

Grounding for Structures / Equipment

REVISION: Updated Notes, Added Table & Component Details.

CHECKED BY (ENGINEERING): SJ
 DATE: 09/08/16

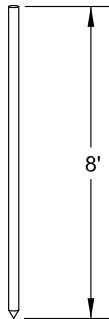
CHECKED BY (FIELD): GY
 APPROVED BY: Stephen E. Saford

Scope:

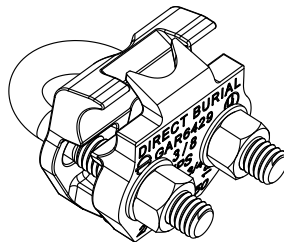
Guidelines for Grounding Manholes, Vaults, Pull Boxes, Service Boxes and Subsurface Structures



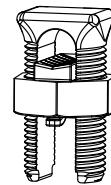
- Two ground rod are required at all structures where primary cable is installed.
- Structures with 1/2" inch threaded grounding inserts in each end wall (internal/external) of the structure (See UGS-225.1, Detail C) will be identified by the abbreviation "GRD" stenciled in red adjacent to the insert. Each end wall bronze insert will be inter-connected together prior to casting (manufacturing) with no contact to rebar cage structure. Prior to backfilling installation of ground wires shall be connected to ground rods & concrete structure using RPU approved clamps & connectors.
- Structures with ground wire entering from outside through 1" PVC (See UGS-225.1, Detail C) shall be continuous from ground rods and extended 3' above slab when connecting to sub surface equipment or leave enough ground wire to wrap the interior top perimeter of the structure grounding bus when required (as mentioned above)
- Structures with 1/2" threaded bonding inserts in each side wall (internal) will be identified by the abbreviation "BOND" stenciled in red adjacent to the insert (See UGS-225.1, Detail A); ground bonding tails shall be inter-connected to concrete steel cage prior to casting (manufacturing); when required on plans or by RPU Inspector connect ground wire to bond insert using RPU approved connectors. When a structure has an extension section in addition to the bottom section and bonding inserts are provided, install ground wire thru the top section Bond split bolt, extension split bolt connector and bottom section split bolt connector.
- In order to maintain maximum ground capacity in structure install ground/neutral encircling the structure when on design plans or required by RPU Inspector. While it may not be necessary to encircle these structures with a ground bus, depending upon cable and equipment installed, the bus must be installed along at least one wall near the top of the structure to interconnect the ground inserts at each end using a 4/0 AWG 19 Str. bare copper (minimum), for example switches, fuse cabinets, junction cabinets, shall be connected to bus bar/halo except where otherwise specified in the individual equipment standard.
- Concentric neutral from spliced UG primary cables in a structure shall be bonded between phases & connected to 4/0 AWG bare copper (minimum) ground bus/halo.
- When splicing PILC (paper insulated lead covered) cable, ground all splices by soldering one ground braid at each splice to the lead sheath and connect the ground braid to the structure ground.



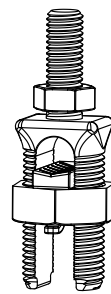
Ground Rod
Copper-bonded
(Item #1)



Ground Clamp
for Ground Rod
(Item #2 & 3)



Split Bolt
(Item #4 & 5)



Split Bolt with
Male Servit Post
(Item #6)



Item No.	RPU Approved Grounding Components	Stock Code
1	Rod, Ground, 5/8" X 8', Copperbonded(without Ground Clamp)	25976
2	Clamp, Ground, Bronze, for 5/8" Ground Rod, Range #4 Sol - 2/0 Str; Burndy No. Gar6426 or RPU Approved Equal	10011923
3	Clamp, Ground, Bronze, for 5/8" Ground Rod, Range 2/0 Sol. - 250 Str; Burndy No. Gar6429 or RPU Approved Equal	10011924
4	Connector, Split Bolt, for #4 copper wire, Burndy #KS20 or Approved Equal	22017
5	Connector, Split Bolt, Bronze, 2/0 - 500 Blackburn #500, Burndy #KS34, Isco #IK-500	22024
6	Connector, Split Bolt with Male Servit Post, 4/0, 1/2"-13 Male Stud & Nut	21410
7	Wire, #4 Tie, Solid Copper Bare Soft Drawn (Required Length May Vary)	23022
8	Wire, 4/0 Bare Copper, 19 Strand, Soft Drawn (Required Length May Vary)	23028