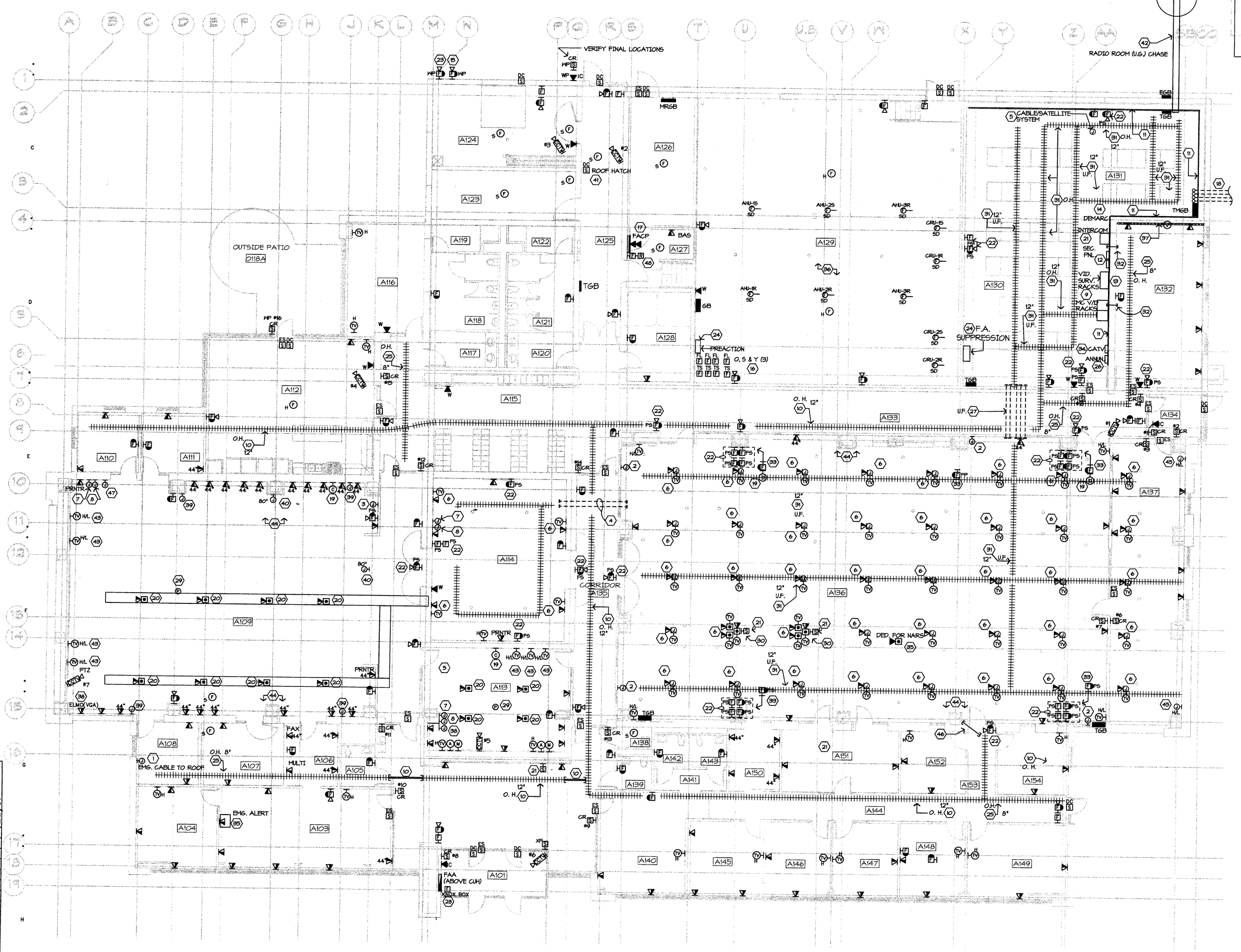

H1 ELECTRICAL SYSTEMS PLAN
1/8"=1'-0"

GENERAL NOTES (CONT.):

L. LOW VOLTAGE CABLING ROUTED IN AREAS WITHOUT CABLE TRAY SHALL BE INDEPENDENTLY SUPPORTED AND ROUTED ALONG BUILDING LINES AT PARALLEL AND PERPENDICULAR ANGLES.

M. OUTLETS IN THE SAME WALL SHALL NOT BE BACK-TO-BACK.

N. PROVIDE FIRE ALARM DUCT DETECTOR TEST SWITCHES FOR DEVICES MOUNTED OVER 12' AFF.

NUMBERED NOTES:

1. PROVIDE 1-1/4"C, MT (BUSHED) TO CEILING SPACE AND THEN A 1-1/2" EMT THROUGH ROOF AT GRID LOCATION. COORDINATE WITH ROOFER AND VERIFY LOCATION WITH OWNER.
2. PROVIDE (2) 3-GANG J-BOXES WITH (3) 1" BUSHED CONDUITS FROM J-BOX TO ACCESSIBLE SPACE BELOW RAISED FLOOR TO PROVIDE ROUTE FOR TV CABLING. INSTALL BLANK STAINLESS STEEL COVERPLATES. COORDINATE LOCATIONS WITH OWNER.
3. PROVIDE (3) GANG J-BOX WITH (2) 1" BUSHED CONDUITS FROM J-BOX TO ACCESSIBLE CEILING TO PROVIDE ROUTE FOR PROJECTOR CABLING. INSTALL BLANK S. S. COVERPLATE ON J-BOX. VERIFY FINAL LOCATION.
4. PROVIDE (2) 4"C. BETWEEN ROOMS TO RAISED FLOOR SPACES (BUSHED) WITH DUCT SEAL. FIRE STOP CONDUIT PENETRATIONS AT DATA ROOM WALL. PROVIDE REMOVABLE INTUMESCENT PILLOWS TO SEAL CONDUIT AFTER CABLE INSTALLATION. (POWER PLANS SHOW AN ADDITIONAL (4) 2" C. SLEEVES)
5. PROVIDE 2" CAPPED SLEEVE THROUGH ROOF FOR FUTURE ANTENNA OR SATELLITE CONNECTIONS. COORDINATE EXACT REQUIREMENTS WITH OWNER AND ROOFER.
6. PROVIDE DATA/VOICE ROUGH-IN, MOUNT VOICE/DATA BOXES IN CONSOLES AS REQUIRED BY OWNER. COORDINATE CABLING/DEVICE LOCATIONS IN THE FLOOR BOX (DISPATCH) OR WALL BOX (TRAINING) WITH 911 SYSTEMS INSTALLER. ENSURE THAT THERE IS SUFFICIENT SPACE TO INSTALL ALL POWER RECEPTACLES AND AT LEAST (5) 911 DATA DROPS. PROVIDE CONDUIT THROUGH WALLS WHERE CABLES WILL EXIT RAISED FLOOR ON ROUTE TO DATA RACK. BOXES ARE SPECIFIED ON DWG. E2.1.
7. PROVIDE SOUND CONDUIT/J.B'S FOR OWNER LOCAL SOUND SYSTEM. COORDINATE EXACT LOCATION W /OWNER. PROVIDE #4 AWG CU. WIRE TO NEAREST GROUNDING BUS BAR. VERIFY LOCATION. REFER TO DETAIL HM/E7.1.
8. PROVIDE DATA/VOICE CONDUIT(S) / J.B'S (1-1/4" MIN) FOR OWNER TF CABINET. COORDINATE ALL REQUIREMENTS WITH OWNER'S L.V. INSTALLER. REFER TO DWG. E2.1 FOR COORDINATION AND DETAIL HM/E7.1. VERIFY LOCATION, CONDUIT SIZE, AND QUANTITY.
9. MAIN DATA/VOICE ENCLOSURE 'MC' TO BE INSTALLED BY OTHERS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER'S LOW-VOLTAGE CONTRACTOR, DEMARC AND DATA ROOM EQUIPMENT. PROVIDE (2) DEDICATED UPS CIRCUITS PER RACK. REFER TO DWG. E2.1 FOR COORDINATION.
10. PROVIDE 12" WIDE BY 4" DEEP, WIRE BASKET CABLE TRAY, ABOVE CEILING LEVEL, FOR LOW-VOLTAGE CABLING. PROVIDE #4 CONTINUOUS GROUND WIRE BONDED TO TRAY EVERY 4'. COORDINATE EXACT LOCATION AND ROUTING WITH LIGHT FIXTURES, DUCTWORK, SPRINKLERS AND MISC EQUIPMENT LOCATED ABOVE ACCESSIBLE CEILING. MAINTAIN 2" MIN. CLEAR SPACE ABOVE TRAY. PROVIDE (4) 4" BUSHED CONDUIT SLEEVES WHEN PENETRATING WALLS OR SLEEVING ACROSS HARD CEILING (GYPSUM) SOFFITS. SUBMIT COORDINATION DRAWINGS WITH SHOP DRAWINGS. COORDINATE WITH ALL DISCIPLINES. POWER WIRING AND 911 CABLING SHALL NOT BE INSTALLED IN ABOVE CEILING CABLE TRAY.
11. PROVIDE 3/4" THICK X 4' WIDE X 8' TALL, AC GRADE PLYWOOD BACKBOARD TO COVER ENTIRE WALL WITH 2 COATS LIGHT COLORED FIRE RETARDANT PAINT TO MATCH WALL.
12. COORDINATE SPACE FOR CARD ACCESS (BY OWNER) AND INTRUSION DETECTION/DOOR UNLOCK (BY E.C.) HEAD-END EQUIPMENT. INTERCONNECT OWNER'S SECURITY SYSTEM(S) WITH FACP FOR REMOTE MONITORING PURPOSES. PROVIDE ANALOG PHONE LINES AS NEEDED. COORDINATE EQUIPMENT LAYOUT WITH OTHER ELEC. EQUIPMENT AND OWNER. SEE DETAIL C/E7.1 FOR ROUGH-IN OF CARD READER LOCATIONS. SEE DETAIL E7/E7.1 FOR INTRUSION SYSTEM AND DEVICE SPECIFICS.
13. PROVIDE ENCLOSED CABINET FOR VIDEO SURVEILLANCE EQUIPMENT AND DVR'S. REFER TO SPEC. FOR EXACT REQUIREMENTS. COORDINATE EXACT LOCATION AND ALL REQUIREMENTS, REFER TO DWG. E2.1 FOR COORDINATION AND DETAIL E/E7.1. PROVIDE ALL LOW-VOLTAGE DROPS AS REQUIRED FOR THIS HEAD-END EQUIPMENT AND LOCAL AND REMOTE MONITORING LOCATIONS.
14. APPROXIMATE LOCATION OF VOICE/DATA DEMARC TO BE INSTALLED BY OTHERS.
15. PROVIDE WEATHERPROOF HORN/STROBE, CONNECT TO BUILDING FIRE ALARM SYSTEM. MOUNT ABOVE SPRINKLER SIAMESE CONNECTION. VERIFY EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL.
16. PROVIDE FIRE ALARM MONITOR MODULE(S) FOR FLOW AND TAMPER SWITCHES. VERIFY EXACT LOCATION WITH CIVIL/MECH. IN THE FIELD. CONNECT TO FACP. SEE DETAIL FB/E7.2.
17. PROVIDE FIRE ALARM CONTROL PANEL, FACP. CONNECT TO CLEAN AGENT AND PRE-ACTION FIRE SUPPRESSION SYSTEMS. PROGRAM ALL TROUBLE SUPERVISORY, GENERAL, DISCHARGE, TAMPER, PRESSURE, VALVE STATUS, AND ALL OTHER ALARM SIGNALS FROM FIRE SUPPRESSION SYSTEMS INTO FACP, COORDINATE ALL WORK WITH FIRE SUPPRESSION INSTALLERS. INTERCONNECT TO BUILDING SECURITY SYSTEM FOR REMOTE MONITORING PURPOSES WITH 1" CONDUIT AND WIRING AS REQUIRED. PROVIDE DEDICATED EMERGENCY POWER CIRCUITS AS REQUIRED FROM PANEL ELP-EGA, CIRCUIT #29. SEE DETAIL C/E7.2.
18. PROVIDE BUSHED CONDUIT STUB-UPS INTO ROOM FROM PROPERTY LINE FOR COMMUNICATION CABLING. REFER TO SITE PLAN E1.0.
19. PROVIDE 1"G. TO CEILING SPACE (BUSHED) WITH CAT 6 CLOCK CABLE TO MC RACK. VERIFY FINAL LOCATION. (CLOCKS BY OWNER).
20. PROVIDE VOICE/DATA FLOOR BOX AND CONDUIT ROUGH-INS SPECIFIED ON DWG. E2.1. LOCATE FLOOR BOXES AS INDICATED ON ARCHITECTURAL DRAWINGS.
21. PROVIDE COMPLETELY INTEGRATED, COMPUTERIZED, INTERCOM, VIDEO SURVEILLANCE AND DOOR RELEASE SYSTEMS CONTROL STATIONS. CONTROL STATIONS SHALL BE AT ADMIN. SUPPORT AND BOTH SUPERVISOR STATIONS IN DISPATCH ROOM. PROVIDE ALL CONTROL SOFTWARE, PROGRAMMING, PTZ CONTROLLERS, AND COMPONENTS REQUIRED FOR OPERATING SYSTEMS. PROVIDE FLOOR BOX, CABLING AND DEVICES AS REQ'D. REFER TO SPEC., NOTE #13 AND DETAILS E1 AND E4 ON E7.1.
22. PROVIDE ROUGH-IN BACK BOX(ES) FOR THE DEVICE(S) SHOWN, DESIGNATED 'FS'. DEVICE(S) AND WIRING SHALL BE PROVIDED BY THE FIRE SUPPRESSION CONTRACTORS. COORDINATE FINAL LOCATIONS WITH FIRE SUPPRESSION CONTRACTOR, BUILDING FIRE ALARM DEVICE, AND OTHER DEVICES (I.E. CLOCK).
23. PROVIDE COMPLETE CONNECTIONS TO FIRE SUPPRESSION, SPRINKLER, PROVIDED 120V BELL. CONNECT TO ELP-EGA, CIRCUIT #37. WIRE VIA FLOW SWITCH.

NUMBERED NOTES (CONTINUED):

24. PROVIDE BUILDING FIRE ALARM SYSTEM CONNECTIONS TO BOTH FIRE SUPPRESSION, CLEAN AGENT AND DRY PRE-ACTION DOUBLE INTERLOCK SYSTEMS SHOWN. FOR CLEAN AGENT SYSTEM INTERLOCK SHUT-DOWN CONTROL OF CRU-1, CRU-2, UPS-1, AND UPS-2. COORDINATE ALL REQUIREMENTS WITH INSTALLERS. PROVIDE ALL WIRING, CONDUIT AND CONNECTIONS. REFER TO DETAILS E5/E7.2.
25. SAME AS NOTE #10 EXCEPT FOR 8" WIDE CABLE TRAY.
26. PROVIDE GENERATOR(S) AND ATS(S) ANNUNCIATOR PANELS, COORDINATE EXACT LOCATION AND REQUIREMENTS IN THE FIELD. PROVIDE WIRING AS REQUIRED IN CONDUIT TO GENERATORS/ATS'S.
27. PROVIDE (4) 4" CONDUITS/SLEEVES (BUSHED) ROUTED BETWEEN DATA AND DISPATCH ROOMS BELOW RAISED FLOOR. FIRE STOP CONDUIT PENETRATIONS AT DATA ROOM WALL. PROVIDE REMOVABLE INTUMESCENT PILLOWS TO SEAL CONDUIT AFTER CABLE INSTALLATION. (POWER PLANS SHOW AN ADDITIONAL (2) 4" C. SLEEVES)
28. PROVIDE RECESSED FIRE ALARM LOCK-BOX, VERIFY ALL REQUIREMENTS/KEYING WITH LOCAL FIRE DEPART.
29. PROVIDE CEILING DATA OUTLET ROUGH-IN FOR PROJECTOR. PROVIDE 1" C. MT FROM CEILING BOX TO WALL CONTROL OUTLET. VERIFY EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN.
30. SECONDARY MONITORING LOCATION(S) FOR ELECTRICAL EQUIPMENT ALARMS, CONNECT TO REMOTE ANNUNCIATOR PANELS IN DATA ROOM. PROVIDE CAT 6 CABLING IN CONDUIT FROM EACH OF THE REMOTE 'C' CONTACTS ON ELECTRICAL EQUIPMENT INCLUDING ATS SWITCHES (PARALLELING EQUIPMENT - SEE ALTERNATE #1B), GENERATOR(S) (SEE ALTERNATE #1A AND #1B), UPS'S, CRU, AND HMBS SPD (TVSS). VERIFY EXACT CONNECTION REQUIREMENTS.
31. PROVIDE CABLE TRAY BELOW RAISED FLOOR AND ABOVE RACKS IN DATA ROOM, (SHOWN FOR COORDINATION WITH 9'W RADIO CABLE TRAYS PROVIDED BY OWNER). PROVIDE CABLE TRAY BELOW RAISED FLOOR IN DISPATCH FLOOR. SUBMIT MULTI-DISCIPLINE COORDINATION DRAWINGS FOR CABLE TRAY, CONDUITS AND MECH ITEMS TO ENSURE THERE IS SPACE FOR CABLE TRAYS. POWER WIRING SHALL NOT BE INSTALLED IN CABLE TRAYS. PROVIDE #2 CONTINUOUS GROUND WIRE BONDED TO ALL TRAYS EVERY 4' AND AT ALL TRAY SECTIONS; ALSO SEE E5.1.
32. PROVIDE (4) 2" BUSHED SLEEVES THRU WALL FROM ABOVE ACCESSIBLE CEILING TO MC RACKS IN DATA ROOM.
33. VERIFY WITH LOCAL AHJ IF IT IS ACCEPTABLE TO PROVIDE STROBE ONLY DEVICE IN LIEU OF HORN/STROBE FOR DEVICES IN DISPATCH ROOM ONLY. IF NOT, PROVIDE HORN/STROBE DEVICES. VERIFY REQUIREMENTS WITH FIRE MARSHAL PRIOR TO INSTALLATION.
34. PROVIDE CATV HEAD-END AT THIS LOCATION.
35. NARS (NUCLEAR ACCIDENT REPORTING SYSTEM), PROVIDE 1"G, MT (BUSHED) TO ACCESSIBLE CEILING SPACE FOR OWNER'S VOICE CABLE. VERIFY LOCATION.
36. VERIFY LOCATION OF DUCT DETECTORS WITH MECHANICAL.
37. PROVIDE SURFACE MIREMOLD WITH DEVICES SHOWN, SEE POWER PLAN E2.1, FOR POWER REQUIREMENTS.
38. PROVIDE 1" C, MT FROM WALL CONTROL OUTLET TO CEILING BOX. VERIFY EXACT LOCATION AND REQUIREMENTS PRIOR TO ROUGH-IN.
39. PROVIDE LOCAL HALL MOUNTED (FUTURE SOUND SYSTEM) SPEAKERS ROUGH-IN WITH CONDUITS TO HEAD-END EQUIPMENT. COORDINATE CONDUIT ROUTING.
40. PROVIDE 1" C, MT (BUSHED) TO ACCESSIBLE SPACE. VERIFY EXACT LOCATION OF (2) MESSAGE BOARDS WITH OWNER PRIOR TO ROUGH-IN. (V IS ON SOFFIT.
41. VERIFY EXACT LOCATION OF ROOF HATCH. PROVIDE LOCAL ALARM MONITORING EMPTY CONDUIT FROM HATCH TO CORRIDOR AT 1'-0" APPROX.
42. REFER TO DETAIL HM/E5.4 FOR TYP. RADIO TOWER CONDUITS.
43. COORDINATE WITH OWNER'S REPRESENTATIVE FOR EQUIPMENT TO BE INSTALLED AND LOCATIONS.
44. PROVIDE (3) 1" LOW VOLTAGE CONDUIT SLEEVES AROUND COLUMNS / BEAMS TO ABOVE ACCESSIBLE CEILINGS.
45. PROVIDE EMPTY JUNCTION BOX WITH BLANK COVERS FOR FUTURE TV RECEPTACLE.
46. PROVIDE (4) 2" BUSHED SLEEVES THRU WALL FROM ABOVE ACCESSIBLE CEILING IN CORRIDOR A135 TO BELOW RAISED FLOOR IN DISPATCH ROOM A136.
47. EQC TV HEAD END EQUIPMENT. PROVIDE SLEEVE IN WALL SIZED FOR CABLES REQUIRED. SEE TV RISER DETAIL C4 ON E7.1.
48. PROVIDE FIRE ALARM RELAY MODULE FOR CONTROL OF 120V 20A FIRE SMOKE DAMPERS.

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GENERAL NOTES:

A. SECURITY SYSTEMS FOR VIDEO SURVEILLANCE AND INTERCOMS, SHALL BE INSTALLED BY THIS E. C. (CARD ACCESS AND VOICE/DATA CABLING/EQUIP. SHALL BE BY OWNER'S SECURITY CONTR.). ALSO REFER TO DETAILS ON E7.1.

B. PROVIDE ROUGH-IN ONLY (CONDUITS, SLEEVES AND J-BOXES) FOR OWNER'S SECURITY CONTR. PROVIDED VOICE AND DATA, CARD ACCESS AND SECURITY SYSTEMS. CABLING FOR THESE N. I. C.

C. THE FIRE ALARM SYSTEM AND SECURITY SYSTEMS PROVIDED BY THE E. C. SHALL HAVE A FULL TWO YEAR WARRANTY AND MAINTENANCE AGREEMENT INCLUDING PARTS, LABOR AND ADJUSTMENTS. PROVIDE COMPLETE TWO YEAR MONITORING FOR THESE SYSTEMS AS COORDINATED WITH OWNER.

D. ALL SYSTEMS CABLING USED ON THIS PROJECT SHALL BE PLENUM RATED; NO EXCEPTIONS.

E. ALL METAL CONDUITS AND TELE-COMMUNICATIONS RACKS AND ENCLOSURES SHALL BE GROUNDED/ BONDED; REFER TO SPEC. AND GROUNDING SHEETS FOR DETAILS.

F. PROVIDE 1" MIN. BUSHED, CONDUIT SLEEVES FOR ALL LOW-VOLTAGE PENETRATIONS THROUGH WALLS AND CEILINGS. PROVIDE LARGER SLEEVES AS NOTED OR IF REQUIRED TO ACHIEVE 40% CONDUIT FILL. SEAL/FIRESTOP AT ALL PENETRATIONS. SLEEVES ARE NOT ALL INDICATED ON DRAWINGS; COORDINATE WITH OWNER'S LOW-VOLTAGE INSTALLERS.

G. COORDINATE ALL CARD ACCESS AND SECURITY DEVICES W/OWNER'S DOOR HARDWARE SUPPLIER. PROVIDE 120V UPS CONNECTIONS, EMPTY J-BOXES/ CONDUITS, AND INTERCONNECTIONS AS REQUIRED FOR FUNCTIONING SYSTEMS. REFER TO DETAILS C1/C4/E7.1 AND HB/E7.2.

H. COORDINATE DOOR HARDWARE, LOW-VOLTAGE AND POWER CONNECTIONS WITH SHOP DRAWINGS. IF DOOR HAS ELEC. STRIKE, POWER WILL BE FROM OWNER'S WIRING FROM CARD READERS/PANEL. IF DOOR HAS ELECTRIC RETRACTION CRASH BAR, PROVIDE 120V UPS POWER ABOVE DOOR. ALSO REFER TO DETAIL HB/E7.2.

I. UNLESS INDICATED OTHERWISE OR BY AHJ, ROUTE ALL LOW-VOLTAGE SYSTEMS CABLING IN ABOVE CEILING CABLE TRAY. BUNDLE CABLING BASED ON FUNCTION SERVED. LABEL EACH BUNDLE EVERY 4'. BMS CABLING MAY BE INSTALLED IN CABLE TRAY IF TYPE IS PERMISSIBLE BY CODE AND AHJ. POWER WIRING AND 911 CABLING SHALL NOT BE ROUTED IN ABOVE CEILING CABLE TRAY.

J. PROVIDE CONDUIT BUSHINGS FOR ALL CONDUIT SLEEVE ENDS.

K. ALL COMMUNICATION CONDUITS SHALL HAVE LARGE BENDS AS REQUIRED BY SUPPLIERS AND STANDARDS.

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered PROFESSIONAL ENGINEER under the laws of the State of IOWA.
Registration Number 19356 Date 8/28/09
PAUL R. JUNTILLA

Revisions	Date	No.

North
Comm 083022
Date 8/28/09
Drawn CA/PRJ
Check PRJ/MES

LICENSED PROFESSIONAL ENGINEER
PAUL R. JUNTILLA
19356
EXPIRES
12/31/2010
STATE OF IOWA

ELECTRICAL SYSTEMS PLAN

Scale: 1/8" = 1'-0"

E3.1

Discipline	Level	Quadrant	Layer
A			
F			
S			
M			
E			

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