

POLES & TIMBERS

| DRAWING NUMBER | SHT. | DRAWING TITLE | DWG REV. | BOM REV. |
|----------------|-------|---------------------------------------------------------|----------|----------|
| A-38-00 | 1 - 2 | GENERAL INFORMATION | B / A | - |
| A-38-01 | 1 | POLES - STOCK CODE NUMBERS | B | - |
| A-38-02 | 1 - 4 | WOOD POLES BY SPECIES DIMENSIONS & MASS | B/B/0/0 | - |
| A-38-03 | 1 - 2 | POLE STUBBING METHODS | 0 / 0 | - |
| A-38-04 | 1 | POLE STUB SELECTION CHARTS | 0 | - |
| A-38-05 | 1 | EXTERIOR TREATMENT OF POLES | A | - |
| A-38-06 | 1 - 3 | POLE ROCK SETS | C / A | C |
| A-38-07 | 1 - 3 | STEEL STUB | 0 / 0 | 0 |
| A-38-08 | 1 - 3 | SCREW PILE POLE FOUNDATION | B / B | B |
| A-38-09 | 1 - 4 | DOUBLE STEEL STUB SPLICED POLE FOUNDATION REINFORCEMENT | 0/0/0 | A |

SaskPower - DISTRIBUTION STANDARDS

| | | |
|----------------|------------------|-------------------|
| APPROVAL | DESIGN CHK | DRN. DCD |
| L. MOEN | D. DONAIS | CHKD. |
| | | 2018-12-14 |

INDEX

POLES & TIMBERS

POLES

1. THE STANDARD SUPPORT FOR AN OVERHEAD DISTRIBUTION LINE IS A SINGLE WOOD POLE STRUCTURE NORMALLY GUYED FOR DEFLECTIONS AND DEADENDS.
2. WOOD POLES ARE NORMALLY FULL LENGTH TREATED WESTERN RED CEDAR, JACK PINE OR LODGEPOLE PINE PURCHASED ACCORDING TO THE SPC SPECIFICATIONS.
3. TABLES ARE PLACED, AS NEEDED, IN OTHER SECTIONS OF THIS MANUAL FOR SELECTION OF POLE CLASS TO SUIT THE REQUIRED APPLICATION. THESE ARE BASED ON THE STRENGTH OF WESTERN RED CEDAR, SINCE THIS SPECIES HAS THE LEAST STRENGTH FOR A GIVEN CLASS OF THE TYPES PURCHASED.
4. DIMENSIONS FOR POLES GIVEN ON DRAWING A-38-02 ARE MINIMUM VALUES GIVEN BY STANDARDS.

POLE SETTING & BACKFILLING

1. POLE SETTING DEPTHS ARE GIVEN ON DRAWINGS A-38-02 SHEETS 1 & 2. A TOLERANCE OF $\pm 0.1\text{m}$ IS ALLOWABLE.
2. HOLE DIAMETERS SHALL BE AS SMALL AS PRACTICAL AND STILL ALLOW TAMPING FOR THE FULL DEPTH OF THE HOLE. THOROUGHLY TAMP THE BACKFILL IN LAYERS USING A TAMPING ROD, OR A POWER TAMPER IF NECESSARY TO CONSOLIDATE THE BACKFILL. REMOVE ANY WATER IN THE HOLE.
3. BACKFILLING IN WINTER SHOULD NOT BE DONE WITH FROZEN LUMPS OF SOIL. IF LUMPS CANNOT BE BROKEN UP BEFORE BACKFILLING, THEN WELL GRADED CRUSHED ROCK (19-35mm SIZE) BACKFILL SHOULD BE USED. DO NOT BACKFILL WITH SNOW OR ICE.
4. WELL GRADED CRUSHED ROCK (19-35mm SIZE) SHOULD BE USED IN AREAS WITH "POOR" SOIL SUCH AS SOFT OR WET CLAY, SANDY SOILS WITH HIGH WATER TABLE OR ANY AREA WITH A HISTORY OF POLE LEANING OR SETTLING.
5. USE WELL GRADED CRUSHED ROCK (19-35mm SIZE) FOR SETTING STRUCTURES FOR UNGUYED DEFLECTIONS.
6. WHEN CRUSHED ROCK IS USED, IT SHOULD BE A MINIMUM RADIAL THICKNESS OF 100mm AROUND THE POLE. ALSO, IT IS IMPERATIVE THAT THE AREA, FROM GROUND LINE TO 600mm DOWN, IS SOIL TO ALLOW FUTURE TESTING OF POLE AND TO REDUCE POLE DECAY.
7. ON SLOPES OR HILLSIDES THE DEPTH OF THE HOLE SHALL BE MEASURED FROM THE LOWEST SIDE OF THE OPENING.
8. CHECK FOR BURIED FACILITIES BEFORE DRILLING FOR NEW OR RELOCATED POLES OR SETTING ANCHORS.
9. POLES SHOULD BE SET A MINIMUM OF 10m FROM PLANNED OR EXISTING CULVERTS TO ALLOW IMPROVED OPERATION OF MACHINERY IN THE RIGHT OF WAY.

| | | | | |
|-------------------------------------------|----------------------------------|------------|----------------------------|----------------------------|
| SaskPower - DISTRIBUTION STANDARDS | | | | |
| | APPROVAL | DESIGN CHK | DRN. | GENERAL INFORMATION |
| | | | CHKD. | |
| | | | | |
| | DATE OF ISSUE: 2011-04-01 | | DRAWING NO: A-38-00 | SHEET 1 of 2 |
| | | | | REV. B |

CROSSARMS

1. TANGENT CROSSARMS ARE NORMAL 4" x 5" x 10' (CODE 1 29 10) LAMINATED FIR. ACTUAL DIMENSIONS OF THE FIR ARM ARE SLIGHTLY LARGER THAN THE LAMINATED ARM.
2. DEADEND CROSSARM ARMS ARE NOMINAL 6" x 6" x 9' (CODE 1 29 39) LAMINATED FIR. ACTUAL DIMENSIONS OF THE FIR ARM ARE SLIGHTLY LARGER THAN THE LAMINATED ARM.

MISCELLANEOUS WOOD PRODUCTS

ALL WOOD PRODUCTS USED IN CONTACT WITH THE EARTH MUST BE TREATED WITH AN APPROVED PRESERVATIVE. IF THE TIMBERS THAT ARE NOT STOCK CODED ARE PLANNED ON BEING USED, FIRST PROVIDE DISTRIBUTION ENGINEERING WITH INFORMATION ON THE PRESERVATIVE TO DETERMINE ITS SUITABILITY.

SaskPower - DISTRIBUTION STANDARDS

| | | | |
|----------|------------|-------|----------------------------|
| APPROVAL | DESIGN CHK | DRN. | GENERAL INFORMATION |
| | | CHKD. | |
| | | | |

DATE OF ISSUE: **2011-04-01**

DRAWING NO: **A-38-00**

SHEET 2 of 2

REV. **A**

| LENGTH m (ft) | CLASS | | | | |
|---------------|---------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 |
| 10.7 (35) | N/A | N/A | N/A | N/A | 1 62 05 |
| 12.2 (40) | 1 63 01 | 1 63 02 | 1 63 03 | 1 63 04 | 1 63 05 |
| 13.7 (45) | 1 64 01 | 1 64 02 | 1 64 03 | 1 64 04 | 1 64 05 |
| 15.2 (50) | 1 65 01 | 1 65 02 | 1 65 03 | 1 65 04 | N/A |
| 16.8 (55) | 1 66 01 | 1 66 02 | 1 66 03 | 1 66 04 | N/A |
| 18.3 (60) | 1 67 01 | 1 67 02 | 1 67 03 | 1 67 04 | N/A |

| | | | | |
|-------------------------------------------|---------------------|----------------------------|----------------------------|---------------|
| SaskPower - DISTRIBUTION STANDARDS | | | | |
| APPROVAL | DESIGN CHK | DRN. JDA | POLES – STOCK CODE NUMBERS | |
| L. MOEN | J. ARSENAULT | CHKD. | | |
| | | 2018-11-15 | | |
| DATE OF ISSUE: GEJ/EF/EG | | DRAWING NO: A-38-01 | SHEET 1 of 1 | REV. B |

| POLE LENGTH m (ft) | POLE CLASS | SETTING DEPTH m | MINIMUM DIAMETER – mm | | | CHANGE OF DIAMETER mm/m OF POLE Ht | POLE MASS kg |
|-----------------------|------------|--------------------|-----------------------|-------------|-----------|---------------------------------------|-----------------|
| | | | POLE TOP | GROUND LINE | POLE BUTT | | |
| 9.1 (30) | 5 | 1.6 | 154 | 244 | 264 | 12.1 | 200 |
| 9.1 (30) | 4 | 1.6 | 170 | 270 | 292 | 13.4 | 245 |
| 9.1 (30) | 3 | 1.6 | 186 | 286 | 308 | 13.4 | 293 |
| 10.7 (35) | 5 | 1.8 | 154 | 263 | 285 | 12.2 | 259 |
| 10.7 (35) | 4 | 1.8 | 170 | 286 | 312 | 13.3 | 299 |
| 10.7 (35) | 3 | 1.8 | 186 | 307 | 332 | 13.6 | 340 |
| 10.7 (35) | 2 | 1.8 | 202 | 331 | 358 | 14.6 | 399 |
| 10.7 (35) | 1 | 1.8 | 218 | 352 | 379 | 15.0 | 479 |
| 12.2 (40) | 5 | 1.8 | 154 | 279 | 300 | 12.0 | 320 |
| 12.2 (40) | 4 | 1.8 | 170 | 304 | 328 | 13.0 | 358 |
| 12.2 (40) | 3 | 1.8 | 186 | 328 | 353 | 13.7 | 440 |
| 12.2 (40) | 2 | 1.8 | 202 | 352 | 378 | 14.4 | 519 |
| 12.2 (40) | 1 | 1.8 | 218 | 372 | 400 | 14.9 | 599 |
| 13.7 (45) | 5 | 2.0 | 154 | 293 | 316 | 11.8 | 399 |
| 13.7 (45) | 4 | 2.0 | 170 | 318 | 343 | 12.6 | 458 |
| 13.7 (45) | 3 | 2.0 | 186 | 342 | 369 | 13.3 | 519 |
| 13.7 (45) | 2 | 2.0 | 202 | 366 | 394 | 14.0 | 619 |
| 13.7 (45) | 1 | 2.0 | 218 | 390 | 419 | 14.7 | 719 |
| 15.2 (50) | 5 | 2.1 | 154 | 305 | 328 | 11.4 | 519 |
| 15.2 (50) | 4 | 2.1 | 170 | 329 | 354 | 12.1 | 558 |
| 15.2 (50) | 3 | 2.1 | 186 | 358 | 384 | 13.0 | 619 |
| 15.2 (50) | 2 | 2.1 | 202 | 380 | 407 | 13.5 | 719 |
| 15.2 (50) | 1 | 2.1 | 218 | 406 | 434 | 14.2 | 798 |
| 16.8 (55) | 5 | 2.3 | 154 | 315 | 341 | 11.1 | 577 |
| 16.8 (55) | 4 | 2.3 | 170 | 339 | 366 | 11.7 | 640 |
| 16.8 (55) | 3 | 2.3 | 186 | 368 | 396 | 12.5 | 698 |
| 16.8 (55) | 2 | 2.3 | 202 | 395 | 425 | 13.3 | 798 |
| 16.8 (55) | 1 | 2.3 | 218 | 419 | 450 | 13.8 | 918 |
| 18.3 (60) | 4 | 2.4 | 170 | 348 | 377 | 11.3 | 758 |
| 18.3 (60) | 3 | 2.4 | 186 | 376 | 406 | 12.0 | 798 |
| 18.3 (60) | 2 | 2.4 | 202 | 404 | 435 | 12.7 | 878 |
| 18.3 (60) | 1 | 2.4 | 218 | 433 | 466 | 13.6 | 1039 |

EXAMPLE: CALCULATION OF THE MINIMUM DIAMETER 1.1m BELOW POLE TOP FOR 9.1m/5 POLE.
 $D = 154(\text{mm}) + 1.1(\text{m}) \times 12.1(\text{mm/m}) = 167.3(\text{mm})$

SaskPower – DISTRIBUTION STANDARDS

| | | | | |
|--------------------|----------------------|---------------------|----------------------------------------------|--------|
| APPROVAL L.MOEN | DESIGN CHK. Q.SUN | DRN. QS CHKD. | WESTERN RED CEDAR POLES DIMENSIONS & MASS | |
| | | 2018-03-13 | | |
| DATE OF ISSUE | 2018-06-07 | DRAWING NO. A-38-02 | SHEET 1 of 4 | REV. B |

| POLE LENGTH m (ft) | POLE CLASS | SETTING DEPTH m | MINIMUM DIAMETER – mm | | | CHANGE OF DIAMETER mm/m OF POLE Ht | POLE MASS kg |
|-----------------------|------------|--------------------|-----------------------|-------------|-----------|---------------------------------------|-----------------|
| | | | POLE TOP | GROUND LINE | POLE BUTT | | |
| 9.1 (30) | 5 | 1.6 | 154 | 241 | 260 | 11.6 | 225 |
| 9.1 (30) | 4 | 1.6 | 170 | 261 | 281 | 12.2 | 272 |
| 9.1 (30) | 3 | 1.6 | 186 | 277 | 297 | 12.2 | 309 |
| 10.7 (35) | 5 | 1.8 | 154 | 255 | 275 | 11.3 | 299 |
| 10.7 (35) | 4 | 1.8 | 170 | 275 | 296 | 11.8 | 352 |
| 10.7 (35) | 3 | 1.8 | 186 | 295 | 317 | 12.2 | 406 |
| 10.7 (35) | 2 | 1.8 | 202 | 315 | 338 | 12.7 | 472 |
| 10.7 (35) | 1 | 1.8 | 218 | 340 | 365 | 13.7 | 537 |
| 12.2 (40) | 5 | 1.8 | 154 | 267 | 287 | 10.9 | 372 |
| 12.2 (40) | 4 | 1.8 | 170 | 291 | 319 | 11.6 | 426 |
| 12.2 (40) | 3 | 1.8 | 186 | 311 | 332 | 12.0 | 494 |
| 12.2 (40) | 2 | 1.8 | 202 | 336 | 359 | 12.9 | 572 |
| 12.2 (40) | 1 | 1.8 | 218 | 356 | 380 | 13.3 | 644 |
| 13.7 (45) | 5 | 2.0 | 154 | 280 | 302 | 10.8 | 441 |
| 13.7 (45) | 4 | 2.0 | 170 | 301 | 323 | 11.2 | 508 |
| 13.7 (45) | 3 | 2.0 | 186 | 324 | 348 | 11.8 | 581 |
| 13.7 (45) | 2 | 2.0 | 202 | 350 | 375 | 12.6 | 671 |
| 13.7 (45) | 1 | 2.0 | 218 | 369 | 395 | 12.9 | 780 |
| 15.2 (50) | 5 | 2.1 | 154 | 292 | 314 | 10.5 | 538 |
| 15.2 (50) | 4 | 2.1 | 170 | 311 | 334 | 10.8 | 590 |
| 15.2 (50) | 3 | 2.1 | 186 | 337 | 361 | 11.5 | 676 |
| 15.2 (50) | 2 | 2.1 | 202 | 361 | 386 | 12.1 | 771 |
| 15.2 (50) | 1 | 2.1 | 218 | 384 | 411 | 12.7 | 907 |
| 16.8 (55) | 5 | 2.3 | 154 | 297 | 320 | 9.9 | 599 |
| 16.8 (55) | 4 | 2.3 | 170 | 322 | 346 | 10.5 | 676 |
| 16.8 (55) | 3 | 2.3 | 186 | 346 | 372 | 11.1 | 771 |
| 16.8 (55) | 2 | 2.3 | 202 | 375 | 402 | 11.9 | 898 |
| 16.8 (55) | 1 | 2.3 | 218 | 397 | 426 | 12.4 | 1043 |
| 18.3 (60) | 4 | 2.4 | 170 | 333 | 358 | 10.3 | 762 |
| 18.3 (60) | 3 | 2.4 | 186 | 358 | 384 | 10.8 | 880 |
| 18.3 (60) | 2 | 2.4 | 202 | 384 | 412 | 11.5 | 1034 |
| 18.3 (60) | 1 | 2.4 | 218 | 409 | 438 | 12.0 | 1211 |

MINIMUM DIAMETER AT GROUND LINE AND POLE BUTT FOR LODGEPOLE PINE POLES ARE SMALLER THAN SHOWN IN THE TABLE BY 5mm FOR THE FOLLOWING POLES: 9.1m CLASS 4,5; 10.7m CLASS 1,2,3,4,5; 12.2m CLASS 2,3,4; 13.7m CLASS 2,3,4,5; 15.2m CLASS 5; 16.8m CLASS 1,2; 18.3m CLASS 2,5.

| | | | | |
|-------------------------------------------|----------------------|---------------------|--------------------------------------------------|--------|
| SaskPower – DISTRIBUTION STANDARDS | | | | |
| APPROVAL L.MOEN | DESIGN CHK. Q.SUN | DRN. QS CHKD. | JACK & LODGEPOLE PINE POLES DIMENSIONS & MASS | |
| | | 2018-03-13 | | |
| DATE OF ISSUE | 2018-06-07 | DRAWING NO. A-38-02 | SHEET 2 of 4 | REV. B |

| POLE LENGTH m (ft) | POLE CLASS | SETTING DEPTH m | MINIMUM DIAMETER – mm | | | CHANGE OF DIAMETER mm/m OF POLE Ht | POLE MASS kg |
|-----------------------|------------|--------------------|-----------------------|-------------|-----------|---------------------------------------|-----------------|
| | | | POLE TOP | GROUND LINE | POLE BUTT | | |
| 9.1 (30) | 5 | 1.7 | 153 | 321 | 359 | 11.3 | 269 |
| 9.1 (30) | 4 | 1.7 | 169 | 343 | 383 | 11.8 | 311 |
| 9.1 (30) | 3 | 1.7 | 185 | 372 | 415 | 12.6 | 367 |
| 10.7 (35) | 5 | 1.8 | 153 | 350 | 390 | 11.1 | 358 |
| 10.7 (35) | 4 | 1.8 | 169 | 372 | 414 | 11.4 | 411 |
| 10.7 (35) | 3 | 1.8 | 185 | 401 | 445 | 12.2 | 479 |
| 10.7 (35) | 2 | 1.8 | 204 | 420 | 464 | 12.2 | 536 |
| 10.7 (35) | 1 | 1.8 | 220 | 455 | 503 | 13.2 | 627 |
| 12.2 (40) | 5 | 1.8 | 153 | 382 | 422 | 11 | 462 |
| 12.2 (40) | 4 | 1.8 | 169 | 404 | 445 | 11.3 | 524 |
| 12.2 (40) | 3 | 1.8 | 185 | 433 | 476 | 11.9 | 606 |
| 12.2 (40) | 2 | 1.8 | 204 | 458 | 502 | 12.2 | 689 |
| 12.2 (40) | 1 | 1.8 | 220 | 493 | 541 | 13.2 | 799 |
| 13.7 (45) | 5 | 2.0 | 153 | 403 | 446 | 10.7 | 567 |
| 13.7 (45) | 4 | 2.0 | 169 | 425 | 469 | 11 | 640 |
| 13.7 (45) | 3 | 2.0 | 185 | 460 | 507 | 11.8 | 751 |
| 13.7 (45) | 2 | 2.0 | 204 | 485 | 534 | 12 | 849 |
| 13.7 (45) | 1 | 2.0 | 220 | 520 | 571 | 12.8 | 977 |
| 15.2 (50) | 5 | 2.1 | 153 | 427 | 471 | 10.5 | 686 |
| 15.2 (50) | 4 | 2.1 | 169 | 455 | 501 | 10.9 | 788 |
| 15.2 (50) | 3 | 2.1 | 185 | 490 | 538 | 11.6 | 917 |
| 15.2 (50) | 2 | 2.1 | 204 | 521 | 572 | 12.1 | 1051 |
| 15.2 (50) | 1 | 2.1 | 220 | 549 | 602 | 12.6 | 1177 |
| 16.8 (55) | 5 | 2.3 | 153 | 424 | 467 | 9.3 | 748 |
| 16.8 (55) | 4 | 2.3 | 169 | 476 | 525 | 10.6 | 941 |
| 16.8 (55) | 3 | 2.3 | 185 | 511 | 563 | 11.2 | 1088 |
| 16.8 (55) | 2 | 2.3 | 204 | 536 | 589 | 11.5 | 1216 |
| 16.8 (55) | 1 | 2.3 | 220 | 570 | 626 | 12.1 | 1383 |
| 18.3 (60) | 4 | 2.4 | 169 | 500 | 550 | 10.4 | 1105 |
| 18.3 (60) | 3 | 2.4 | 185 | 534 | 587 | 11 | 1270 |
| 18.3 (60) | 2 | 2.4 | 204 | 560 | 613 | 11.2 | 1415 |
| 18.3 (60) | 1 | 2.4 | 220 | 600 | 657 | 12 | 1629 |

EXAMPLE: CALCULATION OF THE MINIMUM DIAMETER 1.1m BELOW POLE TOP FOR 9.1m/5 POLE.
 $D = 154(\text{mm}) + 1.1(\text{m}) \times 12.1(\text{mm/m}) = 167.3(\text{mm})$

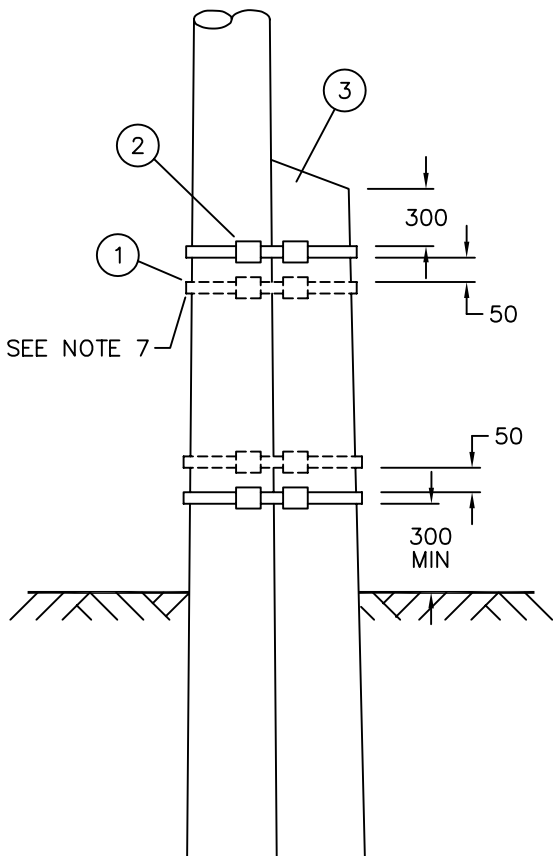
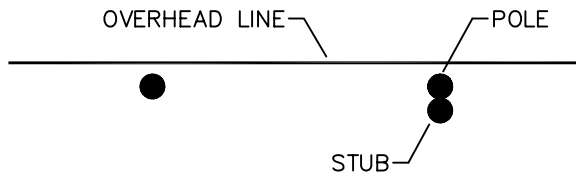
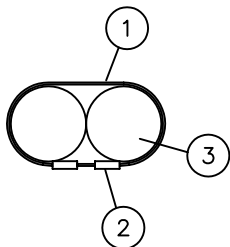
SaskPower – DISTRIBUTION STANDARDS

| | | | |
|--------------------|----------------------|---------------------|------------------------------------------|
| APPROVAL L.MOEN | DESIGN CHK. Q.SUN | DRN. QS CHKD. | RED PINE WOOD POLES DIMENSIONS & MASS |
| | | 2018-03-13 | |
| DATE OF ISSUE | 2018-06-07 | DRAWING NO. A-38-02 | SHEET 3 of 4 |
| | | | REV. - |

| POLE LENGTH m (ft) | POLE CLASS | SETTING DEPTH m | MINIMUM DIAMETER – mm | | | CHANGE OF DIAMETER mm/m OF POLE Ht | POLE MASS kg |
|-----------------------|------------|--------------------|-----------------------|-------------|-----------|---------------------------------------|-----------------|
| | | | POLE TOP | GROUND LINE | POLE BUTT | | |
| 9.1 (30) | 5 | 1.6 | | | | | |
| 9.1 (30) | 4 | 1.6 | | | | | |
| 9.1 (30) | 3 | 1.6 | | | | | |
| 10.7 (35) | 5 | 1.8 | | | | | |
| 10.7 (35) | 4 | 1.8 | | | | | |
| 10.7 (35) | 3 | 1.8 | | | | | |
| 10.7 (35) | 2 | 1.8 | | | | | |
| 10.7 (35) | 1 | 1.8 | | | | | |
| 12.2 (40) | 5 | 1.8 | | | | | |
| 12.2 (40) | 4 | 1.8 | | | | | |
| 12.2 (40) | 3 | 1.8 | | | | | |
| 12.2 (40) | 2 | 1.8 | | | | | |
| 12.2 (40) | 1 | 1.8 | | | | | |
| 13.7 (45) | 5 | 2.0 | | | | | |
| 13.7 (45) | 4 | 2.0 | | | | | |
| 13.7 (45) | 3 | 2.0 | | | | | |
| 13.7 (45) | 2 | 2.0 | | | | | |
| 13.7 (45) | 1 | 2.0 | | | | | |
| 15.2 (50) | 5 | 2.1 | | | | | |
| 15.2 (50) | 4 | 2.1 | | | | | |
| 15.2 (50) | 3 | 2.1 | | | | | |
| 15.2 (50) | 2 | 2.1 | | | | | |
| 15.2 (50) | 1 | 2.1 | | | | | |
| 16.8 (55) | 5 | 2.3 | | | | | |
| 16.8 (55) | 4 | 2.3 | | | | | |
| 16.8 (55) | 3 | 2.3 | | | | | |
| 16.8 (55) | 2 | 2.3 | | | | | |
| 16.8 (55) | 1 | 2.3 | | | | | |
| 18.3 (60) | 4 | 2.4 | | | | | |
| 18.3 (60) | 3 | 2.4 | | | | | |
| 18.3 (60) | 2 | 2.4 | | | | | |
| 18.3 (60) | 1 | 2.4 | | | | | |

EXAMPLE: CALCULATION OF THE MINIMUM DIAMETER 1.1m BELOW POLE TOP FOR 9.1m/5 POLE.
 $D = 154(\text{mm}) + 1.1(\text{m}) \times 12.1(\text{mm/m}) = 167.3(\text{mm})$

| | | | | |
|-------------------------------------------|----------------------|---------------------|--------------------|--------|
| SaskPower – DISTRIBUTION STANDARDS | | | | |
| APPROVAL L.MOEN | DESIGN CHK. Q.SUN | DRN. QS CHKD. | FUTURE WOOD SPECIE | |
| | | 2018-03-13 | | |
| DATE OF ISSUE | 2018-06-07 | DRAWING NO. A-38-02 | SHEET 4 of 4 | REV. – |



| NO. | QUANTITY | | CODE NO. | DESCRIPTION |
|-------------------------------------------------------|----------|---|----------|-------------------------------------------|
| | A | B | | |
| 1 | 2 | 4 | 1-03-25 | STRAPPING GALVANIZED 2" x .05" x 7'-0" |
| 2 | 4 | 8 | 1-79-00 | SEALS CRIMP DOUBLE |
| 3 | 1 | 1 | 1-8X-XX | STUB POLE(SEE NOTE 1) |
| A - FOR TANGENT STRUCTURE B - FOR CORNER STRUCTURE | | | | |

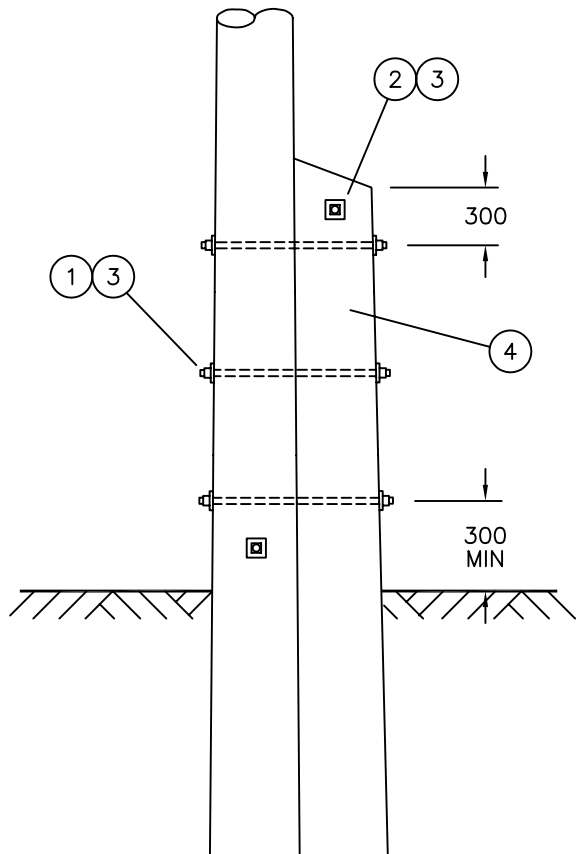
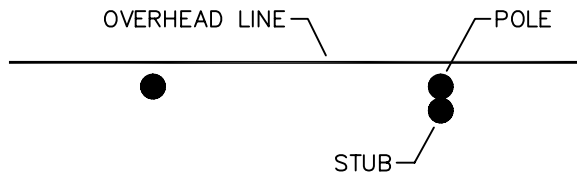
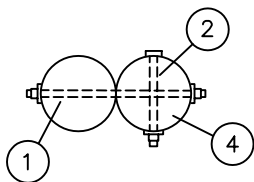
NOTE:

1. SEE DRAWING A-38-04 FOR STUB SIZES.
2. STUBS SHALL BE POSITIONED ACROSS LINE.
3. ON TWO POLE STRUCTURES PUT STUBS ON THE OUTSIDE.
4. BOTTOM BAND MUST BE ABOVE ROTTED PORTION.
5. SEAL HAS TO COVER END OF BANDS.
6. SET SAME DEPTH LENGTH OF STUB AS FOR ORIGINAL POLE.
7. TWO SETS OF BANDS TO BE USED AT CORNER STRUCTURE.
8. THE FOLLOWING POLES ARE NOT TO BE STUBBED:
 TRANSFORMER, OCR, FUSE, TAP-OFF, SWITCHES, DISCONNECTS,
 RAILROAD OR PIPELINE CROSSINGS AND DEADENDS.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SASKATCHEWAN POWER CORP. - DISTRIBUTION ENGINEERING STANDARDS

| | | | | |
|------------------------|---------------------|-------------|--------------|----------------------------------|
| DRN. <i>B</i> | DESIGN CHK. | SAFETY APP. | APPROVAL | POLE STUBBING - PREFERRED METHOD |
| CHKD. <i>FTK</i> | DATE | DATE | DATE | |
| DATE 86-11-24 | DATE | DATE | DATE | |
| DATE OF ISSUE 87-02-01 | DRAWING NO. A-38-03 | | SHEET 1 OF 2 | REV. 0 |



| NO. | QUAN. | CODE NO. | DESCRIPTION |
|-----|-------|----------|----------------------------------|
| 1 | 3 | 1-09-2X | BOLT D.A. 5/8" (LENGTH AS REQ'D) |
| 2 | 2 | 1-13-14 | BOLT MACHINE 5/8" x 14" |
| 3 | 10 | 1-93-42 | WASHER 2 1/4" x 2 1/4" |
| 4 | 1 | 1-8X-XX | STUB POLE (SEE NOTE 1) |

NOTE:

1. SEE DRAWING A-38-04 FOR STUB SIZES.
2. USE ON TANGENT STRUCTURES ONLY.
3. STUBS SHALL BE POSITIONED ACROSS LINE.
4. ON TWO POLE STRUCTURES PUT STUBS ON THE OUTSIDE.
5. BOTTOM BOLT MUST BE ABOVE ROTTED PORTION.
6. SET SAME DEPTH LENGTH OF STUB AS FOR ORIGINAL POLE.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SASKATCHEWAN POWER CORP. - DISTRIBUTION ENGINEERING STANDARDS

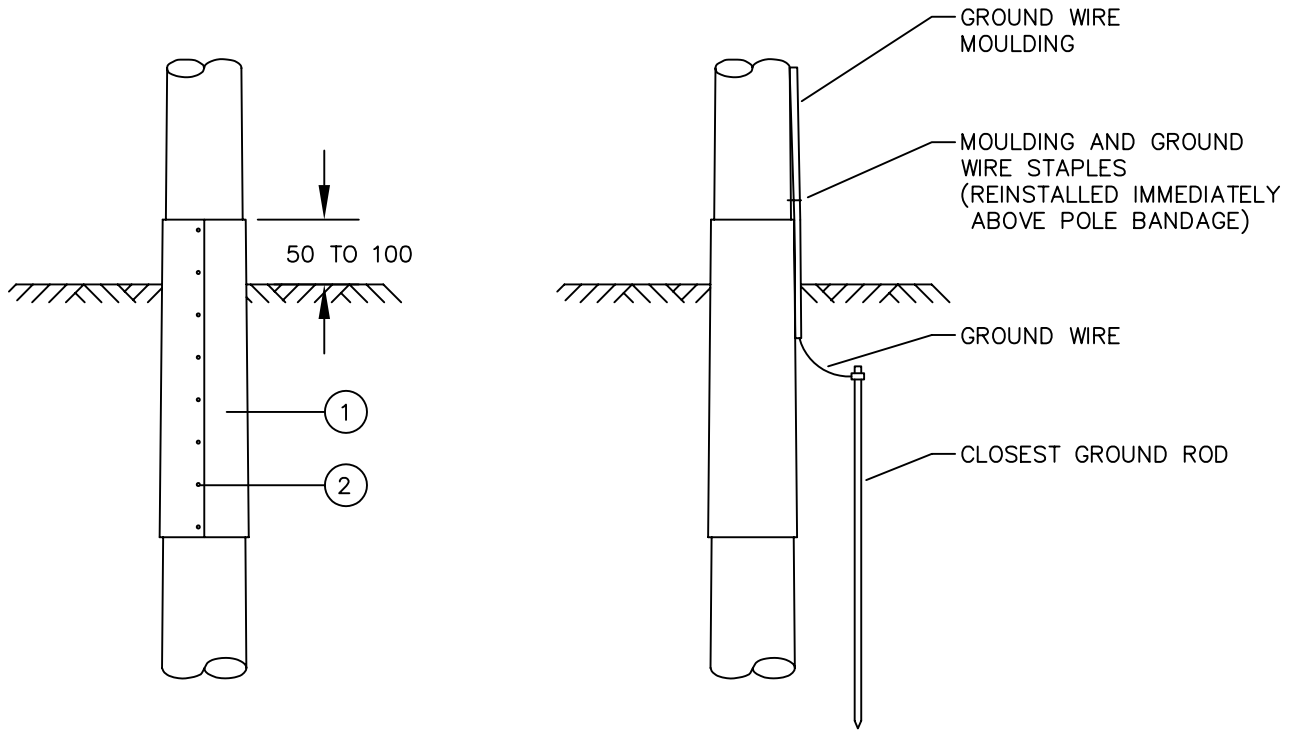
| | | | | |
|------------------------|---------------------|-------------|--------------|----------------------------------|
| DRN. <i>B</i> | DESIGN CHK. | SAFETY APP. | APPROVAL | POLE STUBBING - EMERGENCY METHOD |
| CHKD. <i>FTK</i> | DATE | DATE | DATE | |
| DATE 86-11-25 | DATE | DATE | DATE | |
| DATE OF ISSUE 87-02-01 | DRAWING NO. A-38-03 | | SHEET 2 OF 2 | REV. 0 |

STUB SIZING CHART

| POLE | POLE LENGTH (m) | | | | | | |
|---------|-----------------|---------|---------|---------|---------|---------|---------|
| | 9.1 | 10.7 | 12.2 | 13.7 | 15.2 | 16.8 | 18.3 |
| CLASS 1 | | | | 1-89-13 | 1-89-13 | 1-89-15 | 1-89-19 |
| 2 | | | | 1-89-13 | 1-89-13 | 1-89-15 | 1-89-19 |
| 3 | | | 1-88-11 | 1-88-13 | 1-88-13 | 1-88-15 | 1-88-19 |
| 4 | | 1-88-11 | 1-88-11 | 1-88-13 | 1-88-13 | | |
| 5 | | 1-87-11 | 1-87-11 | 1-88-13 | | | |
| 6 | 1-87-11 | 1-87-11 | | | | | |

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

| | | | | |
|------------------------|-------------|-------------|---------------------|----------------------------|
| DRN. <i>B</i> | DESIGN CHK. | SAFETY APP. | APPROVAL | POLE STUB SELECTION CHARTS |
| CHKD. <i>FTK</i> | | | | |
| DATE 86-11-24 | DATE | DATE | DATE | |
| DATE OF ISSUE 87-02-01 | | | DRAWING NO. A-38-04 | SHEET 1 OF 1 |
| | | | | REV. 0 |



| ITEM | CODE NO. | QTY. | DESCRIPTION | POLE CLASS/LENGTH |
|------|------------------|---------------|---------------------|---------------------|
| 1 | 10 137 030 | 1 EA/POLE | POLE WRAP-30" | 6/30', 5/30' |
| 1 | 10 137 036 | 1 EA/POLE | POLE WRAP-36" | 5/35', 5/40', 5/45' |
| 1 | 10 137 042 | 1 EA/POLE | POLE WRAP-42" | 4/40', 4/45' |
| 1 | 10 137 100 | 0.1 ROLL/POLE | POLE WRAP-50' | ALL |
| 2 | PURCHASE LOCALLY | 8 EA/POLE | ROOFING NAIL-1 1/2" | ALL |

NOTE:

1. ALL RE-USABLE SALVAGED POLES SHALL BE TREATED.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS

| | | | | |
|---------------|---------------------|--------------|--------------------------------|--|
| DRN. A. JUTLA | DESIGN CHK. | APPROVAL | EXTERIOR TREATMENT OF POLES | |
| CHKD. | | | | |
| DATE 97-07-14 | DATE | DATE | | |
| DATE OF ISSUE | DRAWING NO. A-38-05 | SHEET 1 OF 1 | REV. A | |

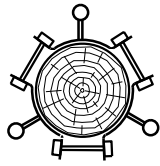
BILL OF MATERIAL

| ITEM NO. | CODE NO. | QUANTITY | DESCRIPTION |
|----------|-----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | 1 01 28 | 4 | ROCK ANCHOR – VERTICAL |
| 2 | 1 01 29 | 1/2 KIT | GROUT – 2 COMPONENT (W/SUB ZERO) |
| 3 | 5 640 002 | 0 | TRI ANCHOR ROCK SET SIGNS (SEE NOTE 4) |
| | | | <p>NOTES:</p> <p>1. THIS BOM CONTAINS MATERIAL FOR THE TYPICAL 4 ANCHOR INSTALLATION.</p> <p>2. ADD 1 ANCHOR AND 1/10 KIT OF GROUT FOR THE 5 ANCHOR INSTALLATION AND REMOVE THOSE SAME QUANTITIES FOR THE 3 ANCHOR INSTALLATION.</p> <p>3. DOES NOT INCLUDE POLE.</p> <p>4. USE THE TRI ANCHOR ROCK SET SIGNS WHEN THE ROCK SET IS BELOW GRADE.</p> |

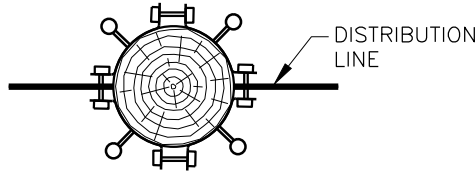
SaskPower - DISTRIBUTION STANDARDS

| | | | |
|----------------------------|-------------------------------|--------------------------|-----------------------|
| APPROVAL L. MOEN | DESIGN CHK A. UHREN | DRN. ARU CHKD. | POLE ROCK SETS |
| | | 2016-09-19 | |
| DATE OF ISSUE: 2016/11/08 | DRAWING NO: A-38-06 | SHEET 1 OF 3 | REV. C |

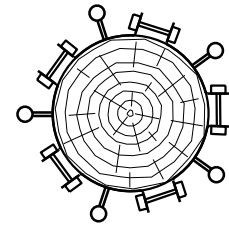
VERTICAL (SPA-2V) POLE ROCK SET



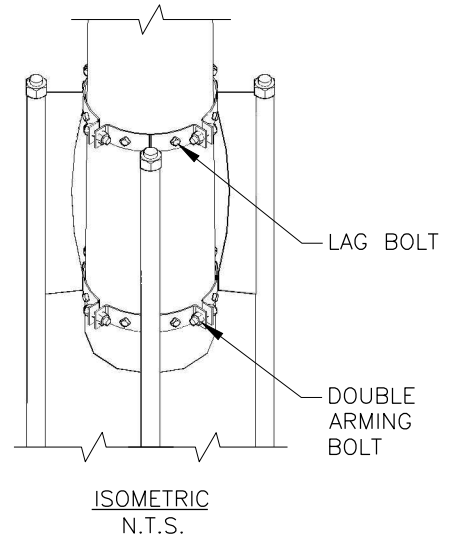
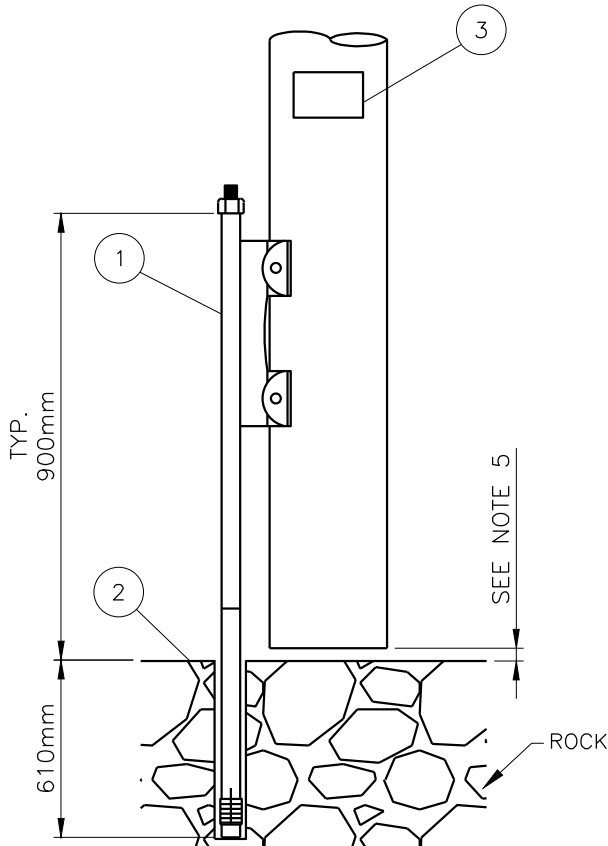
3 ANCHOR CONFIGURATION



4 ANCHOR CONFIGURATION



5 ANCHOR CONFIGURATION



INSTALLATION CONSIDERATIONS

1. USE APPROPRIATE TEMPLATE FOR DRILLING OF HOLES. THE TEMPLATE STOCK CODES ARE:
 DISTRIBUTION: 3 ANCHOR TEMPLATE - 1-01-21
 4 ANCHOR TEMPLATE - 1-01-22
 5 ANCHOR TEMPLATE - 1-01-23
2. EACH ANCHOR LEG INCLUDES 4 LAG BOLTS AND 2 DOUBLE ARMING BOLTS.
3. AFTER ANCHOR IS INSTALLED, HOLE IN ROCK TO BE SEALED WITH GROUT TO PREVENT WATER INGRESS. TWO COMPONENT GROUT PACKAGE (1-01-29) INCLUDES SUB-ZERO COMPONENT FOR INSTALLATION AT TEMPERATURES BELOW -10°C. GROUT IS NECESSARY TO PREVENT ICE DAMAGE.
4. FOLLOW RECOMMENDATIONS OF ANCHOR AND GROUT MANUFACTURERS DURING INSTALLATION.
5. MAX ALLOWABLE GAP AT ANY POINT BETWEEN POLE BASE AND ROCK FACE IS 76mm. THE POLE MUST REST ON THE ROCK AT SOME POINT. IF FOR SOME REASON THIS CANNOT BE ACHIEVED, SOME POINT OF THE POLE BASE MUST BE WITHIN AT LEAST 19mm OF THE ROCK FACE.

| | | | | |
|-------------------------------------------|-------------|---------------------|----------------|--------|
| SaskPower – DISTRIBUTION STANDARDS | | | | |
| APPROVAL | DESIGN CHK. | DRN. Y.HAO | POLE ROCK SETS | |
| L.MOEN | A.UHREN | CHKD. | | |
| | | 2016-08-30 | | |
| DATE OF ISSUE | 2016/11/08 | DRAWING NO. A-38-06 | SHEET 2 of 3 | REV. C |

CONVERSION TABLE OF ROCK SET POLES AND DIRECT BURIAL POLES

| ROCK SET POLES (SPA-2V) AND DIRECT BURIAL POLES CONVERSION TABLE | | | | | |
|-------------------------------------------------------------------------|--------------------------------------------|---------------------------------|---------------------|------------------------|---------------------|
| DIRECT BURIAL POLES | | ROCK SETS POLES (SPA-2V) | | | |
| | | SAME LENGTH (UNCUT POLE) | | TOP CUT BACK 5' | |
| (CLASS/ LENGTH) | REQUIRED MIN POLE BUTT CIRCUMFERENCE | (CLASS/ LENGTH) | # OF ROCK ANCHOR | (CLASS/ LENGTH) | # OF ROCK ANCHOR |
| ft (meter) | in (meter) | ft (meter) | # | ft (meter) | # |
| 1/35 (10.7) | 44.5 (1.13) | N/A | N/A | 1/35 (10.7) | 4/5 |
| 2/35 (10.7) | 41.6 (1.06) | 1/30 (9.1) | 4 | 1/35 (10.7) | 4 |
| 3/35 (10.7) | 38.8 (0.99) | 2/30 (9.1) | 4 | 2/35 (10.7) | 4 |
| 4/35 (10.7) | 36.1 (0.92) | 3/30 (9.1) | 3/4 | 4/35 (10.7) | 3/4 |
| 5/35 (10.7) | 33.3 (0.85) | 4/30 (9.1) | 3/4 | 5/35 (10.7) | 3/4 |
| 1/40 (12.2) | 47.0 (1.19) | H2/35 (10.7)* | 4/5 | H1/40 (12.2) | 4/5 |
| 2/40 (12.2) | 44.1 (1.12) | 1/35 (10.7) | 4/5 | 1/40 (12.2) | 4/5 |
| 3/40 (12.2) | 41.1 (1.04) | 2/35 (10.7) | 4 | 2/40 (12.2) | 4 |
| 4/40 (12.2) | 38.2 (0.97) | 3/35 (10.7) | 4 | 3/40 (12.2) | 4 |
| 5/40 (12.2) | 35.3 (0.90) | 4/35 (10.7) | 3/4 | 5/40 (12.2) | 3/4 |
| 1/45 (13.7) | 49.2 (1.25) | H1/40 (12.2) | 5 | 1/45 (13.7) | 5 |
| 2/45 (13.7) | 46.0 (1.17) | 1/40 (12.2) | 4/5 | 1/45 (13.7) | 4/5 |
| 3/45 (13.7) | 42.9 (1.09) | 2/40 (12.2) | 4/5 | 2/45 (13.7) | 4/5 |
| 4/45 (13.7) | 39.9 (1.01) | 3/40 (12.2) | 4 | 3/45 (13.7) | 4 |
| 5/45 (13.7) | 36.9 (0.94) | 4/40 (12.20) | 4 | 5/45 (13.7) | 4 |
| 1/50 (15.2) | 51.1 (1.30) | H1/45 (13.7) | 5 | 1/50 (15.2) | 5 |
| 2/50 (15.2) | 47.9 (1.22) | 1/45 (13.7) | 5 | 2/50 (15.2) | 4/5 |
| 3/50 (15.2) | 44.6 (1.13) | 2/45 (13.7) | 4/5 | 3/50 (15.2) | 4/5 |
| 4/50 (15.2) | 41.4 (1.05) | 3/45 (13.7) | 4/5 | 4/50 (15.2) | 4 |
| 5/50 (15.2) | 38.3 (0.98) | 5/45 (13.7) | 4 | 5/45 (13.7) | 4 |

NOTES: TO MATCH STRENGTH OF CLASS 1/40 ft (12.2 m) DIRECT BURIED POLES, WESTERN RED CEDAR POLES IN H1/35 ft (10.7 m) ARE SUFFICIENT, OTHER SPECIES REQUIRE H2/35 ft (10.7 m).

SaskPower - DISTRIBUTION STANDARDS

| | | | |
|-----------------------------|-------------------------------|----------------------------------------------|-------------------------------------|
| APPROVAL M. ERETH | DESIGN CHK X. ZHANG | DRN. XZ CHKD. 2015-02-03 | POLE ROCK SETS |
| DATE OF ISSUE: 2015/04/28 | | DRAWING NO: A-38-06 | SHEET 3 of 3 REV. A |

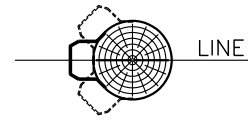
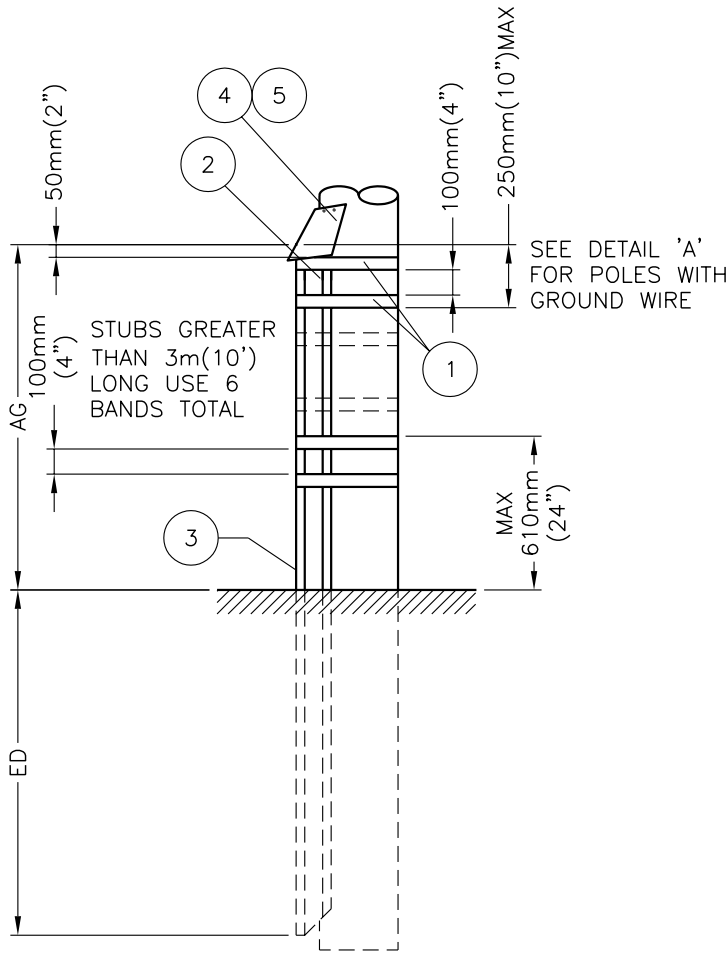
BILL OF MATERIAL

| ITEM NO. | CODE NO. | QUANTITY | DESCRIPTION |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|--------------------------------------------------------------------|
| 1 | 1 03 25 | 2 KG | STRAPPING - GALV 2" X .05" (45 KG/ROLL) |
| 2 | 1 79 00 | -- | CRIMP SEAL - GALV FOR 2" STRAPPING 3" LONG |
| 2 | 1 79 02 | 4 | CRIMP SEAL - GALV FOR 2" STRAPPING 4 1/2" LONG |
| 3 | 1 89 30 | 1 | POLE STUB - STEEL 5/30-35', 6/30-45' (CPE-47-10) |
| 3 | 1 89 40 | 1 | POLE STUB - STEEL 3/35', 4/35-45', 5/40-50' (CPE-75-10) |
| 3 | 1 89 50 | 1 | POLE STUB - STEEL 1/35', 2/35-40', 3/40-50', 4/50-60' (CPE-108-11) |
| 4 | 1 89 52 | 1 | POLE STUB SAFETY CAP - FOR 7" TO 10" WIDE STUB |
| 5 | 7 69 62 | 0.04 | SCREWS - WOOD - #10 - 1 1/2" (100/BOX) |
| ITEMS BELOW ARE FOR BONDING STEEL STUB ON POLES WITH A GROUND WIRE | | | |
| 6 | 1 12 02 | 1 | BOLT - MACHINE - 1/2" X 2" - GALVANIZED |
| 7 | 1 93 22 | 1 | WASHER - LOCK 1/2" SPRING TYPE |
| 8 | 1 93 30 | 1 | WASHER - ROUND - 1 3/8" O.D. - 9/16" HOLE |
| 9 | 2 65 94 | 1 | HYLUG - #4 SOL. OR STR. ALUM. & COPPER |
| 10 | 2 83 04 | 1 m | WIRE - COPPER-#4/7 STR - BARE |
| 11 | 5 12 06 | 1 | CONNECTOR - CRIMPIT CU (4C4) |
| <p>NOTES</p> <p>1. SEE SHEET 3 FOR STUB SELECTION CHART AND STUBBING CRITERIA</p> <p>2. DRAWING – ‘AG’ IS ‘ABOVE GROUND’, ‘ED’ IS ‘EMBEDMENT DEPTH’. SEE CHART ON SHEET 3 FOR VALUES.</p> <p>3. BANDS REQUIRE 2 SHORT SEALS (1 79 00) CRIMPED TWICE OR 1 LONG SEAL (1 79 02) CRIMPED 4 TIMES.</p> | | | |

SaskPower - DISTRIBUTION STANDARDS

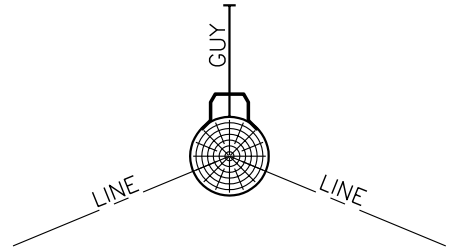
| | | | |
|----------------------------------|-------------|----------------------------|-------------------------------------|
| DRN. | DESIGN CHK. | APPROVAL | POLE STUBBING – STEEL STUB |
| CHKD. | | | |
| DATE | DATE | DATE | |
| DATE OF ISSUE: 2003/05/30 | | DRAWING NO: A-38-07 | SHEET 1 OF 3 REV. 0 |

TANGENT, TAP AND DEFLECTION < 10°

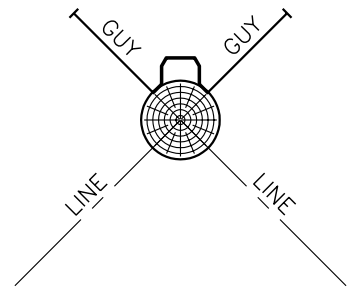


STUB MAYBE ROTATED ±45° TO AVOID OBSTRUCTIONS

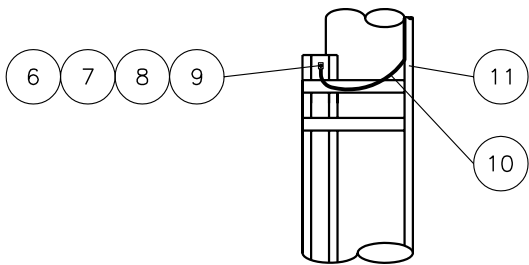
DEFLECTION 10° - 30°



DEFLECTION, CORNER > 30°



DETAIL 'A'

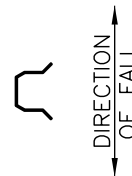


POLES WITH GROUND WIRE (SAFETY CAP SHOWN REMOVED) PLACE BANDS UNDER GROUND WIRE/MOULDING

DEAD END POLE



GENERAL GUIDELINE: THE STEEL STUB SHOULD BE PLACED AS SHOWN BELOW.



SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower - DISTRIBUTION STANDARDS

| | | | |
|---------------------------|---------------------|--------------|----------------------------|
| DRN. J. Kerr | DESIGN CHK. | APPROVAL | POLE STUBBING - STEEL STUB |
| CHKD. | | | |
| DATE 01-03-13 | DATE | DATE | |
| DATE OF ISSUE: 2003/05/30 | DRAWING NO. A-38-07 | SHEET 2 of 3 | REV. 0 |

STEEL STUB SELECTION CHART

| POLE CLASS | POLE LENGTH METERS(FEET) | | | | | | |
|------------|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 9.1 (30) | 10.7 (35) | 12.2 (40) | 13.7 (45) | 15.2 (50) | 16.8 (55) | 18.3 (60) |
| 1 | 1 89 50 | 1 89 50 | | | | | |
| 2 | 1 89 40 | 1 89 50 | 1 89 50 | | | | |
| 3 | 1 89 40 | 1 89 40 | 1 89 50 | 1 89 50 | 1 89 50 | | |
| 4 | 1 89 30 | 1 89 40 | 1 89 40 | 1 89 40 | 1 89 50 | 1 89 50 | 1 89 50 |
| 5 | 1 89 30 | 1 89 30 | 1 89 40 | 1 89 40 | 1 89 40 | -- | -- |
| 6 | 1 89 30 | 1 89 30 | 1 89 30 | 1 89 30 | -- | -- | -- |

STEEL STUB EMBEDMENT DEPTH

| CODE | LENGTH | 'AG' ABOVE GROUND | 'ED' EMBEDMENT DEPTH |
|---------|------------|-------------------|----------------------|
| 1 89 30 | 3.0m (10') | 1.5 m (5') | 1.5 m (5') |
| 1 89 40 | 3.0m (10') | 1.5 m (5') | 1.5 m (5') |
| 1 89 50 | 3.3m (11') | 1.7 m (5.5') | 1.7 m (5.5') |

1. SELECTION CHART IS BASED ON CSA C22.3 NO. 1 - GRADE 2 CONSTRUCTION, TRANSVERSE LOADING FACTORS OF 1.1 FOR STEEL, 1.3 FOR WOOD.
2. GRADE 1 CONSTRUCTION LOADING FACTORS DICTATE A MUCH HEAVIER WOOD POLE INITIALLY, SO THE CHART IS APPLICABLE TO GRADE 1 CONSTRUCTION AS WELL.
3. MINIMUM 2" SHELL AT BOTTOM BANDS, CAN BE LESS AT GROUNDLINE. MINIMUM 3" SHELL BETWEEN BANDS.
4. ALL POLES TO BE STUBBED SHALL BE TREATED TO PREVENT FURTHER ROT OR DECAY.
5. THE BASIC STEEL STUBS ARE NOT FOR USE ON STRUCTURES WHERE THERE MAY BE UPLIFT. THIS INCLUDES BRACED H-FRAME STRUCTURES.
6. STUBS 3.3m LONG OR LONGER REQUIRE TWO EXTRA BANDS, ONE ABOVE BOTTOM BANDS, OTHER BELOW TOP BANDS.

SaskPower - DISTRIBUTION STANDARDS

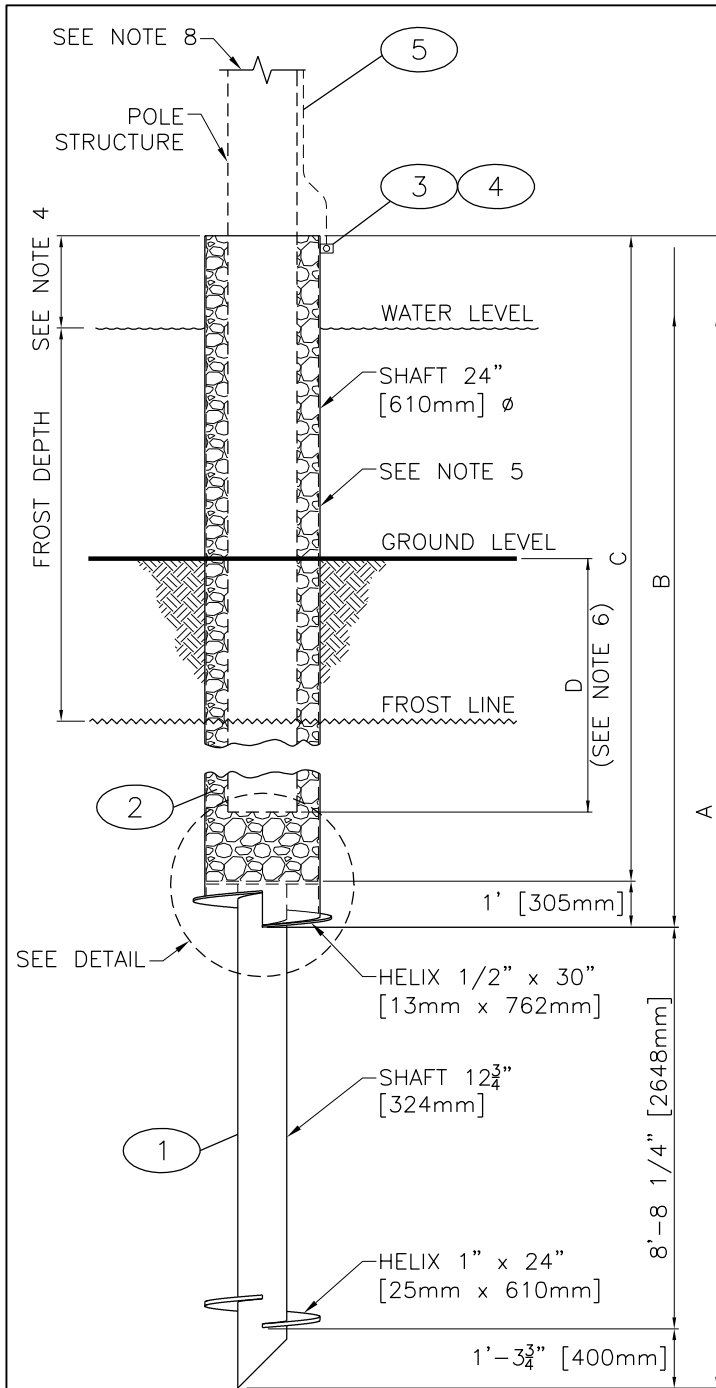
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|---------------------------|-------------|---------------------|-----------------------------------|--------|
| DRN. | DESIGN CHK. | APPROVAL | POLE STUBBING – STEEL STUB | |
| CHKD. | | | | |
| DATE | DATE | DATE | | |
| DATE OF ISSUE: 2003/05/30 | | DRAWING NO: A-38-07 | SHEET 3 OF 3 | REV. 0 |

BILL OF MATERIAL

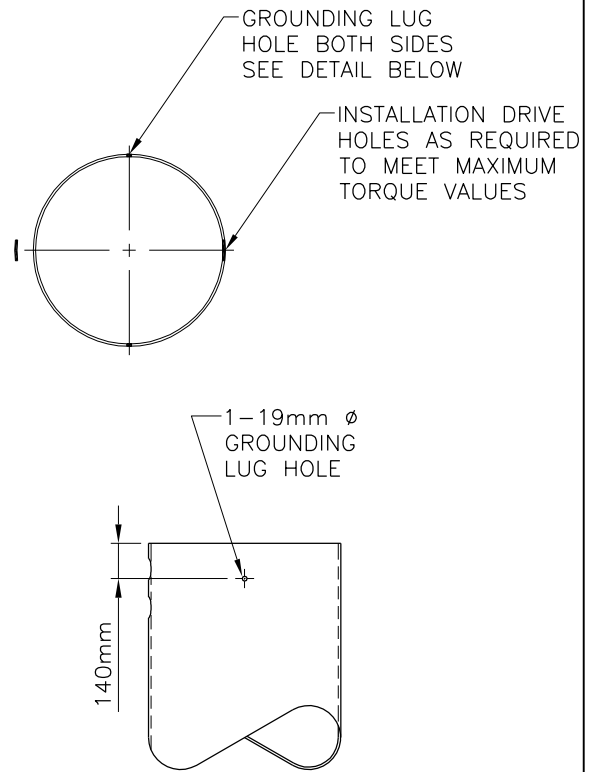
| ITEM NO. | CODE NO. | QUANTITY | DESCRIPTION |
|----------|---------------------|----------|--------------------------------------------------------------------------|
| 1 | NON STOCK | 1 | SCREW PILE-6.10m IN LENGTH (ALMITA #PIL-2400-375-10-B-001 OR EQUIVALENT) |
| 1 | NON STOCK | 1 | SCREW PILE-7.62m IN LENGTH (ALMITA #PIL-2400-375-15-B-003 OR EQUIVALENT) |
| 1 | NON STOCK | 1 | SCREW PILE-9.14m IN LENGTH (ALMITA #PIL-2400-375-20-B-002 OR EQUIVALENT) |
| 2 | PURCHASE LOCALLY | X | CRUSHED ROCK |
| 3 | 1 14 03 | 1 | BOLT-MACHINE – 3/4” x 3” |
| 4 | 1 93 34 | 2 | WASHER-ROUND – 2” x 13/16” HOLE |
| 5 | 2 83 04 | - | WIRE-COPPER - #4/7 STR |

SaskPower - DISTRIBUTION STANDARDS

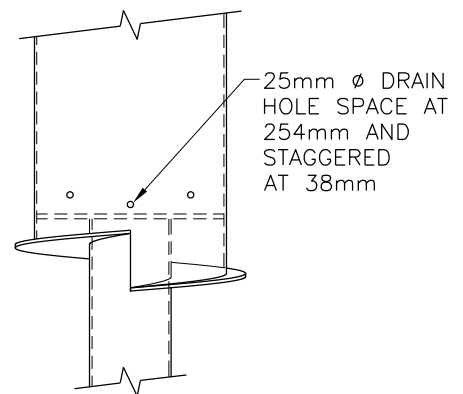
| | | | |
|----------------|-----------------|----------------------------|---------------------------------------|
| APPROVAL | DESIGN CHK | DRN. ARU | SCREW PILE POLE FOUNDATION |
| L. MOEN | A. UHREN | CHKD. | |
| | | 2016-03-01 | |
| DATE OF ISSUE: | 2016/05/04 | DRAWING NO: A-38-08 | SHEET 1 OF 3 REV. B |



**POLE BASE DETAIL
(ELEVATION)**



GROUNDING LUG HOLE DETAIL



LOWER SHAFT DETAIL

MATERIAL REQUIREMENTS;

1. STRUCTURAL STEEL MEMBERS SHALL CONFORM TO CSA S16 (DESIGN OF STEEL STRUCTURES).
2. PIPE SHAFT - ASTM A252 GRADE 3 OR BETTER STEEL PIPE, SEAMLESS OR STRAIGHT WELDED.
3. CAP PILE AND HELIX PLATE - ASTM A36 OR CSA G40.20/G40.21 44W(300W) HOT ROLLED STRUCTURAL STEEL PLATE.
4. WELDING SHALL CONFORM TO CSA W59 AND CSA W47.1. WELD TENSILE STRENGTH = 485 MPA(70ksi).
5. THE SCREW PILES SHALL BE SUITABLY COATED AS TO PROTECT THE BASE METAL FROM CORROSION.
6. THE SUPPLIER SHALL PROVIDE ENGINEER STAMPED DRAWINGS THAT SHOW ALL INSTALL DETAILS INCLUDING REQUIRED TORQUE VALUES (MAXIMUM, EXPECTED, AND MINIMUM) AND MINIMUM AND MAXIMUM EMBEDMENT AT EACH SITUATION LISTED IN THE TABLE IN NOTE 3 ON SHEET 3.

INSTALLATION NOTES LOCATED ON SHEET 3.

| | | | |
|-------------------------------------------|------------------------|---------------------|---------------------------------------|
| SaskPower - DISTRIBUTION STANDARDS | | | |
| APPROVAL L.MOEN | DESIGN CHK. A.UHREN | DRN. N.KIM CHKD. | SCREW PILE POLE FOUNDATION |
| | | 2016-04-20 | |
| DATE OF ISSUE | 2016/05/04 | DRAWING NO. A-38-08 | SHEET 2 of 3 |
| | | | REV. B |

INSTALLATION NOTES

1. THIS SCREW PILE IS DESIGNED FOR DISTRIBUTION POLES THAT ARE INSTALLED IN TROUBLE SPOTS OR LOTS OF STANDING WATER, WHEN RE-ROUTING IS IMPRACTICAL.
2. SCREW PILES TO BE VERTICAL +/- 2 DEGREES.
3. 'A' IS THE LENGTH OF THE SCREW PILE, 3 DIFFERENT LENGTHS ARE REQUIRED TO ACCOMMODATE VARIOUS GROUND WATER LEVELS:

| WATER LEVEL ABOVE GROUND LINE | A | B | C |
|-------------------------------|--------|--------|--------|
| UP TO 0.61 m | 6.10 m | 3.05 m | 2.74 m |
| UP TO 0.61 m | 7.62 m | 4.57 m | 4.27 m |
| UP TO 0.61 m | 9.14 m | 6.10 m | 5.79 m |
| UP TO 1.52 m | 7.62 m | 4.57 m | 4.27 m |
| UP TO 1.52 m | 9.14 m | 6.10 m | 5.79 m |
| UP TO 2.44 m | 9.14 m | 6.10 m | 5.79 m |

4. FINAL PILE ELEVATION ABOVE WATER LEVEL AT LEAST 0.61m DUE TO WATER LEVEL FLUCTUATION.
5. INSTALL CRUSHED ROCK INTO SCREW PILE CYLINDER TO ESTABLISH POLE SET DEPTH 'D' AND THEN FILL THE ANNULAR VOID BETWEEN POLE AND PILE WITH CRUSHED ROCK.
6. 'D' IS THE DISTANCE BETWEEN POLE BUTT TO GROUND LINE, $D=10\%$ OF POLE LENGTH + 0.61m, EXCEPT FOR 35ft POLES, $D=10\%$ OF POLE LENGTH + 0.762m.
7. THESE ARE INTENDED TO BE INSTALLED WITH SPECIALIZED EQUIPMENT BY A QUALIFIED CONTRACTOR.
8. POLE INSTALL NOT INCLUDED WITH THIS DRAWING. IN CONFIGURATOR, INCLUDE A-38-01 WITH THIS DRAWING.
9. IF MINIMUM INSTALL TORQUE HAS NOT BEEN REACHED BY THE TIME MAXIMUM DEPTH HAS BEEN REACHED, THE SCREW PILE WILL HAVE TO BE REMOVED AND A LONGER ONE USED.

SaskPower - DISTRIBUTION STANDARDS

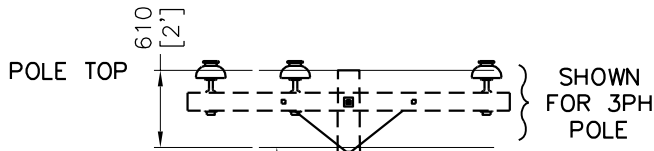
| | | | |
|----------------------------|-------------------------------|-----------------------------------------------|--------------------------------------------------------------|
| APPROVAL L. MOEN | DESIGN CHK A. UHREN | DRN. ARU CHKD. 2016-04-19 | SCREW PILE POLE FOUNDATION INSTALLATION NOTES |
| DATE OF ISSUE: 2016/05/04 | | DRAWING NO: A-38-08 | SHEET 3 of 3 REV. B |

BILL OF MATERIAL

| ITEM NO. | CODE NO. | QUANTITY | | DESCRIPTION |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-------|------------------------------------------------|
| | | A | B | |
| 1 | 1 03 25 | 2 KG | 2KG | STRAPPING - GALV 2" X .05" (45 KG/ROLL) |
| 2 | 1 09 20 | 1 | 1 | BOLT - DOUBLE ARMING - 5/8" x 20" |
| 3 | 1 79 02 | 4 | 4 | CRIMP SEAL - GALV FOR 2" STRAPPING 4 1/2" LONG |
| 4 | 1 89 70 | 2 | - | STEEL STUB - 20 FEET |
| 4 | 1 89 71 | - | 2 | STEEL STUB - 30 FEET |
| 5 | 1 89 52 | 2 | 2 | POLE STUB SAFETY CAP - FOR 7" TO 10" WIDE STUB |
| 6 | 7 69 62 | 0.08 | 0.08 | SCREWS - WOOD - #10 - 1 1/2" (100/BOX) |
| ITEMS BELOW ARE FOR BONDING STEEL STUB ON POLES WITH A GROUND WIRE | | | | |
| 7 | 1 12 02 | 2 | 2 | BOLT- MACHINE - 1/2" X 2" - GALVANIZED |
| 8 | 1 93 22 | 2 | 2 | WASHER - LOCK 1/2" SPRING TYPE |
| 9 | 1 93 30 | 2 | 2 | WASHER - ROUND - 1 3/8" O.D. - 9/16" HOLE |
| 10 | 2 65 94 | 2 | 2 | HYLUG-#4 SOL. OR STR. ALUM. & COPPER |
| 11 | 2 83 04 | 1.5 m | 1.5 m | WIRE - COPPER- #4/7 STR.-BARE |
| 12 | 5 12 06 | 1 | 1 | CRIMPIT CU #4 TO #4 |
| <p>NOTE:</p> <ol style="list-style-type: none"> 1. BANDS REQUIRE 1 LONG SEAL (1 79 02) CRIMPED 4 TIMES. 2. THIS STRUCTURE TO BE USED FOR: <ol style="list-style-type: none"> a. STRUCTURES IN ≤ 4.5 FEET OF WATER. b. STRUCTURES IN POOR FOUNDATION SOIL CONDITIONS. 3. STOCK CODE 18970 c/w 1 X FOOTED BASE, 1 X SPLICE ASSEMBLY AND 1 X UPPER UNIT. COMPLETE UNIT. 4. STOCK CODE 18971 c/w 1 X FOOTED BASE, 2 X SPLICE ASSEMBLY AND 2 X UPPER UNIT. COMPLETE UNIT. 5. COLUMN A REFERS TO A 20' STEEL STUB INSTALLATION. COLUMN B REFERS TO A 30' STEEL STUB INSTALLATION. | | | | |

SaskPower - DISTRIBUTION STANDARDS

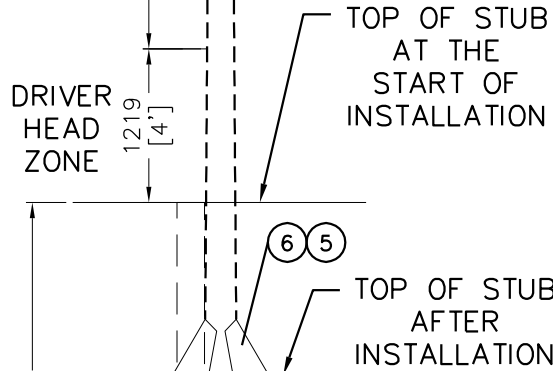
| | | | |
|----------------|-----------------|----------------------------|------------------------------------------------------------------------|
| APPROVAL | DESIGN CHK | DRN. ARU | DOUBLE STEEL STUB SPLICED POLE FOUNDATION REINFORCEMENT |
| L. MOEN | A. UHREN | CHKD. | |
| | | 2017-08-14 | |
| DATE OF ISSUE | 2017-11-03 | DRAWING NO. A-38-09 | SHEET 1 OF 4 REV. A |



DIST. Y = CLEARANCE FROM TOP OF DRIVER HEAD TO BRACES (ASSUMING 4FT DRIVER HEAD)

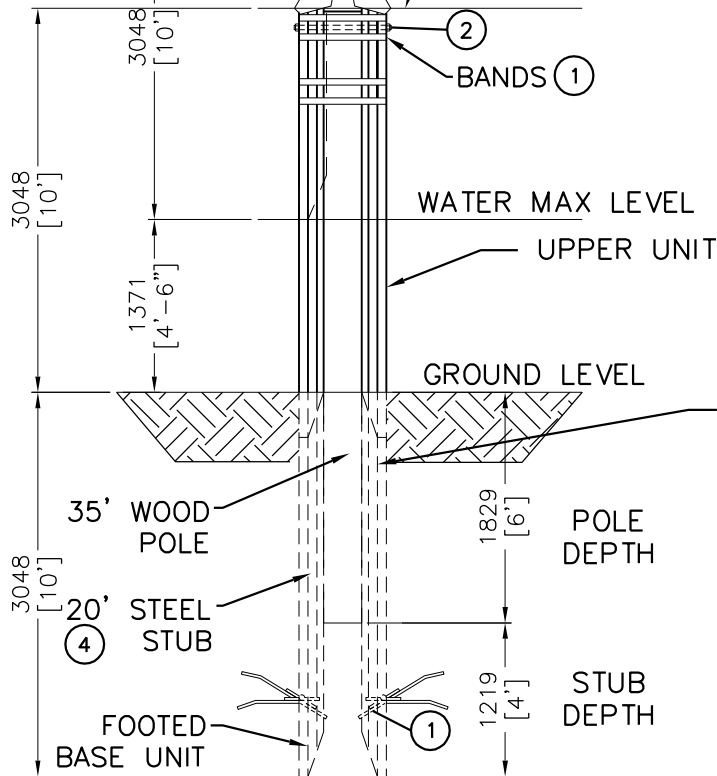
| SPliced STUB LENGTH | POLE LENGTH | CLEARANCE Y |
|---------------------|-------------|----------------|
| 6.1m (20') | 10.7m (35') | 2.59m (8'-6") |
| 6.1m (20') | 12.2m (40') | 4.12m (13'-6") |
| 6.1m (20') | 13.7m (45') | 5.49m (18') |
| 6.1m (20') | 15.2m (50') | 6.86m (22'-6") |
| 6.1m (20') | 16.8m (55') | 8.24m (27') |

TABLE A



| SPliced STUB LENGTH | POLE LENGTH | CLEARANCE Y |
|---------------------|-------------|----------------|
| 9.15m (30') | 10.7m (35') | 1.98m (6'-6") |
| 9.15m (30') | 12.2m (40') | 3.5m (11'-6") |
| 9.15m (30') | 13.7m (45') | 4.88m (16') |
| 9.15m (30') | 15.2m (50') | 6.28m (20'-6") |
| 9.15m (30') | 16.8m (55') | 7.62m (25') |

TABLE B



SPLICE CHANNEL
SEE DETAIL ON
SHEET 4 OF 4

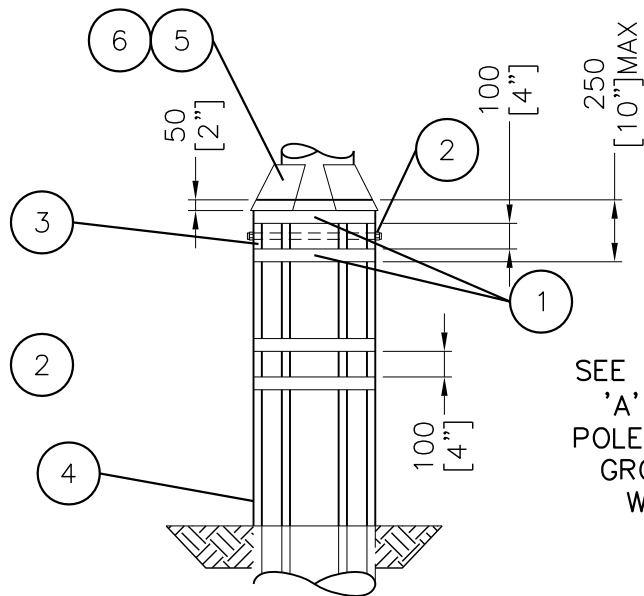
NOTES

1. ALL STUBS MUST BE INSTALLED WITH 50% ABOVE & BELOW GROUND LEVEL.
2. FOR THE 30' STUB THE INSTALL DEPTH IS 5' DEEPER.
3. FOR TABLE B ASSUME THAT 2' OF THE SECOND STUB IS ABOVE WATER/ICE LEVEL TO FACILITATE THE SECOND SPLICE CHANNEL INSTALLATION, BEFORE INSTALLED TO ITS ACTUAL DEPTH.

**POLE WITH 20' DOUBLE
BIG FOOT STUB-STEEL
2 SETS OF 2x10'**

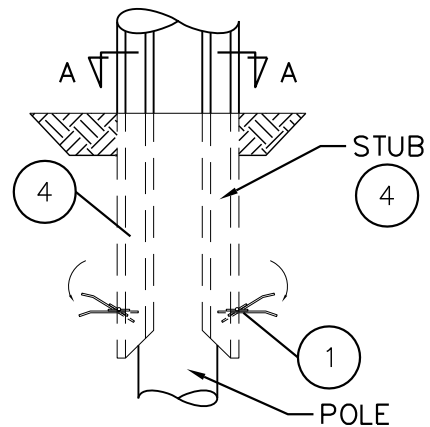
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| | | | |
|-----------------------------|-------------------------|------------------------------------------|---------------------------------------------------------------|
| APPROVAL L.MOEN | DESIGN CHK. L.BAILEY | DRN. N.KIM CHKD. D.REID 2016-04-28 | DOUBLE STEEL STUB SPliced POLE FOUNDATION REINFORCEMENT |
| DATE OF ISSUE 2016/05/04 | DRAWING NO. A-38-09 | SHEET 2 of 4 | |
| | | | REV. - |

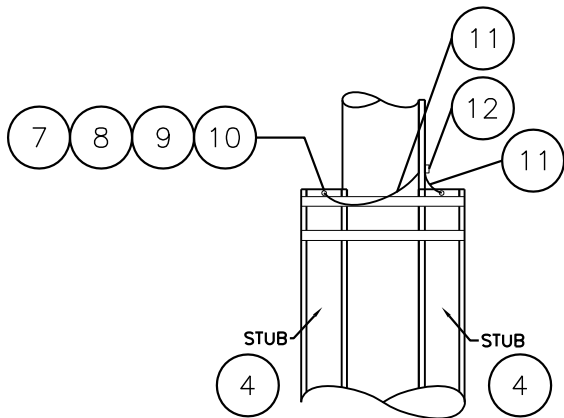


UPPER UNIT

SEE DETAIL
'A' FOR
POLES WITH
GROUND
WIRE

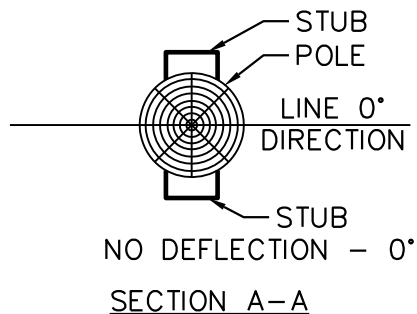


BIG FOOT STUB-
UPLIFT
& THRUST SYSTEM
DETAIL
FOOTED BASE UNIT



BONDING DETAIL-A

POLES WITH GROUND WIRE (SAFETY
CAP SHOWN REMOVED) PLACE BANDS
UNDER GROUND WIRE/MOULDING.



SECTION A-A

SaskPower – DISTRIBUTION STANDARDS

APPROVAL
L. MOEN

DESIGN CHK.
L.BAILEY

DRN. N. KIM
CHKD. D. REID
2016-04-28

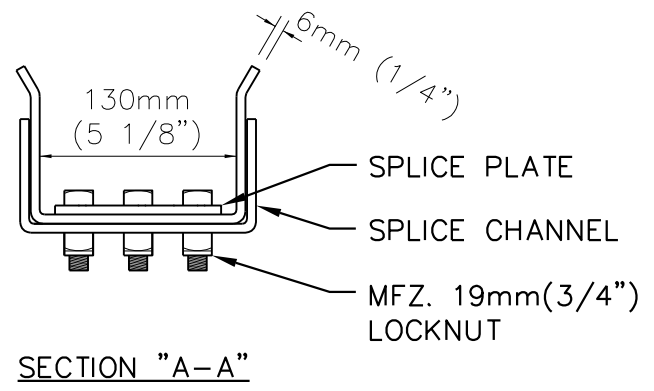
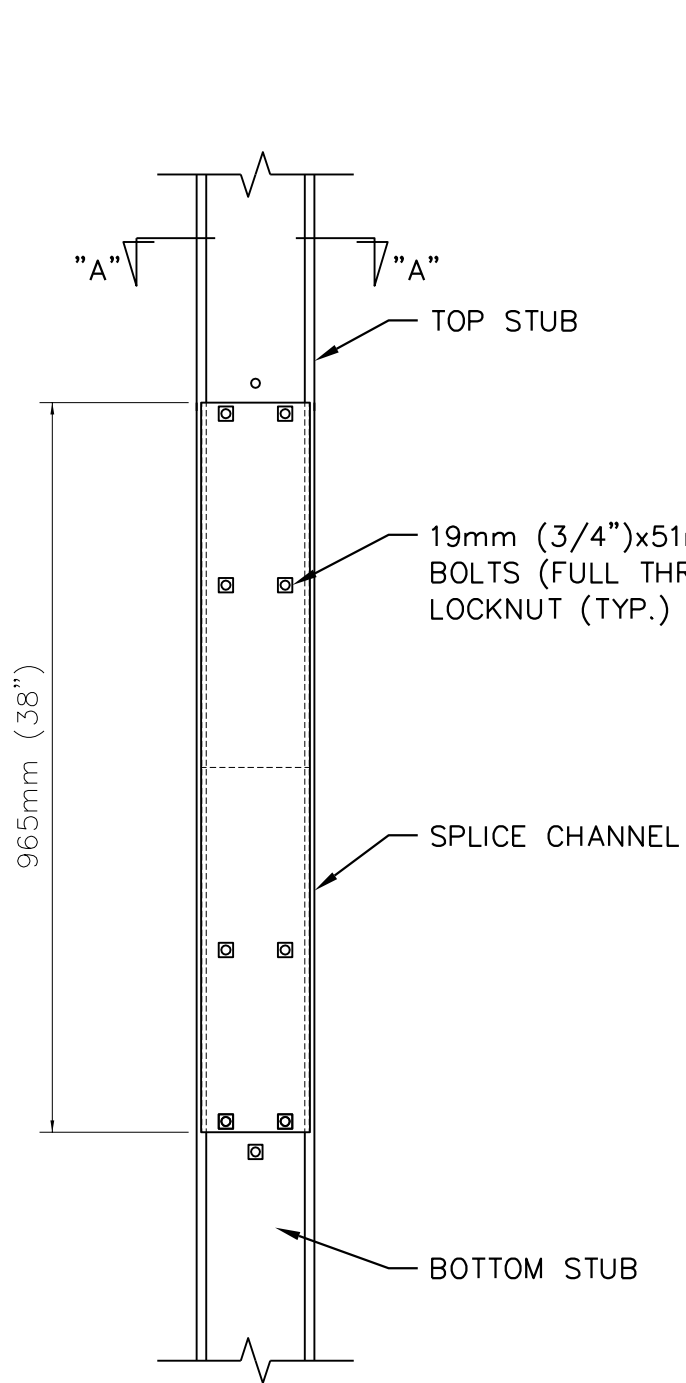
DOUBLE STEEL STUB SPLICED
POLE FOUNDATION
REINFORCEMENT

DATE OF ISSUE 2016/05/04

DRAWING NO. A-38-09

SHEET 3 of 4

REV. -



DETAIL - SPLICE

NOTE

ITEM IS SHIPPED ASSEMBLED AND NEED TO BE DISASSEMBLED IN THE FIELD BEFORE CONSTRUCTION IN ORDER TO MAINTAIN LINE CLEARANCE.

| | | | | |
|-------------------------------------------|-------------------------|----------------------------|---------------------------------------------------------------|--------|
| SaskPower – DISTRIBUTION STANDARDS | | | | |
| APPROVAL L.MOEN | DESIGN CHK. L.BAILEY | DRN. N.KIM CHKD. D.REID | DOUBLE STEEL STUB SPLICED POLE FOUNDATION REINFORCEMENT | |
| | | 2016-04-28 | | |
| DATE OF ISSUE | 2016/05/04 | DRAWING NO. A-38-09 | SHEET 4 of 4 | REV. - |