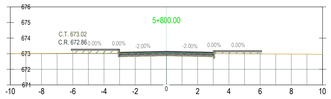
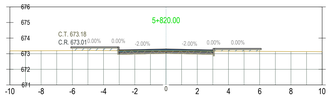
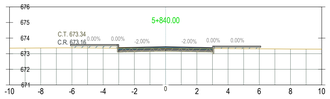
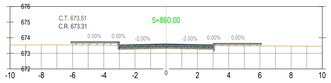
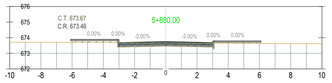
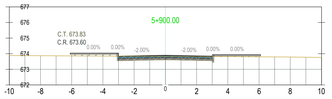


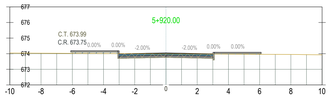


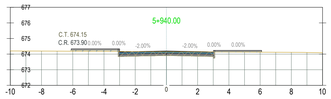


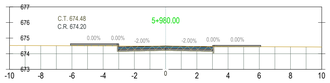


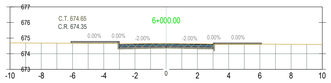


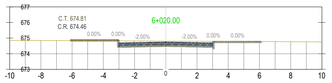


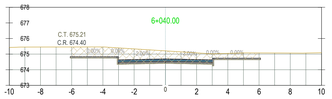


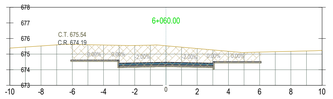


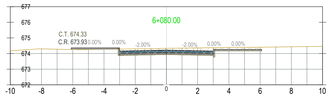


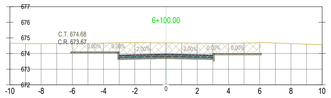




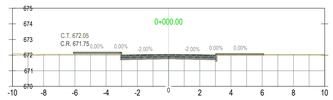


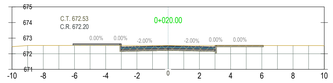


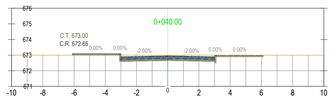


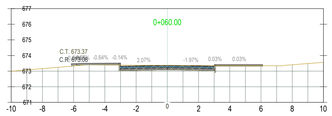


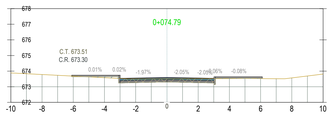
SECCIONES TRAMO FINAL

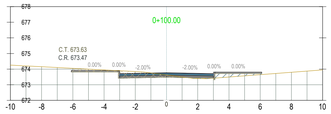


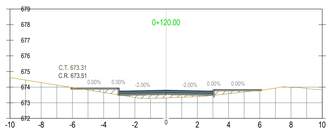


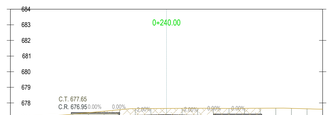


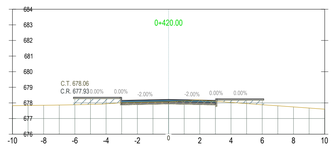


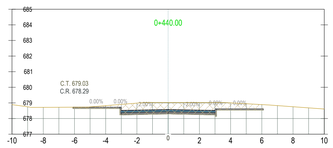


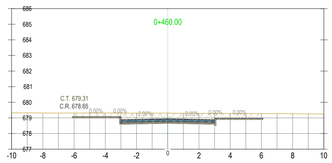












UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario: Villa Bejarano Luis Alberto

Tutor:
Firma y Sello:
Ing. Oscar Marcelo Chavez C.

Materia.: Proyecto de Ingeniería Civil II (M. Vías) - CIV 502

Tribunal: Ing. Jhonny M. Orgaz F.

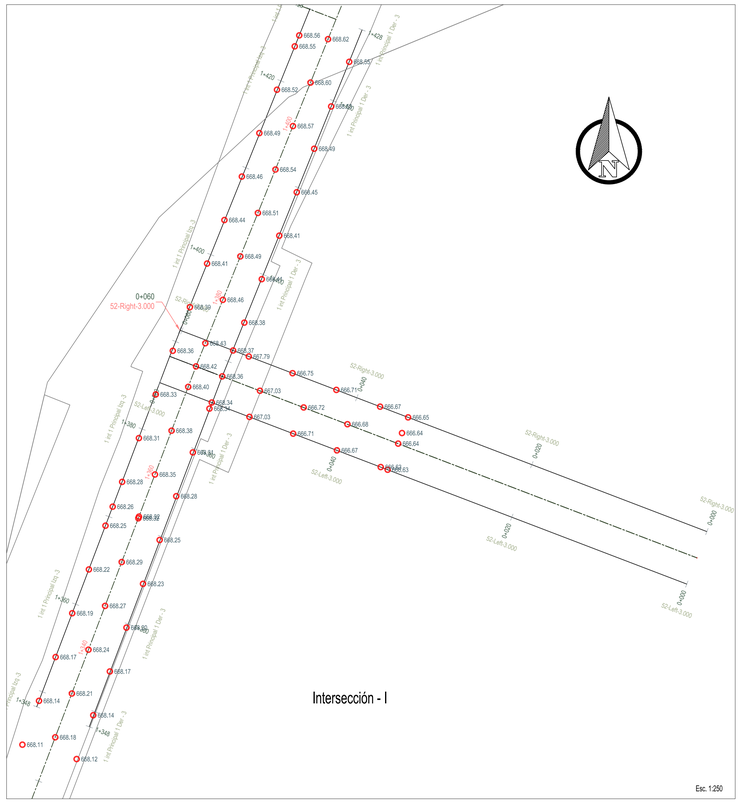
Tribunal: Ing. Wilson R. Yucra R.

Tribunal: Ing. Edwin Osvaldo Aguirre

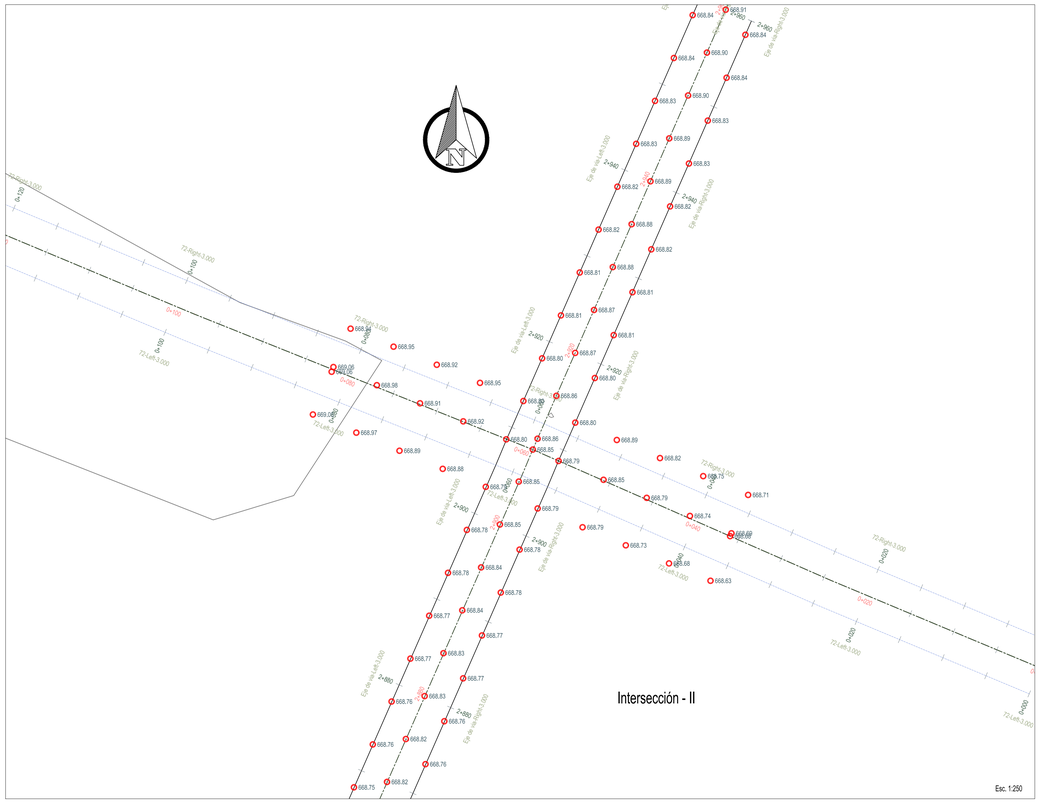
Sitio de Estudio - Departamento : Tarija
Provincia: Gran Chaco
Ciudad: Yacuiba

Proyecto: DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE
Carácter: PLANO DE SECCIONES TRANSVERSALES
SECCIONES TRANSVERSALES 004 - RUTA ANTIGUA YACUIBA CAMPO GRANDE
Fecha: Agosto 2020
Escala: 1: 150

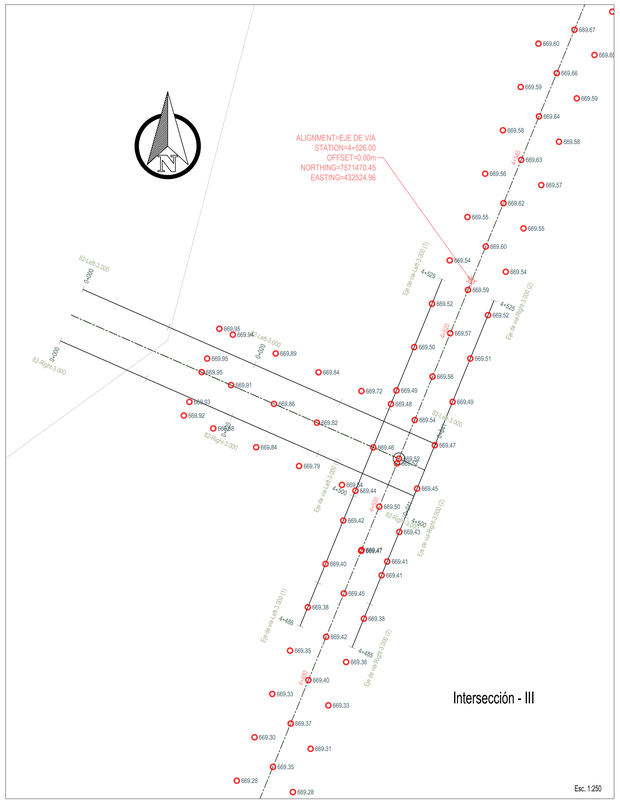
Lámina N°
4 /04
Dimensiones de lamina 1160x770



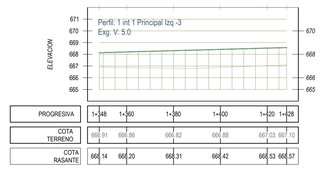
Esc. 1:250

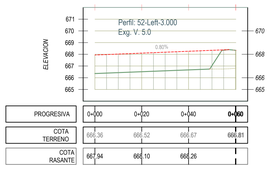


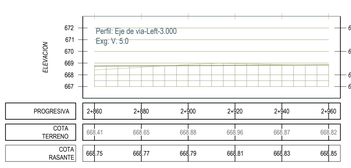
Esc. 1:250

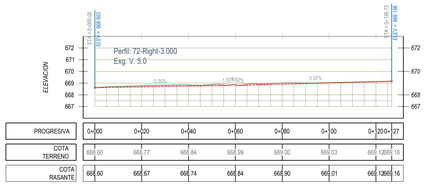


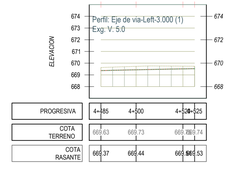
Esc. 1:250

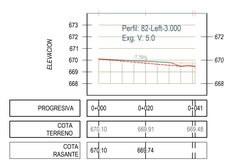


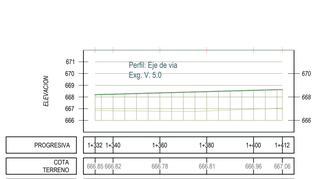


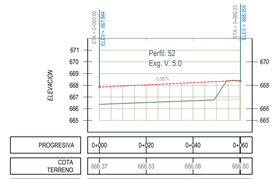


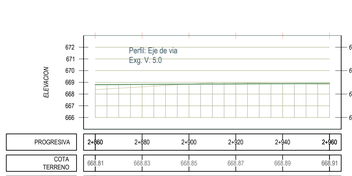


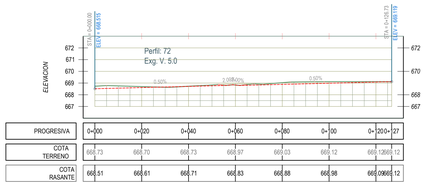


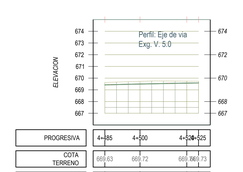


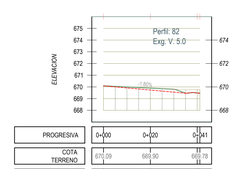


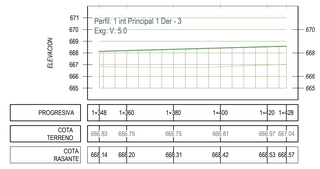


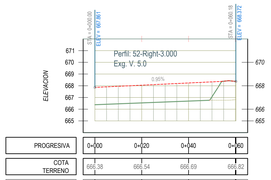


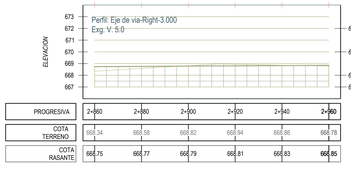


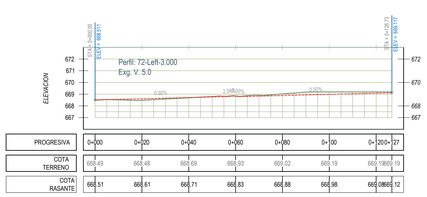


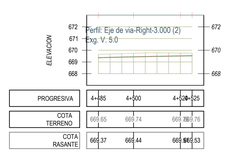


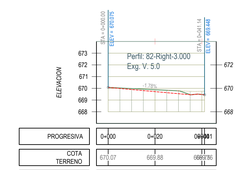












Esc. 1:1000

UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario: Villa Bejarano Luis Alberto

Tutor: Firma y Sello: Ing. Oscar Marcelo Chavez C.

Materia: Proyecto de Ingeniería Civil II (M. Vías) - CIV 502

Tribunal: Ing. Jhonny M. Orgaz F.

Tribunal: Ing. Wilson R. Yucra R.

Tribunal: Ing. Edwin Osvaldo Aguirre

Sitio de Estudio - Departamento : Tarija
Provincia: Gran Chaco
Ciudad: Yacuiba

Proyecto: DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE

Carácter: PLANO EN PLANTA Y PERFIL DE DISEÑO DE INTERSECCIONES

Fecha: Agosto 2020

Escala: Indicadas

Lámina Nº 01/01

Dimensiones de lamina 1100x775

Diagrama de Movimiento de Tierras

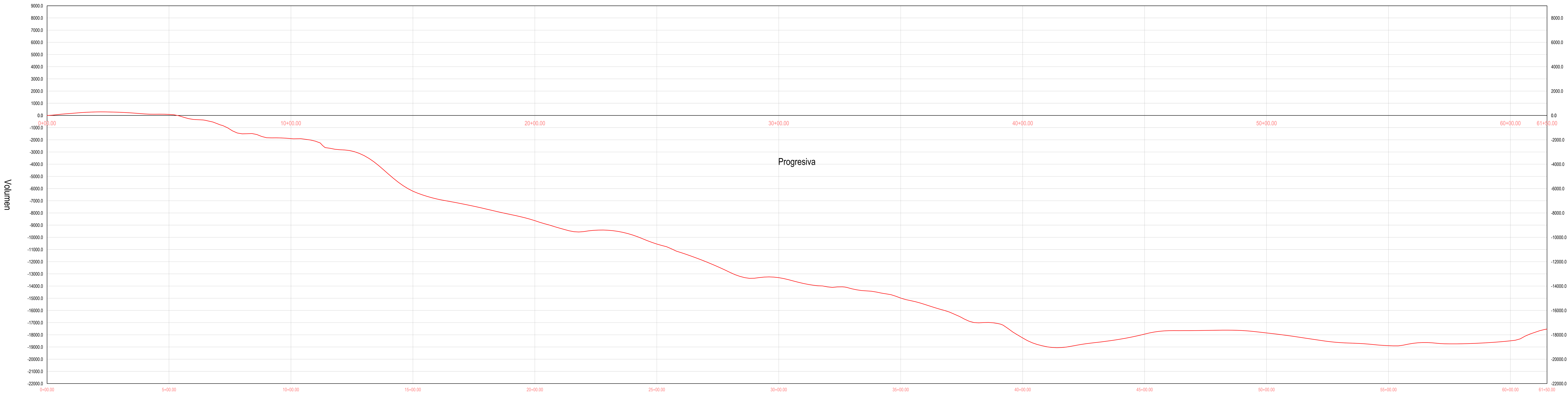
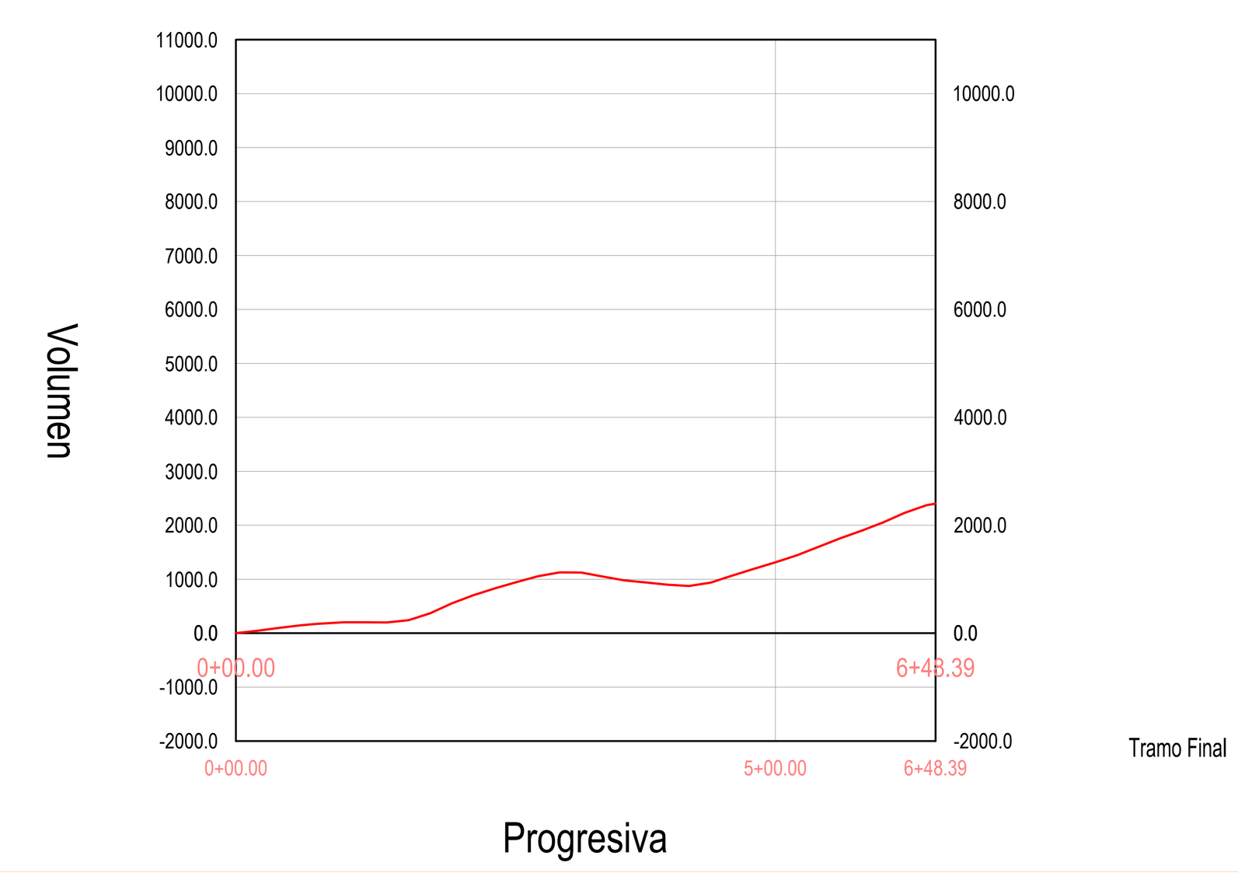


Diagrama de Movimiento de Tierras



Tramo Final

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+000.00	0.00	0.00	0.00	0.00	0.00	0.00
0+020.00	0.06	1.96	0.62	19.55	0.62	19.55
0+040.00	0.16	1.84	2.21	37.91	2.83	57.46
0+060.00	0.22	1.77	3.78	36.11	6.62	93.57
0+080.00	0.35	1.69	5.70	34.60	12.32	128.18
0+100.00	0.44	1.58	7.90	32.64	20.22	160.82
0+120.00	0.51	1.46	9.53	30.34	29.75	191.16
0+140.00	0.64	1.34	11.48	27.99	41.23	219.15
0+160.00	0.79	1.18	14.28	25.22	55.51	244.37
0+180.00	0.95	1.02	17.42	21.97	72.93	266.34
0+200.00	1.11	0.85	20.57	18.70	93.50	285.03
0+220.00	1.27	0.69	23.75	15.41	117.25	300.45
0+240.00	1.42	0.52	26.82	12.12	144.07	312.57
0+260.00	1.42	0.53	28.35	10.54	172.42	323.11
0+280.00	1.52	0.43	29.38	9.59	201.79	332.70
0+300.00	1.61	0.33	31.30	7.62	233.10	340.32
0+320.00	1.70	0.24	33.09	5.77	266.18	346.09
0+340.00	1.78	0.16	34.80	4.05	300.99	350.14

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+360.00	1.89	0.10	36.77	2.58	337.76	352.72
0+380.00	2.03	0.06	39.21	1.56	376.96	354.28
0+400.00	1.80	0.13	38.31	1.89	415.27	356.17
0+420.00	1.38	0.54	31.78	6.68	447.05	362.85
0+440.00	0.94	1.01	23.12	15.45	470.17	378.30
0+460.00	0.97	0.97	19.07	19.79	489.24	398.10
0+480.00	1.28	0.65	22.49	16.21	511.73	414.31
0+500.00	1.38	0.55	26.56	11.97	538.29	426.28
0+520.00	2.37	0.03	37.48	5.78	575.77	432.06
0+540.00	5.63	0.00	79.99	0.30	655.76	432.35
0+560.00	6.69	0.00	123.13	0.00	778.88	432.35
0+580.00	4.58	0.00	112.62	0.00	891.51	432.35
0+600.00	2.30	0.12	68.75	1.19	960.26	433.55
0+620.00	0.99	0.94	32.93	10.61	993.19	444.15
0+640.00	2.14	0.14	31.29	10.83	1024.48	454.98
0+650.00	4.63	0.00	33.53	0.70	1058.02	455.69
0+660.00	5.22	0.34	49.20	1.74	1107.21	457.42
0+680.00	8.22	4.17	134.41	45.09	1241.62	502.51

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+700.00	12.68	1.40	207.99	53.50	1449.61	556.01
0+710.00	4.68	0.14	84.81	6.81	1534.43	562.82
0+720.00	6.43	0.00	54.58	0.62	1589.01	563.44
0+740.00	12.01	0.00	184.42	0.00	1773.43	563.44
0+760.00	13.07	0.00	251.48	0.00	2024.91	563.44
0+780.00	4.77	0.06	178.93	0.63	2203.84	564.07
0+800.00	2.62	0.55	73.92	6.13	2277.76	570.21
0+820.00	0.13	3.03	27.51	35.83	2305.27	606.04
0+840.00	5.86	4.60	59.87	76.36	2365.14	682.40
0+860.00	9.77	3.06	156.29	76.64	2521.43	759.03
0+880.00	10.15	0.70	199.22	37.60	2720.65	796.63
0+900.00	2.90	1.93	130.51	26.30	2851.16	822.93
0+920.00	1.74	1.60	46.43	35.34	2897.59	858.27
0+940.00	1.27	1.68	30.11	32.87	2927.70	891.14
0+960.00	2.04	0.82	33.02	25.04	2960.72	916.17
0+980.00	2.78	1.84	48.14	26.57	3008.86	942.74
1+000.00	4.60	2.41	73.79	42.49	3082.65	985.23
1+010.00	4.06	3.04	45.33	27.07	3127.98	1012.30

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
1+020.00	0.78	2.41	24.22	27.28	3152.20	1039.58
1+040.00	1.33	0.63	21.15	30.38	3173.35	1069.96
1+080.00	4.77	0.00	122.23	12.48	3295.58	1082.45
1+100.00	4.85	0.00	96.24	0.00	3391.82	1082.45
1+120.00	10.33	0.41	151.83	4.08	3543.64	1086.53
1+130.00	32.69	0.00	215.05	2.05	3758.69	1088.58
1+140.00	1.49	0.97	171.43	4.86	3930.12	1093.43
1+160.00	5.11	0.00	65.98	9.72	3996.11	1103.15
1+180.00	2.91	0.01	80.20	0.07	4076.31	1103.23
1+200.00	1.39	0.57	43.09	5.78	4119.40	1109.01
1+220.00	1.52	0.32	29.14	8.92	4148.54	1117.93
1+240.00	3.48	0.00	50.03	3.22	4198.57	1121.15
1+260.00	5.78	0.00	92.66	0.00	4291.23	1121.15
1+280.00	8.08	0.00	138.62	0.00	4429.85	1121.15
1+300.00	10.38	0.00	184.58	0.00	4614.43	1121.15
1+320.00	12.66	0.00	230.40	0.00	4844.84	1121.15
1+340.00	15.00	0.00	276.58	0.00	5121.42	1121.15
1+360.00	16.83	0.00	318.23	0.00	5439.65	1121.15

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
1+380.00	17.89	0.00	347.17	0.00	5786.82	1121.15
1+400.00	17.36	0.00	352.49	0.00	6139.31	1121.15
1+420.00	16.61	0.00	339.72	0.00	6479.03	1121.15
1+440.00	15.23	0.00	318.44	0.00	6797.46	1121.15
1+460.00	13.35	0.00	285.77	0.00	7083.24	1121.15
1+480.00	11.31	0.00	246.58	0.00	7329.82	1121.15
1+500.00	9.27	0.00	205.80	0.00	7535.62	1121.15
1+520.00	7.45	0.00	167.15	0.00	7702.77	1121.15
1+540.00	6.75	0.00	141.99	0.00	7844.76	1121.15
1+560.00	5.98	0.00	127.35	0.00	7972.12	1121.15
1+580.00	5.22	0.00	112.06	0.00	8084.18	1121.15
1+600.00	4.53	0.00	97.51	0.00	8181.69	1121.15
1+620.00	3.78	0.00	83.04	0.00	8264.73	1121.15
1+640.00	3.56	0.00	73.33	0.00	8338.07	1121.15
1+660.00	3.70	0.00	72.52	0.00	8410.58	1121.15
1+680.00	3.83	0.00	75.30	0.00	8485.88	1121.15
1+700.00	3.97	0.00	78.08	0.00	8563.96	1121.15
1+720.00	4.11	0.00	80.86	0.00	8644.81	1121.15

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
1+740.00	4.25	0.00	83.63	0.00	8728.44	1121.15
1+760.00	4.39	0.00	86.41	0.00	8814.86	1121.15
1+780.00	4.53	0.00	89.19	0.00	8904.05	1121.15
1+800.00	4.68	0.00	92.06	0.00	8996.11	1121.15
1+820.00	4.75	0.00	94.30	0.00	9090.41	1121.15
1+840.00	4.66	0.00	94.08	0.00	9184.49	1121.15
1+860.00	4.44	0.00	90.94	0.00	9275.43	1121.15
1+880.00	4.28	0.00	87.16	0.00	9362.59	1121.15
1+900.00	4.14	0.00	84.18	0.03	9446.76	1121.17
1+920.00	4.42	0.01	85.60	0.11	9532.37	1121.28
1+940.00	4.73	0.03	91.47	0.41	9623.84	1121.70
1+960.00	5.14	0.00	98.70	0.33	9722.54	1122.03
1+980.00	5.73	0.00	108.73	0.00	9831.27	1122.03
2+000.00	6.49	0.00	122.19	0.00	9953.46	1122.03
2+020.00	7.13	0.00	136.16	0.00	10089.62	1122.03
2+040.00	4.57	0.00	116.97	0.00	10206.59	1122.03
2+060.00	6.49	0.00	110.61	0.00	10317.20	1122.03
2+080.00	6.05	0.00	125.38	0.00	10442.59	1122.03

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
2+100.00	5.61	0.00	116.56	0.00	10559.15	1122.03
2+120.00	5.83	0.00	114.43	0.00	10673.58	1122.03
2+140.00	5.01	0.00	108.45	0.00	10782.03	1122.03
2+160.00	2.59	0.01	76.02	0.11	10858.04	1122.14
2+180.00	1.10	1.08	36.88	10.92	10894.92	1133.06
2+200.00	0.00	3.10	10.96	41.76	10905.88	1174.82
2+220.00	0.00	2.98	0.00	60.77	10905.88	1235.58
2+240.00	0.30	1.67	3.03	46.50	10908.91	1282.09
2+260.00	0.67	1.37	9.72	30.35	10918.63	1312.44
2+280.00	1.16	0.87	18.34	22.32	10936.96	1334.76
2+300.00	1.67	0.37	28.31	12.34	10965.27	1347.10
2+320.00	2.33	0.03	39.97	3.93	11005.24	1351.03
2+340.00	3.33	0.00	56.61	0.25	11061.85	1351.28
2+360.00	4.36	0.00	76.89	0.00	11138.74	1351.28
2+380.00	5.39	0.00	97.51	0.00	11236.25	1351.28
2+400.00	6.43	0.00	118.19	0.00	11354.44	1351.28
2+420.00	7.47	0.00	138.92	0.00	11493.36	1351.28
2+440.00	8.43	0.00	159.00	0.00	11652.36	1351.28

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
2+460.00	7.92	0.00	163.56	0.00	11815.92	1351.28
2+480.00	7.11	0.00	150.37	0.00	11966.29	1351.28
2+500.00	6.31	0.00	134.23	0.00	12100.52	1351.28
2+520.00	5.50	0.00	118.09	0.00	12218.61	1351.28
2+540.00	4.69	0.00	101.95	0.00	12320.56	1351.28
2+560.00	12.65	0.00	173.48	0.00	12494.04	1351.28
2+580.00	6.25	0.00	189.19	0.00	12683.23	1351.28
2+600.00	6.53	0.00	127.80	0.00	12811.04	1351.28
2+620.00	6.83	0.00	133.56	0.00	12944.59	1351.28
2+640.00	7.13	0.00	139.59	0.00	13084.18	1351.28
2+660.00	7.43	0.00	145.62	0.00	13229.79	1351.28
2+680.00	7.73	0.00	151.64	0.00	13381.44	1351.28
2+700.00	8.06	0.00	157.89	0.00	13539.33	1351.28
2+720.00	8.37	0.00	164.26	0.00	13703.59	1351.28
2+740.00	8.70	0.00	170.71	0.00	13874.30	1351.28
2+760.00	9.04	0.00	177.40	0.00	14051.70	1351.28
2+780.00	9.37	0.00	184.07	0.00	14235.77	1351.28
2+800.00	9.72	0.00	190.91	0.00	14426.68	1351.28

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
2+820.00	8.54	0.00	182.58	0.00	14609.26	1351.28
2+840.00	5.76	0.00	143.01	0.00	14752.27	1351.28
2+860.00	4.69	0.00	104.52	0.00	14856.79	1351.28
2+880.00	1.94	0.76	66.30	7.60	14923.09	1358.89
2+900.00	0.11	2.14	20.53	29.05	14943.63	1387.93
2+920.00	0.06	3.15	1.68	52.96	14945.31	1440.89
2+940.00	0.78	2.09	8.40	52.44	14953.71	1493.33
2+960.00	1.58	1.50	23.67	35.90	14977.37	1529.23
2+980.00	2.42	0.92	39.99	24.17	15017.36	1553.40
3+000.00	3.25	0.32	56.63	12.42	15073.99	1565.82
3+020.00	4.22	0.02	74.71	3.42	15148.70	1569.24
3+040.00	5.26	0.00	94.86	0.19	15243.56	1569.43
3+060.00	5.46	0.00	107.21	0.00	15350.77	1569.43
3+080.00	5.05	0.00	105.08	0.00	15455.84	1569.43
3+100.00	4.43	0.00	94.83	0.02	15550.67	1569.45
3+120.00	3.67	0.04	80.98	0.43	15631.66	1569.89
3+140.00	2.95	0.13	66.12	1.76	15697.77	1571.65
3+160.00	2.29	0.29	52.32	4.20	15750.09	1575.85

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
3+180.00	1.42	1.73	37.07	20.20	15787.17	1596.05
3+200.00	7.54	0.00	89.66	17.35	15876.83	1613.40
3+220.00	0.51	3.35	80.58	33.48	15957.41	1646.88
3+240.00	1.26	2.75	17.77	61.01	15975.18	1707.90
3+260.00	2.25	1.22	35.13	39.70	16010.31	1747.60
3+270.00	3.37	0.47	23.48	8.54	16033.79	1756.14
3+280.00	6.16	0.00	40.77	2.49	16074.56	1758.62
3+300.00	4.84	0.01	108.63	0.18	16183.19	1758.80
3+320.00	3.90	0.32	87.42	3.38	16270.61	1762.18
3+340.00	2.95	0.68	68.59	10.08	16339.20	1772.26
3+360.00	1.76	1.25	47.17	19.34	16386.36	1791.60
3+380.00	3.05	0.66	48.15	19.08	16434.51	1810.68
3+400.00	4.28	0.12	73.29	7.78	16507.80	1818.46
3+420.00	4.19	0.17	84.65	2.87	16592.45	1821.33
3+430.00	3.55	0.45	40.27	3.04	16632.72	1824.37
3+440.00	2.58	0.17	32.31	2.91	16665.03	1827.29
3+460.00	4.70	0.00	69.83	1.66	16734.86	1828.95
3+480.00	8.02	0.00	127.17	0.00	16862.03	1828.95

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
3+500.00	7.14	0.00	151.55	0.00	17013.58	1828.95
3+520.00	4.84	0.00	119.74	0.04	17133.32	1828.99
3+540.00	3.87	0.02	87.08	0.25	17220.40	1829.24
3+560.00	4.86	0.00	87.28	0.21	17307.68	1829.45
3+580.00	6.18	0.00	110.39	0.00	17418.07	1829.45
3+600.00	6.42	0.00	126.05	0.00	17544.12	1829.45
3+620.00	6.46	0.00	128.79	0.00	17672.91	1829.45
3+640.00	6.24	0.00	126.96	0.00	17799.87	1829.45
3+660.00	5.94	0.00	121.77	0.00	17921.64	1829.45
3+680.00	5.18	0.00	111.18	0.00	18032.82	1829.45
3+700.00	7.87	0.00	130.53	0.00	18163.36	1829.45
3+720.00	9.53	0.00	174.05	0.00	18337.41	1829.45
3+740.00	9.30	0.00	175.57	0.00	18512.97	1829.45
3+750.00	11.80	0.00	101.02	0.00	18613.99	1829.45
3+760.00	10.46	0.00	111.87	0.00	18725.86	1829.45
3+780.00	7.76	0.00	182.22	0.00	18908.08	1829.45
3+800.00	3.80	0.29	115.53	2.87	19023.61	1832.31
3+820.00	1.60	2.62	53.91	29.06	19077.52	1861.38

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
3+840.00	2.27	3.72	38.65	63.41	19116.16	1924.78
3+860.00	2.95	2.39	52.15	61.14	19168.32	1985.92
3+880.00	3.67	1.11	66.14	35.05	19234.45	2020.98
3+900.00	4.98	0.15	80.86	13.31	19315.32	2034.29
3+910.00	8.03	0.00	46.54	1.00	19361.86	2035.29
3+920.00	10.65	0.00	83.29	0.00	19445.15	2035.29
3+940.00	16.43	0.00	270.86	0.00	19716.01	2035.29
3+960.00	12.81	0.00	292.44	0.00	20008.45	2035.29
3+980.00	11.61	0.00	244.19	0.00	20252.64	2035.29
4+000.00	12.26	0.00	238.71	0.00	20491.35	2035.29
4+020.00	10.05	0.00	223.09	0.00	20714.44	2035.29
4+040.00	7.86	0.00	179.03	0.00	20893.47	2035.29
4+060.00	5.59	0.00	134.48	0.00	21027.94	2035.29
4+080.00	5.03	0.00	106.20	0.03	21134.15	2035.32
4+100.00	3.46	0.03	84.85	0.31	21219.00	2035.63
4+120.00	2.27	0.45	57.23	4.80	21276.23	2040.43
4+140.00	1.27	1.07	35.33	15.25	21311.56	2055.67
4+160.00	0.40	1.83	16.72	29.00	21328.27	2084.67

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
4+180.00	0.00	2.89	4.04	47.20	21332.32	2131.87
4+200.00	0.00	3.72	0.00	66.08	21332.32	2197.94
4+220.00	0.00	3.76	0.00	74.78	21332.32	2272.73
4+240.00	0.00	3.29	0.00	70.48	21332.32	2343.21
4+260.00	0.02	2.81	0.20	60.92	21332.51	2404.13
4+280.00	0.11	2.37	1.25	51.79	21333.76	2455.92
4+300.00	0.12	2.41	2.27	47.79	21336.03	2503.71
4+320.00	0.10	2.53	2.22	49.42	21338.25	2553.13
4+340.00	0.07	2.72	1.69	52.55	21339.94	2605.68
4+360.00	0.04	2.92	1.12	56.37	21341.06	2662.05
4+380.00	0.02	3.12	0.67	60.32	21341.72	2722.37
4+400.00	0.00	3.26	0.24	63.76	21341.96	2786.14
4+420.00	0.00	3.60	0.00	68.58	21341.96	2854.72
4+440.00	0.00	3.97	0.00	75.64	21341.96	2930.36
4+460.00	0.00	4.33	0.00	82.97	21341.96	3013.33
4+480.00	0.00	4.70	0.00	90.31	21341.96	3103.64
4+500.00	0.00	5.08	0.00	97.77	21341.96	3201.41
4+520.00	0.00	4.36	0.00	94.39	21341.96	3295.79

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
4+540.00	0.00	3.30	0.00	76.65	21341.96	3372.44
4+560.00	0.03	2.37	0.33	56.75	21342.29	3429.19
4+580.00	0.26	1.63	2.93	40.05	21345.22	3469.24
4+600.00	0.70	1.11	9.60	27.45	21354.82	3496.69
4+620.00	0.90	0.87	15.99	19.80	21370.80	3516.50
4+640.00	0.89	0.89	17.94	17.62	21388.74	3534.12
4+660.00	0.87	0.92	17.69	18.12	21406.44	3552.24
4+680.00	0.85	0.95	17.28	18.67	21423.72	3570.91
4+700.00	0.83	0.98	16.87	19.28	21440.59	3590.19
4+720.00	0.81	1.02	16.46	19.95	21457.04	3610.15
4+740.00	0.79	1.05	16.05	20.69	21473.09	3630.83
4+760.00	0.77	1.09	15.63	21.48	21488.72	3652.31
4+780.00	0.75	1.14	15.22	22.34	21503.95	3674.65
4+800.00	0.79	1.12	15.43	22.61	21519.37	3697.26
4+820.00	0.90	1.02	16.97	21.39	21536.34	3718.65
4+840.00	1.01	0.91	19.17	19.31	21555.51	3737.96
4+860.00	1.12	0.81	21.32	17.26	21576.83	3755.22
4+880.00	1.26	0.67	23.83	14.80	21600.66	3770.02

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
4+900.00	1.51	0.42	27.71	10.88	21628.37	3780.90
4+920.00	1.75	0.17	32.60	5.93	21660.96	3786.84
4+940.00	2.09	0.03	38.41	2.06	21699.37	3788.90
4+960.00	2.26	0.01	43.53	0.48	21742.90	3789.38
4+980.00	2.30	0.01	45.63	0.27	21788.52	3789.65
5+000.00	2.33	0.01	46.29	0.23	21834.81	3789.88
5+020.00	2.36	0.01	46.90	0.21	21881.71	3790.09
5+040.00	2.40	0.01	47.60	0.19	21929.31	3790.28
5+060.00	2.54	0.01	49.39	0.17	21978.69	3790.45
5+080.00	2.69	0.01	52.27	0.15	22030.96	3790.60
5+100.00	2.84	0.01	55.26	0.12	22086.22	3790.72
5+120.00	3.00	0.00	58.37	0.10	22144.59	3790.82
5+140.00	3.03	0.00	60.30	0.08	22204.90	3790.89
5+160.00	3.02	0.00	60.47	0.07	22265.37	3790.97
5+180.00	3.00	0.00	60.17	0.08	22325.54	3791.05
5+200.00	2.99	0.00	59.86	0.08	22385.41	3791.13
5+220.00	3.00	0.00	59.86	0.08	22445.27	3791.21
5+240.00	2.81	0.01	58.09	0.09	22503.36	3791.30

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
5+260.00	2.35	0.01	51.62	0.14	22554.99	3791.43
5+280.00	1.93	0.06	42.82	0.67	22597.81	3792.11
5+300.00	1.65	0.25	35.76	3.13	22633.57	3795.24
5+320.00	1.42	0.50	30.64	7.54	22664.20	3802.78
5+340.00	1.25	0.68	26.68	11.77	22690.89	3814.55
5+360.00	1.35	0.58	26.05	12.54	22716.93	3827.09
5+380.00	1.47	0.47	28.18	10.47	22745.11	3837.57
5+400.00	1.78	0.37	32.43	8.39	22777.54	3845.95
5+420.00	2.11	0.26	38.88	6.30	22816.43	3852.25
5+430.00	2.26	0.21	21.73	2.37	22838.16	3854.63
5+440.00	2.25	0.17	22.25	1.89	22860.41	3856.52
5+460.00	1.75	0.20	39.98	3.63	22900.38	3860.14
5+480.00	1.52	0.34	32.69	5.36	22933.07	3865.51
5+500.00	1.38	0.48	29.04	8.14	22962.11	3873.65
5+520.00	1.25	0.62	26.33	10.93	22988.44	3884.58
5+540.00	0.57	1.26	18.22	18.78	23006.66	3903.35
5+560.00	0.00	4.58	5.72	58.41	23012.38	3961.76
5+580.00	0.00	3.87	0.00	84.47	23012.38	4046.23

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
5+600.00	0.00	2.75	0.00	66.24	23012.38	4112.46
5+620.00	0.16	1.81	1.64	45.60	23014.02	4158.06
5+640.00	0.71	1.24	8.73	30.42	23022.75	4188.48
5+660.00	1.26	0.67	19.67	19.09	23042.42	4207.57
5+680.00	1.83	0.13	30.84	8.00	23073.27	4215.57
5+700.00	2.13	0.02	39.61	1.51	23112.88	4217.08
5+710.00	1.75	0.23	19.41	1.28	23132.29	4218.36
5+720.00	1.45	0.53	16.00	3.80	23148.29	4222.16
5+730.00	1.33	0.73	13.92	6.29	23162.20	4228.45
5+740.00	1.19	0.87	12.65	7.98	23174.86	4236.42
5+750.00	1.11	0.95	11.54	9.09	23186.40	4245.51
5+760.00	1.05	1.01	10.79	9.81	23197.19	4255.32
5+780.00	0.93	1.11	19.72	21.20	23216.91	4276.52
5+800.00	0.81	1.19	17.37	23.04	23234.29	4299.57
5+820.00	0.71	1.27	15.19	24.68	23249.47	4324.25
5+840.00	0.62	1.35	13.33	26.29	23262.80	4350.54
5+860.00	0.55	1.43	11.72	27.89	23274.52	4378.43
5+880.00	0.47	1.51	10.16	29.50	23284.69	4407.93

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
5+900.00	0.39	1.60	8.61	31.10	23293.30	4439.03
5+920.00	0.31	1.68	7.06	32.71	23300.36	4471.74
5+940.00	0.24	1.76	5.54	34.31	23305.90	4506.05
5+960.00	0.16	1.85	4.00	36.09	23309.89	4542.15
5+980.00	0.11	1.98	2.73	38.37	23312.63	4580.52
6+000.00	0.07	2.12	1.84	40.98	23314.47	4621.50
6+020.00	0.00	2.77	0.71	48.87	23315.18	4670.37
6+040.00	0.00	8.60	0.00	113.73	23315.18	4784.10
6+060.00	0.00	13.62	0.00	222.20	23315.18	5006.31
6+080.00	0.03	3.41	0.26	170.30	23315.44	5176.61
6+100.00	0.00	10.74	0.26	141.53	23315.70	5318.14
6+120.00	0.11	2.87	1.10	136.13	23316.81	5454.27
6+140.00	0.00	7.35	1.10	102.20	23317.91	5556.48
6+150.00	0.00	0.00	0.00	37.20	23317.91	5593.68

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+000.00	0.11	2.23	0.00	0.00	0.00	0.00
0+020.00	0.03	2.50	1.43	47.26	1.43	47.26
0+040.00	0.00	2.75	0.35	52.43	1.77	99.69
0+060.00	0.07	2.14	0.65	49.21	2.43	148.90
0+074.79	0.15	1.53	1.69	27.11	4.11	176.01

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+100.00	0.57	1.72	9.16	40.86	13.28	216.87
0+120.00	1.45	0.10	20.24	18.19	33.51	235.06
0+140.00	0.36	1.51	18.07	16.12	51.59	251.19
0+160.00	0.00	2.93	3.56	44.44	55.15	295.62
0+180.00	0.00	9.97	0.00	129.05	55.15	424.67

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+200.00	0.00	8.26	0.00	182.31	55.15	606.98
0+220.00	0.05	6.80	0.54	150.64	55.68	757.62
0+240.00	0.00	6.26	0.56	130.67	56.24	888.29
0+260.00	0.00	5.22	0.02	114.79	56.26	1003.08
0+280.00	0.36	6.11	3.57	113.26	59.83	1116.35

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+300.00	0.89	2.27	12.45	83.80	72.29	1200.14
0+320.00	1.99	0.30	28.80	25.74	101.09	1225.88
0+340.00	5.77	0.00	77.58	3.04	178.66	1228.92
0+360.00	2.40	1.00	81.69	10.00	260.35	1238.92
0+380.00	2.90	0.61	53.00	16.14	313.35	1255.06

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+400.00	2.27	0.33	51.69	9.48	365.05	1264.55
0+420.00	1.57	1.17	38.40	15.07	403.45	1279.62
0+440.00	0.00	6.49	15.69	76.62	419.14	1356.24
0+460.00	0.00	6.44	0.00	129.31	419.14	1485.55
0+480.00	0.00	6.14	0.00	125.80	419.14	1611.35

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+500.00	0.00	6.07	0.00	122.10	419.14	1733.46
0+520.00	0.00	7.03	0.00	131.03	419.14	1864.49
0+540.00	0.00	8.44	0.00	154.73	419.14	2019.22
0+560.00	0.00	7.45	0.00	158.96	419.14	2178.18
0+580.00	0.00	6.62	0.00	140.69	419.14	2318.87

Planilla de Movimiento de Tierras

Progresiva	Area Relleno	Area Corte	Vol. Relleno	Vol. Corte	Vol. Acum. Relleno	Vol. Acum. Corte
0+600.00	0.00	8.73	0.00	153.47	419.14	2472.34
0+620.00	0.00	9.05	0.00	177.79	419.14	2650.13
0+640.00	0.00	5.10	0.00	141.42	419.14	2791.55
0+648.39	0.23	2.16	0.98	30.43	420.12	2821.98

Tramo Final

UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario: Villa Bejarano Luis Alberto

Tutor: Firma y Sello: Ing. Oscar Marcelo Chavez C.

Materia: Proyecto de Ingeniería Civil II (M. Vías) - CIV 502

Tribunal: Ing. Jhonny M. Orgaz F.

Tribunal: Ing. Wilson R. Yucra R.

Tribunal: Ing. Edwin Osvaldo Aguirre

Sitio de Estudio - Departamento : Tarija
Provincia: Gran Chaco
Ciudad: Yacuiba

Proyecto: DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE

Carácter: DIAGRAMAS DE MOVIMIENTO DE TIERRAS

Fecha: Agosto 2020

Escala: Indicadas

Lámina Nº 1 /01

Dimensiones de lamina 1100x770

UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO FACULTAD DE CIENCIAS Y TECNOLOGÍA	Universitario: Villa Bejarano Luis Alberto	Tutor: Firma y Sello: Ing. Oscar Marcelo Chavez C.	Materia: Proyecto de Ingeniería Civil II (M. Vías) - CIV 502	Tribunal: Ing. Jhonny M. Orgaz F.	Tribunal: Ing. Wilson R. Yucra R.	Tribunal: Ing. Edwin Osvaldo Aguirre.	Sitio de Estudio - Departamento: Tarija Provincia: Gran Chaco Ciudad: Yacuiba

Proyecto: DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE

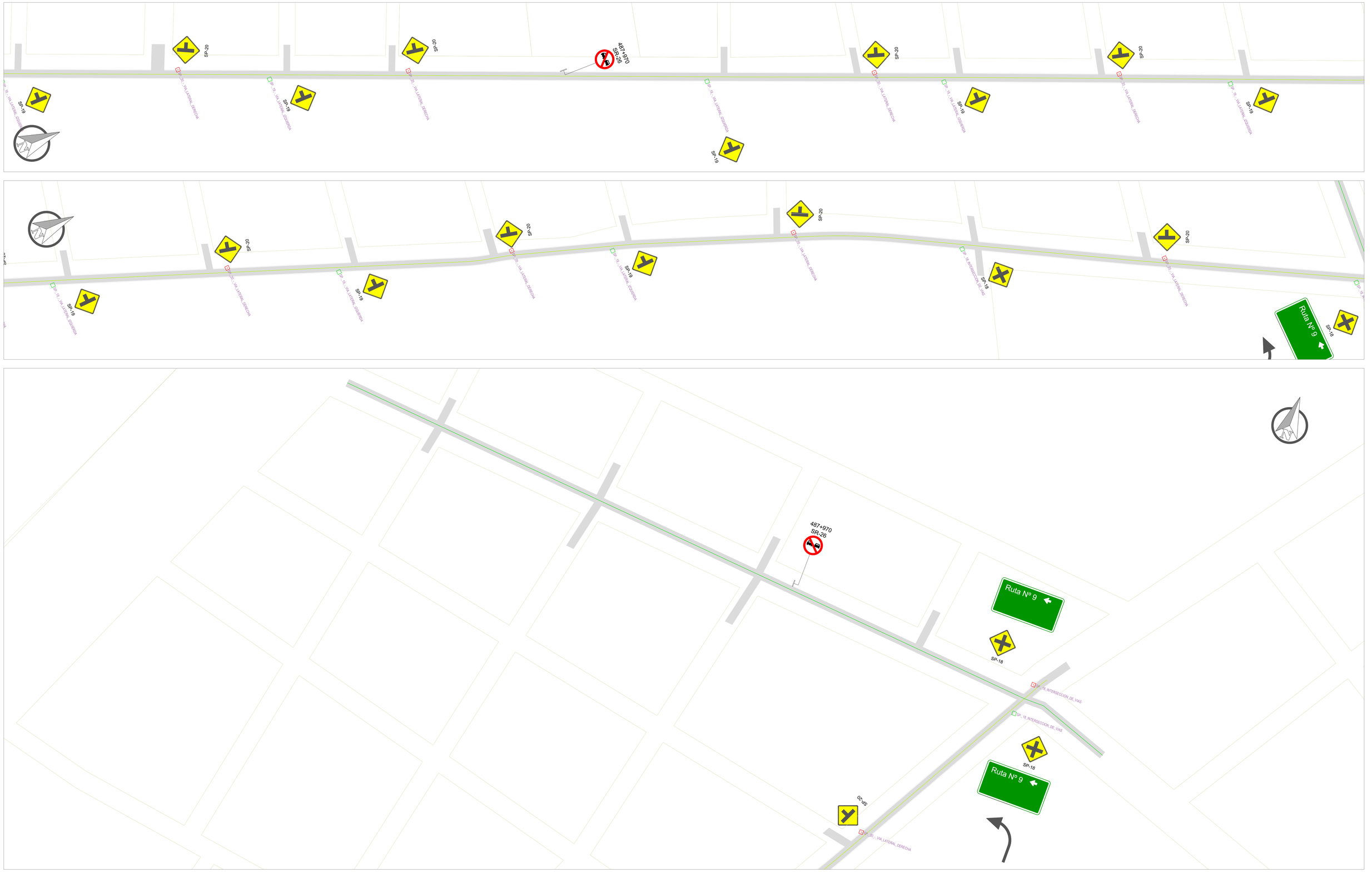
Carácter: Señalización Vertical

Fecha: Agosto 2020

Escala: Indicadas

Lámina Nº 01/02

Dimensiones de lamina 1100x770

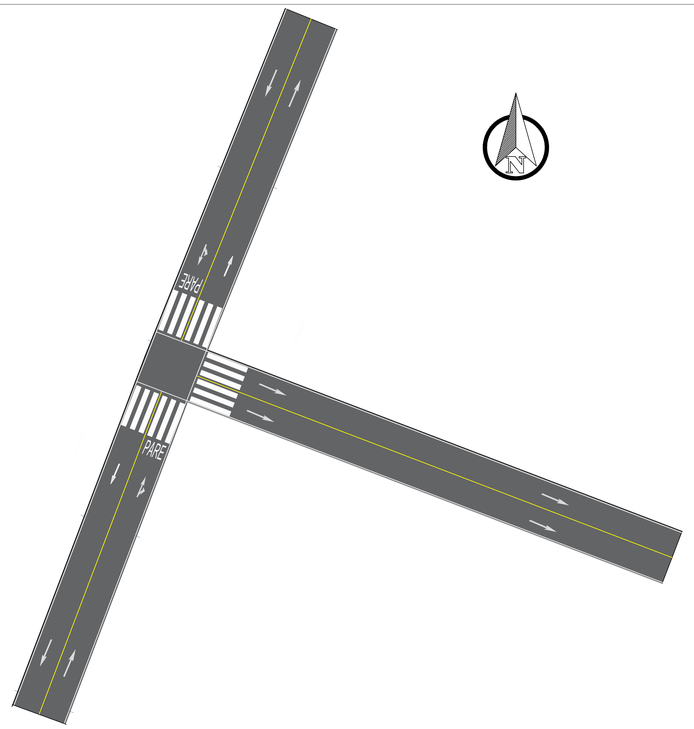


UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO FACULTAD DE CIENCIAS Y TECNOLOGÍA	**Universitario:** Villa Bejarano Luis Alberto	**Tutor:** Firma y Sello: Ing. Oscar Marcelo Chavez C.	**Materia:** Proyecto de Ingeniería Civil II (M. Vías) - CIV 502	**Tribunal:** Ing. Jhonny M. Orgaz F.	**Tribunal:** Ing. Wilson R. Yucra R.	**Tribunal:** Ing. Edwin Osvaldo Aguirre.	**Sitio de Estudio - Departamento :** Tarija **Provincia:** Gran Chaco **Ciudad:** Yacuiba

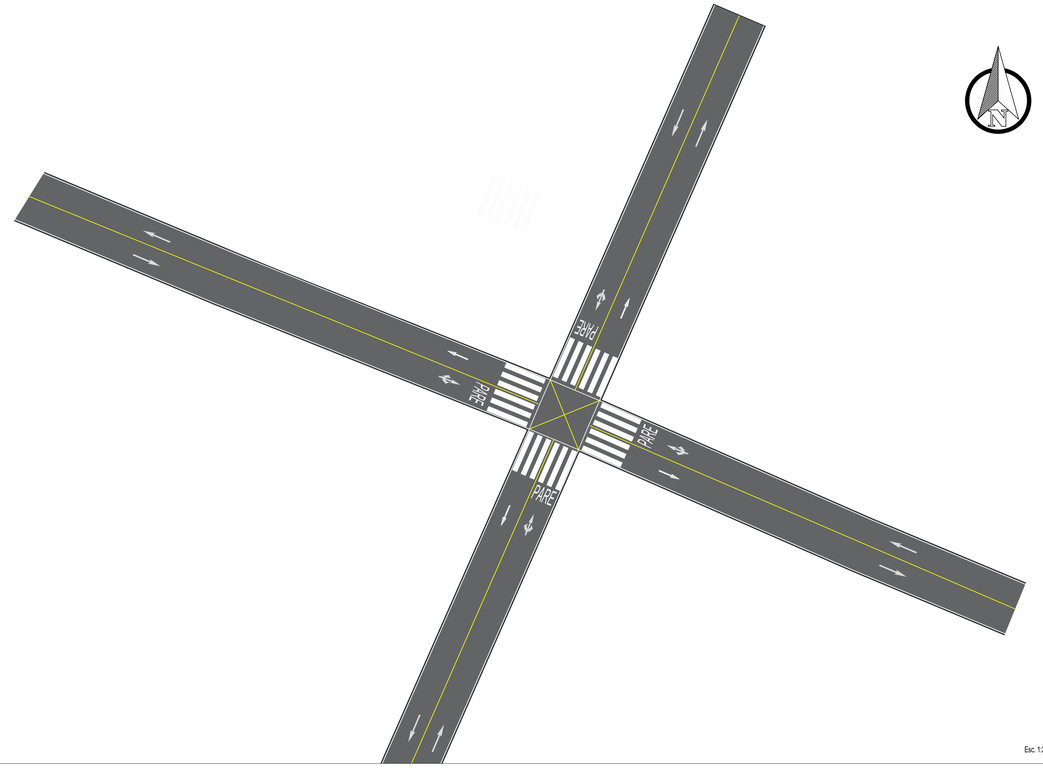
Proyecto:	DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE
Carácter:	Señalización Vertical
Fecha:	Agosto 2020
Escala:	Indicadas

Lámina Nº 02/02

Dimensiones de lamina 1160x770



Esc. 1:250



Esc. 1:250

DETALLE DE SEÑALIZACION HORIZONTAL PARA ADELANTAR

Caso 1:

Adelantamiento permitido en ambos sentidos

Campo Grande

Caso 2:

Adelantamiento permitido solo en el sentido Yacuiba - Campo Grande

Caso 3:

Adelantamiento prohibido en ambos sentidos

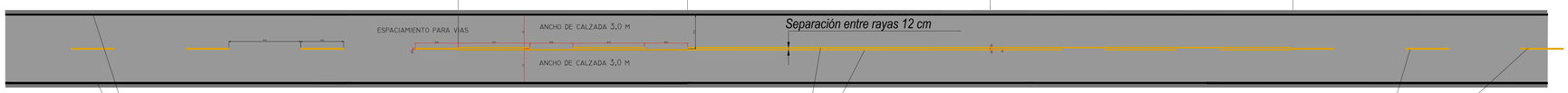
Caso 4:

Adelantamiento permitido solo en el sentido Campo Grande - Yacuiba

Caso 1:

Adelantamiento permitido en ambos sentidos

Yacuiba



Rayas limitadoras de la calzada (blancas) ancho 10cm

Rayas centrales continuas (amarillas) ancho 10cm

Raya central discontinua (blanca) ancho 10cm

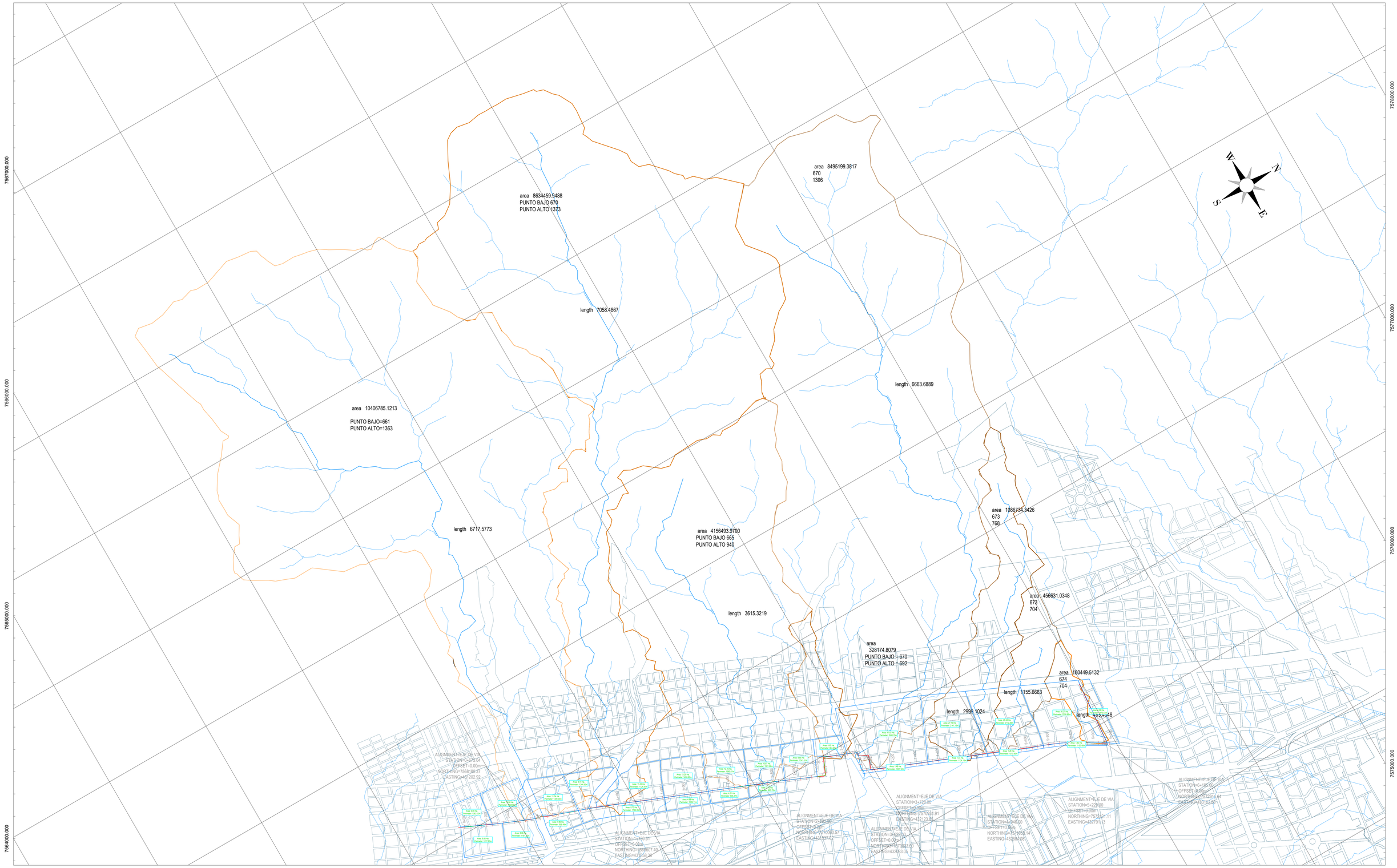
Esc. 1:400

UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario: Villa Bejarano Luis Alberto	**Tutor:** Firma y Sello: Ing. Oscar Marcelo Chavez C.	**Materia.:** Proyecto de Ingeniería Civil II (M. Vías) - CIV 502	**Tribunal:** Ing. Jhonny M. Orgaz F.	**Tribunal:** Ing. Wilson R. Yucra R.	**Tribunal:** Ing. Edwin Osvaldo Aguirre	**Sitio de Estudio - Departamento :** Tarija **Provincia:** Gran Chaco **Ciudad:** Yacuiba

Proyecto:	DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE
Carácter:	SEÑALIZACIÓN HORIZONTAL
Fecha:	Agosto 2020
Escala:	Indicadas

Lámina N°
01/01
Dimensiones de lamina 1100x775



UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO FACULTAD DE CIENCIAS Y TECNOLOGÍA	**Universitario:** Villa Bejarano Luis Alberto	**Tutor:** Firma y Sello: Ing. Oscar Marcelo Chavez C.	**Materia:** Proyecto de Ingeniería Civil II (M. Vías) - CIV 502	**Tribunal:** Ing. Jhonny M. Orgaz F.	**Tribunal:** Ing. Wilson R. Yucra R.	**Tribunal:** Ing. Edwin Osvaldo Aguirre	**Sitio de Estudio - Departamento :** Tarija **Provincia:** Gran Chaco **Ciudad:** Yacuiba

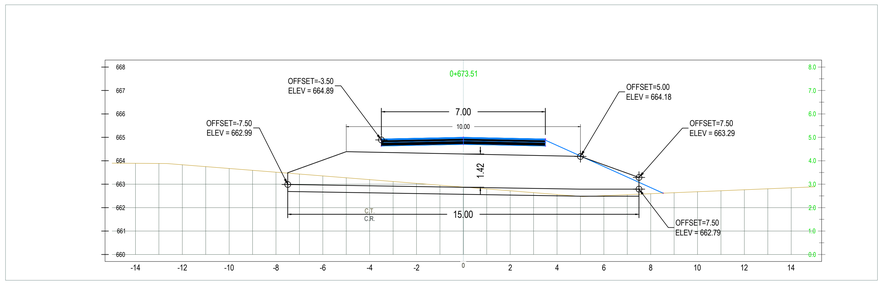
Proyecto:
DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE

Carácter:
PLANO - MAPA DE CUENCAS HIDROLÓGICAS

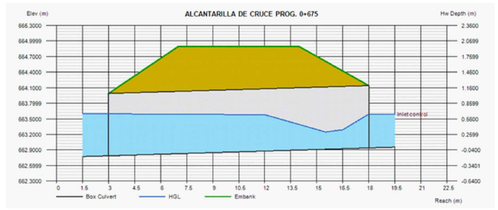
Fecha: Agosto 2020

Escala: 1:12000

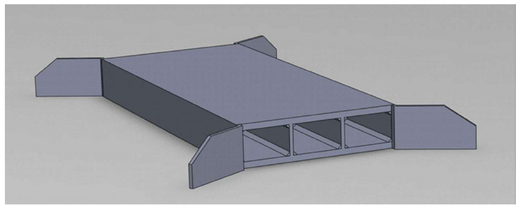
Lámina N°
1 /01
Dimensiones de lámina
1100x770



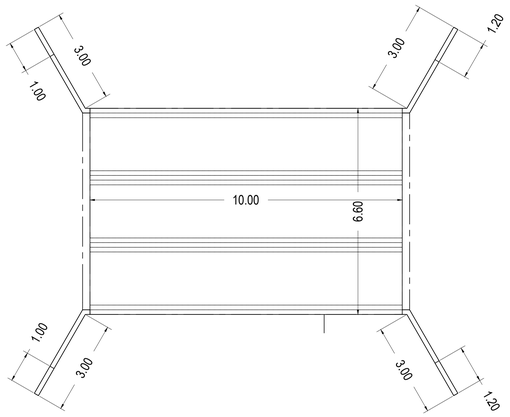
PERFIL DEL FLUJO
ESC. 1:75

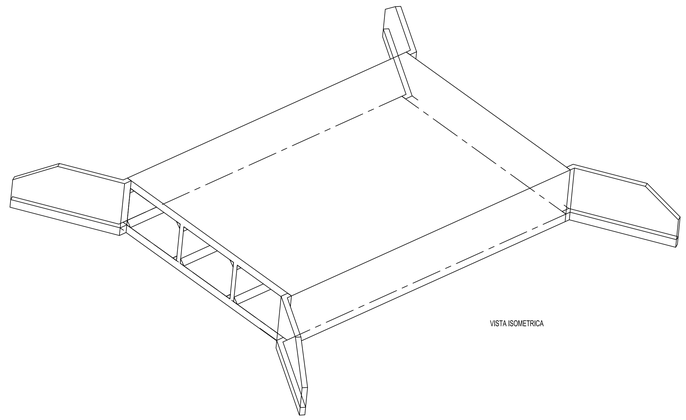


VISTA ISOMETRICA



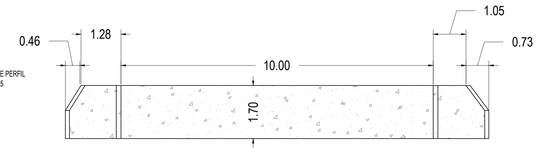
VISTA EN PLANTA
ESC. 1:75



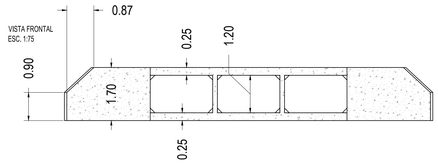


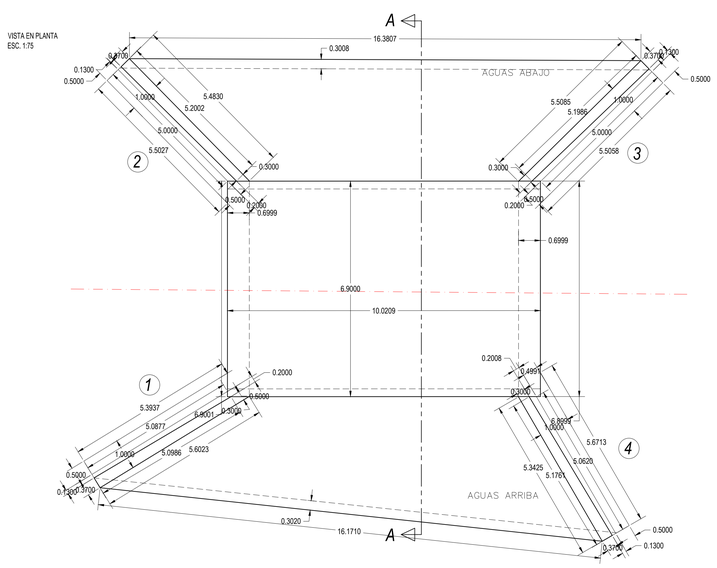
VISTA ISOMETRICA

VISTA DE PERFIL
ESC. 1:75

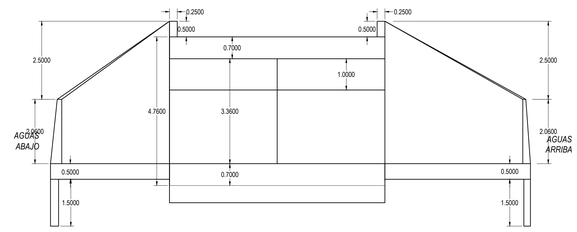


VISTA FRONTAL
ESC. 1:75

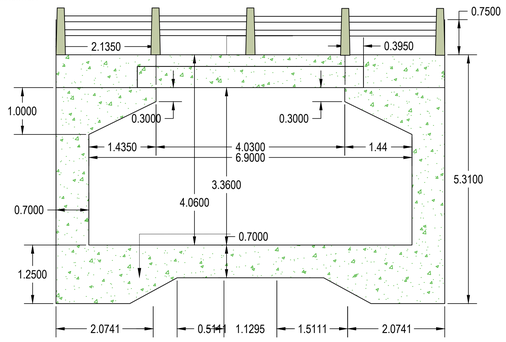




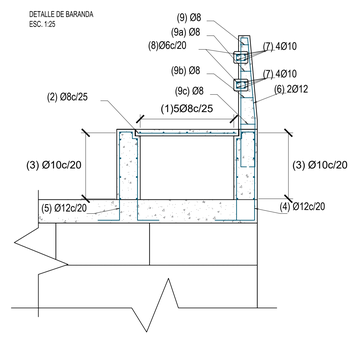
CORTE A-A
ESC. 1:100



SECCIÓN TRANSVERSAL
ESC. 1:50



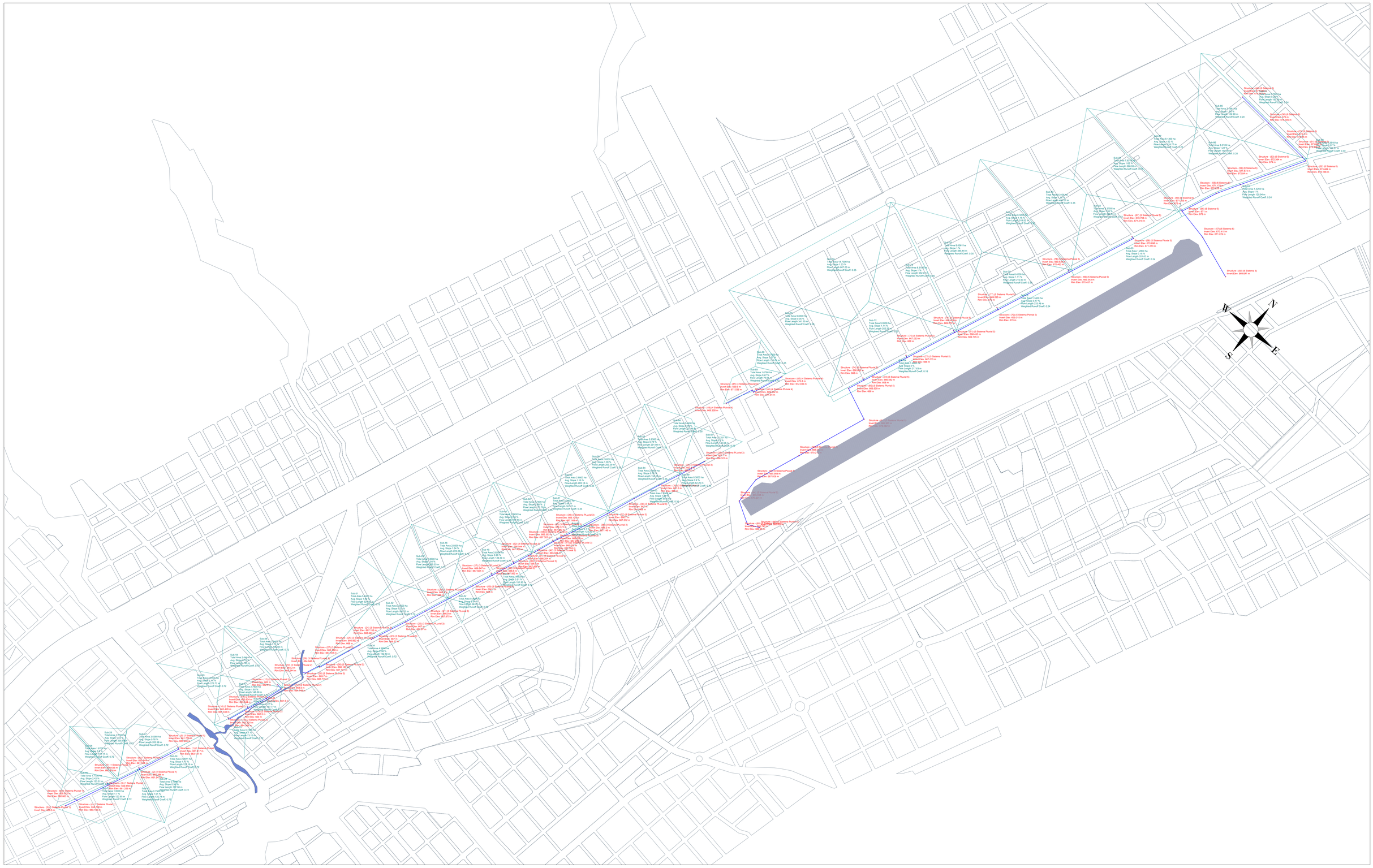
DETALLE DE BARANDA
ESC. 1:25



UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario: Villa Bejarano Luis Alberto	**Tutor:** Firma y Sello: Ing. Oscar Marcelo Chavez C.	**Materia.:** Proyecto de Ingeniería Civil II (M. Vías) - CIV 502	**Tribunal:** Ing. Jhonny M. Orgaz F.	**Tribunal:** Ing. Wilson R. Yucra R.	**Tribunal:** Ing. Edwin Osvaldo Aguirre	**Sitio de Estudio - Departamento :** Tarija **Provincia:** Gran Chaco **Ciudad:** Yacuiba	**Proyecto:** DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE **Carácter:** PLANO DE OBRAS DE ARTE **Fecha:** Agosto 2020 **Escala:** Indicadas

Lámina Nº 1 /01
Dimensiones de lamina 1160x770

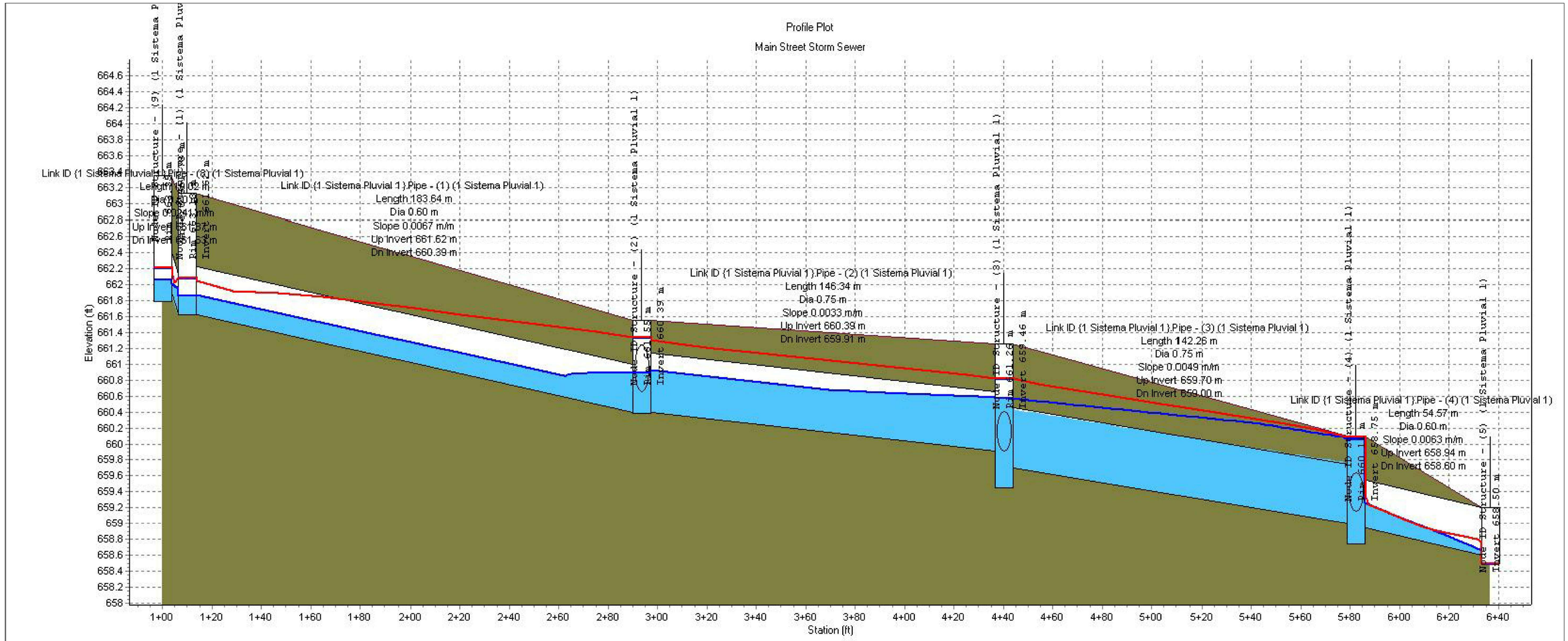


UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario:	Villa Bejarano Luis Alberto
Tutor:	Firma y Sello: Ing. Oscar Marcelo Chavez C.
Materia:	Proyecto de Ingeniería Civil II (M. Vías) - CIV 502
Tribunal:	Ing. Jhonny M. Orgaz F.
Tribunal:	Ing. Wilson R. Yucra R.
Tribunal:	Ing. Edwin Osvaldo Aguirre
Sitio de Estudio - Departamento :	Tarija
Provincia:	Gran Chaco
Ciudad:	Yacuiba

Proyecto:	DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE
Carácter:	PLANO DE DRENAJE PLUVIAL Estructuras del Sistema / Alineacion de Tuberias
Fecha:	Agosto 2020
Escala:	Indicada

Lámina Nº
1 /09
Dimensiones de lamina 1100x770



Node ID:			Structure - (2) (1 Sistema Pluvial 1)	Structure - (3) (1 Sistema Pluvial 1)	Structure - (4) (1 Sistema Pluvial 1)	
Rim (m):	663.38	663.13	661.55	661.26	660.11	
Invert (m):	661.70	661.62	660.39	659.46	658.75	658.50
Min Pipe Cover (m):						
Max HGL (m):	662.28	662.08	661.33	660.82	660.09	658.50

Link ID:		{1 Sistema Pluvial 1}.Pipe - (1) (1 Sistema Pluvial 1)	{1 Sistema Pluvial 1}.Pipe - (2) (1 Sistema Pluvial 1)	{1 Sistema Pluvial 1}.Pipe - (3) (1 Sistema Pluvial 1)		
Length (m):	10.02	183.64	146.34	142.26	54.57	
Dia (m):	0.50	0.60	0.75	0.75	0.60	
Slope (m/m):	0.0241	0.0067	0.0033	0.0049	0.0063	
Up Invert (m):	661.87	661.62	660.39	659.70	658.94	
Dn Invert (m):	661.63	660.39	659.91	659.00	658.60	
Max Q (cms):	0.24	0.39	0.60	0.72	0.62	
Max Vel (m/s):	1.66	1.65	1.58	1.63	2.26	
Max Depth (m):	0.40	0.53	0.75	0.75	0.55	

UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA

Universitario: Villa Bejarano Luis Alberto

Tutor: Firma y Sello: Ing. Oscar Marcelo Chavez C.

Materia: Proyecto de Ingeniería Civil II (M. Vías) - CIV 502

Tribunal: Ing. Jhonny M. Orgaz F.

Tribunal: Ing. Wilson R. Yucra R.

Tribunal: Ing. Edwin Osvaldo Aguirre

Sitio de Estudio - Departamento : Tarija
Provincia: Gran Chaco
Ciudad: Yacuiba

Proyecto: DISEÑO DE INGENIERÍA, TRAMO RUTA ANTIGUA YACUIBA - CAMPO GRANDE
Carácter: PLANO DE DRENAJE PLUVIAL
Esquema de Dimensionamiento del Sistema Pluvial "1"
Fecha: Agosto 2020
Escala: Indicada

Lámina Nº 2 /09
Dimensiones de lamina 1100x770