



PUNTOS DE CONTROL VERTICAL (BM)

| PUNTO | COORDENADAS TOPOGRAFICAS | | COTA NIVELACION |
|-------------|--------------------------|-------------|-----------------|
| | ESTE | NORTE | |
| BM-27/AZ-04 | 817866.219 | 9178889.576 | 2490.698 |
| BM-28 | 818211.468 | 9178644.064 | 2461.509 |
| BM-29 | 818161.685 | 9178462.891 | 2429.597 |
| BM-30 | 817886.691 | 9178443.329 | 2384.419 |
| BM-31 | 817871.618 | 9178221.379 | 2366.718 |
| BM-32 | 817676.085 | 9178328.873 | 2336.190 |
| BM-33 | 817326.086 | 9178636.068 | 2308.306 |
| BM-34 | 817591.856 | 9178163.124 | 2269.591 |
| BM-35 | 818089.002 | 9177849.894 | 2223.169 |
| BM-36 | 818419.869 | 9177633.906 | 2198.444 |
| BM-37 | 818564.978 | 9177238.048 | 2176.264 |
| BM-38/AZ-05 | 818620.479 | 9176993.530 | 2142.003 |
| BM-39/PB-05 | 818298.910 | 9176297.989 | 2123.208 |
| BM-40 | 818256.616 | 9175802.610 | 2090.566 |
| BM-41 | 818673.898 | 9175662.476 | 2066.692 |
| BM-42 | 818491.087 | 9175161.398 | 2048.619 |
| BM-43 | 818436.833 | 9174636.127 | 2029.160 |
| BM-44 | 818399.201 | 9174128.449 | 2001.345 |
| BM-45 | 818734.639 | 9173726.864 | 1992.976 |
| BM-46 | 818448.665 | 9173240.739 | 2002.687 |
| BM-48/AZ-06 | 818135.070 | 9172820.073 | 2014.583 |
| BM-49/PB-06 | 817866.071 | 9172410.413 | 2020.963 |
| BM-49 | 817699.321 | 9171968.884 | 2019.636 |
| BM-50 | 817284.828 | 9171622.024 | 2036.924 |
| BM-51 | 817197.090 | 9171623.963 | 2037.699 |
| BM-52 | 816996.286 | 9171264.298 | 2016.251 |
| BM-53 | 816818.143 | 9170767.496 | 2012.325 |
| BM-54 | 816626.645 | 9170168.162 | 2026.690 |
| BM-55A | 816216.862 | 9169826.600 | 2028.278 |
| BM-56 | 816847.084 | 9169441.395 | 2029.395 |
| BM-57/AZ-07 | 816490.444 | 9169233.892 | 2036.290 |
| BM-58/PB-07 | 816292.617 | 9168776.878 | 2049.017 |
| BM-59 | 816389.361 | 9168290.797 | 2060.619 |

PUNTOS DE CONTROL HORIZONTAL

| VERTICE | LADO | DISTANCIA | AZIMUT | NORTE | ESTE | COTA |
|---------|--------------|-----------|--------------|--------------|-------------|-----------|
| P-00 | P-00 - PB-04 | 487.9194 | 177° 8' 62" | 9178883.6926 | 818037.2021 | 2473.0822 |
| PB-04 | PB-04 - P-01 | 626.6963 | 208° 53' 26" | 9178196.2988 | 818061.9037 | 2413.7719 |
| P-01 | P-01 - P-02 | 172.2102 | 144° 27' 11" | 9178367.8819 | 817469.1860 | 2280.8954 |
| P-02 | P-02 - P-03 | 817.7309 | 122° 44' 7" | 9178227.7642 | 817569.3019 | 2276.1092 |
| P-03 | P-03 - P-04 | 400.2200 | 179° 18' 4" | 9177786.5689 | 818247.1687 | 2212.6714 |
| P-04 | P-04 - P-05 | 530.6448 | 179° 37' 33" | 9177543.0320 | 818566.6169 | 2204.7954 |
| P-05 | P-05 - P-06 | 884.3460 | 200° 50' 8" | 9177012.3987 | 818568.8620 | 2160.1756 |
| P-06 | P-06 - P-07 | 1897.1820 | 178° 43' 3" | 9176186.8950 | 818264.4327 | 2116.9319 |
| P-07 | P-07 - P-08 | 306.1771 | 144° 7' 28" | 9174289.1790 | 818296.8887 | 2012.8444 |
| P-08 | P-08 - P-09 | 178.6776 | 84° 10' 3" | 9174041.9969 | 818476.7295 | 1996.0704 |
| P-09 | P-09 - P-00 | 408.7045 | 171° 67' 4" | 9174028.9190 | 818663.8349 | 1988.2084 |
| P-00 | P-00 - P-01 | 266.8996 | 216° 13' 39" | 9173624.2406 | 818711.0603 | 1986.8994 |
| P-01 | P-01 - P-02 | 1676.9923 | 219° 14' 8" | 9173408.9473 | 818563.3300 | 2001.7874 |
| P-02 | P-02 - P-03 | 673.0169 | 231° 41' 46" | 9172120.8933 | 817643.4971 | 2019.7954 |
| P-03 | P-03 - P-04 | 100.6982 | 219° 44' 23" | 9171703.7281 | 817116.3673 | 2041.1934 |
| P-04 | P-04 - P-05 | 666.8044 | 192° 46' 5" | 9171626.2703 | 817062.4123 | 2047.9699 |
| P-05 | P-05 - P-06 | 956.3242 | 201° 38' 58" | 9170976.1906 | 816906.0839 | 2016.4759 |
| P-06 | P-06 - P-07 | 769.3727 | 231° 30' 12" | 9170087.0116 | 816863.1665 | 2028.7404 |
| P-07 | P-07 - P-08 | 606.0289 | 219° 0' 29" | 9169614.3296 | 816968.8336 | 2030.7829 |
| P-08 | P-08 - P-09 | 612.9600 | 203° 27' 56" | 9169199.8962 | 816988.6320 | 2030.4824 |
| P-09 | P-09 - P-70 | 727.4896 | 186° 51' 56" | 9168637.6907 | 816424.4908 | 2054.2929 |

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| LEYENDA | |
|-----------------------------------|--|
| POLIGONAL DE APOYO | |
| EJE PROYECTADO | |
| CARRETERA EXISTENTE | |
| PUNTOS DE CONTROL HORIZONTAL (AZ) | |
| PUNTOS DE CONTROL HORIZONTAL (PB) | |
| PUNTOS DE POLIGONAL (P) | |
| PUNTOS DE CONTROL VERTICAL (BM) | |

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| REVISIONES | | |
|------------|-------|-------------|
| N° | FECHA | DESCRIPCION |
| | | |
| | | |

ESTUDIO DEFINITIVO PARA EL MEJORAMIENTO DE LA CARRETERA: SAN MARCOS-CAJABAMBA-SAUSACOCCHA
TRAMO: SAN MARCOS-CAJABAMBA
 CONTRATO N° 008-2011-MTC/20

PLANO DE GEOREFERENCIACION COORDENADAS TOPOGRAFICAS

| | |
|----------------------|--------------------|
| FECHA: | MAYO 2012 |
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| 1/15 000 | 30 000 |
| 008-11-PGT-02 | |