



Anejo Nº 2

CARTOGRAFÍA Y TOPOGRAFÍA

1. DOCUMENTACIÓN
2. RED BÁSICA
3. RED DE APOYO
4. LISTADO DE PUNTOS QUE DEFINEN EL TERRENO DE LA ZONA

ANEXO I: La Poligonal

ANEXO II: Taquimetría y levantamiento de puntos

1. DOCUMENTACIÓN

El objeto de este Anejo es describir la cartografía que ha servido de base al Proyecto.

Para la obtención de la topografía de la zona, se acudió a la cartografía base existente.

En primer lugar se observó el Mapa Topográfico Nacional a escala 1:25000 del Instituto Geográfico Nacional, dependiente del Ministerio de Fomento, en su hoja 453-III correspondiente a Villoruela y que corresponde al tramo de carretera objeto de proyecto en su totalidad. En ese mapa se observaron que las líneas nivel tenían una equidistancia de 10 m.

En segundo lugar se estudió la cartografía facilitada por la Diputación Provincial de Salamanca en formato digital, con escala 1:10.000, donde se observó que las líneas de nivel tenían una equidistancia de 5 m. Como las líneas de nivel tenían una equidistancia menor se adoptó como cartografía base de proyecto la proporcionada por la Diputación Provincial de Salamanca a escala 1:10000.

En tercer lugar se ha realizado un levantamiento topográfico de la carretera actual que se ve afectada por el presente proyecto. Se han tomado datos de las zonas de la carretera existente que sufrirían modificaciones, con el fin de realizar posteriormente un modelo digital del terreno que permita definir correctamente la nueva obra.

Para realizar el modelo digital del terreno se ha empleado el programa informático M.D.T. versión 4.0. Este software se instala como una aplicación más dentro del Autocad 2002, por lo tanto su manejo es dentro del entorno Autocad

En dicho modelo digital del terreno se ha usado los datos del levantamiento correspondientes a la carretera y los puntos del terreno definidos por la cartografía

facilitada por la Diputación Provincial de Salamanca en formato digital, con escala 1:10.000.

A continuación se realiza una triangulación con los puntos importados y por último se hace el curvado, que consiste en generar las curvas de nivel del terreno en función de las cotas de los puntos del levantamiento. La equidistancia entre las líneas normales del curvado es de 1 metros y entre las líneas directoras de 5 metros.

Las coordenadas utilizadas en el proyecto son las UTM (Universal Transverse Mercator).

2. RED DE BÁSICA

Consultando la red geodésica nacional que elabora el Instituto Geográfico Nacional, encontramos en las cercanías de la zona del proyecto un vértice geodésico perteneciente a la red de orden inferior:

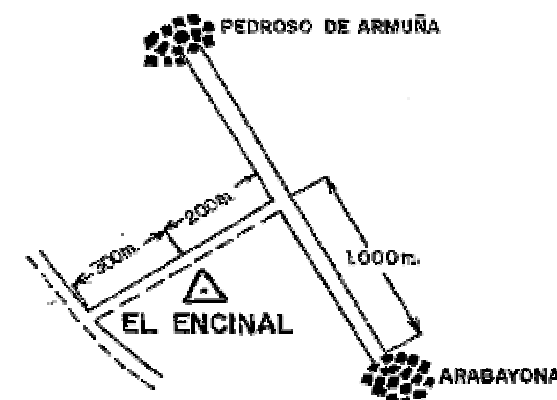
EL ENCINAL (45333)

Se utiliza este vértice para transformar las coordenadas locales utilizadas en la red de apoyo en coordenadas generales UTM, mediante la observación angular

EL ENCINAL (45333)

| | | |
|---|---------------------|--------|
| Municipio: | Arabayona de Mógica | |
| Provincia: | Salamanca | |
| Situación | | |
| A unos 1400 m al N.O. de Arabayona, junto al borde del camino de servidumbre, pero en una linde entre dos fincas. | | |
| COORDENADAS GEOGRÁFICAS | | |
| Sistema de Ref.: | ED50 | ETRS89 |
| Longitud | -5º 23' 38,15180" | |
| Latitud | 41º 3' 24,10460" | |
| Alt. Elipsoidal: | | |
| Compensación: | 03/11/1994 | |
| | | |
| COORDENADAS UTM. HUSO 30 | | |
| Sistema de Ref.: | ED50 | ETRS89 |
| X UTM | 4547891,430 m | |
| Y UTM | 1,000098108 | |
| Factor de escala: | | |
| Convergencia: | -1º 34' 22,34468" | |
| ACCESO | | |
| Saliendo de Arabayona hacia el Pedroso de la Armuña. Una vez recorridos por esta | | |

| | | | |
|--|------------|-----------------------------|---------|
| carretera 1000 m. se toma un carril que sale a la izda. y recorriendo unos 200 m se llega al vértice, que se encuentra a la izda. de éste. | | | |
| DESCRIPCIÓN FÍSICA | | | |
| Fecha de Construcción: | 01/09/1990 | | |
| Centrado forzado: | No | Nº de Cuerpos: | 2 |
| Altura Pilar: | 1,20 m. | Diámetro Pilar: | 0,30 m. |
| Altura último cuerpo: | 6,00 m. | Ancho último cuerpo: | 1,00 m. |
| Altura total de los Cuerpos: | 8,50 m. | | |
| HORIZONTE GPS | Despejado | | |





Fotografía del vértice Geodésico: EL ENCINAL (45333)

3. RED DE APOYO

Al tratarse de una zona prácticamente ondulada y de pequeña extensión se ha llevado a cabo un estudio topográfico clásico para obtener datos lo más ajustado posible a la realidad. Contamos para ello con dos estaciones totales, marca PENTAX R-326 con precisión de 6" en medición de ángulos, de $\pm(5+3 \text{ ppm} \times D)$ mm en medida de distancias, con un rango de medición, en buenas condiciones, de 2.000 metros, utilizando prisma.

Se establecieron 23 bases desde las cuales se ha hecho observación al vértice geodésico descrito anteriormente y entre bases. Tras el trabajo de campo se realizó la compensación de la poligonal y la obtención de las coordenadas UTM de las bases

Los puntos que componen esta red básica estarán marcados debidamente con un hito para que perdure, debido a que parte de estos puntos servirán para el futuro replanteo de la obra como bases de replanteo.

Los puntos que componen esta red básica estarán marcados debidamente con un hito para que perdure, debido a que parte de estos puntos servirán para el futuro replanteo de la obra como bases de replanteo.

Se incluye a continuación un listado con los puntos utilizados como bases de replanteo.

Listado de coordenadas de las Bases del Levantamiento y posterior Replanteo

| Nombre | Coord.X | Coord.Y | Coord.Z |
|--------|------------|-------------|---------|
| E1 | 298574,080 | 4547612,881 | 852,000 |
| E2 | 297400,060 | 4547588,920 | 859,097 |
| E3 | 296661,260 | 4546389,430 | 873,663 |
| E4 | 295987,618 | 4545705,449 | 887,180 |
| E5 | 295612,831 | 4545313,980 | 887,500 |
| E6 | 295827,586 | 4545351,479 | 887,013 |
| E7 | 296016,305 | 4545447,509 | 884,746 |
| E8 | 296245,175 | 4545416,785 | 883,949 |
| E9 | 296461,040 | 4545484,757 | 881,411 |
| E10 | 296872,768 | 4545730,171 | 870,222 |
| E11 | 297376,015 | 4545781,192 | 869,980 |
| E12 | 297738,350 | 4545819,280 | 857,661 |
| E13 | 298108,600 | 4546141,630 | 854,154 |
| E14 | 298534,460 | 4546448,800 | 852,362 |
| E15 | 298629,178 | 4546658,976 | 852,773 |
| E16 | 298917,730 | 4546739,452 | 849,825 |
| E17 | 299005,586 | 4546829,689 | 849,825 |
| E18 | 299220,980 | 4546847,141 | 847,177 |
| E19 | 299194,345 | 4546916,987 | 849,271 |
| E20 | 299160,971 | 4547136,639 | 852,413 |
| E21 | 299304,810 | 4547618,200 | 857,063 |
| E22 | 296686,362 | 4545721,271 | 874,330 |
| E23 | 296886,051 | 4545441,340 | 864,908 |

4. LISTADO DE PUNTOS QUE DEFINEN EL TERRENO DE LA ZONA

Las coordenadas de cada punto vienen dadas en metros.

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|-----------|------------|----------|---------|
| 1 | 293443,08 | 4547391,89 | 858,62 | Terreno |
| 2 | 293050,28 | 4547045,57 | 865,34 | Terreno |
| 3 | 293501,88 | 4547052,77 | 862,64 | Terreno |
| 4 | 293754,6 | 4547290,13 | 861,46 | Terreno |
| 5 | 294304,84 | 4547246,34 | 863,56 | Terreno |
| 6 | 294669,1 | 4547415,86 | 863,65 | Terreno |
| 7 | 294448,7 | 4547666,42 | 859,09 | Terreno |
| 8 | 294963,56 | 4547271,78 | 866,28 | Terreno |
| 9 | 294959,66 | 4547107,94 | 867,33 | Terreno |
| 10 | 294679,33 | 4546759,14 | 871,75 | Terreno |
| 11 | 294091,32 | 4547050,77 | 864,34 | Terreno |
| 12 | 293592,36 | 4546776,18 | 865,42 | Terreno |
| 13 | 293271,64 | 4546674,69 | 869,16 | Terreno |
| 14 | 293380,68 | 4546372,29 | 874,48 | Terreno |
| 15 | 293768,36 | 4546235,94 | 869,14 | Terreno |
| 16 | 294101,56 | 4546191,01 | 876,06 | Terreno |
| 17 | 294255,81 | 4546502,5 | 871,01 | Terreno |
| 18 | 293952,28 | 4546548,13 | 873,12 | Terreno |
| 19 | 294629,97 | 4546085,78 | 876,65 | Terreno |
| 20 | 294459,65 | 4545735,06 | 876,62 | Terreno |
| 21 | 293877,32 | 4545788,02 | 881,26 | Terreno |
| 22 | 293397,24 | 4545715,33 | 876,06 | Terreno |
| 23 | 294977,25 | 4545905,06 | 881,54 | Terreno |
| 24 | 295227,65 | 4546219,14 | 878,07 | Terreno |
| 25 | 295136,37 | 4546453,54 | 876,95 | Terreno |
| 26 | 295670,53 | 4546449,7 | 873,27 | Terreno |
| 27 | 295605,01 | 4546798,18 | 868,79 | Terreno |
| 28 | 295301,41 | 4546872,9 | 871,99 | Terreno |
| 29 | 295558,36 | 4547320,42 | 867,22 | Terreno |
| 30 | 296038,82 | 4547323,5 | 862,23 | Terreno |
| 31 | 296655,58 | 4547635,7 | 868,2 | Terreno |
| 32 | 297398,73 | 4547593,63 | 859,8 | Terreno |
| 33 | 297266,61 | 4547334,25 | 861,32 | Terreno |
| 34 | 296981,89 | 4547382,11 | 864,04 | Terreno |
| 35 | 296527,37 | 4547271,15 | 874,26 | Terreno |
| 36 | 296230,97 | 4547007,07 | 866,41 | Terreno |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|---------|
| 37 | 296404,45 | 4546745,92 | 880,78 | Terreno |
| 38 | 296652,41 | 4546719,68 | 876,79 | Terreno |
| 39 | 296950,63 | 4546629,96 | 873,31 | Terreno |
| 40 | 297085,33 | 4546978,51 | 866,46 | Terreno |
| 41 | 297373,35 | 4546944,24 | 867,55 | Terreno |
| 42 | 297416,91 | 4546483,36 | 861,84 | Terreno |
| 43 | 297230,45 | 4546132,28 | 861,32 | Terreno |
| 44 | 296919,79 | 4546421 | 871,94 | Terreno |
| 45 | 296365,37 | 4546487 | 869,02 | Terreno |
| 46 | 296597,65 | 4546332,72 | 873,6 | Terreno |
| 47 | 296833,85 | 4546130,48 | 877,41 | Terreno |
| 48 | 296979,45 | 4545818,48 | 867,25 | Terreno |
| 51 | 296359,85 | 4546096,52 | 875,81 | Terreno |
| 52 | 295911,77 | 4546178,88 | 877,31 | Terreno |
| 53 | 296089,89 | 4545818,4 | 883,02 | Terreno |
| 54 | 296014,14 | 4545739,67 | 887,35 | Terreno |
| 55 | 295536,13 | 4545777,86 | 878,53 | Terreno |
| 56 | 293219,384 | 4545385,94 | 879,12 | Terreno |
| 57 | 293408,392 | 4545428,59 | 881,18 | Terreno |
| 58 | 293543,88 | 4545523,14 | 879,56 | Terreno |
| 59 | 293733,39 | 4545586,19 | 890,47 | Terreno |
| 60 | 293136,574 | 4544826,76 | 879,59 | Terreno |
| 61 | 293376,192 | 4544961,12 | 882,12 | Terreno |
| 62 | 293435,256 | 4545131 | 884,5 | Terreno |
| 63 | 293719,54 | 4545161,52 | 886,4 | Terreno |
| 64 | 294081,02 | 4545370,44 | 888,52 | Terreno |
| 65 | 293955,56 | 4545529,57 | 881,5 | Terreno |
| 66 | 294045,64 | 4545299,22 | 881,1 | Terreno |
| 67 | 294369,96 | 4545245,06 | 885,4 | Terreno |
| 68 | 294410,82 | 4545165,58 | 894,85 | Terreno |
| 69 | 294728,69 | 4545274,5 | 883,46 | Terreno |
| 70 | 295283,33 | 4545417,06 | 886,98 | Terreno |
| 71 | 295251,58 | 4544970,97 | 891,42 | Terreno |
| 72 | 295047,129 | 4544729,97 | 896,63 | Terreno |
| 73 | 294548,76 | 4544822,5 | 891,16 | Terreno |
| 74 | 294178,629 | 4544650,41 | 894,94 | Terreno |
| 75 | 293886,647 | 4544803,02 | 887,82 | Terreno |
| 76 | 294132,943 | 4544944,64 | 885,45 | Terreno |
| 77 | 293872,119 | 4545062,11 | 885,45 | Terreno |
| 78 | 293548,182 | 4544953,68 | 885,13 | Terreno |
| 79 | 293574,396 | 4544803,06 | 886,24 | Terreno |
| 80 | 293215,364 | 4544613,34 | 883,23 | Terreno |
| 81 | 293502,759 | 4544516,32 | 887,66 | Terreno |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|---------|
| 82 | 293143,695 | 4544308,72 | 888,61 | Terreno |
| 83 | 293654,891 | 4544321,73 | 886,87 | Terreno |
| 84 | 293866,779 | 4544491,36 | 893,67 | Terreno |
| 85 | 294143,444 | 4544448,26 | 896,36 | Terreno |
| 86 | 294245,149 | 4544354,08 | 898,42 | Terreno |
| 87 | 294643,688 | 4544348,22 | 891,57 | Terreno |
| 88 | 294787,563 | 4544328,62 | 903,12 | Terreno |
| 89 | 294920,852 | 4544519,93 | 900,27 | Terreno |
| 90 | 294850,37 | 4544614,02 | 891,38 | Terreno |
| 91 | 294429,4 | 4544565,62 | 895,38 | Terreno |
| 92 | 295128,431 | 4544485 | 893,79 | Terreno |
| 93 | 293256,046 | 4544024,45 | 891,14 | Terreno |
| 94 | 293413,023 | 4544207,65 | 891,77 | Terreno |
| 95 | 293537,387 | 4543946,78 | 890,98 | Terreno |
| 96 | 293562,926 | 4543879,94 | 891,46 | Terreno |
| 97 | 293757,021 | 4544040 | 888,77 | Terreno |
| 98 | 294030,744 | 4543845,94 | 893,36 | Terreno |
| 99 | 293980,869 | 4544240,25 | 892,41 | Terreno |
| 100 | 294423,69 | 4544239,07 | 910,51 | Terreno |
| 101 | 294175,986 | 4543993,55 | 902,06 | Terreno |
| 102 | 294373,486 | 4543924,43 | 897,74 | Terreno |
| 103 | 294595,581 | 4543876,62 | 895,05 | Terreno |
| 104 | 294603,272 | 4544085,14 | 897,27 | Terreno |
| 105 | 294792,891 | 4544020,16 | 903,43 | Terreno |
| 106 | 294845,061 | 4544147,36 | 904,7 | Terreno |
| 107 | 295222,389 | 4544252,47 | 895,05 | Terreno |
| 108 | 295469,658 | 4543892,99 | 902,01 | Terreno |
| 109 | 295575,511 | 4544151,68 | 896,48 | Terreno |
| 110 | 295464,735 | 4544398,81 | 894,42 | Terreno |
| 111 | 295476,107 | 4544630,57 | 890,94 | Terreno |
| 112 | 295512,358 | 4544768,83 | 887,62 | Terreno |
| 113 | 295468,806 | 4544976,82 | 885,72 | Terreno |
| 114 | 295764,164 | 4544965,59 | 893,95 | Terreno |
| 115 | 296059,57 | 4544973,78 | 890,29 | Terreno |
| 116 | 295895,752 | 4544633,3 | 898,37 | Terreno |
| 117 | 295727,074 | 4544533,65 | 891,89 | Terreno |
| 118 | 295876,554 | 4544409,56 | 899,8 | Terreno |
| 119 | 295814,487 | 4544263,9 | 898,22 | Terreno |
| 120 | 296054,744 | 4544325,75 | 896,16 | Terreno |
| 121 | 296280,751 | 4544113,72 | 887,78 | Terreno |
| 122 | 296186,234 | 4543822,15 | 885,25 | Terreno |
| 123 | 296618,852 | 4543947,69 | 883,34 | Terreno |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|---------|
| 124 | 296529,596 | 4544179,44 | 885,49 | Terreno |
| 125 | 296348,301 | 4544372,19 | 886,51 | Terreno |
| 126 | 296507,668 | 4544540,55 | 883,37 | Terreno |
| 127 | 296411,25 | 4544789,78 | 880,69 | Terreno |
| 128 | 296223 | 4544735,42 | 893,84 | Terreno |
| 129 | 296789,9 | 4544940,47 | 871,75 | Terreno |
| 130 | 297254,76 | 4544418,25 | 884,96 | Terreno |
| 131 | 296976,091 | 4544177,16 | 884,15 | Terreno |
| 132 | 297350,423 | 4543903,51 | 895,35 | Terreno |
| 133 | 297574,921 | 4543941,78 | 895,35 | Terreno |
| 134 | 297831,589 | 4544144,87 | 892,77 | Terreno |
| 135 | 297551,646 | 4544300,23 | 888,66 | Terreno |
| 136 | 297711,813 | 4544440,95 | 892,8 | Terreno |
| 137 | 297653,519 | 4544633,01 | 886,27 | Terreno |
| 138 | 297119,58 | 4545122,55 | 863,95 | Terreno |
| 139 | 297064,46 | 4545369,67 | 861,71 | Terreno |
| 140 | 296888,13 | 4545442,82 | 864,81 | Terreno |
| 141 | 296495,09 | 4545443,62 | 881,79 | Terreno |
| 143 | 296267,74 | 4545350,87 | 885,23 | Terreno |
| 146 | 297644,85 | 4546268,81 | 856,37 | Terreno |
| 147 | 297768,69 | 4547403,12 | 861,19 | Terreno |
| 148 | 298131,11 | 4547572,62 | 860,71 | Terreno |
| 149 | 298046,11 | 4546967,16 | 864,22 | Terreno |
| 150 | 298494,13 | 4547029,56 | 858,77 | Terreno |
| 151 | 298747,05 | 4547234,8 | 865,63 | Terreno |
| 152 | 298919,27 | 4547578,7 | 866,07 | Terreno |
| 153 | 299420,8 | 4547562,22 | 857,2 | Terreno |
| 154 | 299442,24 | 4547289,74 | 849,38 | Terreno |
| 155 | 299170,79 | 4547139,98 | 852,22 | Terreno |
| 157 | 299455,36 | 4546801,74 | 845,54 | Terreno |
| 158 | 299429,6 | 4546992,94 | 844,7 | Terreno |
| 159 | 299588,55 | 4546942,02 | 856,63 | Terreno |
| 160 | 299733,12 | 4546739,18 | 847,82 | Terreno |
| 161 | 300143,84 | 4546765,1 | 848,74 | Terreno |
| 162 | 300102,24 | 4547069,1 | 852,1 | Terreno |
| 163 | 299659,75 | 4547123,46 | 843,15 | Terreno |
| 164 | 299591,68 | 4547275,5 | 844,58 | Terreno |
| 165 | 299835,2 | 4547438,22 | 845,72 | Terreno |
| 166 | 300064,64 | 4547307,18 | 842,22 | Terreno |
| 167 | 300355,36 | 4547325,58 | 845,86 | Terreno |
| 168 | 300562,72 | 4547392,62 | 841,9 | Terreno |
| 169 | 300591,61 | 4547639,14 | 846,36 | Terreno |
| 170 | 300400,8 | 4547669,9 | 837,66 | Terreno |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|---------|
| 171 | 300463,36 | 4547066,06 | 847,6 | Terreno |
| 174 | 298295,45 | 4545974,6 | 852,81 | Terreno |
| 175 | 298083,53 | 4545761,01 | 856,39 | Terreno |
| 176 | 298814,14 | 4545414,34 | 872,38 | Terreno |
| 177 | 298879,47 | 4545720,77 | 860,87 | Terreno |
| 178 | 298950,38 | 4545318,02 | 871,72 | Terreno |
| 179 | 299179,26 | 4545436,02 | 866,9 | Terreno |
| 180 | 299511,98 | 4545469,38 | 866,42 | Terreno |
| 181 | 299377,65 | 4545853,33 | 860,67 | Terreno |
| 182 | 299431,68 | 4546021,1 | 857,9 | Terreno |
| 183 | 299152,21 | 4546390,6 | 848,19 | Terreno |
| 184 | 299488,96 | 4546458,22 | 849,64 | Terreno |
| 185 | 299985,28 | 4546563,5 | 849,64 | Terreno |
| 186 | 299884,19 | 4546383,77 | 853,51 | Terreno |
| 187 | 300030,24 | 4546048,94 | 856,6 | Terreno |
| 188 | 299674,29 | 4545876,21 | 860,64 | Terreno |
| 189 | 299833,71 | 4545634,13 | 863,38 | Terreno |
| 190 | 300029,87 | 4545580,69 | 859,3 | Terreno |
| 191 | 300465,27 | 4545466,73 | 857,45 | Terreno |
| 192 | 300242,47 | 4545732,69 | 856,06 | Terreno |
| 193 | 300531,2 | 4545785,26 | 855,5 | Terreno |
| 194 | 298338,145 | 4545184,2 | 884,25 | Terreno |
| 195 | 298140,773 | 4545009,62 | 884,31 | Terreno |
| 196 | 297979,317 | 4544710,77 | 885,61 | Terreno |
| 197 | 298002,089 | 4544469,96 | 885,64 | Terreno |
| 198 | 298235,947 | 4544141 | 886,36 | Terreno |
| 199 | 298940,642 | 4544085,75 | 878,65 | Terreno |
| 200 | 298730,878 | 4544306,1 | 877,59 | Terreno |
| 201 | 298651,582 | 4544598,4 | 875,32 | Terreno |
| 202 | 298479,774 | 4544812,55 | 877,12 | Terreno |
| 203 | 298697,599 | 4545038,61 | 872,33 | Terreno |
| 204 | 299260,137 | 4545171,43 | 866,61 | Terreno |
| 205 | 299303,73 | 4544987,48 | 870,25 | Terreno |
| 206 | 298994,783 | 4544458,8 | 874,76 | Terreno |
| 207 | 299123,653 | 4544275 | 873,3 | Terreno |
| 208 | 299580,831 | 4544075,29 | 877,84 | Terreno |
| 209 | 299868,334 | 4544231,49 | 874,42 | Terreno |
| 210 | 300324,216 | 4544094,4 | 866,55 | Terreno |
| 211 | 300320,464 | 4544342,83 | 867,17 | Terreno |
| 212 | 300129,993 | 4544316,05 | 870,81 | Terreno |
| 213 | 299796,603 | 4544523,03 | 865,09 | Terreno |
| 214 | 299447,071 | 4544556,91 | 868,13 | Terreno |
| 215 | 299601,475 | 4544672,46 | 864,99 | Terreno |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 216 | 299467,994 | 4544765,21 | 868,41 | Terreno |
| 217 | 299658,323 | 4544860,69 | 864,93 | Terreno |
| 218 | 299578,825 | 4545049,92 | 865,49 | Terreno |
| 219 | 299813,9 | 4545205,62 | 863,78 | Terreno |
| 220 | 300106,75 | 4545291,25 | 860,4 | Terreno |
| 221 | 300497,43 | 4545219,41 | 860,08 | Terreno |
| 222 | 300347,035 | 4544829,68 | 862,82 | Terreno |
| 223 | 300450,75 | 4544821,01 | 861,31 | Terreno |
| 224 | 300343,496 | 4544641,68 | 863,16 | Terreno |
| 225 | 300455,87 | 4543932,91 | 865,73 | Terreno |
| 226 | 300056,821 | 4544027,33 | 868,26 | Terreno |
| 227 | 300108,559 | 4543893,73 | 867,01 | Terreno |
| 228 | 299368,324 | 4544042,38 | 876,38 | Terreno |
| 229 | 299144,977 | 4543860,86 | 879,11 | Terreno |
| 230 | 298899,221 | 4543848,47 | 881,23 | Terreno |
| 231 | 298804,381 | 4543865,09 | 880,02 | Terreno |
| 232 | 298433,315 | 4543904,09 | 884,43 | Terreno |
| 233 | 300075,839 | 4544703,58 | 864,65 | Terreno |
| 234 | 300784,807 | 4543909,98 | 862,07 | Terreno |
| 235 | 300645,87 | 4545084,69 | 858,41 | Terreno |
| 236 | 300711,79 | 4545988,57 | 852,9 | Terreno |
| 237 | 300811,52 | 4545653,9 | 853,16 | Terreno |
| 238 | 295619,87 | 4545271 | 889,642 | Eje |
| 239 | 295621,664 | 4545267,99 | 889,572 | Arcen dcho |
| 240 | 295618,077 | 4545274 | 889,572 | Arcen izdo |
| 241 | 295623,236 | 4545265,36 | 889,629 | Pie Terraplen dcho |
| 242 | 295616,524 | 4545276,6 | 887,536 | Pie Terraplen izdo |
| 243 | 295637,062 | 4545281,22 | 889,743 | Eje |
| 244 | 295635,268 | 4545284,22 | 889,76 | Arcen izdo |
| 245 | 295638,855 | 4545278,21 | 889,672 | Arcen dcho |
| 246 | 295640,427 | 4545275,58 | 889,756 | Pie Terraplen dcho |
| 247 | 295633,638 | 4545286,95 | 887,615 | Pie Terraplen izdo |
| 248 | 295654,317 | 4545291,33 | 889,844 | Eje |
| 249 | 295656,106 | 4545288,32 | 889,774 | Arcen dcho |
| 250 | 295657,673 | 4545285,69 | 887,719 | Pie Terraplen dcho |
| 251 | 295650,853 | 4545297,15 | 887,745 | Pie Terraplen izdo |
| 252 | 295652,527 | 4545294,34 | 889,91 | Arcen izdo |
| 253 | 295671,729 | 4545301,16 | 889,938 | Eje |
| 254 | 295673,718 | 4545297,71 | 889,825 | Arcen dcho |
| 255 | 295674,965 | 4545295,55 | 887,822 | Pie Terraplen dcho |
| 256 | 295669,74 | 4545304,62 | 890,035 | Arcen izdo |
| 257 | 295668,322 | 4545307,08 | 887,849 | Pie Terraplen izdo |
| 258 | 295689,377 | 4545310,53 | 889,976 | Eje |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 259 | 295691,029 | 4545307,45 | 889,833 | Arcen dcho |
| 260 | 295692,359 | 4545304,97 | 887,035 | Pie Terraplen dcho |
| 261 | 295687,725 | 4545313,61 | 890,119 | Arcen izdo |
| 262 | 295686,167 | 4545316,52 | 887,952 | Pie Terraplen izdo |
| 263 | 295707,318 | 4545319,25 | 889,954 | Eje |
| 264 | 295708,823 | 4545316,1 | 889,797 | Arcen dcho |
| 265 | 295709,91 | 4545313,82 | 888,078 | Pie Terraplen dcho |
| 266 | 295705,813 | 4545322,41 | 890,111 | Arcen izdo |
| 267 | 295704,411 | 4545325,35 | 887,973 | Pie Terraplen izdo |
| 268 | 295725,571 | 4545327,24 | 889,882 | Eje |
| 269 | 295726,903 | 4545324,01 | 889,725 | Arcen dcho |
| 270 | 295727,919 | 4545321,54 | 887,646 | Pie Terraplen dcho |
| 271 | 295724,24 | 4545330,48 | 890,039 | Arcen izdo |
| 272 | 295722,971 | 4545333,56 | 887,853 | Pie Terraplen izdo |
| 273 | 295744,142 | 4545334,52 | 889,782 | Eje |
| 274 | 295745,346 | 4545331,24 | 889,642 | Arcen dcho |
| 275 | 295746,334 | 4545328,54 | 887,697 | Pie Terraplen dcho |
| 276 | 295742,939 | 4545337,8 | 889,922 | Arcen izdo |
| 277 | 295741,738 | 4545341,08 | 887,627 | Pie Terraplen izdo |
| 278 | 295762,96 | 4545341,21 | 889,782 | Eje |
| 279 | 295764,088 | 4545337,9 | 889,694 | Arcen dcho |
| 280 | 295765,143 | 4545334,8 | 887,496 | Pie Terraplen dcho |
| 281 | 295761,831 | 4545344,52 | 889,87 | Arcen izdo |
| 282 | 295760,624 | 4545348,06 | 887,394 | Pie Terraplen izdo |
| 283 | 295781,941 | 4545347,49 | 889,582 | Eje |
| 284 | 295783,048 | 4545344,17 | 889,537 | Arcen dcho |
| 285 | 295784,107 | 4545340,99 | 886,994 | Pie Terraplen dcho |
| 286 | 295780,834 | 4545350,81 | 889,628 | Arcen izdo |
| 287 | 295779,654 | 4545354,34 | 887,151 | Pie Terraplen izdo |
| 288 | 295801,007 | 4545353,53 | 889,482 | Eje |
| 289 | 295802,114 | 4545350,21 | 889,475 | Arcen dcho |
| 290 | 295803,24 | 4545346,83 | 886,78 | Pie Terraplen dcho |
| 291 | 295799,9 | 4545356,85 | 889,489 | Arcen izdo |
| 292 | 295798,689 | 4545360,48 | 886,907 | Pie Terraplen izdo |
| 293 | 295820,089 | 4545359,53 | 889,382 | Eje |
| 294 | 295821,196 | 4545356,21 | 889,399 | Arcen dcho |
| 295 | 295822,207 | 4545353,18 | 886,896 | Pie Terraplen dcho |
| 296 | 295818,982 | 4545362,85 | 889,365 | Arcen izdo |
| 297 | 295817,877 | 4545366,16 | 886,655 | Pie Terraplen izdo |
| 298 | 295839,15 | 4545365,59 | 889,2 | Eje |
| 299 | 295840,257 | 4545362,27 | 889,239 | Arcen dcho |
| 300 | 295841,464 | 4545358,65 | 886,703 | Pie Terraplen dcho |
| 301 | 295838,043 | 4545368,91 | 889,162 | Arcen izdo |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 302 | 295836,753 | 4545372,78 | 886,434 | Pie Terraplen izdo |
| 303 | 295858,16 | 4545371,81 | 889,169 | Eje |
| 304 | 295859,267 | 4545368,49 | 889,239 | Arcen dcho |
| 305 | 295860,576 | 4545364,56 | 886,498 | Pie Terraplen dcho |
| 306 | 295857,053 | 4545375,13 | 889,099 | Arcen izdo |
| 307 | 295855,699 | 4545379,19 | 886,23 | Pie Terraplen izdo |
| 308 | 295877,097 | 4545378,26 | 889,021 | Eje |
| 309 | 295878,212 | 4545374,94 | 889,295 | Arcen dcho |
| 310 | 295879,565 | 4545370,92 | 886,292 | Pie Terraplen dcho |
| 311 | 295875,983 | 4545381,58 | 889,125 | Arcen izdo |
| 312 | 295874,599 | 4545385,69 | 886,022 | Pie Terraplen izdo |
| 313 | 295895,94 | 4545385,03 | 888,838 | Eje |
| 314 | 295897,087 | 4545381,73 | 888,943 | Arcen dcho |
| 315 | 295898,505 | 4545377,64 | 886,081 | Pie Terraplen dcho |
| 316 | 295894,792 | 4545388,34 | 888,733 | Arcen izdo |
| 317 | 295893,366 | 4545392,45 | 885,811 | Pie Terraplen izdo |
| 318 | 295914,633 | 4545392,19 | 888,618 | Eje |
| 319 | 295915,82 | 4545388,9 | 888,72 | Arcen dcho |
| 320 | 295917,273 | 4545384,84 | 885,866 | Pie Terraplen dcho |
| 321 | 295913,461 | 4545395,48 | 888,516 | Arcen izdo |
| 322 | 295911,993 | 4545399,58 | 885,592 | Pie Terraplen izdo |
| 323 | 295933,207 | 4545399,69 | 888,363 | Eje |
| 324 | 295934,419 | 4545396,4 | 888,44 | Arcen dcho |
| 325 | 295935,878 | 4545392,45 | 885,648 | Pie Terraplen dcho |
| 326 | 295931,995 | 4545402,97 | 888,286 | Arcen izdo |
| 327 | 295930,487 | 4545407,05 | 885,368 | Pie Terraplen izdo |
| 328 | 295951,665 | 4545407,43 | 888,076 | Eje |
| 329 | 295954,36 | 4545400,35 | 885,414 | Pie Terraplen dcho |
| 330 | 295948,899 | 4545414,7 | 885,138 | Pie Terraplen izdo |
| 331 | 295952,909 | 4545404,16 | 888,125 | Arcen dcho |
| 332 | 295950,42 | 4545410,7 | 888,006 | Arcen izdo |
| 333 | 295970,043 | 4545415,35 | 887,787 | Eje |
| 334 | 295971,319 | 4545412,09 | 887,815 | Arcen dcho |
| 335 | 295972,765 | 4545408,4 | 885,191 | Pie Terraplen dcho |
| 336 | 295967,24 | 4545422,5 | 884,911 | Pie Terraplen izdo |
| 337 | 295968,766 | 4545418,61 | 887,717 | Arcen izdo |
| 338 | 295988,373 | 4545423,35 | 887,497 | Eje |
| 339 | 295989,681 | 4545420,1 | 887,497 | Arcen dcho |
| 340 | 295991,116 | 4545416,54 | 884,938 | Pie Terraplen dcho |
| 341 | 295985,539 | 4545430,38 | 884,691 | Pie Terraplen izdo |
| 342 | 295987,064 | 4545426,59 | 887,427 | Arcen izdo |
| 343 | 296006,685 | 4545431,36 | 887,207 | Eje |
| 344 | 296008,026 | 4545428,13 | 887,179 | Arcen dcho |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 345 | 296009,447 | 4545424,7 | 884,699 | Pie Terraplen dcho |
| 346 | 296003,821 | 4545438,27 | 884,468 | Pie Terraplen izdo |
| 347 | 296005,345 | 4545434,59 | 887,137 | Arcen izdo |
| 348 | 296024,991 | 4545439,37 | 886,917 | Eje |
| 349 | 296026,363 | 4545436,15 | 886,865 | Arcen dcho |
| 350 | 296027,769 | 4545432,85 | 884,461 | Pie Terraplen dcho |
| 351 | 296022,077 | 4545446,21 | 884,246 | Pie Terraplen izdo |
| 352 | 296023,619 | 4545442,59 | 886,847 | Arcen izdo |
| 353 | 296043,293 | 4545447,37 | 886,628 | Eje |
| 354 | 296044,696 | 4545444,17 | 886,558 | Arcen dcho |
| 355 | 296046,093 | 4545440,98 | 884,22 | Pie Terraplen dcho |
| 356 | 296041,89 | 4545450,58 | 886,558 | Arcen izdo |
| 357 | 296040,344 | 4545454,11 | 883,972 | Pie Terraplen izdo |
| 358 | 296061,615 | 4545455,39 | 886,332 | Eje |
| 359 | 296060,209 | 4545458,59 | 886,262 | Arcen izdo |
| 360 | 296058,704 | 4545462,02 | 883,751 | Pie Terraplen izdo |
| 361 | 296063,02 | 4545452,19 | 886,262 | Arcen dcho |
| 362 | 296064,385 | 4545449,07 | 883,983 | Pie Terraplen dcho |
| 363 | 296079,938 | 4545463,41 | 886,01 | Eje |
| 364 | 296081,344 | 4545460,2 | 885,94 | Arcen dcho |
| 365 | 296082,658 | 4545457,21 | 883,744 | Pie Terraplen dcho |
| 366 | 296078,532 | 4545466,61 | 885,94 | Arcen izdo |
| 367 | 296077,091 | 4545469,9 | 883,534 | Pie Terraplen izdo |
| 368 | 296098,261 | 4545471,42 | 885,657 | Eje |
| 369 | 296099,667 | 4545468,22 | 885,587 | Arcen dcho |
| 370 | 296100,912 | 4545465,38 | 883,505 | Pie Terraplen dcho |
| 371 | 296096,855 | 4545474,63 | 885,587 | Arcen izdo |
| 372 | 296095,496 | 4545477,72 | 883,318 | Pie Terraplen izdo |
| 373 | 296116,584 | 4545479,44 | 885,275 | Eje |
| 374 | 296117,99 | 4545476,23 | 885,205 | Arcen dcho |
| 375 | 296119,15 | 4545473,59 | 883,265 | Pie Terraplen dcho |
| 376 | 296115,178 | 4545482,64 | 885,205 | Arcen izdo |
| 377 | 296113,919 | 4545485,51 | 883,101 | Pie Terraplen izdo |
| 378 | 296134,908 | 4545487,46 | 884,88 | Eje |
| 379 | 296136,313 | 4545484,25 | 884,81 | Arcen dcho |
| 380 | 296137,379 | 4545481,82 | 883,037 | Pie Terraplen dcho |
| 381 | 296133,503 | 4545490,66 | 884,81 | Arcen izdo |
| 382 | 296132,351 | 4545493,29 | 882,895 | Pie Terraplen izdo |
| 383 | 296153,249 | 4545495,48 | 884,484 | Eje |
| 384 | 296154,626 | 4545492,26 | 884,414 | Arcen dcho |
| 385 | 296155,579 | 4545490,04 | 882,785 | Pie Terraplen dcho |
| 386 | 296151,872 | 4545498,7 | 884,414 | Arcen izdo |
| 387 | 296150,847 | 4545501,09 | 882,664 | Pie Terraplen izdo |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 388 | 296171,623 | 4545503,52 | 884,088 | Eje |
| 389 | 296172,933 | 4545500,27 | 884,018 | Arcen dcho |
| 390 | 296173,809 | 4545498,11 | 882,545 | Pie Terraplen dcho |
| 391 | 296170,312 | 4545506,76 | 884,018 | Arcen izdo |
| 392 | 296169,437 | 4545508,93 | 882,444 | Pie Terraplen izdo |
| 393 | 296190,058 | 4545511,58 | 883,69 | Eje |
| 394 | 296191,261 | 4545508,3 | 883,62 | Arcen dcho |
| 395 | 296191,973 | 4545506,35 | 882,305 | Pie Terraplen dcho |
| 396 | 296188,854 | 4545514,87 | 883,62 | Arcen izdo |
| 397 | 296188,142 | 4545516,81 | 882,224 | Pie Terraplen izdo |
| 398 | 296208,625 | 4545519,71 | 883,29 | Eje |
| 399 | 296209,68 | 4545516,37 | 883,62 | Arcen dcho |
| 400 | 296210,196 | 4545514,74 | 882,064 | Pie Terraplen dcho |
| 401 | 296207,005 | 4545524,83 | 882,001 | Pie Terraplen izdo |
| 402 | 296207,571 | 4545523,04 | 883,259 | Arcen izdo |
| 403 | 296227,453 | 4545527,94 | 882,883 | Eje |
| 404 | 296228,321 | 4545524,55 | 882,813 | Arcen dcho |
| 405 | 296228,699 | 4545523,07 | 881,781 | Pie Terraplen dcho |
| 406 | 296226,087 | 4545533,27 | 881,619 | Pie Terraplen izdo |
| 407 | 296226,585 | 4545531,33 | 882,943 | Arcen izdo |
| 408 | 296246,669 | 4545536,12 | 882,47 | Eje |
| 409 | 296247,346 | 4545532,69 | 882,4 | Arcen dcho |
| 410 | 296247,631 | 4545531,24 | 881,402 | Pie Terraplen dcho |
| 411 | 296245,617 | 4545541,46 | 881,262 | Pie Terraplen izdo |
| 412 | 296245,992 | 4545539,55 | 882,54 | Arcen izdo |
| 413 | 296266,229 | 4545544,13 | 882,061 | Eje |
| 414 | 296266,748 | 4545540,67 | 881,991 | Arcen dcho |
| 415 | 296266,962 | 4545539,24 | 881,013 | Pie Terraplen dcho |
| 416 | 296265,71 | 4545547,59 | 882,131 | Arcen izdo |
| 417 | 296265,45 | 4545549,33 | 880,973 | Pie Terraplen izdo |
| 418 | 296985,573 | 4545748,84 | 866,207 | Eje |
| 419 | 296986,826 | 4545745,58 | 866,137 | Arcen dcho |
| 420 | 296984,321 | 4545752,11 | 866,154 | Arcen izdo |
| 421 | 296987,37 | 4545744,16 | 865,277 | Fondo cuneta dcha |
| 422 | 296987,772 | 4545743,11 | 865,859 | Cabeza cuneta dcha |
| 423 | 296983,777 | 4545753,53 | 865,297 | Fondo cuneta izda |
| 424 | 296983,217 | 4545754,99 | 866,171 | Cabeza cuneta izda |
| 425 | 297006,544 | 4545751,13 | 865,506 | Eje |
| 426 | 297007,658 | 4545747,81 | 865,436 | Arcen dcho |
| 427 | 297008,169 | 4545746,29 | 864,575 | Fondo cuneta dcha |
| 428 | 297008,514 | 4545745,27 | 865,188 | Cabeza cuneta dcha |
| 429 | 297005,429 | 4545754,45 | 865,436 | Arcen izdo |
| 430 | 297004,919 | 4545755,97 | 864,575 | Fondo cuneta izda |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 431 | 297004,481 | 4545757,27 | 865,381 | Cabeza cuneta izda |
| 432 | 297027,199 | 4545753,39 | 865,036 | Eje |
| 433 | 297028,134 | 4545750,01 | 864,966 | Arcen dcho |
| 434 | 297028,283 | 4545749,48 | 864,581 | Pie Terraplen dcho |
| 435 | 297026,264 | 4545756,76 | 864,966 | Arcen izdo |
| 436 | 297025,859 | 4545758,22 | 864,106 | Fondo cuneta izda |
| 437 | 297025,496 | 4545759,53 | 864,844 | Cabeza cuneta izda |
| 438 | 297047,501 | 4545755,6 | 864,343 | Eje |
| 439 | 297048,248 | 4545752,18 | 864,273 | Arcen dcho |
| 440 | 297048,591 | 4545750,62 | 863,413 | Fondo cuneta dcha |
| 441 | 297048,777 | 4545749,77 | 863,892 | Cabeza cuneta dcha |
| 442 | 297046,754 | 4545759,02 | 864,273 | Arcen izdo |
| 443 | 297046,137 | 4545761,84 | 864,159 | Fondo cuneta izda |
| 444 | 297046,411 | 4545760,59 | 863,413 | Cabeza cuneta izda |
| 445 | 297067,548 | 4545757,79 | 863,88 | Eje |
| 446 | 297068,143 | 4545754,34 | 863,81 | Arcen dcho |
| 447 | 297068,273 | 4545753,59 | 863,288 | Pie Terraplen dcho |
| 448 | 297066,954 | 4545761,24 | 863,81 | Arcen izdo |
| 449 | 297066,696 | 4545762,74 | 862,949 | Fondo cuneta izda |
| 450 | 297066,514 | 4545763,79 | 863,497 | Cabeza cuneta izda |
| 451 | 297087,479 | 4545759,97 | 863,504 | Eje |
| 452 | 297087,961 | 4545756,5 | 863,434 | Arcen dcho |
| 453 | 297088,122 | 4545755,35 | 862,642 | Pie Terraplen dcho |
| 454 | 297086,997 | 4545763,43 | 863,434 | Arcen izdo |
| 455 | 297086,872 | 4545764,33 | 862,817 | Pie Terraplen izdo |
| 456 | 297107,369 | 4545762,14 | 863,206 | Eje |
| 457 | 297107,78 | 4545758,66 | 863,136 | Arcen dcho |
| 458 | 297107,921 | 4545757,47 | 862,322 | Pie Terraplen dcho |
| 459 | 297106,959 | 4545765,61 | 863,136 | Arcen izdo |
| 460 | 297106,823 | 4545766,76 | 862,348 | Pie Terraplen izdo |
| 461 | 297127,252 | 4545764,31 | 862,926 | Eje |
| 462 | 297127,633 | 4545760,83 | 862,856 | Arcen dcho |
| 463 | 297127,745 | 4545759,8 | 862,15 | Pie Terraplen dcho |
| 464 | 297126,871 | 4545767,79 | 862,856 | Arcen izdo |
| 465 | 297126,756 | 4545768,84 | 862,178 | Pie Terraplen izdo |
| 466 | 297147,134 | 4545766,48 | 862,651 | Eje |
| 467 | 297147,513 | 4545763 | 862,581 | Arcen dcho |
| 468 | 297147,609 | 4545762,12 | 861,977 | Pie Terraplen dcho |
| 469 | 297146,754 | 4545769,96 | 862,581 | Arcen izdo |
| 470 | 297146,663 | 4545770,79 | 862,008 | Pie Terraplen izdo |
| 471 | 297167,016 | 4545768,65 | 862,375 | Eje |
| 472 | 297167,395 | 4545765,17 | 862,305 | Arcen dcho |
| 473 | 297167,474 | 4545764,45 | 861,805 | Pie Terraplen dcho |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 474 | 297166,636 | 4545772,13 | 862,305 | Arcen izdo |
| 475 | 297166,562 | 4545772,81 | 861,835 | Pie Terraplen izdo |
| 476 | 297186,897 | 4545770,82 | 862,099 | Eje |
| 477 | 297187,277 | 4545767,34 | 862,029 | Arcen dcho |
| 478 | 297187,339 | 4545766,77 | 861,633 | Pie Terraplen dcho |
| 479 | 297186,518 | 4545774,3 | 862,029 | Arcen izdo |
| 480 | 297186,46 | 4545774,82 | 861,662 | Pie Terraplen izdo |
| 481 | 297206,779 | 4545772,99 | 861,823 | Eje |
| 482 | 297207,159 | 4545769,51 | 861,753 | Arcen dcho |
| 483 | 297207,324 | 4545768 | 860,893 | Fondo cuneta dcha |
| 484 | 297207,442 | 4545766,92 | 861,453 | Cabeza cuneta dcha |
| 485 | 297206,4 | 4545776,47 | 861,753 | Arcen izdo |
| 486 | 297206,235 | 4545777,98 | 860,575 | Fondo cuneta izda |
| 487 | 297206,11 | 4545779,13 | 861,497 | Cabeza cuneta izda |
| 488 | 297226,661 | 4545775,16 | 861,547 | Eje |
| 489 | 297227,041 | 4545771,68 | 861,477 | Arcen dcho |
| 490 | 297227,206 | 4545770,17 | 860,575 | Fondo cuneta dcha |
| 491 | 297227,347 | 4545768,88 | 861,28 | Cabeza cuneta dcha |
| 492 | 297226,282 | 4545778,64 | 861,477 | Arcen izdo |
| 493 | 297226,117 | 4545780,15 | 860,575 | Fondo cuneta izda |
| 494 | 297225,968 | 4545781,51 | 861,324 | Cabeza cuneta izda |
| 495 | 297246,543 | 4545777,33 | 861,271 | Eje |
| 496 | 297246,923 | 4545773,85 | 861,201 | Arcen dcho |
| 497 | 297247,088 | 4545772,34 | 860,341 | Fondo cuneta dcha |
| 498 | 297247,239 | 4545770,95 | 861,106 | Cabeza cuneta dcha |
| 499 | 297246,163 | 4545780,81 | 861,201 | Arcen izdo |
| 500 | 297245,999 | 4545782,32 | 860,341 | Fondo cuneta izda |
| 501 | 297245,84 | 4545783,78 | 861,152 | Cabeza cuneta izda |
| 502 | 297266,425 | 4545779,5 | 860,995 | Eje |
| 503 | 297266,805 | 4545776,02 | 860,925 | Arcen dcho |
| 504 | 297266,97 | 4545774,51 | 860,065 | Fondo cuneta dcha |
| 505 | 297267,138 | 4545772,97 | 860,933 | Cabeza cuneta dcha |
| 506 | 297266,045 | 4545782,98 | 860,925 | Arcen izdo |
| 507 | 297265,881 | 4545784,49 | 860,065 | Fondo cuneta izda |
| 508 | 297265,705 | 4545786,1 | 860,979 | Cabeza cuneta izda |
| 509 | 297286,307 | 4545781,67 | 860,72 | Eje |
| 510 | 297286,687 | 4545778,19 | 860,65 | Arcen dcho |
| 511 | 297286,851 | 4545776,68 | 859,789 | Fondo cuneta dcha |
| 512 | 297287,036 | 4545774,99 | 860,759 | Cabeza cuneta dcha |
| 513 | 297285,927 | 4545785,15 | 860,65 | Arcen izdo |
| 514 | 297285,762 | 4545786,66 | 859,789 | Fondo cuneta izda |
| 515 | 297285,57 | 4545788,43 | 860,807 | Cabeza cuneta izda |
| 516 | 297306,189 | 4545783,84 | 860,444 | Eje |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 517 | 297306,569 | 4545780,36 | 860,37 | Arcen dcho |
| 518 | 297306,733 | 4545778,86 | 859,514 | Fondo cuneta dcha |
| 519 | 297306,935 | 4545777,01 | 860,586 | Cabeza cuneta dcha |
| 520 | 297305,809 | 4545787,32 | 860,37 | Arcen izdo |
| 521 | 297305,644 | 4545788,83 | 859,514 | Fondo cuneta izda |
| 522 | 297305,435 | 4545790,75 | 860,635 | Cabeza cuneta izda |
| 523 | 297326,45 | 4545782,53 | 860,136 | Arcen dcho |
| 524 | 297326,071 | 4545786,01 | 860,199 | Eje |
| 525 | 297325,691 | 4545789,49 | 860,129 | Arcen izdo |
| 526 | 297325,526 | 4545791 | 859,268 | Fondo cuneta izda |
| 527 | 297325,305 | 4545793,03 | 860,462 | Cabeza cuneta izda |
| 528 | 297326,615 | 4545781,02 | 859,276 | Fondo cuneta dcha |
| 529 | 297326,827 | 4545779,08 | 860,412 | Cabeza cuneta dcha |
| 530 | 297345,953 | 4545788,18 | 859,996 | Eje |
| 531 | 297346,332 | 4545784,7 | 859,957 | Arcen dcho |
| 532 | 297346,497 | 4545783,19 | 859,102 | Fondo cuneta dcha |
| 533 | 297346,71 | 4545781,25 | 860,239 | Cabeza cuneta dcha |
| 534 | 297345,573 | 4545791,66 | 859,926 | Arcen izdo |
| 535 | 297345,408 | 4545793,17 | 859,067 | Fondo cuneta izda |
| 536 | 297345,182 | 4545795,24 | 860,289 | Cabeza cuneta izda |
| 537 | 297365,834 | 4545790,35 | 859,84 | Eje |
| 538 | 297366,214 | 4545786,87 | 859,815 | Arcen dcho |
| 539 | 297366,38 | 4545785,36 | 858,962 | Fondo cuneta dcha |
| 540 | 297366,573 | 4545783,59 | 860,067 | Cabeza cuneta dcha |
| 541 | 297365,455 | 4545793,83 | 859,77 | Arcen izdo |
| 542 | 297365,29 | 4545795,34 | 858,91 | Fondo cuneta izda |
| 543 | 297365,066 | 4545797,39 | 860,116 | Cabeza cuneta izda |
| 544 | 297385,716 | 4545792,53 | 859,722 | Eje |
| 545 | 297386,096 | 4545789,05 | 859,722 | Arcen dcho |
| 546 | 297386,262 | 4545787,53 | 858,872 | Fondo cuneta dcha |
| 547 | 297386,455 | 4545785,76 | 859,894 | Cabeza cuneta dcha |
| 548 | 297385,336 | 4545796 | 859,652 | Arcen izdo |
| 549 | 297385,172 | 4545797,51 | 858,791 | Fondo cuneta izda |
| 550 | 297384,957 | 4545799,48 | 859,943 | Cabeza cuneta izda |
| 551 | 297405,593 | 4545794,74 | 859,606 | Eje |
| 552 | 297405,973 | 4545791,26 | 859,627 | Arcen dcho |
| 553 | 297406,139 | 4545789,74 | 858,78 | Fondo cuneta dcha |
| 554 | 297406,32 | 4545788,08 | 859,721 | Cabeza cuneta dcha |
| 555 | 297405,214 | 4545798,22 | 859,536 | Arcen izdo |
| 556 | 297405,049 | 4545799,73 | 858,676 | Fondo cuneta izda |
| 557 | 297404,844 | 4545801,61 | 859,77 | Cabeza cuneta izda |
| 558 | 297425,457 | 4545797,08 | 859,49 | Eje |
| 559 | 297425,836 | 4545793,6 | 859,532 | Arcen dcho |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 560 | 297426,002 | 4545792,08 | 858,689 | Fondo cuneta dcha |
| 561 | 297426,17 | 4545790,55 | 859,549 | Cabeza cuneta dcha |
| 562 | 297425,077 | 4545800,56 | 859,42 | Arcen izdo |
| 563 | 297424,913 | 4545802,06 | 858,559 | Fondo cuneta izda |
| 564 | 297424,716 | 4545803,86 | 859,596 | Cabeza cuneta izda |
| 565 | 297445,296 | 4545799,64 | 859,373 | Eje |
| 566 | 297445,676 | 4545796,16 | 859,436 | Arcen dcho |
| 567 | 297445,842 | 4545794,64 | 858,595 | Fondo cuneta dcha |
| 568 | 297445,997 | 4545793,22 | 859,378 | Cabeza cuneta dcha |
| 569 | 297444,917 | 4545803,12 | 859,303 | Arcen izdo |
| 570 | 297444,752 | 4545804,62 | 858,442 | Fondo cuneta izda |
| 571 | 297444,565 | 4545806,34 | 859,425 | Cabeza cuneta izda |
| 572 | 297465,103 | 4545802,5 | 859,257 | Eje |
| 573 | 297465,483 | 4545799,02 | 859,332 | Arcen dcho |
| 574 | 297465,649 | 4545797,5 | 858,494 | Fondo cuneta dcha |
| 575 | 297465,792 | 4545796,18 | 859,209 | Cabeza cuneta dcha |
| 576 | 297464,723 | 4545805,98 | 859,182 | Arcen izdo |
| 577 | 297464,557 | 4545807,5 | 858,321 | Fondo cuneta izda |
| 578 | 297464,379 | 4545809,13 | 859,255 | Cabeza cuneta izda |
| 579 | 297484,487 | 4545809,23 | 859,035 | Arcen izdo |
| 580 | 297484,866 | 4545805,75 | 859,14 | Eje |
| 581 | 297484,146 | 4545812,35 | 859,086 | Cabeza cuneta izda |
| 582 | 297485,246 | 4545802,27 | 859,245 | Arcen dcho |
| 583 | 297485,413 | 4545800,75 | 858,411 | Fondo cuneta dcha |
| 584 | 297485,542 | 4545799,56 | 859,04 | Cabeza cuneta dcha |
| 585 | 297484,322 | 4545810,73 | 558,17 | Fondo cuneta izda |
| 586 | 297504,202 | 4545812,93 | 858,918 | Arcen izdo |
| 587 | 297504,582 | 4545809,45 | 859,023 | Eje |
| 588 | 297504,961 | 4545805,97 | 859,128 | Arcen dcho |
| 589 | 297505,128 | 4545804,44 | 858,295 | Fondo cuneta dcha |
| 590 | 297505,249 | 4545803,33 | 858,873 | Cabeza cuneta dcha |
| 591 | 297503,87 | 4545815,97 | 858,918 | Cabeza cuneta izda |
| 592 | 297504,038 | 4545814,43 | 858,053 | Fondo cuneta izda |
| 593 | 297523,536 | 4545820,03 | 858,746 | Cabeza cuneta izda |
| 594 | 297523,861 | 4545817,07 | 858,802 | Arcen izdo |
| 595 | 297524,244 | 4545813,59 | 858,907 | Eje |
| 596 | 297524,626 | 4545810,11 | 859,012 | Arcen dcho |
| 597 | 297524,794 | 4545808,59 | 858,178 | Fondo cuneta dcha |
| 598 | 297524,908 | 4545807,55 | 858,707 | Cabeza cuneta dcha |
| 599 | 297523,696 | 4545818,57 | 857,937 | Fondo cuneta izda |
| 600 | 297543,016 | 4545824,51 | 858,574 | Cabeza cuneta izda |
| 601 | 297543,18 | 4545823,14 | 857,821 | Fondo cuneta izda |
| 602 | 297543,361 | 4545821,64 | 858,686 | Arcen izdo |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 603 | 297543,778 | 4545818,16 | 858,791 | Eje |
| 604 | 297544,195 | 4545814,69 | 858,896 | Arcen dcho |
| 605 | 297544,261 | 4545814,14 | 858,55 | Pie Terraplen dcho |
| 606 | 297562,213 | 4545829,33 | 858,368 | Cabeza cuneta izda |
| 607 | 297562,388 | 4545828,1 | 857,705 | Fondo cuneta izda |
| 608 | 297562,601 | 4545826,6 | 858,571 | Arcen izdo |
| 609 | 297563,092 | 4545823,14 | 858,676 | Eje |
| 610 | 297563,584 | 4545819,67 | 858,781 | Arcen dcho |
| 611 | 297563,671 | 4545819,06 | 858,389 | Pie Terraplen dcho |
| 612 | 297581,012 | 4545834,67 | 858,289 | Cabeza cuneta izda |
| 613 | 297581,235 | 4545833,4 | 857,596 | Fondo cuneta izda |
| 614 | 297581,497 | 4545831,91 | 858,462 | Arcen izdo |
| 615 | 297582,102 | 4545828,47 | 858,563 | Eje |
| 616 | 297582,707 | 4545825,02 | 858,664 | Arcen dcho |
| 617 | 297582,826 | 4545824,35 | 858,23 | Pie Terraplen dcho |
| 618 | 297599,419 | 4545840,07 | 858,104 | Cabeza cuneta izda |
| 619 | 297599,67 | 4545838,93 | 857,498 | Fondo cuneta izda |
| 620 | 297599,998 | 4545837,45 | 858,361 | Arcen izdo |
| 621 | 297600,756 | 4545834,04 | 858,452 | Eje |
| 622 | 297601,513 | 4545830,62 | 858,543 | Arcen dcho |
| 623 | 297601,672 | 4545829,91 | 858,075 | Pie Terraplen dcho |
| 624 | 297672,429 | 4545861,45 | 857,488 | Pie Terraplen izdo |
| 625 | 297672,687 | 4545860,87 | 857,93 | Arcen izdo |
| 626 | 297674,097 | 4545857,66 | 858 | Eje |
| 627 | 297675,506 | 4545854,46 | 858,07 | Arcen dcho |
| 628 | 297675,878 | 4545853,62 | 857,471 | Pie Terraplen dcho |
| 629 | 297691,152 | 4545867,57 | 857,378 | Pie Terraplen izdo |
| 630 | 297691,421 | 4545867 | 857,814 | Arcen izdo |
| 631 | 297692,911 | 4545863,83 | 857,884 | Eje |
| 632 | 297694,401 | 4545860,66 | 857,954 | Arcen dcho |
| 633 | 297694,818 | 4545859,78 | 857,316 | Pie Terraplen dcho |
| 634 | 297709,968 | 4545874,11 | 857,14 | Pie Terraplen izdo |
| 635 | 297710,324 | 4545873,38 | 857,697 | Arcen izdo |
| 636 | 297711,858 | 4545870,24 | 857,767 | Eje |
| 637 | 297713,392 | 4545867,09 | 857,837 | Arcen dcho |
| 638 | 297713,705 | 4545866,45 | 857,375 | Pie Terraplen dcho |
| 639 | 297728,994 | 4545880,66 | 857,078 | Pie Terraplen izdo |
| 640 | 297729,279 | 4545880,08 | 857,58 | Arcen izdo |
| 641 | 297730,821 | 4545876,94 | 857,65 | Eje |
| 642 | 297732,364 | 4545873,8 | 857,72 | Arcen dcho |
| 643 | 297732,738 | 4545873,04 | 857,113 | Pie Terraplen dcho |
| 644 | 297747,831 | 4545887,67 | 856,97 | Pie Terraplen izdo |
| 645 | 297748,147 | 4545887,03 | 857,463 | Arcen izdo |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 646 | 297749,69 | 4545883,89 | 857,533 | Eje |
| 647 | 297751,232 | 4545880,75 | 857,603 | Arcen dcho |
| 648 | 297751,641 | 4545879,91 | 857 | Pie Terraplen dcho |
| 649 | 297766,581 | 4545894,86 | 856,855 | Pie Terraplen izdo |
| 650 | 297766,896 | 4545894,22 | 857,347 | Arcen izdo |
| 651 | 297768,439 | 4545891,08 | 857,417 | Eje |
| 652 | 297769,981 | 4545887,94 | 857,487 | Arcen dcho |
| 653 | 297770,39 | 4545887,11 | 856,885 | Pie Terraplen dcho |
| 654 | 297785,212 | 4545902,3 | 856,74 | Pie Terraplen izdo |
| 655 | 297785,527 | 4545901,66 | 857,231 | Arcen izdo |
| 656 | 297787,069 | 4545898,52 | 857,301 | Eje |
| 657 | 297788,612 | 4545895,37 | 857,371 | Arcen dcho |
| 658 | 297789,02 | 4545894,54 | 856,769 | Pie Terraplen dcho |
| 659 | 297803,726 | 4545909,97 | 856,624 | Pie Terraplen izdo |
| 660 | 297804,039 | 4545909,33 | 857,113 | Arcen izdo |
| 661 | 297805,581 | 4545906,19 | 857,183 | Eje |
| 662 | 297807,124 | 4545903,05 | 857,253 | Arcen dcho |
| 663 | 297807,53 | 4545902,22 | 856,654 | Pie Terraplen dcho |
| 664 | 297822,118 | 4545917,89 | 856,506 | Pie Terraplen izdo |
| 665 | 297822,433 | 4545917,25 | 856,997 | Arcen izdo |
| 666 | 297823,975 | 4545914,11 | 857,067 | Eje |
| 667 | 297825,518 | 4545910,97 | 857,137 | Arcen dcho |
| 668 | 297825,925 | 4545910,14 | 856,536 | Pie Terraplen dcho |
| 669 | 297840,392 | 4545926,05 | 856,388 | Pie Terraplen izdo |
| 670 | 297840,708 | 4545925,41 | 856,881 | Arcen izdo |
| 671 | 297842,251 | 4545922,26 | 856,951 | Eje |
| 672 | 297843,794 | 4545919,12 | 857,021 | Arcen dcho |
| 673 | 297844,203 | 4545918,29 | 856,418 | Pie Terraplen dcho |
| 674 | 297858,548 | 4545934,45 | 856,269 | Pie Terraplen izdo |
| 675 | 297858,867 | 4545933,8 | 856,765 | Arcen izdo |
| 676 | 297860,409 | 4545930,66 | 856,835 | Eje |
| 677 | 297861,952 | 4545927,52 | 856,905 | Arcen dcho |
| 678 | 297862,363 | 4545926,68 | 856,298 | Pie Terraplen dcho |
| 679 | 297876,587 | 4545943,09 | 856,149 | Pie Terraplen izdo |
| 680 | 297876,907 | 4545942,44 | 856,649 | Arcen izdo |
| 681 | 297878,45 | 4545939,3 | 856,719 | Eje |
| 682 | 297879,993 | 4545936,16 | 856,789 | Arcen dcho |
| 683 | 297880,406 | 4545935,31 | 856,179 | Pie Terraplen dcho |
| 684 | 297894,505 | 4545951,97 | 856,028 | Pie Terraplen izdo |
| 685 | 297894,83 | 4545951,31 | 856,535 | Arcen izdo |
| 686 | 297896,373 | 4545948,17 | 856,605 | Eje |
| 687 | 297897,916 | 4545945,03 | 856,675 | Arcen dcho |
| 688 | 297898,334 | 4545944,18 | 856,058 | Pie Terraplen dcho |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 689 | 297912,305 | 4545961,1 | 855,906 | Pie Terraplen izdo |
| 690 | 297912,636 | 4545960,43 | 856,422 | Arcen izdo |
| 691 | 297914,179 | 4545957,29 | 856,492 | Eje |
| 692 | 297915,721 | 4545954,15 | 856,562 | Arcen dcho |
| 693 | 297916,145 | 4545953,28 | 855,936 | Pie Terraplen dcho |
| 694 | 297929,985 | 4545970,47 | 855,783 | Pie Terraplen izdo |
| 695 | 297930,324 | 4545969,78 | 856,311 | Arcen izdo |
| 696 | 297931,866 | 4545966,64 | 856,381 | Eje |
| 697 | 297933,409 | 4545963,5 | 856,451 | Arcen dcho |
| 698 | 297933,977 | 4545962,34 | 855,813 | Pie Terraplen dcho |
| 699 | 297947,543 | 4545980,08 | 855,66 | Pie Terraplen izdo |
| 700 | 297947,891 | 4545979,37 | 856,2 | Arcen izdo |
| 701 | 297949,437 | 4545976,23 | 856,27 | Eje |
| 702 | 297950,982 | 4545973,1 | 856,34 | Arcen dcho |
| 703 | 297951,423 | 4545972,2 | 855,69 | Pie Terraplen dcho |
| 704 | 297964,923 | 4545989,92 | 855,534 | Pie Terraplen izdo |
| 705 | 297965,295 | 4545989,18 | 856,09 | Arcen izdo |
| 706 | 297966,881 | 4545986,06 | 856,16 | Eje |
| 707 | 297968,467 | 4545982,94 | 856,23 | Arcen dcho |
| 708 | 297968,93 | 4545982,03 | 855,564 | Pie Terraplen dcho |
| 709 | 297982,092 | 4545999,91 | 855,41 | Pie Terraplen izdo |
| 710 | 297982,489 | 4545999,18 | 855,979 | Arcen izdo |
| 711 | 297984,161 | 4545996,11 | 856,049 | Eje |
| 712 | 297985,834 | 4545993,04 | 856,119 | Arcen dcho |
| 713 | 297986,332 | 4545992,12 | 855,439 | Pie Terraplen dcho |
| 714 | 297999 | 4546010,11 | 855,286 | Pie Terraplen izdo |
| 715 | 297999,41 | 4546009,43 | 855,838 | Arcen izdo |
| 716 | 298001,213 | 4546006,43 | 855,94 | Eje |
| 717 | 298003,015 | 4546003,43 | 856,042 | Arcen dcho |
| 718 | 298003,596 | 4546002,46 | 855,312 | Pie Terraplen dcho |
| 719 | 298015,547 | 4546020,7 | 855,16 | Pie Terraplen izdo |
| 720 | 298015,975 | 4546020,07 | 855,697 | Arcen izdo |
| 721 | 298017,941 | 4546017,18 | 855,83 | Eje |
| 722 | 298019,908 | 4546014,29 | 855,963 | Arcen dcho |
| 723 | 298020,59 | 4546013,28 | 855,183 | Pie Terraplen dcho |
| 724 | 298031,685 | 4546031,91 | 855,033 | Pie Terraplen izdo |
| 725 | 298032,141 | 4546031,32 | 855,566 | Arcen izdo |
| 726 | 298034,269 | 4546028,55 | 855,72 | Eje |
| 727 | 298036,396 | 4546025,77 | 855,874 | Arcen dcho |
| 728 | 298037,176 | 4546024,75 | 855,053 | Pie Terraplen dcho |
| 729 | 298047,314 | 4546043,89 | 854,903 | Pie Terraplen izdo |
| 730 | 298047,793 | 4546043,34 | 855,432 | Arcen izdo |
| 731 | 298050,071 | 4546040,68 | 855,61 | Eje |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 732 | 298052,348 | 4546038,03 | 855,788 | Arcen dcho |
| 733 | 298053,235 | 4546037 | 854,92 | Pie Terraplen dcho |
| 734 | 298062,31 | 4546056,79 | 854,77 | Pie Terraplen izdo |
| 735 | 298062,818 | 4546056,25 | 855,308 | Arcen izdo |
| 736 | 298065,206 | 4546053,7 | 855,5 | Eje |
| 737 | 298067,595 | 4546051,15 | 855,692 | Arcen dcho |
| 738 | 298068,568 | 4546050,11 | 854,784 | Pie Terraplen dcho |
| 739 | 298076,581 | 4546070,61 | 854,635 | Pie Terraplen izdo |
| 740 | 298077,128 | 4546070,06 | 855,196 | Arcen izdo |
| 741 | 298079,586 | 4546067,57 | 855,388 | Eje |
| 742 | 298082,045 | 4546065,09 | 855,58 | Arcen dcho |
| 743 | 298083,072 | 4546064,05 | 854,648 | Pie Terraplen dcho |
| 744 | 298090,092 | 4546085,28 | 854,502 | Pie Terraplen izdo |
| 745 | 298090,675 | 4546084,71 | 855,085 | Arcen izdo |
| 746 | 298093,165 | 4546082,26 | 855,277 | Eje |
| 747 | 298095,655 | 4546079,8 | 855,469 | Arcen dcho |
| 748 | 298096,725 | 4546078,75 | 854,51 | Pie Terraplen dcho |
| 749 | 298102,813 | 4546100,82 | 854,359 | Pie Terraplen izdo |
| 750 | 298103,445 | 4546100,2 | 854,988 | Arcen izdo |
| 751 | 298105,937 | 4546097,75 | 855,166 | Eje |
| 752 | 298108,43 | 4546095,29 | 855,344 | Arcen dcho |
| 753 | 298109,513 | 4546094,23 | 854,37 | Pie Terraplen dcho |
| 754 | 298114,805 | 4546117,07 | 854,22 | Pie Terraplen izdo |
| 755 | 298115,515 | 4546116,38 | 854,913 | Arcen izdo |
| 756 | 298118,009 | 4546113,92 | 855,054 | Eje |
| 757 | 298120,502 | 4546111,47 | 855,195 | Arcen dcho |
| 758 | 298121,566 | 4546110,43 | 854,23 | Pie Terraplen dcho |
| 759 | 298126,316 | 4546133,8 | 854,084 | Pie Terraplen izdo |
| 760 | 298127,076 | 4546133,06 | 854,823 | Arcen izdo |
| 761 | 298129,571 | 4546130,6 | 854,911 | Eje |
| 762 | 298132,066 | 4546128,15 | 854,999 | Arcen dcho |
| 763 | 298133,059 | 4546127,18 | 854,089 | Pie Terraplen dcho |
| 764 | 298137,436 | 4546150,92 | 853,947 | Pie Terraplen izdo |
| 765 | 298138,332 | 4546150,04 | 854,793 | Arcen izdo |
| 766 | 298140,828 | 4546147,58 | 854,828 | Eje |
| 767 | 298143,324 | 4546145,13 | 854,863 | Arcen dcho |
| 768 | 298144,311 | 4546144,16 | 853,948 | Pie Terraplen dcho |
| 769 | 298303,444 | 4546324,27 | 853,318 | Cabeza cuneta izda |
| 770 | 298304,349 | 4546323,38 | 852,638 | Fondo cuneta izda |
| 771 | 298305,436 | 4546322,31 | 853,49 | Arcen izdo |
| 772 | 298307,931 | 4546319,86 | 853,504 | Eje |
| 773 | 298310,427 | 4546317,41 | 853,518 | Arcen dcho |
| 774 | 298311,513 | 4546316,34 | 852,67 | Fondo cuneta dcha |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 775 | 298312,286 | 4546315,58 | 853,224 | Cabeza cuneta dcha |
| 776 | 298319,118 | 4546336,91 | 853,221 | Cabeza cuneta izda |
| 777 | 298320,003 | 4546336,04 | 852,561 | Fondo cuneta izda |
| 778 | 298321,088 | 4546334,97 | 853,416 | Arcen izdo |
| 779 | 298323,583 | 4546332,52 | 853,451 | Eje |
| 780 | 298326,079 | 4546330,07 | 853,486 | Arcen dcho |
| 781 | 298327,899 | 4546328,28 | 853,158 | Cabeza cuneta dcha |
| 782 | 298327,169 | 4546328,99 | 852,641 | Fondo cuneta dcha |
| 783 | 298334,769 | 4546349,57 | 853,183 | Pie Terraplen izdo |
| 784 | 298335,657 | 4546348,7 | 852,52 | Arcen izdo |
| 785 | 298339,235 | 4546345,18 | 853,446 | Eje |
| 786 | 298341,73 | 4546342,72 | 853,513 | Arcen dcho |
| 787 | 298342,165 | 4546342,3 | 853,121 | Pie Terraplen dcho |
| 788 | 298350,415 | 4546362,23 | 853,203 | Cabeza cuneta izda |
| 789 | 298351,291 | 4546361,37 | 852,551 | Fondo cuneta izda |
| 790 | 298352,373 | 4546360,31 | 853,412 | Arcen izdo |
| 791 | 298354,868 | 4546357,86 | 853,489 | Eje |
| 792 | 298357,363 | 4546355,4 | 853,566 | Arcen dcho |
| 793 | 298357,936 | 4546354,84 | 853,047 | Pie Terraplen dcho |
| 794 | 298367,543 | 4546373,44 | 854,118 | Pie Terraplen izdo |
| 795 | 298367,924 | 4546373,07 | 853,493 | Arcen izdo |
| 796 | 298370,419 | 4546370,61 | 853,577 | Eje |
| 797 | 298372,914 | 4546368,16 | 853,661 | Arcen dcho |
| 798 | 298373,666 | 4546367,42 | 853,976 | Pie Terraplen dcho |
| 799 | 298382,771 | 4546386,52 | 853,063 | Pie Terraplen izdo |
| 800 | 298383,325 | 4546385,97 | 853,601 | Arcen izdo |
| 801 | 298385,82 | 4546383,52 | 853,694 | Eje |
| 802 | 298388,314 | 4546381,07 | 853,787 | Arcen dcho |
| 803 | 298389,265 | 4546380,13 | 852,918 | Pie Terraplen dcho |
| 804 | 298397,782 | 4546399,81 | 853,011 | Pie Terraplen izdo |
| 805 | 298398,506 | 4546399,09 | 853,71 | Arcen izdo |
| 806 | 298400,999 | 4546396,64 | 853,81 | Eje |
| 807 | 298403,495 | 4546394,19 | 853,91 | Arcen dcho |
| 808 | 298404,639 | 4546393,06 | 852,862 | Pie Terraplen dcho |
| 809 | 298412,547 | 4546413,34 | 852,962 | Pie Terraplen izdo |
| 810 | 298413,4 | 4546412,5 | 853,781 | Arcen izdo |
| 811 | 298415,894 | 4546410,05 | 853,886 | Eje |
| 812 | 298418,389 | 4546407,59 | 853,991 | Arcen dcho |
| 813 | 298419,679 | 4546406,32 | 852,808 | Pie Terraplen dcho |
| 814 | 298427,043 | 4546427,13 | 852,92 | Pie Terraplen izdo |
| 815 | 298427,961 | 4546426,23 | 853,805 | Arcen izdo |
| 816 | 298430,455 | 4546423,78 | 853,905 | Eje |
| 817 | 298432,95 | 4546421,32 | 854,005 | Arcen dcho |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 818 | 298434,316 | 4546419,98 | 852,756 | Pie Terraplen dcho |
| 819 | 298441,3 | 4546441,16 | 852,804 | Pie Terraplen izdo |
| 820 | 298442,234 | 4546440,24 | 853,775 | Arcen izdo |
| 821 | 298444,729 | 4546437,79 | 853,86 | Eje |
| 822 | 298447,224 | 4546435,34 | 853,945 | Arcen dcho |
| 823 | 298448,569 | 4546434,01 | 852,706 | Pie Terraplen dcho |
| 824 | 298455,396 | 4546455,35 | 852,851 | Pie Terraplen izdo |
| 825 | 298456,289 | 4546454,47 | 853,699 | Arcen izdo |
| 826 | 298458,784 | 4546452,02 | 853,761 | Eje |
| 827 | 298461,279 | 4546449,57 | 853,823 | Arcen dcho |
| 828 | 298462,522 | 4546448,34 | 852,675 | Pie Terraplen dcho |
| 829 | 298469,343 | 4546469,69 | 852,823 | Pie Terraplen izdo |
| 830 | 298470,192 | 4546468,85 | 853,625 | Arcen izdo |
| 831 | 298472,688 | 4546466,4 | 853,662 | Eje |
| 832 | 298475,183 | 4546463,94 | 853,699 | Arcen dcho |
| 833 | 298476,313 | 4546462,83 | 852,65 | Pie Terraplen dcho |
| 834 | 298483,212 | 4546484,1 | 852,796 | Pie Terraplen izdo |
| 835 | 298484,012 | 4546483,31 | 853,547 | Arcen izdo |
| 836 | 298486,508 | 4546480,86 | 853,562 | Eje |
| 837 | 298489,003 | 4546478,4 | 853,577 | Arcen dcho |
| 838 | 298490,022 | 4546477,4 | 852,627 | Pie Terraplen dcho |
| 839 | 298497,063 | 4546498,53 | 852,77 | Pie Terraplen izdo |
| 840 | 298497,818 | 4546497,78 | 853,474 | Arcen izdo |
| 841 | 298500,314 | 4546495,33 | 853,462 | Eje |
| 842 | 298502,81 | 4546492,88 | 853,45 | Arcen dcho |
| 843 | 298503,71 | 4546491,99 | 852,605 | Pie Terraplen dcho |
| 844 | 298510,98 | 4546512,89 | 852,742 | Pie Terraplen izdo |
| 845 | 298511,695 | 4546512,19 | 853,402 | Arcen izdo |
| 846 | 298514,191 | 4546509,73 | 853,362 | Eje |
| 847 | 298516,686 | 4546507,28 | 853,322 | Arcen dcho |
| 848 | 298517,468 | 4546506,51 | 852,581 | Pie Terraplen dcho |
| 849 | 298525,734 | 4546526,43 | 853,327 | Arcen izdo |
| 850 | 298528,229 | 4546523,98 | 853,262 | Eje |
| 851 | 298530,724 | 4546521,53 | 853,197 | Arcen dcho |
| 852 | 298531,398 | 4546520,86 | 852,553 | Pie Terraplen dcho |
| 853 | 298525,059 | 4546527,1 | 852,71 | Pie Terraplen izdo |
| 854 | 298539,388 | 4546541,06 | 852,673 | Pie Terraplen izdo |
| 855 | 298540,029 | 4546540,43 | 853,252 | Arcen izdo |
| 856 | 298542,521 | 4546537,98 | 853,161 | Eje |
| 857 | 298545,013 | 4546535,52 | 853,07 | Arcen dcho |
| 858 | 298545,58 | 4546534,96 | 852,519 | Pie Terraplen dcho |
| 859 | 298554,073 | 4546554,74 | 852,626 | Pie Terraplen izdo |
| 860 | 298554,69 | 4546554,12 | 853,183 | Arcen izdo |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 861 | 298557,153 | 4546551,63 | 853,062 | Eje |
| 862 | 298559,616 | 4546549,15 | 852,941 | Arcen dcho |
| 863 | 298560,08 | 4546548,68 | 852,476 | Pie Terraplen dcho |
| 864 | 298569,192 | 4546568 | 852,569 | Pie Terraplen izdo |
| 865 | 298569,753 | 4546567,4 | 853,086 | Arcen izdo |
| 866 | 298572,158 | 4546564,86 | 852,964 | Eje |
| 867 | 298574,563 | 4546562,32 | 852,842 | Arcen dcho |
| 868 | 298574,97 | 4546561,89 | 852,421 | Pie Terraplen dcho |
| 869 | 298584,68 | 4546580,83 | 852,503 | Pie Terraplen izdo |
| 870 | 298585,188 | 4546580,26 | 852,988 | Arcen izdo |
| 871 | 298587,502 | 4546577,63 | 852,866 | Eje |
| 872 | 298589,816 | 4546575,01 | 852,744 | Arcen dcho |
| 873 | 298590,172 | 4546574,61 | 852,358 | Pie Terraplen dcho |
| 874 | 298600,499 | 4546593,22 | 852,426 | Pie Terraplen izdo |
| 875 | 298600,96 | 4546592,65 | 852,891 | Arcen izdo |
| 876 | 298603,148 | 4546589,92 | 852,769 | Eje |
| 877 | 298605,336 | 4546587,19 | 852,647 | Arcen dcho |
| 878 | 298606,342 | 4546585,93 | 851,779 | Fondo cuneta dcha |
| 879 | 298606,87 | 4546585,27 | 852,249 | Cabeza cuneta dcha |
| 880 | 298616,641 | 4546605,15 | 852,341 | Pie Terraplen izdo |
| 881 | 298617,058 | 4546604,57 | 852,794 | Arcen izdo |
| 882 | 298619,089 | 4546601,72 | 852,672 | Eje |
| 883 | 298621,119 | 4546598,87 | 852,55 | Arcen dcho |
| 884 | 298621,997 | 4546597,64 | 851,681 | Fondo cuneta dcha |
| 885 | 298622,56 | 4546596,85 | 852,167 | Cabeza cuneta dcha |
| 886 | 298633,107 | 4546616,62 | 852,245 | Pie Terraplen izdo |
| 887 | 298633,492 | 4546616,02 | 852,696 | Arcen izdo |
| 888 | 298635,374 | 4546613,07 | 852,574 | Eje |
| 889 | 298637,256 | 4546610,12 | 852,452 | Arcen dcho |
| 890 | 298638,07 | 4546608,85 | 851,583 | Fondo cuneta dcha |
| 891 | 298638,598 | 4546608,02 | 852,073 | Cabeza cuneta dcha |
| 892 | 298649,905 | 4546627,63 | 852,141 | Pie Terraplen izdo |
| 893 | 298650,262 | 4546627,02 | 852,586 | Arcen izdo |
| 894 | 298652,027 | 4546624 | 852,464 | Eje |
| 895 | 298653,793 | 4546620,98 | 852,342 | Arcen dcho |
| 896 | 298654,556 | 4546619,67 | 851,474 | Fondo cuneta dcha |
| 897 | 298655,058 | 4546618,81 | 851,971 | Cabeza cuneta dcha |
| 898 | 298666,995 | 4546638,17 | 852,026 | Pie Terraplen izdo |
| 899 | 298667,346 | 4546637,53 | 852,486 | Arcen izdo |
| 900 | 298669,029 | 4546634,47 | 852,364 | Eje |
| 901 | 298670,711 | 4546631,4 | 852,242 | Arcen dcho |
| 902 | 298671,439 | 4546630,07 | 851,373 | Fondo cuneta dcha |
| 903 | 298671,936 | 4546629,17 | 851,896 | Cabeza cuneta dcha |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 904 | 298684,353 | 4546648,23 | 851,903 | Pie Terraplen izdo |
| 905 | 298684,687 | 4546647,6 | 852,359 | Arcen izdo |
| 906 | 298686,322 | 4546644,5 | 852,264 | Eje |
| 907 | 298687,958 | 4546641,41 | 852,169 | Arcen dcho |
| 908 | 298688,709 | 4546639,99 | 851,305 | Fondo cuneta dcha |
| 909 | 298689,143 | 4546639,17 | 851,818 | Cabeza cuneta dcha |
| 910 | 298701,882 | 4546657,89 | 851,798 | Pie Terraplen izdo |
| 911 | 298702,197 | 4546657,29 | 852,234 | Arcen izdo |
| 912 | 298703,822 | 4546654,19 | 852,164 | Eje |
| 913 | 298705,447 | 4546651,09 | 852,094 | Arcen dcho |
| 914 | 298705,713 | 4546650,59 | 851,697 | Pie Terraplen dcho |
| 915 | 298719,502 | 4546667,36 | 851,646 | Pie Terraplen izdo |
| 916 | 298719,826 | 4546666,74 | 851,644 | Arcen izdo |
| 917 | 298721,452 | 4546663,64 | 852,064 | Eje |
| 918 | 298723,076 | 4546660,54 | 851,994 | Arcen dcho |
| 919 | 298723,385 | 4546659,95 | 851,536 | Pie Terraplen dcho |
| 920 | 298737,19 | 4546676,69 | 851,491 | Pie Terraplen izdo |
| 921 | 298739,15 | 4546672,95 | 851,964 | Eje |
| 922 | 298754,878 | 4546686,03 | 851,334 | Pie Terraplen izdo |
| 923 | 298755,237 | 4546685,34 | 851,85 | Arcen izdo |
| 924 | 298756,863 | 4546682,24 | 851,864 | Eje |
| 925 | 298772,578 | 4546695,34 | 851,178 | Pie Terraplen izdo |
| 926 | 298772,951 | 4546694,63 | 851,722 | Arcen izdo |
| 927 | 298774,576 | 4546691,53 | 851,764 | Eje |
| 928 | 298737,524 | 4546676,05 | 851,975 | Arcen izdo |
| 929 | 298740,774 | 4546669,85 | 851,894 | Arcen dcho |
| 930 | 298741,121 | 4546669,19 | 851,375 | Pie Terraplen dcho |
| 931 | 298758,488 | 4546679,14 | 851,794 | Arcen dcho |
| 932 | 298758,868 | 4546678,42 | 851,213 | Pie Terraplen dcho |
| 933 | 298776,201 | 4546688,43 | 851,694 | Arcen dcho |
| 934 | 298776,637 | 4546687,6 | 851,052 | Pie Terraplen dcho |
| 935 | 298790,275 | 4546704,66 | 851,02 | Pie Terraplen izdo |
| 936 | 298790,664 | 4546703,91 | 851,594 | Arcen izdo |
| 937 | 298792,289 | 4546700,81 | 851,664 | Eje |
| 938 | 298793,914 | 4546697,72 | 851,594 | Arcen dcho |
| 939 | 298794,394 | 4546696,8 | 850,891 | Pie Terraplen dcho |
| 940 | 298807,95 | 4546714,02 | 850,866 | Pie Terraplen izdo |
| 941 | 298808,377 | 4546713,2 | 851,494 | Arcen izdo |
| 942 | 298810,002 | 4546710,1 | 851,564 | Eje |
| 943 | 298812,149 | 4546706,01 | 850,729 | Pie Terraplen dcho |
| 944 | 298811,627 | 4546707 | 851,493 | Arcen dcho |
| 945 | 298826,09 | 4546722,49 | 851,394 | Arcen izdo |
| 946 | 298827,715 | 4546719,39 | 851,464 | Eje |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 947 | 298829,34 | 4546716,29 | 851,394 | Arcen dcho |
| 948 | 298825,625 | 4546723,38 | 850,71 | Pie Terraplen izdo |
| 949 | 298829,905 | 4546715,21 | 850,567 | Pie Terraplen dcho |
| 950 | 298843,301 | 4546732,73 | 850,556 | Pie Terraplen izdo |
| 951 | 298843,803 | 4546731,77 | 851,291 | Arcen izdo |
| 952 | 298845,428 | 4546728,68 | 851,361 | Eje |
| 953 | 298847,053 | 4546725,58 | 851,291 | Arcen dcho |
| 954 | 298847,659 | 4546724,42 | 850,406 | Pie Terraplen dcho |
| 955 | 298860,99 | 4546742,07 | 850,399 | Pie Terraplen izdo |
| 956 | 298861,517 | 4546741,06 | 851,17 | Arcen izdo |
| 957 | 298863,141 | 4546737,96 | 851,24 | Eje |
| 958 | 298864,766 | 4546734,86 | 851,17 | Arcen dcho |
| 959 | 298865,4 | 4546733,65 | 850,245 | Pie Terraplen dcho |
| 960 | 298878,695 | 4546751,37 | 850,242 | Pie Terraplen izdo |
| 961 | 298879,23 | 4546750,35 | 851,025 | Arcen izdo |
| 962 | 298880,855 | 4546747,25 | 851,095 | Eje |
| 963 | 298882,479 | 4546744,15 | 851,25 | Arcen dcho |
| 964 | 298883,124 | 4546742,92 | 850,083 | Pie Terraplen dcho |
| 965 | 298896,41 | 4546760,65 | 850,084 | Pie Terraplen izdo |
| 966 | 298896,943 | 4546759,63 | 850,863 | Arcen izdo |
| 967 | 298898,568 | 4546756,54 | 850,933 | Eje |
| 968 | 298900,193 | 4546753,44 | 850,863 | Arcen dcho |
| 969 | 298900,837 | 4546752,21 | 849,923 | Pie Terraplen dcho |
| 970 | 298914,131 | 4546769,92 | 849,926 | Pie Terraplen izdo |
| 971 | 298914,656 | 4546768,92 | 850,695 | Arcen izdo |
| 972 | 298916,281 | 4546765,82 | 850,765 | Eje |
| 973 | 298917,906 | 4546762,72 | 850,695 | Arcen dcho |
| 974 | 298918,545 | 4546761,5 | 849,762 | Pie Terraplen dcho |
| 975 | 298931,854 | 4546779,19 | 849,767 | Pie Terraplen izdo |
| 976 | 298932,369 | 4546778,21 | 850,521 | Arcen izdo |
| 977 | 298933,994 | 4546775,11 | 850,591 | Eje |
| 978 | 298935,619 | 4546772,01 | 850,521 | Arcen dcho |
| 979 | 298936,25 | 4546770,81 | 849,6 | Pie Terraplen dcho |
| 980 | 298949,575 | 4546788,46 | 849,609 | Pie Terraplen izdo |
| 981 | 298950,082 | 4546787,5 | 850,35 | Arcen izdo |
| 982 | 298951,707 | 4546784,4 | 850,42 | Eje |
| 983 | 298953,332 | 4546781,3 | 850,35 | Arcen dcho |
| 984 | 298953,956 | 4546780,11 | 849,439 | Pie Terraplen dcho |
| 985 | 298967,298 | 4546797,73 | 849,451 | Pie Terraplen izdo |
| 986 | 298967,795 | 4546796,78 | 850,79 | Arcen izdo |
| 987 | 298969,42 | 4546793,68 | 850,249 | Eje |
| 988 | 298971,045 | 4546790,58 | 850,179 | Arcen dcho |
| 989 | 298971,663 | 4546789,41 | 849,321 | Pie Terraplen dcho |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 990 | 298984,979 | 4546807,08 | 849,295 | Pie Terraplen izdo |
| 992 | 298987,133 | 4546802,97 | 850,079 | Eje |
| 993 | 298988,758 | 4546799,87 | 850,009 | Arcen dcho |
| 994 | 298989,367 | 4546798,71 | 849,117 | Pie Terraplen dcho |
| 995 | 298985,508 | 4546806,07 | 850,061 | Arcen izdo |
| 996 | 299002,626 | 4546816,49 | 849,14 | Pie Terraplen izdo |
| 997 | 299003,232 | 4546815,34 | 849,957 | Arcen izdo |
| 998 | 299004,857 | 4546812,24 | 849,908 | Eje |
| 999 | 299006,482 | 4546809,14 | 849,838 | Arcen dcho |
| 1000 | 299007,13 | 4546807,9 | 848,955 | Pie Terraplen dcho |
| 1001 | 299020,433 | 4546825,6 | 848,977 | Pie Terraplen izdo |
| 1002 | 299021,022 | 4546824,48 | 849,807 | Arcen izdo |
| 1003 | 299022,647 | 4546821,38 | 849,737 | Eje |
| 1004 | 299024,272 | 4546818,28 | 849,667 | Arcen dcho |
| 1005 | 299024,869 | 4546817,14 | 848,794 | Pie Terraplen dcho |
| 1006 | 299038,299 | 4546834,59 | 848,808 | Pie Terraplen izdo |
| 1007 | 299038,886 | 4546833,47 | 849,636 | Arcen izdo |
| 1008 | 299040,511 | 4546830,38 | 848,566 | Eje |
| 1009 | 299042,136 | 4546827,28 | 849,496 | Arcen dcho |
| 1010 | 299042,727 | 4546826,15 | 848,632 | Pie Terraplen dcho |
| 1011 | 299056,235 | 4546843,46 | 848,634 | Pie Terraplen izdo |
| 1012 | 299056,825 | 4546842,33 | 849,465 | Arcen izdo |
| 1013 | 299058,45 | 4546839,23 | 849,395 | Eje |
| 1014 | 299060,074 | 4546836,13 | 849,325 | Arcen dcho |
| 1015 | 299060,66 | 4546835,02 | 848,469 | Pie Terraplen dcho |
| 1016 | 299074,252 | 4546852,16 | 848,456 | Pie Terraplen izdo |
| 1017 | 299074,838 | 4546851,05 | 849,294 | Arcen izdo |
| 1018 | 299076,463 | 4546847,95 | 849,224 | Eje |
| 1019 | 299078,087 | 4546844,85 | 849,154 | Arcen dcho |
| 1020 | 299078,667 | 4546843,74 | 848,307 | Pie Terraplen dcho |
| 1021 | 299092,327 | 4546860,76 | 848,27 | Pie Terraplen izdo |
| 1022 | 299092,925 | 4546859,62 | 849,114 | Arcen izdo |
| 1023 | 299094,55 | 4546856,52 | 849,044 | Eje |
| 1024 | 299096,175 | 4546853,42 | 848,974 | Arcen dcho |
| 1025 | 299096,743 | 4546852,34 | 848,143 | Pie Terraplen dcho |
| 1026 | 299110,459 | 4546869,25 | 848,068 | Pie Terraplen izdo |
| 1027 | 299111,087 | 4546868,05 | 848,953 | Arcen izdo |
| 1028 | 299112,712 | 4546864,95 | 849,044 | Eje |
| 1029 | 299114,337 | 4546861,85 | 848,813 | Arcen dcho |
| 1030 | 299114,905 | 4546860,77 | 847,983 | Pie Terraplen dcho |
| 1031 | 299128,698 | 4546877,54 | 847,897 | Pie Terraplen izdo |
| 1032 | 299129,313 | 4546876,34 | 848,783 | Arcen izdo |
| 1033 | 299130,904 | 4546873,22 | 848,713 | Eje |



| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 1034 | 299132,496 | 4546870,1 | 848,643 | Arcen dcho |
| 1035 | 299133,054 | 4546869,01 | 847,811 | Pie Terraplen dcho |
| 1036 | 299146,989 | 4546885,66 | 847,725 | Pie Terraplen izdo |
| 1037 | 299147,575 | 4546884,41 | 848,627 | Arcen izdo |
| 1038 | 299149,062 | 4546881,25 | 848,545 | Eje |
| 1039 | 299150,55 | 4546878,08 | 848,463 | Arcen dcho |
| 1040 | 299151,07 | 4546876,97 | 847,619 | Pie Terraplen dcho |
| 1041 | 299165,407 | 4546893,37 | 847,541 | Pie Terraplen izdo |
| 1042 | 299165,946 | 4546892,04 | 848,48 | Arcen izdo |
| 1043 | 299167,254 | 4546888,79 | 848,377 | Eje |
| 1044 | 299168,562 | 4546885,55 | 848,274 | Arcen dcho |
| 1045 | 299169,022 | 4546884,4 | 847,431 | Pie Terraplen dcho |
| 1046 | 299184,084 | 4546900,39 | 847,339 | Pie Terraplen izdo |
| 1047 | 299184,55 | 4546898,93 | 848,332 | Arcen izdo |
| 1048 | 299185,614 | 4546895,6 | 848,209 | Eje |
| 1049 | 299186,678 | 4546892,27 | 848,086 | Arcen dcho |
| 1050 | 299187,049 | 4546891,11 | 847,246 | Pie Terraplen dcho |
| 1051 | 299203,144 | 4546906,45 | 847,113 | Pie Terraplen izdo |
| 1052 | 299203,525 | 4546904,85 | 848,182 | Arcen izdo |
| 1053 | 299204,335 | 4546901,44 | 848,042 | Eje |
| 1054 | 299205,145 | 4546898,04 | 847,902 | Arcen dcho |
| 1055 | 299205,425 | 4546896,86 | 847,064 | Pie Terraplen dcho |
| 1056 | 299222,615 | 4546911,34 | 846,856 | Pie Terraplen izdo |
| 1057 | 299222,892 | 4546909,6 | 848,002 | Arcen izdo |
| 1058 | 299223,443 | 4546906,15 | 847,873 | Eje |
| 1059 | 299223,995 | 4546902,7 | 847,744 | Arcen dcho |
| 1060 | 299224,191 | 4546901,47 | 846,886 | Pie Terraplen dcho |
| 1061 | 299242,461 | 4546914,92 | 846,662 | Pie Terraplen izdo |
| 1062 | 299242,607 | 4546913,17 | 847,81 | Arcen izdo |
| 1063 | 299242,897 | 4546909,69 | 847,703 | Eje |
| 1064 | 299243,187 | 4546906,2 | 847,596 | Arcen dcho |
| 1065 | 299243,294 | 4546904,91 | 846,711 | Pie Terraplen dcho |
| 1066 | 299262,552 | 4546917,25 | 846,484 | Pie Terraplen izdo |
| 1067 | 299262,59 | 4546915,53 | 847,617 | Arcen izdo |
| 1068 | 299262,666 | 4546912,03 | 847,532 | Eje |
| 1069 | 299262,742 | 4546908,53 | 847,47 | Arcen dcho |
| 1070 | 299262,771 | 4546907,19 | 846,538 | Pie Terraplen dcho |
| 1071 | 299282,712 | 4546918,28 | 846,434 | Pie Terraplen izdo |
| 1072 | 299282,685 | 4546916,64 | 847,436 | Arcen izdo |
| 1073 | 299282,625 | 4546913,14 | 847,351 | Eje |
| 1075 | 299282,544 | 4546908,29 | 846,37 | Pie Terraplen dcho |
| 1076 | 299282,566 | 4546909,64 | 847,281 | Arcen dcho |
| 1077 | 299302,787 | 4546917,93 | 846,152 | Pie Terraplen izdo |

| Número | Coord. X | Coord. Y | Coord. Z | Código |
|--------|------------|------------|----------|--------------------|
| 1078 | 299302,625 | 4546913 | 847,158 | Eje |
| 1079 | 299302,51 | 4546909,5 | 847,088 | Arcen dcho |
| 1080 | 299302,51 | 4546908,21 | 846,208 | Pie Terraplen dcho |
| 1081 | 299302,74 | 4546916,5 | 847,116 | Arcen izdo |
| 1082 | 299321,221 | 4546917,03 | 846,005 | Pie Terraplen izdo |
| 1083 | 299321,183 | 4546915,88 | 846,784 | Arcen izdo |
| 1084 | 299321,066 | 4546912,38 | 846,854 | Eje |
| 1085 | 299320,949 | 4546908,89 | 846,784 | Arcen dcho |
| 1086 | 299320,913 | 4546907,82 | 846,058 | Pie Terraplen dcho |
| 1087 | 296681,58 | 4545731,27 | 871,67 | Terreno |



ANEXO I: LA POLIGONAL

En nuestro caso partimos del punto que llamamos E1, considerando en un principio que tiene por coordenadas relativas (X = 10000, Y = 10000 y Z = 100), dicho punto será posteriormente nuestra base del levantamiento nº 1 (E1).

| Partimos de E1 con (10000,10000,100) | | | | | | | |
|--------------------------------------|----------------------|------------------------|------------------------|-----|-----------|-----------|---------|
| | θ (gonios) | ΔZ (metros) | ΔR (metros) | | Xr | Yr | Zr |
| E1 V | 46,5362 | 15,760 | 372,409 | E1 | 10000,000 | 10000,000 | 100,000 |
| E1 E2 | 298,7009 | -7,097 | 1174,264 | E2 | 8825,980 | 9976,039 | 92,903 |
| E2 E3 | 235,1446 | -14,566 | 1408,759 | E3 | 8087,179 | 8776,550 | 78,337 |
| E3 E4 | 249,5152 | -13,517 | 960,012 | E4 | 7413,537 | 8092,569 | 64,820 |
| E4 E5 | 248,6142 | -0,320 | 541,953 | E5 | 7038,751 | 7701,100 | 64,500 |
| E5 E6 | 88,9947 | 0,487 | 218,004 | E6 | 7253,505 | 7738,599 | 64,987 |
| E6 E7 | 70,0340 | 2,267 | 211,747 | E7 | 7442,224 | 7834,629 | 67,254 |
| E7 E8 | 108,4965 | 0,797 | 230,893 | E8 | 7671,064 | 7803,905 | 68,051 |
| E8 E9 | 80,5822 | 2,538 | 226,342 | E9 | 7886,959 | 7871,877 | 70,589 |
| E9 E10 | 65,7806 | 11,189 | 479,320 | E10 | 8298,686 | 8117,291 | 81,778 |
| E10 E11 | 93,5677 | 0,242 | 505,827 | E11 | 8801,934 | 8168,312 | 82,020 |
| E11 E12 | 93,3324 | 12,319 | 364,331 | E12 | 9164,268 | 8206,400 | 94,339 |
| E12 E13 | 54,3958 | 3,507 | 490,912 | E13 | 9534,518 | 8528,751 | 97,846 |
| E13 E14 | 60,2193 | 1,792 | 525,081 | E14 | 9960,378 | 8835,921 | 99,638 |
| E14 E15 | 26,9547 | -0,411 | 230,533 | E15 | 10055,096 | 9046,097 | 99,227 |
| E15 E16 | 82,6849 | 2,948 | 299,564 | E16 | 10343,648 | 9126,572 | 102,175 |
| E16 E17 | 49,1489 | 0,000 | 125,942 | E17 | 10431,504 | 9216,810 | 102,175 |
| E17 E18 | 94,8531 | 2,648 | 216,100 | E18 | 10646,898 | 9234,262 | 104,823 |
| E18 E19 | 376,8069 | -2,094 | 74,752 | E19 | 10620,263 | 9304,108 | 102,729 |
| E19 E20 | 390,4006 | -3,142 | 222,173 | E20 | 10586,889 | 9523,760 | 99,587 |
| E20 E21 | 18,4784 | -4,650 | 502,584 | E21 | 10730,729 | 10005,320 | 94,937 |
| E21 V | 332,6958 | -10,697 | 553,517 | V | 10248,621 | 10277,265 | 84,240 |
| V E1 | 246,5153 | 15,760 | 372,409 | E1 | 9999,998 | 10000,000 | 100,000 |

Teniendo en cuenta que las coordenadas UTM del V (Vértice Geodésico “El Encinal”) son las siguientes (X = 29882,7025, Y = 4547890,145 y Z = 867,760), se realiza la poligonal (abierta) entre las bases del levantamiento, calculando las coordenadas absolutas de las distintas bases, como muestra la tabla siguiente.

El error de la poligonal es:

$$\text{Error de la poligonal} = \theta_{E1}^V - \theta_{E1}^V$$

$$= 46,5153 - 46,5362 = \mathbf{0.0209}$$

Como el error es prácticamente nulo, no hacemos compensación de la poligonal.

| Estación | Coord.X | Coord.Y | Coord.Z |
|----------|-------------|-------------|---------|
| V | 298822,7025 | 4547890,145 | 867,760 |
| E1 | 298574,080 | 4547612,881 | 852,000 |
| E2 | 297400,060 | 4547588,920 | 859,097 |
| E3 | 296661,260 | 4546389,430 | 873,663 |
| E4 | 295987,618 | 4545705,449 | 887,180 |
| E5 | 295612,831 | 4545313,980 | 887,500 |
| E6 | 295827,586 | 4545351,479 | 887,013 |
| E7 | 296016,305 | 4545447,509 | 884,746 |
| E8 | 296245,145 | 4545416,785 | 883,949 |
| E9 | 296461,040 | 4545484,757 | 881,411 |
| E10 | 296872,768 | 4545730,171 | 870,222 |
| E11 | 297376,015 | 4545781,192 | 869,980 |
| E12 | 297738,350 | 4545819,280 | 857,661 |
| E13 | 298108,600 | 4546141,630 | 854,154 |
| E14 | 298534,460 | 4546448,800 | 852,362 |
| E15 | 298629,178 | 4546658,976 | 852,773 |
| E16 | 298917,730 | 4546739,452 | 849,825 |
| E17 | 299005,586 | 4546829,689 | 849,825 |
| E18 | 299220,980 | 4546847,141 | 847,177 |
| E19 | 299194,345 | 4546916,987 | 849,271 |
| E20 | 299160,971 | 4547136,639 | 852,413 |
| E21 | 299304,810 | 4547618,200 | 857,063 |
| V | 298822,7025 | 4547890,145 | 867,760 |
| E1 | 298574,080 | 4547612,881 | 852,000 |



ANEXO II: TAQUIMETRÍA Y LEVANTAMIENTO DE PUNTOS

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|---------|---------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E5 | Ref | | 88,9947 | | | | 295612,831 | 4545313,980 | 887,500 |
| i=1,582 | m=1,500 | | | | | | | | |
| E5 | 238 | 43,601 | 10,3344 | 96,9911 | 43,553 | 2,142 | 295619,87 | 4545271 | 889,642 |
| E5 | 239 | 46,871 | 12,0800 | 97,2963 | 46,830 | 2,072 | 295621,664 | 4545267,99 | 889,572 |
| E5 | 240 | 40,372 | 8,3059 | 96,8607 | 40,323 | 2,072 | 295618,077 | 4545274 | 889,572 |
| E5 | 241 | 49,762 | 13,4216 | 97,3805 | 49,721 | 2,129 | 295623,236 | 4545265,36 | 889,629 |
| E5 | 242 | 37,544 | 6,2692 | 99,9220 | 37,562 | 0,036 | 295616,524 | 4545276,6 | 887,536 |
| E5 | 243 | 40,803 | 40,5428 | 96,6268 | 40,747 | 2,243 | 295637,062 | 4545281,22 | 889,743 |
| E5 | 244 | 37,333 | 41,1264 | 96,2839 | 37,270 | 2,260 | 295635,268 | 4545284,22 | 889,76 |
| E5 | 245 | 44,284 | 40,0414 | 96,9943 | 44,235 | 2,172 | 295638,855 | 4545278,21 | 889,672 |
| E5 | 246 | 47,336 | 39,6697 | 97,0752 | 47,287 | 2,256 | 295640,427 | 4545275,58 | 889,756 |
| E5 | 247 | 34,105 | 41,7640 | 99,9384 | 34,111 | 0,115 | 295633,638 | 4545286,95 | 887,615 |
| E5 | 248 | 47,321 | 68,1854 | 96,9557 | 47,266 | 2,344 | 295654,317 | 4545291,33 | 889,844 |
| E5 | 249 | 50,358 | 65,9267 | 97,2280 | 50,310 | 2,274 | 295656,106 | 4545288,32 | 889,774 |
| E5 | 250 | 53,019 | 64,1699 | 99,8355 | 53,020 | 0,219 | 295657,673 | 4545285,69 | 887,719 |
| E5 | 251 | 41,574 | 73,4711 | 99,7504 | 41,580 | 0,245 | 295650,853 | 4545297,15 | 887,745 |
| E5 | 252 | 44,351 | 70,7507 | 96,6568 | 44,289 | 2,410 | 295652,527 | 4545294,34 | 889,91 |
| E5 | 253 | 60,324 | 86,3558 | 97,5130 | 60,277 | 2,438 | 295671,729 | 4545301,16 | 889,938 |
| E5 | 254 | 63,062 | 83,3769 | 97,7352 | 63,023 | 2,325 | 295673,718 | 4545297,71 | 889,825 |
| E5 | 255 | 64,823 | 81,6431 | 99,7643 | 64,810 | 0,322 | 295674,965 | 4545295,55 | 887,822 |
| E5 | 256 | 57,725 | 89,6222 | 97,2939 | 57,674 | 2,535 | 295669,74 | 4545304,62 | 890,035 |
| E5 | 257 | 55,914 | 92,1244 | 99,6960 | 55,918 | 0,349 | 295668,322 | 4545307,08 | 887,849 |
| E5 | 258 | 76,660 | 97,1326 | 98,0116 | 76,624 | 2,476 | 295689,377 | 4545310,53 | 889,976 |
| E5 | 259 | 78,499 | 94,6962 | 98,1742 | 78,470 | 2,333 | 295691,029 | 4545307,45 | 889,833 |
| E5 | 260 | 80,035 | 92,8181 | 99,5649 | 80,037 | -0,465 | 295692,359 | 4545304,97 | 887,035 |
| E5 | 261 | 74,937 | 99,6855 | 97,8443 | 74,895 | 2,619 | 295687,725 | 4545313,61 | 890,119 |
| E5 | 262 | 73,380 | 97,7959 | 99,6790 | 73,380 | 0,452 | 295686,167 | 4545316,52 | 887,952 |
| E5 | 263 | 94,661 | 96,4530 | 98,4046 | 94,634 | 2,454 | 295707,318 | 4545319,25 | 889,954 |
| E5 | 264 | 96,039 | 98,5942 | 98,5316 | 96,015 | 2,297 | 295708,823 | 4545316,1 | 889,797 |
| E5 | 265 | 97,069 | 99,8951 | 99,6747 | 97,079 | 0,578 | 295709,91 | 4545313,82 | 888,078 |
| E5 | 266 | 93,400 | 94,2440 | 98,2760 | 93,363 | 2,611 | 295705,813 | 4545322,41 | 890,111 |
| E5 | 267 | 92,261 | 92,1364 | 99,7302 | 92,283 | 0,473 | 295704,411 | 4545325,35 | 887,973 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E6 | Ref | | 70,0340 | | | | 295827,586 | 4545351,479 | 887,013 |
| i=1,582 | m=1,500 | | | | | | | | |
| E6 | 268 | 104,892 | 85,1484 | 98,3083 | 104,855 | 2,869 | 295725,571 | 4545327,240 | 889,882 |
| E6 | 269 | 104,394 | 83,0440 | 98,3960 | 104,363 | 2,712 | 295726,903 | 4545324,010 | 889,725 |
| E6 | 270 | 104,057 | 81,4225 | 99,6629 | 104,067 | 0,633 | 295727,919 | 4545321,540 | 887,646 |
| E6 | 271 | 105,502 | 87,2382 | 98,2233 | 105,458 | 3,026 | 295724,240 | 4545330,480 | 890,039 |
| E6 | 272 | 106,127 | 89,2004 | 99,5453 | 106,139 | 0,840 | 295722,971 | 4545333,560 | 887,853 |
| E6 | 273 | 85,191 | 87,2353 | 97,9917 | 85,150 | 2,769 | 295744,142 | 4545334,520 | 889,782 |
| E6 | 274 | 84,734 | 84,6382 | 98,0861 | 84,694 | 2,629 | 295745,346 | 4545331,240 | 889,642 |
| E6 | 275 | 84,435 | 82,4829 | 99,5461 | 84,428 | 0,684 | 295746,334 | 4545328,540 | 887,697 |
| E6 | 276 | 85,790 | 89,8003 | 97,9018 | 85,745 | 2,909 | 295742,939 | 4545337,800 | 889,922 |
| E6 | 277 | 86,465 | 92,3258 | 99,6083 | 86,476 | 0,614 | 295741,738 | 4545341,080 | 887,627 |
| E6 | 278 | 65,491 | 89,9680 | 97,3873 | 65,437 | 2,769 | 295762,960 | 4545341,210 | 889,782 |
| E6 | 279 | 64,984 | 86,5879 | 97,4532 | 64,934 | 2,681 | 295764,088 | 4545337,900 | 889,694 |
| E6 | 280 | 64,629 | 83,3833 | 99,6050 | 64,632 | 0,483 | 295765,143 | 4545334,800 | 887,496 |
| E6 | 281 | 66,180 | 93,2875 | 97,3298 | 66,122 | 2,857 | 295761,831 | 4545344,520 | 889,870 |
| E6 | 282 | 67,048 | 96,7523 | 99,7161 | 67,049 | 0,381 | 295760,624 | 4545348,060 | 887,394 |
| E6 | 283 | 45,887 | 94,4516 | 96,5479 | 45,819 | 2,569 | 295781,941 | 4545347,490 | 889,582 |
| E6 | 284 | 45,200 | 89,6449 | 96,5589 | 45,134 | 2,524 | 295783,048 | 4545344,170 | 889,537 |
| E6 | 285 | 44,714 | 84,9299 | 99,8562 | 44,726 | -0,019 | 295784,107 | 4545340,990 | 886,994 |
| E6 | 286 | 46,825 | 99,0891 | 96,5545 | 46,757 | 2,615 | 295780,834 | 4545350,810 | 889,628 |
| E6 | 287 | 47,982 | 96,2046 | 99,9257 | 48,017 | 0,138 | 295779,654 | 4545354,340 | 887,151 |
| E6 | 288 | 26,764 | 95,0972 | 94,3147 | 26,658 | 2,469 | 295801,007 | 4545353,530 | 889,482 |
| E6 | 289 | 25,615 | 96,8310 | 94,0763 | 25,504 | 2,462 | 295802,114 | 4545350,210 | 889,475 |
| E6 | 290 | 25,039 | 87,9880 | 99,1909 | 24,786 | -0,233 | 295803,240 | 4545346,830 | 886,780 |
| E6 | 291 | 28,303 | 87,8013 | 94,6088 | 28,202 | 2,476 | 295799,900 | 4545356,850 | 889,489 |
| E6 | 292 | 30,262 | 80,7766 | 99,6045 | 30,266 | -0,106 | 295798,689 | 4545360,480 | 886,907 |
| E6 | 293 | 10,448 | 47,7326 | 86,9512 | 11,001 | 2,369 | 295820,089 | 4545359,530 | 889,382 |
| E6 | 294 | 8,278 | 59,4274 | 82,0442 | 7,951 | 2,386 | 295821,196 | 4545356,210 | 889,399 |
| E6 | 295 | 5,646 | 80,5017 | 97,7555 | 5,642 | -0,117 | 295822,207 | 4545353,180 | 886,896 |
| E6 | 296 | 14,439 | 41,2371 | 89,9495 | 14,259 | 2,352 | 295818,982 | 4545362,850 | 889,365 |
| E6 | 297 | 17,606 | 37,1977 | 98,4088 | 17,601 | -0,358 | 295817,877 | 4545366,160 | 886,655 |
| E6 | 298 | 18,365 | 43,7052 | 92,6869 | 18,244 | 2,187 | 295839,150 | 4545365,590 | 889,200 |
| E6 | 299 | 16,780 | 55,0903 | 91,8437 | 16,643 | 2,226 | 295840,257 | 4545362,270 | 889,239 |
| E6 | 300 | 15,625 | 69,6376 | 98,4027 | 15,621 | -0,310 | 295841,464 | 4545358,650 | 886,703 |
| E6 | 301 | 20,4396 | 34,3580 | 93,5485 | 20,327 | 2,149 | 295838,043 | 4545368,910 | 889,162 |
| E6 | 302 | 23,200 | 25,7964 | 98,1859 | 23,190 | -0,579 | 295836,753 | 4545372,780 | 886,434 |
| E6 | 303 | 36,776 | 62,6411 | 96,4078 | 36,717 | 2,156 | 295858,160 | 4545371,810 | 889,169 |
| E6 | 304 | 36,023 | 68,6295 | 96,2087 | 35,959 | 2,226 | 295859,267 | 4545368,490 | 889,239 |
| E6 | 305 | 35,492 | 75,9677 | 98,9291 | 35,489 | -0,515 | 295860,576 | 4545364,560 | 886,498 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E6 | Ref | | 70,0340 | | | | 295827,586 | 4545351,479 | 887,013 |
| i=1,582 | m=1,500 | | | | | | | | |
| E6 | 312 | 58,149 | 59,9521 | 98,8252 | 58,143 | -0,991 | 295874,599 | 4545385,690 | 886,022 |
| E6 | 313 | 76,165 | 70,9514 | 98,5430 | 76,144 | 1,825 | 295895,940 | 4545385,030 | 888,838 |
| E6 | 314 | 75,821 | 73,8649 | 98,4482 | 75,799 | 1,930 | 295897,087 | 4545381,730 | 888,943 |
| E6 | 315 | 72,890 | 77,5019 | 99,1435 | 75,590 | -0,932 | 295898,505 | 4545377,640 | 886,081 |
| E6 | 316 | 76,669 | 68,0624 | 98,6398 | 76,651 | 1,720 | 295894,792 | 4545388,340 | 888,733 |
| E6 | 317 | 77,506 | 64,5370 | 98,9453 | 77,496 | -1,202 | 295893,366 | 4545392,450 | 885,811 |
| E6 | 318 | 96,106 | 72,1500 | 98,9911 | 96,097 | 1,605 | 295914,633 | 4545392,190 | 888,618 |
| E6 | 319 | 95,854 | 74,4641 | 98,9207 | 95,841 | 1,707 | 295915,820 | 4545388,900 | 888,720 |
| E6 | 320 | 95,698 | 77,3291 | 99,1824 | 95,691 | -1,147 | 295917,273 | 4545384,840 | 885,866 |
| E6 | 321 | 96,498 | 69,8557 | 99,0625 | 96,491 | 1,503 | 295913,461 | 4545395,480 | 888,516 |
| E6 | 322 | 97,165 | 67,0249 | 99,0152 | 97,151 | -1,421 | 295911,993 | 4545399,580 | 885,592 |
| E6 | 323 | 116,101 | 72,7395 | 99,3047 | 116,104 | 1,350 | 295933,207 | 4545399,690 | 888,363 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|----------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E7 | Ref | | 108,4965 | | | | 296016,305 | 4545447,509 | 884,746 |
| i=1,582 | m=1,500 | | | | | | | | |
| E7 | 324 | 96,594 | 64,4775 | 97,6189 | 96,527 | 3,694 | 295934,419 | 4545396,4 | 888,44 |
| E7 | 325 | 97,467 | 61,7834 | 99,4644 | 97,468 | 0,902 | 295935,878 | 4545392,45 | 885,648 |
| E7 | 326 | 95,412 | 69,0595 | 97,6922 | 95,351 | 3,540 | 295931,995 | 4545402,97 | 888,286 |
| E7 | 327 | 94,887 | 71,9537 | 99,6377 | 94,877 | 0,622 | 295930,487 | 4545407,05 | 885,368 |
| E7 | 328 | 76,124 | 64,6663 | 97,2829 | 76,057 | 3,330 | 295951,665 | 4545407,43 | 888,076 |
| E7 | 329 | 77,851 | 58,5753 | 99,5208 | 77,853 | 0,668 | 295954,36 | 4545400,35 | 885,414 |
| E7 | 330 | 74,954 | 71,1623 | 99,7367 | 74,967 | 0,392 | 295948,899 | 4545414,7 | 885,138 |
| E7 | 331 | 76,868 | 61,8182 | 97,2686 | 76,800 | 3,379 | 295952,909 | 4545404,16 | 888,125 |
| E7 | 332 | 75,536 | 67,5650 | 97,3208 | 75,470 | 3,260 | 295950,42 | 4545410,7 | 888,006 |
| E7 | 333 | 56,420 | 61,3277 | 96,6596 | 56,342 | 3,041 | 295970,043 | 4545415,35 | 887,787 |
| E7 | 334 | 57,334 | 57,5394 | 96,6818 | 57,256 | 3,069 | 295971,319 | 4545412,09 | 887,815 |
| E7 | 335 | 58,520 | 53,4098 | 99,6051 | 58,526 | 0,445 | 295972,765 | 4545408,4 | 885,191 |
| E7 | 336 | 55,041 | 69,9906 | 99,9040 | 55,071 | 0,165 | 295967,24 | 4545422,5 | 884,911 |
| E7 | 337 | 55,709 | 65,2273 | 96,6971 | 55,634 | 2,971 | 295968,766 | 4545418,61 | 887,717 |
| E7 | 338 | 37,026 | 54,6030 | 95,4070 | 36,930 | 2,751 | 295988,373 | 4545423,35 | 887,497 |
| E7 | 339 | 38,304 | 49,0752 | 95,5605 | 38,211 | 2,751 | 295989,681 | 4545420,1 | 887,497 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|----------|---------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E7 | Ref | | 108,4965 | | | | 296016,305 | 4545447,509 | 884,746 |
| i=1,582 | m=1,500 | | | | | | | | |
| E7 | 345 | 23,818 | 18,9539 | 99,6552 | 23,818 | -0,047 | 296009,447 | 4545424,7 | 884,699 |
| E7 | 346 | 15,535 | 59,4401 | 98,5246 | 15,531 | -0,278 | 296003,821 | 4545438,27 | 884,468 |
| E7 | 347 | 17,098 | 44,7889 | 91,3767 | 16,942 | 2,391 | 296005,345 | 4545434,59 | 887,137 |
| E7 | 348 | 12,085 | 52,0690 | 88,9398 | 11,903 | 2,171 | 296024,991 | 4545439,37 | 886,917 |
| E7 | 349 | 15,308 | 46,1375 | 91,5035 | 15,172 | 2,119 | 296026,363 | 4545436,15 | 886,865 |
| E7 | 350 | 18,612 | 42,2522 | 98,7446 | 18,609 | -0,285 | 296027,769 | 4545432,85 | 884,461 |
| E7 | 351 | 5,944 | 85,9075 | 93,7572 | 5,916 | -0,500 | 296022,077 | 4545446,21 | 884,246 |
| E7 | 352 | 9,042 | 62,3082 | 85,6644 | 8,814 | 2,101 | 296023,619 | 4545442,59 | 886,847 |
| E7 | 353 | 27,048 | 99,6721 | 95,7603 | 26,988 | 1,882 | 296043,293 | 4545447,37 | 886,628 |
| E7 | 354 | 28,640 | 92,5471 | 96,1521 | 28,587 | 1,812 | 296044,696 | 4545444,17 | 886,558 |
| E7 | 355 | 30,501 | 86,2636 | 98,7309 | 30,495 | -0,526 | 296046,093 | 4545440,98 | 884,22 |
| E7 | 356 | 25,827 | 92,3949 | 95,7324 | 25,769 | 1,812 | 296041,89 | 4545450,58 | 886,558 |
| E7 | 357 | 24,943 | 82,9392 | 97,8148 | 24,929 | -0,774 | 296040,344 | 4545454,11 | 883,972 |
| E7 | 358 | 46,014 | 89,0366 | 97,9188 | 45,990 | 1,586 | 296061,615 | 4545455,39 | 886,332 |
| E7 | 359 | 45,304 | 84,2610 | 97,9846 | 45,281 | 1,516 | 296060,209 | 4545458,59 | 886,262 |
| E7 | 360 | 44,826 | 79,0073 | 98,4703 | 44,813 | -0,995 | 296058,704 | 4545462,02 | 883,751 |
| E7 | 361 | 46,970 | 93,6421 | 98,0561 | 46,949 | 1,516 | 296063,02 | 4545452,19 | 886,262 |
| E7 | 362 | 48,110 | 97,9338 | 98,8818 | 48,105 | -0,763 | 296064,385 | 4545449,07 | 883,983 |
| E7 | 363 | 65,602 | 84,4110 | 98,8529 | 65,590 | 1,264 | 296079,938 | 4545463,41 | 886,01 |
| E7 | 364 | 66,275 | 87,7318 | 98,9318 | 66,266 | 1,194 | 296081,344 | 4545460,2 | 885,94 |
| E7 | 365 | 67,067 | 90,7579 | 98,9710 | 67,058 | -1,002 | 296082,658 | 4545457,21 | 883,744 |
| E7 | 366 | 65,099 | 81,0397 | 98,9125 | 65,093 | 1,194 | 296078,532 | 4545466,61 | 885,94 |
| E7 | 367 | 64,793 | 77,5315 | 98,7285 | 64,779 | -1,212 | 296077,091 | 4545469,9 | 883,534 |
| E7 | 368 | 85,371 | 81,9279 | 99,3818 | 85,373 | 0,911 | 296098,261 | 4545471,42 | 885,657 |
| E7 | 369 | 89,432 | 84,4973 | 99,4597 | 85,896 | 0,841 | 296099,667 | 4545468,22 | 885,587 |
| E7 | 370 | 86,485 | 86,7479 | 99,0261 | 86,474 | -1,241 | 296100,912 | 4545465,38 | 883,505 |
| E7 | 371 | 84,995 | 79,3241 | 99,4315 | 84,993 | 0,841 | 296096,855 | 4545474,63 | 885,587 |
| E7 | 372 | 84,775 | 76,7982 | 98,8660 | 84,758 | -1,428 | 296095,496 | 4545477,72 | 883,318 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E8 | Ref | | 80,5822 | | | | 296245,145 | 4545416,785 | 883,949 |
| i=1,582 | m=1,500 | | | | | | | | |
| E8 | 373 | 143,031 | 71,1304 | 99,4463 | 143,016 | 1,326 | 296116,584 | 4545479,44 | 885,275 |
| E8 | 374 | 140,356 | 72,1298 | 99,4675 | 140,364 | 1,256 | 296117,99 | 4545476,23 | 885,205 |
| E8 | 375 | 138,182 | 73,0352 | 99,6471 | 138,208 | -0,684 | 296119,15 | 4545473,59 | 883,265 |
| E8 | 376 | 138,184 | 70,1423 | 99,487 | 145,699 | 1,256 | 296115,178 | 4545482,64 | 885,205 |
| E8 | 377 | 145,692 | 69,2869 | 99,6003 | 148,133 | -0,848 | 296113,919 | 4545485,51 | 883,101 |
| E8 | 378 | 148,126 | 63,7058 | 99,5872 | 130,947 | 0,931 | 296134,908 | 4545487,46 | 884,88 |
| E8 | 379 | 130,934 | 64,6724 | 99,6127 | 128,047 | 0,861 | 296136,313 | 4545484,25 | 884,81 |
| E8 | 380 | 128,048 | 65,433 | 99,4972 | 125,869 | -0,912 | 296137,379 | 4545481,82 | 883,037 |
| E8 | 381 | 125,856 | 62,7854 | 99,4693 | 133,871 | 0,861 | 296133,503 | 4545490,66 | 884,81 |
| E8 | 382 | 136,274 | 62,0578 | 99,4693 | 136,292 | -1,054 | 296132,351 | 4545493,29 | 882,895 |
| E8 | 383 | 136,274 | 54,9166 | 99,7616 | 120,987 | 0,535 | 296153,249 | 4545495,48 | 884,484 |
| E8 | 384 | 120,968 | 55,7539 | 99,7931 | 117,857 | 0,465 | 296154,626 | 4545492,26 | 884,414 |
| E8 | 385 | 117,847 | 56,3563 | 99,3145 | 115,708 | -1,164 | 296155,579 | 4545490,04 | 882,785 |
| E8 | 386 | 115,717 | 54,1216 | 99,8035 | 124,137 | 0,465 | 296151,872 | 4545498,7 | 884,414 |
| E8 | 387 | 124,084 | 53,5582 | 99,312 | 126,489 | -1,285 | 296150,847 | 4545501,09 | 882,664 |
| E8 | 388 | 126,493 | 44,7724 | 99,9681 | 113,703 | 0,139 | 296171,623 | 4545503,52 | 884,088 |
| E8 | 389 | 113,753 | 45,3986 | 99,9925 | 110,383 | 0,069 | 296172,933 | 4545500,27 | 884,018 |
| E8 | 390 | 110,347 | 45,8403 | 99,1255 | 108,178 | -1,404 | 296173,809 | 4545498,11 | 882,545 |
| E8 | 391 | 108,181 | 44,1673 | 99,9929 | 117,028 | 0,069 | 296170,312 | 4545506,76 | 884,018 |
| E8 | 392 | 116,564 | 43,7857 | 99,1529 | 119,258 | -1,505 | 296169,437 | 4545508,93 | 882,444 |
| E8 | 393 | 109,585 | 33,5129 | 99,8019 | 109,639 | -0,259 | 296190,058 | 4545511,58 | 883,69 |
| E8 | 394 | 106,189 | 33,8773 | 99,7536 | 106,200 | -0,329 | 296191,261 | 4545508,3 | 883,62 |
| E8 | 395 | 104,167 | 34,107 | 98,9451 | 104,159 | -1,644 | 296191,973 | 4545506,35 | 882,305 |
| E8 | 396 | 113,073 | 33,1683 | 99,7686 | 113,090 | -0,329 | 296188,854 | 4545514,87 | 883,62 |
| E8 | 397 | 115,145 | 32,9758 | 99,0009 | 115,128 | -1,725 | 296188,142 | 4545516,81 | 882,224 |
| E8 | 398 | 109,198 | 21,7064 | 99,568 | 109,212 | -0,659 | 296208,625 | 4545519,71 | 883,29 |
| E8 | 399 | 105,718 | 21,7803 | 99,7525 | 105,712 | -0,329 | 296209,68 | 4545516,37 | 883,62 |
| E8 | 400 | 104,021 | 21,8174 | 98,7961 | 104,003 | -1,885 | 296210,196 | 4545514,74 | 882,064 |
| E8 | 401 | 114,595 | 21,6034 | 98,8722 | 114,579 | -1,948 | 296207,005 | 4545524,83 | 882,001 |
| E8 | 402 | 112,697 | 21,6385 | 99,5639 | 112,703 | -0,690 | 296207,571 | 4545523,04 | 883,259 |
| E8 | 403 | 112,56 | 10,0485 | 99,3507 | 112,554 | -1,066 | 296227,453 | 4545527,94 | 882,883 |
| E8 | 404 | 109,076 | 9,8592 | 99,2891 | 109,070 | -1,136 | 296228,321 | 4545524,55 | 882,813 |
| E8 | 405 | 107,569 | 9,5716 | 98,6683 | 107,550 | -2,168 | 296228,699 | 4545523,07 | 881,781 |
| E8 | 406 | 118,053 | 10,3242 | 98,6992 | 118,034 | -2,330 | 296226,087 | 4545533,27 | 881,619 |
| E8 | 407 | 116,042 | 10,2264 | 99,4031 | 116,039 | -1,006 | 296226,585 | 4545531,33 | 882,943 |
| E8 | 408 | 119,36 | 0,8129 | 99,1674 | 119,345 | -1,479 | 296246,669 | 4545536,12 | 882,47 |
| E8 | 409 | 115,94 | 1,2088 | 99,1044 | 115,926 | -1,549 | 296247,346 | 4545532,69 | 882,4 |
| E8 | 410 | 114,512 | 1,3825 | 98,5383 | 114,482 | -2,547 | 296247,631 | 4545531,24 | 881,402 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E8 | Ref | | 80,5822 | | | | 296245,145 | 4545416,785 | 883,949 |
| i=1,582 | m=1,500 | | | | | | | | |
| E8 | 414 | 125,763 | 10,9908 | 98,9673 | 125,754 | -1,958 | 296266,748 | 4545540,67 | 881,991 |
| E8 | 415 | 124,418 | 11,2244 | 98,4556 | 124,383 | -2,936 | 296266,962 | 4545539,24 | 881,013 |
| E8 | 416 | 132,43 | 9,9276 | 99,0866 | 132,412 | -1,818 | 296265,71 | 4545547,59 | 882,131 |
| E8 | 417 | 134,124 | 9,6773 | 98,5484 | 134,091 | -2,976 | 296265,45 | 4545549,33 | 880,973 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E10 | Ref | | 93,5677 | | | | 296872,768 | 4545730,171 | 870,222 |
| i=1,582 | m=1,500 | | | | | | | | |
| E10 | 418 | 350,435 | 20,8483 | 100,7443 | 350,693 | -4,015 | 296985,573 | 4545748,840 | 866,207 |
| E10 | 419 | 348,053 | 21,2572 | 100,7622 | 348,016 | -4,085 | 296986,826 | 4545745,580 | 866,137 |
| E10 | 420 | 353,449 | 20,4453 | 100,7475 | 353,393 | -4,068 | 296984,321 | 4545752,110 | 866,154 |
| E10 | 421 | 346,889 | 21,4369 | 100,9226 | 346,854 | -4,945 | 296987,370 | 4545744,160 | 865,277 |
| E10 | 422 | 346,032 | 20,0952 | 100,8178 | 345,997 | -4,363 | 296987,772 | 4545743,110 | 865,859 |
| E10 | 423 | 322,346 | 24,2300 | 100,9889 | 354,570 | -4,925 | 296983,777 | 4545753,530 | 865,297 |
| E10 | 424 | 355,809 | 24,6339 | 100,7395 | 355,783 | -4,051 | 296983,217 | 4545754,990 | 866,171 |
| E10 | 425 | 360,168 | 24,8209 | 100,8481 | 360,115 | -4,716 | 297006,544 | 4545751,130 | 865,506 |
| E10 | 426 | 357,499 | 24,9475 | 100,8669 | 357,453 | -4,786 | 297007,658 | 4545747,810 | 865,436 |
| E10 | 427 | 356,291 | 23,8319 | 101,0237 | 356,240 | -5,647 | 297008,169 | 4545746,290 | 864,575 |
| E10 | 428 | 355,457 | 23,6517 | 100,9163 | 355,428 | -5,034 | 297008,514 | 4545745,270 | 865,188 |
| E10 | 429 | 362,856 | 23,4982 | 100,8541 | 362,790 | -4,786 | 297005,429 | 4545754,450 | 865,436 |
| E10 | 430 | 364,079 | 27,3835 | 101,0018 | 364,020 | -5,647 | 297004,919 | 4545755,970 | 864,575 |
| E10 | 431 | 365,118 | 27,7748 | 100,8584 | 365,073 | -4,841 | 297004,481 | 4545757,270 | 865,381 |
| E10 | 432 | 370,384 | 27,8369 | 100,9055 | 370,340 | -5,186 | 297027,199 | 4545753,390 | 865,036 |
| E10 | 433 | 367,712 | 26,8336 | 100,9242 | 367,665 | -5,256 | 297028,134 | 4545750,010 | 864,966 |
| E10 | 434 | 367,327 | 26,6865 | 100,9919 | 367,248 | -5,641 | 297028,283 | 4545749,480 | 864,581 |
| E10 | 435 | 373,081 | 30,3121 | 100,9109 | 373,020 | -5,256 | 297026,264 | 4545756,760 | 864,966 |
| E10 | 436 | 374,236 | 30,6875 | 101,0544 | 374,185 | -6,116 | 297025,859 | 4545758,220 | 864,106 |
| E10 | 437 | 375,263 | 30,8608 | 100,9263 | 375,233 | -5,378 | 297025,496 | 4545759,530 | 864,844 |
| E10 | 438 | 381,258 | 30,9556 | 100,9954 | 381,218 | -5,879 | 297047,501 | 4545755,600 | 864,343 |
| E10 | 439 | 378,586 | 29,9422 | 101,0142 | 378,527 | -5,949 | 297048,248 | 4545752,180 | 864,273 |
| E10 | 440 | 377,360 | 29,6408 | 101,1626 | 377,306 | -6,809 | 297048,591 | 4545750,620 | 863,413 |
| E10 | 441 | 376,691 | 29,7740 | 101,0837 | 376,641 | -6,330 | 297048,777 | 4545749,770 | 863,892 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E10 | Ref | | 93,5677 | | | | 296872,768 | 4545730,171 | 870,222 |
| i=1,582 | m=1,500 | | | | | | | | |
| E10 | 445 | 392,762 | 32,6801 | 101,0413 | 392,713 | -6,342 | 297067,548 | 4545757,790 | 863,88 |
| E10 | 446 | 390,074 | 32,5257 | 101,0599 | 390,019 | -6,412 | 297068,143 | 4545754,340 | 863,81 |
| E10 | 447 | 389,498 | 32,4181 | 101,1468 | 389,435 | -6,934 | 297068,273 | 4545753,590 | 863,288 |
| E10 | 448 | 395,484 | 35,5909 | 101,0454 | 395,421 | -6,412 | 297066,954 | 4545761,240 | 863,81 |
| E10 | 449 | 396,663 | 35,9469 | 101,1805 | 396,602 | -7,273 | 297066,696 | 4545762,740 | 862,949 |
| E10 | 450 | 397,476 | 36,0662 | 101,0903 | 397,429 | -6,725 | 297066,514 | 4545763,790 | 863,497 |
| E10 | 451 | 404,865 | 35,2404 | 101,0693 | 404,817 | -6,718 | 297087,479 | 4545759,970 | 863,504 |
| E10 | 452 | 402,224 | 35,1501 | 101,0874 | 402,137 | -6,788 | 297087,961 | 4545756,500 | 863,434 |
| E10 | 453 | 401,356 | 37,9871 | 101,2154 | 401,253 | -7,580 | 297088,122 | 4545755,350 | 862,642 |
| E10 | 454 | 407,584 | 35,2404 | 101,0731 | 407,501 | -6,788 | 297086,997 | 4545763,430 | 863,434 |
| E10 | 455 | 408,277 | 35,1500 | 101,1675 | 408,201 | -7,405 | 297086,872 | 4545764,330 | 862,817 |
| E10 | 456 | 417,570 | 37,9871 | 101,0822 | 417,502 | -7,016 | 297107,369 | 4545762,140 | 863,206 |
| E10 | 457 | 414,941 | 38,3394 | 101,0998 | 414,860 | -7,086 | 297107,780 | 4545758,660 | 863,136 |
| E10 | 458 | 414,031 | 38,4609 | 101,2274 | 413,960 | -7,900 | 297107,921 | 4545757,470 | 862,322 |
| E10 | 459 | 420,212 | 37,6403 | 101,0860 | 420,148 | -7,086 | 297106,959 | 4545765,610 | 863,136 |
| E10 | 460 | 421,121 | 37,5263 | 101,2028 | 421,028 | -7,874 | 297106,823 | 4545766,760 | 862,348 |
| E10 | 461 | 429,754 | 40,2382 | 101,0903 | 430,739 | -7,296 | 297127,252 | 4545764,310 | 862,926 |
| E10 | 462 | 428,229 | 40,5896 | 101,1073 | 428,163 | -7,366 | 297127,633 | 4545760,830 | 862,856 |
| E10 | 463 | 427,479 | 40,6943 | 101,2144 | 427,402 | -8,072 | 297127,745 | 4545759,800 | 862,15 |
| E10 | 464 | 433,395 | 39,8910 | 101,0941 | 433,328 | -7,366 | 297126,871 | 4545767,790 | 862,856 |
| E10 | 465 | 434,198 | 39,7870 | 101,1915 | 434,111 | -8,044 | 297126,756 | 4545768,840 | 862,178 |
| E10 | 466 | 444,552 | 42,3525 | 101,0960 | 444,481 | -7,571 | 297147,134 | 4545766,480 | 862,651 |
| E10 | 467 | 442,085 | 42,7048 | 101,1122 | 441,984 | -7,641 | 297147,513 | 4545763,000 | 862,581 |
| E10 | 468 | 441,456 | 42,7946 | 101,2009 | 441,355 | -8,245 | 297147,609 | 4545762,120 | 861,977 |
| E10 | 469 | 447,068 | 42,0039 | 101,0998 | 446,991 | -7,641 | 297146,754 | 4545769,960 | 862,581 |
| E10 | 470 | 447,677 | 41,9213 | 101,1798 | 447,591 | -8,214 | 297146,663 | 4545770,790 | 862,008 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E11 | Ref | | 93,3324 | | | | 297376,015 | 4545781,192 | 869,980 |
| i=1,582 | m=1,500 | | | | | | | | |
| E11 | 471 | 209,510 | 96,1842 | 102,3363 | 209,375 | -7,605 | 297167,016 | 4545768,65 | 862,375 |
| E11 | 472 | 209,376 | 95,1203 | 102,3591 | 209,234 | -7,675 | 297167,395 | 4545765,17 | 862,305 |
| E11 | 473 | 209,379 | 94,9000 | 102,5112 | 209,212 | -8,175 | 297167,474 | 4545764,45 | 861,805 |
| E11 | 474 | 209,722 | 97,2464 | 102,3552 | 209,575 | -7,675 | 297166,636 | 4545772,13 | 862,305 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|---------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E11 | Ref | | 93,3324 | | | | 297376,015 | 4545781,192 | 869,980 |
| i=1,582 | m=1,500 | | | | | | | | |
| E11 | 478 | 189,415 | 95,1432 | 102,8339 | 189,226 | -8,347 | 297187,339 | 4545766,77 | 861,633 |
| E11 | 479 | 189,793 | 97,6856 | 102,6953 | 189,622 | -7,951 | 297186,518 | 4545774,3 | 862,029 |
| E11 | 480 | 189,848 | 97,8608 | 102,8177 | 189,662 | -8,318 | 297186,46 | 4545774,82 | 861,662 |
| E11 | 481 | 169,635 | 96,9170 | 103,0932 | 169,435 | -8,157 | 297206,779 | 4545772,99 | 861,823 |
| E11 | 482 | 169,467 | 95,6027 | 103,1226 | 169,260 | -8,227 | 297207,159 | 4545769,51 | 861,753 |
| E11 | 483 | 169,457 | 95,0316 | 103,4463 | 169,206 | -9,087 | 297207,324 | 4545768 | 860,893 |
| E11 | 484 | 176,020 | 94,6230 | 103,1149 | 169,176 | -8,527 | 297207,442 | 4545766,92 | 861,453 |
| E11 | 485 | 148,986 | 98,2281 | 103,5523 | 169,681 | -8,227 | 297206,4 | 4545776,47 | 861,753 |
| E11 | 486 | 188,447 | 98,7957 | 103,2063 | 169,810 | -9,405 | 297206,235 | 4545777,98 | 860,575 |
| E11 | 487 | 170,819 | 99,2274 | 103,1934 | 169,918 | -8,483 | 297206,11 | 4545779,13 | 861,497 |
| E11 | 488 | 156,888 | 97,4302 | 103,4569 | 149,476 | -8,433 | 297226,661 | 4545775,16 | 861,547 |
| E11 | 489 | 149,524 | 95,9407 | 103,6572 | 149,277 | -8,503 | 297227,041 | 4545771,68 | 861,477 |
| E11 | 490 | 149,518 | 95,2933 | 104,0421 | 149,217 | -9,405 | 297227,206 | 4545770,17 | 860,575 |
| E11 | 491 | 149,437 | 94,7398 | 103,7434 | 149,177 | -8,700 | 297227,347 | 4545768,88 | 861,28 |
| E11 | 492 | 150,003 | 98,9150 | 103,6455 | 149,755 | -8,503 | 297226,282 | 4545778,64 | 861,477 |
| E11 | 493 | 150,204 | 99,5548 | 104,0236 | 149,902 | -9,405 | 297226,117 | 4545780,15 | 860,575 |
| E11 | 494 | 150,300 | 99,8651 | 103,7032 | 150,047 | -8,656 | 297225,968 | 4545781,51 | 861,324 |
| E11 | 495 | 129,828 | 98,1016 | 104,3140 | 129,530 | -8,709 | 297246,543 | 4545777,33 | 861,271 |
| E11 | 496 | 129,605 | 96,3832 | 104,3559 | 129,301 | -8,779 | 297246,923 | 4545773,85 | 861,201 |
| E11 | 497 | 129,595 | 95,6359 | 104,7798 | 129,231 | -9,639 | 297247,088 | 4545772,34 | 860,341 |
| E11 | 498 | 129,493 | 94,9474 | 104,4065 | 129,183 | -8,874 | 297247,239 | 4545770,95 | 861,106 |
| E11 | 499 | 129,070 | 99,8127 | 104,3740 | 129,853 | -8,779 | 297246,163 | 4545780,81 | 861,201 |
| E11 | 500 | 130,384 | 99,4477 | 104,7508 | 130,021 | -9,639 | 297245,999 | 4545782,32 | 860,341 |
| E11 | 501 | 130,504 | 98,7345 | 104,3498 | 130,201 | -8,828 | 297245,84 | 4545783,78 | 861,152 |
| E11 | 502 | 109,978 | 99,0172 | 105,2545 | 109,603 | -8,985 | 297266,425 | 4545779,5 | 860,995 |
| E11 | 503 | 109,714 | 96,9873 | 105,3079 | 109,332 | -9,055 | 297266,805 | 4545776,02 | 860,925 |
| E11 | 504 | 109,707 | 96,1038 | 105,8092 | 109,250 | -9,915 | 297266,97 | 4545774,51 | 860,065 |
| E11 | 505 | 109,569 | 95,2016 | 105,3103 | 109,187 | -9,047 | 297267,138 | 4545772,97 | 860,933 |
| E11 | 506 | 110,363 | 98,9650 | 105,2766 | 109,985 | -9,055 | 297266,045 | 4545782,98 | 860,925 |
| E11 | 507 | 110,636 | 98,0942 | 105,7603 | 110,183 | -9,915 | 297265,881 | 4545784,49 | 860,065 |
| E11 | 508 | 110,793 | 97,1694 | 105,2250 | 110,419 | -9,001 | 297265,705 | 4545786,1 | 860,979 |
| E11 | 509 | 90,194 | 99,6608 | 106,6057 | 89,709 | -9,260 | 297286,307 | 4545781,67 | 860,72 |
| E11 | 510 | 89,872 | 97,8613 | 106,6793 | 89,378 | -9,330 | 297286,687 | 4545778,19 | 860,65 |
| E11 | 511 | 89,868 | 96,7812 | 107,2933 | 89,278 | -10,191 | 297286,851 | 4545776,68 | 859,789 |
| E11 | 512 | 89,680 | 95,5698 | 106,6159 | 89,195 | -9,221 | 297287,036 | 4545774,99 | 860,759 |
| E11 | 513 | 90,665 | 97,2048 | 106,6207 | 90,175 | -9,330 | 297285,927 | 4545785,15 | 860,65 |
| E11 | 514 | 90,999 | 96,1477 | 107,2022 | 90,418 | -10,191 | 297285,762 | 4545786,66 | 859,789 |
| E11 | 515 | 91,295 | 94,9162 | 106,4712 | 90,734 | -9,173 | 297285,57 | 4545788,43 | 860,807 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|---------|----------|----------|---------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E11 | Ref | | 93,3324 | | | | 297376,015 | 4545781,192 | 869,980 |
| i=1,582 | m=1,500 | | | | | | | | |
| E11 | 519 | 69,851 | 96,1506 | 108,6630 | 69,206 | -9,394 | 297306,935 | 4545777,01 | 860,586 |
| E11 | 520 | 71,136 | 94,4572 | 108,7007 | 70,473 | -9,610 | 297305,809 | 4545787,32 | 860,37 |
| E11 | 521 | 71,258 | 93,1171 | 109,4583 | 70,784 | -10,466 | 297305,644 | 4545788,83 | 859,514 |
| E11 | 522 | 71,845 | 91,4309 | 108,3774 | 71,224 | -9,345 | 297305,435 | 4545790,75 | 860,635 |
| E11 | 523 | 50,567 | 98,2818 | 112,5781 | 49,583 | -9,844 | 297326,45 | 4545782,53 | 860,136 |
| E11 | 524 | 51,107 | 93,8776 | 112,3635 | 50,176 | -9,781 | 297326,071 | 4545786,01 | 860,199 |
| E11 | 525 | 51,962 | 89,5963 | 112,2448 | 51,004 | -9,851 | 297325,691 | 4545789,49 | 860,129 |
| E11 | 526 | 52,553 | 87,7851 | 113,1693 | 51,433 | -10,712 | 297325,526 | 4545791 | 859,268 |
| E11 | 527 | 52,950 | 85,3999 | 111,6062 | 52,073 | -9,518 | 297325,305 | 4545793,03 | 860,462 |
| E11 | 528 | 50,563 | 99,7783 | 113,6852 | 49,400 | -10,704 | 297326,615 | 4545781,02 | 859,276 |
| E11 | 529 | 50,170 | 97,2682 | 112,3219 | 49,233 | -9,568 | 297326,827 | 4545779,08 | 860,412 |
| E11 | 530 | 32,464 | 85,4598 | 120,0703 | 30,864 | -9,984 | 297345,953 | 4545788,18 | 859,996 |
| E11 | 531 | 31,551 | 92,5110 | 120,7550 | 29,890 | -10,023 | 297346,332 | 4545784,7 | 859,957 |
| E11 | 532 | 31,550 | 95,6974 | 122,5854 | 29,586 | -10,878 | 297346,497 | 4545783,19 | 859,102 |
| E11 | 533 | 30,907 | 99,8740 | 120,5901 | 29,305 | -9,741 | 297346,71 | 4545781,25 | 860,239 |
| E11 | 534 | 33,750 | 78,9151 | 119,4190 | 32,192 | -10,054 | 297345,573 | 4545791,66 | 859,926 |
| E11 | 535 | 34,657 | 76,2524 | 120,5518 | 32,867 | -10,913 | 297345,408 | 4545793,17 | 859,067 |
| E11 | 536 | 35,263 | 72,7836 | 117,8775 | 33,882 | -9,691 | 297345,182 | 4545795,24 | 860,289 |
| E11 | 537 | 17,088 | 53,3645 | 140,8220 | 13,694 | -10,140 | 297365,834 | 4545790,35 | 859,84 |
| E11 | 538 | 15,274 | 66,5723 | 146,8157 | 11,327 | -10,165 | 297366,214 | 4545786,87 | 859,815 |
| E11 | 539 | 15,278 | 74,0097 | 151,7739 | 10,498 | -11,018 | 297366,38 | 4545785,36 | 858,962 |
| E11 | 540 | 13,957 | 84,1664 | 150,8160 | 9,742 | -9,913 | 297366,573 | 4545783,59 | 860,067 |
| E11 | 541 | 19,420 | 44,3125 | 135,5584 | 16,469 | -10,210 | 297365,455 | 4545793,83 | 859,77 |
| E11 | 542 | 20,966 | 41,2935 | 135,7050 | 17,754 | -11,070 | 297365,29 | 4545795,34 | 858,91 |
| E11 | 543 | 21,935 | 37,8407 | 129,9593 | 19,551 | -9,864 | 297365,066 | 4545797,39 | 860,116 |
| E11 | 544 | 18,154 | 45,0565 | 138,5772 | 14,922 | -10,258 | 297385,716 | 4545792,53 | 859,722 |
| E11 | 545 | 16,440 | 45,0565 | 143,3012 | 12,782 | -10,258 | 297386,096 | 4545789,05 | 859,722 |
| E11 | 546 | 16,443 | 57,8489 | 147,6478 | 12,049 | -11,108 | 297386,262 | 4545787,53 | 858,872 |
| E11 | 547 | 15,272 | 64,7358 | 146,3785 | 11,396 | -10,086 | 297386,455 | 4545785,76 | 859,894 |
| E11 | 548 | 20,359 | 73,7426 | 134,1677 | 17,497 | -10,328 | 297385,336 | 4545796 | 859,652 |
| E11 | 549 | 21,844 | 35,7651 | 134,5136 | 18,712 | -11,189 | 297385,172 | 4545797,51 | 858,791 |
| E11 | 550 | 22,733 | 32,5548 | 129,3677 | 20,357 | -10,037 | 297384,957 | 4545799,48 | 859,943 |
| E11 | 551 | 34,172 | 28,9517 | 119,7969 | 32,533 | -10,374 | 297405,593 | 4545794,74 | 859,606 |
| E11 | 552 | 33,283 | 72,6557 | 120,3018 | 31,605 | -10,353 | 297405,973 | 4545791,26 | 859,627 |
| E11 | 553 | 33,283 | 79,3600 | 122,0155 | 31,313 | -11,200 | 297406,139 | 4545789,74 | 858,78 |
| E11 | 554 | 32,753 | 82,3979 | 120,4495 | 31,078 | -10,259 | 297406,32 | 4545788,08 | 859,721 |
| E11 | 555 | 35,402 | 85,7720 | 119,2191 | 33,801 | -10,444 | 297405,214 | 4545798,22 | 859,536 |
| E11 | 556 | 36,281 | 66,3895 | 120,3223 | 34,448 | -11,304 | 297405,049 | 4545799,73 | 858,676 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|---------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E11 | Ref | | 93,3324 | | | | 297376,015 | 4545781,192 | 869,980 |
| i=1,582 | m=1,500 | | | | | | | | |
| E11 | 560 | 52,408 | 84,4610 | 113,9260 | 51,159 | -11,291 | 297426,002 | 4545792,08 | 858,689 |
| E11 | 561 | 52,093 | 86,3466 | 112,9366 | 51,021 | -10,431 | 297426,17 | 4545790,55 | 859,549 |
| E11 | 562 | 53,809 | 88,2568 | 112,6740 | 52,747 | -10,560 | 297425,077 | 4545800,56 | 859,42 |
| E11 | 563 | 54,395 | 76,0639 | 113,5650 | 53,165 | -11,421 | 297424,913 | 4545802,06 | 858,559 |
| E11 | 564 | 54,728 | 74,3209 | 112,2499 | 53,718 | -10,384 | 297424,716 | 4545803,86 | 859,596 |
| E11 | 565 | 72,488 | 72,2669 | 109,4219 | 71,695 | -10,607 | 297445,296 | 4545799,64 | 859,373 |
| E11 | 566 | 72,039 | 83,4326 | 109,4247 | 71,251 | -10,544 | 297445,676 | 4545796,16 | 859,436 |
| E11 | 567 | 72,029 | 86,5258 | 110,1783 | 71,110 | -11,385 | 297445,842 | 4545794,64 | 858,595 |
| E11 | 568 | 71,807 | 87,8876 | 109,5074 | 71,008 | -10,602 | 297445,997 | 4545793,22 | 859,378 |
| E11 | 569 | 73,103 | 89,1641 | 109,4036 | 72,307 | -10,677 | 297444,917 | 4545803,12 | 859,303 |
| E11 | 570 | 73,544 | 80,3848 | 110,1009 | 72,620 | -11,538 | 297444,752 | 4545804,62 | 858,442 |
| E11 | 571 | 73,788 | 79,0878 | 109,2093 | 73,017 | -10,555 | 297444,565 | 4545806,34 | 859,425 |
| E11 | 572 | 92,237 | 77,6156 | 107,4748 | 91,601 | -10,723 | 297465,103 | 4545802,5 | 859,257 |
| E11 | 573 | 91,857 | 87,4783 | 107,4535 | 91,227 | -10,648 | 297465,483 | 4545799,02 | 859,332 |
| E11 | 574 | 91,837 | 88,5426 | 108,0404 | 91,105 | -11,486 | 297465,649 | 4545797,5 | 858,494 |
| E11 | 575 | 91,665 | 89,4689 | 107,5552 | 91,020 | -10,771 | 297465,792 | 4545796,18 | 859,209 |
| E11 | 576 | 92,747 | 82,6531 | 107,4853 | 92,106 | -10,798 | 297464,723 | 4545805,98 | 859,182 |
| E11 | 577 | 93,112 | 81,6134 | 108,0489 | 92,368 | -11,659 | 297464,557 | 4545807,5 | 858,321 |
| E11 | 578 | 93,304 | 80,5051 | 107,3903 | 92,675 | -10,725 | 297464,379 | 4545809,13 | 859,255 |
| E11 | 579 | 112,578 | 83,8970 | 106,2457 | 112,037 | -10,945 | 297484,487 | 4545809,23 | 859,035 |
| E11 | 580 | 112,121 | 85,8736 | 106,2113 | 111,587 | -10,840 | 297484,866 | 4545805,75 | 859,14 |
| E11 | 581 | 113,066 | 82,1396 | 106,1898 | 112,531 | -10,894 | 297484,146 | 4545812,35 | 859,086 |
| E11 | 582 | 111,772 | 87,8645 | 106,1707 | 111,246 | -10,735 | 297485,246 | 4545802,27 | 859,245 |
| E11 | 583 | 111,742 | 88,7376 | 106,6499 | 111,133 | -11,569 | 297485,413 | 4545800,75 | 858,411 |
| E11 | 584 | 11,602 | 88,8576 | 106,2976 | 111,057 | -10,940 | 297485,542 | 4545799,56 | 859,04 |
| E11 | 585 | 112,892 | 83,0500 | 106,7186 | 112,263 | -11,810 | 297484,322 | 4545810,73 | 858,17 |
| E11 | 586 | 132,528 | 84,5486 | 105,3595 | 132,058 | -11,062 | 297504,202 | 4545812,93 | 858,918 |
| E11 | 587 | 132,098 | 86,2266 | 105,3262 | 131,636 | -10,957 | 297504,582 | 4545809,45 | 859,023 |
| E11 | 588 | 131,760 | 87,9142 | 105,2890 | 131,305 | -10,852 | 297504,961 | 4545805,97 | 859,128 |
| E11 | 589 | 131,716 | 88,6586 | 105,6949 | 131,189 | -11,685 | 297505,128 | 4545804,44 | 858,295 |
| E11 | 590 | 131,592 | 89,1994 | 105,4196 | 131,116 | -11,107 | 297505,249 | 4545803,33 | 858,873 |
| E11 | 591 | 132,969 | 83,0923 | 105,3417 | 132,501 | -11,062 | 297503,87 | 4545815,97 | 858,918 |
| E11 | 592 | 132,811 | 83,8288 | 105,7643 | 132,267 | -11,927 | 297504,038 | 4545814,43 | 858,053 |
| E11 | 593 | 152,967 | 83,6115 | 104,7138 | 152,548 | -11,234 | 297523,536 | 4545820,03 | 858,746 |
| E11 | 594 | 151,553 | 84,8440 | 104,7032 | 152,137 | -11,178 | 297523,861 | 4545817,07 | 858,802 |
| E11 | 595 | 152,137 | 86,3010 | 104,6720 | 151,728 | -11,073 | 297524,244 | 4545813,59 | 858,907 |
| E11 | 596 | 150,384 | 87,3569 | 104,6820 | 151,398 | -10,968 | 297524,626 | 4545810,11 | 859,012 |
| E11 | 597 | 151,749 | 88,4222 | 104,9907 | 151,281 | -11,802 | 297524,794 | 4545808,59 | 858,178 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|---------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E11 | Ref | | 93,3324 | | | | 297376,015 | 4545781,192 | 869,980 |
| i=1,582 | m=1,500 | | | | | | | | |
| E11 | 601 | 172,782 | 84,3480 | 104,5140 | 172,348 | -12,159 | 297543,18 | 4545823,14 | 857,821 |
| E11 | 602 | 172,542 | 84,9023 | 104,2004 | 172,165 | -11,294 | 297543,361 | 4545821,64 | 858,686 |
| E11 | 603 | 172,156 | 86,1922 | 104,1709 | 171,788 | -11,189 | 297543,778 | 4545818,16 | 858,791 |
| E11 | 604 | 171,849 | 87,4836 | 104,1394 | 171,484 | -11,084 | 297544,195 | 4545814,69 | 858,896 |
| E11 | 605 | 171,827 | 87,6887 | 104,2684 | 171,442 | -11,430 | 297544,261 | 4545814,14 | 858,55 |
| E11 | 606 | 192,675 | 83,8940 | 103,8662 | 192,320 | -11,612 | 297562,213 | 4545829,33 | 858,368 |
| E11 | 607 | 192,580 | 84,3030 | 104,0877 | 192,185 | -12,275 | 297562,388 | 4545828,1 | 857,705 |
| E11 | 608 | 192,377 | 84,8025 | 103,8049 | 192,032 | -11,409 | 297562,601 | 4545826,6 | 858,571 |
| E11 | 609 | 192,061 | 85,9574 | 103,7763 | 191,722 | -11,304 | 297563,092 | 4545823,14 | 858,676 |
| E11 | 610 | 191,807 | 87,1190 | 103,7464 | 191,475 | -11,199 | 297563,584 | 4545819,67 | 858,781 |
| E11 | 611 | 191,799 | 87,3236 | 103,8769 | 191,439 | -11,591 | 297563,671 | 4545819,06 | 858,389 |
| E11 | 612 | 212,183 | 83,7544 | 103,5341 | 211,858 | -11,691 | 297581,012 | 4545834,67 | 858,289 |
| E11 | 613 | 212,125 | 84,1408 | 103,7434 | 211,757 | -12,384 | 297581,235 | 4545833,4 | 857,596 |
| E11 | 614 | 211,965 | 84,5945 | 103,4857 | 211,649 | -11,518 | 297581,497 | 4545831,91 | 858,462 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E12 | Ref | | 54,3958 | | | | 297738,350 | 4545819,280 | 857,661 |
| i=1,582 | m=1,500 | | | | | | | | |
| E12 | 615 | 156,531 | 96,2599 | 99,6665 | 156,518 | 0,902 | 297582,102 | 4545828,47 | 858,563 |
| E12 | 616 | 155,732 | 97,6532 | 99,6235 | 155,749 | 1,003 | 297582,707 | 4545825,02 | 858,664 |
| E12 | 617 | 155,561 | 97,9253 | 99,8007 | 155,607 | 0,569 | 297582,826 | 4545824,35 | 858,23 |
| E12 | 618 | 140,476 | 90,5436 | 99,8364 | 140,478 | 0,443 | 297599,419 | 4545840,07 | 858,104 |
| E12 | 619 | 140,136 | 91,0392 | 100,1113 | 140,065 | -0,163 | 297599,67 | 4545838,93 | 857,498 |
| E12 | 620 | 139,515 | 91,6867 | 99,7180 | 139,540 | 0,700 | 297599,998 | 4545837,45 | 858,361 |
| E12 | 621 | 138,370 | 93,1968 | 99,6738 | 138,383 | 0,791 | 297600,756 | 4545834,04 | 858,452 |
| E12 | 622 | 137,277 | 94,7362 | 99,6290 | 137,306 | 0,882 | 297601,513 | 4545830,62 | 858,543 |
| E12 | 623 | 137,067 | 95,0587 | 99,8458 | 137,091 | 0,414 | 297601,672 | 4545829,91 | 858,075 |
| E12 | 624 | 78,273 | 63,7697 | 100,2074 | 78,255 | -0,173 | 297672,429 | 4545861,45 | 857,488 |
| E12 | 625 | 77,707 | 64,0560 | 99,8468 | 77,726 | 0,269 | 297672,687 | 4545860,87 | 857,93 |
| E12 | 626 | 74,845 | 65,7211 | 99,7814 | 74,843 | 0,339 | 297674,097 | 4545857,66 | 858 |
| E12 | 627 | 72,008 | 67,5110 | 99,7109 | 72,021 | 0,409 | 297675,506 | 4545854,46 | 858,07 |
| E12 | 628 | 71,289 | 68,0033 | 100,2429 | 71,288 | -0,190 | 297675,878 | 4545853,62 | 857,471 |
| E12 | 629 | 67,529 | 49,2719 | 100,3441 | 67,525 | -0,283 | 297691,152 | 4545867,57 | 857,378 |
| E12 | 630 | 66,864 | 49,4679 | 99,9324 | 66,929 | 0,153 | 297691,421 | 4545867 | 857,814 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E12 | Ref | | 54,3958 | | | | 297738,350 | 4545819,280 | 857,661 |
| i=1,582 | m=1,500 | | | | | | | | |
| E12 | 634 | 61,748 | 30,4086 | 100,6217 | 61,740 | -0,521 | 297709,968 | 4545874,11 | 857,14 |
| E12 | 635 | 61,009 | 30,4289 | 100,0480 | 60,928 | 0,036 | 297710,324 | 4545873,38 | 857,697 |
| E12 | 636 | 6,588 | 30,5200 | 99,9730 | 57,435 | 0,106 | 297711,858 | 4545870,24 | 857,767 |
| E12 | 637 | 53,912 | 30,6285 | 99,8890 | 53,932 | 0,176 | 297713,392 | 4545867,09 | 857,837 |
| E12 | 638 | 53,233 | 30,6508 | 100,4401 | 53,220 | -0,286 | 297713,705 | 4545866,45 | 857,375 |
| E12 | 639 | 62,094 | 9,6297 | 100,6818 | 62,089 | -0,583 | 297728,994 | 4545880,66 | 857,078 |
| E12 | 640 | 61,474 | 9,4284 | 100,1688 | 61,473 | -0,081 | 297729,279 | 4545880,08 | 857,58 |
| E12 | 641 | 58,158 | 8,2659 | 100,1018 | 58,149 | -0,011 | 297730,821 | 4545876,94 | 857,65 |
| E12 | 642 | 54,839 | 6,9618 | 100,0267 | 54,848 | 0,059 | 297732,364 | 4545873,8 | 857,72 |
| E12 | 643 | 54,061 | 6,6216 | 100,7419 | 54,052 | -0,548 | 297732,738 | 4545873,04 | 857,113 |
| E12 | 644 | 69,049 | 8,7624 | 100,7127 | 69,044 | -0,691 | 297747,831 | 4545887,67 | 856,97 |
| E12 | 645 | 68,454 | 9,1424 | 100,2604 | 68,455 | -0,198 | 297748,147 | 4545887,03 | 857,463 |
| E12 | 646 | 65,600 | 11,0609 | 100,2038 | 65,598 | -0,128 | 297749,69 | 4545883,89 | 857,533 |
| E12 | 647 | 62,809 | 13,1510 | 100,1419 | 62,805 | -0,058 | 297751,232 | 4545880,75 | 857,603 |
| E12 | 648 | 62,076 | 13,7383 | 100,7620 | 62,070 | -0,661 | 297751,641 | 4545879,91 | 857 |
| E12 | 649 | 80,692 | 22,7576 | 100,7006 | 80,680 | -0,806 | 297766,581 | 4545894,86 | 856,855 |
| E12 | 650 | 80,211 | 23,1697 | 100,3143 | 80,193 | -0,314 | 297766,896 | 4545894,22 | 857,347 |
| E12 | 651 | 77,846 | 25,2632 | 100,2666 | 77,850 | -0,244 | 297768,439 | 4545891,08 | 857,417 |
| E12 | 652 | 74,626 | 27,4834 | 100,2155 | 75,596 | -0,174 | 297769,981 | 4545887,94 | 857,487 |
| E12 | 653 | 75,021 | 19,1480 | 100,7281 | 75,016 | -0,776 | 297770,39 | 4545887,11 | 856,885 |
| E12 | 654 | 95,347 | 32,7147 | 100,6697 | 95,333 | -0,921 | 297785,212 | 4545902,3 | 856,74 |
| E12 | 655 | 94,946 | 33,1096 | 100,3433 | 94,932 | -0,430 | 297785,527 | 4545901,66 | 857,231 |
| E12 | 656 | 92,898 | 35,0937 | 100,1025 | 93,019 | -0,360 | 297787,069 | 4545898,52 | 857,301 |
| E12 | 657 | 91,191 | 37,1635 | 100,2597 | 91,192 | -0,290 | 297788,612 | 4545895,37 | 857,371 |
| E12 | 658 | 90,734 | 37,7234 | 100,6834 | 90,728 | -0,892 | 297789,02 | 4545894,54 | 856,769 |
| E12 | 659 | 111,799 | 39,7631 | 100,6372 | 111,798 | -1,037 | 297803,726 | 4545909,97 | 856,624 |
| E12 | 660 | 111,471 | 40,1219 | 100,3598 | 111,463 | -0,548 | 297804,039 | 4545909,33 | 857,113 |
| E12 | 661 | 109,897 | 41,9160 | 100,3244 | 109,879 | -0,478 | 297805,581 | 4545906,19 | 857,183 |
| E12 | 662 | 108,389 | 43,7617 | 100,2878 | 108,385 | -0,408 | 297807,124 | 4545903,05 | 857,253 |
| E12 | 663 | 108,023 | 44,2571 | 100,6418 | 108,004 | -1,007 | 297807,53 | 4545902,22 | 856,654 |
| E12 | 664 | 129,645 | 44,8305 | 101,6086 | 129,387 | -1,155 | 297822,118 | 4545917,89 | 856,506 |
| E12 | 665 | 129,103 | 45,1532 | 100,3368 | 129,105 | -0,664 | 297822,433 | 4545917,25 | 856,997 |
| E12 | 666 | 127,765 | 58,7435 | 100,3049 | 127,767 | -0,594 | 297823,975 | 4545914,11 | 857,067 |
| E12 | 667 | 126,506 | 48,3908 | 100,6088 | 126,512 | -0,524 | 297825,518 | 4545910,97 | 857,137 |
| E12 | 668 | 126,189 | 48,8281 | 100,5840 | 126,194 | -1,125 | 297825,925 | 4545910,14 | 856,536 |
| E12 | 669 | 126,187 | 48,5587 | 100,3721 | 147,690 | -1,273 | 297840,392 | 4545926,05 | 856,388 |
| E12 | 670 | 147,687 | 48,8483 | 100,3446 | 147,447 | -0,780 | 297840,708 | 4545925,41 | 856,881 |
| E12 | 671 | 147,445 | 50,2834 | 100,3165 | 146,288 | -0,710 | 297842,251 | 4545922,26 | 856,951 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E12 | Ref | | 54,3958 | | | | 297738,350 | 4545819,280 | 857,661 |
| i=1,582 | m=1,500 | | | | | | | | |
| E12 | 675 | 166,465 | 51,6239 | 100,3498 | 166,250 | -0,896 | 297858,867 | 4545933,8 | 856,765 |
| E12 | 676 | 166,247 | 52,9102 | 100,3247 | 165,239 | -0,826 | 297860,409 | 4545930,66 | 856,835 |
| E12 | 677 | 165,236 | 54,2121 | 100,5607 | 164,297 | -0,756 | 297861,952 | 4545927,52 | 856,905 |
| E12 | 678 | 164,290 | 54,5624 | 100,5468 | 164,055 | -1,363 | 297862,363 | 4545926,68 | 856,298 |
| E12 | 679 | 64,049 | 53,5013 | 100,3757 | 185,576 | -1,512 | 297876,587 | 4545943,09 | 856,149 |
| E12 | 680 | 185,573 | 53,7409 | 100,3533 | 185,382 | -1,012 | 297876,907 | 4545942,44 | 856,649 |
| E12 | 681 | 184,477 | 54,9046 | 100,3307 | 184,480 | -0,942 | 297878,45 | 4545939,3 | 856,719 |
| E12 | 682 | 183,637 | 56,0794 | 100,3307 | 183,640 | -0,872 | 297879,993 | 4545936,16 | 856,789 |
| E12 | 683 | 183,413 | 56,3982 | 100,5428 | 183,420 | -1,482 | 297880,406 | 4545935,31 | 856,179 |
| E12 | 684 | 204,909 | 55,1604 | 100,5327 | 204,917 | -1,633 | 297894,505 | 4545951,97 | 856,028 |
| E12 | 685 | 204,933 | 55,3822 | 100,3756 | 204,739 | -1,126 | 297894,83 | 4545951,31 | 856,535 |
| E12 | 686 | 203,917 | 56,4421 | 100,3553 | 203,921 | -1,056 | 297896,373 | 4545948,17 | 856,605 |
| E12 | 687 | 203,158 | 57,5102 | 100,3347 | 203,161 | -0,986 | 297897,916 | 4545945,03 | 856,675 |
| E12 | 688 | 202,958 | 57,8008 | 100,5285 | 202,965 | -1,603 | 297898,334 | 4545944,18 | 856,058 |
| E12 | 689 | 224,432 | 56,4563 | 100,5210 | 224,440 | -1,755 | 297912,305 | 4545961,1 | 855,906 |
| E12 | 690 | 224,270 | 56,6631 | 100,3749 | 224,274 | -1,239 | 297912,636 | 4545960,43 | 856,422 |
| E12 | 691 | 223,519 | 57,6347 | 100,3563 | 223,523 | -1,169 | 297914,179 | 4545957,29 | 856,492 |
| E12 | 692 | 22,820 | 58,6124 | 100,3374 | 222,824 | -1,099 | 297915,721 | 4545954,15 | 856,562 |
| E12 | 693 | 222,629 | 58,8839 | 100,5167 | 222,637 | -1,725 | 297916,145 | 4545953,28 | 855,936 |
| E12 | 694 | 244,087 | 57,4760 | 100,5111 | 244,095 | -1,878 | 297929,985 | 4545970,47 | 855,783 |
| E12 | 695 | 243,930 | 57,5721 | 100,3737 | 243,935 | -1,350 | 297930,324 | 4545969,78 | 856,311 |
| E12 | 696 | 243,231 | 58,5679 | 100,3564 | 243,235 | -1,280 | 297931,866 | 4545966,64 | 856,381 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E13 | Ref | | 60,2193 | | | | 298108,600 | 4546141,630 | 854,154 |
| i=1,582 | m=1,500 | | | | | | | | |
| E13 | 697 | 249,853 | 49,4704 | 99,4356 | 249,844 | 2,297 | 297933,409 | 4545963,500 | 856,451 |
| E13 | 698 | 250,281 | 49,1605 | 99,5988 | 250,276 | 1,659 | 297933,977 | 4545962,340 | 855,813 |
| E13 | 699 | 228,122 | 49,9027 | 99,6026 | 228,118 | 1,506 | 297947,543 | 4545980,080 | 855,660 |
| E13 | 700 | 228,384 | 49,6942 | 99,4525 | 228,376 | 2,046 | 297947,891 | 4545979,370 | 856,200 |
| E13 | 701 | 229,552 | 48,7767 | 99,4207 | 229,543 | 2,116 | 297949,437 | 4545976,230 | 856,270 |
| E13 | 702 | 230,760 | 47,8708 | 99,4195 | 230,751 | 2,186 | 297950,982 | 4545973,100 | 856,340 |
| E13 | 703 | 231,112 | 47,6128 | 99,5994 | 231,108 | 1,536 | 297951,423 | 4545972,200 | 855,690 |
| E13 | 704 | 208,951 | 48,2691 | 99,6045 | 208,947 | 1,380 | 297964,923 | 4545989,920 | 855,534 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E13 | Ref | | 60,2193 | | | | 298108,600 | 4546141,630 | 854,154 |
| i=1,582 | m=1,500 | | | | | | | | |
| E13 | 708 | 212,089 | 45,7666 | 99,6013 | 212,085 | 1,410 | 297968,930 | 4545982,030 | 855,564 |
| E13 | 709 | 189,975 | 46,3934 | 99,6065 | 189,971 | 1,256 | 297982,092 | 4545999,910 | 855,410 |
| E13 | 710 | 190,259 | 46,1316 | 99,4167 | 190,252 | 1,825 | 297982,489 | 4545999,180 | 855,979 |
| E13 | 711 | 191,479 | 45,0387 | 99,3972 | 191,471 | 1,895 | 297984,161 | 4545996,110 | 856,049 |
| E13 | 712 | 192,754 | 43,9597 | 99,3780 | 192,745 | 1,965 | 297985,834 | 4545993,040 | 856,119 |
| E13 | 713 | 193,142 | 43,6400 | 99,6034 | 193,139 | 1,285 | 297986,332 | 4545992,120 | 855,439 |
| E13 | 714 | 171,204 | 44,2284 | 99,6096 | 171,201 | 1,132 | 297999,000 | 4546010,110 | 855,286 |
| E13 | 715 | 171,469 | 43,9498 | 99,4052 | 171,462 | 1,684 | 297999,410 | 4546009,430 | 855,838 |
| E13 | 716 | 172,667 | 42,7327 | 99,3717 | 172,659 | 1,786 | 298001,213 | 4546006,430 | 855,940 |
| E13 | 717 | 173,927 | 41,5332 | 99,3389 | 173,918 | 1,888 | 298003,015 | 4546003,430 | 856,042 |
| E13 | 718 | 174,342 | 41,1496 | 99,6071 | 174,339 | 1,158 | 298003,596 | 4546002,460 | 855,312 |
| E13 | 719 | 152,589 | 41,7528 | 99,6144 | 152,587 | 1,006 | 298015,547 | 4546020,700 | 855,160 |
| E13 | 720 | 155,193 | 41,4514 | 99,3914 | 152,827 | 1,543 | 298015,975 | 4546020,070 | 855,697 |
| E13 | 721 | 155,629 | 40,0805 | 99,3409 | 153,970 | 1,676 | 298017,941 | 4546017,180 | 855,830 |
| E13 | 722 | 133,996 | 38,7301 | 99,2915 | 155,183 | 1,809 | 298019,908 | 4546014,290 | 855,963 |
| E13 | 723 | 134,223 | 38,2651 | 99,6126 | 155,626 | 1,029 | 298020,590 | 4546013,280 | 855,183 |
| E13 | 724 | 135,331 | 38,9232 | 99,6213 | 133,994 | 0,879 | 298031,685 | 4546031,910 | 855,033 |
| E13 | 725 | 136,527 | 38,5854 | 99,3691 | 134,217 | 1,412 | 298032,141 | 4546031,320 | 855,566 |
| E13 | 726 | 136,978 | 37,0201 | 99,3018 | 135,323 | 1,566 | 298034,269 | 4546028,550 | 855,720 |
| E13 | 727 | 115,367 | 35,4791 | 99,2305 | 136,517 | 1,720 | 298036,396 | 4546025,770 | 855,874 |
| E13 | 728 | 115,585 | 34,9206 | 99,6202 | 136,976 | 0,899 | 298037,176 | 4546024,750 | 855,053 |
| E13 | 729 | 116,698 | 35,6544 | 99,6319 | 115,365 | 0,749 | 298047,314 | 4546043,890 | 854,903 |
| E13 | 730 | 117,000 | 35,2699 | 99,3412 | 115,579 | 1,278 | 298047,793 | 4546043,340 | 855,432 |
| E13 | 731 | 117,897 | 33,4493 | 99,2504 | 116,690 | 1,456 | 298050,071 | 4546040,680 | 855,610 |
| E13 | 732 | 118,377 | 31,6675 | 99,1619 | 117,887 | 1,634 | 298052,348 | 4546038,030 | 855,788 |
| E13 | 733 | 96,648 | 30,9839 | 99,6321 | 118,375 | 0,766 | 298053,235 | 4546037,000 | 854,920 |
| E13 | 734 | 96,885 | 31,7972 | 99,6482 | 96,647 | 0,616 | 298062,310 | 4546056,790 | 854,770 |
| E13 | 735 | 99,063 | 31,3342 | 99,2956 | 96,880 | 1,154 | 298062,818 | 4546056,250 | 855,308 |
| E13 | 736 | 99,348 | 29,1851 | 99,1794 | 98,055 | 1,346 | 298065,206 | 4546053,700 | 855,500 |
| E13 | 737 | 99,893 | 27,0886 | 99,0669 | 99,338 | 1,538 | 298067,595 | 4546051,150 | 855,692 |
| E13 | 738 | 77,905 | 26,2502 | 99,6507 | 99,892 | 0,630 | 298068,568 | 4546050,110 | 854,784 |
| E13 | 739 | 78,190 | 26,9644 | 99,6739 | 77,904 | 0,481 | 298076,581 | 4546070,610 | 854,635 |
| E13 | 740 | 79,549 | 26,3743 | 99,2183 | 78,184 | 1,042 | 298077,128 | 4546070,060 | 855,196 |
| E13 | 741 | 81,027 | 23,7705 | 99,0780 | 79,541 | 1,234 | 298079,586 | 4546067,570 | 855,388 |
| E13 | 742 | 81,673 | 21,2598 | 98,9439 | 81,016 | 1,426 | 298082,045 | 4546065,090 | 855,580 |
| E13 | 743 | 59,313 | 20,2377 | 99,6776 | 81,672 | 0,494 | 298083,072 | 4546064,050 | 854,648 |
| E13 | 744 | 59,682 | 20,2029 | 99,7144 | 59,312 | 0,348 | 298090,092 | 4546085,280 | 854,502 |
| E13 | 745 | 61,353 | 19,4222 | 99,0943 | 59,676 | 0,931 | 298090,675 | 4546084,710 | 855,085 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E13 | Ref | | 60,2193 | | | | 298108,600 | 4546141,630 | 854,154 |
| i=1,582 | m=1,500 | | | | | | | | |
| E13 | 749 | 41,756 | 8,9677 | 99,8100 | 41,218 | 0,205 | 298102,813 | 4546100,820 | 854,359 |
| E13 | 750 | 43,971 | 7,8807 | 98,8534 | 41,749 | 0,834 | 298103,445 | 4546100,200 | 854,988 |
| E13 | 751 | 46,353 | 3,8588 | 98,6534 | 43,961 | 1,012 | 298105,937 | 4546097,750 | 855,166 |
| E13 | 752 | 47,410 | 0,2335 | 98,4781 | 46,340 | 1,190 | 298108,430 | 4546095,290 | 855,344 |
| E13 | 753 | 25,332 | 1,2260 | 99,8200 | 47,409 | 0,216 | 298109,513 | 4546094,230 | 854,370 |
| E13 | 754 | 26,171 | 15,7543 | 100,0402 | 25,332 | 0,066 | 298114,805 | 4546117,070 | 854,220 |
| E13 | 755 | 29,275 | 17,0173 | 98,3541 | 26,180 | 0,759 | 298115,515 | 4546116,380 | 854,913 |
| E13 | 756 | 32,437 | 20,8389 | 98,2209 | 29,264 | 0,900 | 298118,009 | 4546113,920 | 855,054 |
| E13 | 757 | 33,787 | 23,9284 | 98,1175 | 32,423 | 1,041 | 298120,502 | 4546111,470 | 855,195 |
| E13 | 758 | 19,368 | 25,0740 | 100,0113 | 33,787 | 0,076 | 298121,566 | 4546110,430 | 854,230 |
| E13 | 759 | 20,375 | 73,5065 | 100,4995 | 19,369 | -0,070 | 298126,316 | 4546133,800 | 854,084 |
| E13 | 760 | 23,704 | 72,3511 | 98,1869 | 20,367 | 0,669 | 298127,076 | 4546133,060 | 854,823 |
| E13 | 761 | 27,073 | 69,1747 | 98,1869 | 23,695 | 0,757 | 298129,571 | 4546130,600 | 854,911 |
| E13 | 762 | 28,409 | 66,8054 | 98,2056 | 27,062 | 0,845 | 298132,066 | 4546128,150 | 854,999 |
| E13 | 763 | 30,294 | 66,0289 | 100,3294 | 28,409 | -0,065 | 298133,059 | 4546127,180 | 854,089 |
| E13 | 764 | 30,297 | 80,1586 | 100,6072 | 30,296 | -0,207 | 298137,436 | 4546150,920 | 853,947 |
| E13 | 765 | 30,904 | 82,4510 | 98,8525 | 30,899 | 0,639 | 298138,332 | 4546150,040 | 854,793 |
| E13 | 766 | 32,778 | 88,3774 | 98,8501 | 32,773 | 0,674 | 298140,828 | 4546147,580 | 854,828 |
| E13 | 767 | 34,905 | 93,6080 | 98,8564 | 34,900 | 0,709 | 298143,324 | 4546145,130 | 854,863 |
| E13 | 768 | 35,802 | 95,4973 | 100,5121 | 35,801 | -0,206 | 298144,311 | 4546144,160 | 853,948 |
| E13 | 769 | 267,063 | 52,0574 | 100,2188 | 267,061 | -0,836 | 298303,444 | 4546324,270 | 853,318 |
| E13 | 770 | 267,120 | 52,3597 | 100,3808 | 267,116 | -1,516 | 298304,349 | 4546323,380 | 852,638 |
| E13 | 771 | 267,189 | 52,7227 | 100,1777 | 267,188 | -0,664 | 298305,436 | 4546322,310 | 853,490 |
| E13 | 772 | 267,394 | 53,5542 | 100,1742 | 267,393 | -0,650 | 298307,931 | 4546319,860 | 853,504 |
| E13 | 773 | 267,643 | 54,3844 | 100,1707 | 267,643 | -0,636 | 298310,427 | 4546317,410 | 853,518 |
| E13 | 774 | 267,767 | 54,7458 | 100,3723 | 267,763 | -1,484 | 298311,513 | 4546316,340 | 852,670 |
| E13 | 775 | 267,858 | 55,0025 | 100,2405 | 267,856 | -0,930 | 298312,286 | 4546315,580 | 853,224 |
| E13 | 776 | 287,146 | 52,3894 | 100,2250 | 287,145 | -0,933 | 298319,118 | 4546336,910 | 853,221 |
| E13 | 777 | 287,209 | 52,6642 | 100,3713 | 287,205 | -1,593 | 298320,003 | 4546336,040 | 852,561 |
| E13 | 778 | 287,284 | 53,0015 | 100,1817 | 287,283 | -0,738 | 298321,088 | 4546334,970 | 853,416 |
| E13 | 779 | 287,502 | 53,7746 | 100,1738 | 287,501 | -0,703 | 298323,583 | 4546332,520 | 853,451 |
| E13 | 780 | 287,763 | 54,5465 | 100,1659 | 287,762 | -0,668 | 298326,079 | 4546330,070 | 853,486 |
| E13 | 781 | 287,978 | 55,1091 | 100,2383 | 287,976 | -0,996 | 298327,899 | 4546328,280 | 853,158 |
| E13 | 782 | 287,886 | 54,8849 | 100,3527 | 287,882 | -1,513 | 298327,169 | 4546328,990 | 852,641 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E14 | Ref | | 26,9547 | | | | 298534,460 | 4546448,800 | 852,362 |
| i=1,582 | m=1,500 | | | | | | | | |
| E14 | 783 | 222,988 | 70,6404 | 99,7890 | 222,987 | 0,821 | 298334,769 | 4546349,570 | 853,183 |
| E14 | 784 | 222,582 | 70,3045 | 99,9782 | 222,582 | 0,158 | 298335,657 | 4546348,700 | 852,520 |
| E14 | 785 | 221,022 | 68,9354 | 99,7113 | 221,020 | 1,084 | 298339,235 | 4546345,180 | 853,446 |
| E14 | 786 | 219,998 | 67,9681 | 99,6906 | 219,995 | 1,151 | 298341,730 | 4546342,720 | 853,513 |
| E14 | 787 | 219,818 | 67,8007 | 99,8039 | 219,817 | 0,759 | 298342,165 | 4546342,300 | 853,121 |
| E14 | 788 | 203,390 | 72,0099 | 99,7624 | 203,389 | 0,841 | 298350,415 | 4546362,230 | 853,203 |
| E14 | 789 | 202,965 | 71,6488 | 99,9664 | 202,965 | 0,189 | 298351,291 | 4546361,370 | 852,551 |
| E14 | 790 | 202,452 | 71,2914 | 99,6956 | 202,450 | 1,050 | 298352,373 | 4546360,310 | 853,412 |
| E14 | 791 | 201,306 | 70,1596 | 99,6695 | 201,304 | 1,127 | 298354,868 | 4546357,860 | 853,489 |
| E14 | 792 | 200,220 | 69,1034 | 99,6120 | 200,217 | 1,204 | 298357,363 | 4546355,400 | 853,566 |
| E14 | 793 | 199,974 | 71,7365 | 99,8080 | 199,973 | 0,685 | 298357,936 | 4546354,840 | 853,047 |
| E14 | 794 | 183,147 | 73,0018 | 99,4181 | 183,140 | 1,756 | 298367,543 | 4546373,440 | 854,118 |
| E14 | 795 | 182,949 | 72,8299 | 99,6349 | 182,946 | 1,131 | 298367,924 | 4546373,070 | 853,493 |
| E14 | 796 | 181,727 | 71,6835 | 99,5709 | 181,723 | 1,215 | 298370,419 | 4546370,610 | 853,577 |
| E14 | 797 | 180,558 | 70,5252 | 99,5709 | 180,554 | 1,299 | 298372,914 | 4546368,160 | 853,661 |
| E14 | 798 | 180,221 | 70,1726 | 99,4588 | 180,215 | 1,614 | 298373,666 | 4546367,420 | 853,976 |
| E14 | 799 | 163,978 | 75,1978 | 99,7496 | 163,977 | 0,701 | 298382,771 | 4546386,520 | 853,063 |
| E14 | 800 | 163,679 | 74,9181 | 99,5499 | 163,675 | 1,239 | 298383,325 | 4546385,970 | 853,601 |
| E14 | 801 | 162,347 | 73,6553 | 99,5098 | 162,343 | 1,332 | 298385,820 | 4546383,520 | 853,694 |
| E14 | 802 | 161,083 | 72,3720 | 99,4692 | 161,078 | 1,425 | 298388,314 | 4546381,070 | 853,787 |
| E14 | 803 | 160,615 | 71,8757 | 99,8121 | 160,615 | 0,556 | 298389,265 | 4546380,130 | 852,918 |
| E14 | 804 | 145,194 | 78,0895 | 99,7513 | 145,193 | 0,649 | 298397,782 | 4546399,810 | 853,011 |
| E14 | 805 | 144,762 | 77,6840 | 99,4432 | 144,757 | 1,348 | 298398,506 | 4546399,090 | 853,710 |
| E14 | 806 | 143,298 | 76,2812 | 99,3931 | 143,292 | 1,448 | 298400,999 | 4546396,640 | 853,810 |
| E14 | 807 | 141,902 | 74,8497 | 99,3423 | 141,895 | 1,548 | 298403,495 | 4546394,190 | 853,910 |
| E14 | 808 | 141,281 | 74,1813 | 99,8116 | 141,281 | 0,500 | 298404,639 | 4546393,060 | 852,862 |
| E14 | 809 | 126,966 | 81,9802 | 99,7402 | 126,965 | 0,600 | 298412,547 | 4546413,340 | 852,962 |
| E14 | 810 | 126,392 | 81,4539 | 99,3265 | 126,385 | 1,419 | 298413,400 | 4546412,500 | 853,781 |
| E14 | 811 | 124,446 | 79,8905 | 99,2640 | 124,738 | 1,524 | 298415,894 | 4546410,050 | 853,886 |
| E14 | 812 | 123,179 | 78,2811 | 99,2004 | 123,170 | 1,629 | 298418,389 | 4546407,590 | 853,991 |
| E14 | 813 | 122,390 | 77,4341 | 99,8106 | 122,390 | 0,446 | 298419,679 | 4546406,320 | 852,808 |
| E14 | 814 | 109,582 | 87,3271 | 99,7234 | 109,581 | 0,558 | 298427,043 | 4546427,130 | 852,920 |
| E14 | 815 | 108,872 | 86,7050 | 99,2041 | 108,864 | 1,443 | 298427,961 | 4546426,230 | 853,805 |
| E14 | 816 | 106,982 | 84,9707 | 99,1305 | 106,972 | 1,543 | 298430,455 | 4546423,780 | 853,905 |
| E14 | 817 | 104,175 | 83,1693 | 99,0551 | 105,164 | 1,643 | 298432,950 | 4546421,320 | 854,005 |
| E14 | 818 | 104,209 | 82,1610 | 99,8093 | 104,209 | 0,394 | 298434,316 | 4546419,980 | 852,756 |
| E14 | 819 | 93,474 | 94,7907 | 99,7548 | 93,473 | 0,442 | 298441,300 | 4546441,160 | 852,804 |
| E14 | 820 | 92,631 | 94,1080 | 99,0852 | 92,622 | 1,413 | 298442,234 | 4546440,240 | 853,775 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E14 | Ref | | 26,9547 | | | | 298534,460 | 4546448,800 | 852,362 |
| i=1,582 | m=1,500 | | | | | | | | |
| E14 | 824 | 79,336 | 94,7379 | 99,6734 | 79,335 | 0,489 | 298455,396 | 4546455,350 | 852,851 |
| E14 | 825 | 78,386 | 95,3904 | 98,9807 | 78,376 | 1,337 | 298456,289 | 4546454,470 | 853,699 |
| E14 | 826 | 75,755 | 97,2928 | 98,8931 | 75,744 | 1,399 | 298458,784 | 4546452,020 | 853,761 |
| E14 | 827 | 73,180 | 99,3301 | 98,8005 | 73,185 | 1,461 | 298461,279 | 4546449,570 | 853,823 |
| E14 | 828 | 71,939 | 99,5929 | 99,7955 | 71,939 | 0,313 | 298462,522 | 4546448,340 | 852,675 |
| E14 | 829 | 68,387 | 80,2370 | 99,6472 | 68,386 | 0,461 | 298469,343 | 4546469,690 | 852,823 |
| E14 | 830 | 67,333 | 80,7482 | 98,8833 | 67,323 | 1,263 | 298470,192 | 4546468,850 | 853,625 |
| E14 | 831 | 64,241 | 82,3297 | 98,7929 | 64,230 | 1,300 | 298472,688 | 4546466,400 | 853,662 |
| E14 | 832 | 61,192 | 84,0804 | 98,6942 | 61,180 | 1,337 | 298475,183 | 4546463,940 | 853,699 |
| E14 | 833 | 59,816 | 84,9274 | 99,7807 | 59,816 | 0,288 | 298476,313 | 4546462,830 | 852,650 |
| E14 | 834 | 62,230 | 61,6007 | 99,6398 | 62,229 | 0,434 | 298483,212 | 4546484,100 | 852,796 |
| E14 | 835 | 61,132 | 61,8056 | 98,8512 | 61,122 | 1,185 | 298484,012 | 4546483,310 | 853,547 |
| E14 | 836 | 57,692 | 62,4821 | 98,7662 | 57,682 | 1,200 | 298486,508 | 4546480,860 | 853,562 |
| E14 | 837 | 54,256 | 63,2547 | 98,6705 | 54,245 | 1,215 | 298489,003 | 4546478,400 | 853,577 |
| E14 | 838 | 52,846 | 63,5943 | 99,7759 | 52,846 | 0,265 | 298490,022 | 4546477,400 | 852,627 |
| E14 | 839 | 62,222 | 41,0479 | 99,6664 | 62,222 | 0,408 | 298497,063 | 4546498,530 | 852,770 |
| E14 | 840 | 61,177 | 40,8891 | 98,9281 | 61,169 | 1,112 | 298497,818 | 4546497,780 | 853,474 |
| E14 | 841 | 57,724 | 40,1034 | 98,8772 | 57,715 | 1,100 | 298500,314 | 4546495,330 | 853,462 |
| E14 | 842 | 54,275 | 39,6431 | 98,8199 | 54,266 | 1,088 | 298502,810 | 4546492,880 | 853,450 |
| E14 | 843 | 53,018 | 39,3886 | 99,8067 | 53,018 | 0,243 | 298503,710 | 4546491,990 | 852,605 |
| E14 | 844 | 68,256 | 22,3564 | 99,7220 | 68,256 | 0,380 | 298510,980 | 4546512,890 | 852,742 |
| E14 | 845 | 67,361 | 21,9494 | 99,0945 | 67,354 | 1,040 | 298511,695 | 4546512,190 | 853,402 |
| E14 | 846 | 64,219 | 20,4447 | 99,0899 | 64,213 | 1,000 | 298514,191 | 4546509,730 | 853,362 |
| E14 | 847 | 61,127 | 18,7841 | 99,0855 | 61,121 | 0,960 | 298516,686 | 4546507,280 | 853,322 |
| E14 | 848 | 60,160 | 18,2293 | 99,8550 | 60,160 | 0,219 | 298517,468 | 4546506,510 | 852,581 |
| E14 | 849 | 78,124 | 7,1260 | 99,2804 | 78,119 | 0,965 | 298525,734 | 4546526,430 | 853,327 |
| E14 | 850 | 75,442 | 5,2643 | 99,3097 | 75,438 | 0,900 | 298528,229 | 4546523,980 | 853,262 |
| E14 | 851 | 72,830 | 3,2673 | 99,3418 | 72,826 | 0,835 | 298530,724 | 4546521,530 | 853,197 |
| E14 | 852 | 72,125 | 2,7035 | 99,9037 | 72,125 | 0,191 | 298531,398 | 4546520,860 | 852,553 |
| E14 | 853 | 78,862 | 7,6070 | 99,7852 | 78,862 | 0,348 | 298525,059 | 4546527,100 | 852,710 |
| E14 | 854 | 92,392 | 3,3972 | 99,8422 | 92,392 | 0,311 | 298539,388 | 4546541,060 | 852,673 |
| E14 | 855 | 91,802 | 3,8644 | 99,4396 | 91,799 | 0,890 | 298540,029 | 4546540,430 | 853,252 |
| E14 | 856 | 89,547 | 5,7388 | 99,4902 | 89,544 | 0,799 | 298542,521 | 4546537,980 | 853,161 |
| E14 | 857 | 87,362 | 7,7091 | 99,5438 | 87,360 | 0,708 | 298545,013 | 4546535,520 | 853,070 |
| E14 | 858 | 86,875 | 8,1711 | 99,9450 | 86,875 | 0,157 | 298545,580 | 4546534,960 | 852,519 |
| E14 | 859 | 107,740 | 11,6539 | 99,8924 | 107,740 | 0,264 | 298554,073 | 4546554,740 | 852,626 |
| E14 | 860 | 107,247 | 12,0811 | 99,5613 | 107,245 | 0,821 | 298554,690 | 4546554,120 | 853,183 |
| E14 | 861 | 105,305 | 13,8275 | 99,6263 | 105,304 | 0,700 | 298557,153 | 4546551,630 | 853,062 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E14 | Ref | | 26,9547 | | | | 298534,460 | 4546448,800 | 852,362 |
| i=1,582 | m=1,500 | | | | | | | | |
| E14 | 865 | 123,741 | 18,4132 | 99,6697 | 123,740 | 0,724 | 298569,753 | 4546567,400 | 853,086 |
| E14 | 866 | 122,030 | 19,9939 | 99,7287 | 122,029 | 0,602 | 298572,158 | 4546564,860 | 852,964 |
| E14 | 867 | 120,395 | 21,6185 | 99,7895 | 120,395 | 0,480 | 298574,563 | 4546562,320 | 852,842 |
| E14 | 868 | 120,127 | 21,8978 | 99,9878 | 120,127 | 0,059 | 298574,970 | 4546561,890 | 852,421 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E15 | Ref | | 82,6849 | | | | 298629,178 | 4546658,976 | 852,773 |
| i=1,582 | m=1,500 | | | | | | | | |
| E15 | 869 | 89,928 | 32,9534 | 100,2492 | 89,927 | -0,270 | 298584,68 | 4546580,83 | 852,503 |
| E15 | 870 | 90,174 | 32,4427 | 99,9061 | 90,174 | 0,215 | 298585,188 | 4546580,26 | 852,988 |
| E15 | 871 | 91,401 | 30,1415 | 99,9233 | 91,401 | 0,093 | 298587,502 | 4546577,63 | 852,866 |
| E15 | 872 | 92,734 | 27,9072 | 100,0762 | 92,734 | -0,029 | 298589,816 | 4546575,01 | 852,744 |
| E15 | 873 | 92,948 | 27,5701 | 100,3404 | 92,947 | -0,415 | 298590,172 | 4546574,61 | 852,358 |
| E15 | 874 | 71,739 | 26,1823 | 100,3807 | 71,738 | -0,347 | 298600,499 | 4546593,22 | 852,426 |
| E15 | 875 | 72,079 | 25,6078 | 99,9682 | 72,079 | 0,118 | 298600,96 | 4546592,65 | 852,891 |
| E15 | 876 | 73,799 | 22,9482 | 100,0741 | 73,799 | -0,004 | 298603,148 | 4546589,92 | 852,769 |
| E15 | 877 | 75,642 | 20,414 | 100,175 | 75,642 | -0,126 | 298605,336 | 4546587,19 | 852,647 |
| E15 | 878 | 76,539 | 19,2894 | 100,8949 | 76,532 | -0,994 | 298606,342 | 4546585,93 | 851,779 |
| E15 | 879 | 77,01 | 18,71 | 100,5009 | 77,008 | -0,524 | 298606,87 | 4546585,27 | 852,249 |
| E15 | 880 | 55,269 | 14,5682 | 100,592 | 55,267 | -0,432 | 298616,641 | 4546605,15 | 852,341 |
| E15 | 881 | 55,74 | 13,9541 | 100,0696 | 55,740 | 0,021 | 298617,058 | 4546604,57 | 852,794 |
| E15 | 882 | 58,138 | 11,1038 | 100,2004 | 58,138 | -0,101 | 298619,089 | 4546601,72 | 852,672 |
| E15 | 883 | 60,644 | 8,4851 | 100,2101 | 60,644 | -0,223 | 298621,119 | 4546598,87 | 852,55 |
| E15 | 884 | 61,766 | 7,4195 | 101,2101 | 61,755 | -1,092 | 298621,997 | 4546597,64 | 851,681 |
| E15 | 885 | 62,48 | 6,7561 | 100,701 | 62,477 | -0,606 | 298622,56 | 4546596,85 | 852,167 |
| E15 | 886 | 42,542 | 5,8885 | 100,9128 | 42,538 | -0,528 | 298633,107 | 4546616,62 | 852,245 |
| E15 | 887 | 43,172 | 6,3721 | 100,2344 | 43,172 | -0,077 | 298633,492 | 4546616,02 | 852,696 |
| E15 | 888 | 46,322 | 8,5409 | 100,3861 | 46,322 | -0,199 | 298635,374 | 4546613,07 | 852,574 |
| E15 | 889 | 49,52 | 6,4988 | 100,518 | 49,519 | -0,321 | 298637,256 | 4546610,12 | 852,452 |
| E15 | 890 | 50,924 | 11,1769 | 101,5903 | 50,909 | -1,190 | 298638,07 | 4546608,85 | 851,583 |
| E15 | 891 | 51,825 | 11,6375 | 100,9606 | 51,819 | -0,700 | 298638,598 | 4546608,02 | 852,073 |
| E15 | 892 | 37,585 | 37,1933 | 101,2094 | 37,579 | -0,632 | 298649,905 | 4546627,63 | 852,141 |
| E15 | 893 | 38,286 | 37,129 | 100,4473 | 38,285 | -0,187 | 298650,262 | 4546627,02 | 852,586 |
| E15 | 894 | 41,779 | 36,8396 | 100,5957 | 41,778 | -0,309 | 298652,027 | 4546624 | 852,464 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E15 | Ref | | 82,6849 | | | | 298629,178 | 4546658,976 | 852,773 |
| i=1,582 | m=1,500 | | | | | | | | |
| E15 | 898 | 43,171 | 67,9794 | 101,2225 | 43,163 | -0,747 | 298666,995 | 4546638,17 | 852,026 |
| E15 | 899 | 43,781 | 67,41 | 100,5365 | 43,780 | -0,287 | 298667,346 | 4546637,53 | 852,486 |
| E15 | 900 | 46,785 | 64,901 | 100,6681 | 46,783 | -0,409 | 298669,029 | 4546634,47 | 852,364 |
| E15 | 901 | 49,858 | 64,8614 | 100,7827 | 49,854 | -0,531 | 298670,711 | 4546631,4 | 852,242 |
| E15 | 902 | 51,222 | 61,8093 | 101,8421 | 51,201 | -1,400 | 298671,439 | 4546630,07 | 851,373 |
| E15 | 903 | 52,129 | 61,2446 | 101,1712 | 52,121 | -0,877 | 298671,936 | 4546629,17 | 851,896 |
| E15 | 904 | 56,22 | 87,7543 | 101,078 | 56,212 | -0,870 | 298684,353 | 4546648,23 | 851,903 |
| E15 | 905 | 56,665 | 87,1313 | 100,5572 | 56,663 | -0,414 | 298684,687 | 4546647,6 | 852,359 |
| E15 | 906 | 58,951 | 84,2051 | 100,6382 | 58,949 | -0,509 | 298686,322 | 4546644,5 | 852,264 |
| E15 | 907 | 61,352 | 81,5128 | 100,7118 | 61,349 | -0,604 | 298687,958 | 4546641,41 | 852,169 |
| E15 | 908 | 62,504 | 80,3457 | 101,5788 | 62,485 | -1,468 | 298688,709 | 4546639,99 | 851,305 |
| E15 | 909 | 63,159 | 79,6911 | 101,0453 | 63,151 | -0,955 | 298689,143 | 4546639,17 | 851,818 |
| E15 | 910 | 72,719 | 99,0491 | 100,9253 | 72,712 | -0,975 | 298701,882 | 4546657,89 | 851,798 |
| E15 | 911 | 73,04 | 98,5303 | 100,5412 | 73,038 | -0,539 | 298702,197 | 4546657,29 | 852,234 |
| E15 | 912 | 74,8 | 95,9237 | 100,5881 | 74,797 | -0,609 | 298703,822 | 4546654,19 | 852,164 |
| E15 | 913 | 76,679 | 93,4408 | 100,6318 | 76,676 | -0,679 | 298705,447 | 4546651,09 | 852,094 |
| E15 | 914 | 77,002 | 93,0522 | 100,9574 | 76,993 | -1,076 | 298705,713 | 4546650,59 | 851,697 |
| E15 | 915 | 90,72 | 94,1076 | 100,8484 | 90,712 | -1,127 | 298719,502 | 4546667,36 | 851,646 |
| E15 | 916 | 90,988 | 94,5606 | 100,8473 | 90,980 | -1,129 | 298719,826 | 4546666,74 | 851,644 |
| E15 | 917 | 92,395 | 96,7849 | 100,545 | 92,392 | -0,709 | 298721,452 | 4546663,64 | 852,064 |
| E15 | 918 | 93,915 | 98,9397 | 100,5836 | 93,911 | -0,779 | 298723,076 | 4546660,54 | 851,994 |
| E15 | 919 | 94,221 | 99,3418 | 100,8912 | 94,212 | -1,237 | 298723,385 | 4546659,95 | 851,536 |
| E15 | 920 | 109,463 | 89,6515 | 100,7933 | 109,455 | -1,282 | 298737,19 | 4546676,69 | 851,491 |
| E15 | 921 | 110,859 | 91,9536 | 100,5116 | 110,856 | -0,809 | 298739,15 | 4546672,95 | 851,964 |
| E15 | 922 | 128,587 | 86,5041 | 100,753 | 128,578 | -1,439 | 298754,878 | 4546686,03 | 851,334 |
| E15 | 923 | 128,789 | 86,8749 | 100,4967 | 128,786 | -0,923 | 298755,237 | 4546685,34 | 851,85 |
| E15 | 924 | 129,79 | 88,5267 | 100,486 | 129,787 | -0,909 | 298756,863 | 4546682,24 | 851,864 |
| E15 | 925 | 147,948 | 84,1895 | 100,7216 | 147,939 | -1,595 | 298772,578 | 4546695,34 | 851,178 |
| E15 | 926 | 148,132 | 84,5247 | 100,4869 | 148,128 | -1,051 | 298772,951 | 4546694,63 | 851,722 |
| E15 | 927 | 149,001 | 85,9776 | 100,4661 | 148,998 | -1,009 | 298774,576 | 4546691,53 | 851,764 |
| E15 | 928 | 109,686 | 90,0494 | 100,5107 | 109,683 | -0,798 | 298737,524 | 4546676,05 | 851,975 |
| E15 | 929 | 112,129 | 93,8162 | 100,5456 | 112,125 | -0,879 | 298740,774 | 4546669,85 | 851,894 |
| E15 | 930 | 112,417 | 94,2073 | 100,8381 | 112,408 | -1,398 | 298741,121 | 4546669,19 | 851,375 |
| E15 | 931 | 130,877 | 90,1521 | 100,5161 | 130,873 | -0,979 | 298758,488 | 4546679,14 | 851,794 |
| E15 | 932 | 131,149 | 90,5259 | 100,7971 | 131,139 | -1,560 | 298758,868 | 4546678,42 | 851,213 |
| E15 | 933 | 149,948 | 87,4128 | 100,4929 | 149,944 | -1,079 | 298776,201 | 4546688,43 | 851,694 |
| E15 | 934 | 150,222 | 87,794 | 100,7641 | 150,211 | -1,721 | 298776,637 | 4546687,6 | 851,052 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|---------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E16 | Ref | | 49,1489 | | | | 298917,730 | 4546739,452 | 849,825 |
| i=1,582 | m=1,500 | | | | | | | | |
| E16 | 935 | 132,122 | 83,0352 | 99,4555 | 132,118 | 1,195 | 298790,275 | 4546704,66 | 851,020 |
| E16 | 936 | 131,954 | 82,6785 | 99,1860 | 131,943 | 1,769 | 298790,664 | 4546703,91 | 851,594 |
| E16 | 937 | 131,269 | 80,9762 | 99,1478 | 131,258 | 1,839 | 298792,289 | 4546700,81 | 851,664 |
| E16 | 938 | 130,671 | 79,3041 | 99,1780 | 130,660 | 1,769 | 298793,914 | 4546697,72 | 851,594 |
| E16 | 939 | 130,507 | 78,8040 | 99,5199 | 130,503 | 1,066 | 298794,394 | 4546696,8 | 850,891 |
| E16 | 940 | 112,691 | 85,5075 | 99,4582 | 112,687 | 1,041 | 298807,95 | 4546714,02 | 850,866 |
| E16 | 941 | 112,471 | 85,0007 | 99,1016 | 112,460 | 1,669 | 298808,377 | 4546713,2 | 851,494 |
| E16 | 942 | 111,667 | 83,0654 | 99,0553 | 111,655 | 1,739 | 298810,002 | 4546710,1 | 851,564 |
| E16 | 943 | 110,754 | 80,4719 | 99,5275 | 110,751 | 0,904 | 298812,149 | 4546706,01 | 850,729 |
| E16 | 944 | 110,996 | 81,1039 | 99,0900 | 110,955 | 1,668 | 298811,627 | 4546707 | 851,493 |
| E16 | 945 | 93,208 | 88,3484 | 98,9843 | 93,197 | 1,569 | 298826,09 | 4546722,49 | 851,394 |
| E16 | 946 | 92,237 | 86,0396 | 98,9253 | 92,224 | 1,639 | 298827,715 | 4546719,39 | 851,464 |
| E16 | 947 | 91,386 | 83,6846 | 98,9640 | 91,374 | 1,569 | 298829,34 | 4546716,29 | 851,394 |
| E16 | 948 | 93,5 | 89,0019 | 99,4532 | 93,497 | 0,885 | 298825,625 | 4546723,38 | 850,710 |
| E16 | 949 | 91,111 | 82,8545 | 99,5388 | 91,109 | 0,742 | 298829,905 | 4546715,21 | 850,567 |
| E16 | 950 | 74,734 | 94,2659 | 99,4471 | 74,732 | 0,731 | 298843,301 | 4546732,73 | 850,556 |
| E16 | 951 | 74,337 | 93,4083 | 98,8146 | 74,325 | 1,466 | 298843,803 | 4546731,77 | 851,291 |
| E16 | 952 | 73,114 | 90,5845 | 98,7339 | 73,100 | 1,536 | 298845,428 | 4546728,68 | 851,361 |
| E16 | 953 | 72,038 | 87,6600 | 98,7768 | 72,025 | 1,466 | 298847,053 | 4546725,58 | 851,291 |
| E16 | 954 | 71,667 | 86,5468 | 99,5567 | 71,665 | 0,581 | 298847,659 | 4546724,42 | 850,406 |
| E16 | 955 | 56,802 | 97,0647 | 99,4485 | 56,800 | 0,574 | 298860,99 | 4546742,07 | 850,399 |
| E16 | 956 | 56,25 | 98,1794 | 98,5704 | 56,236 | 1,345 | 298861,517 | 4546741,06 | 851,170 |
| E16 | 957 | 54,625 | 98,2604 | 98,4463 | 54,609 | 1,415 | 298863,141 | 4546737,96 | 851,240 |
| E16 | 958 | 53,178 | 94,4942 | 98,4878 | 53,163 | 1,345 | 298864,766 | 4546734,86 | 851,170 |
| E16 | 959 | 52,652 | 92,9703 | 99,5913 | 52,651 | 0,420 | 298865,4 | 4546733,65 | 850,245 |
| E16 | 960 | 40,815 | 81,1353 | 99,4774 | 40,814 | 0,417 | 298878,695 | 4546751,37 | 850,242 |
| E16 | 961 | 40,028 | 82,4389 | 98,2160 | 40,013 | 1,200 | 298879,23 | 4546750,35 | 851,025 |
| E16 | 962 | 37,709 | 86,7328 | 97,9940 | 37,691 | 1,270 | 298880,855 | 4546747,25 | 851,095 |
| E16 | 963 | 35,588 | 91,5653 | 97,5970 | 35,563 | 1,425 | 298882,479 | 4546744,15 | 851,250 |
| E16 | 964 | 34,779 | 93,6114 | 99,6778 | 34,779 | 0,258 | 298883,124 | 4546742,92 | 850,083 |
| E16 | 965 | 30,065 | 50,1827 | 99,6252 | 30,065 | 0,259 | 298896,41 | 4546760,65 | 850,084 |
| E16 | 966 | 28,986 | 50,9463 | 97,8999 | 28,970 | 1,038 | 298896,943 | 4546759,63 | 850,863 |
| E16 | 967 | 25,695 | 53,6384 | 97,4573 | 25,675 | 1,108 | 298898,568 | 4546756,54 | 850,933 |
| E16 | 968 | 22,452 | 57,1368 | 97,2885 | 22,432 | 1,038 | 298900,193 | 4546753,44 | 850,863 |
| E16 | 969 | 21,129 | 58,8211 | 99,9519 | 21,169 | 0,098 | 298900,837 | 4546752,21 | 849,923 |
| E16 | 970 | 30,68 | 7,4853 | 99,9606 | 30,680 | 0,101 | 298914,131 | 4546769,92 | 849,926 |
| E16 | 971 | 29,638 | 6,6170 | 98,3072 | 29,628 | 0,870 | 298914,656 | 4546768,92 | 850,695 |
| E16 | 972 | 26,422 | 3,4949 | 97,9323 | 26,408 | 0,940 | 298916,281 | 4546765,82 | 850,765 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E16 | Ref | | 49,1489 | | | | 298917,730 | 4546739,452 | 849,825 |
| i=1,582 | m=1,500 | | | | | | | | |
| E16 | 976 | 41,434 | 22,9907 | 99,0565 | 41,430 | 0,696 | 298932,369 | 4546778,21 | 850,521 |
| E16 | 977 | 39,197 | 27,2425 | 98,8890 | 39,192 | 0,766 | 298933,994 | 4546775,11 | 850,591 |
| E16 | 978 | 37,154 | 31,9851 | 98,9479 | 37,149 | 0,696 | 298935,619 | 4546772,01 | 850,521 |
| E16 | 979 | 36,42 | 33,9623 | 100,5366 | 36,419 | -0,225 | 298936,25 | 4546770,81 | 849,600 |
| E16 | 980 | 58,446 | 36,6838 | 100,3246 | 58,446 | -0,216 | 298949,575 | 4546788,46 | 849,609 |
| E16 | 981 | 57,927 | 37,7260 | 99,5131 | 57,925 | 0,525 | 298950,082 | 4546787,5 | 850,350 |
| E16 | 982 | 56,347 | 44,6608 | 99,4204 | 56,345 | 0,595 | 298951,707 | 4546784,4 | 850,420 |
| E16 | 983 | 54,944 | 44,8770 | 99,4867 | 54,943 | 0,525 | 298953,332 | 4546781,3 | 850,350 |
| E16 | 984 | 54,457 | 46,3342 | 100,5501 | 54,455 | -0,386 | 298953,956 | 4546780,11 | 849,439 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E17 | Ref | | 94,8531 | | | | 299005,586 | 4546829,689 | 849,825 |
| i=1,582 | m=1,500 | | | | | | | | |
| E17 | 985 | 49,875 | 55,7202 | 100,5820 | 49,873 | -0,374 | 298967,298 | 4546797,73 | 849,451 |
| E17 | 986 | 50,118 | 54,3890 | 98,8783 | 50,111 | 0,965 | 298967,795 | 4546796,78 | 850,790 |
| E17 | 987 | 51,037 | 50,1385 | 99,5734 | 51,036 | 0,424 | 298969,42 | 4546793,68 | 850,249 |
| E17 | 988 | 52,178 | 46,0565 | 99,6681 | 52,178 | 0,354 | 298971,045 | 4546790,58 | 850,179 |
| E17 | 989 | 52,664 | 44,5601 | 100,7084 | 52,661 | -0,504 | 298971,663 | 4546789,41 | 849,321 |
| E17 | 990 | 30,601 | 47,0529 | 101,6627 | 30,591 | -0,530 | 298984,979 | 4546807,08 | 849,295 |
| E17 | 992 | 32,472 | 38,4780 | 99,6627 | 32,472 | 0,254 | 298987,133 | 4546802,97 | 850,079 |
| E17 | 993 | 34,240 | 32,7085 | 99,8103 | 34,240 | 0,184 | 298988,758 | 4546799,87 | 850,009 |
| E17 | 994 | 34,977 | 30,7047 | 101,4380 | 34,968 | -0,708 | 298989,367 | 4546798,71 | 849,117 |
| E17 | 995 | 31,000 | 44,8524 | 99,6837 | 31,000 | 0,236 | 298985,508 | 4546806,07 | 850,061 |
| E17 | 996 | 13,548 | 14,0444 | 103,6058 | 13,527 | -0,685 | 299002,626 | 4546816,49 | 849,140 |
| E17 | 997 | 14,541 | 10,3517 | 99,7812 | 14,541 | 0,132 | 299003,232 | 4546815,34 | 849,957 |
| E17 | 998 | 17,464 | 2,6582 | 99,9963 | 17,464 | 0,083 | 299004,857 | 4546812,24 | 849,908 |
| E17 | 999 | 20,569 | 2,7741 | 100,2135 | 20,569 | 0,013 | 299006,482 | 4546809,14 | 849,838 |
| E17 | 1000 | 21,865 | 4,5036 | 102,7727 | 21,844 | -0,870 | 299007,13 | 4546807,9 | 848,955 |
| E17 | 1001 | 15,428 | 82,8910 | 103,8398 | 15,400 | -0,848 | 299020,433 | 4546825,6 | 848,977 |
| E17 | 1002 | 16,291 | 79,2806 | 100,3907 | 16,291 | -0,018 | 299021,022 | 4546824,48 | 849,807 |
| E17 | 1003 | 18,978 | 71,1479 | 100,5703 | 18,977 | -0,088 | 299022,647 | 4546821,38 | 849,737 |
| E17 | 1004 | 21,895 | 65,1036 | 100,6978 | 21,894 | -0,158 | 299024,272 | 4546818,28 | 849,667 |
| E17 | 1005 | 23,034 | 63,2719 | 103,1242 | 23,007 | -1,031 | 299024,869 | 4546817,14 | 848,794 |
| E17 | 1006 | 33,096 | 90,5298 | 102,1143 | 33,078 | -1,017 | 299038,299 | 4546834,59 | 848,808 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|---------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E17 | Ref | | 94,8531 | | | | 299005,586 | 4546829,689 | 849,825 |
| i=1,582 | m=1,500 | | | | | | | | |
| E17 | 1010 | 37,331 | 93,9522 | 102,1747 | 37,309 | -1,193 | 299042,727 | 4546826,15 | 848,632 |
| E17 | 1011 | 52,503 | 83,0994 | 101,5437 | 52,488 | -1,191 | 299056,235 | 4546843,46 | 848,634 |
| E17 | 1012 | 52,777 | 84,6016 | 100,5331 | 52,775 | -0,360 | 299056,825 | 4546842,33 | 849,465 |
| E17 | 1013 | 53,720 | 88,6325 | 100,6067 | 53,718 | -0,430 | 299058,45 | 4546839,23 | 849,395 |
| E17 | 1014 | 54,870 | 92,5093 | 100,6752 | 54,867 | -0,500 | 299060,074 | 4546836,13 | 849,325 |
| E17 | 1015 | 55,349 | 93,8568 | 101,6541 | 55,331 | -1,356 | 299060,66 | 4546835,02 | 848,469 |
| E17 | 1016 | 72,263 | 79,8658 | 101,2783 | 72,249 | -1,369 | 299074,252 | 4546852,16 | 848,456 |
| E17 | 1017 | 72,474 | 80,9527 | 100,5384 | 72,472 | -0,531 | 299074,838 | 4546851,05 | 849,294 |
| E17 | 1018 | 73,195 | 83,9470 | 100,5940 | 73,192 | -0,601 | 299076,463 | 4546847,95 | 849,224 |
| E17 | 1019 | 74,073 | 86,8765 | 100,6471 | 74,069 | -0,671 | 299078,087 | 4546844,85 | 849,154 |
| E17 | 1020 | 74,437 | 87,9075 | 101,3685 | 74,420 | -1,518 | 299078,667 | 4546843,74 | 848,307 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|----------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E18 | Ref | | 376,8069 | | | | 299220,980 | 4546847,141 | 847,177 |
| i=1,582 | m=1,500 | | | | | | | | |
| E18 | 1021 | 129,375 | 93,2858 | 99,5025 | 129,372 | 1,093 | 299092,327 | 4546860,76 | 848,27 |
| E18 | 1022 | 128,675 | 93,8156 | 99,0822 | 128,662 | 1,937 | 299092,925 | 4546859,62 | 849,114 |
| E18 | 1023 | 126,975 | 95,2859 | 99,1037 | 126,777 | 1,867 | 299094,55 | 4546856,52 | 849,044 |
| E18 | 1024 | 124,974 | 96,7998 | 99,1263 | 124,963 | 1,797 | 299096,175 | 4546853,42 | 848,974 |
| E18 | 1025 | 124,349 | 97,3374 | 99,5474 | 124,346 | 0,966 | 299096,743 | 4546852,34 | 848,143 |
| E18 | 1026 | 112,714 | 87,4307 | 99,5430 | 112,711 | 0,891 | 299110,459 | 4546869,25 | 848,068 |
| E18 | 1027 | 111,876 | 88,0303 | 99,0360 | 111,864 | 1,776 | 299111,087 | 4546868,05 | 848,953 |
| E18 | 1028 | 109,737 | 89,6211 | 98,9644 | 109,723 | 1,867 | 299112,712 | 4546864,95 | 849,044 |
| E18 | 1029 | 107,664 | 91,2743 | 99,0810 | 107,653 | 1,636 | 299114,337 | 4546861,85 | 848,813 |
| E18 | 1030 | 106,949 | 91,8649 | 99,5686 | 106,947 | 0,806 | 299114,905 | 4546860,77 | 847,983 |
| E18 | 1031 | 97,162 | 79,7415 | 99,5819 | 97,160 | 0,720 | 299128,698 | 4546877,54 | 847,897 |
| E18 | 1032 | 96,217 | 80,3684 | 98,9916 | 96,205 | 1,606 | 299129,313 | 4546876,34 | 848,783 |
| E18 | 1033 | 93,786 | 82,0589 | 99,0129 | 93,775 | 1,536 | 299130,904 | 4546873,22 | 848,713 |
| E18 | 1034 | 91,424 | 83,8379 | 99,0362 | 91,414 | 1,466 | 299132,496 | 4546870,1 | 848,643 |
| E18 | 1035 | 90,607 | 84,4808 | 99,6121 | 90,605 | 0,634 | 299133,054 | 4546869,01 | 847,811 |
| E18 | 1036 | 83,418 | 69,4433 | 99,6443 | 83,417 | 0,548 | 299146,989 | 4546885,66 | 847,725 |
| E18 | 1037 | 82,335 | 70,0914 | 98,9422 | 82,324 | 1,450 | 299147,575 | 4546884,41 | 848,627 |
| E18 | 1038 | 79,607 | 71,8068 | 98,9715 | 79,597 | 1,368 | 299149,062 | 4546881,25 | 848,545 |
| E18 | 1039 | 76,935 | 73,6497 | 99,0036 | 76,926 | 1,286 | 299150,55 | 4546878,08 | 848,463 |



| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|----------|---------|----------|-------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E18 | Ref | | 376,8069 | | | | 299220,980 | 4546847,141 | 847,177 |
| i=1,582 | m=1,500 | | | | | | | | |
| E18 | 1043 | 67,988 | 58,0186 | 98,9531 | 67,979 | 1,200 | 299167,254 | 4546888,79 | 848,377 |
| E18 | 1044 | 64,992 | 59,7423 | 99,0057 | 64,984 | 1,097 | 299168,562 | 4546885,55 | 848,274 |
| E18 | 1045 | 63,936 | 60,3952 | 99,8287 | 63,936 | 0,254 | 299169,022 | 4546884,4 | 847,431 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|--------|----------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E18 | Ref | | 390,4006 | | | | 299194,345 | 4546916,987 | 849,271 |
| i=1,582 | m=1,500 | | | | | | | | |
| E19 | 1046 | 19,617 | 35,2513 | 106,5475 | 19,513 | -1,932 | 299184,084 | 4546900,39 | 847,339 |
| E19 | 1047 | 20,568 | 31,6417 | 103,1614 | 20,543 | -0,939 | 299184,55 | 4546898,93 | 848,332 |
| E19 | 1048 | 23,129 | 24,6746 | 103,1500 | 23,101 | -1,062 | 299185,614 | 4546895,6 | 848,209 |
| E19 | 1049 | 25,968 | 19,1482 | 103,1143 | 25,879 | -1,185 | 299186,678 | 4546892,27 | 848,086 |
| E19 | 1050 | 26,968 | 17,4952 | 104,9789 | 26,886 | -2,025 | 299187,049 | 4546891,11 | 847,246 |
| E19 | 1051 | 13,909 | 44,2931 | 110,2969 | 13,728 | -2,158 | 299203,144 | 4546906,45 | 847,113 |
| E19 | 1052 | 15,262 | 41,2250 | 104,8890 | 15,218 | -1,089 | 299203,525 | 4546904,85 | 848,182 |
| E19 | 1053 | 18,526 | 36,3594 | 104,5087 | 18,480 | -1,229 | 299204,335 | 4546901,44 | 848,042 |
| E19 | 1054 | 21,857 | 32,9818 | 104,2293 | 21,809 | -1,369 | 299205,145 | 4546898,04 | 847,902 |
| E19 | 1055 | 23,088 | 32,0366 | 106,3217 | 22,975 | -2,207 | 299205,425 | 4546896,86 | 847,064 |
| E19 | 1056 | 28,935 | 87,4485 | 105,5004 | 28,828 | -2,415 | 299222,615 | 4546911,34 | 846,856 |
| E19 | 1057 | 29,518 | 83,8800 | 102,9147 | 29,487 | -1,269 | 299222,892 | 4546909,6 | 848,002 |
| E19 | 1058 | 31,086 | 77,3034 | 103,0320 | 31,051 | -1,398 | 299223,443 | 4546906,15 | 847,873 |
| E19 | 1059 | 32,952 | 71,4140 | 103,1097 | 32,913 | -1,527 | 299223,995 | 4546902,7 | 847,744 |
| E19 | 1060 | 33,729 | 69,4778 | 104,6604 | 33,639 | -2,385 | 299224,191 | 4546901,47 | 846,886 |
| E19 | 1061 | 48,235 | 97,2668 | 103,5535 | 48,160 | -2,609 | 299242,461 | 4546914,92 | 846,662 |
| E19 | 1062 | 48,437 | 94,9755 | 102,0283 | 48,413 | -1,461 | 299242,607 | 4546913,17 | 847,81 |
| E19 | 1063 | 49,049 | 90,5031 | 102,1387 | 49,097 | -1,568 | 299242,897 | 4546909,69 | 847,703 |
| E19 | 1064 | 50,049 | 86,1620 | 102,2353 | 50,019 | -1,675 | 299243,187 | 4546906,2 | 847,596 |
| E19 | 1065 | 50,486 | 84,6005 | 103,3330 | 50,417 | -2,560 | 299243,294 | 4546904,91 | 846,711 |
| E19 | 1066 | 68,268 | 99,7545 | 102,6762 | 68,208 | -2,787 | 299262,552 | 4546917,25 | 846,484 |
| E19 | 1067 | 68,283 | 98,6410 | 101,6187 | 68,261 | -1,654 | 299262,59 | 4546915,53 | 847,617 |
| E19 | 1068 | 68,525 | 95,3891 | 101,6919 | 68,501 | -1,739 | 299262,666 | 4546912,03 | 847,532 |
| E19 | 1069 | 68,943 | 92,1682 | 101,7389 | 68,918 | -1,801 | 299262,742 | 4546908,53 | 847,47 |
| E19 | 1070 | 69,181 | 90,9466 | 102,5911 | 69,124 | -2,733 | 299262,771 | 4546907,19 | 846,538 |
| E19 | 1071 | 88,424 | 9,0685 | 102,1019 | 88,376 | -2,837 | 299282,712 | 4546918,28 | 846,434 |
| E19 | 1072 | 88,361 | 99,7499 | 101,3812 | 88,341 | -1,835 | 299282,685 | 4546916,64 | 847,436 |

| Observación | | | | | Cálculos | | | | |
|-------------|---------|---------|----------|----------|----------|--------|------------|-------------|---------|
| Est | Punto | DG | H | V | DR | AZ | X | Y | Z |
| E18 | Ref | | 390,4006 | | | | 299194,345 | 4546916,987 | 849,271 |
| i=1,582 | m=1,500 | | | | | | | | |
| E19 | 1077 | 108,493 | 99,4464 | 101,8785 | 108,446 | -3,119 | 299302,787 | 4546917,93 | 846,152 |
| E19 | 1078 | 108,375 | 97,6569 | 101,2895 | 108,353 | -2,113 | 299302,625 | 4546913 | 847,158 |
| E19 | 1079 | 108,447 | 95,6004 | 101,3297 | 108,424 | -2,183 | 299302,51 | 4546909,5 | 847,088 |
| E19 | 1080 | 108,719 | 98,1977 | 103,8444 | 108,521 | -3,063 | 299302,51 | 4546908,21 | 846,208 |
| E19 | 1081 | 108,419 | 99,7139 | 101,3136 | 108,396 | -2,155 | 299302,74 | 4546916,5 | 847,116 |
| E19 | 1082 | 126,920 | 99,9784 | 101,6795 | 126,876 | -3,266 | 299321,221 | 4546917,03 | 846,005 |
| E19 | 1083 | 126,869 | 99,4444 | 101,2892 | 126,843 | -2,487 | 299321,183 | 4546915,88 | 846,784 |
| E19 | 1084 | 126,829 | 97,6865 | 101,2544 | 126,805 | -2,417 | 299321,066 | 4546912,38 | 846,854 |
| E19 | 1085 | 126,889 | 95,9340 | 101,2889 | 126,863 | -2,487 | 299320,949 | 4546908,89 | 846,784 |
| E19 | 1086 | 126,942 | 95,3971 | 101,6526 | 126,900 | -3,213 | 299320,913 | 4546907,82 | 846,058 |