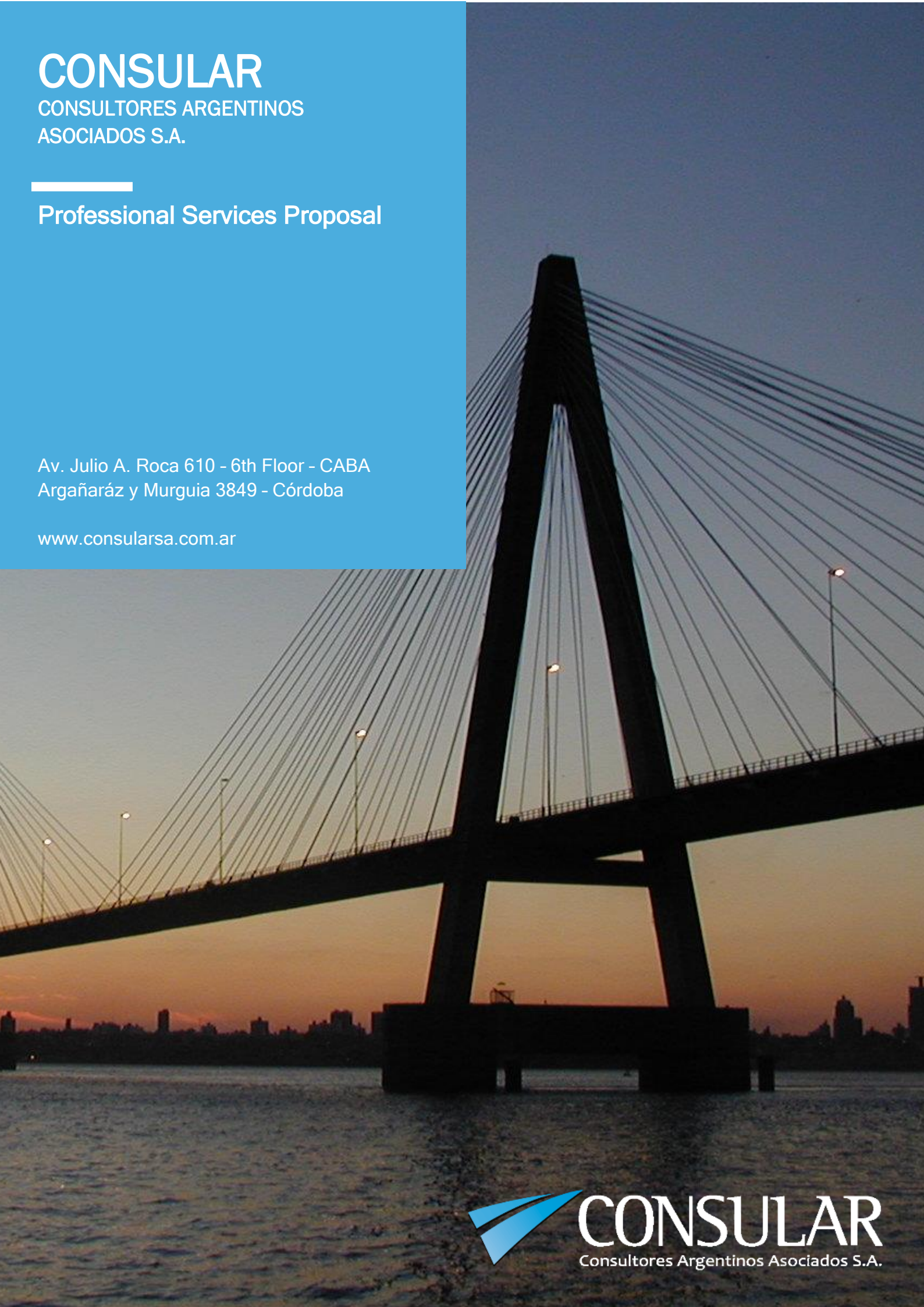
CONSULAR

CONSULTORES ARGENTINOS
ASOCIADOS S.A.

Professional Services Proposal

Av. Julio A. Roca 610 - 6th Floor - CABA
Argañaráz y Murguia 3849 - Córdoba

www.consularsa.com.ar



Consular Consultores Argentinos Asociados S.A.

Engineering Solutions

CONSULAR Consultores Argentinos Asociados S.A. is a Civil Engineering Consulting firm, with a track record of 50 years providing engineering services for large-scale projects in transportation, mining, water resources, sanitation, and works of civil infrastructure. Our team is committed to developing cutting-edge solutions tailored to meet the demands of each project, ensuring efficiency, safety, and sustainability.

We Offer

- Feasibility studies, preliminary designs, executive projects and detailed engineering for projects related to:
  - Road and railway design
  - Hidrology and hydraulic works
  - Bridges and structures
  - Architectural projects
  - Urban infrastructure
  - Construction site inspections
  - Technical office assitance for construction projects
- Topographic surveys with LiDAR technology:
  - Mobile terrestrial LiDAR
  - Manned and unmanned airborne LiDAR
- Cartography - GIS
- LiDAR data processing

Work Areas

- Transportation
- Mining
- Oil & Gas
- Water Resources
- Sanitation
- Structures
- Forestry

Detail of Services Offered by Consular

Within the engineering solutions offered by Consular Consultores Argentinos Asociados S.A., we provide design and documentation of various civil engineering projects, including roads and highways, railways, bridges, site development, stormwater and sanitation networks, as well as hydrological and hydraulic studies, for different stages of the project life cycle, from feasibility to detailed engineering development. A detailed description of the scope of various services offered are listed below:

ROAD AND RAILWAY

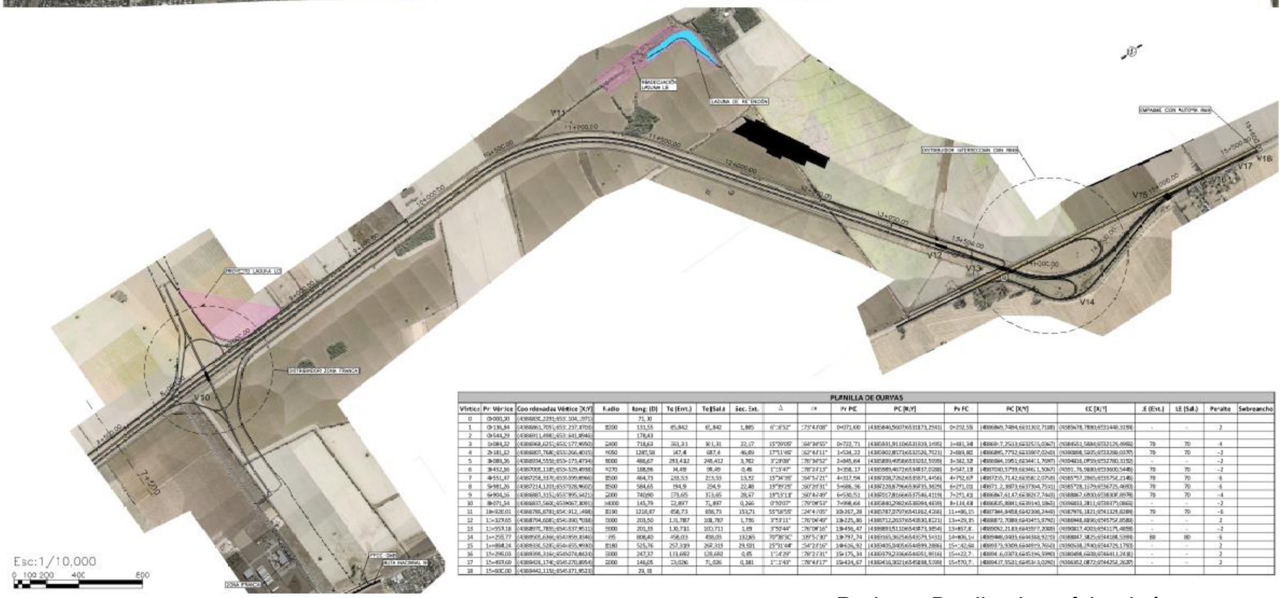
- Related to the development of digital terrain models and determination of earthwork volumes:
  - Point importation: Importing points from various surface sources such as LiDAR, SHP, DEM, etc.
  - Terrain surface generation: Generated from point importation or contour lines, and other methodologies.
  - Platform design: Structure dimensioning and calculation of cut and fill volumes.
  - Volumetric reports generation: Comparing two surfaces.
  - Soil movement optimization processes.
- Related to linear works modeling: models for the design of roads, highways, railways, pipelines, canals, aqueducts, etc:
  - Alignment generation, longitudinal profiles, and cross-sections.
  - 3D model generation of the linear work. From the generated 3D model, work volume reports can be extracted, achieving resource optimization through iterative processes of adjusting design variables.

Project of the Third Lane to the Ring Road of Córdoba City

General Planimetry

Project – National Route Nº38 Highway – Córdoba

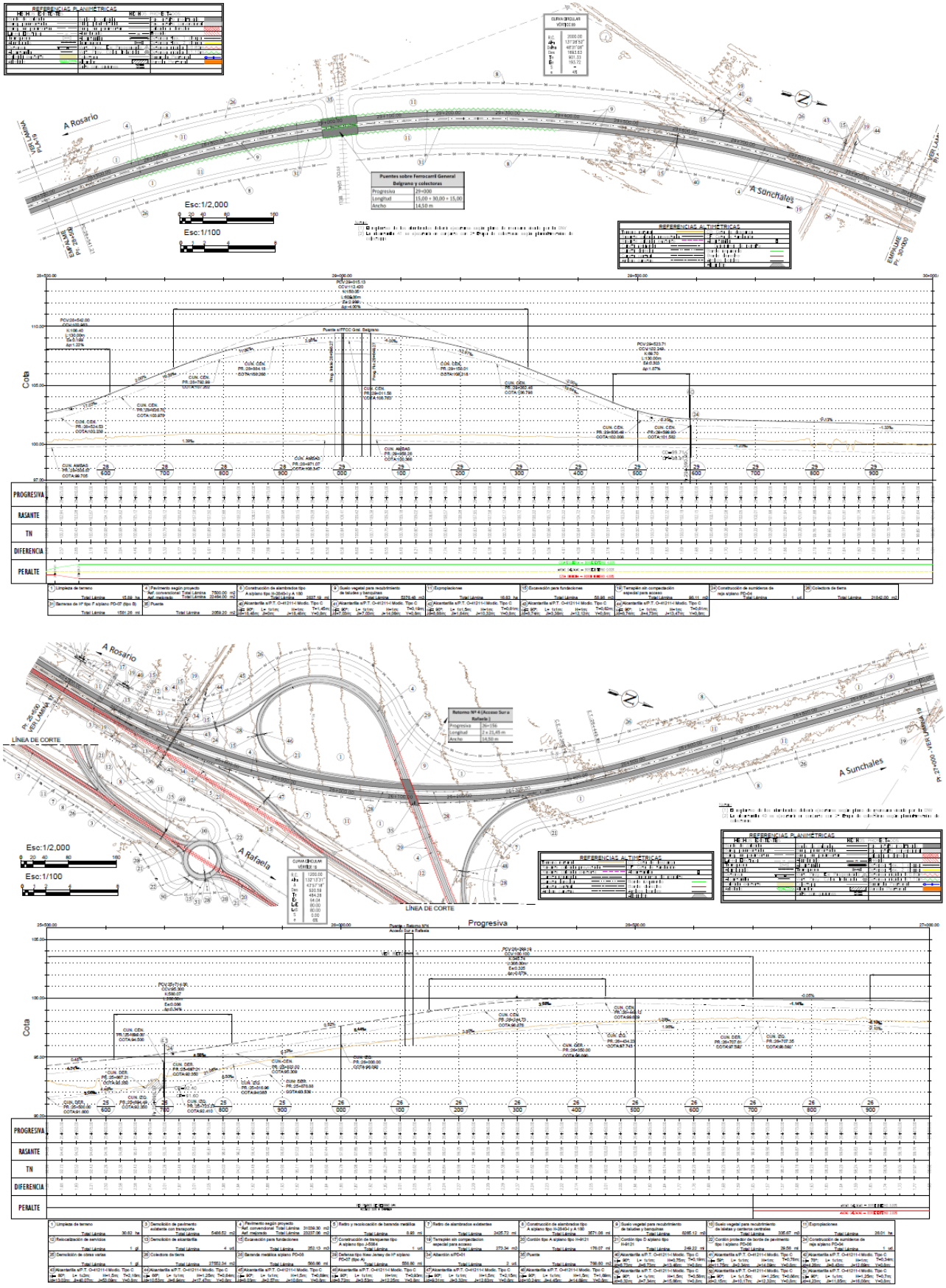
PLANILLA DE CURVAS HORIZONTALES																	
Vertice	Pr. Vertice	Coordenadas Vertice [X;Y]	Long. (D)	Radio	Te (Ent.)	Te (Sal.)	Sec. Ext	Δ	α	Pr. PC	PC [X;Y]	Pr. FC	FC [X;Y]	CC [X;Y]	L.E. (Ent.)	LE (Sal.)	Peralte
1	0+000.00	[4 004 914.89; 6 530 863.40]															
2	0+213.45	[4 004 828.03; 6 531 058.38]	210.33	420	180.77	180.77	25.04	38°14'31"	141°45'29"	0+032.68	[4 004 901.59; 6 530 893.25]	0+383.01	[4 004 872.48; 6 531 233.60]	[4 005 271.45; 6 531 096.31]	70.00	70.00	6%
3	1+023.41	[4 005 029.92; 6 531 854.38]	703.83	405	608.49	608.49	297.38	109°28'28"	70°31'32"	0+414.92	[4 004 880.32; 6 531 264.54]	1+258.75	[4 004 423.97; 6 531 798.76]	[4 004 495.87; 6 531 398.15]	70.00	70.00	8%
4	1+550.00	[4 004 133.95; 6 531 772.15]	155.45	3000	132.77	132.77	1.89	4°01'10"	175°58'50"	1+417.23	[4 004 266.16; 6 531 784.28]	1+682.68	[4 004 002.91; 6 531 750.78]	[4 004 512.88; 6 528 794.28]	55.00	55.00	2%
5	5+175.00	[4 003 166.78; 6 531 614.44]	883.81	455	825.57	825.57	457.39	120°06'29"	59°53'31"	1+704.27	[4 003 981.60; 6 531 747.31]	2+728.08	[4 003 460.58; 6 532 385.97]	[4 003 873.76; 6 532 191.19]	70.00	70.00	6%
6	2+810.59	[4 003 507.41; 6 532 508.95]	165.02	7000	82.51	82.51	0.49	1°21'03"	178°38'57"	2+777.17	[4 003 478.04; 6 532 431.84]	2+942.19	[4 003 534.95; 6 532 586.74]	[3 996 936.28; 6 534 922.89]			-
7	3+531.01	[4 003 731.46; 6 533 141.80]	416.68	600	281.82	281.82	50.93	45°31'10"	134°28'50"	3+249.19	[4 003 637.40; 6 532 876.13]	3+785.86	[4 003 607.81; 6 533 395.05]	[4 003 081.58; 6 533 104.74]	60.00	60.00	6%
8	4+507.71	[4 003 291.10; 6 534 043.71]	255.19	500	203.71	203.71	28.09	37°15'50"	142°44'10"	4+304.00	[4 003 380.48; 6 533 860.65]	4+699.19	[4 003 109.13; 6 534 135.28]	[4 002 915.45; 6 533 672.55]	70.00	70.00	6%
9	5+050.36	[4 002 795.44; 6 534 293.14]	42.74	450	91.72	91.72	4.01	14°24'15"	165°38'45"	4+958.64	[4 002 877.37; 6 534 251.91]	5+141.38	[4 002 706.85; 6 534 312.76]	[4 002 643.63; 6 533 866.26]	70.00	70.00	6%
10	5+382.76	[4 002 470.07; 6 534 364.42]	305.00	405	237.40	237.40	48.21	53°03'07"	126°56'53"	5+145.36	[4 002 701.97; 6 534 313.62]	5+590.36	[4 002 371.29; 6 534 580.29]	[4 002 754.58; 6 534 717.21]	70.00	70.00	8%
11	5+770.80	[4 002 296.20; 6 534 744.37]	148.02	450	146.30	146.30	14.00	27°45'33"	152°14'27"	5+624.50	[4 002 357.08; 6 534 611.34]	5+912.52	[4 002 180.37; 6 534 833.74]	[4 001 932.92; 6 534 456.72]	70.00	70.00	6%
12	6+249.15	[4 001 913.84; 6 535 039.37]	446.22	405	335.21	335.21	99.55	73°01'49"	106°58'11"	5+913.94	[4 002 179.25; 6 534 834.60]	6+500.16	[4 002 032.23; 6 535 352.98]	[4 002 399.24; 6 535 177.03]	70.00	70.00	8%
13	6+791.20	[4 002 135.01; 6 535 625.26]	233.74	725	173.85	173.85	14.79	22°49'09"	157°10'51"	6+617.35	[4 002 073.61; 6 535 462.61]	6+961.09	[4 002 128.53; 6 535 798.98]	[4 001 404.88; 6 535 744.45]	55.00	55.00	6%
14	7+134.55	[4 002 122.08; 4 002 122.08]	190.10	450	168.92	168.92	19.94	33°07'01"	146°52'59"	6+965.63	[4 002 128.36; 6 535 803.51]	7+295.73	[4 002 209.01; 6 536 117.15]	[4 002 577.19; 6 535 855.28]	70.00	70.00	6%
15	8+364.98	[4 002 759.38; 6 537 033.88]	553.62	700	352.63	352.63	71.99	49°48'59"	130°11'01"	8+012.35	[4 002 577.87; 6 536 731.55]	8+675.97	[4 002 645.52; 6 537 367.62]	[4 001 991.72; 6 537 115.52]	55.00	55.00	6%
16	9+580.75	[4 002 353.39; 6 538 223.94]	130.40	1000	120.48	120.48	4.44	10°37'21"	169°22'39"	9+460.27	[4 002 392.29; 6 538 109.92]	9+700.67	[4 002 336.18; 6 538 343.18]	[4 003 329.97; 6 538 458.86]	55.00	55.00	6%
17	10+071.66	[4 002 283.17; 6 538 710.37]	52.12	1000	81.12	81.12	1.56	6°08'16"	173°51'44"	9+990.54	[4 002 294.76; 6 538 630.08]	10+152.67	[4 002 280.23; 6 538 791.44]	[4 003 280.69; 6 538 800.20]	55.00	55.00	6%
18	10+852.28	[4 002 254.88; 6 539 490.58]	134.12	600	127.96	127.96	8.19	18°32'15"	161°27'45"	10+724.32	[4 002 259.51; 6 539 362.71]	10+978.44	[4 002 209.83; 6 539 610.34]	[4 001 658.57; 6 539 370.93]	60.00	60.00	6%
19	11+475.15	[4 002 034.95; 6 540 075.24]	164.86	450	155.29	155.29	16.24	29°54'14"	150°05'46"	11+319.86	[4 002 089.62; 6 539 929.90]	11+624.72	[4 002 060.01; 6 540 228.49]	[4 002 498.91; 6 540 121.25]	70.00	70.00	6%
20	11+893.46	[4 002 103.39; 6 540 493.70]	103.25	500	122.57	122.57	8.01	19°51'10"	160°08'50"	11+770.89	[4 002 083.61; 6 540 372.74]	12+014.14	[4 002 080.92; 6 540 614.19]	[4 001 595.41; 6 540 488.06]	70.00	70.00	6%
21	12+631.97	[4 001 967.66; 6 541 221.57]	71.68	1000	90.93	90.93	2.14	4°06'26"	172°44'30"	12+541.04	[4 001 984.33; 6 541 132.17]	12+722.73	[4 001 962.42; 6 541 312.35]	[4 002 962.47; 6 541 342.55]	55.00	55.00	6%
22	13+556.79	[4 001 914.34; 6 542 145.02]	53.37	1000	81.74	81.74	1.60	6°12'33"	173°47'27"	13+475.05	[4 001 919.05; 6 542 063.41]	13+638.42	[4 001 918.48; 6 542 226.66]	[4 002 915.93; 6 542 148.52]	55.00	55.00	6%
23	14+315.80	[4 001 952.80; 6 542 903.17]	152.30	450	148.57	148.57	14.55	28°18'13"	151°41'47"	14+167.23	[4 001 945.27; 6 542 754.79]	14+459.52	[4 001 889.08; 6 543 037.38]	[4 001 497.17; 6 542 812.56]	70.00	70.00	6%
24	15+164.41	[4 001 586.74; 6 543 674.13]	186.36	2000	149.34	149.34	3.77	6°58'19"	173°01'41"	15+015.07	[4 001 650.79; 6 543 539.23]	15+313.43	[4 001 539.53; 6 543 815.81]	[4 003 445.74; 6 544 421.84]	55.00	55.00	3%
25	16+197.27	[4 001 260.15; 6 544 654.33]	519.90	500	369.97	369.97	102.18	67°35'51"	112°24'09"	15+827.30	[4 001 377.10; 6 544 303.33]	16+487.20	[4 001 540.09; 6 544 896.23]	[4 001 840.79; 6 544 494.71]	70.00	70.00	6%
26	16+974.06	[4 001 906.47; 6 545 214.54]	567.27	450	420.67	420.67	143.00	81°08'24"	98°51'36"	16+553.39	[4 001 590.17; 6 544 939.50]	17+260.66	[4 001 685.74; 6 545 571.41]	[4 001 322.13; 6 545 303.22]	70.00	70.00	6%
27	17+520.57	[4 001 548.12; 6 545 791.89]	285.63	600	207.83	207.83	26.04	33°0'20"	146°59'40"	17+312.74	[4 001 658.16; 6 545 615.58]	17+718.37	[4 001 551.88; 6 545 999.69]	[4 002 151.49; 6 545 958.85]	60.00	60.00	6%
28	18+330.63	[4 001 562.95; 6 546 611.84]	350.18	600	243.56	243.56	37.11	39°10'10"	140°49'50"	18+087.07	[4 001 558.54; 6 546 368.33]	18+557.25	[4 001 412.55; 6 546 803.42]	[4 000 958.93; 6 546 409.17]	60.00	60.00	6%
29	19+508.21	[4 000 825.33; 6 547 551.41]	183.87	600	153.69	153.69	12.86	23°17'16"	156°42'44"	19+354.52	[4 000 920.24; 6 547 430.53]	19+658.38	[4 000 785.95; 6 547 699.97]	[4 001 373.85; 6 547 824.78]	60.00	60.00	6%
30	20+580.44	[4 001 562.95; 6 546 611.83]	290.59	600	210.53	210.53	26.80	33°28'43"	146°31'17"	20+369.91	[4 000 603.64; 6 548 387.75]	20+780.50	[4 000 616.96; 6 548 790.75]	[4 001 176.17; 6 548 570.54]	60.00	60.00	6%
31	21+281.58	[4 000 777.06; 6 549 265.57]	119.79	700	115.37	115.37	5.67	14°18'24"	165°41'36"	21+166.21	[4 000 740.20; 6 549 156.24]	21+396.00	[4 000 785.76; 6 549 380.62]	[4 000 085.50; 6 549 406.01]	55.00	55.00	6%
32	21+825.00	[4 000 818.12; 6 549 808.39]															



PLANILLA DE CURVAS																		
Vértice	Pr Vértice	Coordenadas Vértice [X;Y]	Radio	Long. (D)	Te (Ent.)	Te (Sal.)	Sec. Ext.	Δ	α	Pr PC	PC [X;Y]	Pr FC	FC [X;Y]	CC [X;Y]	LE (Ent.)	LE (Sal.)	Peralte	Sobreancho
0	0+000,30	[illegible]		71,30														
1	0+136,84	[illegible]	[illegible]	131,55	65,842	65,842	1,885	6°16'52"	173°43'08"	0+071,00	[illegible]	0+202,55	[illegible]	[illegible]	-	-	2	
2	0+544,29	[illegible]		178,43														
3	1+084,22	[illegible]	2400	718,63	361,31	361,31	22,17	15°29'05"	164°30'55"	0+722,71	[illegible]	1+441,34	[illegible]	[illegible]	70	70	4	
4	2+181,12	[illegible]	[illegible]	1285,58	147,4	687,4	46,09	17°11'40"	162°48'11"	1+534,22	[illegible]	2+819,80	[illegible]	[illegible]	70	70	-2	
5	3+089,36	[illegible]	8000	486,67	243,412	243,412	3,702	3°29'08"	176°30'52"	2+845,64	[illegible]	3+332,32	[illegible]	[illegible]	-	-	-2	
6	3+452,56	[illegible]	[illegible]	188,96	94,49	94,49	0,46	1°15'47"	178°44'13"	3+358,17	[illegible]	3+547,13	[illegible]	[illegible]	70	70	-2	
7	4+551,47	[illegible]	1500	464,73	233,53	233,53	13,52	15°34'38"	164°25'21"	4+317,94	[illegible]	4+782,67	[illegible]	[illegible]	70	70	6	
8	5+881,26	[illegible]	1500	584,65	294,9	294,9	22,48	19°39'29"	160°20'31"	5+686,36	[illegible]	6+271,01	[illegible]	[illegible]	70	70	6	
9	6+904,16	[illegible]	2000	740,60	373,65	373,65	28,67	19°13'11"	160°47'49"	6+530,51	[illegible]	7+271,41	[illegible]	[illegible]	70	70	-4	
10	8+071,58	[illegible]	10000	145,79	72,897	72,897	0,266	0°50'07"	179°09'53"	7+998,64	[illegible]	8+144,43	[illegible]	[illegible]	-	-	-2	
11	10+920,01	[illegible]	[illegible]	1218,87	658,73	658,73	153,71	55°18'55"	124°41'05"	10+267,28	[illegible]	11+486,15	[illegible]	[illegible]	70	70	-6	
12	11+327,65	[illegible]	3000	203,50	101,787	101,787	1,726	3°53'11"	176°06'49"	11+225,86	[illegible]	11+429,35	[illegible]	[illegible]	-	-	2	
13	11+557,18	[illegible]	5000	201,35	100,711	100,711	1,09	3°50'44"	176°09'16"	11+456,47	[illegible]	11+657,8	[illegible]	[illegible]	-	-	-2	
14	14+255,77	[illegible]	695	808,40	458,03	458,03	132,65	70°38'30"	109°21'30"	13+797,74	[illegible]	14+606,14	[illegible]	[illegible]	80	80	6	
15	14+888,24	[illegible]	1180	525,76	267,319	267,319	29,531	25°31'44"	154°27'16"	14+616,92	[illegible]	15+142,68	[illegible]	[illegible]	-	-	2	
16	15+296,03	[illegible]	3000	247,37	123,692	123,692	0,85	1°14'29"	178°27'31"	15+175,34	[illegible]	15+422,7	[illegible]	[illegible]	-	-	2	
17	15+497,69	[illegible]	2000	146,05	73,026	73,026	0,381	1°12'43"	178°47'17"	15+424,67	[illegible]	15+570,7	[illegible]	[illegible]	-	-	2	
18	15+600,00	[illegible]		29,18														

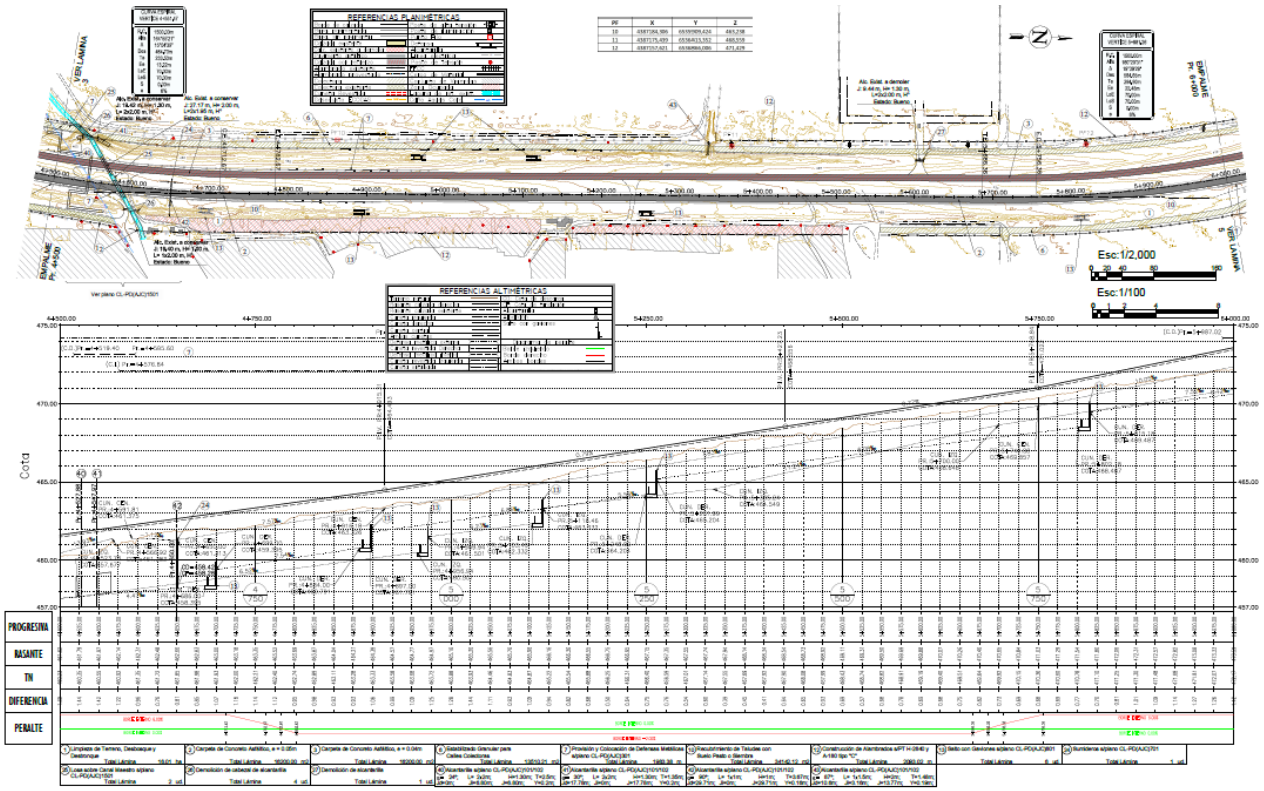
Project – Duplication of the Juárez Celman Highway – Córdoba

Planialtimetry

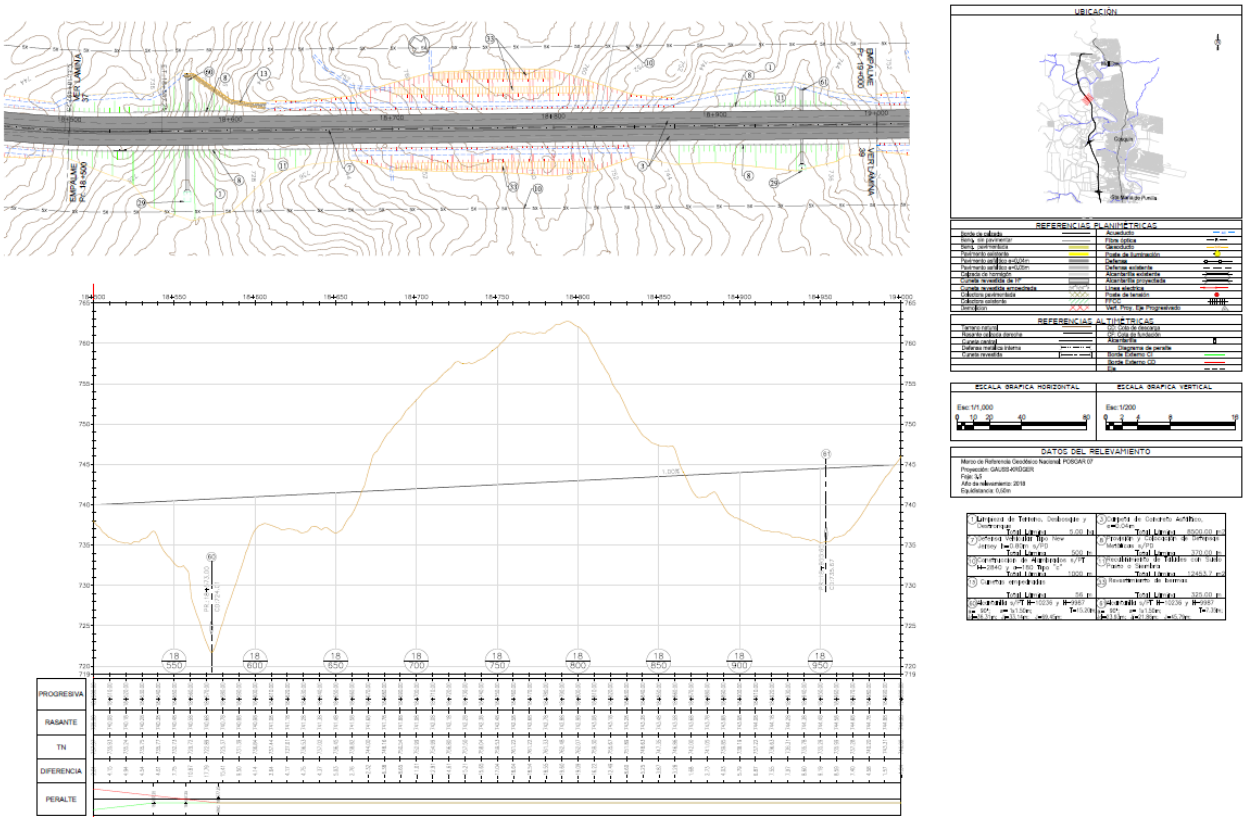


Project - National Route Nº34 Highway - Rafaela, Santa Fé

Planialtimetry (Cont.)

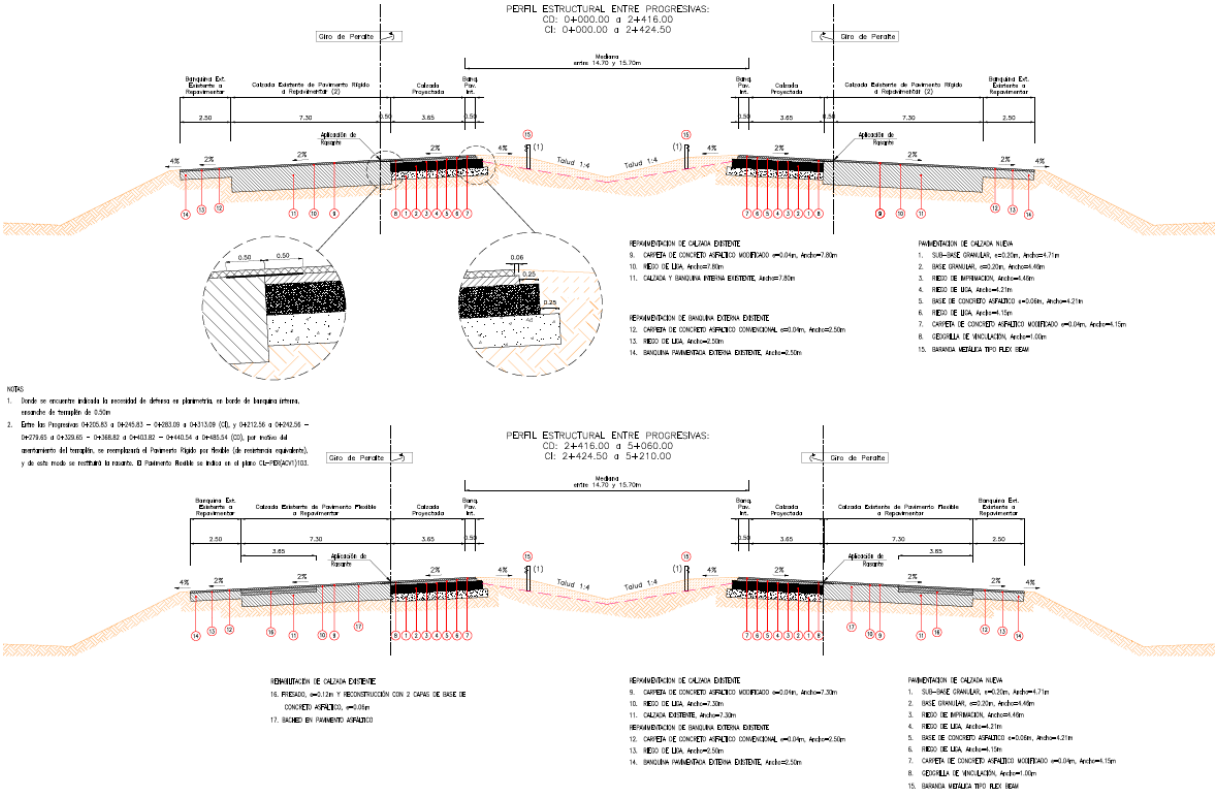


Project - Duplication of the Juárez Celman Highway - Córdoba

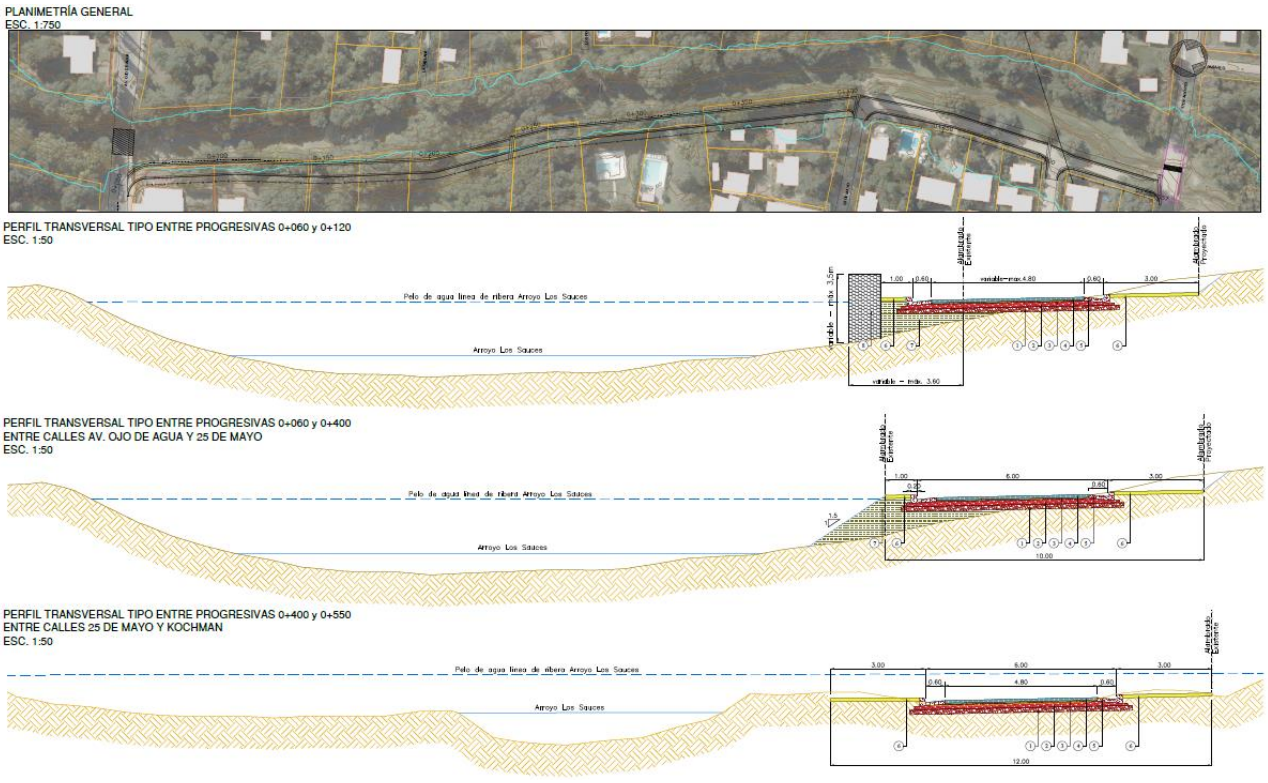


Project - National Route Nº38 Highway - Córdoba

Cross Sections for Basic Construction Works

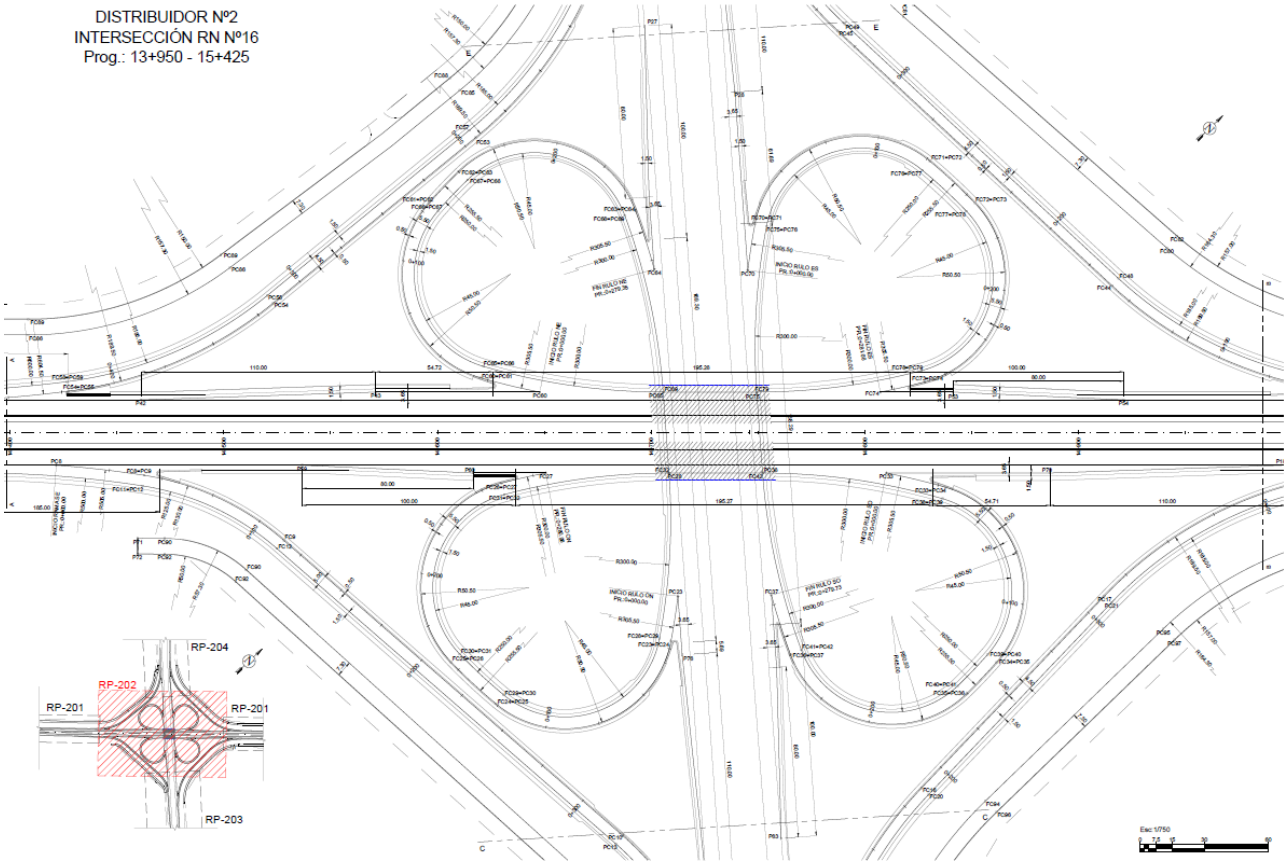


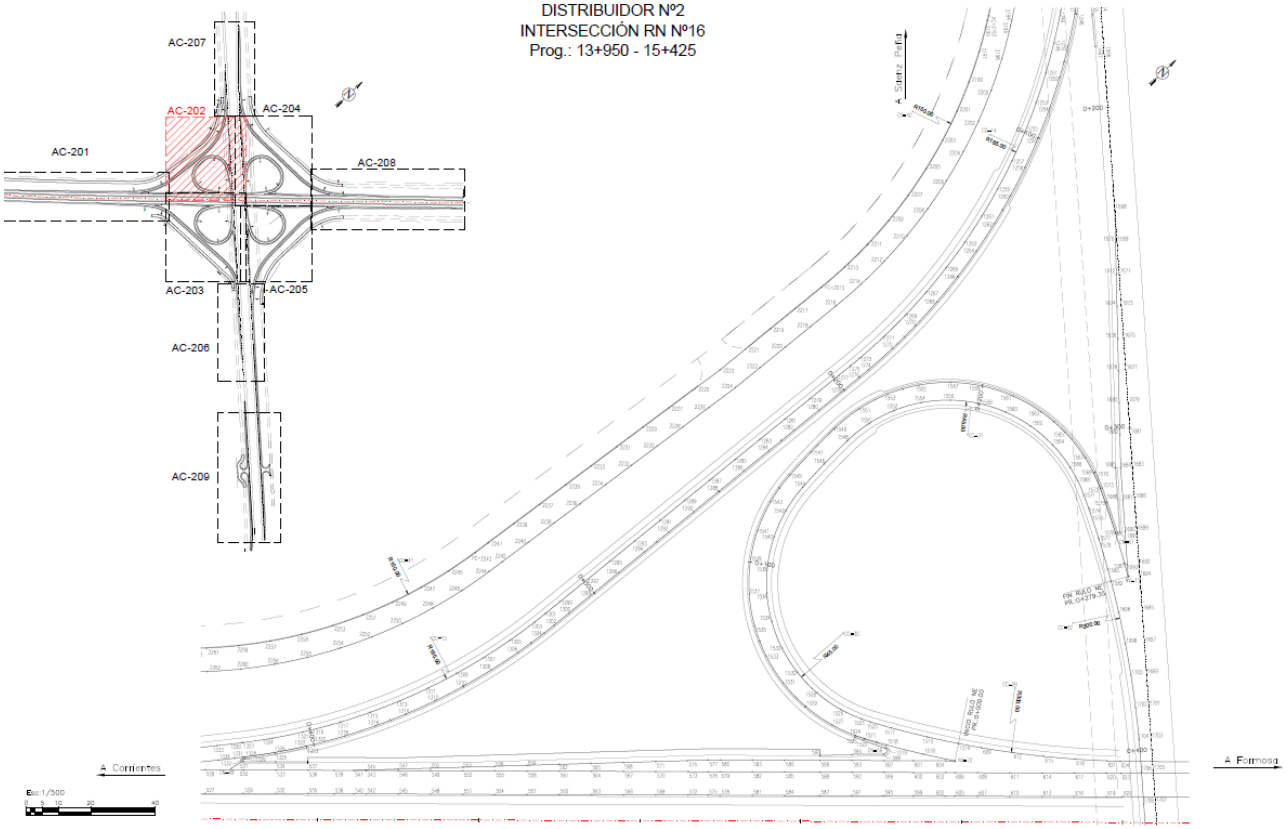
Project of the Third Lane to the Ring Road of Córdoba City



Project - Coastal Street - Villa General Belgrano - Córdoba

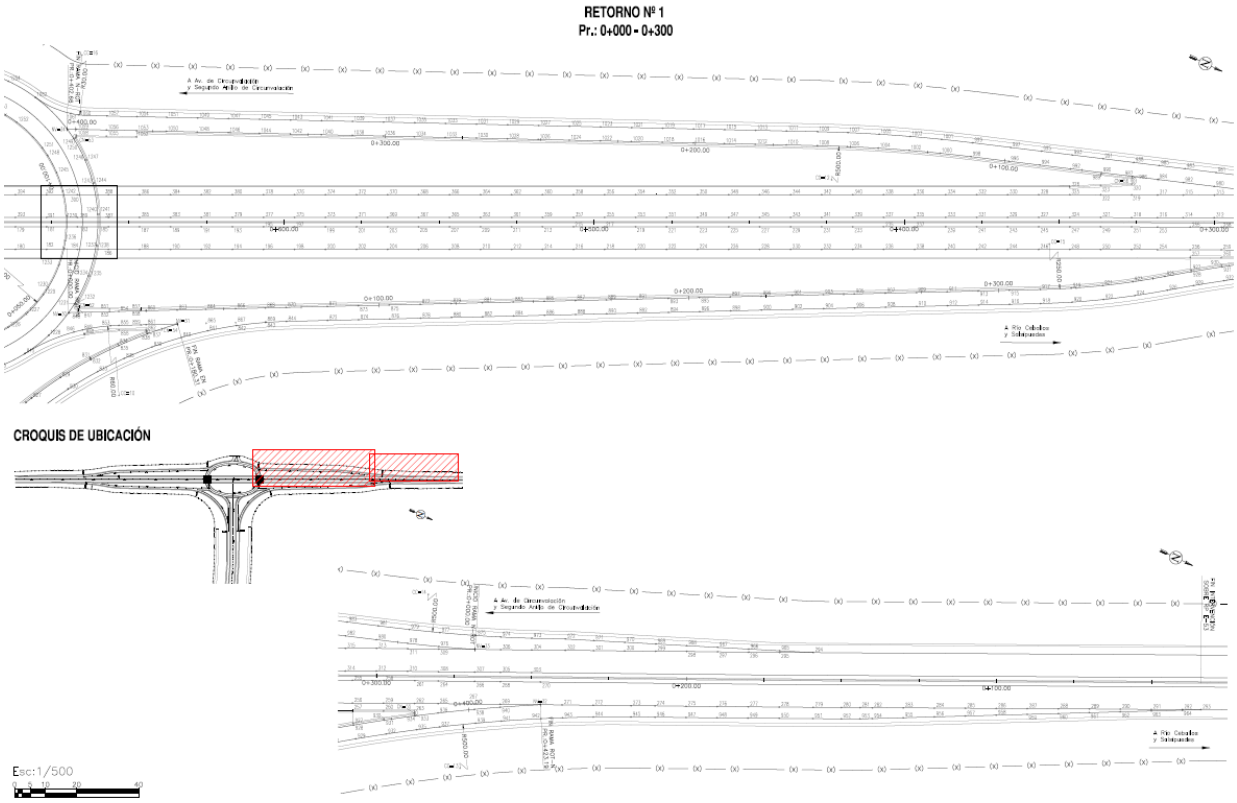
Freeway Interchange and Intersection Projects



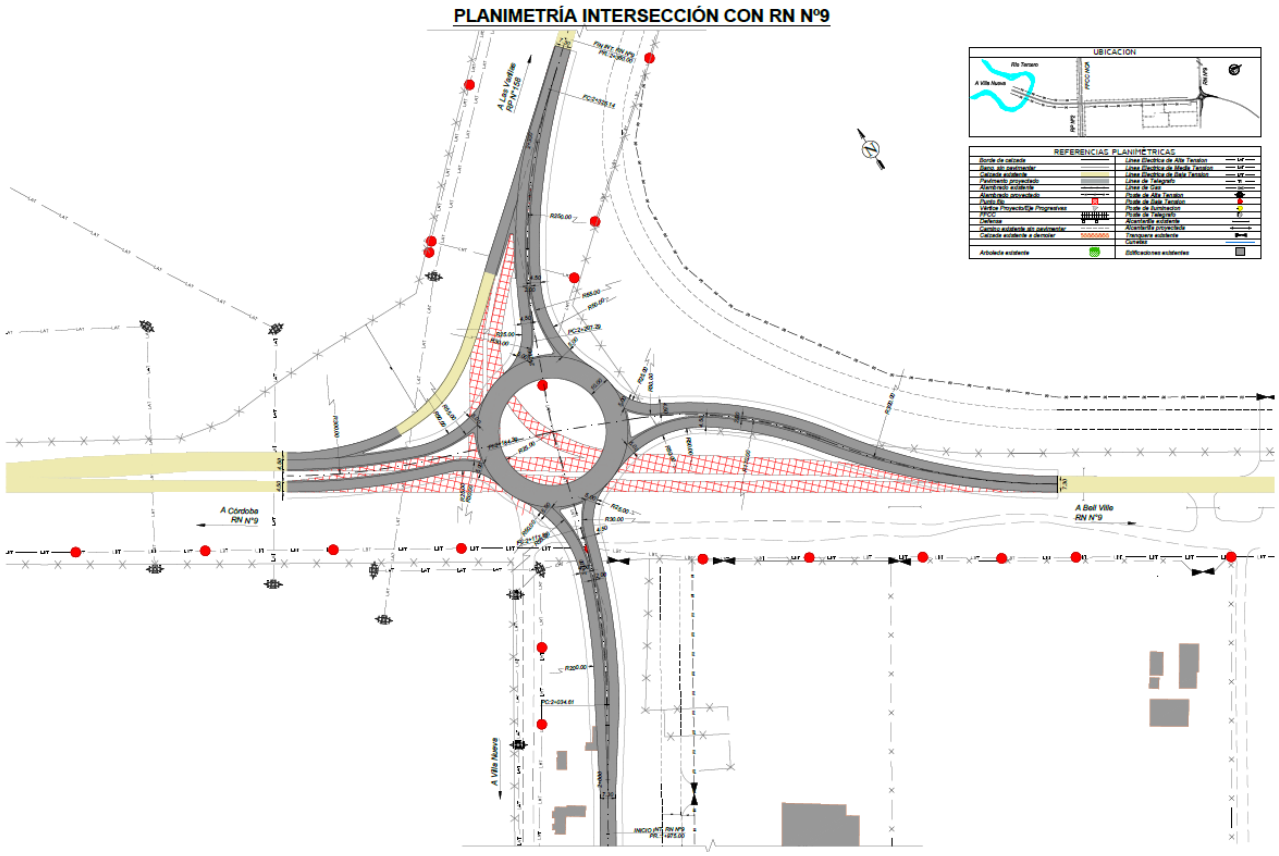


Project - National Route Nº11 Highway - Resistencia, Chaco

Freeway Interchange and Intersection Projects (Cont.)

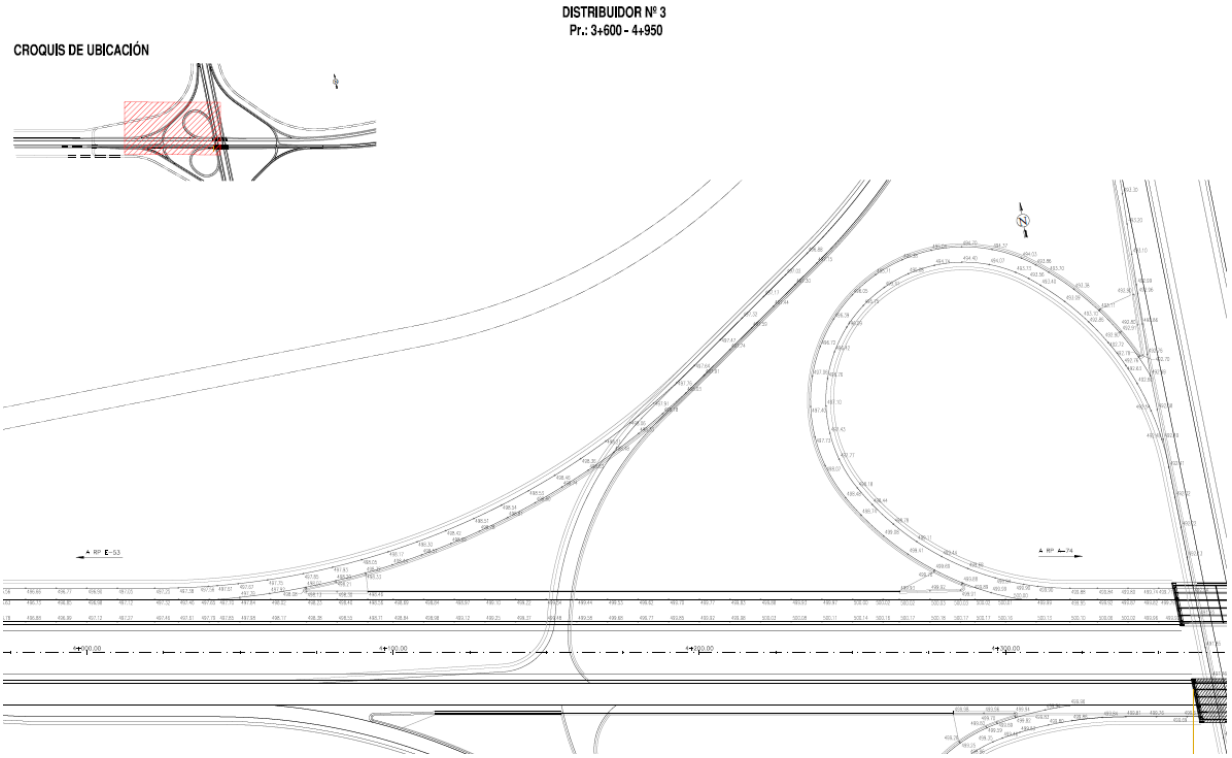


Project – 'Second Ring Road': Juan Domingo Perón - Córdoba



Project - Villa María Ring Road - Córdoba

Freeway Interchange and Intersection Projects (Cont.)

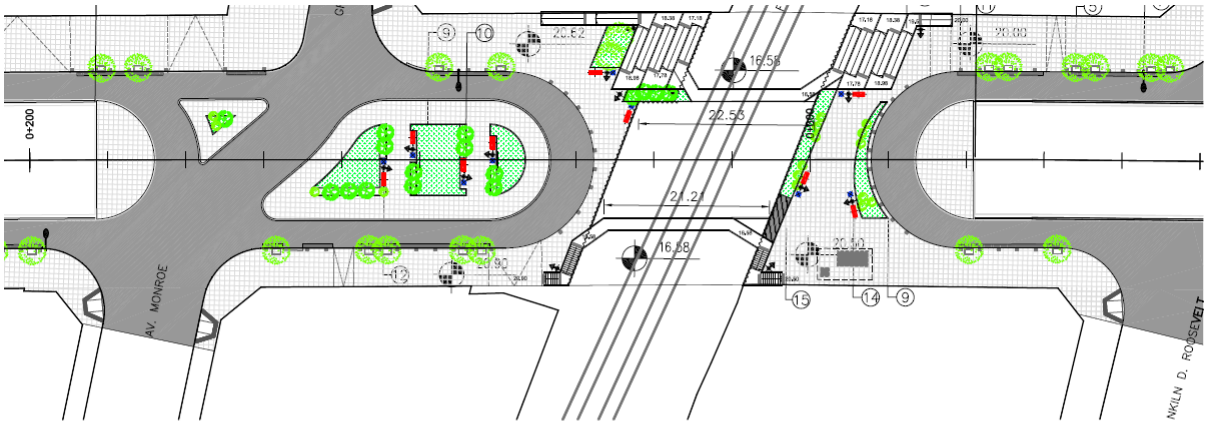


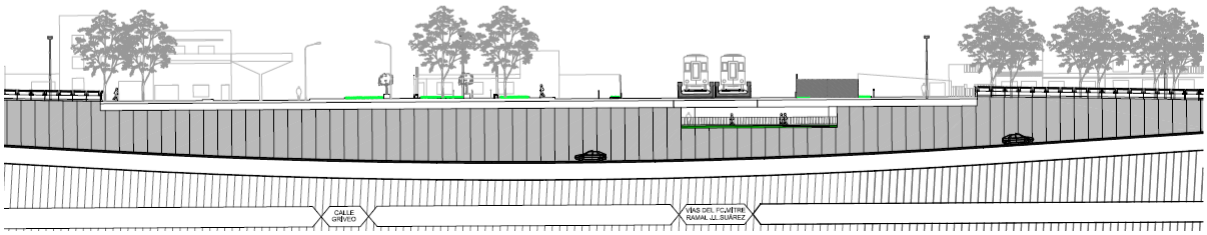
Project - Duplication of the Juárez Celman Highway - Córdoba

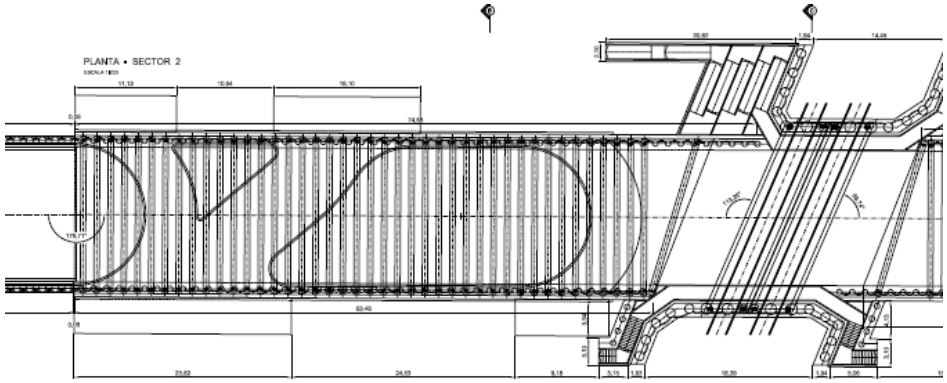
Project - National Route Nº34 Highway.
Rafaela, Santa Fé

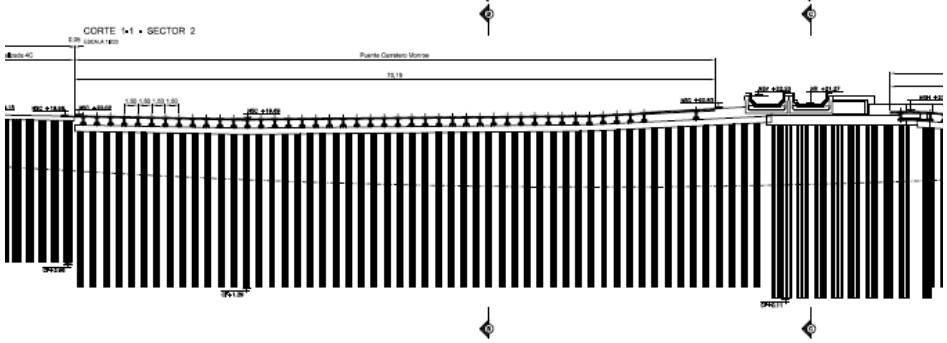
Garita Road Junction - National Route Nº12 and Nº 105 Intersection - Misiones

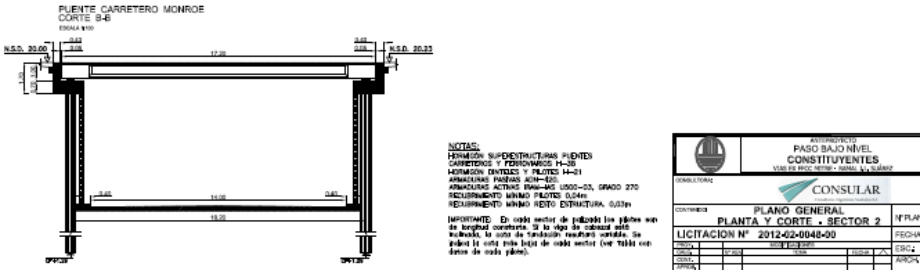
Urban Intervention – Road and Railway Underpass





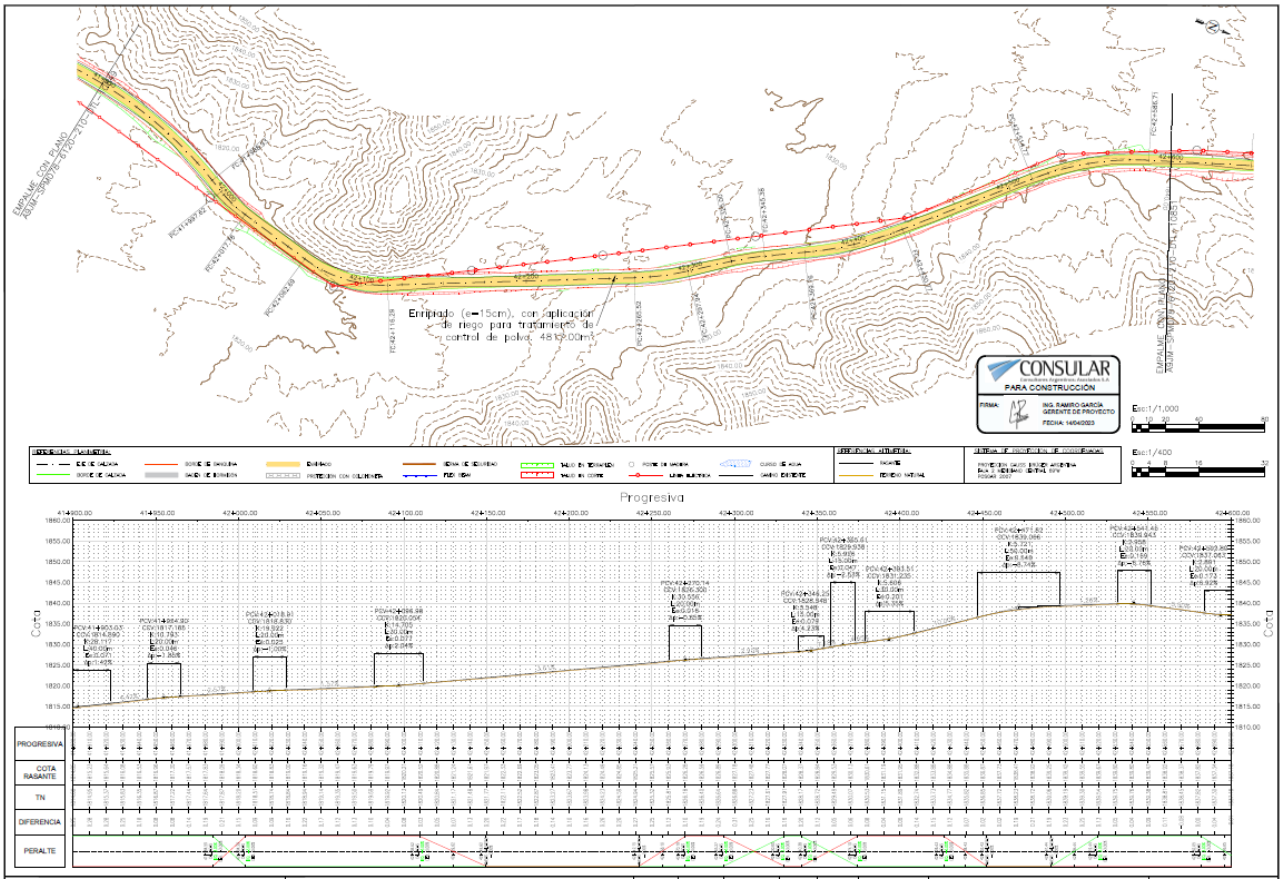




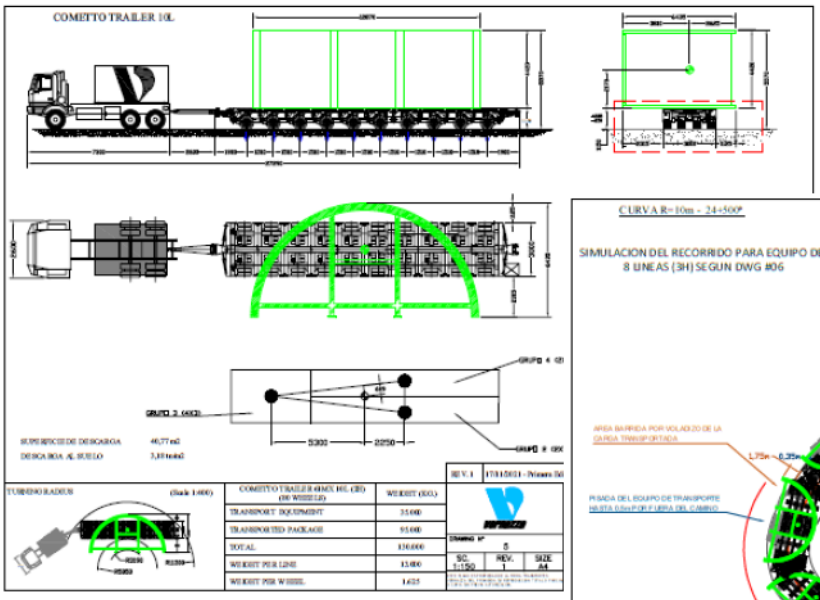


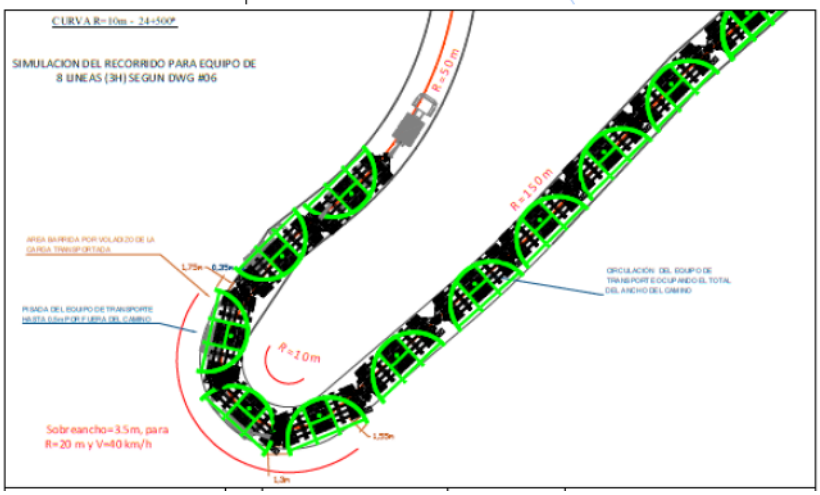
Av. Constituyentes Underpass - Autonomous City of Buenos Aires

Improvement Project for Mining Access Road

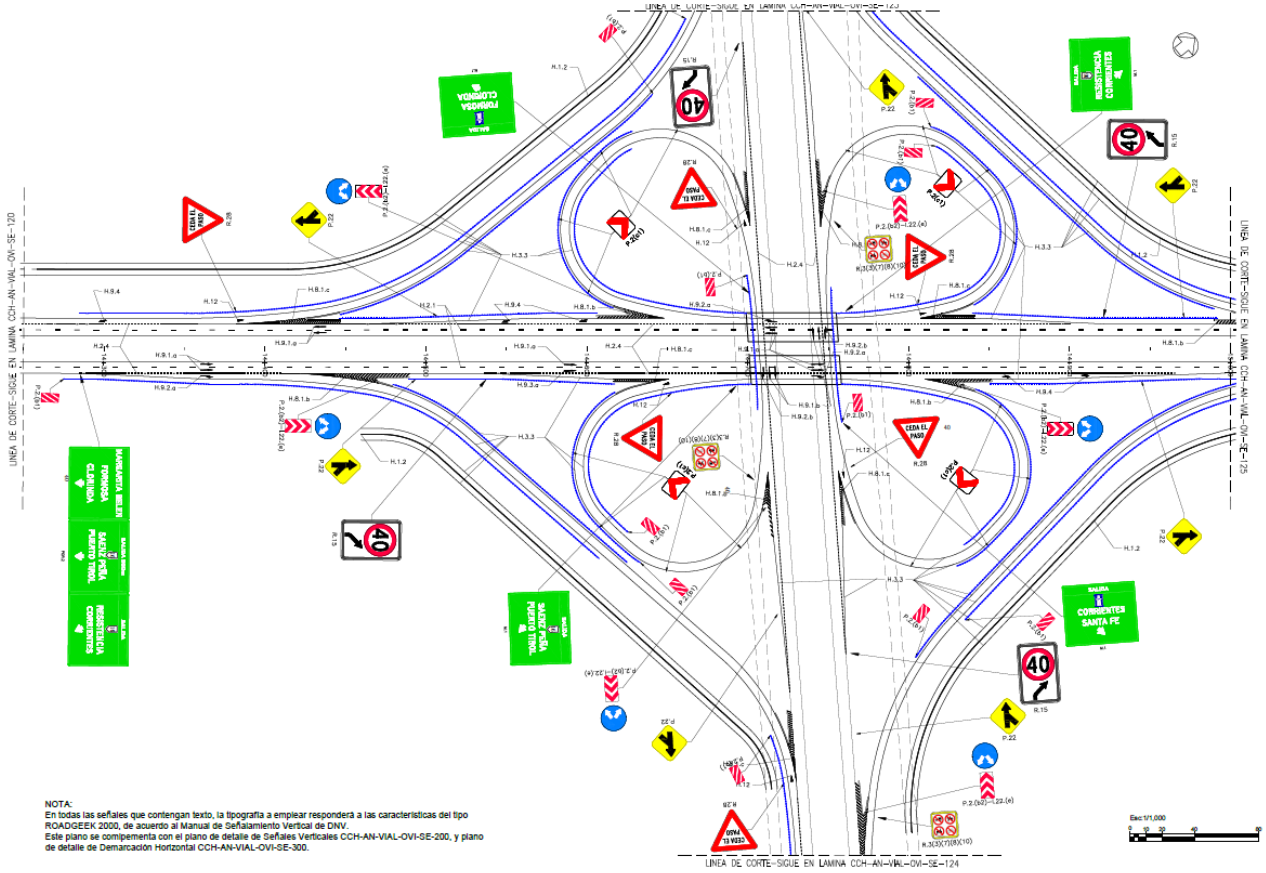


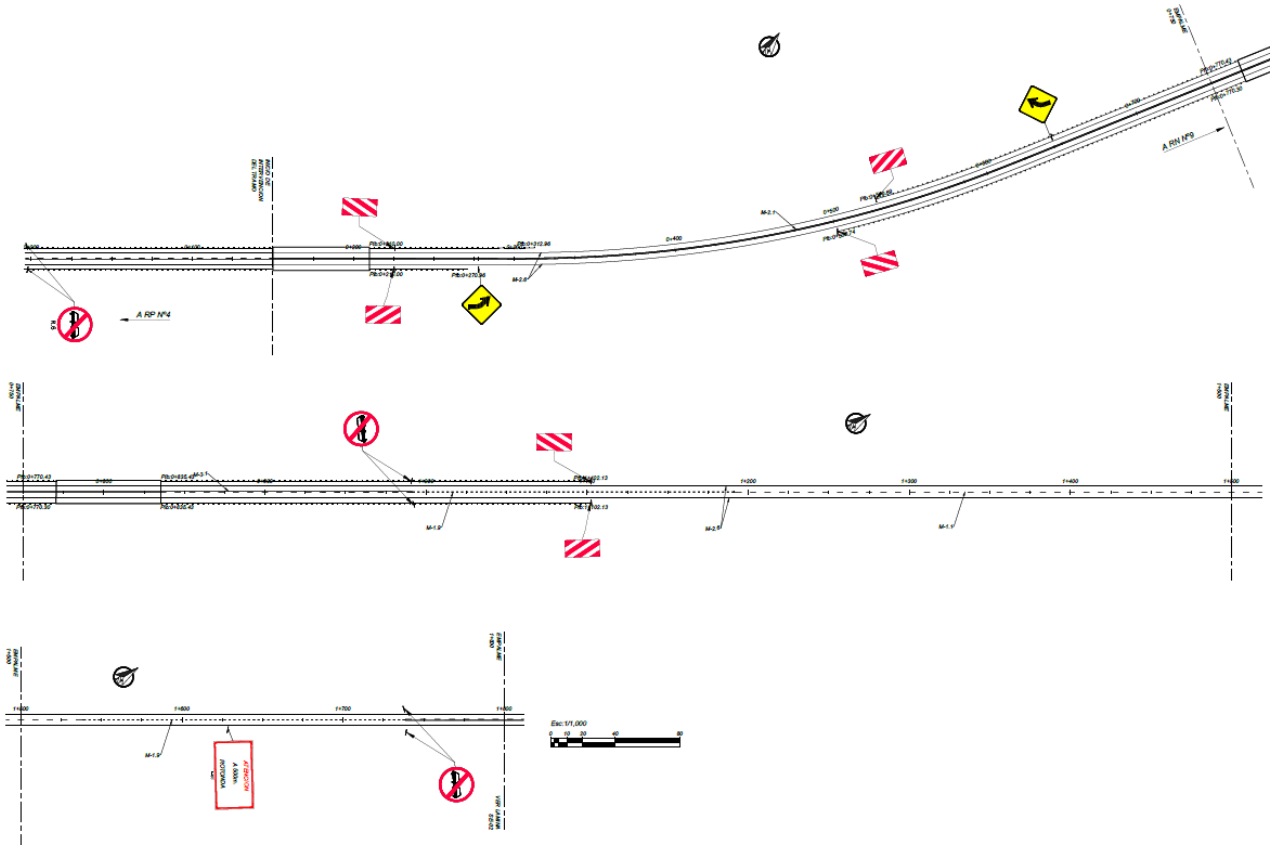
Vehicle Kinematics Analysis





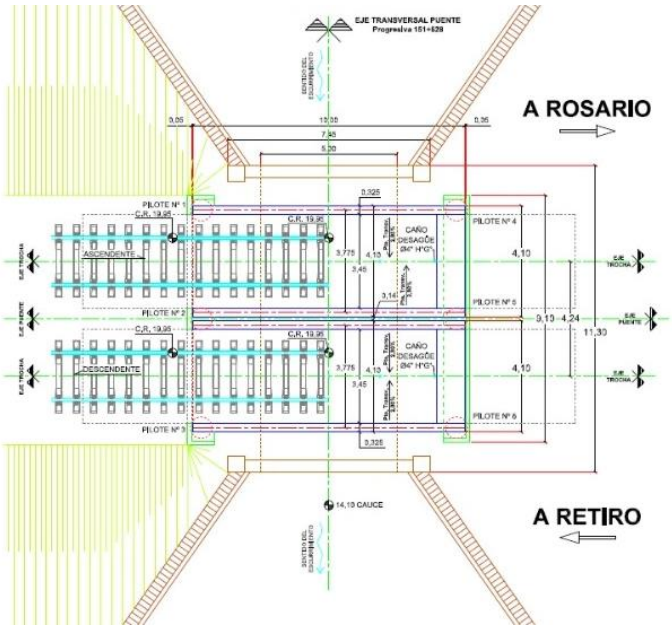
Road Signage and Marking

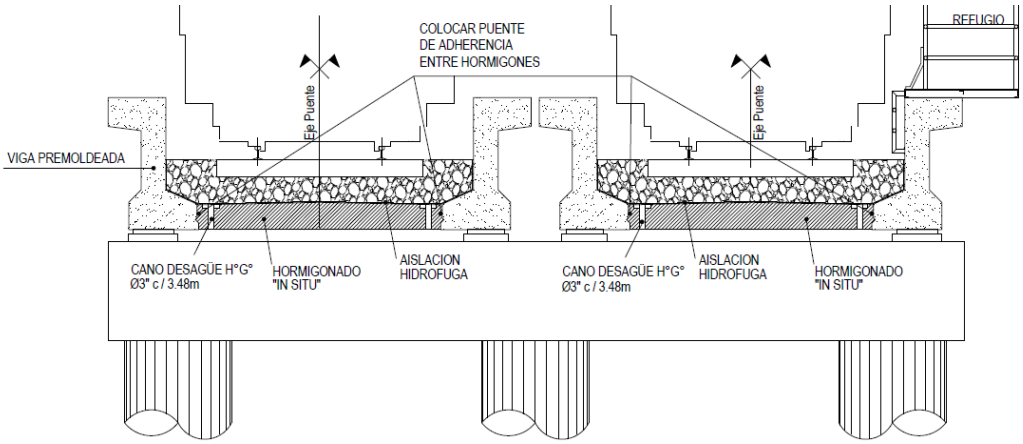




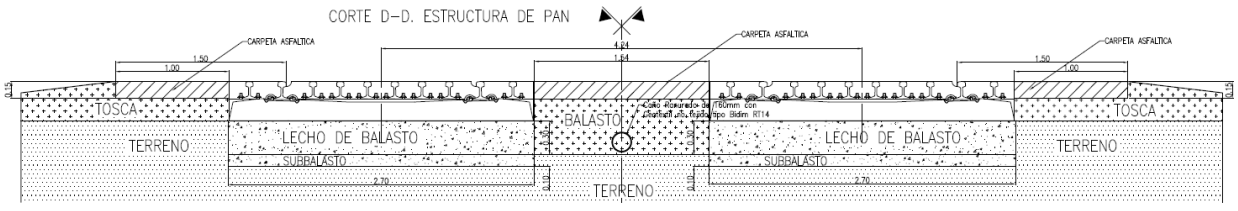
Project - National Route Nº11 Highway - Resistencia, Chaco

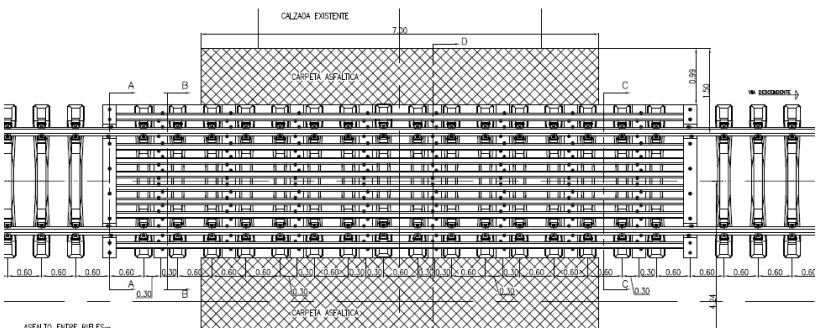
Railway Projects Details

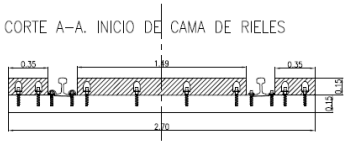


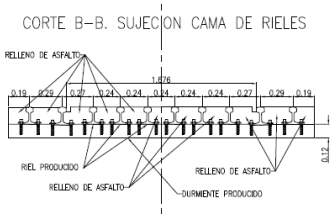


Level Crossing - Roadway Detail over Railway

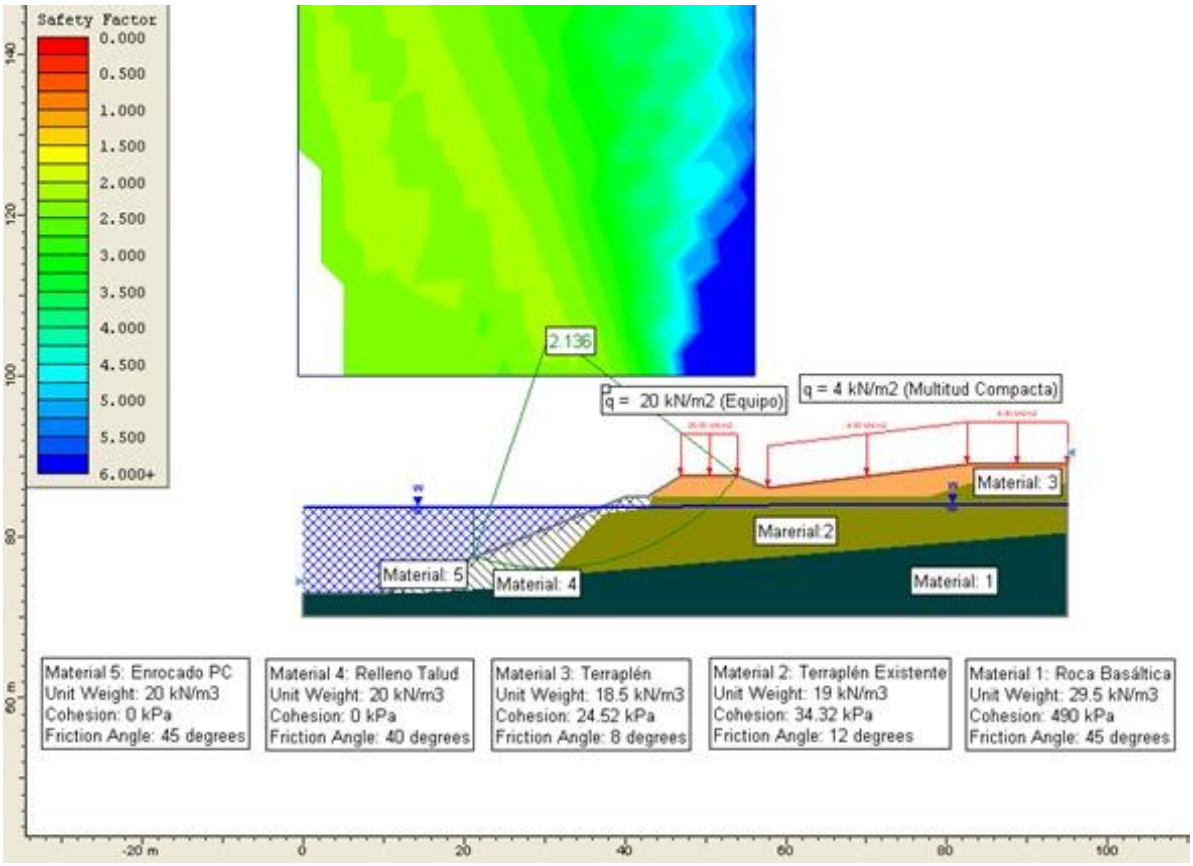


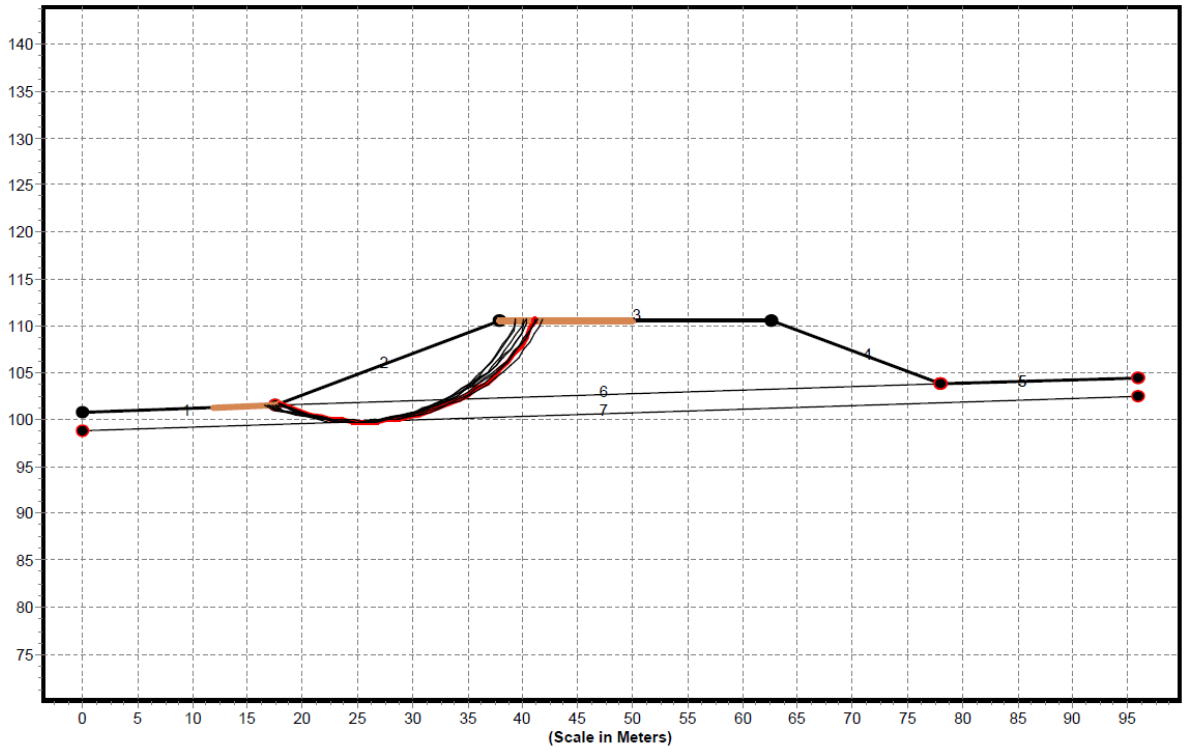






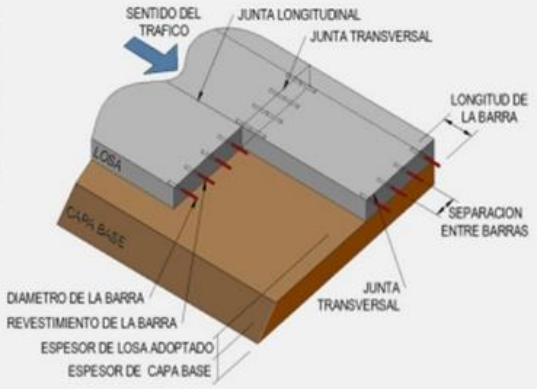
Slope Stability Analysis

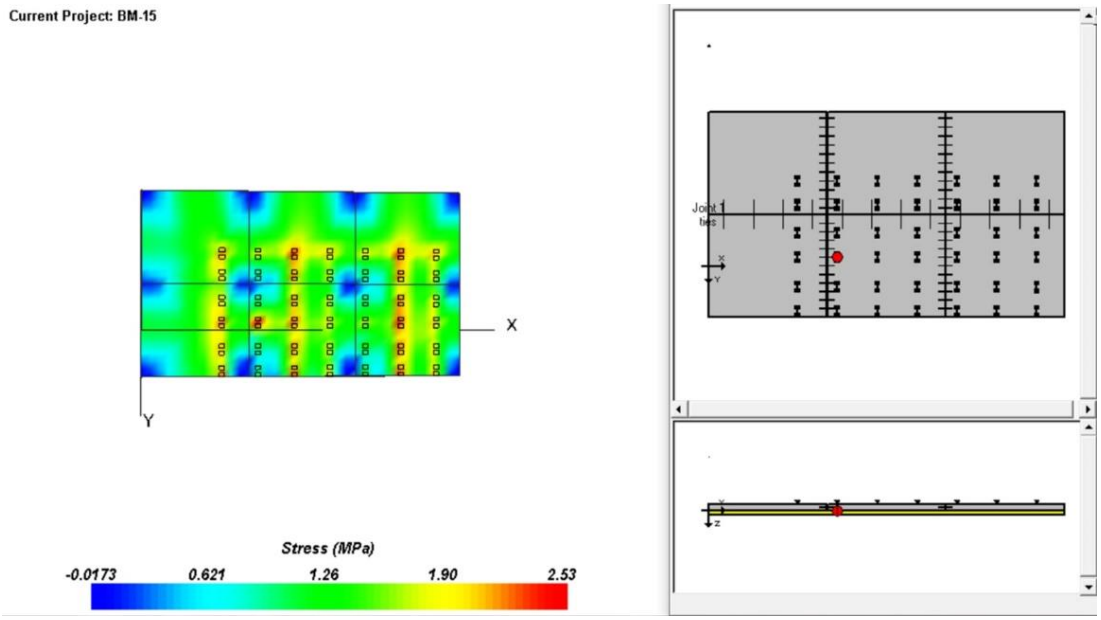


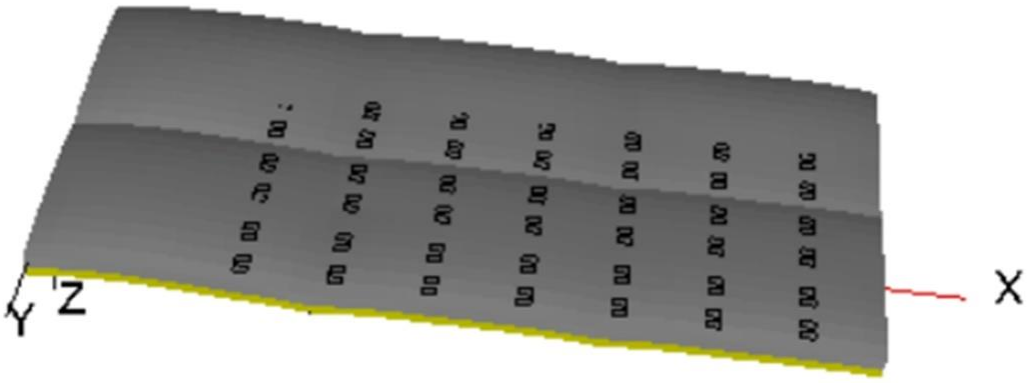


Pavement Calculation

Tipo de Capa Base	BG-Cto
Espesor de Capa Base (mm)	150
Diámetro de Barras Pasajuntas (mm)	283
Longitud de Barras Pasajuntas (cm)	50
Separación entre Barras Pasajuntas (cm)	34
Revestimiento de Barras Pasajuntas	SI
Separación entre Juntas Transversales (m)	3.6
Espesor de Losa Adoptado (mm)	250

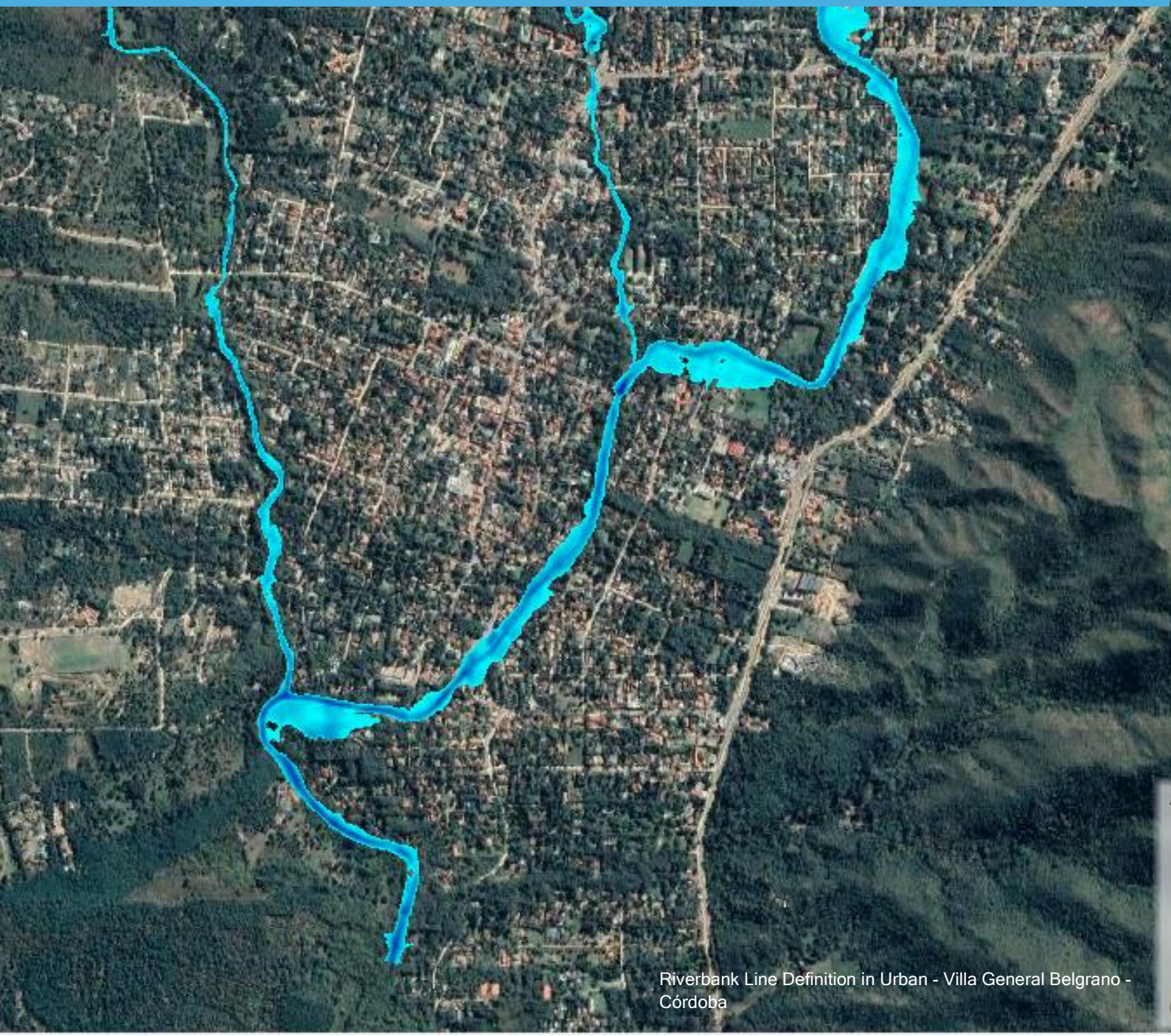






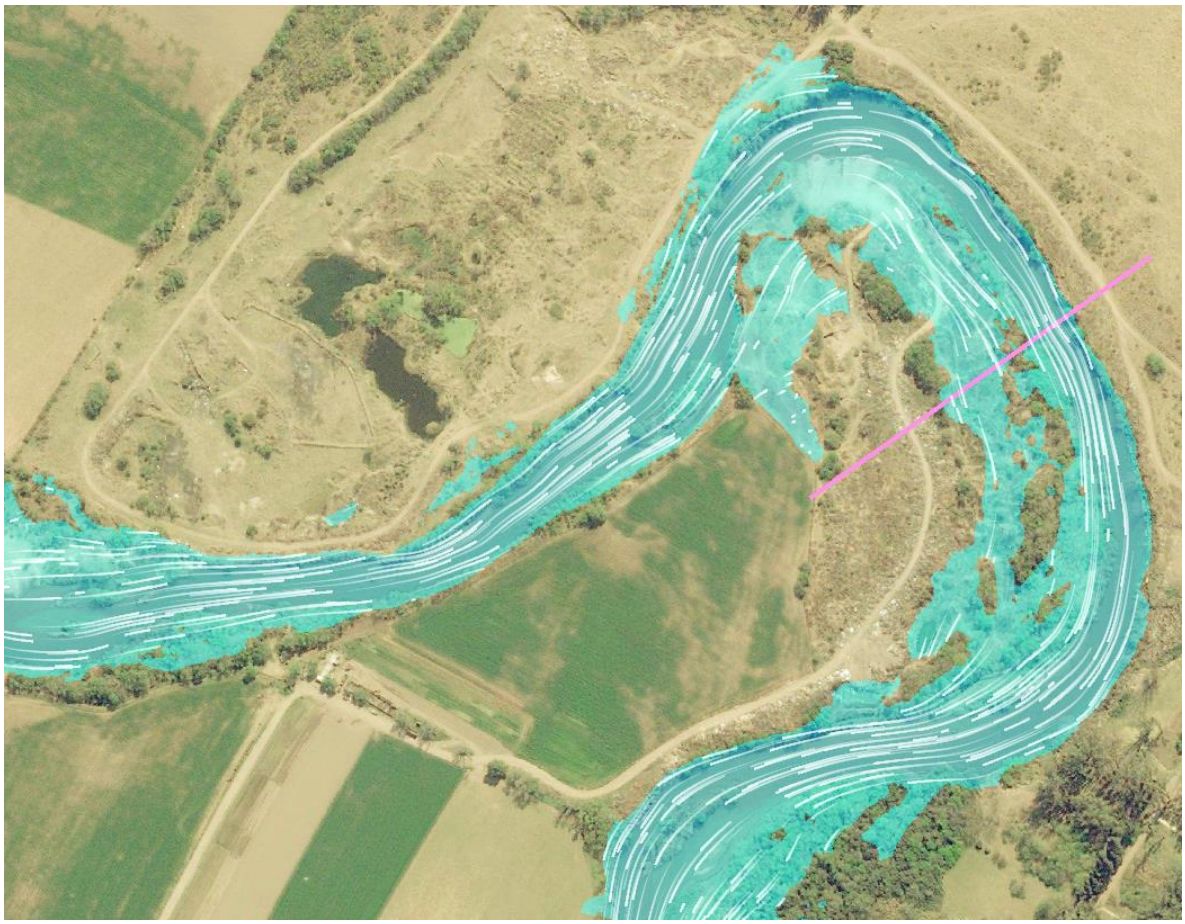
Projects analyzed with Infraworks

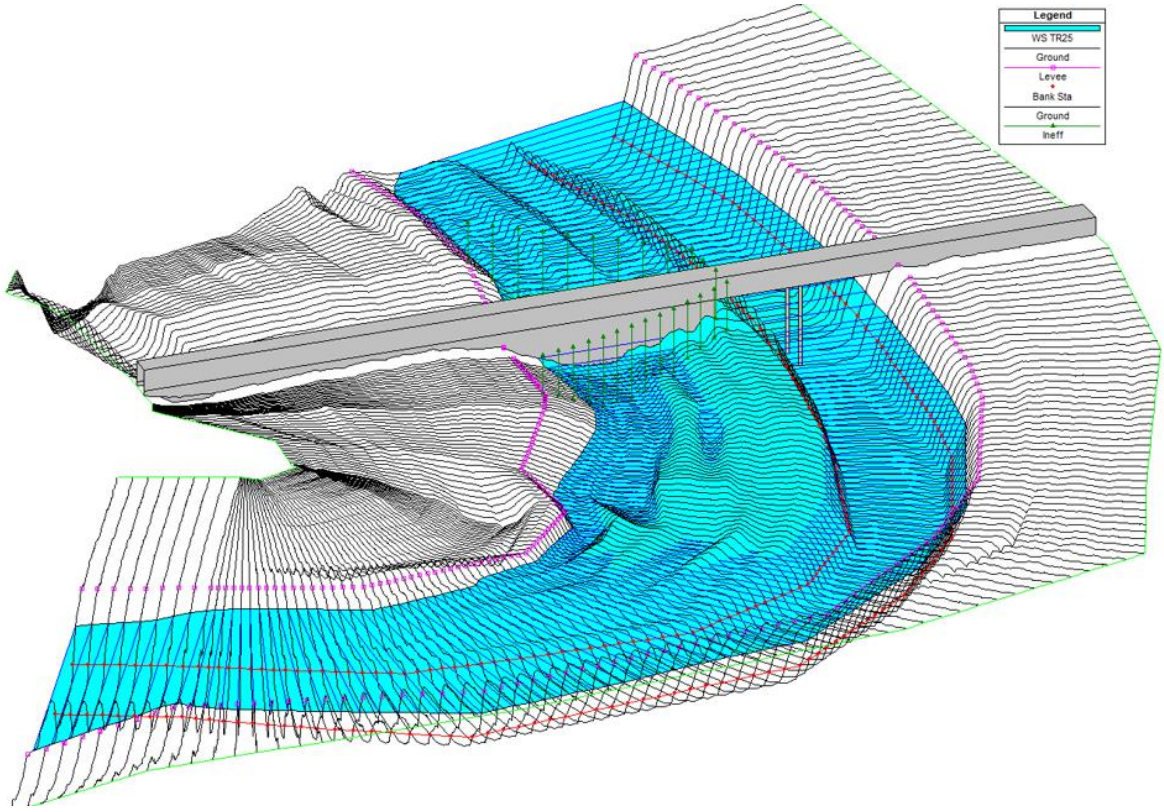
- Related to hydrological models:
  - Modeling of the most common hydrological processes occurring in a catchment area, such as simulating the conversion of rainfall into runoff, flow routing through hillslopes and riverbed, and calculating the outflow hydrograph, including peak volume and delay, etc.; with applications in implementing early flood warning systems, delineating flood-prone areas, estimating design flows for water works, and quantifying the effect of land use changes on runoff, among other applications.
- Related to hydraulic models:
  - Modeling of one-dimensional steady flow, one-dimensional and two-dimensional unsteady flow, sediment transport calculations, and water temperature/water quality modeling, for application in the analysis of natural riverbed behavior such as rivers and streams, as well as the analysis and design of hydraulic structures, canal networks, and bridge hydraulics.



Riverbank Line Definition in Urban - Villa General Belgrano - Córdoba

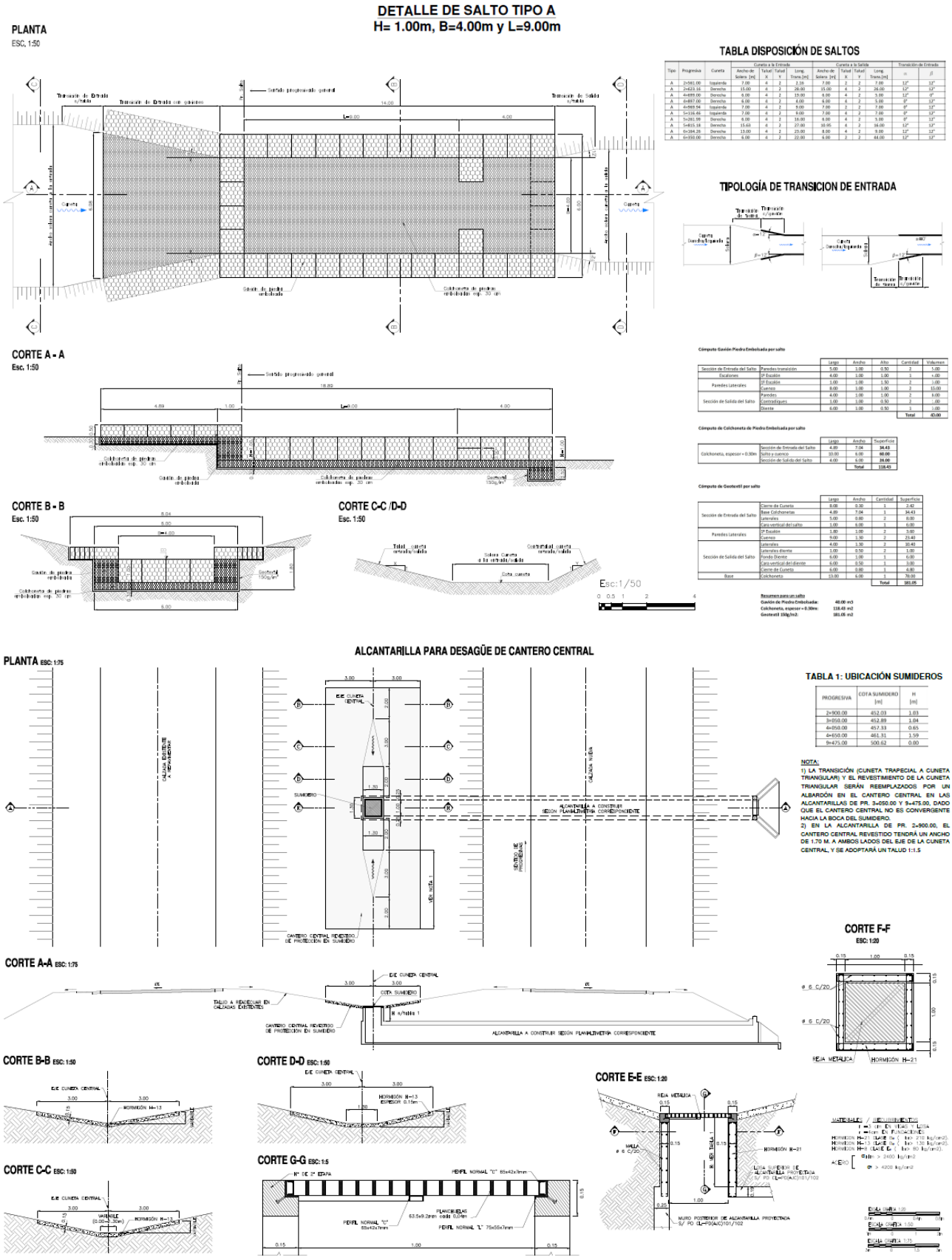
Hydraulic Models with HEC-RAS y HEC-HMS





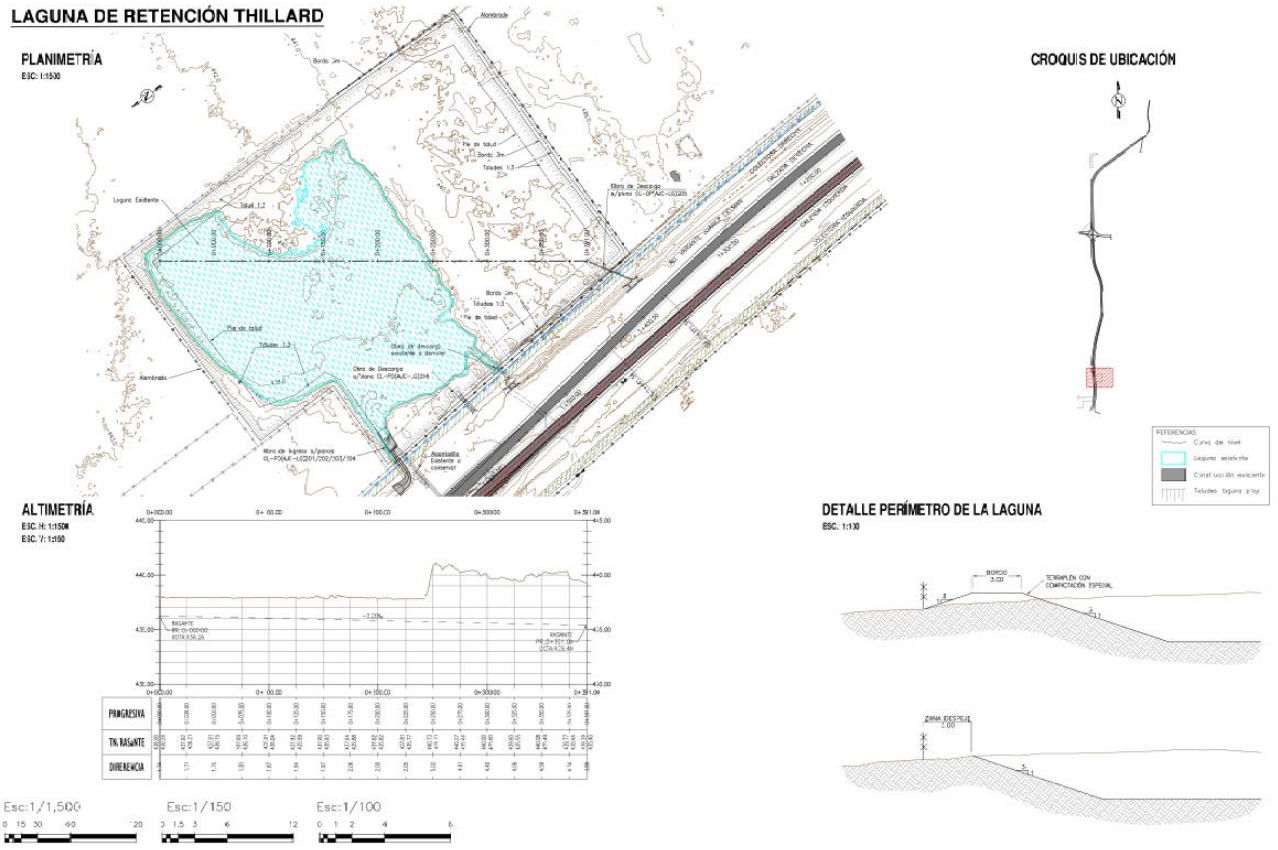
Project -Villa María Ring Road- Córdoba

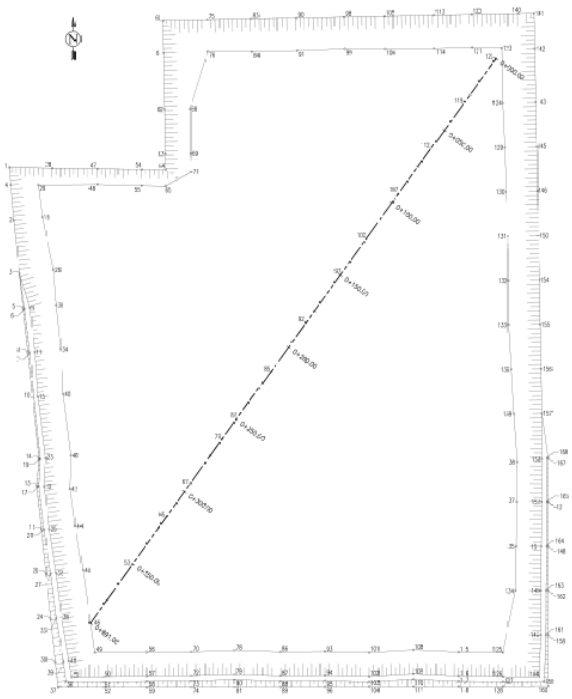
Constructive Details



Project - Duplication of the Juárez Celman Highway - Córdoba

Retention Ponds





Punto	Este [E]	Norte [N]	Cota [m]
1	4866960.74	6532'62.84	440.87
2	4866960.31	6532'62.59	441.41
3	4866958.69	6532'62.87	441.33
4	4866958.56	6532'62.58	441.50
5	4866958.61	6532-082.28	440.62
6	4866958.55	6532-083.25	440.87
7	4866962.28	6532-058.85	440.70
8	4866962.26	6532-058.82	441.05
9	4866962.33	6532-083.87	440.87
10	4866960.91	6532-083.86	440.52
11	4866960.26	6532-058.54	440.70
12	4867250.91	6532'174.88	440.30
13	4866966.52	6532'183.87	440.11
14	4866967.60	6532'198.58	440.29
15	4866966.96	6532-083.68	440.54
16	4866968.92	6532-058.05	440.02
17	4866967.48	6532-083.37	440.50
18	4866968.55	6532'154.82	475.97
19	4866968.22	6532'188.05	440.02
20	4866975.55	6532'193.98	479.61
21	4866975.96	6532'158.80	440.50
22	4866975.67	6532'182.82	440.50
23	4866975.21	6532'198.07	440.50
24	4866974.22	6532'208.56	479.46
25	4866975.34	6532'159.81	440.50
26	4866975.68	6532'104.01	475.90
27	4866974.20	6532'184.37	440.50
28	4866975.20	6532'162.35	441.05
29	4866962.25	6532'152.62	496.20
30	4866976.83	6532-084.36	438.96
31	4866977.28	6532-084.27	475.86
32	4866977.18	6532'154.88	440.50
33	4866977.33	6532'208.39	440.50
34	4866979.88	6532-060.80	475.80
35	4866985.93	6532-075.71	440.50
36	4866982.86	6532-073.89	440.50
37	4866978.31	6532-070.20	438.88
38	4866980.27	6532-029.27	440.50
39	4866980.41	6532-084.25	440.50
40	4866980.25	6532-035.81	475.75
41	4866986.38	6532-084.09	440.50
42	4866985.10	6532'181.50	475.61
43	4866985.61	6532-060.50	475.67
44	4866988.00	6532-060.37	475.59
45	4866990.01	6532-135.95	475.53
46	4866996.17	6532-096.81	475.60
47	4867000.20	6532'161.36	440.72
48	4867000.06	6532'152.86	496.20
49	4866998.50	6532-089.54	496.00
50	4867000.09	6532-075.90	440.50
51	4867000.31	6532-072.98	440.50
52	4867000.31	6532-070.38	479.53
53	4867024.67	6532-188.89	475.43
54	4867025.20	6532'161.87	440.83
55	4867025.05	6532'152.85	496.20
56	4867026.27	6532-089.86	496.00
57	4867029.30	6532-076.86	440.50
58	4867029.31	6532-073.86	440.50
59	4867028.31	6532-070.14	479.43
60	4867030.12	6532-045.33	412.35
61	4867030.47	6532-026.80	412.10
62	4867030.09	6532'193.36	441.01
63	4867030.58	6532'190.35	440.98
64	4867030.72	6532'161.35	440.87
65	4867030.57	6532'151.86	496.20

Punto	Este [E]	Norte [N]	Cota [m]
66	4867030.24	w5325666.10	435.47
67	4867052.80	w5325684.57	435.49
68	4867054.40	w5327795.82	436.24
69	4867054.94	w5327770.83	436.19
70	4867054.27	w5324960.85	436.00
71	4867056.27	w5327760.85	436.17
72	4867056.30	w5324376.65	440.50
73	4867054.31	w5324373.65	440.50
74	4867054.31	w5324701.19	439.38
75	4867064.11	w5328845.62	442.22
76	4867062.46	w5328827.67	436.27
77	4867077.47	w5326009.65	435.52
78	4867077.71	w5324901.89	436.00
79	4867077.74	w5324377.89	440.50
80	4867077.75	w5324376.89	440.50
81	4867077.76	w5324701.74	439.12
82	4867075.50	w5326200.75	435.53
83	4867087.11	w5328846.61	442.45
84	4867087.47	w5328827.68	436.27
85	4867090.78	w5326647.62	435.56
86	4867108.96	w5324889.98	436.00
87	4867108.99	w5324376.68	440.50
88	4867108.99	w5324373.68	440.50
89	4867108.00	w5324701.80	439.44
90	4867111.10	w5328846.89	442.40
91	4867111.46	w5328828.10	436.27
92	4867117.36	w5326674.95	435.59
93	4867125.27	w5324901.91	436.00
94	4867125.30	w5324376.91	440.50
95	4867125.31	w5324373.91	440.50
96	4867125.31	w5324701.85	439.38
97	4867130.94	w5327701.88	435.63
98	4867130.00	w5328847.82	442.24
99	4867130.35	w5328829.12	436.27
100	4867154.47	w5327722.29	435.65
101	4867156.27	w5324889.47	436.00
102	4867154.30	w5324376.67	440.50
103	4867154.31	w5324373.67	440.50
104	4867154.31	w5324701.81	439.61
105	4867160.00	w5328847.86	442.42
106	4867160.36	w5328829.03	436.27
107	4867160.71	w5327747.16	435.68
108	4867175.27	w5324891.89	436.00
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110	4867175.31	w5324374.69	440.50
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112	4867180.95	w5327722.83	435.71
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115	4867208.27	w5324889.87	436.00
116	4867208.30	w5324376.87	440.50
117	4867208.31	w5324373.87	440.50
118	4867208.31	w5324701.62	439.55
119	4867209.19	w5327708.59	435.74
120	4867211.59	w5328848.81	442.44
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122	4867225.43	w5328823.46	435.77
123	4867227.71	w5328829.47	436.27
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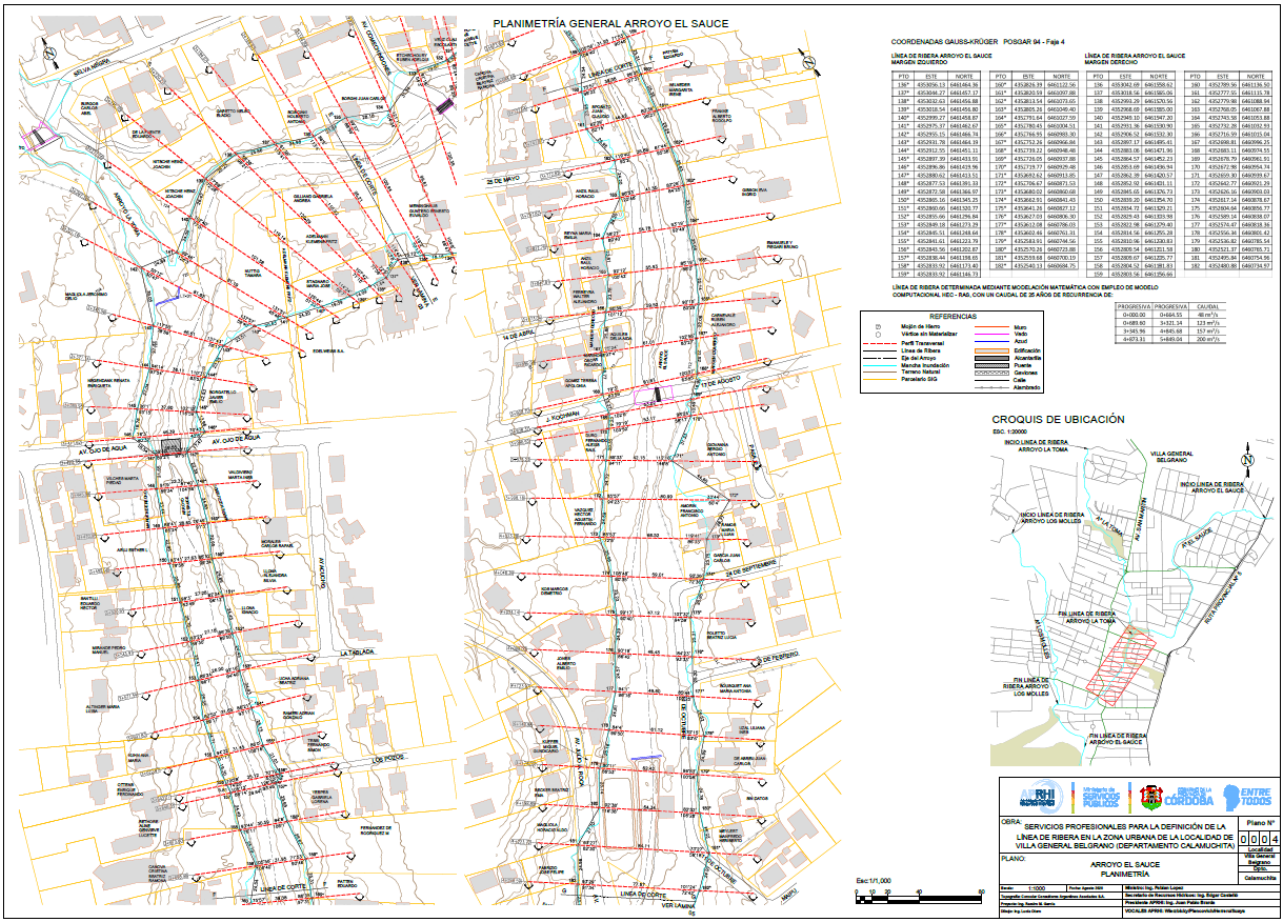
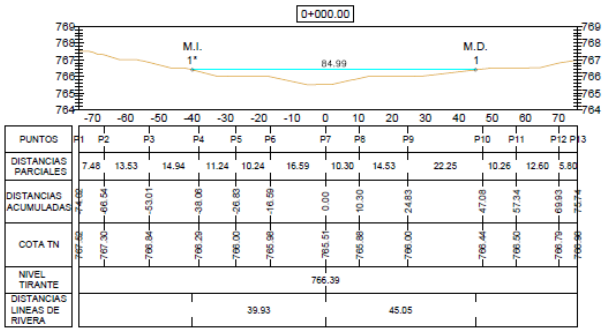
127	4867225.31	w5324373.16	440.50
128	4867225.31	w5324701.67	439.64
129	4867229.39	w5327713.95	436.19
130	4867230.25	w5327708.73	436.14

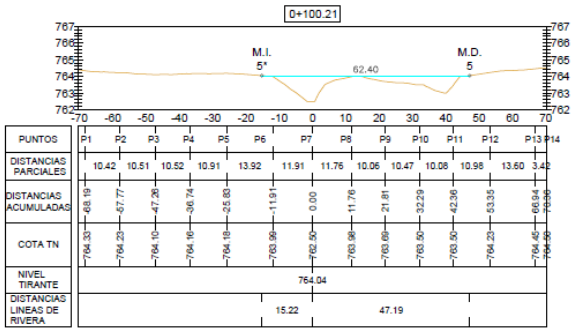
Punto	Este [E]	Norte [N]	Cota [m]
131	4867231.15	w5327231.76	436.09
132	4867231.54	w5326988.78	436.04
133	4867231.65	w5326731.78	435.99
134	4867231.35	w5325534.46	435.69
135	4867231.83	w5325490.46	435.74
136	4867231.05	w5326488.80	435.94
137	4867234.17	w5325734.46	435.79
138	4867234.37	w5325596.75	435.79
139	4867234.56	w5326233.83	435.89
140	4867237.08	w5326488.90	442.74
141	4867241.95	w5326490.00	442.50
142	4867244.54	w5326839.28	442.60
143	4867244.95	w5327991.11	442.48
144	4867244.82	w5326475.75	443.50
145	4867247.65	w5327741.11	442.21
146	4867247.95	w5327491.22	442.04
147	4867249.73	w5326991.07	443.50
148	4867251.94	w5325490.98	443.22
149	4867249.78	w5325534.07	443.50
150	4867244.45	w5327241.22	445.86
151	4867256.11	w5325491.07	443.50
152	4867256.29	w5325534.07	443.50
153	4867256.39	w5325988.68	443.50
154	4867244.95	w5326989.33	445.84
155	4867249.45	w5326741.33	445.92
156	4867249.95	w5326489.44	445.57
157	4867256.45	w5326824.44	445.18
158	4867251.99	w5326991.98	443.08
159	4867251.60	w5326473.79	445.01
160	4867254.02	w5326743.63	443.96
161	4867251.73	w5326988.98	443.50
162	4867251.96	w5326524.08	443.10
163	4867251.78	w5326524.48	443.50
164	4867253.11	w5326489.98	443.50
165	4867251.29	w5326741.48	443.50
166	4867251.36	w5326989.89	443.50
167	4867251.88	w5326991.68	443.33

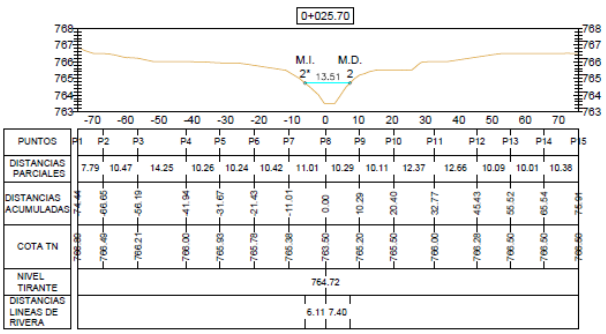
Project - Delay Ponds - Juárez Celman Highway - Córdoba

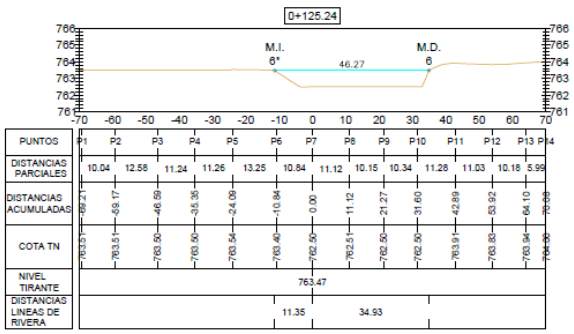
Riverbank Lines





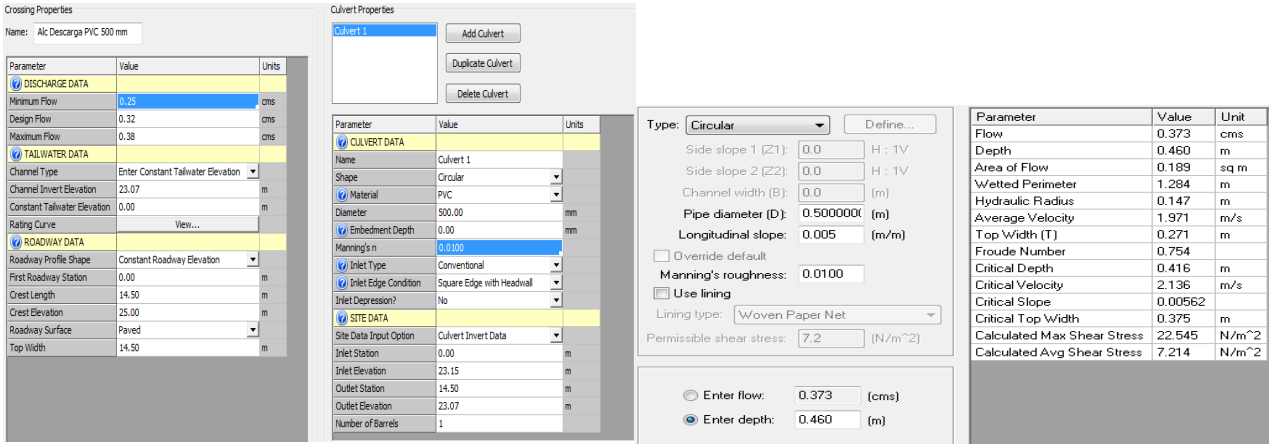


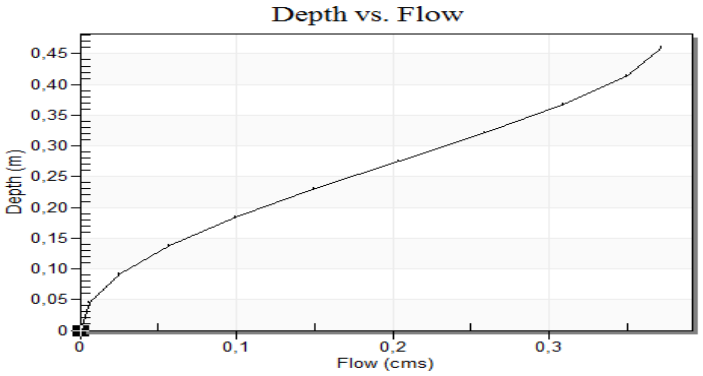


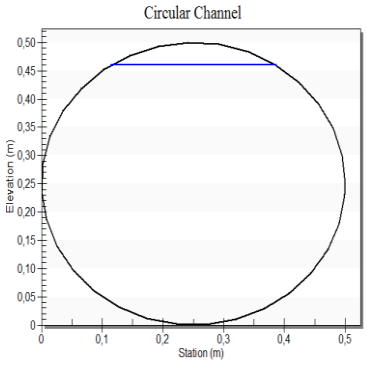


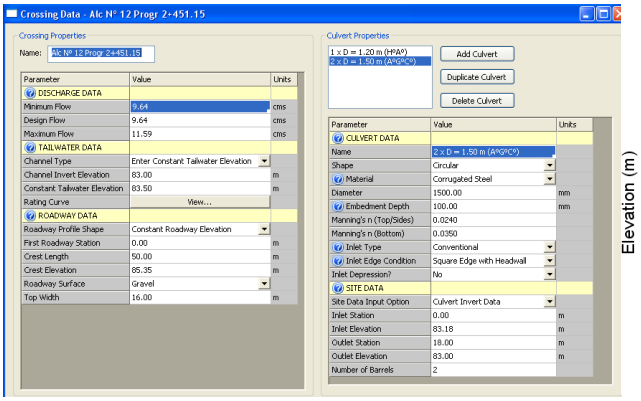
Riverbank Line Definition in Urban Areas - Villa General Belgrano - Córdoba

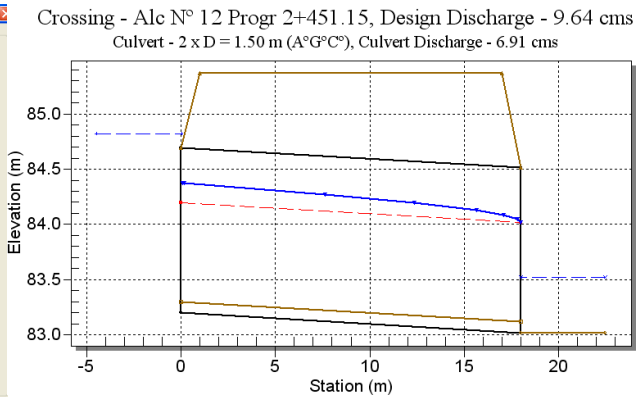
Hydraulic Work Verificaction with HY-8



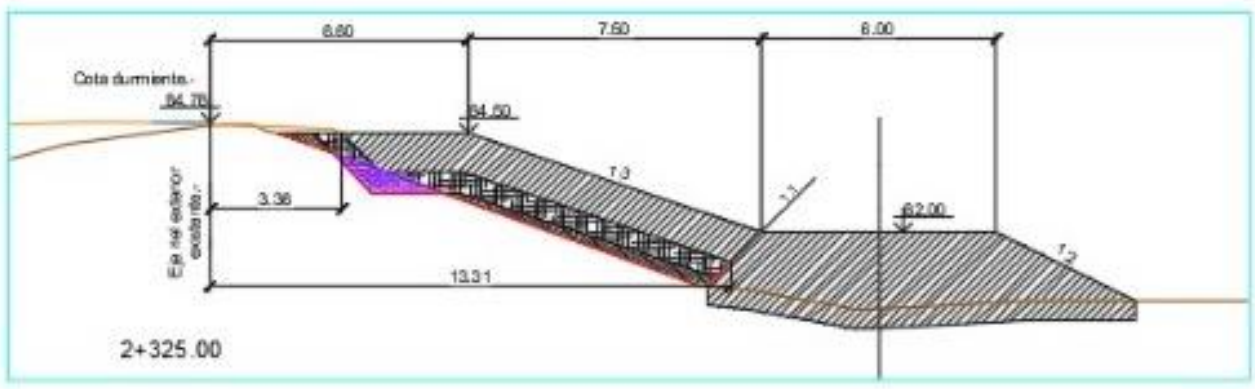






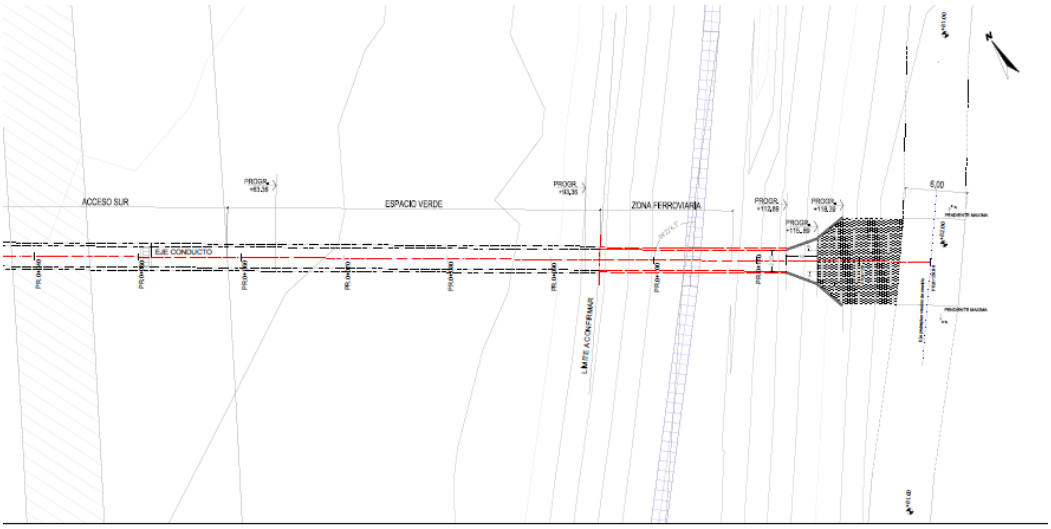


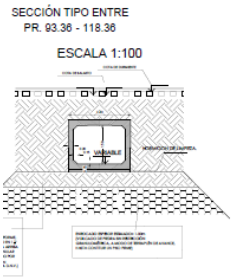
Coastal Protection Works

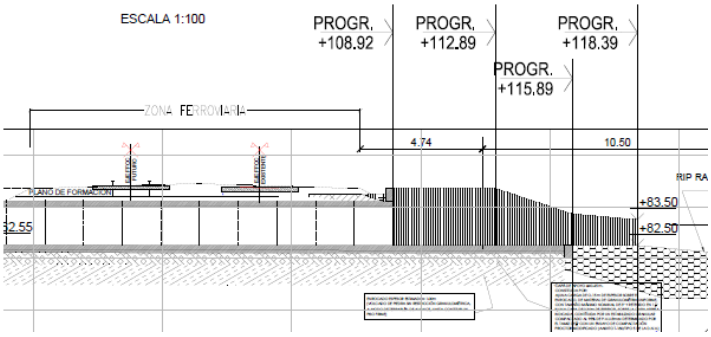


Coastal Protection of the Paraná River - Posadas - Misiones

Streams Channeling







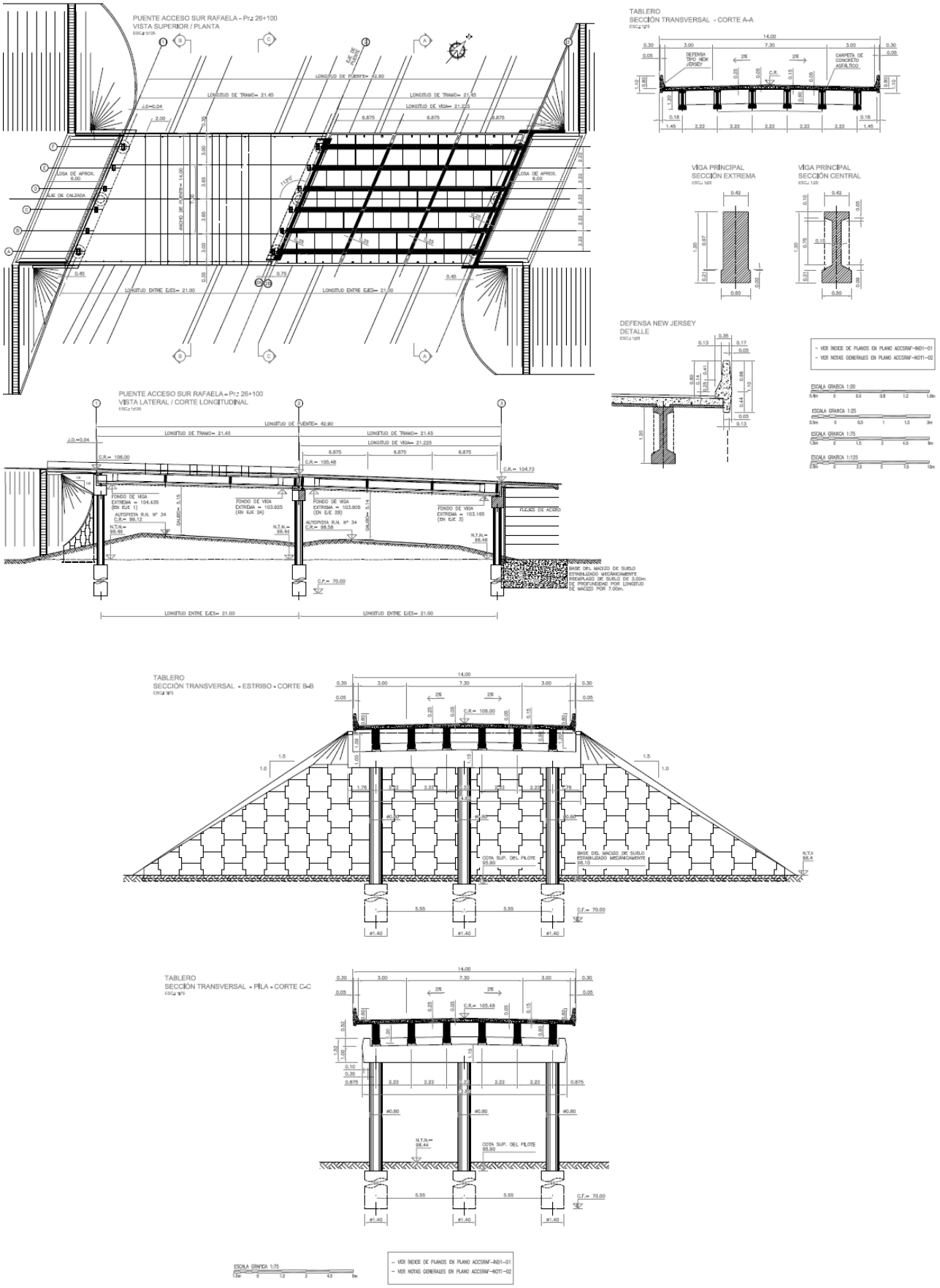
Channeling of Vicario and Mitre Streams
Posadas, Misiones

STRUCTURES

- Related to bridges and structures:
  - Design and calculation of structures, whether architectural or civil works, such as bridges, foundations, buildings, retaining walls, etc.
  - Surveying and structural diagnosis of infrastructures.

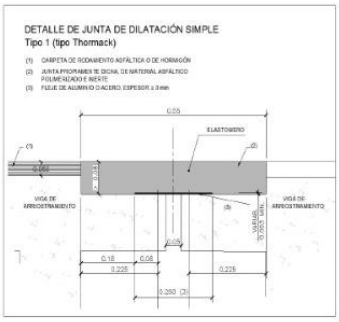
International Bridge - Posadas - Encarnación

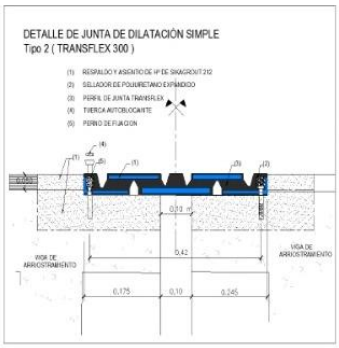
Project for a Road Bridge



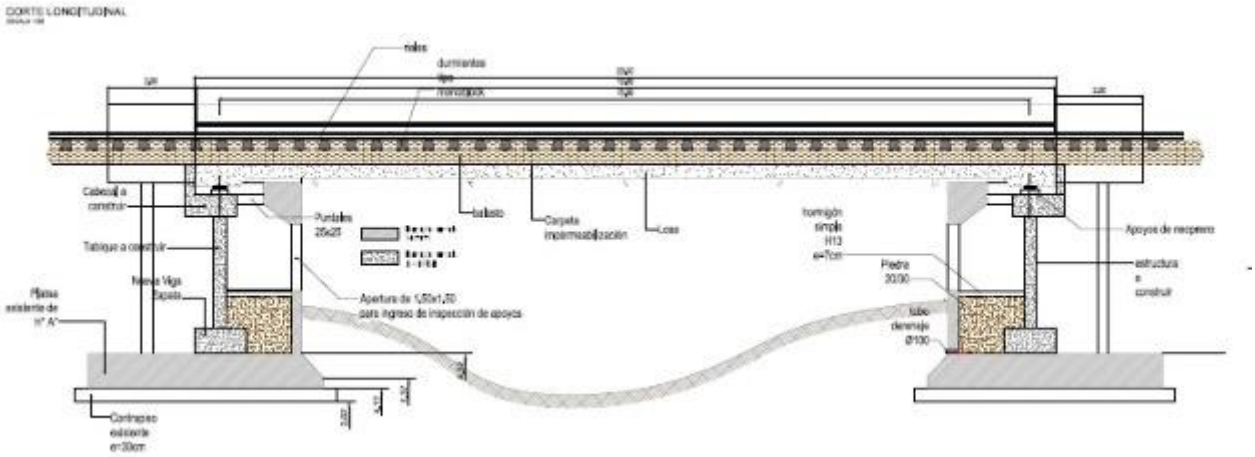
Project - National Route Nº34 Highway - Rafaela, Santa Fé

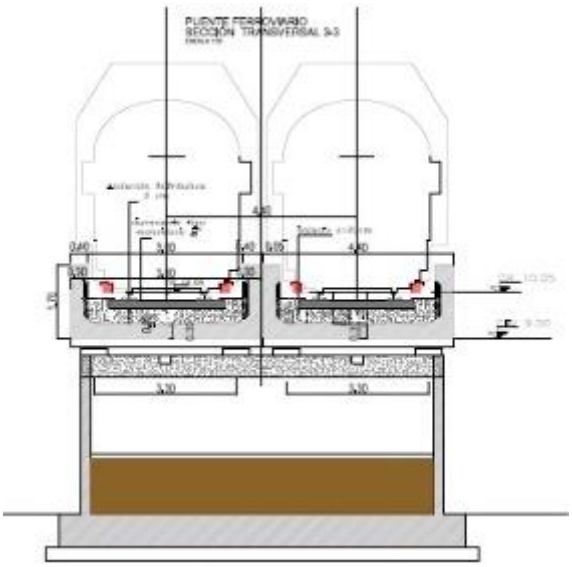
Construction Detail of Joints



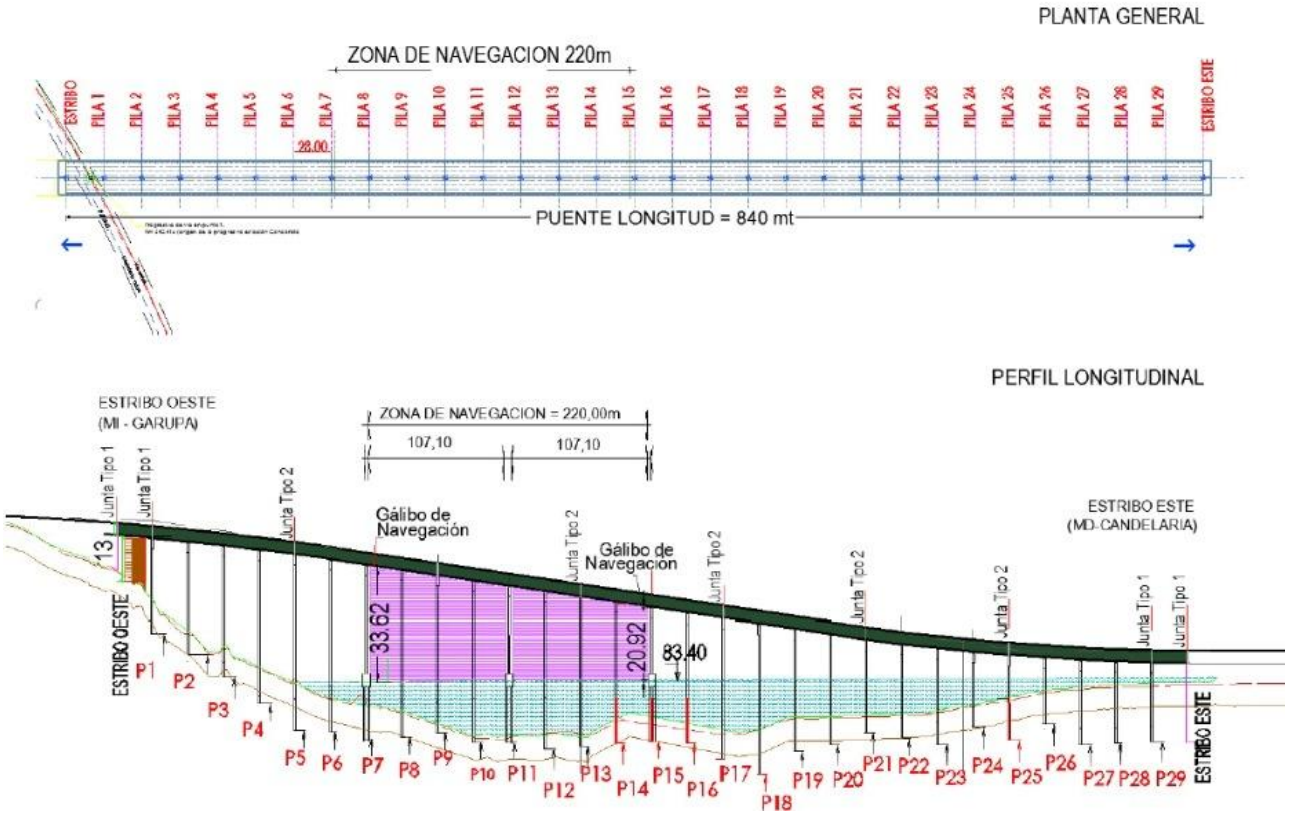


Project for a Railway Bridge





Project for a Bridge over a Navigable Channel



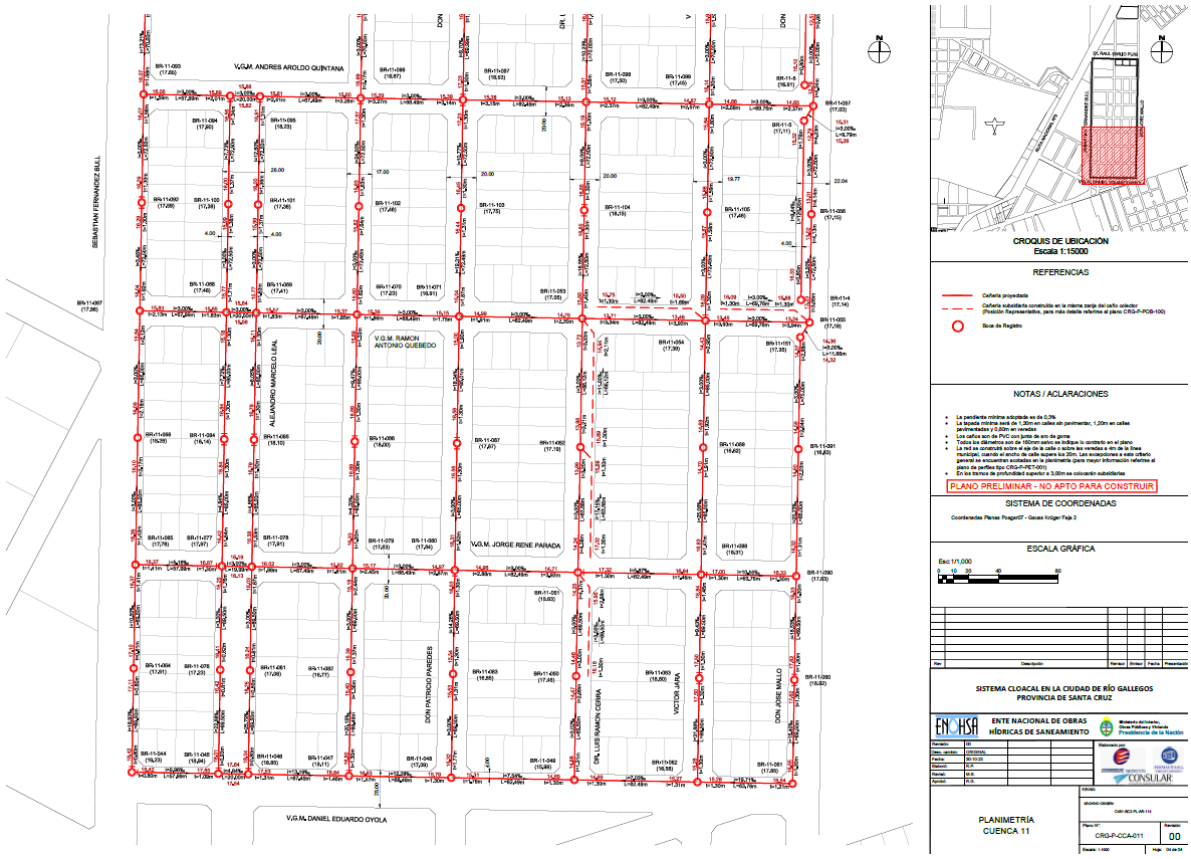
Project Garupá Bridge - Misiones

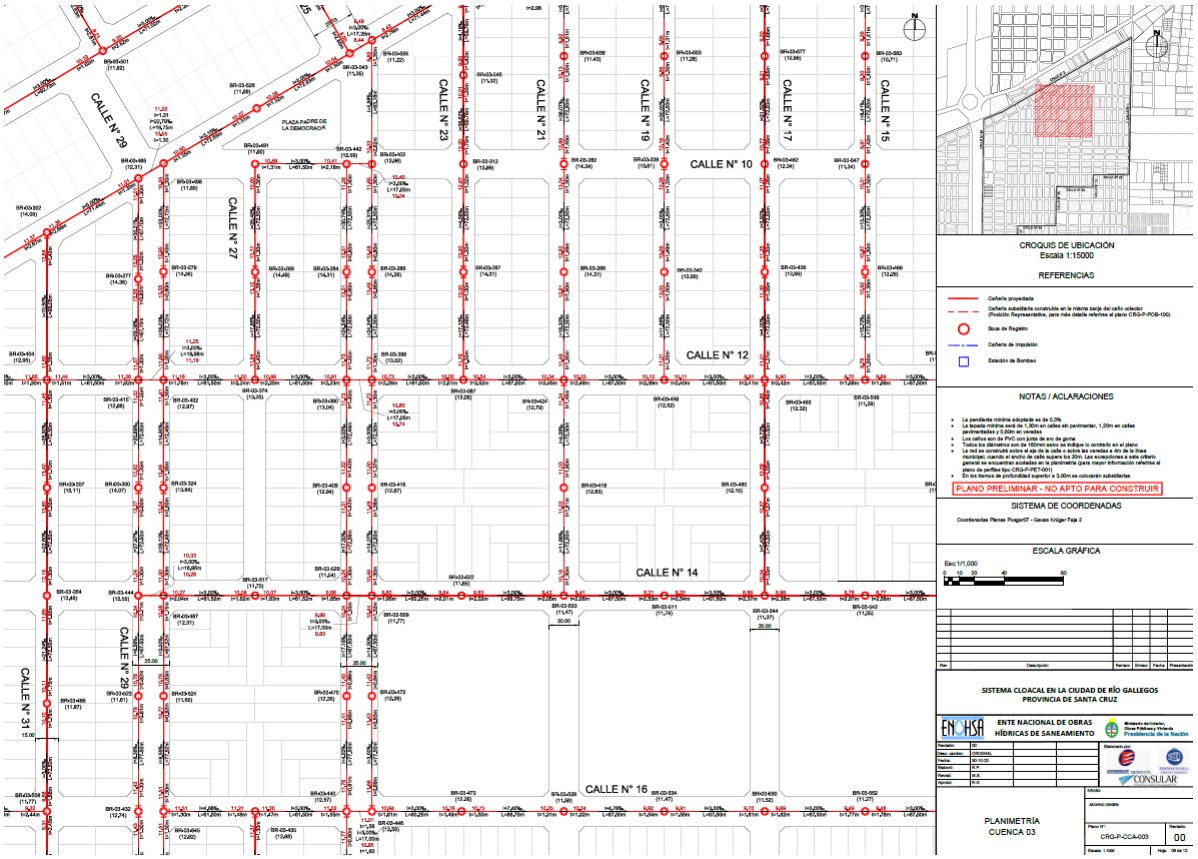
SANITARY ENGINEERING

- Related to the modeling of sanitary engineering infrastructures:
  - Design and analysis of urban infrastructure such as water networks, sewer networks, sewerage systems, and surface runoff management systems.
  - Water distribution systems: application of specific software to model water distribution systems, allowing understanding of the movement and destination of potable water and its constituents.
  - Surface drainage systems: channel designs and levees, and planning, analysis, and design related to stormwater runoff.
  - Sewerage systems: planning, analysis, and design of sewage collection and treatment systems.

Expansion of the sewage network of Río Gallegos - Santa Cruz

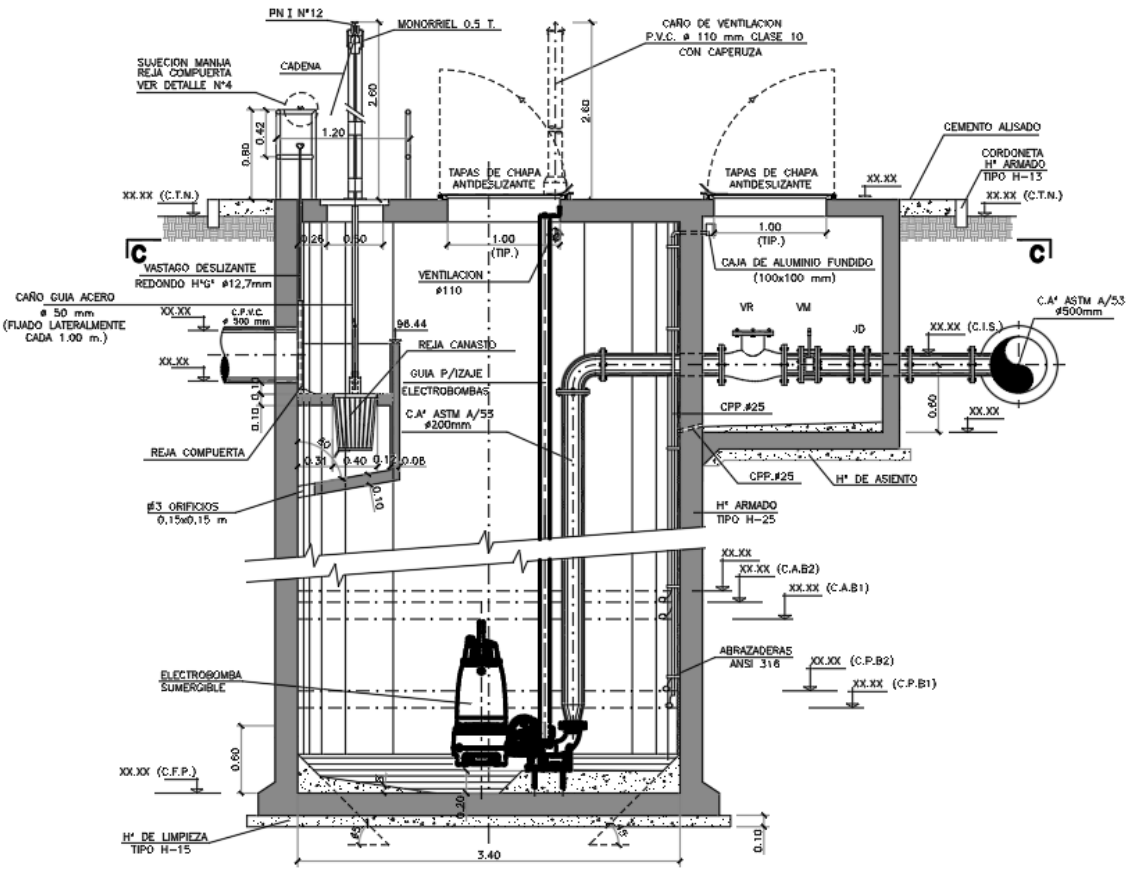
Sewer Network Project



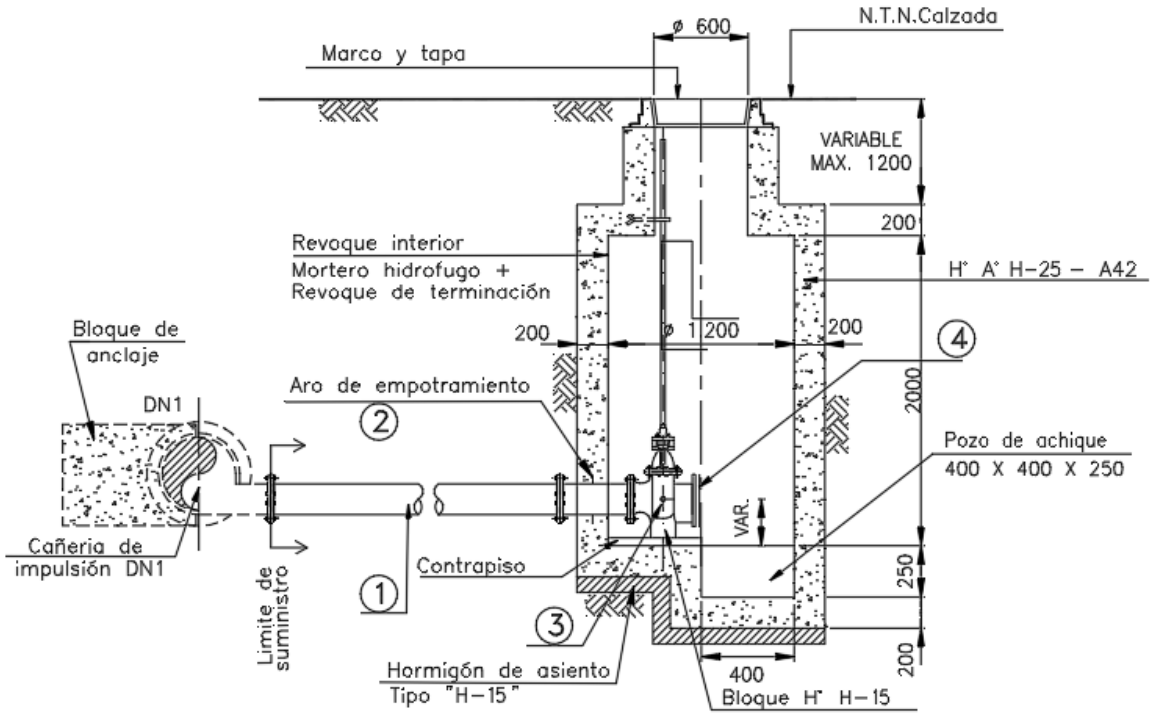


Expansion of the sewage network of Río Gallegos - Santa Cruz

Pumping Station



Chamber and Valve Detail



Expansion of the sewage network of Río Gallegos - Santa Cruz

Software Used

- Autodesk Civil 3D
  It allows carrying out design and documentation processes for various civil engineering projects, including roads and highways, railways, bridges and tunnels, stormwater, and sanitary networks.
- Autodesk Infraworks
  Conceptual design of infrastructures, allowing modeling, analyzing, and visualizing design contents within a realistic 3D environment that includes natural and built models, enhancing decision-making and project outcomes.
- Autodesk ReCap
  It allows knowing and veryfing the existing conditions to generate textured meshes and point clouds, achieving information to ensure better decision making in relation to planning and construction.
- QGIS
  Geographic Information System (GIS) software, which enables the visualization, management, editing, and analysis of raster and vector data formats as a database.
- Global Mapper
  It is a robust GIS application that combines a full range of spatial data processing tools with access to a wide variety of data formats.
- HEC-RAS
  This software allows for calculations of one-dimensional steady flow, one-dimensional and two-dimensional unsteady flow, sediment transport calculations, and modeling of water temperature/water quality.
- HEC-HMS
  Designed to simulate the complete hydrological processes of watershed systems. The software includes many traditional hydrological analysis procedures such as event infiltration, unit hydrographs, and hydrologic routing.
- Storm Water Management Model (SWMM)
  Used for planning, analysis, and design related to stormwater runoff, sanitation systems, and urban drainage.
- Epanet
  It is a program aimed at analyzing the behavior of water distribution systems and monitoring water quality within them.
- HY-8
  Automates hydraulic calculations of culverts using a series of essential features that facilitate culvert analysis and design.
- Slide / ElopeStabilility
  Slope stability analysis based on soil parameters of different strata, surcharge loads, and groundwater level.
- EverFE
  Calculation of both rigid and flexible pavement, new and reinforced.

CONSULAR
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