SYMBOLS

SINGLE LINE DIAGRAM

- T1 45KVA — TRANSFORMER, DESIGNATION AND RATINGS AS NOTED
- T1 45KVA — ISOLATION TRANSFORMER, DESIGNATION AND RATINGS AS NOTED
- BUS DUCT
- Y GROUND
- 100AF 100AT — CIRCUIT BREAKER: 100AF = FRAME RATING IN AMPERES 100AT = TRIP RATING IN AMPERES
- ENCLOSED CIRCUIT BREAKER
- 800A — SWITCH: RATING AS SHOWN, 3 POLE, UNO
- 400A — FUSE: RATING AS SHOWN
- 800A — CIRCUIT BREAKER: TRIP RATING AS SHOWN, 3 POLE UNO
- 800A — DRAWOUT CIRCUIT BREAKER: TRIP RATING AS SHOWN, 3 POLE UNO
- 600A ATS/MTS — TRANSFER SWITCH: 600A = RATING IN AMPERES ATS = AUTOMATIC TRANSFER SWITCH MTS = MANUAL TRANSFER SWITCH
- INLINE FUSE DISCONNECT
- FUSE CUTOUT
- POTENTIAL TRANSFORMER WITH FUSES
- CURRENT TRANSFORMER
- GROUND
- 1R — MAGNETIC MOTOR STARTER: 1–NEMA SIZE, R–REDUCED VOLTAGE
- NORMALLY CLOSED PUSHBUTTON
- NORMALLY OPEN PUSHBUTTON
- WHD — WATTHOUR DEMAND METER
- AM — AMP METER
- VM — VOLT METER
- AMMETER SWITCH
- VS — VOLTMETER SWITCH
- VFD — VARIABLE FREQUENCY DRIVE
- ½ OR M — 1ø OR 3ø MOTOR: NUMBER INSIDE SYMBOL INDICATES HORSEPOWER
- S_M — MANUAL MOTOR STARTER WITH THERMAL OVERLOAD – 1ø
- C — CONTACTOR
- M — ELECTRIC VALVE ACTUATOR
- ST — SHUNT TRIP
- GFR — GROUND FAULT RELAY
- E — ELECTRIC INTERLOCK WITH LOGIC CONNECTION
- P — POWER MODULAR METER
- C — COIL
- G — GENERATOR
- CONTROLLER

LIGHTING

- A — LIGHTING FIXTURE IDENTIFICATION SYMBOL: SEE LIGHTING FIXTURE SCHEDULE ON SHEET E–010
- 6"x4' PENDANT MOUNTED FLUORESCENT
- LINEAR WALL MOUNTED FLUORESCENT
- 2'x4' RECESSED MOUNTED FLUORESCENT
- 1'x4' RECESSED MOUNTED FLUORESCENT
- INDUSTRIAL OR STRIP FLUORESCENT – SURFACE MOUNTED OR CHAIN HUNG
- WALL MOUNTED FIXTURE
- SURFACE MOUNTED DOWNLIGHT
- RECESSED MOUNTED DOWNLIGHT
- EXIT SIGN: WALL MOUNTED, DARKENED AREA INDICATES FACE
- EXIT SIGN: CEILING MOUNTED, DARKENED AREA INDICATES FACE
- UNSWITCHED LIGHT FIXTURES ON GENERATOR LIFE/SAFETY CIRCUITS

SWITCHES

INSTALL AT +48" UNO

- S — SINGLE POLE SWITCH, 20A, 120/277V
- S_2 — DOUBLE POLE SWITCH, 20A, 120/277V
- S_3 — THREE–WAY SWITCH, 20A, 120/277V
- S_4 — FOUR–WAY SWITCH, 20A, 120/277V
- S_a — SWITCH CONTROLS FIXTURE MARKED WITH SUBSCRIPT INDICATED
- S_K — SINGLE POLE KEY OPERATED SWITCH, 20A, 120/277V
- S_P — SINGLE POLE SWITCH WITH PILOT LAMP, 20A, 120/277V
- S_D — DIMMER SWITCH: 1500 WATT FLUORESCENT TYPE UNO
- WALL MOUNTED OCCUPANCY SENSOR WITH LOCAL SWITCHING, MANUAL ON/AUTO OFF
- CEILING OR PENDANT MOUNTED OCCUPANCY SENSOR, AUTO ON/AUTO OFF
- S_M — MOTOR RATED SWITCH, 1ø
- MOTOR STARTER: MAGNETIC, SIZE AS NOTED
- DISCONNECT/COMBINATION MOTOR STARTER: SIZE AS NOTED
- DISCONNECT SWITCH: NON FUSED, SIZE AS NOTED, 600V–3ø
- F — DISCONNECT SWITCH: FUSED, SIZE AS NOTED, 600V–3ø
- TS — TIMER SWITCH
- PB — PHOTOCELL

MISCELLANEOUS

- S — SPEAKER: WALL MOUNTED
- S — SPEAKER: CEILING MOUNTED
- S — SPEAKER: FLOOR MOUNTED
- CLOSED CIRCUIT TV CAMERA
- M — VIDEO MONITOR OUTLET: WALL MOUNTED
- TV — TELEVISION OUTLET
- A — AMPLIFIER
- A — PA AMPLIFIER AND POWER SUPPLY
- M — PA MICROPHONE
- P — PUBLIC ADDRESS SYSTEM OUTLET
- I — INTERCOM OUTLET
- M — MICROPHONE OUTLET: WALL MOUNTED
- D — MAGNETIC DOOR CONTACT
- CR — CARD READER
- RE — REQUEST TO EXIT

PANELBOARDS AND POWER EQUIPMENT

- RECESSED MOUNTED PANELBOARD
- SURFACE MOUNTED PANELBOARD
- TELEPHONE TERMINAL BOARD
- TC — TELEPHONE TERMINAL CABINET
- SWITCHBOARD OR DISTRIBUTION BOARD
- MCC: MOTOR CONTROL CENTER
- ½ OR M — MOTOR: HORSEPOWER AS INDICATED
- PUSHBUTTON STATION
- A 01 — MECHANICAL EQUIPMENT IDENTIFICATION SYMBOL
- T — DRY TYPE TRANSFORMER

GROUNDING

- G — BURIED BARE COPPER GROUND WIRE, SIZE AS SHOWN
- G — EXPOSED BARE COPPER GROUND WIRE, SIZE AS SHOWN
- 3/4" DIAMETER X 10'–0" GROUND ROD
- GROUNDING TEST BOX WITH 3/4" DIAMETER X 10'–0" GROUND ROD
- CHEMICAL GROUND WELL
- AIR TERMINAL
- GROUND BAR

RECEPTACLE/OUTLETS

NOTE: ALL WALL MOUNTED OUTLETS AND RECEPTACLES SHALL BE RECESSED AT 18" ABOVE FINISHED FLOOR FROM CENTERLINE OF DEVICE, UNO

- SINGLE RECEPTACLE, NEMA 5–20R, GROUNDING TYPE
- GFI — DUPLEX RECEPTACLE, NEMA 5–20R, GROUNDING TYPE, GFI INDICATES GROUND FAULT INTERRUPTER TYPE
- DUPLEX RECEPTACLE FLOOR MOUNTED, NEMA 5–15R
- QUAD RECEPTACLE, NEMA 5–20R, GROUNDING TYPE
- QUAD RECEPTACLE, NEMA 5–20R, FLOOR MOUNTED
- DUPLEX RECEPTACLE, NEMA 5–20R, ISOLATED GROUND TYPE
- DUPLEX RECEPTACLE, FLOOR MOUNTED, ISOLATED GROUND TYPE
- SPECIAL RECEPTACLE TYPE AS NOTED
- OR C — CLOCK RECEPTACLE +84" UNO
- J — JUNCTION BOX: RECESSED OR CEILING MOUNTED
- J — JUNCTION BOX: WALL MOUNTED
- J — JUNCTION BOX: FLOOR MOUNTED
- TELEPHONE OUTLET: WALL MOUNTED AT +54"
- COMBINATION TELEPHONE/DATA OUTLET: WALL MOUNTED
- COMBINATION TELEPHONE/DATA OUTLET: FLOOR MOUNTED
- DATA OUTLET: WALL MOUNTED

CIRCUITING AND WIRING

- CIRCUIT/CONDUIT EXPOSED, 3/4"C, UNO
- CIRCUIT/CONDUIT CONCEALED IN WALL OR CEILING, 3/4"C MIN UNO
- CIRCUIT/CONDUIT BELOW SLAB OR GRADE
- LA1–2,4 — HOMERUN TO PANEL WITH CIRCUIT NUMBERS AS INDICATED
- GROUND / ISOLATED GROUND — SHORT HASH MARKS INDICATE QUANTITY OF #12 CONDUCTORS IN CODE SIZE CONDUIT. LONG HASH MARK INDICATES NEUTRAL CONDUCTOR. NO HASH MARKS INDICATE 2#12 IN 3/4" CONDUIT, TYP UNO SEE GENERAL NOTES 5 & 6 ON E002.
- CONDUIT STUB UP
- CONDUIT STUB DOWN
- CONDUIT STUB–OUT WITH CAP
- FLEXIBLE CONDUIT
- E — UNDERGROUND ELECTRICAL DUCT BANK
- T — TELEPHONE LINE
- PB — PULL BOX
- E — ELECTRICAL POWER MANHOLE
- C — COMMUNICATION MANHOLE
- H — HANDHOLE
- T — TRANSFORMER, PAD MOUNTED

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE	DATE	DESCRIPTION
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE

MARK	DATE	DESCRIPTION

DRAWN S. KANDA	DATE	
DESIGNED N. ZECH	DATE	
CHECKED D. KING	DATE	
PRELIMER	DATE	
REVIEWER	DATE	
RLGA	DATE	
SAFETY	DATE	
SUPERVISOR G. STEVENS	DATE	

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

ELECTRICAL SYMBOLS

SIZE	CAGE CODE		REV
D	25307	A232-0800- E001	

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ABBREVIATIONS

A	AMPERE
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY (RMS SYMMETRICAL)
APPROX	APPROXIMATELY
AS	AMPERE SWITCH
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
BC	BARE COPPER
BKBD	BACKBOARD
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSE CIRCUIT TELEVISION
CIRC	CIRCULAR, CIRCUIT
CKT	CIRCUIT
℄	CENTERLINE
CLG	CEILING
CO	CONTRACTING OFFICER
COMM	COMMUNICATIONS
CONC	CONCRETE
CONT	CONTINUED
CONT'L	CONTROL
CONTR	CONTROLLER
COTR	CONTRACTING OFFICER TECHNICAL REPRESENTATIVE.
CR	CURRENT TRANSFORMER
CT	COPPER
CU	DOMESTIC COLD WATER LINE
CWL	
DDC	DIRECT DIGITAL CONTROL
DET	DETAIL
DF	DEMAND FACTOR
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DTC	DATA TERMINAL CABINET
DVR	DIGITAL VIDEO RECORDER
DWG	DRAWING
DWP	DEPARTMENT OF WATER AND POWER
E	EXISTING
E/G	EMERGENCY GENERATOR
ELEC	ELECTRICAL
EMH	ELECTRICAL MANHOLE
EPO	EMERGENCY POWER OFF
EPU	EMERGENCY POWER UNIT
EQUIP	EQUIPMENT
EES	EARTH ELECTRODE SYSTEM
EXIST	EXISTING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FL, FLR	FLOOR
FLUOR	FLUORESCENT
FO	FIBER OPTIC
FOT	FIELD OPERATIONAL TEST
FT	FEET
GFCI	GOVERNMENT FURNISHED, CONTRACTOR INSTALLED
GFE	GOVERNMENT FURNISHED EQUIPMENT
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRN	GREEN
HID	HIGH INTENSITY DISCHARGE
HH	HANDHOLE
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HT	HEIGHT
HV	HIGH VOLTAGE
HZ	HERTZ
IC	INTERCOM
IG	ISOLATED GROUND
IN	INCHES
INCAND	INCANDESCENT
J-BOX	JUNCTION BOX
KA	KILO AMPERE
kcmil	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT-HOUR
L	LAN
LAN	LOCAL AREA NETWORK
LP	LAN PRINTER, LIGHTNING PROTECTION
LT	LIGHT
LTG	LIGHTING
LC	LIGHTING CONTROL
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANELBOARD
MDS	MAIN DISTRIBUTION SWITCHBOARD
MECH	MECHANICAL
MH	METAL HALIDE, MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
N.C.	NORMALLY CLOSE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
PA	PUBLIC ADDRESS
PB	PULLBOX
PIR	PASSIVE INFRARED
PNL	PANEL
PP	POWER PACK
PT	POTENTIAL TRANSFORMER
PTZF	PAN TILT ZOOM FOCUS
PVC	POLY VINYL CHLORIDE
REC	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RM	ROOM
REQ'D	REQUIRED
SCE	SOUTHERN CALIFORNIA EDISON
SCH	SCHEDULE
SHD	SHIELDED
SHT	SHEET
SMFO	SINGLE MODE FIBER OPTIC CABLE
SRG	SIGNAL REFERENCE GRID
SRL	SOUTHERN REGIONAL LAB
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
T, TEL	TELEPHONE
TB	TELEPHONE BACKBOARD
TBD	TO BE DETERMINED
TC	TERMINAL CABINET
TMC	TRANSPORTATION MANAGEMENT CENTER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
U/G	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
W/	WITH
WP	WEATHERPROOF
XP	EXPLOSION PROOF
XFMR	TRANSFORMER

GENERAL NOTES:

1. DO NOT SCALE ELECTRICAL DRAWINGS FOR FIXTURES, DEVICES OR APPLIANCE LOCATIONS. USE FIGURED DIMENSIONS IF GIVEN OR CHECK MECHANICAL AND ARCHITECTURAL PLANS.
2. MOUNT ALL TOGGLE SWITCHES AT 48 INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. COORDINATE WITH ARCHITECTURAL DRAWINGS. OWNER MAY CHOOSE TO LOCATE OUTLETS DIFFERENTLY THAN WHAT IS SHOWN ON DRAWINGS. VERIFY EXACT LOCATIONS PRIOR TO ROUGH-IN AT NO ADDITIONAL COST TO OWNER.
3. REVIEW AND VERIFY MECHANICAL DRAWINGS FOR ABBREVIATION LIST AND EQUIPMENT CALLOUT. COORDINATE AND PROVIDE ALL POWER WIRING AND DEVICES AS REQUIRED FOR MECHANICAL EQUIPMENT SHOWN ON MECHANICAL DRAWINGS BUT NOT SHOWN ON THE ELECTRICAL DRAWINGS.
4. REFER TO MECHANICAL DRAWINGS FOR ABBREVIATION LIST, EQUIPMENT CALLOUT AND EXACT EQUIPMENT LOCATIONS.
5. VERIFY EXACT LOCATION AND DIMENSION OF ALL EQUIPMENT, FIXTURE OR OUTLETS WITH OTHER TRADES AND MANUFACTURERS PRIOR TO ROUGH-IN.
6. VERIFY POINT AND METHOD OF CONNECTION TO MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR IN FIELD PRIOR TO ROUGH-IN.
7. COORDINATE ALL ROOF PENETRATIONS WITH MECHANICAL CONTRACTOR. ENTER ROOF MOUNTED UNITS THROUGH EQUIPMENT MOUNTING CURBS WHERE POSSIBLE.
8. FUSE RATINGS OF ALL HVAC EQUIPMENT SHALL BE ACCORDING TO NAMEPLATE OF EACH RESPECTIVE EQUIPMENT OR MANUFACTURER RECOMMENDATION.
9. COORDINATE ELECTRIC AND TELEPHONE SERVICE WITH UTILITY COMPANIES. PROVIDE ALL TRENCHING, CONDUITS, CONDUCTORS, METER SOCKETS AND ANY OTHER FACILITIES REQUIRED BY THE UTILITY COMPANIES.
10. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR UNDERGROUND SYSTEM. ALL SITE WORK SHALL BE STAKED OUT FOR APPROVAL BY THE NASA CO. NO SITE WORK SHALL START UNTIL STAKE-OUT IS APPROVED BY THE NASA CO.
11. VISIT THE JOB SITE AND VERIFY EXISTING CONDITIONS BEFORE BIDDING AND INCLUDE ALL NECESSARY COST TO CONSTRUCT THIS PROJECT IN ACCORDANCE WITH THE INTENT OF THE ELECTRICAL DRAWINGS, SPECIFICATIONS, AND ALL APPLICABLE CODES.
12. SPECIFIC CARE SHALL BE TAKEN TO INSTALL EXPOSED SYSTEM TO ENSURE A NEAT AND WORKMAN LIKE FINAL INSTALLATION WITH ALL CONDUITS ROUTED TIGHT TO THE STRUCTURE AND PARALLEL TO OR 90 DEGREES TO STRUCTURAL MEMBERS. AFTER INSTALLATION IS COMPLETE, PROPERLY CLEAN ALL CONDUIT FITTINGS, J-BOXES AND SUPPORT BRACKETS.
13. ALL ELECTRICAL MATERIAL SHALL BE NEW AND LISTED BY THE UNDERWRITERS LABORATORIES INC. (UL) IF THE RESPECTIVE STANDARDS HAVE BEEN ESTABLISHED IN UL PUBLICATIONS.
14. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS SHALL BE SEALED WITH APPROVED SEALANT TO MAINTAIN FIRE SEPARATION RATING.
15. COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE ALL TEMPERATURE CONTROL CONDUITS, PROVIDE ¾" CONDUIT AS A MINIMUM. TEMPERATURE CONTROL WIRING AND OTHER LOW VOLTAGE CONTROL WIRING SHALL BE AS SPECIFIED BY MECHANICAL.
16. DO NOT INSTALL ANY POWER OR TELEPHONE OUTLETS BACK TO BACK IN STUD WALLS. LOCATE OUTLETS SUCH THAT THEY ARE SEPARATED BY A WALL STUD.
17. COORDINATE THE INSTALLATION OF ALL RECESSED LIGHT FIXTURES WITH MECHANICAL DUCTWORK PRIOR TO INSTALLATION OF HVAC DUCTS AND SPRINKLER HEADS. ENSURE THAT THERE IS NO CONTACT BETWEEN DUCTS AND FIXTURES AND AVOID REFLECTOR VIBRATION IN PARABOLIC FIXTURES.
18. PROVIDE NYLON PULL WIRE IN ALL EMPTY CONDUITS AND INNER DUCTS INSTALLED WITHIN CONDUIT.
19. PROVIDE GROUND WIRE IN ALL BRANCH CIRCUIT AND LIGHTING CONDUITS WHETHER OR NOT SPECIFICALLY SHOWN. THE GROUND WIRE SHALL BE SIZED IN ACCORDANCE WITH NEC.
20. ALL CIRCUIT BREAKERS & DISCONNECT SWITCHES SHOWN ON DRAWINGS ARE THREE POLE, UNLESS OTHERWISE NOTED.
21. ALL BUILDING EXTERIOR MOUNTED EQUIPMENT AND DEVICES SHALL BE WEATHERPROOF.
22. THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE 2005 NATIONAL ELECTRICAL CODE, 2007 CALIFORNIA ELECTRICAL CODE, AND ALL OTHER GOVERNING CODES AND ORDINANCES.
23. FOR ALL ELECTRICAL SWITCHBOARD AND PANELBOARD THE SPACE EQUAL TO THE WIDTH AND DEPTH OF THE EQUIPMENT AND EXTENDING FROM THE FLOOR TO A HEIGHT OF 6FT ABOVE THE EQUIPMENT OR TO THE STRUCTURAL CEILING, WHICHEVER IS LOWER, SHALL BE DEDICATED TO THE ELECTRICAL INSTALLATION. NO PIPING, DUCT OR EQUIPMENT FOREIGN TO THE ELECTRICAL INSTALLATION SHALL BE LOCATED IN THIS ZONE, AS INDICATED IN NEC 110.26F.
24. IN THE EVENT OF DISCREPANCY BETWEEN LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS, THE ELECTRICAL PLAN DRAWINGS SHALL GOVERN. DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE CO.
25. UNLESS SPECIFICALLY SHOWN ON THESE PLANS NO STRUCTURAL MEMBER SHALL BE CUT, NEITHER DRILLED NOR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE CO.
26. OUTLET BOXES ON OPPOSITE SIDES OF FIRE-RESISTIVE WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES (CBC SECTION 709.7 EXCEPT #1).
27. PROVIDE THROUGH PENETRATION FIRESTOP SYSTEM AT ALL CONDUITS TO MATCH FIRE RATING OF GYPBOARD WALL. THE FIRESTOP SHALL BE UL SYSTEM NO. W-L-1085.
28. PROVIDE THROUGH PENETRATION FIRESTOP SYSTEM AT ALL CONDUITS PENETRATING THE FLOOR CONCRETE SLAB. THE FIRESTOP SHALL BE UL SYSTEM NO. C-AJ-1053.
29. PROVIDE THROUGH PENETRATION FIRESTOP SYSTEM AT ALL CABLE RUNS IN CABLE TRAYS TO MATCH FIRE RATING OF GYPBOARD WALLS. THE FIRE STOP SHALL BE UL SYSTEM NO. W-L-3218.
30. PROVIDE THROUGH PENETRATION FIRESTOP SYSTEM AT ALL CABLE RUNS IN CABLE TRAYS PENETRATING THE FLOOR CONCRETE SLAB. THE FIRESTOP SHALL BE UL SYSTEM NO. C-AJ-4069.
31. THE SEISMIC ANCHORAGE OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL CONFORM TO C.C.R. TITLE 24, 2001 CBC, SECTION 1632A AND TABLE 16A.O. ANCHORAGE DETAILS FOR ROOF FLOOR MOUNTED EQUIPMENT SHALL BE SHOWN ON PLANS. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS, OR APPROVED DURING PLAN REVIEW, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE CO PRIOR TO INSTALLATION AND INSPECTION BY THE COTR.
32. CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAIL IN THE DRAWINGS OR ACCEPTED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD WITH THE APPROVAL OF DSA REPRESENTATIVE. ALL WELDING SHALL BE SPECIALLY INSPECTED BY AN AWS-CWI QUALIFIED INSPECTOR APPROVED BY DSA/ORS. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE SMACNA GUIDELINES AS APPROVED BY DSA. WHEN BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT, MECHANICAL ENGINEER AND DSA FIELD ENGINEER. A COPY OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY DSA SHALL PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES. SEISMIC BRACING AND RESTRAINTS MUST CONFORM TO SMACNA:

    SHL C – FOR 1ST FLOOR APPLICATIONS
    SHL A – FOR 2ND FLOOR APPLICATIONS
    SHL AA – FOR LOW ROOF APPLICATIONS

33. PROVIDE A MINIMUM 3" HIGH HOUSEKEEPING PAD FOR ALL EXTERIOR FLOOR MOUNTED SWITCHGEAR, DISTRIBUTION BOARDS, TRANSFORMERS, MOTOR CONTROL CENTERS ETC FLUSH WITH THE FACE OF THE EQUIPMENT. PROVIDE A MINIMUM 3" HIGH HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED SWITCHGEAR, DISTRIBUTION BOARDS, TRANSFORMERS, MOTOR CONTROL CENTERS, TRANSFER SWITCHES ETC LOCATED IN CENTRAL PLANT FLUSH WITH THE FACE OF THE EQUIPMENT. CONFIRM PAD DIMENSIONS WITH LOCAL INSPECTOR PRIOR TO FORMING PAD TO ENSURE ANY LOCAL CODE INTERPRETATIONS OR CONDITIONS REGARDING HOUSEKEEPING PADS ARE MET.
34. UNLESS OTHERWISE NOTED ABOVE, PROVIDE A MINIMUM 1-1/2" HOUSEKEEPING PAD FOR ALL INTERIOR FLOOR MOUNTED SWITCHGEAR, DISTRIBUITON BOARDS, TRANSFORMERS, MOTOR CONTROL CENTERS, TRANSFER SWITCHES ETC FLUSH WITH THE FACE OF THE EQUIPMENT. CONFIRM PAD DIMENSIONS WITH LOCAL INSPECTOR PRIOR TO FORMING PAD TO ENSURE ANY LOCAL CODE INTERPRETATIONS OR CONDITIONS REGARDING HOUSEKEEPING PADS ARE MET.
35. PROVIDE A 1-1/2" HIGH HOUSEKEEPING PAD FOR SERVICE EQUIPMENT. PRIOR TO PAD ROUGH-IN, CONTRACTOR SHALL VERIFY SERVING UTILITY COMPANY'S MAXIMUM METER HEIGHT REQUIREMENTS AND IF NECESSARY, ADJUST HEIGHT OF HOUSEKEEPING PAD TO COMPLY WITH THOSE REQUIREMENTS. IN INDOOR APPLICATIONS, THE PAD SHALL BE FLUSH WITH THE FACE OF THE SWITCHGEAR. IN OUTDOOR APPLICATIONS, THE HOUSEKEEPING PAD SHALL EXTEND A MINIMUM OF 4 FEET FROM THE FRONT OF THE SWITCHGEAR'S WEATHERPROOF ENCLOSURE. CONFIRM PAD DIMENSIONS WITH LOCAL INSPECTOR PRIOR TO FORMING PAD TO ENSURE ANY LOCAL CODE INTERPRETATIONS OR CONDITIONS REGARDING HOUSEKEEPING PADS ARE MET.
36. ANY HOUSINGKEEPING PADS LOCATED IN, ON OR ATTACHED TO A BUILDING SHALL BE SEISMICALLY BRACED OR CONNECTED TO THE BUILDING STRUCTURE.

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE

MARK	DATE	DESCRIPTION
1	10/20/2008	30% PRICING
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DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PROJMGR		DATE
REQUESTOR		DATE
R&QA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

ABBREVIATIONS AND GENERAL NOTES

SIZE	CAGE CODE		REV
D	25307	A232-0800- E002	

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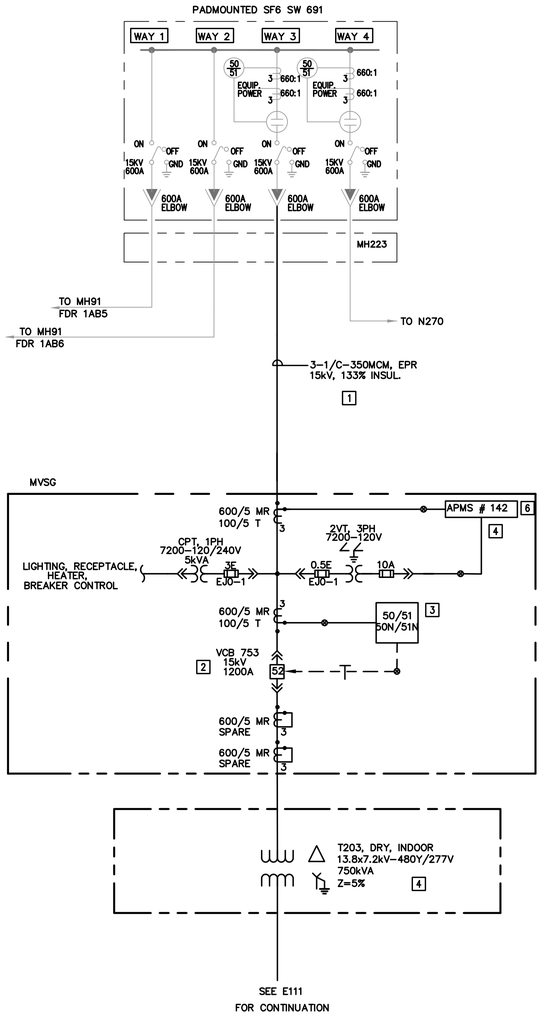

GENERAL NOTES:

1. FOR GENERAL CONSTRUCTION NOTES, ABBREVIATIONS AND SYMBOLS SEE DRAWING E001 & E002.
2. ALL INDOOR EQUIPMENT TO BE RATED FOR USE IN NEMA 12 ENVIRONMENT, MINIMUM.
3. ALL CT WIRES SHALL BE #10 AWG MINIMUM, TYPE SIS. ALL VOLTAGE, CPT SECONDARY AND BREAKER TRIP WIRES SHALL BE #12 AWG MINIMUM, TYPE SIS. U.O.N.
4. CPT AND VT'S SHALL BE DRAWOUT TYPE.

PLAN NOTES:

1. PROVIDE 15kV, 3-1/C-350kCMIL, 133% INSULATION, EPR CABLE AND 1/C #4/0 GND FROM SW691 TO VCB753 VIA MH E223.
2. PROVIDE 15kV, 1200A VACUUM CIRCUIT BREAKER SWITCHGEAR VCB753 INCLUDING CPT, VT AND ALL ACCESSORIES PER SPECIFICATION SECTION 262816 AND 261116.
3. INSTALL GFE 3-PHASE MICROPROCESSOR BASED RELAY ALSTOM MICOM P124 COMPLETELY WIRED ON THE NEW SWITCHGEAR.
4. INSTALL GFE 3-PHASE DIGITAL POWER METER, PML ION 7330 COMPLETELY WIRED ON THE NEW SWITCHGEAR. INSTALLATION SHALL BE IN ACCORDANCE WITH DRAWING EXXX.
5. PROVIDE NEW 750kVA DUAL VOLTAGE DRY TYPE TRANSFORMER T203, INDOOR, ELECTROSTATIC SHIELDED, TOTALLY ENCLOSED, INCLUDING ALL ACCESSORIES PER SPECIFICATION SECTION 261116.
6. PROVIDE 2" CONDUIT WITH CAT 5E ETHERNET CABLE FROM APMS #142 IN MV SWITCHGEAR TO COMMUNICATION ROOM. INSTALL CONDUIT NOT MORE THEN 5 FEET FROM THE COMMUNICATION PANEL. PROVIDE ADDITIONAL 25 FEET OF CABLE AT EACH END. ETHERNET CABLE HOOK UP TO COMMUNICATION PANEL AND APMS #142 WILL BE PERFORMED BY OTHERS.

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ARCHITECT/ENGINEER STAMP

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
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DRAWN S. KANDA	DATE	
DESIGNED N. ZECH	DATE	
CHECKED	DATE	
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NASA	DATE	
SAFETY	DATE	
SUPERVISOR	DATE	

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SUBSTATION
SINGLE LINE RELAY DIAGRAM

SIZE	CAGE CODE		REV
D	25307	A232-0800- E110	
SCALE		INDEX	SHEET OF

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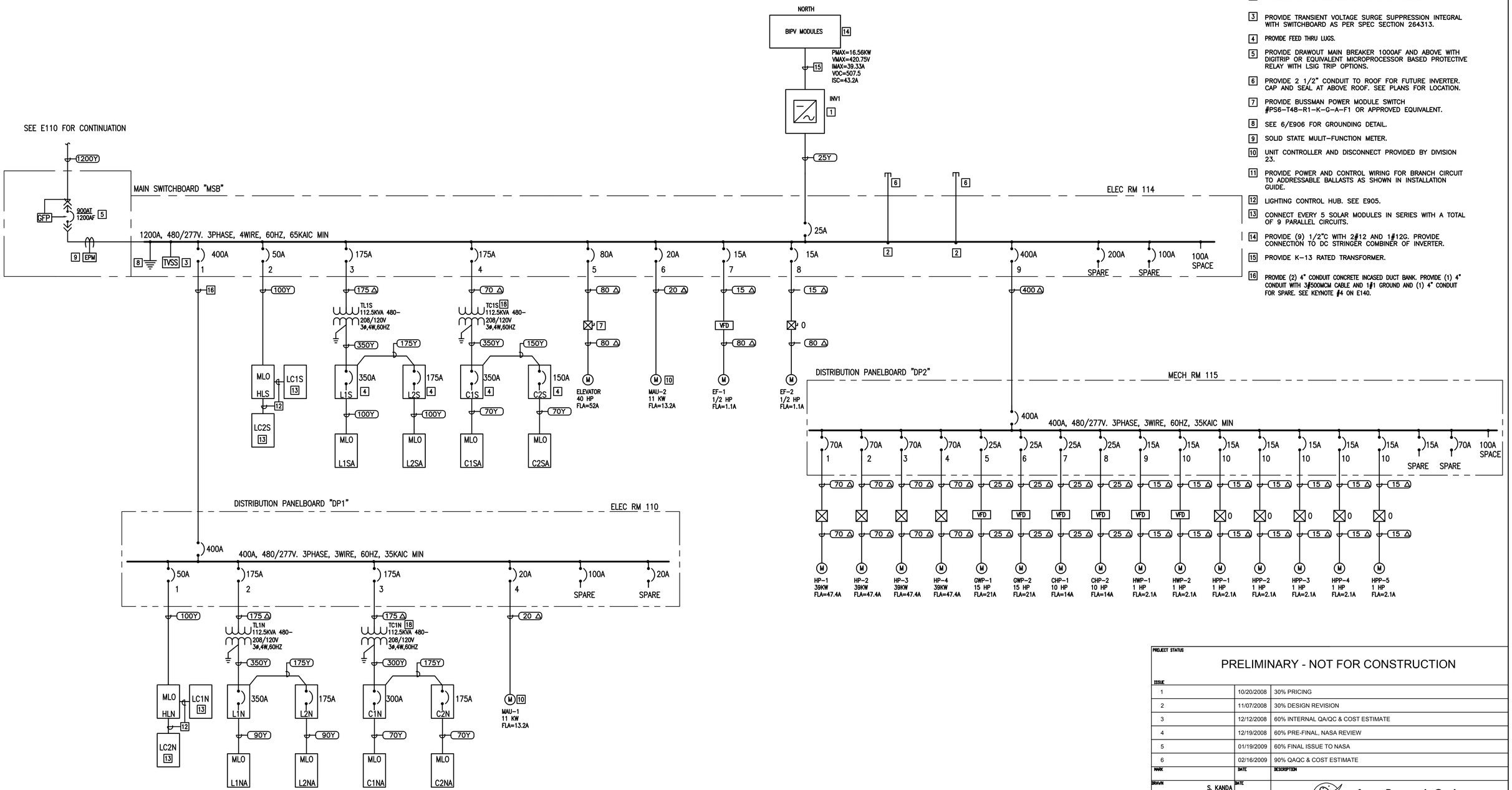
Xrefs: XBOR

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET E120 FOR FEEDER SCHEDULE.

PLAN NOTES:

1. PROVIDE XANTREX OR APPROVED EQUAL 15KW INVERTER AT 3 PHASE, 480VAC OUTPUT WITH INTEGRAL GROUND-FAULT PROTECTION DEVICE, FUSED AC AND DC DISCONNECTS, AND OPTIONAL DC STRING COMBINER.
2. PROVIDE SPACE FOR 200A BREAKER FOR FUTURE INVERTER.
3. PROVIDE TRANSIENT VOLTAGE SURGE SUPPRESSION INTEGRAL WITH SWITCHBOARD AS PER SPEC SECTION 264313.
4. PROVIDE FEED THRU LUGS.
5. PROVIDE DRAWOUT MAIN BREAKER 1000AF AND ABOVE WITH DIGITRIP OR EQUIVALENT MICROPROCESSOR BASED PROTECTIVE RELAY WITH LSIG TRIP OPTIONS.
6. PROVIDE 2 1/2" CONDUIT TO ROOF FOR FUTURE INVERTER. CAP AND SEAL AT ABOVE ROOF. SEE PLANS FOR LOCATION.
7. PROVIDE BUSSMAN POWER MODULE SWITCH #PS6-T48-R1-K-G-A-F1 OR APPROVED EQUIVALENT.
8. SEE 6/E906 FOR GROUNDING DETAIL.
9. SOLID STATE MULIT-FUNCTION METER.
10. UNIT CONTROLLER AND DISCONNECT PROVIDED BY DIVISION 23.
11. PROVIDE POWER AND CONTROL WIRING FOR BRANCH CIRCUIT TO ADDRESSABLE BALLASTS AS SHOWN IN INSTALLATION GUIDE.
12. LIGHTING CONTROL HUB. SEE E905.
13. CONNECT EVERY 5 SOLAR MODULES IN SERIES WITH A TOTAL OF 9 PARALLEL CIRCUITS.
14. PROVIDE (9) 1/2"C WITH 2#12 AND 1#12G. PROVIDE CONNECTION TO DC STRINGER COMBINER OF INVERTER.
15. PROVIDE K-13 RATED TRANSFORMER.
16. PROVIDE (2) 4" CONDUIT CONCRETE INCASED DUCT BANK. PROVIDE (1) 4" CONDUIT WITH 3#500MCM CABLE AND 1#1 GROUND AND (1) 4" CONDUIT FOR SPARE. SEE KEYNOTE #4 ON E140.



PROJECT STATUS		
PRELIMINARY - NOT FOR CONSTRUCTION		
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DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REQUESTOR		DATE
NASA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SINGLE LINE DIAGRAM

SIZE	CAGE CODE		REV
D	25307	A232-0800- E111	
SCALE		INDEX	SHEET OF

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CONDUIT AND WIRE SCHEDULE

FEEDER NUMBER	PARALLEL FEEDER	WIRE QTY & SIZE	NEUTRAL SIZE	GROUND SIZE	CONDUIT SIZE	FEEDER LENGTH (NOTE 1)	LOAD AMPS	VOLTAGE	VD %
	XX	WIRES BY XXXX			XXXX	XXXX	XXXX	XXXX	XXXX
15 △	1	3#12		1#12	3/4"				
25 △	1	3#12		1#10	3/4"				
50 △	1	3#6		1#10	3/4"				
70 △	1	3#4		1#8	1"				
80 △	1	3#3		1#8	1 1/4"				
125 △	1	3#1		1#6	1 1/4"				
175 △	1	3-2/0		1#6	2"				
400 △	1	3-500KCMIL		1#3	3"				
500 △	1	3-500KCMIL		1#3	4"				
25Y	1	3#12	3#12	1#10	3/4"				
70Y	1	3#4	1#4	1#8	1 1/4"				
90Y	1	3#3	1#3	1#8	1 1/4"				
100Y	1	3#3	1#3	1#8	1 1/4"				
175Y	1	3#-2/0	1#-2/0	1#6	2"				
200Y	1	3#-4/0	1#-4/0	1#6	2 1/2"				
300Y	1	3-350KCMIL	1-350KCMIL	1#4	2 1/2"				
350Y	1	3-500KCMIL	1-500KCMIL	1#2	3"				
1200Y	4	3-350KCMIL	1-350KCMIL	1#-3/0	4"				

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1

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DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REQUESTOR		DATE
RGDA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FEEDER SCHEDULE

SIZE	CAGE CODE		REV
D	25307	A232-0800- E120	
SCALE		INDEX	SHEET OF

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Xrefs: *ymodxfe-existing utilities *XRDR-SHORT

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER, OR APPROVED EQUAL	MODEL NUMBER	BALLAST	INPUT WATTAGE	VOLTAGE	LAMP	MOUNTING	MOUNTING HEIGHT	DESCRIPTION
A1	FINELITE S16	X-S16-WCB-X-1T5-X-91W-OPEN-277-FA-EE-ECOSYSTEM	LUTRON ECOSYSTEM	33	277	(1) 28-WATT T5 LINEAR FLUORESCENT.	PENDANT	FIRST FLOOR 9'-0" AFF SECOND FLOOR 8'-3" AFF	
A1E	FINELITE S16 WITH BATTERY BACKUP	X-S16-WCB-X-1T5-X-91W-OPEN-277-FA-EE-ECOSYSTEM	LUTRON ECOSYSTEM	33	277	(1) 28-WATT T5 LINEAR FLUORESCENT.	PENDANT	FIRST FLOOR 9'-0" AFF SECOND FLOOR 8'-3" AFF	
A2	ZUMTOBEL SPHEROS	SN-1285-4-W-U-X1-ECOSYSTEM	LUTRON ECOSYSTEM	33	277	(1) 28-WATT T5 LINEAR FLUORESCENT.	PENDANT	FIRST FLOOR 9'-0" AFF SECOND FLOOR 8'-3" AFF	
B1	ELLIPTIPAR OVALINEAR	F140-T128-X-02-2-X-0	LUTRON ECOSYSTEM	33	277	(1) 28-WATT T5 LINEAR FLUORESCENT.	PENDANT	FIRST FLOOR 9'-0" AFF SECOND FLOOR 8'-3" AFF	
C1	OMEGA OM6LED	OM6LED-10-3K-MD-CS-277-DIM	LED DRIVER	24	277	(1) 24-WATT LED	RECESSED	CEILING	
F1	LITHONIA	AFP-2-28-277-GEB10IS	ELECTRONIC	65	277	(2) 28-WATT T5 LINEAR FLUORESCENT.	PENDANT	FIRST FLOOR 9'-0" AFF SECOND FLOOR 8'-3" AFF	
G1	CUSTOM		ELECTRONIC	138	277	(4) 32-WATT COMPACT FLUORESCENT.	PENDANT		
H1	BEGA 2492P	2492-P	ELECTRONIC	55	277	(2) 26-WATT COMPACT FLUORESCENT	SURFACE	FIRST FLOOR 9'-0" AFF SECOND FLOOR 8'-3" AFF	
J1	STONCO	VCXL-26W-HFL-120V	ELECTRONIC	29	120	WITH UNIT	SURFACE WALL MOUNT	2'-0" AFF OF ELEVATOR PIT	
K1	PRESCOLITE	ASP80CVS	ELECTRONIC	29	120	(2) LAMP HEADS WITH UNIT	SURFACE WALL MOUNT	3'-0" AFF OF ELEVATOR PIT	
X1	DUAL-LITE	LE-W-S-G-X-N-EI	ELECTRONIC	5	277	LED	BACK MOUNT		
X2	DUAL-LITE	LE-E-S-G-D-N-EI	ELECTRONIC	5	277	LED	END MOUNT		
X3	DUAL-LITE	LE-C-D-G-D-N-EI	ELECTRONIC	5	277	LED	END MOUNT		

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SUPERVISOR	DATE	

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

LIGHT FIXTURE SCHEDULE

SIZE	CAGE CODE		REV
D	25307	A232-0800- E121	

SCALE | INDEX | SHEET OF

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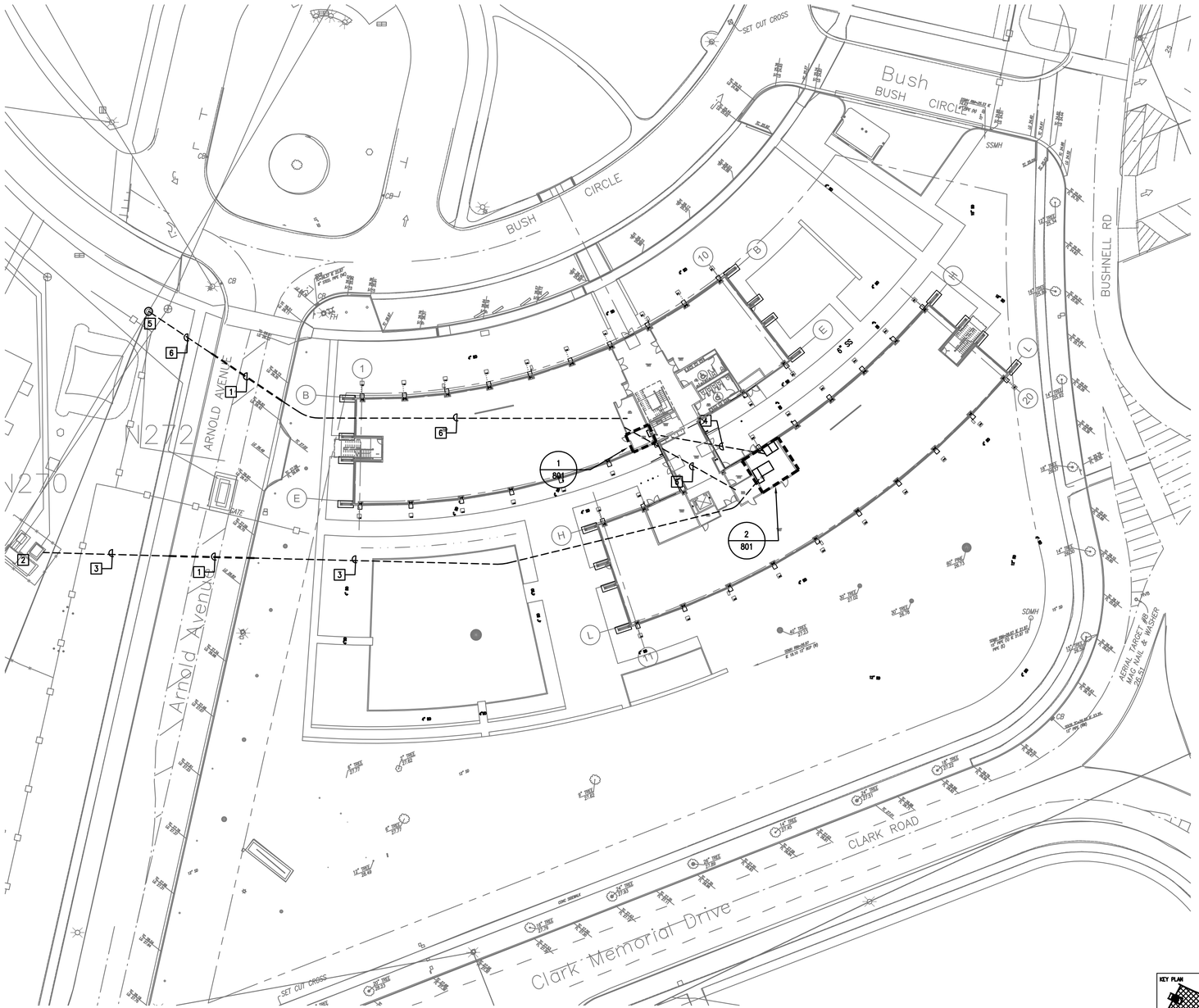

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. PROVIDE PULL WIRE IN SPARE CONDUITS.
3. EXISTING CONDUITS AND DUCT BANKS TO REMAIN UNLESS OTHERWISE NOTED.
4. COORDINATE NEW UTILITY WORK WITH ALL EXISTING UTILITY WORK.
5. PROTECT EXISTING ELECTRICAL AND COMMUNCATION CONDUITS DURING CONSTRUCTION.

PLAN NOTES:

1. PROVIDE JACKED RIGID STEEL CASING SLEEVES UNDER ACCESS ROAD FOR CONDUITS. SEE CIVIL PLAN DETAILS.
2. EXISTING SWITCH #691.
3. PROVIDE (2) 4"CONDUIT CONCRETE INCASED DUCTBANK. (1) 4" CONDUIT CONTAINING 3-1/C #350MCM CABLE AT 15KV, EPR, AND 133% INSULATED AND (1) 4" CONDUIT FOR SPARE. SEE 3/E906.
4. PROVIDE (2) 4" CONDUIT CONCRETE INCASED DUCT BANK. PROVIDE (1) 4" CONDUIT WITH 3#500KCMIL CABLE AND 1#1 GROUND AND (1) 4" CONDUIT FOR SPARE. SEE 3/E906.
5. EXISTING COMMUNICATION MANHOLE.
6. PROVIDE (2) 4" CONDUIT CONCRETE INCASED DUCT BANK FOR COMMUNICATION. SEE 7/E906.

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ADDRESS
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KEY PLAN

NORTH ARROW

BLDG NORTH, TRUE NORTH

1"=30'-0" 0 15 30 60 90

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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DESIGNED	N. ZECH	DATE
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NASA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

ELECTRICAL SITE PLAN

SIZE	CAGE CODE		REV
D	25307	A232-0800- E140	
SCALE		INDEX	SHEET OF

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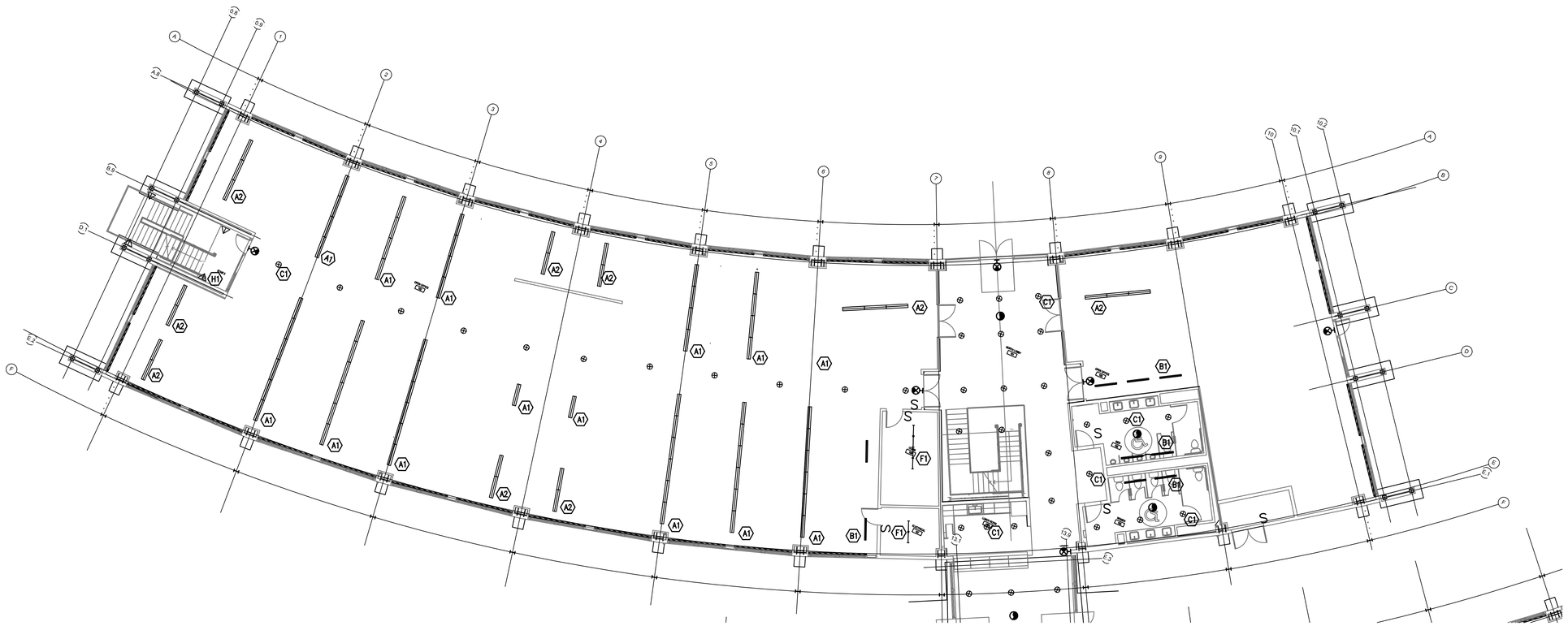
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.



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MARK	DATE	DESCRIPTION

KEY PLAN

NORTH ARROW

BLDG NORTH

TRUE NORTH

3/32"=1' 0 8 16 32 48

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REVIEWSTOR		DATE
RILGA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR LIGHTING PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E311	
SCALE	INDEX	SHEET OF	

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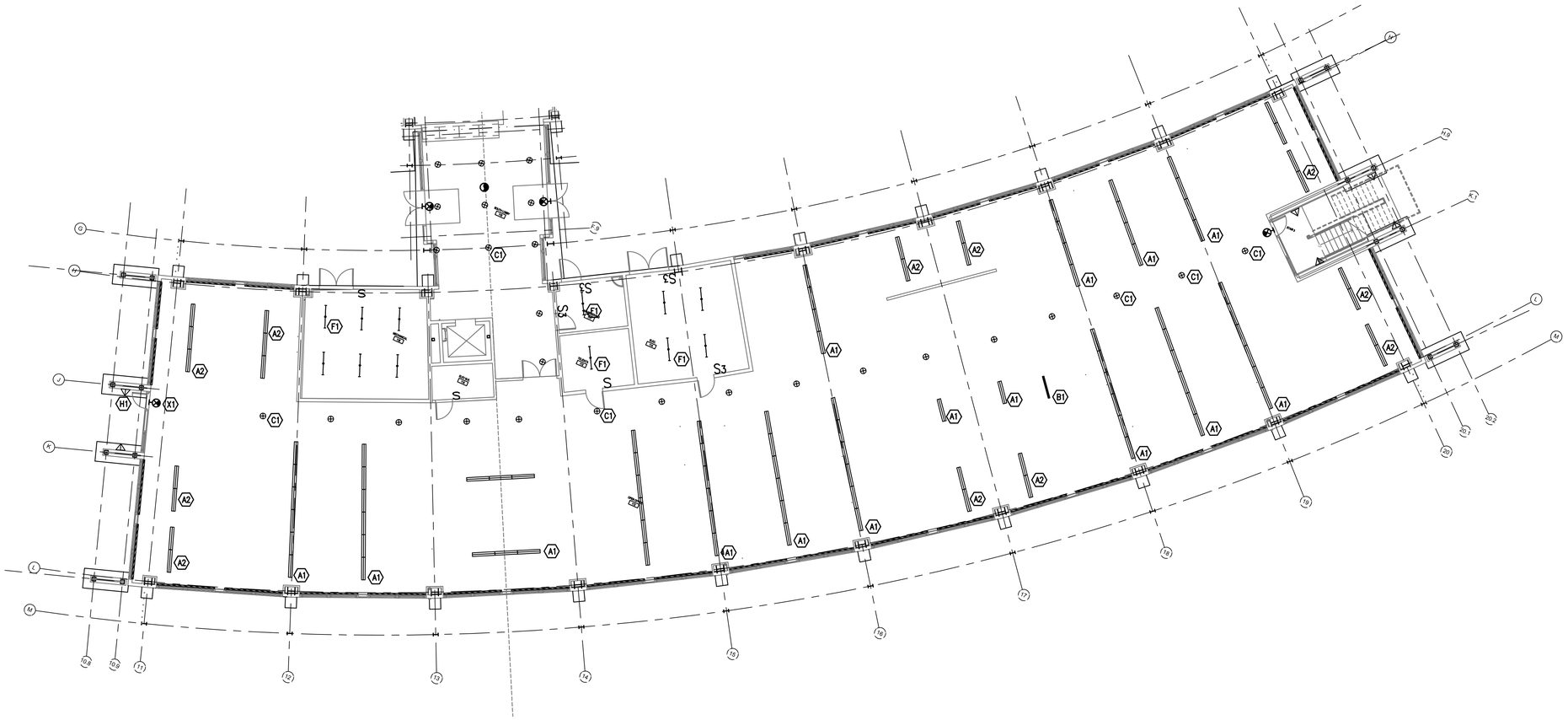

GENERAL NOTES:

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MARK	DATE	DESCRIPTION

KEY PLAN

NORTH ARROW

BLDG NORTH
TRUE NORTH

3/32"=1' 0 8 16 32 48

DRAWN	L.DICKENS	DATE
DESIGNED	V. DANG	DATE
CHECKED	A. REED	DATE
PRELIMGR		DATE
REVIEWER		DATE
RILGA		DATE
SAFETY		DATE
SUPERVISOR	S. PAINTER	DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR LIGHTING PLAN SOUTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E312	
SCALE	INDEX	SHEET OF	

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GENERAL NOTES:

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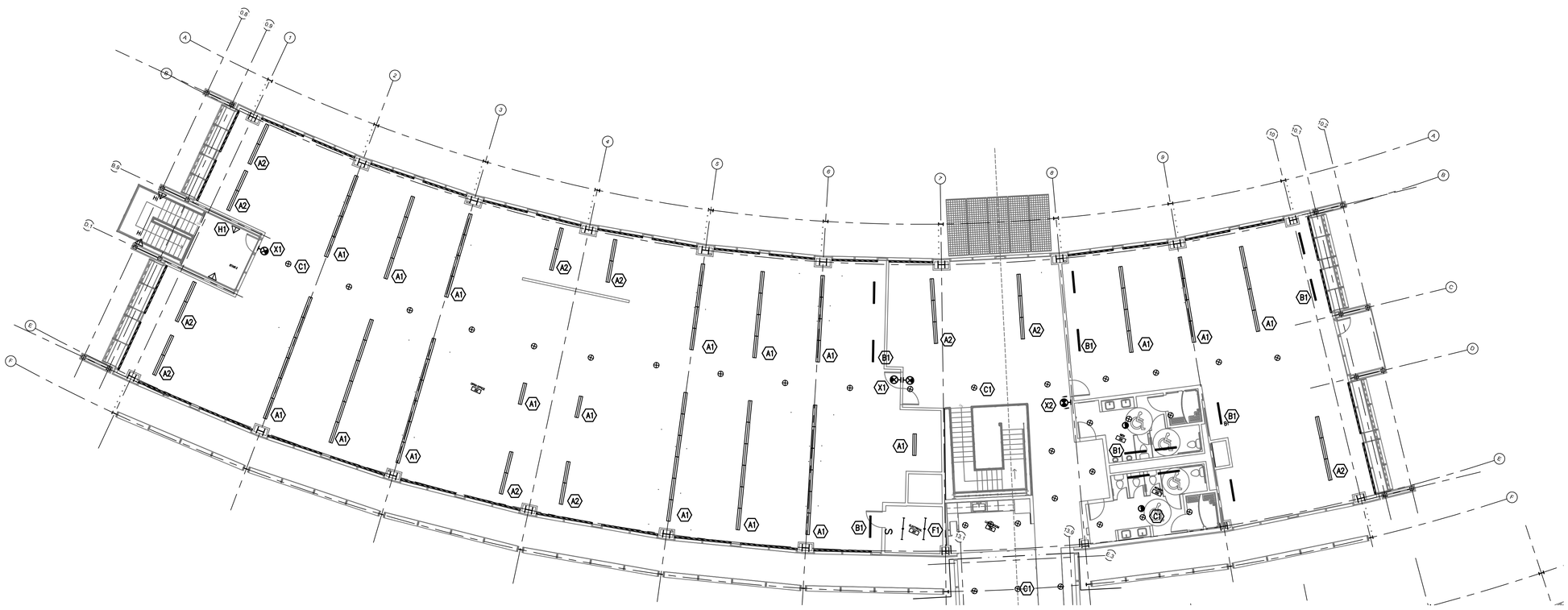

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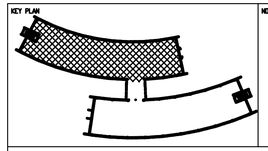

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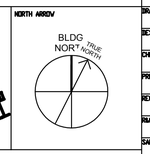

3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMER		DATE
REVIEWER		DATE
NASA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR
LIGHTING PLAN
NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E321	
SCALE	INDEX	SHEET OF	

DWG: Q:\00048683 - NASA Ames CSF N232\500 CAD\E\Sheet\E321.dwg User: zechn
DATE: Feb 15, 2009 - 12:41:07 pm Images:
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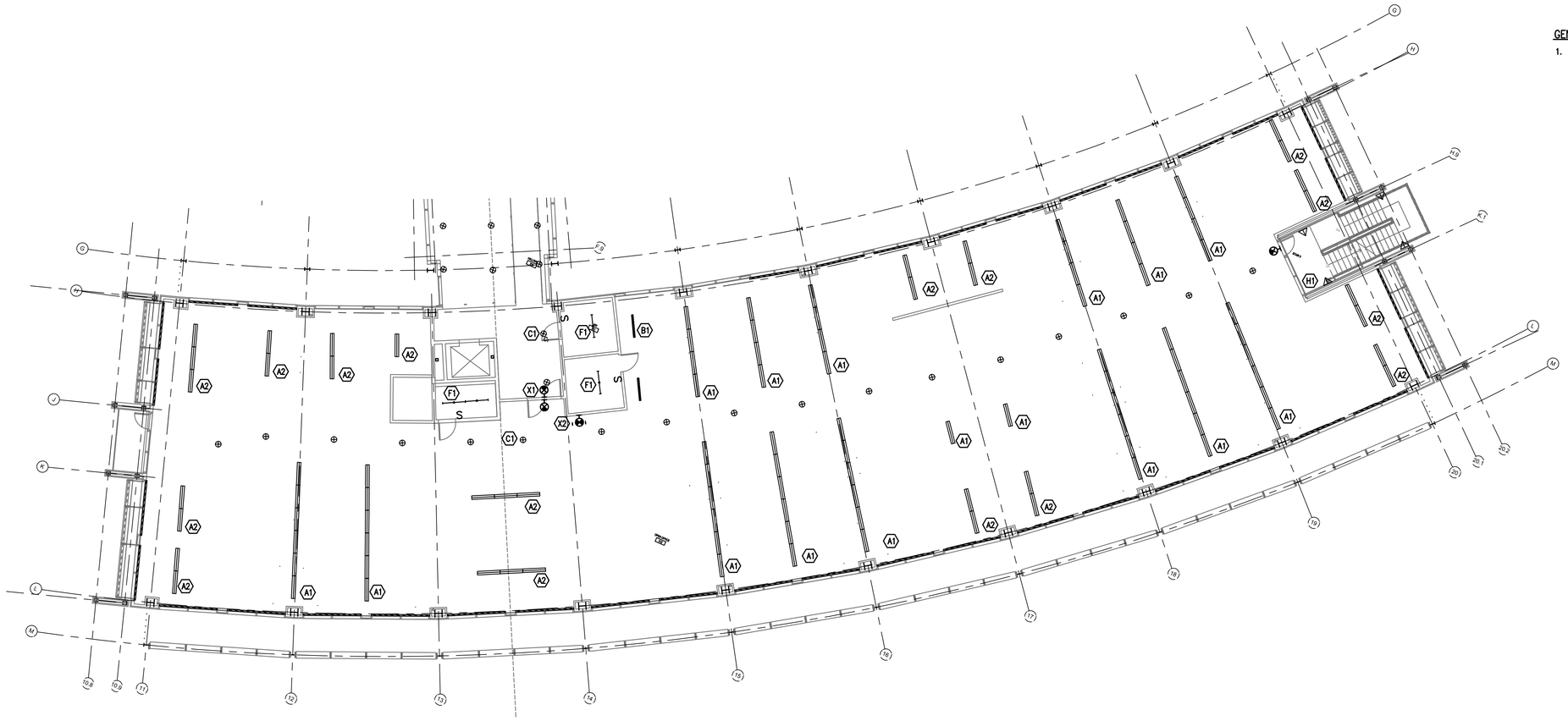
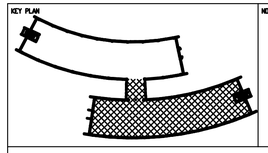


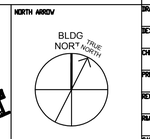
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

KEY PLAN



NORTH ARROW



3/32"=1'

0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMIER		DATE
REQUESTOR		DATE
NASA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR
LIGHTING PLAN
SOUTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E322	
SCALE		INDEX	SHEET OF

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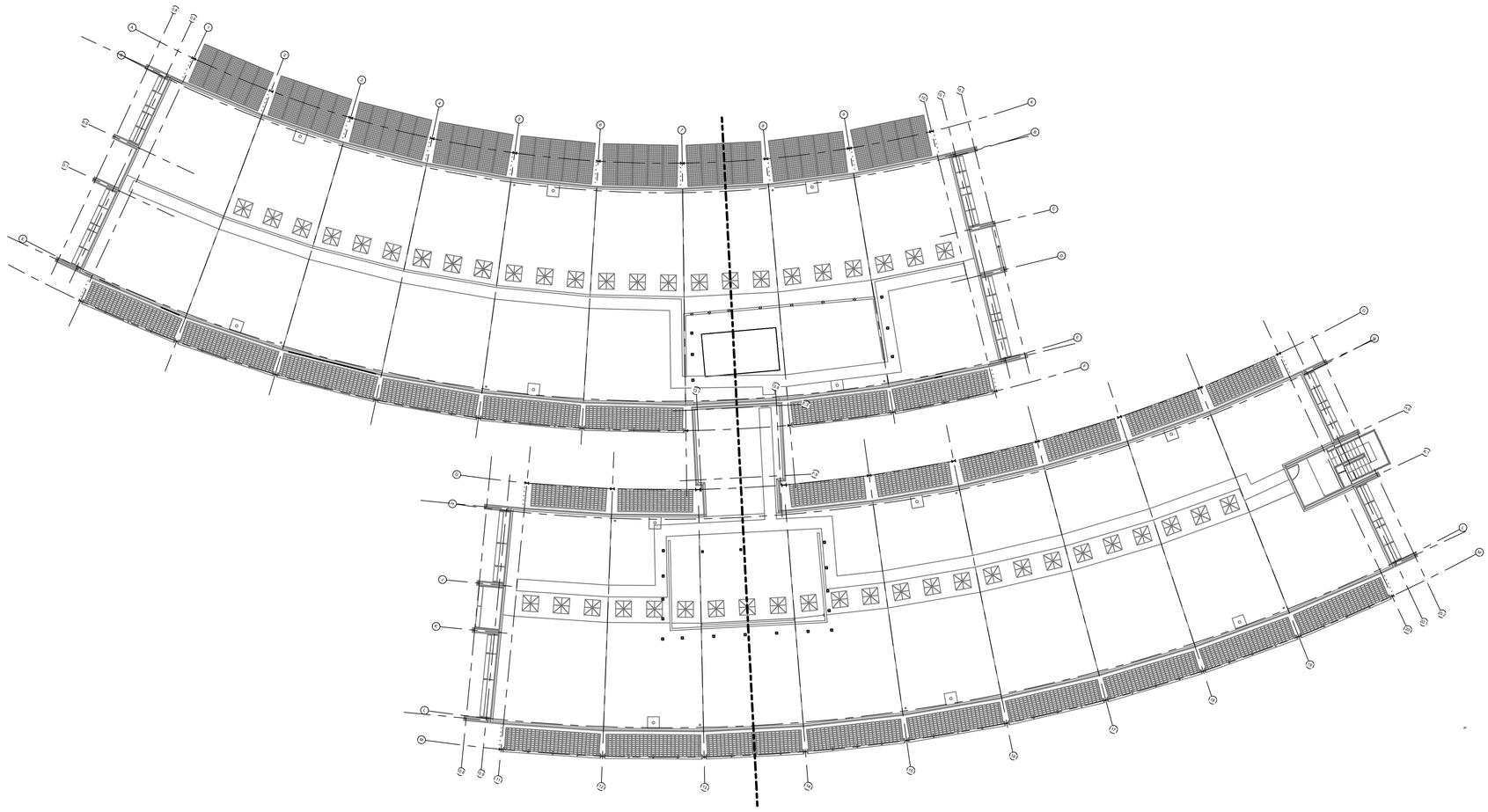
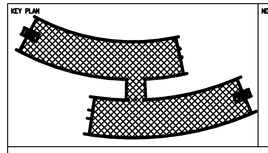


GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

KEY PLAN



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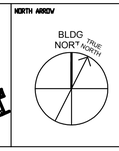

1/16"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PROJMGR		DATE
REQUESTOR		DATE
FACM		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

LIGHTING
ROOF PLAN

SIZE	CAGE CODE		REV
D	25307	A232-0800- E331	
SCALE		INDEX	SHEET OF

DWG: Q:\60048683 - NASA Ames CSF N232\300 CAD\E\Sheet\E331.dwg User: zechn
DATE: Feb 16, 2009 - 8:33:54 pm Images:
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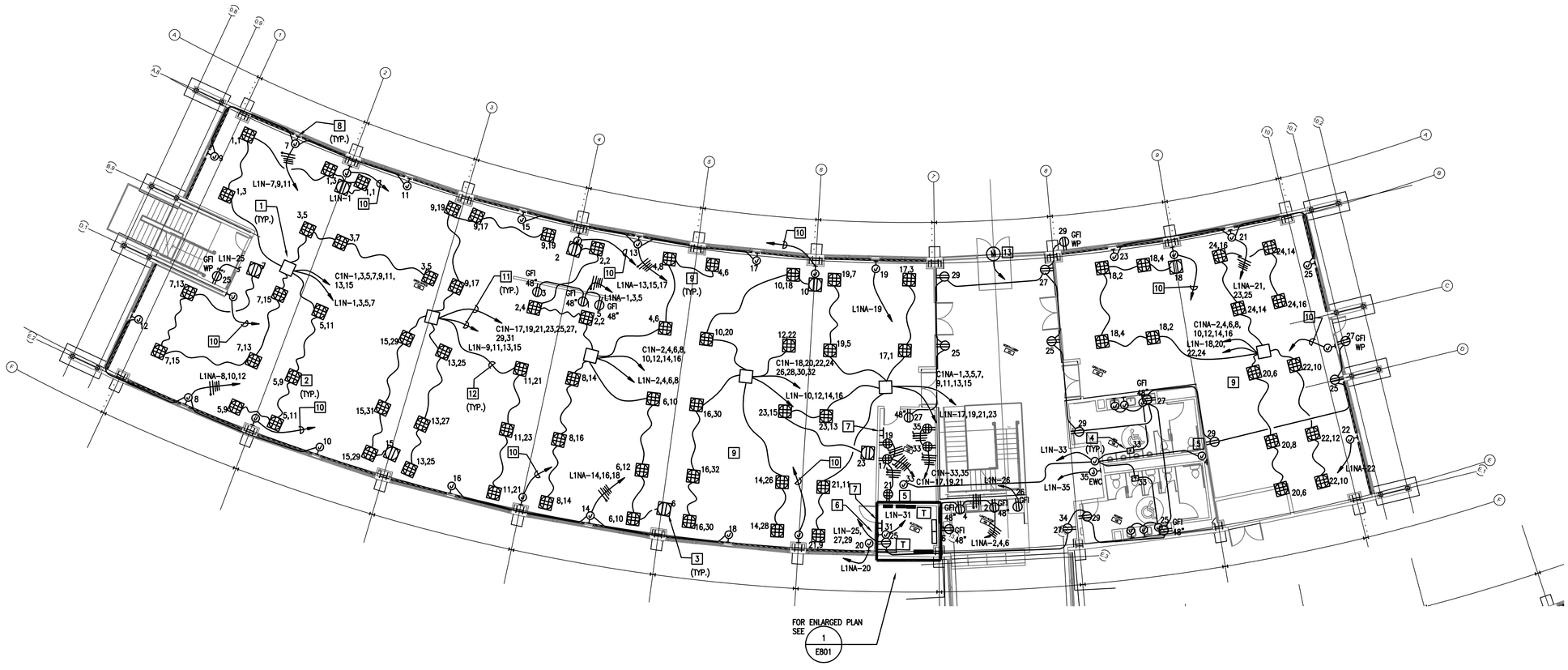

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. POWER DISTRIBUTION MODULE (PDM). SEE 3/E907.
2. PROVIDE RAISED FLOOR BOX WITH (3) DUPLEX RECEPTACLES AND (2) DATA AND (1) TELEPHONE JACK. SEE 4/E907. ONE DUPLEX RECEPTACLE TO BE MARKED AND PROVIDED FOR COMPUTER LOADS AND THE OTHER (2) TO BE PROVIDED FOR MISC. LOADS. SEE E511 FOR TELECOMMUNICATION CONNECTIONS.
3. PROVIDE RAISED FLOOR BOX WITH (1) DUPLEX RECEPTACLE.
4. PROVIDE TRANSFORMER AND POWER FOR AUTOMATIC ACTUATION VALVES. LOCATE TRANSFORMER IN LOCAL ACCESS SPACE. SEE 4/E906.
5. PROVIDE 120V POWER CONNECTION TO FIRE/SMOKE DAMPER. COORDINATE WITH DIVISION 23.
6. PROVIDE POWER FOR FIRE ALARM SYSTEM. COORDINATE WITH FIRE ALARM INSTALLER.
7. GROUND BAR. COORDINATE LOCATION WITH EQUIPMENT. SEE 6/906.
8. PROVIDE 120V CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
9. PROVIDE GROUNDING TO UNDERFLOOR PEDESTAL SYSTEM IN AREAS WITH RAISED FLOOR PER MANUFACTURERS RECOMMENDATIONS. SEE 1/E906 FOR PEDESTAL BOND DETAIL.
10. PROVIDE 24VDC CONNECTION FOR FUNCTIONAL FENESTRATION RB24 RELAY BOX OR APPROVED MOTORIZED WINDOW CONTROL SYSTEM FOR MOTORIZED WINDOWS. PROVIDE CONNECTION TO ELECTRICAL ROOM 210. CONNECT TO POWER SUPPLY LOCATED IN POWER SUPPLY CABINET. SEE E802.
11. HOMERUN FOR PDM. SEE 6/E907.
12. ACCESS FLOOR BOX CONNECTOR. SEE 5/E907.
13. MOTORIZED DOOR OPENER.

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
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5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

KEY PLAN

NORTH ARROW

BLDG NORTH / TRUE NORTH

3/32"=1' 0 8 16 32 48

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REVIEWER		DATE
RIGGA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR POWER PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E411	
SCALE		INDEX	SHEET OF

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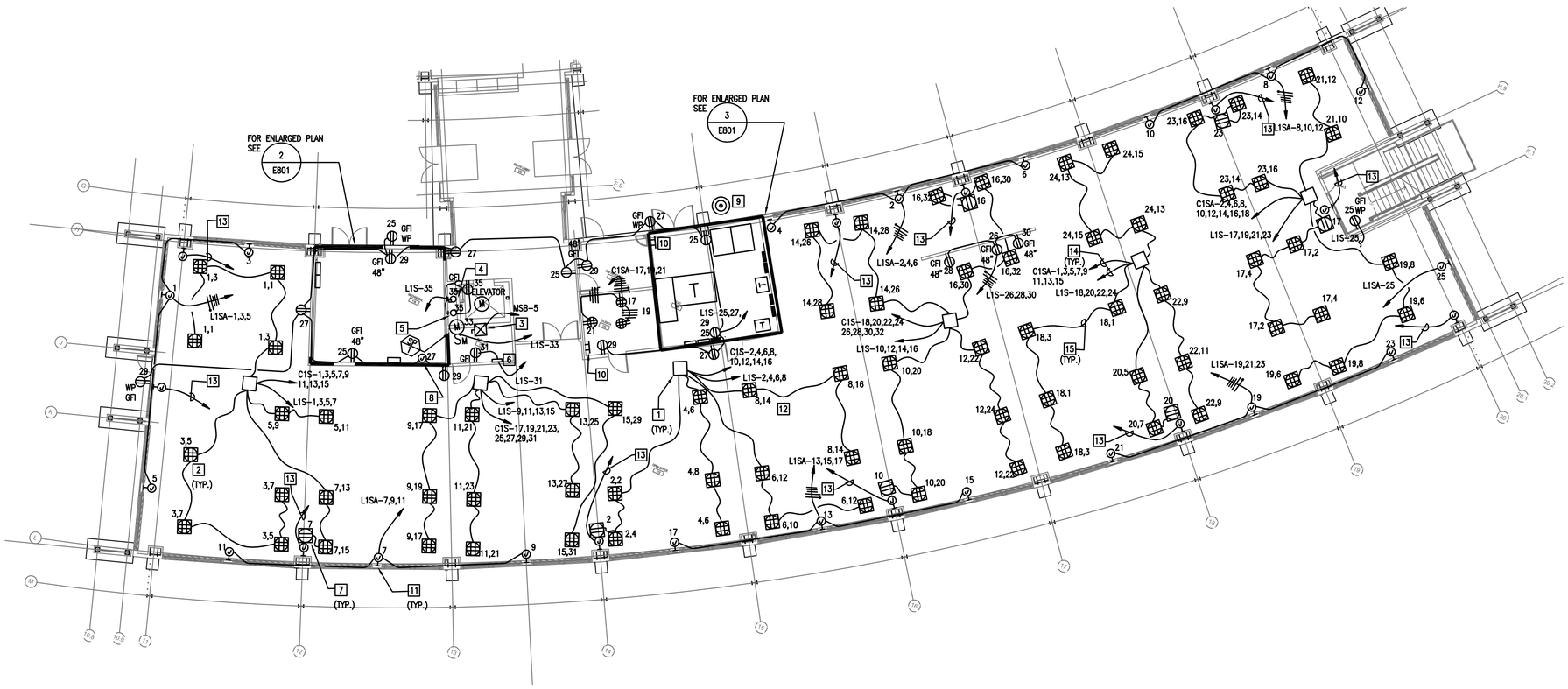

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. POWER DISTRIBUTION MODULE (PDM). SEE 3/E907.
2. PROVIDE RAISED FLOOR BOX WITH (3) DUPLEX RECEPTACLES AND (2) DATA AND (1) TELEPHONE JACK. SEE 4/E907. ONE DUPLEX RECEPTACLE TO BE MARKED AND PROVIDED FOR COMPUTER LOADS AND THE OTHER (2) TO BE PROVIDED FOR MISC. LOADS. SEE E511 FOR TELECOMMUNICATION CONNECTIONS.
3. ELEVATOR DISCONNECT MODULE. SEE E111.
4. PROVIDE LIGHT FIXTURE J1.
5. PROVIDE LIGHT FIXTURE K1.
6. 20A, 120V ENCLOSED LOCKABLE CIRCUIT BREAKER IN NEMA 1 ENCLOSURE TO SERVE CAR LIGHT AND RECEPTACLE.
7. PROVIDE RAISED FLOOR BOX WITH (1) DUPLEX RECEPTACLE.
8. PROVIDE 120V POWER CONNECTION TO FIRE/SMOKE DAMPER. COORDINATE WITH DIVISION 23.
9. PROVIDE GROUND TEST WELL. SEE 8/906. PROVIDE GROUND RODS UNTIL RESISTANCE IS TESTED AND VERIFIED AT 25 OHMS OR LESS.
10. GROUND BAR. COORDINATE LOCATION WITH EQUIPMENT. SEE 6/906.
11. PROVIDE 120V CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
12. PROVIDE GROUNDING TO UNDERFLOOR PEDESTAL SYSTEM IN AREAS WITH RAISED FLOOR PER MANUFACTURERS RECOMMENDATIONS. SEE 1/E906 FOR PEDESTAL BOND DETAIL.
13. PROVIDE 24VDC CONNECTION FOR FUNCTIONAL FENESTRATION RB24 RELAY BOX OR APPROVED MOTORIZED WINDOW CONTROIL SYSTEM FOR MOTORIZED WINDOWS. PROVIDE CONNECTION TO ELECTRICAL ROOM 2XX. CONNECT TO POWER SUPPLY LOCATED IN POWER SUPPLY CABINET. SEE XXX
14. HOMERUN FOR PDM. SEE 6/E907.
15. ACCESS FLOOR BOX CONNECTOR. SEE 5/E907.

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
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3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

KEY PLAN

NORTH ARROW

BLDG NORTH — TRUE NORTH

3/32"=1' 0 8 16 32 48

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REVIEWER		DATE
RAGA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR POWER PLAN SOUTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E412	
SCALE	INDEX	SHEET OF	

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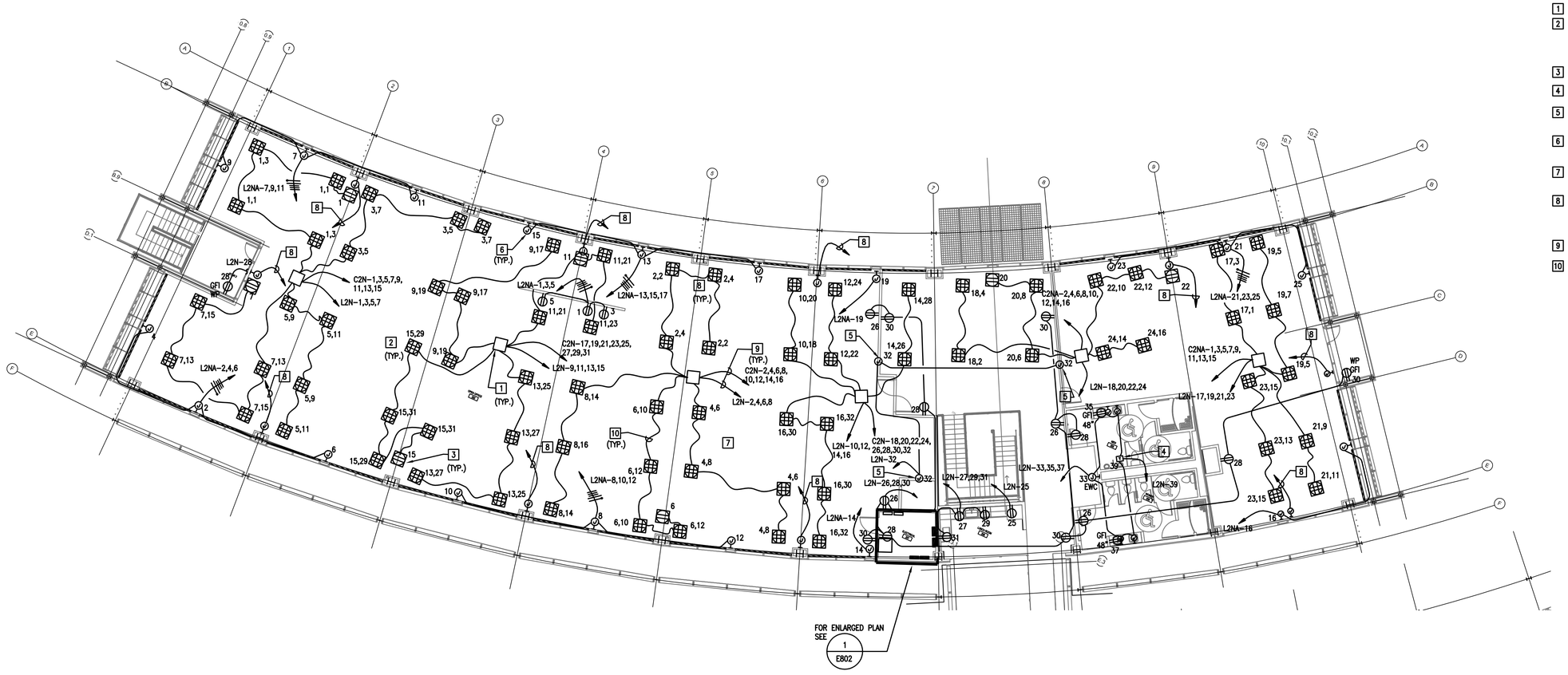


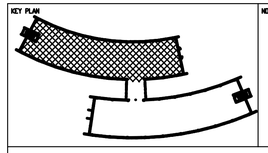
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

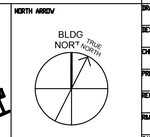
PLAN NOTES:

1. POWER DISTRIBUTION MODULE (PDM). SEE 3/E907.
2. PROVIDE RAISED FLOOR BOX WITH (3) DUPLEX RECEPTACLES AND (2) DATA AND (1) TELEPHONE JACK. SEE 4/E907. ONE DUPLEX RECEPTACLE TO BE MARKED AND PROVIDED FOR COMPUTER LOADS AND THE OTHER (2) TO BE PROVIDED FOR MISC. LOADS. SEE E521 FOR TELECOMMUNICATION CONNECTIONS.
3. PROVIDE RAISED FLOOR BOX WITH (1) DUPLEX RECEPTACLE.
4. PROVIDE TRANSFORMER AND POWER FOR AUTOMATIC ACTUATION VALVES. LOCATE TRANSFORMER IN LOCAL ACCESS SPACE. SEE 4/E906.
5. PROVIDE 120V POWER CONNECTION TO FIRE/SMOKE DAMPER. COORDINATE WITH DIVISION 23.
6. PROVIDE 120V CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
7. PROVIDE GROUNDING TO UNDERFLOOR PEDESTAL SYSTEM IN AREAS WITH RAISED FLOOR PER MANUFACTURERS RECOMMENDATIONS. SEE 1/E906 FOR PEDESTAL BOND DETAIL.
8. PROVIDE 24VDC CONNECTION FOR FUNCTIONAL FENESTRATION RB24 RELAY BOX OR APPROVED MOTORIZED WINDOW CONTROL SYSTEM FOR MOTORIZED WINDOWS. PROVIDE CONNECTION TO ELECTRICAL ROOM 210. CONNECT TO POWER SUPPLY LOCATED IN POWER SUPPLY CABINET. SEE XXX
9. HOMERUN FOR PDM. SEE 6/E907.
10. ACCESS FLOOR BOX CONNECTOR. SEE 5/E907.

KEY PLAN



NORTH ARROW



3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PROJMGR		DATE
REQUESTOR		DATE
RSGA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR POWER PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E421	
SCALE		INDEX	SHEET OF

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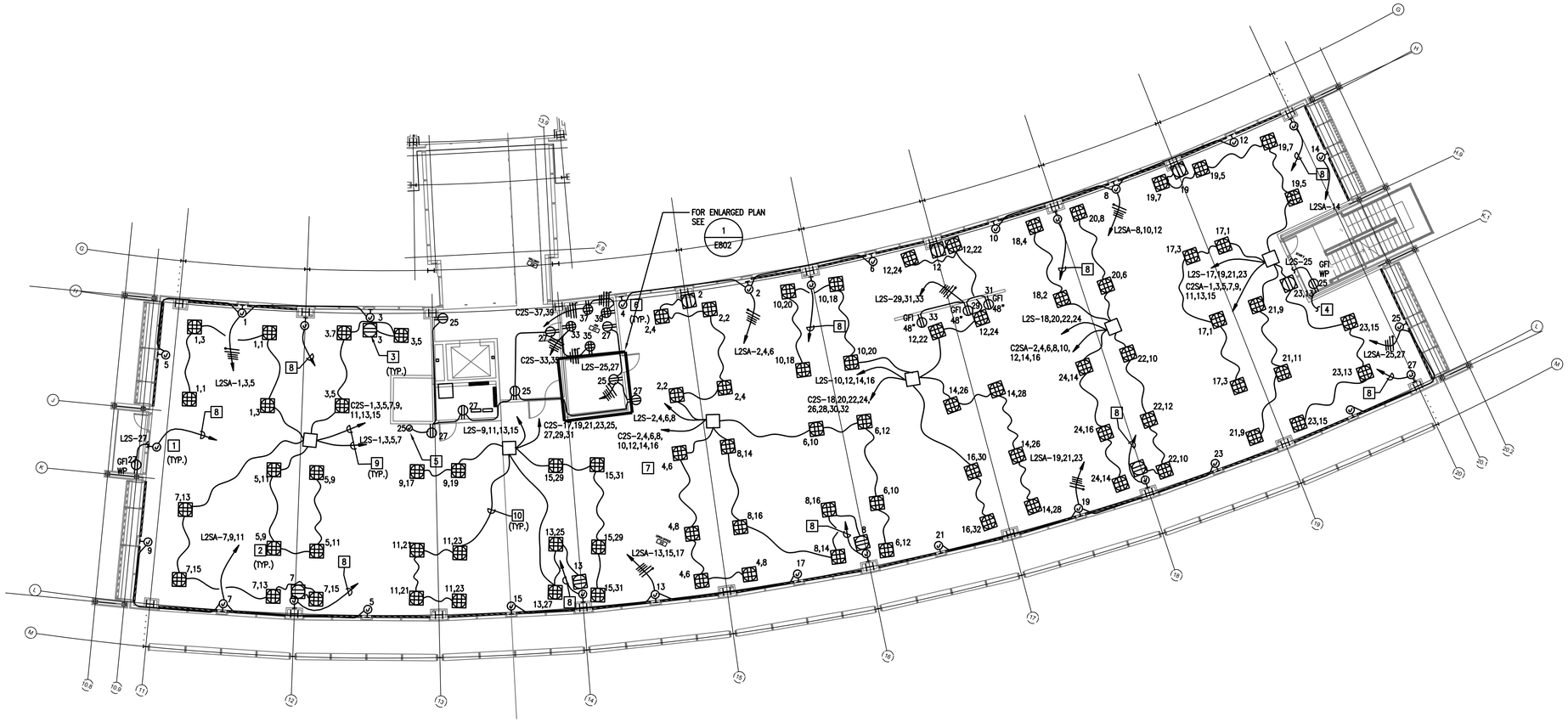


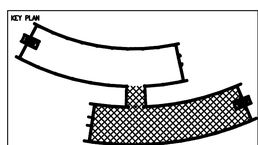
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

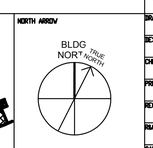
PLAN NOTES:

1. POWER DISTRIBUTION MODULE (PDM). SEE 3/E907.
2. PROVIDE RAISED FLOOR BOX WITH (3) DUPLEX RECEPTACLES AND (2) DATA AND (1) TELEPHONE JACK. SEE 4/E907. ONE DUPLEX RECEPTACLE TO BE MARKED AND PROVIDED FOR COMPUTER LOADS AND THE OTHER (2) TO BE PROVIDED FOR MISC. LOADS. SEE E522 FOR TELECOMMUNICATION CONNECTIONS.
3. PROVIDE RAISED FLOOR BOX WITH (1) DUPLEX RECEPTACLE.
4. CONNECT TO RECEPTACLE ON ROOF LEVEL. SEE E431.
5. PROVIDE 120V POWER CONNECTION TO FIRE/SMOKE DAMPER. COORDINATE WITH DIVISION 23.
6. PROVIDE 120V CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
7. PROVIDE GROUNDING TO UNDERFLOOR PEDESTAL SYSTEM IN AREAS WITH RAISED FLOOR PER MANUFACTURERS RECOMMENDATIONS. SEE 1/E906 FOR PEDESTAL BOND DETAIL.
8. PROVIDE 24VDC CONNECTION FOR FUNCTIONAL FENESTRATION R924 RELAY BOX OR APPROVED MOTORIZED WINDOW CONTROL SYSTEM FOR MOTORIZED WINDOWS. PROVIDE CONNECTION TO ELECTRICAL ROOM 2XX. CONNECT TO POWER SUPPLY LOCATED IN POWER SUPPLY CABINET. SEE XXX
9. HOMERUN FOR PDM. SEE 6/E907.
10. ACCESS FLOOR BOX CONNECTOR. SEE 5/E907.

KEY PLAN



NORTH ARROW



3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMIER		DATE
REVIEWSTER		DATE
RGOA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR POWER PLAN SOUTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E422	
SCALE		INDEX	SHEET OF

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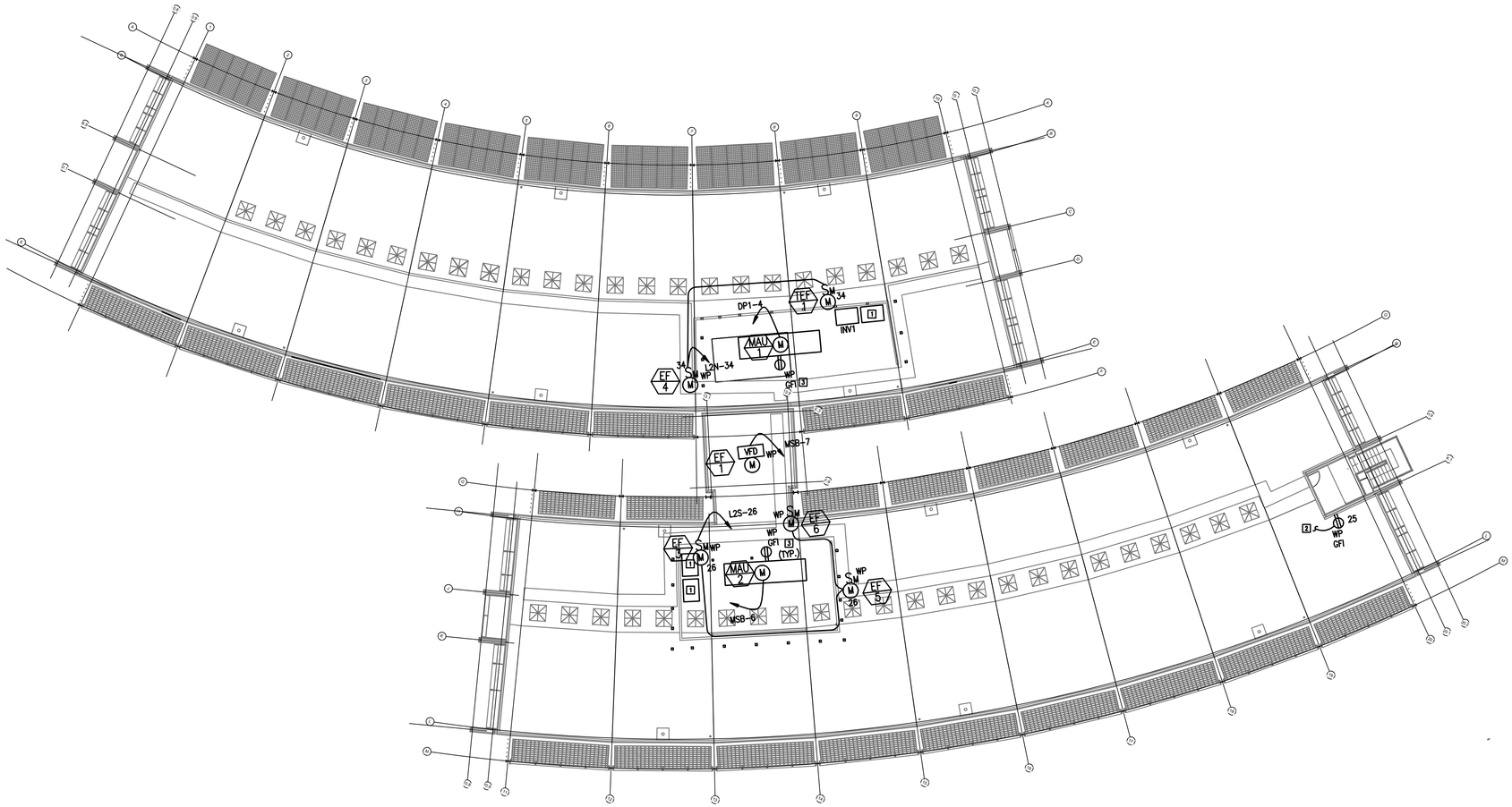
DATE: Feb 16, 2009 - 12:22 pm Images:
Xrefs: "AAFP02" "R08R-SHART" "AEPWR02" "AEQOP02" "AAFP02-SPACE PLAN" "N232_S09_CENTRAL_rvt-1-Level 2 Export- Space Plan



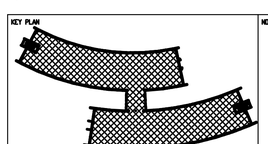
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. AREA FOR FUTURE INVERTER SYSTEM.
2. CONNECT TO CIRCUIT BELOW. SEE E422.
3. INTEGRAL MAINTAINCE RECEPTACLE PROVIDED AND INSTALLED BY DIVISION 23.

KEY PLAN



NORTH ARROW

1/16"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REQUESTOR		DATE
NSQA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY
ROOF
POWER PLAN

SIZE	CAGE CODE			REV
D	25307	A232-0800-	E431	
SCALE		INDEX	SHEET OF	

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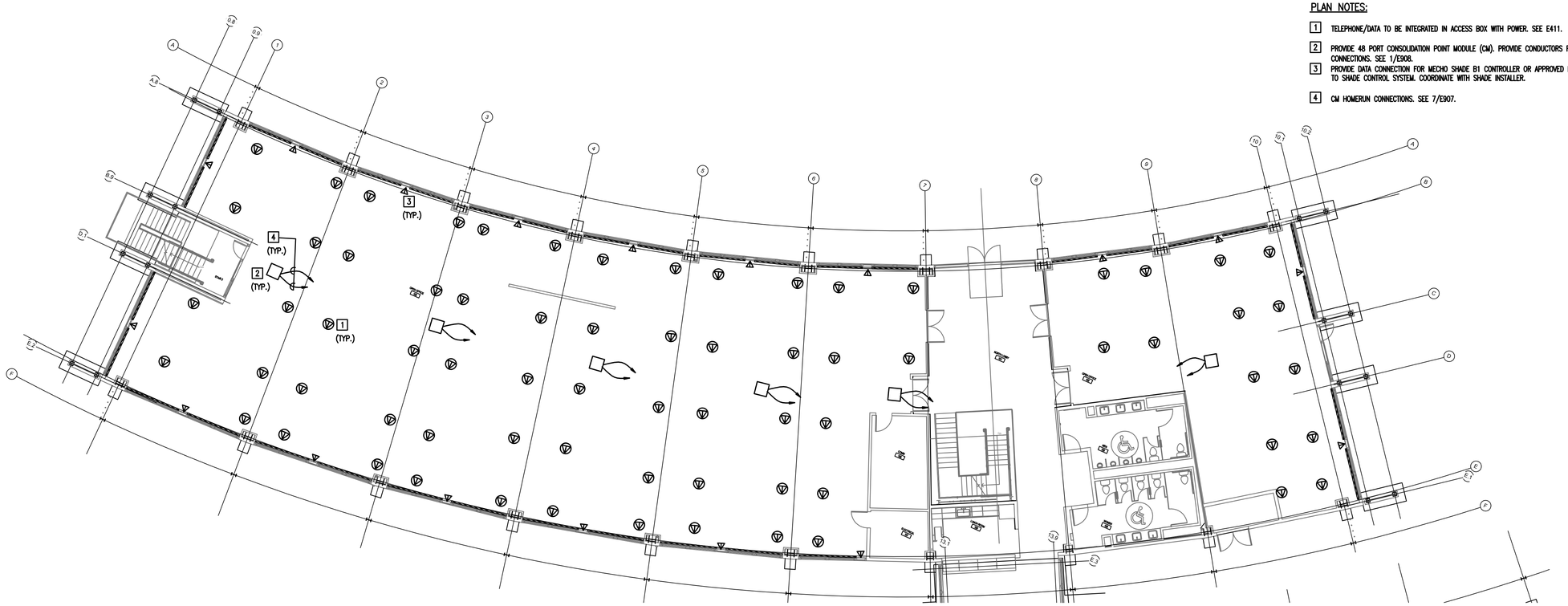
DATE: Feb 16, 2009 - 6:31:14 pm Images:
Xrefs: "XBDR-SHORT" "xAFR01" "xEPWRR"

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. TELEPHONE/DATA TO BE INTEGRATED IN ACCESS BOX WITH POWER. SEE E411.
2. PROVIDE 48 PORT CONSOLIDATION POINT MODULE (CM). PROVIDE CONDUCTORS FOR 48 CONNECTIONS. SEE 1/E908.
3. PROVIDE DATA CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
4. CM HOMERUN CONNECTIONS. SEE 7/E907.



PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
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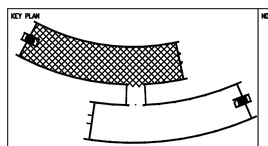
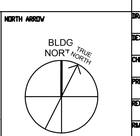
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

KEY PLAN



NORTH ARROW



3/32"=1' 0 8 16 32 48

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMIER		DATE
REQUESTER		DATE
NASA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR COMMUNICATIONS PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E511	
SCALE	INDEX	SHEET OF	

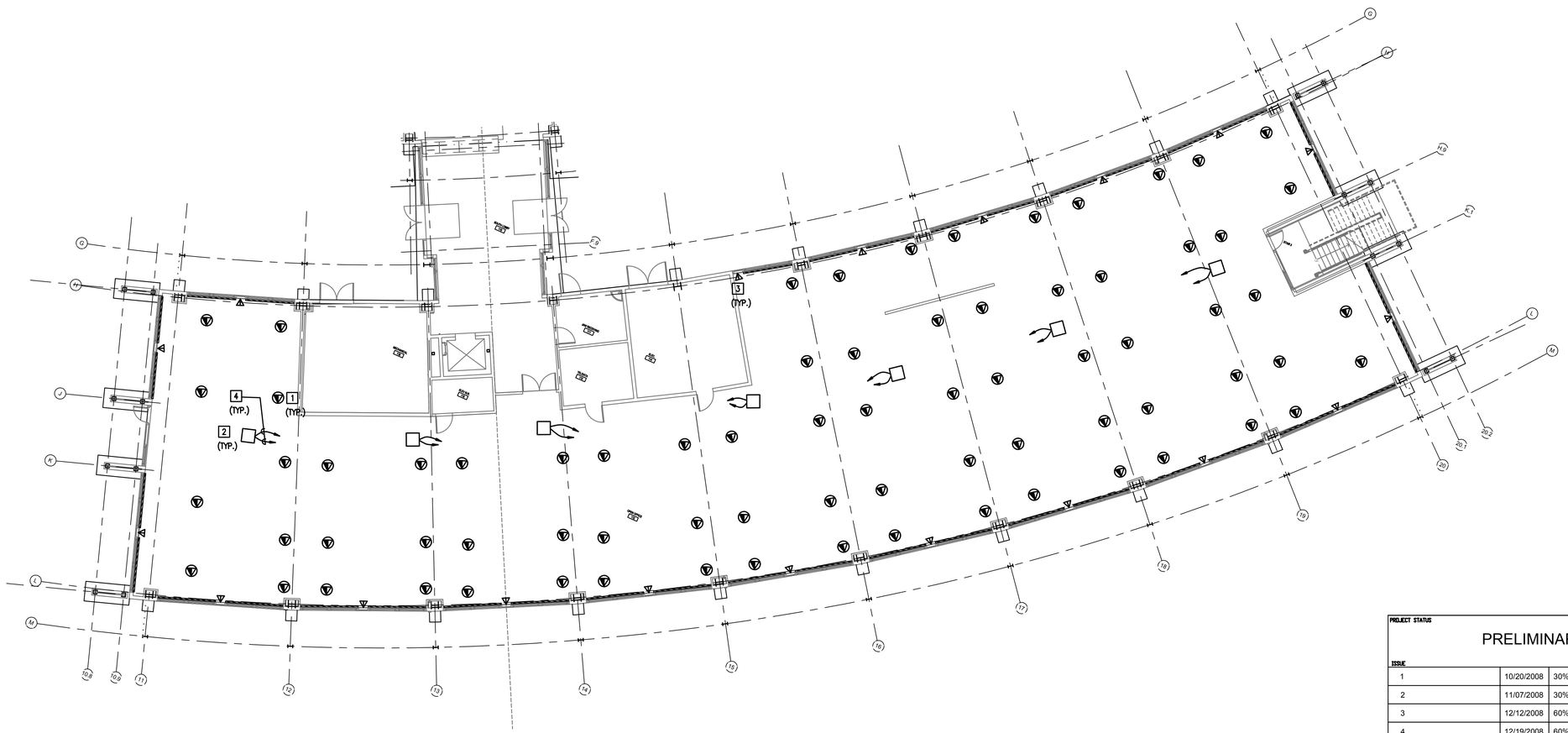
DWG: Q:\00048683 - NASA Ames CSF N232\500 CAD\E\Sheet\E511.dwg User: zechn
DATE: Feb 16, 2009 - 8:23:06 pm Images:
Xrefs: "AAFF01" "AARC01" "ABBR-SHORT" "ACCOM01"

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. TELEPHONE/DATA TO BE INTEGRATED IN ACCESS BOX WITH POWER. SEE E412.
2. PROVIDE 48 PORT CONSOLIDATION POINT MODULE (CM). PROVIDE CONDUCTORS FOR 48 CONNECTIONS. SEE 1/E908.
3. PROVIDE DATA CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
4. CM HOMERUN CONNECTIONS. SEE 7/E907.

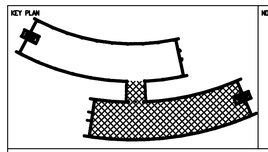


PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

KEY PLAN



NORTH ARROW

3/32"=1' 0 8 16 32 48

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REVIEWSTOR		DATE
RAQA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR COMMUNICATIONS PLAN SOUTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E512	

SCALE | INDEX | SHEET OF

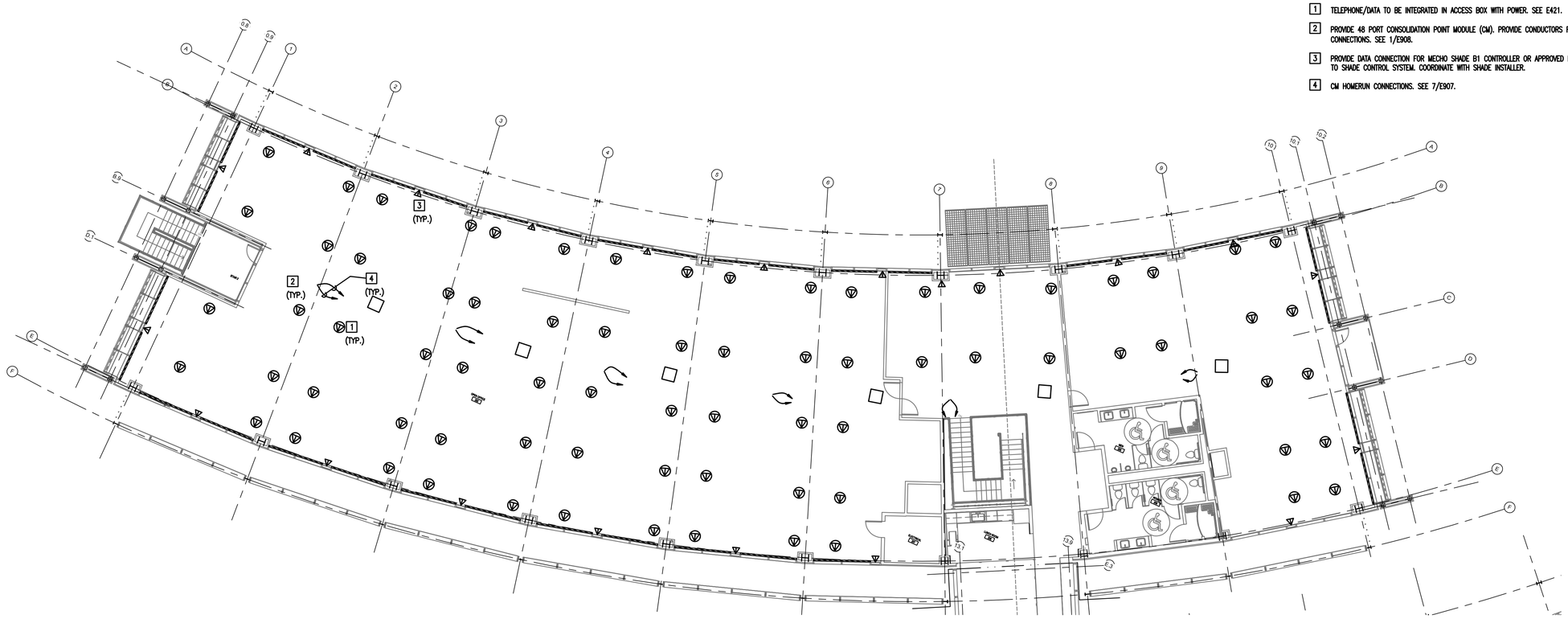
DWG: G:\60048683 - NASA Ames CSF N232\300 CAD\E\Sheet\E512.dwg User: zechn
DATE: Feb 16, 2009 - 8:30 am Images:
Xrefs: AAFP01 AAROO1 ZEBOR-SHORT XECONO1

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. TELEPHONE/DATA TO BE INTEGRATED IN ACCESS BOX WITH POWER. SEE E421.
2. PROVIDE 48 PORT CONSOLIDATION POINT MODULE (CM). PROVIDE CONDUCTORS FOR 48 CONNECTIONS. SEE 1/E908.
3. PROVIDE DATA CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
4. CM HOMERUN CONNECTIONS. SEE 7/E907.



PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

KEY PLAN

NORTH ARROW

BLDG NORTH / TRUE NORTH

3/32"=1' 0 8 16 32 48

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMIER		DATE
REVIEWER		DATE
RLGA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR COMMUNICATIONS PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E521	
SCALE		INDEX	SHEET OF

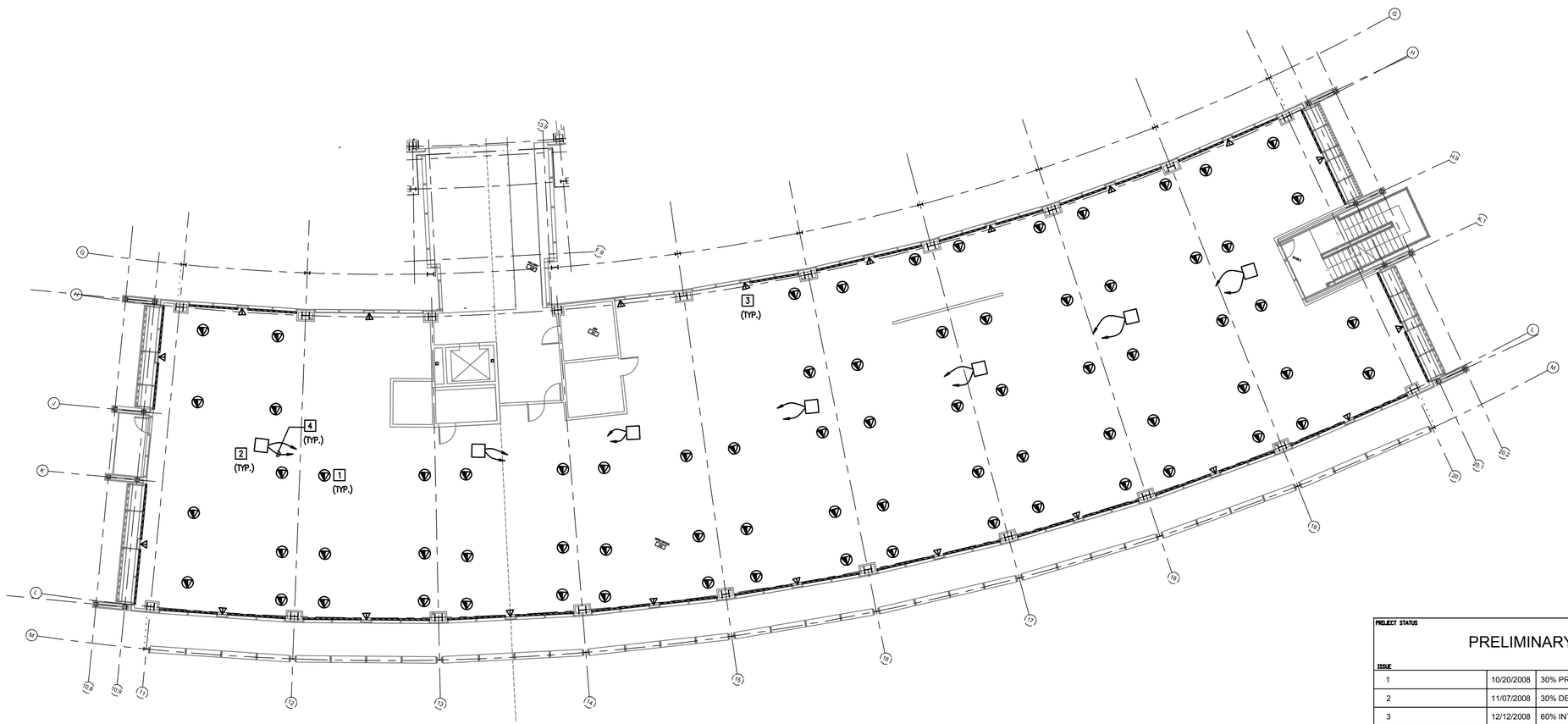
DWG: Q:\60048653 - NASA Ames CSF N232\300 CAD\E\Sheet\E521.dwg User: zechn
DATE: Feb 16, 2009 - 12:25:5 pm Images:
Xrefs: "xAFP02" "208PR-SHORT" "XECOM02"

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. TELEPHONE/DATA TO BE INTEGRATED IN ACCESS BOX WITH POWER. SEE E422.
2. PROVIDE 48 PORT CONSOLIDATION POINT MODULE (CM). PROVIDE CONDUCTORS FOR 48 CONNECTIONS. SEE 1/E908.
3. PROVIDE DATA CONNECTION FOR MECHO SHADE B1 CONTROLLER OR APPROVED EQUAL TO SHADE CONTROL SYSTEM. COORDINATE WITH SHADE INSTALLER.
4. CM HOMERUN CONNECTIONS. SEE 7/E907.



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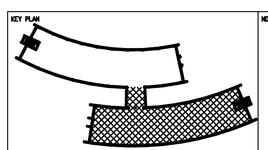

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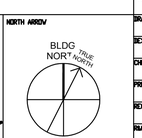


3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2009	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMIN		DATE
REQUESTOR		DATE
FSQA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR COMMUNICATIONS PLAN SOUTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E522	
SCALE	INDEX	SHEET OF	

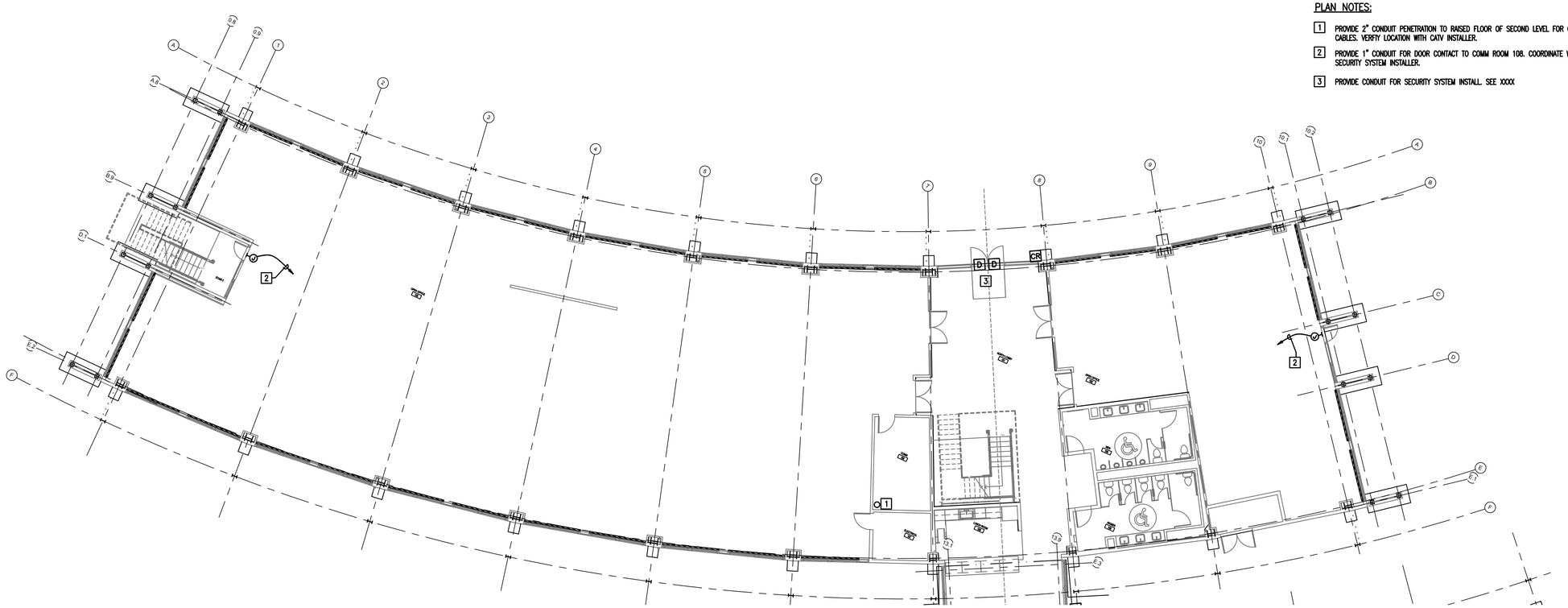
DWG: Q:\60048683 - NASA Ames CSF N232\500 CAD\E\Sheet\E522.dwg User: zechn
DATE: Feb 16, 2009 - 8:32:47 pm Images:
Xrefs: "A4FT02" "R3DR-SHORT" "AECOM02"

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1. PROVIDE 2" CONDUIT PENETRATION TO RAISED FLOOR OF SECOND LEVEL FOR CATV CABLES. VERFIY LOCATION WITH CATV INSTALLER.
2. PROVIDE 1" CONDUIT FOR DOOR CONTACT TO COMM ROOM 108. COORDINATE WITH SECURITY SYSTEM INSTALLER.
3. PROVIDE CONDUIT FOR SECURITY SYSTEM INSTALL. SEE XXXX



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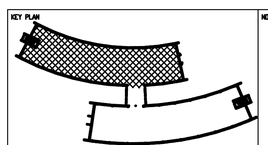

NORTH ARROW

3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMGR		DATE
REVIEWER		DATE
RIGOR		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

FIRST FLOOR SYSTEMS PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E611	
SCALE		INDEX	SHEET OF

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DATE: Feb 16, 2009 - 6:20:41 pm Images:
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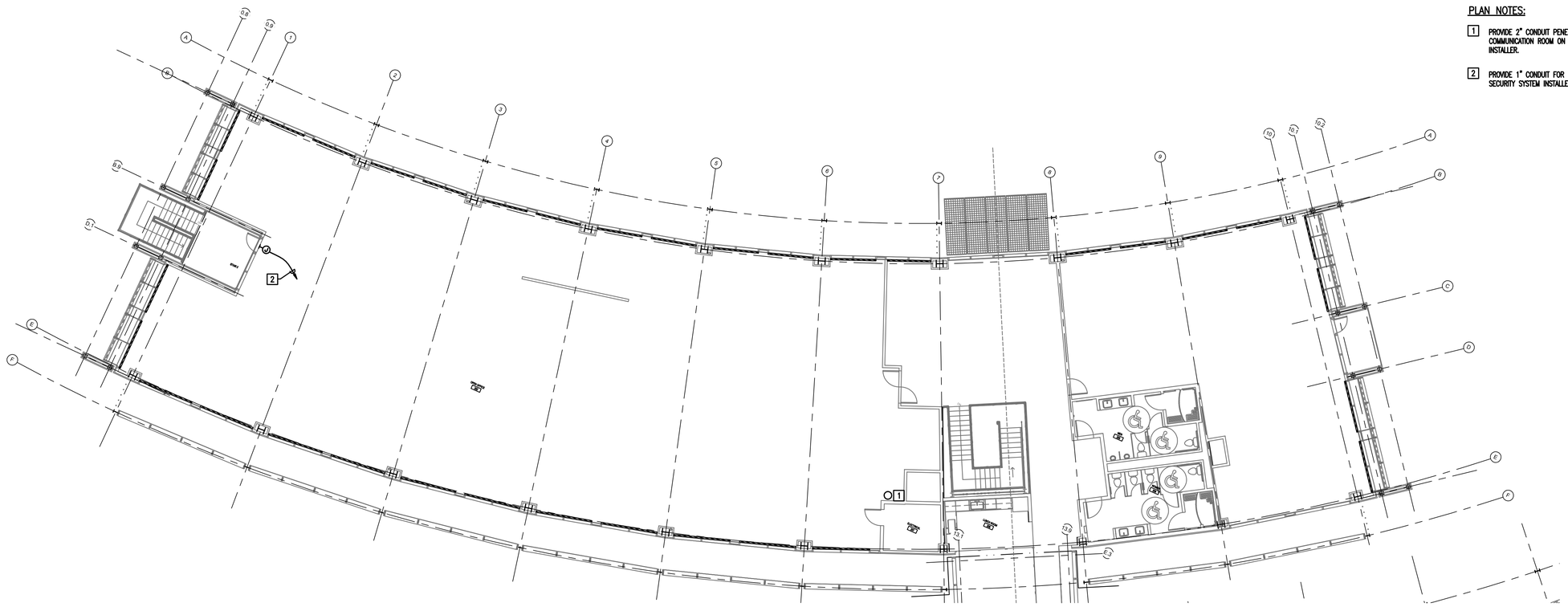


GENERAL NOTES:

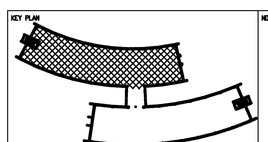
1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

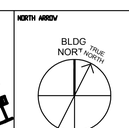
1. PROVIDE 2" CONDUIT PENETRATION FROM ABOVE FLOOR OF SECOND LEVEL TO COMMUNICATION ROOM ON 1ST FLOOR FOR CATV CABLES. VERFIY LOCATION WITH CATV INSTALLER.

2. PROVIDE 1" CONDUIT FOR DOOR CONTACT TO COMM ROOM 108. COORDINATE WITH SECURITY SYSTEM INSTALLER.

KEY PLAN



NORTH ARROW



3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE

MARK	DATE	DESCRIPTION
DRAWN S. KANDA	DATE	
DESIGNED N. ZECH	DATE	
CHECKED	DATE	
PRELIMNER	DATE	
REVIEWSTOR	DATE	
RLGA	DATE	
SAFETY	DATE	
SUPERVISOR	DATE	

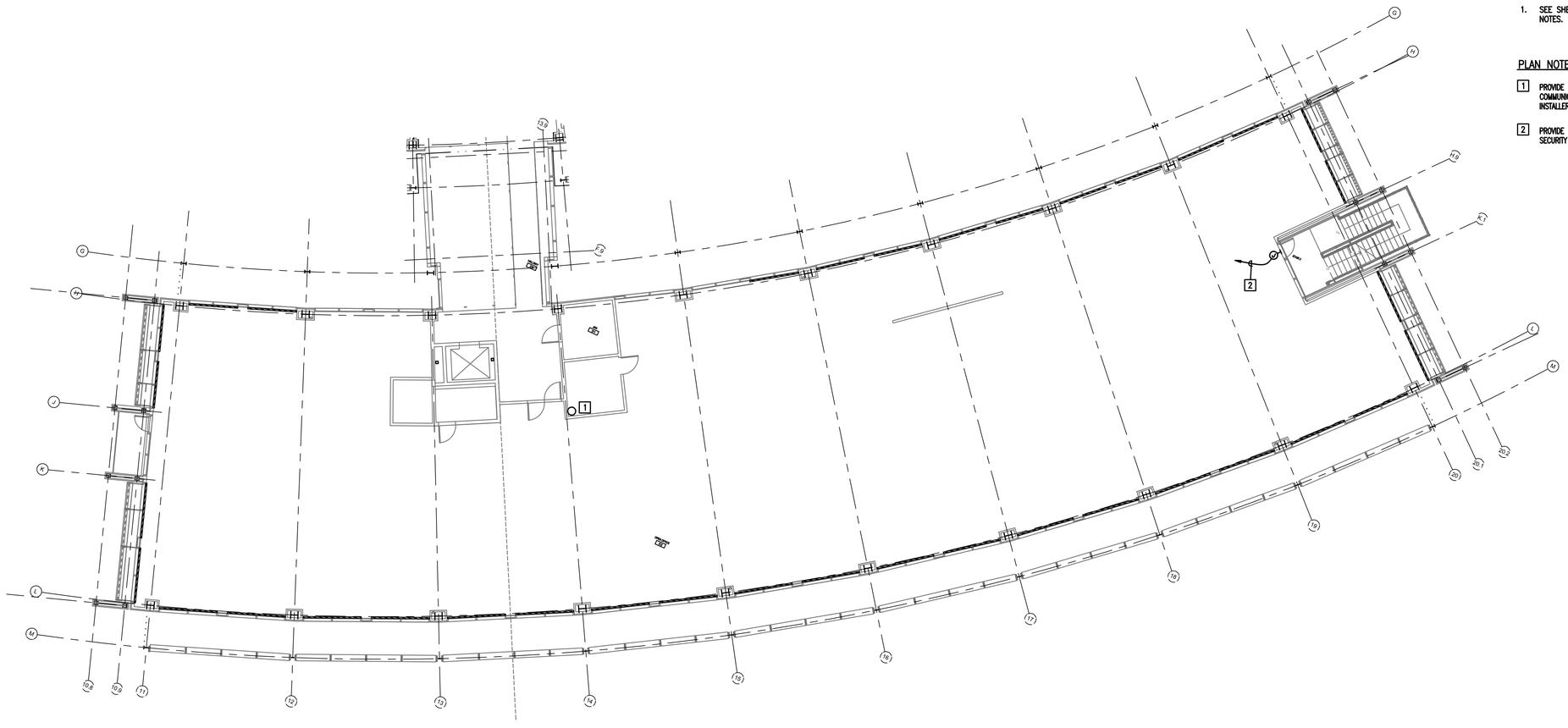
Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR SYSTEMS PLAN NORTH WING

SIZE	CAGE CODE		REV
D	25307	A232-0800- E621	
SCALE	INDEX	SHEET OF	

DWG: G:\60048663 - NASA Ames CSF N232\300 CAD\E\Sheet\E621.dwg User: zechn
DATE: Feb 16, 2009 - 8:22pm Images:
Xrefs: XAFP02 7680R-SHORT XCSTS02



GENERAL NOTES:

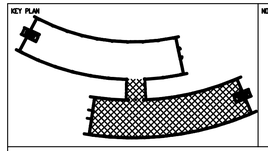
1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

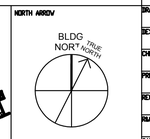
1. PROVIDE 2" CONDUIT PENETRATION FROM ABOVE FLOOR OF SECOND LEVEL TO COMMUNICATION ROOM ON 1ST FLOOR FOR CATV CABLES. VERIFY LOCATION WITH CATV INSTALLER.

2. PROVIDE 1" CONDUIT FOR DOOR CONTACT TO COMM ROOM 108. COORDINATE WITH SECURITY SYSTEM INSTALLER.

KEY PLAN



NORTH ARROW



3/32"=1' 0 8 16 32 48

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMIER		DATE
REVIEWSTER		DATE
NASA		DATE
SAFETY		DATE
SUPERVISOR		DATE

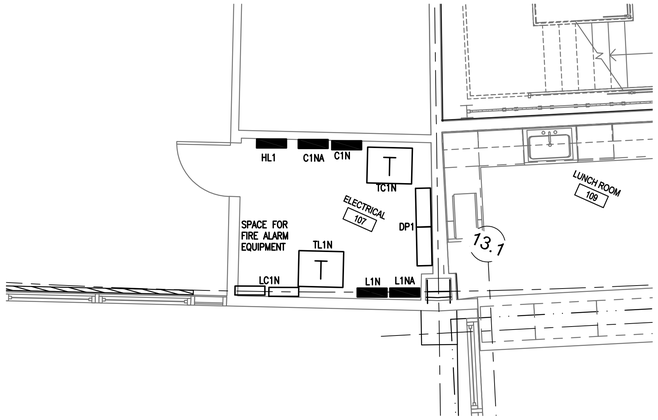
Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

SECOND FLOOR SYSTEMS PLAN SOUTH WING

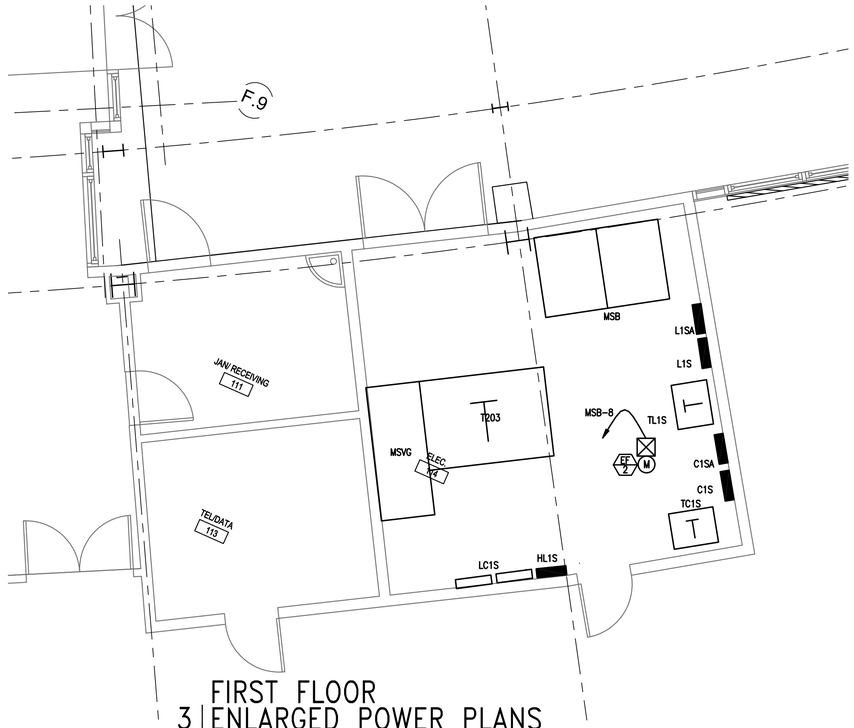
SIZE	CAGE CODE		REV
D	25307	A232-0800- E622	
SCALE		INDEX	SHEET OF

DWG: Q:\00048683 - NASA Ames CSF N232\500 CAD\E\Sheet\E622.dwg User: zechn
DATE: Feb 16, 2009 - 6:22:22 pm Images:
Xrefs: XAFP02 RDBR-SHORT XESTS02



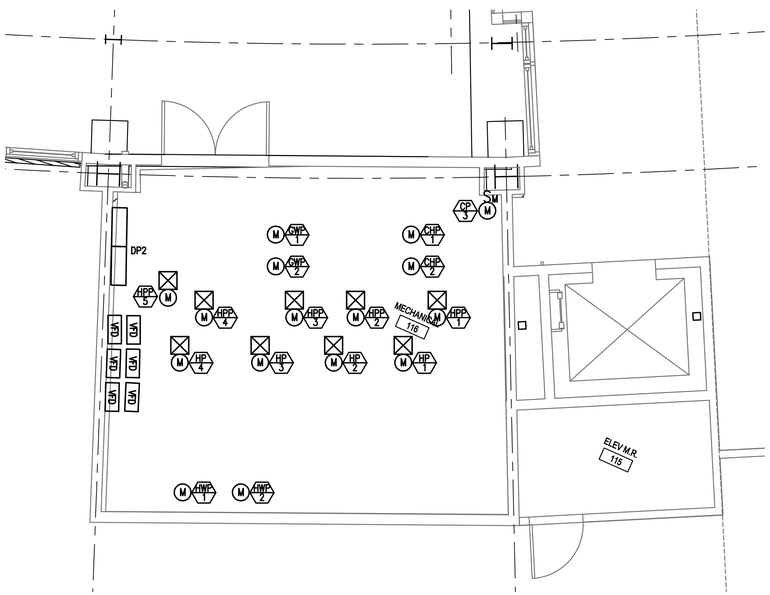
1 FIRST FLOOR ENLARGED POWER PLANS

E801 REF. SCALE: 1/4" = 1'-0"



3 FIRST FLOOR ENLARGED POWER PLANS

E801 REF. SCALE: 1/4" = 1'-0"



2 FIRST FLOOR ENLARGED POWER PLANS

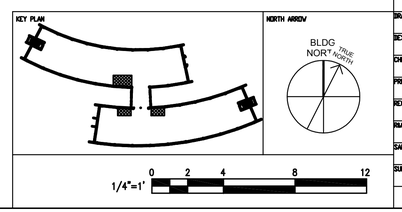
E801 REF. SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

PLAN NOTES:

1 xxx



PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRIMER		DATE
REVIEWER		DATE
PM/QA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY
FIRST FLOOR
ENLARGED POWER PLANS

SIZE	CAGE CODE			REV
D	25307	A232-0800-	E801	
SCALE		INDEX	SHEET OF	

DWG: Q:\60048653 - NASA Ames CSF N232\500 CAD\E\Sheet\E801.dwg User: zechn
DATE: Feb 16, 2009 - 8:21:11 pm
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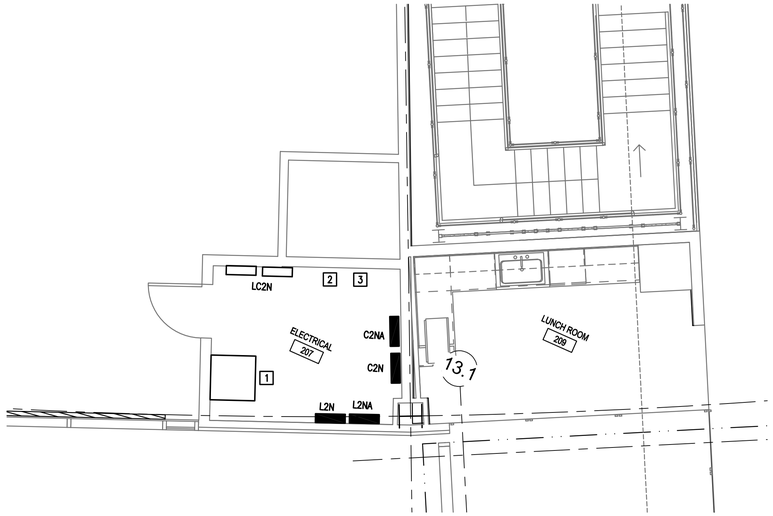
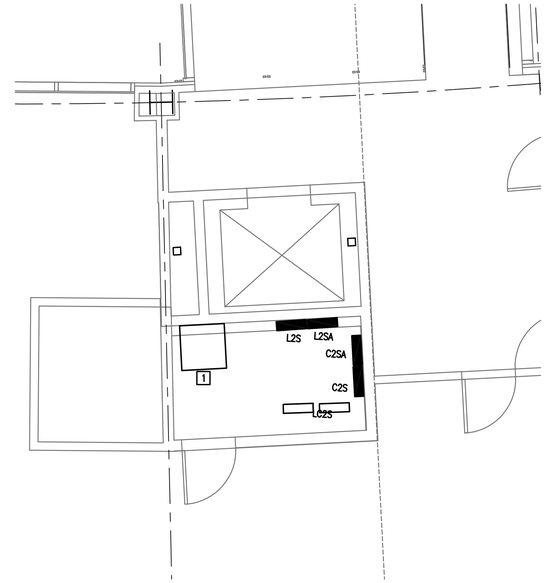
Images:



1 SECOND FLOOR ENLARGED POWER PLANS

E802 | REF. | SCALE: 1/4" = 1'-0"



2 SECOND FLOOR ENLARGED POWER PLANS

E802 | REF. | SCALE: 1/4" = 1'-0"

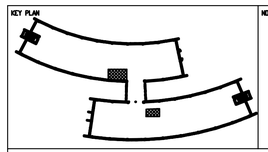
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.

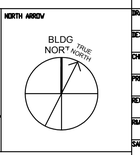
PLAN NOTES:

1. PROVIDE 36"H X 30"W X 19"D MINIMUM CORROSIVE RESISTANT WALL MOUNT STEEL CABINET WITH LOUVERED SIDE PANELS, ROOF MOUNTED FAN AT NO LESS THAN 250CFM AND WITH CABINET GROUND LUG FOR MOTORIZED WINDOW POWER SUPPLIES.
2. LOCATION FOR LUTRON QUANTUM CONTROL SYSTEM.
3. LOCATION FOR FOR MECHO SHADES SOLAR TRAC SYSTEM.

KEY PLAN



NORTH ARROW



1/4"=1' 0 2 4 8 12

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	S. KANDA	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMNER		DATE
REVIEWER		DATE
RLGA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY
SECOND FLOOR
ENLARGED POWER PLANS

SIZE	CAGE CODE			REV
D	25307	A232-0800-	E802	
SCALE		INDEX	SHEET	OF

DWG: G:\60048683 - NASA Ames CSF N232\500 CAD\E\Sheet\E802.dwg User: zechn
DATE: Feb 16, 2009 - 4:27:06 pm Images:
Xrefs: XAFP02 7QBDR-SHORT XEPWR02 XEEQP02

PANEL : HLS

PANEL : HLS	Location: Elect Rm 114	Bus Rating Amps	Volts: 480 / 277	Mounting:
	Main: LUGS ONLY	100	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
						1	1	20	A	20	1	2						
						3	1	20	B	20	1	4						
						5	1	20	C	20	1	6						
						7	1	20	A	20	1	8						
						9	1	20	B	20	1	10						
						11	1	20	C	20	1	12						
						13	1	20	A	20	1	14						
						15	1	20	B	20	1	16						
						17	1	20	C	20	1	18						
						19	1	20	A	20	1	20						
						21	1	20	B	20	1	22						
						23	1	20	C	20	1	24						
						25	1	20	A	20	1	26						
						27	1	20	B	20	1	28						
						29	1	20	C	20	1	30						
						31	1	20	A	20	1	32						
						33	1	20	B	20	1	34						
						35	1	20	C	20	1	36						
						37	1	20	A	20	1	38						
						39	1	20	B	20	1	40						
						41	1	20	C	20	1	42						
								A	B	C								
TOTAL/PHASE:																		

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC		
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00		
SUM				
CALC'D AMPERES				

NOTES	
1	VIA TIME CLOCK
2	VIA LIGHTING CONTROLLER
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	##FILENAME##

PANEL : L2S

PANEL : L2S	Location: Elect Rm 214	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: 175 A	225 A	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 212 RECEPTACLES		R	1,440			1	1	20	A	20	1	2	1,620			R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R		1,080		3	1	20	B	20	1	4		1,440		R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R			1,440	5	1	20	C	20	1	6			1,440	R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R	1,620			7	1	20	A	20	1	8	1,620			R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R		720		9	1	20	B	20	1	10		1,440		R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R			1,440	11	1	20	C	20	1	12			1,620	R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R	900			13	1	20	A	20	1	14	1,440			R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R		1,440		15	1	20	B	20	1	16		720		R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R			1,440	17	1	20	C	20	1	18			720	R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R	1,620			19	1	20	A	20	1	20	720			R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R		1,080		21	1	20	B	20	1	22		1,260		R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R			1,440	23	1	20	C	20	1	24			1,080	R		OPEN OFFICE 212 RECEPTACLES
OPEN OFFICE 212 RECEPTACLES		R	1,080			25	1	20	A	20	1	26	770			M		EF-3 & EF-5 ON ROOF
OPEN OFFICE 212 RECEPTACLES		R		1,080		27	1	20	B	20	1	28						SPARE
OPEN OFFICE 212 RECEPTACLES		R			180	29	1	20	C	20	1	30						SPARE
OPEN OFFICE 212 RECEPTACLES		R	180			31	1	20	A	20	1	32						SPARE
OPEN OFFICE 212 RECEPTACLES		R		180		33	1	20	B	20	1	34						SPARE
SPARE						35	1	20	C	20	1	36						SPARE
L2SA			6,384			37	3	100	A	20	1	38						SPARE
L2SA				6,384		39	–	100	B	20	1	40						SPARE
L2SA					6,384	41	–	100	C	20	1	42						SPARE
			13,224	11,964	12,324			A	B	C			6,170	4,860	4,860			
TOTAL/PHASE:								19,394	16,824	17,184								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25	963	770
RECEPTACLE LOAD	X	NEC	21,740	33480
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	19,152	19152
SUM			41,855	53402
CALC'D AMPERES			116.2	

NOTES	
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	#REF!

PANEL : HLN

PANEL : HLN	Location: Elect Rm 110	Bus Rating Amps	Volts: 480 / 277	Mounting:
	Main: LUGS ONLY	100 A	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
						1	1	20	A	20	1	2						
						3	1	20	B	20	1	4						
						5	1	20	C	20	1	6						
						7	1	20	A	20	1	8						
						9	1	20	B	20	1	10						
						11	1	20	C	20	1	12						
						13	1	20	A	20	1	14						
						15	1	20	B	20	1	16						
						17	1	20	C	20	1	18						
						19	1	20	A	20	1	20						
						21	1	20	B	20	1	22						
						23	1	20	C	20	1	24						
						25	1	20	A	20	1	26						
						27	1	20	B	20	1	28						
						29	1	20	C	20	1	30						
						31	1	20	A	20	1	32						
						33	1	20	B	20	1	34						
						35	1	20	C	20	1	36						
						37	1	20	A	20	1	38						
						39	1	20	B	20	1	40						
						41	1	20	C	20	1	42						
								A	B	C								
TOTAL/PHASE:																		

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC		
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00		
SUM				
CALC'D AMPERES				

NOTES	
1	VIA TIME CLOCK
2	VIA LIGHTING CONTROLLER
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	##FILENAME##

PANEL : L2SA

PANEL : L2SA	Location: Elect Rm 214	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: LUGS ONLY	100 A	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 212 SHADES			912			1	1	20	A	20	1	2	912					OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES				912		3	1	20	B	20	1	4		912				OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES					912	5	1	20	C	20	1	6			912			OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES			912			7	1	20	A	20	1	8	912					OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES				912		9	1	20	B	20	1	10		912				OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES					912	11	1	20	C	20	1	12			912			OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES			912			13	1	20	A	20	1	14	912					OPEN OFFICE 212 SHADES
OPEN OFFICE 212 SHADES				912		15	1	20	B	20	1	16						SPARE
OPEN OFFICE 212 SHADES					912	17	1	20	C	20	1	18						SPARE
OPEN OFFICE 212 SHADES			912			19	1	20	A			20						SPACE
OPEN OFFICE 212 SHADES				912		21	1	20	B			22						SPACE
OPEN OFFICE 212 SHADES					912	23	1	20	C			24						SPACE
OPEN OFFICE 212 SHADES			912			25	1	20	A			26						SPACE
OPEN OFFICE 212 SHADES				912		27	1	20	B			28						SPACE
SPARE						29	1	20	C			30						SPACE
						31			A			32						
						33			B			34						
						35			C			36						
						37			A			38						
						39			B			40						
						41			C			42						
			4,560	4,560	3,648			A	B	C			2,736	1,824	1,824			
TOTAL/PHASE:								7,296	6,384	5,472								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC		
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	19,152	19152
SUM			19,152	19152
CALC'D AMPERES			53.2	

NOTES	
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	#REF!

PANEL : L2N

PANEL : L2N	Location: Elect Rm 114	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: 175 A	225	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 202 RECEPTACLE		R	1,620			1	1	20	A	20	1	2	1,440			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,440		3	1	20	B	20	1	4		1,440		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,440	5	1	20	C	20	1	6			1,620	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,620			7	1	20	A	20	1	8	1,080			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,440		9	1	20	B	20	1	10		720		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,260	11	1	20	C	20	1	12			720	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,440			13	1	20	A	20	1	14	720			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,620		15	1	20	B	20	1	16		1,440		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			720	17	1	20	C	20	1	18			720	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,080			19	1	20	A	20	1	20	900			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		720		21	1	20	B	20	1	22		900		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,080	23	1	20	C	20	1	24			720	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	180			25	1	20	A	20	1	26	720			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		180		27	1	20	B	20	1	28		900		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			180	29	1	20	C	20	1	30			900	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	180			31	1	20	A	20	1	32	100			R		FIRE SMOKE DAMPERS
OPEN OFFICE 202 RECEPTACLE		R		500		33	1	20	B	20	1	34		1,000		M		TEF-1 & EF-4 ON ROOF
OPEN OFFICE 202 RECEPTACLE		R			180	35	1	20	C	20	1	36						SPARE
OPEN OFFICE 202 RECEPTACLE		R	180			37	1	20	A	90	3	38	6,000					L2NA
OPEN OFFICE 202 RECEPTACLE		R		300		39	1	20	B	90	–	40		6,000				L2NA
SPARE						41	1	20	C	90	–	42			6,000			L2NA
			6,300	6,200	4,860			A	B	C			10,960	12,400	10,680			
TOTAL/PHASE:								17,260	18,600	15,540								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25	0	0
LARGEST MOTOR	X	1.25	1,250	1,000
RECEPTACLE LOAD	X	NEC	21,200	32,400
DWELLING TYPE LOADS	X	1.00	0	0
OTHER LOADS	X	1.00	18,000	18,000
SUM			40,450	51,400
CALC'D AMPERES			112.3	

NOTES	
1	VIA TIME CLOCK
2	VIA LIGHTING CONTROLLER
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	##FILENAME##

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PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE

MARK	DATE	DESCRIPTION
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE

DRAWN	L. DICKENS	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PROJMGR		DATE
REQUESTOR		DATE
R&QA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

PANEL SCHEDULES

SIZE	CAGE CODE			REV
D	25307	A232-0800-	E901	
SCALE		INDEX	SHEET OF	

DWG: Q:\60048683 – NASA Ames CSF N232\500 CAD\E\Sheet\E901.dwg User: zechn
DATE: Feb 16, 2009 – 6:31:56 pm Images:
Xrefs: XBDR

PANEL : C1S

Location: Elect Rm 114
Main: 250 A

Bus Rating Amps: 400 A

Volts: 208 / 120
Phase/Wires: 3 / 4

Mounting: SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 112 RECEPTACLES		R	1,000			1	1	20	A	20	1	2	500			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,000		3	1	20	B	20	1	4		500		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			1,000	5	1	20	C	20	1	6			1,000	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	1,000			7	1	20	A	20	1	8	500			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		500		9	1	20	B	20	1	10		500		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			500	11	1	20	C	20	1	12			1,000	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	500			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		500		15	1	20	B	20	1	16		500		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			1,000	17	1	20	C	20	1	18			500	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	500			19	1	20	A	20	1	20	1,000			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,000		21	1	20	B	20	1	22		1,000		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			500	23	1	20	C	20	1	24			500	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	500			25	1	20	A	20	1	26	1,000			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		500		27	1	20	B	20	1	28		1,000		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			500	29	1	20	C	20	1	30			1,000	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	500			31	1	20	A	20	1	32	1,000			R		OPEN OFFICE 112 RECEPTACLES
SPARE						33	1	20	B	20	1	34						SPARE
SPARE						35	1	20	C	20	1	36						SPARE
C1SA			4,166			37	3	70	A	150	3	38	10,000					C2S
C1SA				4,166		39	–	70	B	150	–	40		10,000				C2S
C1SA					4,166	41	–	70	C	150	–	42			10,000			C2S
			8,166	7,666	7,666			A	B	C			15,000	13,500	14,000			
TOTAL/PHASE:								23,166	21,166	21,666								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	16,750	23500
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	42,498	42498
SUM			59,248	65998
CALC'D AMPERES			164.5	

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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
	#REF!

PANEL : C1N

Location: Elect Rm 114
Main: 300 A

Bus Rating Amps: 400 A

Volts: 208 / 120
Phase/Wires: 3 / 4

Mounting: SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 102 RECEPTACLES		R	1,000			1	1	20	A	20	1	2	1,000			R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R		1,000		3	1	20	B	20	1	4		500		R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R			1,000	5	1	20	C	20	1	6			1,000	R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R	500			7	1	20	A	20	1	8	500			R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R		1,000		9	1	20	B	20	1	10		1,000		R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R			1,000	11	1	20	C	20	1	12			500	R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R	1,000			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R		1,000		15	1	20	B	20	1	16		500		R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R			1,000	17	1	20	C	20	1	18			500	R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R	1,000			19	1	20	A	20	1	20	500			R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R		1,000		21	1	20	B	20	1	22		500		R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R			500	23	1	20	C	20	1	24						SPARE
OPEN OFFICE 102 RECEPTACLES		R	1,000			25	1	20	A	20	1	26	500			R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R		500		27	1	20	B	20	1	28		500		R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R			1,000	29	1	20	C	20	1	30			1,000	R		OPEN OFFICE 102 RECEPTACLES
OPEN OFFICE 102 RECEPTACLES		R	500			31	1	20	A	20	1	32	500			R		OPEN OFFICE 102 RECEPTACLES
ROOM 108 RECEPTACLES		R		500		33	1	20	B	20	1	34				R		SPARE
ROOM 108 RECEPTACLES		R				35	1	20	C	20	1	36				R		SPARE
C2N				12,333		37	3	175	A	70	3	38	4,166			R		C1NA
C2N					12,333	39	–	175	B	70	–	40		4,166				C1NA
C2N						41	–	175	C	70	–	42			4,166			C1NA
			17,333	17,333	17,333			A	B	C			8,166	7,166	7,166			
TOTAL/PHASE:								25,499	24,499	24,499								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	19,583	29166
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	45,331	45331
SUM			64,914	74497
CALC'D AMPERES			180.2	

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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
	#REF!

PANEL : C1SA

Location: Elect Rm 114
Main: 70 A

Bus Rating Amps: 100 A

Volts: 208 / 120
Phase/Wires: 3 / 4

Mounting: SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 112 RECEPTACLES		R	1,000			1	1	20	A	20	1	2	1,000			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,000		3	1	20	B	20	1	4		1,000		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			500	5	1	20	C	20	1	6			1,000	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	500			7	1	20	A	20	1	8	1,000			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,000		9	1	20	B	20	1	10		500		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			500	11	1	20	C	20	1	12			500	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	1,000			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,000		15	1	20	B	20	1	16		1,000		R		OPEN OFFICE 112 RECEPTACLES
ROOM 113 RECEPTACLES		R			500	17	1	20	C	20	1	18						SPARE
ROOM 113 RECEPTACLES		R	500			19	1	20	A	20	1	20						SPARE
ROOM 113 RECEPTACLES		R		500		21	1	20	B	20	1	22						SPARE
SPARE						23	1	20	C	20	1	24						SPARE
SPARE						25	1	20	A	20	1	26						SPARE
SPARE						27	1	20	B	20	1	28						SPARE
SPARE						29	1	20	C	20	1	30						SPARE
						31	1	20	A	20	1	32						
						33	1	20	B	20	1	34						
						35	1	20	C	20	1	36						
						37	1	20	A	20	1	38						
						39	1	20	B	20	1	40						
						41	1	20	C	20	1	42						
			3,000	3,500	1,500			A	B	C			3,000	2,500	1,500			
TOTAL/PHASE:								6,000	6,000	3,000								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25	0	0
LARGEST MOTOR	X	1.25	0	0
RECEPTACLE LOAD	X	NEC	12,500	15,000
DWELLING TYPE LOADS	X	1.00	0	0
OTHER LOADS	X	1.00	0	0
SUM			12,500	15,000
CALC'D AMPERES			34.7	

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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
	#REF!

PANEL : C1NA

Location: Elect Rm 114
Main: 225 A

Bus Rating Amps: 225 A

Volts: 208 / 120
Phase/Wires: 3 / 4

Mounting: SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 102 RECEPTACLE		R	500			1	1	20	A	20	1	2	1,000			R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R		500		3	1	20	B	20	1	4		1,000		R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R			500	5	1	20	C	20	1	6			1,000	R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R	500			7	1	20	A	20	1	8	500			R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R		500		9	1	20	B	20	1	10		1,000		R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R			500	11	1	20	C	20	1	12			500	R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R	500			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 102 RECEPTACLE
OPEN OFFICE 102 RECEPTACLE		R		500		15	1	20	B	20	1	16		1,000		R		OPEN OFFICE 102 RECEPTACLE
ROOM 108 RECEPTACLES		R			500	17	1	20	C	20	1	18						SPARE
ROOM 108 RECEPTACLES		R	500			19	1	20	A	20	1	20						SPARE
ROOM 108 RECEPTACLES		R		500		21	1	20	B	20	1	22						SPARE
SPARE						23	1	20	C	20	1	24						SPARE
SPARE						25	1	20	A	20	1	26						SPARE
SPARE						27	1	20	B	20	1	28						SPARE
SPARE						29	1	20	C	20	1	30						SPARE
SPARE						31	1	20	A	20	1	32						SPARE
SPARE						33	1	20	B	20	1	34						SPARE
SPARE						35	1	20	C	20	1	36						SPARE
SPARE						37	1	20	A	20	1	38						SPARE
SPARE						39	1	20	B	20	1	40						SPARE
SPARE						41	1	20	C	20	1	42						SPARE
			2,000	2,000	1,500			A	B	C			2,500	3,000	1,500			
TOTAL/PHASE:								4,500	5,000	3,000								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25	0	0
LARGEST MOTOR	X	1.25	0	0
RECEPTACLE LOAD	X	NEC	11,250	12,500
DWELLING TYPE LOADS	X	1.00	0	0
OTHER LOADS	X	1.00	0	0
SUM			11,250	12,500
CALC'D AMPERES			31.2	

	NOTES
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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
	#REF!

PANEL : L2NA

Location: Elect Rm 114
Main: LUGS ONLY

Bus Rating Amps: 100

Volts: 208 / 120
Phase/Wires: 3 / 4

Mounting: SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 202 RECEPTACLE		R	500			1	1	20	A	20	1	2	912					OPEN OFFICE 202 SHADES
OPEN OFFICE 202 RECEPTACLE		R		500		3	1	20	B	20	1	4		912				OPEN OFFICE 202 SHADES
OPEN OFFICE 202 RECEPTACLE		R			500	5	1	20	C	20	1	6			912			OPEN OFFICE 202 SHADES
OPEN OFFICE 202 SHADES			912			7	1	20	A	20	1	8	912					OPEN OFFICE 202 SHADES
OPEN OFFICE 202 SHADES				912		9	1	20	B	20	1	10		912				OPEN OFFICE 202 SHADES
OPEN OFFICE 202 SHADES					912	11	1	20	C	20	1	12			912			OPEN OFFICE 202 SHADES
OPEN OFFICE 202 SHADES			912			13	1	20	A	20	1	14	912					OPEN OFFICE 202 SHADES
OPEN OFFICE 202 SHADES				912		15	1	20	B	20	1	16		912				OPEN OFFICE 203 SHADES
OPEN OFFICE 202 SHADES					912	17	1	20	C	20	1	18						SPARE
OPEN OFFICE 202 SHADES			912			19	1	20	A			20						SPACE
OPEN OFFICE 203 SHADES				912		21	1	20	B			22						SPACE
OPEN OFFICE 203 SHADES					912	23	1	20	C			24						SPACE
OPEN OFFICE 203 SHADES			912			25	1	20	A			26						SPACE
SPARE						27	1	20	B			28						SPACE
SPARE						29	1	20	C			30						SPACE
						31			A									
						33			B									
						35			C									
						37			A									
						39			B									
						41			C									
			4,148	3,236	3,236			A	B	C			2,736	2,736	1,824			
TOTAL/PHASE:								6,884	5,972	5,060								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25	0	0
LARGEST MOTOR	X	1.25	0	0
RECEPTACLE LOAD	X	NEC	1,500	1,500
DWELLING TYPE LOADS	X	1.00	0	0
OTHER LOADS	X	1.00	16,416	16,416
SUM			17,916	17,916
CALC'D AMPERES			49.7	

	NOTES
1	VIA TIME CLOCK
2	VIA LIGHTING CONTROLLER
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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	##FILENAME##

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PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
4	12/19/2008	60% PRE-FINAL, NASA REVIEW
5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE
MARK	DATE	DESCRIPTION

DRAWN	L. DICKENS	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PRELIMER		DATE
REQUESTOR		DATE
FSQA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

PANEL SCHEDULES

SIZE	CAGE CODE		REV
D	25307	A232-0800- E902	
SCALE		INDEX	SHEET OF

DWG: Q:\60048883 – NASA Ames CSF N232\500 CAD\E\Sheet\E902.dwg User: zechn
DATE: Feb 16, 2009 – 6:31:49 pm Images:
Xrefs: XBDR

PANEL : L1N

PANEL : L1N	Location: Elect Rm 114	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: 350 A	400	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 102, 103 RECEPTACLES		R	1,620			1	1	20	A	20	1	2	1,260			R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R		1,080		3	1	20	B	20	1	4		1,080		R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R			1,440	5	1	20	C	20	1	6			1,260	R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R	1,620			7	1	20	A	20	1	8	1,080			R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R		1,440		9	1	20	B	20	1	10		900		R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R			1,080	11	1	20	C	20	1	12			360	R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R	1,080			13	1	20	A	20	1	14	720			R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R		1,260		15	1	20	B	20	1	16		1,080		R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R			720	17	1	20	C	20	1	18			1,440	R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R	720			19	1	20	A	20	1	20	1,080			R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R		720		21	1	20	B	20	1	22		1,080		R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R			900	23	1	20	C	20	1	24			1,440	R		OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R	900			25	1	20	A	20	1	26	180					ROOM 109 RECEPTACLE
OPEN OFFICE 102, 103 RECEPTACLES		R		900		27	1	20	B	20	1	28		500				OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R			720	29	1	20	C	20	1	30			500			OPEN OFFICE 102, 103 RECEPTACLES
SPARE						31	1	20	A	20	1	32	500					OPEN OFFICE 102, 103 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R		600		33	1	20	B	20	1	34						SPARE
OPEN OFFICE 102, 103 RECEPTACLES		R			500	35	1	20	C	20	1	36						SPARE
L1NA			6,152			37	3	90	A	175	3	38	13,483					L2N
L1NA				6,152		39	–	90	B	175	–	40		13,483				L2N
L1NA					6,152	41	–	90	C	175	–	42			13,483			L2N
			12,092	12,152	11,512			A	B	C			18,303	18,123	18,483			
TOTAL/PHASE:								30,395	30,275	29,995								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	20,040	30080
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	60,585	60585
SUM			80,625	90665
CALC'D AMPERES			223.8	

NOTES	
1	VIA TIME CLOCK
2	VIA LIGHTING CONTROLLER
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	##FILENAME##

PANEL : L1S

PANEL : L1S	Location: Elect Rm 114	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: 350 A	400 A	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 112 RECEPTACLES		R	1,440			1	1	20	A	20	1	2	900			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,440		3	1	20	B	20	1	4		1,080		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			720	5	1	20	C	20	1	6			1,080	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	1,260			7	1	20	A	20	1	8	1,080			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		1,080		9	1	20	B	20	1	10		1,260		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			1,080	11	1	20	C	20	1	12			1,080	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	720			13	1	20	A	20	1	14	1,440			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		720		15	1	20	B	20	1	16		1,620		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			1,620	17	1	20	C	20	1	18			1,440	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	1,440			19	1	20	A	20	1	20	900			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		720		21	1	20	B	20	1	22		1,080		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			1,620	23	1	20	C	20	1	24			1,440	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	900			25	1	20	A	20	1	26	500			R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R		900		27	1	20	B	20	1	28		500		R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R			900	29	1	20	C	20	1	30			500	R		OPEN OFFICE 112 RECEPTACLES
OPEN OFFICE 112 RECEPTACLES		R	180			31	1	20	A	20	1	32						SPARE
OPEN OFFICE 112 RECEPTACLES		R		300		33	1	20	B	20	1	34						SPARE
OPEN OFFICE 112 RECEPTACLES		R			250	35	1	20	C	20	1	36						'
L2S			14,000			37	3	175	A	100	3	38	5,800					L1SA
L2S				14,000		39	–	175	B	100	–	40		5,800				L1SA
L2S					14,000	41	–	175	C	100	–	42			5,800			L1SA
			19,940	19,160	20,190			A	B	C			10,620	11,340	11,340			
TOTAL/PHASE:								30,560	30,500	31,530								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	21,595	33190
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	59,400	59400
SUM			80,995	92590
CALC'D AMPERES			224.8	

NOTES	
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	#REF!

PANEL : L1NA

PANEL : L1NA	Location: Elect Rm 114	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: LUGS ONLY	100	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 102, 103 RECEPTACLES		R	500			1	1	20	A	20	1	2	180			R		ROOM 209 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R		500		3	1	20	B	20	1	4		180		R		ROOM 209 RECEPTACLES
OPEN OFFICE 102, 103 RECEPTACLES		R			500	5	1	20	C	20	1	6			180	R		ROOM 209 RECEPTACLES
OPEN OFFICE 102 SHADES			912			7	1	20	A	20	1	8	912					OPEN OFFICE 102 SHADES
OPEN OFFICE 102 SHADES				912		9	1	20	B	20	1	10		912				OPEN OFFICE 102 SHADES
OPEN OFFICE 102 SHADES					912	11	1	20	C	20	1	12			912			OPEN OFFICE 102 SHADES
OPEN OFFICE 102 SHADES			912			13	1	20	A	20	1	14	912					OPEN OFFICE 102 SHADES
OPEN OFFICE 102 SHADES				912		15	1	20	B	20	1	16		912				OPEN OFFICE 102 SHADES
OPEN OFFICE 102 SHADES					912	17	1	20	C	20	1	18			912			OPEN OFFICE 102 SHADES
OPEN OFFICE 102 SHADES			912			19	1	20	A	20	1	20	912					OPEN OFFICE 102 SHADES
OPEN OFFICE 103 SHADES				912		21	1	20	B	20	1	22		912				OPEN OFFICE 103 SHADES
OPEN OFFICE 103 SHADES					912	23	1	20	C	20	1	24						SPARE
OPEN OFFICE 103 SHADES			912			25	1	20	A	20	1	26						SPARE
SPARE						27	1	20	B	20	1	28						SPARE
SPARE						29	1	20	C	20	1	30						SPARE
SPACE						31			A			32						SPACE
SPACE						33			B			34						SPACE
SPACE						35			C			36						SPACE
SPACE						37			A			38						SPACE
SPACE						39			B			40						SPACE
SPACE						41			C			42						SPACE
			4,148	3,236	3,236			A	B	C			2,916	2,916	2,004			
TOTAL/PHASE:								7,064	6,152	5,240								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25	0	0
LARGEST MOTOR	X	1.25	0	0
RECEPTACLE LOAD	X	NEC	2,040	2,040
DWELLING TYPE LOADS	X	1.00	0	0
OTHER LOADS	X	1.00	16,416	16,416
SUM			18,456	18,456
CALC'D AMPERES			51.2	

NOTES	
1	VIA TIME CLOCK
2	VIA LIGHTING CONTROLLER
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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	##FILENAME##

PANEL : L1SA

PANEL : L1SA	Location: Elect Rm 114	Bus Rating Amps	Volts: 208 / 120	Mounting:
	Main: LUGS ONLY	100 A	Phase/Wires: 3 / 4	SURFACE

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 112 SHADES			912			1	1	20	A	20	1	2	912					OPEN OFFICE 112 SHADES
OPEN OFFICE 112 SHADES				912		3	1	20	B	20	1	4		912				OPEN OFFICE 112 SHADES
OPEN OFFICE 112 SHADES					912	5	1	20	C	20	1	6			912			OPEN OFFICE 112 SHADES
OPEN OFFICE 112 SHADES			912			7	1	20	A	20	1	8	912					OPEN OFFICE 112 SHADES
OPEN OFFICE 112 SHADES				912		9	1	20	B	20	1	10		912				OPEN OFFICE 112 SHADES
OPEN OFFICE 112 SHADES					912	11	1	20	C	20	1	12			912			OPEN OFFICE 112 SHADES
OPEN OFFICE 112 SHADES			912			13	1	20	A	20	1	14						
OPEN OFFICE 112 SHADES				912		15	1	20	B	20	1	16						
OPEN OFFICE 112 SHADES					912	17	1	20	C	20	1	18						
OPEN OFFICE 112 SHADES			912			19	1	20	A	20	1	20						
OPEN OFFICE 112 SHADES				912		21	1	20	B	20	1	22						
OPEN OFFICE 112 SHADES					912	23	1	20	C	20	1	24						
OPEN OFFICE 112 SHADES			912			25	1	20	A	20	1	26						
						27	1	20	B	20	1	28						
						29	1	20	C	20	1	30						
						31	1	20	A	20	1	32						
						33	1	20	B	20	1	34						
						35	1	20	C	20	1	36						
						37	1	20	A	20	1	38						
						39	1	20	B	20	1	40						
						41	1	20	C	20	1	42						
			4,560	3,648	3,648			A	B	C			1,824	1,824	1,824			
TOTAL/PHASE:								6,384	5,472	5,472								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC		
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	17,328	17328
SUM			17,328	17328
CALC'D AMPERES			48.1	

NOTES	
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Load Types	
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	#REF!

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5	01/19/2009	60% FINAL ISSUE TO NASA
6	02/16/2009	90% QAQC & COST ESTIMATE

DRAWN	L. DICKENS	DATE
DESIGNED	N. ZECH	DATE
CHECKED		DATE
PROJMGR		DATE
REQUESTOR		DATE
R&QA		DATE
SAFETY		DATE
SUPERVISOR		DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

PANEL SCHEDULES

SIZE	CAGE CODE			REV
D	25307	A232-0800-	E903	
SCALE		INDEX	SHEET OF	

DWG: Q:\60048683 - NASA Ames CSF N232\500 CAD\E\Sheet\E903.dwg User: zechn
DATE: Feb 16, 2009 - 6:31:44 pm Images:
Xrefs: *XBDR

PANEL : C2S

Location: Elect Rm 214 | Bus Rating Amps 225 A | Volts: 208 / 120 | Mounting: SURFACE
Main: 150 A | Phase/Wires: 3 / 4

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 212 RECEPTACLE		R	1,000			1	1	20	A	20	1	2	1,000			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		3	1	20	B	20	1	4		1,000		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			1,000	5	1	20	C	20	1	6			1,000	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	500			7	1	20	A	20	1	8	1,000			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		9	1	20	B	20	1	10		1,000		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			1,000	11	1	20	C	20	1	12			1,000	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	1,000			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		15	1	20	B	20	1	16		1,000		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			500	17	1	20	C	20	1	18			1,000	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	500			19	1	20	A	20	1	20	1,000			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		21	1	20	B	20	1	22		1,000		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			1,000	23	1	20	C	20	1	24			1,000	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	500			25	1	20	A	20	1	26	1,000			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		500		27	1	20	B	20	1	28		1,000		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			1,000	29	1	20	C	20	1	30			500	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	1,000			31	1	20	A	20	1	32	500			R		OPEN OFFICE 212 RECEPTACLE
ROOM 211		R		500		33	1	20	B	20	1	34						SPARE
ROOM 211		R			500	35	1	20	C	20	1	36						SPARE
ROOM 211		R	500			37	1	20	A	70	3	38	3,166					C2SA
ROOM 211		R		500		39	1	20	B	70	–	40		3,166				C2SA
SPARE						41	1	20	C	70	–	42			3,166			C2SA
			5,000	5,500	5,000			A	B	C			8,666	8,166	7,666			
TOTAL/PHASE:								13,666	13,666	12,666								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	20,250	30500
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	9,498	9498
SUM			29,748	39998
CALC'D AMPERES			82.6	

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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
	#REF!

PANEL : C2N

Location: Elect Room | Bus Rating Amps 225 | Volts: 208 / 120 | Mounting: SURFACE
Main: 175 A | Phase/Wires: 3 / 4

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 202 RECEPTACLE		R	1,000			1	1	20	A	20	1	2	1,000			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,000		3	1	20	B	20	1	4		1,000		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,000	5	1	20	C	20	1	6			1,000	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,000			7	1	20	A	20	1	8	1,000			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,000		9	1	20	B	20	1	10		1,000		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,000	11	1	20	C	20	1	12			1,000	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,000			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,000		15	1	20	B	20	1	16		500		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,000	17	1	20	C	20	1	18			500	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,000			19	1	20	A	20	1	20	500			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,000		21	1	20	B	20	1	22		500		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			500	23	1	20	C	20	1	24			500	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,000			25	1	20	A	20	1	26	500			R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R		1,000		27	1	20	B	20	1	28		500		R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R			1,000	29	1	20	C	20	1	30			1,000	R		OPEN OFFICE 202 RECEPTACLE
OPEN OFFICE 202 RECEPTACLE		R	1,000			31	1	20	A	20	1	32	1,000			R		OPEN OFFICE 202 RECEPTACLE
SPARE						33	1	20	B	20	1	34						SPARE
SPARE						35	1	20	C	20	1	36						SPARE
SPARE						37	1	20	A	70	3	38	3,000					C2NA
SPARE						39	1	20	B	70	–	40		3,000				C2NA
SPARE						41	1	20	C	70	–	42			3,000			C2NA
			6,000	5,000	4,500			A	B	C			8,000	6,500	7,000			
TOTAL/PHASE:								14,000	11,500	11,500								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	19,000	28000
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	9,000	9000
SUM			28,000	37000
CALC'D AMPERES			77.7	

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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
	#REF!

PANEL : C2SA

Location: Elect Rm 214 | Bus Rating Amps 100 A | Volts: 208 / 120 | Mounting: SURFACE
Main: LUGS ONLY | Phase/Wires: 3 / 4

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 212 RECEPTACLE		R	1,000			1	1	20	A	20	1	2	500			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		3	1	20	B	20	1	4		500		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			1,000	5	1	20	C	20	1	6			500	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	1,000			7	1	20	A	20	1	8	500			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		9	1	20	B	20	1	10		1,000		R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R			500	11	1	20	C	20	1	12			500	R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R	1,000			13	1	20	A	20	1	14	1,000			R		OPEN OFFICE 212 RECEPTACLE
OPEN OFFICE 212 RECEPTACLE		R		1,000		15	1	20	B	20	1	16		500		R		OPEN OFFICE 212 RECEPTACLE
SPARE						17	1	20	C	20	1	18						SPARE
SPARE						19	1	20	A	20	1	20						SPARE
SPARE						21	1	20	B	20	1	22						SPARE
SPARE						23	1	20	C	20	1	24						SPARE
SPACE						25			A			26						SPACE
SPACE						27			B			28						SPACE
SPACE						29			C			30						SPACE
						31			A			32						
						33			B			34						
						35			C			36						
						37			A			38						
						39			B			40						
						41			C			42						
			3,000	3,000	1,500			A	B	C			2,000	2,000	1,000			
TOTAL/PHASE:								5,000	5,000	2,500								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	11,250	12500
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00		
SUM			11,250	12500
CALC'D AMPERES			31.2	

	NOTES
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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	#REF!

PANEL : C2NA

Location: Elect Room | Bus Rating Amps 100 | Volts: 208 / 120 | Mounting: SURFACE
Main: Lugs Only | Phase/Wires: 3 / 4

LOAD INFORMATION			VOLTAMPS			CB RATING/POLES							VOLTAMPS			LOAD INFORMATION		
LOAD	Note	Type	PH-A	PH-B	PH-C	Ckt	P	CB	PH	CB	P	Ckt	PH-A	PH-B	PH-C	Type	Note	LOAD
OPEN OFFICE 202 RECEPTACLES		R	500			1	1	20	A	20	1	2	500			R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R		500		3	1	20	B	20	1	4		500		R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R			1,000	5	1	20	C	20	1	6			500	R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R	500			7	1	20	A	20	1	8	500			R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R		500		9	1	20	B	20	1	10		500		R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R			500	11	1	20	C	20	1	12			500	R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R	500			13	1	20	A	20	1	14	500			R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES		R		1,000		15	1	20	B	20	1	16		500		R		OPEN OFFICE 202 RECEPTACLES
OPEN OFFICE 202 RECEPTACLES					500	17	1	20	C	20	1	18						SPARE
SPARE						19	1	20	A	20	1	20						SPARE
SPARE						21	1	20	B	20	1	22						SPARE
SPARE						23	1	20	C	20	1	24						SPARE
SPACE						25			A			26						SPACE
SPACE						27			B			28						SPACE
SPACE						29			C			30						SPACE
						31			A			32						
						33			B			34						
						35			C			36						
						37			A			38						
						39			B			40						
						41			C			42						
			1,500	2,000	2,000			A	B	C			1,500	1,500	1,000			
TOTAL/PHASE:								3,000	3,500	3,000								

Load Breakdown		DF	VAxDF	VA
CONTINUOUS LOAD	X	1.25		
LARGEST MOTOR	X	1.25		
RECEPTACLE LOAD	X	NEC	9,000	9000
DWELLING TYPE LOADS	X	1.00		
OTHER LOADS	X	1.00	500	500
SUM			9,500	9500
CALC'D AMPERES			26.4	

	NOTES
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	Load Types
L	LIGHTING LOAD
R	RECEPTACLE LOAD
M	LARGEST MOTOR
D	DWELLING/RESIDENTIAL LOAD
	#REF!

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PROJMGR	DATE
REQUESTOR	DATE
RSQA	DATE
SAFETY	DATE
SUPERVISOR	DATE

Ames Research Center
Moffet Field, California

N232 COLLABORATIVE SUPPORT FACILITY

PANEL SCHEDULES

SIZE	CAGE CODE		REV
D	25307	A232-0800- E904	
SCALE		INDEX	SHEET OF

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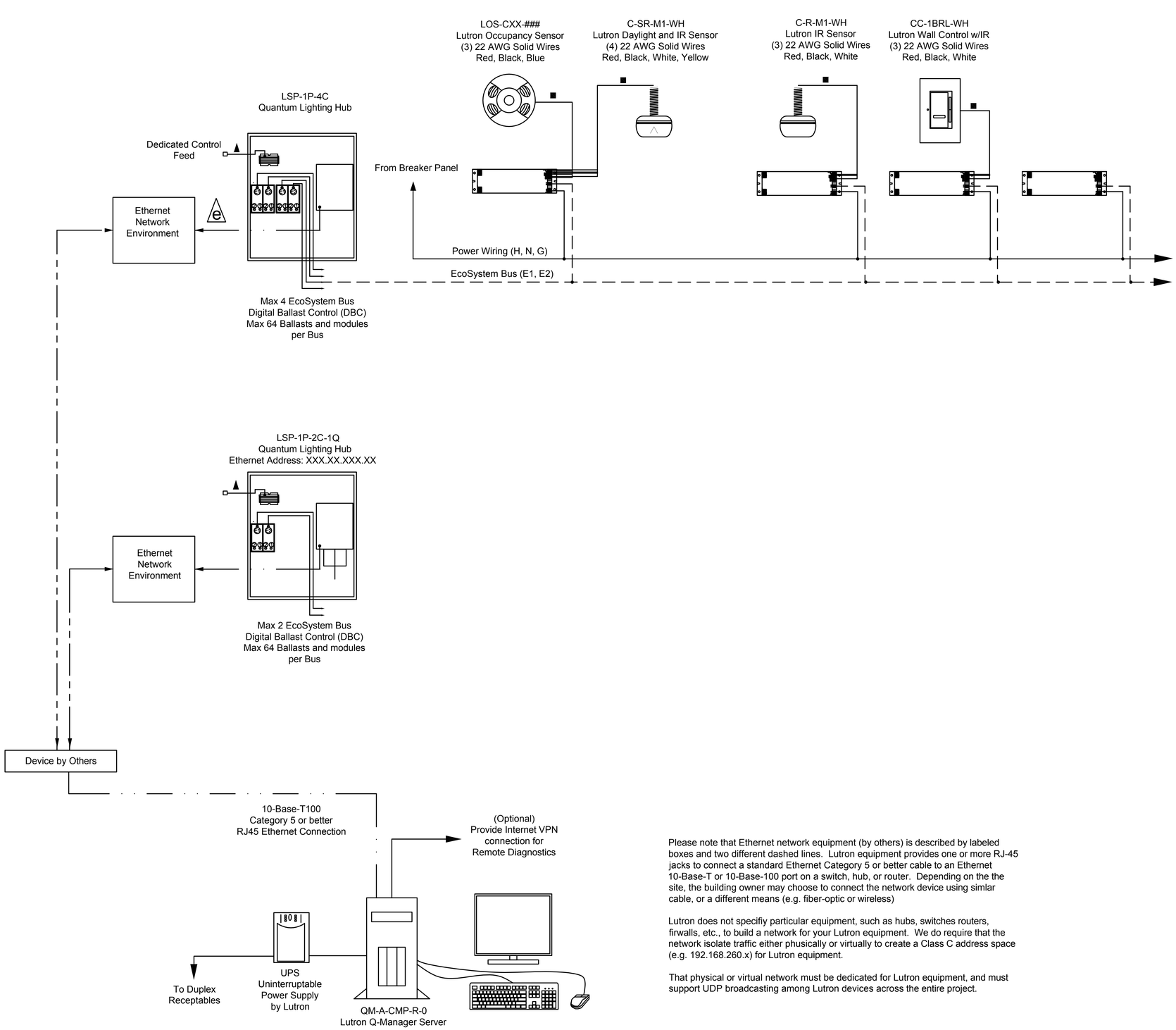
DATE: Feb 16, 2009 - 6:31:35 pm Images:
Xrefs: XBOR



Wiring Notes

▲ 120-277 VAC

Note: This drawing shows power distribution wiring as #12 AWG, and EcoSystem bus wiring as #12 to #18 AWG. The largest diamter wire that will fit an EcoSystem ballast terminal for power or the EcoSystem bus is #16 AWG.

H - Hot
N - Neutral
G - Ground
E1, E2 - EcoSystem Control Wiring (Class 1 or Class 2)

■ Sensor wiring (5 #22 AWG wires)
Plenum: C-PCBL-522S-WH-1
Non-Plenum: C-CBL-522S-WH-1

EcoSystem bus wiring (2 #16 AWG wires)
Plenum: C-PCBL-216S-CL-1
Non-Plenum: C-CBL-216SR-WH-1

Each ballst bus consists of two #12 to #18 AWG wires (depending on loop length (see EcoSystem Documentation)

Lutron provides color-coded wire for sensors (5 #22 AWG wires) and EcoSystem bus wiring (2 #16 AWG wires), in both plenum and non-plenum jacketing.

⬡ Sivoia link requires Lutron Cable SVQ-CBL-250 or 2 #16 (PWR), 1 #18 (GND) plus 4 #18 Twisted and Shielded

Please note that Ethernet network equipment (by others) is described by labeled boxes and two different dashed lines. Lutron equipment provides one or more RJ-45 jacks to connect a standard Ethernet Category 5 or better cable to an Ethernet 10-Base-T or 10-Base-100 port on a switch, hub, or router. Depending on the the site, the building owner may choose to connect the network device using simlar cable, or a different means (e.g. fiber-optic or wireless)

Lutron does not specifiy particular equipment, such as hubs, switches routers, firwalls, etc., to build a network for your Lutron equipment. We do require that the network isolate traffic either phusically or virtually to create a Class C address space (e.g. 192.168.260.x) for Lutron equipment.

That physical or virtual network must be dedicated for Lutron equipment, and must support UDP broadcasting among Lutron devices across the entire project.

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ARCHITECT/ENGINEER STAMP

PROJECT STATUS

PRELIMINARY - NOT FOR CONSTRUCTION

ISSUE		
1	10/20/2008	30% PRICING
2	11/07/2008	30% DESIGN REVISION
3	12/12/2008	60% INTERNAL QA/QC & COST ESTIMATE
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MARK	DATE	DESCRIPTION

DRAWN S. KANDA	DATE	Ames Research Center, Moffet Field, California
DESIGNED N. ZECH	DATE	
CHECKED	DATE	N232 COLLABORATIVE SUPPORT FACILITY
PRELIMIER	DATE	ELECTRICAL DETAILS
REQUESTOR	DATE	
RLGA	DATE	
SAFETY	DATE	
SUPERVISOR	DATE	

SIZE	CAGE CODE		REV
D	25307	A232-0800- E905	
SCALE		INDEX	SHEET OF

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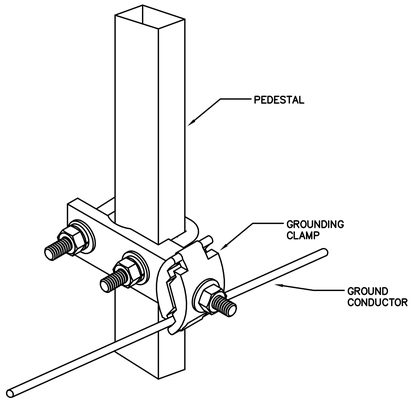
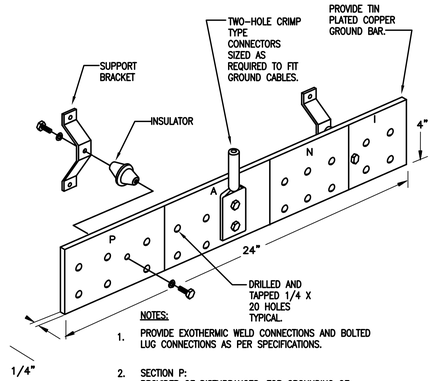


1 | PEDESTAL GROUND CLAMP DETAIL

E906 | REF. SCALE: NTS

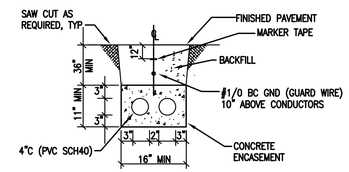


NOTES:

1. PROVIDE EXOTHERMIC WELD CONNECTIONS AND BOLTED LUG CONNECTIONS AS PER SPECIFICATIONS.
2. SECTION P: PROVIDER OF DISTURBANCES, FOR GROUNDING OF SERVICE ENTRANCE CABLES AND PROTECTORS
3. SECTION A: ABSORBER OF DISTURBANCES, FOR CONNECTION TO ELECTRICAL SYSTEM MAIN GROUND BAR (MGB) AND BUILDING STEEL.
4. SECTION N: NON ISOLATED SYSTEMS, FOR CONNECTION TO TELECOMMUNICATION GROUND BARS.
5. SECTION I: ISOLATED GROUND ZONES

2 | GROUND BAR DETAIL

E906 | REF. SCALE: NTS



3 | POWER DUCT BANK SECTION

E906 | REF. SCALE: NTS

GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET E120 FOR FEEDER SCHEDULE.

PLAN NOTES:

1. PROVIDE #3/0 AWG BONDING CONDUCTOR.
2. PROVIDE #3/0 AWG BONDING CONDUCTOR TO SWITCHBOARD ENCLOSURE. SEE 1/E907.
3. PROVIDE #3/0 AWG BONDING CONDUCTOR TO UFER GROUND.
4. PROVIDE #6 AWG BONDING CONDUCTOR TO FIRST FLOOR SOUTH WING PEDESTAL GROUNDING.
5. PROVIDE #3/0 AWG BONDING CONDUCTOR TO NORTH WING FIRST FLOOR GROUND BAR.
6. PROVIDE #6 AWG BONDING CONDUCTOR TO FIRST FLOOR NORTH WING PEDESTAL GROUNDING.
7. PROVIDE #6 AWG BONDING CONDUCTOR TO SECOND FLOOR SOUTH WING PEDESTAL GROUNDING.
8. PROVIDE #6 AWG BONDING CONDUCTOR TO SECOND FLOOR NORTH WING PEDESTAL GROUNDING.
9. PROVIDE #3/0 AWG BONDING CONDUCTOR TO UFER GROUND.
10. PROVIDE #750 KCMIL BONDING CONDUCTOR TO GROUND TEST WELL. PROVIDE GROUND RODS AS REQUIRED TO ACHIEVE 25 OHMS OR LESS.
11. PROVIDE #500 KCMIL BONDING JUMPER TO NEUTRAL BUS BAR.
12. ELECTRICAL GROUND BAR. SEE DETAIL 5/E906.
13. TELECOMMUNCATION GROUND BAR. SEE DETAIL 2/E906.

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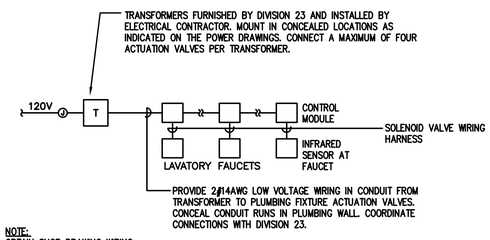
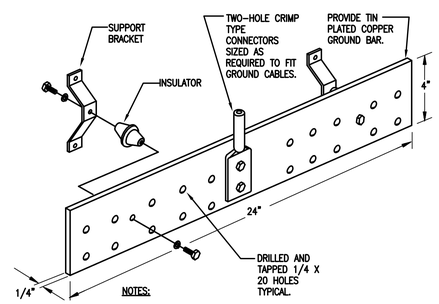


NOTE:
OBTAIN SHOP DRAWING WIRING DIAGRAMS FROM DIVISION 23 BEFORE INSTALLING WIRING.

4 | AUTOMATIC ACTUATION VALVE DETAIL

E906 | REF. SCALE: NTS

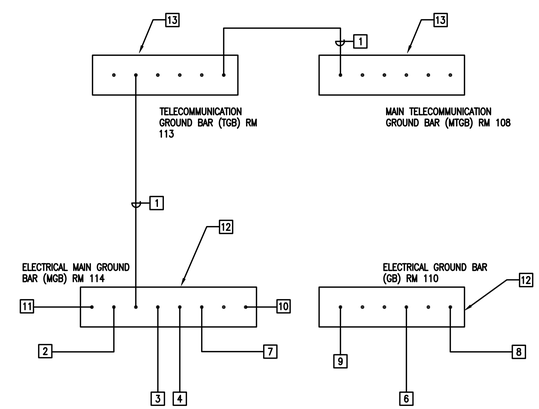


NOTES:

1. PROVIDE EXOTHERMIC WELD CONNECTIONS AND BOLTED LUG CONNECTIONS AS PER SPECIFICATIONS.

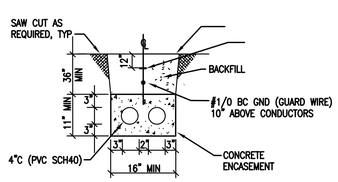
5 | GROUND BAR DETAIL

E906 | REF. SCALE: NTS



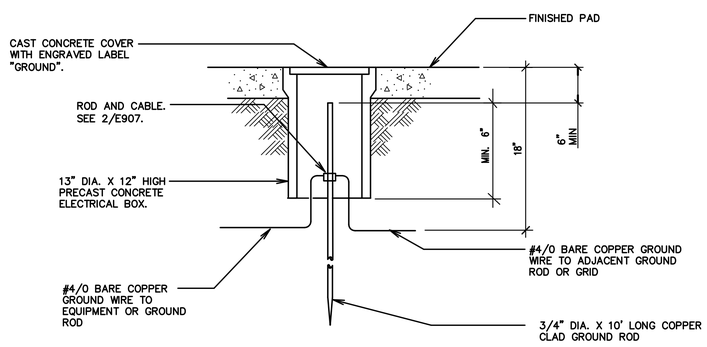
6 | GROUND BAR DETAIL

E906 | REF. SCALE: NTS



7 | COMMUNICATION DUCT BANK SECTION

E906 | REF. SCALE: NTS



8 | GROUND WELL DETAIL

E906 | REF. SCALE: NTS

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N232 COLLABORATIVE SUPPORT FACILITY
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D	25307	A232-0800- E905	
SCALE		INDEX	SHEET OF

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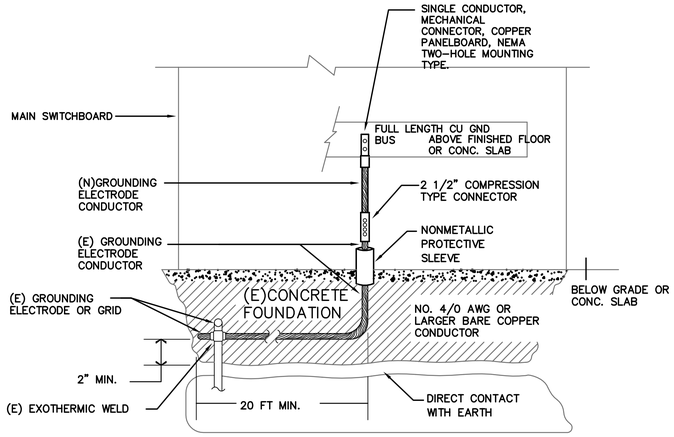
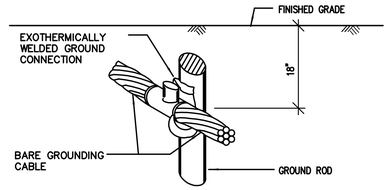


1 GROUND BUS BAR DETAIL

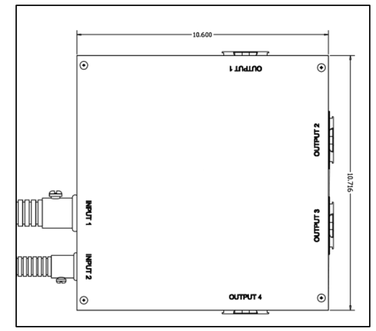
E907 REF. SCALE: NTS



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

2 GROUND BUS BAR DETAIL

E907 REF. SCALE: NTS



3 PDM DETAIL

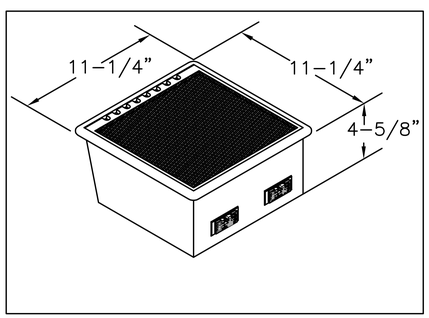
E907 REF. SCALE: NTS

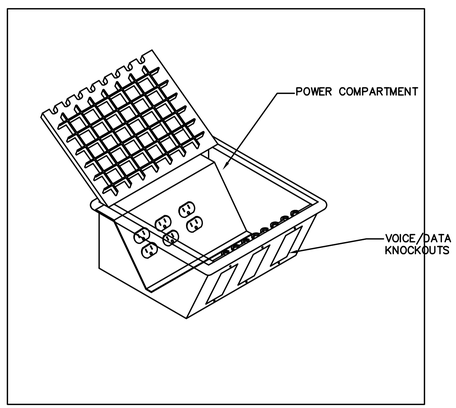
GENERAL NOTES:

1. SEE SHEET E001 AND E002 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
2. SEE SHEET E120 FOR FEEDER SCHEDULE.

PLAN NOTES:

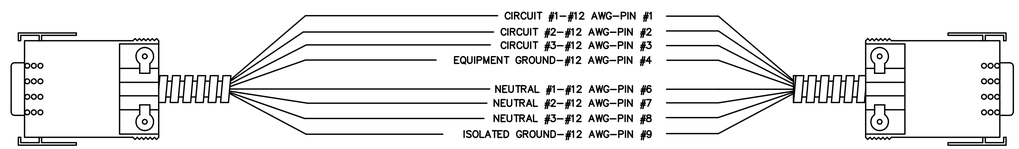
1 PROVIDE #4/0 AWG BONDING CONDUCTOR TO MAIN TELECOMMUNICATION GROUND BAR.



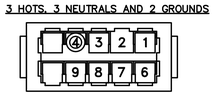


4 ACCESS FLOOR BOX DETAIL

E907 REF. SCALE: NTS



3 HOTS, 3 NEUTRALS AND 2 GROUNDS

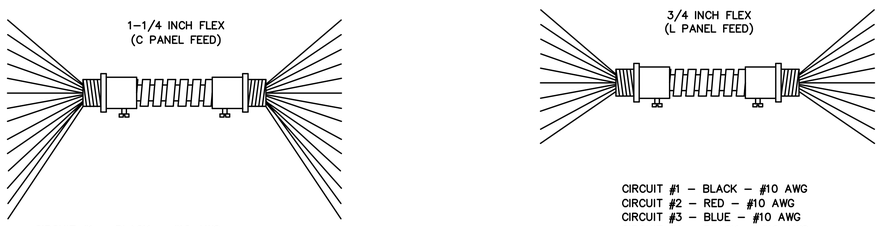


1. HOT #1-#12 THHN
2. HOT #2-#12 THHN
3. HOT #3-#12 THHN
4. EQUIPMENT GROUND-#12 THHN

6. NEUTRAL #1-#12 THHN
7. NEUTRAL #2-#12 THHN
8. NEUTRAL #3-#12 THHN
9. ISOLATED GROUND-#12 THHN

5 FLOOR BOX CONNECTOR WHIP

E907 REF. SCALE: NTS

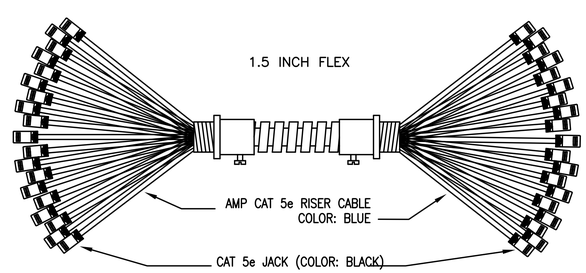


CIRCUIT #1 - BLACK - #10 AWG
CIRCUIT #2 - RED - #10 AWG
CIRCUIT #3 - BLUE - #10 AWG
CIRCUIT #4 - BLACK - #10 AWG
CIRCUIT #5 - RED - #10 AWG
CIRCUIT #6 - BLUE - #10 AWG
CIRCUIT #7 - BLACK - #10 AWG
CIRCUIT #8 - RED - #10 AWG
NEUTRAL #1 - WHITE - #10 AWG
NEUTRAL #2 - WHITE - #10 AWG
NEUTRAL #3 - WHITE - #10 AWG
NEUTRAL #4 - WHITE - #10 AWG
NEUTRAL #5 - WHITE - #10 AWG
NEUTRAL #6 - WHITE - #10 AWG
NEUTRAL #7 - WHITE - #10 AWG
NEUTRAL #8 - WHITE - #10 AWG
EQUIPMENT GROUND - GREEN - #10 AWG
ISOLATED GROUND - GREEN/YELLOW - #10 AWG

CIRCUIT #1 - BLACK - #10 AWG
CIRCUIT #2 - RED - #10 AWG
CIRCUIT #3 - BLUE - #10 AWG
CIRCUIT #4 - BLACK - #10 AWG
NEUTRAL #1 - WHITE - #10 AWG
NEUTRAL #2 - WHITE - #10 AWG
NEUTRAL #3 - WHITE - #10 AWG
NEUTRAL #4 - WHITE - #10 AWG
EQUIPMENT GROUND - GREEN - #10 AWG

6 PDM POWER HOMERUN CONNECTIONS (1 OF EACH PER PDM)

E907 REF. SCALE: NTS



*1.5" FLEX W/ (24) CAT 5e CABLES (BLUE) AND (2) BLACK CAT6 JACKS EACH
*ID EACH CABLE W/ (2) SELF LAMINATING CABLE LABELS (1 AT 6" FROM EACH END)

7 CM HOMERUN CONNECTIONS (2 PER CM)

E907 REF. SCALE: NTS

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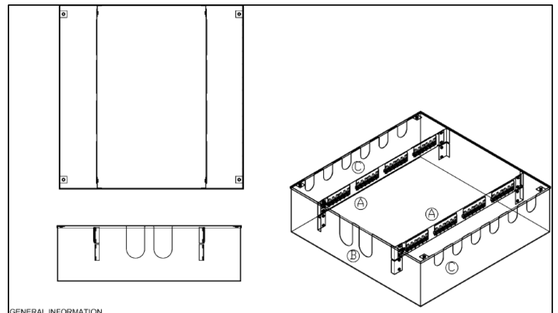

GENERAL INFORMATION

A. PATCH PANEL LOCATIONS
B. HOMERUN INPUT LOCATION
C. TRANSITION CABLE (OUTPUT) LOCATION

DIMS 20"X20"X6
1.5" HR INPUT
¾" TC OUTPUT

1 CM MODULE DETAIL

E908 REF. SCALE: NTS

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