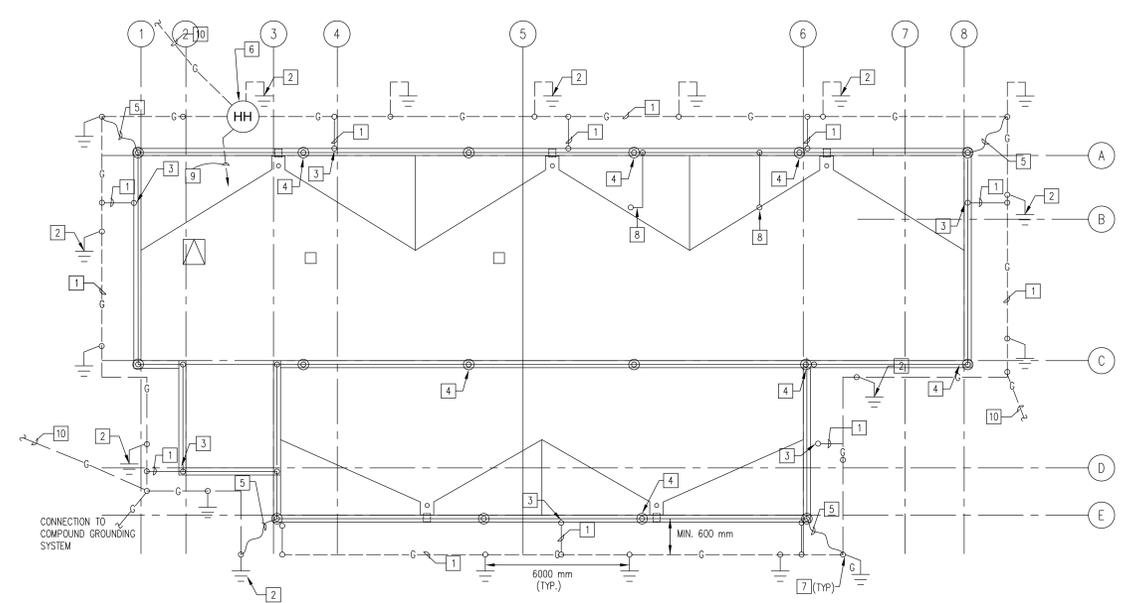


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

P  
O  
N  
M  
L  
K  
J  
I  
H  
G  
F  
E  
D  
C  
B  
A



**1**  
E111  
**GROUNDING AND LIGHTNING PROTECTION PLAN**  
1:100

**CODED NOTES:**

- 1 BARE, STRANDED, COPPER CONDUCTOR 460 mm BELOW FINISHED GRADE.
- 2 COPPER CLAD STEEL GROUND ROD.
- 3 GROUND CONNECTION TO THE CONCRETE REINFORCING STEEL, BOND TO REINFORCING STEEL IN EACH COLUMN.
- 4 AIR TERMINAL.
- 5 LIGHTNING PROTECTION CONDUCTOR, PROVIDE PVC CONDUIT CAST INTO THE EXTERIOR WALL FOR EACH DOWN CONDUCTOR.
- 6 LIGHTNING PROTECTION CONDUCTOR.
- 7 HAND HOLE.
- 8 BOND ALL ROOFTOP MECHANICAL EQUIPMENT AND OTHER METALLIC ENCLOSURES TO LIGHTNING PROTECTION SYSTEM. REFER TO MECHANICAL AND ARCHITECTURAL DRAWINGS FOR LOCATIONS.
- 9 CABLE TO MAIN GROUND BUS BAR, SEE SHEET GEN E502 DETAIL 3 & 4.
- 10 CONNECT TO ADJACENT GROUNDING COUNTERPOISE SYSTEM. REFER TO DRAWING OMPD XXXX.

National Institute of Building Sciences  
building Smart Alliance  
Washington, DC

**Barracks 101**  
**Building Information Model**  
**Common File**

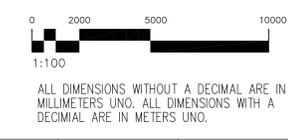
WARNING: All building models provided by buildingSMART alliance are licensed under a Creative Commons Attribution-NonDerivs 3.0 Unported License.  
National Institute of Building Sciences  
buildingSMART Alliance  
Washington, DC 20005

**GENERAL NOTES:**

1. SEE SHEETS GEN E001, E501, E502, E503, & E504 FOR ADDITIONAL INFORMATION.
2. EQUIPMENT LAYOUTS AND COMPONENTS SHOWN ARE SCHEMATIC IN NATURE AND REPRESENT A DESIGN INTENT ONLY. EQUIPMENT SHOWN DOES NOT REFLECT THE ENTIRETY OF ALL SYSTEMS REQUIRED. ACTUAL EQUIPMENT INSTALLED AND FINAL SIZES AND LOCATIONS ARE TO BE PROVIDED BASED ON SITE SPECIFIC CONDITIONS AND GBO DESIGN REQUIREMENTS, STANDARDS, AND SPECIFICATIONS.
3. ALL GROUND CONNECTIONS FOR BUILDING GROUNDING SYSTEM SHALL BE EXOTHERMIC WELD (CADWELD OR EQUAL) AND ROOFTOP LIGHTNING PROTECTION SYSTEM CONNECTIONS SHALL BE MECHANICAL OR EXOTHERMIC WELD TYPE. REFER TO DETAILS ON SHEET GEN E501.
4. THIS PLAN INDICATES MINIMUM REQUIREMENTS FOR LOCATION AND ROUTING OF LIGHTNING PROTECTION SYSTEM COMPONENTS AND CONDUCTORS AND IS NOT INTENDED TO ILLUSTRATE A COMPLETE DESIGN. A LPI CERTIFIED MASTER LIGHTNING PROTECTION SYSTEM DESIGNER/INSTALLER SHALL BE RESPONSIBLE FOR THE COMPLETE DESIGN OF A U.L. MASTER LABEL CERTIFIED SYSTEM. ALL MATERIALS SHALL BE AS REQUIRED PER NFPA 780.
5. ADD BENTONITE (A CLAY) SLURRY MATERIAL TO SOIL SURROUNDING GROUND RODS AND COUNTERPOISE CONDUCTOR WHEN SOIL IS ROCKY OR SANDY, OR IN PARTICULAR DRY CLIMATES, IN ACCORDANCE WITH MIL-HDBK-419A. MIL-HDBK-419A REQUIRES THE BACKFILL SHALL CONSIST OF A MIXTURE OF 75 PERCENT GYPSUM (CALCIUM SULFATE), 20 PERCENT BENTONITE CLAY, AND 5 PERCENT SODIUM SULFATE. ENCASE THE COUNTERPOISE IN A 50 mm ENVELOPE OF SLURRY OF THE BACKFILL MATERIAL. INSTALL GROUND RODS IN 150 mm DIAMETER AUGURED HOLES. BACKFILL HOLE WITH SLURRY OF THE BACKFILL MATERIAL. THE BACKFILL MATERIAL MUST BE SATURATED WITH WATER AFTER INITIAL INSTALLATION AND BE TOPPED WITH A 300 mm LAYER OF EXCAVATED SOIL.
6. AN ALTERNATE TO BENTONITE SLURRY MATERIAL IS TO ADD ERICO'S GROUND ENHANCEMENT MATERIAL (GEM) OR EQUAL TO GROUND RODS AND THE COUNTERPOISE CONDUCTOR. INSTALL THE GEM IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDES.
7. IN CERTAIN HIGH RESISTIVITY SOILS, THE USE OF CHEMICALLY TREATED GROUND RODS SHALL BE CONSIDERED.
8. GROUND SYSTEM IMPEDANCE NOT TO EXCEED 10 OHMS.
9. ALL MATERIALS SHALL BE AS REQUIRED IN NFPA 780.
10. ALL AIR TERMINALS SHALL BE A MINIMUM OF 600 mm IN LENGTH.
11. ALL HANDHOLE AND MANHOLE COVERS MUST BE LOCKING TYPE/LOCKABLE.

Rev. Number	Description	Date
Revisions		

Release For Construction:		NIBS/Asa	
Drawing Title: <b>GROUNDING &amp; LIGHTNING PROTECTION PLAN</b>			
GBO Project Number	Drawing Scale	Phase	AS NOTED
CBME111.DWG	1:1	CONCEPT	CONCEPT
Date	NOV-2012	Sheet Number	
Drawn By	NIBS	Barracks	
Checked By	NIBS	E111	
Project Number			
Classification	UNCLASSIFIED		



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18