

ELECTRICAL NOTES AND SPECIFICATIONS:

1. ALL WORK SHALL COMPLY WITH APPLICABLE LOCAL ELECTRICAL, BUILDING AND FIRE CODES, APPLICABLE FEDERAL AND STATE REGULATIONS.
2. LAYOUT IS DIAGRAMMATIC AND CONTRACTOR SHALL INSTALL EQUIPMENT TO MEET THE FIELD CONDITIONS.
3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES AS REQUIRED FOR HIS PORTION OF THE WORK.
4. CONTRACTOR SHALL GUARANTEE ALL WORK FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL COMPLETION.
5. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE RESPECTIVE TRADES AND VERIFY LOCATIONS FROM THE ARCHITECTURAL DRAWINGS, FIELD MEASUREMENTS AND SUPPLIER SHOP DRAWINGS.
6. CONTRACTOR SHALL VISIT SITE TO DETERMINE THE FULL EXTENT OF THE WORK AND FACILITY LOCATIONS AND VERIFY WITH THE LOCAL GOVERNING BODIES.
7. CONTRACTOR SHALL FURNISH SHOP DRAWING ON ALL EQUIPMENT AND FIXTURES TO ENGINEER FOR REVIEW; QUANTITY AS PER GENERAL PROVISIONS.
8. CONTRACTOR SHALL FURNISH ONE SET OF AS-BUILTS TO ENGINEER OF ALL CONTRACT WORK.
9. CONTRACTOR SHALL CHECK ALL DRAWINGS AND SPECIFICATIONS OF OTHER TRADES AND INCLUDE IN HIS BID ANY ADDITIONAL WORK REQUIRED BY THIS TRADE.
10. ALL EXISTING CONDITIONS MUST BE VERIFIED AT THE PROJECT SITE BY THE CONTRACTOR. THE CONTRACTOR IS REQUIRED TO MAKE ANY AND ALL PROVISIONS NECESSARY TO ADAPT THE NEW WORK TO EXISTING CONDITIONS. ALL SUCH ADAPTATION MUST BE REVIEWED BY THE ENGINEER AND MUST BE MADE AT NO ADDITIONAL COST TO THE OWNER.
11. THE CONTRACTOR SHALL AVOID ALL STRUCTURAL SUPPORT MEMBERS, RELOCATE EQUIPMENT AS NECESSITATED BY FIELD CONDITIONS, FROM WHERE SHOWN ON DRAWINGS. CUTTING SHALL ONLY BE DONE AFTER OBTAINING ARCHITECT'S REVIEW.
12. THE CONTRACTOR SHALL PROTECT THE EXISTING FACILITY AND SHALL EXERCISE CARE NOT TO DAMAGE ANY EXISTING CONSTRUCTION TO REMAIN. ALL WORK DAMAGED BY THE CONTRACTOR MUST BE RESTORED SO AS TO MATCH EXISTING ADJACENT SURFACES IN ALL RESPECTS AND AS APPROVED BY THE ARCHITECT. ANY SUCH CORRECTIVE WORK MUST BE PERFORMED AT NO ADDITIONAL COST. ALL CORING AND ELECTRICAL WORK DONE AT FLOOR OR FLOOR BELOW SHALL BE AFTER HOURS AND ON OVERTIME BASIS.
13. THE CONTRACTOR SHALL VERIFY THE CONDITION OF EXISTING ELECTRICAL PANELS AND NUMBER OF SPARES AND SPACES. HE SHALL PROVIDE AND INSTALL OVERCURRENT DEVICES AS REQUIRED TO CONTROL NEW CIRCUITRY.
14. THE CONTRACTOR SHALL MAINTAIN THE ELECTRICAL CONTINUITY OF ELECTRICAL CIRCUITS, EQUIPMENT, AND DEVICES TO REMAIN. HE SHALL REWORK AND RECIRCUIT AS NECESSARY TO INSURE THE PROPER FUNCTIONING OF REMAINING CIRCUITS, EQUIPMENT AND DEVICES.
15. CIRCUIT NUMBERS GIVEN ON DRAWINGS ARE FOR CIRCUIT IDENTIFICATION ONLY. THE CONTRACTOR SHALL INSTALL CIRCUITRY AS GOVERNED BY FIELD CONDITIONS. HE SHALL KEEP A TYPED RECORD CORRELATING GIVEN AND ACTUAL CIRCUIT NUMBERS AND RECORD THIS INFORMATION ON THE PANEL DIRECTORIES.
16. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF THE OTHER CONTRACTORS AND WITH THE EXISTING JOB SITE CONDITIONS. HE SHALL RELOCATE EQUIPMENT AS REQUIRED TO AVOID CONFLICT WITH OTHER TRADES. ALL DEVIATIONS SHALL BE APPROVED BY THE ENGINEER BEFORE EXECUTION OF WORK.
17. OUTAGES OF EXISTING ELECTRICAL SYSTEMS NECESSITATED BY THE NEW CONSTRUCTION WORK OF ALL TRADES SHALL BE IN ACCORDANCE WITH A SCHEDULE ISSUED IN THE FIELD BY THE LANDLORD & BLDG. ENGINEER. INCLUDE ALL ELECTRIC WORK, OVERTIME LABOR AND SUPERVISION NECESSARY TO ADHERE TO THIS SCHEDULE.
18. ANY EXISTING ELECTRICAL WORK WHICH IS PULLED OUT OR CUT AWAY SHALL BE REMOVED FROM THE SITE AS IF IT WERE RUBBISH. PROPER CREDIT SHALL BE GIVEN FOR ALL SALVAGEABLE ITEMS.
19. RACEWAYS SHALL BE MINIMUM 3/4" EMT FOR LIGHTING AND APPLIANCE BRANCH CIRCUITRY AND MINIMUM 3/4" EMT FOR TELEPHONE.
20. CONDUCTORS SHALL BE COPPER, MINIMUM #12 A.W.G., WITH TYPE THWN INSULATION.
21. RACEWAY FITTINGS SHALL BE GALVANIZED STEEL, CODE APPROVED TYPE.
22. ALL BRANCH CIRCUITS SHALL BE GROUPED INTO PHASE BALANCED MULTIPLE CIRCUIT HOMERUNS. A MAXIMUM OF 6 CIRCUITS PER SINGLE HOMERUN.
23. THE ELECTRICAL CONTRACTOR SHALL PROVIDE A COMPLETE CONDUCTOR AND RACEWAY SYSTEM FOR ALL CIRCUIT DEVICES INDICATED ON THE PLANS EVEN THOUGH NOT DELINEATED.
24. WIRES FOR BRANCH CIRCUITS THAT EXCEED 100' IN LENGTH FROM PANEL TO CENTER OF LOAD SHALL NOT BE SMALLER THAN #10 AWG.
25. INSTALLATION OF ALL LIGHTING FIXTURES SHALL INCLUDE ALL NECESSARY CONDUIT (SOLID OR FLEXIBLE), WIRING, JUNCTION BOXES, ETC., FOR CIRCUIT DEVICES.
26. ALL ELECTRICAL EQUIPMENT AND INSTALLATION ABOVE THE CEILING SHALL BE APPROVED FOR PLENUM CONDITIONS AS REQUIRED BY APPLICABLE GOVERNING AUTHORITY.
27. ALL CIRCUITRY TO BE RUN CONCEALED UNLESS OTHERWISE INDICATED.
28. MATERIAL AND EQUIPMENT SHALL MATCH BUILDING STANDARD UNLESS NOTED OTHERWISE.

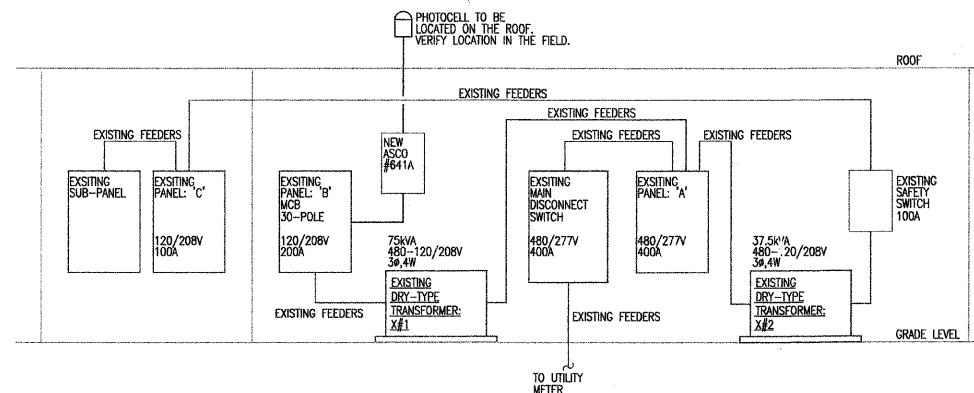
VOLTAGE DROP CALCULATIONS

<p>BRANCH LIGHTING TYPE 'A' RUN LENGTH: 80FT CABLE SIZE: 12AWG AMPACITY SERVICE: 1.48A CURRENT RESISTANCE: 2.0 120V 1φ CONNECTION</p> <p>$V(d) = \text{RESISTANCE} \times (\text{LENGTH}/1000) \times \text{AMPACITY}$ $= 2.0 \times (96/1000) \times 1.46$ $= 0.289V$</p> <p>$\%V(d) = V(d)/120V \times 100$ $= (0.289/120) \times 100$ $= 0.241\%$</p>	<p>BRANCH LIGHTING TYPE 'B' RUN LENGTH: 80FT CABLE SIZE: 12AWG AMPACITY SERVICE: 1.48A CURRENT RESISTANCE: 2.0 120V 1φ CONNECTION</p> <p>$V(d) = \text{RESISTANCE} \times (\text{LENGTH}/1000) \times \text{AMPACITY}$ $= 2.0 \times (68/1000) \times 1.46$ $= 0.257V$</p> <p>$\%V(d) = V(d)/120V \times 100$ $= (0.257/120) \times 100$ $= 0.214\%$</p>	<p>BRANCH LIGHTING TYPE 'C' RUN OVER 100FT TO MAX: 110FT CABLE SIZE: 10AWG AMPACITY SERVICE: 1.5A CURRENT RESISTANCE: 1.2 120V 1φ CONNECTION</p> <p>$V(d) = \text{RESISTANCE} \times (\text{LENGTH}/1000) \times \text{AMPACITY}$ $= 1.2 \times (110/1000) \times 1.5$ $= 0.594V$</p> <p>$\%V(d) = V(d)/120V \times 100$ $= (0.594/120) \times 100$ $= 0.495\%$</p>
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CONDUCTORS FOR BRANCH CIRCUITS SHALL BE SIZED TO PREVENT A VOLTAGE DROP NOT TO EXCEED 3% AT THE FARTHEST LOAD PER VILLAGE OF RIVERSIDE AND NEC CODE SECTION 210.19.

CONDUCTORS FOR FEEDERS SHALL BE SIZED TO PREVENT A VOLTAGE DROP NOT TO EXCEED 3% AT THE FARTHEST LOAD PER VILLAGE OF RIVERSIDE AND NEC CODE SECTION 215.2.

ALL FEEDERS GREATER THAN 100' IN LENGTH SHALL BE SIZED ONE GAGE LARGER TO COMPLY WITH THIS SECTION.



RIVERSIDE TOWER-RISER DIAGRAM

SCALE: N.T.S.

PANEL DESIGNATION: 'B'									
SERVICE: 120/208 VOLTS, 3 φ, 4 WIRES					<input type="checkbox"/> M.L.O.				
BUS SIZE: 200 AMPS					<input type="checkbox"/> MAIN O.C. DEVICE - SIZE: 200 AMPS				
LOCATION: ELECTRIC CLOSET					<input type="checkbox"/> GND BUS <input type="checkbox"/> ISO GND BUS				
CCT#	AMPS	PHASE A	PHASE B	PHASE C	AMPS	PHASE A	PHASE B	PHASE C	CCT#
1	100/3	9600	1080		20/1	REC - ELECTRICAL ROOM			2
3			9600	600	20/1	LIGHTING CONTROLLER			4
5			3840	175	20/1	EXISTING			6
7					20/1	LTC - FIXTURE TYPE 'A'			8
9	40/3		3840	175	20/1	LTC - FIXTURE TYPE 'B'			10
11					20/1	LTC - FIXTURE TYPE 'C'			12
13	20/1	0	0		20/1	EXISTING			14
15	20/1		0	0	20/1	EXISTING			16
17	20/1			0	20/1	EXISTING			18
19	20/1	0	0		20/1	EXISTING			20
21	20/1		0	0	20/1	EXISTING			22
23	20/1			0	20/1	EXISTING			24
25	20/1	0	0		20/1	EXISTING			26
27	20/1		0	0	20/1	EXISTING			28
29	20/1			0	20/1	EXISTING			30
TOTAL VA PER PHASE		14,695	14,215	13,980	TOTAL VA THIS PANEL		42,890		
TOTAL PANEL LOAD: 42.9 kVA, 119.1 AMPS									



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REVISIONS	
NAME	DATE
ISSUE FOR PERMIT	02.06.09

ILLINOIS DEPARTMENT OF TRANSPORTATION
 FAU ROUTES 1472 & 3569
 VILLAGE OF RIVERSIDE
 RAILWAY/WATER TOWER CAMPUS RESTORATION PROJECT

ELECTRICAL NOTES, RISER & SCHEDULES

SCALE: AS NOTED DRAWN BY:
 DATE: FEBRUARY 6, 2009 CHECKED BY: