

# BONDING & GROUND DETAIL

## KEY NOTES - GROUNDING DIAGRAM

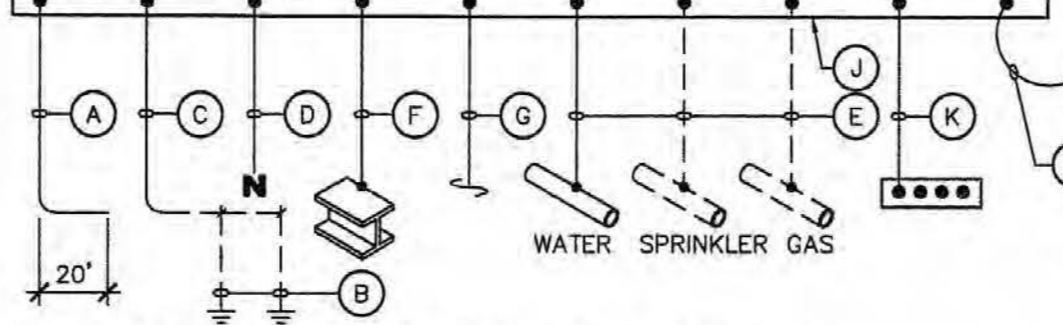
- (A) CONCRETE ENCASED ELECTRODE (UFER) (GROUNDING ELECTRODE #1). REFER TO CHART FOR SIZE. MINIMUM 20'.
- (B) MINIMUM 10 MIL ANNEALED COPPER CLAD STEEL GROUND ROD. (GROUNDING ELECTRODE #2). REFER TO CHART FOR SIZE. GROUND RODS ARE NOT OPTIONAL, MUST BE INSTALLED.
- (C) GROUNDING ELECTRODE CONDUCTOR. REFER TO CHART FOR SIZE.
- (D) INTEGRATED (FACTORY BONDED) BUS BAR MAIN BONDING JUMPER. REFER TO CHART FOR MINIMUM CONDUCTOR SIZE. (AMPACTY SHALL BE 150% RATED)
- (E) METALLIC PIPING BOND WIRE. REFER TO CHART FOR MINIMUM SIZE. BOND TO ALL METALLIC PIPING (WATER, SPRINKLER, GAS, PNEUMATIC LINES, ETC.) WITHIN THE FIRST ACCESSIBLE 5' OF PIPES ENTRY INTO BUILDING.
- (F) BUILDING STEEL BOND WIRE (IF REQUIRED PER BUILDING CONSTRUCTION TYPE). REFER TO CHART FOR MINIMUM SIZE.
- (G) BOND WIRE FOR USE WITH MULTIPLE SERVICE(S) (WHEN PRESENT). REFER TO CHART FOR MINIMUM SIZE.
- (H) INTEGRATED (FACTORY BONDED) BUS BAR CASE BOND. REFER TO CHART FOR MINIMUM CONDUCTOR SIZE.
- (J) INTEGRATED (FACTORY INSTALLED) GROUND BUS BAR. SHALL BE SIZED TO ACCOMMODATE GROUND WIRE LOADS AS INDICATED ON THE ONE-LINE DIAGRAM.
- (K) INTERSYSTEM BONDING TERMINATION BAR AT SERVICE EQUIPMENT, W/ MIN. 3 POINTS OF CONNECTION FOR OTHER SYSTEMS. CONDUCTOR SHALL BE MIN. #6 CU, UNLESS SPECIFIED ELSEWHERE. INSTALL PER NEC 250.94.

## CONDUCTOR SIZE CHART

SES AMPACITY	A	B	C	D	E	F	G	H
1000 AMP	#4	5/8" x 10' (x2)	#4	#4/0	#3/0	#3/0	#4/0	#4/0

ALL SIZES SHOWN ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.

## GROUNDING DIAGRAM



## GENERAL NOTES - GROUNDING DIAGRAM

1. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE ARTICLE 250 PERTAINING TO THE "GROUNDING ELECTRODE SYSTEM".
2. SPLICING OF CONDUCTORS SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD WELD) ONLY.
3. ALL CONNECTIONS TO GROUND RODS BELOW GRADE OR IN CONCRETE SHALL BE MADE VIA EXOTHERMIC WELD (CAD WELD) ONLY. CONNECTIONS MADE ABOVE GROUND LEVEL CAN BE ACCOMPLISHED UTILIZING A U.L. LISTED MECHANICAL CLAMP SUITABLE FOR THE PURPOSE.
4. ANY VARIANCE FROM THIS DRAWING AND/OR SPECIFICATION MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.
5. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF ARTICLE 250 (ALL SUBPARAGRAPHS) OF THE NATIONAL ELECTRICAL CODE AND ALL STATE AND LOCAL CODE REQUIREMENTS.
6. THE GROUNDING SYSTEM SHALL PROVIDE NO GREATER THAN (5) FIVE OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OFF-POTENTIAL) AND SUBMITTED IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS CONTAINED HEREIN.
7. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF GROUNDING ELECTRODES, ITEMS A (CONCRETE-ENCASED ELECTRODE (A.K.A. UFER), AND GROUND ROD(S) ITEM B. METAL UNDERGROUND WATER PIPE WITH 10' IN CONTACT WITH EARTH, AS DEFINED IN NEC 250.52(A)(1) AND METAL IN-GROUND SUPPORT STRUCTURE IN CONTACT WITH EARTH AS DEFINED IN 2017 NEC 250.52(A)(2) SHALL BE BONDED WITH ITEMS A & B AS PART OF THE GROUNDING ELECTRODE SYSTEM.
8. GROUNDING ELECTRODE CONDUCTORS - ITEMS A AND C, ((F) CONNECTION TO METAL FRAME AND (E) CONNECTION TO UNDERGROUND WATER PIPE WHEN CONSIDERED A GROUNDING ELECTRODE) SHALL EACH BE MADE IN SEPARATE CONDUCTORS AND SUITABLY PROTECTED BY CONDUIT WHERE EXPOSED TO DAMAGE OR THEY CONDUITS THAT ARE NOT CONTINUOUS FROM GROUNDING ELECTRODE TO CABINET/ENCLOSURE SHALL BE BONDED TO THE SEC PER NEC 250.64(E).
9. EXPOSED STRUCTURAL METAL AND METAL PIPING (NOT CONSIDERED A GROUNDING ELECTRODE) SHALL BE BONDED TO THE GROUNDING ELECTRODE SYSTEM AS INDICATED ON DETAIL CONNECTIONS E AND F, IN ACCORDANCE WITH BONDING REQUIREMENT IN ARTICLE 250 PART V.

# NEW PANELBOARD SCHEDULE 'HP'

TYPE: PANELBOARD	NEMA TYPE: NEMA 1	MAIN TYPE: FEED THRU	M.L.O. NO
VOLTAGE: 208Y/120V 3Ø 4W	AFC: FULLY RATED	ISO. GROUNDING: NO	NO
MOUNTING SURFACE: 225	C/B RATING: 22,000	SERVICE RATED: NO	NO
BUS AMPS: 225	C/B A.I.C.:		

T	AREA SERVED	C/B	#	A#	B#	C#	#	C/B	T	AREA SERVED
E	IRRIGATION CONTROLLER	20	1	100				20	L	LIGHTING - STRIP/EM
R	ELECTRICAL RM - TMB	20	3	360				20	L	LIGHTING - BUILDING EXT/SITE
L	ELECTRICAL RM - LTG	20	5	753				100		- BUSSED SPACE
R	ELECTRICAL RM - F.A.C.P.	20	7	180				5		- BUSSED SPACE
	- SPARE	20	9					10		- BUSSED SPACE
	- SPARE	20	11					15		- BUSSED SPACE
	- SPARE	20	13					17		- BUSSED SPACE
	- SPARE	20	15					19		- BUSSED SPACE
	- SPARE	20	17					21		- BUSSED SPACE
	- SPARE	20	19					23		- BUSSED SPACE
	- SPARE	20	21					25		- BUSSED SPACE
	- SPARE	20	23					27		- BUSSED SPACE
	- SPARE	20	25					29		- BUSSED SPACE
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