

# DUPAGE AIRPORT AUTHORITY WEST CHICAGO, ILLINOIS

## CONSTRUCTION PLANS FOR DUPAGE AIRPORT

### AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)

A.I.P. PROJECT: 3-17-0017-B20  
ILLINOIS PROJECT: DPA-3674

APRIL 20, 2007

**DUPAGE AIRPORT**

TOWNSHIP: 40 NORTH      WAYNE TOWNSHIP  
RANGE: 9 EAST            (SECTIONS: 31)  
DUPAGE COUNTY

DESIGN AIRCRAFT APPROACH CATEGORY D  
DESIGN AIRCRAFT GROUP III

**CALL JULIE  
BEFORE EXCAVATING  
1-800-892-0123**

**CMT** 07257-03  
CRAWFORD, MURPHY & TILLY, INC.  
CONSULTING ENGINEERS  
900 N. COMMONS DRIVE  
SUITE 107  
AURORA, IL 60504  
PHONE (630) 820-1222  
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ASAD M. BAJWA  
062-055662  
LICENSED  
PROFESSIONAL  
ENGINEER  
OF  
ILLINOIS  
Exp: 11/30/07

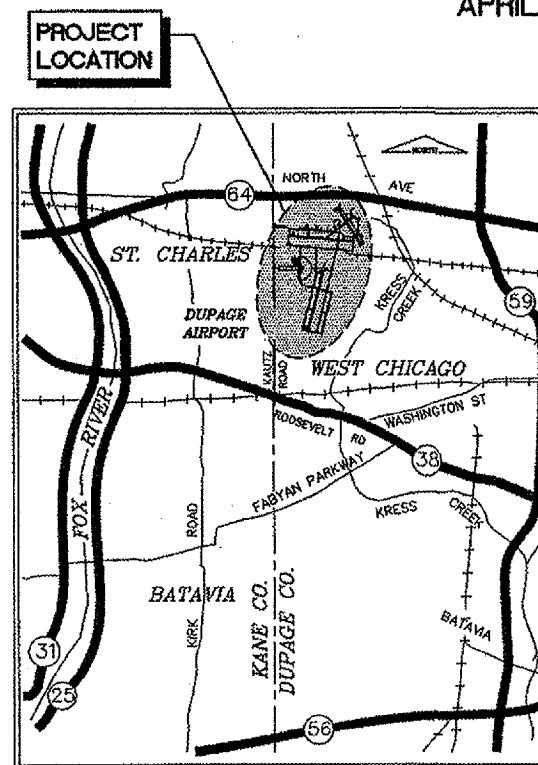
SUBMITTED BY: *Asad Bajwa*  
DATE: *April-20-2007*

ASAD BAJWA, P.E.

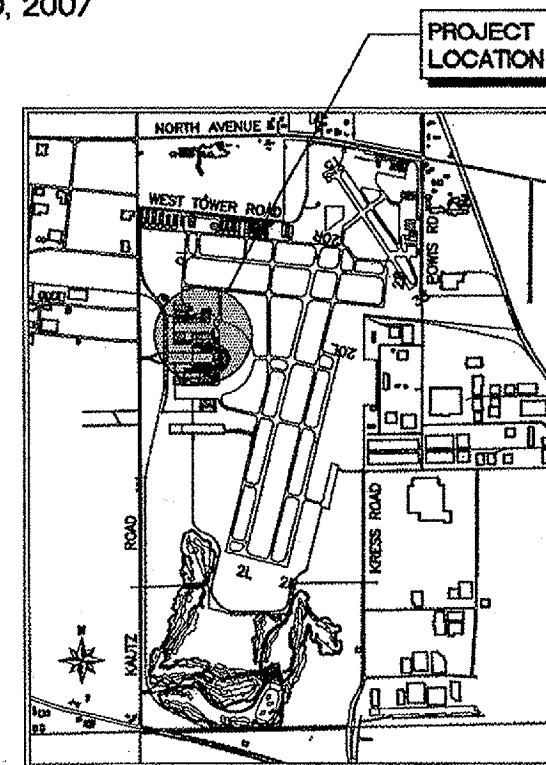
**DDA**  
**DuPage Airport**  
2700 INTERNATIONAL DRIVE  
SUITE 200  
WEST CHICAGO, IL 60085

APPROVED BY: \_\_\_\_\_  
DAVID BIRD -- EXECUTIVE DIRECTOR

DATE: \_\_\_\_\_



LOCATION MAP

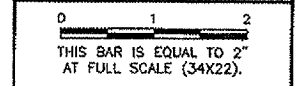


SITE PLAN

**INDEX TO SHEETS**

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- 4 AIRFIELD LIGHTING VAULT PLAN
- 5 AIR TRAFFIC CONTROL TOWER (ATCT) PLAN
- 6 ELECTRICAL DETAILS

REVISIONS		
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**DUPAGE AIRPORT  
 WEST CHICAGO, ILLINOIS**

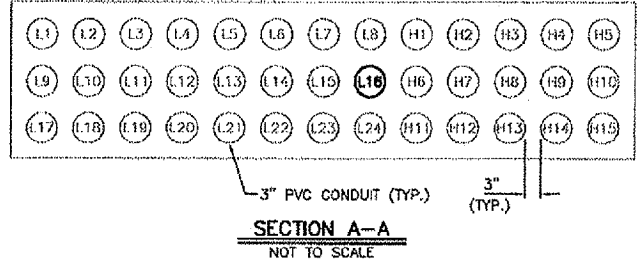
**AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)  
 SITE PLAN**

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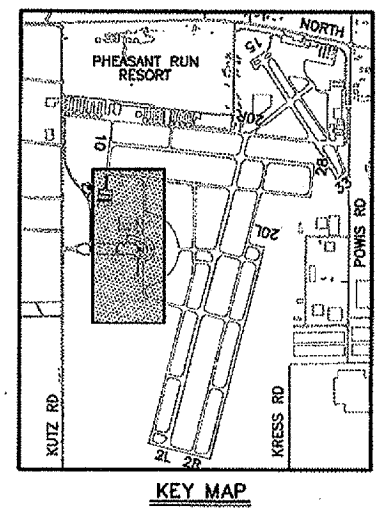
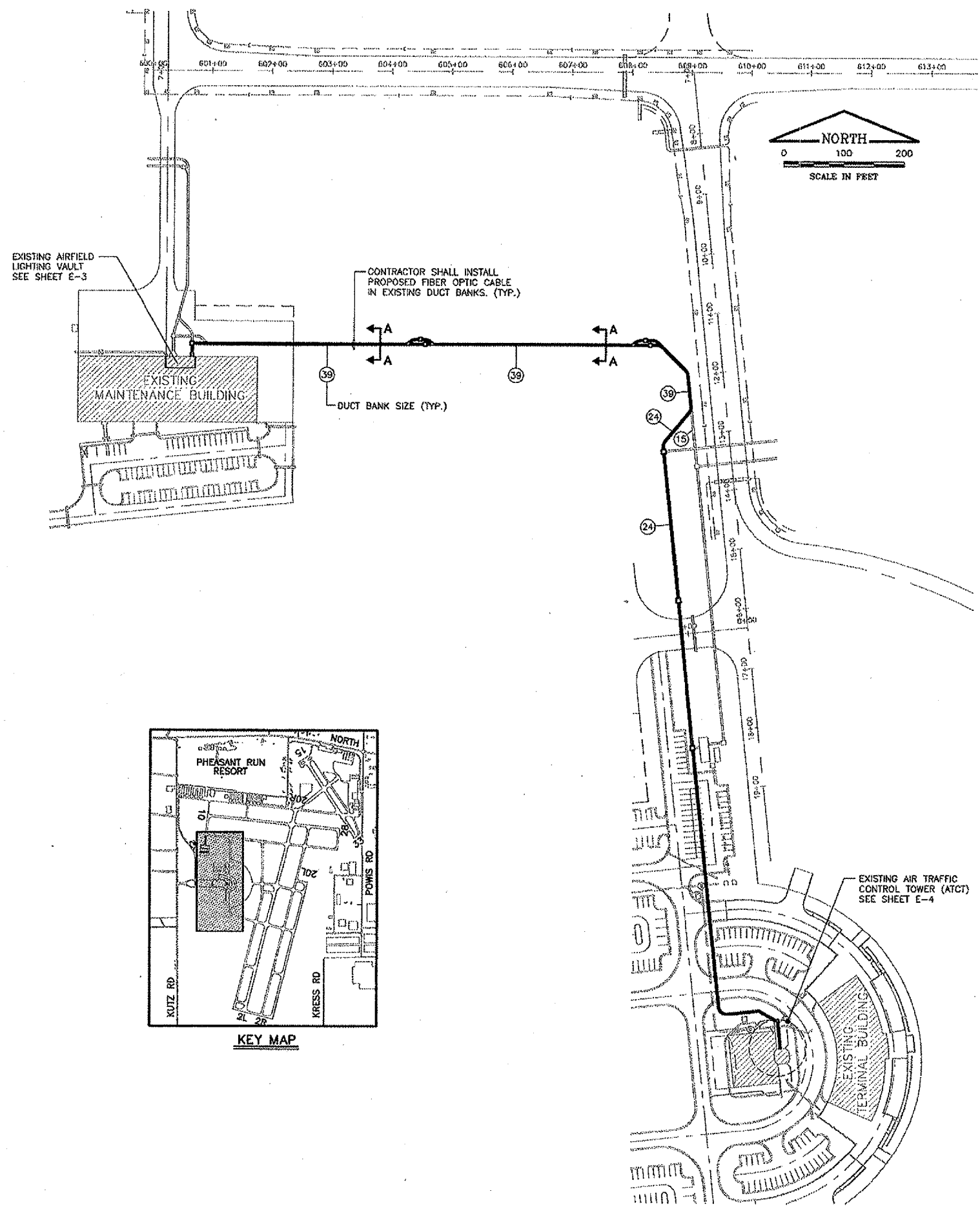
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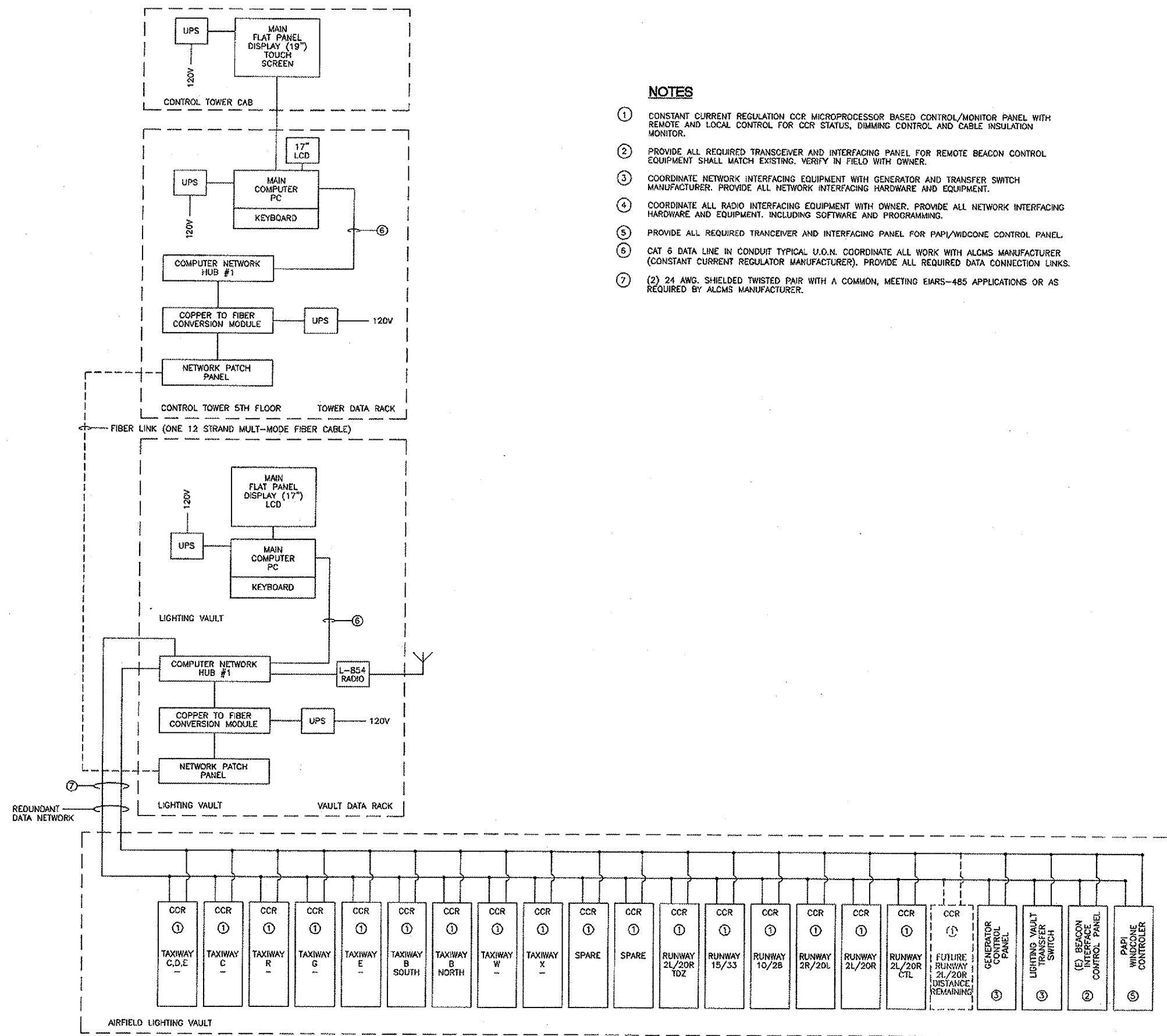
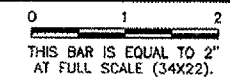
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DUCT BANK NOMENCLATURE		DUCT BANK NOMENCLATURE	
L1-L24 LOW VOLTAGE DUCTS		H1-H15 HIGH VOLTAGE DUCTS	
DUCT	USAGE	DUCT	USAGE
L1-L12	RESERVED FOR FAA USE	H1-H5	SPARES
L13-L15	SPARES	H6-H10	SPARES
L16	PROPOSED 1-12 STRAND MULTI-MODE FIBER OPTIC CABLE	H11	EXISTING 4#8, 5KV, L-824 AIRFIELD HOMERUNS FOR RUNWAY 1R-19L AND RUNWAY 1L-19R (CIRCUITS 11 AND 13).
L17	EXISTING 2 FIBER OPTIC DATA CABLES FOR PLC CONTROLS.	H12	EXISTING 4#8, 5KV, L-824 AIRFIELD HOMERUNS FOR CENTERLINE RUNWAY 1L-19R AND TOUCHDOWN ZONE RUNWAY 1L-19R (CIRCUITS 17 AND 18).
L18	EXISTING 9#1 THWN, 1#12 GND. CIRCUITS (PDF-2-1), (PDF-2-2) AND (PDF-2-3) FOR EXIST. APRON LIGHTS.	H13	EXISTING 4#8, 5KV, L-824 AIRFIELD HOMERUNS FOR TAXIWAY "X" AND TAXIWAY "W" (CIRCUITS 12 AND 14).
L19	EXISTING 14#10 THWN, 1#12 GND. FOR REMOTE APRON LIGHTING CONTROL STATION	H14	EXISTING 4#8, 5KV, L-824 AIRFIELD HOMERUNS FOR TAXIWAY "R" AND TAXIWAY "G" (CIRCUITS 15 AND 16).
L20	EXISTING 8#4 THWN, 1#12 GND. CIRCUITS (LP-3), (LP-4), (LP-5) AND (LP-6) FOR EXISTING WINDCONES.	H15	SPARE.
L21	EXISTING 4#4 THWN, 1#12 GND. CIRCUITS (LP-1) AND (LP-2) FOR EXISTING PAVEMENT SENSORS.		
L22-L24	SPARES		



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- NOTES**
- CONSTANT CURRENT REGULATION CCR MICROPROCESSOR BASED CONTROL/MONITOR PANEL WITH REMOTE AND LOCAL CONTROL FOR CCR STATUS, DIMMING CONTROL AND CABLE INSULATION MONITOR.
  - PROVIDE ALL REQUIRED TRANSCIVER AND INTERFACING PANEL FOR REMOTE BEACON CONTROL EQUIPMENT SHALL MATCH EXISTING. VERIFY IN FIELD WITH OWNER.
  - COORDINATE NETWORK INTERFACING EQUIPMENT WITH GENERATOR AND TRANSFER SWITCH MANUFACTURER. PROVIDE ALL NETWORK INTERFACING HARDWARE AND EQUIPMENT.
  - COORDINATE ALL RADIO INTERFACING EQUIPMENT WITH OWNER. PROVIDE ALL NETWORK INTERFACING HARDWARE AND EQUIPMENT. INCLUDING SOFTWARE AND PROGRAMMING.
  - PROVIDE ALL REQUIRED TRANSCIVER AND INTERFACING PANEL FOR PAPI/WINDCONE CONTROL PANEL.
  - CAT 6 DATA LINE IN CONDUIT TYPICAL U.O.N. COORDINATE ALL WORK WITH ALCMS MANUFACTURER (CONSTANT CURRENT REGULATOR MANUFACTURER). PROVIDE ALL REQUIRED DATA CONNECTION LINKS.
  - (2) 24 AWG. SHIELDED TWISTED PAIR WITH A COMMON, MEETING EIA RS-485 APPLICATIONS OR AS REQUIRED BY ALCMS MANUFACTURER.

**AIRFIELD LIGHTING AND EQUIPMENT CONTROL DIAGRAM**  
 NOT TO SCALE

**DUPAGE AIRPORT  
 WEST CHICAGO, ILLINOIS**

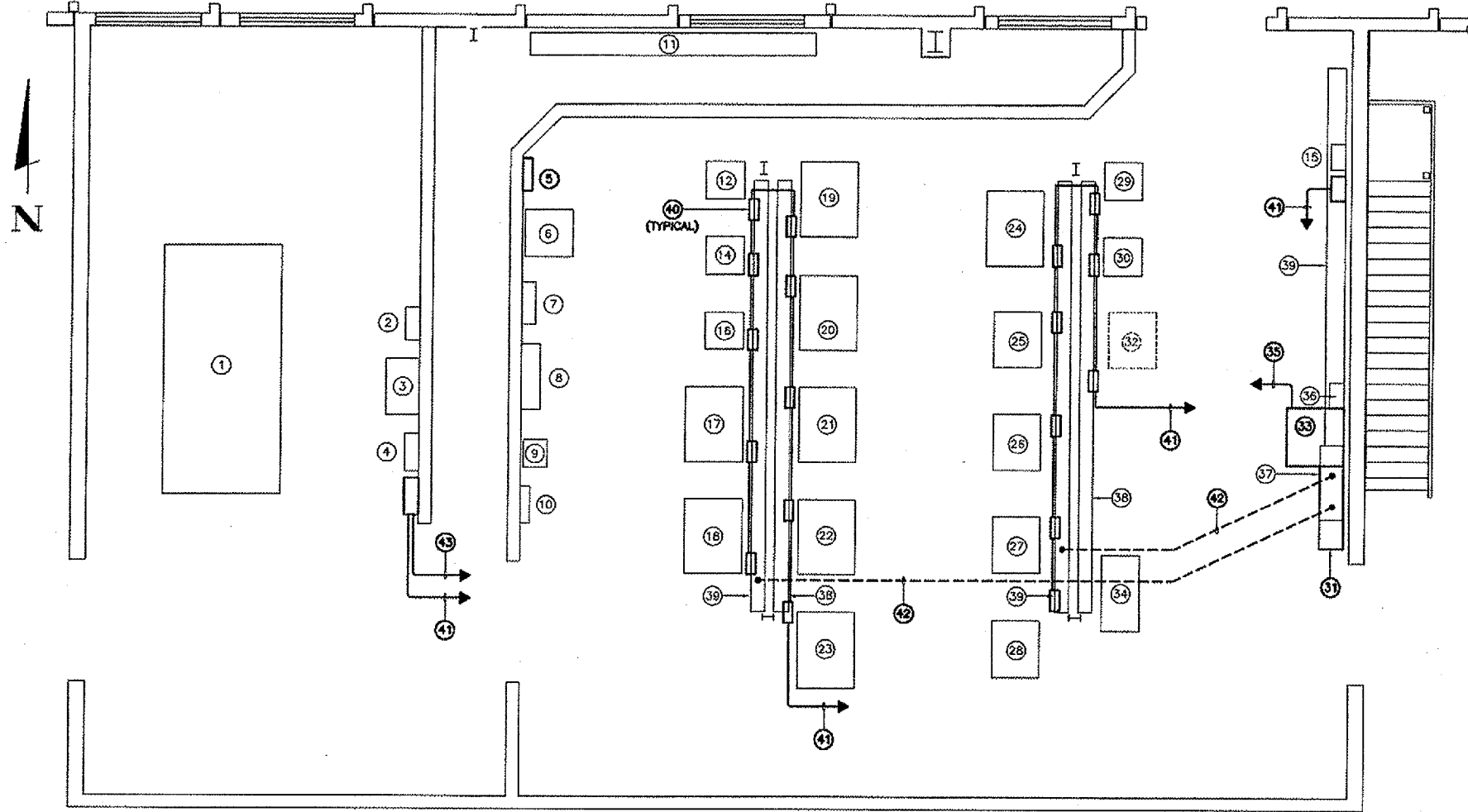
**AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)  
 ALCMS BLOCK DIAGRAM**

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**PROPOSED AIRFIELD VAULT MODIFICATIONS**  
1/4"=1'-0"

**NOTES:**

1. ALL PROPOSED WORK OR ITEMS BEING MODIFIED ARE SHOWN IN BOLD. ALL OTHER ITEMS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.
2. PROPOSED ALCMS RACK SHALL BE SUPPLIED WITH WHEELS. NEW CONTROL SYSTEM SHALL BE OPERATIONAL AND TESTED PRIOR TO THE REMOVAL OF EXISTING PLC CABINET. PROVIDE SUFFICIENT CABLE SLACK REQUIRED FOR ALCMS RACK TO BE OPERATIONAL.
3. INSTALL 2-20A, 1-POLE CIRCUIT BREAKERS IN LIGHTING PANEL FOR PROPOSED ALCMS.
4. INSTALL POWER AND CONTROL WIRES BETWEEN INTERFACE CONTROL PANEL AND GENERATOR, A.T.S., BEACON CONTROL, L-854 RADIO CONTROLLER AND PAPI/WINDCONE CONTROLLER PER ALCMS MANUFACTURER.
5. INSTALL 12"x12" WIREWAY 24" AFF. EXTEND EXISTING CONDUIT. MATCH EXISTING CONDITIONS.
6. CUT 30" LENGTH OF EXISTING WIREWAY TO INSTALL ALCMS RACK.
7. INSTALL AND WIRE NEW INTERFACE CONTROL PANEL AND IRMS FOR FUTURE REGULATOR FOR RUNWAY 2L/20R DISTANCE REMAINING SIGN CIRCUIT.

**AIRFIELD VAULT NOMENCLATURE**

- 1 EXISTING 430 KW (537.5 KVA) STAND-BY GENERATOR SET.
- 2 EXISTING 800A, 480V, 3Ø UTILITY MAIN DISCONNECT.
- 3 EXISTING 800A, 480V, 3Ø AUTOMATIC TRANSFER SWITCH.
- 4 EXISTING 800A, 480V, 3Ø GENERATOR SET MAIN DISCONNECT.
- 5 EXISTING 208Y/120 VAC, 3Ø, 4W, LIGHTING PANEL - SEE NOTE 3.
- 6 EXISTING 75 KVA, 480-208Y/120 VAC TRANSFORMER.
- 7 EXISTING 480V, 3Ø POWER DISTRIBUTION PANEL PDP-2.
- 8 EXISTING 480V, 3Ø POWER DISTRIBUTION PANEL PDP-1.
- 9 EXISTING 480V, 3Ø, 480V DELTA TO 480Y/277 VAC TRANSFORMER.
- 10 EXISTING 480Y/277V POWER DISTRIBUTION PANEL.
- 11 EXISTING HIGH VOLTAGE "HOMERUN" WIREWAY.
- 12 EXISTING 480 VAC, 10 KW, RW 15-33 REGULATOR.
- 13 NOT USED.
- 14 EXISTING 30KW, 480V, RUNWAY 10/28 REGULATOR.
- 15 EXISTING PAPI/WINDCONE CONTROL PANEL.
- 16 EXISTING 480 VAC, 10 KW, RUNWAY 2R/20L REGULATOR.
- 17 EXISTING 480 VAC, 20 KW, RUNWAY 2L/20R REGULATOR.
- 18 EXISTING 480 VAC, 30 KW, RUNWAY 2L/20R CENTERLINE REGULATOR.
- 19 EXISTING 480 VAC, 30 KW, RUNWAY 2L/20R TOUCHDOWN ZONE REGULATOR.
- 20 EXISTING 480 VAC, 30 KW, SPARE REGULATOR.
- 21 EXISTING 480 VAC, 30 KW, SPARE REGULATOR.
- 22 EXISTING 480 VAC, 30 KW, TAXIWAY C REGULATOR.
- 23 EXISTING 480 VAC, 30 KW, TAXIWAY W REGULATOR.
- 24 EXISTING 480 VAC, 20 KW, TAXIWAY R REGULATOR.
- 25 EXISTING 480 VAC, 15 KW, TAXIWAY G REGULATOR.
- 26 EXISTING 480 VAC, 15 KW, TAXIWAY E REGULATOR.
- 27 EXISTING 480 VAC, 10 KW, TAXIWAY B-SOUTH REGULATOR.
- 28 EXISTING 480 VAC, 10 KW, TAXIWAY B-NORTH REGULATOR.
- 29 EXISTING 480 VAC, 10 KW, TAXIWAY C REGULATOR.
- 30 EXISTING 480 VAC, 15 KW, TAXIWAY C, D, E-EAST REGULATOR.
- 31 PROPOSED 12"x12" WIREWAY - SEE NOTE 5.
- 32 FUTURE 480V AC, 10 KW RUNWAY 2L/20R RDR (SEE NOTE 7).
- 33 PROPOSED ALCMS RACK - SEE NOTE 2.
- 34 EXISTING WORK BENCH.
- 35 PROPOSED 4 #12 THWN, 2 #12 GND. IN 3/4" CONDUIT TO LIGHTING PANEL.
- 36 EXISTING L-854 RADIO CONTROLLER TO BE RELOCATED.
- 37 EXISTING PLC CONTROL CABINET TO BE REMOVED.
- 38 EXISTING 8" x 8" HIGH VOLTAGE (5 KV) WIREWAY.
- 39 EXISTING 8" x 8" LOW VOLTAGE (600V) WIREWAY - SEE NOTE 6.
- 40 PROPOSED INTERFACE CONTROL PANEL AND INSULATION RESISTANCE MONITOR. TYPICAL FOR EACH CCR, BEACON, GENERATOR AND PAPI/WINDCONE CONTROLLERS.
- 41 PROPOSED (2) 24 AWG SHIELDED TWISTED PAIRS IN 1" CONDUIT TO ALCMS RACK.
- 42 PROPOSED 2 #10 THWN, 1 #12 GND. IN EXISTING CONDUIT FOR 120V UPS POWER TO 40
- 43 PROPOSED 2 #10 THWN, 1 #12 GND. IN 3/4" CONDUIT TO ALCMS RACK.

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UPDATE BY: Jeremy Linke  
SURVEY BOOK #  
DATE: Friday, April 20, 2007 11:31:04 AM  
XREF DWG: tbcint.dwg  
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0 1 2  
THIS BAR IS EQUAL TO 2"  
AT FULL SCALE (34x22).

**DUPAGE AIRPORT**  
**WEST CHICAGO, ILLINOIS**  
**AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)**  
**AIRFIELD LIGHTING VAULT PLAN**

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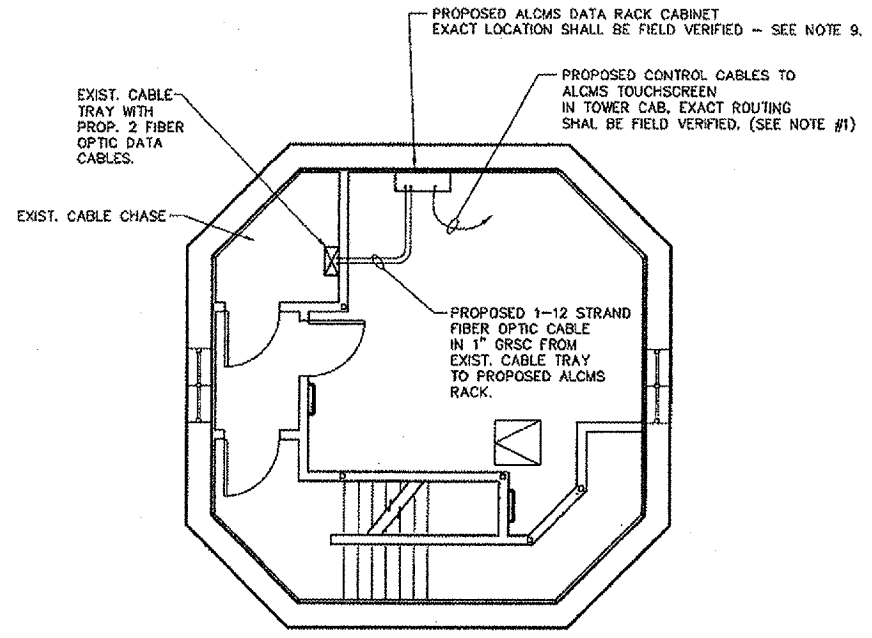


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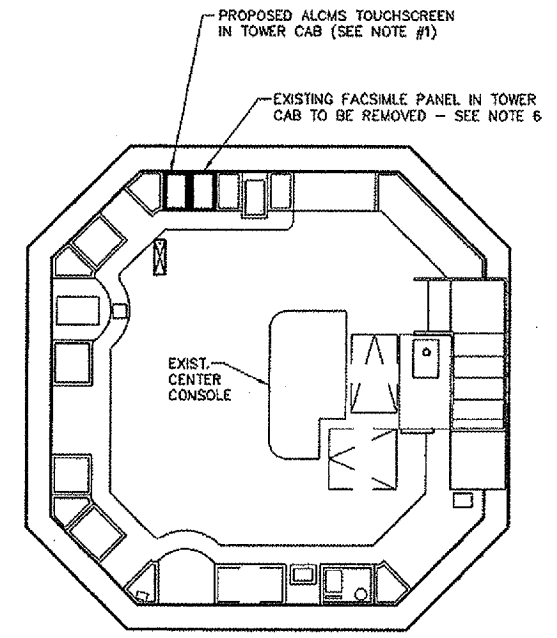
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**NOTES**

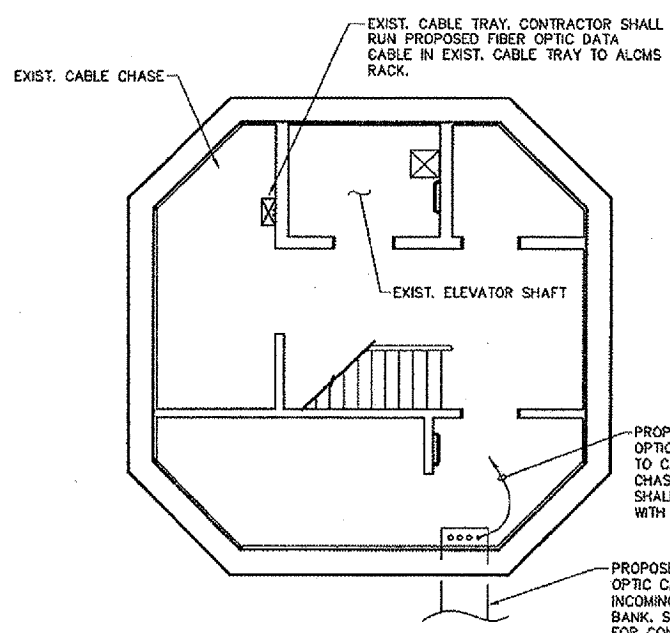
- CONTRACTOR SHALL COORDINATE ALL WORK IN THE EXISTING CONTROL TOWER WITH THE FAA AIRWAYS FACILITIES REPRESENTATIVES AND THE RESIDENT ENGINEER. CONTRACTOR SHALL GIVE A MINIMUM OF 2 DAYS NOTICE PRIOR TO BEGINNING WORK IN THE EXISTING TOWER.
- CONTRACTOR SHALL REMOVE EXISTING CONTROL WIRING FROM CONDUIT AFTER PROPOSED FIBER OPTIC CABLES AND ALCMS HAVE BEEN INSTALLED AND OPERATIONAL.
- CONTRACTOR SHALL PULL PROPOSED FIBER OPTIC CABLES THROUGH EXISTING CABLE CHASE.
- CONTRACTOR SHALL REMOVE EXISTING CONTROL CABLES IN TOWER FOR EXISTING AIRFIELD LIGHTING CONTROLS ONCE NEW AIRFIELD LIGHTING CONTROL SYSTEM IN TOWER IS COMPLETELY OPERATIONAL. CONTRACTOR SHALL ROUTE PROPOSED FIBER OPTIC CABLES IN EXISTING CABLE CHASE.
- CONTRACTOR SHALL REMOVE EXISTING CONTROL CABLES AND FLEXIBLE CONDUIT FROM TOWER CAB AFTER ALCMS HAS BEEN INSTALLED AND OPERATIONAL. CONTRACTOR SHALL RUN PROPOSED FIBER OPTIC CABLES IN 2"-2" FLEXIBLE CONDUITS ALONG ROUTE OF EXISTING CONTROL CABLES.
- CONTRACTOR SHALL REMOVE EXISTING CONTROL CONSOLE AND INSTALL PROPOSED COUNTER TOP AND FLUSH MOUNTED TOUCHSCREEN IN ITS PLACE. CONTRACTOR SHALL MAKE NECESSARY MODIFICATIONS TO EXISTING CABINET WORK TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM TO THE SATISFACTION OF THE ENGINEER AND TOWER CHIEF. PROPOSED COUNTER TOP SHALL BE CUSTOM WOOD CONSOLE OF SIZE AND FINISH TO MATCH THE EXISTING COUNTER OR AS DIRECTED BY TOWER CHIEF.
- PROVIDE UPS AND RECEPTACLE FOR TOUCHSCREEN MONITOR IN THE TOWER CAB.
- ALL PROPOSED WORK IN EXISTING TOWER SHALL BE INCLUDED IN THE UNIT BID PRICE FOR L-890 ALCMS.
- PROPOSED ALCMS RACK SHALL BE SUPPLIED WITH WHEELS. NEW CONTROL SYSTEM SHALL BE OPERATIONAL AND TESTED PRIOR TO THE REMOVAL OF EXISTING PLC CABINET. PROVIDE SUFFICIENT CABLE SLACK REQUIRED FOR ALCMS RACK TO BE OPERATIONAL.



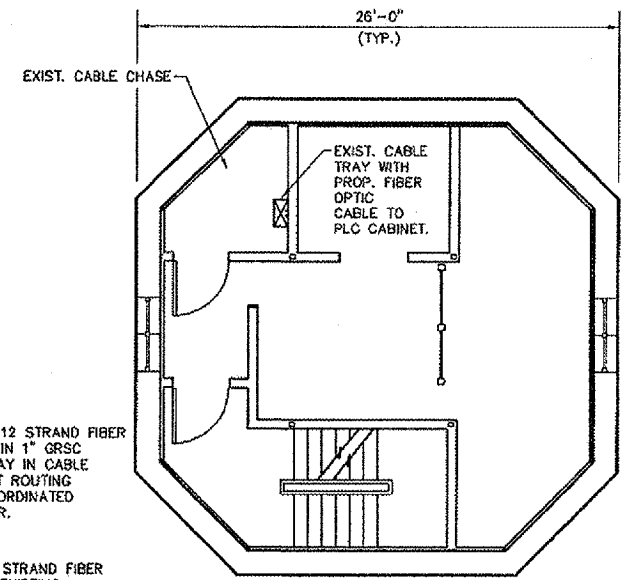
**FIFTH FLOOR PLAN VIEW**  
NO SCALE



**CONTROL TOWER CAB LAYOUT PLAN VIEW**  
NO SCALE

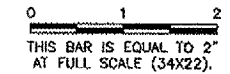


**GROUND LEVEL PLAN VIEW**  
NO SCALE



**TYPICAL INTERMEDIATE LEVEL PLAN VIEW**  
(TYP. OF 4)  
NO SCALE

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 AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)  
 AIR TRAFFIC CONTROL TOWER (ATCT) PLAN

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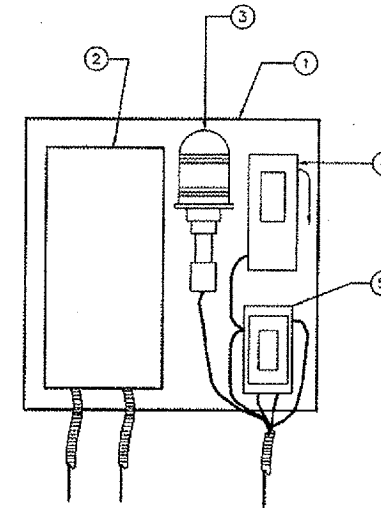
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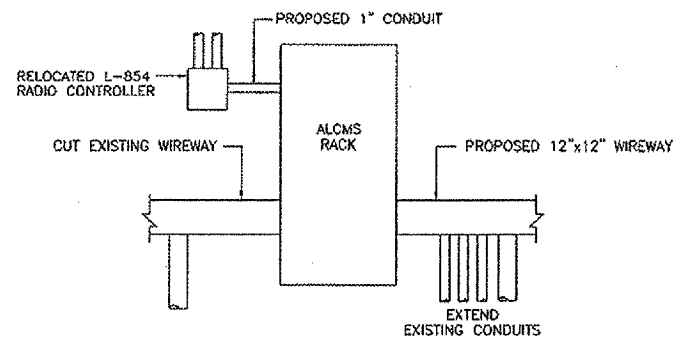
1. INSTALL PROPOSED INTERFACE CONTROL PANEL AND IRMS PANEL ON UNITSTRUT. MATCH EXISTING CONDITIONS. COORDINATE SIZE AND CONDUIT OPENINGS WITH ALCMS MANUFACTURER.
2. INSTALL MALE AND FEMALE L-823 CONNECTOR TO CONNECT AIRFIELD LIGHTING CIRCUITS IN HIGH VOLTAGE WIREWAY.
3. PROPOSED S-1 CUT-OUT SHALL BE SGO SERIES BY SIEMENS OR EQUAL. CONNECT SECONDARY SIDE OF THE S-1 CUT-OUT TO IRMS PANEL PER ALCMS MANUFACTURER.

**EQUIPMENT NOMENCLATURE**

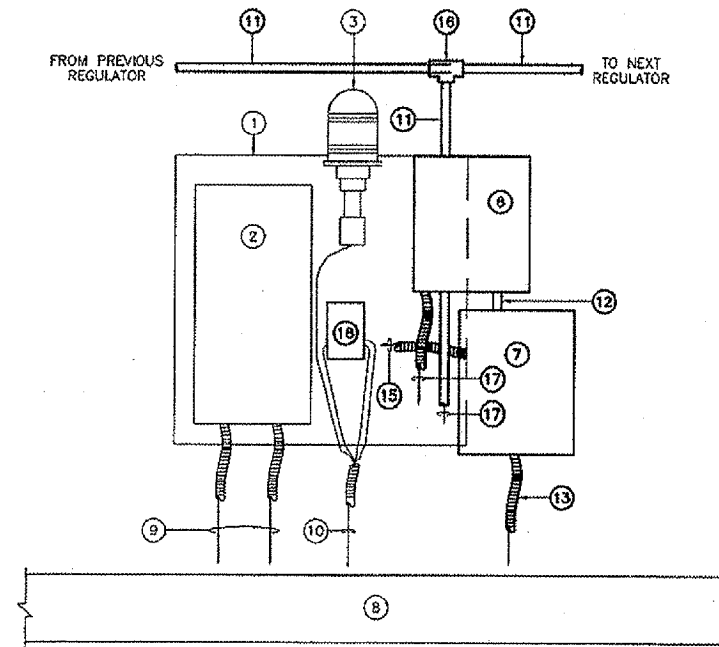
- ① EXISTING EQUIPMENT MOUNTING PLATE TO REMAIN.
- ② EXISTING REGULATOR DISCONNECT SWITCH TO REMAIN.
- ③ EXISTING RUNWAY/TAXIWAY INDICATOR LIGHT TO BE RELOCATED.
- ④ EXISTING GROUNDING SWITCH TO BE REMOVED.
- ⑤ EXISTING S-1 PLUG CUT-OUT TO BE REMOVED.
- ⑥ PROPOSED INTERFACE CONTROL PANEL - SEE NOTE 1.
- ⑦ PROPOSED INSULATION RESISTANCE MEASURING SYSTEM (IRMS) - SEE NOTE 1.
- ⑧ EXISTING LOW VOLTAGE AND HIGH VOLTAGE 12"x12" WIREWAY - SEE NOTE 2.
- ⑨ EXISTING INCOMING AND OUTGOING 600V POWER CABLES IN FLEX CONDUIT TO LOW VOLTAGE WIREWAY.
- ⑩ EXISTING 4 #8 5KV AIRFIELD LIGHTING CABLES IN FLEX CONDUIT TO HIGH VOLTAGE WIREWAY.
- ⑪ PROPOSED (2) 24 AWG SHIELDED TWISTED PAIRS IN 1" GRS CONDUIT.
- ⑫ PROPOSED DATA CABLES IN 1" GRS CONDUIT.
- ⑬ PROPOSED 2 #8 5KV, L-824 TYPE C AIRFIELD LIGHTING CABLES IN 1" FLEX CONDUIT TO HIGH VOLTAGE WIREWAY.
- ⑭ PROPOSED 2 #10 THWN, 1 #12 GND. IN 3/4" FLEX CONDUIT TO LOW VOLTAGE WIREWAY FOR UPS POWER.
- ⑮ PROPOSED 2 #8 5KV, L-824 TYPE C CABLES IN 1" FLEX CONDUIT TO S-1 PLUG CUT-OUT.
- ⑯ PROPOSED 1" TX CONDUIT BODY WITH GASKET AND COVER.
- ⑰ PROPOSED DATA/CONTROL CABLES (AS REQUIRED BY ALCMS MANUFACTURER) IN 1" CONDUIT TO EXISTING REGULATOR.
- ⑱ PROPOSED S-1 CUT-OUT. SEE NOTE 3.



**EXISTING EQUIPMENT MOUNTING PLATE DETAIL**  
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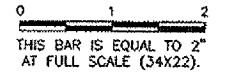


**ALCMS RACK ELEVATION**  
 NOT TO SCALE



**TYPICAL INTERFACE CONTROL AND IRMS PANEL MOUNTING DETAIL**  
 NOT TO SCALE

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**WEST CHICAGO, ILLINOIS**  
**AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM (ALCMS)**  
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