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Unidad de Proyectos

INFORME MAYO 2025

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Oficina de Proyectos – SECPLA

A : **Miguel Muñoz Verdugo**
Secretario Comunal de Planificación

MAT : **“ASISTENCIA TÉCNICA PARA EL DESARROLLO DE PROYECTOS DE MEJORAMIENTO DE PAVIMENTOS DE SECTOR SANTA ROSA”**

Padre Hurtado, mayo de 2025

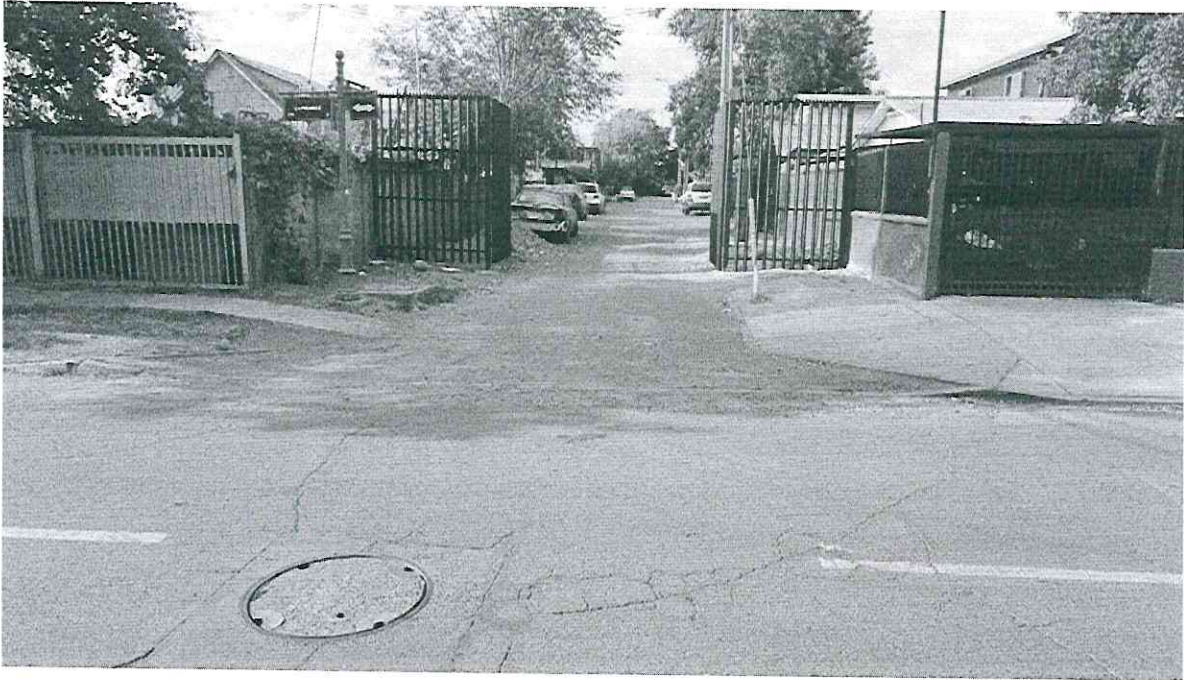
Con respecto al cometido otorgado, envié a U.D. informe correspondiente al proceso de “Asistencia técnica para el desarrollo de proyectos de mejoramiento de pavimentos de sector Santa Rosa”.

Con el fin de presentar el análisis y las propuestas para el mejoramiento de la calzada en los pasajes de la villa Santa Rosa, además optimizar las condiciones de circulación, aumentar la seguridad vial, y extender la vida útil de la infraestructura existente. La intervención busca resolver problemas de deterioro y condiciones de inseguridad para los usuarios de las vías, ya sea para vehículos o peatones.

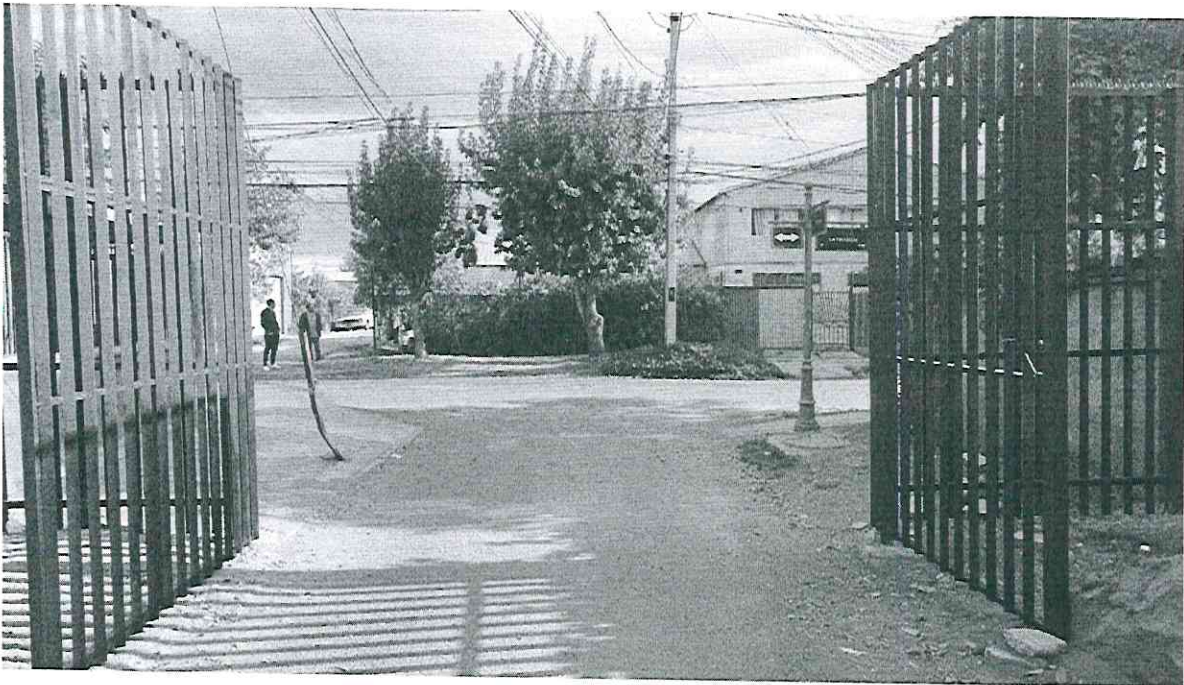
El mejoramiento de calzada es un proceso esencial para garantizar una infraestructura vial que responda de manera eficiente a las necesidades de movilidad de la comunidad. Las calzadas, que constituyen una de las principales arterias de comunicación y transporte, suelen experimentar un desgaste considerable debido al paso constante de los vehículos, las condiciones climáticas adversas, y la falta de mantenimiento adecuado a lo largo del tiempo. Este deterioro no solo afecta la seguridad vial, sino que también incrementa los costos de mantenimiento y afecta la calidad de vida de los usuarios.



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Pasaje Santa Marta, acceso por La Pirámide



Pasaje Santa Marta, vista La Pirámide



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Pasaje Santa Marta



Pasaje Santa Marta



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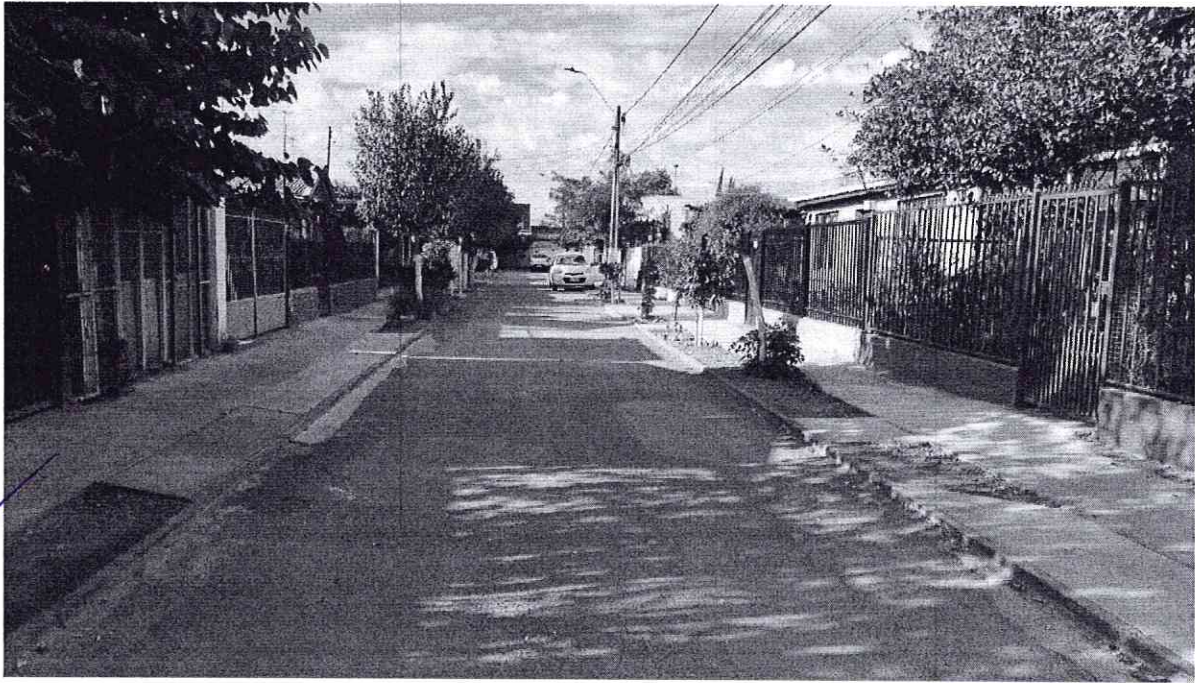
Pasaje Las Acacias, acceso por La Pirámide



Pasaje Las Acacias, vista La Pirámide



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Pasaje Las Acacias



Pasaje Las Acacias



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Pasaje El Progreso, acceso por La Pirámide



Pasaje El Progreso, vista La Pirámide



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Pasaje El Progreso



Pasaje El Progreso



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2. Especificaciones del terreno

En la visita del terreno podemos identificar cual es la gravedad del daño generado en la calzada de los pasajes, visualizando grietas transversales de lado a lado y paños asfáltico quebrados. También en los accesos a estos pasajes se vieron escarpado con el pasar del tiempo y la erosión climática, generando baches.

Esto afecta con el pasar del tiempo a los vehículos que pertenecen en estos pasajes, disminuyendo su tiempo de utilidad vehicular.

Estos pasajes se componen de 17 viviendas aproximadamente cada uno, identificando que todas poseen al menos un vehículo.

3. Propuesta de Mejoramiento de la Calzada

Para resolver los problemas identificados y cumplir con los objetivos mencionados, se propone un conjunto de intervenciones específicas:

- **Rehabilitación del pavimento:** Se procederá con la reparación de la calzada existente. Se utilizarán materiales de alta calidad y durabilidad, como concreto asfáltico o concreto hidráulico, dependiendo de las características del tráfico en la zona.
- **Instalación de señalización adecuada:** Se renovará toda la señalización vertical y horizontal, incluyendo señales de tránsito, marcas viales y señales de advertencia. Se implementarán medidas para mejorar la visibilidad, especialmente en cruces.
- **Rediseño de intersecciones y accesos:** Se mejorarán las intersecciones más problemáticas, facilitando los giros, reduciendo el riesgo de accidentes y promoviendo una circulación más ordenada. Además, se garantizará la accesibilidad para peatones, incorporando cruces peatonales y adecuando las aceras.



4. Ubicación del proyecto

El proyecto contempla la repavimentación de la calzada. Los Pasajes Santa Marta, Las Acacias, El Progreso, Pasaje Primera Transversal, Las Dalias son los primeros seleccionados para el levantamiento topográfico.



5. Consideraciones

- Es necesario realizar un análisis más detallado de la zona para evaluar posibles mejoras en la visibilidad y seguridad del camino.
- Las intersecciones con otras vías deben ser estudiadas para determinar la necesidad de obras de acondicionamiento.
- Falta control de manejo de velocidad en el pasaje con un reductor vehicular.



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6. Dibujo digital



Vista en planta pasaje Santa Marta



Vista en planta pasaje Las Acacias



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7. Tabla de datos

- Santa Marta

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 1 | 5062.359 | 1062.362 | 500.349 | BSS |
| 2 | 5062.360 | 1062.360 | 500.349 | ORT |
| 3 | 5004.104 | 1003.354 | 499.682 | 9 |
| 4 | 4997.947 | 1005.113 | 499.846 | 3 |
| 5 | 4998.044 | 1005.196 | 499.849 | 3 |
| 6 | 4998.065 | 1005.223 | 499.729 | 4 |
| 7 | 4994.995 | 1005.354 | 499.867 | 2 |
| 8 | 4994.246 | 1004.665 | 499.860 | 2 |
| 9 | 4994.636 | 1004.276 | 499.899 | 2 |
| 10 | 4995.497 | 1003.434 | 500.005 | 2 |
| 11 | 4995.079 | 1002.870 | 500.115 | 1 |
| 12 | 5004.710 | 993.864 | 499.901 | 2 |
| 13 | 5005.450 | 994.497 | 499.837 | 2 |
| 14 | 5006.193 | 991.039 | 499.904 | 1 |
| 15 | 5006.333 | 996.314 | 499.576 | 3 |
| 16 | 5006.448 | 996.424 | 499.565 | 3 |
| 17 | 5006.456 | 996.439 | 499.537 | 4 |
| 18 | 5003.944 | 1004.128 | 499.702 | 4 |
| 19 | 4999.211 | 1009.129 | 499.817 | 4 |
| 20 | 5001.502 | 1011.615 | 499.728 | 4 |
| 21 | 5001.522 | 1011.633 | 499.776 | 3 |
| 22 | 5001.601 | 1011.706 | 499.781 | 3 |
| 23 | 5001.306 | 1012.047 | 499.871 | 2 |
| 24 | 5002.363 | 1012.310 | 499.875 | 2 |
| 25 | 5003.409 | 1013.296 | 500.013 | 2 |
| 26 | 5004.459 | 1014.322 | 500.056 | 1 |
| 27 | 5002.646 | 1014.091 | 500.060 | 2 |
| 28 | 5005.386 | 1011.195 | 499.957 | 11 |
| 29 | 5005.656 | 1010.905 | 499.942 | 11 |
| 30 | 5006.253 | 1012.020 | 499.992 | 11 |
| 31 | 5006.522 | 1011.740 | 499.984 | 11 |
| 32 | 5006.375 | 1012.296 | 500.045 | 10 |
| 33 | 5004.674 | 1014.162 | 500.054 | 10 |
| 34 | 5006.515 | 1012.185 | 499.978 | 1 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 69 | 5013.543 | 999.008 | 499.690 | 3 |
| 70 | 5013.638 | 999.091 | 499.696 | 3 |
| 71 | 5017.321 | 998.310 | 499.812 | 2 |
| 72 | 5018.227 | 998.739 | 499.839 | 2 |
| 73 | 5018.988 | 998.985 | 499.821 | 1 |
| 74 | 5012.523 | 1005.733 | 499.837 | 1 |
| 75 | 5012.684 | 1005.545 | 499.829 | 10 |
| 76 | 5008.722 | 1011.496 | 499.769 | 12 |
| 77 | 5011.298 | 1013.650 | 499.862 | 14 |
| 78 | 5009.790 | 1015.230 | 499.964 | 14 |
| 79 | 5014.248 | 1010.517 | 499.763 | 14 |
| 80 | 5015.755 | 1008.886 | 499.938 | 14 |
| 81 | 5013.371 | 1015.857 | 500.080 | 5 |
| 82 | 5018.491 | 1012.466 | 500.048 | 8 |
| 83 | 5020.675 | 1014.930 | 499.996 | 8 |
| 84 | 5014.265 | 1017.589 | 500.040 | 8 |
| 85 | 5021.603 | 1024.749 | 499.962 | 8 |
| 86 | 5023.257 | 1017.317 | 500.116 | 8 |
| 87 | 5036.332 | 1037.787 | 500.054 | 5 |
| 88 | 5017.157 | 1022.336 | 499.963 | 10 |
| 89 | 5020.143 | 1025.232 | 499.959 | 10 |
| 90 | 5018.677 | 1020.569 | 499.914 | 3 |
| 91 | 5018.724 | 1020.520 | 499.913 | 3 |
| 92 | 5018.743 | 1020.506 | 499.883 | 4 |
| 93 | 5024.668 | 1017.482 | 499.931 | 10 |
| 94 | 5026.396 | 1018.748 | 499.945 | 10 |
| 95 | 5026.043 | 1021.861 | 499.978 | 3 |
| 96 | 5025.997 | 1021.902 | 499.978 | 3 |
| 97 | 5025.989 | 1021.922 | 499.953 | 4 |
| 98 | 5026.962 | 1022.719 | 499.974 | 2 |
| 99 | 5028.224 | 1023.913 | 499.982 | 2 |
| 100 | 5021.907 | 1023.652 | 499.946 | 2 |
| 101 | 5020.179 | 1025.147 | 499.955 | 2 |
| 102 | 5027.434 | 1028.952 | 499.993 | 2 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 35 | 5003.988 | 1009.021 | 499.669 | 4 |
| 36 | 5004.013 | 1009.048 | 499.775 | 3 |
| 37 | 5004.091 | 1009.125 | 499.779 | 3 |
| 38 | 5004.233 | 1008.999 | 499.753 | 4 |
| 39 | 5004.168 | 1009.054 | 499.768 | 3 |
| 40 | 5004.625 | 1008.400 | 499.665 | 3 |
| 41 | 5004.697 | 1008.488 | 499.684 | 3 |
| 42 | 5006.714 | 1009.064 | 499.646 | 4 |
| 43 | 5006.720 | 1009.078 | 499.664 | 3 |
| 44 | 5006.670 | 1009.149 | 499.666 | 3 |
| 45 | 5007.023 | 1009.494 | 499.666 | 2 |
| 46 | 5007.979 | 1010.399 | 499.727 | 2 |
| 47 | 5009.453 | 1008.988 | 499.669 | 4 |
| 48 | 5006.724 | 1006.359 | 499.635 | 4 |
| 49 | 5009.678 | 1006.214 | 499.588 | 2 |
| 50 | 5010.390 | 1006.902 | 499.610 | 2 |
| 51 | 5012.248 | 1008.694 | 499.666 | 3 |
| 52 | 5012.206 | 1008.737 | 499.667 | 3 |
| 53 | 5012.195 | 1008.750 | 499.638 | 4 |
| 54 | 5012.262 | 1008.241 | 499.821 | 13 |
| 55 | 5012.981 | 1007.464 | 499.838 | 13 |
| 56 | 5012.103 | 1006.651 | 499.834 | 13 |
| 57 | 5011.480 | 1007.325 | 499.840 | 13 |
| 58 | 5012.185 | 1007.418 | 499.851 | 15 |
| 59 | 5011.360 | 1006.458 | 499.807 | 6 |
| 60 | 5011.950 | 1005.283 | 499.864 | 2 |
| 61 | 5011.220 | 1004.630 | 499.844 | 2 |
| 62 | 5009.541 | 1003.210 | 499.585 | 4 |
| 63 | 5009.551 | 1003.232 | 499.685 | 3 |
| 64 | 5009.646 | 1003.278 | 499.697 | 3 |
| 65 | 5009.658 | 1003.274 | 499.697 | 3 |
| 66 | 5009.528 | 1003.445 | 499.656 | 4 |
| 67 | 5013.405 | 999.100 | 499.539 | 4 |
| 68 | 5009.799 | 998.019 | 499.593 | 4 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 103 | 5026.709 | 1028.245 | 499.980 | 2 |
| 104 | 5026.585 | 1029.874 | 499.975 | 2 |
| 105 | 5030.935 | 1034.088 | 500.017 | 2 |
| 106 | 5032.692 | 1031.426 | 500.012 | 4 |
| 107 | 5032.365 | 1027.883 | 499.996 | 16 |
| 108 | 5033.931 | 1026.113 | 499.995 | 16 |
| 109 | 5033.984 | 1026.101 | 499.899 | 10 |
| 110 | 5036.051 | 1028.160 | 499.947 | 10 |
| 111 | 5033.814 | 1025.966 | 499.910 | 10 |
| 112 | 5031.889 | 1024.055 | 499.920 | 10 |
| 113 | 5032.206 | 1027.722 | 500.002 | 2 |
| 114 | 5029.981 | 1025.554 | 499.983 | 2 |
| 115 | 5039.708 | 1034.915 | 500.058 | 16 |
| 116 | 5041.198 | 1033.369 | 500.062 | 10 |
| 117 | 5039.455 | 1031.476 | 499.997 | 10 |
| 118 | 5041.258 | 1033.411 | 499.967 | 10 |
| 119 | 5043.249 | 1035.283 | 499.965 | 10 |
| 120 | 5047.131 | 1042.046 | 500.091 | 16 |
| 121 | 5048.601 | 1040.601 | 500.118 | 16 |
| 122 | 5033.938 | 1026.117 | 499.892 | 16 |
| 123 | 5048.443 | 1040.457 | 500.115 | 10 |
| 124 | 5050.773 | 1042.651 | 500.117 | 10 |
| 125 | 5047.521 | 1042.402 | 500.092 | 2 |
| 126 | 5047.905 | 1042.714 | 500.086 | 2 |
| 127 | 5048.473 | 1043.328 | 500.106 | 2 |
| 128 | 5048.879 | 1043.647 | 500.085 | 2 |
| 129 | 5050.244 | 1042.236 | 500.105 | 2 |
| 130 | 5049.897 | 1041.903 | 500.105 | 2 |
| 131 | 5048.925 | 1040.968 | 500.044 | 2 |
| 132 | 5049.262 | 1041.297 | 500.057 | 2 |
| 133 | 5051.437 | 1046.170 | 500.104 | 16 |
| 134 | 5052.181 | 1046.878 | 500.110 | 16 |
| 135 | 5053.726 | 1045.225 | 500.139 | 16 |
| 136 | 5052.999 | 1044.528 | 500.123 | 16 |





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| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 137 | 5050.523 | 1047.935 | 500.081 | 4 |
| 138 | 5051.854 | 1046.573 | 500.120 | 3 |
| 139 | 5051.812 | 1046.635 | 500.121 | 3 |
| 140 | 5051.784 | 1046.644 | 500.086 | 4 |
| 141 | 5048.376 | 1048.898 | 500.126 | 4 |
| 142 | 5048.361 | 1048.900 | 500.142 | 3 |
| 143 | 5048.290 | 1048.949 | 500.129 | 3 |
| 144 | 5051.724 | 1052.356 | 500.128 | 17 |
| 145 | 5054.273 | 1048.354 | 500.140 | 17 |
| 146 | 5049.769 | 1053.798 | 500.216 | 2 |
| 147 | 5051.539 | 1052.047 | 500.171 | 2 |
| 148 | 5043.987 | 1044.787 | 500.110 | 2 |
| 149 | 5042.329 | 1046.603 | 500.119 | 2 |
| 150 | 5044.648 | 1048.886 | 500.209 | 10 |
| 151 | 5042.529 | 1046.787 | 500.199 | 10 |
| 152 | 5042.009 | 1042.912 | 500.045 | 2 |
| 153 | 5043.976 | 1044.785 | 500.107 | 2 |
| 154 | 5042.319 | 1046.600 | 500.113 | 2 |
| 155 | 5042.319 | 1046.600 | 500.113 | 10 |
| 156 | 5040.473 | 1044.629 | 500.126 | 10 |
| 157 | 5042.166 | 1043.046 | 500.074 | 3 |
| 158 | 5042.217 | 1042.995 | 500.073 | 3 |
| 159 | 5042.228 | 1042.970 | 500.045 | 4 |
| 160 | 5044.081 | 1041.993 | 500.021 | 4 |
| 161 | 5056.751 | 1054.249 | 500.178 | 4 |
| 162 | 5062.151 | 1059.378 | 500.282 | 4 |
| 164 | 1000.000 | 5000.000 | 500.000 | INST |
| 164 | 4999.999 | 1000.002 | 500.002 | BSS |
| 165 | 4999.997 | 1000.000 | 500.001 | ORT |
| 167 | 5057.050 | 1048.238 | 500.136 | 10 |
| 168 | 5056.158 | 1047.508 | 500.136 | 1 |
| 169 | 5054.593 | 1049.210 | 500.159 | 3 |
| 170 | 5054.484 | 1049.193 | 500.159 | 3 |
| 171 | 5054.465 | 1049.210 | 500.120 | 4 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 172 | 5054.813 | 1049.385 | 500.151 | 16 |
| 173 | 5055.179 | 1049.743 | 500.152 | 16 |
| 174 | 5055.567 | 1050.119 | 500.154 | 16 |
| 175 | 5055.921 | 1050.477 | 500.161 | 16 |
| 176 | 5056.896 | 1051.405 | 500.169 | 16 |
| 177 | 5056.940 | 1048.188 | 500.137 | 16 |
| 178 | 5056.184 | 1047.580 | 500.119 | 16 |
| 179 | 5051.838 | 1052.342 | 500.152 | 2 |
| 180 | 5052.434 | 1056.365 | 500.247 | 2 |
| 181 | 5052.805 | 1055.964 | 500.236 | 2 |
| 182 | 5053.526 | 1056.662 | 500.243 | 2 |
| 183 | 5053.105 | 1057.040 | 500.254 | 2 |
| 184 | 5055.767 | 1058.786 | 500.273 | 2 |
| 185 | 5055.441 | 1059.115 | 500.271 | 2 |
| 187 | 5057.278 | 1060.833 | 500.289 | 10 |
| 188 | 5058.938 | 1059.158 | 500.270 | 10 |
| 189 | 5055.162 | 1058.911 | 500.233 | 10 |
| 190 | 5058.611 | 1059.467 | 500.269 | 5 |
| 191 | 5059.097 | 1059.966 | 500.286 | 18 |
| 192 | 5061.534 | 1054.229 | 500.266 | 8 |
| 193 | 5060.651 | 1053.145 | 500.242 | 8 |
| 194 | 5061.251 | 1055.572 | 500.217 | 2 |
| 195 | 5062.799 | 1053.962 | 500.200 | 2 |
| 196 | 5064.763 | 1058.953 | 500.328 | 2 |
| 197 | 5066.212 | 1057.297 | 500.250 | 2 |
| 198 | 5063.319 | 1054.458 | 500.200 | 10 |
| 199 | 5065.609 | 1056.601 | 500.193 | 10 |
| 200 | 5063.218 | 1057.473 | 500.300 | 3 |
| 201 | 5063.164 | 1057.530 | 500.297 | 3 |
| 202 | 5063.140 | 1057.532 | 500.263 | 4 |
| 203 | 5066.080 | 1060.299 | 500.325 | 4 |
| 204 | 5066.080 | 1060.213 | 500.320 | 3 |
| 206 | 5068.325 | 1061.106 | 500.341 | 4 |
| 207 | 5068.393 | 1061.057 | 500.346 | 3 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 208 | 5068.326 | 1061.090 | 500.330 | 3 |
| 209 | 5070.437 | 1063.090 | 500.402 | 4 |
| 210 | 5070.453 | 1063.080 | 500.425 | 3 |
| 211 | 5070.518 | 1063.034 | 500.416 | 3 |
| 212 | 5071.579 | 1062.206 | 500.467 | 10 |
| 213 | 5073.305 | 1063.899 | 500.514 | 10 |
| 214 | 5074.005 | 1065.667 | 500.635 | 8 |
| 215 | 5075.659 | 1066.969 | 500.695 | 17 |
| 216 | 5074.085 | 1069.477 | 500.741 | 17 |
| 217 | 5075.192 | 1067.729 | 500.581 | 3 |
| 218 | 5075.214 | 1067.720 | 500.605 | 3 |
| 219 | 5075.245 | 1067.677 | 500.617 | 3 |
| 220 | 5074.769 | 1068.163 | 500.588 | 4 |
| 221 | 5075.190 | 1067.729 | 500.578 | 4 |
| 222 | 5071.426 | 1071.547 | 500.604 | 4 |
| 223 | 5071.035 | 1071.951 | 500.624 | 4 |
| 225 | 5071.039 | 1072.048 | 500.637 | 3 |
| 226 | 5071.036 | 1071.945 | 500.624 | 3 |
| 227 | 5071.125 | 1072.039 | 500.799 | 13 |
| 228 | 5075.402 | 1067.747 | 500.731 | 13 |
| 229 | 5077.271 | 1070.263 | 500.790 | 1 |
| 230 | 5077.275 | 1069.129 | 500.789 | 19 |
| 231 | 5076.865 | 1068.936 | 500.755 | 19 |
| 232 | 5076.390 | 1070.549 | 500.763 | 19 |
| 233 | 5076.053 | 1070.278 | 500.759 | 19 |
| 234 | 5072.958 | 1073.577 | 500.794 | 19 |
| 235 | 5073.403 | 1074.035 | 500.796 | 19 |
| 236 | 5075.540 | 1068.931 | 500.796 | 20 |
| 237 | 5074.179 | 1070.985 | 500.798 | 20 |
| 238 | 5073.515 | 1071.684 | 500.794 | 20 |
| 239 | 5073.098 | 1072.071 | 500.801 | 20 |
| 240 | 5072.462 | 1072.769 | 500.801 | 20 |
| 241 | 5072.456 | 1072.763 | 500.801 | 20 |
| 242 | 5067.176 | 1070.246 | 500.487 | 10 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 243 | 5065.072 | 1068.164 | 500.461 | 10 |
| 245 | 5066.300 | 1067.647 | 500.451 | 3 |
| 246 | 5066.312 | 1067.643 | 500.475 | 3 |
| 247 | 5066.366 | 1067.590 | 500.475 | 3 |
| 248 | 5066.355 | 1067.567 | 500.445 | 4 |
| 249 | 5063.726 | 1065.197 | 500.405 | 3 |
| 250 | 5063.709 | 1065.215 | 500.369 | 2 |
| 251 | 5063.813 | 1065.210 | 500.414 | 3 |
| 252 | 5063.816 | 1065.195 | 500.398 | 4 |
| 253 | 5063.466 | 1063.790 | 500.349 | 4 |
| 254 | 5063.461 | 1063.836 | 500.387 | 3 |
| 255 | 5063.382 | 1063.841 | 500.385 | 3 |
| 256 | 5063.415 | 1063.970 | 500.343 | 2 |
| 257 | 5062.959 | 1062.872 | 500.326 | 4 |
| 258 | 5062.937 | 1062.869 | 500.355 | 3 |
| 259 | 5062.886 | 1062.919 | 500.355 | 3 |
| 260 | 5062.916 | 1062.969 | 500.337 | 2 |
| 261 | 5064.798 | 1068.077 | 500.411 | 10 |
| 262 | 5063.088 | 1066.532 | 500.385 | 10 |
| 264 | 5057.329 | 1060.920 | 500.267 | 2 |
| 265 | 5059.219 | 1059.438 | 500.269 | 2 |
| 266 | 5077.539 | 1067.905 | 500.732 | 1 |
| 267 | 5062.359 | 1062.360 | 500.349 | |
| 268 | 5000.000 | 1000.000 | 500.000 | INSTA |



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• Las Acacias

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 1 | 5000.000 | 1000.000 | 500.000 | |
| 2 | 5059.140 | 1055.093 | 500.576 | |
| 3 | 5010.680 | 1001.339 | 499.566 | |
| 4 | 5010.718 | 1001.341 | 499.621 | |
| 5 | 5010.799 | 1001.410 | 499.625 | |
| 6 | 5012.476 | 1002.476 | 500.042 | |
| 7 | 5013.412 | 1003.546 | 500.083 | |
| 8 | 5013.189 | 1004.210 | 500.114 | |
| 9 | 5011.130 | 1006.701 | 500.114 | |
| 10 | 5010.909 | 1006.556 | 500.099 | |
| 11 | 5010.656 | 1006.857 | 500.098 | |
| 12 | 5009.991 | 1005.791 | 500.066 | |
| 13 | 5009.737 | 1006.083 | 500.062 | |
| 14 | 5010.338 | 1007.945 | 500.100 | |
| 15 | 5008.071 | 1004.810 | 499.652 | |
| 16 | 5008.111 | 1004.711 | 499.627 | |
| 17 | 5008.057 | 1004.771 | 499.627 | |
| 18 | 5007.973 | 1004.703 | 499.627 | |
| 19 | 5008.034 | 1004.869 | 499.630 | |
| 20 | 5005.661 | 1007.477 | 499.592 | |
| 21 | 5004.056 | 1009.637 | 499.673 | |
| 22 | 5003.967 | 1009.582 | 499.670 | |
| 23 | 5002.967 | 1010.978 | 499.773 | |
| 24 | 5002.917 | 1011.067 | 499.779 | |
| 25 | 5002.957 | 1010.991 | 499.780 | |
| 26 | 5002.705 | 1011.115 | 499.790 | |
| 27 | 5002.663 | 1011.093 | 499.671 | |
| 28 | 5006.005 | 1010.707 | 499.929 | |
| 29 | 5005.966 | 1010.760 | 499.924 | |
| 30 | 5008.460 | 1007.378 | 499.956 | |
| 31 | 5008.511 | 1007.393 | 499.956 | |
| 32 | 5008.503 | 1007.481 | 499.889 | |
| 33 | 5008.453 | 1007.546 | 499.884 | |
| 34 | 5008.311 | 1010.057 | 500.031 | |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 69 | 5013.885 | 1011.745 | 500.233 | |
| 70 | 5012.245 | 1013.217 | 500.201 | |
| 71 | 5010.882 | 1014.741 | 500.230 | |
| 72 | 5010.868 | 1014.760 | 500.286 | |
| 73 | 5010.828 | 1014.810 | 500.293 | |
| 74 | 5013.636 | 1011.923 | 500.193 | |
| 75 | 5009.526 | 1014.812 | 500.270 | |
| 76 | 5018.159 | 1021.949 | 500.310 | |
| 77 | 5018.620 | 1021.337 | 500.334 | |
| 78 | 5018.623 | 1021.341 | 500.334 | |
| 79 | 5018.676 | 1021.279 | 500.334 | |
| 80 | 5018.674 | 1021.250 | 500.287 | |
| 81 | 5022.170 | 1024.170 | 500.304 | |
| 82 | 5022.142 | 1024.189 | 500.346 | |
| 83 | 5022.090 | 1024.238 | 500.347 | |
| 84 | 5021.141 | 1024.430 | 500.367 | |
| 85 | 5022.447 | 1025.533 | 500.378 | |
| 86 | 5022.971 | 1024.960 | 500.360 | |
| 87 | 5023.708 | 1025.576 | 500.361 | |
| 88 | 5023.195 | 1026.179 | 500.375 | |
| 89 | 5025.279 | 1027.485 | 500.359 | |
| 90 | 5028.113 | 1029.547 | 500.363 | |
| 91 | 5029.420 | 1030.504 | 500.308 | |
| 92 | 5029.957 | 1031.841 | 500.416 | |
| 93 | 5030.744 | 1032.457 | 500.415 | |
| 94 | 5030.762 | 1032.477 | 500.415 | |
| 95 | 5030.410 | 1031.167 | 499.981 | |
| 96 | 5030.409 | 1031.167 | 500.401 | |
| 97 | 5031.228 | 1031.826 | 500.403 | |
| 98 | 5031.867 | 1032.604 | 500.369 | |
| 99 | 5032.635 | 1033.015 | 500.416 | |
| 100 | 5032.632 | 1033.011 | 500.416 | |
| 101 | 5032.455 | 1033.783 | 500.422 | |
| 102 | 5035.886 | 1036.743 | 500.450 | |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 35 | 5005.718 | 1007.832 | 499.66 | |
| 36 | 5005.424 | 1007.560 | 499.604 | |
| 37 | 5002.293 | 1005.379 | 499.700 | |
| 38 | 5007.358 | 1011.931 | 500.136 | |
| 39 | 5007.422 | 1011.884 | 500.116 | |
| 40 | 5005.934 | 1013.165 | 500.140 | |
| 41 | 5004.229 | 1015.216 | 500.163 | |
| 42 | 5004.112 | 1015.052 | 500.150 | |
| 43 | 5003.286 | 1014.108 | 500.132 | |
| 44 | 5004.374 | 1012.783 | 500.122 | |
| 45 | 5004.616 | 1012.479 | 500.119 | |
| 46 | 5005.553 | 1013.250 | 500.136 | |
| 47 | 5005.313 | 1013.553 | 500.136 | |
| 48 | 5008.791 | 1013.131 | 500.260 | |
| 49 | 5007.672 | 1014.454 | 500.266 | |
| 50 | 5011.454 | 1009.947 | 500.176 | |
| 51 | 5012.553 | 1008.661 | 500.203 | |
| 52 | 5013.639 | 1009.952 | 500.264 | |
| 53 | 5012.941 | 1009.000 | 500.220 | |
| 54 | 5015.695 | 1012.114 | 500.322 | |
| 55 | 5016.484 | 1013.023 | 500.335 | |
| 56 | 5014.561 | 1012.019 | 500.183 | |
| 57 | 5016.990 | 1013.965 | 500.227 | |
| 58 | 5018.035 | 1014.789 | 500.261 | |
| 59 | 5018.510 | 1015.658 | 500.236 | |
| 60 | 5019.608 | 1016.559 | 500.237 | |
| 61 | 5020.550 | 1017.323 | 500.273 | |
| 62 | 5015.801 | 1012.669 | 500.306 | |
| 63 | 5015.721 | 1012.876 | 500.319 | |
| 64 | 5015.716 | 1012.872 | 500.319 | |
| 65 | 5015.135 | 1012.127 | 500.316 | |
| 66 | 5013.665 | 1010.930 | 500.243 | |
| 67 | 5013.501 | 1011.144 | 500.223 | |
| 68 | 5013.931 | 1011.507 | 500.230 | |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 103 | 5036.672 | 1036.312 | 500.438 | |
| 104 | 5036.672 | 1036.312 | 500.437 | |
| 105 | 5036.698 | 1036.265 | 500.443 | |
| 106 | 5036.687 | 1036.261 | 500.391 | |
| 107 | 5037.870 | 1034.741 | 500.378 | |
| 108 | 5039.116 | 1033.158 | 500.367 | |
| 109 | 5036.591 | 1036.798 | 500.366 | |
| 110 | 5038.061 | 1037.691 | 500.369 | |
| 111 | 5040.364 | 1039.927 | 500.383 | |
| 112 | 5041.497 | 1040.408 | 500.466 | |
| 113 | 5041.003 | 1041.018 | 500.489 | |
| 114 | 5041.281 | 1042.580 | 500.499 | |
| 115 | 5042.540 | 1042.683 | 500.517 | |
| 116 | 5046.113 | 1045.526 | 500.533 | |
| 117 | 5045.588 | 1046.204 | 500.546 | |
| 118 | 5046.336 | 1046.856 | 500.538 | |
| 119 | 5046.878 | 46.261 | 500.526 | |
| 120 | 5047.564 | 1045.470 | 500.494 | |
| 121 | 5047.829 | 1047.050 | 500.549 | |
| 122 | 5051.384 | 1049.651 | 500.535 | |
| 123 | 5052.290 | 1049.450 | 500.541 | |
| 124 | 5052.280 | 1049.420 | 500.541 | |
| 125 | 5052.357 | 1049.394 | 500.531 | |
| 126 | 5052.386 | 1049.379 | 500.467 | |
| 127 | 5053.917 | 1048.454 | 500.438 | |
| 128 | 5054.247 | 1052.096 | 500.558 | |
| 129 | 5054.760 | 1051.513 | 500.548 | |
| 130 | 5054.759 | 1051.515 | 500.548 | |
| 131 | 5055.148 | 1052.825 | 500.570 | |
| 132 | 5055.629 | 1052.223 | 500.541 | |
| 133 | 5057.470 | 1054.749 | 500.590 | |
| 134 | 5057.509 | 1053.818 | 500.561 | |
| 135 | 5057.540 | 1053.810 | 500.561 | |
| 136 | 5057.605 | 1053.762 | 500.561 | |



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| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 137 | 5057.606 | 1053.761 | 500.503 | |
| 138 | 5058.931 | 1052.510 | 500.472 | |
| 139 | 5060.463 | 1056.230 | 500.595 | |
| 140 | 5059.616 | 1056.510 | 500.626 | |
| 141 | 5065.755 | 1060.693 | 500.634 | |
| 142 | 5065.739 | 1060.679 | 500.633 | |
| 143 | 5065.792 | 1060.619 | 500.617 | |
| 144 | 5065.834 | 1060.586 | 500.543 | |
| 145 | 5065.829 | 1060.586 | 500.542 | |
| 146 | 5069.236 | 1063.633 | 500.622 | |
| 147 | 5069.523 | 1064.546 | 500.652 | |
| 148 | 5069.534 | 1064.487 | 500.644 | |
| 149 | 5069.553 | 1064.476 | 500.600 | |
| 150 | 5075.773 | 1069.790 | 500.641 | |
| 151 | 5075.810 | 1069.724 | 500.630 | |
| 152 | 5075.831 | 1069.671 | 500.631 | |
| 153 | 5074.754 | 1071.051 | 500.659 | |
| 154 | 5059.141 | 1055.092 | 500.576 | PR2 |
| 155 | 4999.994 | 999.993 | 499.983 | PR1 |
| 156 | 5081.532 | 1065.761 | 500.712 | 1 |
| 157 | 5081.413 | 1065.707 | 500.687 | 17 |
| 158 | 5081.101 | 1065.438 | 500.760 | 17 |
| 159 | 5080.517 | 1064.942 | 500.651 | 10 |
| 160 | 5078.346 | 1063.098 | 500.648 | 10 |
| 161 | 5079.541 | 1066.276 | 500.615 | 2 |
| 162 | 5079.589 | 1066.201 | 500.621 | 3 |
| 163 | 5079.543 | 1066.277 | 500.614 | 3 |
| 164 | 5079.590 | 1066.205 | 500.619 | 2 |
| 165 | 5080.398 | 1065.322 | 500.617 | 2 |
| 166 | 5077.473 | 1064.500 | 500.613 | 3 |
| 167 | 5077.539 | 1064.551 | 500.613 | 3 |
| 168 | 5079.437 | 1066.279 | 500.609 | 4 |
| 169 | 5076.177 | 1066.224 | 500.614 | 4 |
| 170 | 5074.590 | 1065.117 | 500.596 | 9 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 171 | 5073.235 | 1060.494 | 500.562 | 8 |
| 172 | 5071.202 | 1059.361 | 500.602 | 8 |
| 173 | 5072.801 | 1060.465 | 500.622 | 3 |
| 174 | 5072.819 | 1060.401 | 500.617 | 3 |
| 175 | 5072.874 | 1060.416 | 500.616 | 2 |
| 176 | 5071.715 | 1060.310 | 500.593 | 3 |
| 177 | 5071.760 | 1060.259 | 500.590 | 3 |
| 178 | 5072.804 | 1060.506 | 500.572 | 4 |
| 179 | 5071.715 | 1060.337 | 500.552 | 4 |
| 180 | 5065.545 | 1054.105 | 500.538 | 2 |
| 181 | 5066.380 | 1053.229 | 500.576 | 10 |
| 182 | 5065.419 | 1054.955 | 500.536 | 2 |
| 183 | 5065.416 | 1054.955 | 500.536 | 3 |
| 184 | 5065.364 | 1055.023 | 500.542 | 3 |
| 185 | 5063.951 | 1050.957 | 500.561 | 10 |
| 186 | 5061.424 | 1048.939 | 500.569 | 10 |
| 187 | 5059.711 | 1049.301 | 500.497 | 2 |
| 188 | 5059.258 | 1049.821 | 500.504 | 2 |
| 189 | 5059.258 | 1049.817 | 500.504 | 3 |
| 190 | 5059.228 | 1049.883 | 500.502 | 3 |
| 191 | 5059.212 | 1049.899 | 500.457 | 4 |
| 192 | 5058.709 | 1048.965 | 500.454 | 8 |
| 193 | 5055.493 | 1046.232 | 500.379 | 8 |
| 194 | 5055.575 | 1044.187 | 500.519 | 10 |
| 195 | 5053.367 | 1042.448 | 500.499 | 10 |
| 196 | 5052.479 | 1043.249 | 500.468 | 2 |
| 197 | 5051.650 | 1043.460 | 500.444 | 2 |
| 198 | 5051.618 | 1043.464 | 500.465 | 3 |
| 199 | 5051.561 | 1043.486 | 500.465 | 3 |
| 200 | 5051.544 | 1043.506 | 500.403 | 4 |
| 201 | 5054.954 | 1045.297 | 500.473 | 2 |
| 202 | 5054.670 | 1045.996 | 500.468 | 2 |
| 203 | 5054.608 | 1046.050 | 500.468 | 3 |
| 204 | 5049.327 | 1041.152 | 500.404 | 8 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 205 | 5047.942 | 1040.261 | 500.412 | 8 |
| 206 | 5044.881 | 1037.661 | 500.334 | 8 |
| 207 | 5042.830 | 1035.827 | 500.314 | 8 |
| 208 | 5040.541 | 1033.765 | 500.366 | 8 |
| 209 | 5038.461 | 1032.142 | 500.317 | 8 |
| 210 | 5042.743 | 1035.064 | 500.441 | 2 |
| 211 | 5042.255 | 1035.632 | 500.405 | 2 |
| 212 | 5040.623 | 1034.263 | 500.397 | 2 |
| 213 | 5041.174 | 1033.609 | 500.412 | 2 |
| 214 | 5039.735 | 1033.540 | 500.390 | 3 |
| 215 | 5039.668 | 1033.565 | 500.389 | 3 |
| 216 | 5039.657 | 1033.577 | 500.365 | 4 |
| 217 | 5031.964 | 1027.042 | 500.349 | 2 |
| 218 | 5032.053 | 1026.207 | 500.366 | 2 |
| 219 | 5025.239 | 1020.589 | 500.312 | 2 |
| 220 | 5024.563 | 1020.879 | 500.304 | 2 |
| 221 | 5024.437 | 1020.772 | 500.303 | 3 |
| 222 | 5024.379 | 1020.809 | 500.302 | 3 |
| 223 | 5024.386 | 1020.843 | 500.264 | 4 |
| 224 | 5013.515 | 1011.127 | 500.213 | 2 |
| 225 | 5014.013 | 1011.554 | 500.210 | 2 |
| 226 | 5013.930 | 1011.997 | 500.228 | 3 |
| 227 | 5013.874 | 1012.050 | 500.234 | 3 |
| 228 | 5013.865 | 1012.068 | 500.172 | 4 |
| 229 | 5030.376 | 1023.321 | 500.437 | 10 |
| 230 | 5032.665 | 1025.138 | 500.442 | 10 |
| 231 | 5000.000 | 1000.000 | 500.000 | PR1 |
| 232 | 5059.140 | 1055.093 | 500.576 | PR2 |
| 233 | 5010.680 | 1001.339 | 499.566 | 4 |
| 234 | 5010.718 | 1001.341 | 499.621 | 3 |
| 235 | 5010.799 | 1001.410 | 499.625 | 3 |
| 236 | 5012.476 | 1002.476 | 500.042 | 2 |
| 237 | 5013.412 | 1003.546 | 500.083 | 2 |
| 238 | 5013.189 | 1004.210 | 500.114 | 10 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 239 | 5011.130 | 1006.701 | 500.114 | 10 |
| 240 | 5010.909 | 1006.556 | 500.099 | 13 |
| 241 | 5010.656 | 1006.857 | 500.098 | 13 |
| 242 | 5009.991 | 1005.791 | 500.066 | 13 |
| 243 | 5009.737 | 1006.083 | 500.062 | 13 |
| 244 | 5010.338 | 1007.945 | 500.100 | 6 |
| 245 | 5008.071 | 1004.810 | 499.652 | 3 |
| 246 | 5008.111 | 1004.711 | 499.627 | 3 |
| 247 | 5008.057 | 1004.771 | 499.627 | 3 |
| 248 | 5007.973 | 1004.703 | 499.627 | 3 |
| 249 | 5008.034 | 1004.869 | 499.630 | 4 |
| 250 | 5005.661 | 1007.477 | 499.592 | 4 |
| 251 | 5004.056 | 1009.637 | 499.673 | 3 |
| 252 | 5003.967 | 1009.582 | 499.670 | 3 |
| 253 | 5002.967 | 1010.978 | 499.773 | 3 |
| 254 | 5002.917 | 1011.067 | 499.779 | 3 |
| 255 | 5002.957 | 1010.991 | 499.780 | 3 |
| 256 | 5002.705 | 1011.115 | 499.790 | 3 |
| 257 | 5002.663 | 1011.093 | 499.671 | 4 |
| 258 | 5006.005 | 1010.707 | 499.929 | 3 |
| 259 | 5005.966 | 1010.760 | 499.924 | 3 |
| 260 | 5008.460 | 1007.378 | 499.956 | 3 |
| 261 | 5008.511 | 1007.393 | 499.956 | 3 |
| 262 | 5008.503 | 1007.481 | 499.889 | 3 |
| 263 | 5008.453 | 1007.546 | 499.884 | 3 |
| 264 | 5008.311 | 1010.057 | 500.031 | 4 |
| 265 | 5005.718 | 1007.832 | 499.660 | 4 |
| 266 | 5005.424 | 1007.560 | 499.604 | 4 |
| 267 | 5002.293 | 1005.379 | 499.700 | 9 |
| 268 | 5007.358 | 1011.931 | 500.136 | 3 |
| 269 | 5007.422 | 1011.884 | 500.116 | 3 |
| 270 | 5005.934 | 1013.165 | 500.140 | 10 |
| 271 | 5004.229 | 1015.216 | 500.163 | 10 |
| 272 | 5004.112 | 1015.052 | 500.150 | 2 |



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| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 273 | 5003.286 | 1014.108 | 500.132 | 2 |
| 274 | 5004.374 | 1012.783 | 500.122 | 13 |
| 275 | 5004.616 | 1012.479 | 500.119 | 13 |
| 276 | 5005.553 | 1013.250 | 500.136 | 13 |
| 277 | 5005.313 | 1013.553 | 500.136 | 13 |
| 278 | 5008.791 | 1013.131 | 500.260 | 14 |
| 279 | 5007.672 | 1014.454 | 500.266 | 14 |
| 280 | 5011.454 | 1009.947 | 500.176 | 14 |
| 281 | 5012.553 | 1008.661 | 500.203 | 14 |
| 282 | 5013.639 | 1009.952 | 500.264 | 9 |
| 283 | 5012.941 | 1009.000 | 500.220 | 1 |
| 284 | 5015.695 | 1012.114 | 500.322 | 15 |
| 285 | 5016.484 | 1013.023 | 500.335 | 11 |
| 286 | 5014.561 | 1012.019 | 500.183 | 8 |
| 287 | 5016.990 | 1013.965 | 500.227 | 16 |
| 288 | 5018.035 | 1014.789 | 500.261 | 8 |
| 289 | 5018.510 | 1015.658 | 500.236 | 16 |
| 290 | 5019.608 | 1016.559 | 500.237 | 8 |
| 291 | 5020.550 | 1017.323 | 500.273 | 12 |
| 292 | 5015.801 | 1012.669 | 500.306 | 2 |
| 293 | 5015.721 | 1012.876 | 500.319 | 2 |
| 294 | 5015.716 | 1012.872 | 500.319 | 2 |
| 295 | 5015.135 | 1012.127 | 500.316 | 2 |
| 296 | 5013.665 | 1010.930 | 500.243 | 2 |
| 297 | 5013.501 | 1011.144 | 500.223 | 2 |
| 298 | 5013.931 | 1011.507 | 500.230 | 2 |
| 299 | 5013.885 | 1011.745 | 500.233 | 2 |
| 300 | 5012.245 | 1013.217 | 500.201 | 4 |
| 301 | 5010.882 | 1014.741 | 500.230 | 4 |
| 302 | 5010.868 | 1014.760 | 500.286 | 3 |
| 303 | 5010.828 | 1014.810 | 500.293 | 3 |
| 304 | 5013.636 | 1011.923 | 500.193 | 3 |
| 305 | 5009.526 | 1014.812 | 500.270 | 2 |
| 306 | 5018.159 | 1021.949 | 500.310 | 2 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 341 | 5040.364 | 1039.927 | 500.383 | 8 |
| 342 | 5041.497 | 1040.408 | 500.466 | 2 |
| 343 | 5041.003 | 1041.018 | 500.489 | 2 |
| 344 | 5041.281 | 1042.580 | 500.499 | 2 |
| 345 | 5042.540 | 1042.683 | 500.517 | 5 |
| 346 | 5046.113 | 1045.526 | 500.533 | 2 |
| 347 | 5045.588 | 1046.204 | 500.546 | 2 |
| 348 | 5046.336 | 1046.856 | 500.538 | 2 |
| 349 | 5046.878 | 46.261 | 500.526 | 2 |
| 350 | 5047.564 | 1045.470 | 500.494 | 2 |
| 351 | 5047.829 | 1047.050 | 500.549 | 2 |
| 352 | 5051.384 | 1049.651 | 500.535 | 2 |
| 353 | 5052.290 | 1049.450 | 500.541 | 2 |
| 354 | 5052.280 | 1049.420 | 500.541 | 3 |
| 355 | 5052.357 | 1049.394 | 500.531 | 3 |
| 356 | 5052.386 | 1049.379 | 500.467 | 4 |
| 357 | 5053.917 | 1048.454 | 500.438 | 4 |
| 358 | 5054.247 | 1052.096 | 500.558 | 2 |
| 359 | 5054.760 | 1051.513 | 500.548 | 2 |
| 360 | 5054.759 | 1051.515 | 500.548 | 2 |
| 361 | 5055.148 | 1052.825 | 500.570 | 2 |
| 362 | 5055.629 | 1052.223 | 500.541 | 2 |
| 363 | 5057.470 | 1054.749 | 500.590 | 2 |
| 364 | 5057.509 | 1053.818 | 500.561 | 2 |
| 365 | 5057.540 | 1053.810 | 500.561 | 3 |
| 366 | 5057.605 | 1053.762 | 500.561 | 3 |
| 367 | 5057.606 | 1053.761 | 500.503 | 4 |
| 368 | 5058.931 | 1052.510 | 500.472 | 4 |
| 369 | 5060.463 | 1056.230 | 500.595 | 2 |
| 370 | 5059.616 | 1056.510 | 500.626 | 2 |
| 371 | 5065.755 | 1060.693 | 500.634 | 2 |
| 372 | 5065.739 | 1060.679 | 500.633 | 3 |
| 373 | 5065.792 | 1060.619 | 500.617 | 3 |
| 374 | 5065.834 | 1060.586 | 500.543 | 3 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 307 | 5018.620 | 1021.337 | 500.334 | 2 |
| 308 | 5018.623 | 1021.341 | 500.334 | 3 |
| 309 | 5018.676 | 1021.279 | 500.334 | 3 |
| 310 | 5018.674 | 1021.250 | 500.287 | 4 |
| 311 | 5022.170 | 1024.170 | 500.304 | 4 |
| 312 | 5022.142 | 1024.189 | 500.346 | 3 |
| 313 | 5022.090 | 1024.238 | 500.347 | 2 |
| 314 | 5021.141 | 1024.430 | 500.367 | 2 |
| 315 | 5022.447 | 1025.533 | 500.378 | 2 |
| 316 | 5022.971 | 1024.960 | 500.360 | 2 |
| 317 | 5023.708 | 1025.576 | 500.361 | 2 |
| 318 | 5023.195 | 1026.179 | 500.375 | 2 |
| 319 | 5025.279 | 1027.485 | 500.359 | 8 |
| 320 | 5028.113 | 1029.547 | 500.363 | 12 |
| 321 | 5029.420 | 1030.504 | 500.308 | 8 |
| 322 | 5029.957 | 1031.841 | 500.416 | 2 |
| 323 | 5030.744 | 1032.457 | 500.415 | 2 |
| 324 | 5030.762 | 1032.477 | 500.415 | 2 |
| 325 | 5030.410 | 1031.167 | 499.981 | 2 |
| 326 | 5030.409 | 1031.167 | 500.401 | 2 |
| 327 | 5031.228 | 1031.826 | 500.403 | 2 |
| 328 | 5031.867 | 1032.604 | 500.369 | 8 |
| 329 | 5032.635 | 1033.015 | 500.416 | 2 |
| 330 | 5032.632 | 1033.011 | 500.416 | 3 |
| 331 | 5032.455 | 1033.783 | 500.422 | 2 |
| 332 | 5035.886 | 1036.743 | 500.450 | 2 |
| 333 | 5036.672 | 1036.312 | 500.438 | 2 |
| 334 | 5036.672 | 1036.312 | 500.437 | 3 |
| 335 | 5036.698 | 1036.265 | 500.443 | 3 |
| 336 | 5036.687 | 1036.261 | 500.391 | 4 |
| 337 | 5037.870 | 1034.741 | 500.378 | 4 |
| 338 | 5039.116 | 1033.158 | 500.367 | 4 |
| 339 | 5036.591 | 1036.798 | 500.366 | 16 |
| 340 | 5038.061 | 1037.691 | 500.369 | 8 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 375 | 5065.829 | 1060.586 | 500.542 | 4 |
| 376 | 5069.236 | 1063.633 | 500.622 | 3 |
| 377 | 5069.523 | 1064.546 | 500.652 | 3 |
| 378 | 5069.534 | 1064.487 | 500.644 | 3 |
| 379 | 5069.553 | 1064.476 | 500.600 | 4 |
| 380 | 5075.773 | 1069.790 | 500.641 | 3 |
| 381 | 5075.810 | 1069.724 | 500.630 | 3 |
| 382 | 5075.831 | 1069.671 | 500.631 | 4 |
| 383 | 5074.754 | 1071.051 | 500.659 | 1 |



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• El Progreso

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 1 | 5069.365 | 1059.587 | 500.977 | ORT |
| 2 | 4997.606 | 1000.534 | 500.059 | 1 |
| 3 | 5000.569 | 1002.932 | 499.882 | 3 |
| 4 | 5000.681 | 1002.987 | 499.880 | 3 |
| 5 | 5000.732 | 1003.038 | 499.770 | 4 |
| 6 | 5003.539 | 993.535 | 499.940 | 1 |
| 7 | 5006.162 | 996.207 | 499.805 | 3 |
| 8 | 5006.251 | 996.273 | 499.801 | 3 |
| 9 | 5006.289 | 996.296 | 499.665 | 4 |
| 10 | 5011.638 | 1000.675 | 499.661 | 4 |
| 11 | 5011.679 | 1000.697 | 499.792 | 3 |
| 12 | 5011.756 | 1000.758 | 499.790 | 3 |
| 13 | 5014.959 | 1002.882 | 499.858 | 1 |
| 14 | 5014.086 | 1001.675 | 499.845 | 2 |
| 15 | 5013.384 | 1000.957 | 499.801 | 15 |
| 16 | 5012.230 | 1002.052 | 499.817 | 6 |
| 17 | 5013.947 | 1003.703 | 499.920 | 11 |
| 18 | 5013.700 | 1003.996 | 499.922 | 11 |
| 19 | 5012.761 | 1003.222 | 499.890 | 11 |
| 20 | 5013.018 | 1002.935 | 499.881 | 11 |
| 21 | 5013.678 | 1004.040 | 499.927 | 11 |
| 22 | 5012.949 | 1004.931 | 499.917 | 11 |
| 23 | 5013.256 | 1005.171 | 499.941 | 11 |
| 24 | 5013.921 | 1004.371 | 499.944 | 11 |
| 25 | 5013.884 | 1004.238 | 499.944 | 1 |
| 26 | 5017.130 | 1007.169 | 500.119 | 1 |
| 27 | 5012.943 | 1004.930 | 499.906 | 2 |
| 28 | 5012.236 | 1005.790 | 499.723 | 2 |
| 29 | 5011.913 | 1004.255 | 499.873 | 2 |
| 30 | 5011.296 | 1005.011 | 499.718 | 2 |
| 31 | 5010.687 | 1002.064 | 499.697 | 4 |
| 32 | 5010.859 | 1004.752 | 499.731 | 4 |
| 33 | 5011.132 | 1001.359 | 499.799 | 3 |
| 34 | 5011.214 | 1001.421 | 499.797 | 3 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 35 | 5011.096 | 1001.327 | 499.673 | 4 |
| 36 | 5010.590 | 1001.986 | 499.698 | 3 |
| 37 | 5010.673 | 1002.074 | 499.704 | 3 |
| 38 | 5010.594 | 1002.146 | 499.684 | 3 |
| 39 | 5007.834 | 1005.285 | 499.710 | 3 |
| 40 | 5007.915 | 1005.368 | 499.710 | 3 |
| 41 | 5008.206 | 1005.038 | 499.693 | 4 |
| 42 | 5008.094 | 1004.941 | 499.684 | 4 |
| 43 | 5004.525 | 1009.172 | 499.753 | 4 |
| 44 | 5004.562 | 1009.208 | 499.901 | 3 |
| 45 | 5004.647 | 1009.278 | 499.909 | 3 |
| 46 | 5006.923 | 1012.542 | 500.004 | 1 |
| 47 | 5005.958 | 1011.360 | 500.033 | 2 |
| 48 | 5007.784 | 1009.150 | 500.004 | 11 |
| 49 | 5007.539 | 1009.457 | 500.009 | 11 |
| 50 | 5008.732 | 1009.901 | 500.018 | 11 |
| 51 | 5008.479 | 1010.212 | 500.026 | 11 |
| 52 | 5009.655 | 1009.570 | 499.932 | 7 |
| 53 | 5009.333 | 1009.162 | 499.934 | 2 |
| 54 | 5009.939 | 1008.470 | 499.853 | 2 |
| 55 | 5009.229 | 1007.445 | 499.785 | 2 |
| 56 | 5010.154 | 1008.214 | 499.787 | 2 |
| 57 | 5009.239 | 1007.444 | 499.788 | 3 |
| 58 | 5009.300 | 1007.396 | 499.788 | 3 |
| 59 | 5009.304 | 1007.390 | 499.783 | 4 |
| 60 | 5006.318 | 1007.279 | 499.769 | 4 |
| 61 | 5006.235 | 1007.213 | 499.756 | 3 |
| 62 | 5006.218 | 1007.205 | 499.737 | 3 |
| 63 | 5005.942 | 1007.727 | 499.785 | 3 |
| 64 | 5005.842 | 1007.671 | 499.793 | 3 |
| 65 | 5000.928 | 1008.589 | 499.851 | 9 |
| 66 | 5005.966 | 1001.741 | 499.747 | 9 |
| 67 | 5010.774 | 1006.667 | 499.759 | 4 |
| 68 | 5010.536 | 1010.275 | 500.043 | 2 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 69 | 5010.932 | 1011.564 | 500.130 | 2 |
| 70 | 5010.932 | 1011.564 | 500.130 | 10 |
| 71 | 5011.850 | 1010.221 | 500.005 | 2 |
| 72 | 5012.127 | 1009.928 | 499.853 | 2 |
| 73 | 5011.360 | 1010.362 | 500.028 | 9 |
| 74 | 5014.446 | 1014.850 | 500.228 | 10 |
| 75 | 5015.472 | 1015.635 | 500.253 | 14 |
| 76 | 5016.810 | 1014.140 | 499.972 | 14 |
| 77 | 5019.000 | 1011.603 | 499.965 | 14 |
| 78 | 5020.438 | 1009.953 | 500.242 | 14 |
| 79 | 5018.965 | 1009.837 | 500.182 | 5 |
| 80 | 5017.966 | 1009.214 | 500.130 | 2 |
| 81 | 5016.373 | 1008.380 | 499.268 | 8 |
| 82 | 5015.416 | 1014.192 | 500.164 | 2 |
| 83 | 5016.515 | 1013.729 | 499.932 | 2 |
| 84 | 5018.545 | 1013.384 | 499.896 | 4 |
| 85 | 5020.076 | 1011.568 | 500.134 | 8 |
| 86 | 5027.385 | 1018.943 | 500.077 | 2 |
| 87 | 5027.381 | 1018.941 | 500.077 | 3 |
| 88 | 5028.417 | 1018.337 | 500.318 | 2 |
| 89 | 5030.143 | 1021.328 | 500.120 | 2 |
| 90 | 5030.144 | 1021.329 | 500.120 | 3 |
| 91 | 5030.629 | 1020.210 | 500.357 | 2 |
| 92 | 5029.342 | 1017.723 | 500.367 | 10 |
| 93 | 5031.259 | 1019.431 | 500.392 | 10 |
| 94 | 5027.635 | 1017.645 | 500.337 | 2 |
| 95 | 5027.028 | 1018.771 | 500.022 | 4 |
| 96 | 5027.032 | 1018.753 | 500.076 | 3 |
| 97 | 5026.114 | 1019.980 | 500.046 | 4 |
| 98 | 5023.489 | 1014.502 | 500.172 | 8 |
| 99 | 5025.927 | 1016.599 | 500.211 | 8 |
| 100 | 5032.369 | 1022.418 | 500.316 | 8 |
| 101 | 5033.916 | 1023.428 | 500.268 | 8 |
| 102 | 5035.840 | 1025.414 | 500.313 | 8 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 103 | 5041.219 | 1029.604 | 500.436 | 8 |
| 104 | 5044.006 | 1032.100 | 500.510 | 8 |
| 105 | 5038.094 | 1030.370 | 500.288 | 4 |
| 106 | 5035.699 | 1024.542 | 500.454 | 2 |
| 107 | 5036.540 | 1024.018 | 500.486 | 10 |
| 108 | 5031.848 | 1028.477 | 500.487 | 2 |
| 109 | 5031.536 | 1029.553 | 500.539 | 2 |
| 110 | 5031.701 | 1029.709 | 500.547 | 10 |
| 111 | 5035.051 | 1032.743 | 500.636 | 10 |
| 112 | 5032.953 | 1029.458 | 500.506 | 2 |
| 113 | 5033.126 | 1028.136 | 500.259 | 2 |
| 114 | 5033.125 | 1028.137 | 500.259 | 3 |
| 115 | 5032.922 | 1027.971 | 500.257 | 3 |
| 116 | 5035.135 | 1029.808 | 500.295 | 3 |
| 117 | 5035.154 | 1029.816 | 500.268 | 4 |
| 118 | 5038.058 | 1028.218 | 500.264 | 2 |
| 119 | 5038.618 | 1027.613 | 500.404 | 2 |
| 120 | 5050.043 | 1038.615 | 500.509 | 2 |
| 121 | 5050.460 | 1037.450 | 500.598 | 2 |
| 122 | 5046.651 | 1042.659 | 500.818 | 1 |
| 123 | 5045.004 | 1039.905 | 500.736 | 2 |
| 124 | 5045.709 | 1039.078 | 500.511 | 2 |
| 125 | 5042.039 | 1035.894 | 500.433 | 3 |
| 126 | 5042.168 | 1035.890 | 500.441 | 3 |
| 127 | 5042.173 | 1035.875 | 500.390 | 4 |
| 128 | 5037.526 | 1034.739 | 500.650 | 10 |
| 129 | 5035.493 | 1033.128 | 500.655 | 10 |
| 130 | 5042.169 | 1033.979 | 500.370 | 4 |
| 131 | 5052.820 | 1041.000 | 500.564 | 2 |
| 132 | 5053.547 | 1040.123 | 500.645 | 2 |
| 133 | 5054.527 | 1041.001 | 500.670 | 2 |
| 134 | 5053.787 | 1041.869 | 500.592 | 2 |
| 135 | 5060.487 | 1046.165 | 500.789 | 2 |
| 136 | 5059.747 | 1047.032 | 500.712 | 2 |



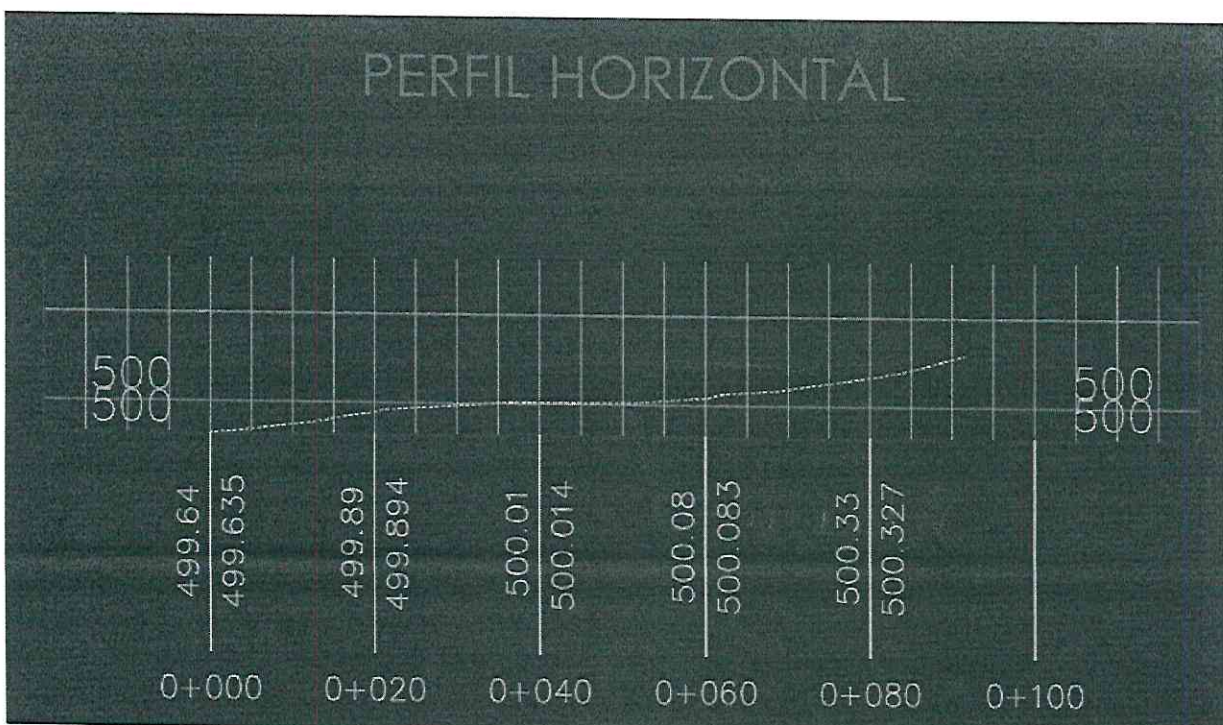
| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 137 | 5064.085 | 1050.798 | 500.799 | 2 |
| 138 | 5064.662 | 1049.818 | 500.848 | 2 |
| 139 | 5070.584 | 1054.942 | 500.975 | 2 |
| 140 | 5071.150 | 1054.057 | 501.071 | 1 |
| 141 | 5056.431 | 1051.404 | 500.884 | 1 |
| 142 | 5057.979 | 1049.665 | 500.748 | 3 |
| 143 | 5064.568 | 1057.089 | 500.958 | 2 |
| 144 | 5065.673 | 1056.417 | 500.898 | 2 |
| 145 | 5000.000 | 1000.000 | 500.000 | PR1 |
| 146 | 5000.002 | 1000.002 | 499.987 | BSS |
| 147 | 5049.179 | 1034.536 | 500.657 | 10 |
| 148 | 5051.237 | 1036.364 | 500.643 | 10 |
| 149 | 5051.246 | 1037.661 | 500.623 | 5 |
| 150 | 5051.886 | 1047.296 | 500.843 | 10 |
| 151 | 5049.736 | 1045.416 | 500.817 | 10 |
| 152 | 5058.287 | 1052.984 | 500.907 | 10 |
| 153 | 5060.344 | 1054.864 | 500.930 | 10 |
| 154 | 5064.524 | 1057.110 | 500.958 | 2 |
| 155 | 5065.657 | 1056.370 | 500.890 | 2 |
| 156 | 5065.900 | 1058.232 | 500.997 | 2 |
| 157 | 5066.723 | 1057.323 | 500.911 | 2 |
| 158 | 5067.463 | 1057.976 | 500.931 | 2 |
| 159 | 5066.660 | 1058.892 | 501.011 | 2 |
| 160 | 5072.861 | 1064.277 | 501.169 | 2 |
| 161 | 5073.172 | 1063.861 | 501.051 | 2 |
| 162 | 5077.238 | 1067.391 | 501.260 | 2 |
| 163 | 5076.179 | 1068.526 | 501.380 | 2 |
| 164 | 5076.178 | 1068.524 | 501.380 | 11 |
| 165 | 5074.413 | 1067.091 | 501.319 | 10 |
| 166 | 5076.453 | 1066.555 | 501.134 | 3 |
| 167 | 5076.458 | 1066.678 | 501.160 | 3 |
| 168 | 5079.180 | 1063.292 | 501.091 | 3 |
| 169 | 5079.284 | 1063.284 | 501.106 | 3 |
| 170 | 5074.543 | 1059.363 | 501.004 | 3 |

| PUNTO | NORTE | ESTE | COTA | CODIGO |
|-------|----------|----------|---------|--------|
| 171 | 5074.576 | 1059.300 | 501.018 | 3 |
| 172 | 5072.807 | 1058.486 | 500.974 | 3 |
| 173 | 5072.854 | 1058.414 | 500.990 | 3 |
| 174 | 5070.886 | 1060.855 | 501.003 | 3 |
| 175 | 5070.872 | 1060.908 | 501.006 | 3 |
| 176 | 5071.891 | 1062.639 | 501.045 | 3 |
| 177 | 5071.848 | 1062.653 | 501.047 | 3 |
| 178 | 5074.674 | 1062.311 | 501.028 | 9 |
| 179 | 5071.980 | 1062.500 | 501.017 | 4 |
| 180 | 5074.364 | 1059.571 | 500.974 | 4 |
| 181 | 5076.433 | 1066.314 | 501.104 | 4 |
| 182 | 5077.571 | 1064.941 | 501.081 | 4 |
| 183 | 5078.839 | 1063.342 | 501.065 | 4 |
| 184 | 5078.184 | 1061.574 | 501.070 | 2 |
| 185 | 5077.948 | 1062.160 | 501.066 | 2 |
| 186 | 5080.884 | 1063.955 | 501.244 | 2 |
| 187 | 5081.500 | 1063.125 | 501.261 | 2 |
| 188 | 5082.857 | 1065.103 | 501.525 | 1 |
| 189 | 5078.375 | 1070.419 | 501.628 | 1 |
| 190 | 5078.677 | 1060.550 | 501.116 | 10 |
| 191 | 5076.584 | 1058.778 | 501.088 | 10 |
| 192 | 5076.048 | 1059.089 | 501.073 | 5 |
| 193 | 5073.885 | 1058.643 | 501.015 | 8 |
| 194 | 5070.449 | 1055.608 | 500.950 | 8 |
| 195 | 5071.103 | 1055.421 | 500.965 | 2 |
| 196 | 5064.961 | 1056.458 | 501.560 | 10 |
| 197 | 5074.342 | 1056.778 | 501.112 | 10 |
| 198 | 5072.522 | 1055.206 | 501.074 | 10 |
| 199 | 4999.999 | 1000.002 | 499.985 | Norte |
| 200 | 5069.365 | 1059.587 | 500.977 | INS |

8. Perfil Horizontal

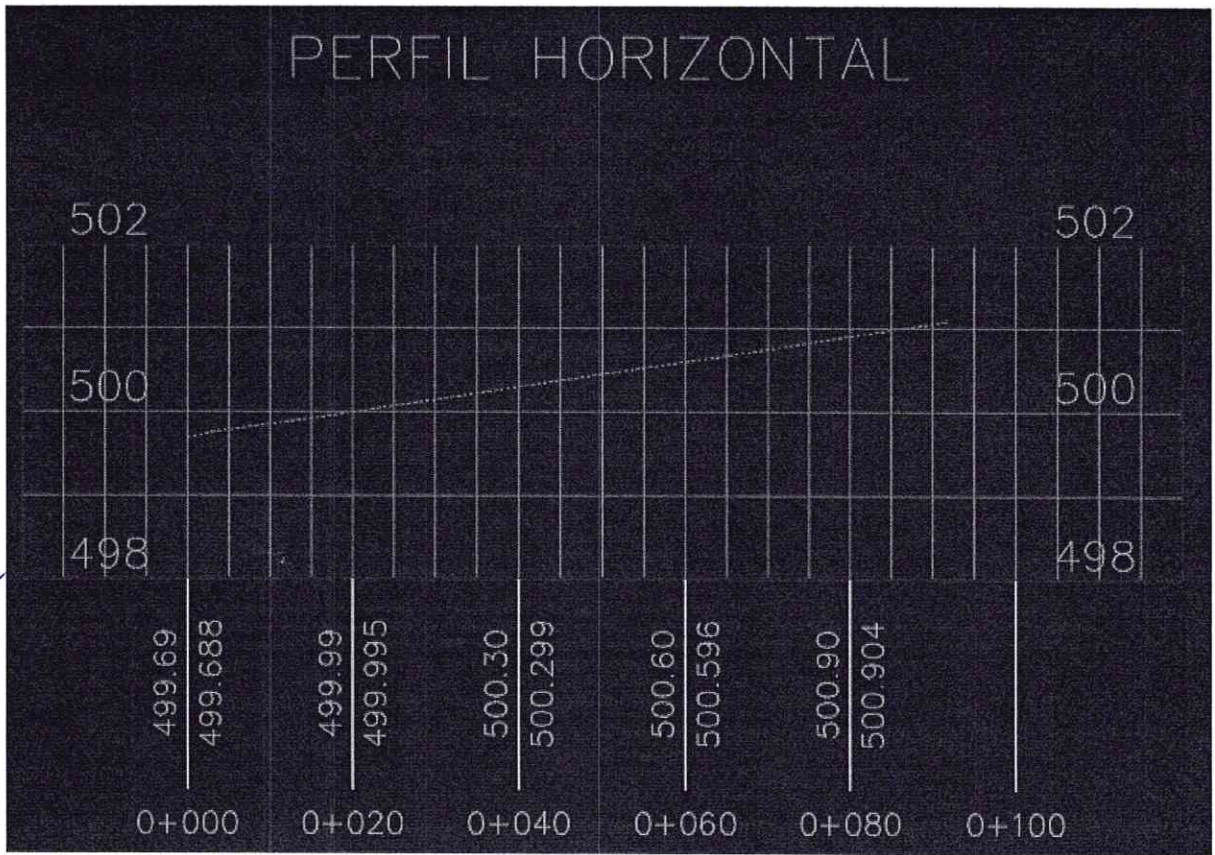
El perfil horizontal (también conocido como corte horizontal) representa la forma de un terreno a lo largo de una línea definida en un mapa topográfico. Es decir, muestra las variaciones de altura del terreno a lo largo de esa línea, como si se realizara un corte transversal en el terreno.

Perfil pasaje Santa Marta

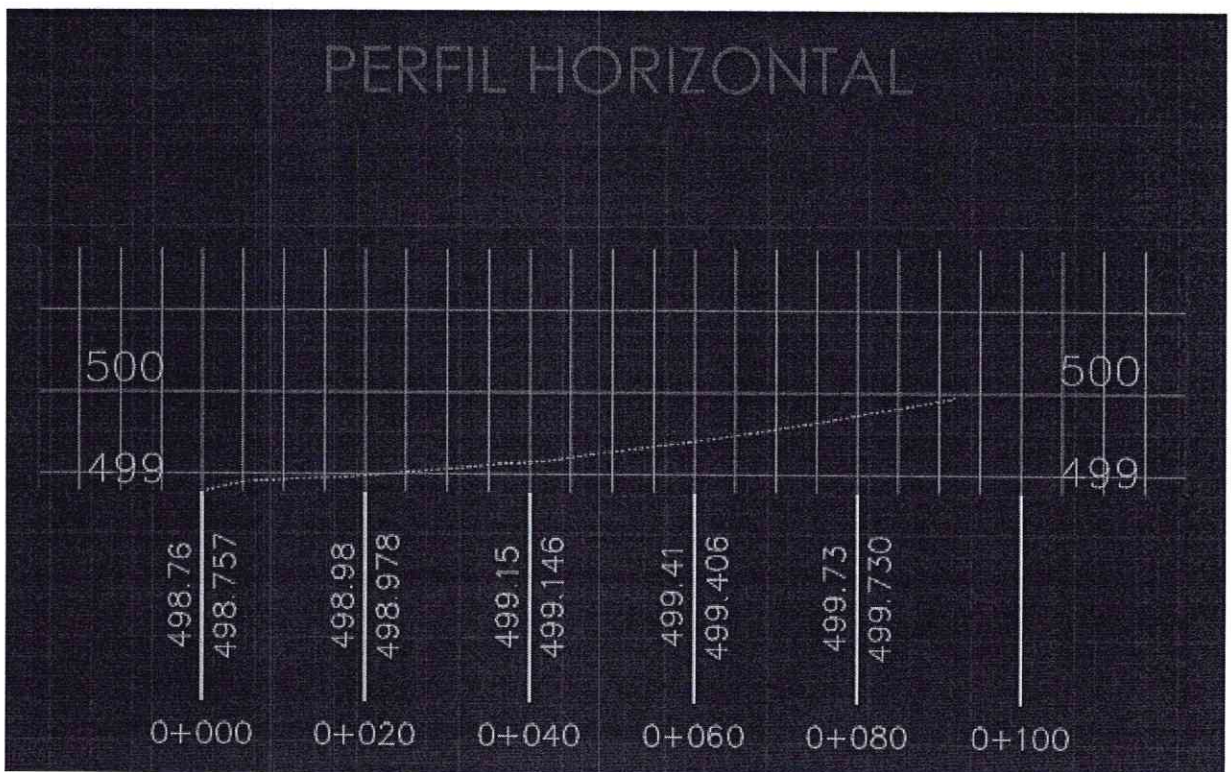




Perfil pasaje Las Acacias



Perfil pasaje El Progreso





14

Podemos interpretar en estos perfiles que la pendiente siempre se direcciona a un sentido de caída, estos pasajes tienen en común que los conecta la avenida La Pirámide, esta calzada se encuentra a menor altura por lo que podemos deducir la caída del agua lluvia y su circulación.

9. Perfiles Transversales

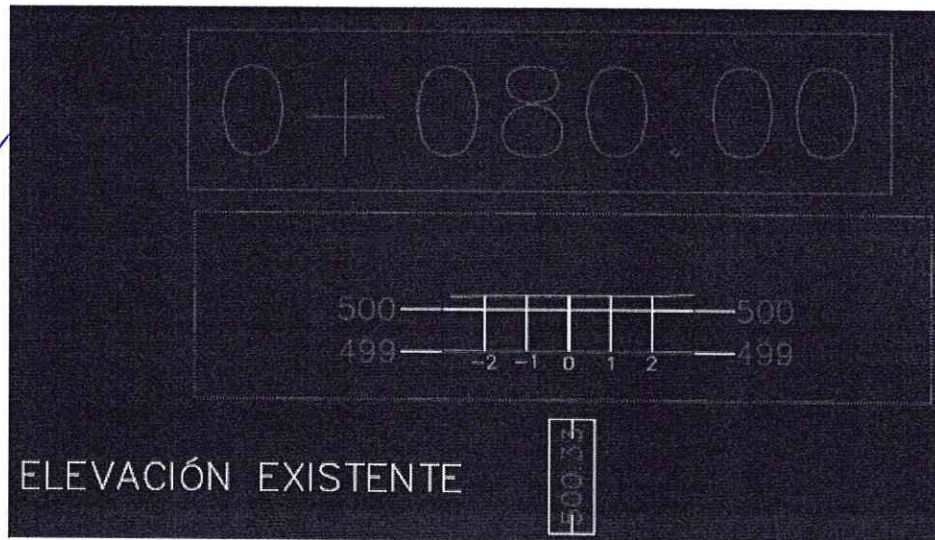
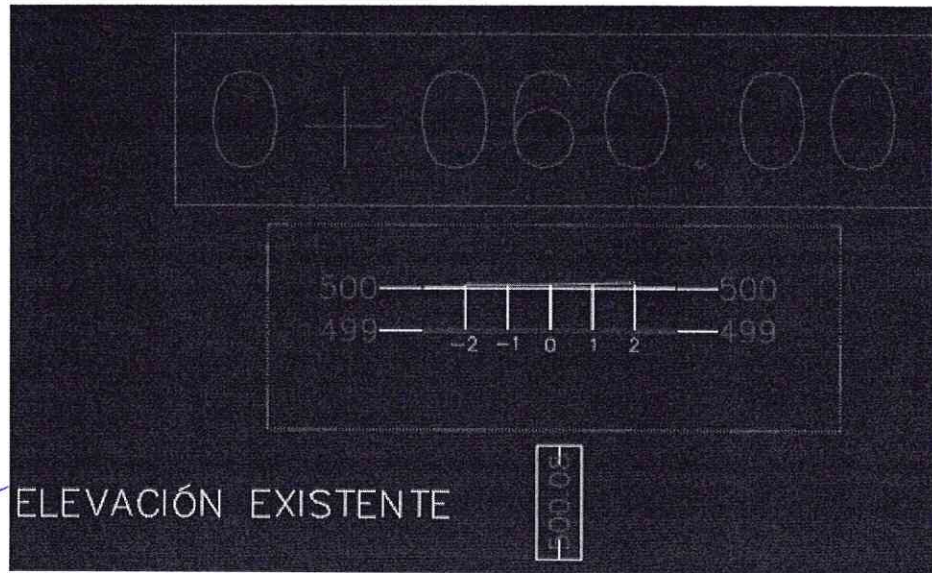
El perfil transversal en la topografía es una representación gráfica del terreno obtenida a partir de cortes perpendiculares al eje principal de una obra lineal, como una carretera o pasaje. Estos perfiles muestran cómo varía la elevación del terreno hacia los lados del eje, permitiendo observar la forma real del terreno en diferentes puntos a lo largo del recorrido.

- Pasaje Santa Marta





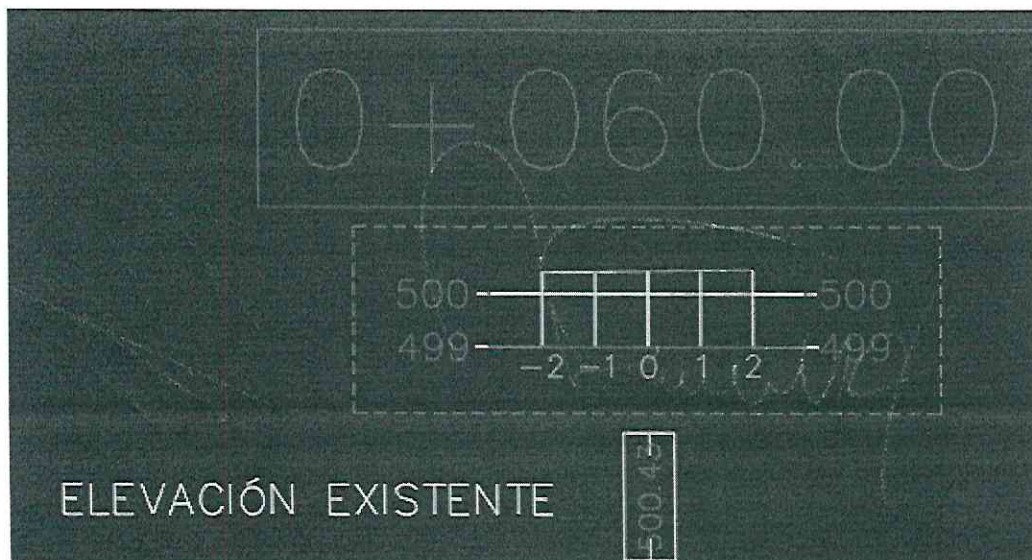
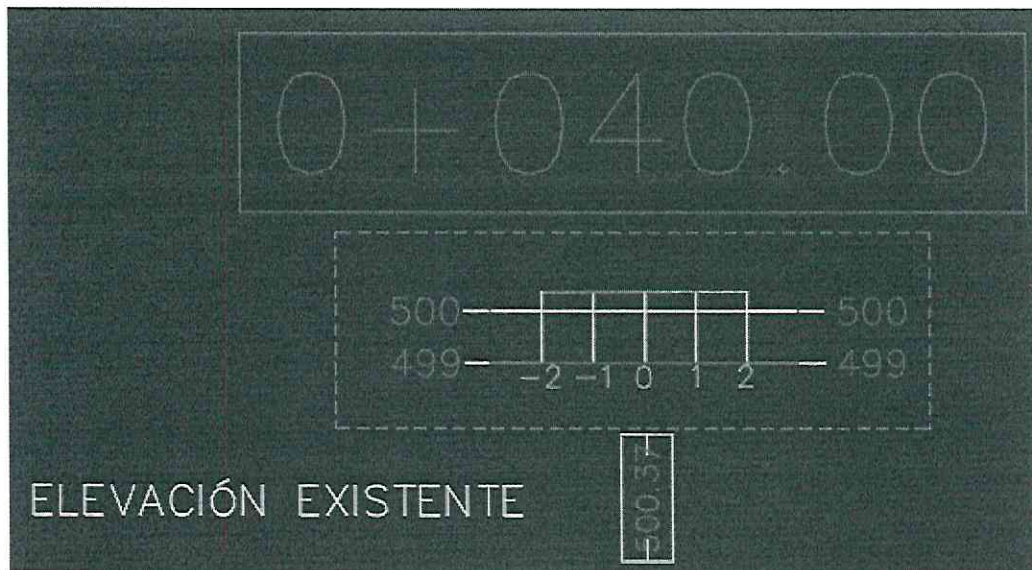
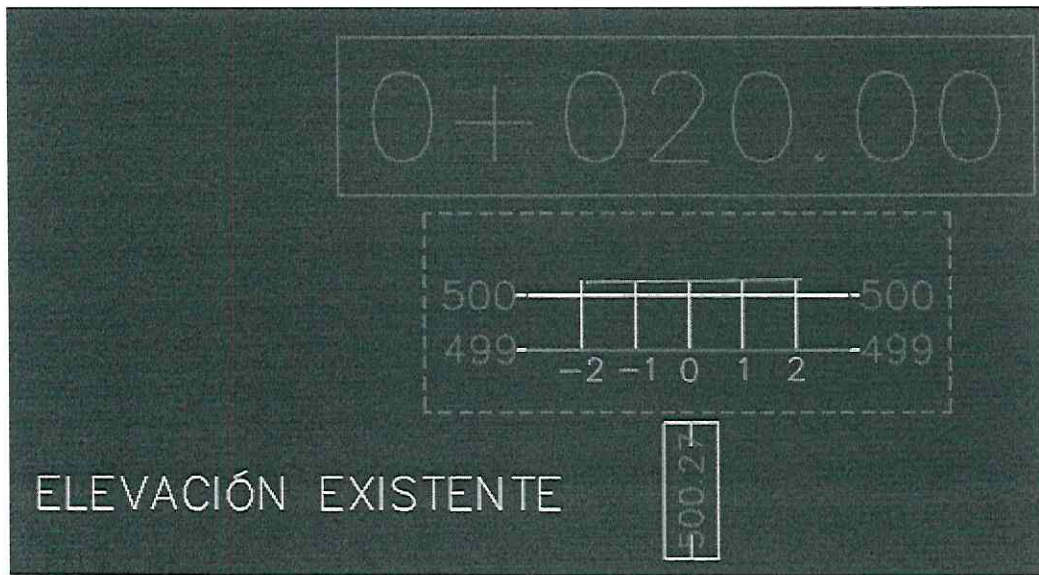
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Unidad de Proyectos





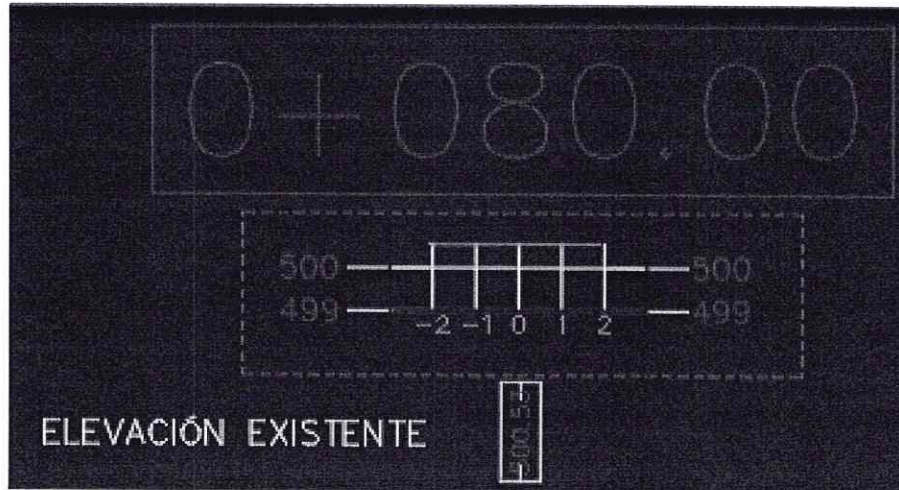
45

- Pasaje Las Acacias

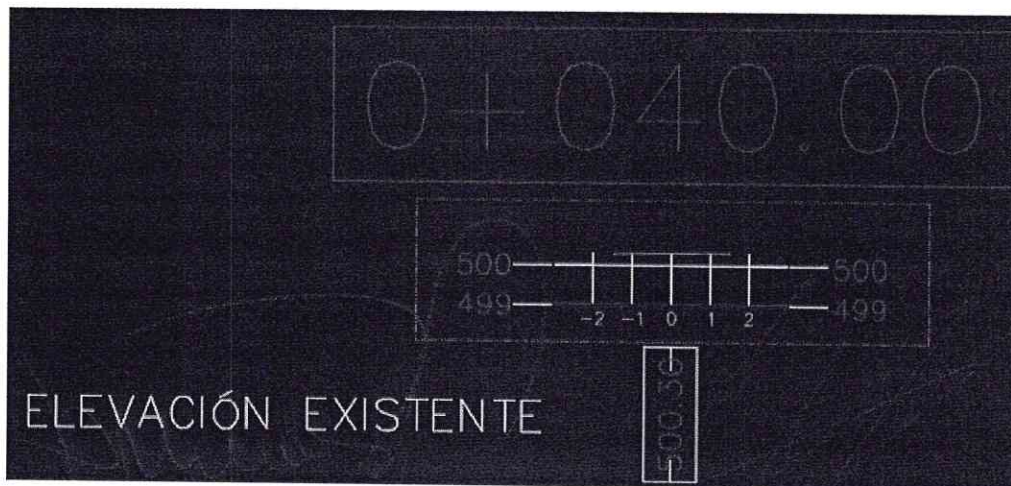
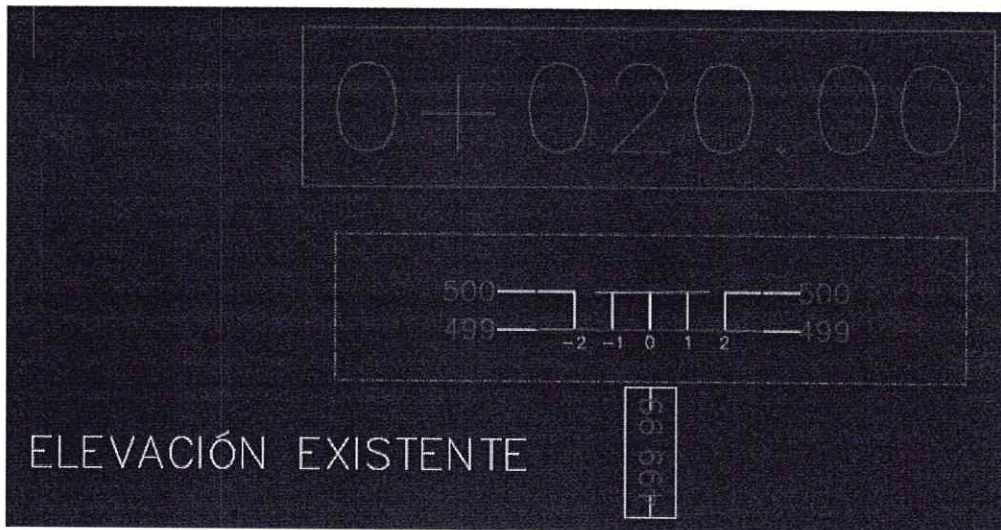




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Unidad de Proyectos

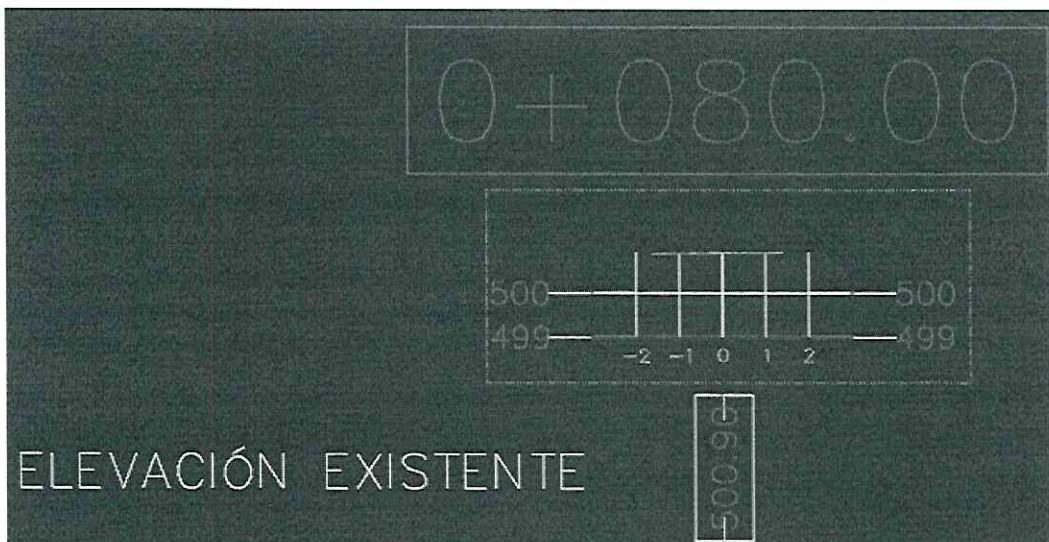
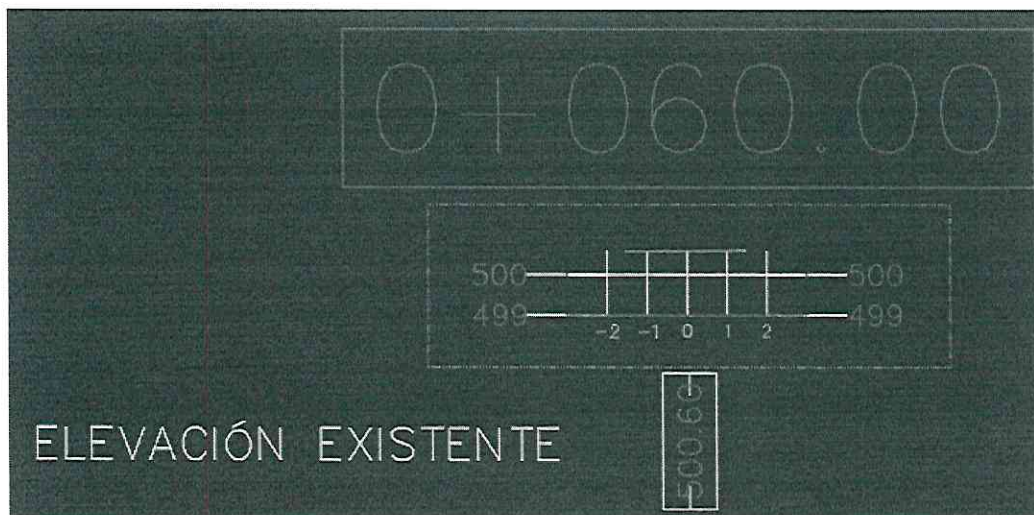


- Pasaje El Progreso





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10. Conclusiones

El levantamiento topográfico realizado en el marco del proyecto de renovación de la calzada en los pasajes permitió obtener información precisa y detallada sobre las condiciones actuales del terreno, incluyendo pendientes, alineaciones, cotas y elementos existentes. Esta información es fundamental para el diseño y ejecución de las obras, ya que garantiza una correcta planificación de los niveles, el drenaje superficial y la optimización del uso de materiales.

El mejoramiento de la calzada en estos pasajes es una intervención necesaria para garantizar una circulación más segura y eficiente. Las propuestas de rehabilitación del pavimento y la actualización de la señalética.