR APPROVAL FOR ALL AREAS INDICATED. WORK SHALL NOT COMMENCE UNTIL DRAWINGS AND CALCULATIONS ARE APPROVED BY NASA

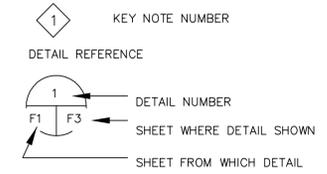
FIRE SUPPRESSION FOR THE SWITCHGEAR ENCLOSURE

- 1. THE SYSTEM DESIGN SHALL USE TOTAL COMPARTMENT PROTECTION APPROACH. SWITCHGEAR ENCLOSURE SHALL BE PROTECTED BY ITS DEDICATED CLEAN AGENT FIRE SUPPRESSION SYSTEM. THE SYSTEM SHALL BE ASSEMBLED AND TESTED AND SHALL INCLUDE ALL NECESSARY VALVES, ACTUATION COMPONENTS FOR SYSTEM OPERATION AND A WATER STORAGE TANK MOUNTED ON A SINGLE SKID INSIDE THE ENCLOSURE.

ABBREVIATIONS

Table with 2 columns: Abbreviation and Description. Includes entries like AFF (ABOVE FINISHED FLOOR), A.S. (AUTOMATIC SPRINKLER SYSTEM WET PIPE), BLDG (BUILDING), etc.

DRAWING CONVENTIONS



FIRE SUPPRESSION FOR THE ROTARY UNINTERRUPTIBLE POWER SUPPLY (RUPS) ENCLOSURE, TOTAL OF FOUR (4)

- 1. THE SYSTEM DESIGN SHALL USE TOTAL COMPARTMENT PROTECTION APPROACH. EACH RUPS ENCLOSURE SHALL BE PROTECTED BY A DEDICATED WATER MIST FIRE SUPPRESSION SYSTEM. THE SYSTEM SHALL BE ASSEMBLED AND TESTED AND SHALL INCLUDE ALL NECESSARY VALVES, ACTUATION COMPONENTS FOR SYSTEM OPERATION AND A WATER STORAGE TANK MOUNTED ON A SINGLE SKID INSIDE THE ENCLOSURE.

CODES AND REFERENCES

- ALL WORK SHALL BE IN ACCORDANCE WITH THE CODES AND STANDARDS LISTED IN NASA APD 8829.1 INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING: ASCS, APR 1700.1, ADAAG, etc.

Table with columns: ZONE, LETTER, DESCRIPTION, DRAWN, DATE, APPRVD. Includes a REVISIONS table and a title block for Ames Research Center.

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DWG NO. A258A-0701-F2 SH. REV

SHEET NOTES

- 1. LIGHT LINES INDICATE EXISTING CONDITIONS AND DARK LINES INDICATE NEW WORK.
- 2. REFER TO SPECIFICATION SECTION 263233.0010 FOR RUPS UNIT AND SWITCHGEAR ENCLOSURE FIRE SUPPRESSION AND FIRE ALARM REQUIREMENTS.
- 3. ALL NEW EQUIPMENT ON THIS DRAWING ARE BASE BID ITEMS, UON.

KEY NOTES

- 1 DESIGN PROVIDE AND INSTALL WATER MIST FIRE SUPPRESSION SYSTEM WITH SELF CONTAINED WATER TANK FOR ALL OF THE RUPS UNIT ENCLOSURES AS PER SPECIFICATIONS AND NFPA 750.
- 2 TYPICAL WATER MIST FIRE SUPPRESSION PIPING. CONTRACTOR TO DESIGN AND LAYOUT ACTUAL LOCATIONS, QUANTITY AND TYPE OF NOZZLES.
- 3 DESIGN, PROVIDE AND INSTALL CLEAN AGENT FIRE SUPPRESSION SYSTEM FOR THE SWITCHGEAR ENCLOSURE AS PER SPECIFICATIONS AND NFPA 2001.
- 4 PROVIDE AND INSTALL ONE 40-BC PORTABLE FIRE EXTINGUISHER INSIDE EACH OF THE FOUR RUPS UNIT ENCLOSURES AND TWO IN THE SWITCHGEAR ENCLOSURE.
- 5 LOCATION OF SKID MOUNTED SELF-CONTAINED WATER MIST FIRE SUPPRESSION PACKAGE SYSTEM.
- 6 LOCATION OF SKID MOUNTED CLEAN AGENT FIRE SUPPRESSION PACKAGE SYSTEM.
- 7 NOT USED.
- 8 OPTION #1.
- 9 OPTION #2.

1
 FIRE SUPPRESSION INSTALLATION PLAN
 SCALE: 1/4" = 1'-0"



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 DATE: Apr 08, 2010 - 12:15:32 pm

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DESIGNED	P.WAN	DATE			
CHECKED	J.LEUNG	DATE			
PROJ.MGR	J.McCUSKER	DATE			
REQUESTER	N.HSU	DATE			
SUPV	R&QA	DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			
SIZE	D	CAGE CODE	25307	INDEX	SCALE AS SHOWN
		FILE NAME:	258A-0701-F2		
		SHEET	1	OF	1

Ames Research Center
 Moffett Field, California

N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II
 FIRE SUPPRESSION

PROPOSED FIRE SUPPRESSION
 INSTALLATION PLAN

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DWG NO. A258A-0701-G1 SH. REV

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER

BUILDING 258
NASA ADVANCED SUPERCOMPUTING FACILITY
ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT
PHASE IB AND PHASE II
BASE BID WITH OPTIONS #1 & #2

SCOPE OF WORK

BASE BID:

1. PROVIDE INFRASTRUCTURE, SWITCHGEAR AND SUPPORT EQUIPMENT IN AN OUTDOOR ENCLOSURE FOR 4 RUPS UNITS.
2. DEMOLISH EXISTING FEEDERS BETWEEN MANHOLE MHE219 AND THE N258 SWITCHGEAR.
3. PROVIDE MEDIUM VOLTAGE FEEDER CABLES AND INSTALL GFE MEDIUM VOLTAGE FEEDER CABLES.
4. PROVIDE POWER AND CONTROLS INTERCONNECTION WIRING TO ADJACENT BUILDING, N258.
5. PROVIDE LIGHTING, AIR CONDITIONING, FIRE PROTECTION, FIRE ALARM, GRAPHIC ANNUNCIATOR AND EMERGENCY POWER OFF SWITCH.
6. INSTALL GFE PROTECTIVE RELAYS, POWER METERS, TRANSCEIVER AND ANTENNA.
7. PROVIDE CONCRETE FILL PADS, ACCESS RAMPS AND STAIRS.
8. PROVIDE AND INSTALL 2 RUPS UNITS.
9. TEST, STARTUP AND COMMISSION THE SYSTEM.

OPTION 1:

1. PROVIDE ONE RUPS UNIT WITH OUTDOOR ENCLOSURE AND BASE FUEL STORAGE TANK.

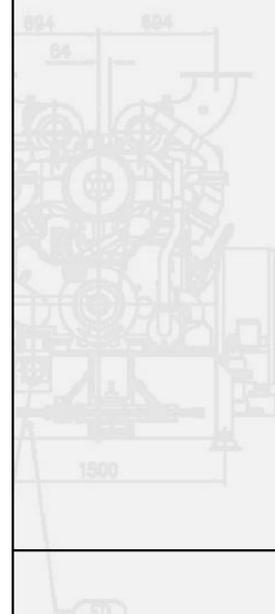
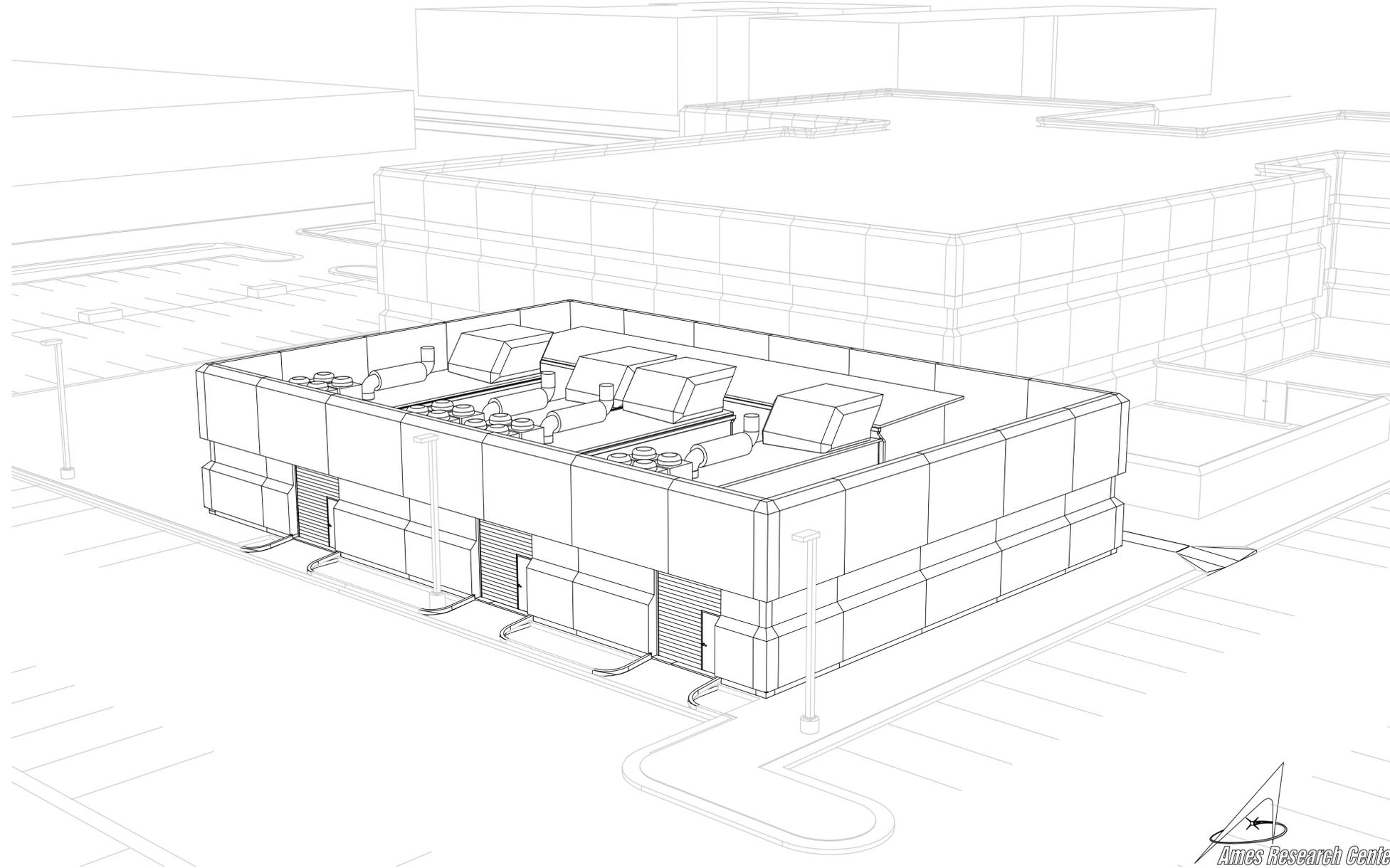
OPTION 2:

1. PROVIDE A SECOND RUPS UNIT WITH OUTDOOR ENCLOSURE AND BASE FUEL STORAGE TANK.

NOTES:

1. SCOPE OF WORK PROVIDED HERE IS FOR REFERENCE ONLY. REFER TO DRAWINGS AND SPECIFICATIONS FOR SPECIFIC SCOPE OF WORK.
2. SEE SHEET G4 FOR PROJECT DRAWING LIST.

R O T A R Y U N I N T E R R U P T I B L E P O W E R S U P P L Y



Total mass approx. : 21650 kg.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					

DRAWN P. ALDEN	DATE	 Ames Research Center Moffett Field, California
DESIGNED P. ALDEN	DATE	
CHECKED J. McCUSKER	DATE	
PROJ MGR J. McCUSKER	DATE	
REQUESTER N. HSU	DATE	
R&QA	DATE	
SAFETY	DATE	
SUPERVISOR S. FRANKEL	DATE	
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INDEX	SHEET	

TITLE SHEET

SIZE D	CAGE CODE 25307	FILE NAME: 258A-0701-G1	REV 1
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FILE NAME:
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DATE: Apr 08, 2010 - 12:05:01 pm
Version: 17.1s (LMS Tech) User: smai

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DWG NO. A258A-0701-G2

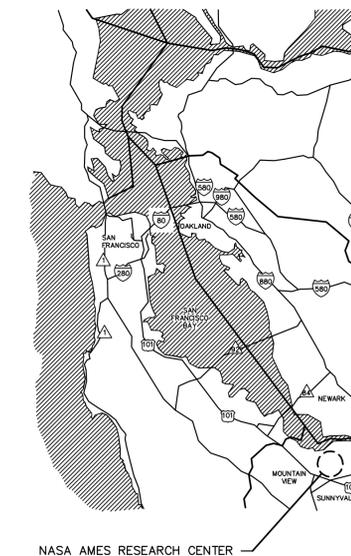
SH. REV

LOCATION MAP

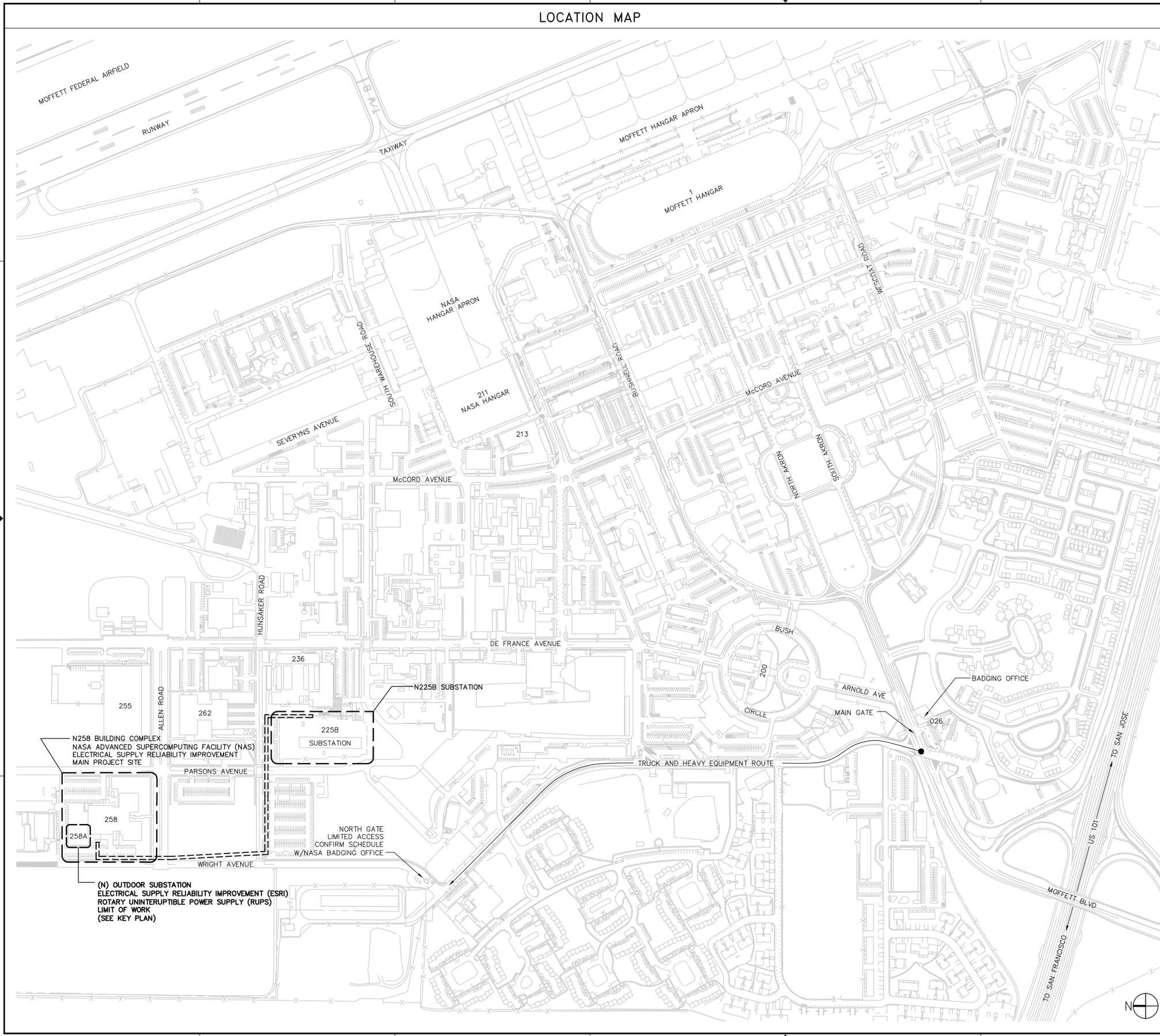
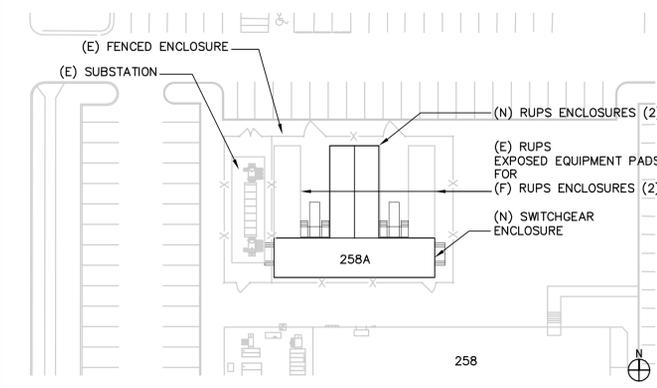
PROJECT TITLE

BUILDING 258
ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT
BASE BID WITH OPTIONS #1 & #2

VICINITY MAP



KEY PLAN



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FILE NAME: 258A-G02.DWG 01-30-09

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Version: 17.1s (LMS Tech) User: smai
DATE: Apr 08, 2010 - 12:05:44 pm

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DESIGNED		P. ALDEN	DATE		
CHECKED		J. McCUSKER	DATE		
PROJ MGR		J. McCUSKER	DATE		
REQUESTER		N. HSU	DATE		
SAFETY		R & QA	DATE		
SUPERVISOR		S. FRANKEL	DATE		
SIZE	CAGE CODE	REV			
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Ames Research Center
Moffett Field, California

N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE I B AND PHASE II GENERAL

LOCATION PLAN

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GENERAL NOTES

DEMOLITION NOTES

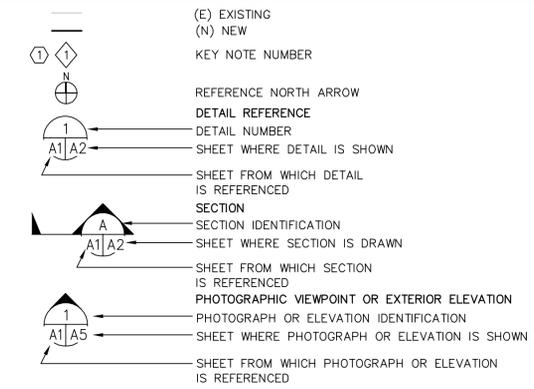
HEALTH, SAFETY AND ENVIRONMENTAL REQUIREMENTS

GENERAL SYMBOLS

- 1. THIS PROJECT HAS BEEN DESIGNED COMPLETELY IN ENGLISH UNITS. ALL INSPECTIONS WILL TAKE PLACE IN ENGLISH DIMENSIONS. SHOP DRAWINGS MUST BE SUBMITTED WITH ENGLISH DIMENSIONS UNLESS OTHERWISE DIRECTED BY THE CONTRACTING OFFICER (COTR).

- 1. THE CONTRACTOR SHALL PROVIDE DEMOLITION DETAILS BASED ON HIS/HER APPROVED DESIGN.

- 1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF CAL-OSHA, FED-OSHA, CAL-EPA, FED-EPA, SANTA CLARA COUNTY, THE BAAQMD (BAY AREA AIR QUALITY MANAGEMENT DISTRICT), THE RWQCB (REGIONAL WATER QUALITY CONTROL BOARD) AND THE SWPPP (STORM WATER POLLUTION PREVENTION PLAN).



QUALITY CONTROL

THE CONSTRUCTION INSPECTIONS LISTED ARE IN ADDITION TO THE INSPECTIONS REQUIRED BY CBC SECTION 108. SPECIALLY INSPECTED WORK THAT IS INSTALLED OR COVERED WITHOUT THE APPROVAL OF THE BUILDING OFFICIAL AND THE SPECIAL INSPECTOR, IS SUBJECT TO REMOVAL OR EXPOSURE.

CODES AND STANDARDS

ALL DESIGN CONSTRUCTION WORK SHALL BE IN ACCORDANCE WITH THE CODES LISTED IN APD 8829.1 AVAILABLE ON-LINE AT: "HTTP://SERVER-MPO.ARC.NASA.GOV/SERVICES/CDMSDOCS/CENTERS/ARC/DIRS/APU/8829.1.HTML" INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

Table with columns: ZONE, LETTER, DESCRIPTION, DRAWN, DATE, APPRVD

Revisions table and Ames Research Center logo with project name: N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II GENERAL

General notes table with columns: SIZE, CAGE CODE, INDEX, SHEET, OF

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Version: 17.1s (LMS Tech) User: smai

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RUPS SWITCHGEAR E101 HVAC GENERAL NOTES

- 1. BUILDING INSULATION: THE BUILDING SHALL BE INSULATED PER CALIFORNIA 2007 BUILDING ENERGY EFFICIENCY STANDARDS.
2. HVAC SYSTEM: ROOF TOP PACKAGED HEAT PUMP MEETING THE ENERGY EFFICIENCY REQUIREMENT OF CALIFORNIA 2007 BUILDING ENERGY EFFICIENCY STANDARDS SECTION 112 AND NASA AMES SANDARD CONSTRUCTION SPECIFICATION.
3. REFRIGERANT: NON-OZONE DEPLETING TYPE
4. DESIGN CONDITION: OUTSIDE: SUMMER 93 FDB/67 FWB; WINTER 33 FDB INSIDE: SUMMER 78 FDB/75% RH MAX; WINTER 68 FDB
5. DUCTWORK: PROVIDE DUCTWORK FOR AIR DISTRIBUTION. THE DUCTWORK SHALL BE LOW VELOCITY DESIGN USING NOT MORE THAN 0.08 INCH OF WATER PER 100 FEET OF DUCT.
6. VENTILATION: PER CALIFORNIA 2007 BUILDING ENERGY EFFICIENCY STANDARDS SECTION 121.
7. AIR FILTERS: THROWAWAY REMOVABLE WITHOUT USE OF TOOLS AND SHALL FILTER BOTH RE-CIRCULATED AND VENTILATING AIR.
8. TEMPERATURE CONTROL AND MONITORING: INSTALL WALL MOUNTED LOW VOLTAGE TYPE THERMOSTAT MEETING THE REQUIREMENT OF CALIFORNIA 2007 BUILDING ENERGY EFFICIENCY STANDARDS SECTION 122. THE THERMOSTAT SHALL BE ELECTRONIC TYPE WITH MANUAL MEANS FOR TEMPERATURE SET BACK.
9. INSTALL TWO DDC TYPE TEMPERATURE SWITCHES WITH ADJUSTABLE SET POINT IN THE ROOM FOR HIGH TEMPERATURE ALARM. CONNECT THE SWITCH TO THE EXISTING FMCS IN THE BUILDING 258 MECHANICAL ROOM. SEE AMES STANDARD CONSTRUCTION SPECIFICATION FOR SPECIFICATION.
10. DUCTWORK SHALL MEET THE REQUIREMENT OF CALIFORNIA MECHANICAL CODE AND SMACNA DUCT CONSTRUCTION STANDARDS.
11. DUCTWORK AND EQUIPMENT SUPPORTS SHALL BE IN A CCORDANCE WITH SMACNA SEISMIC RESTRAINT MANUAL WITH SHL'A.

SUBMITTALS

- SUBMIT DESIGN-BUILD SHOP DRAWINGS AND THE FOLLOWING SUBMITTALS TO NASA FOR APPROVAL BEFORE START OF CONSTRUCTION:
1. CALIFORNIA TITLE 24 ENERGY CALCULATION
2. COOLING AND HEATING LOAD CALCULATION
3. AIR CONDITIONING UNIT (ACU-1)
4. MOUNTING DETAILS FOR ACU-1 ON ROOF WITH ROOF CURB
5. TYPICAL DUCTWORK SUPPORT MEETING SMACNA REQUIREMENT
6. THERMOSTAT
THE FOLLOWING SUBMITTALS ARE FOR INFORMATION ONLY:
1. O&M MANUAL

RUPS SWITCHGEAR E101 TITLE 24 COMPLIANCE SPECIFICATIONS

- 1. CERTIFY THAT MECHANICAL SYSTEMS INSTALLATION MEETS ACCEPTANCE REQUIREMENTS FOR CODE COMPLIANCE, PER TITLE 24 SECTION 125. CERTIFICATIONS SHALL INCLUDE: DUCT WORK AND PLENUMS PER SECTION 124(g) THROUGH 124(f) ECONOMIZERS PER SECTION 144(e)
2. BEFORE OCCUPANCY PERMIT IS GRANTED, SUBMIT CERTIFICATES OF ACCEPTANCE PER SECTIONS 121, 122 AND 125 TO NASA ARC PERMIT REVIEW BOARD.

CODES AND REFERENCES

ALL WORK SHALL BE IN ACCORDANCE WITH THE CODES AND STANDARDS LISTED IN NASA APD 8829.1 INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
ASCS NASA AMES STANDARD CONSTRUCTION SPECIFICATIONS
APR 1700.1 NASA AMES HEALTH AND SAFETY MANUAL (AVAILABLE FOR REFERENCE)
ADAAG AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (LATEST EDITION)
CBC 2007 CALIFORNIA BUILDING CODE
CFC 2007 CALIFORNIA FIRE CODE
CMC 2007 CALIFORNIA MECHANICAL CODE
CPC 2007 CALIFORNIA PLUMBING CODE
CEC 2007 CALIFORNIA ELECTRIC CODE (1999 NEC WITH CALIFORNIA AMENDMENTS)
TITLE-24 CALIFORNIA STATE BUILDING CODE ACCESSIBILITY STANDARDS (LATEST EDITION)
UFAS UNIFORM FEDERAL ACCESSIBILITY STANDARDS (LATEST EDITION)
SMACNA SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (LATEST EDITION)
BAAQMD BAY AREA AIR QUALITY MANAGEMENT DISTRICT RULES AND REGULATIONS
CARB CALIFORNIA AIR RESOURCES BOARD CALIFORNIA AIR RESOURCES BOARD AIRBORNE TOXIC CONTROL MEASURES FOR STATIONARY COMPRESSION IGNITION ENGINES

ABBREVIATIONS (NOT ALL ABBREVIATIONS HAVE BEEN USED)

Table with 4 columns: Abbreviation, Description, Abbreviation, Description. Includes entries like ACM ASBESTOS CONTAINING MATERIAL, AHU AIR HANDLING UNIT, AMP AMPERE, etc.

SYMBOLS

Table with 2 columns: Symbol, Description. Includes symbols for UNLINED DUCTWORK, SUPPLY DUCT DOWN, RETURN DUCT DOWN, CEILING SUPPLY AIR DIFFUSER, KEY NOTE IDENTIFIER, POINT OF CONNECTION, etc.

Revision table and title block containing project name 'Ames Research Center', drawing title 'MECHANICAL NOTES, SYMBOLS AND ABBREVIATIONS', and drawing number '258A-0701-M1'.

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DWG NO. A258A-0701-M3 SH. REV

SHEET NOTES

- 1. SEE DRAWING M1 FOR GENERAL MECHANICAL NOTES, SYMBOLS AND ABBREVIATIONS.
- 2. REFER TO SPECIFICATION 263233.0010 FOR RUPS UNIT AND SWITCHGEAR ENCLOSURE REQUIREMENTS
- 3. ALL NEW EQUIPMENT ON THIS DRAWING ARE BASE BID ITEMS, UON.

KEY NOTES

- 1 LOCATION FOR MAIN BASE TANK FUEL SUPPLY FILL PORT. FUEL FILL PORT SHALL HAVE A LOCKABLE MANUAL FUEL FILL CAP AND SHALL ACCOMMODATE STANDARD 1" DIAMETER DIESEL FUEL FILL TRUCK NOZZLE. A SPILL LIP SHALL BE INSTALLED AROUND THE FUEL FILL PORT.
- 2 LOCATION OF VENTILATION FAN FOR RUPS UNIT.
- 3 SUPPLY AIR DUCT FROM ACU 1 ON ROOF. FOR CONT. SEE M4
- 4 PROVIDE DUCTWORK FOR AIR DISTRIBUTION.
- 5 RETURN AIR DUCT TO ACU 1 ON ROOF. FOR CONT. SEE M4
- 6 NOT USED.
- 7 LOCATION OF AIR OUTLET FOR RUPS UNIT. GENERATOR END OF ENCLOSURES TO CONTAIN ELECTRICALLY OPERATED AIR OUTLET LOUVERS FOR RAIN-PROTECTION WITH BIRD SCREEN, SIZED FOR THE MAXIMUM AIR EXHAUST BY THE VENTILATION FAN(S) DURING DIESEL OPERATION. ALL AIR EXHAUST OPENINGS SHALL BE PROTECTED FROM RAIN INTRUSION WITH METAL LOUVERS.
- 8 (E) 1" ICW ROUTED UNDERGROUND FROM (E) IRRIGATION BACKFLOW PREVENTER, PROTECT FROM DAMAGE.
- 9 NOT USED.
- 10 OPTION #1.
- 11 OPTION #2.

ZONE	LETTER	DESCRIPTION	DRAWN	DATE	APPRVD
REVISIONS					

DRAWN J.RUFFO	DATE	 Ames Research Center Moffett Field, California N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II MECHANICAL PROPOSED MECHANICAL RUPS UNIT FLOOR PLAN	
DESIGNED P.WAN	DATE		
CHECKED J.LEUNG	DATE		
PROJ.MGR J.McCUSKER	DATE		
REQUESTER N.HSU	DATE		
TR&QA	DATE		
SAFETY	DATE		
SUPERVISOR S.FRANKEL	DATE		
SIZE D	CAGE CODE 25307		INDEX
SCALE AS SHOWN	FILE NAME: 258A-M03.DWG		SHEET OF

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MECHANICAL RUPS UNIT FLOOR PLAN SCALE: 1/4" = 1'-0"



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DWG NO. A258A-0701-M4

SH. REV

SHEET NOTES

- 1. SEE DRAWING M1 FOR GENERAL MECHANICAL NOTES, SYMBOLS AND ABBREVIATIONS.
- 2. REFER TO SPECIFICATION 263233.0010 FOR RUPS UNIT AND SWITCHGEAR ENCLOSURE REQUIREMENTS.
- 3. ALL NEW EQUIPMENT ON THIS DRAWING ARE BASE BID ITEMS, UON.

KEY NOTES

- 1 LOCATION OF HEAT EXCHANGER/RADIATOR FOR DIESEL ENGINE COOLING SYSTEM. RADIATOR IS MOUNTED AND SUPPORTED ON TOP OF RUPS UNIT ENCLOSURE.
- 2 LOCATION OF AIR INLET TO RUPS UNIT. AIR INLET SCOOP ON TOP OF RUPS ENCLOSURE TO CONTAIN ELECTRICALLY OPERATED AIR INLET LOUVERS FOR RAIN PROTECTION WITH BIRD SCREEN. SIZE FOR THE MAXIMUM AIR DRAWN BY THE VENTILATION FAN(S) DURING DIESEL OPERATION. ALL AIR INLET AND EXHAUST OPENINGS SHALL BE PROTECTED FROM RAIN INTRUSION WITH METAL LOUVERS.
- 3 LOCATION OF DIESEL ENGINE EXHAUST MUFFLER AND EXHAUST STACK. MAXIMUM HEIGHT OF EXHAUST STACK NOT TO EXCEED MAXIMUM HEIGHT OF PERIMETER WALL. MINIMUM HEIGHT SHALL BE 22'-0" ABOVE GRADE.
- 4 RUPS UNIT ENCLOSURE, TYP. 2 PLACES
- 5 THERMOSTATICALLY CONTROLLED ROOF TOP PACKAGED UNIT MOUNTED ON ROOF CURB.
- 6 NOT USED.
- 7 OPTION #1.
- 8 OPTION #2.

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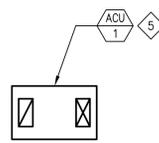
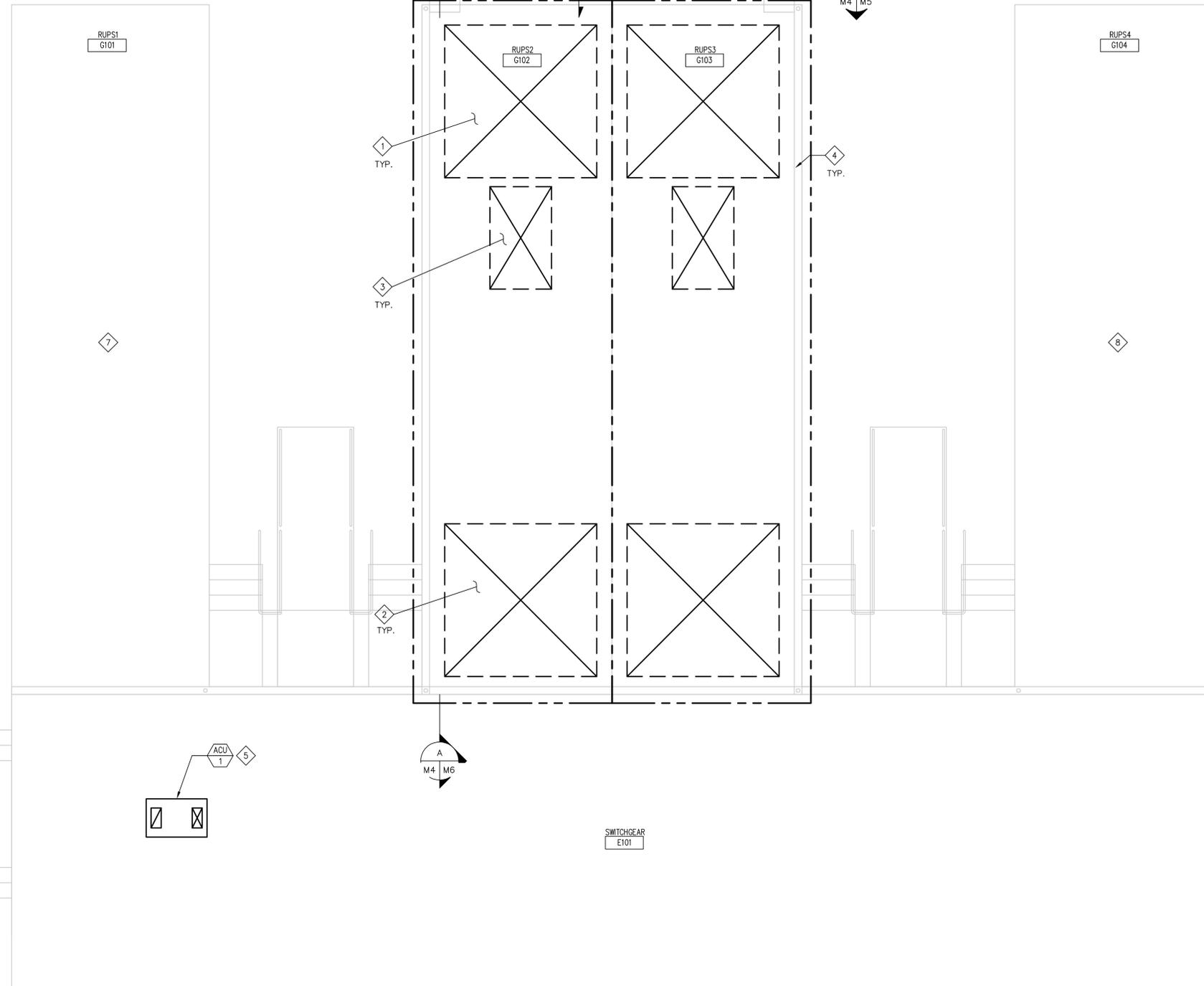
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SWITCHGEAR E101

MECHANICAL RUPS UNIT ROOF PLAN
 SCALE: 1/4" = 1'-0"



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REVISIONS					

DRAWN	J.RUFFO	DATE	
DESIGNED	P.WAN	DATE	
CHECKED	J.LEUNG	DATE	
PROJ.MGR	J.McCUSKER	DATE	
REQUESTER	N.HSU	DATE	
TR&QA	R&QA	DATE	
SAFETY		DATE	
SUPERVISOR	S.FRANKEL	DATE	

Ames Research Center
 Moffett Field, California

N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE IB AND PHASE II
 MECHANICAL

PROPOSED MECHANICAL RUPS UNIT ROOF PLAN

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STRUCTURAL NOTES

- 1. ALL WORK AND MATERIALS SHALL CONFORM TO THE 2007 CALIFORNIA BUILDING CODE.
2. ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND ALL OTHER DRAWINGS RELATING TO THE WORK.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION.
4. EMBEDDED ITEMS SUCH AS PIPES, INSERTS, SLEEVES AND CONDUITS, AND ANY RECESSES OR OPENINGS REQUIRED FOR UTILITY, ARCHITECTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
5. NO PIPES OR SLEEVES FOR MECHANICAL, ELECTRICAL OR PLUMBING TRADES SHALL PASS THROUGH STRUCTURAL MEMBERS, UNLESS SHOWN ON STRUCTURAL DRAWINGS, WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
6. SEWER AND UTILITY LINES ARE NOT INDICATED ON STRUCTURAL DRAWINGS. REFER TO CIVIL, PLUMBING AND ELECTRICAL DRAWINGS FOR THEIR LOCATION, PROFILE AND DETAILS.
7. SEE ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS FOR WALL OPENINGS, SLAB DEPRESSIONS, TRENCHES ETC. NOT SHOWN ON THE STRUCTURAL DRAWINGS.
8. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISH STRUCTURE.
9. THE CONSTRUCTION PRACTICE, ADEQUACY AND SAFETY OF TEMPORARY BRACING, SHORING, SUPPORTS, ETC. SHALL REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

FOUNDATION

- 1. FOUNDATION DESIGN SHALL BE BASED ON THE GEOTECHNICAL EVALUATION PREPARED BY FUGRO WEST INC. DATED JULY 2007 A COPY OF THIS REPORT WILL BE PROVIDED BY CONTRACTING OFFICER TO THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE RECOMMENDATIONS OF THIS REPORT.
2. ALLOWABLE BEARING PRESSURE FOR FOLLOWING LOAD CONDITIONS

FOR SPREAD FOOTINGS

Table with 2 columns: LOAD CONDITION, ALLOWABLE BEARING PRESSURE (PSF). Rows include DEAD LOAD (3000), DEAD PLUS LIVE LOAD (4500), TOTAL LOAD INCL. WIND OR SEISMIC (6000).

FOR MAT FOOTING

Table with 2 columns: LOAD CONDITION, ALLOWABLE BEARING PRESSURE (PSF). Rows include DEAD LOAD PLUS SUSTAINED LIVE LOAD (1500), DEAD PLUS TRANSIENT LIVE LOAD (2250), TOTAL LOAD INCLUDING WIND OR SEISMIC (3000).

- 3. FOOTINGS LOCATED ADJACENT TO OTHER FOOTINGS OR UTILITY TRENCHES SHOULD BEAR BELOW AN IMAGINARY 1.5:1 (HORIZONTAL TO VERTICAL) PLANE PROJECTED UPWARD FROM THE BOTTOM EDGE OF THE ADJACENT FOOTINGS OR UTILITY TRENCH.

CONCRETE

- 1. ALL PHASES OF WORK PERTAINING TO CONCRETE CONSTRUCTION SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318 AND WITH MODIFICATIONS AS NOTED IN THE CONTRACT DOCUMENTS.
2. UNLESS NOTED OTHERWISE ON THE DRAWINGS OR SPECIFICATIONS, ALL STRUCTURAL CONCRETE SHALL BE HARD ROCK - 145 #/CU.FT., AND SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: ALL CONCRETE----- 4000 PSI.
3. ALL CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNIZED TESTING LABORATORY, SHALL BE STAMPED AND SEALED BY A LICENSED CALIFORNIA CIVIL ENGINEER AND SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO PLACING CONCRETE.
4. COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD.
5. AGGREGATES IN NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C-33.
6. PORTLAND CEMENT : TYPE II (UNO) FOR ALL CONCRETE CONFORMING TO ASTM C150, LOW ALKALI, MILL TESTED WITH CERTIFICATES OF COMPLIANCE REQUIRED.
7. CONCRETE MIXING OPERATIONS, ETC. SHALL CONFORM TO ASTM C94. UNLESS OTHERWISE SHOWN OR NOTED, CONCRETE COVER FOR REINFORCING BARS TO FACE OF CONCRETE SHALL BE AS FOLLOWS :
A. CONCRETE IN CONTACT WITH EARTH, UNFORMED ----- 3"
B. CONCRETE IN CONTACT WITH EARTH, FORMED ----- 2"
C. WALL EXTERIOR FACE, EXPOSED TO WEATHER ----- 2"
9. ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
10. REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENTS, CLIPS OR GROUNDS REQUIRED TO BE CAST INTO THE CONCRETE AND FOR EXTENT OF DEPRESSIONS, RAMPS, ETC..
11. EXPOSED PROJECTION CORNERS OF SLABS, BEAMS, WALLS, COLUMNS, ETC. SHALL BE FORMED WITH A 3/4" CHAMFER, UNLESS SHOWN OR NOTED OTHERWISE.
12. LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER.
13. ROUGHEN ALL CONSTRUCTION JOINTS TO A MINIMUM 1/4" AMPLITUDE, EXPOSING AGGREGATE FIRMLY EMBEDDED IN THE MORTAR MATRIX.

ABBREVIATIONS

- A.B. --- ANCHOR BOLT
ADD'L --- ADDITIONAL
ACI --- AMERICAN CONCRETE INSTITUTE
AISC --- AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT --- ALTERNATE
ARCH --- ARCHITECTURAL
AWS --- AMERICAN WELDING SOCIETY
BM --- BEAM
B.O.S --- BOTTOM OF STEEL
BOT --- BOTTOM
B.PL --- BASE PLATE
BTWN --- BETWEEN
C.J.P --- COMPLETE JOINT PENETRATION
CHKD --- CHECKERED
C.I.P --- CAST IN PLACE
CLR --- CLEAR
C.M.U --- CONCRETE MASONRY UNIT
COL --- COLUMN
CONC --- CONCRETE
CONN --- CONNECTION
CONST JT --- CONSTRUCTION JOINT
C.J --- CONTROL JOINT
CONT --- CONTINUOUS
DET --- DETAIL
DIA OR Ø --- DIAMETER
DWG --- DRAWING
EA --- EACH
E.F --- EACH FACE
EQUIP --- EQUIPMENT
E.S --- EACH SIDE
E.W --- EACH WAY
EL OR ELEV --- ELEVATION
EQ --- EQUAL
ER --- EXISTING TO REMAIN
EXP --- EXPANSION
EXP JT --- EXPANSION JOINT
FLG --- FLANGE
FDN --- FOUNDATION
F.S --- FAR SIDE
FTG --- FOOTING
FRMG --- FRAMING
GA --- GAGE, GAUGE
GALV --- GALVANIZED
GB --- GRADE BEAM
GRTO --- GRATING
HNGR --- HANGER
HORIZ --- HORIZONTAL
H.P --- HIGH POINT
HT --- HEIGHT
H.S --- HIGH STRENGTH
JT --- JOINT
KSI --- KILO LBS PER SQUARE INCH
LG --- LONG
LLH --- LONG LEG HORIZONTAL
LLV --- LONG LEG VERTICAL
L.P --- LOW POINT
LT WT --- LIGHT WEIGHT
M --- METER
MAX --- MAXIMUM
MET --- METAL
MIN --- MINIMUM
N.I.C --- NOT IN CONTRACT
N.S --- NEAR SIDE
N.T.S --- NOT TO SCALE
N.W --- NORMAL WEIGHT
O.C --- ON CENTER
OPNG --- OPENING
OPP HD --- OPPOSITE HAND
OVS --- OVERSIZED
PL OR P --- PLATE
PLF --- POUNDS PER LINEAL FOOT
PSF --- POUNDS PER SQUARE FOOT
PSI --- POUNDS PER SQUARE INCH
PC --- PRECAST
PS --- PRESTRESSED
RAD --- RADIUS
REF --- REFERENCE
REINF --- REINFORCE (D) (ING) (MENT)
REQ --- REQUIRED/REQUIREMENTS
SECT --- SECTION
SHT --- SHEET
SIM --- SIMILAR
STAG --- STAGGERED
STIFF --- STIFFENER
STL --- STEEL
STRUCT --- STRUCTURAL
SYMM --- SYMMETRICAL
T & B --- TOP AND BOTTOM
THK --- THICK, THICKNESS
T.O.C --- TOP OF CONCRETE
T.O.F --- TOP OF FOOTING
T.O.S --- TOP OF STEEL
T.O.W --- TOP OF WALL
TSG --- TAPERED STEEL GIRDER
TYP --- TYPICAL
U.N.O --- UNLESS NOTED OTHERWISE
VERT --- VERTICAL
W/ --- WITH
W.P --- WORKING POINT
WPS --- WELD PASS SEQUENCE
W.W.F --- WELDED WIRE FABRIC

REINFORCING STEEL

- 1. REINFORCING STEEL SHALL BE DEFORMED STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A615, GRADE 60, REINFORCING TO BE WELDED SHALL BE ASTM A706, GRADE 60.
2. WIRE MESH SHALL CONFORM TO ASTM A185.
3. WIRE MESH SHALL BE LAPPED 1 1/2 SPACES (9" MINIMUM).

SPECIAL INSPECTION

- 1. INSPECTIONS AND TESTING SHALL COMPLY WITH SPECIFICATIONS.
2. ALL INSPECTIONS INCLUDING SPECIAL INSPECTIONS AND CONTINUOUS INSPECTION SHALL BE DONE BY A QUALIFIED TESTING AGENCY AND QUALIFIED INSPECTORS AT THE EXPENSE OF THE CONTRACTOR. GOVERNMENT SHALL BE NOTIFIED IN ADVANCE TO WITNESS ALL THE TESTS. ALL TEST RESULTS DOCUMENTATIONS SHALL BE SUBMITTED TO THE GOVERNMENT.
3. SPECIAL INSPECTION SHALL COMPLY WITH 2007 CBC, CHAPTER 17. SPECIAL INSPECTION SHALL BE PROVIDED FOR THE FOLLOWING USE:
A) WELDING - WELDING SHALL BE DONE IN AN GOVERNMENT APPROVED SHOP. APPROVED FABRICATORS SHALL CONFORM TO CBC 1701. ALL FIELD WELDING SHALL HAVE CONTINUOUS INSPECTION.
B) EPOXY & EXPANSION TYPE ANCHOR BOLTS.
C) REINFORCING STEEL PLACEMENT.
D) ALL CONCRETE WORK.

Table with columns: ZONE, LETTER, DESCRIPTION, DRAWN, DATE, APPRVD. Includes a REVISIONS table, project information for Ames Research Center, and a title block for 'STRUCTURAL NOTES AND ABBREVIATIONS' with fields for SIZE (D), CAGE CODE (25307), SCALE (NTS), INDEX, SHEET (OF), and FILE NAME (258A-S01.DWG).

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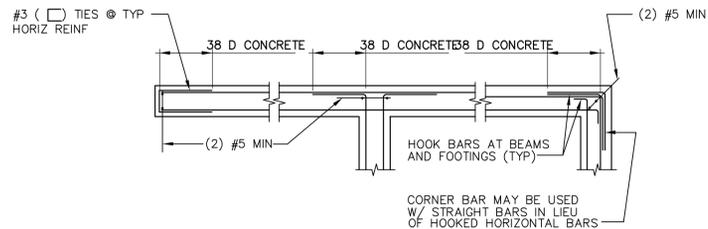
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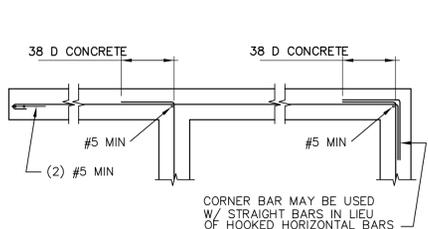
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TWO LAYERS OF REINFORCING



ONE LAYER OF REINFORCING

1 TYPICAL BAR ENDS AND LAPS IN CONCRETE, FOOTINGS AND BEAMS SCALE: 3/4"=1'-0"

3 NOT USED SCALE: NONE

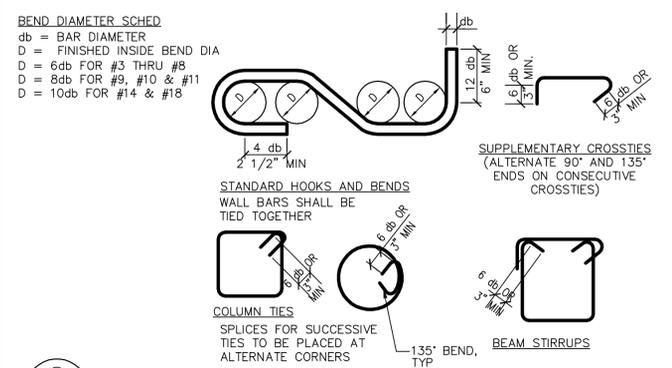


NOTE: f'c = 3,000 PSI AND 4,000 PSI
fy = 60,000 PSI

		BASIC									
LENGTH BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11	
3,000 PSI	"B"	1'-10"	2'-4"	3'-0"	3'-7"	5'-3"	6'-0"	6'-9"	7'-7"	8'-5"	
	"Ld"	1'-5"	1'-10"	2'-3"	2'-9"	4'-0"	4'-7"	5'-2"	5'-10"	6'-5"	
4,000 PSI	"B"	1'-7"	2'-1"	2'-7"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"	
	"Ld"	1'-3"	1'-7"	2'-0"	2'-5"	3'-6"	4'-0"	4'-6"	5'-1"	5'-7"	

6 NOT USED SCALE: NONE

7 TYPICAL SLAB ON GRADE CONTROL JOINT SCALE: 1"=1'-0"



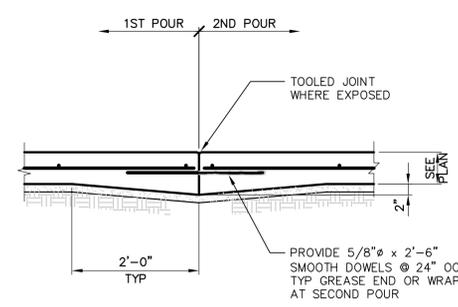
8 TYPICAL REINF BAR, ENDS, STIRRUPS & TIES SCALE: 3/4"=1'-0"

		TOP BARS									
LENGTH BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11	
3,000 PSI	"B"	2'-4"	3'-1"	3'-11"	4'-8"	6'-9"	7'-9"	8'-9"	9'-10"	10'-11"	
	"Ld"	1'-10"	2'-4"	3'-0"	3'-7"	5'-2"	5'-11"	6'-8"	7'-6"	8'-4"	
4,000 PSI	"B"	2'-0"	2'-8"	3'-4"	4'-0"	5'-10"	6'-8"	7'-7"	8'-6"	9'-5"	
	"Ld"	1'-7"	2'-1"	2'-7"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"	

NOTE: 1. TOP BARS ARE HORIZONTAL REINFORCING BARS (EXCEPT WALL HORIZ BARS) SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
2. LAP LENGTH SHALL BE THAT OF THE LARGER DIAMETER BAR IN THE SPLICE.

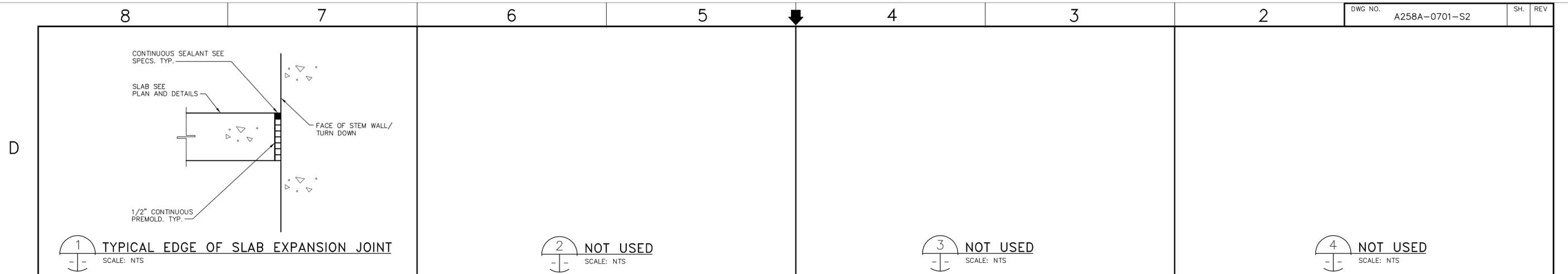
9 TYPICAL LAP SPLICE/DEVELOPMENT LENGTH SCALE: NONE

10 TYP SLAB ON GRADE CONSTRUCTION JT SCALE: 3/4"=1'-0"



11 NOT USED SCALE: NONE

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REVISIONS					
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DESIGNED	JMATUTINA	DATE			
CHECKED	N.SHAH	DATE			
PROJ.MGR	J.McCUSKER	DATE			
REQUESTER	N.HSU	DATE			
TR&QA		DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			
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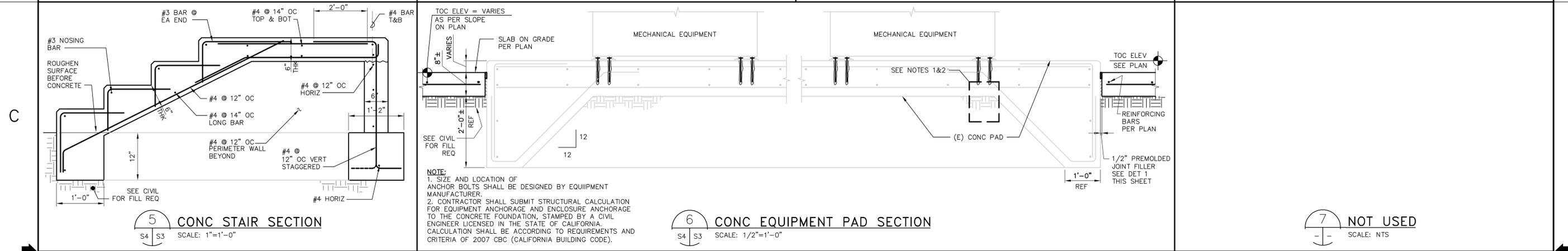


1 TYPICAL EDGE OF SLAB EXPANSION JOINT
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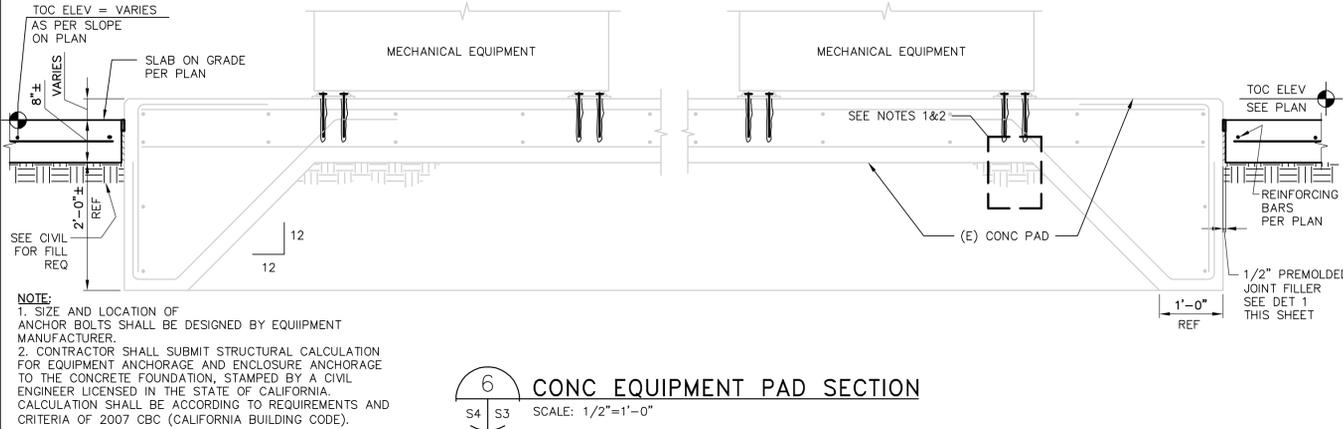
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3 NOT USED
SCALE: NTS

4 NOT USED
SCALE: NTS

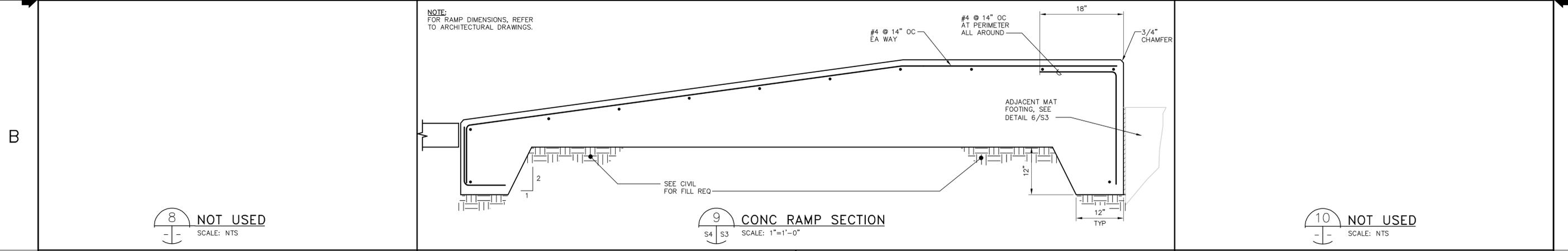


5 CONC STAIR SECTION
SCALE: 1"=1'-0"



6 CONC EQUIPMENT PAD SECTION
SCALE: 1/2"=1'-0"

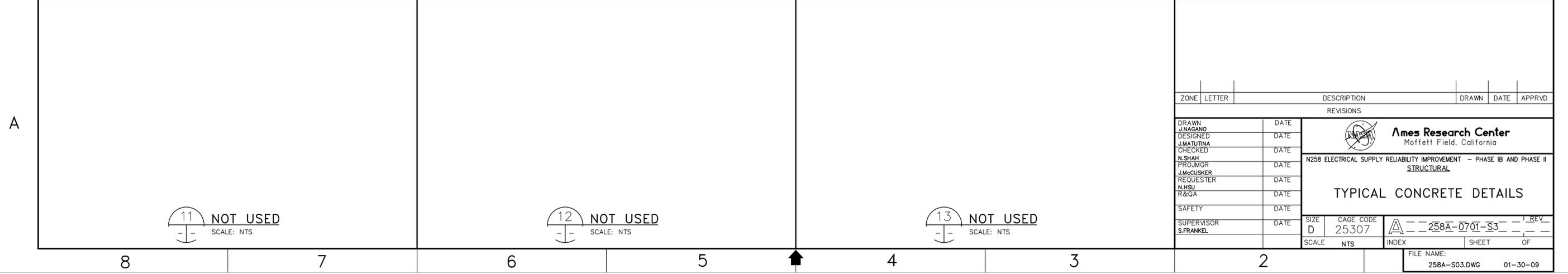
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9 CONC RAMP SECTION
SCALE: 1"=1'-0"

8 NOT USED
SCALE: NTS

10 NOT USED
SCALE: NTS



11 NOT USED
SCALE: NTS

12 NOT USED
SCALE: NTS

13 NOT USED
SCALE: NTS

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REQUESTER	N.HSU	DATE			
TR&QA	S.FRANKEL	DATE			
SAFETY		DATE			
SUPERVISOR	S.FRANKEL	DATE			

Ames Research Center Moffett Field, California	
N258 ELECTRICAL SUPPLY RELIABILITY IMPROVEMENT - PHASE 1B AND PHASE 2 STRUCTURAL	
TYPICAL CONCRETE DETAILS	
SIZE D	CAGE CODE 25307
SCALE NTS	INDEX A
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SH. REV

SHEET NOTES

- MAT FOUNDATION DIMENSIONS FOR THE NEW RUPS AND SWITCHGEAR ENCLOSURES SHALL BE DETERMINED WHEN THE ACTUAL EQUIPMENT HAS BEEN SELECTED. MAT SHALL BE 6" BEYOND EXTERIOR WALLS OF THE EQUIPMENT ENCLOSURES AND 12" THICK. SEE NOTE #4 ON SHEET A2 OF THE ARCHITECTURAL DRAWINGS.
- FOR CONCRETE STAIR INFORMATION AND DIMENSIONS, REFER TO ARCHITECTURAL DRAWINGS.
- FOR FINISH SLAB ELEVATIONS, SEE CIVIL DRAWINGS.

KEYNOTES

- ① (E) CONC EQUIPMENT PAD.
- ② (E) INTEGRAL WIREWAY TRENCH.
- ③ (E) CHAIN LINK FENCE.

LEGEND

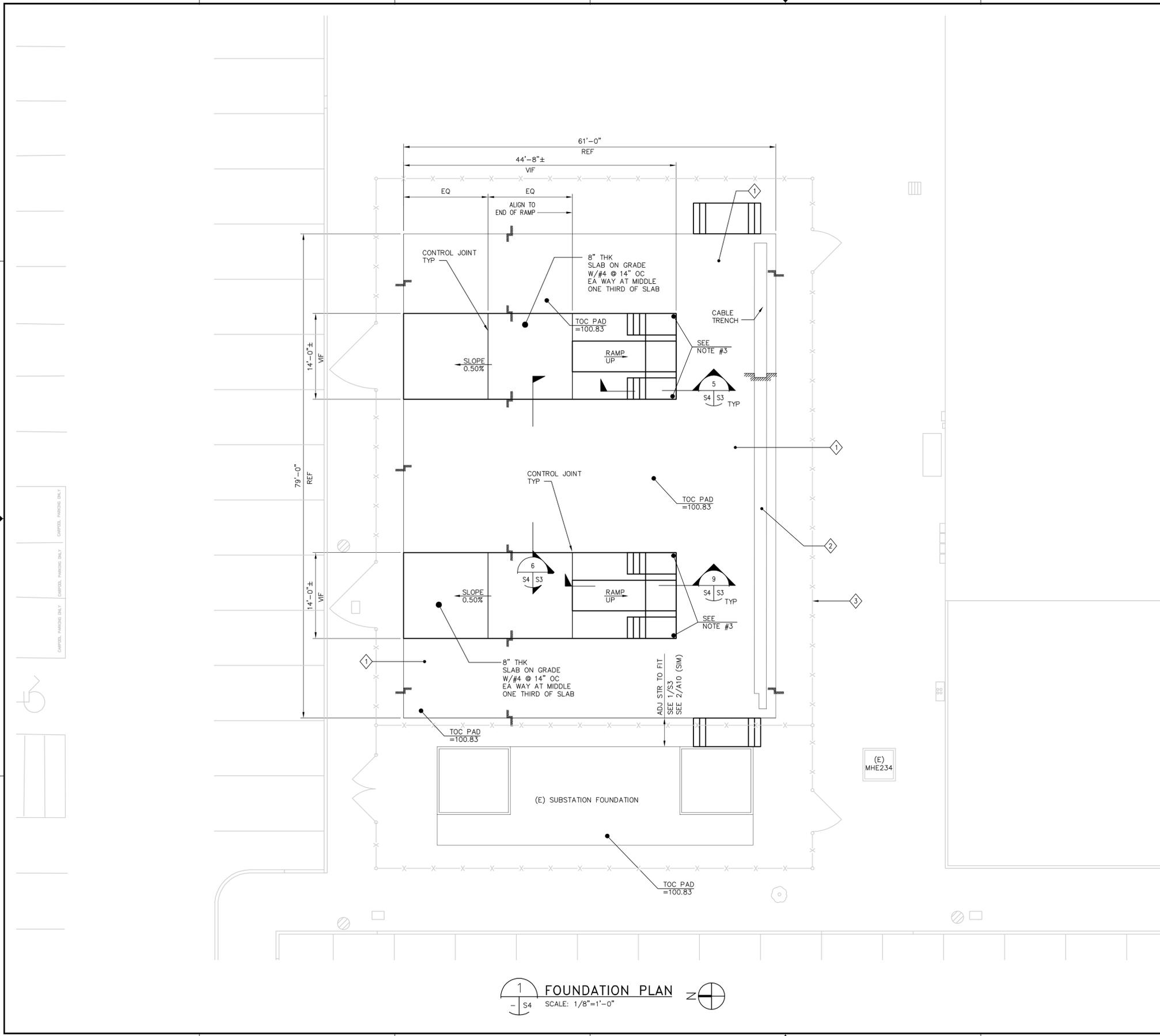
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REVISIONS					

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DESIGNED JMATUTINA	DATE		
CHECKED N.SHAH	DATE		
PROJ.MGR J.McCUSKER	DATE		
REQUESTER N.HSU	DATE		
R&QA	DATE		
SAFETY	DATE		
SUPERVISOR S.FRANKEL	DATE		
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FOUNDATION PLAN
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