INFORME FINAL
VOLUMEN 6

ESTUDIO DE PREFACTIBILIDAD
PLANOS

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TOMO 3/4

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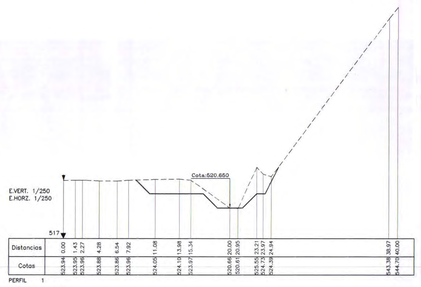

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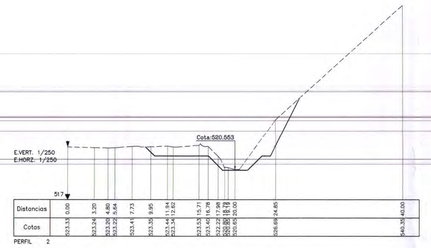

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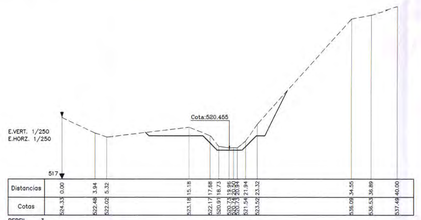

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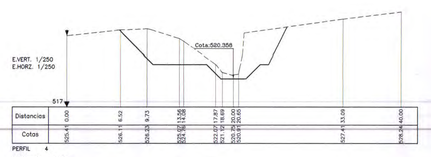

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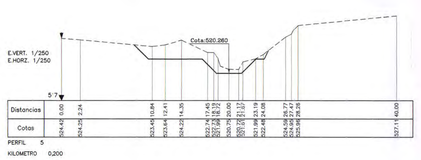

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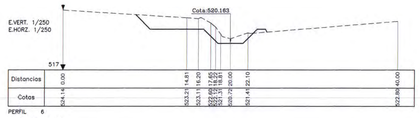

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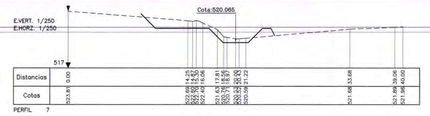

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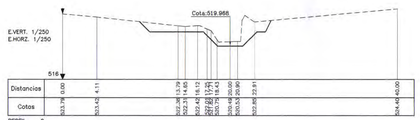

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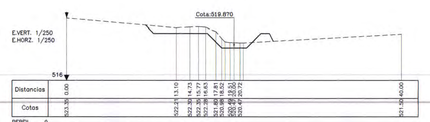

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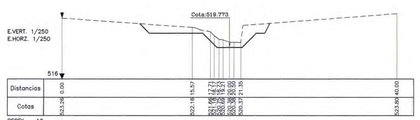

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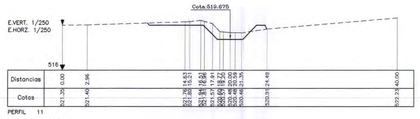

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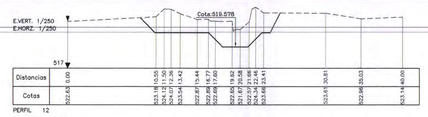

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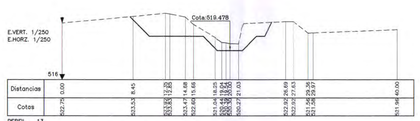

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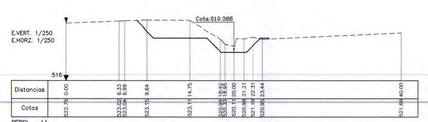

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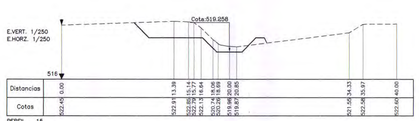
KILOMETRO 0,650



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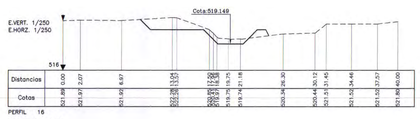

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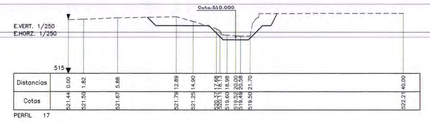

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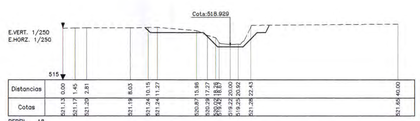

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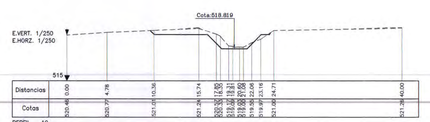

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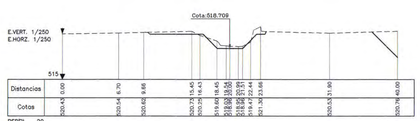
KILOMETRO 0,900



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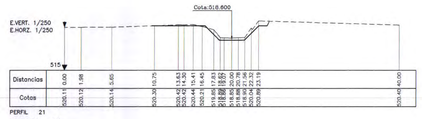

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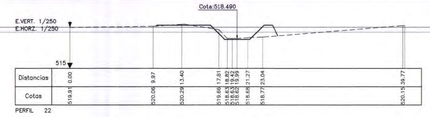

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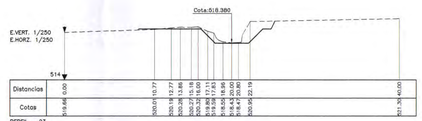
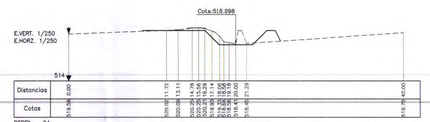


PERFIL 23
KILOMETRO 1,100



PERFIL 24
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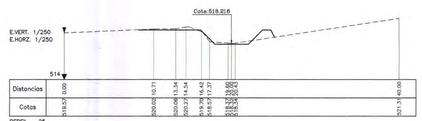

PERFIL 25
KILOMETRO 1,200

COMISIÓN NACIONAL DE RIEGO

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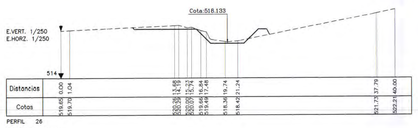
Estudio

ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

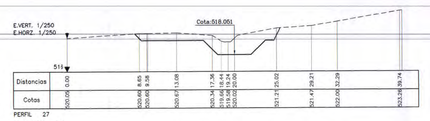
Título

PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 0,000 AL KM 1,200 LÁMINA 1/15

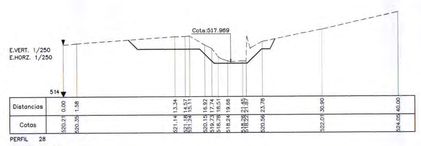
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR : HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-01



PERFIL 26
KILOMETRO 1,250



PERFIL 27
KILOMETRO 1,300



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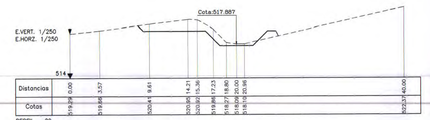
KILOMETRO 1,350



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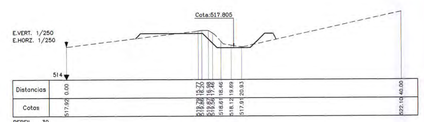

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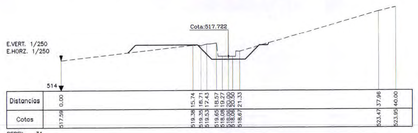
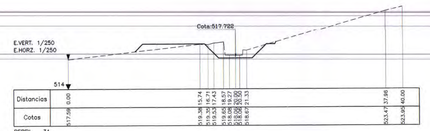
KILOMETRO 1,450



PERFIL 31
KILOMETRO 1,500



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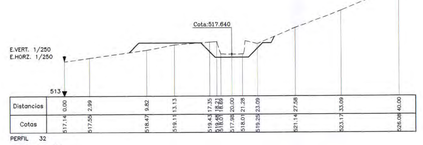
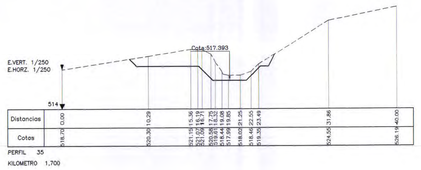


PERFIL 32
KILOMETRO 1,550

PERFIL 33
KILOMETRO 1,600

PERFIL 34
KILOMETRO 1,650



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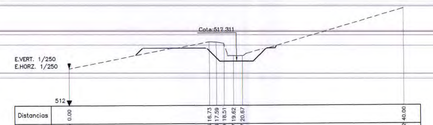
KILOMETRO 1,700



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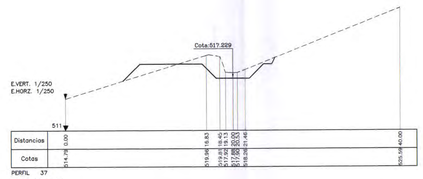
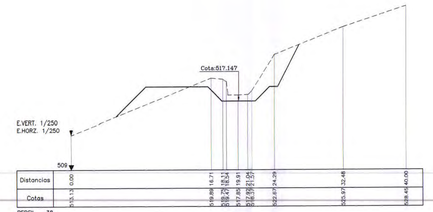
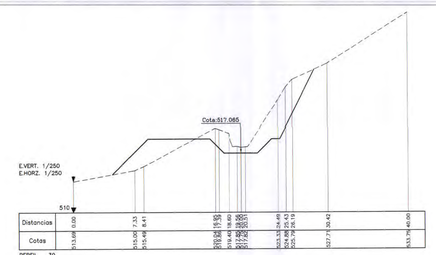
KILOMETRO 1,750



PERFIL 37
KILOMETRO 1,800



PERFIL 38
KILOMETRO 1,850



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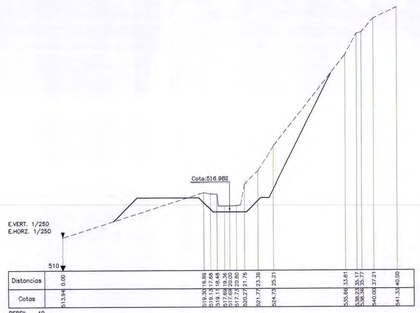
KILOMETRO 1,900



PERFIL 40
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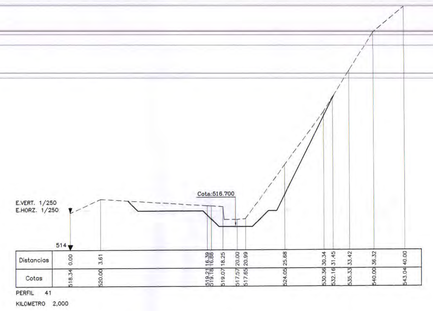

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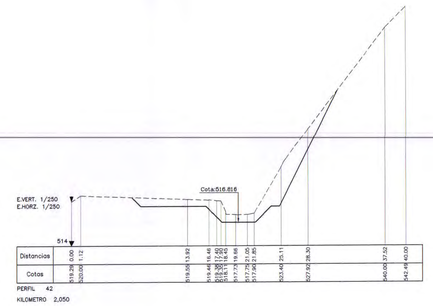
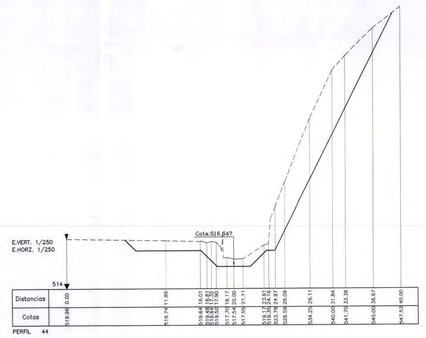


PERFIL 42
KILOMETRO 2,050

PERFIL 43
KILOMETRO 2,100



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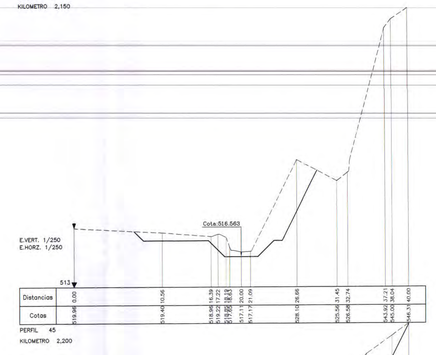
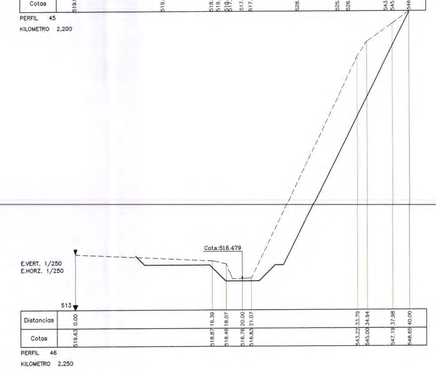
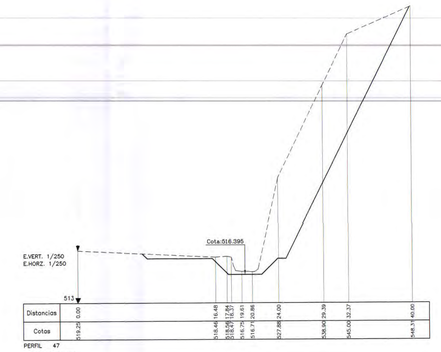
KILOMETRO 2,150



PERFIL 45
KILOMETRO 2,200



PERFIL 46
KILOMETRO 2,250



PERFIL 47
KILOMETRO 2,300

COMISIÓN NACIONAL DE RIEGO

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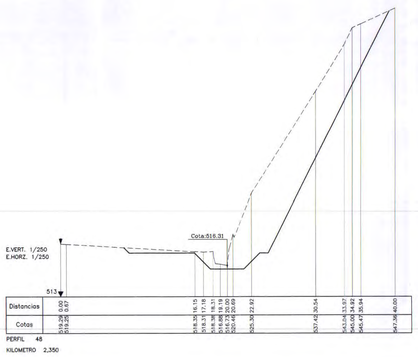
Estudio

ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

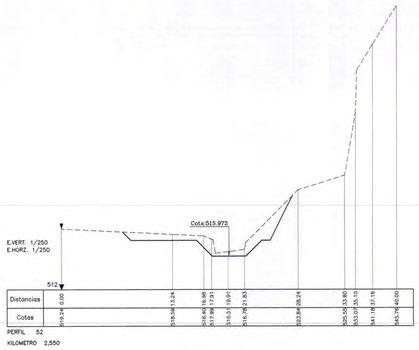
Título

PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 1,250 AL KM 2,300 LAMINA 2/15

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-02



PERFIL 48
KILOMETRO 2,350



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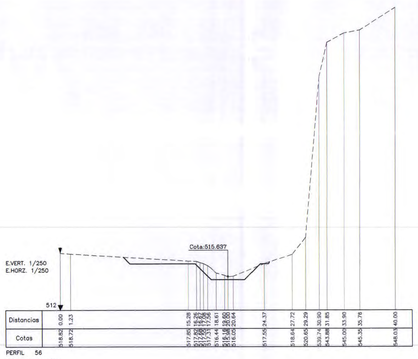

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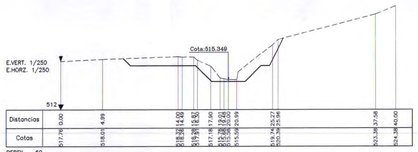

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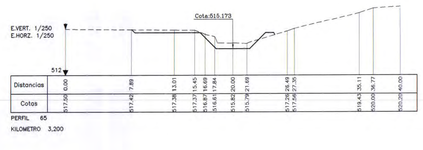

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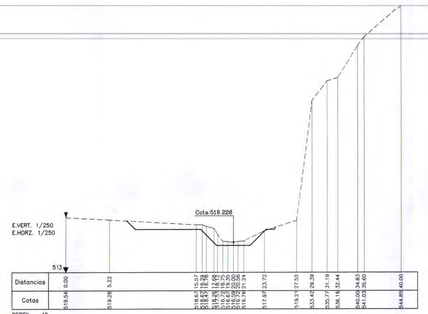

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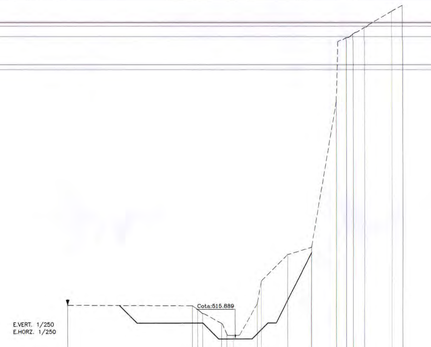

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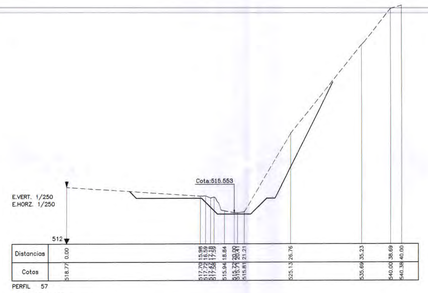

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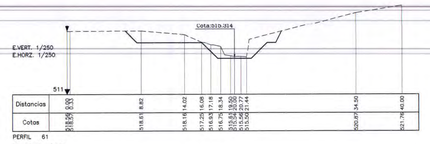

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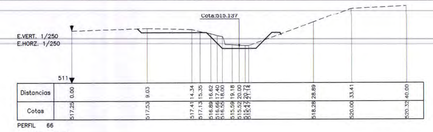

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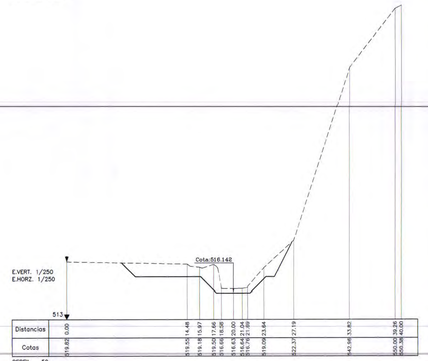

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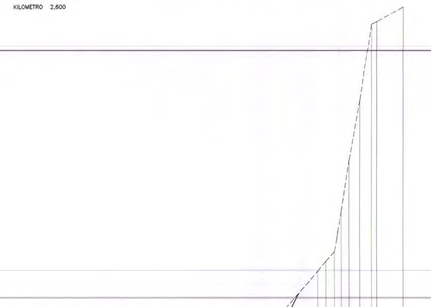

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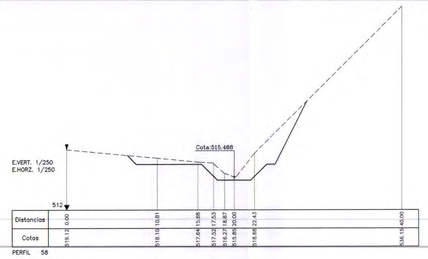

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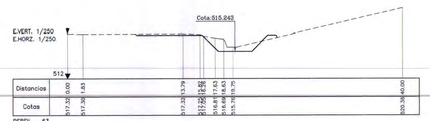
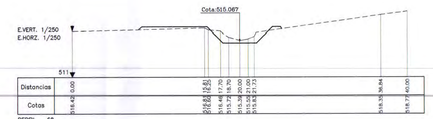
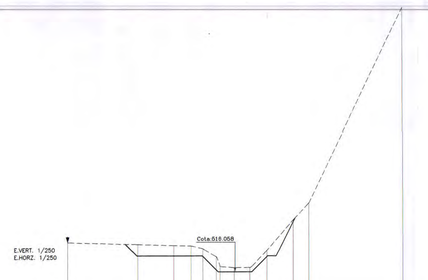


PERFIL 63
KILOMETRO 3,100



PERFIL 68
KILOMETRO 3,350



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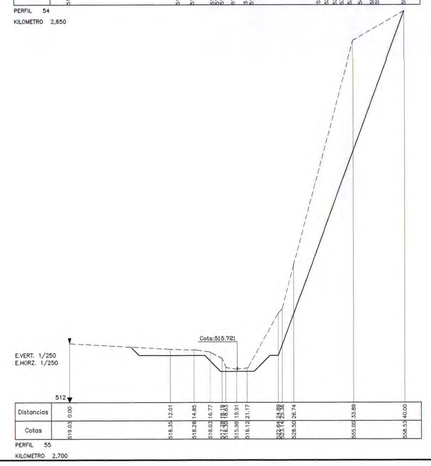

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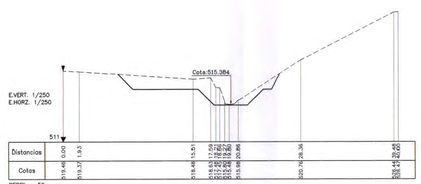
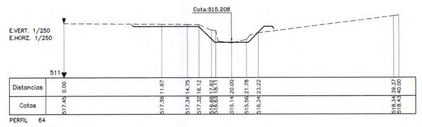


PERFIL 59
KILOMETRO 2,900



PERFIL 64
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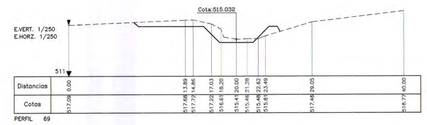

PERFIL 69
KILOMETRO 3,400

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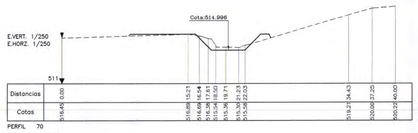

PERFIL 70
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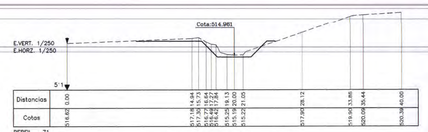

PERFIL 71
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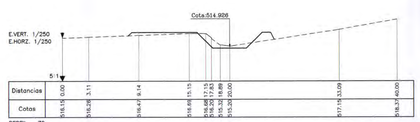

PERFIL 72
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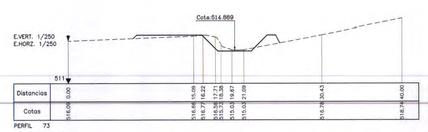

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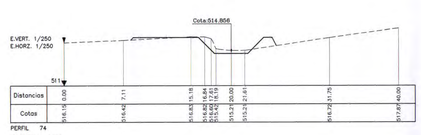

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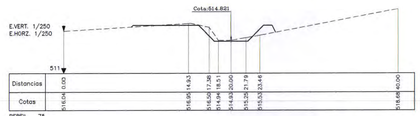

PERFIL 75
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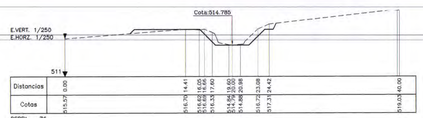

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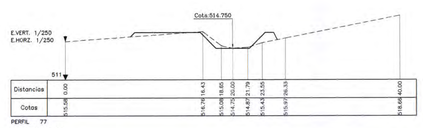

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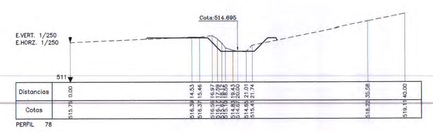

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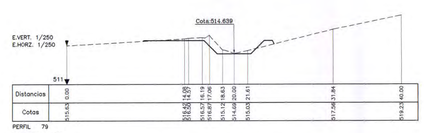

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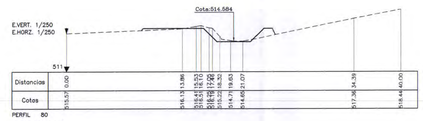

PERFIL 80
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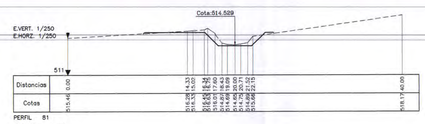

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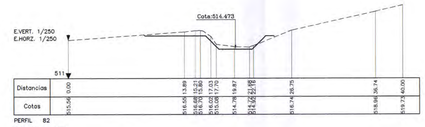

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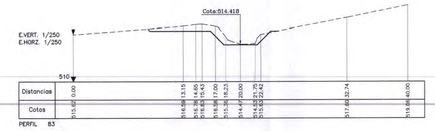

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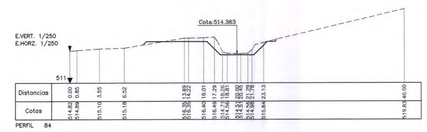

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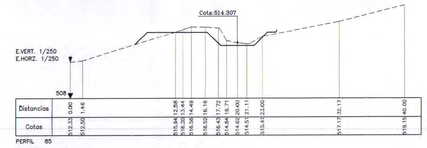

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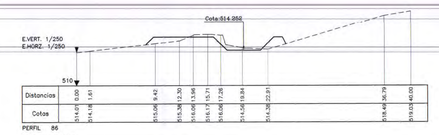

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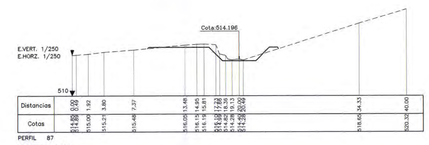
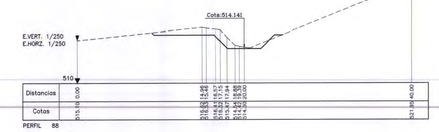


PERFIL 87
KILOMETRO 4,300



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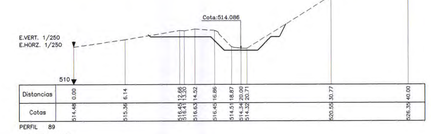
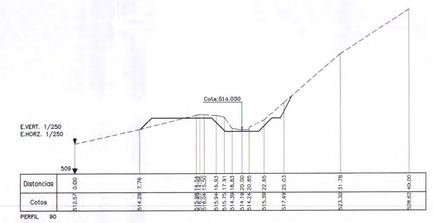


PERFIL 89
KILOMETRO 4,400



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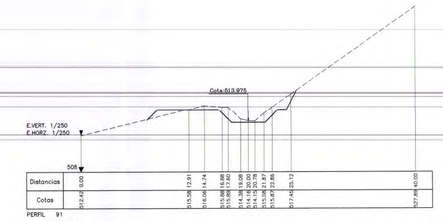
KILOMETRO 4,450



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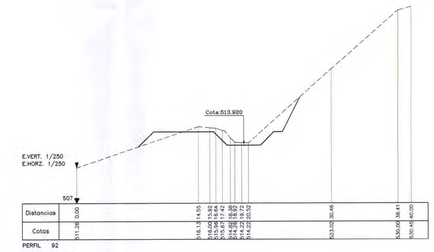
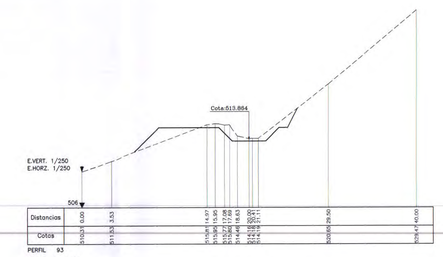


PERFIL 92
KILOMETRO 4,550



PERFIL 93
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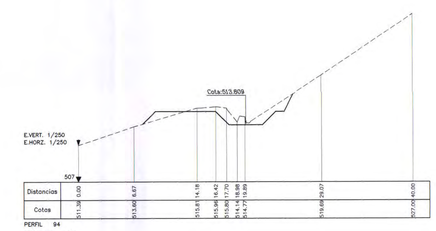

PERFIL 94
KILOMETRO 4,650

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MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

Título
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KM 3,450 AL KM 4,650
LÁMINA 4/15

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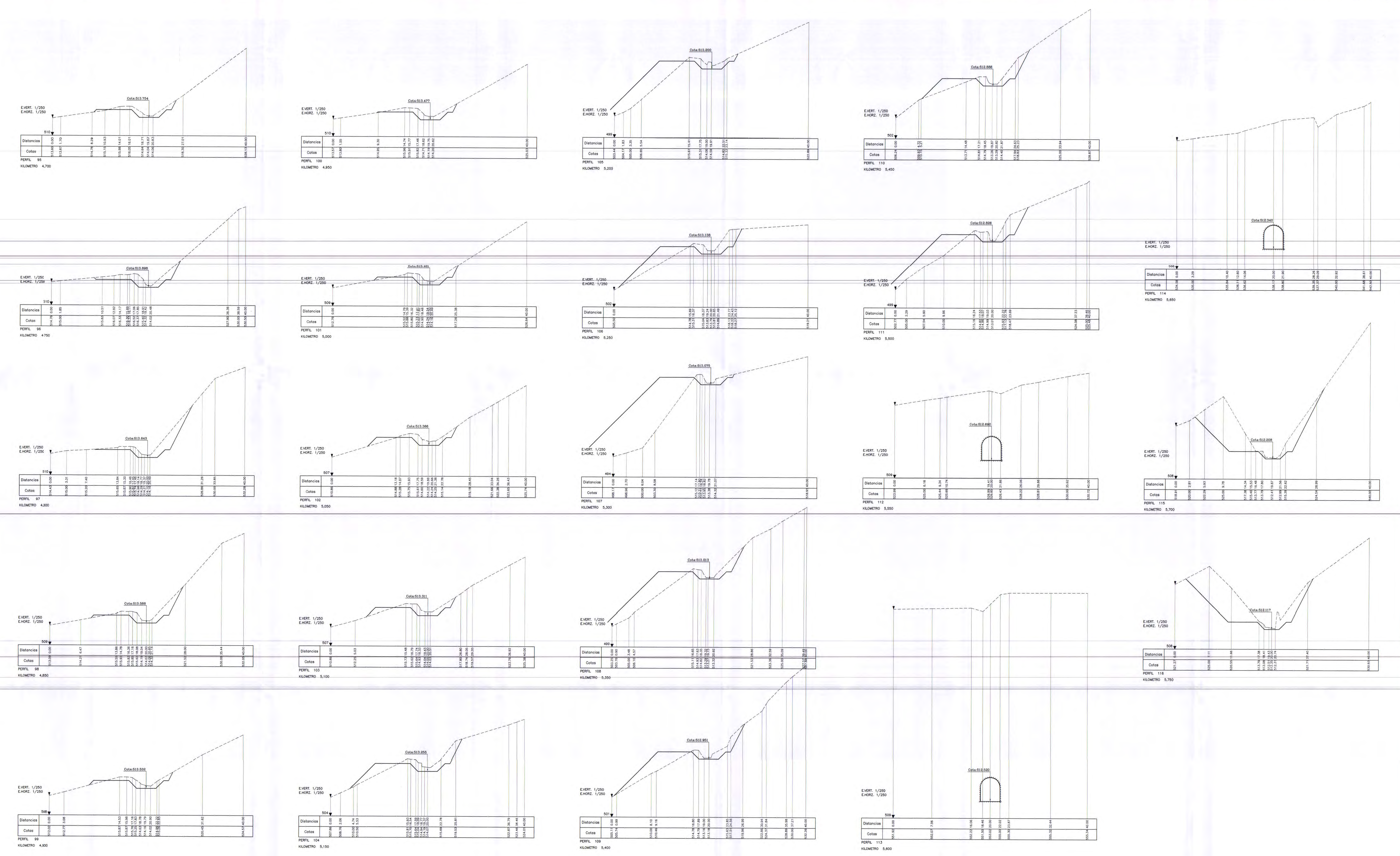

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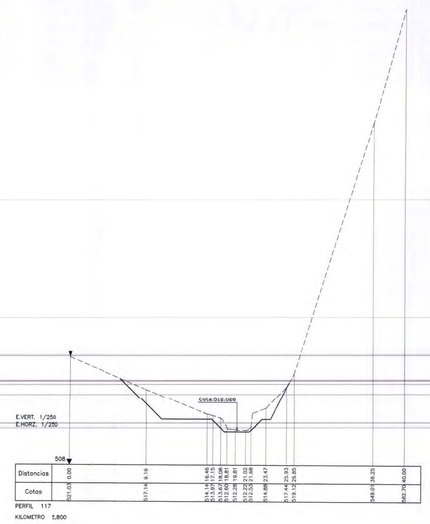
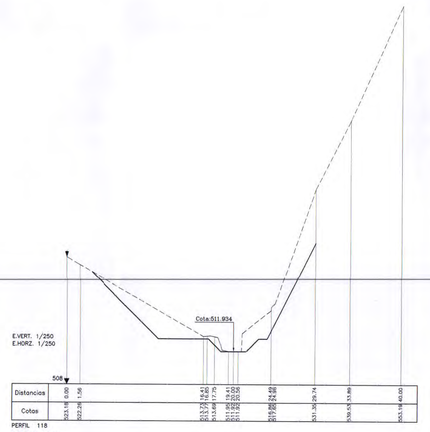
Estudio
ESTUDIO DE PREFACTIBILIDAD
MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

Título
PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU
KM 4,700 AL KM 5,750
LÁMINA 5/15

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-05



PERFIL 117
KILOMETRO 5,800



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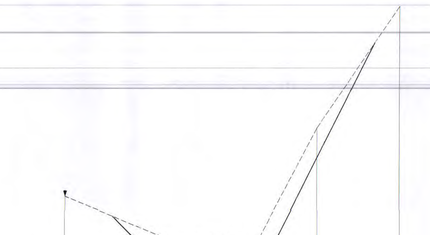

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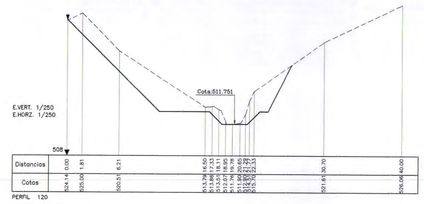

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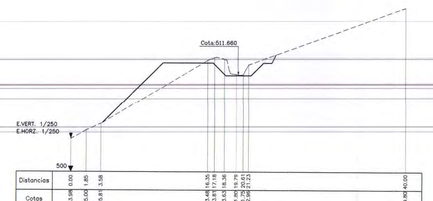

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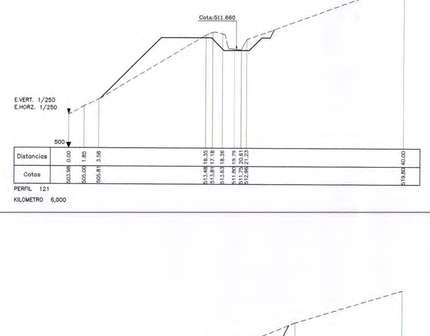

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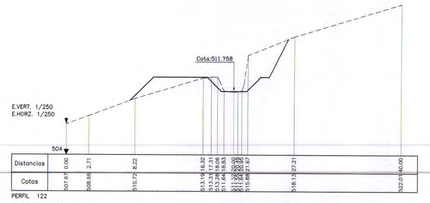

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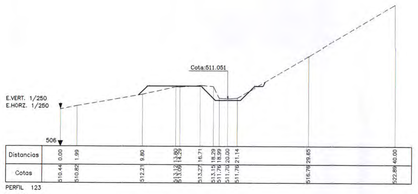

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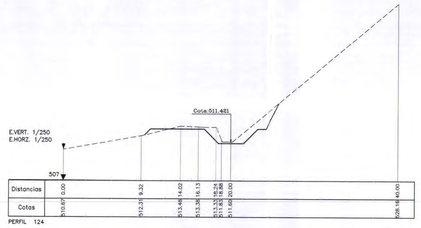

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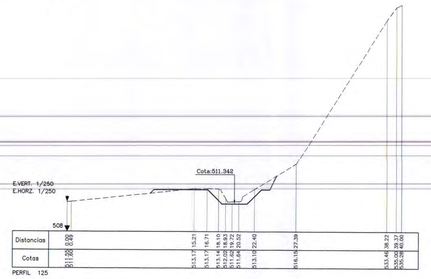

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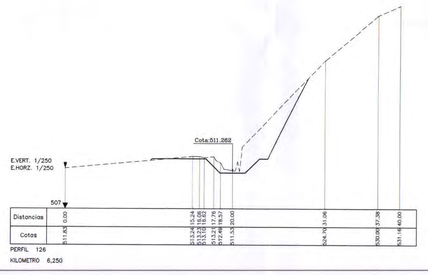

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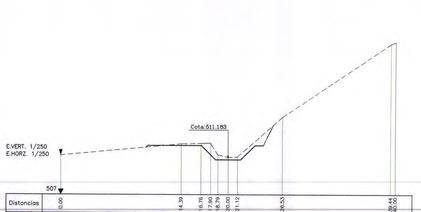

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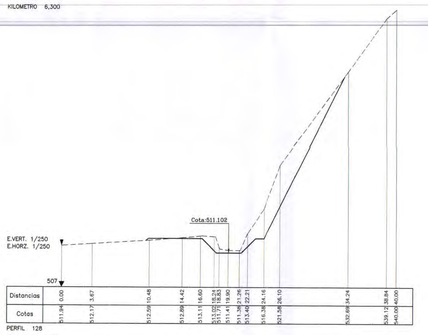
KILOMETRO 6,300



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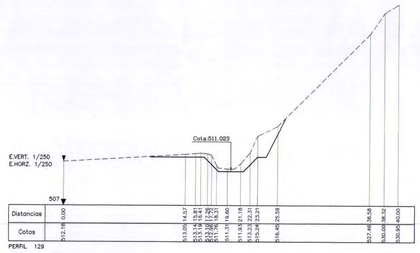

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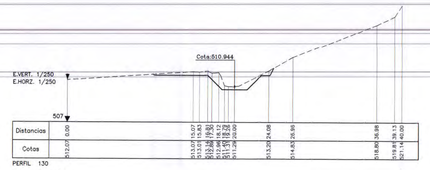

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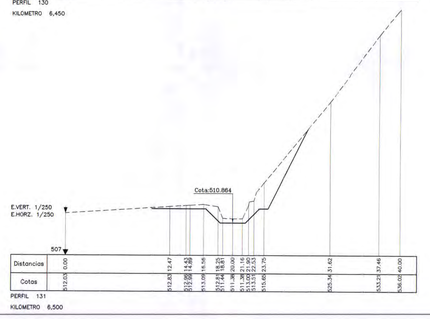

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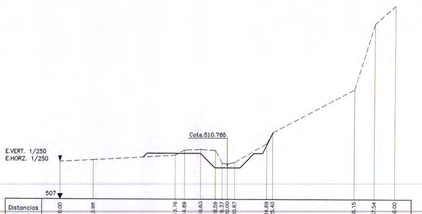

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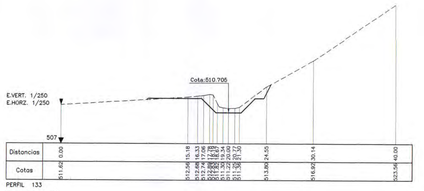

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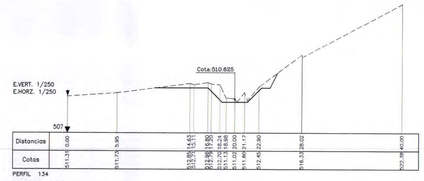

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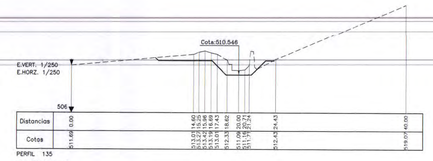

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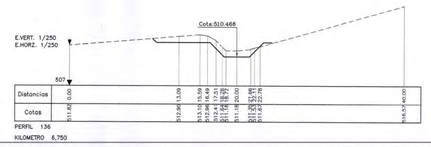

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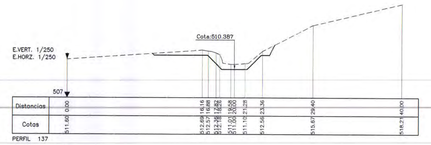

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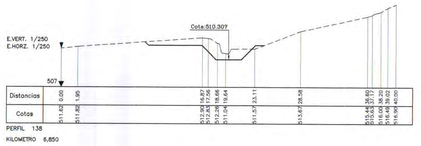

PERFIL 138
KILOMETRO 6,850

COMISIÓN NACIONAL DE RIEGO

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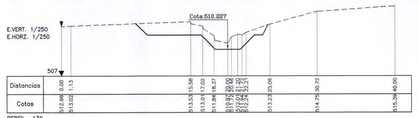
e-mail oficina@arralingeniería.cl

Estudio	Título
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA	PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 5,800 AL KM 6,850 LAMINA 6/15

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-06



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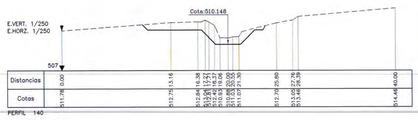

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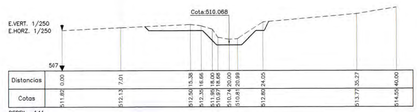

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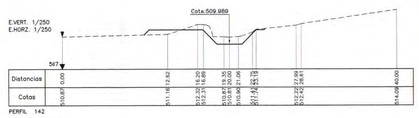

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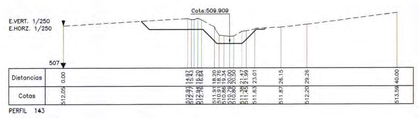

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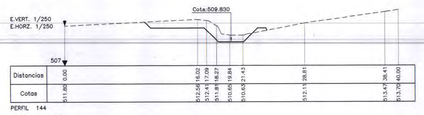

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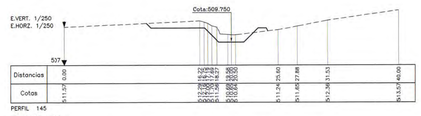

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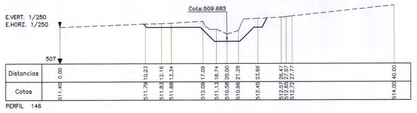

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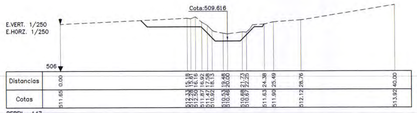

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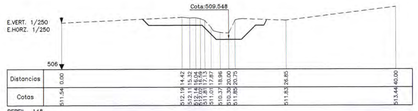

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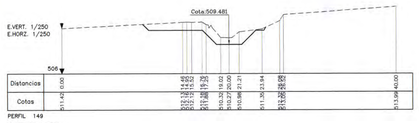

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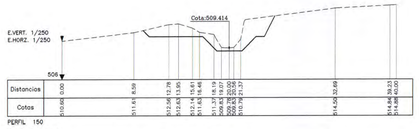

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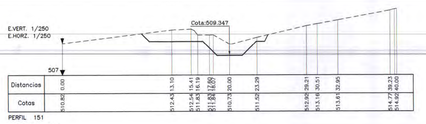

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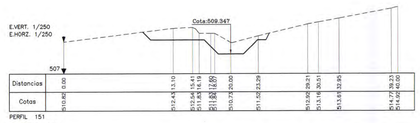

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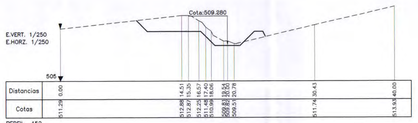

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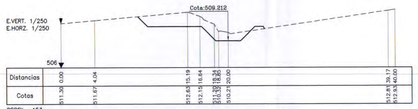

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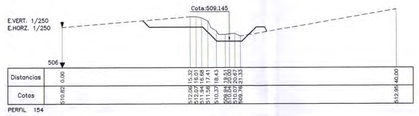

PERFIL 154
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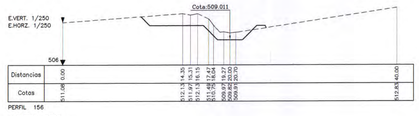
PERFIL 155
KILOMETRO 7,700



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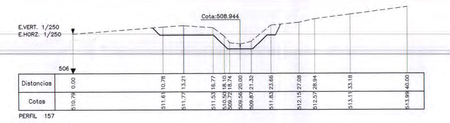

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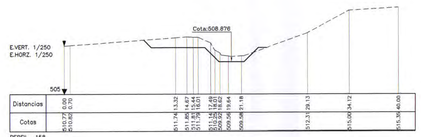

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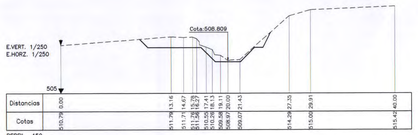

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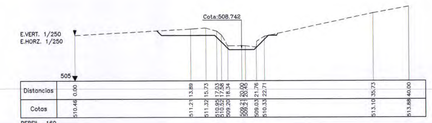

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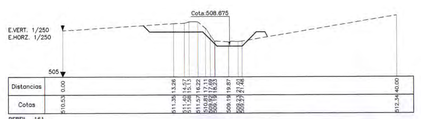

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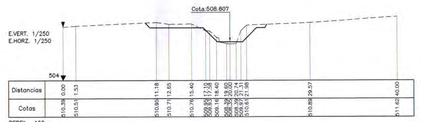
KILOMETRO 8,000



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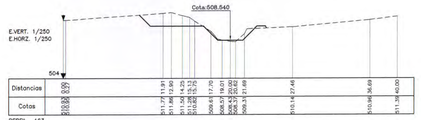

PERFIL 163
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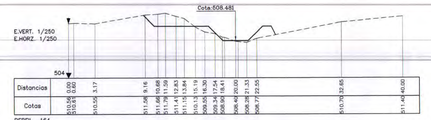
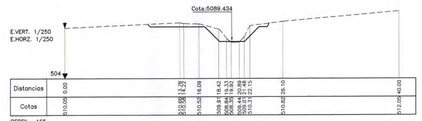
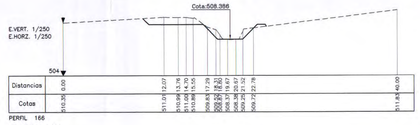


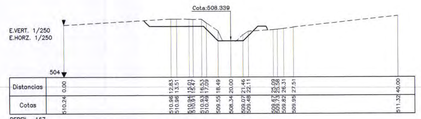
PERFIL 164
KILOMETRO 8,150



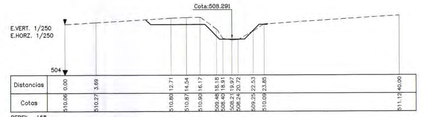
PERFIL 165
KILOMETRO 8,200



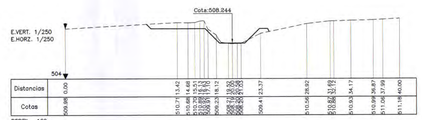
PERFIL 166
KILOMETRO 8,250



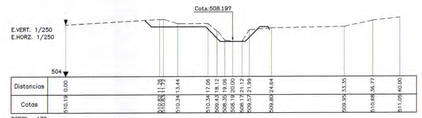
PERFIL 167
KILOMETRO 8,300



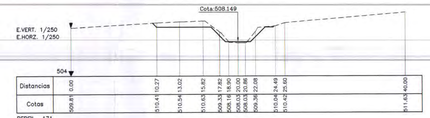
PERFIL 168
KILOMETRO 8,350



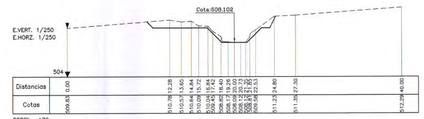
PERFIL 169
KILOMETRO 8,400



PERFIL 170
KILOMETRO 8,450



PERFIL 171
KILOMETRO 8,500



PERFIL 172
KILOMETRO 8,550

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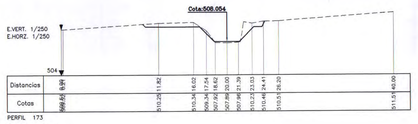
Estudio

ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

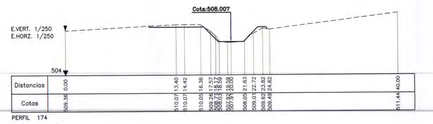
Título

PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 6,900 AL KM 8,550 LAMINA 7/15

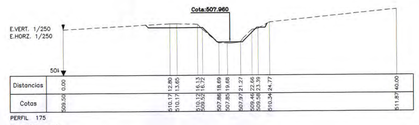
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-07



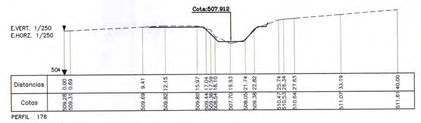
PERFIL 173
KILOMETRO 8,600



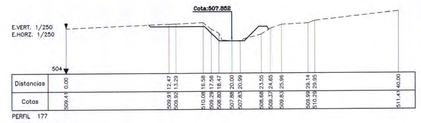
PERFIL 174
KILOMETRO 8,650



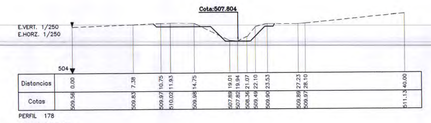
PERFIL 175
KILOMETRO 8,700



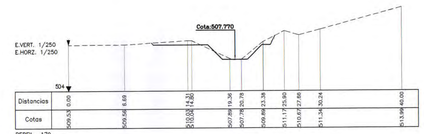
PERFIL 176
KILOMETRO 8,750



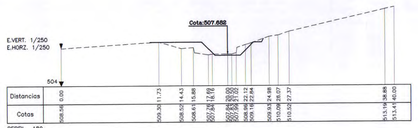
PERFIL 177
KILOMETRO 8,800



PERFIL 178
KILOMETRO 8,850

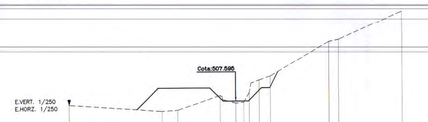


PERFIL 179
KILOMETRO 8,900



PERFIL 180
KILOMETRO 8,950

PERFIL 181
KILOMETRO 9,000



PERFIL 181
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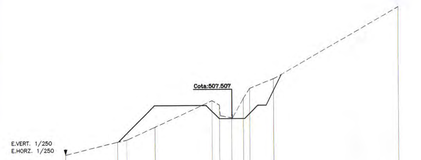
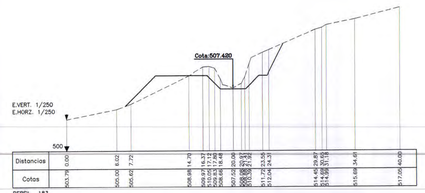
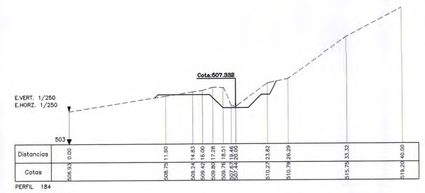


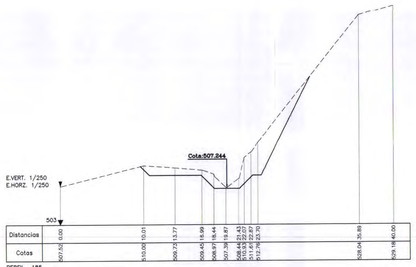
PERFIL 182
KILOMETRO 9,050



PERFIL 183
KILOMETRO 9,100



PERFIL 184
KILOMETRO 9,150



PERFIL 185
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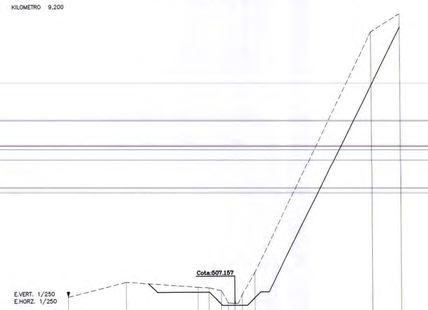
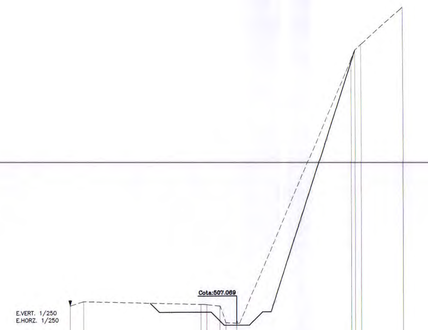
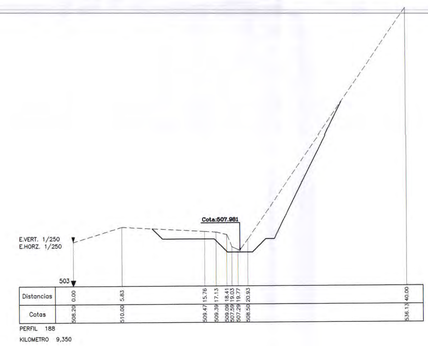


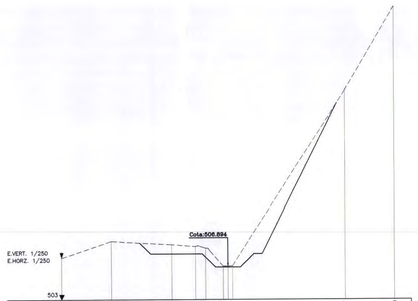
PERFIL 186
KILOMETRO 9,250



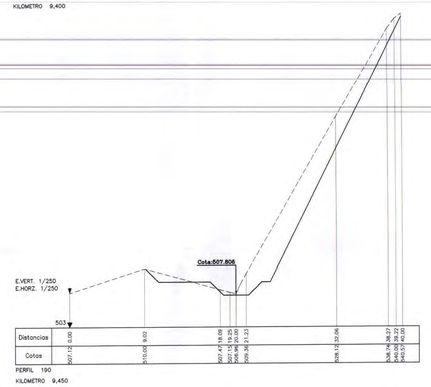
PERFIL 187
KILOMETRO 9,300



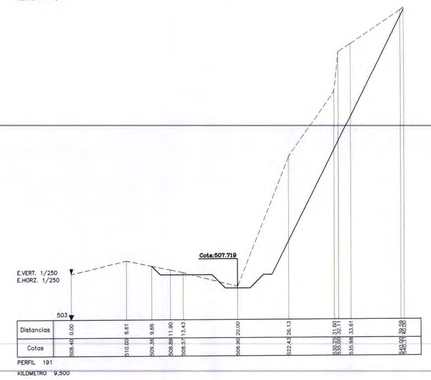
PERFIL 188
KILOMETRO 9,350



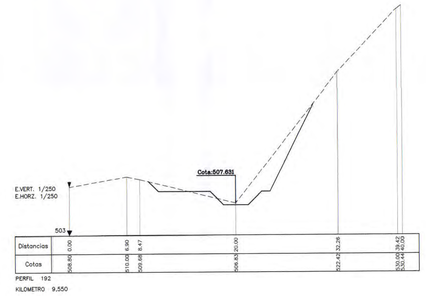
PERFIL 189
KILOMETRO 9,400



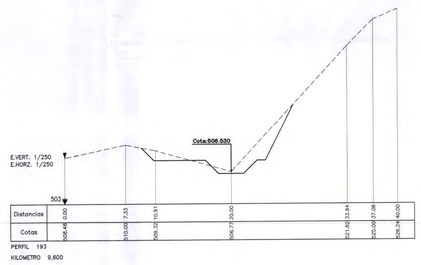
PERFIL 190
KILOMETRO 9,450



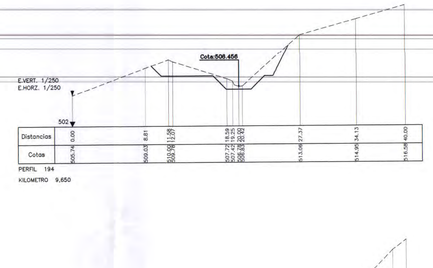
PERFIL 191
KILOMETRO 9,500



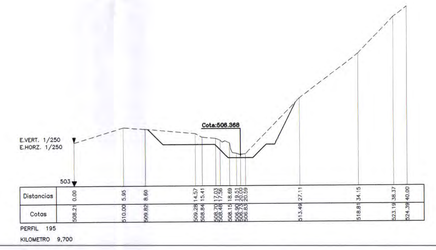
PERFIL 192
KILOMETRO 9,550



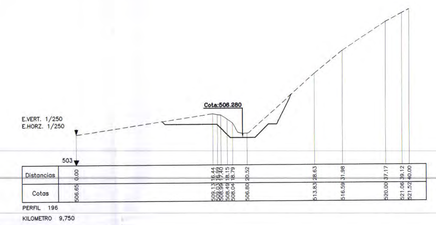
PERFIL 193
KILOMETRO 9,600



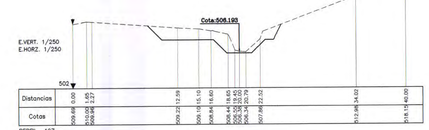
PERFIL 194
KILOMETRO 9,650



PERFIL 195
KILOMETRO 9,700



PERFIL 196
KILOMETRO 9,750



PERFIL 197
KILOMETRO 9,800

COMISIÓN NACIONAL DE RIEGO

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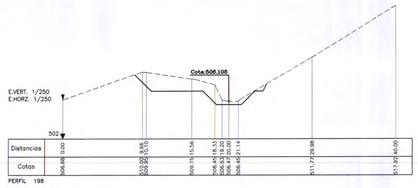
Estudio

ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

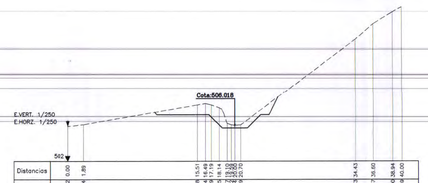
Título

PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 8,600 AL KM 9,800
LÁMINA 8/15

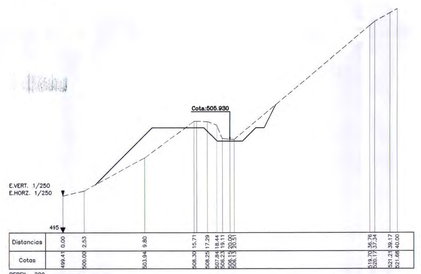
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-08



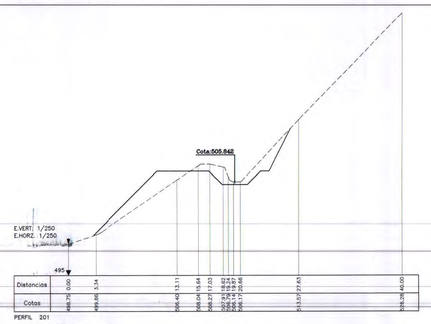
PERFIL 198
KILOMETRO 9,850



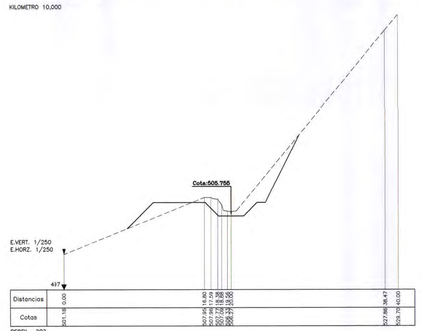
PERFIL 199
KILOMETRO 9,900



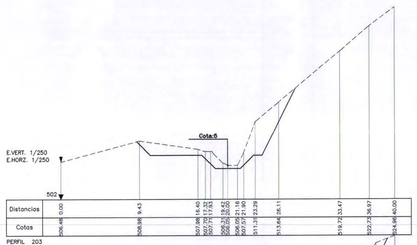
PERFIL 200
KILOMETRO 9,950



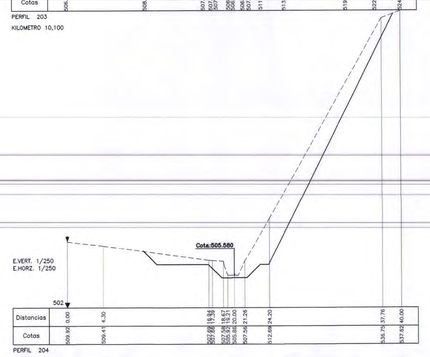
PERFIL 201
KILOMETRO 10,000



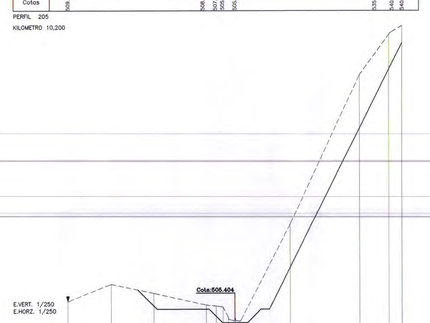
PERFIL 202
KILOMETRO 10,050



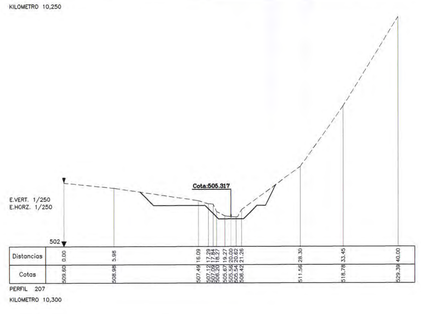
PERFIL 203
KILOMETRO 10,100



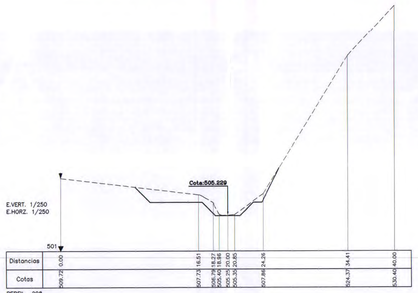
PERFIL 204
KILOMETRO 10,150



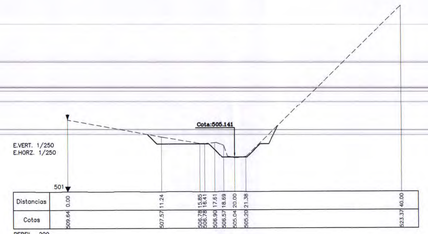
PERFIL 206
KILOMETRO 10,250



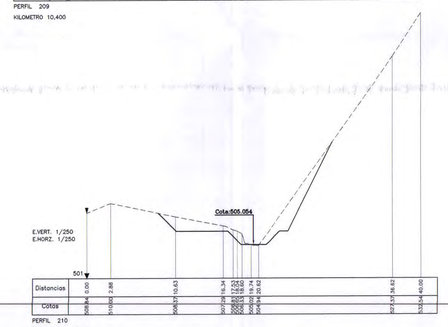
PERFIL 207
KILOMETRO 10,300



PERFIL 208
KILOMETRO 10,350



PERFIL 209
KILOMETRO 10,400



PERFIL 210
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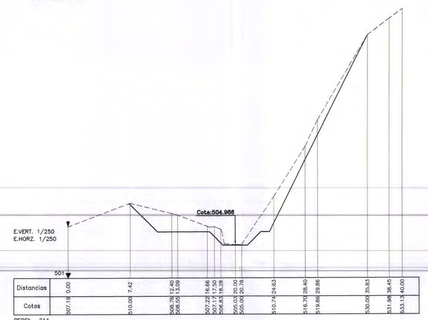
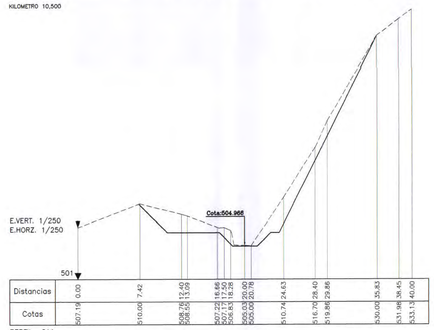


PERFIL 211
KILOMETRO 10,500



PERFIL 211
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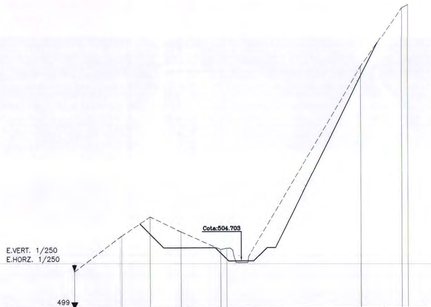
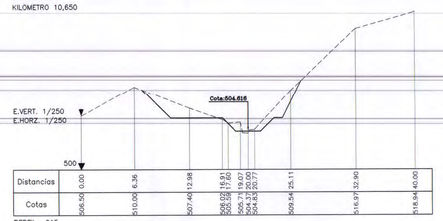
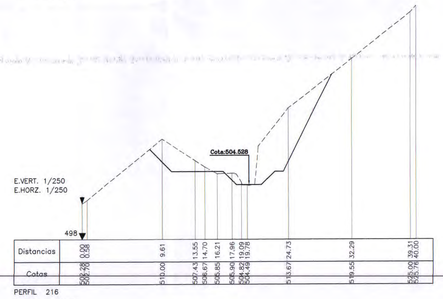


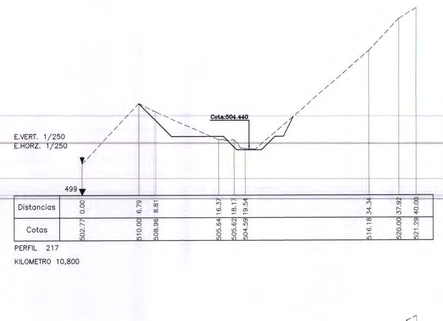
PERFIL 214
KILOMETRO 10,650



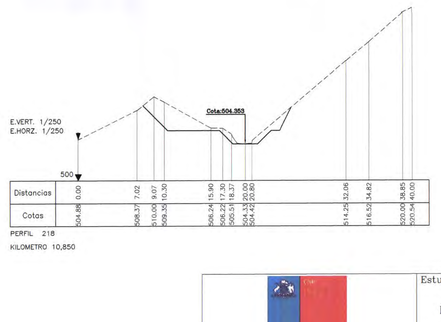
PERFIL 215
KILOMETRO 10,700



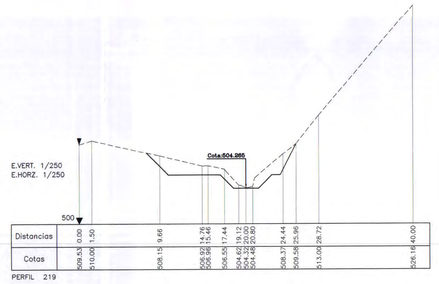
PERFIL 216
KILOMETRO 10,750



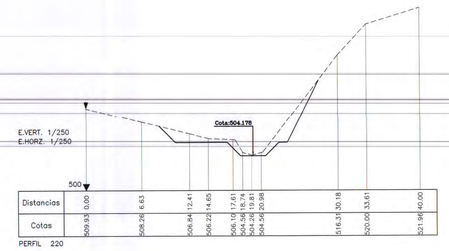
PERFIL 217
KILOMETRO 10,800



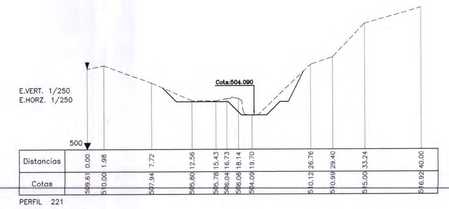
PERFIL 218
KILOMETRO 10,850



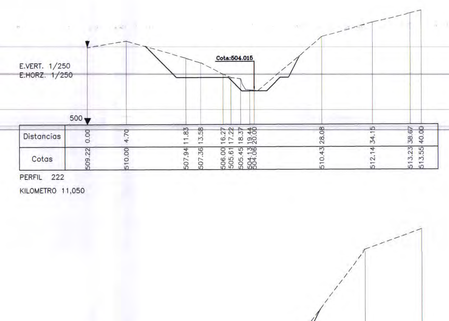
PERFIL 219
KILOMETRO 10,900



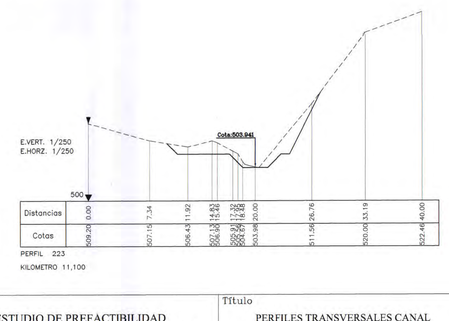
PERFIL 220
KILOMETRO 10,950



PERFIL 221
KILOMETRO 11,000



PERFIL 222
KILOMETRO 11,050



PERFIL 223
KILOMETRO 11,100

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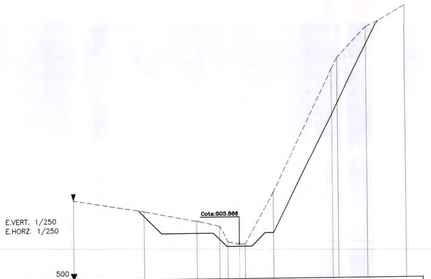
Estudio

ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

Título

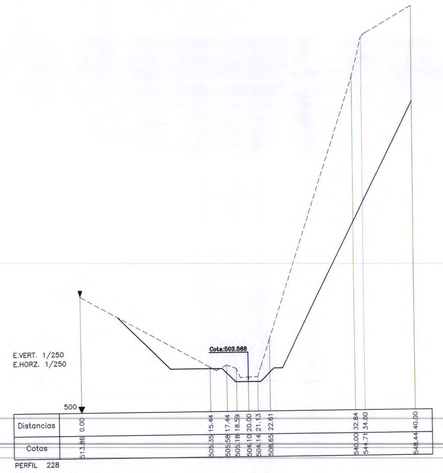
PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 9,850 AL KM 11,100
LÁMINA 9/15

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-09



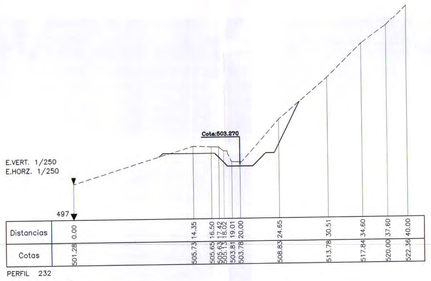
PERFIL 224

KILOMETRO 11,150



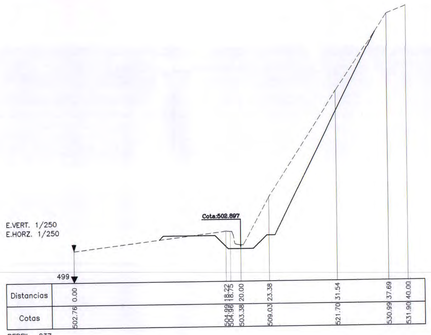
PERFIL 228

KILOMETRO 11,350



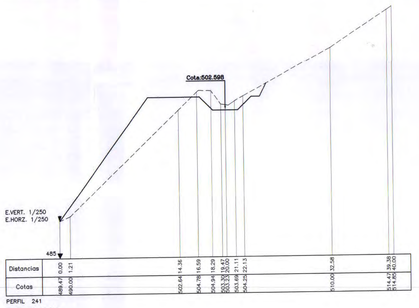
PERFIL 232

KILOMETRO 11,550



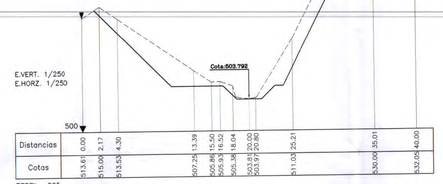
PERFIL 237

KILOMETRO 11,800



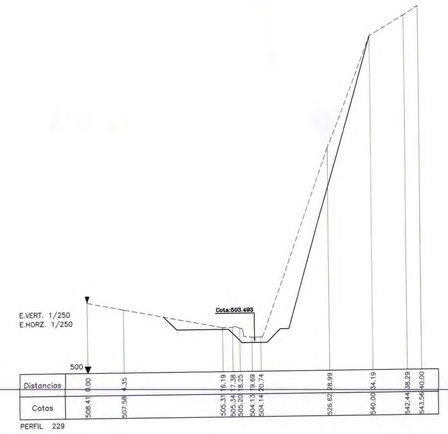
PERFIL 241

KILOMETRO 12,000



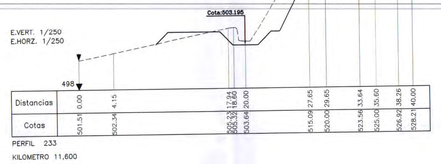
PERFIL 225

KILOMETRO 11,200



PERFIL 229

KILOMETRO 11,400



PERFIL 233

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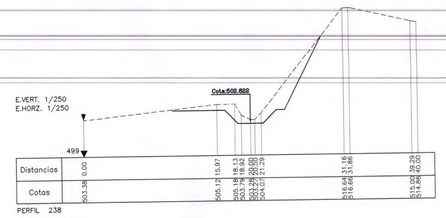
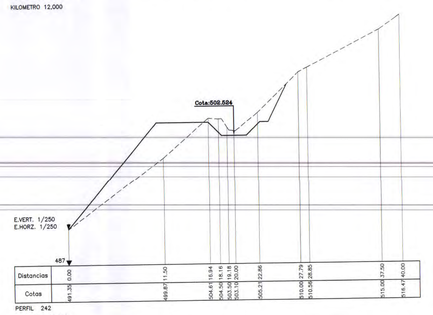


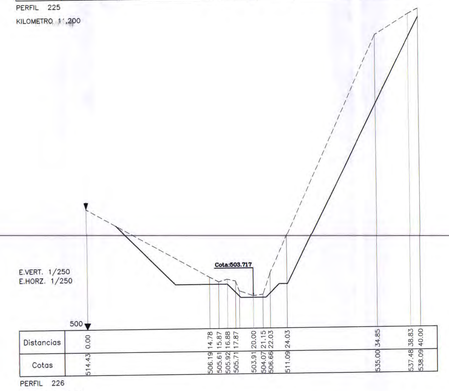
PERFIL 238

KILOMETRO 11,850



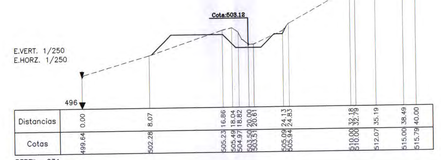
PERFIL 242

KILOMETRO 12,050



PERFIL 226

KILOMETRO 11,250



PERFIL 234

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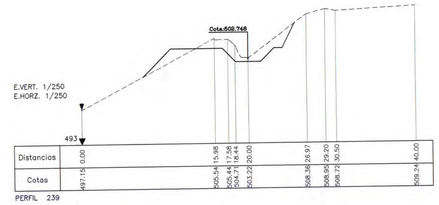

PERFIL 239

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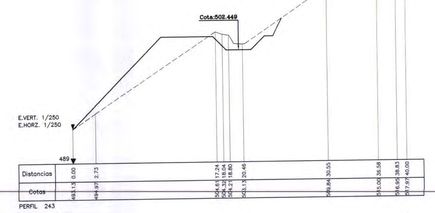
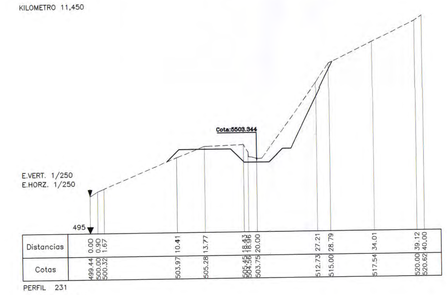


PERFIL 243

KILOMETRO 12,100

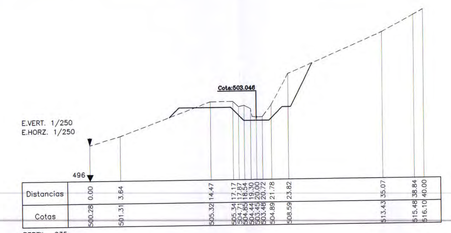
PERFIL 217

KILOMETRO 11,300



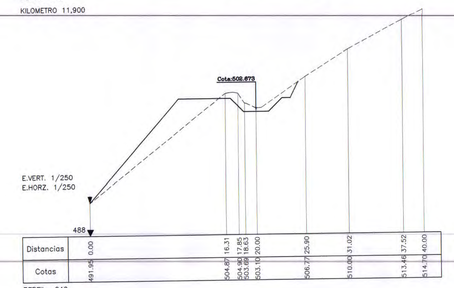
PERFIL 230

KILOMETRO 11,450



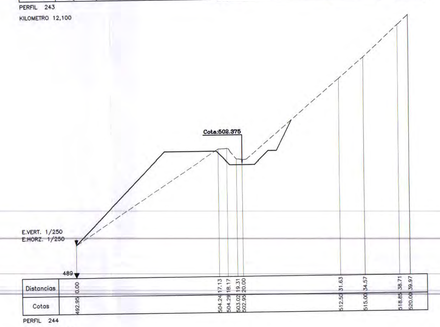
PERFIL 235

KILOMETRO 11,700



PERFIL 240

KILOMETRO 11,950

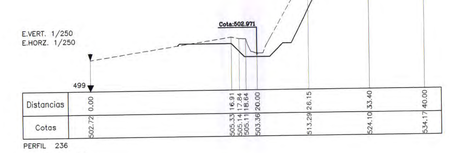


PERFIL 244

KILOMETRO 12,150

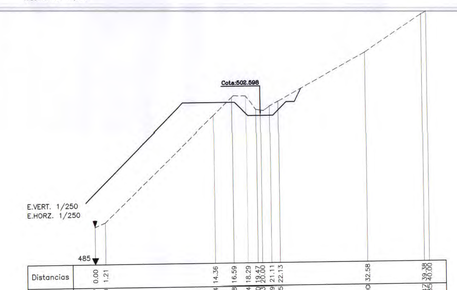
PERFIL 231

KILOMETRO 11,500



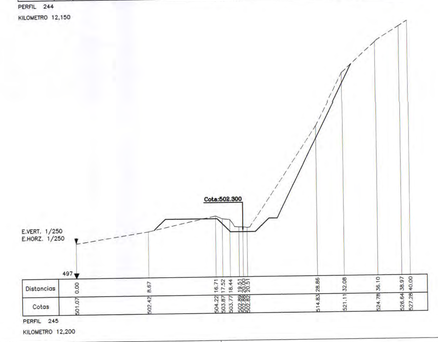
PERFIL 236

KILOMETRO 11,750



PERFIL 241

KILOMETRO 12,000



PERFIL 245

KILOMETRO 12,200

COMISIÓN NACIONAL DE RIEGO

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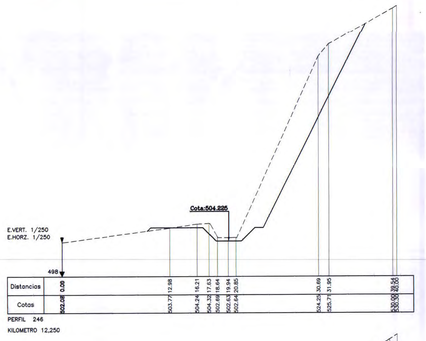
Estudio

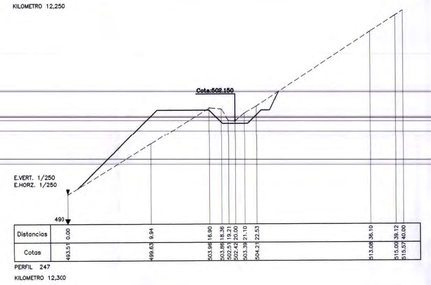
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

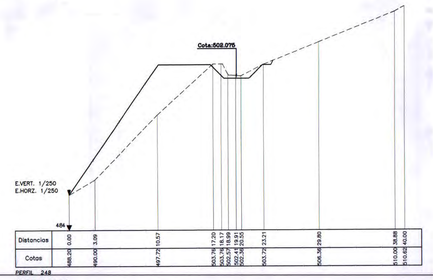
Título

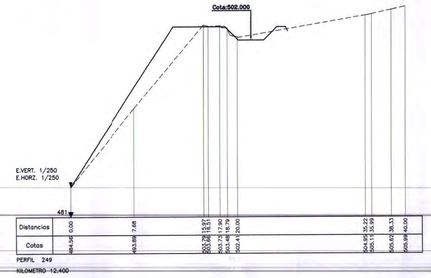
PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 11,150 AL KM 12,200 LÁMINA 10/15

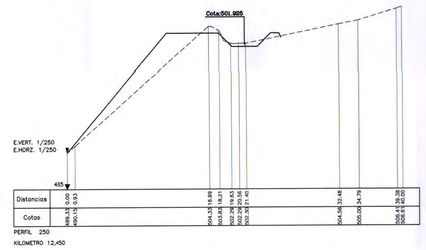
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA (1982)	Julio 2012	PTCA-10

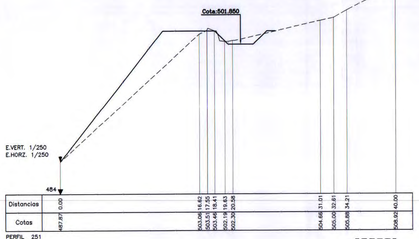


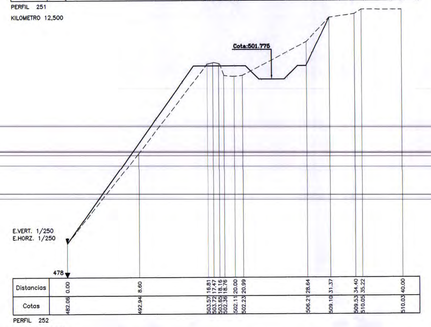


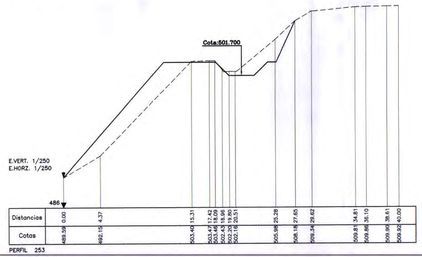


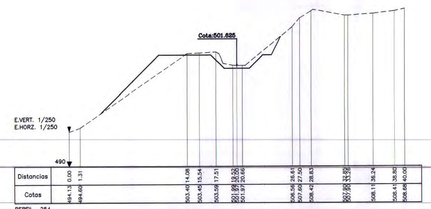


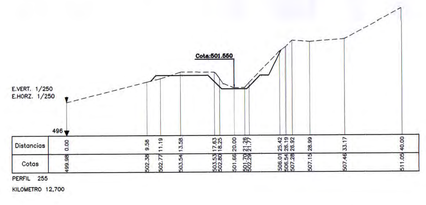


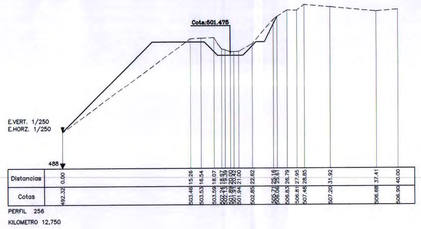


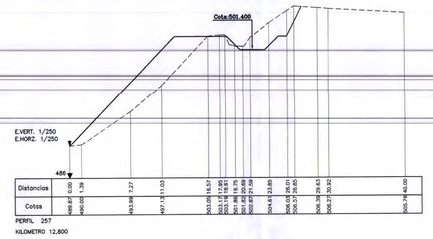


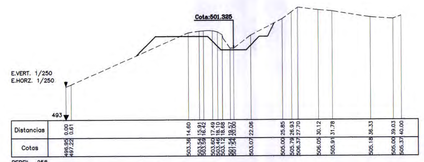


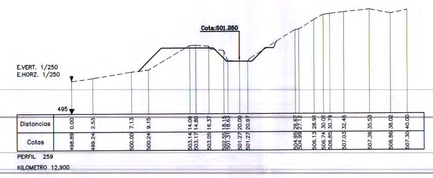


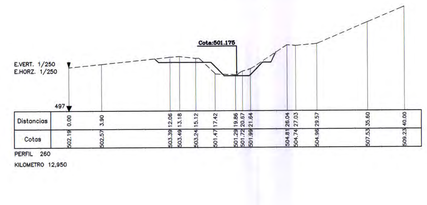


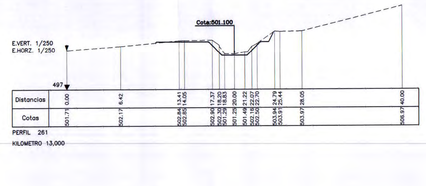


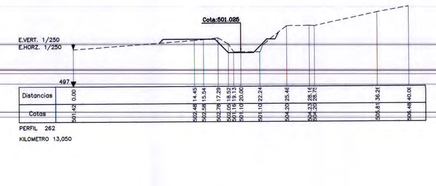


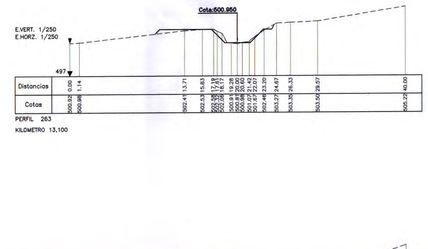


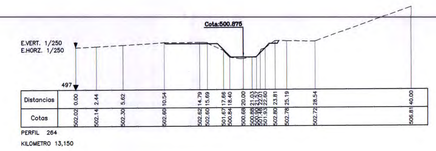


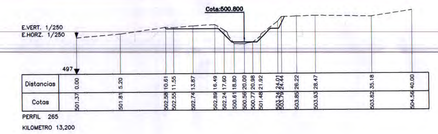


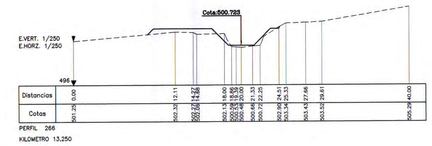


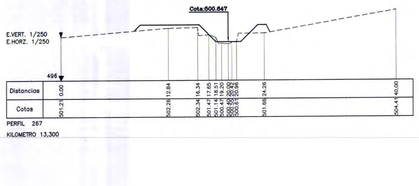


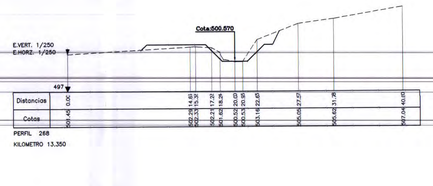


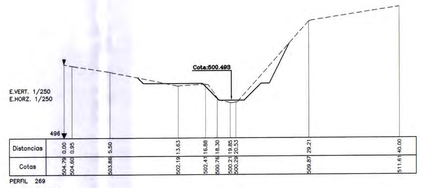


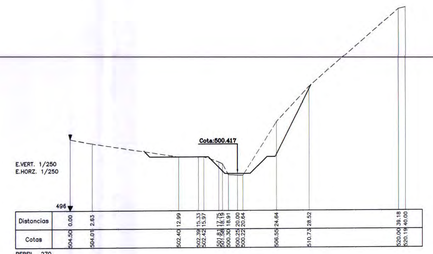


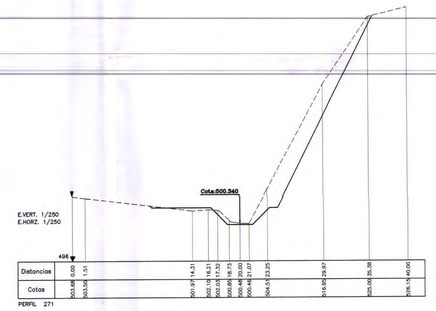












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Estudio

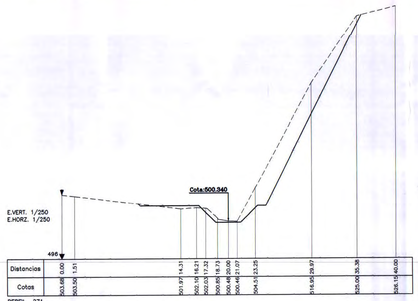
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

Título

PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 12,250 AL KM 13,500

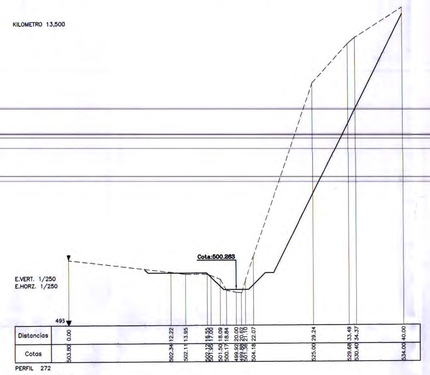
LÁMINA 11/15

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-11



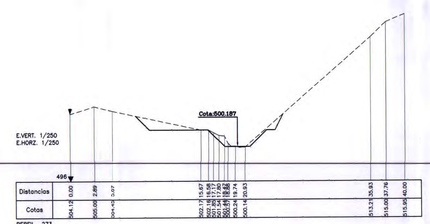
PERFIL 271

KILOMETRO 13,500



PERFIL 272

KILOMETRO 13,550



PERFIL 273

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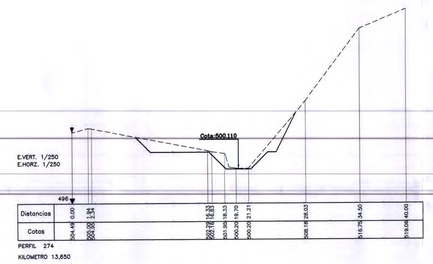

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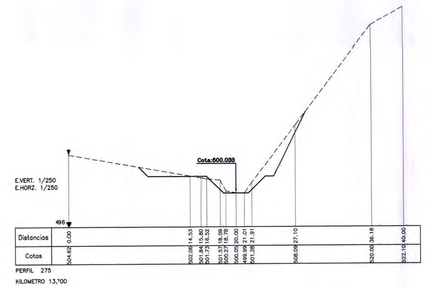

PERFIL 275

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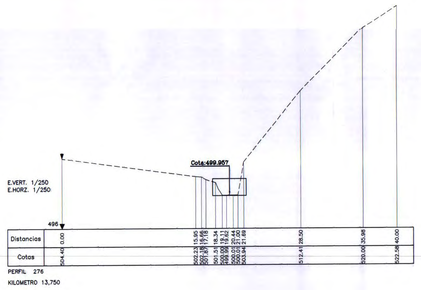

PERFIL 276

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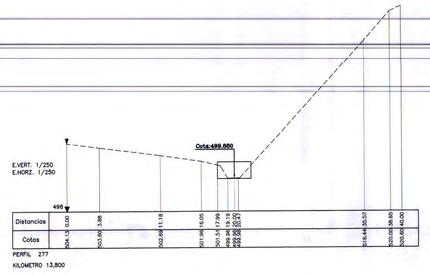

PERFIL 277

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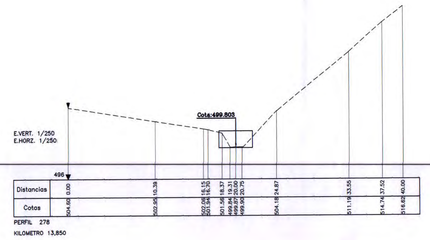

PERFIL 278

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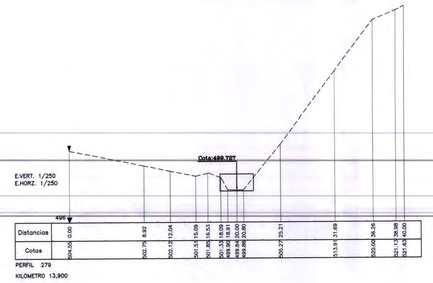

PERFIL 279

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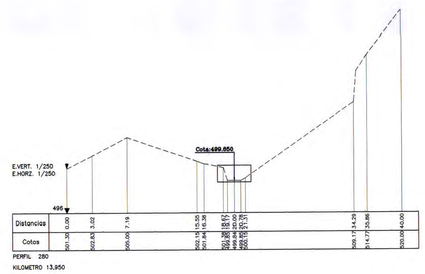

PERFIL 280

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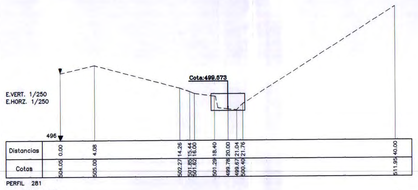
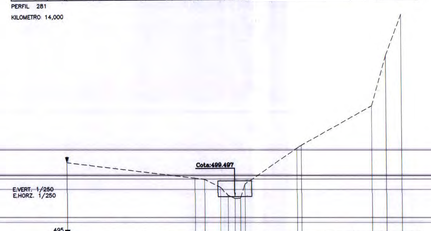


PERFIL 281

KILOMETRO 14,000



PERFIL 282

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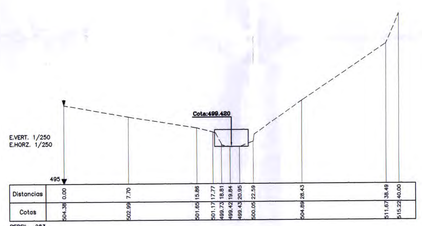

PERFIL 283

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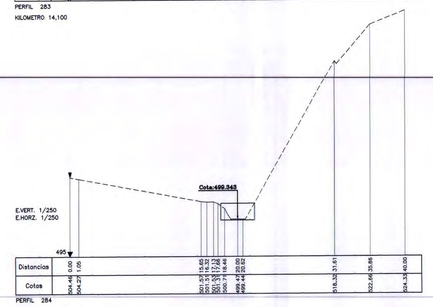

PERFIL 284

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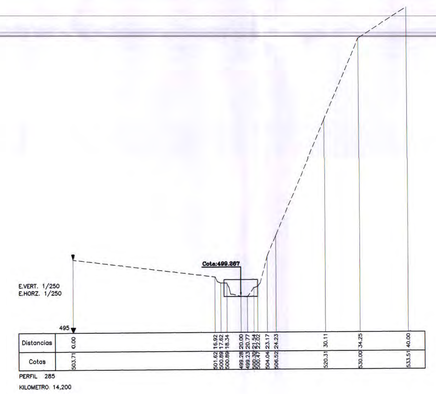

PERFIL 285

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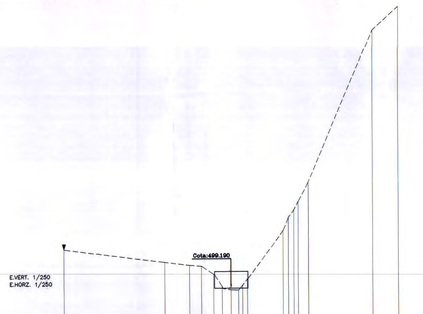

PERFIL 286

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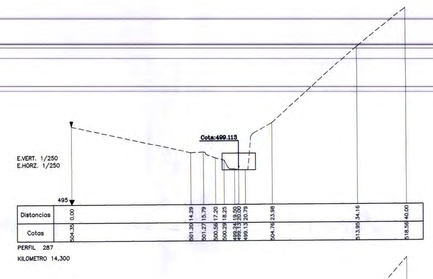

PERFIL 287

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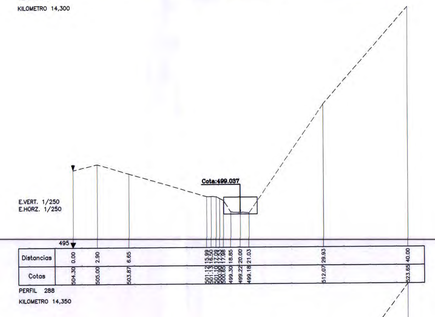

PERFIL 288

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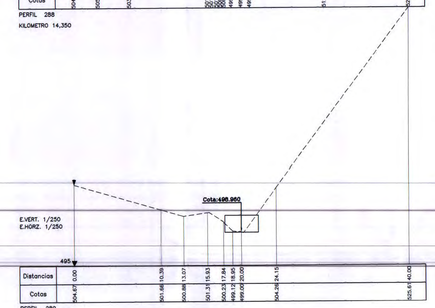

PERFIL 289

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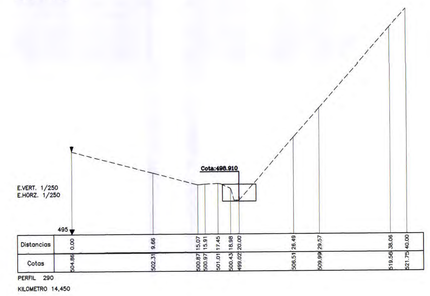

PERFIL 290

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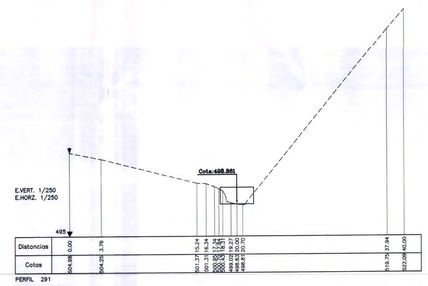

PERFIL 291

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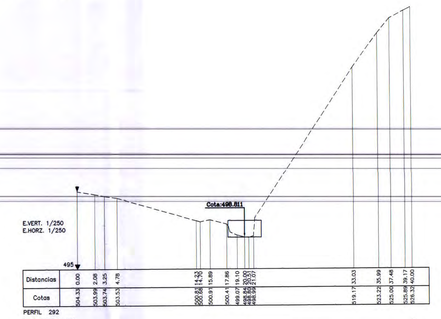

PERFIL 292

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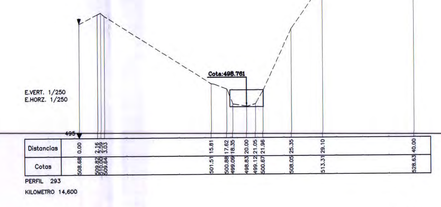

PERFIL 293

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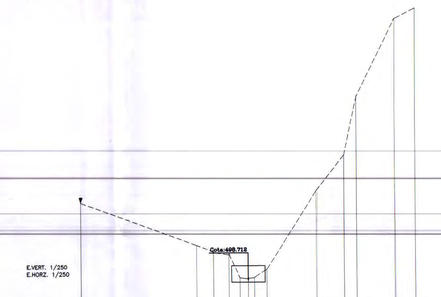

PERFIL 294

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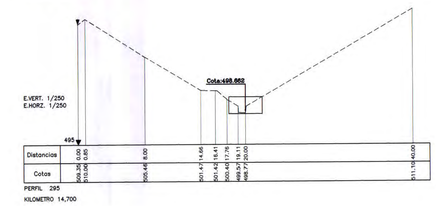

PERFIL 295

KILOMETRO 14,700

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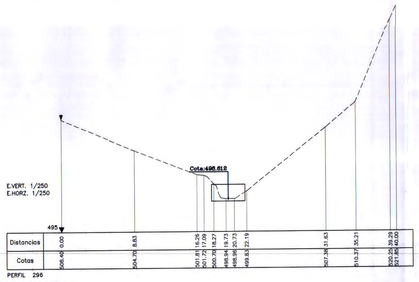
Estudio

ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

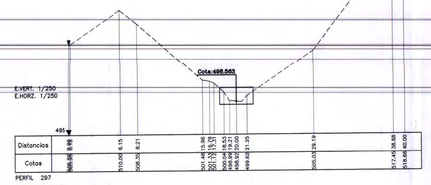
Título

PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 13,550 AL KM 14,700 LÁMINA 12/15

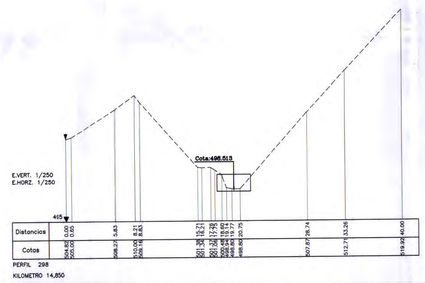
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR : HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-12



PERFIL 296
KILOMETRO 14,750



PERFIL 297
KILOMETRO 14,800



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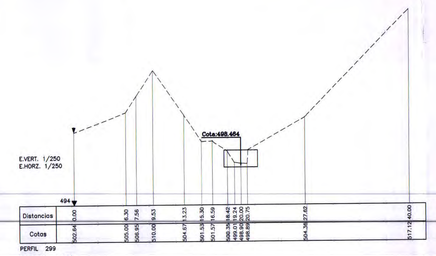
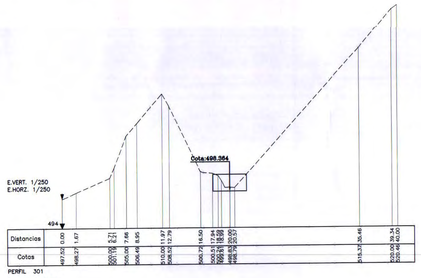


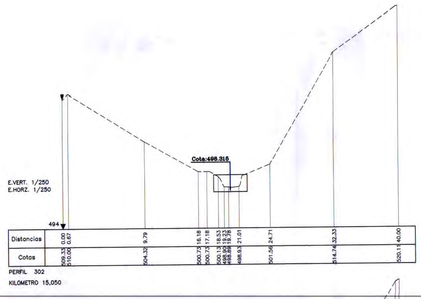
PERFIL 299
KILOMETRO 14,900

PERFIL 300
KILOMETRO 14,950



PERFIL 301
KILOMETRO 15,000

PERFIL 301
KILOMETRO 15,000



PERFIL 302
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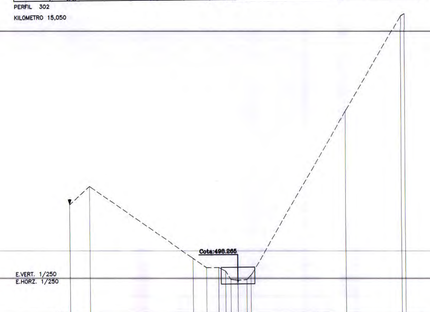

PERFIL 303
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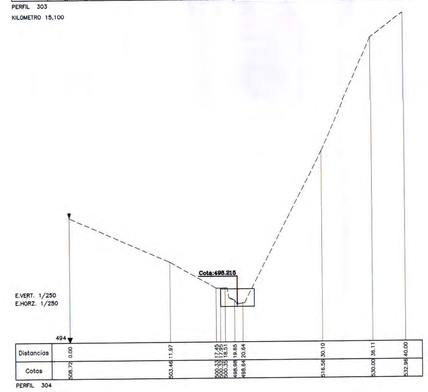

PERFIL 304
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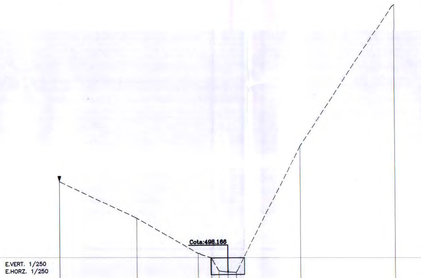
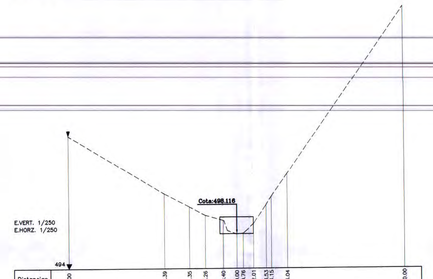


PERFIL 305
KILOMETRO 15,200



PERFIL 306
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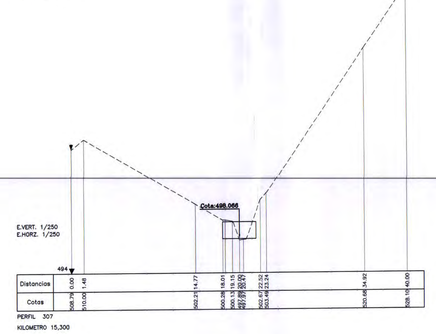

PERFIL 307
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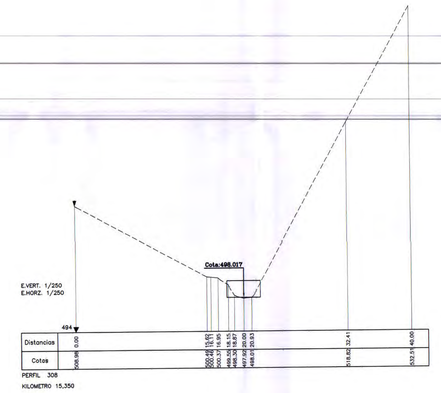
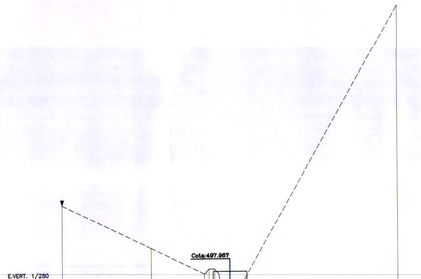
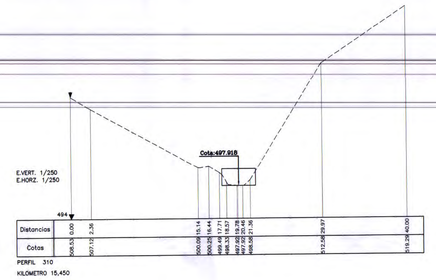


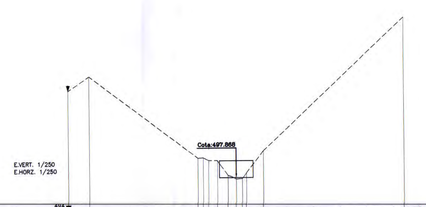
PERFIL 308
KILOMETRO 15,350



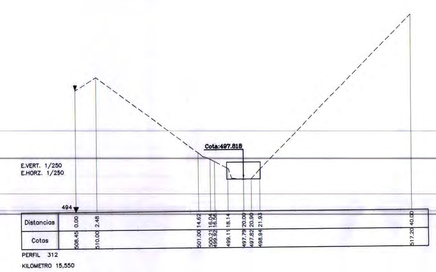
PERFIL 309
KILOMETRO 15,400



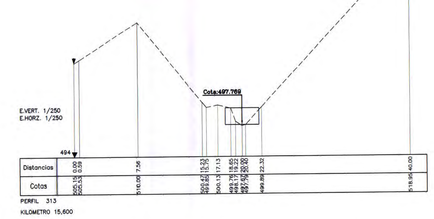
PERFIL 310
KILOMETRO 15,450



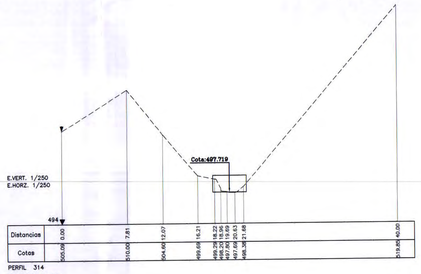
PERFIL 311
KILOMETRO 15,500



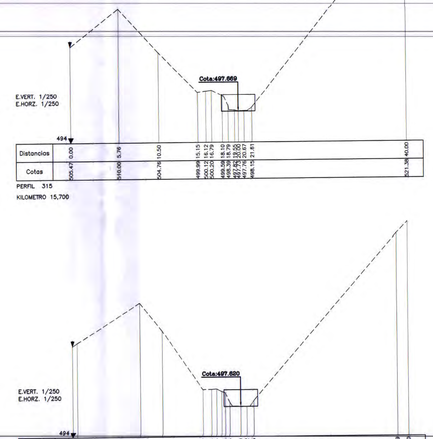
PERFIL 312
KILOMETRO 15,550



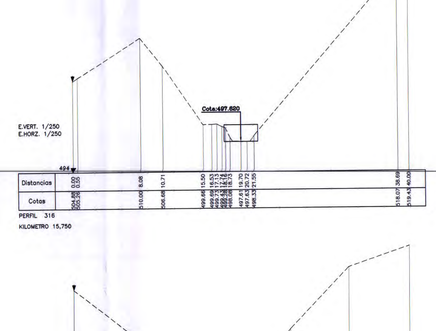
PERFIL 313
KILOMETRO 15,600



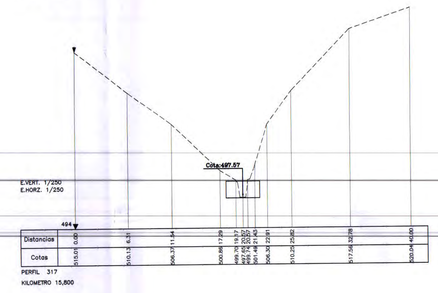
PERFIL 314
KILOMETRO 15,650



PERFIL 315
KILOMETRO 15,700



PERFIL 316
KILOMETRO 15,750



PERFIL 317
KILOMETRO 15,800

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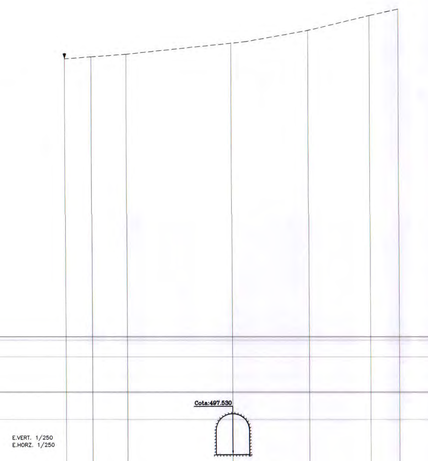
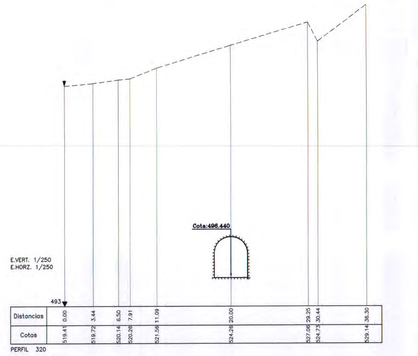
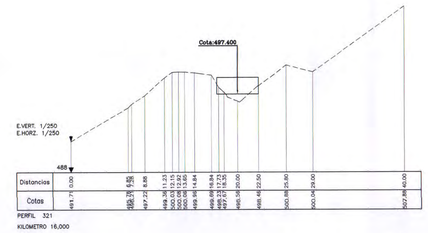
Estudio
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

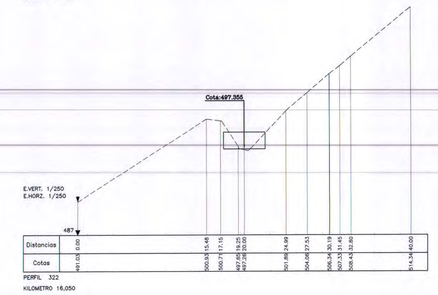
Título
PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 14,750 AL KM 15,800
LÁMINA 13/15

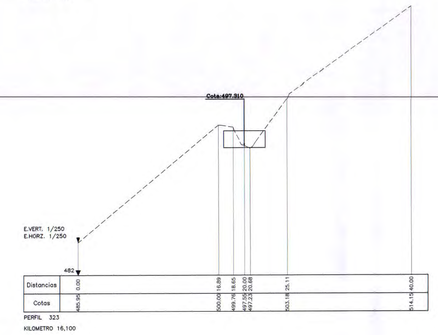
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR : HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-13

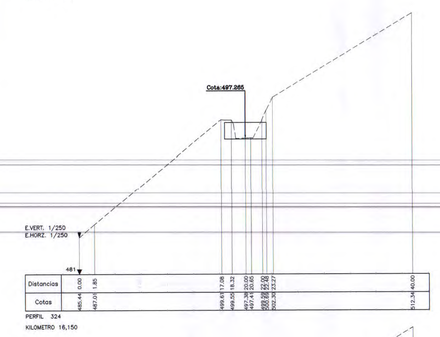


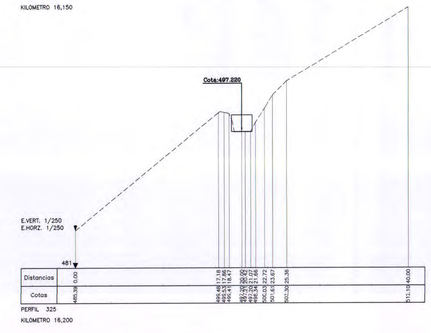


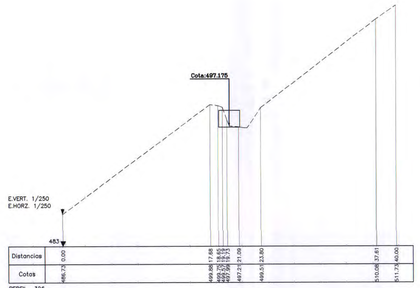


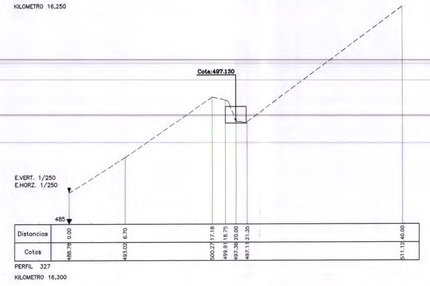


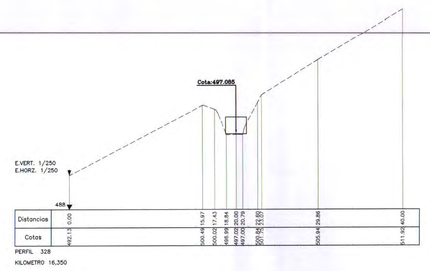


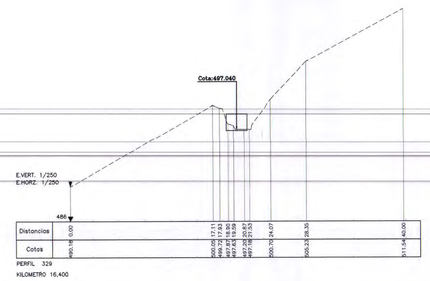


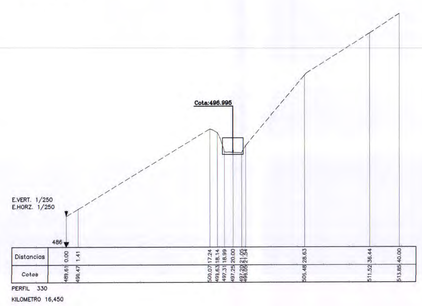


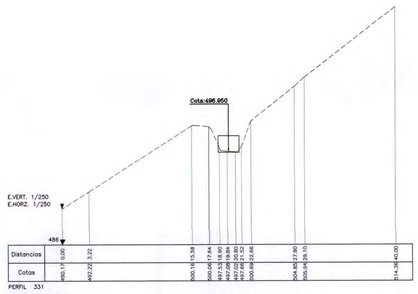


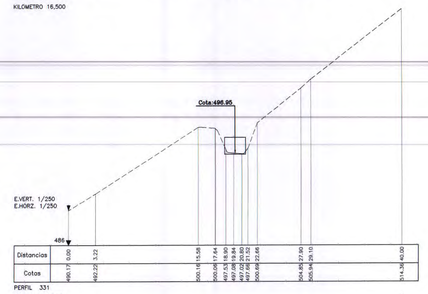


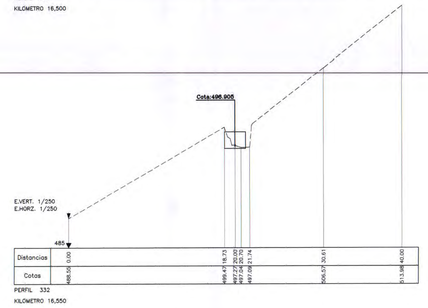


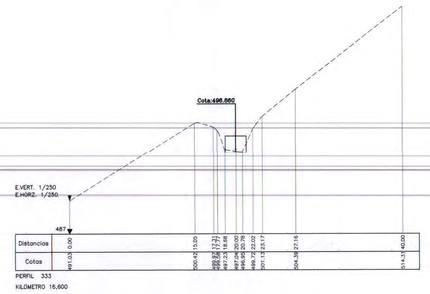


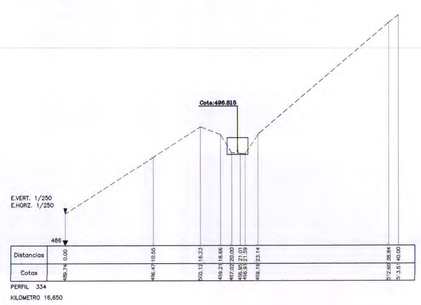


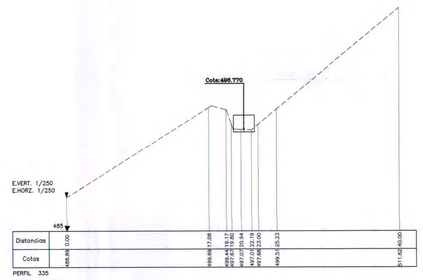


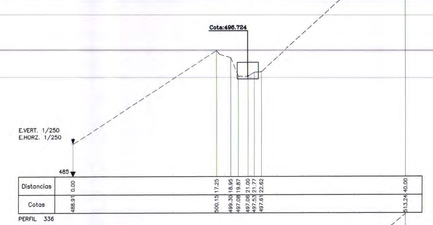


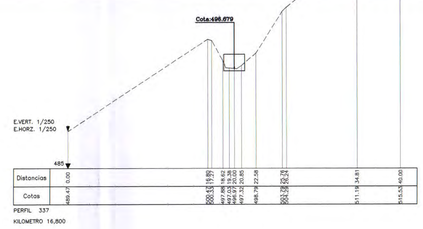


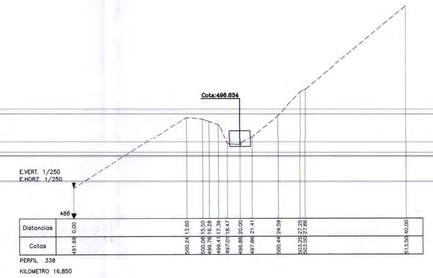


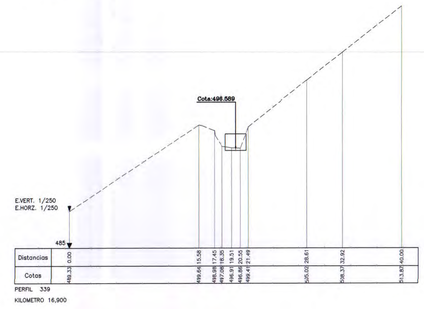












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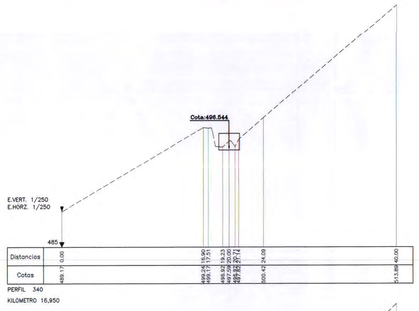
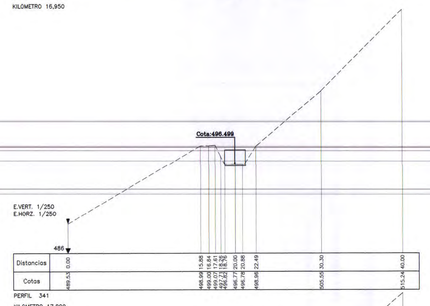
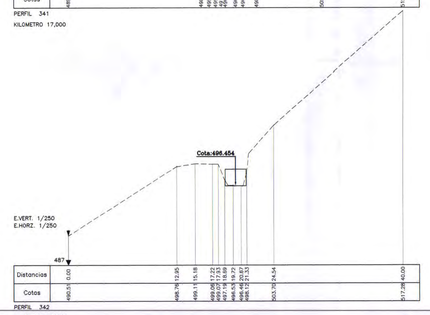
Estudio	Título			
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA	PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU KM 15,850 AL KM 16,900 LÁMINA 14/15			
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-14



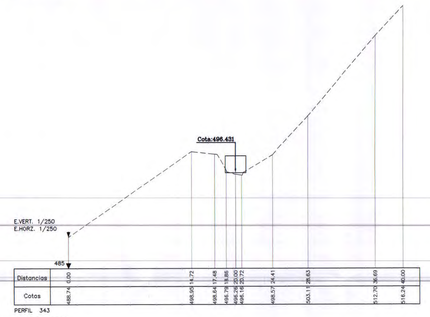
PERFIL 340
KILOMETRO 16,950



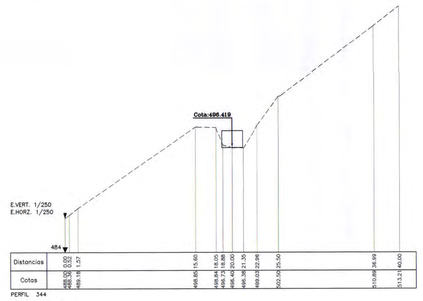
PERFIL 341
KILOMETRO 17,000



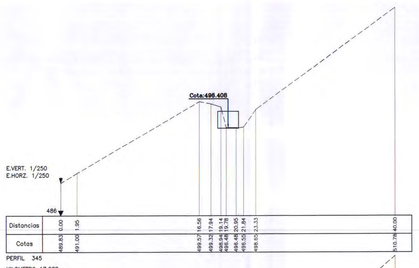
PERFIL 342
KILOMETRO 17,050



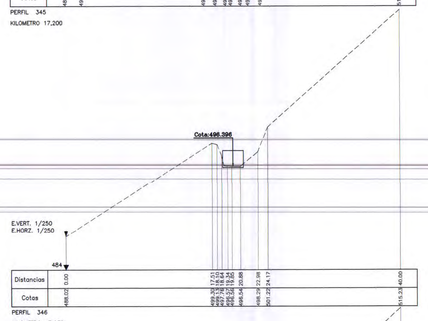
PERFIL 343
KILOMETRO 17,100



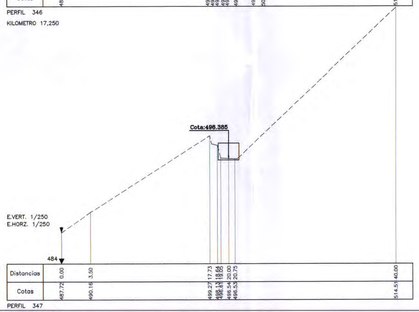
PERFIL 344
KILOMETRO 17,150



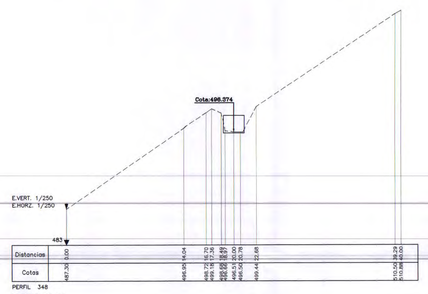
PERFIL 345
KILOMETRO 17,200



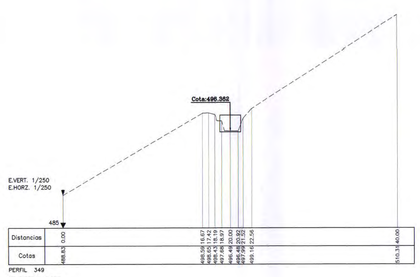
PERFIL 346
KILOMETRO 17,250



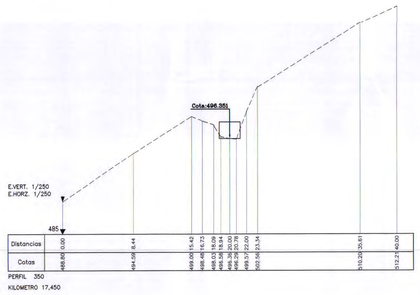
PERFIL 347
KILOMETRO 17,300



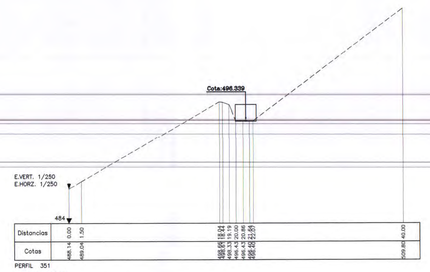
PERFIL 348
KILOMETRO 17,350



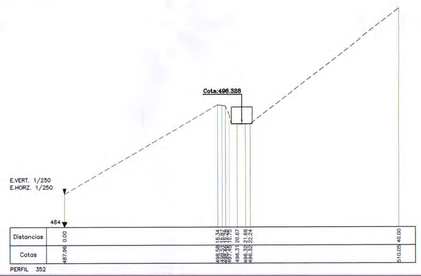
PERFIL 349
KILOMETRO 17,400



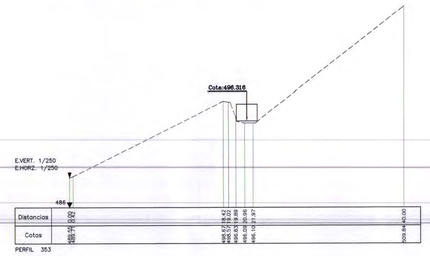
PERFIL 350
KILOMETRO 17,450



PERFIL 351
KILOMETRO 17,500



PERFIL 352
KILOMETRO 17,550



PERFIL 353
KILOMETRO 17,600

COMISIÓN NACIONAL DE RIEGO

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Estudio
ESTUDIO DE PREFACTIBILIDAD
MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

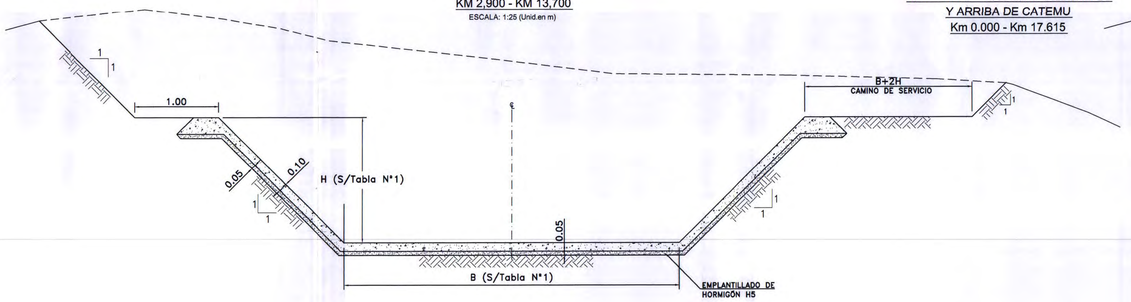
Título
PERFILES TRANSVERSALES CANAL UNIFICADO Y ARRIBA DE CATEMU
KM 16,950 AL KM 17,600
LÁMINA 15/15

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
1:250	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Estudio Integral de los Valles Aconcagua, Putaendo, Ligua y Petorca, CNR-CICA 1982	Julio 2012	PTCA-15

SECCIONES TIPICAS
REVESTIMIENTO CANAL UNIFICADO
Y ARRIBA DE CATEMU
Km 0.000 - Km 17.615

TIPO 1 CORTE - CORTE
KM 2,900 - KM 13,700

ESCALA: 1:25 (Unid.en m)



TIPO 2 CORTE- CORTE
KM 0,000 - KM 2,900

ESCALA: 1:25 (Unid.en m)

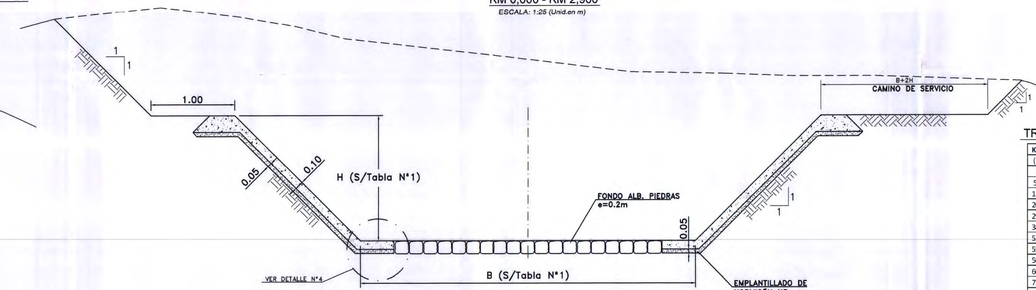
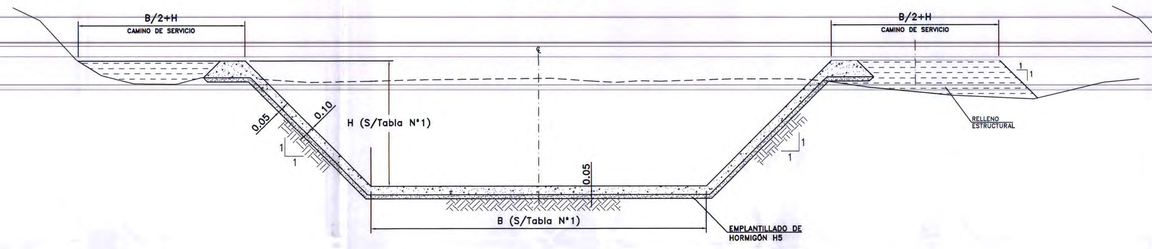


TABLA N°1
TRAMOS CON SECCIÓN TRANSVERSAL TIPO

Km i (m)	Km f (m)	B (m)	H (m)	k	i	TIPO	Característica
0	590	3	1.7	1	0.001949153	2	Trapecial
590	1100	3	1.7	1	0.002196078	2	Trapecial
1100	2000	4	1.7	1	0.001644444	2	Trapecial
2000	2900	4	1.9	1	0.001684444	1	Trapecial
2900	3800	4	1.9	1	0.000704444	1	Trapecial
3800	5200	4	1.6	1	0.001107143	1	Trapecial
5200	5516	4	1.5	1	0.001246835	1	Trapecial
5516	5675	4	3	0	0.003471698	1	Tunel
5675	6000	3	1.5	1	0.001827692	1	Trapecial
6000	7200	3	1.7	1	0.001591667	1	Trapecial
7200	8130	3	1.7	1	0.001344086	1	Trapecial
8130	8900	3	1.75	1	0.000948052	1	Trapecial
8900	11000	3	1.6	1	0.001752381	1	Trapecial
11000	12200	3	1.6	1	0.001491667	1	Trapecial
12200	13200	3	1.6	1	0.0015	1	Trapecial
13200	13700	3	2	1	0.001533333	1	Trapecial
13700	14400	4	2	0	0.001533333	3	Rectangular
14400	15800	4	2	0	0.000992857	3	Rectangular
15800	16000	5	3	0	0.00085		Tunel
16000	16150	5	2	0	0.000900749	3	Rectangular
16150	17068	2.5	2	0	0.000900749	4	Rectangular
17068	17615	2.5	2	0	0.000228519	4	Rectangular

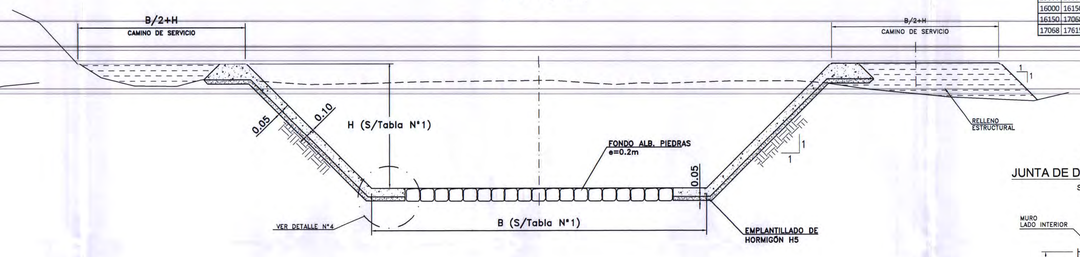
TIPO 1 RELLENO - RELLENO
KM 2,900 - KM 13,700

ESCALA: 1:25 (Unid.en m)

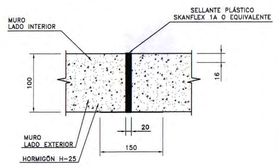


TIPO 2 RELLENO - RELLENO
KM 2,900 - KM 13,700

ESCALA: 1:25 (Unid.en m)

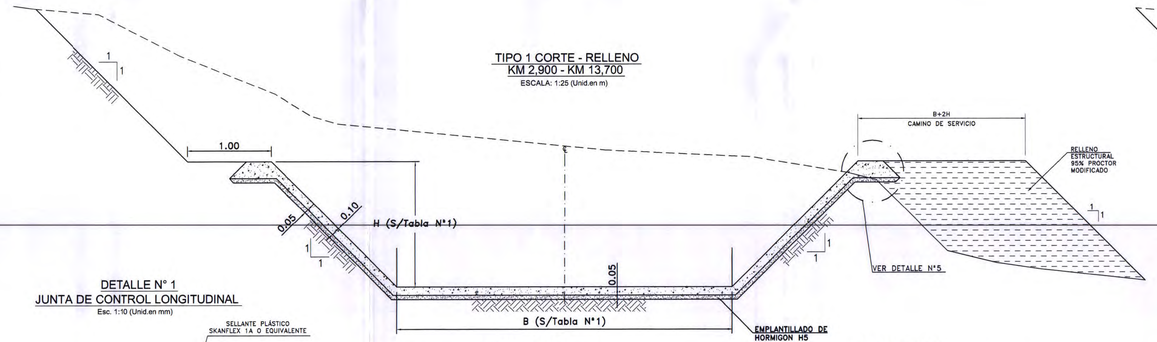


DETALLE N° 3
JUNTA DE DILATACIÓN TRANSVERSAL
Sin Escala (Unid.en mm)



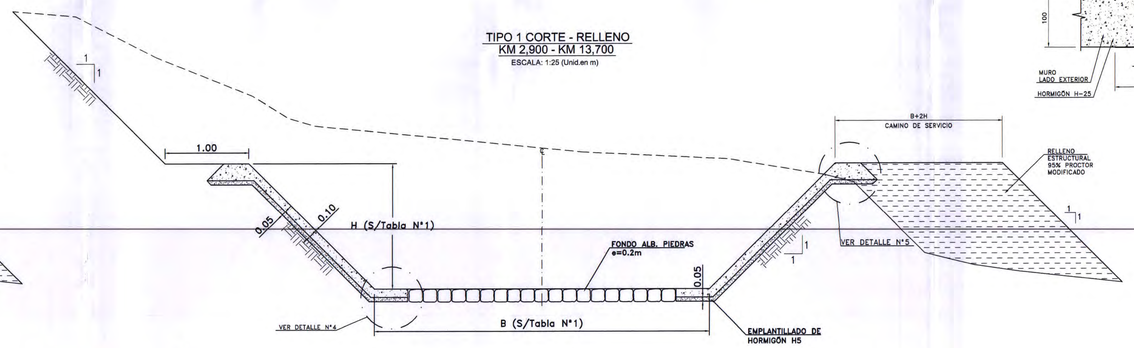
TIPO 1 CORTE - RELLENO
KM 2,900 - KM 13,700

ESCALA: 1:25 (Unid.en m)

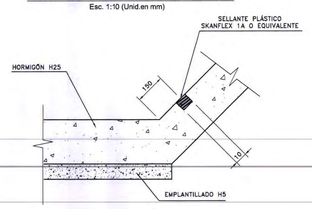


TIPO 1 CORTE - RELLENO
KM 2,900 - KM 13,700

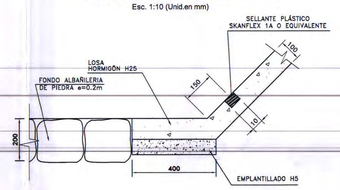
ESCALA: 1:25 (Unid.en m)



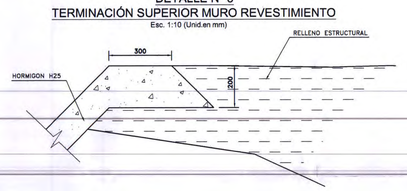
DETALLE N° 1
JUNTA DE CONTROL LONGITUDINAL
Esc. 1:10 (Unid.en mm)



DETALLE N° 4
JUNTA DE CONTROL LONGITUDINAL
Esc. 1:10 (Unid.en mm)

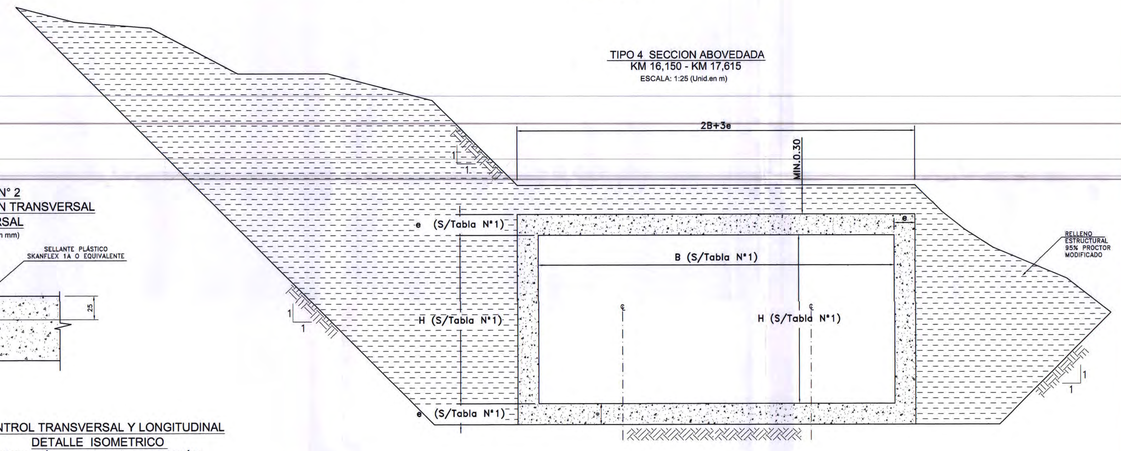


DETALLE N° 5
TERMINACIÓN SUPERIOR MURO REVESTIMIENTO
Esc. 1:10 (Unid.en mm)

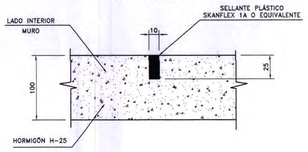


TIPO 4 SECCION ABOVEDADA
KM 16,150 - KM 17,615

ESCALA: 1:25 (Unid.en m)

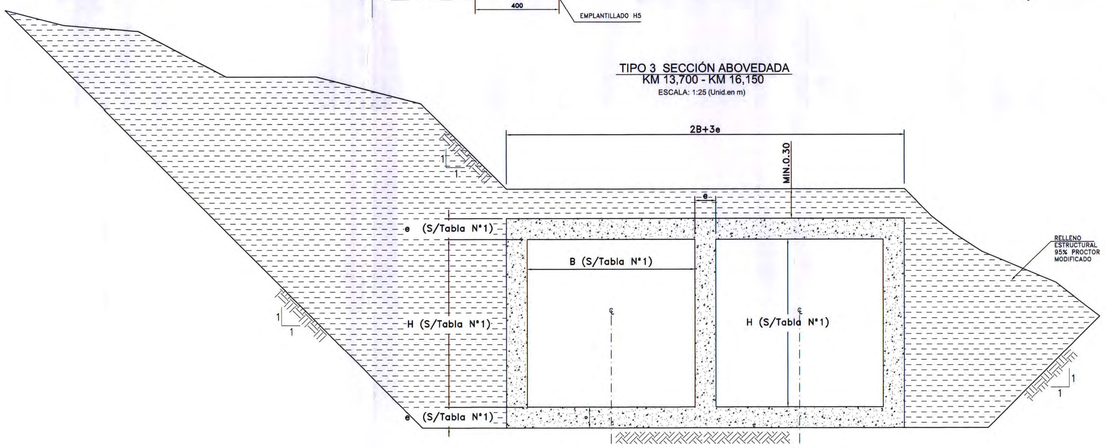


DETALLE N° 2
JUNTA DE CONTRACIÓN TRANSVERSAL
TRANSVERSAL
Sin Escala (Unid.en mm)



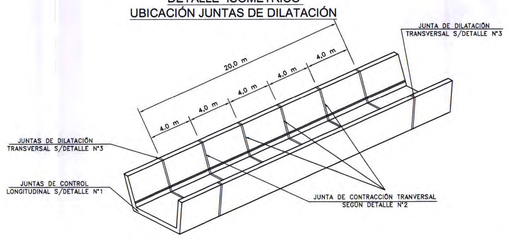
TIPO 3 SECCIÓN ABOVEDADA
KM 13,700 - KM 16,150

ESCALA: 1:25 (Unid.en m)



NOTA: CAJON H.A SEGUN PLANO TIPO M.C VOL.4 LAMINAS 4.103.801; 4.103.802; 4.103.804
MUROS ALA SEGUN PLANO TIPO M.C VOL.4 LAMINAS 4.103.301; 4.103.302; 4.103.303

CONTROL TRANSVERSAL Y LONGITUDINAL
DETALLE ISOMETRICO
UBICACIÓN JUNTAS DE DILATACIÓN



NOTA: CAJÓN H.A SEGÚN PLANO TIPO M.C VOL.4 LAMINAS 4.103.701; 4.103.702; 4.103.705
MUROS ALA SEGÚN PLANO TIPO M.C VOL.4 LAMINAS 4.103.201; 4.103.204;

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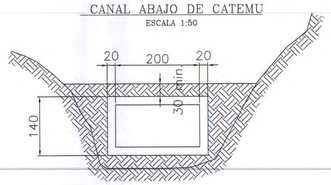
Estudio	Título		
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA	SECCIONES TIPIFICADAS REVESTIMIENTO CANAL UNIFICADO ARRIBA CATEMU		
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	OBR-01

SECCIÓN TIFICADA REVESTIMIENTO CANAL ABAJO DE CATEMU

ESCALA 1:50



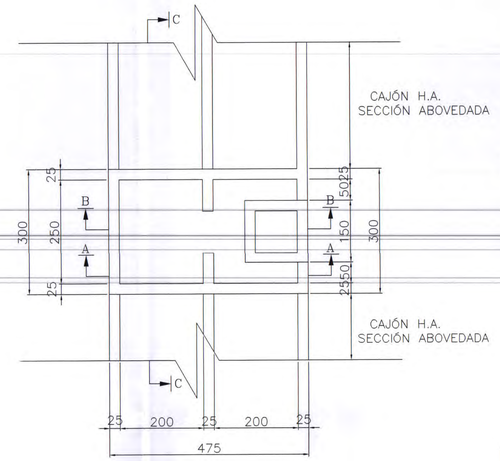
NOTA:

-SECCIÓN CAJÓN SEGÚN M.C.V.4 LÁMINAS 4.103.701;4.103.702 Y 4.103.704.
-MUROS SEGÚN M.C.V.4 LÁMINAS 4.103.201;4.103.202 Y 4.103.203.

Km inicial (m)	Km final (m)	B (m)	H (m)	e (m)
0.00	1700.00	2.00	1.00	0.20

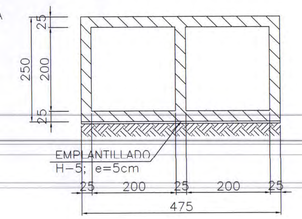
PLANTA CÀMARA DE INSPECCIÒN (TIPO 1)

ESCALA 1:50



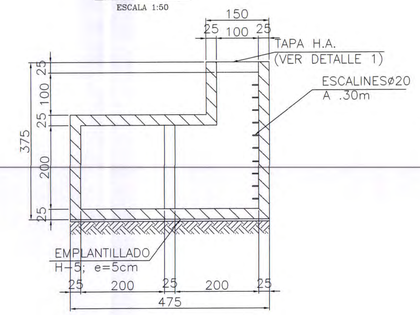
CORTE A-A

ESCALA 1:50



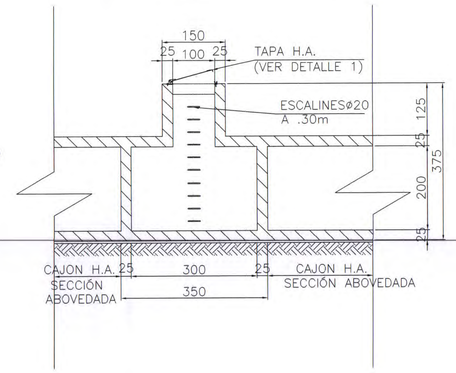
CORTE B-B

ESCALA 1:50



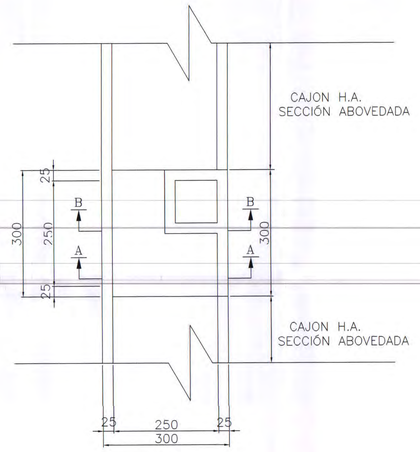
CORTE C-C

ESCALA 1:50



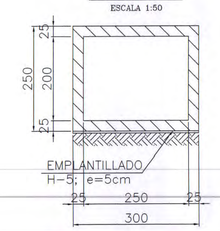
PLANTA CÀMARA DE INSPECCIÒN (TIPO 2)

ESCALA 1:50



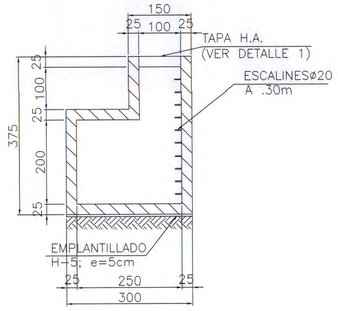
CORTE A-A

ESCALA 1:50



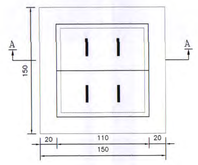
CORTE B-B

ESCALA 1:50



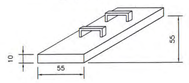
PLANTA DETALLE TAPA

ESCALA 1:25



DETALLE TAPA

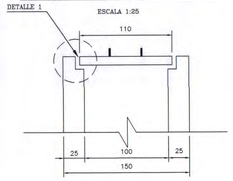
ESCALA 1:25



CORTE A-A DETALLE TAPA

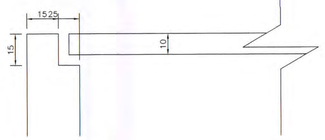
DETALLE 1

ESCALA 1:25



DETALLE 1

ESCALA 1:10



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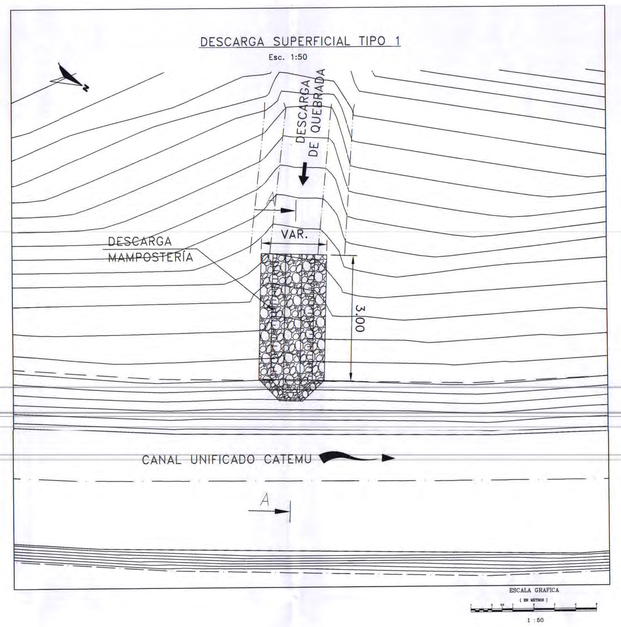
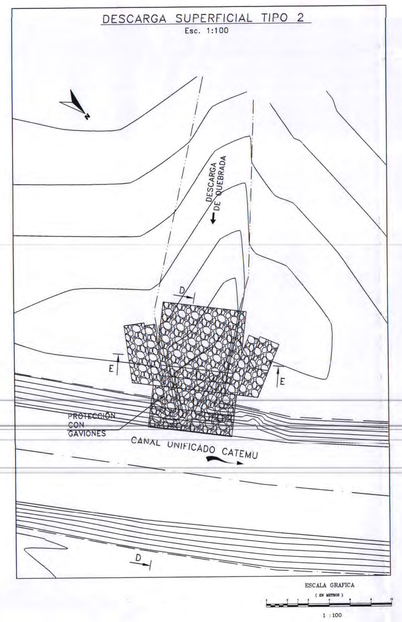
Estudio	Título
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA	SECCIONES TIPIFICADAS REVESTIMIENTO CANAL ABAJO DE CATEMU Y CÁMARA DE INSPECCIÓN

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	OBR-02

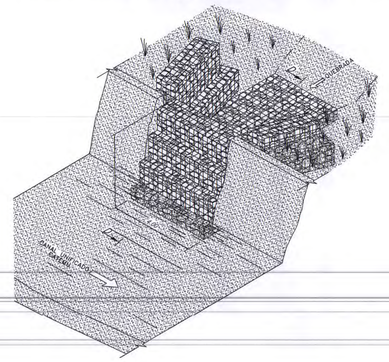
DESCARGA SUPERFICIAL TIPO 1
Esc. 1:50



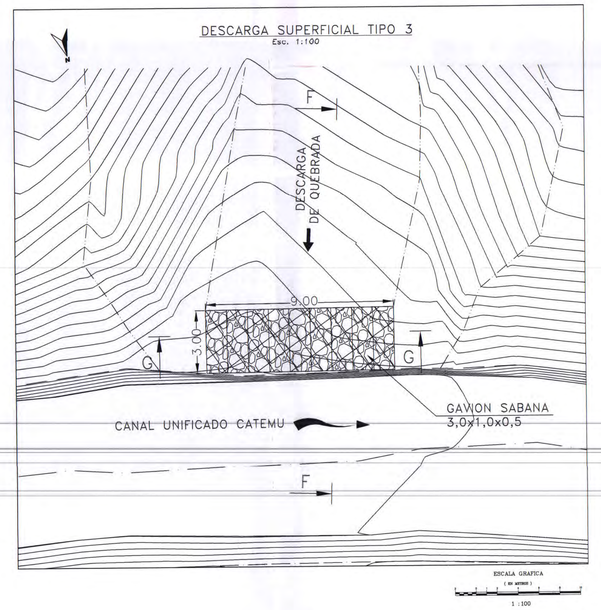
DESCARGA SUPERFICIAL TIPO 2
Esc. 1:100



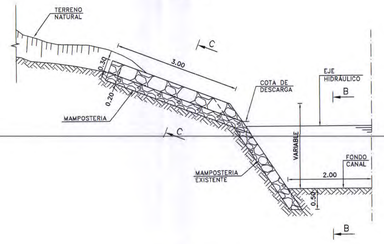
VISTA ISOMÉTRICA DESCARGA SUPERFICIAL TIPO 2
Esc. 1:100



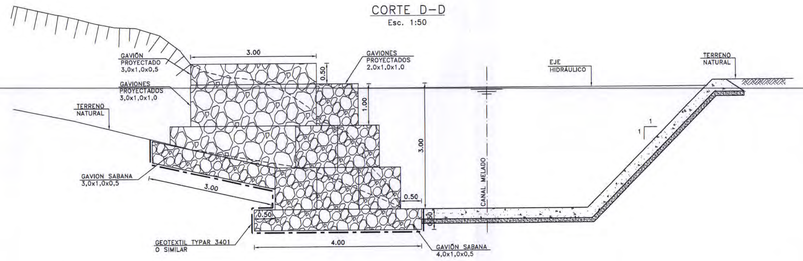
DESCARGA SUPERFICIAL TIPO 3
Esc. 1:100



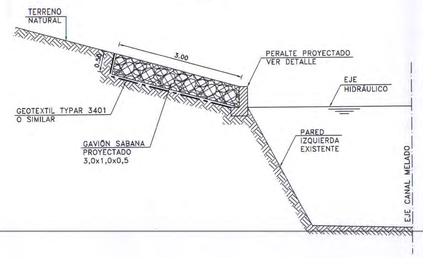
CORTE A–A
Esc. 1:50



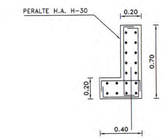
CORTE D–D
Esc. 1:50



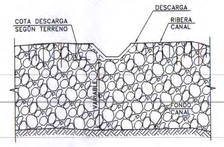
CORTE F–F
Esc. 1:50



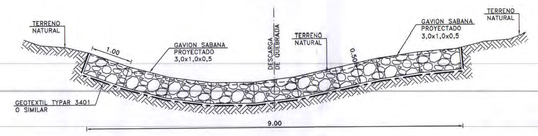
DETALLE PERALTE PROYECTADO
Esc. 1:20 (Unid.en m)



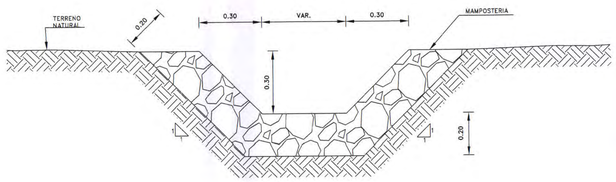
SECCIÓN B–B
Esc. 1:50



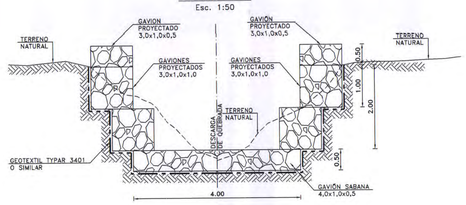
CORTE G–G
Esc. 1:50



SECCION C–C
Esc. 1:10 (Unid.en m)



CORTE E–E
Esc. 1:50



CUADRO DE UBICACIÓN DE OBRAS

Codificación	UTM Este (m)	UTM Norte (m)	Kilometraje (m)	CAUDAL (m3/s) T = 20 años	TIPO DE OBRA
Q_1	318,119	6,372,458	14,815	0,59	3
Q_2	318,624	6,372,551	14,260	1,26	1
Q_3	318,768	6,372,569	14,110	0,64	3
Q_4	319,22	6,372,513	13,550	1,62	1
Q_5	319,563	6,372,324	13,200	5,16	2
Q_6	319,598	6,372,234	13,100	1,3	2
Q_7	319,646	6,372,110	13,000	0,71	3
Q_8	319,602	6,371,971	12,860	0,44	3
Q_9	320,026	6,371,690	12,680	0,16	3
Q_10	320,444	6,371,544	11,040	1,61	1
Q_11	321,052	6,371,819	9,570	0,33	3
Q_12	326,740	6,373,545	1,45	0,2	3
Q_13	326,740	6,373,545	1,255	0,2	3

COMISIÓN NACIONAL DE RIEGO

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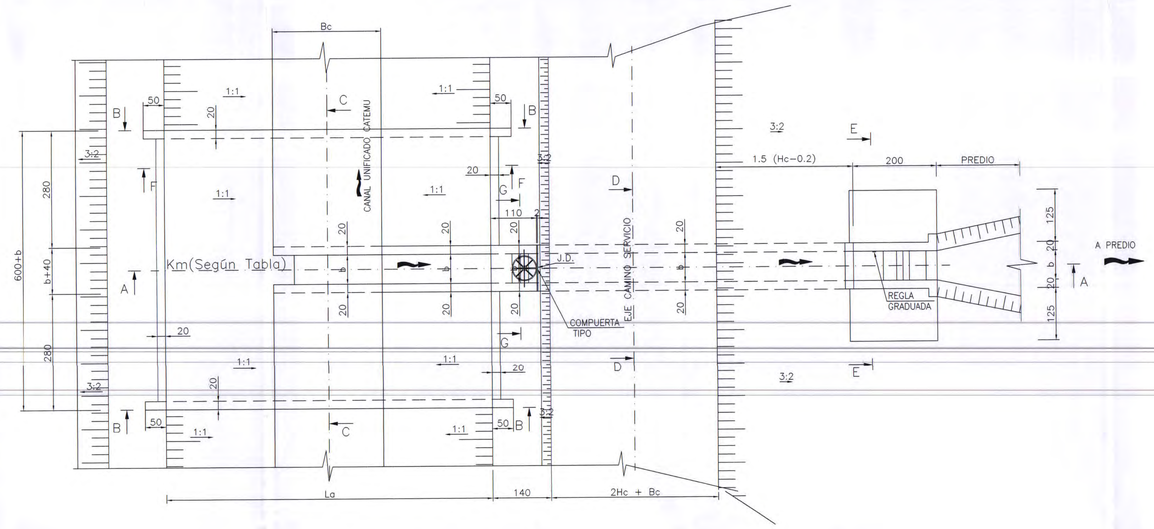
Estudio: ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

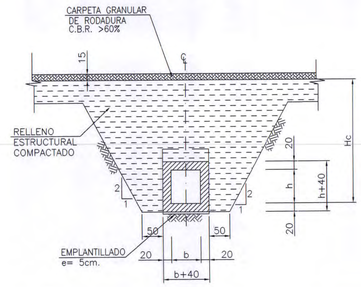
Título: OBRA TIPIFICADAS DE DESCARGA AL CANAL

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	OBR–03

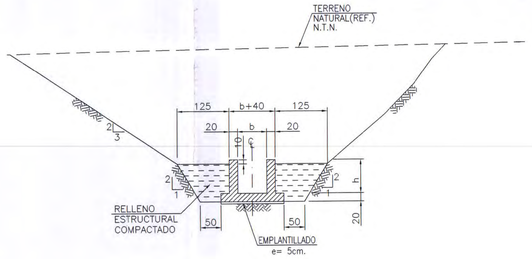
PLANTA OBRA TIPO DE ENTREGA PREDIAL
ESCALA 1:50



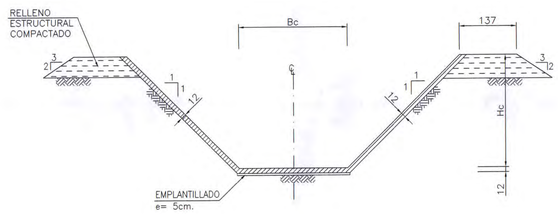
CORTE D-D
ESCALA 1:50



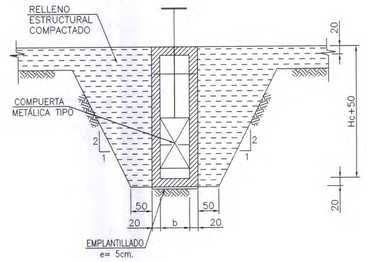
CORTE E-E
ESCALA 1:50



CORTE F-F
ESCALA 1:50

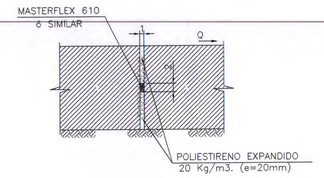


CORTE G-G
ESCALA 1:50



CORTE A-A
ESCALA 1:50

DETALLE JUNTA DE DILATACIÓN (J.D.)
ESCALA 1 : 50



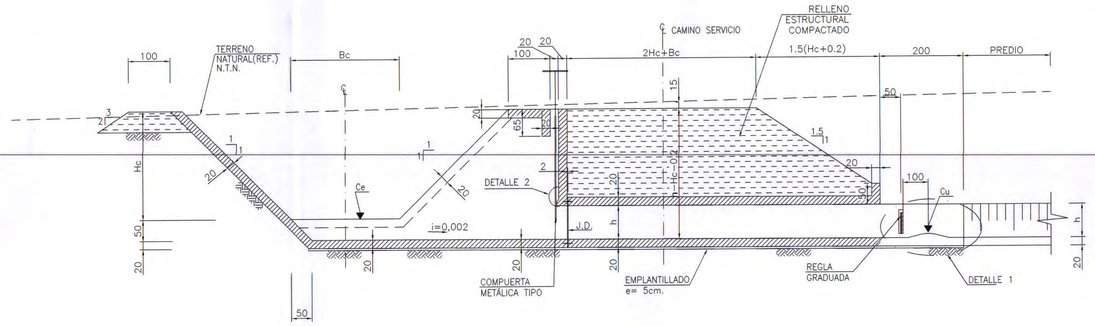
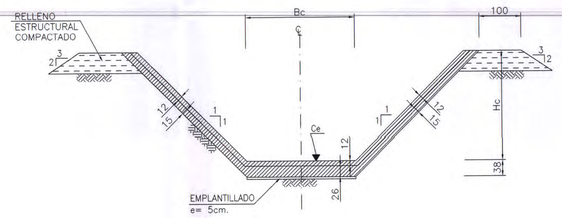


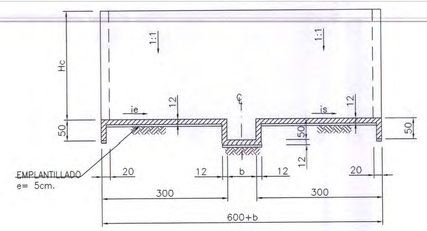
TABLA DE UBICACIÓN DE OBRAS

Nº	Km	Bc	Hc	Ce	h	b	a
	(m)	(m)	(m)	(msnm)	(m)	(m)	(m)
1	1.45	4	1.7	517.804	0.5	0.5	0.2
2	7.225	3	1.7	509.716	0.5	0.5	0.2
3	7.4	3	1.7	509.481	0.5	0.5	0.2
4	8.87	3	1.75	507.798	0.5	0.5	0.2
5	12.8	3	1.6	501.400	0.5	0.5	0.2
6	13.35	3	2	500.570	0.5	0.5	0.2

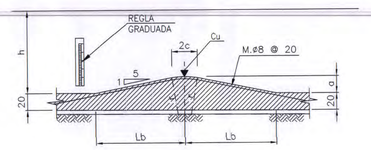
CORTE B-B
ESCALA 1:50



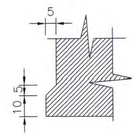
CORTE C-C
ESCALA 1:50



DETALLE 1
GRADA AFORADOR
ESCALA 1:25



DETALLE 2
ESCALA 1:10



NOTAS GENERALES :

1.- DIMENSIONES EN METROS Y ELEVACIONES EN m.s.n.m. (SIC).
2.- MATERIALES:
- HORMIGÓN SIMPLE: H-20, 90% N.C.
- HORMIGÓN ESTRUCTURAS: H-25, 90% N.C.
- HORMIGÓN EMPLANTILLADO: H-5, e= 5cm
- ACERO REFUERZO: CALIDAD A63-42H
- ACERO ESTRUCTURAL: CALIDAD A37-24ES

3.- RECUBRIMIENTOS: 5cm
4.- RELLENO COMÚN COMPACTADO CON DENSIDAD SECA DE COMPACTACIÓN DE A LO MENOS EL 90% DE LA DENSIDAD SECA MÁXIMA PROCTOR MODIFICADO.

ESPECIFICACIONES TECNICAS :

1.- DIMENSIONES EN CENTÍMETROS Y ELEVACIONES EN m.s.n.m. (SIC).
2.- MATERIALES:
- HORMIGÓN: H-30 CON 90 % DE NIVEL DE CONFIANZA
- ACERO REFUERZO : CALIDAD A63-42H
- EMPLANTILLADO HORMIGÓN H-5 e=5 cm.
- RECUBRIMIENTO DE ARMADURA: 5 cm.

3.- DESCUENTO POR DOBLECES EN TERRENO.
4.- NOTAS SOBRE EL SUELO DE FUNDACIÓN DE ACUERDO A INFORME GEOTÉCNICO KBA 093-B/2006.
- NO SE DEBE FUNDAR EN SUELOS DE ALTA PLASTICIDAD (MH Y CH) SE DEBE USAR MATERIAL DE REEMPLAZO PARA EL SUELO DE FUNDACIÓN.

5.- MAMPOSTERÍA DE PIEDRA
- VOL e=0.20m. : > 15 Lts.
- VOL e=0.30m. : > 15 Lts.
- MORTERO DE PEGA : 1:3 - CEMENTO:ARENA

6.- CARGA DE TRANSITO : CAMIÓN AASHTO H-15
7.- RELLENO ESTRUCTURAL: USAR ESTABILIZADO NATURAL PROVENIENTE DE LAS EXCAVACIONES, TIPO RIPIO INTEGRAL, COLOCADO EN CAPAS DE 20cm, COMPACTADO A MAXIMA DENSIDAD. USAR HUMEDAD ÓPTIMA.

COMISIÓN NACIONAL DE RIEGO

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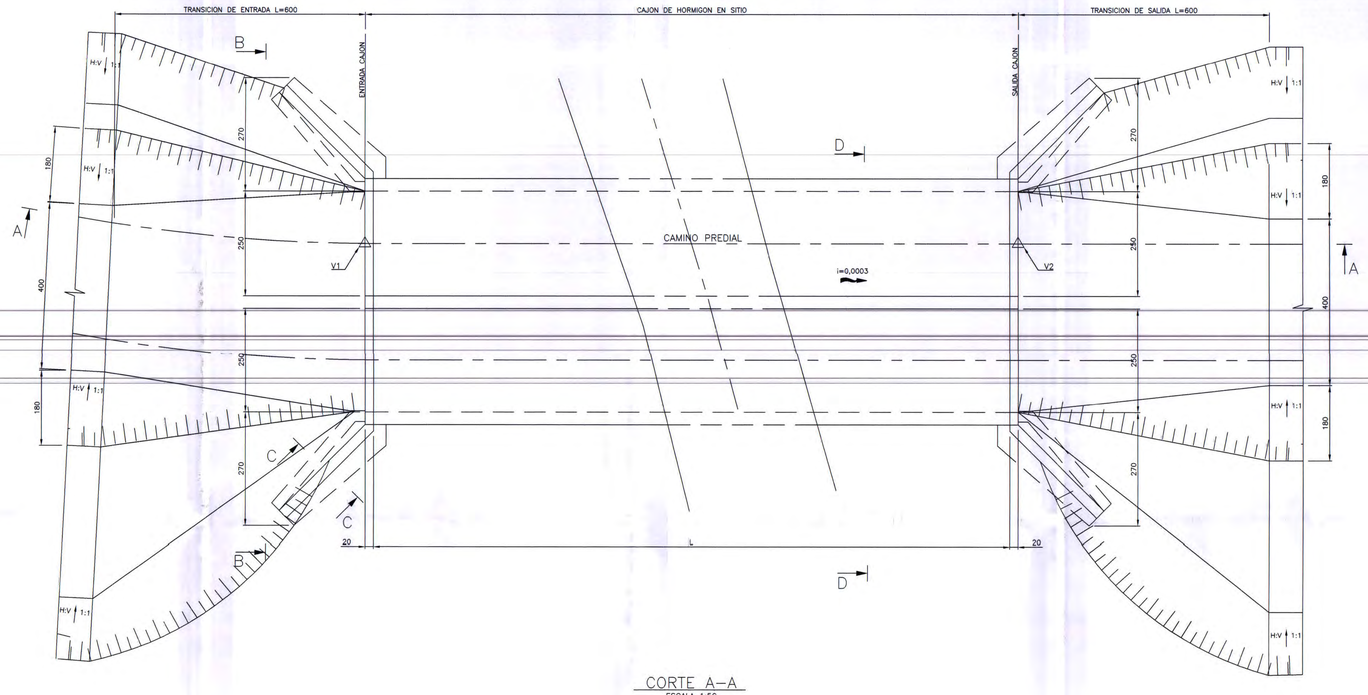
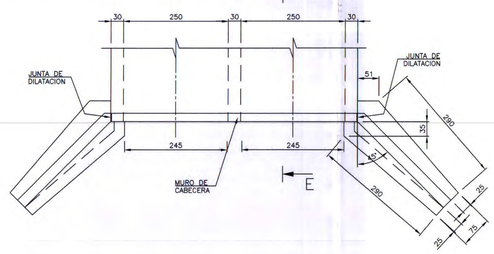
Estudio	Título			
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA	OBRA TIPIFICADA DE ENTREGA PREDIAL			
Escala: LAS INDICADAS	Sistema de Referencia SIRGAS: UNIVERSAL TRANSVERSAL DE MERCATOR : HUSO 19	Fuente Cartográfica: Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Fecha: Julio 2012	Lámina: OBR-04

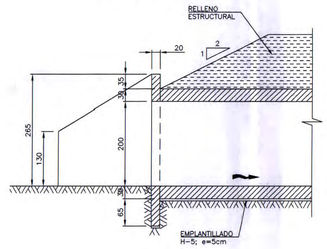
PLANTA
ESCALA 1:50



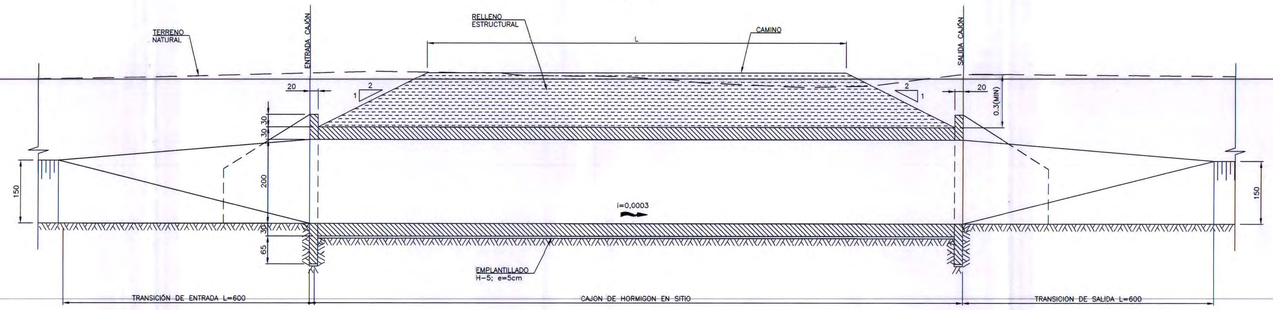
PLANTA MURO ALA
ESCALA 1:50



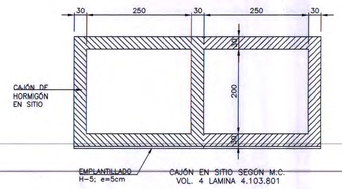
CORTE E–E
ESCALA 1:50



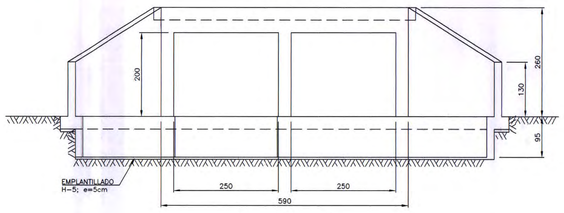
CORTE A–A
ESCALA 1:50



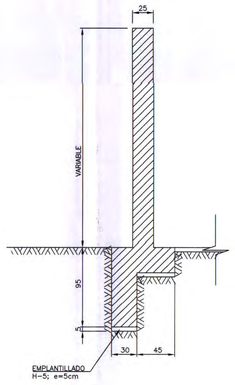
CORTE D–D
ESCALA 1:50



VISTA B–B
ESCALA 1:50



CORTE C–C
ESCALA 1:25



	Kilometraje	Ancho (m)
Puente	0.52	6
Puente	1.26	6
Puente	1.68	6
Puente	3.62	12
Puente	4.27	6
Puente	7.22	6
puente	8.02	6
puente	12.93	6
puente	13.28	6

NOTAS GENERALES :

1.– DIMENSIONES EN CENTÍMETROS (cm) Y ELEVACIONES EN m s.n.m. (S.IC.)
2.– MATERIALES:
- HORMIGÓN SIMPLE: H–20, 90% N.C.
- HORMIGÓN ESTRUCTURAS: H–25, 90% N.C.
- HORMIGÓN EMPLANTILLADO: H–5, e= 5cm
- ACERO REFUERZO: CALIDAD A63–42H
- ACERO ESTRUCTURAL: CALIDAD A37–24ES

3.– RECUBRIMIENTOS: 5cm
4.– RELLENO COMÚN COMPACTADO CON DENSIDAD SECA DE COMPACTACIÓN DE A LO MENOS EL 90% DE LA DENSIDAD SECA MÁXIMA PROCTOR MODIFICADO.

COMISIÓN NACIONAL DE RIEGO

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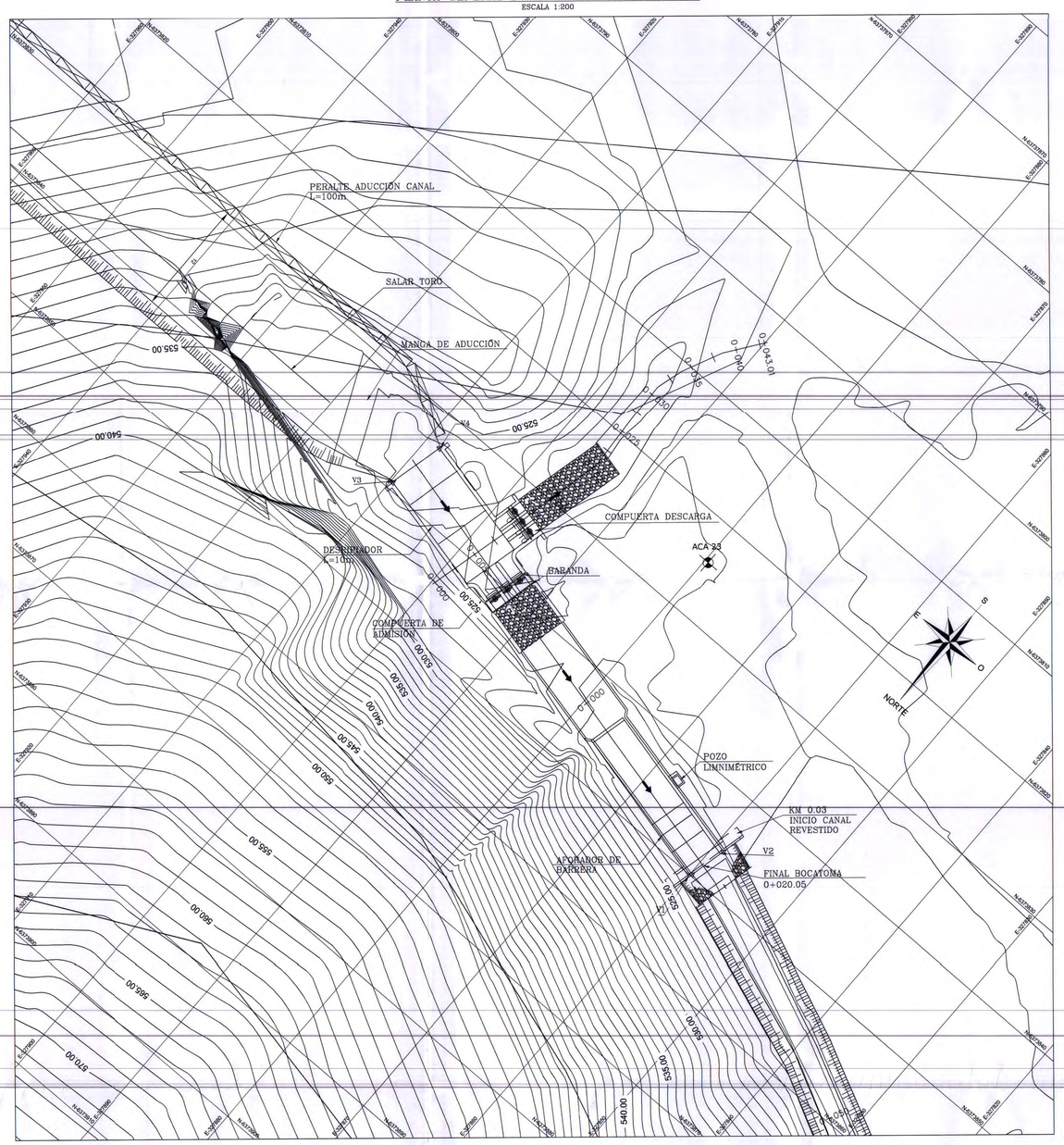
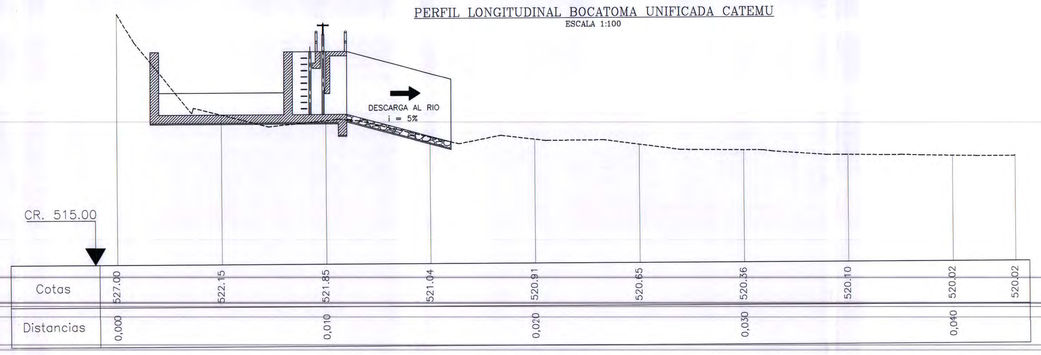
Estudio	Título
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA	OBRA CRUCE DE CAMINO

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	OBR–05

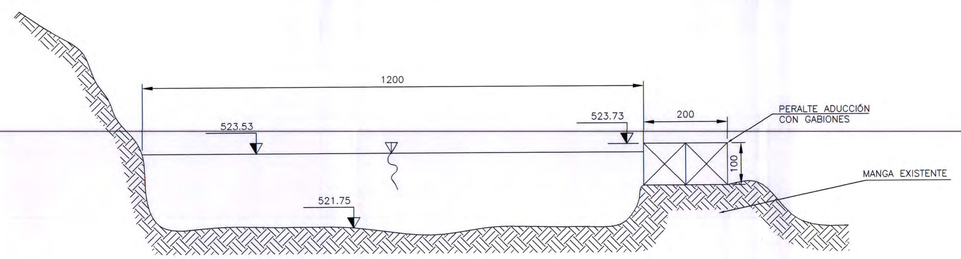
PLANTA GENERAL BOCATOMA UNIFICADA CATEMU
ESCALA 1:200



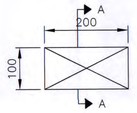
PERFIL LONGITUDINAL BOCATOMA UNIFICADA CATEMU
ESCALA 1:100



SECCIÓN TÍPICA DE PERALTE
ESCALA 1:50



GAVIÓN TÍPICO
ESCALA 1:50



CORTE A–A
ESCALA 1:50

CUADRO DE COORDENADAS CALICATAS EXISTENTES

Nº	Este	Norte
C1	327860	6373846
C2	327342	6373932
C3	326732	6373538
C4	326621	6372948

CUADRO DE PR'S TOPOGRÁFICOS

PR	Norte	Este	Cota
ACA 20	6373494.10	326771.97	517.734
ACA 21	6373570.09	327437.59	518.094
ACA 22	6373674.51	327638.00	520.109
ACA 23	6373824.29	327880.28	524.051

NOTAS:

- EL MARCO DE LA COMPUERTA SE HORMIGONA CON LA COMPUERTA MONTADA PARA ASEGURAR SU ALINEAMIENTO
- ACERO CALIDAD A37–24ES
- HORMIGÓN H25 – DOSIFICACIÓN 340 kg. cemento/m3.
- ENFIERRADURA CALIDAD A44–28H
- ALAMO IMPREGNADO DE PRIMERA CALIDAD. GRADO ESTRUCTURAL N°2
- PERNOS DE ACERO GALVANIZADO CALIDAD A42–23
- SOLDADURAS EN MAESTRANZA.
- EMPLANTILLADO DE HORMIGÓN DE 2 SACOS DE CEMENTO POR M3 e=5 cm
- RECUBRIMIENTO MÍNIMO 5 cm
- PROTECCIÓN ANTICORROSIVA: SISTEMA DE PROTECCIÓN EPOXICO. EN TODAS LAS PIEZAS METÁLICAS. VER E.T.E.
- LAS MADERAS QUE SUFRAN CORTES, REBAJES Y/O PERFORACIONES POSTERIORES AL PROCESO DE IMPREGNACIÓN, DEBERÁN SOMETERSE A UN PROCESO DE PROTECCIÓN ADICIONAL EN TERRENO, VER E.T.E.
- SOLDADURA : USAR ELECTRODO TIPO E60XX–AWS.
- EN TODOS LOS MUROS DE HORMIGÓN ARMADO, DEBERÁN CONSULTARSE COMO MÍNIMO 4 AMARRAS #6 CALIDAD A44–28H POR M2.
- VÁSTAGOS ø38 mm.– PASO 7.0 mm. HILO CUADRADO ACERO SAE 1050
- CADA COMPUERTA LLEVA UNA CADENA GALVANIZADA L= 1 m, ESLABÓN DE e= 8 mm CON CANDADO Y TRES LLAVES
- RELLENO ESTRUCTURAL SEGÚN SE INDICA EN E.T.E.
- ESTAS ESPECIFICACIONES SE COMPLEMENTAN CON LAS E.T.E. Y E.T.G.
- SEPARADORES DE MOLDAJES: SE UTILIZARAN LOS SEPARADORES DE MOLDAJE QUE AUTORICE EL INSPECTOR TÉCNICO DE OBRAS.
- LAS COTAS PREVALECEN SOBRE EL DIBUJO

COMISIÓN NACIONAL DE RIEGO

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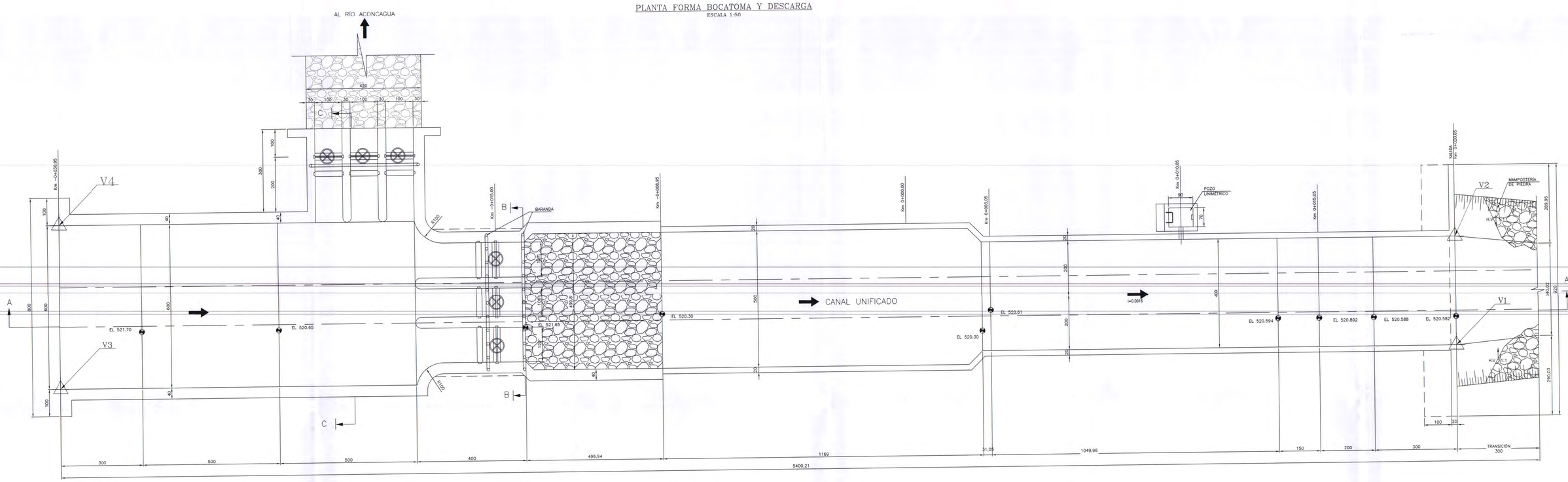
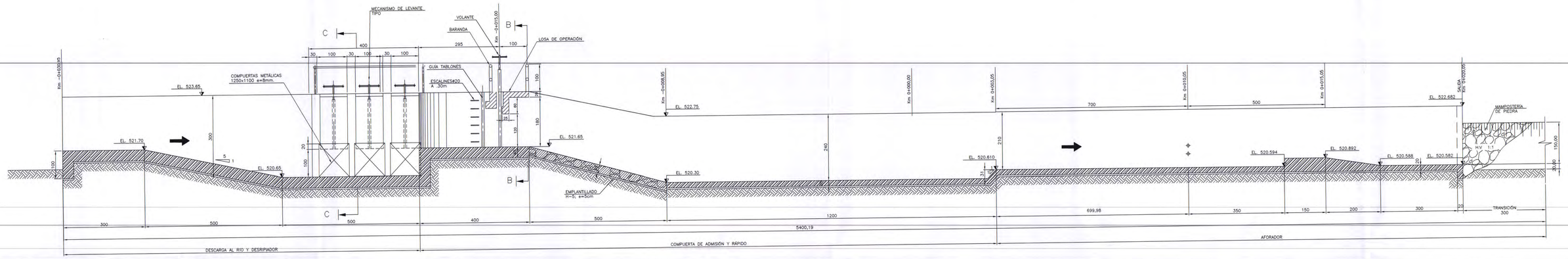
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	DET–01

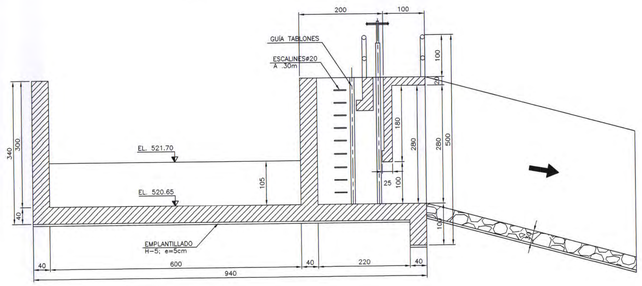
PLANTA FORMA BOCATOMA Y DESCARGA
ESCALA 1:50



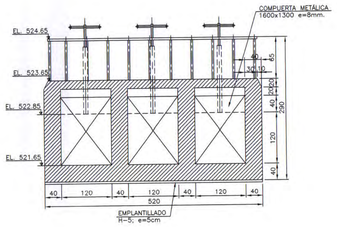
CORTE A–A
ESCALA 1:50



CORTE C–C
ESCALA 1:50



CORTE B–B
ESCALA 1:50



CUADRO DE VÉRTICES

VÉRTICE	COORDENADAS	
	NORTE	ESTE
V–1	6373850.15	327860.63
V–2	6373846.26	327859.69
V–3	6373839.08	327910.43
V–4	6373833.24	327909.01

NOTAS:

- EL MARCO DE LA COMPUERTA SE HORMIGONA CON LA COMPUERTA MONTADA PARA ASEGURAR SU ALINEAMIENTO
- ACERO CALIDAD A37–24ES
- HORMIGÓN H25 – DOSIFICACIÓN 340 kg. cemento/m3.
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- VÁSTAGOS ø38 mm.– PASO 7.0 mm. HILO CUADRADO ACERO SAE 1050
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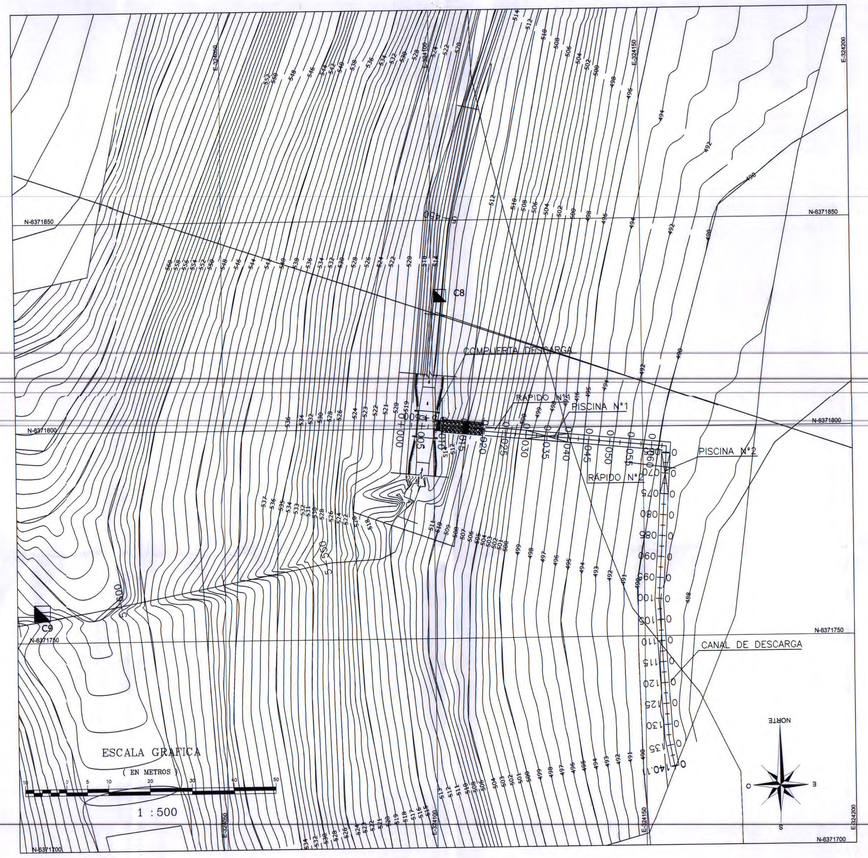
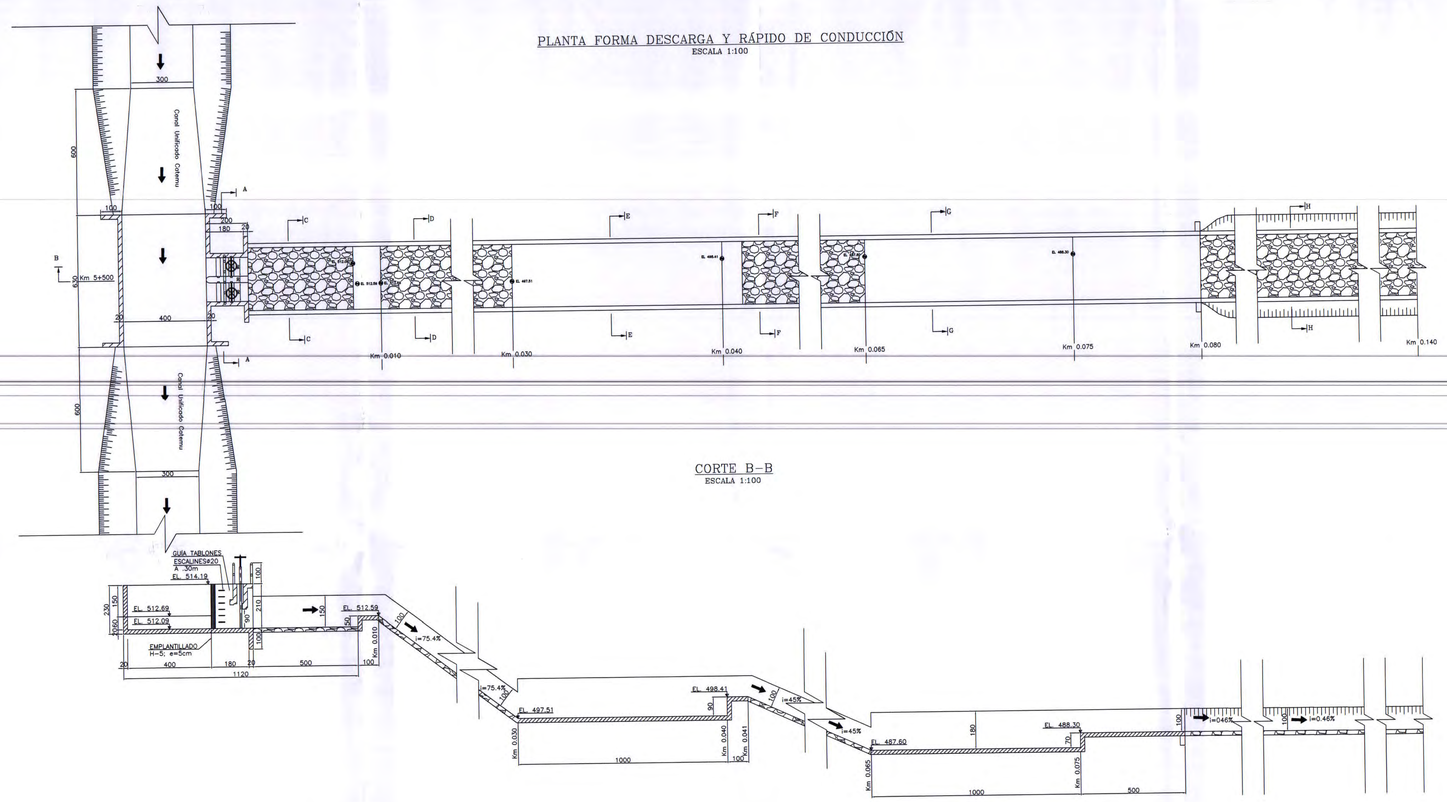
Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	DET–02

PLANTA GENERAL COMPUERTA DESCARGA AGUAS ARRIBA
TÚNEL N°1-KM 5,512
Esc. 1:500

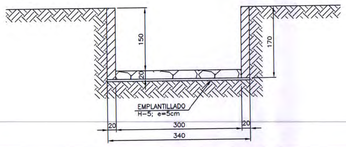


PLANTA FORMA DESCARGA Y RÁPIDO DE CONDUCCIÓN
ESCALA 1:100

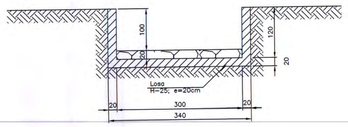


CORTE B-B
ESCALA 1:100

CORTE C-C
ESCALA 1:50



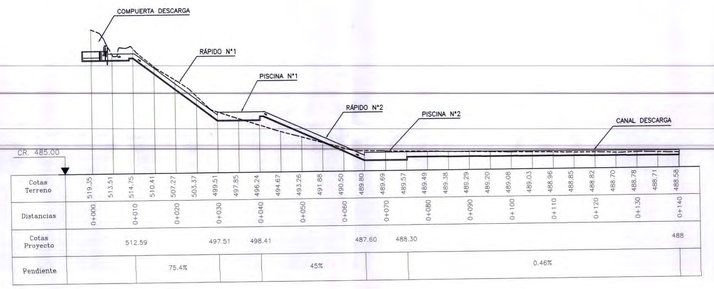
CORTE F-F SECCIÓN RÁPIDO DE CONDUCCIÓN N°2
ESCALA 1:50



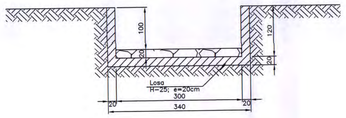
CUADRO DE COORDENADAS CALICATAS EXISTENTES

Nº	Este	Norte
C18	322134	6372630
C22	321305	6371859
C23	320807	6371603
C24	320807	6371603

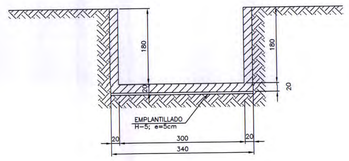
PERFIL LONGITUDINAL COMPUERTA DESCARGA TUNEL N°1
Esc. 1:500



CORTE D-D SECCIÓN RÁPIDO DE CONDUCCIÓN N°1
ESCALA 1:50



CORTE G-G PISCINA N°2
ESCALA 1:50



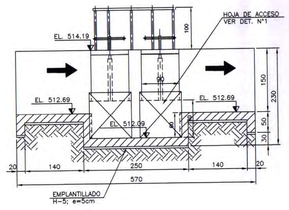
SIMBOLOGÍA

ELEMENTOS CONTENIDOS	SIMBOLO
Eje Canal Arriba de Catemu	
Ríos y Esteros	
Curvas de Nivel	
Caminos	
Canales Principales	
Canales Secundarios y Acequias	
Calicatas Existentes	
PR's Topográficos	

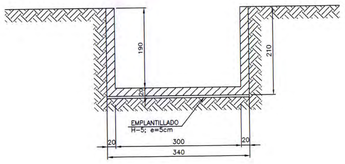
NOTAS:

- EL MARCO DE LA COMPUERTA SE HORMIGONA CON LA COMPUERTA MONTADA PARA ASEGURAR SU ALINEAMIENTO
- ACERO CALIDAD A37-24ES
- HORMIGÓN H25 – DOSIFICACIÓN 340 kg. cemento/m3.
- ENFIERRADURA CALIDAD A44-28H
- ALAMO IMPREGNADO DE PRIMERA CALIDAD, GRADO ESTRUCTURAL N°2
- PERNOS DE ACERO GALVANIZADO CALIDAD A42-23
- SOLDADURAS EN MAESTRANZA.
- EMPLANTILLADO DE HORMIGÓN DE 2 SACOS DE CEMENTO POR M3 e=5 cm
- RECUBRIMIENTO MÍNIMO 5 cm
- PROTECCIÓN ANTICORROSIVA: SISTEMA DE PROTECCIÓN EPOXICO. EN TODAS LAS PIEZAS METÁLICAS, VER E.T.E..
- LAS MADERAS QUE SUFRAN CORTES, REBAJES Y/O PERFORACIONES POSTERIORES AL PROCESO DE IMPREGNACIÓN DEBERÁN SOMETERSE A UN PROCESO DE PROTECCIÓN ADICIONAL EN TERRENO, VER E.T.E.
- SOLDADURA : USAR ELECTRODO TIPO E60XX-AWS.
- EN TODOS LOS MUROS DE HORMIGÓN ARMADO, DEBERÁN CONSULTARSE COMO MÍNIMO 4 AMARRAS ø6 CALIDAD A44-28H POR M2.
- VÁSTAGOS ø38 mm.- PASO 7.0 mm. HILO CUADRADO ACERO SAE 1050
- CADA COMPUERTA LLEVA UNA CADENA GALVANIZADA L= 1 m, ESLABÓN DE e= 8 mm CON CANDADO Y TRES LLAVES
- RELLENO ESTRUCTURAL SEGÚN SE INDICA EN E.T.E.
- ESTAS ESPECIFICACIONES SE COMPLEMENTAN CON LAS E.T.E. Y E.T.G.
- SEPARADORES DE MOLDAJES: SE UTILIZARAN LOS SEPARADORES DE MOLDAJE QUE AUTORICE EL INSPECTOR TÉCNICO DE OBRAS.
- LAS COTAS PREVALECEN SOBRE EL DIBUJO

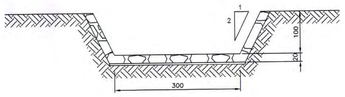
CORTE A-A
ESCALA 1:50



CORTE E-E PISCINA N°1
ESCALA 1:50



CORTE H-H CANAL DE DESCARGA
ESCALA 1:50



COMISIÓN NACIONAL DE RIEGO

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Estudio
ESTUDIO DE PREFACTIBILIDAD MEJORAMIENTO DE CANALES ARRIBA DE CATEMU, ABAJO DE CATEMU Y PEPINO, SEGUNDA SECCIÓN RÍO ACONCAGUA

Título
OBRA DE DESCARGA AL RIO KM. 5,510 1/2

Escala	Sistema de Referencia SIRGAS	Fuente Cartográfica	Fecha	Lámina
LAS INDICADAS	UNIVERSAL TRANSVERSAL DE MERCATOR ; HUSO 19	Levantamiento topográfico Arrau Ingeniería E.I.R.L. Junio 2011	Julio 2012	DET-03