

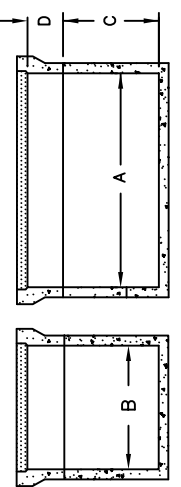
PURPOSE: THIS DRAWING PROVIDES INFORMATION ON THE INSTALLATION REQUIREMENTS, BOX TYPES, AND BOX SIZES ALLOWED FOR UNDERGROUND ELECTRIC UTILITY APPLICATION.

Box Manufacturer and Catalog Number	Utility Vault Company	Inside Dimensions (Inches)				Voltage	Maximum Wire Size (AWG or kcmil)	Maximum # of Spliced or Looped Cables in Box	Maximum Conduit Size (Inches)	Maximum # of Conduits	Application
		Length	Width	Height	Extension						
Quazite Corporation	Christy Concrete Products, Inc.										
FG1118	N-9	17	10	12	1C	Secondary	# 2	2	4	Traffic Signal, Street Light, or Communications ONLY	
FG1324	N-30	24	13	18	8	Secondary	# 2	2	3	Pull box for secondary cables	
FG1730	N-36	30	17	18	8	Secondary	4/0	2	3	Pull box for secondary cables	
FG2436	N-40	36	24	30	8	Secondary	350	4	4	Pull box for secondary cables	
FG3048	N-48	48	30	36	8	Secondary	750	4	6	Pull box for secondary cables	
		42	42	42	FOR REFERENCE - ENGINEERING APPROVAL REQUIRED FOR NEW INSTALLATIONS	Secondary Primary	750/1/0	4	6	200 A primary cables, single phase only Under single phase transformer pads	
		60	36	42	6, 12	Secondary	750	4	6	Pull box for secondary cables	
		60	36	54	6, 12	Primary	350	4	4	200 A primary cables 6 - 200 A Splices Submersible Load Break Pull box for 600 A primary cables	
		66	42	39	FOR REFERENCE - ENGINEERING APPROVAL REQUIRED FOR NEW INSTALLATIONS	Secondary Primary	750/350	4/5	8/6	NOT Allowed in Full Traffic Applications 2 sets - 200A or 600A splices 4 way 200A Padmount Load Break Junction	
		78	48	60		Secondary	750	4	12	2 sets - 200A or 600A splices 4 way 200A Padmount Load Break Junction 1 Ph Submersible Transformer ≤ 100 Kva	
		102	54	84	6, 12	Secondary	750	4	14	6 - 600 A primary cables 6 - 600 A splices or connectors 3 way 200 A switch Submersible Transformer ≤ 150 kVA	
		120	60	84		Secondary	750	4	16	6 - 600 A primary cables 6 - 600 A primary splices or connectors 600 A Switch	
		144	72	84		Secondary	750	4	16	6 - 600 A primary cables 6 - 600 A primary splices or connectors 600 A Switch Submersible Transformer ≤ 500 kVA	
						Primary	750	5	6		

- LEGEND:**
- For Traffic Signal, Streetlight, or Communications ONLY
 - ▲ For Use in Substations ONLY
 - ◆ No more than 4 of maximum size
 - No more than 6 of maximum size
 - (1) No more than 1-set of maximum size (set = 4 conductors)
 - (2) No more than 2-sets of maximum size (set = 4 conductors)
 - (3) No more than 3-sets of maximum size (set = 4 conductors)
 - (4) No more than 4-sets of maximum size (set = 4 conductors)

TABLE 1 - BOX TYPE, SIZE, & APPLICATION

REV	DATE	DESCRIPTION	APPR
8	9-15	ADD PGE-466	JP
7	7-13	ADD PG1118, REV BOX SIZE	TT
6	1-09	REVISED	TT
5	3-95	REVISED	PV/MU
4	7-89	REVISED	DH



BOX DIMENSIONS

APPROVED 10/1994
W.D. Bergman
 ENGR. P.E. 1010
 DRAWN BY ENGR. PEV / MU
 CHECKED PEV

ENGINEERING STANDARD
UNDERGROUND JUNCTION BOXES

CITY OF PALO ALTO
 CALIFORNIA

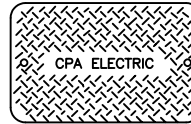
NTS
 1 OF 3

SCALE
 STANDARD NO.
 SHEET NO.

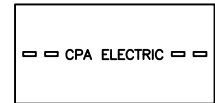
TABLE 2 – COVER TYPES BY APPLICATION

Manufacturer and Catalog Number		
Box	Application/Cover Type	Catalog Number
Utility Vault Company		
444-LA-CPA	Full Traffic	444 Roof Slab with inside-outside frame assembly and one (1) 30" manhole frame and cover
	Transformer (1-phase)	Pad size as required by transformer
644-LA-CPA	Non-Traffic, Submersible Load Break Junction	Aluminum Adjustable Frame with torsion assist slip resistant covers (3'6" x 5'6")
	Full Traffic - ONLY allowed with CPAU Approval	644 Roof Slab with inside-outside frame assembly and one (1) 30" manhole frame and cover
	Load Break Cabinet (60" wide)	Load Break Pad (48" x 72" x 8")
	Load Break Cabinet (44" wide)	Load Break Pad Type 2, with A-1252 Cover (48" x 72" x 8")
577-LA-CPA	Full Traffic	577 Roof Slab with inside-outside frame assembly and two (2) 30" manhole frames and covers
	Non-Traffic	Incidental Quick Release Slip Resistant Aluminum Plates & Adjustable Frame Assembly
	Submersible Transformer	Precast Roof Slab - Tapered Lift Out Cover with Two (2) 30" Grated Cast Iron Covers
CPA-3536 CPA-3546	Full Traffic	Full Traffic Rectangular Splice Cover/Frame Assembly with Round Covers
	Non-Traffic	CPA Adjustable Frame with Torsion Assist Cover Assembly
PGE-466	Non-Traffic / Submersible Transformer	Incidental Quick Release Slip Resistant Aluminum Plates & Adjustable Frame Assembly
	Full Traffic	Full Traffic Cover/Frame Assembly with Two (2) Round Covers
	Load Break Cabinet (44" wide)	Load Break Pad Type 2, with A-1252 Cover
CPA-4686	Non-Traffic	Incidental Quick Release Slip Resistant Aluminum Plates & Adjustable Frame Assembly
	Full Traffic	Full Traffic Cover/Frame Assembly with Three (3) Round Covers
	600A Switch, 600 A Splices or Separable Connectors - TRAFFIC	Full Traffic Cover/Frame Assembly with Three (3) Round Covers
	600A Switch, 600 A Splices or Separable Connectors - NON-TRAFFIC	Incidental Quick Release Slip Resistant Aluminum Plates & Adjustable Frame Assembly
	Submersible Transformer	CPA Heavy FVT Frame (5") & CPA 24"x29" Grated Cast Iron Cover
38Y-510-LA-CPA	Submersible Switch	Precast Roof Slab - Tapered Lift Out Cover with Three (3) 30" Solid Cast Iron Covers
	Submersible Transformer	Precast Roof Slab - Tapered Lift Out Cover with Three (3) 30" Grated Cast Iron Covers
	Switch (Type A)	711-CPA Switch Pad Roof Slab Type A
	Switch (Type B)	711-CPA Switch Pad Roof Slab Type B
38Y-612-LA-CPA	Switch (Type C)	711-CPA Switch Pad Roof Slab Type C
	Three Phase Transformer	Precast Roof Slab - Tapered Lift Out Cover with Three (3) 30" Grated Cast Iron Covers

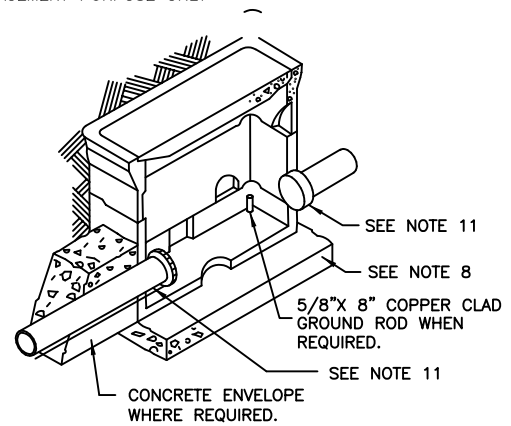
Manufacturer and Catalog Number		
Box	Cover Type	Catalog Number
Quazite Corporation		
PG1118	Heavy Duty w/ 2 Bolts	PG1118HA00
PG1324	Heavy Duty w/ 2 Bolts	PG1324HA00
PG1730	Heavy Duty w/ 2 Bolts	PG1730HA00
PG2436	Heavy Duty w/ 2 Bolts	PG2436HA00
PG3048	Heavy Duty w/ 2 Bolts	PG3048HA00
SUBSTATION APPLICATIONS ONLY		
Steel covers for replacement purposes only		
Christy Concrete Products, Inc.		
N-9	Non-Traffic - Concrete	N9T
	Traffic - Steel	N9-61J
N-30	Non-Traffic - Concrete	N30T
	Traffic - Steel	N30-61J
N-36	Non-Traffic - Concrete	N36T
	Traffic - Steel	N36-61J
N-40	Non-Traffic - Concrete	N40T
	Traffic - Steel	N40-61J
N-48	Non-Traffic - Concrete	N48T
	Traffic - Steel	N48-61J



STEEL COVER
REPLACEMENT PURPOSE ONLY



PLAIN COVER



TYPICAL BOX/CONDUIT INSTALLATION

7	9-15	ADD PGE-466	JP
6	1-09	REVISED	TT
5	1-09	REVISED	TT
4	3-95	REVISED	PV/MJ
3	7-89	REVISED	DH
REV	DATE	DESCRIPTION	APPR

APPROVED 3/1994
MOR signed and Approved by Engineering Manager
 ENGR. MANAGER
 ENGR. PEV
 DRAWN UFA MJ MJ
 CHECKED PEV

ENGINEERING STANDARD
**UNDERGROUND
 JUNCTION BOXES**

**CITY OF PALO ALTO
 CALIFORNIA**

NTS	DT-SS-U-1002	2 OF 3
SCALE	STANDARD NO.	SHEET NO.

NOTES

1. UNUSUAL FIELD CONDITIONS MAY DICTATE BOX DIMENSIONS FOR DESIGNS DIFFERENT FROM THOSE SPECIFIED IN THIS DRAWING. THE DETAILS FOR INSTALLATIONS VARYING FROM THESE SPECIFICATIONS WILL BE FURNISHED BY ELECTRIC UTILITY.
2. ALL BOXES SHALL BE COMPLETE WITH BODY, COVER, SOLID BASE, AND NECESSARY EXTENSIONS. A SOLID, CONCRETE FLOOR IS REQUIRED FOR ALL BOXES.
3. ALL NON-CONCRETE ENCLOSURES (BODY, BASE, COVER, AND EXTENSIONS WHERE REQUIRED) SHALL MEET TIER 15 REQUIREMENTS AS SPECIFIED IN SCTE 77 2007 (OR LATEST VERSION) AND PER CPAU SPECIFICATION SS-01-09 – SPECIFICATION FOR NON-CONCRETE ENCLOSURES.
4. THE NUMBER OF EXTENSIONS REQUIRED IS DEPENDENT ON THE DEPTH OF THE CONDUIT. THE CONDUIT SHALL ENTER STRAIGHT INTO THE BOX, PARALLEL WITH THE COVER, I.E. WITH NO VERTICAL BENDS OR SWEEPS.
5. ALL NON-ROUND COVERS ON ALL BOXES MUST BE SECURED BY RECESSED HOLD-DOWN BOLTS.
6. ALL BOXES SHALL HAVE COVERS APPROVED BY CPAU AND HAVE A NON-SLIP SURFACE.
7. THE WORDS “CPA ELECTRIC”, “CPA SL”, “CPA TS”, OR “CPA COMM” SHALL BE CAST OR INSCRIBED IN THE SURFACE OF ALL COVERS, 30”X48” AND SMALLER DEPENDING ON APPLICATION. LARGER BOXES SHALL HAVE “CPA-HIGH VOLTAGE” INSCRIBED ON THE FRAME.
8. BOXES LARGER THAN 30”X48” SHALL HAVE PROVISIONS FOR ATTACHING A METAL PLATE INDICATING THE VAULT NUMBER (I.E. LOCATION NUMBER), ALONG WITH THE CORRESPONDING NUMBER PLATE. CONTACT THE UTILITY ENGINEER FOR THE NUMBER BEFORE ORDERING THE BOX.
9. THE BASE OF EACH BOX SHALL BE PLACED ON A MINIMUM 6” BEDDING OF 3/4” DRAIN ROCK ON UNDISTURBED OR 95% COMPACTED EARTH. THE BOXES SHALL BE INSTALLED SO THE COVERS ARE LEVEL WITH THE ADJACENT CURB, DRIVEWAY, OR SIDEWALK GRADE.
10. FOR 30”X48” OR SMALLER BOXES, AN ALLOWANCE SHALL BE MADE FOR THE THICKNESS OF THE COVER TO ENSURE THE COVER IS FLUSH WITH THE FINISH GRADE. WHEN NO FINISH GRADE IS ESTABLISHED, BOX COVERS SHALL BE 2” ABOVE THE ADJACENT TERRAIN.
11. IT IS INTENDED THAT CONDUITS SHALL ENTER CONCRETE BOXES THROUGH THE KNOCKOUTS PROVIDED. BOX WALL MAY BE CUT OR CORE DRILLED AT OTHER LOCATIONS TO PROVIDE CONDUIT ENTRY WITH APPROVAL OF THE CPAU UNDERGROUND INSPECTOR.
12. STEEL CONDUITS SHALL EXTEND NO MORE THAN 2” INTO A BOX AND SHALL BE TERMINATED WITH GROUNDING BUSHINGS. PLASTIC CONDUITS SHALL BE TERMINATED WITH BELL ENDS, FLUSH WITH THE WALL OF THE BOX. BELL ENDS MAY NOT PROJECT INTO THE BOX. ALL CONDUIT ENTRANCES SHALL BE GROUTED.
13. BOXES USED IN HEAVY TRAFFIC AREAS SHALL BE DESIGNED FOR H-20-44 TRAFFIC LOADING.
14. BOXES 3’X5’ OR LARGER SUBJECT TO MOTOR VEHICLE TRAFFIC, BACKFILL WITH A 6” MINIMUM WIDTH OF TWO SACK SLURRY, OTHERWISE BACKFILL WITH 12” MINIMUM WIDTH OF ¾” BASE ROCK AT 95% COMPACTION.
15. BOXES 3’X5’ OR LARGER REQUIRE A 12” X 12” CONCRETE COLLAR WITH REBAR AROUND THE FRAME AND VAULT. CONCRETE SHALL BE MINOR CONCRETE PER THE CITY OF PALO ALTO PUBLIC WORKS STANDARD DRAWINGS AND SPECIFICATIONS SIDEWALK REQUIREMENTS, SECTION 16, CONTAINING SIX (6) SACKS OF CEMENT PER CUBIC YARD AND SHALL PROVIDE A MINIMUM COMPREHENSIVE STRENGTH OF 3500 POUNDS PER SQUARE INCH AT 28. TWO PINTS OF LAMPBLACK PER CUBIC YARD OF CONCRETE IS REQUIRED. (SEE DRAWING# DT-SS-U-1038 FOR DETAILS)
16. STEEL TRAFFIC LIDS ARE FOR REPLACEMENT PURPOSES ONLY.
17. ALL BOXES LISTED IN TABLE 1 SHALL BE SIZED FOR THE LARGEST CONDUCTOR THEY ARE EXPECTED TO CONTAIN.
18. FOR BOX INSTALLATION AT THE BASE OF A POLE RISER, SEE CPAU DWG’S DT-SS-U-1001 AND DT-SS-U-1001A.
19. UNLESS APPROVED BY THE UTILITY ELECTRIC ENGINEER, THE DEPTH OF A BOX MAY NOT EXCEED ITS LENGTH.

10	8-20	REVISED NOTE 15	TT
9	9-16	CORRECTED NOTE 14	TT
7	9-15	REVISED	JP
6	1-12	REVISED	TT
5	1-09	REVISED	TT
4	3-95	REVISED	PV/MJ
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REV	DATE	DESCRIPTION	APPR

APPROVED	3-1994
ENGR.	MJ
ENGR.	MJ
DRAWN	MJ
CHECKED	PEV

ENGINEERING STANDARD
**UNDERGROUND
JUNCTION BOXES**

**CITY OF PALO ALTO
CALIFORNIA**

NTS	DT-SS-U-1002	3 OF 3
SCALE	STANDARD NO.	SHEET NO.