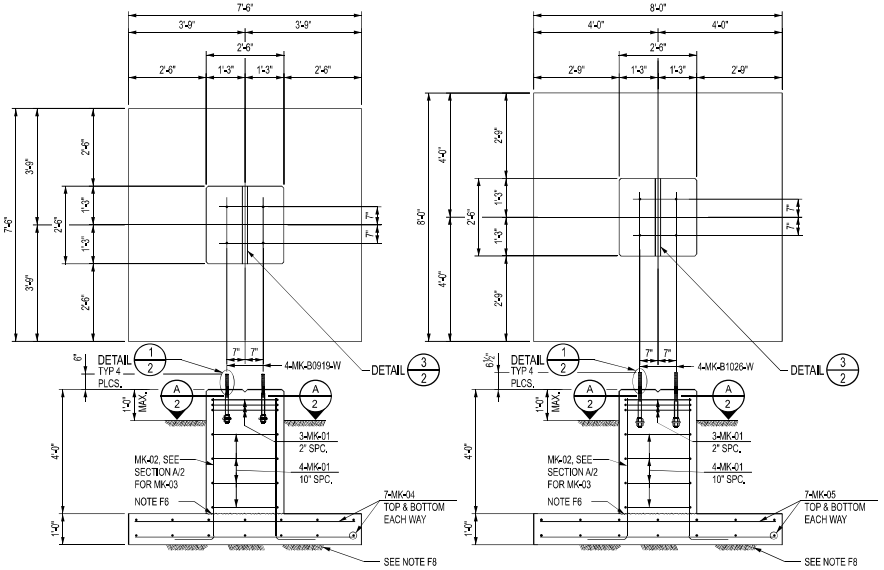
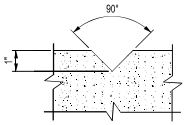


500KV INSULATOR PEDESTAL (LOW)
FOOTING MK-01PL5

500KV INSULATOR PEDESTAL (MID)
FOOTING MK-01PM5

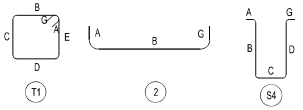


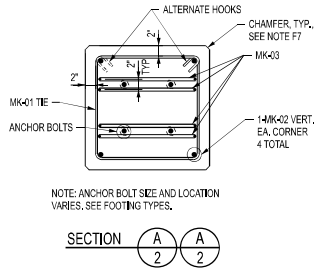
MATERIAL SCHEDULE

MARK	TYPE OF FOOTING	MATERIAL REQUIRED FOR ONE FOOTING		
		MARK	QTY.	DESCRIPTION
01PL5	500KV INSULATOR PEDESTAL (LOW)	--	2.68	CU. YDS. CONCRETE
		01	7	#3x9'-4½"
		02	4	#6x5'-6"
		03	4	#8x13'-9¾"
		04	28	#5x7'-0" STR.
		B0919-W	4	1⅛" DIA.x1'-7" ANCHOR BOLTS
		--	4	SQ. FT. CONCRETE BONDING AGENT (PER BPA CONSTRUCTION SPEC 03 30 00)
01PM5	500KV INSULATOR PEDESTAL (MID)	--	2.96	CU. YDS. CONCRETE
		01	7	#3x9'-4½"
		02	4	#6x5'-6"
		03	4	#8x13'-9¾"
		05	28	#5x7'-6" STR.
		B1026-W	4	1¼" DIA.x1'-9" ANCHOR BOLTS
		--	4	SQ. FT. CONCRETE BONDING AGENT (PER BPA CONSTRUCTION SPEC 03 30 00)

REINFORCING SCHEDULE

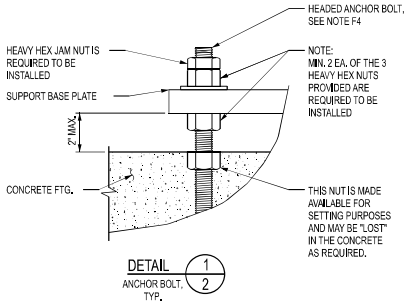
MARK	BAR SIZE	TYPE	A	B	C	D	E	G
01	#3	T1	0'-4½"	2'-2"	2'-2"	2'-2"	2'-2"	0'-4½"
02	#6	2	1'-0"	4'-6"				0'-0"
03	#8	S4	1'-4"	4'-6"	2'-1⅞"	4'-6"		1'-4"



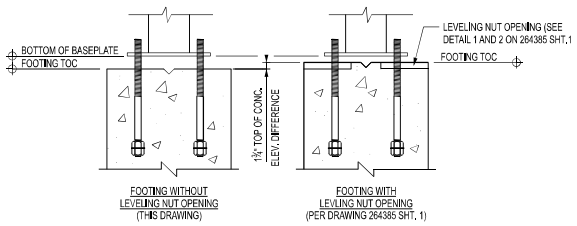


NOTE: ANCHOR BOLT SIZE AND LOCATION VARIES. SEE FOOTING TYPES.

SECTION A/2 A/2



DETAIL 1/2
ANCHOR BOLT, TYP.



NOTE TO DESIGNER: DETAIL IS INTENDED TO REPRESENT THE DIFFERENCE IN TOP OF CONCRETE (TOC) ELEVATION FOR BUS RUNS CONTAINING BOTH OF THESE TYPES OF FOOTINGS. SEE DESIGN NOTE D4 FOR ADDITIONAL INFORMATION.

TOP OF CONCRETE ELEVATION 2/2

DESIGN NOTES:

D1. REFERENCES INCLUDE THE FOLLOWING:
"BPA SUBSTATION OUTDOOR EQUIPMENT STEEL SUPPORT AND FOOTINGS - LOADING AND DESIGN CRITERIA, STD-DS-000030-03" "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318) AND COMMENTARY (ACI 318R), AMERICAN CONCRETE INSTITUTE" "MANUAL OF STEEL CONSTRUCTION - AMERICAN INSTITUTE OF STEEL CONSTRUCTION."

D2. DESIGN CRITERIA:
EXTREME WIND: 100 MPH WITH A 1.2 GUST FACTOR.
GLAZE ICE AND WIND: 1" RADIAL ICE (57 PCF), 56 MPH WIND.
RIME ICE AND WIND: 2" RADIAL ICE (15 PCF), 40 MPH WIND.
SEISMIC: 0.5G WITH A 3.24 DYNAMIC AMPLIFICATIONFACTOR APPLIED TO EQUIPMENT.
EQUIPMENT CANTILEVER: 2.5 KIPS.
SOIL: 48" FROST DEPTH, 2000 PSF BEARING PRESUURE (VERIFY SOIL BEARING PRESSURE WITH SITE SPEIFICATION GEOTECHNICAL REPORT).

D3. DESIGN EQUIPMENT:
BUS: 5" DIA. (5.563 O.D., 5.057 LB/FT WT.), 54' SPAN (60' SPAN OPX5)
INSULATOR: TAPERED STATION POST (128" HT., 863 LB. WT., 11" AVG. DIA.)
SUPPORT: SEE DRAWING 264386 SHT. 1.

D4. DUE TO REPORTED INSTALLATION CHALLENGES, THESE FOOTING DESIGNS ELIMINATE THE LEVELING NUT OPENING SHOWN ON DRAWING 264385, WHEN CONNECTING TO AN EXISTING BUS RUN WITH FOOTINGS PER DRAWING 264385, THE BUS MUST REMAIN LEVEL. ATTENTION SHALL BE GIVEN TO ENSURE THAT THE NEW AND EXISTING BOTTOM OF BASEPLATE ELEVATIONS MATCH, REFER TO DETAIL 2/1. THE NEW TOC ELEVATION SHOWN ON THE FOOTING PLAN SHALL BE 1½" LESS THAN THE EXISTING TOC ELEVATION FOR ANY EXISTING FOOTINGS PER DRAWING 264385, FOR EXAMPLE, IF AN EXISTING MK-OPH2 FOOTING ELEVATION IS 12.2 FT., THEN THE NEW MK-01PH2 TOC ELEVATION SHALL BE 12.2 FT. MINUS 1½" = 12.0542 FT.

FABRICATION NOTES:

F1. CONCRETE f'c = 4500 PSI INSTALLED. (3000 PSI ASSUMED FOR DESIGN)
F2. REINFORCING STEEL fy = 60000 PSI.
F3. REFER TO DRAWING 263940 SHT. 1 FOR REINF. DETAILING AND COVER.
F4. REFER TO DRAWING 263939 SHT. 1 FOR ANCHOR BOLT DETAILS.
F5. FOR OTHER GENERAL REINFORCED CONCRETE CONSIDERATIONS SEE ACI-318 AND BPA CONSTRUCTION SPECIFICATION 03 30 00.
F6. CONSTRUCTION JOINT. PREPARE SURFACE AND APPLY BONDING AGENT AS REQUIRED PER BPA CONSTRUCTION SPECIFICATION 03 30 00 AND MANUFACTURER'S SPECIFICATIONS.
F7. CHAMFER EXPOSED EDGES ¾" PER BPA CONSTRUCTION SPECIFICATION 03 10 00.
F8. INSTALL ON UNDISTURBED SOIL OR COMPACTED GRANULAR BACKFILL AS REQUIRED BY THE GEOTECHNICAL REPORT. SUBBASE TO BE PREPARED BASED ON REQUIREMENTS FROM THE GEOTECHNICAL REPORT.
F9. TORQUE ANCHOR BOLT NUTS PER BPA CONSTRUCTION SPECIFICATION 01 73 10.

264386	1	STD. SUBST. STRUCT. 500KV SUPPORT DETAILS
263940	1	STANDARD HOOK & BEND DIMENSIONS FOR REINFORCING BARS
263939	1	STANDARD HEADED ANCHOR BOLTS
DRAWING NO.	SHEET	TITLE
REFERENCE DRAWINGS		

NO.	R	W.O. 189971	DESCRIPTION	BY	DATE	POC/APPROVED BY
0	R	189971	SUPERSEDES DWG 264385 SHT. 1 REV 3 ON 09/25/2024	BPA/ RJH	09/25/2024	BPA/ ACH / BPA/ ROW / TELD

DESIGNED BY: DSGN: BPA/A.C.HAUPT
DRWN: BPA/R.J.HAMLIN
CHKD: BPA/B.D.WEHRGREN
REVW: BPA/J.M.GRUNKEMEIER
CNCR: BPA/M.D.NELSON

APPROVED BY: TELD
DATE: 09/27/2024

MICHAEL TOOMEY
I am approving this document.
2024-09-25 16:00:05-07'00'

BONNEVILLE POWER ADMINISTRATION
UNITED STATES DEPARTMENT OF ENERGY

STANDARD SUBSTATION FOOTINGS
FOOTING DETAILS
500KV INSULATOR PEDESTALS
(MK-01PL5, 01PM5)

SOURCE	SIZE	SERIAL	SHEET	REVISION
SFS	ANSI D	351952	2	0

NOT APPROVED UNTIL DIGITALLY SIGNED & CERTIFIED ICON APPEARS BELOW TITLE BLOCK