

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
 35-4	 35-4	ARIZONA PUBLIC SERVICE POLE, NUMBER SHOWS HEIGHT AND CLASS
 40-1	 40-1	ARIZONA PUBLIC SERVICE POLE, JOINTLY USED
 T40-4	 T40-4	FOREIGN POLE, JOINTLY USED LETTER DENOTES OWNERSHIP (SEE BELOW)
 T30		FOREIGN POLE, NOT FOR JOINT USE LETTER DENOTES OWNERSHIP (SEE BELOW)
		LETTER DENOTES OWNERSHIP (SEE ABOVE) SRP SALT RIVER PROJECT MCMWCD MARICOPA COUNTY MUNICIPAL WATER CONSERVATION DISTRICT ED ELECTRIC DISTRICT T US WEST CRT CONTINENTAL TELEPHONE OF CALIFORNIA WU WESTERN UNION TELEGRAPH COMPANY USBR UNITED STATES BUREAU OF RECLAMATION YCWA YUMA COUNTY WATER USER ASSOCIATION NGVID NORTH GILA VALLEY IRRIGATION DISTRICT USIS UNITED STATES INDIAN SERVICE PD PHELPS DODGE REA RURAL ELECTRIFICATION ADMINISTRATION
 45-3	 45-3	TRANSITION, OVERHEAD TO UNDERGROUND,  INDICATES QUADRANT CABLE GUARD IS IN
 30	 30	CUSTOMER OWNED POLE
 49	 49	STEEL POLE

1002A3

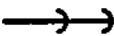
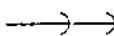
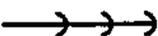
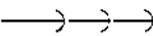
**APS** ARIZONA PUBLIC SERVICE COMPANY  
T&D CONSTRUCTION STANDARDS

BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

**METHODS**  
**STANDARD SYMBOLS AND ABBREVIATIONS**

SH 1 OF 18

1002

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
 78	 78	STEEL JOINT USE POLE
	35  3	POLE TO BE RELOCATED, DIRECTION AND DISTANCE SHOWN
		TREE USED AS A POLE
		1 ANCHOR ONE 3/4" X 8" ANCHOR 15' LEAD, WITH ONE 10M GUY WIRE, ATTACHED GUY LEAD AS SHOWN IN STANDARDS 6902 THRU 6928
		2 ANCHORS TWO T X 10' ANCHORS 20' & 30' LEAD, WITH THREE 18M GUY WIRES, ATTACHED GUY LEADS AS SHOWN IN STANDARDS 6902 THRU 6928
		3 ANCHORS THREE 3/4" X 8' ANCHORS 20' 30' & 40' WITH FOUR 10M GUY WIRES, ATTACHED GUY LEADS AS SHOWN IN STANDARDS 6902 THRU 6928.
		SPAN GUY, HEAD OR ARM GUY
		PUSH BRACE, SHOWN ON AN EXISTING POLE

263

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

<b>METHODS</b> <b>STANDARD SYMBOLS AND ABBREVIATIONS</b>
---

SH 2 OF 18
<b>1002</b>

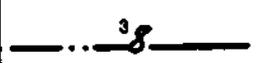
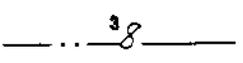
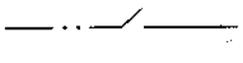
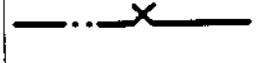
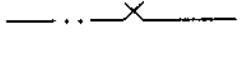
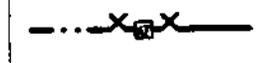
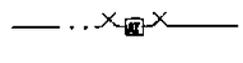
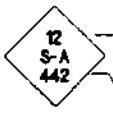
STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
▲ 25 B 7200/12470Y 120/240	△ 25 B	1-25 KVA TRANSFORMER, POLE MOUNTED
▲ 2-50 75A 7200/12470Y 208/120	△ 2-50 75A	2-50 KVA 1-75 KVA TRANSFORMER, POLE MOUNTED
▲ 25C 7200/12470Y 120/240	△ 25C	CUSTOMER OWNED, POLE MOUNTED
DRAW PHYSICAL DETAILS AS NEEDED	⊞ 3-100	CUSTOMER OWNED SUB, ON THE GROUND
└	└	STREET LIGHT FIXTURE
└	└	DUSK-TO-DAWN LIGHT
⊙	⊙	PHOTO EYE

1000-343

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

<b>METHODS</b>	
<b>STANDARD SYMBOLS AND ABBREVIATIONS</b>	

SH 3 OF 18
<b>1002</b>

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
		FUSED DISCONNECT SWITCHES. IF REPEATER TYPE, INDICATE NUMBER OF FUSES WITH NUMBER ALONG SIDE
		DISCONNECT SWITCHES
		GANG OPERATED AIR BREAK SWITCH
		SECTIONALIZER
		RECLOSER
		AUTO TRANSFER SWITCH
		INDICATES OPERATING SWITCH NUMBER
		CAPACITORS, SERIES CAPACITOR ON DISTRIBUTION TRANSFORMER NUMBER DENOTES CAPACITY
		<p>SHUNT CAPACITOR BANK,</p> <p>BANK KWAC SIZE</p> <p>3 = 300</p> <p>6 = 600</p> <p>9 = 900</p> <p>12 = 1200</p> <p>TYPE OF CONTROL</p> <p>V-B = VOLTAGE CONTROLLED-W/PHASE B</p> <p>F = FIXED</p> <p>S-A = CURRENT SENSOR-W/PHASE A</p> <p>100B = CURRENT COMPENSATED W/100A CT W/PHASE B</p> <p>LOCATION #442</p>

443

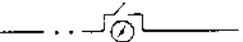
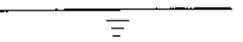
**APS**ARIZONA PUBLIC SERVICE COMPANY  
T&D CONSTRUCTION STANDARDS

BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

METHODS  
STANDARD SYMBOLS AND ABBREVIATIONS

SH 4 OF 18

1002

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
		REGULATOR
		PRIMARY METER
		ARRESTER
		GROUND
		PLANT ITEMS TO BE REMOVED, CROSSCUT WITH THIS SYMBOL ANY ITEM TO BE REMOVED
3-R002W+R002WN-CBA  3-A795V+R210VN-CBA		PLANT ITEMS TO BE REPLACED FIRST FIGURE EXISTING/LAST FIGURE PROPOSED

1002-5A3

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

**METHODS**  
**STANDARD SYMBOLS AND ABBREVIATIONS**

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
		TRANSMISSION LINES, OVERHEAD CONDUCTORS
		PRIMARY LINES, OVERHEAD CONDUCTORS AND STREET LIGHT CIRCUIT, SERIES
		SECONDARY/SERVICE LINES, OVERHEAD CONDUCTORS AND STREET LIGHT CIRCUIT, MULTIPLE
		PRIMARY LINE CROSSOVER, NOT CONNECTED
		PRIMARY LINE CROSSOVER, CONNECTED AT POLE
		PRIMARY LINE CROSSOVER, CONNECTED AT MID-SPAN
		CHANGE IN NUMBER AND/OR SIZE OF WIRE, AND POINT OF CHANGE OF PHASING
		OPEN CIRCUIT
		AERIAL CABLE (PRIMARY)

643

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS</b> <b>STANDARD SYMBOLS AND ABBREVIATIONS</b>	SH 6 DF 18
BY	LDR.	MGR.	DATE	REV.		1002
RD	L. Daniel	R. Thompson	1996	3		

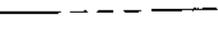
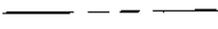
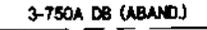
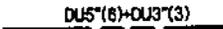
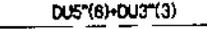
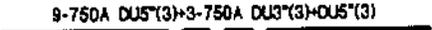
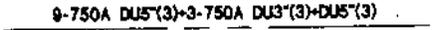
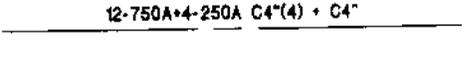
STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
<u>3-A338V+S518VS ABC 89KV</u> .....	<u>3-A338V+S518VS ABC 89KV</u> .....	THREE 338 ACSR PHASES AND 5/16-INCH STEEL STATIC PLUS PHASE SEQUENCE AND VOLTAGE, 89KV
<u>3-W01V+S518VS ABC 89KV</u> .....	<u>3-W01V+S518VS ABC 89KV</u> .....	THREE #1F CWC PHASES AND 5/16-INCH STEEL STATIC PLUS PHASE SEQUENCE AND VOLTAGE, 89KV
<u>2-R002W+R002WN- ABN</u> ..	<u>2-R002W+R002WN- ABN</u> ..	TWO #2 ACSR PHASES AND #2 ACSR NEUTRAL ON THE CROSSARM PLUS PHASE SEQUENCE
<u>3-A795V+R2/0VN- CBA</u> ..	<u>3-A795V+R2/0VN- CBA</u> ..	THREE 795(26/7) ACSR PHASES AND K NEUTRAL IN SECONDARY POSITION PLUS PRIMARY PHASE SEQUENCE NOTE: DEFINE STRANDING WHEN MORE THAN ONE OPTION MAY EXIST.
<u>3-A3/0V+R002WNS- ABC</u> ..	<u>3-A3/0V+R002WNS- ABC</u> ..	THREE #3/0 AL PHASES AND #2 ACSR NEUTRAL IN STATIC POSITION PLUS PRIMARY PHASE SEQUENCE
<u>1-C006W+N- A</u> ..	<u>1-C006W+N- A</u> ..	ONE #6 CU PHASE AND NEUTRAL IN SECONDARY POSITION PLUS PRIMARY PHASE SEQUENCE
<u>3-C006W- ABC</u> ..	<u>3-C006W- ABC</u> ..	THREE #6 CU PHASES AND NO NEUTRAL PLUS PRIMARY PHASE SEQUENCE
<u>3-A3/0V+C006WSL+R2/0VN- ABSC</u> ..	<u>3-A3/0V+C006WSL+R2/0VN- ABSC</u> ..	THREE #3/0 AL PHASES AND ONE #6 CU SERIES STREET LIGHT IN PRIMARY POSITION PLUS A K NEUTRAL IN SECONDARY POSITION
<u>A4/0C</u> .	<u>A4/0C</u> .	THREE #4/0 AL ON A K NEUTRAL (QUAD) SECONDARY/SERVICE CABLES
<u>C006C</u> .	<u>C006C</u> .	THREE #4 CU OPEN WIRE SECONDARY/SERVICE CABLES
<u>A1/0B</u> .	<u>A1/0B</u> .	TWO #1/0 AL PLUS 1 #1/0 AL BARE NEUTRAL SECONDARY/SERVICE CABLES

1002-743

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

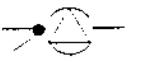
METHODS STANDARD SYMBOLS AND ABBREVIATIONS
---

SH 7 OF 18
1002

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
		TRANSMISSION LINES, UNDERGROUND CONDUCTORS
		PRIMARY LINES, UNDERGROUND CONDUCTORS
		SECONDARY/SERVICE LINES, UNDERGROUND CONDUCTORS
		<p>THE FOLLOWING INFORMATION IS TO BE USED IN IDENTIFYING CABLE AND CONDUIT FACILITIES:</p> <p>THE CONDUCTOR SIZE SHALL BE SPECIFIED ON ALL CONSTRUCTION SKETCHES INSTEAD OF THE CONDUCTOR CODE (E.G. 3-750A NOT UA750W)</p> <p>DU= CONCRETE-ENCASED CONDUIT</p> <p>CONCRETE= CONCRETE CAPPED (REQUIRED WHERE THE CAP EXTENDS A DISTANCE OF 100 FEET OR MORE)</p> <p>C= EMPTY DIRECT-BURIED CONDUIT</p> <p>AR= ARMORED CABLE</p> <p>DB= DIRECT-BURIED CABLE (E.G. 3-1/0A DB)</p> <p>SIZE OF CONDUIT (E.G. 1", 2", 2-1/2", 3", 4", 5", ETC.)</p> <p>(#)= THE NUMBER LOCATED WITHIN THE PARENTHESIS INDICATES THE NUMBER OF CONDUITS. THIS SYMBOL IS REQUIRED WHERE THERE IS MORE THAN ONE CONDUIT.</p> <p>THE LACK OF A CONDUCTOR SIZE IN FRONT OF "DU" "CONCRETE" AND "C" SHALL SIGNIFY THAT THE CONDUITS ARE EMPTY.</p> <p>DEAD= UNENERGIZED CONDUCTOR</p>
		EXAMPLE OF HOW TO LABEL CABLE WHICH IS TO BE ABANDONED IN PLACE.
		ARROWS SHALL INDICATE A CHANGE IN CONDUCTOR OR ASSOCIATED FACILITIES.
		EXAMPLE OF HOW TO LABEL A WORK ORDER DRAWING WHERE A PROPOSED NINE-HOLE DUCT BANK CONSISTING OF SIX EMPTY 5-INCH CONDUITS AND THREE EMPTY 3-INCH CONDUITS IS TO BE INSTALLED
		<p>EXAMPLE OF HOW TO LABEL A WORK ORDER DRAWING WHERE A PROPOSED NINE-HOLE DUCT BANK CONSISTING OF 3-750A IN EACH OF THREE 5-INCH CONDUITS AND 1-750A IN EACH OF THREE 3-INCH CONDUITS AND THREE 5-INCH EMPTY CONDUITS.</p> <p>PROPOSED</p> <p>EXISTING</p>
		<p>EXAMPLE OF HOW TO LABEL CONDUCTORS AND CONDUIT WHICH EXTEND FROM A THREE-PHASE TRANSFORMER TO A SERVICE ENTRANCE SECTION</p> <p>PROPOSED</p> <p>EXISTING</p> <p>INSTALL 4-750A PER Ø + 4-250A NEUTRALS FOR A TOTAL OF 12-750A + 4-250A NEUTRALS IN 4 OF 5, 4" CONDUITS</p>

343

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS</b>  <b>STANDARD SYMBOLS AND ABBREVIATIONS</b>	SH 8 OF 18
BY	LDR.	MGR.	DATE	REV.		1002
RD	L. Daniel	R. Thompson	1996	3		

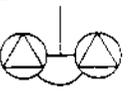
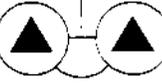
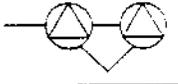
STANDARD SYMBOLS			OPERATIONS	DESCRIPTION
CONSTRUCTION		EXISTING		
PROPOSED	EXISTING			
			CIRCUIT LOOPING AROUND (NOT CONNECTED TO A= PAD-MOUNTED TRANSFORMER)	
			PAD-MOUNTED TRANSFORMER WITH LOADBREAK ELBOWS. D= DRY TYPE (NON-LOADBREAK)	
OBSOLETE			PAD-MOUNTED TRANSFORMER WITH OPEN TYPE SWITCHES.	
			PAD-MOUNTED TRANSFORMER WITHOUT SWITCHING DEVICES AND TRANSOSCLOSURES	
			PAD-MOUNTED TRANSFORMER WITH LOADBREAK ELBOWS UTILIZING A FEED-THRU BUSHING	
OBSOLETE			PAD-MOUNTED TRANSFORMER WITH LOADBREAK ELBOWS, DUAL LOADBREAK (PIGGYBACK) ELBOW ON ONE SIDE.	
OBSOLETE			PAD-MOUNTED TRANSFORMER WITH OPEN TYPE SWITCHES, TWO PHASES UNDER ONE DEVICE (DOUBLE-LUGGED)	
OBSOLETE			PAD-MOUNTED TRANSFORMER WITHOUT SWITCHES, TWO PHASES UNDER ONE DEVICE (DOUBLE LUGGED)	
OBSOLETE			SUBSURFACE TRANSFORMER WITH LOADBREAK DEVICE.	
OBSOLETE			SUBSURFACE TRANSFORMER WITHOUT SWITCHES.	
			CUSTOMER-OWNED PAD-MOUNTED TRANSFORMER	

1002-9A3

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

METHODS <b>STANDARD SYMBOLS AND ABBREVIATIONS</b>
--

SH 9 OF 18
1002

STANDARD SYMBOLS			OPERATIONS	DESCRIPTION	
CONSTRUCTION		PROPOSED			EXISTING
PROPOSED	EXISTING				
				DUMMY PAD-MOUNTED TRANSFORMER	
				TWO SINGLE-PHASE PAD-MOUNTED TRANSFORMERS CONNECTED OPEN-DELTA.	
				TWO SINGLE-PHASE PAD-MOUNTED "BANKED" TRANSFORMERS WITH SECONDARIES IN SERIES.	
OBSOLETE				PAD-MOUNTED DUPLEX TRANSFORMER WITH LOADBREAK ELBOWS.	
OBSOLETE				PAD-MOUNTED DUPLEX TRANSFORMER WITH OPEN TYPE SWITCHES.	
OBSOLETE				PAD-MOUNTED DUPLEX TRANSFORMER WITHOUT SWITCHES.	
				PAD-MOUNTED THREE-PHASE TRANSFORMER WITH LOADBREAK ELBOWS.	
				PAD-MOUNTED THREE-PHASE TRANSFORMER WITH OPEN TYPE SWITCHING DEVICES.	
				PAD-MOUNTED THREE-PHASE TRANSFORMER WITHOUT SWITCHING DEVICES.	
		NOT SHOWN ON OPERATIONS DRAWINGS		SECONDARY JUNCTION BOX	
		NOT SHOWN ON OPERATIONS DRAWINGS		CASCADING METER PEDESTAL LOCATION	

21043

**APS** ARIZONA PUBLIC SERVICE COMPANY  
T&D CONSTRUCTION STANDARDS

BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

**METHODS**  
**STANDARD SYMBOLS AND ABBREVIATIONS**

SH 10 OF 18

1002

STANDARD SYMBOLS					DESCRIPTION
CONSTRUCTION		OPERATIONS			
PROPOSED	EXISTING				
					PHASE-ISOLATED PAD-MOUNTED SWITCHING ENCLOSURE WITH BOLTED CONNECTION.
					PHASE-ISOLATED PAD-MOUNTED SWITCHING ENCLOSURE WITH BLADE DISCONNECT.
					PHASE-ISOLATED PAD-MOUNTED SWITCHING ENCLOSURE WITH FUSE DEVICE.
					CIRCUIT-ISOLATED SWITCHING ENCLOSURE WITH GANG-OPERATED DEVICES AND FUSED POSITIONS. EXACT CONFIGURATION VARIES.
					PAD-MOUNTED SWITCHING ENCLOSURE WITH LOADBREAK ELBOWS OR JUNCTION ENCLOSURE OR SECTIONALIZING ENCLOSURE. EXACT CONFIGURATION VARIES.
					PAD-MOUNTED AUTOMATIC TRANSFER SWITCH
					PAD-MOUNTED AUTOMATIC TRANSFER SWITCH ON QUARTER TOWNSHIP SCALE DRAWINGS.
DRAW PHYSICAL DETAIL AS NEEDED.				NETWORK TRANSFORMER WITH PRIMARY OIL SWITCH AND NETWORK PROTECTOR	
DRAW PHYSICAL DETAIL AS NEEDED.				NETWORK TRANSFORMER WITH 600A ELBOWS AND NETWORK PROTECTOR	
DRAW PHYSICAL DETAIL AS NEEDED.					NETWORK TRANSFORMER WITH VACUUM SWITCH PRIMARY OIL SWITCH AND NETWORK PROTECTOR
DRAW PHYSICAL DETAIL AS NEEDED.					NETWORK TRANSFORMER WITH VACUUM SWITCH, 600 AMP ELBOWS AND NETWORK PROTECTOR.

100211A3

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

**METHODS**  
**STANDARD SYMBOLS AND ABBREVIATIONS**

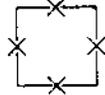
STANDARD SYMBOLS			OPERATIONS	DESCRIPTION
CONSTRUCTION		REFER TO OVERHEAD METHODS		
PROPOSED	EXISTING			
				OVERHEAD PRIMARY METER
				PAD-MOUNTED PRIMARY METER ENCLOSURE
OBSOLETE				PAD-MOUNTED SECTIONALIZING ENCLOSURE
				PAD-MOUNTED CAPACITOR BANK EXAMPLE: 12-KVAC SIZE IN 100'S 100-CURRENT COMPENSATED BANK WITH 100 TO 5CV V-VOLTAGE ONLY BANK F-FIXED BANK S-CURRENT SENSOR B-PHASING NOTATION 150-CAPACITOR ENCLOSURE NUMBER
OBSOLETE				JUNCTION BOX F-FLUSH B-BURIED D-DISCONNECTABLE
OBSOLETE				SINGLE OR THREE-PHASE PAD-MOUNTED TERMINATION CABINET

STANDARD SYMBOLS			DESCRIPTION
CONSTRUCTION		OPERATIONS	
PROPOSED	EXISTING		
			OCTAGON MANHOLE SHOW ALL CIRCUITRY ON OPERATIONS DRAWINGS.
			MANHOLE WITH THREE-PHASE SWITCHING DEVICE FLUSH OR BURIED. O=OIL V=VACUUM BLANK=AIR-BREAK
			ONE SINGLE-PHASE TRANSFORMER IN A MANHOLE. SB=SEMI BURIED BLANK=COMPLETELY BURIED
			TWO SINGLE-PHASE TRANSFORMERS IN A MANHOLE. SB=SEMI BURIED BLANK=COMPLETELY BURIED
			THREE SINGLE-PHASE TRANSFORMERS IN A MANHOLE. SB=SEMI BURIED BLANK=COMPLETELY BURIED
			ONE SINGLE-PHASE TRANSFORMER WITH DISCONNECTING POTHEADS IN A MANHOLE.
			TWO SINGLE-PHASE TRANSFORMERS WITH DISCONNECTING POTHEADS IN A MANHOLE.
			THREE SINGLE-PHASE TRANSFORMERS WITH DISCONNECTING POTHEADS IN A MANHOLE.
			PRIMARY PULL BOX; NOT MAN ACCESSIBLE. B=BURIED BLANK=FLUSH
			PRIMARY RECTANGULAR MANHOLE; MAN ACCESSIBLE. F=FLUSH BLANK=BURIED

100213A3

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

**METHODS**  
**STANDARD SYMBOLS AND ABBREVIATIONS**

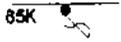
STANDARD SYMBOLS			OPERATIONS	DESCRIPTION
CONSTRUCTION		EXISTING		
PROPOSED	EXISTING			
DRAW PHYSICAL DETAIL AS NEEDED.				FENCED VAULT
DRAW PHYSICAL DETAIL AS NEEDED.				BUILDING VAULT
DRAW PHYSICAL DETAIL AS NEEDED.				ONE SINGLE-PHASE OVERHEAD TRANSFORMER IN A VAULT
DRAW PHYSICAL DETAIL AS NEEDED.				TWO SINGLE-PHASE OVERHEAD TRANSFORMERS IN A VAULT.
DRAW PHYSICAL DETAIL AS NEEDED.				THREE SINGLE-PHASE OVERHEAD TRANSFORMERS IN A VAULT.
DRAW PHYSICAL DETAIL AS NEEDED.				ONE SINGLE-PHASE PAD-MOUNTED TRANSFORMER IN A VAULT.
DRAW PHYSICAL DETAIL AS NEEDED.				TWO SINGLE-PHASE PAD-MOUNTED TRANSFORMERS IN A VAULT.
DRAW PHYSICAL DETAIL AS NEEDED.				THREE-PHASE PAD-MOUNTED TRANSFORMERS IN A VAULT.
DRAW PHYSICAL DETAIL AS NEEDED.				SUBSTATION

1002

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

METHODS STANDARD SYMBOLS AND ABBREVIATIONS	
---	--

SH 14 OF 18
1002

STANDARD SYMBOLS			DESCRIPTION
CONSTRUCTION		OPERATIONS	
PROPOSED	EXISTING		
			TRANSITION OVERHEAD TO UNDERGROUND. / INDICATES QUADRANT CABLE GUARD IS IN
USED ONLY ON OPERATIONS DRAWINGS.			TRANSITION POLE WITH JUMPERED CABLES.
USED ONLY ON OPERATIONS DRAWINGS.		65K 	TRANSITION POLE WITH FUSED DEVICE, SPECIFY THE FUSE SIZE AND TYPE.
USED ONLY ON OPERATIONS DRAWINGS.		600 A 	600 A TRANSITION POLE WITH BLADE DISCONNECT.
USED ONLY ON OPERATIONS DRAWINGS.		200 A  SOLID	200 A TRANSITION POLE, FUSED SOLID (SLUGGED) WITH 200 AMP SOLID LINK.
REFER TO SHEET 4 OF 17			TRANSITION POLE WITH Z=SECTIONALIZER O=OIL SWITCH R=RECLOSER
REFER TO SHEET 4 OF 17			TRANSITION POLE WITH FUSE AND Z=SECTIONALIZER O=OIL SWITCH R=RECLOSER
REFER TO SHEET 4 OF 17			TRANSITION POLE WITH BLADE DISCONNECT AND Z=SECTIONALIZER O=OIL SWITCH R=RECLOSER

10021543

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

<b>METHODS</b>	
<b>STANDARD SYMBOLS AND ABBREVIATIONS</b>	

SH 15 OF 18
<b>1002</b>

STANDARD SYMBOLS			DESCRIPTION
CONSTRUCTION		OPERATIONS	
PROPOSED	EXISTING		
SEE 1002 SH. 8			UNDERGROUND CIRCUIT LINE
OBSOLETE			DIRECT-BURIED PRIMARY TEE SPLICE
	N.O.	N.O.	NORMAL-OPEN POINT.
USED ONLY ON OPERATIONS DRAWINGS.			THE SLASH INDICATES CHANGE IN PRIMARY UNDERGROUND CONDUCTOR SIZE.
USED ONLY ON OPERATIONS DRAWINGS.			DEADEND PRIMARY CIRCUIT.
USED ONLY ON OPERATIONS DRAWINGS.			FEEDER NUMBER IN A SUBSTATION.
			EQUIPMENT NUMBER.
USED ONLY ON OPERATIONS DRAWINGS.			BORDERLINE REFERENCE EQUIPMENT TAG.
USED ONLY ON OPERATIONS DRAWINGS.			PHASING BUBBLE.

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

METHODS  
STANDARD SYMBOLS AND ABBREVIATIONS

SH 16 OF 18

1002

1001

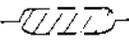
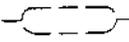
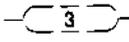
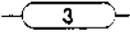
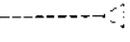
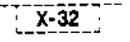
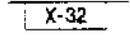
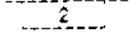
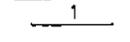
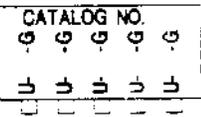
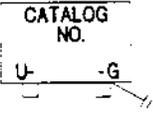
STANDARD SYMBOLS		OPERATIONS	DESCRIPTION
CONSTRUCTION			
PROPOSED	EXISTING		
DRAW PHYSICAL DETAIL AS NEEDED.		+	STREET INTERSECTION
DRAW PHYSICAL DETAIL AS NEEDED.		○	CUL-DE-SAC.
DRAW PHYSICAL DETAIL AS NEEDED.		— OAK ST. —	NAME AND SYMBOL FOR A STREET, RAILROAD OR RIVER
USED ONLY ON OPERATIONS DRAWINGS		≡	PRIMARY GROUND
USED ONLY ON OPERATIONS DRAWINGS		—	OVERHEAD PRIMARY DISTRIBUTION LINE SHOWN WITH THIN LINE
USED ONLY ON OPERATIONS DRAWINGS		— / —	BLADE DISCONNECT SHOWN WITH THIN LINE
USED ONLY ON OPERATIONS DRAWINGS		— 2 —	FUSE DISCONNECT SHOWN WITH THIN LINE
USED ONLY ON OPERATIONS DRAWINGS		— < —	GANG-OPERATED AIR-BREAK SWITCH SHOWN WITH THIN LINE
		3-A477V-R2/0VN-ABC	NUMBER OF PHASES, CONDUCTOR SIZES NEUTRAL POSITION AND PHASING SHOWN WITH THIN LINE
REFER TO OVERHEAD METHODS		1-R002W-N-A 1-A002V-N-A	THE SLASH INDICATES A CHANGE OF CONDUCTOR, NEUTRAL OR PHASING. SHOWN WITH THIN LINE.

100217A3

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

<b>METHODS</b> <b>STANDARD SYMBOLS AND ABBREVIATIONS</b>
---

SH 17 OF 18
1002

STANDARD SYMBOLS		DESCRIPTION
CONSTRUCTION		
PROPOSED	EXISTING	
		HANDWRAPPED SPLICE
		PREMOLDED SPLICE
		SPLICES PER RACK
		HOT CAPS
		SUBSTATION AND FEEDER DESIGNATION (NETWORK FEEDERS ONLY)
		FEEDER
		SEPERATE GROUND WIRE IN CONDUIT OR SWITCH GROUNDING POSITION
		PARALLEL CIRCUIT DESIGNATION
NOT USED IN NEW CONSTRUCTION		EXISTING SWITCH
NOT USED IN NEW CONSTRUCTION		EXISTING SWITCH

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	3

METHODS  
STANDARD SYMBOLS AND ABBREVIATIONS

## STANDARD ABBREVIATIONS

ABBREVIATION	WORD OR PHASE
°C	DEGREES CELSIUS
°F	DEGREES FAHRENHEIT
1/4 COR	QUARTER CORNER
1/C	ONE CONDUCTOR
2/C	TWO CONDUCTOR
3/C	MULTIPLE (NUMBER INDICATED) CONDUCTOR
5	OFFSET (STAKE NUMBER IN CIRCLE INDICATES DISTANCE IN THE DIRECTION OF THE OFFSET)
ⓓ	DELTA CONNECTION
A	AMPERES
AAAC	ALL ALUMINUM ALLOY CONDUCTOR
ABR	ABRASION-RESISTANT
ABSW	AIR-BREAK SWITCH
ACAR	ALUMINUM CONDUCTOR ALUMINUM REINFORCED
ACB	AIR CIRCUIT BREAKER
ACCESS	ACCESSORY
ACSR	ALUMINUM CONDUCTOR STEEL REINFORCED
ADJ	ADJACENT
AFC	AUTOMATIC FREQUENCY CONTROL
AG	ARM GUY
AL	ALUMINUM
ALY	ALLOY
AMER	AMERDUCTOR
AMPS	AMPERES
APL	ANGLE POINT LEFT
APPVL	APPROVAL
APR	ANGLE POINT RIGHT
APS	ARIZONA PUBLIC SERVICE
AR	ARMORED
ARCH	ARCHITECTURAL
ARSR	ARRESTER
ASSY	ASSEMBLY
ATCH	ATTACH
AUTO RECL	AUTOMATIC RECLOSING
AW	ALUMOWELD, ALUMINUM CLAD STEEL (CONDUCTOR)
AWG	AMERICAN WIRE GAGE
AWS	AMERICAN WELDING SOCIETY
BAY	BAYONET
BIL	BASIC IMPULSE INSULATION LEVEL
BM	BENCH MARK
BND	BAND
BNG	BENDING
BOC	BACK OF CURB
C TO C	CENTER-TO-CENTER
C-2.0	CUT 2.0 FEET
C	CENTERLINE
APN	APN
CAP	CAPACITOR
CBL	CABLE
CCW	COUNTERCLOCKWISE
CIC	CABLE (MANUFACTURED) IN CONDUIT
CKT	CIRCUIT
CMP	COMPACT (CONDUCTOR)

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS ABBREVIATIONS</b>	SH 1 OF 5
						1003
BY	LDR.	MGR.	DATE	REV.		
RD	L. Daniel	R. Thompson	1996	2		

## STANDARD ABBREVIATIONS

ABBREVIATION	WORD OR PHASE
CN	COMMON NEUTRAL
CN-S2	COMMON NEUTRAL GROUNDED LEG
COMM	COMMUNICATION
CONC	CONCRETE
COND	CONDUCTOR
CONN	CONNECT
CDR	CORNER
CPRS	COMPRESSED (CONDUCTOR)
CR	CONTROL RELAY
CS	CONTROL SWITCH
CSP	COMPLETE SELF-PROTECTED
CT	CURRENT TRANSFORMER
CU	COPPER
CW	COPPERWELD.COPPER CLAD STEEL (CONDUCTOR)
CWC	COPPERWELD COPPER (CONDUCTOR)
D	ANY PHASE(S) NOT CONNECTED (DEAD)
DA	DOUBLE ARM (CROSSARM)
DB	DIRECT BURIAL
DD	DUSK-TO-DAWN
DDE	DOUBLE DEADEND
DF	DEADEND
DEF LT	DEFLECTION LEFT
DEF RT	DEFLECTION RIGHT
DF	DOUGLAS FIR
DG	DOWN GUY
DIA	DIAMETER
DIEL	DIELECTRIC
DISTR	DISTRIBUTION
DM	DEMAND METER
DX	DUPLEX
E	EAST
EDEM	ELECTRIC DISTRIBUTION ENGINEERING MANUAL
EHD	EXTRA HEAVY DUTY
EHS	EXTRA HIGH STRENGTH
ELEV	ELEVATION
ELB	ELBOW
EMT	ELECTRICAL METALLIC TUBING
EPD	ELECTRIC POWER DISTRIBUTION
ES	EASEMENT
F-2.0	FILL 2.0 FEET
FC	FOOT CANDLE
FDR	FEEDER
GALV	GALVANIZE
GND	GROUND
GR	GRADE
GS	GALVANIZED STEEL (CONDUCTOR)
GS	GUY STUB
HD	HEAVY DUTY
HG	HEAD GUY
HMPE	HIGH MOLECULAR POLYETHYLENE (CABLE)
HMWPE	HIGH MOLECULAR WEIGHT POLYETHYLENE (CABLE)
HP	HORSEPOWER

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	2

### METHODS ABBREVIATIONS

SH 2 OF 5

1003

## STANDARD ABBREVIATIONS

ABBREVIATION	WORD OR PHASE
HS	HIGH STRENGTH STEEL CABLE
HV	HIGH-VOLTAGE
ID	INSIDE DIAMETER
X	#2/0-4/3 AWAC STRAND MESSENGER
KCMIL	CIRCULAR MILS X 1,000
KV	KILOVOLT
KVA	KILOVOLT AMPS
KVAC	KILOVOLT AMPS CAPACITIVE
KVAR	KILOVOLT AMPS REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LA	LIGHTNING ARRESTER
LB	POUNDS
LK	LINK
LP	LOW-PRESSURE
LPO	LOW POWER OUTPUT
LTG	LIGHTING
LTSW	LIGHT SWITCH
LV	LOW-VOLTAGE
MATL	MATERIAL
MAX	MAXIMUM
MCKT	MULTIPLE STREET LIGHT CIRCUIT
MCMIL	CIRCULAR MILS X 1,000,000
MFGR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
M	MONUMENT LINE
MUX	MULTIPLEX
MV	MERCURY VAPOR
N	NEUTRAL (PRIMARY ZONE)
N	NDRTH
N	NOTE
NA	NOT AVAILABLE OR NON-APPLICABLE
NC	NORMALLY CLOSED
NC	NATIONAL COURSE THREAD
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRIC MANUFACTURING ASSOCIATION
NESC	NATIONAL ELECTRICAL SAFETY CODE
NEUT	NEUTRAL
NFSD	NONFUSED
NIS	NOT IN STOCK
NO	NORMALLY OPEN
NONSTD	NONSTANDARD
NS	NEUTRAL (STATIC POSITION)
OBS	OBSOLETE
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OHGW	OVERHEAD GROUND WIRE
OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT
P	PROPERTY LINE
PB	PULL BOX
P.C.	POINT OF CURVE

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS          ABBREVIATIONS</b>		SH 3 OF 5
BY	LDR.	MGR.	DATE	REV.			1003
RD	L. Daniel	R. Thompson	1996	2			

## STANDARD ABBREVIATIONS

ABBREVIATION	WORD OR PHASE
PCT	PERCENT
PF	POWER FACTOR
P.I.	POINT OF INTERSECTION
PILC	PAPER INSULATED LEAD COVERED (CABLE)
PJ	PLASTIC JACKETED
P	PROPERTY LINE
PLRT	POLARITY
PLYPH	POLYPHASE
P.O.S.L.	POINT ON SECTION LINE
PREFAB	PREFABRICATED
P.T.	POINT OF TANGENT
PT	POTENTIAL TRANSFORMER
QUADIX	QUADAPLEX
R/W	RIGHT-OF-WAY
RC	REMOTE CONTROL
RECL	RECLOSER
REF	REFERENCE
REG	REGULATOR
REPL	REPLACE
RFI	RADIO FREQUENCY INTERFERENCE
RISNJ	RUBBER INSULATED SHIELDED NEOPRENE JACKETED (CABLE)
RIV	RADIO INFLUENCED VOLTAGE
RLY	RELAY
R.P.	REFERENCE POINT
RT	RAINTIGHT
S	SOUTH
SCT	SERIES STREET LIGHT CIRCUIT
SEC.COR	SECTION CORNER
SECT	SECTIONALIZER
SER	SERVICE
SG	SPAN GUY
SHKL	SHACKLE
S	SECTION LINE
SOL	SOLID (CONDUCTOR)
STRL	STRUCTURAL
STRUCT	STRUCTURE
SURV	SURVEY
SYS	SYSTEM
T&D	TRANSMISSION DISTRIBUTION
T.B.M.	TEMPORARY BENCHMARK
TELCO	TELEPHONE COMPANY
TRIX	TRIPLEX
TVI	TELEVISION INTERFERENCE
ULT	ULTIMATE
UNG	UNGROUNDDED
USR	UNBALANCE SENSING RELAY
V	VOLTS
W	WATTS
W	WEST
W/	WITH
W/O	WITHOUT
WD	WOOD

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	2

METHODS ABBREVIATIONS
--------------------------

SH 4 OF 5
1003

## STANDARD ABBREVIATIONS

ABBREVIATION	WORD OR PHASE
WHSE .....	WAREHOUSE
WP .....	WEATHERPROOF (CONDUCTOR)
XARM .....	CROSSARM
XCONN .....	CROSS CONNECTION
XFMR .....	TRANSFORMER
XLPE .....	CROSS-LINKED POLYETHYLENE (CABLE)
XPT .....	CROSS POINT
XSECT .....	CROSS SECTION
Y .....	WYE CONNECTION
YD .....	CUBIC YARD

**CONSTRUCTION NOTES:**

- SEE 1116 "SURVEY MARKINGS" FOR SURVEY ABBREVIATIONS.

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS ABBREVIATIONS</b>	SH 5 OF 5
BY	LDR.	MGR.	DATE	REV.		<b>1003</b>
RO	L. Daniel	R. Thompson	1996	2		

## WORD DEFINITIONS

THE FOLLOWING ARE DEFINITIONS OF WORDS OR PHASES WHICH APPLY ONLY TO USE IN THE OVERHEAD CONSTRUCTION STANDARDS BOOK.	
<p><b>ABRASION-RESISTANT</b></p> <p><b>ANODE</b></p> <p><b>ARMORED</b></p> <p><b>BEDDING</b></p> <p><b>BLADE DISCONNECT</b></p> <p><b>BOOT</b></p> <p><b>CABLE</b></p> <p><b>CASCADING METER PEDESTALS</b></p> <p><b>CATHODE</b></p> <p><b>CATV</b></p> <p><b>CHROMATE (YELLOW DI-CHROMATE ZINC PLATED)</b></p> <p><b>C.I.C (CABLE-IN-CONDUIT)</b></p> <p><b>CIRCUIT-ISOLATED</b></p> <p><b>COMPACT (WIRE)</b></p> <p><b>COMPRESSED (WIRE)</b></p> <p><b>COMPRESSIVE STRENGTH</b></p> <p><b>CONCENTRIC NEUTRAL</b></p> <p><b>CONCENTRIC (WOUND)</b></p> <p><b>CUSTOMER</b></p> <p><b>DEAD-FRONT</b></p> <p><b>DESIGN LOAD</b></p> <p><b>DIRECT-BURIED CABLE</b></p> <p><b>DUCT BANK</b></p> <p><b>EASEMENT</b></p> <p><b>EFFECTIVELY GROUNDED</b></p> <p><b>ELASTIC STRESS</b></p> <p><b>ELECTRICALLY CONNECTED</b></p> <p><b>ELECTRICALLY INTERCONNECTED</b></p> <p><b>ELECTROLYTIC CORROSION</b></p> <p><b>FINAL GRADE</b></p>	<p>A THERMOSETTING POLYETHYLENE INSULATION CAPABLE OF REDUCING SURFACE WEAR OR DAMAGE TO LOW-VOLTAGE CABLE.</p> <p>THE POSITIVE CHARGED ELECTRODE TOWARD WHICH CURRENT FLOWS.</p> <p>THE OUTER COVERING ON THE CABLE PROVIDES MECHANICAL PROTECTION. HIGH-VOLTAGE CABLE COMBINES FLAT STRAP CONCENTRIC NEUTRAL WITH A TOUGH OUTER JACKET. LOW-VOLTAGE CABLE UTILIZES A FLEXIBLE INTERLOCKING METAL CONDUIT.</p> <p>THE BOTTOM LAYER OF BACKFILL WHICH PREPARES THE TRENCH FLOOR AND SHIELDS THE FACILITIES FROM POSSIBLE DAMAGE RESULTING FROM CONTACT WITH NORMAL SOIL. BEDDING IS ALSO USED TO FACILITATE LEVELING OF MANHOLES AND PULL BOXES.</p> <p>AN UNFUSED BLADE TYPE DEVICE USED FOR SWITCHING LOAD.</p> <p>A FLANGE-TYPE DEVICE LOCATED AT THE BASE OF THE TRANSITION (POLE)PVC CABLE GUARD WHICH COVERS THE CONDUIT SWEEPS AND FACILITATES CABLE TRAINING.</p> <p>A CONDUCTOR WITH INSULATION OR A STRANDED CONDUCTOR WITH OR WITHOUT INSULATION AND OTHER COVERINGS (SINGLE-CONDUCTOR CABLE) OR A COMBINATION OF CONDUCTORS INSULATED FROM ONE ANOTHER.</p> <p>METER PEDESTALS CONNECTED IN SERIES.</p> <p>THE NEGATIVE CHARGED ELECTRODE FROM WHICH CURRENT FLOWS</p> <p>CABLE TELEVISION.</p> <p>A ZINC PLATED MATERIAL WHICH HAS ALSO RECEIVED A YELLOW DI-CHROMATE COATING. ITEMS WHICH HAVE THIS PLATING ARE SUITABLE FOR OUTDOOR USE.</p> <p>CABLE WHICH IS MANUFACTURED INSIDE A FLEXIBLE CONDUIT.</p> <p>THE SWITCHING CABINET BUSS CONFIGURATION IS SUCH THAT ALL PHASES OF A CIRCUIT ARE TERMINATED IN THE SAME PHYSICAL AREA OF THE CABINET.</p> <p>A UNIDIRECTIONAL OR CONVENTIONAL CONCENTRIC CONDUCTOR MANUFACTURED TO A SPECIFIED DIAMETER, APPROXIMATELY 8- TO 10-PERCENT BELOW THE NOMINAL DIAMETER OF A NON-COMPACT CONDUCTOR OF THE SAME SIZE.</p> <p>A CONVENTIONAL CONCENTRIC WOUND CONDUCTOR MANUFACTURED TO A DIAMETER NOT MORE THAN 3-PERCENT BELOW THE NOMINAL DIAMETER OF A NON-COMPRESSED CONDUCTOR OF THE SAME CROSS-SECTIONAL SIZE. ALL INSULATED CONDUCTOR PRESENTLY PURCHASED (OVERHEAD AND UNDERGROUND) IS COMPRESSED.</p> <p>FORCE APPLIED TO A SMALL SPACE OR THE SPECIFIED RESISTANCE USED IN DESIGN CALCULATIONS.</p> <p>A NEUTRAL WOUND HELICALLY AROUND THE CABLE INSULATION.</p> <p>AN UNINSULATED WIRE STRAND AS THE CORE AROUND WHICH ARE SPIRALLY LAID WIRES IN LAYERS. EACH LAYER AFTER THE FIRST HAS SIX MORE STRANDS THAN THE PRECEDING LAYER AND IS APPLIED CONTRAHELICALLY. ALL BARE CONDUCTOR PRESENTLY PURCHASED (OVERHEAD AND UNDERGROUND) IS CONCENTRIC.</p> <p>A PERSON OR ENTITY FOR WHICH SERVICES ARE PROVIDED.</p> <p>ELECTRICAL EQUIPMENT, SO CONSTRUCTED THAT THERE ARE NO EXPOSED ENERGIZED PARTS ABOVE 300 VOLTS TO GROUND, WHEN THE FRONT OF THE ASSEMBLY IS OPENED.</p> <p>MAXIMUM LOAD EXPECTED WITHOUT SAFETY FACTOR.</p> <p>INSTALLED WITHOUT ADDITIONAL MECHANICAL PROTECTION.</p> <p>MULTIPLE CONDUIT RUNS WHICH ARE USUALLY CONCRETE ENCASED.</p> <p>A LEGAL RIGHT HELD BY A PERSON OR ENTITY TO UTILIZE LAND OWNED BY OTHERS FOR A LIMITED PURPOSE.</p> <p>PRODUCING A CONNECTION OF AN ELECTRICAL CONDUCTOR AT EARTH POTENTIAL.</p> <p>A LOAD IS APPLIED TO A PIECE OF HARDWARE, THE HARDWARE STRETCHES UNDER THAT LOAD. WHEN THE LOAD IS RELEASED THE HARDWARE RETURNS TO ITS ORIGINAL SHAPE.</p> <p>INES ELECTRICALLY JOINED IN ORDER OR SEQUENCE.</p> <p>INES CONNECTED BETWEEN ONE ANOTHER ELECTRICALLY.</p> <p>DETERIORATION OF METAL PRODUCED BY THE CONDUCTION OF ELECTRIC CURRENT THROUGH ELECTROLYTES BETWEEN ANODE AND CATHODE.</p> <p>THE FINISHED ELEVATION REQUIRED BY THE SPECIFICATION.</p>

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS</b> <b>WORD DEFINITIONS</b>	SH 1 OF 4  1004
BY	LDR.	MGR.	DATE	REV.		
RD	L. Daniel	R. Thompson	1996	2		

## WORD DEFINITIONS

FOREMAN	A PERSON IN CHARGE OF A PARTICULAR DEPARTMENT OR GROUP OF WORKMEN.
GALVANIZED	HOT-DIPPED IN BOILING ZINC. ITEMS WHICH HAVE THIS PLATING ARE SUITABLE FOR OUTDOOR USE.
GROUND	A CONDUCTING CONNECTION, BETWEEN AN ELECTRICAL CIRCUIT OR EQUIPMENT AND THE EARTH, OR TO SOME CONDUCTING BODY THAT SERVES IN PLACE OF THE EARTH.
HALF-LAPPED TAPED	SPIRAL TAPING WHERE THE TAPE OVERLAPS THE PREVIOUS SWAP BY ONE-HALF ITS WIDTH.
HANDHOLE	AN ACCESS OPENING IN EQUIPMENT INTO WHICH WORKMEN REACH BUT DO NOT ENTER.
INSPECTOR	A PERSON WHO PERFORMS INSPECTION ACTIVITIES TO VERIFY CONFORMANCE TO SPECIFIC REQUIREMENTS.
INTERSTATION COMMUNICATIONS	TELECOMMUNICATIONS (TELEPHONE TYPE CABLE INCLUDING FIBER OPTICS) WHICH PROVIDES COMMUNICATION SERVICES FOR SUBSTATIONS (PROTECTIVE RELAYING), ENGINEERING MANAGEMENT SYSTEMS, CORPORATE COMPUTERS AND TELEPHONE SERVICES.
JACKETED CABLE	HIGH-VOLTAGE CABLE WITH A PROTECTIVE COVERING EXTRUDED OVER IT.
JOINTLY USED	A FACILITY (USUALLY A POLE OR TRENCH) WHICH IS UTILIZED BY DIFFERENT/SEPARATE UTILITY LICENSEES.
JUMPER	A SHORT LENGTH OF WIRE USED TO CONNECT ELECTRICAL TERMINALS OR CIRCUITS.
JUNCTION BOX	A BOX WHICH PROVIDES SPACE FOR THE CONNECTION AND BRANCHING OF THE ENCLOSED CONDUCTORS.
KICK BLOCK	CONCRETE REINFORCEMENT WHICH OPPOSES EXTERNAL FORCES.
LINK BREAK CUTOUT	A LOADBREAK CUTOUT WHICH UTILIZES A LEVER TO MECHANICALLY BREAK THE FUSELINK ELEMENT.
LIVE-FRONT	ELECTRICAL EQUIPMENT, SO CONSTRUCTED THAT THERE ARE EXPOSED ENERGIZED PARTS, ABOVE 300 VOLTS TO GROUND, WHEN THE FRONT OF THE ASSEMBLY IS OPENED.
LOAD-BREAK	CAPABLE OF INTERRUPTING LOAD CURRENTS.
LONGITUDINAL WORKING LOAD	A FORCE ESSENTIALLY PARALLEL TO THE LONG AXIS OF AN ELECTRIC LINE.
LOOP FEED	A SYSTEM IN WHICH ANY POINT ON THE FEEDER CAN RECEIVE ELECTRICAL ENERGY FROM EITHER DIRECTION/SOURCE/ROUTE.
LOW-VOLTAGE	AN ELECTRIC VOLTAGE FROM 0-750 VOLTS.
MANHOLE	A SUBSURFACE ENCLOSURE WHICH PERSONNEL MAY ENTER AND WHICH IS USED FOR THE PURPOSE OF INSTALLING, OPERATING AND MAINTAINING SUBMERSIBLE EQUIPMENT AND CABLE.
MAXIMUM WORKING LOAD	A LOAD WHICH CAN BE IMPOSED ON MATERIALS AND EQUIPMENT EQUAL TO THE ULTIMATE STRENGTH DIVIDED BY THE APPROPRIATE SAFETY FACTOR(S).
MECHANICAL PROTECTION	FACILITIES WHICH HAVE BEEN INSTALLED IN STEEL CONDUIT OR HAVE A MINIMUM OF 2 INCHES OF CONCRETE COVE (CAPPED OR ENCASED).
NEUTRAL SYSTEM	A SYSTEM NEUTRAL GROUND IS A CONNECTION TO GROUND FROM THE NEUTRAL POINT OR POINTS OF A CIRCUIT, TRANSFORMER, MACHINE, ETC.
MULTI	IS THE NEUTRAL WHEN GROUNDED AT EACH DISTRIBUTION TRANSFORMER AND AT FREQUENT INTERVALS WHERE NO TRANSFORMERS ARE CONNECTED.
NEUTRAL (SYSTEM) UNDERGROUND	A CONDUCTOR WHICH IS EFFECTIVELY GROUNDED THROUGHOUT ITS LENGTH AND PROVIDES A NEUTRAL RETURN PATH TO THE NEUTRAL OF THE SUBSTATION TRANSFORMER.
NON-LOADBREAK	NOT CAPABLE OF INTERRUPTING LOAD CURRENTS.
NON-TRAFFIC-BEARING	A STRUCTURE WHICH WILL NOT SUPPORT TRAFFIC, OR ONLY LIGHT OCCASIONAL TRAFFIC PER AASHTO H-10 SPECIFICATIONS.
NORMALLY-CLOSED POINT	THE CURRENT CARRYING MEMBERS OF A DEVICE ARE ENGAGED WHEN THE DEVICE IS IN ITS NORMAL POSITION.
NORMALLY-OPEN POINT	THE CURRENT CARRYING MEMBERS OF A DEVICE ARE DISENGAGED WHEN THE DEVICE IS IN ITS NORMAL POSITION.
PAD VAULT	A COMBINATION EQUIPMENT PAD AND BELOW-GROUND ENCLOSURE DESIGNED TO FACILITATE CABLE PULLING AND TRAINING.
PARALLEL CIRCUIT	A SYSTEM WHEREBY CURRENT IS DIVIDED AMONG TWO OR MORE PATHS, BETWEEN COMMON STARTING AND ENDING POINTS.
PHASE-ISOLATED	THE SWITCHING CABINET BUSS CONFIGURATION IS SUCH THAT LIKE PHASES, ONE FROM EACH CIRCUIT, ARE TERMINATED IN THE SAME PHYSICAL AREA OF THE CABINET.

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS</b> <b>WORD DEFINITIONS</b>		SH 2 OF 4
BY	LDR.	MGR.	DATE	REV.			1004
RD	L. Daniel	R. Thompson	1996	2			

## WORD DEFINITIONS

PLASTIC STRESS	A LOAD IS APPLIED TO A PIECE OF HARDWARE. THE HARDWARE STRETCHES UNDER THE LOAD. WHEN THE LOAD IS RELEASED THE HARDWARE STAYS DEFORMED IN THAT SHAPE, AND THE HARDWARE HAS NOT LOST ITS ORIGINAL STRENGTH.
POT HOLE	A HOLE DUG TO PROVIDE ADDITIONAL INFORMATION REGARDING SOIL (TRENCHING) CONDITIONS.
PREPACKAGE	A NUMBER OF ITEMS SORTED AND PACKAGED TOGETHER FOR CONVENIENCE (BY THE WAREHOUSE) UNDER A UNIQUE APN NUMBER.
PULL BOX	A SUBSURFACE ENCLOSURE (TOO SMALL FOR PERSONNEL TO ENTER) WHICH IS USED FOR THE PURPOSE OF INSTALLING AND MAINTAINING UNDERGROUND CABLE.
PVC	POLYVINYL CHLORIDE; A THERMOPLASTIC COMPOUND.
RADIAL FEED	A SYSTEM IN WHICH INDEPENDENT FEEDERS BRANCH OUT RADIALLY FROM A COMMON SOURCE OF SUPPLY.
RADIUS:	
BENDING	THE MINIMUM RADIUS THAT CABLE CAN BE SUBJECTED TO DURING REMOVAL FROM REELS AND TRAVELING OVER GUIDES AND SHEAVES WHERE MINIMUM TENSION AND SIDEWALL BEARING PRESSURE IS INVOLVED.
PULLING	THE MINIMUM RADIUS TO WHICH CABLE CAN BE SUBJECTED WHILE PULLING UNDER TENSION.
TRAINING	THE RECOMMENDED MINIMUM RADIUS TO WHICH THE INDIVIDUAL INSULATED CONDUCTOR CAN BE BENT FOR PERMANENT ATTACHMENT TO A TERMINAL.
REFERENCE DIMENSION	A REFERENCE DIMENSION GIVEN FOR INFORMATION ONLY AND NOT INTENDED TO BE MEASURED OR TO GOVERN FIELD RESULTS. USED FOR MANUFACTURED OR APPROXIMATE DIMENSIONS.
RIGHT-OF-WAY	THE LAND SECURED AND RESERVED TO THE PUBLIC FOR ROADWAYS, INGRESS/EGRESS AND UTILITIES.
RISER	A JUMPER WHICH EXTENDS VERTICALLY TO CONNECT A TERMINATION POTHEAD TO A SWITCH OR CUTOUT, OR A TRANSITION WHICH FEEDS OVERHEAD FACILITIES FROM AN UNDERGROUND SOURCE.
SADDLE	PART OF AN INSULATOR HAVING A CONCAVE OUTLINE USED TO SET THE CONDUCTOR.
SAFETY FACTOR	THE RATIO OF THE ULTIMATE STRENGTH OF MATERIAL OR EQUIPMENT TO THE MAXIMUM WORKING LOAD.
SEMICONDUCTOR (SEMI-CON)	A CONDUCTING MEDIUM (LAYER) IN WHICH THE ELECTRICAL FLOW IS SOMEWHAT RESTRICTED.
SERIES CIRCUIT	AN ELECTRICAL CIRCUIT IN WHICH ITS COMPONENTS ARE CONNECTED END-TO-END AND ACROSS A POWER SOURCE.
SHADING	THE INITIAL LAYER OF BACKFILL ABOVE CABLE OR CONDUIT THAT SHIELDS THE FACILITIES FROM POSSIBLE DAMAGE RESULTING FROM NORMAL BACKFILL CONDITIONS.
SHALL	THAT WHICH IS REQUIRED (MANDATORY)
SHOE-FLY	A TEMPORARY LINE BUILT TO BYPASS A CONSTRUCTION AREA.
SHOULD	THAT WHICH IS RECOMMENDED; PREFERRED BUT NOT MANDATORY.
SILICON BRONZE	A NONCORROSIVE METAL COMPATIBLE WITH COPPER. NINETY-PERCENT BRONZE, 7-PERCENT TIN AND 3-PERCENT SILICON APPROXIMATELY.
SPAN LENGTH	THE HORIZONTAL DISTANCE BETWEEN TWO ADJACENT SUPPORTING POINTS OF A CONDUCTOR.
STRUCTURE	ANY CONSTRUCTION COMPOSED OF EQUIPMENT, HARDWARE OR PARTS ARRANGED AND FITTED TOGETHER.
STUB-OUT	TERMINATION OF CABLE OR CONDUIT IN PREPARATION OF FUTURE CONNECTION OR EXTENSION.
SUPPLYLINE	A LINE CONSTRUCTED TO CARRY ELECTRIC CURRENT.
SWEEP	A SHORT LENGTH OF CONDUIT EXTRUDED TO A GIVEN RADIUS, ALSO KNOWN AS A BEND, ELL OR ELBOW.
SWITCHED TRANSFORMER	LIVE-FRONT TRANSFORMER WITH DISCONNECT SWITCHES.
TAIL-TO-TAIL CONNECTION	A CONNECTION MADE BETWEEN THE END POINTS OF CONDUCTORS.
TELCO	THE TELEPHONE COMPANY.
TERMINATION	1. THE CONNECTION OF A CABLE. 2. THE PREPARATION OF A CABLE FOR TERMINATION.
TRAFFIC-BEARING	A STRUCTURE WHICH SUPPORTS TRAFFIC PER AASHTO H-20 SPECIFICATIONS.
TRANSITION	A POLE MOUNTED EQUIPMENT WHICH CHANGES THE OVERHEAD TYPE FACILITIES TO UNDERGROUND OR VICE VERSA.

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS</b> <b>WORD DEFINITIONS</b>	SH 3 OF 4
BY	LDR.	MGR.	DATE	REV.		<b>1004</b>
RD	L. Daniel	R. Thompson	1996	2		

## WORD DEFINITIONS

<p>ULTIMATE STRENGTH</p> <p>WHEEL ROLLING</p> <p>WHEREVER PRACTICAL</p> <p>WIRE</p> <p>WORKING LOAD</p> <p>WORK METHODS</p> <p>WORK ORDER CONSTRUCTION DRAWINGS</p> <p>WYE CONNECTION</p> <p>XLPE (CABLE)</p>	<p>THE MAXIMUM LOAD WHICH MAY BE PLACED ON A STRUCTURE OR PIECE OF MATERIAL WHICH CAUSES FAILURE.</p> <p>COMPACTING THE TRENCH BY DRIVING A VEHICLE OVER THE BACKFILL MATERIALS.</p> <p>WHEREVER REALISTIC AND SENSIBLE.</p> <p>A SLENDER ROD OR FILAMENT OF DRAWN METAL; THE TERM MAY ALSO REFER TO INSULATED WIRE.</p> <p>THE MAXIMUM LOAD WHICH CAN BE USED FOR STRUCTURAL DESIGN WHICH INCLUDES SAFETY FACTORS.</p> <p>THE MANNER IN WHICH THE WORK IS TO BE PERFORMED AT THE SITE OF CONSTRUCTION.</p> <p>ALL DRAWINGS AND SCHEMATICS ASSOCIATED WITH A WORK ORDER.</p> <p>INTERCONNECTION OF 3 WINDINGS OF ELECTRICAL EQUIPMENT IN WYE (STAR) FASHION.</p> <p>CROSS-LINKED POLYETHYLENE-THERMOSETTING POLYETHYLENE INSULATION CURED BY LINKING MOLECULES TOGETHER IN A POLYMER WHICH PROVIDES GOOD PHYSICAL PROPERTIES.</p>
---	---

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
BY	LDR.	MGR.	DATE	REV.
RD	L. Daniel	R. Thompson	1996	2

<b>METHODS</b>  <b>WORD DEFINITIONS</b>
---

SH 4 OF 4
1004

## POLE LOCATION NUMBER (PLN)

### 1.0 SCOPE

- 1.1 THIS NEW NUMBER WILL BE IN ADDITION TO OUR EXISTING NUMBER SCHEMES.
- 1.2 THE PRIMARY PURPOSE OF THE POLE LOCATION NUMBER (PLN) IS TO IDENTIFY ACCURATELY THE LOCATION OF NEW AND EXISTING POLES, OVERHEAD TRANSFORMERS, BOTH SINGLE AND THREE PHASE. EACH NUMBER WILL BE USED TO MAINTAIN ACCURATE DATA ON EACH CUSTOMER TO TRANSFORMER LINK. THIS NUMBER WILL NOT CHANGE WHEN A TRANSFORMER IS REPLACED.
- 1.3 TRANSMISSION POLES SHALL CONTINUE TO BE NUMBERED AS SHOWN ON T&D CONSTRUCTION STANDARD 1012. TRANSMISSION POLES WITH DISTRIBUTION UNDERBUILD SHALL BE NUMBERED WITH BOTH THE TRANSMISSION NUMBER AND THE POLE LOCATION NUMBER (PLN).
- 1.4 NO DUPLICATION OF NUMBERS MAY EXIST. NO ALPHA CHARACTERS SHALL BE USED. THIS 7 DIGIT NUMBER IS TO BE OBTAINED FROM YOUR CONTROL/CLEARING DESK AS IS CURRENTLY BEING DONE WITH PAD-MOUNT TRANSFORMER NUMBERS.
- 1.5 IF NO NUMBER IS FOUND TO EXIST IN THE FIELD, ASSUME THAT A NEW NUMBER MUST BE ASSIGNED.
- 1.6 WHEN A POLE IS REPLACED OR RELOCATED WITHIN 2 FEET OF ITS PREVIOUS LOCATION THE NUMBER SHALL BE REUSED. WHEN THE POLE IS REMOVED AND NOT REPLACED, THE NUMBER SHALL BE RETIRED FROM THE SYSTEM AND NOT REUSED.
- 1.7 ALL NUMBERS SHALL BE OF THE DAY/NIGHT TYPE. (SEE APN NUMBERS SHOWN ON SPEC 1220 SH 4) AND PLACED ON ALUMINUM PLATES, APN 720-2991. THE ALUMINUM PLATES SHALL BE SECURED TO THE POLES USING GROUND WIRE CLIP NAILS, APN 714-6270. THE NUMBERS SHALL BE PLACED VERTICALLY ON THE POLES, WITH THE BOTTOM OF THE PLATE 6 TO 8 FEET ABOVE GROUND.
- 1.8 WHEN POLES ARE IN STREETS, THE NUMBERS SHALL BE ON THE QUARTER OF THE POLE TOWARDS ONCOMING TRAFFIC. WHEN POLES ARE IN ALLEYS, THE NUMBER SHALL FACE THE OPPOSITE SIDE OF THE ALLEY, AND IN EASEMENTS, THE NUMBERS SHALL POINT TOWARDS THE LOCATION WHERE ACCESS IS OBTAINED TO THE POLE.
- 1.9 WHEN A PIECE OF EXISTING EQUIPMENT PREVENTS PROPER INSTALLATION OF THE NUMBERS, INSTALL NUMBERS AS CLOSE TO THE RULES AS POSSIBLE.
- 1.10 WHERE A POLE NUMBER HAS BEEN ASSIGNED TO A POLE WHICH HAS AN EXISTING POLE NUMBER, CONSTRUCTION CREWS ARE TO RETURN DUPLICATE NUMBERS TO THE RESPONSIBLE PROJECT LEADER FOR THE JOB SKETCH WHICH ASSIGNED THE DUPLICATE NUMBER.

### REFERENCES:

1. SEE 1002 SH2 FOR STANDARD SYMBOL EXAMPLE.
2. SEE 1003 SH 4 FOR ABBREVIATIONS.
3. SEE 1220 SH 4 FOR MATERIALS.

<b>APN</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					METHODS POLE DATA AND NUMBERING DISTRIBUTION	SH 1 OF 1  1005
BY	LDR.	MGR.	DATE	REV.		
RD	L. Daniel	R. Thompson	1996	1		



2.3 THE SECOND CHARACTER OF THE CODE SHALL BE A LETTER DESIGNATING THE TYPE OF DEVICE. THE LETTER USED SHALL BE AS FOLLOWS:

DEVICE LETTER	DESCRIPTION TYPE OF DEVICE	CAPABILITY OF DEVICE
D	SINGLE BLADE DISCONNECT	DE-ENERGIZED LINE
F	SINGLE FUSED DISCONNECT	DE-ENERGIZED LINE
A	GANG-OPERATED WITHOUT ARC HORNS WITHOUT DELRIN HOODS	DROP 0-12 MILE LINE
K	GANG-OPERATED QUICK BREAK ARC HORNS	DROP 0-20 MILE LINE
J	GANG-OPERATED QUICK BREAK DELRIN HOOD	DROP 0-40 MILE LINE DROP 0-300 AMP LOAD BREAK PARALLEL 0-600 AMP
O	OIL SWITCH	
R	RECLOSER WITHOUT GROUND TRIP	
T	RECLOSER WITH GROUND TRIP	
Z	SECTIONALIZER (SINGLE-PHASE OR THREE-PHASE)	
B	AUTO BOOST OR LINE REGULATOR	

2.4 THE NEXT ONE-TO-FIVE CHARACTER CODE SHALL BE A NUMBER FROM 100-99999. THESE NUMBERS SHOULD NOT BE ASSIGNED IN ORDER BUT SHOULD BE ASSIGNED AT RANDOM.

2.5 THE LAST CHARACTER OF THE CODE IS A LETTER USED TO IDENTIFY EITHER AUTOMATIC OR SUPERVISORY OPERATED DEVICES. THIS LETTER WILL BE ADDED WHEN APPLICABLE.

*A*	WILL INDICATE AUTOMATIC TRANSFER CONTROL
*S*	WILL INDICATE SUPERVISORY CONTROL
*G*	WILL INDICATE HAS GROUND POSITION
*M*	WILL INDICATE MOTOR OPERATED
*H*	WILL INDICATE HYDRAULIC OPERATED

### 3.0 TRANSITION POLES

3.1 THE EQUIPMENT ON A TRANSITION POLE FOR THE PURPOSE OF DISCONNECTING THE UNDERGROUND WILL HAVE THE STANDARD TP NUMBER (SEE 1215), FOR EXAMPLE, DISCONNECTS, SECTIONALIZER, ETC., EXCEPT CABLES WITH 3 OR MORE TERMINATION POINTS. UTILIZE DEVICE NUMBER PER STANDARD 1215, PARAGRAPH 5.1.

### 4.0 BYPASS SWITCHES

4.1 THE BYPASS SWITCHES FOR RECLOSERS AND SECTIONALIZER WILL NOT HAVE THEIR OWN NUMBER. THEY WILL BE REFERRED TO AS THE BYPASS SWITCH FOR WHATEVER DEVICE WITH WHICH THEY ARE ASSOCIATED.

### 5.0 CONTROL OF NUMBERING SYSTEM

- 5.1 THERE SHALL BE A CONTROL SYSTEM ESTABLISHED WITHIN EACH OPERATING DIVISION/DISTRICT WHICH WILL ADMINISTER THIS NUMBERING SYSTEM.
- 5.2 UP-TO-DATE OPERATING MAPS MUST BE MAINTAINED.
- 5.3 NUMBERS MUST NOT BE DUPLICATED WITHIN A DIVISION/DISTRICT.
- 5.4 SWITCH NUMBERS ARE NOT ASSIGNED IN ORDER BUT SHALL BE ASSIGNED AT RANDOM.

<b>APS</b> ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS					<b>METHODS NUMBERING OF OVERHEAD SWITCHING APPARATUS DISTRIBUTION</b>	SH 2 OF 2
BY	LDR.	MGR.	DATE	REV.		1006
RD	L. Daniel	R. Thompson	1996	2		