



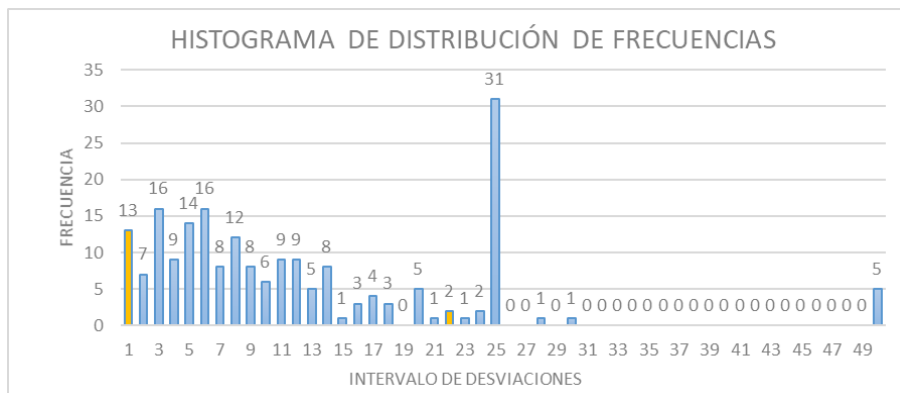
**ANEXO I. DATOS Y  
CÁLCULOS DE  
MERLÍN**

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICIÓN DE LA RUGOSIDAD CON EL MERLÍN		
	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	0 + 000	SENTIDO:	IDA
PROGRESIVA FINAL:	0 + 400	NÚMERO DE ENSAYO:	E - 01
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	10	6	3	25	4	3	2	2	6	5
2	5	1	3	3	3	6	13	6	1	5
3	8	11	3	4	11	17	25	21	3	2
4	4	1	1	11	9	25	20	7	11	20
5	5	4	14	7	1	17	12	17	4	7
6	25	6	3	8	11	10	1	14	13	6
7	11	12	7	9	2	25	3	25	23	18
8	1	25	5	3	8	6	14	12	25	7
9	5	1	1	6	25	12	13	8	25	25
10	16	17	16	3	25	4	12	9	8	12
11	1	5	6	3	30	20	8	14	9	28
12	25	25	6	25	14	25	9	3	4	2
13	6	9	7	16	10	11	22	22	1	50
14	50	24	8	14	8	5	8	14	4	25
15	25	12	18	5	13	14	25	11	25	24
16	20	20	25	25	25	3	5	10	6	25
17	3	8	8	6	12	5	12	15	9	7
18	25	2	10	25	11	5	25	10	25	4
19	6	13	50	9	3	5	1	8	18	50
20	50	25	1	2	25	7	6	5	6	25



Lecturas	Frecuencia
1	13
2	7
3	16
4	9
5	14
6	16
7	8
8	12
9	8
10	6
11	9
12	9
13	5
14	8
15	1
16	3
17	4
18	3
19	0
20	5
21	1
22	2
23	1
24	2
25	31
26	0
27	0
28	1
29	0
30	1
31	0
32	0
33	0
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	5
Total	200

FRECUENCIAS	
Valor a dividir izq. (di) =	13
Existente izq. (ei) =	0
Faltante izq. (fi) =	10
Valor a dividir der.(dd) =	31
Existente der. (ed) =	7
Faltante der. (fd) =	3
rango medio (dm) =	19

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(13 - 10)}{13} + 19 + \frac{(31 - 3)}{31} \right) * 5 [mm]$$

$$D = 100,7 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 83,22 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

$$\rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$\rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$



$$I.R.I. = 4,51 \text{ m/km}$$

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Ing. Seila Claudia Ávila Sandoval

ESTUDIANTE CIV 502

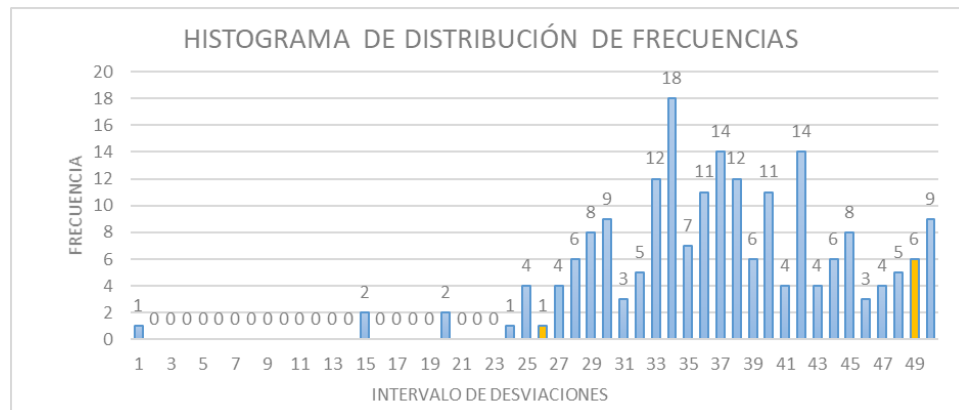
ENCARGADA DE LABORATORIO DE  
ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICIÓN DE LA RUGOSIDAD CON EL MERLÍN		
	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	0 + 400	SENTIDO:	IDA
PROGRESIVA FINAL:	0 + 800	NÚMERO DE ENSAYO:	E - 02
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

**Datos de campo con la Rueda de Merlín**

	1	2	3	4	5	6	7	8	9	10
1	37	34	41	27	31	42	42	42	38	42
2	47	50	44	37	38	45	34	32	37	34
3	41	47	43	34	1	20	38	36	34	29
4	38	47	38	30	37	34	44	30	30	36
5	36	38	38	38	36	40	36	36	35	32
6	42	40	28	36	39	35	39	37	34	48
7	36	30	33	33	38	43	37	42	42	34
8	26	15	44	50	50	29	32	45	45	28
9	25	25	50	48	30	41	37	40	42	46
10	40	44	33	31	34	50	48	37	40	29
11	29	29	42	25	39	44	33	35	50	46
12	49	27	27	34	33	48	30	34	34	35
13	28	43	27	15	50	34	49	33	39	24
14	34	30	36	37	40	37	34	43	30	46
15	35	45	41	47	48	40	36	42	35	30
16	33	28	29	50	45	49	49	33	49	32
17	39	33	31	39	44	38	45	40	36	33
18	32	37	42	25	40	29	45	29	38	28
19	35	34	40	33	37	34	45	28	37	42
20	40	34	20	37	49	38	42	42	33	50



Lecturas	Frecuencia
1	1
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	2
16	0
17	0
18	0
19	0
20	2
21	0
22	0
23	0
24	1
25	4
26	1
27	4
28	6
29	8
30	9
31	3
32	5
33	12
34	18
35	7
36	11
37	14
38	12
39	6
40	11
41	4
42	14
43	4
44	6
45	8
46	3
47	4
48	5
49	6
50	9
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	<b>1</b>
Existente izq. (ei) =	10
Faltante izq. (fi) =	<b>0</b>
Valor a dividir der. (dd) =	<b>6</b>
Existente der. (ed) =	9
Faltante der. (fd) =	<b>1</b>
rango medio (dm) =	<b>22</b>

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(1 - 0)}{1} + 22 + \frac{(6 - 1)}{6} \right) * 5 [mm]$$

$$D = 119,2 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 98,51 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c \rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c \rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$



$$I.R.I. = 5,23 \text{ m/km}$$

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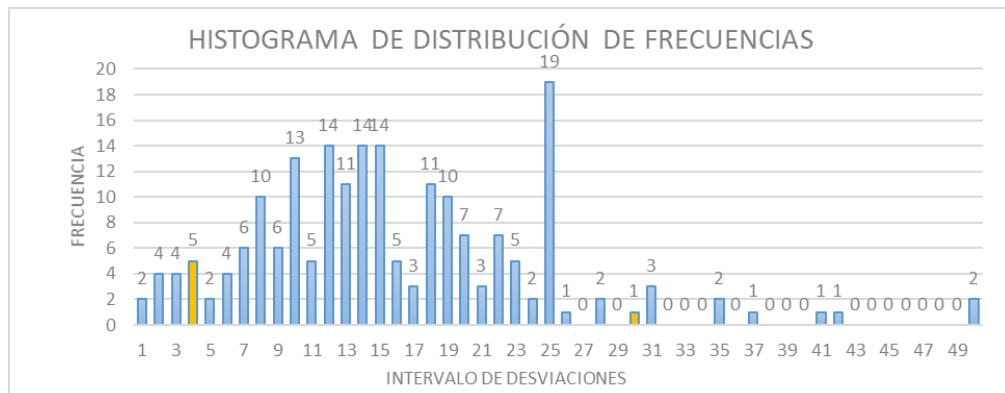
ENCARGADA DE LABORATORIO DE  
ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICIÓN DE LA RUGOSIDAD CON EL MERLÍN		
	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	0 + 800	SENTIDO:	IDA
PROGRESIVA FINAL:	1 + 200	NÚMERO DE ENSAYO:	E - 03
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

**Datos de campo con la Rueda de Merlín**

	1	2	3	4	5	6	7	8	9	10
1	14	9	18	6	9	8	9	20	18	14
2	9	3	18	7	13	25	35	16	12	4
3	13	15	2	41	20	8	10	13	25	15
4	10	25	16	25	10	3	20	12	20	8
5	14	19	1	25	8	7	15	10	11	10
6	23	28	28	25	16	22	12	22	10	42
7	18	25	30	21	14	22	21	18	21	5
8	7	8	12	19	50	19	6	10	15	3
9	6	25	25	8	23	2	13	11	23	4
10	25	37	25	7	11	17	18	16	8	19
11	12	15	8	25	22	5	18	14	31	1
12	31	23	25	14	12	15	25	24	20	12
13	23	17	35	20	12	24	10	22	25	31
14	25	12	14	7	19	11	10	14	2	14
15	19	3	16	25	17	19	15	12	13	20
16	13	18	19	13	22	19	15	22	10	2
17	15	15	4	15	18	12	7	12	9	10
18	12	13	19	25	25	14	10	26	4	50
19	8	15	10	9	14	14	6	13	11	18
20	14	14	18	8	15	15	4	13	13	12



Lecturas	Frecuencia
1	2
2	4
3	4
4	5
5	2
6	4
7	6
8	10
9	6
10	13
11	5
12	14
13	11
14	14
15	14
16	5
17	3
18	11
19	10
20	7
21	3
22	7
23	5
24	2
25	19
26	1
27	0
28	2
29	0
30	1
31	3
32	0
33	0
34	0
35	2
36	0
37	1
38	0
39	0
40	0
41	1
42	1
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	2
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	<b>5</b>
Existente izq. (ei) =	10
Faltante izq. (fi) =	<b>0</b>
Valor a dividir der. (dd) =	<b>1</b>
Existente der. (ed) =	10
Faltante der. (fd) =	<b>0</b>
rango medio (dm) =	<b>23</b>

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 \text{ [mm]}$$

$$D = \left( \frac{(5 - 0)}{5} + 23 + \frac{(1 - 0)}{1} \right) * 5 \text{ [mm]}$$

$$D = 125 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 103,3 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c \rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c \rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$



$$I.R.I. = 5,46 \text{ m/km}$$

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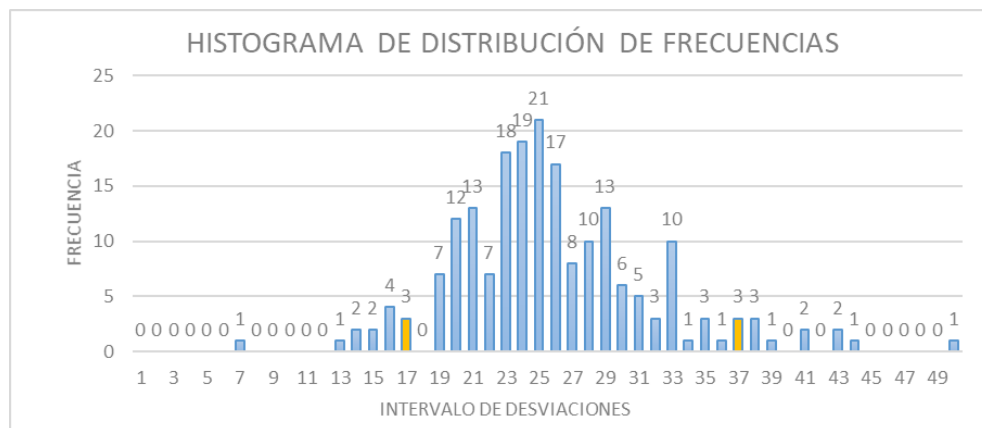
ENCARGADA DE LABORATORIO DE  
ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICIÓN DE LA RUGOSIDAD CON EL MERLÍN		
	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	1 + 200	SENTIDO:	IDA
PROGRESIVA FINAL:	1 + 600	NÚMERO DE ENSAYO:	E - 04
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	27	16	22	31	21	33	33	25	31	20
2	29	20	26	27	29	25	26	26	39	33
3	28	24	21	24	29	33	29	28	26	20
4	43	38	23	21	25	50	15	27	20	33
5	24	20	26	32	17	29	26	27	19	24
6	30	43	16	21	26	19	31	19	26	24
7	32	21	26	25	17	20	28	22	33	24
8	24	25	22	20	19	29	28	23	24	7
9	27	26	27	21	25	29	25	20	23	24
10	23	26	25	30	25	28	37	26	29	24
11	28	28	29	37	33	24	24	25	23	28
12	25	24	38	17	34	24	24	26	29	28
13	28	25	23	23	31	20	21	25	19	29
14	21	25	21	25	22	23	41	23	24	35
15	24	25	36	33	23	27	15	33	16	26
16	23	21	23	32	30	21	23	26	23	19
17	23	30	25	22	24	37	22	27	29	14
18	25	41	23	19	38	30	33	20	16	26
19	23	14	20	35	25	31	29	25	22	23
20	20	25	30	21	24	26	44	21	35	13





Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	1
8	0
9	0
10	0
11	0
12	0
13	1
14	2
15	2
16	4
17	3
18	0
19	7
20	12
21	13
22	7
23	18
24	19
25	21
26	17
27	8
28	10
29	13
30	6
31	5
32	3
33	10
34	1
35	3
36	1
37	3
38	3
39	1
40	0
41	2
42	0
43	2
44	1
45	0
46	0
47	0
48	0
49	0
50	1
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	<b>3</b>
Existente izq. (ei) =	10
Faltante izq. (fi) =	<b>0</b>
Valor a dividir der. (dd) =	<b>3</b>
Existente der. (ed) =	10
Faltante der. (fd) =	<b>0</b>
rango medio (dm) =	<b>18</b>

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(3 - 0)}{3} + 18 + \frac{(3 - 0)}{3} \right) * 5 [mm]$$

$$D = 100 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

Ep = 6,2

Li = 25

Lf = 10

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 82,67 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

$$\rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$\rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

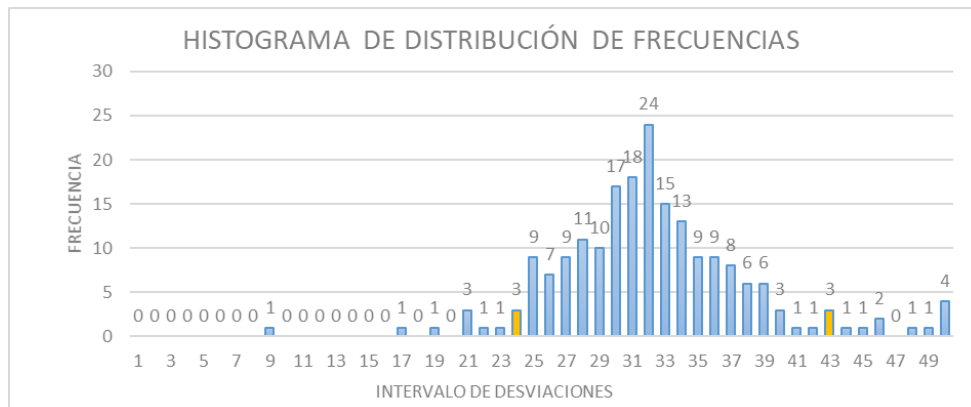
$$I.R.I. = 4,49 \text{ m/km}$$

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
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	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	1 + 600	SENTIDO:	IDA
PROGRESIVA FINAL:	2 + 000	NÚMERO DE ENSAYO:	E - 05
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

### EVALUACIÓN SUPERFICIAL DEL PAVIMENTO ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	28	31	27	36	37	29	27	28	32	36
2	32	34	38	32	44	32	33	41	35	32
3	33	37	34	29	33	36	31	29	32	28
4	26	50	30	25	48	28	37	33	31	35
5	37	31	25	26	45	22	40	39	36	35
6	30	39	28	36	33	37	31	38	33	27
7	34	33	31	36	32	34	32	27	28	32
8	17	43	33	28	31	43	30	25	30	39
9	43	31	21	21	30	37	27	28	25	27
10	29	29	35	34	30	38	26	34	34	33
11	33	31	40	30	37	39	30	36	34	28
12	27	25	31	30	34	31	31	30	46	35
13	30	29	33	30	31	19	30	35	32	34
14	32	34	28	29	32	39	31	32	35	32
15	38	32	32	32	24	31	26	29	40	31
16	42	49	36	34	35	30	36	31	32	33
17	31	33	32	39	21	38	35	27	37	26
18	26	25	29	46	26	29	30	32	27	23
19	32	50	33	33	25	25	28	32	30	38
20	32	32	9	50	30	50	24	34	25	24



Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	1
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	1
18	0
19	1
20	0
21	3
22	1
23	1
24	3
25	9
26	7
27	9
28	11
29	10
30	17
31	18
32	24
33	15
34	13
35	9
36	9
37	8
38	6
39	6
40	3
41	1
42	1
43	3
44	1
45	1
46	2
47	0
48	1
49	1
50	4
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	3
Existente izq. (ei) =	8
Faltante izq. (fi) =	2
Valor a dividir der. (dd) =	3
Existente der. (ed) =	10
Faltante der. (fd) =	0
rango medio (dm) =	18

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 \text{ [mm]}$$

$$D = \left( \frac{(3 - 2)}{3} + 18 + \frac{(3 - 0)}{3} \right) * 5 \text{ [mm]}$$

$$D = 96,67 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

Ep = 6,2

Li = 25

Lf = 10

fc = 0,827 mm

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

Dc = 79,91 mm

**Determinación del I.R.I.:**

Para pavimentos nuevos:

I.R.I. = 0,0485 \* D<sub>c</sub> → (IRI < 2.4)

Para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub> → (2.4 < IRI < 15.9)

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>

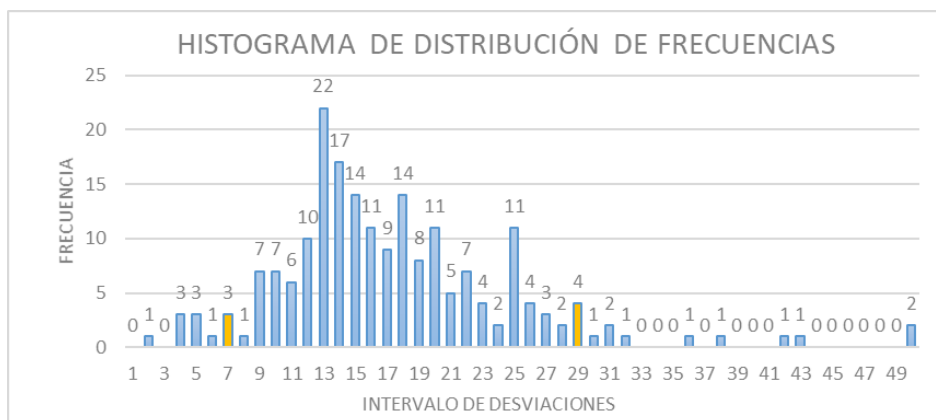
**I.R.I. = 4,36 m/km**

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICIÓN DE LA RUGOSIDAD CON EL MERLÍN		
	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	2 + 000	SENTIDO:	IDA
PROGRESIVA FINAL:	2 + 400	NÚMERO DE ENSAYO:	E - 06
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

### EVALUACIÓN SUPERFICIAL DEL PAVIMENTO ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	24	13	50	31	17	26	11	29	12	18
2	27	17	13	15	25	15	22	15	16	16
3	12	21	9	21	23	20	19	12	18	13
4	25	23	17	4	18	13	13	20	14	20
5	13	22	13	12	17	26	13	16	19	23
6	20	25	12	16	27	13	9	28	25	19
7	15	14	17	10	16	18	13	15	13	13
8	15	18	19	13	4	10	9	10	25	22
9	18	8	29	12	20	19	25	13	15	21
10	10	19	18	15	13	20	14	27	22	20
11	11	22	13	7	5	16	15	7	5	14
12	18	29	21	5	14	10	9	14	18	14
13	16	13	25	32	25	16	13	15	9	15
14	17	14	26	24	14	12	13	13	14	11
15	43	50	18	18	20	10	15	14	9	14
16	13	16	25	17	17	20	38	12	14	15
17	14	14	28	25	42	36	25	18	11	20
18	14	11	13	16	29	22	7	21	18	15
19	18	30	2	20	17	10	4	22	19	12
20	6	16	12	14	23	19	9	31	26	11



Lecturas	Frecuencia
1	0
2	1
3	0
4	3
5	3
6	1
7	3
8	1
9	7
10	7
11	6
12	10
13	22
14	17
15	14
16	11
17	9
18	14
19	8
20	11
21	5
22	7
23	4
24	2
25	11
26	4
27	3
28	2
29	4
30	1
31	2
32	1
33	0
34	0
35	0
36	1
37	0
38	1
39	0
40	0
41	0
42	1
43	1
44	0
45	0
46	0
47	0
48	0
49	0
50	2
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	<b>3</b>
Existente izq. (ei) =	8
Faltante izq. (fi) =	<b>2</b>
Valor a dividir der. (dd) =	<b>4</b>
Existente der. (ed) =	10
Faltante der. (fd) =	<b>0</b>
rango medio (dm) =	<b>21</b>

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(3 - 2)}{3} + 21 + \frac{(4 - 0)}{4} \right) * 5 [mm]$$

$$D = 111,7 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 92,31 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

$$\rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$\rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$



$$I.R.I. = 4,94 \text{ m/km}$$

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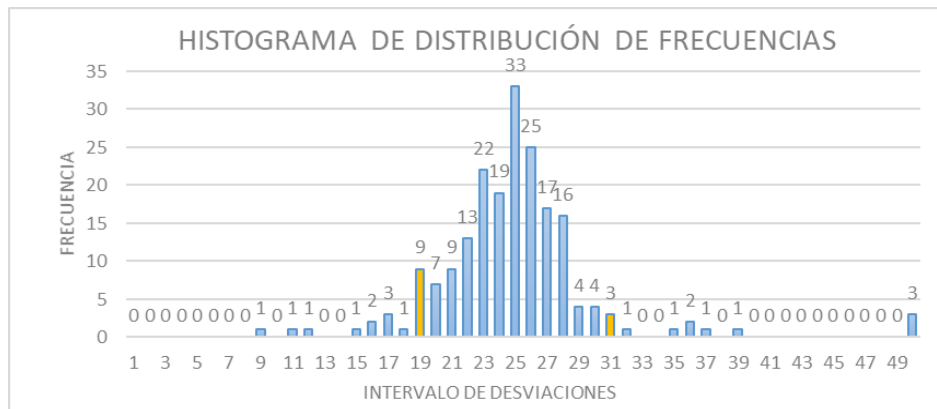
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ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICIÓN DE LA RUGOSIDAD CON EL MERLÍN		
	MÉTODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA LOS MOLLES	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	2 + 400	SENTIDO:	IDA
PROGRESIVA FINAL:	2 + 800	NÚMERO DE ENSAYO:	E - 07
CARRIL:	DERECHO	FECHA:	23/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

**Datos de campo con la Rueda de Merlín**

	1	2	3	4	5	6	7	8	9	10
1	23	25	17	26	25	25	29	24	29	25
2	28	50	25	21	25	25	23	25	24	20
3	20	24	25	19	19	23	24	28	28	21
4	20	26	36	25	28	36	25	27	23	24
5	21	27	24	20	27	28	16	23	26	24
6	26	23	23	26	23	22	25	23	24	24
7	19	26	22	23	26	28	26	30	24	21
8	28	25	25	26	24	27	25	25	19	28
9	23	27	25	22	25	30	27	25	21	21
10	50	12	24	23	26	26	29	16	26	19
11	19	31	28	26	27	20	25	26	23	26
12	21	23	23	27	24	37	35	18	31	29
13	20	25	24	27	19	11	32	24	25	26
14	30	25	28	25	23	17	21	25	26	23
15	19	26	25	26	22	28	26	23	27	27
16	25	22	23	27	25	22	28	24	24	26
17	26	27	30	27	24	19	26	27	22	25
18	25	25	28	22	23	9	25	50	23	22
19	26	27	39	28	22	22	21	22	28	15
20	17	25	23	28	24	27	22	20	26	31



Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	1
10	0
11	1
12	1
13	0
14	0
15	1
16	2
17	3
18	1
19	9
20	7
21	9
22	13
23	22
24	19
25	33
26	25
27	17
28	16
29	4
30	4
31	3
32	1
33	0
34	0
35	1
36	2
37	1
38	0
39	1
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	3
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	9
Existente izq. (ei) =	10
Faltante izq. (fi) =	0
Valor a dividir der. (dd) =	3
Existente der. (ed) =	9
Faltante der. (fd) =	1
rango medio (dm) =	11

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(9 - 0)}{9} + 11 + \frac{(3 - 1)}{3} \right) * 5 [mm]$$

$$D = 63,33 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

Ep = 6,2

Li = 25

Lf = 10

fc = 0,827 mm

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

Dc = 52,36 mm

**Determinación del I.R.I.:**

Para pavimentos nuevos:

I.R.I. = 0,0485 \* D<sub>c</sub>

→ (IRI < 2.4)

Para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>

→ (2.4 < IRI < 15.9)

**Cálculo del I.R.I.:**


Aplicando la fórmula para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>

I.R.I. = 3,06 m/km

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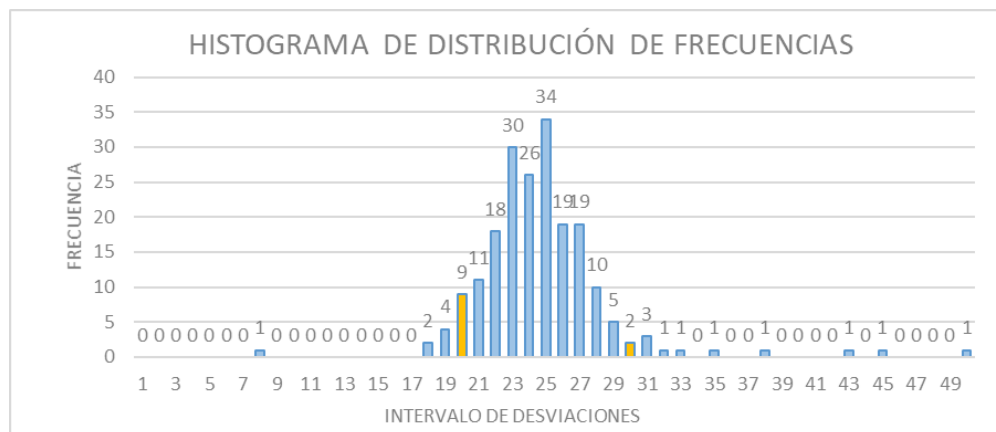
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<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICION DE LA RUGOSIDAD CON EL MERLIN		
	METODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA SAN LUIS	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	0 + 000	SENTIDO:	IDA
PROGRESIVA FINAL:	0 + 400	NÚMERO DE ENSAYO:	E - 01
CARRIL:	DERECHO	FECHA:	31/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

**Datos de campo con la Rueda de Merlín**

	1	2	3	4	5	6	7	8	9	10
1	23	24	27	25	23	28	23	27	22	27
2	27	25	24	19	25	28	22	25	38	43
3	24	21	24	22	26	25	22	25	24	20
4	22	20	18	25	31	21	20	27	21	23
5	24	26	22	25	25	26	25	25	25	24
6	24	23	24	25	20	23	26	22	20	23
7	23	26	23	25	25	22	25	29	22	24
8	23	23	23	28	26	27	24	24	25	23
9	24	25	26	27	23	25	23	21	23	27
10	23	25	27	27	26	23	33	27	31	25
11	21	28	23	25	22	24	23	24	23	27
12	25	22	26	27	28	23	26	24	23	28
13	27	26	22	23	21	19	31	26	26	26
14	21	19	23	22	22	50	25	23	21	26
15	23	28	22	24	24	24	24	26	30	20
16	25	25	27	20	30	8	29	27	19	27
17	20	18	45	27	26	25	23	24	29	24
18	23	24	25	25	25	25	27	25	28	20
19	24	21	28	22	22	21	32	26	29	35
20	29	22	26	21	28	24	24	25	25	23





Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	1
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	2
19	4
20	9
21	11
22	18
23	30
24	26
25	34
26	19
27	19
28	10
29	5
30	2
31	3
32	1
33	1
34	0
35	1
36	0
37	0
38	1
39	0
40	0
41	0
42	0
43	1
44	0
45	1
46	0
47	0
48	0
49	0
50	1
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	<b>9</b>
Existente izq. (ei) =	7
Faltante izq. (fi) =	<b>3</b>
Valor a dividir der. (dd) =	<b>2</b>
Existente der. (ed) =	10
Faltante der. (fd) =	<b>0</b>
rango medio (dm) =	<b>9</b>

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(9 - 3)}{9} + 9 + \frac{(2 - 0)}{2} \right) * 5 [mm]$$

$$D = 53,33 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 44,09 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

$$\rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$\rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$


$$I.R.I. = 2,67 \text{ m/km}$$

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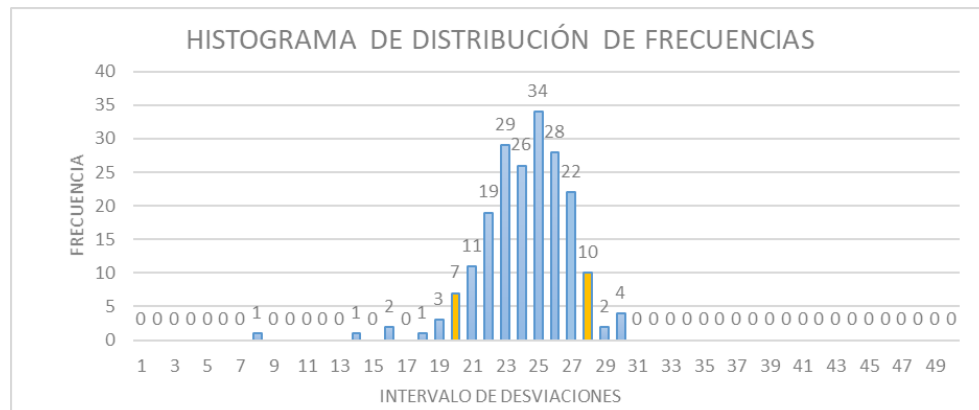
ENCARGADA DE LABORATORIO DE  
ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICION DE LA RUGOSIDAD CON EL MERLIN		
	METODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA SAN LUIS	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	0 + 400	SENTIDO:	IDA
PROGRESIVA FINAL:	0 + 800	NÚMERO DE ENSAYO:	E - 02
CARRIL:	DERECHO	FECHA:	31/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	25	28	26	27	26	25	24	24	23	27
2	29	25	28	28	27	26	26	23	25	23
3	20	25	21	24	23	20	23	26	27	21
4	22	26	25	23	23	24	27	24	23	27
5	25	22	22	22	26	26	25	22	25	24
6	24	20	26	27	24	28	21	24	26	23
7	25	27	24	30	21	25	22	25	25	23
8	27	26	25	24	26	23	24	22	22	25
9	25	21	26	26	27	14	8	28	22	29
10	24	28	23	23	25	26	27	27	28	22
11	21	24	21	26	25	23	24	27	30	26
12	28	25	26	26	25	26	25	28	19	22
13	23	25	23	24	25	26	24	23	22	24
14	19	22	27	26	21	23	25	27	30	23
15	25	16	30	22	26	27	16	19	25	23
16	24	23	27	21	22	25	26	21	22	26
17	23	26	25	26	24	23	20	25	28	27
18	20	21	24	27	25	24	24	23	27	23
19	23	25	25	23	25	18	24	26	22	27
20	23	24	27	20	25	22	23	24	22	20



Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	1
9	0
10	0
11	0
12	0
13	0
14	1
15	0
16	2
17	0
18	1
19	3
20	7
21	11
22	19
23	29
24	26
25	34
26	28
27	22
28	10
29	2
30	4
31	0
32	0
33	0
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	0
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	7
Existente izq. (ei) =	8
Faltante izq. (fi) =	2
Valor a dividir der. (dd) =	10
Existente der. (ed) =	6
Faltante der. (fd) =	4
rango medio (dm) =	7

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 \text{ [mm]}$$

$$D = \left( \frac{(7 - 2)}{7} + 7 + \frac{(10 - 4)}{10} \right) * 5 \text{ [mm]}$$

$$D = 41,57 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

Ep = 6,2

Li = 25

Lf = 10

fc = 0,827 mm

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

Dc = 34,37 mm

**Determinación del I.R.I.:**

Para pavimentos nuevos:

I.R.I. = 0,0485 \* D<sub>c</sub>

→ (IRI < 2.4)

Para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>

→ (2.4 < IRI < 15.9)

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>


I.R.I. = 2,21 m/km

Univ. Marco Antonio Cardozo Flores

Ing. Seila Claudia Ávila Sandoval

ESTUDIANTE CIV 502

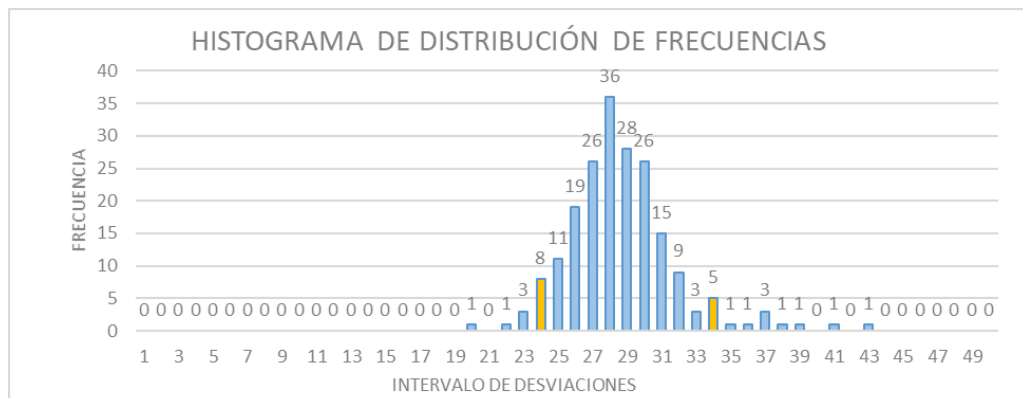
ENCARGADA DE LABORATORIO DE ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICION DE LA RUGOSIDAD CON EL MERLIN		
	METODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA SAN LUIS	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	0 + 800	SENTIDO:	IDA
PROGRESIVA FINAL:	1 + 200	NÚMERO DE ENSAYO:	E - 03
CARRIL:	DERECHO	FECHA:	31/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

**Datos de campo con la Rueda de Merlín**

	1	2	3	4	5	6	7	8	9	10
1	29	30	29	32	34	27	30	34	28	34
2	28	31	30	26	32	29	27	30	27	27
3	30	26	37	28	30	28	30	28	28	28
4	27	29	32	32	31	27	31	27	29	31
5	26	30	37	29	27	29	27	29	26	28
6	26	30	31	31	30	24	28	27	33	26
7	23	30	26	31	28	27	25	30	29	33
8	31	29	32	29	26	27	30	28	29	30
9	28	29	28	29	30	29	29	32	29	27
10	30	28	30	28	24	29	31	26	43	41
11	25	28	29	28	27	28	28	27	34	27
12	26	28	29	30	28	28	31	29	31	30
13	27	30	30	29	28	27	28	26	27	28
14	28	31	28	27	30	25	26	25	30	24
15	35	39	26	27	23	33	26	28	29	27
16	29	30	31	27	24	25	32	22	38	31
17	26	24	27	23	28	29	27	36	31	28
18	25	34	29	30	28	29	25	24	37	26
19	25	29	26	24	32	28	24	26	25	28
20	28	28	27	20	25	28	30	26	32	25



Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	1
21	0
22	1
23	3
24	8
25	11
26	19
27	26
28	36
29	28
30	26
31	15
32	9
33	3
34	5
35	1
36	1
37	3
38	1
39	1
40	0
41	1
42	0
43	1
44	0
45	0
46	0
47	0
48	0
49	0
50	0
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	<b>8</b>
Existente izq. (ei) =	5
Faltante izq. (fi) =	<b>5</b>
Valor a dividir der. (dd) =	<b>5</b>
Existente der. (ed) =	9
Faltante der. (fd) =	<b>1</b>
rango medio (dm) =	<b>9</b>

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(8 - 5)}{8} + 9 + \frac{(5 - 1)}{5} \right) * 5 [mm]$$

$$D = 50,88 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 42,06 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

$$\rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$\rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$I.R.I. = 2,57 \text{ m/km}$$

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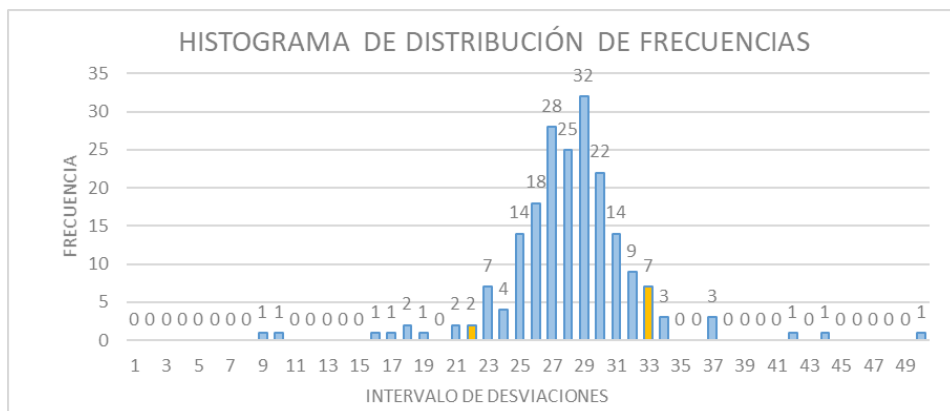
ENCARGADA DE LABORATORIO DE  
ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICION DE LA RUGOSIDAD CON EL MERLIN		
	METODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA SAN LUIS	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	1 + 200	SENTIDO:	IDA
PROGRESIVA FINAL:	1 + 600	NÚMERO DE ENSAYO:	E - 04
CARRIL:	DERECHO	FECHA:	31/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	31	27	30	30	27	30	27	30	27	28
2	28	27	28	33	27	33	33	9	19	28
3	31	18	33	23	25	26	26	30	29	34
4	28	33	25	50	28	28	29	27	26	29
5	28	25	37	30	34	25	28	30	30	31
6	28	33	26	27	27	28	23	29	28	44
7	33	25	42	31	29	37	23	21	30	28
8	21	26	30	31	24	25	28	27	24	29
9	22	16	24	28	37	32	28	27	29	29
10	31	27	29	27	29	30	26	23	32	32
11	18	29	28	30	28	28	25	29	29	26
12	29	29	27	30	26	28	30	25	29	30
13	26	25	29	30	10	29	27	29	28	32
14	26	29	30	27	26	29	22	25	25	27
15	31	25	32	29	27	26	23	27	31	26
16	29	32	29	30	27	34	31	31	29	26
17	31	27	26	30	17	27	32	31	25	28
18	32	24	31	30	27	28	27	29	32	28
19	29	29	29	26	30	29	27	28	27	29
20	26	30	27	31	25	23	29	27	23	26



Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	1
10	1
11	0
12	0
13	0
14	0
15	0
16	1
17	1
18	2
19	1
20	0
21	2
22	2
23	7
24	4
25	14
26	18
27	28
28	25
29	32
30	22
31	14
32	9
33	7
34	3
35	0
36	0
37	3
38	0
39	0
40	0
41	0
42	1
43	0
44	1
45	0
46	0
47	0
48	0
49	0
50	1
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	2
Existente izq. (ei) =	9
Faltante izq. (fi) =	1
Valor a dividir der.(dd) =	7
Existente der. (ed) =	9
Faltante der. (fd) =	1
rango medio (dm) =	10

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(2 - 1)}{2} + 10 + \frac{(7 - 1)}{7} \right) * 5 [mm]$$

$$D = 56,79 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

Ep = 6,2

Li = 25

Lf = 10

fc = 0,827 mm

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

Dc = 46,94 mm

**Determinación del I.R.I.:**

Para pavimentos nuevos:

I.R.I. = 0,0485 \* D<sub>c</sub>

→ (IRI < 2.4)

Para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>

→ (2.4 < IRI < 15.9)

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

I.R.I. = 0,593 + 0,0471 \* D<sub>c</sub>


I.R.I. = 2,80 m/km

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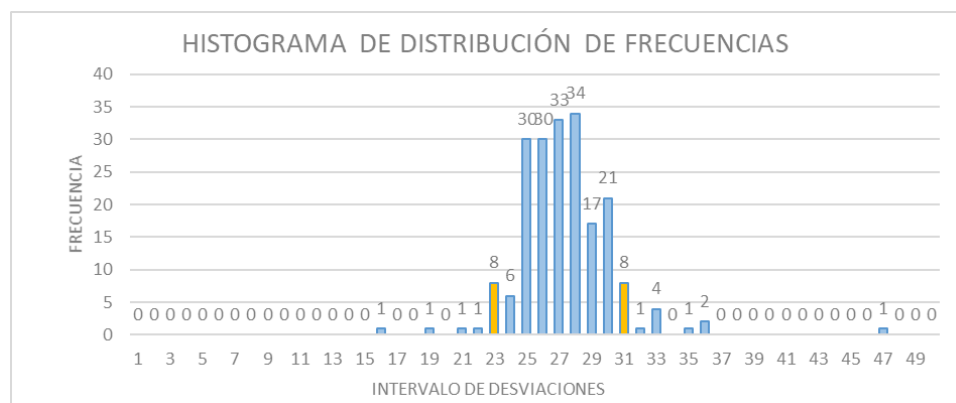
ENCARGADA DE LABORATORIO DE ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICION DE LA RUGOSIDAD CON EL MERLIN		
	METODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA SAN LUIS	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	1 + 600	SENTIDO:	IDA
PROGRESIVA FINAL:	2 + 000	NÚMERO DE ENSAYO:	E - 05
CARRIL:	DERECHO	FECHA:	31/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

Datos de campo con la Rueda de Merlín

	1	2	3	4	5	6	7	8	9	10
1	27	24	16	23	26	30	25	25	26	30
2	22	29	25	25	28	29	26	28	25	28
3	19	26	30	27	30	28	30	28	26	26
4	31	28	27	24	24	23	26	35	27	26
5	28	30	29	30	30	30	26	25	30	25
6	30	25	31	25	28	25	26	25	27	29
7	28	26	28	25	28	23	25	28	28	26
8	23	36	21	25	27	26	27	33	26	36
9	28	33	25	25	29	27	27	26	30	30
10	28	25	26	26	25	33	29	28	24	28
11	30	26	28	29	32	25	47	28	28	25
12	30	27	26	29	28	27	27	26	27	25
13	27	27	27	23	29	27	29	27	27	25
14	28	27	26	29	25	30	24	28	26	29
15	30	27	31	30	26	28	27	27	25	28
16	28	25	28	26	25	28	27	26	26	31
17	23	27	25	29	26	27	26	28	28	28
18	25	27	27	29	29	30	28	27	25	28
19	25	23	24	27	29	29	30	27	30	26
20	23	31	33	31	31	27	28	31	27	26





Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	1
17	0
18	0
19	1
20	0
21	1
22	1
23	8
24	6
25	30
26	30
27	33
28	34
29	17
30	21
31	8
32	1
33	4
34	0
35	1
36	2
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	1
48	0
49	0
50	0
<b>Total</b>	<b>200</b>

FRECUENCIAS	
Valor a dividir izq. (di) =	8
Existente izq. (ei) =	4
Faltante izq. (fi) =	6
Valor a dividir der. (dd) =	8
Existente der. (ed) =	9
Faltante der. (fd) =	1
rango medio (dm) =	7

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(8 - 6)}{8} + 7 + \frac{(8 - 1)}{8} \right) * 5 [mm]$$

$$D = 40,63 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 33,58 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

$$\rightarrow (IRI < 2.4)$$

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$\rightarrow (2.4 < IRI < 15.9)$$

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$I.R.I. = 2,17 \text{ m/km}$$

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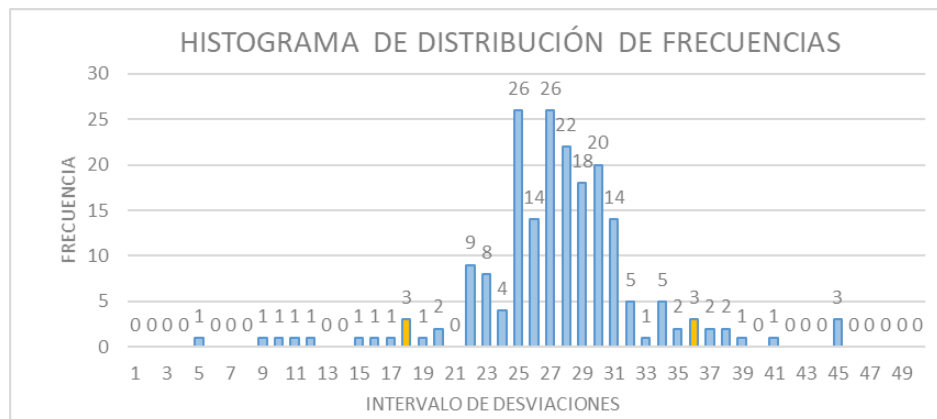
ENCARGADA DE LABORATORIO DE ASFALTOS

<b>UNIVERSIDAD AUTÓNOMA "JUAN MISAEL SARACHO"</b>			
<b>FACULTAD DE CIENCIAS Y TECNOLOGÍA</b>			
<b>CARRERA DE INGENIERÍA CIVIL</b>			
	ENSAYO PARA MEDICION DE LA RUGOSIDAD CON EL MERLIN		
	METODO IRI - INDICE DE RUGOSIDAD INTERNACIONAL		
	DEPARTAMENTO DE TOPOGRAFÍA Y VÍAS DE COMUNICACIÓN		
NOMBRE DE LA VÍA:	AVENIDA SAN LUIS	<b>"LABORATORIO DE ASFALTOS"</b>	
PROGRESIVA INICIAL:	2 + 000	SENTIDO:	IDA
PROGRESIVA FINAL:	2 + 400	NÚMERO DE ENSAYO:	E - 06
CARRIL:	DERECHO	FECHA:	31/03/2023
REALIZADO POR:	MARCO ANTONIO CARDOZO FLORES		

**EVALUACIÓN SUPERFICIAL DEL PAVIMENTO  
ÍNDICE DE REGULARIDAD INTERNACIONAL (I.R.I.)**

**Datos de campo con la Rueda de Merlín**

	1	2	3	4	5	6	7	8	9	10
1	26	25	26	28	28	25	27	30	18	30
2	25	29	27	30	31	35	38	26	27	32
3	41	10	25	16	27	23	22	30	26	30
4	30	27	37	30	20	31	29	32	34	18
5	25	29	37	22	39	45	5	32	18	29
6	31	12	36	32	23	30	28	25	22	22
7	25	25	25	11	24	30	28	30	15	45
8	34	38	19	23	36	27	31	17	30	9
9	29	34	28	27	30	29	31	22	24	32
10	29	30	25	25	30	30	27	26	26	25
11	27	28	27	29	31	30	29	26	26	28
12	27	30	25	27	28	25	31	29	23	28
13	25	27	26	24	25	28	29	28	26	31
14	29	31	26	26	25	27	36	29	25	22
15	28	31	27	25	27	26	27	27	28	31
16	22	27	29	27	31	23	28	23	30	31
17	25	28	30	22	26	28	29	24	34	45
18	25	22	27	28	23	25	27	27	27	27
19	28	29	28	33	34	23	28	35	25	31
20	30	25	29	29	20	27	28	25	28	25



Lecturas	Frecuencia
1	0
2	0
3	0
4	0
5	1
6	0
7	0
8	0
9	1
10	1
11	1
12	1
13	0
14	0
15	1
16	1
17	1
18	3
19	1
20	2
21	0
22	9
23	8
24	4
25	26
26	14
27	26
28	22
29	18
30	20
31	14
32	5
33	1
34	5
35	2
36	3
37	2
38	2
39	1
40	0
41	1
42	0
43	0
44	0
45	3
46	0
47	0
48	0
49	0
50	0
Total	200

FRECUENCIAS	
Valor a dividir izq. (di) =	3
Existente izq. (ei) =	8
Faltante izq. (fi) =	2
Valor a dividir der. (dd) =	3
Existente der. (ed) =	9
Faltante der. (fd) =	1
rango medio (dm) =	16

**Cálculo del rango D:**

$$D = \left( \frac{(d_i - f_i)}{d_i} + d_m + \frac{(d_d - f_d)}{d_d} \right) * 5 [mm]$$

$$D = \left( \frac{(3 - 2)}{3} + 16 + \frac{(3 - 1)}{3} \right) * 5 [mm]$$

$$D = 85 \text{ mm}$$

**Cálculo factor de corrección fc:**

$$f_c = \left( \frac{(E_p * 10)}{(L_i - L_f) * 5} \right)$$

Donde:

$$E_p = 6,2$$

$$L_i = 25$$

$$L_f = 10$$

$$f_c = 0,827 \text{ mm}$$

**Cálculo del rango corregido Dc:**

$$D_c = D * f_c$$

$$D_c = 70,27 \text{ mm}$$

**Determinación del I.R.I.:**

Para pavimentos nuevos:

$$I.R.I. = 0,0485 * D_c$$

→ (IRI < 2.4)

Para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

→ (2.4 < IRI < 15.9)

**Cálculo del I.R.I.:**

Aplicando la fórmula para pavimentos en servicio:

$$I.R.I. = 0,593 + 0,0471 * D_c$$

$$I.R.I. = 3,90 \text{ m/km}$$

Univ. Marco Antonio Cardozo Flores

Ing. Seila Claudia Ávila Sandoval

ESTUDIANTE CIV 502

ENCARGADA DE LABORATORIO DE  
ASFALTOS

**ANEXO II.**  
**DATOS DE CAMPO DE**  
**MIRA Y NIVEL**

**Levantamiento Topográfico Para el Proyecto "Determinación del índice de rugosidad internacional, usando el aplicativo inteligente Abakal y el rugosímetro de Merlín en las avenidas de la ciudad de Tarija"**

**AVENIDA LOS MOLLES PROGRESIVA 000 + 1200**

<b>PROGRESIVAS (DISTANCIA m)</b>	<b>VISTA ATRÁS</b>	<b>ALTURA DEL INSTRUMENTO</b>	<b>VISTA ADELANTE</b>	<b>COTA m</b>
<b>E1 BM</b>	0,9662	1,458	-	1949,0000
0,5	-	1,458	1,4509	1949,0071
1	-	1,458	1,4438	1949,0142
1,5	-	1,458	1,4368	1949,0212
2	-	1,458	1,4297	1949,0283
2,5	-	1,458	1,4232	1949,0348
3	-	1,458	1,4188	1949,0392
3,5	-	1,458	1,4096	1949,0484
4	-	1,458	1,4004	1949,0576
4,5	-	1,458	1,3904	1949,0676
5	-	1,458	1,3818	1949,0762
5,5	-	1,458	1,3750	1949,0830
6	-	1,458	1,3665	1949,0915
6,5	-	1,458	1,3626	1949,0954
7	-	1,458	1,3539	1949,1041
7,5	-	1,458	1,3388	1949,1192
8	-	1,458	1,3376	1949,1204
8,5	-	1,458	1,3360	1949,1220
9	-	1,458	1,3286	1949,1294
9,5	-	1,458	1,3208	1949,1372
10	-	1,458	1,3175	1949,1405
10,5	-	1,458	1,3125	1949,1455
11	-	1,458	1,3037	1949,1543
11,5	-	1,458	1,2958	1949,1622
12	-	1,458	1,2885	1949,1695
12,5	-	1,458	1,2873	1949,1707
13	-	1,458	1,2764	1949,1816
13,5	-	1,458	1,2701	1949,1879
14	-	1,458	1,2607	1949,1973
14,5	-	1,458	1,2505	1949,2075
15	-	1,458	1,2427	1949,2153
15,5	-	1,458	1,2322	1949,2258
16	-	1,458	1,2257	1949,2323
16,5	-	1,458	1,2164	1949,2416

17	-	1,458	1,2095	1949,2485
17,5	-	1,458	1,2011	1949,2569
18	-	1,458	1,1927	1949,2653
18,5	-	1,458	1,1864	1949,2716
19	-	1,458	1,1774	1949,2806
19,5	-	1,458	1,1744	1949,2836
20	-	1,458	1,1694	1949,2886
20,5	-	1,458	1,1652	1949,2928
21	-	1,458	1,1615	1949,2965
21,5	-	1,458	1,1559	1949,3021
22	-	1,458	1,1511	1949,3069
22,5	-	1,458	1,1482	1949,3098
23	-	1,458	1,1406	1949,3174
23,5	-	1,458	1,1345	1949,3235
24	-	1,458	1,1271	1949,3309
24,5	-	1,458	1,1221	1949,3359
25	-	1,458	1,1196	1949,3384
25,5	-	1,458	1,1173	1949,3407
26	-	1,458	1,1112	1949,3468
26,5	-	1,458	1,1026	1949,3554
27	-	1,458	1,1009	1949,3571
27,5	-	1,458	1,0981	1949,3599
28	-	1,458	1,0904	1949,3676
28,5	-	1,458	1,0843	1949,3737
29	-	1,458	1,0800	1949,3780
29,5	-	1,458	1,0747	1949,3833
30	-	1,458	1,0692	1949,3888
30,5	-	1,458	1,0639	1949,3941
31	-	1,458	1,0587	1949,3993
31,5	-	1,458	1,0511	1949,4069
32	-	1,458	1,0493	1949,4087
32,5	-	1,458	1,0465	1949,4115
33	-	1,458	1,0447	1949,4133
33,5	-	1,458	1,0417	1949,4163
34	-	1,458	1,0388	1949,4192
34,5	-	1,458	1,0373	1949,4207
35	-	1,458	1,0328	1949,4252
35,5	-	1,458	1,0287	1949,4293
36	-	1,458	1,0230	1949,4350
36,5	-	1,458	1,0207	1949,4373
37	-	1,458	1,0175	1949,4405
37,5	-	1,458	1,0104	1949,4476
38	-	1,458	1,0057	1949,4523

38,5	-	1,458	0,9959	1949,4621
39	-	1,458	0,9949	1949,4631
39,5	-	1,458	0,9845	1949,4735
40	-	1,458	0,9787	1949,4793
40,5	-	1,458	0,9746	1949,4834
41	-	1,458	0,9675	1949,4905
41,5	-	1,458	0,9638	1949,4942
42	-	1,458	0,9599	1949,4981
42,5	-	1,458	0,9504	1949,5076
43	-	1,458	0,9428	1949,5152
43,5	-	1,458	0,9372	1949,5208
44	-	1,458	0,9327	1949,5253
44,5	-	1,458	0,9267	1949,5313
45	-	1,458	0,9206	1949,5374
45,5	-	1,458	0,9093	1949,5487
46	-	1,458	0,8978	1949,5602
46,5	-	1,458	0,8861	1949,5719
47	-	1,458	0,8748	1949,5832
47,5	-	1,458	0,8649	1949,5931
48	-	1,458	0,8566	1949,6014
48,5	-	1,458	0,8467	1949,6113
49	-	1,458	0,8335	1949,6245
49,5	-	1,458	0,8248	1949,6332
50	-	1,458	0,8123	1949,6457
50,5	-	1,458	0,8196	1949,6384
51	-	1,458	0,7875	1949,6705
51,5	-	1,458	0,7794	1949,6786
52	-	1,458	0,7687	1949,6893
52,5	-	1,458	0,7576	1949,7004
53	-	1,458	0,7495	1949,7085
53,5	-	1,458	0,7351	1949,7229
54	-	1,458	0,7220	1949,7360
54,5	-	1,458	0,7169	1949,7411
55	-	1,458	0,7077	1949,7503
55,5	-	1,458	0,7003	1949,7577
56	-	1,458	0,7913	1949,6667
56,5	-	1,458	0,7817	1949,6763
57	-	1,458	0,7725	1949,6855
57,5	-	1,458	0,6616	1949,7964
58	-	1,458	0,6492	1949,8088
58,5	-	1,458	0,6397	1949,8183
59	-	1,458	0,6299	1949,8281
59,5	-	1,458	0,6241	1949,8339

60	-	1,458	0,6199	1949,8381
60,5	-	1,458	0,6096	1949,8484
61	-	1,458	0,5954	1949,8626
61,5	-	1,458	0,5857	1949,8723
62	-	1,458	0,5735	1949,8845
62,5	-	1,458	0,5675	1949,8905
63	-	1,458	0,5590	1949,8990
63,5	-	1,458	0,5482	1949,9098
64	-	1,458	0,5419	1949,9161
64,5	-	1,458	0,5335	1949,9245
65	-	1,458	0,5277	1949,9303
65,5	-	1,458	0,5168	1949,9412
66	-	1,458	0,5101	1949,9479
66,5	-	1,458	0,5061	1949,9519
67	-	1,458	0,4958	1949,9622
67,5	-	1,458	0,4881	1949,9699
68	-	1,458	0,4824	1949,9756
68,5	-	1,458	0,4713	1949,9867
69	-	1,458	0,4661	1949,9919
69,5	-	1,458	0,4582	1949,9998
70	-	1,458	0,4476	1950,0104
70,5	-	1,458	0,4477	1950,0103
71	-	1,458	0,4377	1950,0203
71,5	-	1,458	0,4316	1950,0264
72	-	1,458	0,4273	1950,0307
72,5	-	1,458	0,4194	1950,0386
73	-	1,458	0,4106	1950,0474
73,5	-	1,458	0,4045	1950,0535
74	-	1,458	0,3957	1950,0623
74,5	-	1,458	0,3900	1950,0680
<b>E2 - PTO 75</b>	0,3778	1,458	0,3842	1950,0738
75,5	-	1,515	1,5094	1950,0794
76	-	1,515	1,5038	1950,0850
76,5	-	1,515	1,4983	1950,0905
77	-	1,515	1,4927	1950,0961
77,5	-	1,515	1,4870	1950,1018
78	-	1,515	1,4872	1950,1016
78,5	-	1,515	1,4741	1950,1147
79	-	1,515	1,4692	1950,1196
79,5	-	1,515	1,4628	1950,1260
80	-	1,515	1,4621	1950,1267
80,5	-	1,515	1,4588	1950,1300
81	-	1,515	1,4441	1950,1447



81,5	-	1,515	1,4450	1950,1438
82	-	1,515	1,4185	1950,1703
82,5	-	1,515	1,4109	1950,1779
83	-	1,515	1,4119	1950,1769
83,5	-	1,515	1,4004	1950,1884
84	-	1,515	1,3937	1950,1951
84,5	-	1,515	1,3886	1950,2002
85	-	1,515	1,3783	1950,2105
85,5	-	1,515	1,3685	1950,2203
86	-	1,515	1,3602	1950,2286
86,5	-	1,515	1,3573	1950,2315
87	-	1,515	1,3545	1950,2343
87,5	-	1,515	1,3483	1950,2405
88	-	1,515	1,3422	1950,2466
88,5	-	1,515	1,3309	1950,2579
89	-	1,515	1,3316	1950,2572
89,5	-	1,515	1,3178	1950,2710
90	-	1,515	1,3147	1950,2741
90,5	-	1,515	1,3108	1950,2780
91	-	1,515	1,3037	1950,2851
91,5	-	1,515	1,3051	1950,2837
92	-	1,515	1,3012	1950,2876
92,5	-	1,515	1,2980	1950,2908
93	-	1,515	1,2926	1950,2962
93,5	-	1,515	1,2998	1950,2890
94	-	1,515	1,2801	1950,3087
94,5	-	1,515	1,2718	1950,3170
95	-	1,515	1,2748	1950,3140
95,5	-	1,515	1,2679	1950,3209
96	-	1,515	1,2675	1950,3213
96,5	-	1,515	1,2628	1950,3260
97	-	1,515	1,2549	1950,3339
97,5	-	1,515	1,2521	1950,3367
98	-	1,515	1,2474	1950,3414
98,5	-	1,515	1,2343	1950,3545
99	-	1,515	1,2380	1950,3508
99,5	-	1,515	1,2283	1950,3605
100	-	1,515	1,2277	1950,3611
100,5	-	1,515	1,2174	1950,3714
101	-	1,515	1,2092	1950,3796
101,5	-	1,515	1,2019	1950,3869
102	-	1,515	1,1931	1950,3957
102,5	-	1,515	1,1883	1950,4005

103	-	1,515	1,1790	1950,4098
103,5	-	1,515	1,1688	1950,4200
104	-	1,515	1,1658	1950,4230
104,5	-	1,515	1,1579	1950,4309
105	-	1,515	1,1522	1950,4366
105,5	-	1,515	1,1482	1950,4406
106	-	1,515	1,1421	1950,4467
106,5	-	1,515	1,1411	1950,4477
107	-	1,515	1,1366	1950,4522
107,5	-	1,515	1,1310	1950,4578
108	-	1,515	1,1280	1950,4608
108,5	-	1,515	1,1240	1950,4648
109	-	1,515	1,1227	1950,4661
109,5	-	1,515	1,1201	1950,4687
110	-	1,515	1,1173	1950,4715
110,5	-	1,515	1,1131	1950,4757
111	-	1,515	1,1140	1950,4748
111,5	-	1,515	1,1121	1950,4767
112	-	1,515	1,1076	1950,4812
112,5	-	1,515	1,1025	1950,4863
113	-	1,515	1,1012	1950,4876
113,5	-	1,515	1,1002	1950,4886
114	-	1,515	1,0984	1950,4904
114,5	-	1,515	1,0999	1950,4889
115	-	1,515	1,0943	1950,4945
115,5	-	1,515	1,0952	1950,4936
116	-	1,515	1,0952	1950,4936
116,5	-	1,515	1,0983	1950,4905
117	-	1,515	1,0967	1950,4921
117,5	-	1,515	1,0935	1950,4953
118	-	1,515	1,0917	1950,4971
118,5	-	1,515	1,0875	1950,5013
119	-	1,515	1,0872	1950,5016
119,5	-	1,515	1,0870	1950,5018
120	-	1,515	1,0878	1950,5010
120,5	-	1,515	1,0899	1950,4989
121	-	1,515	1,0877	1950,5011
121,5	-	1,515	1,0879	1950,5009
122	-	1,515	1,0883	1950,5005
122,5	-	1,515	1,0889	1950,4999
123	-	1,515	1,0888	1950,5000
123,5	-	1,515	1,0933	1950,4955
124	-	1,515	1,0962	1950,4926

124,5	-	1,515	1,0977	1950,4911
125	-	1,515	1,0982	1950,4906
125,5	-	1,515	1,0976	1950,4912
126	-	1,515	1,1032	1950,4856
126,5	-	1,515	1,1077	1950,4811
127	-	1,515	1,1086	1950,4802
127,5	-	1,515	1,1131	1950,4757
128	-	1,515	1,1110	1950,4778
128,5	-	1,515	1,1088	1950,4800
129	-	1,515	1,1085	1950,4803
129,5	-	1,515	1,1086	1950,4802
130	-	1,515	1,1128	1950,4760
130,5	-	1,515	1,1089	1950,4799
131	-	1,515	1,1092	1950,4796
131,5	-	1,515	1,1113	1950,4775
132	-	1,515	1,1087	1950,4801
132,5	-	1,515	1,1063	1950,4825
133	-	1,515	1,1041	1950,4847
133,5	-	1,515	1,1103	1950,4785
134	-	1,515	1,1115	1950,4773
134,5	-	1,515	1,1136	1950,4752
135	-	1,515	1,1216	1950,4672
135,5	-	1,515	1,1199	1950,4689
136	-	1,515	1,1222	1950,4666
136,5	-	1,515	1,1261	1950,4627
137	-	1,515	1,1274	1950,4614
137,5	-	1,515	1,1224	1950,4664
138	-	1,515	1,1265	1950,4623
138,5	-	1,515	1,1278	1950,4610
139	-	1,515	1,1315	1950,4573
139,5	-	1,515	1,1362	1950,4526
140	-	1,515	1,1404	1950,4484
140,5	-	1,515	1,1440	1950,4448
141	-	1,515	1,1475	1950,4413
141,5	-	1,515	1,1490	1950,4398
142	-	1,515	1,1550	1950,4338
142,5	-	1,515	1,1621	1950,4267
143	-	1,515	1,1586	1950,4302
143,5	-	1,515	1,1634	1950,4254
144	-	1,515	1,1730	1950,4158
144,5	-	1,515	1,1729	1950,4159
145	-	1,515	1,1784	1950,4104
145,5	-	1,515	1,1843	1950,4045

146	-	1,515	1,1864	1950,4024
146,5	-	1,515	1,1888	1950,4000
147	-	1,515	1,1970	1950,3918
147,5	-	1,515	1,2034	1950,3854
148	-	1,515	1,2014	1950,3874
148,5	-	1,515	1,2088	1950,3800
149	-	1,515	1,2119	1950,3769
149,5	-	1,515	1,2127	1950,3761
<b>E3 - PTO 150</b>	1,4845	1,515	1,2200	1950,3688
150,5	-	1,504	1,5085	1950,3643
151	-	1,504	1,5130	1950,3598
151,5	-	1,504	1,5176	1950,3552
152	-	1,504	1,5221	1950,3507
152,5	-	1,504	1,5301	1950,3427
153	-	1,504	1,5331	1950,3397
153,5	-	1,504	1,5356	1950,3372
154	-	1,504	1,5431	1950,3297
154,5	-	1,504	1,5476	1950,3252
155	-	1,504	1,5507	1950,3221
155,5	-	1,504	1,5576	1950,3152
156	-	1,504	1,5613	1950,3115
156,5	-	1,504	1,5688	1950,3040
157	-	1,504	1,5737	1950,2991
157,5	-	1,504	1,5802	1950,2926
158	-	1,504	1,5784	1950,2944
158,5	-	1,504	1,5856	1950,2872
159	-	1,504	1,5938	1950,2790
159,5	-	1,504	1,5982	1950,2746
160	-	1,504	1,6041	1950,2687
160,5	-	1,504	1,6041	1950,2687
161	-	1,504	1,6088	1950,2640
161,5	-	1,504	1,6105	1950,2623
162	-	1,504	1,6175	1950,2553
162,5	-	1,504	1,6232	1950,2496
163	-	1,504	1,6281	1950,2447
163,5	-	1,504	1,6341	1950,2387
164	-	1,504	1,6370	1950,2358
164,5	-	1,504	1,6448	1950,2280
165	-	1,504	1,6485	1950,2243
165,5	-	1,504	1,6580	1950,2148
166	-	1,504	1,6604	1950,2124
166,5	-	1,504	1,6628	1950,2100
167	-	1,504	1,6698	1950,2030

167,5	-	1,504	1,6858	1950,1870
168	-	1,504	1,6949	1950,1779
168,5	-	1,504	1,6934	1950,1794
169	-	1,504	1,6986	1950,1742
169,5	-	1,504	1,7048	1950,1680
170	-	1,504	1,6129	1950,2599
170,5	-	1,504	1,6232	1950,2496
171	-	1,504	1,7302	1950,1426
171,5	-	1,504	1,7356	1950,1372
172	-	1,504	1,7399	1950,1329
172,5	-	1,504	1,7435	1950,1293
173	-	1,504	1,7472	1950,1256
173,5	-	1,504	1,7621	1950,1107
174	-	1,504	1,7804	1950,0924
174,5	-	1,504	1,7701	1950,1027
175	-	1,504	1,7832	1950,0896
175,5	-	1,504	1,7979	1950,0749
176	-	1,504	1,8071	1950,0657
176,5	-	1,504	1,8168	1950,0560
177	-	1,504	1,8263	1950,0465
177,5	-	1,504	1,8272	1950,0456
178	-	1,504	1,8347	1950,0381
178,5	-	1,504	1,8391	1950,0337
179	-	1,504	1,8490	1950,0238
179,5	-	1,504	1,8583	1950,0145
180	-	1,504	1,8676	1950,0052
180,5	-	1,504	1,8718	1950,0010
181	-	1,504	1,8778	1949,9950
181,5	-	1,504	1,8823	1949,9905
182	-	1,504	1,8960	1949,9768
182,5	-	1,504	1,9041	1949,9687
183	-	1,504	1,9184	1949,9544
183,5	-	1,504	1,9123	1949,9605
184	-	1,504	1,9223	1949,9505
184,5	-	1,504	1,9298	1949,9430
185	-	1,504	1,9424	1949,9304
185,5	-	1,504	1,9536	1949,9192
186	-	1,504	1,9639	1949,9089
186,5	-	1,504	1,9687	1949,9041
187	-	1,504	1,9718	1949,9010
187,5	-	1,504	1,9852	1949,8876
188	-	1,504	1,9929	1949,8799
188,5	-	1,504	1,9974	1949,8754

189	-	1,504	2,0062	1949,8666
189,5	-	1,504	2,0160	1949,8568
190	-	1,504	2,0167	1949,8561
190,5	-	1,504	2,0118	1949,8610
191	-	1,504	2,0334	1949,8394
191,5	-	1,504	2,0355	1949,8373
192	-	1,504	2,0374	1949,8354
192,5	-	1,504	2,0437	1949,8291
193	-	1,504	2,0512	1949,8216
193,5	-	1,504	2,0540	1949,8188
194	-	1,504	2,0580	1949,8148
194,5	-	1,504	2,0646	1949,8082
195	-	1,504	2,0707	1949,8021
195,5	-	1,504	2,0752	1949,7976
196	-	1,504	2,0831	1949,7897
196,5	-	1,504	2,0891	1949,7837
197	-	1,504	2,0974	1949,7754
197,5	-	1,504	2,1013	1949,7715
198	-	1,504	2,1080	1949,7648
198,5	-	1,504	2,1137	1949,7591
199	-	1,504	2,1161	1949,7567
199,5	-	1,504	2,1190	1949,7538
200	-	1,504	2,1260	1949,7468
200,5	-	1,504	2,1271	1949,7457
201	-	1,504	2,1354	1949,7374
201,5	-	1,504	2,1411	1949,7317
202	-	1,504	2,1464	1949,7264
202,5	-	1,504	2,1524	1949,7204
203	-	1,504	2,1582	1949,7146
203,5	-	1,504	2,1648	1949,7080
204	-	1,504	2,1746	1949,6982
204,5	-	1,504	2,1769	1949,6959
205	-	1,504	2,1810	1949,6918
205,5	-	1,504	2,1866	1949,6862
206	-	1,504	2,1906	1949,6822
206,5	-	1,504	2,1957	1949,6771
207	-	1,504	2,2026	1949,6702
207,5	-	1,504	2,2090	1949,6638
208	-	1,504	2,2161	1949,6567
208,5	-	1,504	2,2227	1949,6501
209	-	1,504	2,2289	1949,6439
209,5	-	1,504	2,2333	1949,6395
210	-	1,504	2,2410	1949,6318

210,5	-	1,504	2,2439	1949,6289
211	-	1,504	2,2486	1949,6242
211,5	-	1,504	2,2572	1949,6156
212	-	1,504	2,2632	1949,6096
212,5	-	1,504	2,2709	1949,6019
213	-	1,504	2,2730	1949,5998
213,5	-	1,504	2,2703	1949,6025
214	-	1,504	2,2856	1949,5872
214,5	-	1,504	2,3075	1949,5653
215	-	1,504	2,3023	1949,5705
215,5	-	1,504	2,3080	1949,5648
216	-	1,504	2,3157	1949,5571
216,5	-	1,504	2,3197	1949,5531
217	-	1,504	2,3152	1949,5576
217,5	-	1,504	2,3175	1949,5553
218	-	1,504	2,3209	1949,5519
218,5	-	1,504	2,3250	1949,5478
219	-	1,504	2,3298	1949,5430
219,5	-	1,504	2,3314	1949,5414
220	-	1,504	2,3358	1949,5370
220,5	-	1,504	2,3364	1949,5364
221	-	1,504	2,3372	1949,5356
221,5	-	1,504	2,3411	1949,5317
222	-	1,504	2,3427	1949,5301
222,5	-	1,504	2,3456	1949,5272
223	-	1,504	2,3453	1949,5275
223,5	-	1,504	2,3484	1949,5244
224	-	1,504	2,3634	1949,5094
224,5	-	1,504	2,3736	1949,4992
<b>E4 - PTO 225</b>	1,5051	1,504	2,3679	1949,5049
225,5	-	1,53	1,5340	1949,5009
226	-	1,53	1,5379	1949,4970
226,5	-	1,53	1,5419	1949,4930
227	-	1,53	1,5459	1949,4890
227,5	-	1,53	1,5486	1949,4863
228	-	1,53	1,5513	1949,4836
228,5	-	1,53	1,5544	1949,4805
229	-	1,53	1,5575	1949,4774
229,5	-	1,53	1,5607	1949,4742
230	-	1,53	1,5638	1949,4711
230,5	-	1,53	1,5664	1949,4685
231	-	1,53	1,5690	1949,4659
231,5	-	1,53	1,5716	1949,4633

232	-	1,53	1,5742	1949,4607
232,5	-	1,53	1,5765	1949,4584
233	-	1,53	1,5788	1949,4561
233,5	-	1,53	1,5812	1949,4537
234	-	1,53	1,5835	1949,4514
234,5	-	1,53	1,5872	1949,4477
235	-	1,53	1,5909	1949,4440
235,5	-	1,53	1,5947	1949,4402
236	-	1,53	1,5984	1949,4365
236,5	-	1,53	1,6024	1949,4325
237	-	1,53	1,6064	1949,4285
237,5	-	1,53	1,6105	1949,4244
238	-	1,53	1,6145	1949,4204
238,5	-	1,53	1,6186	1949,4163
239	-	1,53	1,6227	1949,4122
239,5	-	1,53	1,6268	1949,4081
240	-	1,53	1,6309	1949,4040
240,5	-	1,53	1,6354	1949,3995
241	-	1,53	1,6399	1949,3950
241,5	-	1,53	1,6444	1949,3905
242	-	1,53	1,6489	1949,3860
242,5	-	1,53	1,6538	1949,3811
243	-	1,53	1,6587	1949,3762
243,5	-	1,53	1,6637	1949,3712
244	-	1,53	1,6686	1949,3663
244,5	-	1,53	1,6724	1949,3625
245	-	1,53	1,6763	1949,3586
245,5	-	1,53	1,6801	1949,3548
246	-	1,53	1,6840	1949,3509
246,5	-	1,53	1,6868	1949,3481
247	-	1,53	1,6896	1949,3453
247,5	-	1,53	1,6924	1949,3425
248	-	1,53	1,6952	1949,3397
248,5	-	1,53	1,6977	1949,3372
249	-	1,53	1,7002	1949,3347
249,5	-	1,53	1,7028	1949,3321
250	-	1,53	1,7053	1949,3296
250,5	-	1,53	1,7067	1949,3282
251	-	1,53	1,7081	1949,3268
251,5	-	1,53	1,7096	1949,3253
252	-	1,53	1,7110	1949,3239
252,5	-	1,53	1,7134	1949,3215
253	-	1,53	1,7158	1949,3191



253,5	-	1,53	1,7183	1949,3166
254	-	1,53	1,7207	1949,3142
254,5	-	1,53	1,7181	1949,3168
255	-	1,53	1,7154	1949,3195
255,5	-	1,53	1,7128	1949,3221
256	-	1,53	1,7102	1949,3247
256,5	-	1,53	1,7100	1949,3249
257	-	1,53	1,7098	1949,3251
257,5	-	1,53	1,7096	1949,3253
258	-	1,53	1,7094	1949,3255
258,5	-	1,53	1,7086	1949,3263
259	-	1,53	1,7078	1949,3271
259,5	-	1,53	1,7070	1949,3279
260	-	1,53	1,7062	1949,3287
260,5	-	1,53	1,7026	1949,3323
261	-	1,53	1,6989	1949,3360
261,5	-	1,53	1,6953	1949,3396
262	-	1,53	1,6917	1949,3432
262,5	-	1,53	1,6877	1949,3472
263	-	1,53	1,6837	1949,3512
263,5	-	1,53	1,6798	1949,3551
264	-	1,53	1,6758	1949,3591
264,5	-	1,53	1,6696	1949,3653
265	-	1,53	1,6634	1949,3715
265,5	-	1,53	1,6572	1949,3777
266	-	1,53	1,6510	1949,3839
266,5	-	1,53	1,6448	1949,3901
267	-	1,53	1,6386	1949,3963
267,5	-	1,53	1,6324	1949,4025
268	-	1,53	1,6579	1949,3770
268,5	-	1,53	1,6552	1949,3797
269	-	1,53	1,6524	1949,3825
269,5	-	1,53	1,6497	1949,3852
270	-	1,53	1,6470	1949,3879
270,5	-	1,53	1,6451	1949,3898
271	-	1,53	1,6432	1949,3917
271,5	-	1,53	1,6413	1949,3936
272	-	1,53	1,6394	1949,3955
272,5	-	1,53	1,6386	1949,3963
273	-	1,53	1,6378	1949,3971
273,5	-	1,53	1,6370	1949,3979
274	-	1,53	1,6362	1949,3987
274,5	-	1,53	1,6337	1949,4012

275	-	1,53	1,6311	1949,4038
275,5	-	1,53	1,6286	1949,4063
276	-	1,53	1,6261	1949,4088
276,5	-	1,53	1,6251	1949,4098
277	-	1,53	1,6242	1949,4107
277,5	-	1,53	1,6232	1949,4117
278	-	1,53	1,6223	1949,4126
278,5	-	1,53	1,6215	1949,4134
279	-	1,53	1,6206	1949,4143
279,5	-	1,53	1,6198	1949,4151
280	-	1,53	1,6190	1949,4159
280,5	-	1,53	1,6169	1949,4180
281	-	1,53	1,6149	1949,4200
281,5	-	1,53	1,6128	1949,4221
282	-	1,53	1,6108	1949,4241
282,5	-	1,53	1,6098	1949,4251
283	-	1,53	1,6089	1949,4260
283,5	-	1,53	1,6079	1949,4270
284	-	1,53	1,6070	1949,4279
284,5	-	1,53	1,6058	1949,4291
285	-	1,53	1,6046	1949,4303
285,5	-	1,53	1,6034	1949,4315
286	-	1,53	1,6022	1949,4327
286,5	-	1,53	1,6014	1949,4335
287	-	1,53	1,6006	1949,4343
287,5	-	1,53	1,5998	1949,4351
288	-	1,53	1,5990	1949,4359
288,5	-	1,53	1,5981	1949,4368
289	-	1,53	1,5973	1949,4376
289,5	-	1,53	1,5964	1949,4385
290	-	1,53	1,5956	1949,4393
290,5	-	1,53	1,5918	1949,4431
291	-	1,53	1,5879	1949,4470
291,5	-	1,53	1,5841	1949,4508
292	-	1,53	1,5803	1949,4546
292,5	-	1,53	1,5774	1949,4575
293	-	1,53	1,5745	1949,4604
293,5	-	1,53	1,5716	1949,4633
294	-	1,53	1,5687	1949,4662
294,5	-	1,53	1,5771	1949,4578
295	-	1,53	1,5840	1949,4509
295,5	-	1,53	1,5909	1949,4440
296	-	1,53	1,5923	1949,4426

296,5	-	1,53	1,5884	1949,4465
297	-	1,53	1,5845	1949,4504
297,5	-	1,53	1,5850	1949,4499
298	-	1,53	1,5856	1949,4493
298,5	-	1,53	1,5882	1949,4467
299	-	1,53	1,5908	1949,4441
299,5	-	1,53	1,5836	1949,4513
<b>E5 - PTO 300</b>	1,5499	1,53	1,5827	1949,4522
300,5	-	1,535	1,5313	1949,4559
301	-	1,535	1,5276	1949,4596
301,5	-	1,535	1,5239	1949,4633
302	-	1,535	1,5202	1949,4670
302,5	-	1,535	1,5194	1949,4678
303	-	1,535	1,5187	1949,4685
303,5	-	1,535	1,5109	1949,4763
304	-	1,535	1,5092	1949,4780
304,5	-	1,535	1,5111	1949,4761
305	-	1,535	1,5131	1949,4741
305,5	-	1,535	1,5122	1949,4750
306	-	1,535	1,5113	1949,4759
306,5	-	1,535	1,5105	1949,4767
307	-	1,535	1,5096	1949,4776
307,5	-	1,535	1,5111	1949,4761
308	-	1,535	1,5127	1949,4745
308,5	-	1,535	1,5187	1949,4685
309	-	1,535	1,5247	1949,4625
309,5	-	1,535	1,5309	1949,4563
310	-	1,535	1,5686	1949,4186
310,5	-	1,535	1,5333	1949,4539
311	-	1,535	1,5329	1949,4543
311,5	-	1,535	1,5343	1949,4529
312	-	1,535	1,5358	1949,4514
312,5	-	1,535	1,5301	1949,4571
313	-	1,535	1,5245	1949,4627
313,5	-	1,535	1,5215	1949,4657
314	-	1,535	1,5186	1949,4686
314,5	-	1,535	1,5209	1949,4663
315	-	1,535	1,5233	1949,4639
315,5	-	1,535	1,5230	1949,4642
316	-	1,535	1,5228	1949,4644
316,5	-	1,535	1,5240	1949,4632
317	-	1,535	1,5253	1949,4619
317,5	-	1,535	1,5240	1949,4632

318	-	1,535	1,5227	1949,4645
318,5	-	1,535	1,5237	1949,4635
319	-	1,535	1,5247	1949,4625
319,5	-	1,535	1,5242	1949,4630
320	-	1,535	1,5238	1949,4634
320,5	-	1,535	1,5194	1949,4678
321	-	1,535	1,5150	1949,4722
321,5	-	1,535	1,5145	1949,4727
322	-	1,535	1,5140	1949,4732
322,5	-	1,535	1,5127	1949,4745
323	-	1,535	1,5114	1949,4758
323,5	-	1,535	1,5124	1949,4748
324	-	1,535	1,5135	1949,4737
324,5	-	1,535	1,5168	1949,4704
325	-	1,535	1,5202	1949,4670
325,5	-	1,535	1,5188	1949,4684
326	-	1,535	1,5174	1949,4698
326,5	-	1,535	1,5223	1949,4649
327	-	1,535	1,5273	1949,4599
327,5	-	1,535	1,5288	1949,4584
328	-	1,535	1,5303	1949,4569
328,5	-	1,535	1,5334	1949,4538
329	-	1,535	1,5365	1949,4507
329,5	-	1,535	1,5377	1949,4495
330	-	1,535	1,5390	1949,4482
330,5	-	1,535	1,5420	1949,4452
331	-	1,535	1,5451	1949,4421
331,5	-	1,535	1,5473	1949,4399
332	-	1,535	1,5496	1949,4376
332,5	-	1,535	1,5502	1949,4370
333	-	1,535	1,5508	1949,4364
333,5	-	1,535	1,5524	1949,4348
334	-	1,535	1,5541	1949,4331
334,5	-	1,535	1,5569	1949,4303
335	-	1,535	1,5597	1949,4275
335,5	-	1,535	1,5601	1949,4271
336	-	1,535	1,5606	1949,4266
336,5	-	1,535	1,5638	1949,4234
337	-	1,535	1,5671	1949,4201
337,5	-	1,535	1,4723	1949,5149
338	-	1,535	1,3775	1949,6097
338,5	-	1,535	1,4740	1949,5132
339	-	1,535	1,5706	1949,4166

339,5	-	1,535	1,5741	1949,4131
340	-	1,535	1,5776	1949,4096
340,5	-	1,535	1,5751	1949,4121
341	-	1,535	1,5727	1949,4145
341,5	-	1,535	1,5747	1949,4125
342	-	1,535	1,5767	1949,4105
342,5	-	1,535	1,5753	1949,4119
343	-	1,535	1,5739	1949,4133
343,5	-	1,535	1,5732	1949,4140
344	-	1,535	1,5726	1949,4146
344,5	-	1,535	1,5722	1949,4150
345	-	1,535	1,5719	1949,4153
345,5	-	1,535	1,5727	1949,4145
346	-	1,535	1,5735	1949,4137
346,5	-	1,535	1,5746	1949,4126
347	-	1,535	1,5757	1949,4115
347,5	-	1,535	1,5733	1949,4139
348	-	1,535	1,5710	1949,4162
348,5	-	1,535	1,5699	1949,4173
349	-	1,535	1,5688	1949,4184
349,5	-	1,535	1,5689	1949,4183
350	-	1,535	1,5690	1949,4182
350,5	-	1,535	1,5740	1949,4132
351	-	1,535	1,5835	1949,4037
351,5	-	1,535	1,5783	1949,4089
352	-	1,535	1,5731	1949,4141
352,5	-	1,535	1,5665	1949,4207
353	-	1,535	1,5610	1949,4262
353,5	-	1,535	1,5556	1949,4316
354	-	1,535	1,5564	1949,4308
354,5	-	1,535	1,5571	1949,4301
355	-	1,535	1,5579	1949,4293
355,5	-	1,535	1,5726	1949,4146
356	-	1,535	1,5727	1949,4145
356,5	-	1,535	1,5729	1949,4143
357	-	1,535	1,5726	1949,4146
357,5	-	1,535	1,5723	1949,4149
358	-	1,535	1,5711	1949,4161
358,5	-	1,535	1,5699	1949,4173
359	-	1,535	1,5706	1949,4166
359,5	-	1,535	1,5713	1949,4159
360	-	1,535	1,5720	1949,4152
360,5	-	1,535	1,5727	1949,4145

361	-	1,535	1,5734	1949,4138
361,5	-	1,535	1,5755	1949,4117
362	-	1,535	1,5777	1949,4095
362,5	-	1,535	1,5801	1949,4071
363	-	1,535	1,5825	1949,4047
363,5	-	1,535	1,5843	1949,4029
364	-	1,535	1,5862	1949,4010
364,5	-	1,535	1,5872	1949,4000
365	-	1,535	1,5882	1949,3990
365,5	-	1,535	1,5927	1949,3945
366	-	1,535	1,5973	1949,3899
366,5	-	1,535	1,6000	1949,3872
367	-	1,535	1,6027	1949,3845
367,5	-	1,535	1,6032	1949,3840
368	-	1,535	1,6037	1949,3835
368,5	-	1,535	1,6053	1949,3819
369	-	1,535	1,6069	1949,3803
369,5	-	1,535	1,6161	1949,3711
370	-	1,535	1,6253	1949,3619
370,5	-	1,535	1,6169	1949,3703
371	-	1,535	1,6086	1949,3786
371,5	-	1,535	1,6140	1949,3732
372	-	1,535	1,6194	1949,3678
372,5	-	1,535	1,6134	1949,3738
373	-	1,535	1,6075	1949,3797
373,5	-	1,535	1,6101	1949,3771
374	-	1,535	1,6127	1949,3745
374,5	-	1,535	1,6139	1949,3733
<b>E6 - PTO 375</b>	1,379	1,535	1,6152	1949,3720
375,5	-	1,387	1,3893	1949,3697
376	-	1,387	1,3916	1949,3674
376,5	-	1,387	1,3940	1949,3650
377	-	1,387	1,3963	1949,3627
377,5	-	1,387	1,3989	1949,3601
378	-	1,387	1,4016	1949,3574
378,5	-	1,387	1,4039	1949,3551
379	-	1,387	1,4061	1949,3529
379,5	-	1,387	1,4084	1949,3506
380	-	1,387	1,4107	1949,3483
380,5	-	1,387	1,4155	1949,3435
381	-	1,387	1,4202	1949,3388
381,5	-	1,387	1,4250	1949,3340
382	-	1,387	1,4298	1949,3292

382,5	-	1,387	1,4335	1949,3255
383	-	1,387	1,4372	1949,3218
383,5	-	1,387	1,4409	1949,3181
384	-	1,387	1,4446	1949,3144
384,5	-	1,387	1,4490	1949,3100
385	-	1,387	1,4535	1949,3055
385,5	-	1,387	1,4579	1949,3011
386	-	1,387	1,4624	1949,2966
386,5	-	1,387	1,4672	1949,2918
387	-	1,387	1,4720	1949,2870
387,5	-	1,387	1,4768	1949,2822
388	-	1,387	1,4816	1949,2774
388,5	-	1,387	1,4865	1949,2725
389	-	1,387	1,4913	1949,2677
389,5	-	1,387	1,4961	1949,2629
390	-	1,387	1,5009	1949,2581
390,5	-	1,387	1,5040	1949,2550
391	-	1,387	1,5071	1949,2519
391,5	-	1,387	1,5103	1949,2487
392	-	1,387	1,5134	1949,2456
392,5	-	1,387	1,5190	1949,2400
393	-	1,387	1,5245	1949,2345
393,5	-	1,387	1,5301	1949,2289
394	-	1,387	1,5357	1949,2233
394,5	-	1,387	1,5397	1949,2193
395	-	1,387	1,5438	1949,2152
395,5	-	1,387	1,5478	1949,2112
396	-	1,387	1,5519	1949,2071
396,5	-	1,387	1,5542	1949,2048
397	-	1,387	1,5565	1949,2025
397,5	-	1,387	1,5589	1949,2001
398	-	1,387	1,5612	1949,1978
398,5	-	1,387	1,5643	1949,1947
399	-	1,387	1,5675	1949,1915
399,5	-	1,387	1,5706	1949,1884
400	-	1,387	1,5738	1949,1852
400,5	-	1,387	1,5765	1949,1825
401	-	1,387	1,5792	1949,1798
401,5	-	1,387	1,5819	1949,1771
402	-	1,387	1,5846	1949,1744
402,5	-	1,387	1,5896	1949,1694
403	-	1,387	1,5946	1949,1644
403,5	-	1,387	1,5997	1949,1593

404	-	1,387	1,6047	1949,1543
404,5	-	1,387	1,6099	1949,1491
405	-	1,387	1,6152	1949,1438
405,5	-	1,387	1,6204	1949,1386
406	-	1,387	1,6257	1949,1333
406,5	-	1,387	1,6304	1949,1286
407	-	1,387	1,6351	1949,1239
407,5	-	1,387	1,6398	1949,1192
408	-	1,387	1,6445	1949,1145
408,5	-	1,387	1,6501	1949,1089
409	-	1,387	1,6557	1949,1033
409,5	-	1,387	1,6614	1949,0976
410	-	1,387	1,6670	1949,0920
410,5	-	1,387	1,6739	1949,0851
411	-	1,387	1,6809	1949,0781
411,5	-	1,387	1,6878	1949,0712
412	-	1,387	1,6948	1949,0642
412,5	-	1,387	1,7009	1949,0581
413	-	1,387	1,7071	1949,0519
413,5	-	1,387	1,7132	1949,0458
414	-	1,387	1,7194	1949,0396
414,5	-	1,387	1,7256	1949,0334
415	-	1,387	1,7318	1949,0272
415,5	-	1,387	1,7381	1949,0209
416	-	1,387	1,7443	1949,0147
416,5	-	1,387	1,7533	1949,0057
417	-	1,387	1,7622	1948,9968
417,5	-	1,387	1,7712	1948,9878
418	-	1,387	1,7802	1948,9788
418,5	-	1,387	1,7891	1948,9699
419	-	1,387	1,7980	1948,9610
419,5	-	1,387	1,8068	1948,9522
420	-	1,387	1,8157	1948,9433
420,5	-	1,387	1,8251	1948,9339
421	-	1,387	1,8345	1948,9245
421,5	-	1,387	1,8431	1948,9159
422	-	1,387	1,8518	1948,9072
422,5	-	1,387	1,8624	1948,8966
423	-	1,387	1,8730	1948,8860
423,5	-	1,387	1,8850	1948,8740
424	-	1,387	1,8971	1948,8619
424,5	-	1,387	1,9072	1948,8518
425	-	1,387	1,9173	1948,8417



425,5	-	1,387	1,9265	1948,8325
426	-	1,387	1,9357	1948,8233
426,5	-	1,387	1,9489	1948,8101
427	-	1,387	1,9622	1948,7968
427,5	-	1,387	1,9724	1948,7866
428	-	1,387	1,9826	1948,7764
428,5	-	1,387	1,9959	1948,7631
429	-	1,387	2,0093	1948,7497
429,5	-	1,387	2,0188	1948,7402
430	-	1,387	2,0284	1948,7306
430,5	-	1,387	2,0414	1948,7176
431	-	1,387	2,0544	1948,7046
431,5	-	1,387	2,0609	1948,6981
432	-	1,387	2,0675	1948,6915
432,5	-	1,387	2,0840	1948,6750
433	-	1,387	2,1006	1948,6584
433,5	-	1,387	2,1127	1948,6463
434	-	1,387	2,1247	1948,6343
434,5	-	1,387	2,1368	1948,6222
435	-	1,387	2,1489	1948,6101
435,5	-	1,387	2,1601	1948,5989
436	-	1,387	2,1713	1948,5877
436,5	-	1,387	2,1826	1948,5764
437	-	1,387	2,1938	1948,5652
437,5	-	1,387	2,2063	1948,5527
438	-	1,387	2,2188	1948,5402
438,5	-	1,387	2,2314	1948,5276
439	-	1,387	2,2439	1948,5151
439,5	-	1,387	2,2561	1948,5029
440	-	1,387	2,2683	1948,4907
440,5	-	1,387	2,2805	1948,4785
441	-	1,387	2,2927	1948,4663
441,5	-	1,387	2,3029	1948,4561
442	-	1,387	2,3132	1948,4458
442,5	-	1,387	2,3234	1948,4356
443	-	1,387	2,3337	1948,4253
443,5	-	1,387	2,3462	1948,4128
444	-	1,387	2,3587	1948,4003
444,5	-	1,387	2,3713	1948,3877
445	-	1,387	2,3838	1948,3752
445,5	-	1,387	2,3964	1948,3626
446	-	1,387	2,4089	1948,3501
446,5	-	1,387	2,4215	1948,3375

447	-	1,387	2,4341	1948,3249
447,5	-	1,387	2,4483	1948,3107
448	-	1,387	2,4626	1948,2964
448,5	-	1,387	2,4781	1948,2809
449	-	1,387	2,4936	1948,2654
449,5	-	1,387	2,5075	1948,2515
<b>E7 - PTO 450</b>	1,4565	1,387	2,5215	1948,2375
450,5	-	1,518	1,5294	1948,2261
451	-	1,518	1,5409	1948,2146
451,5	-	1,518	1,5523	1948,2032
452	-	1,518	1,5638	1948,1917
452,5	-	1,518	1,5781	1948,1774
453	-	1,518	1,5924	1948,1631
453,5	-	1,518	1,6015	1948,1540
454	-	1,518	1,6106	1948,1449
454,5	-	1,518	1,6216	1948,1339
455	-	1,518	1,6326	1948,1229
455,5	-	1,518	1,6424	1948,1131
456	-	1,518	1,6522	1948,1033
456,5	-	1,518	1,6675	1948,0880
457	-	1,518	1,6829	1948,0726
457,5	-	1,518	1,6931	1948,0624
458	-	1,518	1,7033	1948,0522
458,5	-	1,518	1,7127	1948,0428
459	-	1,518	1,7222	1948,0333
459,5	-	1,518	1,7368	1948,0187
460	-	1,518	1,7514	1948,0041
460,5	-	1,518	1,7659	1947,9896
461	-	1,518	1,7805	1947,9750
461,5	-	1,518	1,7951	1947,9604
462	-	1,518	1,7853	1947,9702
462,5	-	1,518	1,7951	1947,9604
463	-	1,518	1,8049	1947,9506
463,5	-	1,518	1,8151	1947,9404
464	-	1,518	1,8253	1947,9302
464,5	-	1,518	1,8356	1947,9199
465	-	1,518	1,8458	1947,9097
465,5	-	1,518	1,8570	1947,8985
466	-	1,518	1,8682	1947,8873
466,5	-	1,518	1,8794	1947,8761
467	-	1,518	1,8906	1947,8649
467,5	-	1,518	1,9019	1947,8536
468	-	1,518	1,9131	1947,8424

468,5	-	1,518	1,9244	1947,8311
469	-	1,518	1,9357	1947,8198
469,5	-	1,518	1,9459	1947,8096
470	-	1,518	1,9560	1947,7995
470,5	-	1,518	1,9662	1947,7893
471	-	1,518	1,9764	1947,7791
471,5	-	1,518	1,9873	1947,7682
472	-	1,518	1,9982	1947,7573
472,5	-	1,518	2,0092	1947,7463
473	-	1,518	2,0201	1947,7354
473,5	-	1,518	2,0307	1947,7248
474	-	1,518	2,0413	1947,7142
474,5	-	1,518	2,0519	1947,7036
475	-	1,518	2,0625	1947,6930
475,5	-	1,518	2,0751	1947,6804
476	-	1,518	2,0877	1947,6678
476,5	-	1,518	2,1005	1947,6550
477	-	1,518	2,1133	1947,6422
477,5	-	1,518	2,1245	1947,6310
478	-	1,518	2,1358	1947,6197
478,5	-	1,518	2,1505	1947,6050
479	-	1,518	2,1652	1947,5903
479,5	-	1,518	2,1772	1947,5783
480	-	1,518	2,1892	1947,5663
480,5	-	1,518	2,2030	1947,5525
481	-	1,518	2,2168	1947,5387
481,5	-	1,518	2,2276	1947,5279
482	-	1,518	2,2384	1947,5171
482,5	-	1,518	2,2505	1947,5050
483	-	1,518	2,2627	1947,4928
483,5	-	1,518	2,2738	1947,4817
484	-	1,518	2,2850	1947,4705
484,5	-	1,518	2,2969	1947,4586
485	-	1,518	2,3089	1947,4466
485,5	-	1,518	2,0321	1947,7234
486	-	1,518	2,3300	1947,4255
486,5	-	1,518	2,3410	1947,4145
487	-	1,518	2,3521	1947,4034
487,5	-	1,518	2,3639	1947,3916
488	-	1,518	2,3757	1947,3798
488,5	-	1,518	2,3885	1947,3670
489	-	1,518	2,4014	1947,3541
489,5	-	1,518	2,4142	1947,3413

490	-	1,518	2,4271	1947,3284
490,5	-	1,518	2,4381	1947,3174
491	-	1,518	2,4491	1947,3064
491,5	-	1,518	2,4601	1947,2954
492	-	1,518	2,4711	1947,2844
492,5	-	1,518	2,4819	1947,2736
493	-	1,518	2,4928	1947,2627
493,5	-	1,518	2,5036	1947,2519
494	-	1,518	2,5145	1947,2410
494,5	-	1,518	2,5266	1947,2289
495	-	1,518	2,5387	1947,2168
495,5	-	1,518	2,5509	1947,2046
496	-	1,518	2,5630	1947,1925
496,5	-	1,518	2,5750	1947,1805
497	-	1,518	2,5869	1947,1686
497,5	-	1,518	2,5989	1947,1566
498	-	1,518	2,6109	1947,1446
498,5	-	1,518	2,6223	1947,1332
499	-	1,518	2,6338	1947,1217
499,5	-	1,518	2,6452	1947,1103
500	-	1,518	2,6567	1947,0988
500,5	-	1,518	2,6676	1947,0879
501	-	1,518	2,6785	1947,0770
501,5	-	1,518	2,6895	1947,0660
502	-	1,518	2,7004	1947,0551
502,5	-	1,518	2,7118	1947,0437
503	-	1,518	2,7233	1947,0322
503,5	-	1,518	2,7347	1947,0208
504	-	1,518	2,7462	1947,0093
504,5	-	1,518	2,7578	1946,9977
505	-	1,518	2,7693	1946,9862
505,5	-	1,518	2,7809	1946,9746
506	-	1,518	2,7925	1946,9630
506,5	-	1,518	2,8044	1946,9511
507	-	1,518	2,8163	1946,9392
507,5	-	1,518	2,8283	1946,9272
508	-	1,518	2,8402	1946,9153
508,5	-	1,518	2,8524	1946,9031
509	-	1,518	2,8646	1946,8909
509,5	-	1,518	2,8773	1946,8782
510	-	1,518	2,8900	1946,8655
510,5	-	1,518	2,9011	1946,8544
511	-	1,518	2,9122	1946,8433

511,5	-	1,518	2,9231	1946,8324
512	-	1,518	2,9340	1946,8215
512,5	-	1,518	2,9466	1946,8089
513	-	1,518	2,9592	1946,7963
513,5	-	1,518	2,9696	1946,7859
514	-	1,518	2,9801	1946,7754
514,5	-	1,518	2,9922	1946,7633
515	-	1,518	3,0044	1946,7511
515,5	-	1,518	3,0192	1946,7363
516	-	1,518	3,0340	1946,7215
516,5	-	1,518	3,0431	1946,7124
517	-	1,518	3,0522	1946,7033
517,5	-	1,518	3,0658	1946,6897
518	-	1,518	3,0794	1946,6761
518,5	-	1,518	3,0901	1946,6654
519	-	1,518	3,1008	1946,6547
519,5	-	1,518	3,1141	1946,6414
520	-	1,518	3,1275	1946,6280
520,5	-	1,518	3,1406	1946,6149
521	-	1,518	3,1537	1946,6018
521,5	-	1,518	3,1640	1946,5915
522	-	1,518	3,1743	1946,5812
522,5	-	1,518	3,1873	1946,5682
523	-	1,518	3,2003	1946,5552
523,5	-	1,518	3,2133	1946,5422
524	-	1,518	3,2263	1946,5292
524,5	-	1,518	3,2387	1946,5168
<b>E8 - PTO 525</b>	2,4379	1,518	3,2511	1946,5044
525,5	-	1,493	1,5034	1946,4940
526	-	1,493	1,5139	1946,4835
526,5	-	1,493	1,5243	1946,4731
527	-	1,493	1,5348	1946,4626
527,5	-	1,493	1,5494	1946,4480
528	-	1,493	1,5640	1946,4334
528,5	-	1,493	1,5730	1946,4244
529	-	1,493	1,5820	1946,4154
529,5	-	1,493	1,5919	1946,4055
530	-	1,493	1,6018	1946,3956
530,5	-	1,493	1,6157	1946,3817
531	-	1,493	1,6296	1946,3678
531,5	-	1,493	1,6400	1946,3574
532	-	1,493	1,6505	1946,3469
532,5	-	1,493	1,6624	1946,3350

533	-	1,493	1,6744	1946,3230
533,5	-	1,493	1,6847	1946,3127
534	-	1,493	1,6950	1946,3024
534,5	-	1,493	1,7065	1946,2909
535	-	1,493	1,7181	1946,2793
535,5	-	1,493	1,7259	1946,2715
536	-	1,493	1,7338	1946,2636
536,5	-	1,493	1,7480	1946,2494
537	-	1,493	1,7623	1946,2351
537,5	-	1,493	1,7726	1946,2248
538	-	1,493	1,7830	1946,2144
538,5	-	1,493	1,7951	1946,2023
539	-	1,493	1,8073	1946,1901
539,5	-	1,493	1,8180	1946,1794
540	-	1,493	1,8287	1946,1687
540,5	-	1,493	1,8386	1946,1588
541	-	1,493	1,8485	1946,1489
541,5	-	1,493	1,8602	1946,1372
542	-	1,493	1,8719	1946,1255
542,5	-	1,493	1,8836	1946,1138
543	-	1,493	1,8953	1946,1021
543,5	-	1,493	1,9065	1946,0909
544	-	1,493	1,9177	1946,0797
544,5	-	1,493	1,9289	1946,0685
545	-	1,493	1,9401	1946,0573
545,5	-	1,493	1,9510	1946,0464
546	-	1,493	1,9619	1946,0355
546,5	-	1,493	1,9721	1946,0253
547	-	1,493	1,9824	1946,0150
547,5	-	1,493	1,9943	1946,0031
548	-	1,493	2,0063	1945,9911
548,5	-	1,493	2,0176	1945,9798
549	-	1,493	2,0290	1945,9684
549,5	-	1,493	2,0391	1945,9583
550	-	1,493	2,0493	1945,9481
550,5	-	1,493	2,0615	1945,9359
551	-	1,493	2,0737	1945,9237
551,5	-	1,493	2,0859	1945,9115
552	-	1,493	2,0981	1945,8993
552,5	-	1,493	2,1097	1945,8877
553	-	1,493	2,1213	1945,8761
553,5	-	1,493	2,1353	1945,8621
554	-	1,493	2,1494	1945,8480

554,5	-	1,493	2,1591	1945,8383
555	-	1,493	2,1689	1945,8285
555,5	-	1,493	2,1784	1945,8190
556	-	1,493	2,1880	1945,8094
556,5	-	1,493	2,1995	1945,7979
557	-	1,493	2,2110	1945,7864
557,5	-	1,493	2,2216	1945,7758
558	-	1,493	2,2323	1945,7651
558,5	-	1,493	2,2433	1945,7541
559	-	1,493	2,2543	1945,7431
559,5	-	1,493	2,2628	1945,7346
560	-	1,493	2,2713	1945,7261
560,5	-	1,493	2,2786	1945,7188
561	-	1,493	2,2859	1945,7115
561,5	-	1,493	2,2972	1945,7002
562	-	1,493	2,3086	1945,6888
562,5	-	1,493	2,3235	1945,6739
563	-	1,493	2,3384	1945,6590
563,5	-	1,493	2,3489	1945,6485
564	-	1,493	2,3594	1945,6380
564,5	-	1,493	2,3700	1945,6274
565	-	1,493	2,3805	1945,6169
565,5	-	1,493	2,3913	1945,6061
566	-	1,493	2,4021	1945,5953
566,5	-	1,493	2,4130	1945,5844
567	-	1,493	2,4238	1945,5736
567,5	-	1,493	2,4378	1945,5596
568	-	1,493	2,4517	1945,5457
568,5	-	1,493	2,4657	1945,5317
569	-	1,493	2,4797	1945,5177
569,5	-	1,493	2,4900	1945,5074
570	-	1,493	2,5003	1945,4971
570,5	-	1,493	2,5117	1945,4857
571	-	1,493	2,5232	1945,4742
571,5	-	1,493	2,5362	1945,4612
572	-	1,493	2,5492	1945,4482
572,5	-	1,493	2,5610	1945,4364
573	-	1,493	2,5729	1945,4245
573,5	-	1,493	2,5861	1945,4113
574	-	1,493	2,5994	1945,3980
574,5	-	1,493	2,6111	1945,3863
575	-	1,493	2,6227	1945,3747
575,5	-	1,493	2,6344	1945,3630

576	-	1,493	2,6461	1945,3513
576,5	-	1,493	2,6577	1945,3397
577	-	1,493	2,6694	1945,3280
577,5	-	1,493	2,6811	1945,3163
578	-	1,493	2,6928	1945,3046
578,5	-	1,493	2,7044	1945,2930
579	-	1,493	2,7161	1945,2813
579,5	-	1,493	2,7242	1945,2732
580	-	1,493	2,7323	1945,2651
580,5	-	1,493	2,7452	1945,2522
581	-	1,493	2,7582	1945,2392
581,5	-	1,493	2,7674	1945,2300
582	-	1,493	2,7767	1945,2207
582,5	-	1,493	2,7839	1945,2135
583	-	1,493	2,7911	1945,2063
583,5	-	1,493	2,8041	1945,1933
584	-	1,493	2,8172	1945,1802
584,5	-	1,493	2,8271	1945,1703
585	-	1,493	2,8370	1945,1604
585,5	-	1,493	2,8465	1945,1509
586	-	1,493	2,8560	1945,1414
586,5	-	1,493	2,8652	1945,1322
587	-	1,493	2,8745	1945,1229
587,5	-	1,493	2,8850	1945,1124
588	-	1,493	2,8955	1945,1019
588,5	-	1,493	2,9061	1945,0913
589	-	1,493	2,9166	1945,0808
589,5	-	1,493	2,9255	1945,0719
590	-	1,493	2,9344	1945,0630
590,5	-	1,493	2,9434	1945,0540
591	-	1,493	2,9523	1945,0451
591,5	-	1,493	2,9640	1945,0334
592	-	1,493	2,9757	1945,0217
592,5	-	1,493	2,9828	1945,0146
593	-	1,493	2,9900	1945,0074
593,5	-	1,493	2,9974	1945,0000
594	-	1,493	3,0049	1944,9925
594,5	-	1,493	3,0153	1944,9821
595	-	1,493	3,0256	1944,9718
595,5	-	1,493	3,0360	1944,9614
596	-	1,493	3,0464	1944,9510
596,5	-	1,493	3,0557	1944,9417
597	-	1,493	3,0649	1944,9325



597,5	-	1,493	3,0742	1944,9232
598	-	1,493	3,0835	1944,9139
598,5	-	1,493	3,0939	1944,9035
599	-	1,493	3,1042	1944,8932
599,5	-	1,493	3,1146	1944,8828
<b>E9 - PTO 600</b>	1,481	1,493	3,1250	1944,8724
600,5	-	1,528	1,5356	1944,8648
601	-	1,528	1,5432	1944,8572
601,5	-	1,528	1,5509	1944,8495
602	-	1,528	1,5585	1944,8419
602,5	-	1,528	1,5705	1944,8299
603	-	1,528	1,5825	1944,8179
603,5	-	1,528	1,5949	1944,8055
604	-	1,528	1,6074	1944,7930
604,5	-	1,528	1,6163	1944,7841
605	-	1,528	1,6252	1944,7752
605,5	-	1,528	1,6397	1944,7607
606	-	1,528	1,6542	1944,7462
606,5	-	1,528	1,6614	1944,7390
607	-	1,528	1,6686	1944,7318
607,5	-	1,528	1,6805	1944,7199
608	-	1,528	1,6924	1944,7080
608,5	-	1,528	1,7032	1944,6972
609	-	1,528	1,7141	1944,6863
609,5	-	1,528	1,7226	1944,6778
610	-	1,528	1,7312	1944,6692
610,5	-	1,528	1,7453	1944,6551
611	-	1,528	1,7595	1944,6409
611,5	-	1,528	1,7680	1944,6324
612	-	1,528	1,7766	1944,6238
612,5	-	1,528	1,7892	1944,6112
613	-	1,528	1,8019	1944,5985
613,5	-	1,528	1,8133	1944,5871
614	-	1,528	1,8247	1944,5757
614,5	-	1,528	1,8354	1944,5650
615	-	1,528	1,8461	1944,5543
615,5	-	1,528	1,8551	1944,5453
616	-	1,528	1,8641	1944,5363
616,5	-	1,528	1,8733	1944,5271
617	-	1,528	1,8826	1944,5178
617,5	-	1,528	1,8918	1944,5086
618	-	1,528	1,9011	1944,4993
618,5	-	1,528	1,9096	1944,4908

619	-	1,528	1,9181	1944,4823
619,5	-	1,528	1,9267	1944,4737
620	-	1,528	1,9352	1944,4652
620,5	-	1,528	1,9445	1944,4559
621	-	1,528	1,9538	1944,4466
621,5	-	1,528	1,9586	1944,4418
622	-	1,528	1,9635	1944,4369
622,5	-	1,528	1,9768	1944,4236
623	-	1,528	1,9902	1944,4102
623,5	-	1,528	2,0001	1944,4003
624	-	1,528	2,0100	1944,3904
624,5	-	1,528	2,0117	1944,3887
625	-	1,528	2,0134	1944,3870
625,5	-	1,528	2,0224	1944,3780
626	-	1,528	2,0314	1944,3690
626,5	-	1,528	2,0388	1944,3616
627	-	1,528	2,0462	1944,3542
627,5	-	1,528	2,0538	1944,3466
628	-	1,528	2,0615	1944,3389
628,5	-	1,528	2,0662	1944,3342
629	-	1,528	2,0710	1944,3294
629,5	-	1,528	2,0768	1944,3236
630	-	1,528	2,0826	1944,3178
630,5	-	1,528	2,0933	1944,3071
631	-	1,528	2,1040	1944,2964
631,5	-	1,528	2,1171	1944,2833
632	-	1,528	2,1302	1944,2702
632,5	-	1,528	2,1319	1944,2685
633	-	1,528	2,1336	1944,2668
633,5	-	1,528	2,1405	1944,2599
634	-	1,528	2,1474	1944,2530
634,5	-	1,528	2,1553	1944,2451
635	-	1,528	2,1632	1944,2372
635,5	-	1,528	2,1716	1944,2288
636	-	1,528	2,1800	1944,2204
636,5	-	1,528	2,1877	1944,2127
637	-	1,528	2,1954	1944,2050
637,5	-	1,528	2,2024	1944,1980
638	-	1,528	2,2095	1944,1909
638,5	-	1,528	2,2138	1944,1866
639	-	1,528	2,2181	1944,1823
639,5	-	1,528	2,2253	1944,1751
640	-	1,528	2,2326	1944,1678

640,5	-	1,528	2,2434	1944,1570
641	-	1,528	2,2534	1944,1470
641,5	-	1,528	2,2624	1944,1380
642	-	1,528	2,2660	1944,1344
642,5	-	1,528	2,2733	1944,1271
643	-	1,528	2,2806	1944,1198
643,5	-	1,528	2,2884	1944,1120
644	-	1,528	2,3062	1944,0942
644,5	-	1,528	2,3078	1944,0926
645	-	1,528	2,3094	1944,0910
645,5	-	1,528	2,3235	1944,0769
646	-	1,528	2,3314	1944,0690
646,5	-	1,528	2,3421	1944,0583
647	-	1,528	2,3497	1944,0507
647,5	-	1,528	2,3514	1944,0490
648	-	1,528	2,3531	1944,0473
648,5	-	1,528	2,3647	1944,0357
649	-	1,528	2,3764	1944,0240
649,5	-	1,528	2,3823	1944,0181
650	-	1,528	2,3882	1944,0122
650,5	-	1,528	2,3971	1944,0033
651	-	1,528	2,4060	1943,9944
651,5	-	1,528	2,4102	1943,9902
652	-	1,528	2,4144	1943,9860
652,5	-	1,528	2,4171	1943,9833
653	-	1,528	2,4199	1943,9805
653,5	-	1,528	2,4244	1943,9760
654	-	1,528	2,4288	1943,9716
654,5	-	1,528	2,4333	1943,9671
655	-	1,528	2,4378	1943,9626
655,5	-	1,528	2,4440	1943,9564
656	-	1,528	2,4502	1943,9502
656,5	-	1,528	2,4564	1943,9440
657	-	1,528	2,4626	1943,9378
657,5	-	1,528	2,4698	1943,9306
658	-	1,528	2,4771	1943,9233
658,5	-	1,528	2,4843	1943,9161
659	-	1,528	2,4916	1943,9088
659,5	-	1,528	2,5000	1943,9004
660	-	1,528	2,5084	1943,8920
660,5	-	1,528	2,5168	1943,8836
661	-	1,528	2,5252	1943,8752
661,5	-	1,528	2,5303	1943,8701

662	-	1,528	2,5355	1943,8649
662,5	-	1,528	2,5406	1943,8598
663	-	1,528	2,5458	1943,8546
663,5	-	1,528	2,5648	1943,8356
664	-	1,528	2,5839	1943,8165
664,5	-	1,528	2,5926	1943,8078
665	-	1,528	2,6014	1943,7990
665,5	-	1,528	2,6105	1943,7899
666	-	1,528	2,6196	1943,7808
666,5	-	1,528	2,6307	1943,7697
667	-	1,528	2,6418	1943,7586
667,5	-	1,528	2,6461	1943,7543
668	-	1,528	2,6505	1943,7499
668,5	-	1,528	2,6622	1943,7382
669	-	1,528	2,6739	1943,7265
669,5	-	1,528	2,6823	1943,7181
670	-	1,528	2,6908	1943,7096
670,5	-	1,528	2,6983	1943,7021
671	-	1,528	2,7059	1943,6945
671,5	-	1,528	2,7158	1943,6846
672	-	1,528	2,7257	1943,6747
672,5	-	1,528	2,7350	1943,6654
673	-	1,528	2,7443	1943,6561
673,5	-	1,528	2,7534	1943,6470
674	-	1,528	2,7626	1943,6378
674,5	-	1,528	2,7698	1943,6306
<b>E10 - PTO 675</b>	1,5012	1,528	2,7770	1943,6234
675,5	-	1,538	1,5462	1943,6152
676	-	1,538	1,5545	1943,6069
676,5	-	1,538	1,5627	1943,5987
677	-	1,538	1,5710	1943,5904
677,5	-	1,538	1,5792	1943,5822
678	-	1,538	1,5875	1943,5739
678,5	-	1,538	1,6016	1943,5598
679	-	1,538	1,6158	1943,5456
679,5	-	1,538	1,6219	1943,5395
680	-	1,538	1,6281	1943,5333
680,5	-	1,538	1,6404	1943,5210
681	-	1,538	1,6462	1943,5152
681,5	-	1,538	1,6579	1943,5035
682	-	1,538	1,6697	1943,4917
682,5	-	1,538	1,6727	1943,4887
683	-	1,538	1,6851	1943,4763

683,5	-	1,538	1,6880	1943,4734
684	-	1,538	1,6951	1943,4663
684,5	-	1,538	1,7022	1943,4592
685	-	1,538	1,7134	1943,4480
685,5	-	1,538	1,7235	1943,4379
686	-	1,538	1,7400	1943,4214
686,5	-	1,538	1,7420	1943,4194
687	-	1,538	1,7429	1943,4185
687,5	-	1,538	1,7490	1943,4124
688	-	1,538	1,7617	1943,3997
688,5	-	1,538	1,7726	1943,3888
689	-	1,538	1,7807	1943,3807
689,5	-	1,538	1,7890	1943,3724
690	-	1,538	1,7993	1943,3621
690,5	-	1,538	1,8017	1943,3597
691	-	1,538	1,8102	1943,3512
691,5	-	1,538	1,8227	1943,3387
692	-	1,538	1,8274	1943,3340
692,5	-	1,538	1,8442	1943,3172
693	-	1,538	1,8461	1943,3153
693,5	-	1,538	1,8499	1943,3115
694	-	1,538	1,8563	1943,3051
694,5	-	1,538	1,8678	1943,2936
695	-	1,538	1,8702	1943,2912
695,5	-	1,538	1,8825	1943,2789
696	-	1,538	1,9010	1943,2604
696,5	-	1,538	1,9001	1943,2613
697	-	1,538	1,9147	1943,2467
697,5	-	1,538	1,9194	1943,2420
698	-	1,538	1,9237	1943,2377
698,5	-	1,538	1,9338	1943,2276
699	-	1,538	1,9373	1943,2241
699,5	-	1,538	1,9504	1943,2110
700	-	1,538	1,9624	1943,1990
700,5	-	1,538	1,9652	1943,1962
701	-	1,538	1,9762	1943,1852
701,5	-	1,538	1,9867	1943,1747
702	-	1,538	1,9959	1943,1655
702,5	-	1,538	1,9970	1943,1644
703	-	1,538	2,0119	1943,1495
703,5	-	1,538	2,0249	1943,1365
704	-	1,538	2,0359	1943,1255
704,5	-	1,538	2,0462	1943,1152

705	-	1,538	2,0514	1943,1100
705,5	-	1,538	2,0603	1943,1011
706	-	1,538	2,0677	1943,0937
706,5	-	1,538	2,0803	1943,0811
707	-	1,538	2,0903	1943,0711
707,5	-	1,538	2,0953	1943,0661
708	-	1,538	2,1085	1943,0529
708,5	-	1,538	2,1216	1943,0398
709	-	1,538	2,1246	1943,0368
709,5	-	1,538	2,1308	1943,0306
710	-	1,538	2,1411	1943,0203
710,5	-	1,538	2,1490	1943,0124
711	-	1,538	2,1590	1943,0024
711,5	-	1,538	2,1719	1942,9895
712	-	1,538	2,1825	1942,9789
712,5	-	1,538	2,1924	1942,9690
713	-	1,538	2,2043	1942,9571
713,5	-	1,538	2,2122	1942,9492
714	-	1,538	2,2204	1942,9410
714,5	-	1,538	2,2301	1942,9313
715	-	1,538	2,2384	1942,9230
715,5	-	1,538	2,2489	1942,9125
716	-	1,538	2,2595	1942,9019
716,5	-	1,538	2,2709	1942,8905
717	-	1,538	2,2854	1942,8760
717,5	-	1,538	2,2964	1942,8650
718	-	1,538	2,3024	1942,8590
718,5	-	1,538	2,3145	1942,8469
719	-	1,538	2,3271	1942,8343
719,5	-	1,538	2,3415	1942,8199
720	-	1,538	2,3491	1942,8123
720,5	-	1,538	2,3554	1942,8060
721	-	1,538	2,3631	1942,7983
721,5	-	1,538	2,3733	1942,7881
722	-	1,538	2,3839	1942,7775
722,5	-	1,538	2,3941	1942,7673
723	-	1,538	2,4046	1942,7568
723,5	-	1,538	2,4154	1942,7460
724	-	1,538	2,4273	1942,7341
724,5	-	1,538	2,4391	1942,7223
<b>E11 - PTO 725</b>	2,14861	1,538	2,4518	1942,7096
725,5	-	1,53	1,5429	1942,6967
726	-	1,53	1,5568	1942,6828

726,5	-	1,53	1,5707	1942,6689
727	-	1,53	1,5846	1942,6550
727,5	-	1,53	1,6008	1942,6388
728	-	1,53	1,6145	1942,6251
728,5	-	1,53	1,6281	1942,6115
729	-	1,53	1,6425	1942,5971
729,5	-	1,53	1,6562	1942,5834
730	-	1,53	1,6698	1942,5698
730,5	-	1,53	1,6863	1942,5533
731	-	1,53	1,7018	1942,5378
731,5	-	1,53	1,7172	1942,5224
732	-	1,53	1,7310	1942,5086
732,5	-	1,53	1,7441	1942,4955
733	-	1,53	1,7586	1942,4810
733,5	-	1,53	1,7732	1942,4664
734	-	1,53	1,7882	1942,4514
734,5	-	1,53	1,8037	1942,4359
735	-	1,53	1,8189	1942,4207
735,5	-	1,53	1,8333	1942,4063
736	-	1,53	1,8465	1942,3931
736,5	-	1,53	1,8592	1942,3804
737	-	1,53	1,8704	1942,3692
737,5	-	1,53	1,8791	1942,3605
738	-	1,53	1,8914	1942,3482
738,5	-	1,53	1,9043	1942,3353
739	-	1,53	1,9176	1942,3220
739,5	-	1,53	1,9282	1942,3114
740	-	1,53	1,9400	1942,2996
740,5	-	1,53	1,9492	1942,2904
741	-	1,53	1,9648	1942,2748
741,5	-	1,53	1,9723	1942,2673
742	-	1,53	1,9827	1942,2569
742,5	-	1,53	1,9893	1942,2503
743	-	1,53	2,0002	1942,2394
743,5	-	1,53	2,0111	1942,2285
744	-	1,53	2,0210	1942,2186
744,5	-	1,53	2,0308	1942,2088
745	-	1,53	2,0398	1942,1998
745,5	-	1,53	2,0503	1942,1893
746	-	1,53	2,0591	1942,1805
746,5	-	1,53	2,0670	1942,1726
747	-	1,53	2,0797	1942,1599
747,5	-	1,53	2,0814	1942,1582

748	-	1,53	2,0843	1942,1553
748,5	-	1,53	2,0887	1942,1509
749	-	1,53	2,0943	1942,1453
749,5	-	1,53	2,1043	1942,1353
750	-	1,53	2,1140	1942,1256
750,5	-	1,53	2,1230	1942,1166
751	-	1,53	2,1307	1942,1089
751,5	-	1,53	2,1360	1942,1036
752	-	1,53	2,1464	1942,0932
752,5	-	1,53	2,1503	1942,0893
753	-	1,53	2,1593	1942,0803
753,5	-	1,53	2,1678	1942,0718
754	-	1,53	2,1750	1942,0646
754,5	-	1,53	2,1858	1942,0538
755	-	1,53	2,1972	1942,0424
755,5	-	1,53	2,2094	1942,0302
756	-	1,53	2,2212	1942,0184
756,5	-	1,53	2,2340	1942,0056
757	-	1,53	2,2473	1941,9923
757,5	-	1,53	2,2576	1941,9820
758	-	1,53	2,2663	1941,9733
758,5	-	1,53	2,2846	1941,9550
759	-	1,53	2,3002	1941,9394
759,5	-	1,53	2,3094	1941,9302
760	-	1,53	2,3217	1941,9179
760,5	-	1,53	2,3332	1941,9064
761	-	1,53	2,3367	1941,9029
761,5	-	1,53	2,3425	1941,8971
762	-	1,53	2,3519	1941,8877
762,5	-	1,53	2,3621	1941,8775
763	-	1,53	2,3698	1941,8698
763,5	-	1,53	2,3798	1941,8598
764	-	1,53	2,3926	1941,8470
764,5	-	1,53	2,4041	1941,8355
765	-	1,53	2,4159	1941,8237
765,5	-	1,53	2,4174	1941,8222
766	-	1,53	2,4265	1941,8131
766,5	-	1,53	2,4377	1941,8019
767	-	1,53	2,4470	1941,7926
767,5	-	1,53	2,4600	1941,7796
768	-	1,53	2,4756	1941,7640
768,5	-	1,53	2,4838	1941,7558
769	-	1,53	2,4934	1941,7462



769,5	-	1,53	2,5080	1941,7316
770	-	1,53	2,5219	1941,7177
770,5	-	1,53	2,5371	1941,7025
771	-	1,53	2,5519	1941,6877
771,5	-	1,53	2,5693	1941,6703
772	-	1,53	2,5842	1941,6554
772,5	-	1,53	2,6031	1941,6365
773	-	1,53	2,6196	1941,6200
773,5	-	1,53	2,6337	1941,6059
774	-	1,53	2,6521	1941,5875
774,5	-	1,53	2,6698	1941,5698
<b>E12 - PTO 775</b>	1,4569	1,53	2,6899	1941,5497
775,5	-	1,522	1,5396	1941,5321
776	-	1,522	1,5611	1941,5106
776,5	-	1,522	1,5816	1941,4901
777	-	1,522	1,6003	1941,4714
777,5	-	1,522	1,6194	1941,4523
778	-	1,522	1,6380	1941,4337
778,5	-	1,522	1,6579	1941,4138
779	-	1,522	1,6762	1941,3955
779,5	-	1,522	1,6922	1941,3795
780	-	1,522	1,7125	1941,3592
780,5	-	1,522	1,7297	1941,3420
781	-	1,522	1,7509	1941,3208
781,5	-	1,522	1,7718	1941,2999
782	-	1,522	1,7914	1941,2803
782,5	-	1,522	1,8126	1941,2591
783	-	1,522	1,8329	1941,2388
783,5	-	1,522	1,8528	1941,2189
784	-	1,522	1,8729	1941,1988
784,5	-	1,522	1,8926	1941,1791
785	-	1,522	1,9126	1941,1591
785,5	-	1,522	1,9324	1941,1393
786	-	1,522	1,9522	1941,1195
786,5	-	1,522	1,9716	1941,1001
787	-	1,522	1,9943	1941,0774
787,5	-	1,522	2,0158	1941,0559
788	-	1,522	2,0388	1941,0329
788,5	-	1,522	2,0606	1941,0111
789	-	1,522	2,0805	1940,9912
789,5	-	1,522	2,1023	1940,9694
790	-	1,522	2,1239	1940,9478
790,5	-	1,522	2,1453	1940,9264

791	-	1,522	2,1678	1940,9039
791,5	-	1,522	2,1911	1940,8806
792	-	1,522	2,2122	1940,8595
792,5	-	1,522	2,2317	1940,8400
793	-	1,522	2,2562	1940,8155
793,5	-	1,522	2,2803	1940,7914
794	-	1,522	2,3060	1940,7657
794,5	-	1,522	2,3324	1940,7393
795	-	1,522	2,3578	1940,7139
795,5	-	1,522	2,3834	1940,6883
796	-	1,522	2,4094	1940,6623
796,5	-	1,522	2,4350	1940,6367
797	-	1,522	2,4585	1940,6132
797,5	-	1,522	2,4835	1940,5882
798	-	1,522	2,5095	1940,5622
798,5	-	1,522	2,5348	1940,5369
799	-	1,522	2,5596	1940,5121
799,5	-	1,522	2,5845	1940,4872
800	-	1,522	2,6085	1940,4632
800,5	-	1,522	2,6326	1940,4391
801	-	1,522	2,6574	1940,4143
801,5	-	1,522	2,6826	1940,3891
802	-	1,522	2,7085	1940,3632
802,5	-	1,522	2,7335	1940,3382
803	-	1,522	2,7583	1940,3134
803,5	-	1,522	2,7838	1940,2879
804	-	1,522	2,8090	1940,2627
804,5	-	1,522	2,8326	1940,2391
805	-	1,522	2,8559	1940,2158
805,5	-	1,522	2,8786	1940,1931
806	-	1,522	2,9030	1940,1687
806,5	-	1,522	2,9257	1940,1460
807	-	1,522	2,9486	1940,1231
807,5	-	1,522	2,9731	1940,0986
808	-	1,522	2,9972	1940,0745
808,5	-	1,522	3,0208	1940,0509
809	-	1,522	3,0448	1940,0269
809,5	-	1,522	3,0674	1940,0043
810	-	1,522	3,0906	1939,9811
810,5	-	1,522	3,1159	1939,9558
811	-	1,522	3,1406	1939,9311
811,5	-	1,522	3,1652	1939,9065
812	-	1,522	3,1905	1939,8812

812,5	-	1,522	3,2153	1939,8564
813	-	1,522	3,2406	1939,8311
813,5	-	1,522	3,2690	1939,8027
814	-	1,522	3,2938	1939,7779
814,5	-	1,522	3,3222	1939,7495
815	-	1,522	3,3498	1939,7219
815,5	-	1,522	3,3781	1939,6936
816	-	1,522	3,4062	1939,6655
816,5	-	1,522	3,4339	1939,6378
817	-	1,522	3,4616	1939,6101
817,5	-	1,522	3,4893	1939,5824
818	-	1,522	3,5174	1939,5543
818,5	-	1,522	3,5458	1939,5259
819	-	1,522	3,5756	1939,4961
819,5	-	1,522	3,6053	1939,4664
820	-	1,522	3,6358	1939,4359
820,5	-	1,522	3,6656	1939,4061
821	-	1,522	3,6958	1939,3759
821,5	-	1,522	3,7261	1939,3456
822	-	1,522	3,7565	1939,3152
822,5	-	1,522	3,7869	1939,2848
823	-	1,522	3,8166	1939,2551
823,5	-	1,522	3,8464	1939,2253
824	-	1,522	3,8759	1939,1958
824,5	-	1,522	3,9066	1939,1651
<b>E13 - PTO 825</b>	1,3159	1,522	3,9379	1939,1338
825,5	-	1,441	1,4724	1939,1024
826	-	1,441	1,5038	1939,0710
826,5	-	1,441	1,5353	1939,0395
827	-	1,441	1,5667	1939,0081
827,5	-	1,441	1,5975	1938,9773
828	-	1,441	1,6283	1938,9465
828,5	-	1,441	1,6596	1938,9152
829	-	1,441	1,6909	1938,8839
829,5	-	1,441	1,7216	1938,8532
830	-	1,441	1,7524	1938,8224
830,5	-	1,441	1,7837	1938,7911
831	-	1,441	1,8143	1938,7605
831,5	-	1,441	1,8457	1938,7291
832	-	1,441	1,8765	1938,6983
832,5	-	1,441	1,9076	1938,6672
833	-	1,441	1,9398	1938,6350
833,5	-	1,441	1,9720	1938,6028

834	-	1,441	2,0042	1938,5706
834,5	-	1,441	2,0358	1938,5390
835	-	1,441	2,0675	1938,5073
835,5	-	1,441	2,0994	1938,4754
836	-	1,441	2,1314	1938,4434
836,5	-	1,441	2,1631	1938,4117
837	-	1,441	2,1949	1938,3799
837,5	-	1,441	2,2269	1938,3479
838	-	1,441	2,2589	1938,3159
838,5	-	1,441	2,2905	1938,2843
839	-	1,441	2,3221	1938,2527
839,5	-	1,441	2,3537	1938,2211
840	-	1,441	2,3856	1938,1892
840,5	-	1,441	2,4166	1938,1582
841	-	1,441	2,4476	1938,1272
841,5	-	1,441	2,4786	1938,0962
842	-	1,441	2,5096	1938,0652
842,5	-	1,441	2,5416	1938,0332
843	-	1,441	2,5737	1938,0011
843,5	-	1,441	2,6030	1937,9718
844	-	1,441	2,6344	1937,9404
844,5	-	1,441	2,6654	1937,9094
845	-	1,441	2,6964	1937,8784
845,5	-	1,441	2,7271	1937,8477
846	-	1,441	2,7579	1937,8169
846,5	-	1,441	2,7897	1937,7851
847	-	1,441	2,8216	1937,7532
847,5	-	1,441	2,8522	1937,7226
848	-	1,441	2,8839	1937,6909
848,5	-	1,441	2,9172	1937,6576
849	-	1,441	2,9496	1937,6252
849,5	-	1,441	2,9796	1937,5952
850	-	1,441	3,0097	1937,5651
850,5	-	1,441	3,0400	1937,5348
851	-	1,441	3,0703	1937,5045
851,5	-	1,441	3,0993	1937,4755
852	-	1,441	3,1283	1937,4465
852,5	-	1,441	3,1597	1937,4151
853	-	1,441	3,1903	1937,3845
853,5	-	1,441	3,2217	1937,3531
854	-	1,441	3,2523	1937,3225
854,5	-	1,441	3,2831	1937,2917
855	-	1,441	3,3140	1937,2608

855,5	-	1,441	3,3437	1937,2311
856	-	1,441	3,3741	1937,2007
856,5	-	1,441	3,4045	1937,1703
857	-	1,441	3,4336	1937,1412
857,5	-	1,441	3,4641	1937,1107
858	-	1,441	3,4947	1937,0801
858,5	-	1,441	3,5263	1937,0485
859	-	1,441	3,5590	1937,0158
859,5	-	1,441	3,5917	1936,9831
860	-	1,441	3,6231	1936,9517
860,5	-	1,441	3,6509	1936,9239
861	-	1,441	3,6819	1936,8929
861,5	-	1,441	3,7097	1936,8651
862	-	1,441	3,7403	1936,8345
862,5	-	1,441	3,7723	1936,8025
863	-	1,441	3,8032	1936,7716
863,5	-	1,441	3,8366	1936,7382
864	-	1,441	3,8677	1936,7071
864,5	-	1,441	3,8991	1936,6757
865	-	1,441	3,9314	1936,6434
865,5	-	1,441	3,9633	1936,6115
866	-	1,441	3,9940	1936,5808
866,5	-	1,441	4,0267	1936,5481
867	-	1,441	4,0595	1936,5153
867,5	-	1,441	4,0913	1936,4835
868	-	1,441	4,1245	1936,4503
868,5	-	1,441	4,1565	1936,4183
869	-	1,441	4,1887	1936,3861
869,5	-	1,441	4,2203	1936,3545
870	-	1,441	4,2514	1936,3234
870,5	-	1,441	4,2825	1936,2923
871	-	1,441	4,3137	1936,2611
871,5	-	1,441	4,3445	1936,2303
872	-	1,441	4,3756	1936,1992
872,5	-	1,441	4,4064	1936,1684
873	-	1,441	4,4376	1936,1372
873,5	-	1,441	4,4680	1936,1068
874	-	1,441	4,4984	1936,0764
874,5	-	1,441	4,5290	1936,0458
<b>E14 - PTO 875</b>	1,2922	1,441	4,5597	1936,0151
875,5	-	1,422	1,4530	1935,9841
876	-	1,422	1,4840	1935,9531
876,5	-	1,422	1,5151	1935,9220

877	-	1,422	1,5442	1935,8929
877,5	-	1,422	1,5749	1935,8622
878	-	1,422	1,6056	1935,8315
878,5	-	1,422	1,6353	1935,8018
879	-	1,422	1,6651	1935,7720
879,5	-	1,422	1,6948	1935,7423
880	-	1,422	1,7246	1935,7125
880,5	-	1,422	1,7543	1935,6828
881	-	1,422	1,7840	1935,6531
881,5	-	1,422	1,8138	1935,6233
882	-	1,422	1,8435	1935,5936
882,5	-	1,422	1,8733	1935,5638
883	-	1,422	1,9030	1935,5341
883,5	-	1,422	1,9328	1935,5043
884	-	1,422	1,9625	1935,4746
884,5	-	1,422	1,9928	1935,4443
885	-	1,422	2,0231	1935,4140
885,5	-	1,422	2,0527	1935,3844
886	-	1,422	2,0824	1935,3547
886,5	-	1,422	2,1120	1935,3251
887	-	1,422	2,1417	1935,2954
887,5	-	1,422	2,1715	1935,2656
888	-	1,422	2,2013	1935,2358
888,5	-	1,422	2,2318	1935,2053
889	-	1,422	2,2620	1935,1751
889,5	-	1,422	2,2924	1935,1447
890	-	1,422	2,3224	1935,1147
890,5	-	1,422	2,3525	1935,0846
891	-	1,422	2,3826	1935,0545
891,5	-	1,422	2,4130	1935,0241
892	-	1,422	2,4435	1934,9936
892,5	-	1,422	2,4758	1934,9613
893	-	1,422	2,5065	1934,9306
893,5	-	1,422	2,5370	1934,9001
894	-	1,422	2,5668	1934,8703
894,5	-	1,422	2,5993	1934,8378
895	-	1,422	2,6318	1934,8053
895,5	-	1,422	2,6645	1934,7726
896	-	1,422	2,6973	1934,7398
896,5	-	1,422	2,7235	1934,7136
897	-	1,422	2,7498	1934,6873
897,5	-	1,422	2,7817	1934,6554
898	-	1,422	2,8136	1934,6235

898,5	-	1,422	2,8370	1934,6001
899	-	1,422	2,8604	1934,5767
899,5	-	1,422	2,8937	1934,5434
900	-	1,422	2,9270	1934,5101
900,5	-	1,422	2,9536	1934,4835
901	-	1,422	2,9803	1934,4568
901,5	-	1,422	3,0072	1934,4299
902	-	1,422	3,0340	1934,4031
902,5	-	1,422	3,0614	1934,3757
903	-	1,422	3,0886	1934,3485
903,5	-	1,422	3,1156	1934,3215
904	-	1,422	3,1430	1934,2941
904,5	-	1,422	3,1706	1934,2665
905	-	1,422	3,1990	1934,2381
905,5	-	1,422	3,2267	1934,2104
906	-	1,422	3,2545	1934,1826
906,5	-	1,422	3,2820	1934,1551
907	-	1,422	3,3098	1934,1273
907,5	-	1,422	3,3374	1934,0997
908	-	1,422	3,3663	1934,0708
908,5	-	1,422	3,3952	1934,0419
909	-	1,422	3,4242	1934,0129
909,5	-	1,422	3,4534	1933,9837
910	-	1,422	3,4826	1933,9545
910,5	-	1,422	3,5114	1933,9257
911	-	1,422	3,5407	1933,8964
911,5	-	1,422	3,5693	1933,8678
912	-	1,422	3,5979	1933,8392
912,5	-	1,422	3,6270	1933,8101
913	-	1,422	3,6564	1933,7807
913,5	-	1,422	3,6850	1933,7521
914	-	1,422	3,7138	1933,7233
914,5	-	1,422	3,7426	1933,6945
915	-	1,422	3,7724	1933,6647
915,5	-	1,422	3,8024	1933,6347
916	-	1,422	3,8335	1933,6036
916,5	-	1,422	3,8647	1933,5724
917	-	1,422	3,8960	1933,5411
917,5	-	1,422	3,9266	1933,5105
918	-	1,422	3,9583	1933,4788
918,5	-	1,422	3,9908	1933,4463
919	-	1,422	4,0244	1933,4127
919,5	-	1,422	4,0587	1933,3784

920	-	1,422	4,0931	1933,3440
920,5	-	1,422	4,1262	1933,3109
921	-	1,422	4,1594	1933,2777
921,5	-	1,422	4,1919	1933,2452
922	-	1,422	4,2244	1933,2127
922,5	-	1,422	4,2578	1933,1793
923	-	1,422	4,2932	1933,1439
923,5	-	1,422	4,3280	1933,1091
924	-	1,422	4,3659	1933,0712
924,5	-	1,422	4,4042	1933,0329
<b>E15 - PTO 925</b>	1,2653	1,422	4,4436	1932,9935
925,5	-	1,425	1,4628	1932,9557
926	-	1,425	1,5014	1932,9171
926,5	-	1,425	1,5393	1932,8792
927	-	1,425	1,5771	1932,8414
927,5	-	1,425	1,6132	1932,8053
928	-	1,425	1,6504	1932,7681
928,5	-	1,425	1,6872	1932,7313
929	-	1,425	1,7241	1932,6944
929,5	-	1,425	1,7579	1932,6606
930	-	1,425	1,7917	1932,6268
930,5	-	1,425	1,8254	1932,5931
931	-	1,425	1,8591	1932,5594
931,5	-	1,425	1,8930	1932,5255
932	-	1,425	1,9270	1932,4915
932,5	-	1,425	1,9608	1932,4577
933	-	1,425	1,9947	1932,4238
933,5	-	1,425	2,0288	1932,3897
934	-	1,425	2,0629	1932,3556
934,5	-	1,425	2,0966	1932,3219
935	-	1,425	2,1303	1932,2882
935,5	-	1,425	2,1648	1932,2537
936	-	1,425	2,1984	1932,2201
936,5	-	1,425	2,2322	1932,1863
937	-	1,425	2,2659	1932,1526
937,5	-	1,425	2,3003	1932,1182
938	-	1,425	2,3347	1932,0838
938,5	-	1,425	2,3684	1932,0501
939	-	1,425	2,4022	1932,0163
939,5	-	1,425	2,4362	1931,9823
940	-	1,425	2,4712	1931,9473
940,5	-	1,425	2,4982	1931,9203
941	-	1,425	2,5263	1931,8922



941,5	-	1,425	2,5554	1931,8631
942	-	1,425	2,5846	1931,8339
942,5	-	1,425	2,6143	1931,8042
943	-	1,425	2,6450	1931,7735
943,5	-	1,425	2,6773	1931,7412
944	-	1,425	2,7097	1931,7088
944,5	-	1,425	2,7423	1931,6762
945	-	1,425	2,7750	1931,6435
945,5	-	1,425	2,8076	1931,6109
946	-	1,425	2,8403	1931,5782
946,5	-	1,425	2,8743	1931,5442
947	-	1,425	2,9093	1931,5092
947,5	-	1,425	2,9440	1931,4745
948	-	1,425	2,9787	1931,4398
948,5	-	1,425	3,0132	1931,4053
949	-	1,425	3,0478	1931,3707
949,5	-	1,425	3,0817	1931,3368
950	-	1,425	3,1157	1931,3028
950,5	-	1,425	3,1500	1931,2685
951	-	1,425	3,1803	1931,2382
951,5	-	1,425	3,2127	1931,2058
952	-	1,425	3,2452	1931,1733
952,5	-	1,425	3,2810	1931,1375
953	-	1,425	3,3168	1931,1017
953,5	-	1,425	3,3531	1931,0654
954	-	1,425	3,3894	1931,0291
954,5	-	1,425	3,4254	1930,9931
955	-	1,425	3,4614	1930,9571
955,5	-	1,425	3,4947	1930,9238
956	-	1,425	3,5281	1930,8904
956,5	-	1,425	3,5624	1930,8561
957	-	1,425	3,5968	1930,8217
957,5	-	1,425	3,6311	1930,7874
958	-	1,425	3,6637	1930,7548
958,5	-	1,425	3,6982	1930,7203
959	-	1,425	3,7324	1930,6861
959,5	-	1,425	3,7669	1930,6516
960	-	1,425	3,7994	1930,6191
960,5	-	1,425	3,8330	1930,5855
961	-	1,425	3,8666	1930,5519
961,5	-	1,425	3,9007	1930,5178
962	-	1,425	3,9352	1930,4833
962,5	-	1,425	3,9691	1930,4494

963	-	1,425	4,0033	1930,4152
963,5	-	1,425	4,0370	1930,3815
964	-	1,425	4,0697	1930,3488
964,5	-	1,425	4,1036	1930,3149
965	-	1,425	4,1376	1930,2809
965,5	-	1,425	4,1732	1930,2453
966	-	1,425	4,2088	1930,2097
966,5	-	1,425	4,2432	1930,1753
967	-	1,425	4,2776	1930,1409
967,5	-	1,425	4,3104	1930,1081
968	-	1,425	4,3432	1930,0753
968,5	-	1,425	4,3769	1930,0416
969	-	1,425	4,4107	1930,0078
969,5	-	1,425	4,4442	1929,9743
970	-	1,425	4,4787	1929,9398
970,5	-	1,425	4,5122	1929,9063
971	-	1,425	4,5447	1929,8738
971,5	-	1,425	4,5775	1929,8410
972	-	1,425	4,6104	1929,8081
972,5	-	1,425	4,6453	1929,7732
973	-	1,425	4,6803	1929,7382
973,5	-	1,425	4,7152	1929,7033
974	-	1,425	4,7502	1929,6683
974,5	-	1,425	4,7820	1929,6365
<b>E16 - PTO 975</b>	1,3694	1,425	4,8139	1929,6046
975,5	-	1,511	1,5434	1929,5722
976	-	1,511	1,5758	1929,5398
976,5	-	1,511	1,6083	1929,5073
977	-	1,511	1,6417	1929,4739
977,5	-	1,511	1,6764	1929,4392
978	-	1,511	1,7108	1929,4048
978,5	-	1,511	1,7435	1929,3721
979	-	1,511	1,7781	1929,3375
979,5	-	1,511	1,8112	1929,3044
980	-	1,511	1,8477	1929,2679
980,5	-	1,511	1,8798	1929,2358
981	-	1,511	1,9128	1929,2028
981,5	-	1,511	1,9463	1929,1693
982	-	1,511	1,9811	1929,1345
982,5	-	1,511	2,0160	1929,0996
983	-	1,511	2,0515	1929,0641
983,5	-	1,511	2,0830	1929,0326
984	-	1,511	2,1162	1928,9994

984,5	-	1,511	2,1494	1928,9662
985	-	1,511	2,1825	1928,9331
985,5	-	1,511	2,2154	1928,9002
986	-	1,511	2,2487	1928,8669
986,5	-	1,511	2,2819	1928,8337
987	-	1,511	2,3151	1928,8005
987,5	-	1,511	2,3485	1928,7671
988	-	1,511	2,3825	1928,7331
988,5	-	1,511	2,4169	1928,6987
989	-	1,511	2,4514	1928,6642
989,5	-	1,511	2,4852	1928,6304
990	-	1,511	2,5200	1928,5956
990,5	-	1,511	2,5539	1928,5617
991	-	1,511	2,5877	1928,5279
991,5	-	1,511	2,6194	1928,4962
992	-	1,511	2,6512	1928,4644
992,5	-	1,511	2,6832	1928,4324
993	-	1,511	2,7152	1928,4004
993,5	-	1,511	2,7473	1928,3683
994	-	1,511	2,7794	1928,3362
994,5	-	1,511	2,8111	1928,3045
995	-	1,511	2,8429	1928,2727
995,5	-	1,511	2,8777	1928,2379
996	-	1,511	2,9134	1928,2022
996,5	-	1,511	2,9505	1928,1651
997	-	1,511	2,9844	1928,1312
997,5	-	1,511	3,0178	1928,0978
998	-	1,511	3,0539	1928,0617
998,5	-	1,511	3,0861	1928,0295
999	-	1,511	3,1160	1927,9996
999,5	-	1,511	3,1484	1927,9672
1000	-	1,511	3,1780	1927,9376
1000,5	-	1,511	3,2066	1927,9090
1001	-	1,511	3,2429	1927,8727
1001,5	-	1,511	3,2780	1927,8376
1002	-	1,511	3,3020	1927,8136
1002,5	-	1,511	3,3344	1927,7812
1003	-	1,511	3,3497	1927,7659
1003,5	-	1,511	3,3856	1927,7300
1004	-	1,511	3,4025	1927,7131
1004,5	-	1,511	3,4255	1927,6901
1005	-	1,511	3,4511	1927,6645
1005,5	-	1,511	3,4838	1927,6318

1006	-	1,511	3,5143	1927,6013
1006,5	-	1,511	3,5306	1927,5850
1007	-	1,511	3,5610	1927,5546
1007,5	-	1,511	3,5776	1927,5380
1008	-	1,511	3,6050	1927,5106
1008,5	-	1,511	3,6175	1927,4981
1009	-	1,511	3,6301	1927,4855
1009,5	-	1,511	3,6477	1927,4679
1010	-	1,511	3,6654	1927,4502
1010,5	-	1,511	3,6946	1927,4210
1011	-	1,511	3,7238	1927,3918
1011,5	-	1,511	3,7419	1927,3737
1012	-	1,511	3,7600	1927,3556
1012,5	-	1,511	3,7800	1927,3356
1013	-	1,511	3,8001	1927,3155
1013,5	-	1,511	3,8244	1927,2912
1014	-	1,511	3,8487	1927,2669
1014,5	-	1,511	3,8667	1927,2489
1015	-	1,511	3,8848	1927,2308
1015,5	-	1,511	3,9069	1927,2087
1016	-	1,511	3,9291	1927,1865
1016,5	-	1,511	3,9493	1927,1663
1017	-	1,511	3,9695	1927,1461
1017,5	-	1,511	3,9876	1927,1280
1018	-	1,511	4,0057	1927,1099
1018,5	-	1,511	4,0221	1927,0935
1019	-	1,511	4,0386	1927,0770
1019,5	-	1,511	4,0561	1927,0595
1020	-	1,511	4,0660	1927,0496
1020,5	-	1,511	4,0820	1927,0336
1021	-	1,511	4,0994	1927,0162
1021,5	-	1,511	4,1159	1926,9997
1022	-	1,511	4,1318	1926,9838
1022,5	-	1,511	4,1479	1926,9677
1023	-	1,511	4,1649	1926,9507
1023,5	-	1,511	4,1822	1926,9334
1024	-	1,511	4,1994	1926,9162
1024,5	-	1,511	4,2155	1926,9001
<b>E17 - PTO 1025</b>	1,455	1,511	4,2314	1926,8842
1025,5	-	1,521	1,5340	1926,8712
1026	-	1,521	1,5461	1926,8591
1026,5	-	1,521	1,5581	1926,8471
1027	-	1,521	1,5701	1926,8351

1027,5	-	1,521	1,5822	1926,8230
1028	-	1,521	1,5942	1926,8110
1028,5	-	1,521	1,6063	1926,7989
1029	-	1,521	1,6183	1926,7869
1029,5	-	1,521	1,6305	1926,7747
1030	-	1,521	1,6427	1926,7625
1030,5	-	1,521	1,6307	1926,7745
1031	-	1,521	1,6188	1926,7864
1031,5	-	1,521	1,6306	1926,7746
1032	-	1,521	1,6425	1926,7627
1032,5	-	1,521	1,6548	1926,7504
1033	-	1,521	1,6671	1926,7381
1033,5	-	1,521	1,6795	1926,7257
1034	-	1,521	1,6919	1926,7133
1034,5	-	1,521	1,7036	1926,7016
1035	-	1,521	1,7154	1926,6898
1035,5	-	1,521	1,7276	1926,6776
1036	-	1,521	1,7379	1926,6673
1036,5	-	1,521	1,7473	1926,6579
1037	-	1,521	1,7567	1926,6485
1037,5	-	1,521	1,7660	1926,6392
1038	-	1,521	1,7753	1926,6299
1038,5	-	1,521	1,7844	1926,6208
1039	-	1,521	1,7935	1926,6117
1039,5	-	1,521	1,8022	1926,6030
1040	-	1,521	1,8109	1926,5943
1040,5	-	1,521	1,8175	1926,5877
1041	-	1,521	1,8241	1926,5811
1041,5	-	1,521	1,8290	1926,5762
1042	-	1,521	1,8340	1926,5712
1042,5	-	1,521	1,8310	1926,5742
1043	-	1,521	1,8280	1926,5772
1043,5	-	1,521	1,8200	1926,5852
1044	-	1,521	1,8121	1926,5931
1044,5	-	1,521	1,8039	1926,6013
1045	-	1,521	1,7958	1926,6094
1045,5	-	1,521	1,7956	1926,6096
1046	-	1,521	1,7954	1926,6098
1046,5	-	1,521	1,8027	1926,6025
1047	-	1,521	1,8101	1926,5951
1047,5	-	1,521	1,8013	1926,6039
1048	-	1,521	1,7925	1926,6127
1048,5	-	1,521	1,7925	1926,6127

1049	-	1,521	1,7925	1926,6127
1049,5	-	1,521	1,7853	1926,6199
1050	-	1,521	1,7782	1926,6270
1050,5	-	1,521	1,7838	1926,6214
1051	-	1,521	1,7894	1926,6158
1051,5	-	1,521	1,7976	1926,6076
1052	-	1,521	1,8059	1926,5993
1052,5	-	1,521	1,8142	1926,5910
1053	-	1,521	1,8225	1926,5827
1053,5	-	1,521	1,8328	1926,5724
1054	-	1,521	1,8431	1926,5621
1054,5	-	1,521	1,8520	1926,5532
1055	-	1,521	1,8610	1926,5442
1055,5	-	1,521	1,8664	1926,5388
1056	-	1,521	1,8718	1926,5334
1056,5	-	1,521	1,8789	1926,5263
1057	-	1,521	1,8860	1926,5192
1057,5	-	1,521	1,8906	1926,5146
1058	-	1,521	1,8953	1926,5099
1058,5	-	1,521	1,8996	1926,5056
1059	-	1,521	1,9039	1926,5013
1059,5	-	1,521	1,9078	1926,4974
1060	-	1,521	1,9118	1926,4934
1060,5	-	1,521	1,9154	1926,4898
1061	-	1,521	1,9191	1926,4861
1061,5	-	1,521	1,9186	1926,4866
1062	-	1,521	1,9181	1926,4871
1062,5	-	1,521	1,9178	1926,4874
1063	-	1,521	1,9175	1926,4877
1063,5	-	1,521	1,9180	1926,4872
1064	-	1,521	1,9185	1926,4867
1064,5	-	1,521	1,9206	1926,4846
1065	-	1,521	1,9228	1926,4824
1065,5	-	1,521	1,9344	1926,4708
1066	-	1,521	1,9376	1926,4676
1066,5	-	1,521	1,9391	1926,4661
1067	-	1,521	1,9187	1926,4865
1067,5	-	1,521	1,9170	1926,4882
1068	-	1,521	1,9154	1926,4898
1068,5	-	1,521	1,8918	1926,5134
1069	-	1,521	1,9095	1926,4957
1069,5	-	1,521	1,9083	1926,4969
1070	-	1,521	1,9072	1926,4980

1070,5	-	1,521	1,9132	1926,4920
1071	-	1,521	1,9192	1926,4860
1071,5	-	1,521	1,9139	1926,4913
1072	-	1,521	1,9087	1926,4965
1072,5	-	1,521	1,9088	1926,4964
1073	-	1,521	1,9090	1926,4962
1073,5	-	1,521	1,9031	1926,5021
1074	-	1,521	1,8972	1926,5080
1074,5	-	1,521	1,8967	1926,5085
<b>E18 - PTO 1075</b>	1,5448	1,521	1,8963	1926,5089
1075,5	-	1,531	1,5324	1926,5075
1076	-	1,531	1,5338	1926,5061
1076,5	-	1,531	1,5352	1926,5047
1077	-	1,531	1,5366	1926,5033
1077,5	-	1,531	1,5350	1926,5049
1078	-	1,531	1,5335	1926,5064
1078,5	-	1,531	1,5224	1926,5175
1079	-	1,531	1,5113	1926,5286
1079,5	-	1,531	1,5011	1926,5388
1080	-	1,531	1,4910	1926,5489
1080,5	-	1,531	1,4881	1926,5518
1081	-	1,531	1,4853	1926,5546
1081,5	-	1,531	1,4870	1926,5529
1082	-	1,531	1,4888	1926,5511
1082,5	-	1,531	1,4819	1926,5580
1083	-	1,531	1,4750	1926,5649
1083,5	-	1,531	1,4658	1926,5741
1084	-	1,531	1,4567	1926,5832
1084,5	-	1,531	1,4603	1926,5796
1085	-	1,531	1,4640	1926,5759
1085,5	-	1,531	1,4539	1926,5860
1086	-	1,531	1,4438	1926,5961
1086,5	-	1,531	1,4350	1926,6049
1087	-	1,531	1,4263	1926,6136
1087,5	-	1,531	1,4213	1926,6186
1088	-	1,531	1,4163	1926,6236
1088,5	-	1,531	1,4103	1926,6296
1089	-	1,531	1,4044	1926,6355
1089,5	-	1,531	1,4042	1926,6357
1090	-	1,531	1,4041	1926,6358
1090,5	-	1,531	1,3994	1926,6405
1091	-	1,531	1,3947	1926,6452
1091,5	-	1,531	1,3963	1926,6436

1092	-	1,531	1,3979	1926,6420
1092,5	-	1,531	1,3838	1926,6561
1093	-	1,531	1,3698	1926,6701
1093,5	-	1,531	1,3614	1926,6785
1094	-	1,531	1,3531	1926,6868
1094,5	-	1,531	1,3451	1926,6948
1095	-	1,531	1,3372	1926,7027
1095,5	-	1,531	1,3270	1926,7129
1096	-	1,531	1,3169	1926,7230
1096,5	-	1,531	1,3103	1926,7296
1097	-	1,531	1,3038	1926,7361
1097,5	-	1,531	1,2949	1926,7450
1098	-	1,531	1,2861	1926,7538
1098,5	-	1,531	1,2772	1926,7627
1099	-	1,531	1,2684	1926,7715
1099,5	-	1,531	1,2596	1926,7803
1100	-	1,531	1,2509	1926,7890
1100,5	-	1,531	1,2445	1926,7954
1101	-	1,531	1,2382	1926,8017
1101,5	-	1,531	1,2302	1926,8097
1102	-	1,531	1,2223	1926,8176
1102,5	-	1,531	1,2153	1926,8246
1103	-	1,531	1,2084	1926,8315
1103,5	-	1,531	1,2099	1926,8300
1104	-	1,531	1,2115	1926,8284
1104,5	-	1,531	1,2057	1926,8342
1105	-	1,531	1,1999	1926,8400
1105,5	-	1,531	1,1905	1926,8494
1106	-	1,531	1,1811	1926,8588
1106,5	-	1,531	1,1688	1926,8711
1107	-	1,531	1,1566	1926,8833
1107,5	-	1,531	1,1447	1926,8952
1108	-	1,531	1,1328	1926,9071
1108,5	-	1,531	1,1234	1926,9165
1109	-	1,531	1,1141	1926,9258
1109,5	-	1,531	1,1017	1926,9382
1110	-	1,531	1,0894	1926,9505
1110,5	-	1,531	1,0816	1926,9583
1111	-	1,531	1,0738	1926,9661
1111,5	-	1,531	1,0557	1926,9842
1112	-	1,531	1,0377	1927,0022
1112,5	-	1,531	1,0256	1927,0143
1113	-	1,531	1,0136	1927,0263



1113,5	-	1,531	0,9972	1927,0427
1114	-	1,531	0,9809	1927,0590
1114,5	-	1,531	0,9682	1927,0717
1115	-	1,531	0,9555	1927,0844
1115,5	-	1,531	0,9459	1927,0940
1116	-	1,531	0,9363	1927,1036
1116,5	-	1,531	0,9238	1927,1161
1117	-	1,531	0,9113	1927,1286
1117,5	-	1,531	0,8968	1927,1431
1118	-	1,531	0,8823	1927,1576
1118,5	-	1,531	0,8610	1927,1789
1119	-	1,531	0,8397	1927,2002
1119,5	-	1,531	0,8183	1927,2216
1120	-	1,531	0,7969	1927,2430
1120,5	-	1,531	0,7810	1927,2589
1121	-	1,531	0,7651	1927,2748
1121,5	-	1,531	0,7503	1927,2896
1122	-	1,531	0,7356	1927,3043
1122,5	-	1,531	0,7188	1927,3211
1123	-	1,531	0,7021	1927,3378
1123,5	-	1,531	0,6843	1927,3556
1124	-	1,531	0,6666	1927,3733
1124,5	-	1,531	0,6523	1927,3876
<b>E19 - PTO 1125</b>	1,722	1,531	0,6380	1927,4019
1125,5	-	1,662	1,6417	1927,4222
1126	-	1,662	1,6215	1927,4424
1126,5	-	1,662	1,6012	1927,4627
1127	-	1,662	1,5810	1927,4829
1127,5	-	1,662	1,5640	1927,4999
1128	-	1,662	1,5471	1927,5168
1128,5	-	1,662	1,5225	1927,5414
1129	-	1,662	1,4978	1927,5661
1129,5	-	1,662	1,4732	1927,5907
1130	-	1,662	1,4486	1927,6153
1130,5	-	1,662	1,4220	1927,6419
1131	-	1,662	1,3954	1927,6685
1131,5	-	1,662	1,3689	1927,6950
1132	-	1,662	1,3423	1927,7216
1132,5	-	1,662	1,3149	1927,7490
1133	-	1,662	1,2876	1927,7763
1133,5	-	1,662	1,2602	1927,8037
1134	-	1,662	1,2329	1927,8310
1134,5	-	1,662	1,1991	1927,8648

1135	-	1,662	1,1654	1927,8985
1135,5	-	1,662	1,1316	1927,9323
1136	-	1,662	1,0979	1927,9660
1136,5	-	1,662	1,0699	1927,9940
1137	-	1,662	1,0419	1928,0220
1137,5	-	1,662	1,0139	1928,0500
1138	-	1,662	0,9859	1928,0780
1138,5	-	1,662	0,9618	1928,1021
1139	-	1,662	0,9377	1928,1262
1139,5	-	1,662	0,9137	1928,1502
1140	-	1,662	0,8896	1928,1743
1140,5	-	1,662	0,8716	1928,1923
1141	-	1,662	0,8536	1928,2103
1141,5	-	1,662	0,8355	1928,2284
1142	-	1,662	0,8175	1928,2464
1142,5	-	1,662	0,7995	1928,2644
1143	-	1,662	0,7815	1928,2824
1143,5	-	1,662	0,7584	1928,3055
1144	-	1,662	0,7354	1928,3285
1144,5	-	1,662	0,7123	1928,3516
1145	-	1,662	0,6893	1928,3746
1145,5	-	1,662	0,6697	1928,3942
1146	-	1,662	0,6501	1928,4138
1146,5	-	1,662	0,6305	1928,4334
1147	-	1,662	0,6109	1928,4530
1147,5	-	1,662	0,5927	1928,4712
1148	-	1,662	0,5745	1928,4894
1148,5	-	1,662	0,5564	1928,5075
1149	-	1,662	0,5382	1928,5257
1149,5	-	1,662	0,5185	1928,5454
1150	-	1,662	0,4988	1928,5651
1150,5	-	1,662	0,4792	1928,5847
1151	-	1,662	0,4595	1928,6044
1151,5	-	1,662	0,4379	1928,6260
1152	-	1,662	0,4163	1928,6476
1152,5	-	1,662	0,3947	1928,6692
1153	-	1,662	0,3731	1928,6908
1153,5	-	1,662	0,3538	1928,7101
1154	-	1,662	0,3345	1928,7294
1154,5	-	1,662	0,3152	1928,7487
1155	-	1,662	0,2959	1928,7680
1155,5	-	1,662	0,2820	1928,7819
1156	-	1,662	0,2680	1928,7959

1156,5	-	1,662	0,2541	1928,8098
1157	-	1,662	0,2402	1928,8237
1157,5	-	1,662	0,2273	1928,8366
1158	-	1,662	0,2143	1928,8496
1158,5	-	1,662	0,2014	1928,8625
1159	-	1,662	0,1885	1928,8754
1159,5	-	1,662	0,1896	1928,8743
1160	-	1,662	0,1907	1928,8732
1160,5	-	1,662	0,1889	1928,8750
1161	-	1,662	0,1769	1928,8870
1161,5	-	1,662	0,1649	1928,8990
1162	-	1,662	0,1520	1928,9119
1162,5	-	1,662	0,1379	1928,9260
1163	-	1,662	0,1229	1928,9410
1163,5	-	1,662	0,1079	1928,9560
1164	-	1,662	0,0929	1928,9710
1164,5	-	1,662	0,0779	1928,9860
<b>E20 - PTO 1165</b>	1,5769	1,662	0,0629	1929,0010
1165,5	-	1,535	1,5230	1929,0130
1166	-	1,535	1,5102	1929,0258
1166,5	-	1,535	1,4990	1929,0370
1167	-	1,535	1,4884	1929,0476
1167,5	-	1,535	1,4774	1929,0586
1168	-	1,535	1,4665	1929,0695
1168,5	-	1,535	1,4555	1929,0805
1169	-	1,535	1,4446	1929,0914
1169,5	-	1,535	1,4380	1929,0980
1170	-	1,535	1,4314	1929,1046
1170,5	-	1,535	1,4248	1929,1112
1171	-	1,535	1,4182	1929,1178
1171,5	-	1,535	1,4070	1929,1290
1172	-	1,535	1,3958	1929,1402
1172,5	-	1,535	1,3846	1929,1514
1173	-	1,535	1,3734	1929,1626
1173,5	-	1,535	1,3645	1929,1715
1174	-	1,535	1,3557	1929,1803
1174,5	-	1,535	1,3490	1929,1870
1175	-	1,535	1,3410	1929,1950
1175,5	-	1,535	1,3310	1929,2050
1176	-	1,535	1,3210	1929,2150
1176,5	-	1,535	1,3093	1929,2267
1177	-	1,535	1,3040	1929,2320
1177,5	-	1,535	1,2968	1929,2392

1178	-	1,535	1,2890	1929,2470
1178,5	-	1,535	1,2790	1929,2570
1179	-	1,535	1,2710	1929,2650
1179,5	-	1,535	1,2610	1929,2750
1180	-	1,535	1,2528	1929,2832
1180,5	-	1,535	1,2451	1929,2909
1181	-	1,535	1,2375	1929,2985
1181,5	-	1,535	1,2275	1929,3085
1182	-	1,535	1,2176	1929,3184
1182,5	-	1,535	1,2076	1929,3284
1183	-	1,535	1,1977	1929,3383
1183,5	-	1,535	1,1896	1929,3464
1184	-	1,535	1,1816	1929,3544
1184,5	-	1,535	1,1735	1929,3625
1185	-	1,535	1,1654	1929,3706
1185,5	-	1,535	1,1574	1929,3786
1186	-	1,535	1,1493	1929,3867
1186,5	-	1,535	1,1412	1929,3948
1187	-	1,535	1,1332	1929,4028
1187,5	-	1,535	1,1251	1929,4109
1188	-	1,535	1,1170	1929,4190
1188,5	-	1,535	1,1090	1929,4270
1189	-	1,535	1,1009	1929,4351
1189,5	-	1,535	1,0943	1929,4417
1190	-	1,535	1,0877	1929,4483
1190,5	-	1,535	1,0811	1929,4549
1191	-	1,535	1,0745	1929,4615
1191,5	-	1,535	1,0677	1929,4683
1192	-	1,535	1,0609	1929,4751
1192,5	-	1,535	1,0541	1929,4819
1193	-	1,535	1,0473	1929,4887
1193,5	-	1,535	1,0406	1929,4954
1194	-	1,535	1,0339	1929,5021
1194,5	-	1,535	1,0273	1929,5087
1195	-	1,535	1,0206	1929,5154
1195,5	-	1,535	1,0154	1929,5206
1196	-	1,535	1,0103	1929,5257
1196,5	-	1,535	1,0051	1929,5309
1197	-	1,535	1,0000	1929,5360
1197,5	-	1,535	0,9981	1929,5379
1198	-	1,535	0,9963	1929,5397
1198,5	-	1,535	0,9944	1929,5416
1199	-	1,535	0,9926	1929,5434

1199,5	-	1,535	0,9915	1929,5445
1200	-	1,535	0,9904	1929,5456

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*Univ. Marco Antonio Cardozo Flores*

**ESTUDIANTE CIV 502**

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*Ing. Pablo Chambi Gareca*

**ENCARGADO DE LABORATORIO DE  
TOPOGRAFIA**

**Levantamiento Topográfico Para el Proyecto "Determinación del índice de rugosidad internacional, usando el aplicativo inteligente Abakal y el rugosímetro de Merlín en las avenidas de la ciudad de Tarija"**

**AVENIDA SAN LUIS PROGRESIVA 000 + 1200**

<b>PROGRESIVAS (DISTANCIA m)</b>	<b>VISTA ATRÁS</b>	<b>ALTURA DEL INSTRUMENTO</b>	<b>VISTA ADELANTE</b>	<b>COTA m</b>
<b>E1 BM</b>	1,5066	1,539	-	1850,0000
0,5	-	1,539	1,5426	1849,9964
1	-	1,539	1,5463	1849,9927
1,5	-	1,539	1,5499	1849,9891
2	-	1,539	1,5536	1849,9854
2,5	-	1,539	1,5600	1849,9790
3	-	1,539	1,5657	1849,9733
3,5	-	1,539	1,5713	1849,9677
4	-	1,539	1,5766	1849,9624
4,5	-	1,539	1,5828	1849,9562
5	-	1,539	1,5895	1849,9495
5,5	-	1,539	1,5958	1849,9432
6	-	1,539	1,6004	1849,9386
6,5	-	1,539	1,6046	1849,9344
7	-	1,539	1,6099	1849,9291
7,5	-	1,539	1,6146	1849,9244
8	-	1,539	1,6194	1849,9196
8,5	-	1,539	1,6245	1849,9145
9	-	1,539	1,6301	1849,9089
9,5	-	1,539	1,6371	1849,9019
10	-	1,539	1,6429	1849,8961
10,5	-	1,539	1,6489	1849,8901
11	-	1,539	1,6549	1849,8841
11,5	-	1,539	1,6610	1849,8780
12	-	1,539	1,6670	1849,8720
12,5	-	1,539	1,6730	1849,8660
13	-	1,539	1,6790	1849,8600
13,5	-	1,539	1,6850	1849,8540
14	-	1,539	1,6911	1849,8479
14,5	-	1,539	1,6971	1849,8419
15	-	1,539	1,7031	1849,8359
15,5	-	1,539	1,7106	1849,8284
16	-	1,539	1,7181	1849,8209
16,5	-	1,539	1,7256	1849,8134

17	-	1,539	1,7331	1849,8059
17,5	-	1,539	1,7406	1849,7984
18	-	1,539	1,7482	1849,7908
18,5	-	1,539	1,7557	1849,7833
19	-	1,539	1,7632	1849,7758
19,5	-	1,539	1,7707	1849,7683
20	-	1,539	1,7782	1849,7608
20,5	-	1,539	1,7837	1849,7553
21	-	1,539	1,7892	1849,7498
21,5	-	1,539	1,7947	1849,7443
22	-	1,539	1,8002	1849,7388
22,5	-	1,539	1,8056	1849,7334
23	-	1,539	1,8111	1849,7279
23,5	-	1,539	1,8166	1849,7224
24	-	1,539	1,8221	1849,7169
24,5	-	1,539	1,8276	1849,7114
25	-	1,539	1,8331	1849,7059
25,5	-	1,539	1,8404	1849,6986
26	-	1,539	1,8478	1849,6912
26,5	-	1,539	1,8551	1849,6839
27	-	1,539	1,8625	1849,6765
27,5	-	1,539	1,8698	1849,6692
28	-	1,539	1,8771	1849,6619
28,5	-	1,539	1,8845	1849,6545
29	-	1,539	1,8918	1849,6472
29,5	-	1,539	1,8992	1849,6398
30	-	1,539	1,9065	1849,6325
30,5	-	1,539	1,9125	1849,6265
31	-	1,539	1,9185	1849,6205
31,5	-	1,539	1,9245	1849,6145
32	-	1,539	1,9305	1849,6085
32,5	-	1,539	1,9364	1849,6026
33	-	1,539	1,9424	1849,5966
33,5	-	1,539	1,9484	1849,5906
34	-	1,539	1,9544	1849,5846
34,5	-	1,539	1,9604	1849,5786
35	-	1,539	1,9664	1849,5726
35,5	-	1,539	1,9729	1849,5661
36	-	1,539	1,9794	1849,5596
36,5	-	1,539	1,9859	1849,5531
37	-	1,539	1,9924	1849,5466
37,5	-	1,539	1,9988	1849,5402
38	-	1,539	2,0053	1849,5337

38,5	-	1,539	2,0118	1849,5272
39	-	1,539	2,0183	1849,5207
39,5	-	1,539	2,0248	1849,5142
40	-	1,539	2,0313	1849,5077
40,5	-	1,539	2,0386	1849,5004
41	-	1,539	2,0460	1849,4930
41,5	-	1,539	2,0533	1849,4857
42	-	1,539	2,0606	1849,4784
42,5	-	1,539	2,0679	1849,4711
43	-	1,539	2,0753	1849,4637
43,5	-	1,539	2,0826	1849,4564
44	-	1,539	2,0899	1849,4491
44,5	-	1,539	2,0973	1849,4417
45	-	1,539	2,1046	1849,4344
45,5	-	1,539	2,1121	1849,4269
46	-	1,539	2,1196	1849,4194
46,5	-	1,539	2,1271	1849,4119
47	-	1,539	2,1346	1849,4044
47,5	-	1,539	2,1420	1849,3970
48	-	1,539	2,1495	1849,3895
48,5	-	1,539	2,1570	1849,3820
49	-	1,539	2,1645	1849,3745
49,5	-	1,539	2,1720	1849,3670
50	-	1,539	2,1795	1849,3595
50,5	-	1,539	2,1854	1849,3536
51	-	1,539	2,1913	1849,3477
51,5	-	1,539	2,1972	1849,3418
52	-	1,539	2,2031	1849,3359
52,5	-	1,539	2,2089	1849,3301
53	-	1,539	2,2148	1849,3242
53,5	-	1,539	2,2207	1849,3183
54	-	1,539	2,2266	1849,3124
54,5	-	1,539	2,2325	1849,3065
55	-	1,539	2,2384	1849,3006
55,5	-	1,539	2,2440	1849,2950
56	-	1,539	2,2496	1849,2894
56,5	-	1,539	2,2553	1849,2837
57	-	1,539	2,2609	1849,2781
57,5	-	1,539	2,2665	1849,2725
58	-	1,539	2,2721	1849,2669
58,5	-	1,539	2,2777	1849,2613
59	-	1,539	2,2834	1849,2556
59,5	-	1,539	2,2890	1849,2500



60	-	1,539	2,2946	1849,2444
60,5	-	1,539	2,3013	1849,2377
61	-	1,539	2,3081	1849,2309
61,5	-	1,539	2,3148	1849,2242
62	-	1,539	2,3215	1849,2175
62,5	-	1,539	2,3282	1849,2108
63	-	1,539	2,3350	1849,2040
63,5	-	1,539	2,3417	1849,1973
64	-	1,539	2,3484	1849,1906
64,5	-	1,539	2,3552	1849,1838
65	-	1,539	2,3619	1849,1771
65,5	-	1,539	2,3697	1849,1693
66	-	1,539	2,3775	1849,1615
66,5	-	1,539	2,3853	1849,1537
67	-	1,539	2,3931	1849,1459
67,5	-	1,539	2,4008	1849,1382
68	-	1,539	2,4086	1849,1304
68,5	-	1,539	2,4164	1849,1226
69	-	1,539	2,4242	1849,1148
69,5	-	1,539	2,4320	1849,1070
70	-	1,539	2,4398	1849,0992
70,5	-	1,539	2,4468	1849,0922
71	-	1,539	2,4538	1849,0852
71,5	-	1,539	2,4608	1849,0782
72	-	1,539	2,4678	1849,0712
72,5	-	1,539	2,4747	1849,0643
73	-	1,539	2,4817	1849,0573
73,5	-	1,539	2,4887	1849,0503
74	-	1,539	2,4957	1849,0433
74,5	-	1,539	2,5027	1849,0363
<b>E2 - PTO 75</b>	1,4602	1,539	2,5097	1849,0293
75,5	-	1,53	1,5381	1849,0212
76	-	1,53	1,5461	1849,0132
76,5	-	1,53	1,5542	1849,0051
77	-	1,53	1,5623	1848,9970
77,5	-	1,53	1,5703	1848,9890
78	-	1,53	1,5784	1848,9809
78,5	-	1,53	1,5865	1848,9728
79	-	1,53	1,5946	1848,9647
79,5	-	1,53	1,6026	1848,9567
80	-	1,53	1,6107	1848,9486
80,5	-	1,53	1,6183	1848,9410
81	-	1,53	1,6259	1848,9334

81,5	-	1,53	1,6334	1848,9259
82	-	1,53	1,6410	1848,9183
82,5	-	1,53	1,6486	1848,9107
83	-	1,53	1,6562	1848,9031
83,5	-	1,53	1,6638	1848,8955
84	-	1,53	1,6713	1848,8880
84,5	-	1,53	1,6789	1848,8804
85	-	1,53	1,6865	1848,8728
85,5	-	1,53	1,6941	1848,8652
86	-	1,53	1,7018	1848,8575
86,5	-	1,53	1,7094	1848,8499
87	-	1,53	1,7171	1848,8422
87,5	-	1,53	1,7247	1848,8346
88	-	1,53	1,7324	1848,8269
88,5	-	1,53	1,7400	1848,8193
89	-	1,53	1,7477	1848,8116
89,5	-	1,53	1,7553	1848,8040
90	-	1,53	1,7630	1848,7963
90,5	-	1,53	1,7705	1848,7888
91	-	1,53	1,7780	1848,7813
91,5	-	1,53	1,7855	1848,7738
92	-	1,53	1,7930	1848,7663
92,5	-	1,53	1,8005	1848,7588
93	-	1,53	1,8080	1848,7513
93,5	-	1,53	1,8155	1848,7438
94	-	1,53	1,8230	1848,7363
94,5	-	1,53	1,8305	1848,7288
95	-	1,53	1,8380	1848,7213
95,5	-	1,53	1,8466	1848,7127
96	-	1,53	1,8551	1848,7042
96,5	-	1,53	1,8637	1848,6956
97	-	1,53	1,8723	1848,6870
97,5	-	1,53	1,8808	1848,6785
98	-	1,53	1,8894	1848,6699
98,5	-	1,53	1,8980	1848,6613
99	-	1,53	1,9066	1848,6527
99,5	-	1,53	1,9151	1848,6442
100	-	1,53	1,9237	1848,6356
100,5	-	1,53	1,9308	1848,6285
101	-	1,53	1,9379	1848,6214
101,5	-	1,53	1,9449	1848,6144
102	-	1,53	1,9520	1848,6073
102,5	-	1,53	1,9591	1848,6002

103	-	1,53	1,9662	1848,5931
103,5	-	1,53	1,9733	1848,5860
104	-	1,53	1,9803	1848,5790
104,5	-	1,53	1,9874	1848,5719
105	-	1,53	1,9945	1848,5648
105,5	-	1,53	2,0019	1848,5574
106	-	1,53	2,0093	1848,5500
106,5	-	1,53	2,0167	1848,5426
107	-	1,53	2,0241	1848,5352
107,5	-	1,53	2,0315	1848,5278
108	-	1,53	2,0390	1848,5203
108,5	-	1,53	2,0464	1848,5129
109	-	1,53	2,0538	1848,5055
109,5	-	1,53	2,0612	1848,4981
110	-	1,53	2,0686	1848,4907
110,5	-	1,53	2,0767	1848,4826
111	-	1,53	2,0847	1848,4746
111,5	-	1,53	2,0928	1848,4665
112	-	1,53	2,1008	1848,4585
112,5	-	1,53	2,1089	1848,4504
113	-	1,53	2,1170	1848,4423
113,5	-	1,53	2,1203	1848,4390
114	-	1,53	2,1331	1848,4262
114,5	-	1,53	2,1411	1848,4182
115	-	1,53	2,1492	1848,4101
115,5	-	1,53	2,1569	1848,4024
116	-	1,53	2,1645	1848,3948
116,5	-	1,53	2,1722	1848,3871
117	-	1,53	2,1798	1848,3795
117,5	-	1,53	2,1875	1848,3718
118	-	1,53	2,1952	1848,3641
118,5	-	1,53	2,2028	1848,3565
119	-	1,53	2,2105	1848,3488
119,5	-	1,53	2,2181	1848,3412
120	-	1,53	2,2258	1848,3335
120,5	-	1,53	2,2333	1848,3260
121	-	1,53	2,2407	1848,3186
121,5	-	1,53	2,2482	1848,3111
122	-	1,53	2,2556	1848,3037
122,5	-	1,53	2,2631	1848,2962
123	-	1,53	2,2706	1848,2887
123,5	-	1,53	2,2780	1848,2813
124	-	1,53	2,2855	1848,2738

124,5	-	1,53	2,2929	1848,2664
125	-	1,53	2,3004	1848,2589
125,5	-	1,53	2,3071	1848,2522
126	-	1,53	2,3100	1848,2493
126,5	-	1,53	2,3204	1848,2389
127	-	1,53	2,3271	1848,2322
127,5	-	1,53	2,3338	1848,2255
128	-	1,53	2,3405	1848,2188
128,5	-	1,53	2,3472	1848,2121
129	-	1,53	2,3538	1848,2055
129,5	-	1,53	2,3605	1848,1988
130	-	1,53	2,3654	1848,1939
130,5	-	1,53	2,3745	1848,1848
131	-	1,53	2,3817	1848,1776
131,5	-	1,53	2,3890	1848,1703
132	-	1,53	2,3962	1848,1631
132,5	-	1,53	2,4035	1848,1558
133	-	1,53	2,4108	1848,1485
133,5	-	1,53	2,4180	1848,1413
134	-	1,53	2,4253	1848,1340
134,5	-	1,53	2,4325	1848,1268
135	-	1,53	2,4398	1848,1195
135,5	-	1,53	2,4476	1848,1117
136	-	1,53	2,4555	1848,1038
136,5	-	1,53	2,4633	1848,0960
137	-	1,53	2,4712	1848,0881
137,5	-	1,53	2,4790	1848,0803
138	-	1,53	2,4869	1848,0724
138,5	-	1,53	2,4947	1848,0646
139	-	1,53	2,5026	1848,0567
139,5	-	1,53	2,5104	1848,0489
140	-	1,53	2,5183	1848,0410
140,5	-	1,53	2,5249	1848,0344
141	-	1,53	2,5315	1848,0278
141,5	-	1,53	2,5381	1848,0212
142	-	1,53	2,5447	1848,0146
142,5	-	1,53	2,5512	1848,0081
143	-	1,53	2,5578	1848,0015
143,5	-	1,53	2,5644	1847,9949
144	-	1,53	2,5710	1847,9883
144,5	-	1,53	2,5776	1847,9817
145	-	1,53	2,5842	1847,9751
145,5	-	1,53	2,5907	1847,9686

146	-	1,53	2,5942	1847,9651
146,5	-	1,53	2,6036	1847,9557
147	-	1,53	2,6101	1847,9492
147,5	-	1,53	2,6165	1847,9428
148	-	1,53	2,6230	1847,9363
148,5	-	1,53	2,6295	1847,9298
149	-	1,53	2,6360	1847,9233
149,5	-	1,53	2,6424	1847,9169
<b>E3 - PTO 150</b>	1,4243	1,53	2,6420	1847,9173
150,5	-	1,494	1,5078	1847,9035
151	-	1,494	1,5148	1847,8965
151,5	-	1,494	1,5217	1847,8896
152	-	1,494	1,5287	1847,8826
152,5	-	1,494	1,5356	1847,8757
153	-	1,494	1,5425	1847,8688
153,5	-	1,494	1,5495	1847,8618
154	-	1,494	1,5564	1847,8549
154,5	-	1,494	1,5634	1847,8479
155	-	1,494	1,5703	1847,8410
155,5	-	1,494	1,5768	1847,8345
156	-	1,494	1,5833	1847,8280
156,5	-	1,494	1,5897	1847,8216
157	-	1,494	1,5962	1847,8151
157,5	-	1,494	1,6027	1847,8086
158	-	1,494	1,6092	1847,8021
158,5	-	1,494	1,6156	1847,7957
159	-	1,494	1,6221	1847,7892
159,5	-	1,494	1,6286	1847,7827
160	-	1,494	1,6351	1847,7762
160,5	-	1,494	1,6416	1847,7697
161	-	1,494	1,6480	1847,7633
161,5	-	1,494	1,6545	1847,7568
162	-	1,494	1,6610	1847,7503
162,5	-	1,494	1,6675	1847,7438
163	-	1,494	1,6739	1847,7374
163,5	-	1,494	1,6804	1847,7309
164	-	1,494	1,6869	1847,7244
164,5	-	1,494	1,6934	1847,7179
165	-	1,494	1,6998	1847,7115
165,5	-	1,494	1,7063	1847,7050
166	-	1,494	1,7128	1847,6985
166,5	-	1,494	1,7193	1847,6920
167	-	1,494	1,7258	1847,6855

167,5	-	1,494	1,7322	1847,6791
168	-	1,494	1,7387	1847,6726
168,5	-	1,494	1,7452	1847,6661
169	-	1,494	1,7517	1847,6596
169,5	-	1,494	1,7581	1847,6532
170	-	1,494	1,7646	1847,6467
170,5	-	1,494	1,7711	1847,6402
171	-	1,494	1,7776	1847,6337
171,5	-	1,494	1,7841	1847,6272
172	-	1,494	1,7837	1847,6276
172,5	-	1,494	1,7914	1847,6199
173	-	1,494	1,8035	1847,6078
173,5	-	1,494	1,8100	1847,6013
174	-	1,494	1,8164	1847,5949
174,5	-	1,494	1,8229	1847,5884
175	-	1,494	1,8294	1847,5819
175,5	-	1,494	1,8354	1847,5759
176	-	1,494	1,8413	1847,5700
176,5	-	1,494	1,8473	1847,5640
177	-	1,494	1,8533	1847,5580
177,5	-	1,494	1,8593	1847,5520
178	-	1,494	1,8652	1847,5461
178,5	-	1,494	1,8712	1847,5401
179	-	1,494	1,8772	1847,5341
179,5	-	1,494	1,8832	1847,5281
180	-	1,494	1,8891	1847,5222
180,5	-	1,494	1,8951	1847,5162
181	-	1,494	1,9011	1847,5102
181,5	-	1,494	1,9070	1847,5043
182	-	1,494	1,9130	1847,4983
182,5	-	1,494	1,9190	1847,4923
183	-	1,494	1,9250	1847,4863
183,5	-	1,494	1,9309	1847,4804
184	-	1,494	1,9369	1847,4744
184,5	-	1,494	1,9429	1847,4684
185	-	1,494	1,9488	1847,4625
185,5	-	1,494	1,9548	1847,4565
186	-	1,494	1,9518	1847,4595
186,5	-	1,494	1,9668	1847,4445
187	-	1,494	1,9727	1847,4386
187,5	-	1,494	1,9787	1847,4326
188	-	1,494	1,9847	1847,4266
188,5	-	1,494	1,9907	1847,4206

189	-	1,494	1,9966	1847,4147
189,5	-	1,494	2,0026	1847,4087
190	-	1,494	2,0045	1847,4068
190,5	-	1,494	2,0145	1847,3968
191	-	1,494	2,0205	1847,3908
191,5	-	1,494	2,0265	1847,3848
192	-	1,494	2,0325	1847,3788
192,5	-	1,494	2,0384	1847,3729
193	-	1,494	2,0444	1847,3669
193,5	-	1,494	2,0504	1847,3609
194	-	1,494	2,0564	1847,3549
194,5	-	1,494	2,0623	1847,3490
195	-	1,494	2,0683	1847,3430
195,5	-	1,494	2,0749	1847,3364
196	-	1,494	2,0815	1847,3298
196,5	-	1,494	2,0880	1847,3233
197	-	1,494	2,0946	1847,3167
197,5	-	1,494	2,1012	1847,3101
198	-	1,494	2,1078	1847,3035
198,5	-	1,494	2,1144	1847,2969
199	-	1,494	2,1209	1847,2904
199,5	-	1,494	2,1275	1847,2838
200	-	1,494	2,1341	1847,2772
200,5	-	1,494	2,1407	1847,2706
201	-	1,494	2,1473	1847,2640
201,5	-	1,494	2,1538	1847,2575
202	-	1,494	2,1604	1847,2509
202,5	-	1,494	2,1670	1847,2443
203	-	1,494	2,1736	1847,2377
203,5	-	1,494	2,1802	1847,2311
204	-	1,494	2,1867	1847,2246
204,5	-	1,494	2,1933	1847,2180
205	-	1,494	2,1999	1847,2114
205,5	-	1,494	2,2065	1847,2048
206	-	1,494	2,2131	1847,1982
206,5	-	1,494	2,2196	1847,1917
207	-	1,494	2,2262	1847,1851
207,5	-	1,494	2,2328	1847,1785
208	-	1,494	2,2394	1847,1719
208,5	-	1,494	2,2460	1847,1653
209	-	1,494	2,2525	1847,1588
209,5	-	1,494	2,2591	1847,1522
210	-	1,494	2,2657	1847,1456

210,5	-	1,494	2,2723	1847,1390
211	-	1,494	2,2789	1847,1324
211,5	-	1,494	2,2854	1847,1259
212	-	1,494	2,2920	1847,1193
212,5	-	1,494	2,2986	1847,1127
213	-	1,494	2,3052	1847,1061
213,5	-	1,494	2,3118	1847,0995
214	-	1,494	2,3183	1847,0930
214,5	-	1,494	2,3249	1847,0864
215	-	1,494	2,3315	1847,0798
215,5	-	1,494	2,3385	1847,0728
216	-	1,494	2,3456	1847,0657
216,5	-	1,494	2,3526	1847,0587
217	-	1,494	2,3597	1847,0516
217,5	-	1,494	2,3667	1847,0446
218	-	1,494	2,3738	1847,0375
218,5	-	1,494	2,3808	1847,0305
219	-	1,494	2,3879	1847,0234
219,5	-	1,494	2,3949	1847,0164
220	-	1,494	2,4019	1847,0094
220,5	-	1,494	2,4090	1847,0023
221	-	1,494	2,4160	1846,9953
221,5	-	1,494	2,4231	1846,9882
222	-	1,494	2,4301	1846,9812
222,5	-	1,494	2,4372	1846,9741
223	-	1,494	2,4442	1846,9671
223,5	-	1,494	2,4513	1846,9600
224	-	1,494	2,4583	1846,9530
224,5	-	1,494	2,4654	1846,9459
<b>E4 - PTO 225</b>	1,4546	1,494	2,4724	1846,9389
225,5	-	1,515	1,5199	1846,9340
226	-	1,515	1,5249	1846,9290
226,5	-	1,515	1,5298	1846,9241
227	-	1,515	1,5348	1846,9191
227,5	-	1,515	1,5397	1846,9142
228	-	1,515	1,5447	1846,9092
228,5	-	1,515	1,5496	1846,9043
229	-	1,515	1,5546	1846,8993
229,5	-	1,515	1,5595	1846,8944
230	-	1,515	1,5645	1846,8894
230,5	-	1,515	1,5725	1846,8814
231	-	1,515	1,5806	1846,8733
231,5	-	1,515	1,5886	1846,8653



232	-	1,515	1,5967	1846,8572
232,5	-	1,515	1,6047	1846,8492
233	-	1,515	1,6127	1846,8412
233,5	-	1,515	1,6208	1846,8331
234	-	1,515	1,6288	1846,8251
234,5	-	1,515	1,6369	1846,8170
235	-	1,515	1,6449	1846,8090
235,5	-	1,515	1,6529	1846,8010
236	-	1,515	1,6610	1846,7929
236,5	-	1,515	1,6690	1846,7849
237	-	1,515	1,6771	1846,7768
237,5	-	1,515	1,6851	1846,7688
238	-	1,515	1,6931	1846,7608
238,5	-	1,515	1,7012	1846,7527
239	-	1,515	1,7092	1846,7447
239,5	-	1,515	1,7173	1846,7366
240	-	1,515	1,7253	1846,7286
240,5	-	1,515	1,7333	1846,7206
241	-	1,515	1,7414	1846,7125
241,5	-	1,515	1,7494	1846,7045
242	-	1,515	1,7575	1846,6964
242,5	-	1,515	1,7655	1846,6884
243	-	1,515	1,7735	1846,6804
243,5	-	1,515	1,7816	1846,6723
244	-	1,515	1,7896	1846,6643
244,5	-	1,515	1,7977	1846,6562
245	-	1,515	1,8057	1846,6482
245,5	-	1,515	1,8141	1846,6398
246	-	1,515	1,8224	1846,6315
246,5	-	1,515	1,8308	1846,6231
247	-	1,515	1,8392	1846,6147
247,5	-	1,515	1,8475	1846,6064
248	-	1,515	1,8559	1846,5980
248,5	-	1,515	1,8643	1846,5896
249	-	1,515	1,8726	1846,5813
249,5	-	1,515	1,8810	1846,5729
250	-	1,515	1,8893	1846,5646
250,5	-	1,515	1,8977	1846,5562
251	-	1,515	1,9061	1846,5478
251,5	-	1,515	1,9144	1846,5395
252	-	1,515	1,9228	1846,5311
252,5	-	1,515	1,9312	1846,5227
253	-	1,515	1,9395	1846,5144

253,5	-	1,515	1,9479	1846,5060
254	-	1,515	1,9563	1846,4976
254,5	-	1,515	1,9646	1846,4893
255	-	1,515	1,9730	1846,4809
255,5	-	1,515	1,9814	1846,4725
256	-	1,515	1,9897	1846,4642
256,5	-	1,515	1,9981	1846,4558
257	-	1,515	2,0065	1846,4474
257,5	-	1,515	2,0148	1846,4391
258	-	1,515	2,0232	1846,4307
258,5	-	1,515	2,0316	1846,4223
259	-	1,515	2,0399	1846,4140
259,5	-	1,515	2,0483	1846,4056
260	-	1,515	2,0566	1846,3973
260,5	-	1,515	2,0650	1846,3889
261	-	1,515	2,0734	1846,3805
261,5	-	1,515	2,0817	1846,3722
262	-	1,515	2,0901	1846,3638
262,5	-	1,515	2,0985	1846,3554
263	-	1,515	2,1068	1846,3471
263,5	-	1,515	2,1152	1846,3387
264	-	1,515	2,1236	1846,3303
264,5	-	1,515	2,1319	1846,3220
265	-	1,515	2,1403	1846,3136
265,5	-	1,515	2,1495	1846,3044
266	-	1,515	2,1586	1846,2953
266,5	-	1,515	2,1678	1846,2861
267	-	1,515	2,1770	1846,2769
267,5	-	1,515	2,1862	1846,2677
268	-	1,515	2,1953	1846,2586
268,5	-	1,515	2,2045	1846,2494
269	-	1,515	2,2137	1846,2402
269,5	-	1,515	2,2229	1846,2310
270	-	1,515	2,2320	1846,2219
270,5	-	1,515	2,2412	1846,2127
271	-	1,515	2,2504	1846,2035
271,5	-	1,515	2,2596	1846,1943
272	-	1,515	2,2687	1846,1852
272,5	-	1,515	2,2779	1846,1760
273	-	1,515	2,2871	1846,1668
273,5	-	1,515	2,2963	1846,1576
274	-	1,515	2,3054	1846,1485
274,5	-	1,515	2,3146	1846,1393

275	-	1,515	2,3238	1846,1301
275,5	-	1,515	2,3330	1846,1209
276	-	1,515	2,3421	1846,1118
276,5	-	1,515	2,3513	1846,1026
277	-	1,515	2,3605	1846,0934
277,5	-	1,515	2,4099	1846,0440
278	-	1,515	2,3769	1846,0770
278,5	-	1,515	2,3862	1846,0677
279	-	1,515	2,3955	1846,0584
279,5	-	1,515	2,4048	1846,0491
280	-	1,515	2,4140	1846,0399
280,5	-	1,515	2,4233	1846,0306
281	-	1,515	2,4326	1846,0213
281,5	-	1,515	2,4419	1846,0120
282	-	1,515	2,4512	1846,0027
282,5	-	1,515	2,4605	1845,9934
283	-	1,515	2,4698	1845,9841
283,5	-	1,515	2,4790	1845,9749
284	-	1,515	2,4883	1845,9656
284,5	-	1,515	2,4976	1845,9563
285	-	1,515	2,5069	1845,9470
285,5	-	1,515	2,5158	1845,9381
286	-	1,515	2,5247	1845,9292
286,5	-	1,515	2,5336	1845,9203
287	-	1,515	2,5425	1845,9114
287,5	-	1,515	2,5514	1845,9025
288	-	1,515	2,5603	1845,8936
288,5	-	1,515	2,5692	1845,8847
289	-	1,515	2,5782	1845,8757
289,5	-	1,515	2,5871	1845,8668
290	-	1,515	2,5960	1845,8579
290,5	-	1,515	2,6049	1845,8490
291	-	1,515	2,6138	1845,8401
291,5	-	1,515	2,6227	1845,8312
292	-	1,515	2,6316	1845,8223
292,5	-	1,515	2,6405	1845,8134
293	-	1,515	2,6494	1845,8045
293,5	-	1,515	2,6583	1845,7956
294	-	1,515	2,6672	1845,7867
294,5	-	1,515	2,6761	1845,7778
295	-	1,515	2,6850	1845,7689
295,5	-	1,515	2,6939	1845,7600
296	-	1,515	2,7028	1845,7511

296,5	-	1,515	2,7118	1845,7421
297	-	1,515	2,7207	1845,7332
297,5	-	1,515	2,7296	1845,7243
298	-	1,515	2,7385	1845,7154
298,5	-	1,515	2,7474	1845,7065
299	-	1,515	2,7563	1845,6976
299,5	-	1,515	2,7652	1845,6887
<b>E5 - PTO 300</b>	1,437	1,515	2,7741	1845,6798
300,5	-	1,519	1,5278	1845,6710
301	-	1,519	1,5367	1845,6621
301,5	-	1,519	1,5455	1845,6533
302	-	1,519	1,5543	1845,6445
302,5	-	1,519	1,5631	1845,6357
303	-	1,519	1,5720	1845,6268
303,5	-	1,519	1,5808	1845,6180
304	-	1,519	1,5896	1845,6092
304,5	-	1,519	1,5985	1845,6003
305	-	1,519	1,6073	1845,5915
305,5	-	1,519	1,6156	1845,5832
306	-	1,519	1,6239	1845,5749
306,5	-	1,519	1,6321	1845,5667
307	-	1,519	1,6404	1845,5584
307,5	-	1,519	1,6487	1845,5501
308	-	1,519	1,6570	1845,5418
308,5	-	1,519	1,6652	1845,5336
309	-	1,519	1,6735	1845,5253
309,5	-	1,519	1,6818	1845,5170
310	-	1,519	1,6901	1845,5087
310,5	-	1,519	1,6983	1845,5005
311	-	1,519	1,7066	1845,4922
311,5	-	1,519	1,7149	1845,4839
312	-	1,519	1,7232	1845,4756
312,5	-	1,519	1,7314	1845,4674
313	-	1,519	1,7397	1845,4591
313,5	-	1,519	1,7480	1845,4508
314	-	1,519	1,7563	1845,4425
314,5	-	1,519	1,7646	1845,4342
315	-	1,519	1,7728	1845,4260
315,5	-	1,519	1,7811	1845,4177
316	-	1,519	1,7894	1845,4094
316,5	-	1,519	1,7977	1845,4011
317	-	1,519	1,8059	1845,3929
317,5	-	1,519	1,8142	1845,3846

318	-	1,519	1,8225	1845,3763
318,5	-	1,519	1,8308	1845,3680
319	-	1,519	1,8390	1845,3598
319,5	-	1,519	1,8473	1845,3515
320	-	1,519	1,8556	1845,3432
320,5	-	1,519	1,8639	1845,3349
321	-	1,519	1,8722	1845,3266
321,5	-	1,519	1,8804	1845,3184
322	-	1,519	1,8887	1845,3101
322,5	-	1,519	1,8970	1845,3018
323	-	1,519	1,9053	1845,2935
323,5	-	1,519	1,9136	1845,2852
324	-	1,519	1,9218	1845,2770
324,5	-	1,519	1,9301	1845,2687
325	-	1,519	1,9384	1845,2604
325,5	-	1,519	1,9467	1845,2521
326	-	1,519	1,9550	1845,2438
326,5	-	1,519	1,9632	1845,2356
327	-	1,519	1,9715	1845,2273
327,5	-	1,519	1,9798	1845,2190
328	-	1,519	1,9881	1845,2107
328,5	-	1,519	1,9964	1845,2024
329	-	1,519	2,0046	1845,1942
329,5	-	1,519	2,0129	1845,1859
330	-	1,519	2,0212	1845,1776
330,5	-	1,519	2,0295	1845,1693
331	-	1,519	2,0378	1845,1610
331,5	-	1,519	2,0460	1845,1528
332	-	1,519	2,0543	1845,1445
332,5	-	1,519	2,0626	1845,1362
333	-	1,519	2,0709	1845,1279
333,5	-	1,519	2,0792	1845,1196
334	-	1,519	2,0874	1845,1114
334,5	-	1,519	2,0957	1845,1031
335	-	1,519	2,1040	1845,0948
335,5	-	1,519	2,1123	1845,0865
336	-	1,519	2,1206	1845,0782
336,5	-	1,519	2,1288	1845,0700
337	-	1,519	2,1371	1845,0617
337,5	-	1,519	2,1454	1845,0534
338	-	1,519	2,1537	1845,0451
338,5	-	1,519	2,1620	1845,0368
339	-	1,519	2,1702	1845,0286

339,5	-	1,519	2,1785	1845,0203
340	-	1,519	2,1868	1845,0120
340,5	-	1,519	2,1933	1845,0055
341	-	1,519	2,1998	1844,9990
341,5	-	1,519	2,2064	1844,9924
342	-	1,519	2,2129	1844,9859
342,5	-	1,519	2,2194	1844,9794
343	-	1,519	2,2259	1844,9729
343,5	-	1,519	2,2325	1844,9663
344	-	1,519	2,2390	1844,9598
344,5	-	1,519	2,2455	1844,9533
345	-	1,519	2,2520	1844,9468
345,5	-	1,519	2,2586	1844,9402
346	-	1,519	2,2651	1844,9337
346,5	-	1,519	2,2716	1844,9272
347	-	1,519	2,2781	1844,9207
347,5	-	1,519	2,2847	1844,9141
348	-	1,519	2,2912	1844,9076
348,5	-	1,519	2,2977	1844,9011
349	-	1,519	2,3042	1844,8946
349,5	-	1,519	2,3108	1844,8880
350	-	1,519	2,3173	1844,8815
350,5	-	1,519	2,3238	1844,8750
351	-	1,519	2,3303	1844,8685
351,5	-	1,519	2,3369	1844,8619
352	-	1,519	2,3434	1844,8554
352,5	-	1,519	2,3499	1844,8489
353	-	1,519	2,3564	1844,8424
353,5	-	1,519	2,3630	1844,8358
354	-	1,519	2,3695	1844,8293
354,5	-	1,519	2,3760	1844,8228
355	-	1,519	2,3825	1844,8163
355,5	-	1,519	2,3891	1844,8097
356	-	1,519	2,3956	1844,8032
356,5	-	1,519	2,4021	1844,7967
357	-	1,519	2,4086	1844,7902
357,5	-	1,519	2,4152	1844,7836
358	-	1,519	2,4217	1844,7771
358,5	-	1,519	2,4282	1844,7706
359	-	1,519	2,4347	1844,7641
359,5	-	1,519	2,4413	1844,7575
360	-	1,519	2,4478	1844,7510
360,5	-	1,519	2,4528	1844,7460

361	-	1,519	2,4578	1844,7410
361,5	-	1,519	2,4628	1844,7360
362	-	1,519	2,4679	1844,7309
362,5	-	1,519	2,4729	1844,7259
363	-	1,519	2,4779	1844,7209
363,5	-	1,519	2,4829	1844,7159
364	-	1,519	2,4879	1844,7109
364,5	-	1,519	2,4929	1844,7059
365	-	1,519	2,4979	1844,7009
365,5	-	1,519	2,5030	1844,6958
366	-	1,519	2,5080	1844,6908
366,5	-	1,519	2,5130	1844,6858
367	-	1,519	2,5180	1844,6808
367,5	-	1,519	2,5230	1844,6758
368	-	1,519	2,5280	1844,6708
368,5	-	1,519	2,5331	1844,6657
369	-	1,519	2,5381	1844,6607
369,5	-	1,519	2,5431	1844,6557
370	-	1,519	2,5481	1844,6507
370,5	-	1,519	2,5561	1844,6427
371	-	1,519	2,5640	1844,6348
371,5	-	1,519	2,5720	1844,6268
372	-	1,519	2,5800	1844,6188
372,5	-	1,519	2,5879	1844,6109
373	-	1,519	2,5959	1844,6029
373,5	-	1,519	2,6039	1844,5949
374	-	1,519	2,6119	1844,5869
374,5	-	1,519	2,6198	1844,5790
<b>E6 - PTO 375</b>	1,402	1,519	2,6278	1844,5710
375,5	-	1,48	1,4870	1844,5640
376	-	1,48	1,4940	1844,5570
376,5	-	1,48	1,5009	1844,5501
377	-	1,48	1,5079	1844,5431
377,5	-	1,48	1,5149	1844,5361
378	-	1,48	1,5219	1844,5291
378,5	-	1,48	1,5289	1844,5221
379	-	1,48	1,5358	1844,5152
379,5	-	1,48	1,5428	1844,5082
380	-	1,48	1,5498	1844,5012
380,5	-	1,48	1,5546	1844,4964
381	-	1,48	1,5593	1844,4917
381,5	-	1,48	1,5641	1844,4869
382	-	1,48	1,5689	1844,4821

382,5	-	1,48	1,5736	1844,4774
383	-	1,48	1,5784	1844,4726
383,5	-	1,48	1,5832	1844,4678
384	-	1,48	1,5880	1844,4630
384,5	-	1,48	1,5927	1844,4583
385	-	1,48	1,5975	1844,4535
385,5	-	1,48	1,6023	1844,4487
386	-	1,48	1,6070	1844,4440
386,5	-	1,48	1,6118	1844,4392
387	-	1,48	1,6166	1844,4344
387,5	-	1,48	1,6213	1844,4297
388	-	1,48	1,6261	1844,4249
388,5	-	1,48	1,6309	1844,4201
389	-	1,48	1,6357	1844,4153
389,5	-	1,48	1,6404	1844,4106
390	-	1,48	1,6452	1844,4058
390,5	-	1,48	1,6500	1844,4010
391	-	1,48	1,6547	1844,3963
391,5	-	1,48	1,6595	1844,3915
392	-	1,48	1,6643	1844,3867
392,5	-	1,48	1,6690	1844,3820
393	-	1,48	1,6738	1844,3772
393,5	-	1,48	1,6786	1844,3724
394	-	1,48	1,6834	1844,3676
394,5	-	1,48	1,6881	1844,3629
395	-	1,48	1,6929	1844,3581
395,5	-	1,48	1,6962	1844,3548
396	-	1,48	1,6995	1844,3515
396,5	-	1,48	1,7029	1844,3481
397	-	1,48	1,7062	1844,3448
397,5	-	1,48	1,7095	1844,3415
398	-	1,48	1,7128	1844,3382
398,5	-	1,48	1,7161	1844,3349
399	-	1,48	1,7194	1844,3316
399,5	-	1,48	1,7228	1844,3282
400	-	1,48	1,7261	1844,3249
400,5	-	1,48	1,7294	1844,3216
401	-	1,48	1,7327	1844,3183
401,5	-	1,48	1,7360	1844,3150
402	-	1,48	1,7393	1844,3117
402,5	-	1,48	1,7427	1844,3083
403	-	1,48	1,7460	1844,3050
403,5	-	1,48	1,7493	1844,3017



404	-	1,48	1,7526	1844,2984
404,5	-	1,48	1,7559	1844,2951
405	-	1,48	1,7592	1844,2918
405,5	-	1,48	1,7626	1844,2884
406	-	1,48	1,7659	1844,2851
406,5	-	1,48	1,7692	1844,2818
407	-	1,48	1,7725	1844,2785
407,5	-	1,48	1,7758	1844,2752
408	-	1,48	1,7792	1844,2718
408,5	-	1,48	1,7825	1844,2685
409	-	1,48	1,7858	1844,2652
409,5	-	1,48	1,7891	1844,2619
410	-	1,48	1,7924	1844,2586
410,5	-	1,48	1,7957	1844,2553
411	-	1,48	1,7991	1844,2519
411,5	-	1,48	1,8024	1844,2486
412	-	1,48	1,8057	1844,2453
412,5	-	1,48	1,8090	1844,2420
413	-	1,48	1,8123	1844,2387
413,5	-	1,48	1,8156	1844,2354
414	-	1,48	1,8190	1844,2320
414,5	-	1,48	1,8223	1844,2287
415	-	1,48	1,8256	1844,2254
415,5	-	1,48	1,8282	1844,2228
416	-	1,48	1,8309	1844,2201
416,5	-	1,48	1,8335	1844,2175
417	-	1,48	1,8361	1844,2149
417,5	-	1,48	1,8387	1844,2123
418	-	1,48	1,8414	1844,2096
418,5	-	1,48	1,8440	1844,2070
419	-	1,48	1,8466	1844,2044
419,5	-	1,48	1,8492	1844,2018
420	-	1,48	1,8519	1844,1991
420,5	-	1,48	1,8545	1844,1965
421	-	1,48	1,8571	1844,1939
421,5	-	1,48	1,8598	1844,1912
422	-	1,48	1,8624	1844,1886
422,5	-	1,48	1,8650	1844,1860
423	-	1,48	1,8676	1844,1834
423,5	-	1,48	1,8703	1844,1807
424	-	1,48	1,8729	1844,1781
424,5	-	1,48	1,8755	1844,1755
425	-	1,48	1,8781	1844,1729

425,5	-	1,48	1,8808	1844,1702
426	-	1,48	1,8834	1844,1676
426,5	-	1,48	1,8860	1844,1650
427	-	1,48	1,8887	1844,1623
427,5	-	1,48	1,8913	1844,1597
428	-	1,48	1,8939	1844,1571
428,5	-	1,48	1,8965	1844,1545
429	-	1,48	1,8992	1844,1518
429,5	-	1,48	1,9018	1844,1492
430	-	1,48	1,9044	1844,1466
430,5	-	1,48	1,9071	1844,1439
431	-	1,48	1,9097	1844,1413
431,5	-	1,48	1,9123	1844,1387
432	-	1,48	1,9149	1844,1361
432,5	-	1,48	1,9176	1844,1334
433	-	1,48	1,9202	1844,1308
433,5	-	1,48	1,9228	1844,1282
434	-	1,48	1,9254	1844,1256
434,5	-	1,48	1,9281	1844,1229
435	-	1,48	1,9307	1844,1203
435,5	-	1,48	1,9341	1844,1169
436	-	1,48	1,9376	1844,1134
436,5	-	1,48	1,9410	1844,1100
437	-	1,48	1,9444	1844,1066
437,5	-	1,48	1,9479	1844,1031
438	-	1,48	1,9513	1844,0997
438,5	-	1,48	1,9547	1844,0963
439	-	1,48	1,9582	1844,0928
439,5	-	1,48	1,9616	1844,0894
440	-	1,48	1,9650	1844,0860
440,5	-	1,48	1,9685	1844,0825
441	-	1,48	1,9719	1844,0791
441,5	-	1,48	1,9754	1844,0756
442	-	1,48	1,9788	1844,0722
442,5	-	1,48	1,9822	1844,0688
443	-	1,48	1,9857	1844,0653
443,5	-	1,48	1,9891	1844,0619
444	-	1,48	1,9925	1844,0585
444,5	-	1,48	1,9960	1844,0550
445	-	1,48	1,9994	1844,0516
445,5	-	1,48	2,0008	1844,0502
446	-	1,48	2,0022	1844,0488
446,5	-	1,48	2,0035	1844,0475

447	-	1,48	2,0049	1844,0461
447,5	-	1,48	2,0063	1844,0447
448	-	1,48	2,0077	1844,0433
448,5	-	1,48	2,0091	1844,0419
449	-	1,48	2,0104	1844,0406
449,5	-	1,48	2,0118	1844,0392
<b>E7 - PTO 450</b>	1,4867	1,48	2,0132	1844,0378
450,5	-	1,504	1,5053	1844,0365
451	-	1,504	1,5065	1844,0353
451,5	-	1,504	1,5078	1844,0340
452	-	1,504	1,5091	1844,0327
452,5	-	1,504	1,5091	1844,0327
453	-	1,504	1,5190	1844,0228
453,5	-	1,504	1,5235	1844,0183
454	-	1,504	1,5244	1844,0174
454,5	-	1,504	1,5198	1844,0220
455	-	1,504	1,5227	1844,0191
455,5	-	1,504	1,5293	1844,0125
456	-	1,504	1,5305	1844,0113
456,5	-	1,504	1,5301	1844,0117
457	-	1,504	1,5309	1844,0109
457,5	-	1,504	1,5357	1844,0061
458	-	1,504	1,5384	1844,0034
458,5	-	1,504	1,5412	1844,0006
459	-	1,504	1,5427	1843,9991
459,5	-	1,504	1,5446	1843,9972
460	-	1,504	1,5455	1843,9963
460,5	-	1,504	1,5488	1843,9930
461	-	1,504	1,5522	1843,9896
461,5	-	1,504	1,5555	1843,9863
462	-	1,504	1,5588	1843,9830
462,5	-	1,504	1,5621	1843,9797
463	-	1,504	1,5655	1843,9763
463,5	-	1,504	1,5688	1843,9730
464	-	1,504	1,5721	1843,9697
464,5	-	1,504	1,5755	1843,9663
465	-	1,504	1,5788	1843,9630
465,5	-	1,504	1,5821	1843,9597
466	-	1,504	1,5855	1843,9563
466,5	-	1,504	1,5888	1843,9530
467	-	1,504	1,5921	1843,9497
467,5	-	1,504	1,5954	1843,9464
468	-	1,504	1,5988	1843,9430

468,5	-	1,504	1,6021	1843,9397
469	-	1,504	1,6054	1843,9364
469,5	-	1,504	1,6088	1843,9330
470	-	1,504	1,6121	1843,9297
470,5	-	1,504	1,6147	1843,9271
471	-	1,504	1,6172	1843,9246
471,5	-	1,504	1,6198	1843,9220
472	-	1,504	1,6223	1843,9195
472,5	-	1,504	1,6249	1843,9169
473	-	1,504	1,6274	1843,9144
473,5	-	1,504	1,6300	1843,9118
474	-	1,504	1,6325	1843,9093
474,5	-	1,504	1,6351	1843,9067
475	-	1,504	1,6376	1843,9042
475,5	-	1,504	1,6402	1843,9016
476	-	1,504	1,6427	1843,8991
476,5	-	1,504	1,6453	1843,8965
477	-	1,504	1,6478	1843,8940
477,5	-	1,504	1,6504	1843,8914
478	-	1,504	1,6529	1843,8889
478,5	-	1,504	1,6555	1843,8863
479	-	1,504	1,6580	1843,8838
479,5	-	1,504	1,6606	1843,8812
480	-	1,504	1,6631	1843,8787
480,5	-	1,504	1,6657	1843,8761
481	-	1,504	1,6683	1843,8735
481,5	-	1,504	1,6708	1843,8710
482	-	1,504	1,6734	1843,8684
482,5	-	1,504	1,6759	1843,8659
483	-	1,504	1,6785	1843,8633
483,5	-	1,504	1,6810	1843,8608
484	-	1,504	1,6836	1843,8582
484,5	-	1,504	1,6861	1843,8557
485	-	1,504	1,6887	1843,8531
485,5	-	1,504	1,6912	1843,8506
486	-	1,504	1,6938	1843,8480
486,5	-	1,504	1,6963	1843,8455
487	-	1,504	1,6989	1843,8429
487,5	-	1,504	1,7014	1843,8404
488	-	1,504	1,7040	1843,8378
488,5	-	1,504	1,7065	1843,8353
489	-	1,504	1,7091	1843,8327
489,5	-	1,504	1,7116	1843,8302

490	-	1,504	1,7142	1843,8276
490,5	-	1,504	1,7149	1843,8269
491	-	1,504	1,7156	1843,8262
491,5	-	1,504	1,7164	1843,8254
492	-	1,504	1,7171	1843,8247
492,5	-	1,504	1,7178	1843,8240
493	-	1,504	1,7185	1843,8233
493,5	-	1,504	1,7192	1843,8226
494	-	1,504	1,7199	1843,8219
494,5	-	1,504	1,7207	1843,8211
495	-	1,504	1,7214	1843,8204
495,5	-	1,504	1,7221	1843,8197
496	-	1,504	1,7228	1843,8190
496,5	-	1,504	1,7235	1843,8183
497	-	1,504	1,7242	1843,8176
497,5	-	1,504	1,7250	1843,8168
498	-	1,504	1,7257	1843,8161
498,5	-	1,504	1,7264	1843,8154
499	-	1,504	1,7271	1843,8147
499,5	-	1,504	1,7278	1843,8140
500	-	1,504	1,7285	1843,8133
500,5	-	1,504	1,7293	1843,8125
501	-	1,504	1,7300	1843,8118
501,5	-	1,504	1,7307	1843,8111
502	-	1,504	1,7314	1843,8104
502,5	-	1,504	1,7321	1843,8097
503	-	1,504	1,7329	1843,8089
503,5	-	1,504	1,7336	1843,8082
504	-	1,504	1,7343	1843,8075
504,5	-	1,504	1,7350	1843,8068
505	-	1,504	1,7357	1843,8061
505,5	-	1,504	1,7364	1843,8054
506	-	1,504	1,7372	1843,8046
506,5	-	1,504	1,7379	1843,8039
507	-	1,504	1,7386	1843,8032
507,5	-	1,504	1,7393	1843,8025
508	-	1,504	1,7400	1843,8018
508,5	-	1,504	1,7407	1843,8011
509	-	1,504	1,7415	1843,8003
509,5	-	1,504	1,7422	1843,7996
510	-	1,504	1,7429	1843,7989
510,5	-	1,504	1,7450	1843,7968
511	-	1,504	1,7472	1843,7946

511,5	-	1,504	1,7493	1843,7925
512	-	1,504	1,7514	1843,7904
512,5	-	1,504	1,7535	1843,7883
513	-	1,504	1,7557	1843,7861
513,5	-	1,504	1,7578	1843,7840
514	-	1,504	1,7599	1843,7819
514,5	-	1,504	1,7621	1843,7797
515	-	1,504	1,7642	1843,7776
515,5	-	1,504	1,7663	1843,7755
516	-	1,504	1,7685	1843,7733
516,5	-	1,504	1,7706	1843,7712
517	-	1,504	1,7727	1843,7691
517,5	-	1,504	1,7748	1843,7670
518	-	1,504	1,7770	1843,7648
518,5	-	1,504	1,7791	1843,7627
519	-	1,504	1,7812	1843,7606
519,5	-	1,504	1,7834	1843,7584
520	-	1,504	1,7855	1843,7563
520,5	-	1,504	1,7871	1843,7547
521	-	1,504	1,7887	1843,7531
521,5	-	1,504	1,7904	1843,7514
522	-	1,504	1,7920	1843,7498
522,5	-	1,504	1,7936	1843,7482
523	-	1,504	1,7952	1843,7466
523,5	-	1,504	1,7968	1843,7450
524	-	1,504	1,7985	1843,7433
524,5	-	1,504	1,8001	1843,7417
<b>E8 - PTO 525</b>	1,5058	1,504	1,8017	1843,7401
525,5	-	1,525	1,5275	1843,7376
526	-	1,525	1,5300	1843,7351
526,5	-	1,525	1,5325	1843,7326
527	-	1,525	1,5350	1843,7301
527,5	-	1,525	1,5375	1843,7276
528	-	1,525	1,5400	1843,7251
528,5	-	1,525	1,5425	1843,7226
529	-	1,525	1,5450	1843,7201
529,5	-	1,525	1,5475	1843,7176
530	-	1,525	1,5500	1843,7151
530,5	-	1,525	1,5509	1843,7142
531	-	1,525	1,5518	1843,7133
531,5	-	1,525	1,5527	1843,7124
532	-	1,525	1,5536	1843,7115
532,5	-	1,525	1,5545	1843,7106

533	-	1,525	1,5554	1843,7097
533,5	-	1,525	1,5563	1843,7088
534	-	1,525	1,5571	1843,7080
534,5	-	1,525	1,5580	1843,7071
535	-	1,525	1,5589	1843,7062
535,5	-	1,525	1,5598	1843,7053
536	-	1,525	1,5607	1843,7044
536,5	-	1,525	1,5616	1843,7035
537	-	1,525	1,5625	1843,7026
537,5	-	1,525	1,5634	1843,7017
538	-	1,525	1,5643	1843,7008
538,5	-	1,525	1,5652	1843,6999
539	-	1,525	1,5661	1843,6990
539,5	-	1,525	1,5670	1843,6981
540	-	1,525	1,5679	1843,6972
540,5	-	1,525	1,5688	1843,6963
541	-	1,525	1,5697	1843,6954
541,5	-	1,525	1,5705	1843,6946
542	-	1,525	1,5714	1843,6937
542,5	-	1,525	1,5723	1843,6928
543	-	1,525	1,5732	1843,6919
543,5	-	1,525	1,5741	1843,6910
544	-	1,525	1,5750	1843,6901
544,5	-	1,525	1,5759	1843,6892
545	-	1,525	1,5768	1843,6883
545,5	-	1,525	1,5785	1843,6866
546	-	1,525	1,5802	1843,6849
546,5	-	1,525	1,5819	1843,6832
547	-	1,525	1,5837	1843,6814
547,5	-	1,525	1,5854	1843,6797
548	-	1,525	1,5871	1843,6780
548,5	-	1,525	1,5888	1843,6763
549	-	1,525	1,5905	1843,6746
549,5	-	1,525	1,5922	1843,6729
550	-	1,525	1,5939	1843,6712
550,5	-	1,525	1,5957	1843,6694
551	-	1,525	1,5974	1843,6677
551,5	-	1,525	1,5991	1843,6660
552	-	1,525	1,6008	1843,6643
552,5	-	1,525	1,6025	1843,6626
553	-	1,525	1,6042	1843,6609
553,5	-	1,525	1,6060	1843,6591
554	-	1,525	1,6077	1843,6574

554,5	-	1,525	1,6094	1843,6557
555	-	1,525	1,6111	1843,6540
555,5	-	1,525	1,6128	1843,6523
556	-	1,525	1,6145	1843,6506
556,5	-	1,525	1,6162	1843,6489
557	-	1,525	1,6180	1843,6471
557,5	-	1,525	1,6197	1843,6454
558	-	1,525	1,6214	1843,6437
558,5	-	1,525	1,6231	1843,6420
559	-	1,525	1,6248	1843,6403
559,5	-	1,525	1,6265	1843,6386
560	-	1,525	1,6282	1843,6369
560,5	-	1,525	1,6300	1843,6351
561	-	1,525	1,6317	1843,6334
561,5	-	1,525	1,6334	1843,6317
562	-	1,525	1,6351	1843,6300
562,5	-	1,525	1,6368	1843,6283
563	-	1,525	1,6385	1843,6266
563,5	-	1,525	1,6403	1843,6248
564	-	1,525	1,6420	1843,6231
564,5	-	1,525	1,6437	1843,6214
565	-	1,525	1,6454	1843,6197
565,5	-	1,525	1,6480	1843,6171
566	-	1,525	1,6505	1843,6146
566,5	-	1,525	1,6531	1843,6120
567	-	1,525	1,6557	1843,6094
567,5	-	1,525	1,6583	1843,6068
568	-	1,525	1,6608	1843,6043
568,5	-	1,525	1,6634	1843,6017
569	-	1,525	1,6660	1843,5991
569,5	-	1,525	1,6686	1843,5965
570	-	1,525	1,6711	1843,5940
570,5	-	1,525	1,6737	1843,5914
571	-	1,525	1,6763	1843,5888
571,5	-	1,525	1,6788	1843,5863
572	-	1,525	1,6814	1843,5837
572,5	-	1,525	1,6840	1843,5811
573	-	1,525	1,6866	1843,5785
573,5	-	1,525	1,6891	1843,5760
574	-	1,525	1,6917	1843,5734
574,5	-	1,525	1,6943	1843,5708
575	-	1,525	1,6968	1843,5683
575,5	-	1,525	1,6994	1843,5657



576	-	1,525	1,7020	1843,5631
576,5	-	1,525	1,7046	1843,5605
577	-	1,525	1,7071	1843,5580
577,5	-	1,525	1,7097	1843,5554
578	-	1,525	1,7123	1843,5528
578,5	-	1,525	1,7149	1843,5502
579	-	1,525	1,7174	1843,5477
579,5	-	1,525	1,7200	1843,5451
580	-	1,525	1,7226	1843,5425
580,5	-	1,525	1,7251	1843,5400
581	-	1,525	1,7277	1843,5374
581,5	-	1,525	1,7303	1843,5348
582	-	1,525	1,7329	1843,5322
582,5	-	1,525	1,7354	1843,5297
583	-	1,525	1,7380	1843,5271
583,5	-	1,525	1,7406	1843,5245
584	-	1,525	1,7432	1843,5219
584,5	-	1,525	1,7457	1843,5194
585	-	1,525	1,7483	1843,5168
585,5	-	1,525	1,7502	1843,5149
586	-	1,525	1,7520	1843,5131
586,5	-	1,525	1,7539	1843,5112
587	-	1,525	1,7558	1843,5093
587,5	-	1,525	1,7493	1843,5158
588	-	1,525	1,7429	1843,5222
588,5	-	1,525	1,7463	1843,5188
589	-	1,525	1,7497	1843,5154
589,5	-	1,525	1,7531	1843,5120
590	-	1,525	1,7566	1843,5085
590,5	-	1,525	1,7600	1843,5051
591	-	1,525	1,7634	1843,5017
591,5	-	1,525	1,7668	1843,4983
592	-	1,525	1,7702	1843,4949
592,5	-	1,525	1,7736	1843,4915
593	-	1,525	1,7770	1843,4881
593,5	-	1,525	1,7805	1843,4846
594	-	1,525	1,7839	1843,4812
594,5	-	1,525	1,7873	1843,4778
595	-	1,525	1,7907	1843,4744
595,5	-	1,525	1,7952	1843,4699
596	-	1,525	1,7997	1843,4654
596,5	-	1,525	1,8042	1843,4609
597	-	1,525	1,8087	1843,4564

597,5	-	1,525	1,8132	1843,4519
598	-	1,525	1,8177	1843,4474
598,5	-	1,525	1,8222	1843,4429
599	-	1,525	1,8267	1843,4384
599,5	-	1,525	1,8312	1843,4339
<b>E9 - PTO 600</b>	1,4718	1,525	1,8357	1843,4294
600,5	-	1,519	1,5234	1843,4250
601	-	1,519	1,5279	1843,4205
601,5	-	1,519	1,5323	1843,4161
602	-	1,519	1,5367	1843,4117
602,5	-	1,519	1,5411	1843,4073
603	-	1,519	1,5456	1843,4028
603,5	-	1,519	1,5500	1843,3984
604	-	1,519	1,5544	1843,3940
604,5	-	1,519	1,5589	1843,3895
605	-	1,519	1,5633	1843,3851
605,5	-	1,519	1,5671	1843,3813
606	-	1,519	1,5710	1843,3774
606,5	-	1,519	1,5748	1843,3736
607	-	1,519	1,5787	1843,3697
607,5	-	1,519	1,5825	1843,3659
608	-	1,519	1,5864	1843,3620
608,5	-	1,519	1,5902	1843,3582
609	-	1,519	1,5940	1843,3544
609,5	-	1,519	1,5979	1843,3505
610	-	1,519	1,6017	1843,3467
610,5	-	1,519	1,6056	1843,3428
611	-	1,519	1,6094	1843,3390
611,5	-	1,519	1,6133	1843,3351
612	-	1,519	1,6171	1843,3313
612,5	-	1,519	1,6209	1843,3275
613	-	1,519	1,6248	1843,3236
613,5	-	1,519	1,6286	1843,3198
614	-	1,519	1,6325	1843,3159
614,5	-	1,519	1,6363	1843,3121
615	-	1,519	1,6402	1843,3082
615,5	-	1,519	1,6440	1843,3044
616	-	1,519	1,6479	1843,3005
616,5	-	1,519	1,6517	1843,2967
617	-	1,519	1,6555	1843,2929
617,5	-	1,519	1,6594	1843,2890
618	-	1,519	1,6632	1843,2852
618,5	-	1,519	1,6671	1843,2813

619	-	1,519	1,6709	1843,2775
619,5	-	1,519	1,6748	1843,2736
620	-	1,519	1,6786	1843,2698
620,5	-	1,519	1,6822	1843,2662
621	-	1,519	1,6858	1843,2626
621,5	-	1,519	1,6893	1843,2591
622	-	1,519	1,6929	1843,2555
622,5	-	1,519	1,6965	1843,2519
623	-	1,519	1,7001	1843,2483
623,5	-	1,519	1,7036	1843,2448
624	-	1,519	1,7072	1843,2412
624,5	-	1,519	1,7108	1843,2376
625	-	1,519	1,7144	1843,2340
625,5	-	1,519	1,7180	1843,2304
626	-	1,519	1,7215	1843,2269
626,5	-	1,519	1,7251	1843,2233
627	-	1,519	1,7287	1843,2197
627,5	-	1,519	1,7323	1843,2161
628	-	1,519	1,7358	1843,2126
628,5	-	1,519	1,7394	1843,2090
629	-	1,519	1,7430	1843,2054
629,5	-	1,519	1,7466	1843,2018
630	-	1,519	1,7501	1843,1983
630,5	-	1,519	1,7537	1843,1947
631	-	1,519	1,7573	1843,1911
631,5	-	1,519	1,7609	1843,1875
632	-	1,519	1,7645	1843,1839
632,5	-	1,519	1,7680	1843,1804
633	-	1,519	1,7716	1843,1768
633,5	-	1,519	1,7752	1843,1732
634	-	1,519	1,7788	1843,1696
634,5	-	1,519	1,7823	1843,1661
635	-	1,519	1,7859	1843,1625
635,5	-	1,519	1,7895	1843,1589
636	-	1,519	1,7931	1843,1553
636,5	-	1,519	1,7967	1843,1517
637	-	1,519	1,8002	1843,1482
637,5	-	1,519	1,8038	1843,1446
638	-	1,519	1,8074	1843,1410
638,5	-	1,519	1,8110	1843,1374
639	-	1,519	1,8145	1843,1339
639,5	-	1,519	1,8181	1843,1303
640	-	1,519	1,8217	1843,1267

640,5	-	1,519	1,8258	1843,1226
641	-	1,519	1,8299	1843,1185
641,5	-	1,519	1,8340	1843,1144
642	-	1,519	1,8381	1843,1103
642,5	-	1,519	1,8422	1843,1062
643	-	1,519	1,8463	1843,1021
643,5	-	1,519	1,8504	1843,0980
644	-	1,519	1,8545	1843,0939
644,5	-	1,519	1,8586	1843,0898
645	-	1,519	1,8627	1843,0857
645,5	-	1,519	1,8668	1843,0816
646	-	1,519	1,8709	1843,0775
646,5	-	1,519	1,8750	1843,0734
647	-	1,519	1,8791	1843,0693
647,5	-	1,519	1,8832	1843,0652
648	-	1,519	1,8873	1843,0611
648,5	-	1,519	1,8914	1843,0570
649	-	1,519	1,8955	1843,0529
649,5	-	1,519	1,8996	1843,0488
650	-	1,519	1,9037	1843,0447
650,5	-	1,519	1,9079	1843,0405
651	-	1,519	1,9120	1843,0364
651,5	-	1,519	1,9161	1843,0323
652	-	1,519	1,9202	1843,0282
652,5	-	1,519	1,9243	1843,0241
653	-	1,519	1,9284	1843,0200
653,5	-	1,519	1,9325	1843,0159
654	-	1,519	1,9366	1843,0118
654,5	-	1,519	1,9407	1843,0077
655	-	1,519	1,9448	1843,0036
655,5	-	1,519	1,9489	1842,9995
656	-	1,519	1,9530	1842,9954
656,5	-	1,519	1,9571	1842,9913
657	-	1,519	1,9612	1842,9872
657,5	-	1,519	1,9653	1842,9831
658	-	1,519	1,9694	1842,9790
658,5	-	1,519	1,9735	1842,9749
659	-	1,519	1,9776	1842,9708
659,5	-	1,519	1,9817	1842,9667
660	-	1,519	1,9858	1842,9626
660,5	-	1,519	1,9911	1842,9573
661	-	1,519	1,9964	1842,9520
661,5	-	1,519	2,0018	1842,9466

662	-	1,519	2,0071	1842,9413
662,5	-	1,519	2,0124	1842,9360
663	-	1,519	2,0177	1842,9307
663,5	-	1,519	2,0230	1842,9254
664	-	1,519	2,0284	1842,9200
664,5	-	1,519	2,0337	1842,9147
665	-	1,519	2,0390	1842,9094
665,5	-	1,519	2,0443	1842,9041
666	-	1,519	2,0496	1842,8988
666,5	-	1,519	2,0550	1842,8934
667	-	1,519	2,0603	1842,8881
667,5	-	1,519	2,0656	1842,8828
668	-	1,519	2,0709	1842,8775
668,5	-	1,519	2,0762	1842,8722
669	-	1,519	2,0816	1842,8668
669,5	-	1,519	2,0869	1842,8615
670	-	1,519	2,0922	1842,8562
670,5	-	1,519	2,0937	1842,8547
671	-	1,519	2,0953	1842,8531
671,5	-	1,519	2,0968	1842,8516
672	-	1,519	2,0984	1842,8500
672,5	-	1,519	2,0999	1842,8485
673	-	1,519	2,1015	1842,8469
673,5	-	1,519	2,1030	1842,8454
674	-	1,519	2,1046	1842,8438
674,5	-	1,519	2,1061	1842,8423
<b>E10 - PTO 675</b>	1,4089	1,519	2,1077	1842,8407
675,5	-	1,445	1,4494	1842,8363
676	-	1,445	1,4539	1842,8318
676,5	-	1,445	1,4583	1842,8274
677	-	1,445	1,4628	1842,8229
677,5	-	1,445	1,4672	1842,8185
678	-	1,445	1,4716	1842,8141
678,5	-	1,445	1,4761	1842,8096
679	-	1,445	1,4805	1842,8052
679,5	-	1,445	1,4850	1842,8007
680	-	1,445	1,4894	1842,7963
680,5	-	1,445	1,4947	1842,7910
681	-	1,445	1,5000	1842,7857
681,5	-	1,445	1,5053	1842,7804
682	-	1,445	1,5106	1842,7751
682,5	-	1,445	1,5159	1842,7698
683	-	1,445	1,5212	1842,7645

683,5	-	1,445	1,5265	1842,7592
684	-	1,445	1,5318	1842,7539
684,5	-	1,445	1,5371	1842,7486
685	-	1,445	1,5424	1842,7433
685,5	-	1,445	1,5477	1842,7380
686	-	1,445	1,5530	1842,7327
686,5	-	1,445	1,5583	1842,7274
687	-	1,445	1,5636	1842,7221
687,5	-	1,445	1,5689	1842,7168
688	-	1,445	1,5742	1842,7115
688,5	-	1,445	1,5795	1842,7062
689	-	1,445	1,5848	1842,7009
689,5	-	1,445	1,5901	1842,6956
690	-	1,445	1,5954	1842,6903
690,5	-	1,445	1,6007	1842,6850
691	-	1,445	1,6060	1842,6797
691,5	-	1,445	1,6113	1842,6744
692	-	1,445	1,6166	1842,6691
692,5	-	1,445	1,6219	1842,6638
693	-	1,445	1,6272	1842,6585
693,5	-	1,445	1,6325	1842,6532
694	-	1,445	1,6378	1842,6479
694,5	-	1,445	1,6431	1842,6426
695	-	1,445	1,6484	1842,6373
695,5	-	1,445	1,6544	1842,6313
696	-	1,445	1,6604	1842,6253
696,5	-	1,445	1,6663	1842,6194
697	-	1,445	1,6723	1842,6134
697,5	-	1,445	1,6783	1842,6074
698	-	1,445	1,6843	1842,6014
698,5	-	1,445	1,6902	1842,5955
699	-	1,445	1,6962	1842,5895
699,5	-	1,445	1,7022	1842,5835
700	-	1,445	1,7082	1842,5775
700,5	-	1,445	1,7142	1842,5715
701	-	1,445	1,7201	1842,5656
701,5	-	1,445	1,7261	1842,5596
702	-	1,445	1,7321	1842,5536
702,5	-	1,445	1,7381	1842,5476
703	-	1,445	1,7440	1842,5417
703,5	-	1,445	1,7500	1842,5357
704	-	1,445	1,7560	1842,5297
704,5	-	1,445	1,7620	1842,5237

705	-	1,445	1,7679	1842,5178
705,5	-	1,445	1,7739	1842,5118
706	-	1,445	1,7799	1842,5058
706,5	-	1,445	1,7859	1842,4998
707	-	1,445	1,7919	1842,4938
707,5	-	1,445	1,7978	1842,4879
708	-	1,445	1,8038	1842,4819
708,5	-	1,445	1,8098	1842,4759
709	-	1,445	1,8158	1842,4699
709,5	-	1,445	1,8217	1842,4640
710	-	1,445	1,8277	1842,4580
710,5	-	1,445	1,8337	1842,4520
711	-	1,445	1,8397	1842,4460
711,5	-	1,445	1,8457	1842,4400
712	-	1,445	1,8516	1842,4341
712,5	-	1,445	1,8576	1842,4281
713	-	1,445	1,8636	1842,4221
713,5	-	1,445	1,8696	1842,4161
714	-	1,445	1,8755	1842,4102
714,5	-	1,445	1,8815	1842,4042
715	-	1,445	1,8875	1842,3982
715,5	-	1,445	1,8935	1842,3922
716	-	1,445	1,8994	1842,3863
716,5	-	1,445	1,9054	1842,3803
717	-	1,445	1,9113	1842,3744
717,5	-	1,445	1,9173	1842,3684
718	-	1,445	1,9232	1842,3625
718,5	-	1,445	1,9292	1842,3565
719	-	1,445	1,9351	1842,3506
719,5	-	1,445	1,9411	1842,3446
720	-	1,445	1,9470	1842,3387
720,5	-	1,445	1,9530	1842,3327
721	-	1,445	1,9590	1842,3267
721,5	-	1,445	1,9649	1842,3208
722	-	1,445	1,9709	1842,3148
722,5	-	1,445	1,9768	1842,3089
723	-	1,445	1,9828	1842,3029
723,5	-	1,445	1,9887	1842,2970
724	-	1,445	1,9947	1842,2910
724,5	-	1,445	2,0006	1842,2851
725	-	1,445	2,0066	1842,2791
725,5	-	1,445	2,0126	1842,2731
726	-	1,445	2,0185	1842,2672

726,5	-	1,445	2,0245	1842,2612
727	-	1,445	2,0304	1842,2553
727,5	-	1,445	2,0364	1842,2493
728	-	1,445	2,0423	1842,2434
728,5	-	1,445	2,0483	1842,2374
729	-	1,445	2,0542	1842,2315
729,5	-	1,445	2,0602	1842,2255
730	-	1,445	2,0661	1842,2196
730,5	-	1,445	2,0721	1842,2136
731	-	1,445	2,0781	1842,2076
731,5	-	1,445	2,0840	1842,2017
732	-	1,445	2,0900	1842,1957
732,5	-	1,445	2,0959	1842,1898
733	-	1,445	2,1019	1842,1838
733,5	-	1,445	2,1078	1842,1779
734	-	1,445	2,1138	1842,1719
734,5	-	1,445	2,1197	1842,1660
735	-	1,445	2,1257	1842,1600
735,5	-	1,445	2,1311	1842,1546
736	-	1,445	2,1364	1842,1493
736,5	-	1,445	2,1418	1842,1439
737	-	1,445	2,1472	1842,1385
737,5	-	1,445	2,1525	1842,1332
738	-	1,445	2,1579	1842,1278
738,5	-	1,445	2,1633	1842,1224
739	-	1,445	2,1686	1842,1171
739,5	-	1,445	2,1740	1842,1117
740	-	1,445	2,1793	1842,1064
740,5	-	1,445	2,1847	1842,1010
741	-	1,445	2,1901	1842,0956
741,5	-	1,445	2,1954	1842,0903
742	-	1,445	2,2008	1842,0849
742,5	-	1,445	2,2062	1842,0795
743	-	1,445	2,2115	1842,0742
743,5	-	1,445	2,2169	1842,0688
744	-	1,445	2,2223	1842,0634
744,5	-	1,445	2,2276	1842,0581
745	-	1,445	2,2330	1842,0527
745,5	-	1,445	2,2379	1842,0478
746	-	1,445	2,2428	1842,0429
746,5	-	1,445	2,2477	1842,0380
747	-	1,445	2,2526	1842,0331
747,5	-	1,445	2,2575	1842,0282



748	-	1,445	2,2625	1842,0232
748,5	-	1,445	2,2674	1842,0183
749	-	1,445	2,2723	1842,0134
749,5	-	1,445	2,2772	1842,0085
<b>E11 - PTO 750</b>	1,4578	1,445	2,2821	1842,0036
750,5	-	1,51	1,5156	1841,9980
751	-	1,51	1,5212	1841,9924
751,5	-	1,51	1,5268	1841,9868
752	-	1,51	1,5324	1841,9812
752,5	-	1,51	1,5379	1841,9757
753	-	1,51	1,5435	1841,9701
753,5	-	1,51	1,5491	1841,9645
754	-	1,51	1,5547	1841,9589
754,5	-	1,51	1,5603	1841,9533
755	-	1,51	1,5659	1841,9477
755,5	-	1,51	1,5705	1841,9431
756	-	1,51	1,5751	1841,9385
756,5	-	1,51	1,5797	1841,9339
757	-	1,51	1,5843	1841,9293
757,5	-	1,51	1,5888	1841,9248
758	-	1,51	1,5934	1841,9202
758,5	-	1,51	1,5980	1841,9156
759	-	1,51	1,6026	1841,9110
759,5	-	1,51	1,6072	1841,9064
760	-	1,51	1,6118	1841,9018
760,5	-	1,51	1,6164	1841,8972
761	-	1,51	1,6210	1841,8926
761,5	-	1,51	1,6256	1841,8880
762	-	1,51	1,6302	1841,8834
762,5	-	1,51	1,6347	1841,8789
763	-	1,51	1,6393	1841,8743
763,5	-	1,51	1,6439	1841,8697
764	-	1,51	1,6485	1841,8651
764,5	-	1,51	1,6531	1841,8605
765	-	1,51	1,6577	1841,8559
765,5	-	1,51	1,6623	1841,8513
766	-	1,51	1,6669	1841,8467
766,5	-	1,51	1,6715	1841,8421
767	-	1,51	1,6761	1841,8375
767,5	-	1,51	1,6806	1841,8330
768	-	1,51	1,6852	1841,8284
768,5	-	1,51	1,6898	1841,8238
769	-	1,51	1,6944	1841,8192

769,5	-	1,51	1,6990	1841,8146
770	-	1,51	1,7036	1841,8100
770,5	-	1,51	1,7067	1841,8069
771	-	1,51	1,7098	1841,8038
771,5	-	1,51	1,7129	1841,8007
772	-	1,51	1,7159	1841,7977
772,5	-	1,51	1,7190	1841,7946
773	-	1,51	1,7221	1841,7915
773,5	-	1,51	1,7252	1841,7884
774	-	1,51	1,7283	1841,7853
774,5	-	1,51	1,7314	1841,7822
775	-	1,51	1,7345	1841,7791
775,5	-	1,51	1,7376	1841,7760
776	-	1,51	1,7406	1841,7730
776,5	-	1,51	1,7437	1841,7699
777	-	1,51	1,7468	1841,7668
777,5	-	1,51	1,7499	1841,7637
778	-	1,51	1,7530	1841,7606
778,5	-	1,51	1,7561	1841,7575
779	-	1,51	1,7592	1841,7544
779,5	-	1,51	1,7623	1841,7513
780	-	1,51	1,7653	1841,7483
780,5	-	1,51	1,7684	1841,7452
781	-	1,51	1,7715	1841,7421
781,5	-	1,51	1,7746	1841,7390
782	-	1,51	1,7777	1841,7359
782,5	-	1,51	1,7808	1841,7328
783	-	1,51	1,7839	1841,7297
783,5	-	1,51	1,7870	1841,7266
784	-	1,51	1,7900	1841,7236
784,5	-	1,51	1,7931	1841,7205
785	-	1,51	1,7962	1841,7174
785,5	-	1,51	1,7993	1841,7143
786	-	1,51	1,8024	1841,7112
786,5	-	1,51	1,8055	1841,7081
787	-	1,51	1,8086	1841,7050
787,5	-	1,51	1,8117	1841,7019
788	-	1,51	1,8147	1841,6989
788,5	-	1,51	1,8178	1841,6958
789	-	1,51	1,8209	1841,6927
789,5	-	1,51	1,8240	1841,6896
790	-	1,51	1,8271	1841,6865
790,5	-	1,51	1,8292	1841,6844

791	-	1,51	1,8314	1841,6822
791,5	-	1,51	1,8335	1841,6801
792	-	1,51	1,8357	1841,6779
792,5	-	1,51	1,8378	1841,6758
793	-	1,51	1,8399	1841,6737
793,5	-	1,51	1,8421	1841,6715
794	-	1,51	1,8442	1841,6694
794,5	-	1,51	1,8464	1841,6672
795	-	1,51	1,8485	1841,6651
795,5	-	1,51	1,8506	1841,6630
796	-	1,51	1,8528	1841,6608
796,5	-	1,51	1,8549	1841,6587
797	-	1,51	1,8571	1841,6565
797,5	-	1,51	1,8592	1841,6544
798	-	1,51	1,8613	1841,6523
798,5	-	1,51	1,8635	1841,6501
799	-	1,51	1,8656	1841,6480
799,5	-	1,51	1,8678	1841,6458
800	-	1,51	1,8699	1841,6437
800,5	-	1,51	1,8720	1841,6416
801	-	1,51	1,8742	1841,6394
801,5	-	1,51	1,8763	1841,6373
802	-	1,51	1,8785	1841,6351
802,5	-	1,51	1,8806	1841,6330
803	-	1,51	1,8827	1841,6309
803,5	-	1,51	1,8849	1841,6287
804	-	1,51	1,8870	1841,6266
804,5	-	1,51	1,8892	1841,6244
805	-	1,51	1,8913	1841,6223
805,5	-	1,51	1,8934	1841,6202
806	-	1,51	1,8956	1841,6180
806,5	-	1,51	1,8977	1841,6159
807	-	1,51	1,8999	1841,6137
807,5	-	1,51	1,9020	1841,6116
808	-	1,51	1,9041	1841,6095
808,5	-	1,51	1,9063	1841,6073
809	-	1,51	1,9084	1841,6052
809,5	-	1,51	1,9106	1841,6030
810	-	1,51	1,9127	1841,6009
810,5	-	1,51	1,9136	1841,6000
811	-	1,51	1,9145	1841,5991
811,5	-	1,51	1,9154	1841,5982
812	-	1,51	1,9163	1841,5973

812,5	-	1,51	1,9172	1841,5964
813	-	1,51	1,9182	1841,5954
813,5	-	1,51	1,9191	1841,5945
814	-	1,51	1,9200	1841,5936
814,5	-	1,51	1,9209	1841,5927
815	-	1,51	1,9218	1841,5918
815,5	-	1,51	1,9227	1841,5909
816	-	1,51	1,9236	1841,5900
816,5	-	1,51	1,9245	1841,5891
817	-	1,51	1,9254	1841,5882
817,5	-	1,51	1,9263	1841,5873
818	-	1,51	1,9273	1841,5863
818,5	-	1,51	1,9282	1841,5854
819	-	1,51	1,9291	1841,5845
819,5	-	1,51	1,9300	1841,5836
820	-	1,51	1,9309	1841,5827
820,5	-	1,51	1,9339	1841,5797
821	-	1,51	1,9370	1841,5766
821,5	-	1,51	1,9400	1841,5736
822	-	1,51	1,9431	1841,5705
822,5	-	1,51	1,9461	1841,5675
823	-	1,51	1,9491	1841,5645
823,5	-	1,51	1,9522	1841,5614
824	-	1,51	1,9552	1841,5584
824,5	-	1,51	1,9583	1841,5553
<b>E12 - PTO 825</b>	1,4813	1,51	1,9613	1841,5523
825,5	-	1,513	1,5139	1841,5514
826	-	1,513	1,5149	1841,5504
826,5	-	1,513	1,5158	1841,5495
827	-	1,513	1,5167	1841,5486
827,5	-	1,513	1,5176	1841,5477
828	-	1,513	1,5186	1841,5467
828,5	-	1,513	1,5195	1841,5458
829	-	1,513	1,5204	1841,5449
829,5	-	1,513	1,5214	1841,5439
830	-	1,513	1,5223	1841,5430
830,5	-	1,513	1,5230	1841,5423
831	-	1,513	1,5238	1841,5415
831,5	-	1,513	1,5245	1841,5408
832	-	1,513	1,5252	1841,5401
832,5	-	1,513	1,5260	1841,5393
833	-	1,513	1,5267	1841,5386
833,5	-	1,513	1,5275	1841,5378

834	-	1,513	1,5282	1841,5371
834,5	-	1,513	1,5289	1841,5364
835	-	1,513	1,5297	1841,5356
835,5	-	1,513	1,5304	1841,5349
836	-	1,513	1,5311	1841,5342
836,5	-	1,513	1,5319	1841,5334
837	-	1,513	1,5326	1841,5327
837,5	-	1,513	1,5333	1841,5320
838	-	1,513	1,5341	1841,5312
838,5	-	1,513	1,5348	1841,5305
839	-	1,513	1,5356	1841,5297
839,5	-	1,513	1,5363	1841,5290
840	-	1,513	1,5370	1841,5283
840,5	-	1,513	1,5378	1841,5275
841	-	1,513	1,5385	1841,5268
841,5	-	1,513	1,5392	1841,5261
842	-	1,513	1,5400	1841,5253
842,5	-	1,513	1,5407	1841,5246
843	-	1,513	1,5415	1841,5238
843,5	-	1,513	1,5422	1841,5231
844	-	1,513	1,5429	1841,5224
844,5	-	1,513	1,5437	1841,5216
845	-	1,513	1,5384	1841,5269
845,5	-	1,513	1,5452	1841,5201
846	-	1,513	1,5460	1841,5193
846,5	-	1,513	1,5468	1841,5185
847	-	1,513	1,5476	1841,5177
847,5	-	1,513	1,5484	1841,5169
848	-	1,513	1,5492	1841,5161
848,5	-	1,513	1,5499	1841,5154
849	-	1,513	1,5507	1841,5146
849,5	-	1,513	1,5515	1841,5138
850	-	1,513	1,5460	1841,5193
850,5	-	1,513	1,5531	1841,5122
851	-	1,513	1,5539	1841,5114
851,5	-	1,513	1,5547	1841,5106
852	-	1,513	1,5555	1841,5098
852,5	-	1,513	1,5563	1841,5090
853	-	1,513	1,5571	1841,5082
853,5	-	1,513	1,5579	1841,5074
854	-	1,513	1,5587	1841,5066
854,5	-	1,513	1,5595	1841,5058
855	-	1,513	1,5602	1841,5051

855,5	-	1,513	1,5610	1841,5043
856	-	1,513	1,5618	1841,5035
856,5	-	1,513	1,5626	1841,5027
857	-	1,513	1,5634	1841,5019
857,5	-	1,513	1,5642	1841,5011
858	-	1,513	1,5650	1841,5003
858,5	-	1,513	1,5658	1841,4995
859	-	1,513	1,5666	1841,4987
859,5	-	1,513	1,5674	1841,4979
860	-	1,513	1,5682	1841,4971
860,5	-	1,513	1,5690	1841,4963
861	-	1,513	1,5698	1841,4955
861,5	-	1,513	1,5706	1841,4947
862	-	1,513	1,5713	1841,4940
862,5	-	1,513	1,5721	1841,4932
863	-	1,513	1,5729	1841,4924
863,5	-	1,513	1,5737	1841,4916
864	-	1,513	1,5745	1841,4908
864,5	-	1,513	1,5689	1841,4964
865	-	1,513	1,5761	1841,4892
865,5	-	1,513	1,5781	1841,4872
866	-	1,513	1,5801	1841,4852
866,5	-	1,513	1,5821	1841,4832
867	-	1,513	1,5841	1841,4812
867,5	-	1,513	1,5861	1841,4792
868	-	1,513	1,5881	1841,4772
868,5	-	1,513	1,5901	1841,4752
869	-	1,513	1,5921	1841,4732
869,5	-	1,513	1,5941	1841,4712
870	-	1,513	1,5961	1841,4692
870,5	-	1,513	1,5981	1841,4672
871	-	1,513	1,6001	1841,4652
871,5	-	1,513	1,6020	1841,4633
872	-	1,513	1,6040	1841,4613
872,5	-	1,513	1,6060	1841,4593
873	-	1,513	1,6080	1841,4573
873,5	-	1,513	1,6100	1841,4553
874	-	1,513	1,6120	1841,4533
874,5	-	1,513	1,6140	1841,4513
875	-	1,513	1,6160	1841,4493
875,5	-	1,513	1,6180	1841,4473
876	-	1,513	1,6200	1841,4453
876,5	-	1,513	1,6220	1841,4433

877	-	1,513	1,6240	1841,4413
877,5	-	1,513	1,6260	1841,4393
878	-	1,513	1,6280	1841,4373
878,5	-	1,513	1,6283	1841,4370
879	-	1,513	1,6287	1841,4366
879,5	-	1,513	1,6290	1841,4363
880	-	1,513	1,6293	1841,4360
880,5	-	1,513	1,6297	1841,4356
881	-	1,513	1,6300	1841,4353
881,5	-	1,513	1,6303	1841,4350
882	-	1,513	1,6307	1841,4346
882,5	-	1,513	1,6310	1841,4343
883	-	1,513	1,6314	1841,4339
883,5	-	1,513	1,6317	1841,4336
884	-	1,513	1,6320	1841,4333
884,5	-	1,513	1,6324	1841,4329
885	-	1,513	1,6327	1841,4326
885,5	-	1,513	1,6286	1841,4367
886	-	1,513	1,6366	1841,4287
886,5	-	1,513	1,6386	1841,4267
887	-	1,513	1,6405	1841,4248
887,5	-	1,513	1,6425	1841,4228
888	-	1,513	1,6445	1841,4208
888,5	-	1,513	1,6464	1841,4189
889	-	1,513	1,6484	1841,4169
889,5	-	1,513	1,6503	1841,4150
890	-	1,513	1,6523	1841,4130
890,5	-	1,513	1,6543	1841,4110
891	-	1,513	1,6562	1841,4091
891,5	-	1,513	1,6582	1841,4071
892	-	1,513	1,6601	1841,4052
892,5	-	1,513	1,6621	1841,4032
893	-	1,513	1,6641	1841,4012
893,5	-	1,513	1,6660	1841,3993
894	-	1,513	1,6680	1841,3973
894,5	-	1,513	1,6699	1841,3954
895	-	1,513	1,6719	1841,3934
895,5	-	1,513	1,6729	1841,3924
896	-	1,513	1,6740	1841,3913
896,5	-	1,513	1,6750	1841,3903
897	-	1,513	1,6760	1841,3893
897,5	-	1,513	1,6770	1841,3883
898	-	1,513	1,6781	1841,3872

898,5	-	1,513	1,6791	1841,3862
899	-	1,513	1,6801	1841,3852
899,5	-	1,513	1,6812	1841,3841
<b>E13 - PTO 900</b>	1,5035	1,513	1,6822	1841,3831
900,5	-	1,521	1,5215	1841,3826
901	-	1,521	1,5221	1841,3820
901,5	-	1,521	1,5226	1841,3815
902	-	1,521	1,5232	1841,3809
902,5	-	1,521	1,5237	1841,3804
903	-	1,521	1,5243	1841,3798
903,5	-	1,521	1,5248	1841,3793
904	-	1,521	1,5254	1841,3787
904,5	-	1,521	1,5259	1841,3782
905	-	1,521	1,5265	1841,3776
905,5	-	1,521	1,5274	1841,3767
906	-	1,521	1,5284	1841,3757
906,5	-	1,521	1,5293	1841,3748
907	-	1,521	1,5303	1841,3738
907,5	-	1,521	1,5312	1841,3729
908	-	1,521	1,5376	1841,3665
908,5	-	1,521	1,5331	1841,3710
909	-	1,521	1,5341	1841,3700
909,5	-	1,521	1,5350	1841,3691
910	-	1,521	1,5360	1841,3681
910,5	-	1,521	1,5369	1841,3672
911	-	1,521	1,5379	1841,3662
911,5	-	1,521	1,5388	1841,3653
912	-	1,521	1,5398	1841,3643
912,5	-	1,521	1,5407	1841,3634
913	-	1,521	1,5416	1841,3625
913,5	-	1,521	1,5426	1841,3615
914	-	1,521	1,5435	1841,3606
914,5	-	1,521	1,5445	1841,3596
915	-	1,521	1,5520	1841,3521
915,5	-	1,521	1,5464	1841,3577
916	-	1,521	1,5473	1841,3568
916,5	-	1,521	1,5483	1841,3558
917	-	1,521	1,5492	1841,3549
917,5	-	1,521	1,5502	1841,3539
918	-	1,521	1,5511	1841,3530
918,5	-	1,521	1,5521	1841,3520
919	-	1,521	1,5530	1841,3511
919,5	-	1,521	1,5540	1841,3501



920	-	1,521	1,5549	1841,3492
920,5	-	1,521	1,5563	1841,3478
921	-	1,521	1,5578	1841,3463
921,5	-	1,521	1,5592	1841,3449
922	-	1,521	1,5606	1841,3435
922,5	-	1,521	1,5620	1841,3421
923	-	1,521	1,5635	1841,3406
923,5	-	1,521	1,5649	1841,3392
924	-	1,521	1,5663	1841,3378
924,5	-	1,521	1,5662	1841,3379
925	-	1,521	1,5677	1841,3364
925,5	-	1,521	1,5691	1841,3350
926	-	1,521	1,5735	1841,3306
926,5	-	1,521	1,5750	1841,3291
927	-	1,521	1,5734	1841,3307
927,5	-	1,521	1,5750	1841,3291
928	-	1,521	1,5781	1841,3260
928,5	-	1,521	1,5798	1841,3243
929	-	1,521	1,5806	1841,3235
929,5	-	1,521	1,5820	1841,3221
930	-	1,521	1,5834	1841,3207
930,5	-	1,521	1,5849	1841,3192
931	-	1,521	1,5863	1841,3178
931,5	-	1,521	1,5877	1841,3164
932	-	1,521	1,5892	1841,3149
932,5	-	1,521	1,5906	1841,3135
933	-	1,521	1,5935	1841,3106
933,5	-	1,521	1,5949	1841,3092
934	-	1,521	1,5964	1841,3077
934,5	-	1,521	1,5978	1841,3063
935	-	1,521	1,5992	1841,3049
935,5	-	1,521	1,6007	1841,3034
936	-	1,521	1,6021	1841,3020
936,5	-	1,521	1,6020	1841,3021
937	-	1,521	1,6034	1841,3007
937,5	-	1,521	1,6049	1841,2992
938	-	1,521	1,6063	1841,2978
938,5	-	1,521	1,6077	1841,2964
939	-	1,521	1,6091	1841,2950
939,5	-	1,521	1,6106	1841,2935
940	-	1,521	1,6120	1841,2921
940,5	-	1,521	1,6131	1841,2910
941	-	1,521	1,6142	1841,2899

941,5	-	1,521	1,6154	1841,2887
942	-	1,521	1,6165	1841,2876
942,5	-	1,521	1,6176	1841,2865
943	-	1,521	1,6187	1841,2854
943,5	-	1,521	1,6199	1841,2842
944	-	1,521	1,6210	1841,2831
944,5	-	1,521	1,6221	1841,2820
945	-	1,521	1,6232	1841,2809
945,5	-	1,521	1,6229	1841,2812
946	-	1,521	1,6240	1841,2801
946,5	-	1,521	1,6251	1841,2790
947	-	1,521	1,6262	1841,2779
947,5	-	1,521	1,6304	1841,2737
948	-	1,521	1,6315	1841,2726
948,5	-	1,521	1,6326	1841,2715
949	-	1,521	1,6337	1841,2704
949,5	-	1,521	1,6334	1841,2707
950	-	1,521	1,6312	1841,2729
950,5	-	1,521	1,6356	1841,2685
951	-	1,521	1,6367	1841,2674
951,5	-	1,521	1,6379	1841,2662
952	-	1,521	1,6390	1841,2651
952,5	-	1,521	1,6401	1841,2640
953	-	1,521	1,6412	1841,2629
953,5	-	1,521	1,6424	1841,2617
954	-	1,521	1,6450	1841,2591
954,5	-	1,521	1,6461	1841,2580
955	-	1,521	1,6472	1841,2569
955,5	-	1,521	1,6491	1841,2550
956	-	1,521	1,6495	1841,2546
956,5	-	1,521	1,6541	1841,2500
957	-	1,521	1,6517	1841,2524
957,5	-	1,521	1,6529	1841,2512
958	-	1,521	1,6540	1841,2501
958,5	-	1,521	1,6536	1841,2505
959	-	1,521	1,6547	1841,2494
959,5	-	1,521	1,6559	1841,2482
960	-	1,521	1,6545	1841,2496
960,5	-	1,521	1,6591	1841,2450
961	-	1,521	1,6636	1841,2405
961,5	-	1,521	1,6682	1841,2359
962	-	1,521	1,6728	1841,2313
962,5	-	1,521	1,6773	1841,2268

963	-	1,521	1,6819	1841,2222
963,5	-	1,521	1,6865	1841,2176
964	-	1,521	1,6910	1841,2131
964,5	-	1,521	1,6956	1841,2085
965	-	1,521	1,7001	1841,2040
965,5	-	1,521	1,7047	1841,1994
966	-	1,521	1,7093	1841,1948
966,5	-	1,521	1,7138	1841,1903
967	-	1,521	1,7184	1841,1857
967,5	-	1,521	1,7230	1841,1811
968	-	1,521	1,7235	1841,1806
968,5	-	1,521	1,7310	1841,1731
969	-	1,521	1,7317	1841,1724
969,5	-	1,521	1,7382	1841,1659
970	-	1,521	1,7388	1841,1653
970,5	-	1,521	1,7449	1841,1592
971	-	1,521	1,7441	1841,1600
971,5	-	1,521	1,7432	1841,1609
972	-	1,521	1,7423	1841,1618
972,5	-	1,521	1,7414	1841,1627
973	-	1,521	1,7406	1841,1635
973,5	-	1,521	1,7412	1841,1629
974	-	1,521	1,7413	1841,1628
974,5	-	1,521	1,7405	1841,1636
<b>E14 - PTO 975</b>	1,5164	1,521	1,7406	1841,1635
975,5	-	1,508	1,5061	1841,1654
976	-	1,508	1,5052	1841,1663
976,5	-	1,508	1,5044	1841,1671
977	-	1,508	1,5064	1841,1651
977,5	-	1,508	1,5026	1841,1689
978	-	1,508	1,5047	1841,1668
978,5	-	1,508	1,5028	1841,1687
979	-	1,508	1,5000	1841,1715
979,5	-	1,508	1,4991	1841,1724
980	-	1,508	1,5005	1841,1710
980,5	-	1,508	1,4990	1841,1725
981	-	1,508	1,4998	1841,1717
981,5	-	1,508	1,5006	1841,1709
982	-	1,508	1,5014	1841,1701
982,5	-	1,508	1,5022	1841,1693
983	-	1,508	1,5030	1841,1685
983,5	-	1,508	1,5038	1841,1677
984	-	1,508	1,5046	1841,1669

984,5	-	1,508	1,5054	1841,1661
985	-	1,508	1,5125	1841,1590
985,5	-	1,508	1,5070	1841,1645
986	-	1,508	1,5078	1841,1637
986,5	-	1,508	1,5086	1841,1629
987	-	1,508	1,5094	1841,1621
987,5	-	1,508	1,5102	1841,1613
988	-	1,508	1,5111	1841,1604
988,5	-	1,508	1,5119	1841,1596
989	-	1,508	1,5127	1841,1588
989,5	-	1,508	1,5135	1841,1580
990	-	1,508	1,5143	1841,1572
990,5	-	1,508	1,5151	1841,1564
991	-	1,508	1,5159	1841,1556
991,5	-	1,508	1,5167	1841,1548
992	-	1,508	1,5175	1841,1540
992,5	-	1,508	1,5183	1841,1532
993	-	1,508	1,5191	1841,1524
993,5	-	1,508	1,5199	1841,1516
994	-	1,508	1,5207	1841,1508
994,5	-	1,508	1,5215	1841,1500
995	-	1,508	1,5223	1841,1492
995,5	-	1,508	1,5239	1841,1476
996	-	1,508	1,5255	1841,1460
996,5	-	1,508	1,5272	1841,1443
997	-	1,508	1,5315	1841,1400
997,5	-	1,508	1,5304	1841,1411
998	-	1,508	1,5319	1841,1396
998,5	-	1,508	1,5336	1841,1379
999	-	1,508	1,5352	1841,1363
999,5	-	1,508	1,5369	1841,1346
1000	-	1,508	1,5385	1841,1330
1000,5	-	1,508	1,5401	1841,1314
1001	-	1,508	1,5417	1841,1298
1001,5	-	1,508	1,5433	1841,1282
1002	-	1,508	1,5449	1841,1266
1002,5	-	1,508	1,5466	1841,1249
1003	-	1,508	1,5482	1841,1233
1003,5	-	1,508	1,5498	1841,1217
1004	-	1,508	1,5514	1841,1201
1004,5	-	1,508	1,5530	1841,1185
1005	-	1,508	1,5546	1841,1169
1005,5	-	1,508	1,5563	1841,1152

1006	-	1,508	1,5579	1841,1136
1006,5	-	1,508	1,5595	1841,1120
1007	-	1,508	1,5611	1841,1104
1007,5	-	1,508	1,5635	1841,1080
1008	-	1,508	1,5644	1841,1071
1008,5	-	1,508	1,5660	1841,1055
1009	-	1,508	1,5676	1841,1039
1009,5	-	1,508	1,5692	1841,1023
1010	-	1,508	1,5708	1841,1007
1010,5	-	1,508	1,5724	1841,0991
1011	-	1,508	1,5825	1841,0890
1011,5	-	1,508	1,5765	1841,0950
1012	-	1,508	1,5773	1841,0942
1012,5	-	1,508	1,5795	1841,0920
1013	-	1,508	1,5805	1841,0910
1013,5	-	1,508	1,5825	1841,0890
1014	-	1,508	1,5845	1841,0870
1014,5	-	1,508	1,5854	1841,0861
1015	-	1,508	1,5868	1841,0847
1015,5	-	1,508	1,5894	1841,0821
1016	-	1,508	1,5918	1841,0797
1016,5	-	1,508	1,5942	1841,0773
1017	-	1,508	1,5966	1841,0749
1017,5	-	1,508	1,5990	1841,0725
1018	-	1,508	1,6015	1841,0700
1018,5	-	1,508	1,6045	1841,0670
1019	-	1,508	1,6063	1841,0652
1019,5	-	1,508	1,6095	1841,0620
1020	-	1,508	1,6111	1841,0604
1020,5	-	1,508	1,6135	1841,0580
1021	-	1,508	1,6159	1841,0556
1021,5	-	1,508	1,6183	1841,0532
1022	-	1,508	1,6207	1841,0508
1022,5	-	1,508	1,6231	1841,0484
1023	-	1,508	1,6255	1841,0460
1023,5	-	1,508	1,6280	1841,0435
1024	-	1,508	1,6304	1841,0411
1024,5	-	1,508	1,6328	1841,0387
1025	-	1,508	1,6353	1841,0362
1025,5	-	1,508	1,6392	1841,0323
1026	-	1,508	1,6400	1841,0315
1026,5	-	1,508	1,6412	1841,0303
1027	-	1,508	1,6425	1841,0290

1027,5	-	1,508	1,6437	1841,0278
1028	-	1,508	1,6449	1841,0266
1028,5	-	1,508	1,6462	1841,0253
1029	-	1,508	1,6474	1841,0241
1029,5	-	1,508	1,6486	1841,0229
1030	-	1,508	1,6499	1841,0216
1030,5	-	1,508	1,6511	1841,0204
1031	-	1,508	1,6523	1841,0192
1031,5	-	1,508	1,6536	1841,0179
1032	-	1,508	1,6548	1841,0167
1032,5	-	1,508	1,6560	1841,0155
1033	-	1,508	1,6573	1841,0142
1033,5	-	1,508	1,6585	1841,0130
1034	-	1,508	1,6597	1841,0118
1034,5	-	1,508	1,6610	1841,0105
1035	-	1,508	1,6622	1841,0093
1035,5	-	1,508	1,6658	1841,0057
1036	-	1,508	1,6693	1841,0022
1036,5	-	1,508	1,6729	1840,9986
1037	-	1,508	1,6764	1840,9951
1037,5	-	1,508	1,6800	1840,9915
1038	-	1,508	1,6835	1840,9880
1038,5	-	1,508	1,6871	1840,9844
1039	-	1,508	1,6906	1840,9809
1039,5	-	1,508	1,6942	1840,9773
1040	-	1,508	1,6977	1840,9738
1040,5	-	1,508	1,7003	1840,9712
1041	-	1,508	1,7029	1840,9686
1041,5	-	1,508	1,7054	1840,9661
1042	-	1,508	1,7080	1840,9635
1042,5	-	1,508	1,7104	1840,9611
1043	-	1,508	1,7130	1840,9585
1043,5	-	1,508	1,7157	1840,9558
1044	-	1,508	1,7183	1840,9532
1044,5	-	1,508	1,7210	1840,9505
1045	-	1,508	1,7234	1840,9481
1045,5	-	1,508	1,7256	1840,9459
1046	-	1,508	1,7286	1840,9429
1046,5	-	1,508	1,7313	1840,9402
1047	-	1,508	1,7337	1840,9378
1047,5	-	1,508	1,7360	1840,9355
1048	-	1,508	1,7383	1840,9332
1048,5	-	1,508	1,7397	1840,9318

1049	-	1,508	1,7410	1840,9305
1049,5	-	1,508	1,7424	1840,9291
<b>E15 - PTO 1050</b>	1,458	1,508	1,7437	1840,9278
1050,5	-	1,475	1,4762	1840,9266
1051	-	1,475	1,4764	1840,9264
1051,5	-	1,475	1,4779	1840,9249
1052	-	1,475	1,4788	1840,9240
1052,5	-	1,475	1,4790	1840,9238
1053	-	1,475	1,4779	1840,9249
1053,5	-	1,475	1,4769	1840,9259
1054	-	1,475	1,4757	1840,9271
1054,5	-	1,475	1,4746	1840,9282
1055	-	1,475	1,4735	1840,9293
1055,5	-	1,475	1,4708	1840,9320
1056	-	1,475	1,4681	1840,9347
1056,5	-	1,475	1,4653	1840,9375
1057	-	1,475	1,4626	1840,9402
1057,5	-	1,475	1,4599	1840,9429
1058	-	1,475	1,4585	1840,9443
1058,5	-	1,475	1,4571	1840,9457
1059	-	1,475	1,4556	1840,9472
1059,5	-	1,475	1,4542	1840,9486
1060	-	1,475	1,4528	1840,9500
1060,5	-	1,475	1,4516	1840,9512
1061	-	1,475	1,4504	1840,9524
1061,5	-	1,475	1,4493	1840,9535
1062	-	1,475	1,4481	1840,9547
1062,5	-	1,475	1,4469	1840,9559
1063	-	1,475	1,4485	1840,9543
1063,5	-	1,475	1,4501	1840,9527
1064	-	1,475	1,4518	1840,9510
1064,5	-	1,475	1,4534	1840,9494
1065	-	1,475	1,4550	1840,9478
1065,5	-	1,475	1,4571	1840,9457
1066	-	1,475	1,4591	1840,9437
1066,5	-	1,475	1,4612	1840,9416
1067	-	1,475	1,4632	1840,9396
1067,5	-	1,475	1,4643	1840,9385
1068	-	1,475	1,4654	1840,9374
1068,5	-	1,475	1,4635	1840,9393
1069	-	1,475	1,4636	1840,9392
1069,5	-	1,475	1,4637	1840,9391
1070	-	1,475	1,4649	1840,9379

1070,5	-	1,475	1,4663	1840,9365
1071	-	1,475	1,4678	1840,9350
1071,5	-	1,475	1,4694	1840,9334
1072	-	1,475	1,4707	1840,9321
1072,5	-	1,475	1,4719	1840,9309
1073	-	1,475	1,4727	1840,9301
1073,5	-	1,475	1,4717	1840,9311
1074	-	1,475	1,4729	1840,9299
1074,5	-	1,475	1,4739	1840,9289
1075	-	1,475	1,4753	1840,9275
1075,5	-	1,475	1,4770	1840,9258
1076	-	1,475	1,4787	1840,9241
1076,5	-	1,475	1,4804	1840,9224
1077	-	1,475	1,4821	1840,9207
1077,5	-	1,475	1,4838	1840,9190
1078	-	1,475	1,4852	1840,9176
1078,5	-	1,475	1,4866	1840,9162
1079	-	1,475	1,4881	1840,9147
1079,5	-	1,475	1,4895	1840,9133
1080	-	1,475	1,4909	1840,9119
1080,5	-	1,475	1,4930	1840,9098
1081	-	1,475	1,4951	1840,9077
1081,5	-	1,475	1,4972	1840,9056
1082	-	1,475	1,4993	1840,9035
1082,5	-	1,475	1,5014	1840,9014
1083	-	1,475	1,5030	1840,8998
1083,5	-	1,475	1,5045	1840,8983
1084	-	1,475	1,5061	1840,8967
1084,5	-	1,475	1,5076	1840,8952
1085	-	1,475	1,5092	1840,8936
1085,5	-	1,475	1,5111	1840,8917
1086	-	1,475	1,5208	1840,8820
1086,5	-	1,475	1,5150	1840,8878
1087	-	1,475	1,5169	1840,8859
1087,5	-	1,475	1,5187	1840,8841
1088	-	1,475	1,5205	1840,8823
1088,5	-	1,475	1,5222	1840,8806
1089	-	1,475	1,5238	1840,8790
1089,5	-	1,475	1,5255	1840,8773
1090	-	1,475	1,5272	1840,8756
1090,5	-	1,475	1,5289	1840,8739
1091	-	1,475	1,5306	1840,8722
1091,5	-	1,475	1,5324	1840,8704



1092	-	1,475	1,5341	1840,8687
1092,5	-	1,475	1,5358	1840,8670
1093	-	1,475	1,5373	1840,8655
1093,5	-	1,475	1,5388	1840,8640
1094	-	1,475	1,5402	1840,8626
1094,5	-	1,475	1,5417	1840,8611
1095	-	1,475	1,5432	1840,8596
1095,5	-	1,475	1,5443	1840,8585
1096	-	1,475	1,5455	1840,8573
1096,5	-	1,475	1,5466	1840,8562
1097	-	1,475	1,5478	1840,8550
1097,5	-	1,475	1,5489	1840,8539
1098	-	1,475	1,5477	1840,8551
1098,5	-	1,475	1,5465	1840,8563
1099	-	1,475	1,5454	1840,8574
1099,5	-	1,475	1,5442	1840,8586
1100	-	1,475	1,5430	1840,8598
1100,5	-	1,475	1,5436	1840,8592
1101	-	1,475	1,5443	1840,8585
1101,5	-	1,475	1,5449	1840,8579
1102	-	1,475	1,5456	1840,8572
1102,5	-	1,475	1,5462	1840,8566
1103	-	1,475	1,5506	1840,8522
1103,5	-	1,475	1,5550	1840,8478
1104	-	1,475	1,5594	1840,8434
1104,5	-	1,475	1,5638	1840,8390
1105	-	1,475	1,5682	1840,8346
1105,5	-	1,475	1,5727	1840,8301
1106	-	1,475	1,5772	1840,8256
1106,5	-	1,475	1,5818	1840,8210
1107	-	1,475	1,5863	1840,8165
1107,5	-	1,475	1,5908	1840,8120
1108	-	1,475	1,5954	1840,8074
1108,5	-	1,475	1,6000	1840,8028
1109	-	1,475	1,6047	1840,7981
1109,5	-	1,475	1,6093	1840,7935
1110	-	1,475	1,6139	1840,7889
1110,5	-	1,475	1,6139	1840,7889
1111	-	1,475	1,6140	1840,7888
1111,5	-	1,475	1,6140	1840,7888
1112	-	1,475	1,6141	1840,7887
1112,5	-	1,475	1,6141	1840,7887
1113	-	1,475	1,6112	1840,7916

1113,5	-	1,475	1,6083	1840,7945
1114	-	1,475	1,6054	1840,7974
1114,5	-	1,475	1,6025	1840,8003
1115	-	1,475	1,5996	1840,8032
1115,5	-	1,475	1,5988	1840,8040
1116	-	1,475	1,5980	1840,8048
1116,5	-	1,475	1,5973	1840,8055
1117	-	1,475	1,5965	1840,8063
1117,5	-	1,475	1,5957	1840,8071
1118	-	1,475	1,5969	1840,8059
1118,5	-	1,475	1,5980	1840,8048
1119	-	1,475	1,5992	1840,8036
1119,5	-	1,475	1,6003	1840,8025
1120	-	1,475	1,6015	1840,8013
1120,5	-	1,475	1,6038	1840,7990
1121	-	1,475	1,6060	1840,7968
1121,5	-	1,475	1,6083	1840,7945
1122	-	1,475	1,6105	1840,7923
1122,5	-	1,475	1,6128	1840,7900
1123	-	1,475	1,6136	1840,7892
1123,5	-	1,475	1,6144	1840,7884
1124	-	1,475	1,6153	1840,7875
1124,5	-	1,475	1,6161	1840,7867
<b>E16 - PTO 1125</b>	1,4837	1,475	1,6169	1840,7859
1125,5	-	1,497	1,4972	1840,7857
1126	-	1,497	1,4973	1840,7856
1126,5	-	1,497	1,4975	1840,7854
1127	-	1,497	1,4976	1840,7853
1127,5	-	1,497	1,4978	1840,7851
1128	-	1,497	1,4978	1840,7851
1128,5	-	1,497	1,4978	1840,7851
1129	-	1,497	1,4979	1840,7850
1129,5	-	1,497	1,4979	1840,7850
1130	-	1,497	1,4979	1840,7850
1130,5	-	1,497	1,4985	1840,7844
1131	-	1,497	1,4990	1840,7839
1131,5	-	1,497	1,4996	1840,7833
1132	-	1,497	1,5001	1840,7828
1132,5	-	1,497	1,5007	1840,7822
1133	-	1,497	1,5005	1840,7824
1133,5	-	1,497	1,5003	1840,7826
1134	-	1,497	1,5000	1840,7829
1134,5	-	1,497	1,4998	1840,7831

1135	-	1,497	1,4996	1840,7833
1135,5	-	1,497	1,4987	1840,7842
1136	-	1,497	1,4978	1840,7851
1136,5	-	1,497	1,4970	1840,7859
1137	-	1,497	1,4961	1840,7868
1137,5	-	1,497	1,4952	1840,7877
1138	-	1,497	1,4960	1840,7869
1138,5	-	1,497	1,4967	1840,7862
1139	-	1,497	1,4975	1840,7854
1139,5	-	1,497	1,4982	1840,7847
1140	-	1,497	1,4990	1840,7839
1140,5	-	1,497	1,5021	1840,7808
1141	-	1,497	1,5053	1840,7776
1141,5	-	1,497	1,5084	1840,7745
1142	-	1,497	1,5116	1840,7713
1142,5	-	1,497	1,5147	1840,7682
1143	-	1,497	1,5136	1840,7693
1143,5	-	1,497	1,5124	1840,7705
1144	-	1,497	1,5113	1840,7716
1144,5	-	1,497	1,5101	1840,7728
1145	-	1,497	1,5090	1840,7739
1145,5	-	1,497	1,5131	1840,7698
1146	-	1,497	1,5172	1840,7657
1146,5	-	1,497	1,5212	1840,7617
1147	-	1,497	1,5253	1840,7576
1147,5	-	1,497	1,5294	1840,7535
1148	-	1,497	1,5282	1840,7547
1148,5	-	1,497	1,5270	1840,7559
1149	-	1,497	1,5257	1840,7572
1149,5	-	1,497	1,5245	1840,7584
1150	-	1,497	1,5233	1840,7596
1150,5	-	1,497	1,5212	1840,7617
1151	-	1,497	1,5191	1840,7638
1151,5	-	1,497	1,5169	1840,7660
1152	-	1,497	1,5148	1840,7681
1152,5	-	1,497	1,5127	1840,7702
1153	-	1,497	1,5128	1840,7701
1153,5	-	1,497	1,5129	1840,7700
1154	-	1,497	1,5131	1840,7698
1154,5	-	1,497	1,5132	1840,7697
1155	-	1,497	1,5133	1840,7696
1155,5	-	1,497	1,5139	1840,7690
1156	-	1,497	1,5145	1840,7684

1156,5	-	1,497	1,5150	1840,7679
1157	-	1,497	1,5156	1840,7673
1157,5	-	1,497	1,5162	1840,7667
1158	-	1,497	1,5167	1840,7662
1158,5	-	1,497	1,5171	1840,7658
1159	-	1,497	1,5176	1840,7653
1159,5	-	1,497	1,5180	1840,7649
1160	-	1,497	1,5185	1840,7644
1160,5	-	1,497	1,5164	1840,7665
1161	-	1,497	1,5143	1840,7686
1161,5	-	1,497	1,5123	1840,7706
1162	-	1,497	1,5102	1840,7727
1162,5	-	1,497	1,5081	1840,7748
1163	-	1,497	1,5068	1840,7761
1163,5	-	1,497	1,5054	1840,7775
1164	-	1,497	1,5041	1840,7788
1164,5	-	1,497	1,5027	1840,7802
1165	-	1,497	1,5014	1840,7815
1165,5	-	1,497	1,4982	1840,7847
1166	-	1,497	1,4949	1840,7880
1166,5	-	1,497	1,4917	1840,7912
1167	-	1,497	1,4884	1840,7945
1167,5	-	1,497	1,4852	1840,7977
1168	-	1,497	1,4822	1840,8007
1168,5	-	1,497	1,4791	1840,8038
1169	-	1,497	1,4761	1840,8068
1169,5	-	1,497	1,4730	1840,8099
1170	-	1,497	1,4700	1840,8129
1170,5	-	1,497	1,4701	1840,8128
1171	-	1,497	1,4702	1840,8127
1171,5	-	1,497	1,4704	1840,8125
1172	-	1,497	1,4705	1840,8124
1172,5	-	1,497	1,4706	1840,8123
1173	-	1,497	1,4687	1840,8142
1173,5	-	1,497	1,4669	1840,8160
1174	-	1,497	1,4650	1840,8179
1174,5	-	1,497	1,4632	1840,8197
1175	-	1,497	1,4613	1840,8216
1175,5	-	1,497	1,4576	1840,8253
1176	-	1,497	1,4539	1840,8290
1176,5	-	1,497	1,4503	1840,8326
1177	-	1,497	1,4466	1840,8363
1177,5	-	1,497	1,4429	1840,8400

1178	-	1,497	1,4400	1840,8429
1178,5	-	1,497	1,4371	1840,8458
1179	-	1,497	1,4342	1840,8487
1179,5	-	1,497	1,4313	1840,8516
1180	-	1,497	1,4284	1840,8545
1180,5	-	1,497	1,4265	1840,8564
1181	-	1,497	1,4246	1840,8583
1181,5	-	1,497	1,4226	1840,8603
1182	-	1,497	1,4207	1840,8622
1182,5	-	1,497	1,4188	1840,8641
1183	-	1,497	1,4147	1840,8682
1183,5	-	1,497	1,4106	1840,8723
1184	-	1,497	1,4065	1840,8764
1184,5	-	1,497	1,4024	1840,8805
1185	-	1,497	1,3983	1840,8846
1185,5	-	1,497	1,3991	1840,8838
1186	-	1,497	1,4000	1840,8829
1186,5	-	1,497	1,4008	1840,8821
1187	-	1,497	1,4017	1840,8812
1187,5	-	1,497	1,4025	1840,8804
1188	-	1,497	1,4033	1840,8796
1188,5	-	1,497	1,4040	1840,8789
1189	-	1,497	1,4048	1840,8781
1189,5	-	1,497	1,4055	1840,8774
1190	-	1,497	1,4063	1840,8766
1190,5	-	1,497	1,4013	1840,8816
1191	-	1,497	1,3963	1840,8866
1191,5	-	1,497	1,3913	1840,8916
1192	-	1,497	1,3863	1840,8966
1192,5	-	1,497	1,3813	1840,9016
1193	-	1,497	1,3783	1840,9046
1193,5	-	1,497	1,3753	1840,9076
1194	-	1,497	1,3723	1840,9106
1194,5	-	1,497	1,3693	1840,9136
1195	-	1,497	1,3663	1840,9166
1195,5	-	1,497	1,3642	1840,9187
1196	-	1,497	1,3621	1840,9208
1196,5	-	1,497	1,3599	1840,9230
1197	-	1,497	1,3578	1840,9251
1197,5	-	1,497	1,3557	1840,9272
1198	-	1,497	1,3544	1840,9285
1198,5	-	1,497	1,3532	1840,9297
1199	-	1,497	1,3519	1840,9310

1199,5	-	1,497	1,3507	1840,9322
1200	-	1,497	1,3494	1840,9335

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*Univ. Marco Antonio Cardozo Flores*

**ESTUDIANTE CIV 502**

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*Ing. Pablo Chambi Gareca*

**ENCARGADO DE LABORATORIO DE  
TOPOGRAFÍA**

**ANEXO III.**  
**RESULTADOS DE**  
**MIRA Y NIVEL**

## AVENIDA LOS MOLLES

<b>CÁLCULO DEL INDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL MÉTODO DE MIRA Y NIVEL</b>	<b>1</b>
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Abscisa	Cota
0,00	1949,000
0,50	1949,007
1,00	1949,014
1,50	1949,021
2,00	1949,028
2,50	1949,035
3,00	1949,039
3,50	1949,048
4,00	1949,058
4,50	1949,068
5,00	1949,076
5,50	1949,083
6,00	1949,092
6,50	1949,095
7,00	1949,104
7,50	1949,119
8,00	1949,120
8,50	1949,122
9,00	1949,129
9,50	1949,137
10,00	1949,141
10,50	1949,146
11,00	1949,154
11,50	1949,162
12,00	1949,170
12,50	1949,171
13,00	1949,182
13,50	1949,188
14,00	1949,197
14,50	1949,208
15,00	1949,215
15,50	1949,226
16,00	1949,232
16,50	1949,242

17,00	1949,249
17,50	1949,257
18,00	1949,265
18,50	1949,272
19,00	1949,281
19,50	1949,284
20,00	1949,289
20,50	1949,293
21,00	1949,297
21,50	1949,302
22,00	1949,307
22,50	1949,310
23,00	1949,317
23,50	1949,324
24,00	1949,331
24,50	1949,336
25,00	1949,338
25,50	1949,341
26,00	1949,347
26,50	1949,355
27,00	1949,357
27,50	1949,360
28,00	1949,368
28,50	1949,374
29,00	1949,378
29,50	1949,383
30,00	1949,389
30,50	1949,394
31,00	1949,399
31,50	1949,407
32,00	1949,409
32,50	1949,412
33,00	1949,413
33,50	1949,416
34,00	1949,419

34,50	1949,421
35,00	1949,425
35,50	1949,429
36,00	1949,435
36,50	1949,437
37,00	1949,441
37,50	1949,448
38,00	1949,452
38,50	1949,462
39,00	1949,463
39,50	1949,474
40,00	1949,479
40,50	1949,483
41,00	1949,491
41,50	1949,494
42,00	1949,498
42,50	1949,508
43,00	1949,515
43,50	1949,521
44,00	1949,525
44,50	1949,531
45,00	1949,537
45,50	1949,549
46,00	1949,560
46,50	1949,572
47,00	1949,583
47,50	1949,593
48,00	1949,601
48,50	1949,611
49,00	1949,625
49,50	1949,633
50,00	1949,646
50,50	1949,638
51,00	1949,671
51,50	1949,679



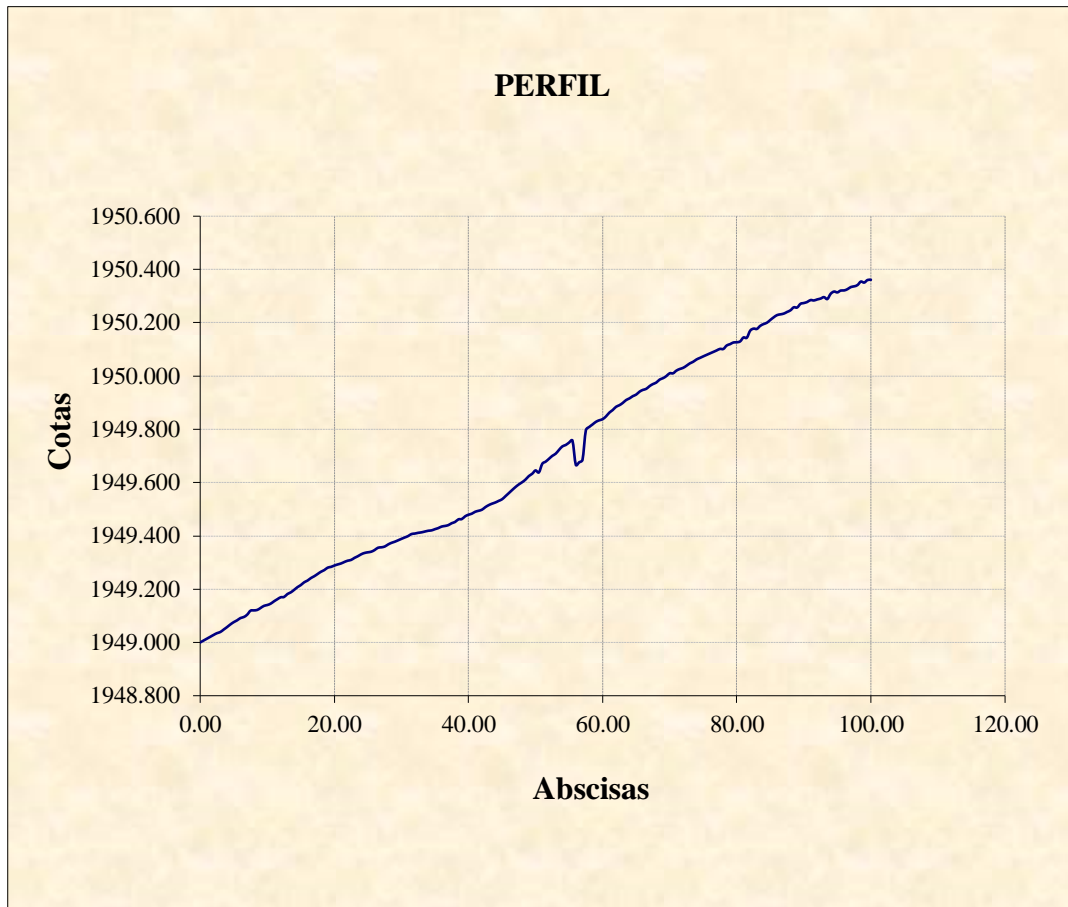
52,00	1949,689
52,50	1949,700
53,00	1949,709
53,50	1949,723
54,00	1949,736
54,50	1949,741
55,00	1949,750
55,50	1949,758
56,00	1949,667
56,50	1949,676
57,00	1949,686
57,50	1949,796
58,00	1949,809
58,50	1949,818
59,00	1949,828
59,50	1949,834
60,00	1949,838
60,50	1949,848
61,00	1949,863
61,50	1949,872
62,00	1949,885
62,50	1949,891
63,00	1949,899
63,50	1949,910
64,00	1949,916
64,50	1949,925
65,00	1949,930
65,50	1949,941
66,00	1949,948
66,50	1949,952
67,00	1949,962
67,50	1949,970
68,00	1949,976
68,50	1949,987
69,00	1949,992
69,50	1950,000
70,00	1950,010
70,50	1950,010
71,00	1950,020
71,50	1950,026
72,00	1950,031

72,50	1950,039
73,00	1950,047
73,50	1950,054
74,00	1950,062
74,50	1950,068
75,00	1950,074
75,50	1950,079
76,00	1950,085
76,50	1950,091
77,00	1950,096
77,50	1950,102
78,00	1950,102
78,50	1950,115
79,00	1950,120
79,50	1950,126
80,00	1950,127
80,50	1950,130
81,00	1950,145
81,50	1950,144
82,00	1950,170
82,50	1950,178
83,00	1950,177
83,50	1950,188
84,00	1950,195
84,50	1950,200
85,00	1950,211
85,50	1950,220
86,00	1950,229
86,50	1950,232
87,00	1950,234
87,50	1950,241
88,00	1950,247
88,50	1950,258
89,00	1950,257
89,50	1950,271
90,00	1950,274
90,50	1950,278
91,00	1950,285
91,50	1950,284
92,00	1950,288
92,50	1950,291

93,00	1950,296
93,50	1950,289
94,00	1950,309
94,50	1950,317
95,00	1950,314
95,50	1950,321
96,00	1950,321
96,50	1950,326
97,00	1950,334
97,50	1950,337
98,00	1950,341
98,50	1950,355
99,00	1950,351
99,50	1950,361
100,00	1950,361

<b>Longitud Tramo :</b>	<b>100,00</b>	<b>m</b>	<b>Longitud Subtramo (m) :</b>			<b>20</b>	
<b>Delta X :</b>	<b>0,50</b>	<b>m</b>	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>IRI :</b>	<b>5,62</b>	<b>m/Km</b>				<b>IRI (m/Km)</b>	
<b>FECHA:</b>	5/4/2023		0	20	20,00	5,36	5,36
<b>PROG. INL</b>	0+000		20	40	20,00	4,21	4,21
<b>PROG. FIN.</b>	0+100		40	60	20,00	25,39	Descartado
			60	80	20,00	5,08	5,08
			80	100	20,00	7,84	7,84
							5,62

**Perfil del tramo 000 + 100 Av. Los Molles**



**CÁLCULO DEL INDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**2**

<b>Abscisa</b>	<b>Cota</b>
100,00	1950,361
100,50	1950,371
101,00	1950,380
101,50	1950,387
102,00	1950,396
102,50	1950,401
103,00	1950,410
103,50	1950,420
104,00	1950,423
104,50	1950,431
105,00	1950,437
105,50	1950,441
106,00	1950,447
106,50	1950,448
107,00	1950,452
107,50	1950,458
108,00	1950,461
108,50	1950,465
109,00	1950,466
109,50	1950,469
110,00	1950,472
110,50	1950,476
111,00	1950,475
111,50	1950,477
112,00	1950,481
112,50	1950,486
113,00	1950,488
113,50	1950,489
114,00	1950,490
114,50	1950,489
115,00	1950,495
115,50	1950,494
116,00	1950,494
116,50	1950,491
117,00	1950,492
117,50	1950,495

118,00	1950,497
118,50	1950,501
119,00	1950,502
119,50	1950,502
120,00	1950,501
120,50	1950,499
121,00	1950,501
121,50	1950,501
122,00	1950,501
122,50	1950,500
123,00	1950,500
123,50	1950,496
124,00	1950,493
124,50	1950,491
125,00	1950,491
125,50	1950,491
126,00	1950,486
126,50	1950,481
127,00	1950,480
127,50	1950,476
128,00	1950,478
128,50	1950,480
129,00	1950,480
129,50	1950,480
130,00	1950,476
130,50	1950,480
131,00	1950,480
131,50	1950,478
132,00	1950,480
132,50	1950,483
133,00	1950,485
133,50	1950,479
134,00	1950,477
134,50	1950,475
135,00	1950,467
135,50	1950,469
136,00	1950,467
136,50	1950,463

137,00	1950,461
137,50	1950,466
138,00	1950,462
138,50	1950,461
139,00	1950,457
139,50	1950,453
140,00	1950,448
140,50	1950,445
141,00	1950,441
141,50	1950,440
142,00	1950,434
142,50	1950,427
143,00	1950,430
143,50	1950,425
144,00	1950,416
144,50	1950,416
145,00	1950,410
145,50	1950,405
146,00	1950,402
146,50	1950,400
147,00	1950,392
147,50	1950,385
148,00	1950,387
148,50	1950,380
149,00	1950,377
149,50	1950,376
150,00	1950,369
150,50	1950,364
151,00	1950,360
151,50	1950,355
152,00	1950,351
152,50	1950,343
153,00	1950,340
153,50	1950,337
154,00	1950,330
154,50	1950,325
155,00	1950,322
155,50	1950,315

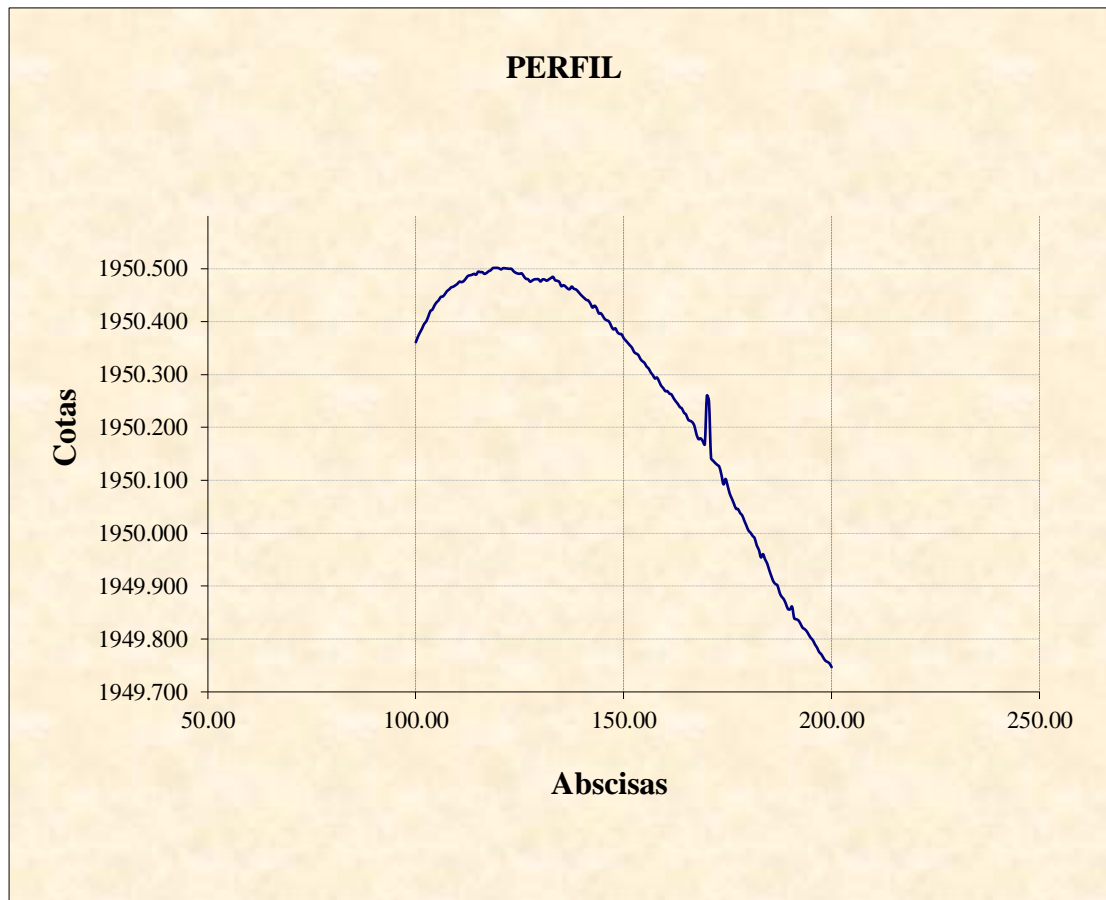
156,00	1950,312
156,50	1950,304
157,00	1950,299
157,50	1950,293
158,00	1950,294
158,50	1950,287
159,00	1950,279
159,50	1950,275
160,00	1950,269
160,50	1950,269
161,00	1950,264
161,50	1950,262
162,00	1950,255
162,50	1950,250
163,00	1950,245
163,50	1950,239
164,00	1950,236
164,50	1950,228
165,00	1950,224
165,50	1950,215
166,00	1950,212
166,50	1950,210
167,00	1950,203
167,50	1950,187
168,00	1950,178
168,50	1950,179
169,00	1950,174
169,50	1950,168
170,00	1950,260
170,50	1950,250
171,00	1950,143
171,50	1950,137
172,00	1950,133
172,50	1950,129
173,00	1950,126
173,50	1950,111
174,00	1950,092
174,50	1950,103
175,00	1950,090
175,50	1950,075
176,00	1950,066

176,50	1950,056
177,00	1950,047
177,50	1950,046
178,00	1950,038
178,50	1950,034
179,00	1950,024
179,50	1950,015
180,00	1950,005
180,50	1950,001
181,00	1949,995
181,50	1949,991
182,00	1949,977
182,50	1949,969
183,00	1949,954
183,50	1949,961
184,00	1949,951
184,50	1949,943
185,00	1949,930
185,50	1949,919
186,00	1949,909
186,50	1949,904
187,00	1949,901
187,50	1949,888
188,00	1949,880
188,50	1949,875
189,00	1949,867
189,50	1949,857
190,00	1949,856
190,50	1949,861
191,00	1949,839
191,50	1949,837
192,00	1949,835
192,50	1949,829
193,00	1949,822
193,50	1949,819
194,00	1949,815
194,50	1949,808
195,00	1949,802
195,50	1949,798
196,00	1949,790
196,50	1949,784

197,00	1949,775
197,50	1949,772
198,00	1949,765
198,50	1949,759
199,00	1949,757
199,50	1949,754
200,00	1949,747

<b>Longitud Tramo :</b>		<b>100,00</b> m	<b>Longitud Subtramo (m) :</b>		<b>20</b>
<b>Delta X :</b>		<b>0,50</b> m			
<b>IRI :</b>		<b>5,48</b> m/Km			
<b>FECHA:</b>	5/4/2023	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>
<b>PROG. INI.</b>	0+100	100	120	20,00	5,38
<b>PROG. FIN.</b>	0+200	120	140	20,00	4,50
		140	160	20,00	4,26
		160	180	20,00	27,08 Descartado
		180	200	20,00	7,78
					7,78
					5,48

### Perfil del tramo 100 + 200 Av. Los Molles



<b>Abscisa</b>	<b>Cota</b>
200,00	1949,747
200,50	1949,746
201,00	1949,737
201,50	1949,732
202,00	1949,726
202,50	1949,720
203,00	1949,715
203,50	1949,708
204,00	1949,698
204,50	1949,696
205,00	1949,692
205,50	1949,686
206,00	1949,682
206,50	1949,677
207,00	1949,670
207,50	1949,664
208,00	1949,657
208,50	1949,650
209,00	1949,644
209,50	1949,640
210,00	1949,632
210,50	1949,629
211,00	1949,624
211,50	1949,616
212,00	1949,610
212,50	1949,602
213,00	1949,600
213,50	1949,603
214,00	1949,587
214,50	1949,565
215,00	1949,571
215,50	1949,565
216,00	1949,557
216,50	1949,553
217,00	1949,558

217,50	1949,555
218,00	1949,552
218,50	1949,548
219,00	1949,543
219,50	1949,541
220,00	1949,537
220,50	1949,536
221,00	1949,536
221,50	1949,532
222,00	1949,530
222,50	1949,527
223,00	1949,528
223,50	1949,524
224,00	1949,509
224,50	1949,499
225,00	1949,505
225,50	1949,501
226,00	1949,497
226,50	1949,493
227,00	1949,489
227,50	1949,486
228,00	1949,484
228,50	1949,481
229,00	1949,477
229,50	1949,474
230,00	1949,471
230,50	1949,469
231,00	1949,466
231,50	1949,463
232,00	1949,461
232,50	1949,458
233,00	1949,456
233,50	1949,454
234,00	1949,451
234,50	1949,448
235,00	1949,444
235,50	1949,440
236,00	1949,437

236,50	1949,433
237,00	1949,429
237,50	1949,424
238,00	1949,420
238,50	1949,416
239,00	1949,412
239,50	1949,408
240,00	1949,404
240,50	1949,400
241,00	1949,395
241,50	1949,391
242,00	1949,386
242,50	1949,381
243,00	1949,376
243,50	1949,371
244,00	1949,366
244,50	1949,363
245,00	1949,359
245,50	1949,355
246,00	1949,351
246,50	1949,348
247,00	1949,345
247,50	1949,343
248,00	1949,340
248,50	1949,337
249,00	1949,335
249,50	1949,332
250,00	1949,330
250,50	1949,328
251,00	1949,327
251,50	1949,325
252,00	1949,324
252,50	1949,322
253,00	1949,319
253,50	1949,317
254,00	1949,314
254,50	1949,317
255,00	1949,320

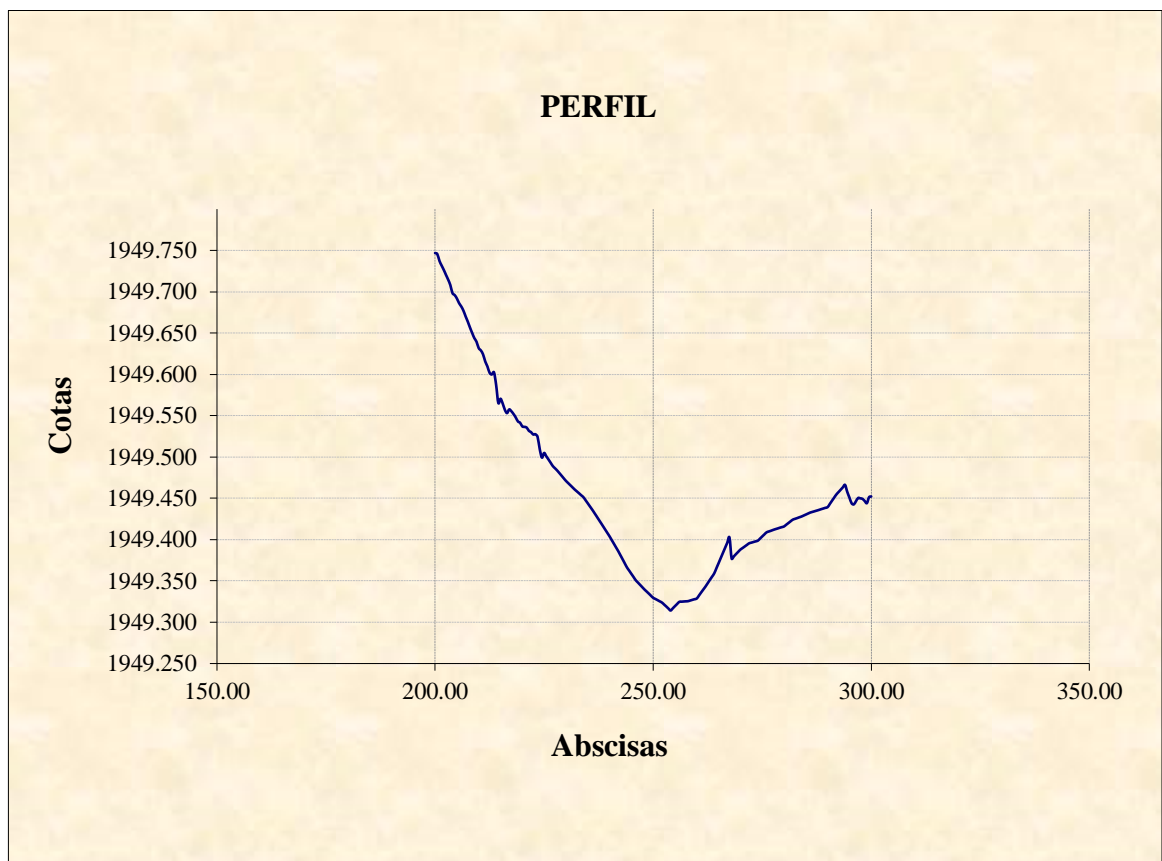
255,50	1949,322
256,00	1949,325
256,50	1949,325
257,00	1949,325
257,50	1949,325
258,00	1949,326
258,50	1949,326
259,00	1949,327
259,50	1949,328
260,00	1949,329
260,50	1949,332
261,00	1949,336
261,50	1949,340
262,00	1949,343
262,50	1949,347
263,00	1949,351
263,50	1949,355
264,00	1949,359
264,50	1949,365
265,00	1949,372
265,50	1949,378
266,00	1949,384
266,50	1949,390
267,00	1949,396
267,50	1949,403
268,00	1949,377
268,50	1949,380
269,00	1949,383
269,50	1949,385
270,00	1949,388
270,50	1949,390
271,00	1949,392
271,50	1949,394
272,00	1949,396
272,50	1949,396
273,00	1949,397
273,50	1949,398
274,00	1949,399
274,50	1949,401
275,00	1949,404
275,50	1949,406

276,00	1949,409
276,50	1949,410
277,00	1949,411
277,50	1949,412
278,00	1949,413
278,50	1949,413
279,00	1949,414
279,50	1949,415
280,00	1949,416
280,50	1949,418
281,00	1949,420
281,50	1949,422
282,00	1949,424
282,50	1949,425
283,00	1949,426
283,50	1949,427
284,00	1949,428
284,50	1949,429
285,00	1949,430
285,50	1949,432
286,00	1949,433
286,50	1949,434
287,00	1949,434
287,50	1949,435
288,00	1949,436
288,50	1949,437
289,00	1949,438
289,50	1949,439
290,00	1949,439
290,50	1949,443
291,00	1949,447
291,50	1949,451
292,00	1949,455
292,50	1949,458
293,00	1949,460
293,50	1949,463
294,00	1949,466
294,50	1949,458
295,00	1949,451
295,50	1949,444
296,00	1949,443

296,50	1949,447
297,00	1949,450
297,50	1949,450
298,00	1949,449
298,50	1949,447
299,00	1949,444
299,50	1949,451
300,00	1949,452

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>				<b>20</b>
<b>Delta X :</b>		<b>0,50</b>	m	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>IRI :</b>		<b>4,43</b>	m/Km	200	220	20,00	6,30	
<b>FECHA:</b>	4/5/2023			220	240	20,00	3,99	
<b>PROG. INI.</b>	0+200			240	260	20,00	3,05	
<b>PROG. FIN.</b>	0+300			260	280	20,00	5,07	
				280	300	20,00	3,75	4,43

**Perfil del tramo 200 + 300 Av. Los Molles**





**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**4**

<b>Abscisa</b>	<b>Cota</b>
300,00	1949,452
300,50	1949,456
301,00	1949,460
301,50	1949,463
302,00	1949,467
302,50	1949,468
303,00	1949,469
303,50	1949,476
304,00	1949,478
304,50	1949,476
305,00	1949,474
305,50	1949,475
306,00	1949,476
306,50	1949,477
307,00	1949,478
307,50	1949,476
308,00	1949,475
308,50	1949,469
309,00	1949,463
309,50	1949,456
310,00	1949,419
310,50	1949,454
311,00	1949,454
311,50	1949,453
312,00	1949,451
312,50	1949,457
313,00	1949,463
313,50	1949,466
314,00	1949,469
314,50	1949,466
315,00	1949,464
315,50	1949,464
316,00	1949,464
316,50	1949,463
317,00	1949,462

317,50	1949,463
318,00	1949,465
318,50	1949,464
319,00	1949,463
319,50	1949,463
320,00	1949,463
320,50	1949,468
321,00	1949,472
321,50	1949,473
322,00	1949,473
322,50	1949,475
323,00	1949,476
323,50	1949,475
324,00	1949,474
324,50	1949,470
325,00	1949,467
325,50	1949,468
326,00	1949,470
326,50	1949,465
327,00	1949,460
327,50	1949,458
328,00	1949,457
328,50	1949,454
329,00	1949,451
329,50	1949,450
330,00	1949,448
330,50	1949,445
331,00	1949,442
331,50	1949,440
332,00	1949,438
332,50	1949,437
333,00	1949,436
333,50	1949,435
334,00	1949,433
334,50	1949,430
335,00	1949,428
335,50	1949,427
336,00	1949,427

336,50	1949,423
337,00	1949,420
337,50	1949,515
338,00	1949,610
338,50	1949,513
339,00	1949,417
339,50	1949,413
340,00	1949,410
340,50	1949,412
341,00	1949,415
341,50	1949,413
342,00	1949,411
342,50	1949,412
343,00	1949,413
343,50	1949,414
344,00	1949,415
344,50	1949,415
345,00	1949,415
345,50	1949,415
346,00	1949,414
346,50	1949,413
347,00	1949,412
347,50	1949,414
348,00	1949,416
348,50	1949,417
349,00	1949,418
349,50	1949,418
350,00	1949,418
350,50	1949,413
351,00	1949,404
351,50	1949,409
352,00	1949,414
352,50	1949,421
353,00	1949,426
353,50	1949,432
354,00	1949,431
354,50	1949,430
355,00	1949,429

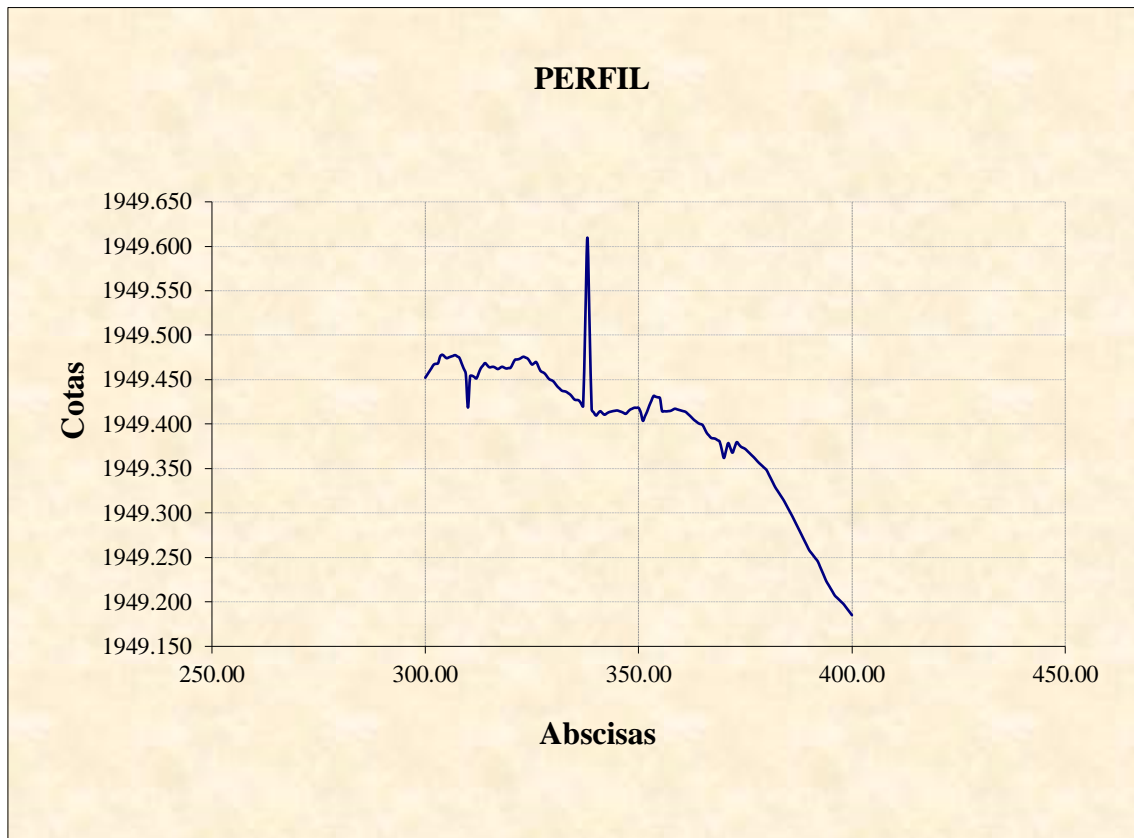
355,50	1949,415
356,00	1949,415
356,50	1949,414
357,00	1949,415
357,50	1949,415
358,00	1949,416
358,50	1949,417
359,00	1949,417
359,50	1949,416
360,00	1949,415
360,50	1949,415
361,00	1949,414
361,50	1949,412
362,00	1949,410
362,50	1949,407
363,00	1949,405
363,50	1949,403
364,00	1949,401
364,50	1949,400
365,00	1949,399
365,50	1949,395
366,00	1949,390
366,50	1949,387
367,00	1949,385
367,50	1949,384
368,00	1949,384
368,50	1949,382
369,00	1949,380
369,50	1949,371
370,00	1949,362
370,50	1949,370
371,00	1949,379
371,50	1949,373
372,00	1949,368
372,50	1949,374
373,00	1949,380
373,50	1949,377
374,00	1949,375
374,50	1949,373
375,00	1949,372
375,50	1949,370

376,00	1949,367
376,50	1949,365
377,00	1949,363
377,50	1949,360
378,00	1949,357
378,50	1949,355
379,00	1949,353
379,50	1949,351
380,00	1949,348
380,50	1949,344
381,00	1949,339
381,50	1949,334
382,00	1949,329
382,50	1949,326
383,00	1949,322
383,50	1949,318
384,00	1949,314
384,50	1949,310
385,00	1949,306
385,50	1949,301
386,00	1949,297
386,50	1949,292
387,00	1949,287
387,50	1949,282
388,00	1949,277
388,50	1949,273
389,00	1949,268
389,50	1949,263
390,00	1949,258
390,50	1949,255
391,00	1949,252
391,50	1949,249
392,00	1949,246
392,50	1949,240
393,00	1949,235
393,50	1949,229
394,00	1949,223
394,50	1949,219
395,00	1949,215
395,50	1949,211
396,00	1949,207

396,50	1949,205
397,00	1949,203
397,50	1949,200
398,00	1949,198
398,50	1949,195
399,00	1949,192
399,50	1949,188
400,00	1949,185

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>		<b>0,50</b>	m				
<b>IRI :</b>		<b>5,81</b>	m/Km				
<b>FECHA:</b>	5/4/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>
<b>PROG. INI.</b>	0+300			300	320	20,00	9,73
<b>PROG. FIN.</b>	0+400			320	340	20,00	27,01 Descartado
				340	360	20,00	5,46
				360	380	20,00	5,81
				380	400	20,00	2,25
							5,81

### Perfil del tramo 300 + 400 Av. Los Molles



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**5**

<b>Abscisa</b>	<b>Cota</b>
400,00	1949,185
400,50	1949,183
401,00	1949,180
401,50	1949,177
402,00	1949,174
402,50	1949,169
403,00	1949,164
403,50	1949,159
404,00	1949,154
404,50	1949,149
405,00	1949,144
405,50	1949,139
406,00	1949,133
406,50	1949,129
407,00	1949,124
407,50	1949,119
408,00	1949,115
408,50	1949,109
409,00	1949,103
409,50	1949,098
410,00	1949,092
410,50	1949,085
411,00	1949,078
411,50	1949,071
412,00	1949,064
412,50	1949,058
413,00	1949,052
413,50	1949,046
414,00	1949,040
414,50	1949,033
415,00	1949,027
415,50	1949,021
416,00	1949,015
416,50	1949,006
417,00	1948,997
417,50	1948,988

418,00	1948,979
418,50	1948,970
419,00	1948,961
419,50	1948,952
420,00	1948,943
420,50	1948,934
421,00	1948,925
421,50	1948,916
422,00	1948,907
422,50	1948,897
423,00	1948,886
423,50	1948,874
424,00	1948,862
424,50	1948,852
425,00	1948,842
425,50	1948,833
426,00	1948,823
426,50	1948,810
427,00	1948,797
427,50	1948,787
428,00	1948,776
428,50	1948,763
429,00	1948,750
429,50	1948,740
430,00	1948,731
430,50	1948,718
431,00	1948,705
431,50	1948,698
432,00	1948,692
432,50	1948,675
433,00	1948,658
433,50	1948,646
434,00	1948,634
434,50	1948,622
435,00	1948,610
435,50	1948,599
436,00	1948,588
436,50	1948,576

437,00	1948,565
437,50	1948,553
438,00	1948,540
438,50	1948,528
439,00	1948,515
439,50	1948,503
440,00	1948,491
440,50	1948,479
441,00	1948,466
441,50	1948,456
442,00	1948,446
442,50	1948,436
443,00	1948,425
443,50	1948,413
444,00	1948,400
444,50	1948,388
445,00	1948,375
445,50	1948,363
446,00	1948,350
446,50	1948,338
447,00	1948,325
447,50	1948,311
448,00	1948,296
448,50	1948,281
449,00	1948,265
449,50	1948,252
450,00	1948,238
450,50	1948,226
451,00	1948,215
451,50	1948,203
452,00	1948,192
452,50	1948,177
453,00	1948,163
453,50	1948,154
454,00	1948,145
454,50	1948,134
455,00	1948,123
455,50	1948,113

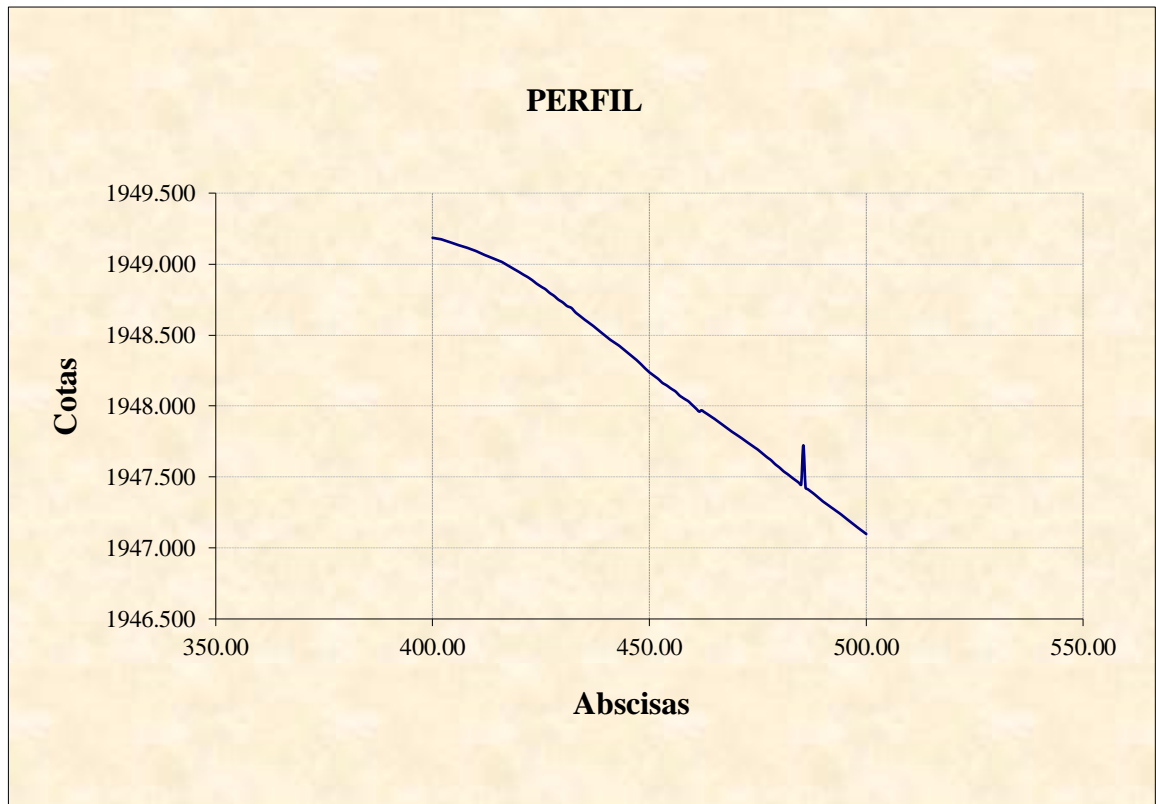
456,00	1948,103
456,50	1948,088
457,00	1948,073
457,50	1948,062
458,00	1948,052
458,50	1948,043
459,00	1948,033
459,50	1948,019
460,00	1948,004
460,50	1947,990
461,00	1947,975
461,50	1947,960
462,00	1947,970
462,50	1947,960
463,00	1947,951
463,50	1947,940
464,00	1947,930
464,50	1947,920
465,00	1947,910
465,50	1947,899
466,00	1947,887
466,50	1947,876
467,00	1947,865
467,50	1947,854
468,00	1947,842
468,50	1947,831
469,00	1947,820
469,50	1947,810
470,00	1947,800
470,50	1947,789
471,00	1947,779
471,50	1947,768
472,00	1947,757
472,50	1947,746
473,00	1947,735
473,50	1947,725
474,00	1947,714
474,50	1947,704
475,00	1947,693
475,50	1947,680
476,00	1947,668

476,50	1947,655
477,00	1947,642
477,50	1947,631
478,00	1947,620
478,50	1947,605
479,00	1947,590
479,50	1947,578
480,00	1947,566
480,50	1947,553
481,00	1947,539
481,50	1947,528
482,00	1947,517
482,50	1947,505
483,00	1947,493
483,50	1947,482
484,00	1947,471
484,50	1947,459
485,00	1947,447
485,50	1947,723
486,00	1947,426
486,50	1947,415
487,00	1947,403
487,50	1947,392
488,00	1947,380
488,50	1947,367
489,00	1947,354
489,50	1947,341
490,00	1947,328
490,50	1947,317
491,00	1947,306
491,50	1947,295
492,00	1947,284
492,50	1947,274
493,00	1947,263
493,50	1947,252
494,00	1947,241
494,50	1947,229
495,00	1947,217
495,50	1947,205
496,00	1947,193
496,50	1947,181

497,00	1947,169
497,50	1947,157
498,00	1947,145
498,50	1947,133
499,00	1947,122
499,50	1947,110
500,00	1947,099

<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>				<b>20</b>
<b>Delta X :</b>	<b>0,50</b>	m					
<b>IRI :</b>	<b>5,07</b>	m/Km					
<b>FECHA:</b>	5/4/2023		<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	0+400		400	420	20,00	2,10	2,10
<b>PROG. FIN.</b>	0+500		420	440	20,00	5,33	5,33
			440	460	20,00	6,13	6,13
			460	480	20,00	6,71	6,71
			480	500	20,00	38,77	Descartado 5,07

### Perfil del tramo 400 + 500 Av. Los Molles



**CÁLCULO DEL INDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**6**

<b>Abscisa</b>	<b>Cota</b>
500,00	1947,099
500,50	1947,088
501,00	1947,077
501,50	1947,066
502,00	1947,055
502,50	1947,044
503,00	1947,032
503,50	1947,021
504,00	1947,009
504,50	1946,998
505,00	1946,986
505,50	1946,975
506,00	1946,963
506,50	1946,951
507,00	1946,939
507,50	1946,927
508,00	1946,915
508,50	1946,903
509,00	1946,891
509,50	1946,878
510,00	1946,866
510,50	1946,854
511,00	1946,843
511,50	1946,832
512,00	1946,822
512,50	1946,809
513,00	1946,796
513,50	1946,786
514,00	1946,775
514,50	1946,763
515,00	1946,751
515,50	1946,736
516,00	1946,722
516,50	1946,712
517,00	1946,703

517,50	1946,690
518,00	1946,676
518,50	1946,665
519,00	1946,655
519,50	1946,641
520,00	1946,628
520,50	1946,615
521,00	1946,602
521,50	1946,592
522,00	1946,581
522,50	1946,568
523,00	1946,555
523,50	1946,542
524,00	1946,529
524,50	1946,517
525,00	1946,504
525,50	1946,494
526,00	1946,484
526,50	1946,473
527,00	1946,463
527,50	1946,448
528,00	1946,433
528,50	1946,424
529,00	1946,415
529,50	1946,406
530,00	1946,396
530,50	1946,382
531,00	1946,368
531,50	1946,357
532,00	1946,347
532,50	1946,335
533,00	1946,323
533,50	1946,313
534,00	1946,302
534,50	1946,291
535,00	1946,279
535,50	1946,272
536,00	1946,264

536,50	1946,249
537,00	1946,235
537,50	1946,225
538,00	1946,214
538,50	1946,202
539,00	1946,190
539,50	1946,179
540,00	1946,169
540,50	1946,159
541,00	1946,149
541,50	1946,137
542,00	1946,126
542,50	1946,114
543,00	1946,102
543,50	1946,091
544,00	1946,080
544,50	1946,069
545,00	1946,057
545,50	1946,046
546,00	1946,036
546,50	1946,025
547,00	1946,015
547,50	1946,003
548,00	1945,991
548,50	1945,980
549,00	1945,968
549,50	1945,958
550,00	1945,948
550,50	1945,936
551,00	1945,924
551,50	1945,912
552,00	1945,899
552,50	1945,888
553,00	1945,876
553,50	1945,862
554,00	1945,848
554,50	1945,838
555,00	1945,829

555,50	1945,819
556,00	1945,809
556,50	1945,798
557,00	1945,786
557,50	1945,776
558,00	1945,765
558,50	1945,754
559,00	1945,743
559,50	1945,735
560,00	1945,726
560,50	1945,719
561,00	1945,712
561,50	1945,700
562,00	1945,689
562,50	1945,674
563,00	1945,659
563,50	1945,649
564,00	1945,638
564,50	1945,627
565,00	1945,617
565,50	1945,606
566,00	1945,595
566,50	1945,584
567,00	1945,574
567,50	1945,560
568,00	1945,546
568,50	1945,532
569,00	1945,518
569,50	1945,507
570,00	1945,497
570,50	1945,486
571,00	1945,474
571,50	1945,461
572,00	1945,448
572,50	1945,436
573,00	1945,425
573,50	1945,411
574,00	1945,398
574,50	1945,386
575,00	1945,375
575,50	1945,363

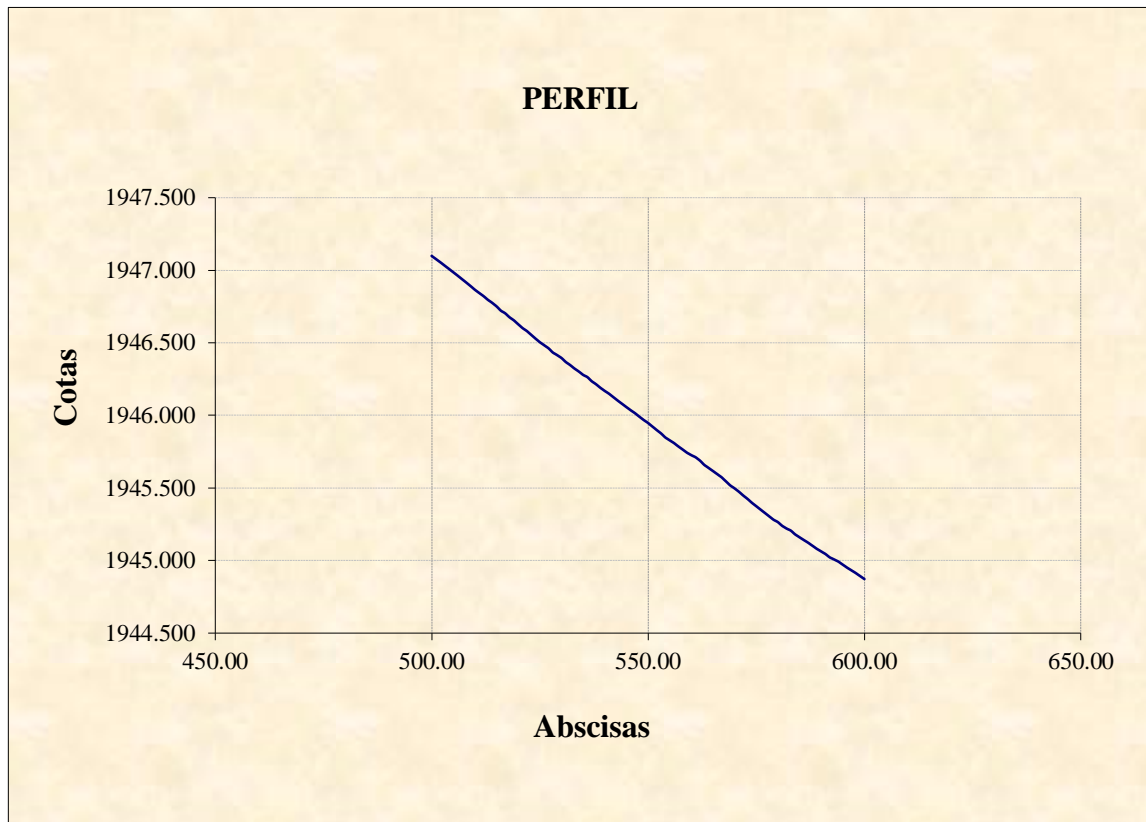
576,00	1945,351
576,50	1945,340
577,00	1945,328
577,50	1945,316
578,00	1945,305
578,50	1945,293
579,00	1945,281
579,50	1945,273
580,00	1945,265
580,50	1945,252
581,00	1945,239
581,50	1945,230
582,00	1945,221
582,50	1945,214
583,00	1945,206
583,50	1945,193
584,00	1945,180
584,50	1945,170
585,00	1945,160
585,50	1945,151
586,00	1945,141
586,50	1945,132
587,00	1945,123
587,50	1945,112
588,00	1945,102
588,50	1945,091
589,00	1945,081
589,50	1945,072
590,00	1945,063
590,50	1945,054
591,00	1945,045
591,50	1945,033
592,00	1945,022
592,50	1945,015
593,00	1945,007
593,50	1945,000
594,00	1944,993
594,50	1944,982
595,00	1944,972
595,50	1944,961
596,00	1944,951

596,50	1944,942
597,00	1944,933
597,50	1944,923
598,00	1944,914
598,50	1944,904
599,00	1944,893
599,50	1944,883
600,00	1944,872



<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>				<b>20</b>
<b>Delta X :</b>	<b>0,50</b>	m					
<b>IRI :</b>	<b>4,59</b>	m/Km					
<b>FECHA:</b>	5/5/2023		<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	0+500		500	520	20,00	4,40	
<b>PROG. FIN.</b>	0+600		520	540	20,00	5,78	
			540	560	20,00	3,82	
			560	580	20,00	3,93	
			580	600	20,00	5,03	4,59

**Perfil del tramo 500 + 600 Av. Los Molles**



**CÁLCULO DEL INDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**7**

<b>Abscisa</b>	<b>Cota</b>
600,00	1944,872
600,50	1944,865
601,00	1944,857
601,50	1944,850
602,00	1944,842
602,50	1944,830
603,00	1944,818
603,50	1944,806
604,00	1944,793
604,50	1944,784
605,00	1944,775
605,50	1944,761
606,00	1944,746
606,50	1944,739
607,00	1944,732
607,50	1944,720
608,00	1944,708
608,50	1944,697
609,00	1944,686
609,50	1944,678
610,00	1944,669
610,50	1944,655
611,00	1944,641
611,50	1944,632
612,00	1944,624
612,50	1944,611
613,00	1944,599
613,50	1944,587
614,00	1944,576
614,50	1944,565
615,00	1944,554
615,50	1944,545
616,00	1944,536
616,50	1944,527
617,00	1944,518

617,50	1944,509
618,00	1944,499
618,50	1944,491
619,00	1944,482
619,50	1944,474
620,00	1944,465
620,50	1944,456
621,00	1944,447
621,50	1944,442
622,00	1944,437
622,50	1944,424
623,00	1944,410
623,50	1944,400
624,00	1944,390
624,50	1944,389
625,00	1944,387
625,50	1944,378
626,00	1944,369
626,50	1944,362
627,00	1944,354
627,50	1944,347
628,00	1944,339
628,50	1944,334
629,00	1944,329
629,50	1944,324
630,00	1944,318
630,50	1944,307
631,00	1944,296
631,50	1944,283
632,00	1944,270
632,50	1944,269
633,00	1944,267
633,50	1944,260
634,00	1944,253
634,50	1944,245
635,00	1944,237
635,50	1944,229
636,00	1944,220

636,50	1944,213
637,00	1944,205
637,50	1944,198
638,00	1944,191
638,50	1944,187
639,00	1944,182
639,50	1944,175
640,00	1944,168
640,50	1944,157
641,00	1944,147
641,50	1944,138
642,00	1944,134
642,50	1944,127
643,00	1944,120
643,50	1944,112
644,00	1944,094
644,50	1944,093
645,00	1944,091
645,50	1944,077
646,00	1944,069
646,50	1944,058
647,00	1944,051
647,50	1944,049
648,00	1944,047
648,50	1944,036
649,00	1944,024
649,50	1944,018
650,00	1944,012
650,50	1944,003
651,00	1943,994
651,50	1943,990
652,00	1943,986
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655,00	1943,963

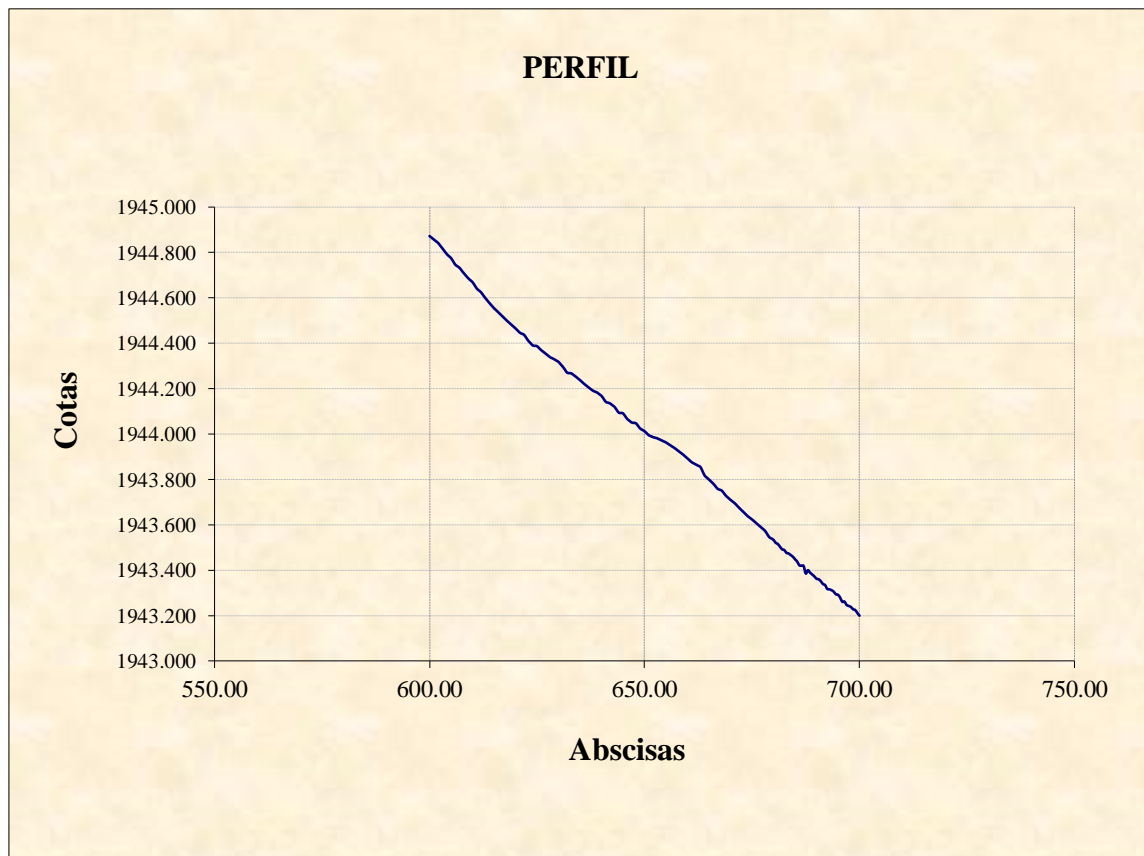
655,50	1943,956
656,00	1943,950
656,50	1943,944
657,00	1943,938
657,50	1943,931
658,00	1943,923
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659,00	1943,909
659,50	1943,900
660,00	1943,892
660,50	1943,884
661,00	1943,875
661,50	1943,870
662,00	1943,865
662,50	1943,860
663,00	1943,855
663,50	1943,836
664,00	1943,817
664,50	1943,808
665,00	1943,799
665,50	1943,790
666,00	1943,781
666,50	1943,770
667,00	1943,759
667,50	1943,754
668,00	1943,750
668,50	1943,738
669,00	1943,727
669,50	1943,718
670,00	1943,710
670,50	1943,702
671,00	1943,695
671,50	1943,685
672,00	1943,675
672,50	1943,665
673,00	1943,656
673,50	1943,647
674,00	1943,638
674,50	1943,631
675,00	1943,623
675,50	1943,615

676,00	1943,607
676,50	1943,599
677,00	1943,590
677,50	1943,582
678,00	1943,574
678,50	1943,560
679,00	1943,546
679,50	1943,540
680,00	1943,533
680,50	1943,521
681,00	1943,515
681,50	1943,504
682,00	1943,492
682,50	1943,489
683,00	1943,476
683,50	1943,473
684,00	1943,466
684,50	1943,459
685,00	1943,448
685,50	1943,438
686,00	1943,421
686,50	1943,419
687,00	1943,419
687,50	1943,412
688,00	1943,400
688,50	1943,389
689,00	1943,381
689,50	1943,372
690,00	1943,362
690,50	1943,360
691,00	1943,351
691,50	1943,339
692,00	1943,334
692,50	1943,317
693,00	1943,315
693,50	1943,312
694,00	1943,305
694,50	1943,294
695,00	1943,291
695,50	1943,279
696,00	1943,260

696,50	1943,261
697,00	1943,247
697,50	1943,242
698,00	1943,238
698,50	1943,228
699,00	1943,224
699,50	1943,211
700,00	1943,199

<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>				<b>20</b>
<b>Delta X :</b>	<b>0,50</b>	m	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>IRI :</b>	<b>6,69</b>	m/Km	600	620	20,00	5,44	
<b>FECHA:</b>	5/5/2023		620	640	20,00	6,55	
<b>PROG. INI.</b>	0+600		640	660	20,00	7,48	
<b>PROG. FIN.</b>	0+700		660	680	20,00	6,43	
			680	700	20,00	7,55	6,69

### Perfil del tramo 600 + 700 Av. Los Molles



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**8**

<b>Abscisa</b>	<b>Cota</b>
700,00	1943,199
700,50	1943,196
701,00	1943,185
701,50	1943,175
702,00	1943,166
702,50	1943,164
703,00	1943,150
703,50	1943,137
704,00	1943,126
704,50	1943,115
705,00	1943,110
705,50	1943,101
706,00	1943,094
706,50	1943,081
707,00	1943,071
707,50	1943,066
708,00	1943,053
708,50	1943,040
709,00	1943,037
709,50	1943,031
710,00	1943,020
710,50	1943,012
711,00	1943,002
711,50	1942,990
712,00	1942,979
712,50	1942,969
713,00	1942,957
713,50	1942,949
714,00	1942,941
714,50	1942,931
715,00	1942,923
715,50	1942,913
716,00	1942,902
716,50	1942,891
717,00	1942,876
717,50	1942,865

718,00	1942,859
718,50	1942,847
719,00	1942,834
719,50	1942,820
720,00	1942,812
720,50	1942,806
721,00	1942,798
721,50	1942,788
722,00	1942,778
722,50	1942,767
723,00	1942,757
723,50	1942,746
724,00	1942,734
724,50	1942,722
725,00	1942,710
725,50	1942,697
726,00	1942,683
726,50	1942,669
727,00	1942,655
727,50	1942,639
728,00	1942,625
728,50	1942,612
729,00	1942,597
729,50	1942,583
730,00	1942,570
730,50	1942,553
731,00	1942,538
731,50	1942,522
732,00	1942,509
732,50	1942,496
733,00	1942,481
733,50	1942,466
734,00	1942,451
734,50	1942,436
735,00	1942,421
735,50	1942,406
736,00	1942,393
736,50	1942,380

737,00	1942,369
737,50	1942,361
738,00	1942,348
738,50	1942,335
739,00	1942,322
739,50	1942,311
740,00	1942,300
740,50	1942,290
741,00	1942,275
741,50	1942,267
742,00	1942,257
742,50	1942,250
743,00	1942,239
743,50	1942,229
744,00	1942,219
744,50	1942,209
745,00	1942,200
745,50	1942,189
746,00	1942,181
746,50	1942,173
747,00	1942,160
747,50	1942,158
748,00	1942,155
748,50	1942,151
749,00	1942,145
749,50	1942,135
750,00	1942,126
750,50	1942,117
751,00	1942,109
751,50	1942,104
752,00	1942,093
752,50	1942,089
753,00	1942,080
753,50	1942,072
754,00	1942,065
754,50	1942,054
755,00	1942,042
755,50	1942,030

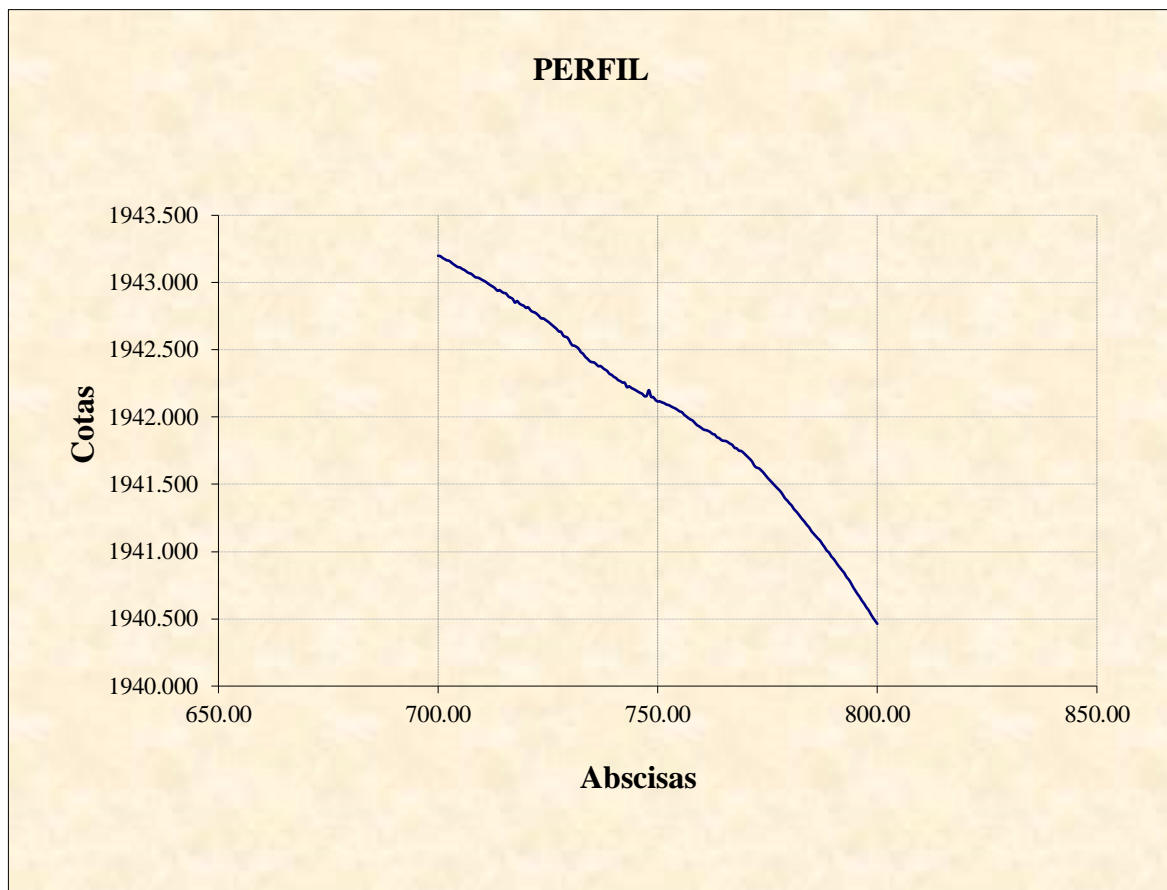
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757,00	1941,992
757,50	1941,982
758,00	1941,973
758,50	1941,955
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759,50	1941,930
760,00	1941,918
760,50	1941,906
761,00	1941,903
761,50	1941,897
762,00	1941,888
762,50	1941,878
763,00	1941,870
763,50	1941,860
764,00	1941,847
764,50	1941,836
765,00	1941,824
765,50	1941,822
766,00	1941,813
766,50	1941,802
767,00	1941,793
767,50	1941,780
768,00	1941,764
768,50	1941,756
769,00	1941,746
769,50	1941,732
770,00	1941,718
770,50	1941,703
771,00	1941,688
771,50	1941,670
772,00	1941,655
772,50	1941,637
773,00	1941,620
773,50	1941,606
774,00	1941,588
774,50	1941,570
775,00	1941,550
775,50	1941,532
776,00	1941,511

776,50	1941,490
777,00	1941,471
777,50	1941,452
778,00	1941,434
778,50	1941,414
779,00	1941,396
779,50	1941,380
780,00	1941,359
780,50	1941,342
781,00	1941,321
781,50	1941,300
782,00	1941,280
782,50	1941,259
783,00	1941,239
783,50	1941,219
784,00	1941,199
784,50	1941,179
785,00	1941,159
785,50	1941,139
786,00	1941,120
786,50	1941,100
787,00	1941,077
787,50	1941,056
788,00	1941,033
788,50	1941,011
789,00	1940,991
789,50	1940,969
790,00	1940,948
790,50	1940,926
791,00	1940,904
791,50	1940,881
792,00	1940,860
792,50	1940,840
793,00	1940,816
793,50	1940,791
794,00	1940,766
794,50	1940,739
795,00	1940,714
795,50	1940,688
796,00	1940,662
796,50	1940,637

797,00	1940,613
797,50	1940,588
798,00	1940,562
798,50	1940,537
799,00	1940,512
799,50	1940,487
800,00	1940,463

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>		<b>0,50</b>	m					
<b>IRI :</b>		<b>6,02</b>	m/Km					
<b>FECHA:</b>	5/5/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	0+700			700	720	20,00	6,25	
<b>PROG. FIN.</b>	0+800			720	740	20,00	5,45	
				740	760	20,00	6,36	
				760	780	20,00	5,78	
				780	800	20,00	6,25	6,02

**Perfil del tramo 700 + 800 Av. Los Molles**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR  
EL MÉTODO DE MIRA Y NIVEL**

<b>Abscisa</b>	<b>Cota</b>
800,00	1940,463
800,50	1940,439
801,00	1940,414
801,50	1940,389
802,00	1940,363
802,50	1940,338
803,00	1940,313
803,50	1940,288
804,00	1940,263
804,50	1940,239
805,00	1940,216
805,50	1940,193
806,00	1940,169
806,50	1940,146
807,00	1940,123
807,50	1940,099
808,00	1940,075
808,50	1940,051
809,00	1940,027
809,50	1940,004
810,00	1939,981
810,50	1939,956
811,00	1939,931
811,50	1939,907
812,00	1939,881
812,50	1939,856
813,00	1939,831
813,50	1939,803
814,00	1939,778
814,50	1939,750
815,00	1939,722
815,50	1939,694
816,00	1939,666
816,50	1939,638
817,00	1939,610
817,50	1939,582

818,00	1939,554
818,50	1939,526
819,00	1939,496
819,50	1939,466
820,00	1939,436
820,50	1939,406
821,00	1939,376
821,50	1939,346
822,00	1939,315
822,50	1939,285
823,00	1939,255
823,50	1939,225
824,00	1939,196
824,50	1939,165
825,00	1939,134
825,50	1939,102
826,00	1939,071
826,50	1939,040
827,00	1939,008
827,50	1938,977
828,00	1938,947
828,50	1938,915
829,00	1938,884
829,50	1938,853
830,00	1938,822
830,50	1938,791
831,00	1938,761
831,50	1938,729
832,00	1938,698
832,50	1938,667
833,00	1938,635
833,50	1938,603
834,00	1938,571
834,50	1938,539
835,00	1938,507
835,50	1938,475
836,00	1938,443
836,50	1938,412

837,00	1938,380
837,50	1938,348
838,00	1938,316
838,50	1938,284
839,00	1938,253
839,50	1938,221
840,00	1938,189
840,50	1938,158
841,00	1938,127
841,50	1938,096
842,00	1938,065
842,50	1938,033
843,00	1938,001
843,50	1937,972
844,00	1937,940
844,50	1937,909
845,00	1937,878
845,50	1937,848
846,00	1937,817
846,50	1937,785
847,00	1937,753
847,50	1937,723
848,00	1937,691
848,50	1937,658
849,00	1937,625
849,50	1937,595
850,00	1937,565
850,50	1937,535
851,00	1937,505
851,50	1937,476
852,00	1937,447
852,50	1937,415
853,00	1937,385
853,50	1937,353
854,00	1937,323
854,50	1937,292
855,00	1937,261
855,50	1937,231



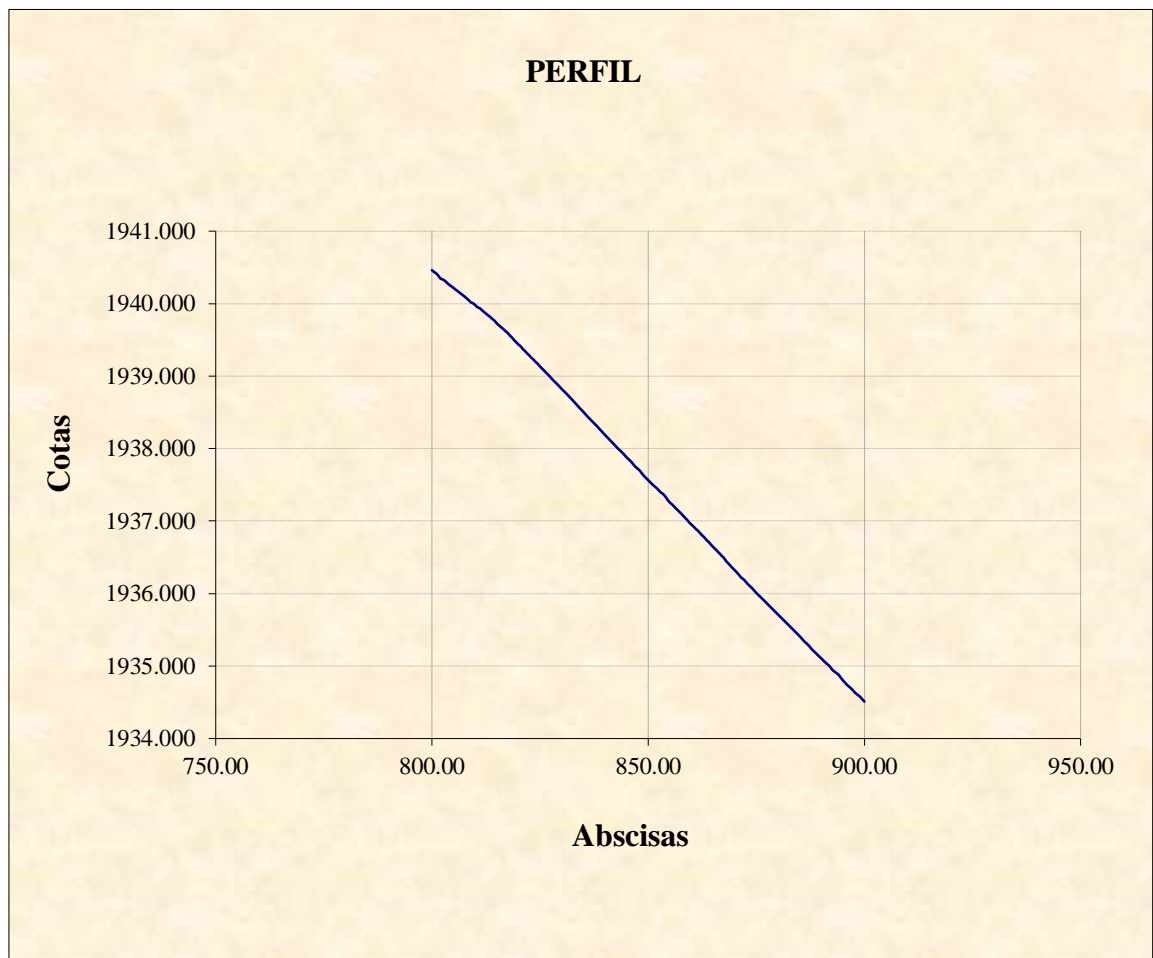
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856,50	1937,170
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857,50	1937,111
858,00	1937,080
858,50	1937,049
859,00	1937,016
859,50	1936,983
860,00	1936,952
860,50	1936,924
861,00	1936,893
861,50	1936,865
862,00	1936,835
862,50	1936,803
863,00	1936,772
863,50	1936,738
864,00	1936,707
864,50	1936,676
865,00	1936,643
865,50	1936,612
866,00	1936,581
866,50	1936,548
867,00	1936,515
867,50	1936,484
868,00	1936,450
868,50	1936,418
869,00	1936,386
869,50	1936,355
870,00	1936,323
870,50	1936,292
871,00	1936,261
871,50	1936,230
872,00	1936,199
872,50	1936,168
873,00	1936,137
873,50	1936,107
874,00	1936,076
874,50	1936,046
875,00	1936,015
875,50	1935,984
876,00	1935,953

876,50	1935,922
877,00	1935,893
877,50	1935,862
878,00	1935,832
878,50	1935,802
879,00	1935,772
879,50	1935,742
880,00	1935,713
880,50	1935,683
881,00	1935,653
881,50	1935,623
882,00	1935,594
882,50	1935,564
883,00	1935,534
883,50	1935,504
884,00	1935,475
884,50	1935,444
885,00	1935,414
885,50	1935,384
886,00	1935,355
886,50	1935,325
887,00	1935,295
887,50	1935,266
888,00	1935,236
888,50	1935,205
889,00	1935,175
889,50	1935,145
890,00	1935,115
890,50	1935,085
891,00	1935,055
891,50	1935,024
892,00	1934,994
892,50	1934,961
893,00	1934,931
893,50	1934,900
894,00	1934,870
894,50	1934,838
895,00	1934,805
895,50	1934,773
896,00	1934,740
896,50	1934,714

897,00	1934,687
897,50	1934,655
898,00	1934,624
898,50	1934,600
899,00	1934,577
899,50	1934,543
900,00	1934,510

<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>	<b>0,50</b>	m				
<b>IRI :</b>	<b>6,94</b>	m/Km				
<b>FECHA:</b>	5/5/2023		<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>
<b>PROG. INI.</b>	0+800		800	820	20,00	6,80
<b>PROG. FIN.</b>	0+900		820	840	20,00	6,95
			840	860	20,00	7,25
			860	880	20,00	6,98
			880	900	20,00	6,70
						6,94

**Perfil del tramo 800 + 900 Av. Los Molles**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR  
EL MÉTODO DE MIRA Y NIVEL**

**10**

<b>Abscisa</b>	<b>Cota</b>
900,00	1934,510
900,50	1934,484
901,00	1934,457
901,50	1934,430
902,00	1934,403
902,50	1934,376
903,00	1934,349
903,50	1934,322
904,00	1934,294
904,50	1934,267
905,00	1934,238
905,50	1934,210
906,00	1934,183
906,50	1934,155
907,00	1934,127
907,50	1934,100
908,00	1934,071
908,50	1934,042
909,00	1934,013
909,50	1933,984
910,00	1933,955
910,50	1933,926
911,00	1933,896
911,50	1933,868
912,00	1933,839
912,50	1933,810
913,00	1933,781
913,50	1933,752
914,00	1933,723
914,50	1933,695
915,00	1933,665
915,50	1933,635
916,00	1933,604
916,50	1933,572
917,00	1933,541

917,50	1933,511
918,00	1933,479
918,50	1933,446
919,00	1933,413
919,50	1933,378
920,00	1933,344
920,50	1933,311
921,00	1933,278
921,50	1933,245
922,00	1933,213
922,50	1933,179
923,00	1933,144
923,50	1933,109
924,00	1933,071
924,50	1933,033
925,00	1932,994
925,50	1932,956
926,00	1932,917
926,50	1932,879
927,00	1932,841
927,50	1932,805
928,00	1932,768
928,50	1932,731
929,00	1932,694
929,50	1932,661
930,00	1932,627
930,50	1932,593
931,00	1932,559
931,50	1932,526
932,00	1932,492
932,50	1932,458
933,00	1932,424
933,50	1932,390
934,00	1932,356
934,50	1932,322
935,00	1932,288
935,50	1932,254
936,00	1932,220

936,50	1932,186
937,00	1932,153
937,50	1932,118
938,00	1932,084
938,50	1932,050
939,00	1932,016
939,50	1931,982
940,00	1931,9473
940,50	1931,920
941,00	1931,892
941,50	1931,863
942,00	1931,834
942,50	1931,804
943,00	1931,774
943,50	1931,741
944,00	1931,709
944,50	1931,676
945,00	1931,644
945,50	1931,611
946,00	1931,578
946,50	1931,544
947,00	1931,509
947,50	1931,475
948,00	1931,440
948,50	1931,405
949,00	1931,371
949,50	1931,337
950,00	1931,303
950,50	1931,269
951,00	1931,238
951,50	1931,206
952,00	1931,173
952,50	1931,138
953,00	1931,102
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954,00	1931,029
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955,00	1930,957

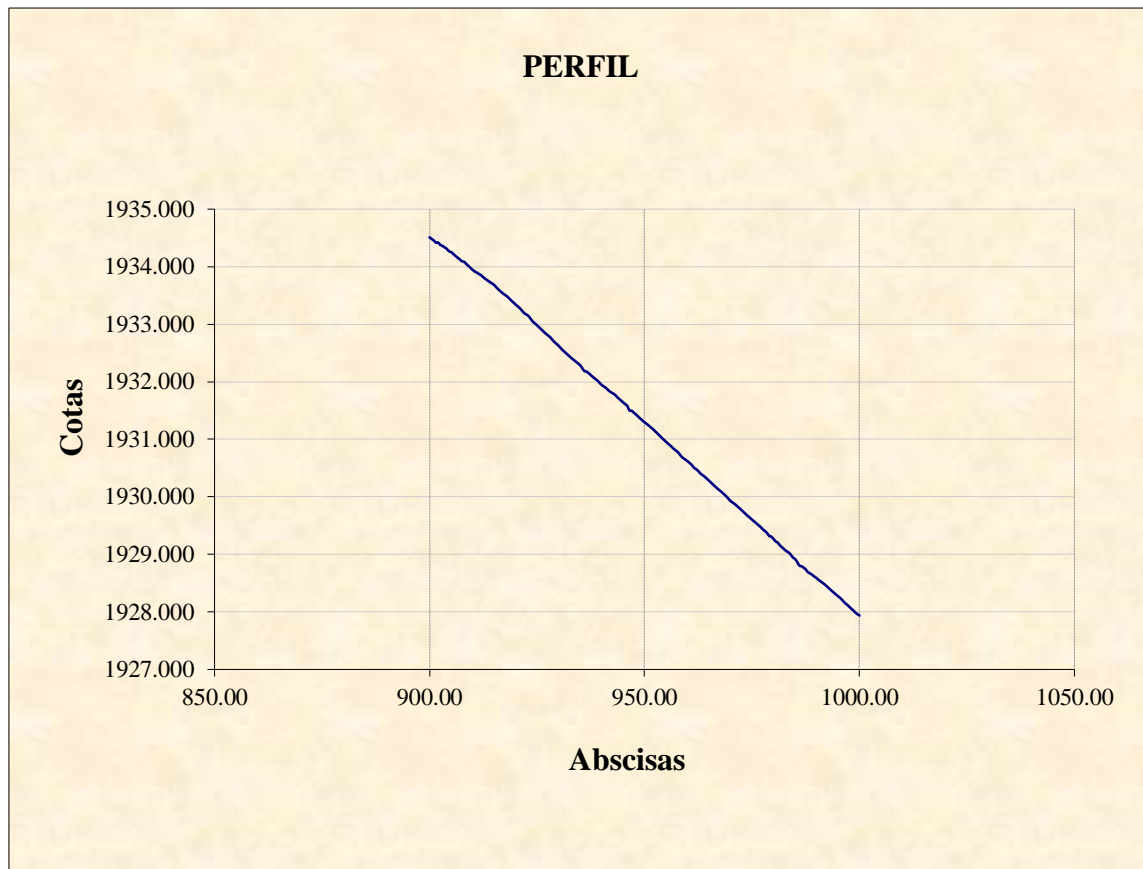
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957,50	1930,787
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959,00	1930,686
959,50	1930,652
960,00	1930,6191
960,50	1930,586
961,00	1930,552
961,50	1930,518
962,00	1930,483
962,50	1930,449
963,00	1930,415
963,50	1930,382
964,00	1930,349
964,50	1930,315
965,00	1930,281
965,50	1930,245
966,00	1930,210
966,50	1930,175
967,00	1930,141
967,50	1930,108
968,00	1930,075
968,50	1930,042
969,00	1930,008
969,50	1929,974
970,00	1929,940
970,50	1929,906
971,00	1929,874
971,50	1929,841
972,00	1929,808
972,50	1929,773
973,00	1929,738
973,50	1929,703
974,00	1929,668
974,50	1929,637
975,00	1929,605
975,50	1929,572

976,00	1929,540
976,50	1929,507
977,00	1929,474
977,50	1929,439
978,00	1929,405
978,50	1929,372
979,00	1929,338
979,50	1929,304
980,00	1929,268
980,50	1929,236
981,00	1929,203
981,50	1929,169
982,00	1929,135
982,50	1929,100
983,00	1929,064
983,50	1929,033
984,00	1928,999
984,50	1928,966
985,00	1928,933
985,50	1928,900
986,00	1928,867
986,50	1928,834
987,00	1928,801
987,50	1928,767
988,00	1928,733
988,50	1928,699
989,00	1928,664
989,50	1928,630
990,00	1928,596
990,50	1928,562
991,00	1928,528
991,50	1928,496
992,00	1928,464
992,50	1928,432
993,00	1928,400
993,50	1928,368
994,00	1928,336
994,50	1928,305
995,00	1928,273
995,50	1928,238
996,00	1928,202

996,50	1928,165
997,00	1928,131
997,50	1928,098
998,00	1928,062
998,50	1928,030
999,00	1928,000
999,50	1927,967
1000,00	1927,938

<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>	<b>0,50</b>	m	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>		
<b>IRI :</b>	<b>6,32</b>	m/Km			<b>IRI (m/Km)</b>		
<b>FECHA:</b>	5/5/2023		900	920	20,00	6,57	
<b>PROG. INI.</b>	0+900		920	940	20,00	5,38	
<b>PROG. FIN.</b>	1+000		940	960	20,00	7,13	
			960	980	20,00	3,65	
			980	1000	20,00	8,88	6,32

**Perfil del tramo 900 + 1000 Av. Los Molles**



<b>Abscisa</b>	<b>Cota</b>
1000,00	1927,938
1000,50	1927,909
1001,00	1927,873
1001,50	1927,838
1002,00	1927,814
1002,50	1927,781
1003,00	1927,766
1003,50	1927,730
1004,00	1927,713
1004,50	1927,690
1005,00	1927,665
1005,50	1927,632
1006,00	1927,601
1006,50	1927,585
1007,00	1927,555
1007,50	1927,538
1008,00	1927,511
1008,50	1927,498
1009,00	1927,486
1009,50	1927,468
1010,00	1927,450
1010,50	1927,421
1011,00	1927,392
1011,50	1927,374
1012,00	1927,356
1012,50	1927,336
1013,00	1927,316
1013,50	1927,291
1014,00	1927,267
1014,50	1927,249
1015,00	1927,231
1015,50	1927,209
1016,00	1927,187
1016,50	1927,166
1017,00	1927,146
1017,50	1927,128

1018,00	1927,110
1018,50	1927,094
1019,00	1927,077
1019,50	1927,060
1020,00	1927,050
1020,50	1927,034
1021,00	1927,016
1021,50	1927,000
1022,00	1926,984
1022,50	1926,968
1023,00	1926,951
1023,50	1926,933
1024,00	1926,916
1024,50	1926,900
1025,00	1926,884
1025,50	1926,871
1026,00	1926,859
1026,50	1926,847
1027,00	1926,835
1027,50	1926,823
1028,00	1926,811
1028,50	1926,799
1029,00	1926,787
1029,50	1926,775
1030,00	1926,763
1030,50	1926,775
1031,00	1926,786
1031,50	1926,775
1032,00	1926,763
1032,50	1926,750
1033,00	1926,738
1033,50	1926,726
1034,00	1926,713
1034,50	1926,702
1035,00	1926,690
1035,50	1926,678
1036,00	1926,667
1036,50	1926,658

1037,00	1926,649
1037,50	1926,639
1038,00	1926,630
1038,50	1926,621
1039,00	1926,612
1039,50	1926,603
1040,00	1926,594
1040,50	1926,588
1041,00	1926,581
1041,50	1926,576
1042,00	1926,571
1042,50	1926,574
1043,00	1926,577
1043,50	1926,585
1044,00	1926,593
1044,50	1926,601
1045,00	1926,609
1045,50	1926,610
1046,00	1926,610
1046,50	1926,603
1047,00	1926,595
1047,50	1926,604
1048,00	1926,613
1048,50	1926,613
1049,00	1926,613
1049,50	1926,620
1050,00	1926,627
1050,50	1926,621
1051,00	1926,616
1051,50	1926,608
1052,00	1926,599
1052,50	1926,591
1053,00	1926,583
1053,50	1926,572
1054,00	1926,562
1054,50	1926,553
1055,00	1926,544
1055,50	1926,539

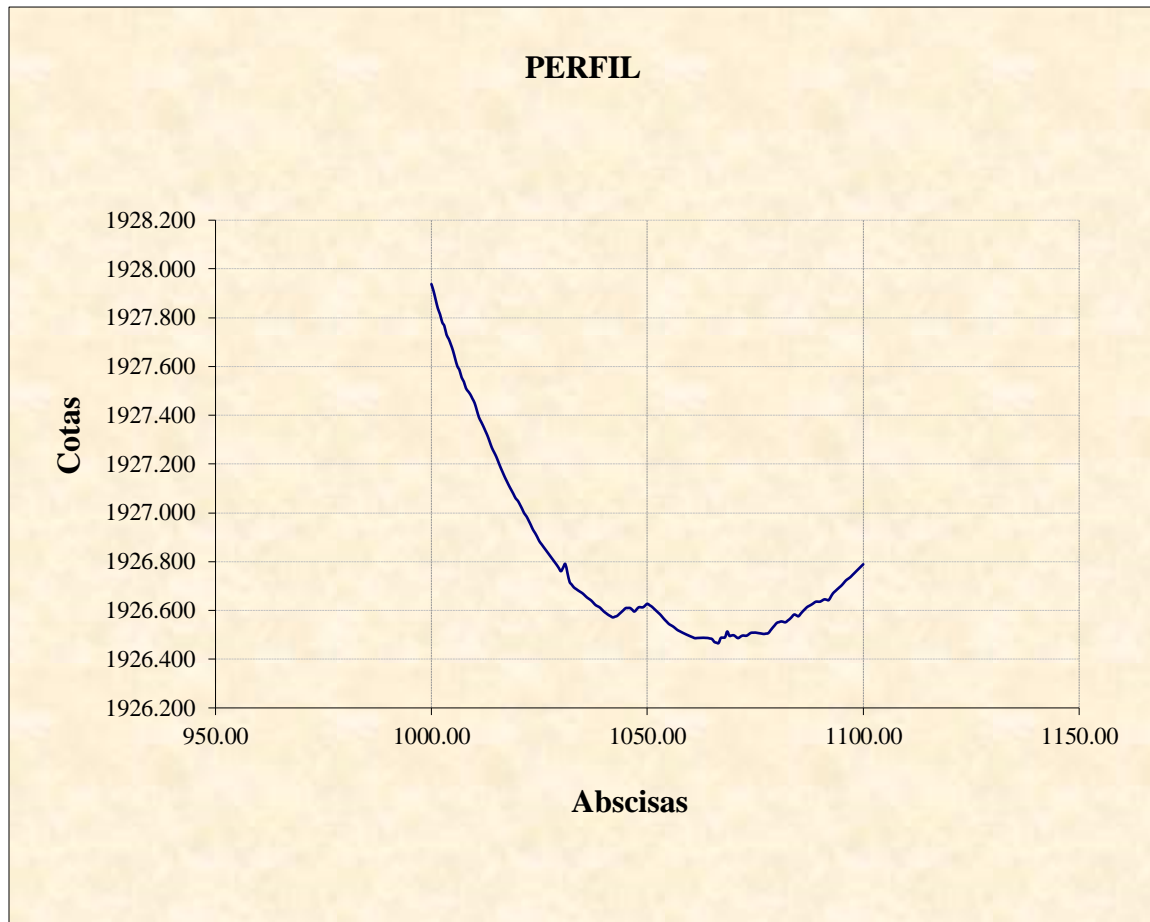
1056,00	1926,533
1056,50	1926,526
1057,00	1926,519
1057,50	1926,515
1058,00	1926,510
1058,50	1926,506
1059,00	1926,501
1059,50	1926,497
1060,00	1926,493
1060,50	1926,490
1061,00	1926,486
1061,50	1926,487
1062,00	1926,487
1062,50	1926,487
1063,00	1926,488
1063,50	1926,487
1064,00	1926,487
1064,50	1926,485
1065,00	1926,482
1065,50	1926,471
1066,00	1926,468
1066,50	1926,466
1067,00	1926,487
1067,50	1926,488
1068,00	1926,490
1068,50	1926,513
1069,00	1926,496
1069,50	1926,497
1070,00	1926,498
1070,50	1926,492
1071,00	1926,486
1071,50	1926,491
1072,00	1926,497
1072,50	1926,496
1073,00	1926,496
1073,50	1926,502
1074,00	1926,508
1074,50	1926,509
1075,00	1926,509
1075,50	1926,508
1076,00	1926,506

1076,50	1926,505
1077,00	1926,503
1077,50	1926,505
1078,00	1926,506
1078,50	1926,518
1079,00	1926,529
1079,50	1926,539
1080,00	1926,549
1080,50	1926,552
1081,00	1926,555
1081,50	1926,553
1082,00	1926,551
1082,50	1926,558
1083,00	1926,565
1083,50	1926,574
1084,00	1926,583
1084,50	1926,580
1085,00	1926,576
1085,50	1926,586
1086,00	1926,596
1086,50	1926,605
1087,00	1926,614
1087,50	1926,619
1088,00	1926,624
1088,50	1926,630
1089,00	1926,636
1089,50	1926,636
1090,00	1926,636
1090,50	1926,641
1091,00	1926,645
1091,50	1926,644
1092,00	1926,642
1092,50	1926,656
1093,00	1926,670
1093,50	1926,679
1094,00	1926,687
1094,50	1926,695
1095,00	1926,703
1095,50	1926,713
1096,00	1926,723
1096,50	1926,730

1097,00	1926,736
1097,50	1926,745
1098,00	1926,754
1098,50	1926,763
1099,00	1926,772
1099,50	1926,780
1100,00	1926,789

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>		<b>0,50</b>	m					
<b>IRI :</b>		<b>6,50</b>	m/Km					
<b>FECHA:</b>	5/5/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	1+000			1000	1020	20,00	4,40	
<b>PROG. FIN.</b>	1+100			1020	1040	20,00	4,48	
				1040	1060	20,00	6,88	
				1060	1080	20,00	8,98	
				1080	1100	20,00	7,76	6,50

**Perfil del tramo 1000 + 1100 Av. Los Molles**





<b>Abscisa</b>	<b>Cota</b>
1100,00	1926,789
1100,50	1926,795
1101,00	1926,802
1101,50	1926,810
1102,00	1926,818
1102,50	1926,825
1103,00	1926,832
1103,50	1926,830
1104,00	1926,828
1104,50	1926,834
1105,00	1926,840
1105,50	1926,849
1106,00	1926,859
1106,50	1926,871
1107,00	1926,883
1107,50	1926,895
1108,00	1926,907
1108,50	1926,917
1109,00	1926,926
1109,50	1926,938
1110,00	1926,951
1110,50	1926,958
1111,00	1926,966
1111,50	1926,984
1112,00	1927,002
1112,50	1927,014
1113,00	1927,026
1113,50	1927,043
1114,00	1927,059
1114,50	1927,072
1115,00	1927,084
1115,50	1927,094
1116,00	1927,104
1116,50	1927,116
1117,00	1927,129
1117,50	1927,143

1118,00	1927,158
1118,50	1927,179
1119,00	1927,200
1119,50	1927,222
1120,00	1927,243
1120,50	1927,259
1121,00	1927,275
1121,50	1927,290
1122,00	1927,304
1122,50	1927,321
1123,00	1927,338
1123,50	1927,356
1124,00	1927,373
1124,50	1927,388
1125,00	1927,402
1125,50	1927,422
1126,00	1927,442
1126,50	1927,463
1127,00	1927,483
1127,50	1927,500
1128,00	1927,517
1128,50	1927,541
1129,00	1927,566
1129,50	1927,591
1130,00	1927,615
1130,50	1927,642
1131,00	1927,669
1131,50	1927,695
1132,00	1927,722
1132,50	1927,749
1133,00	1927,776
1133,50	1927,804
1134,00	1927,831
1134,50	1927,865
1135,00	1927,899
1135,50	1927,932
1136,00	1927,966
1136,50	1927,994

1137,00	1928,022
1137,50	1928,050
1138,00	1928,078
1138,50	1928,102
1139,00	1928,126
1139,50	1928,150
1140,00	1928,174
1140,50	1928,192
1141,00	1928,210
1141,50	1928,228
1142,00	1928,246
1142,50	1928,264
1143,00	1928,282
1143,50	1928,306
1144,00	1928,329
1144,50	1928,352
1145,00	1928,375
1145,50	1928,394
1146,00	1928,414
1146,50	1928,433
1147,00	1928,453
1147,50	1928,471
1148,00	1928,489
1148,50	1928,508
1149,00	1928,526
1149,50	1928,545
1150,00	1928,565
1150,50	1928,585
1151,00	1928,604
1151,50	1928,626
1152,00	1928,648
1152,50	1928,669
1153,00	1928,691
1153,50	1928,710
1154,00	1928,729
1154,50	1928,749
1155,00	1928,768
1155,50	1928,782

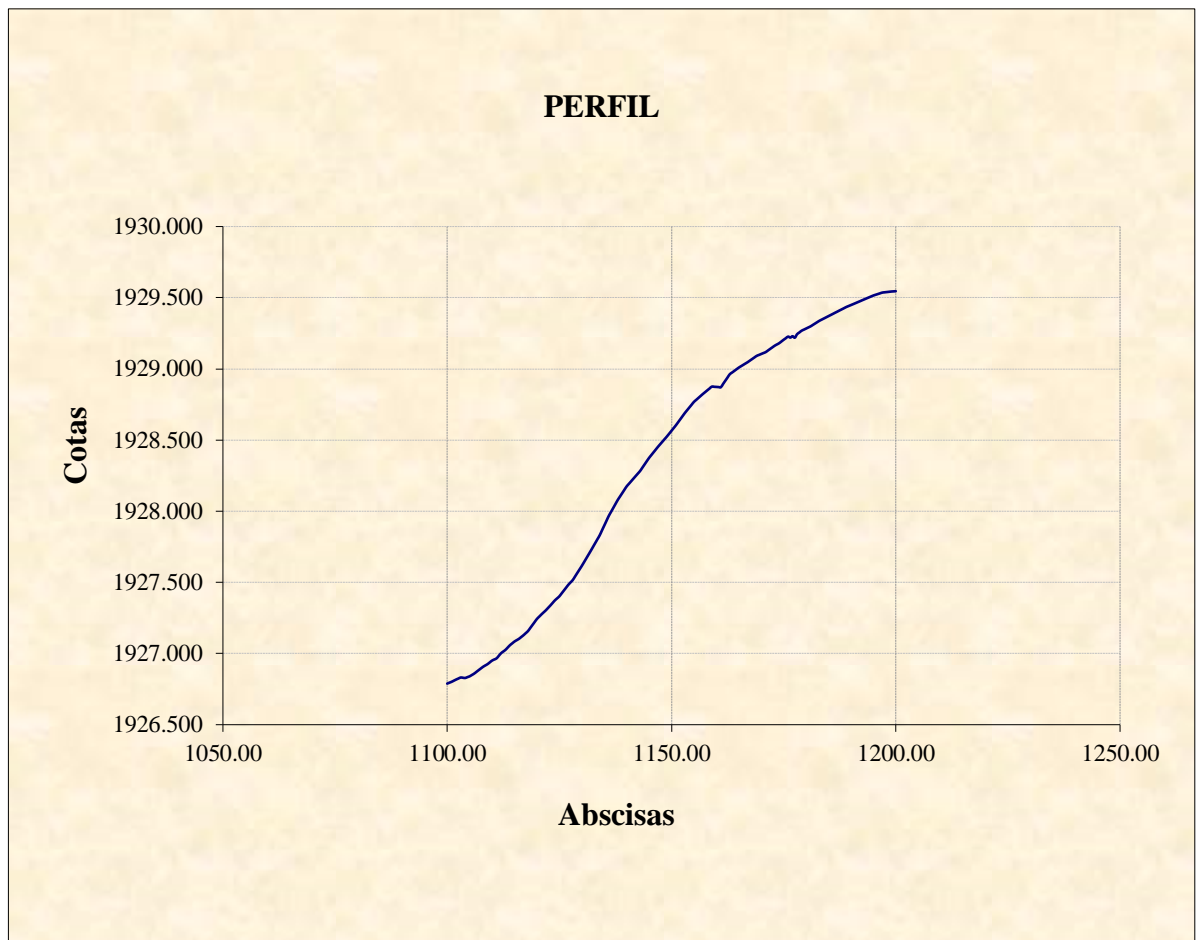
1156,00	1928,796
1156,50	1928,810
1157,00	1928,824
1157,50	1928,837
1158,00	1928,850
1158,50	1928,863
1159,00	1928,875
1159,50	1928,874
1160,00	1928,873
1160,50	1928,875
1161,00	1928,887
1161,50	1928,899
1162,00	1928,912
1162,50	1928,926
1163,00	1928,941
1163,50	1928,956
1164,00	1928,971
1164,50	1928,986
1165,00	1929,001
1165,50	1929,013
1166,00	1929,026
1166,50	1929,037
1167,00	1929,048
1167,50	1929,059
1168,00	1929,070
1168,50	1929,081
1169,00	1929,091
1169,50	1929,098
1170,00	1929,105
1170,50	1929,111
1171,00	1929,118
1171,50	1929,129
1172,00	1929,140
1172,50	1929,151
1173,00	1929,163
1173,50	1929,172
1174,00	1929,180
1174,50	1929,187
1175,00	1929,195
1175,50	1929,205
1176,00	1929,215

1176,50	1929,227
1177,00	1929,232
1177,50	1929,239
1178,00	1929,247
1178,50	1929,257
1179,00	1929,265
1179,50	1929,275
1180,00	1929,283
1180,50	1929,291
1181,00	1929,299
1181,50	1929,309
1182,00	1929,318
1182,50	1929,328
1183,00	1929,338
1183,50	1929,346
1184,00	1929,354
1184,50	1929,363
1185,00	1929,371
1185,50	1929,379
1186,00	1929,387
1186,50	1929,395
1187,00	1929,403
1187,50	1929,411
1188,00	1929,419
1188,50	1929,427
1189,00	1929,435
1189,50	1929,442
1190,00	1929,448
1190,50	1929,455
1191,00	1929,462
1191,50	1929,468
1192,00	1929,475
1192,50	1929,482
1193,00	1929,489
1193,50	1929,495
1194,00	1929,502
1194,50	1929,509
1195,00	1929,515
1195,50	1929,521
1196,00	1929,526
1196,50	1929,531

1197,00	1929,536
1197,50	1929,538
1198,00	1929,540
1198,50	1929,542
1199,00	1929,543
1199,50	1929,545
1200,00	1929,546

<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>	<b>0,50</b>	m	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>		
<b>IRI :</b>	<b>6,96</b>	m/Km			<b>IRI (m/Km)</b>		
<b>FECHA:</b>	5/5/2023		1100	1120	20,00	8,10	
<b>PROG. INI.</b>	1+100		1120	1140	20,00	9,44	
<b>PROG. FIN.</b>	1+200		1140	1160	20,00	7,90	
			1160	1180	20,00	6,35	
			1180	1200	20,00	3,02	6,96

**Perfil del tramo 1100 + 1200 Av. Los Molles**



## TABLA RESUMEN DE RESULTADOS

### CADA 100 METROS

<b>PROGRESIVA</b>	<b>IRI(m/Km)</b>
<b>100</b>	<b>5,62</b>
<b>200</b>	<b>5,48</b>
<b>300</b>	<b>4,43</b>
<b>400</b>	<b>5,81</b>
<b>500</b>	<b>5,07</b>
<b>600</b>	<b>4,59</b>
<b>700</b>	<b>6,69</b>
<b>800</b>	<b>6,02</b>
<b>900</b>	<b>6,94</b>
<b>1000</b>	<b>6,32</b>
<b>1100</b>	<b>6,50</b>
<b>1200</b>	<b>6,96</b>

### CADA 400 METROS

<b>PROGRESIVA</b>	<b>IRI(m/Km)</b>
<b>000 + 400</b>	<b>5,34</b>
<b>400 + 800</b>	<b>5,59</b>
<b>800 + 1200</b>	<b>6,68</b>

## AVENIDA SAN LUIS

### CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL MÉTODO DE MIRA Y NIVEL

**1**

Abscisa	Cota
0,00	1850,000
0,50	1849,996
1,00	1849,993
1,50	1849,989
2,00	1849,985
2,50	1849,979
3,00	1849,973
3,50	1849,968
4,00	1849,962
4,50	1849,956
5,00	1849,950
5,50	1849,943
6,00	1849,939
6,50	1849,934
7,00	1849,929
7,50	1849,924
8,00	1849,920
8,50	1849,915
9,00	1849,909
9,50	1849,902
10,00	1849,896
10,50	1849,890
11,00	1849,884
11,50	1849,878
12,00	1849,872
12,50	1849,866
13,00	1849,860
13,50	1849,854
14,00	1849,848
14,50	1849,842
15,00	1849,836
15,50	1849,828
16,00	1849,821
16,50	1849,813
17,00	1849,806

17,50	1849,798
18,00	1849,791
18,50	1849,783
19,00	1849,776
19,50	1849,768
20,00	1849,761
20,50	1849,755
21,00	1849,750
21,50	1849,744
22,00	1849,739
22,50	1849,733
23,00	1849,728
23,50	1849,722
24,00	1849,717
24,50	1849,711
25,00	1849,706
25,50	1849,699
26,00	1849,691
26,50	1849,684
27,00	1849,677
27,50	1849,669
28,00	1849,662
28,50	1849,655
29,00	1849,647
29,50	1849,640
30,00	1849,633
30,50	1849,627
31,00	1849,621
31,50	1849,615
32,00	1849,609
32,50	1849,603
33,00	1849,597
33,50	1849,591
34,00	1849,585
34,50	1849,579
35,00	1849,573
35,50	1849,566

36,00	1849,560
36,50	1849,553
37,00	1849,547
37,50	1849,540
38,00	1849,534
38,50	1849,527
39,00	1849,521
39,50	1849,514
40,00	1849,508
40,50	1849,500
41,00	1849,493
41,50	1849,486
42,00	1849,478
42,50	1849,471
43,00	1849,464
43,50	1849,456
44,00	1849,449
44,50	1849,442
45,00	1849,434
45,50	1849,427
46,00	1849,419
46,50	1849,412
47,00	1849,404
47,50	1849,397
48,00	1849,390
48,50	1849,382
49,00	1849,375
49,50	1849,367
50,00	1849,360
50,50	1849,354
51,00	1849,348
51,50	1849,342
52,00	1849,336
52,50	1849,330
53,00	1849,324
53,50	1849,318
54,00	1849,312

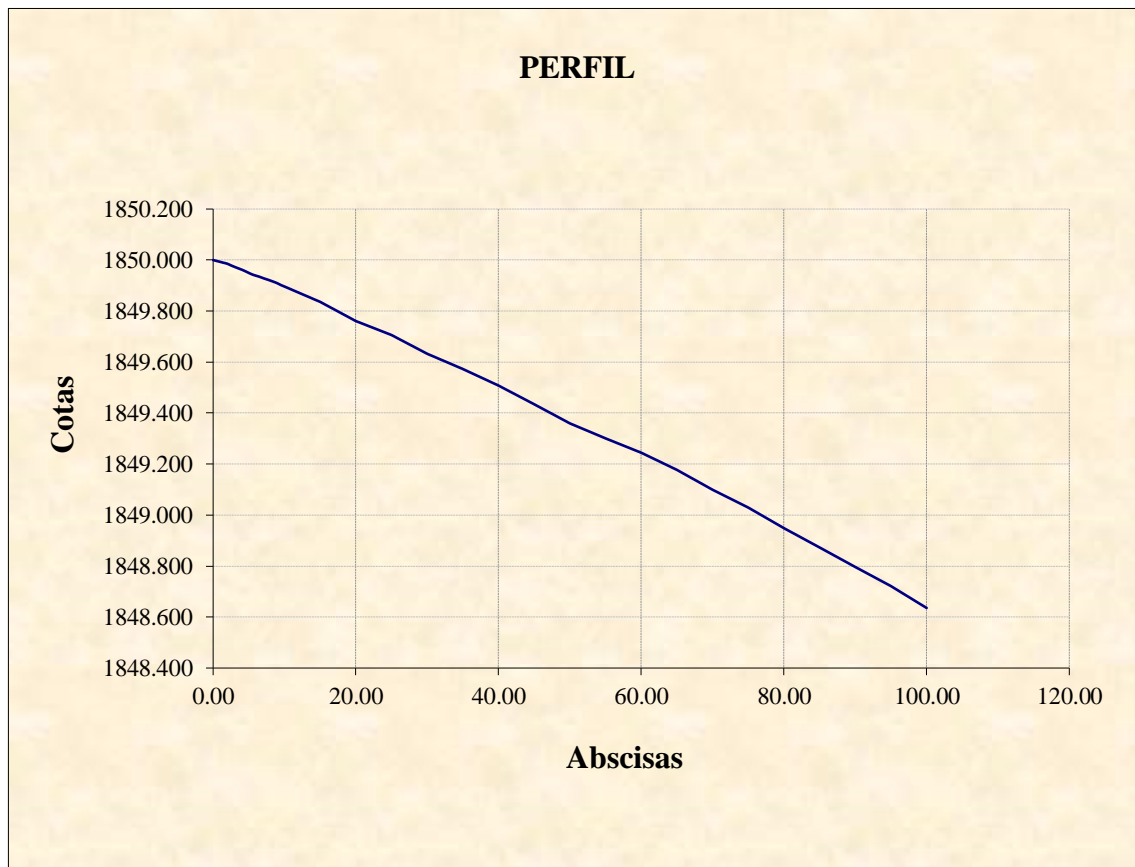
54,50	1849,307
55,00	1849,301
55,50	1849,295
56,00	1849,289
56,50	1849,284
57,00	1849,278
57,50	1849,273
58,00	1849,267
58,50	1849,261
59,00	1849,256
59,50	1849,250
60,00	1849,244
60,50	1849,238
61,00	1849,231
61,50	1849,224
62,00	1849,218
62,50	1849,211
63,00	1849,204
63,50	1849,197
64,00	1849,191
64,50	1849,184
65,00	1849,177
65,50	1849,169
66,00	1849,162
66,50	1849,154
67,00	1849,146
67,50	1849,138
68,00	1849,130
68,50	1849,123
69,00	1849,115
69,50	1849,107
70,00	1849,099
70,50	1849,092
71,00	1849,085
71,50	1849,078
72,00	1849,071
72,50	1849,064
73,00	1849,057
73,50	1849,050
74,00	1849,043
74,50	1849,036

75,00	1849,029
75,50	1849,021
76,00	1849,013
76,50	1849,005
77,00	1848,997
77,50	1848,989
78,00	1848,981
78,50	1848,973
79,00	1848,965
79,50	1848,957
80,00	1848,949
80,50	1848,941
81,00	1848,933
81,50	1848,926
82,00	1848,918
82,50	1848,911
83,00	1848,903
83,50	1848,896
84,00	1848,888
84,50	1848,880
85,00	1848,873
85,50	1848,865
86,00	1848,858
86,50	1848,850
87,00	1848,842
87,50	1848,835
88,00	1848,827
88,50	1848,819
89,00	1848,812
89,50	1848,804
90,00	1848,796
90,50	1848,789
91,00	1848,781
91,50	1848,774
92,00	1848,766
92,50	1848,759
93,00	1848,751
93,50	1848,744
94,00	1848,736
94,50	1848,729
95,00	1848,721

95,50	1848,713
96,00	1848,704
96,50	1848,696
97,00	1848,687
97,50	1848,679
98,00	1848,670
98,50	1848,661
99,00	1848,653
99,50	1848,644
100,00	1848,636

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>		<b>0,50</b>	m	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	
<b>IRI :</b>		<b>2,36</b>	m/Km			<b>IRI (m/Km)</b>	
<b>FECHA:</b>	7/5/2023			0	20	20,00	1,95
<b>PROG. INI.</b>	0+000			20	40	20,00	2,61
<b>PROG. FIN.</b>	0+100			40	60	20,00	2,46
				60	80	20,00	2,54
				80	100	20,00	2,23
							2,36

**Perfil del tramo 000 + 100 Av. San Luis**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**2**

<b>Abscisa</b>	<b>Cota</b>
100,00	1848,636
100,50	1848,629
101,00	1848,621
101,50	1848,614
102,00	1848,607
102,50	1848,600
103,00	1848,593
103,50	1848,586
104,00	1848,579
104,50	1848,572
105,00	1848,565
105,50	1848,557
106,00	1848,550
106,50	1848,543
107,00	1848,535
107,50	1848,528
108,00	1848,520
108,50	1848,513
109,00	1848,506
109,50	1848,498
110,00	1848,491
110,50	1848,483
111,00	1848,475
111,50	1848,467
112,00	1848,459
112,50	1848,450
113,00	1848,442
113,50	1848,439
114,00	1848,426
114,50	1848,418
115,00	1848,410
115,50	1848,402
116,00	1848,395

116,50	1848,387
117,00	1848,380
117,50	1848,372
118,00	1848,364
118,50	1848,357
119,00	1848,349
119,50	1848,341
120,00	1848,334
120,50	1848,326
121,00	1848,319
121,50	1848,311
122,00	1848,304
122,50	1848,296
123,00	1848,289
123,50	1848,281
124,00	1848,274
124,50	1848,266
125,00	1848,259
125,50	1848,252
126,00	1848,249
126,50	1848,239
127,00	1848,232
127,50	1848,226
128,00	1848,219
128,50	1848,212
129,00	1848,206
129,50	1848,199
130,00	1848,194
130,50	1848,185
131,00	1848,178
131,50	1848,170
132,00	1848,163
132,50	1848,156
133,00	1848,149
133,50	1848,141

134,00	1848,134
134,50	1848,127
135,00	1848,120
135,50	1848,112
136,00	1848,104
136,50	1848,096
137,00	1848,088
137,50	1848,080
138,00	1848,072
138,50	1848,065
139,00	1848,057
139,50	1848,049
140,00	1848,041
140,50	1848,034
141,00	1848,028
141,50	1848,021
142,00	1848,015
142,50	1848,008
143,00	1848,002
143,50	1847,995
144,00	1847,988
144,50	1847,982
145,00	1847,975
145,50	1847,969
146,00	1847,965
146,50	1847,956
147,00	1847,949
147,50	1847,943
148,00	1847,936
148,50	1847,930
149,00	1847,923
149,50	1847,917
150,00	1847,917
150,50	1847,904
151,00	1847,897



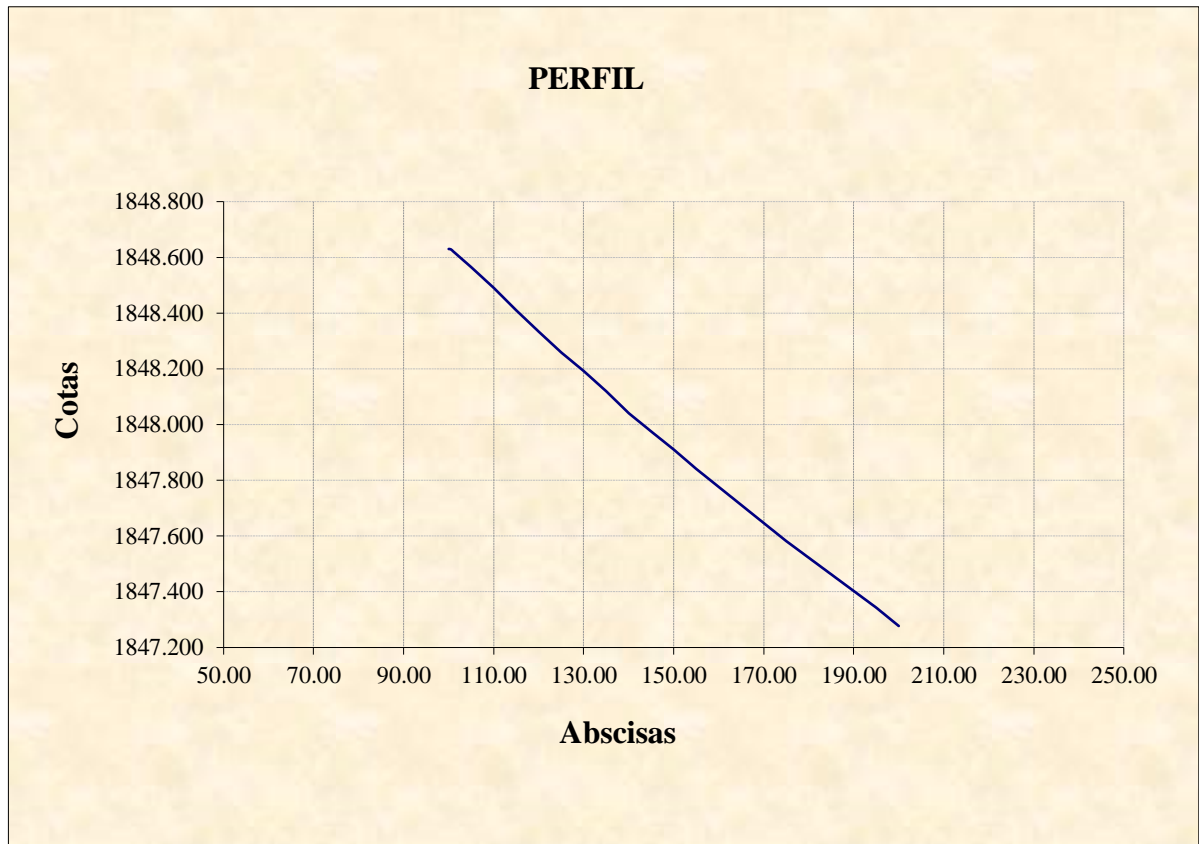
151,50	1847,890
152,00	1847,883
152,50	1847,876
153,00	1847,869
153,50	1847,862
154,00	1847,855
154,50	1847,848
155,00	1847,841
155,50	1847,835
156,00	1847,828
156,50	1847,822
157,00	1847,815
157,50	1847,809
158,00	1847,802
158,50	1847,796
159,00	1847,789
159,50	1847,783
160,00	1847,776
160,50	1847,770
161,00	1847,763
161,50	1847,757
162,00	1847,750
162,50	1847,744
163,00	1847,737
163,50	1847,731
164,00	1847,724
164,50	1847,718
165,00	1847,712
165,50	1847,705
166,00	1847,699
166,50	1847,692
167,00	1847,686
167,50	1847,679
168,00	1847,673
168,50	1847,666
169,00	1847,660
169,50	1847,653
170,00	1847,647
170,50	1847,640
171,00	1847,634
171,50	1847,627

172,00	1847,628
172,50	1847,620
173,00	1847,608
173,50	1847,601
174,00	1847,595
174,50	1847,588
175,00	1847,582
175,50	1847,576
176,00	1847,570
176,50	1847,564
177,00	1847,558
177,50	1847,552
178,00	1847,546
178,50	1847,540
179,00	1847,534
179,50	1847,528
180,00	1847,522
180,50	1847,516
181,00	1847,510
181,50	1847,504
182,00	1847,498
182,50	1847,492
183,00	1847,486
183,50	1847,480
184,00	1847,474
184,50	1847,468
185,00	1847,463
185,50	1847,457
186,00	1847,460
186,50	1847,445
187,00	1847,439
187,50	1847,433
188,00	1847,427
188,50	1847,421
189,00	1847,415
189,50	1847,409
190,00	1847,407
190,50	1847,397
191,00	1847,391
191,50	1847,385
192,00	1847,379

192,50	1847,373
193,00	1847,367
193,50	1847,361
194,00	1847,355
194,50	1847,349
195,00	1847,343
195,50	1847,336
196,00	1847,330
196,50	1847,323
197,00	1847,317
197,50	1847,310
198,00	1847,304
198,50	1847,297
199,00	1847,290
199,50	1847,284
200,00	1847,277

<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>	<b>0,50</b>	m				
<b>IRI :</b>	<b>2,75</b>	m/Km				
<b>FECHA:</b>	7/5/2023		<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>
<b>PROG. INI.</b>	0+100		100	120	20,00	2,45
<b>PROG. FIN.</b>	0+200		120	140	20,00	2,49
			140	160	20,00	2,88
			160	180	20,00	2,96
			180	200	20,00	2,95
						2,75

**Perfil del tramo 100 + 200 Av. San Luis**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**3**

<b>Abscisa</b>	<b>Cota</b>
200,00	1847,277
200,50	1847,271
201,00	1847,264
201,50	1847,258
202,00	1847,251
202,50	1847,244
203,00	1847,238
203,50	1847,231
204,00	1847,225
204,50	1847,218
205,00	1847,211
205,50	1847,205
206,00	1847,198
206,50	1847,192
207,00	1847,185
207,50	1847,179
208,00	1847,172
208,50	1847,165
209,00	1847,159
209,50	1847,152
210,00	1847,146
210,50	1847,139
211,00	1847,132
211,50	1847,126
212,00	1847,119
212,50	1847,113
213,00	1847,106
213,50	1847,100
214,00	1847,093
214,50	1847,086
215,00	1847,080
215,50	1847,073
216,00	1847,066
216,50	1847,059
217,00	1847,052
217,50	1847,045
218,00	1847,038
218,50	1847,031

219,00	1847,023
219,50	1847,016
220,00	1847,009
220,50	1847,002
221,00	1846,995
221,50	1846,988
222,00	1846,981
222,50	1846,974
223,00	1846,967
223,50	1846,960
224,00	1846,953
224,50	1846,946
225,00	1846,939
225,50	1846,934
226,00	1846,929
226,50	1846,924
227,00	1846,919
227,50	1846,914
228,00	1846,909
228,50	1846,904
229,00	1846,899
229,50	1846,894
230,00	1846,889
230,50	1846,881
231,00	1846,873
231,50	1846,865
232,00	1846,857
232,50	1846,849
233,00	1846,841
233,50	1846,833
234,00	1846,825
234,50	1846,817
235,00	1846,809
235,50	1846,801
236,00	1846,793
236,50	1846,785
237,00	1846,777
237,50	1846,769
238,00	1846,761
238,50	1846,753
239,00	1846,745
239,50	1846,737
240,00	1846,729

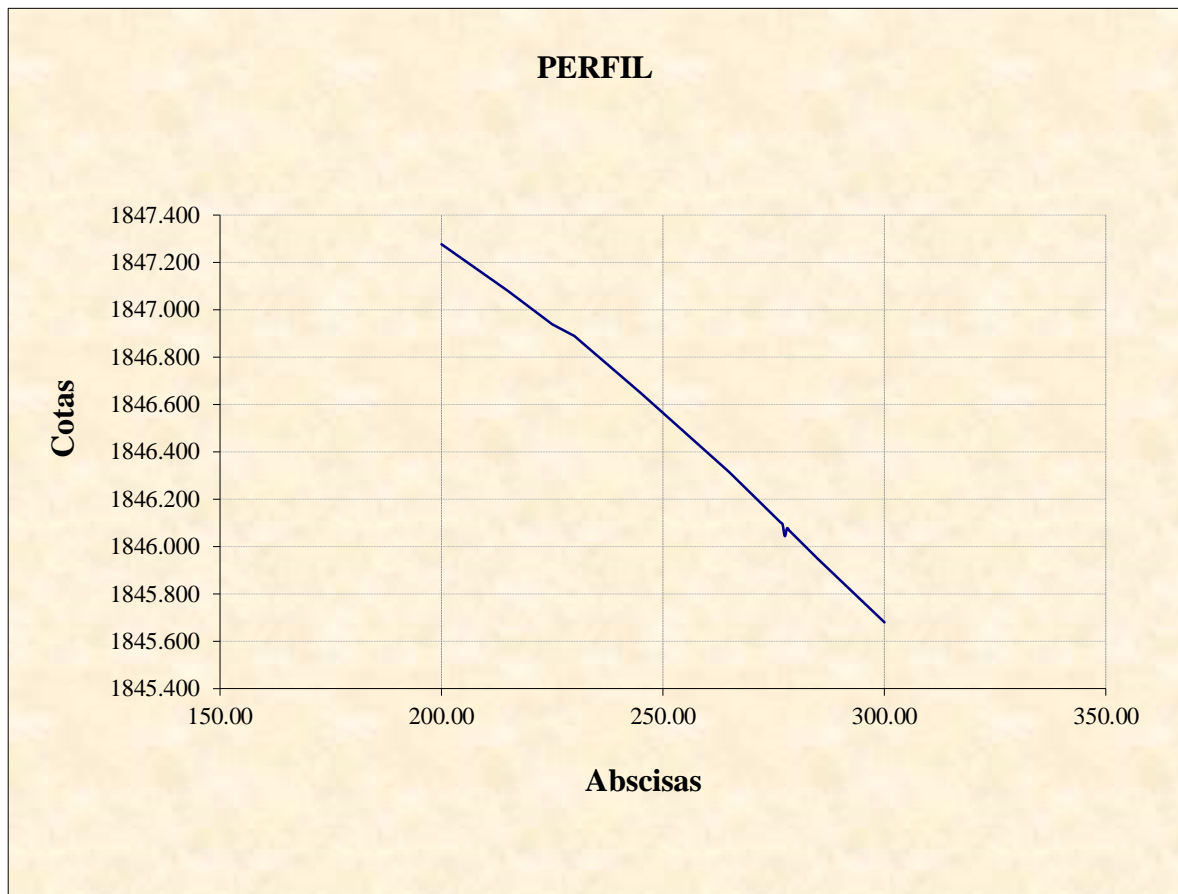
240,50	1846,721
241,00	1846,713
241,50	1846,705
242,00	1846,696
242,50	1846,688
243,00	1846,680
243,50	1846,672
244,00	1846,664
244,50	1846,656
245,00	1846,648
245,50	1846,640
246,00	1846,632
246,50	1846,623
247,00	1846,615
247,50	1846,606
248,00	1846,598
248,50	1846,590
249,00	1846,581
249,50	1846,573
250,00	1846,565
250,50	1846,556
251,00	1846,548
251,50	1846,540
252,00	1846,531
252,50	1846,523
253,00	1846,514
253,50	1846,506
254,00	1846,498
254,50	1846,489
255,00	1846,481
255,50	1846,473
256,00	1846,464
256,50	1846,456
257,00	1846,447
257,50	1846,439
258,00	1846,431
258,50	1846,422
259,00	1846,414
259,50	1846,406
260,00	1846,397
260,50	1846,389
261,00	1846,381
261,50	1846,372

262,00	1846,364
262,50	1846,355
263,00	1846,347
263,50	1846,339
264,00	1846,330
264,50	1846,322
265,00	1846,314
265,50	1846,304
266,00	1846,295
266,50	1846,286
267,00	1846,277
267,50	1846,268
268,00	1846,259
268,50	1846,249
269,00	1846,240
269,50	1846,231
270,00	1846,222
270,50	1846,213
271,00	1846,204
271,50	1846,194
272,00	1846,185
272,50	1846,176
273,00	1846,167
273,50	1846,158
274,00	1846,149
274,50	1846,139
275,00	1846,130
275,50	1846,121
276,00	1846,112
276,50	1846,103
277,00	1846,093
277,50	1846,044
278,00	1846,077
278,50	1846,068
279,00	1846,058
279,50	1846,049
280,00	1846,040
280,50	1846,031
281,00	1846,021
281,50	1846,012
282,00	1846,003
282,50	1845,993
283,00	1845,984
283,50	1845,975
284,00	1845,966
284,50	1845,956
285,00	1845,947

285,50	1845,938
286,00	1845,929
286,50	1845,920
287,00	1845,911
287,50	1845,903
288,00	1845,894
288,50	1845,885
289,00	1845,876
289,50	1845,867
290,00	1845,858
290,50	1845,849
291,00	1845,840
291,50	1845,831
292,00	1845,822
292,50	1845,813
293,00	1845,805
293,50	1845,796
294,00	1845,787
294,50	1845,778
295,00	1845,769
295,50	1845,760
296,00	1845,751
296,50	1845,742
297,00	1845,733
297,50	1845,724
298,00	1845,715
298,50	1845,707
299,00	1845,698
299,50	1845,689
300,00	1845,680

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>			
<b>Delta X :</b>		<b>0,50</b>	m						
<b>IRI :</b>		<b>3,26</b>	m/Km						
<b>FECHA:</b>	7/5/2023	<b>Abscisa Inicial</b>	200	<b>Abscisa Final</b>	220	<b>Longitud (m)</b>	20,00	<b>IRI (m/Km)</b>	1,80
<b>PROG. INI.</b>	0+200		220		240		20,00		3,18
<b>PROG. FIN.</b>	0+300		240		260		20,00		2,21
			260		280		20,00		6,71
			280		300		20,00		2,41
									<b>3,26</b>

### Perfil del tramo 200 + 300 Av. San Luis



<b>Abscisa</b>	<b>Cota</b>
300,00	1845,680
300,50	1845,671
301,00	1845,662
301,50	1845,653
302,00	1845,645
302,50	1845,636
303,00	1845,627
303,50	1845,618
304,00	1845,609
304,50	1845,600
305,00	1845,592
305,50	1845,583
306,00	1845,575
306,50	1845,567
307,00	1845,558
307,50	1845,550
308,00	1845,542
308,50	1845,534
309,00	1845,525
309,50	1845,517
310,00	1845,509
310,50	1845,501
311,00	1845,492
311,50	1845,484
312,00	1845,476
312,50	1845,467
313,00	1845,459
313,50	1845,451
314,00	1845,443
314,50	1845,434
315,00	1845,426
315,50	1845,418
316,00	1845,409
316,50	1845,401
317,00	1845,393
317,50	1845,385
318,00	1845,376
318,50	1845,368
319,00	1845,360

319,50	1845,352
320,00	1845,343
320,50	1845,335
321,00	1845,327
321,50	1845,318
322,00	1845,310
322,50	1845,302
323,00	1845,294
323,50	1845,285
324,00	1845,277
324,50	1845,269
325,00	1845,260
325,50	1845,252
326,00	1845,244
326,50	1845,236
327,00	1845,227
327,50	1845,219
328,00	1845,211
328,50	1845,202
329,00	1845,194
329,50	1845,186
330,00	1845,178
330,50	1845,169
331,00	1845,161
331,50	1845,153
332,00	1845,145
332,50	1845,136
333,00	1845,128
333,50	1845,120
334,00	1845,111
334,50	1845,103
335,00	1845,095
335,50	1845,087
336,00	1845,078
336,50	1845,070
337,00	1845,062
337,50	1845,053
338,00	1845,045
338,50	1845,037
339,00	1845,029
339,50	1845,020
340,00	1845,012
340,50	1845,006

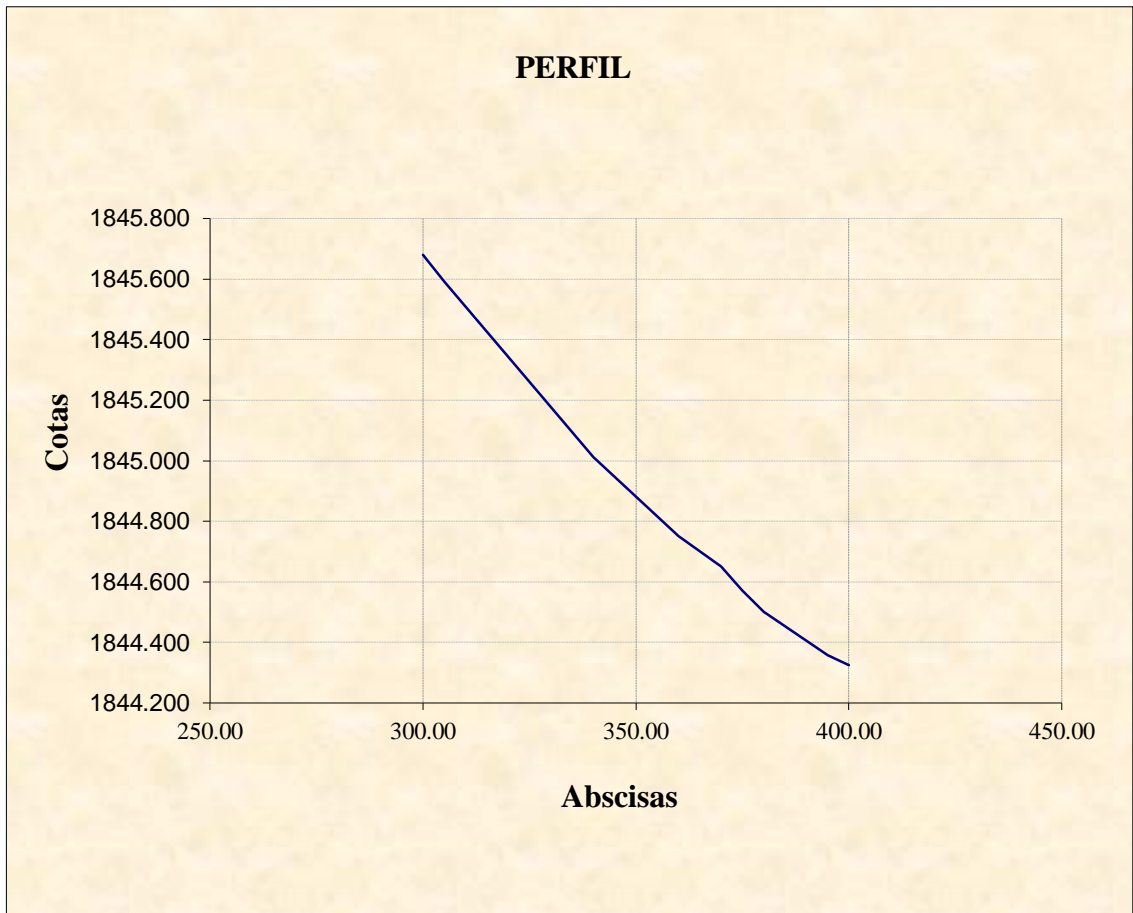
341,00	1844,999
341,50	1844,992
342,00	1844,986
342,50	1844,979
343,00	1844,973
343,50	1844,966
344,00	1844,960
344,50	1844,953
345,00	1844,947
345,50	1844,940
346,00	1844,934
346,50	1844,927
347,00	1844,921
347,50	1844,914
348,00	1844,908
348,50	1844,901
349,00	1844,895
349,50	1844,888
350,00	1844,882
350,50	1844,875
351,00	1844,869
351,50	1844,862
352,00	1844,855
352,50	1844,849
353,00	1844,842
353,50	1844,836
354,00	1844,829
354,50	1844,823
355,00	1844,816
355,50	1844,810
356,00	1844,803
356,50	1844,797
357,00	1844,790
357,50	1844,784
358,00	1844,777
358,50	1844,771
359,00	1844,764
359,50	1844,758
360,00	1844,751
360,50	1844,746
361,00	1844,741
361,50	1844,736
362,00	1844,731

362,50	1844,726
363,00	1844,721
363,50	1844,716
364,00	1844,711
364,50	1844,706
365,00	1844,701
365,50	1844,696
366,00	1844,691
366,50	1844,686
367,00	1844,681
367,50	1844,676
368,00	1844,671
368,50	1844,666
369,00	1844,661
369,50	1844,656
370,00	1844,651
370,50	1844,643
371,00	1844,635
371,50	1844,627
372,00	1844,619
372,50	1844,611
373,00	1844,603
373,50	1844,595
374,00	1844,587
374,50	1844,579
375,00	1844,571
375,50	1844,564
376,00	1844,557
376,50	1844,550
377,00	1844,543
377,50	1844,536
378,00	1844,529
378,50	1844,522
379,00	1844,515
379,50	1844,508
380,00	1844,501
380,50	1844,496
381,00	1844,492
381,50	1844,487
382,00	1844,482
382,50	1844,477
383,00	1844,473
383,50	1844,468
384,00	1844,463
384,50	1844,458
385,00	1844,454
385,50	1844,449

386,00	1844,444
386,50	1844,439
387,00	1844,434
387,50	1844,430
388,00	1844,425
388,50	1844,420
389,00	1844,415
389,50	1844,411
390,00	1844,406
390,50	1844,401
391,00	1844,396
391,50	1844,392
392,00	1844,387
392,50	1844,382
393,00	1844,377
393,50	1844,372
394,00	1844,368
394,50	1844,363
395,00	1844,358
395,50	1844,355
396,00	1844,352
396,50	1844,348
397,00	1844,345
397,50	1844,342
398,00	1844,338
398,50	1844,335
399,00	1844,332
399,50	1844,328
400,00	1844,325

<b>Longitud Tramo :</b>	<b>100,00</b>	<b>m</b>	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>	<b>0,50</b>	<b>m</b>				
<b>IRI :</b>	<b>2,02</b>	<b>m/Km</b>	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud d (m)</b>	
					<b>IRI (m/Km)</b>	
			300	320	20,00	2,31
			320	340	20,00	2,17
			340	360	20,00	1,72
			360	380	20,00	2,40
			380	400	20,00	1,51
						2,02

**Perfil del tramo 300 + 400 Av. San Luis**





**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**5**

<b>Abscisa</b>	<b>Cota</b>
400,00	1844,325
400,50	1844,322
401,00	1844,318
401,50	1844,315
402,00	1844,312
402,50	1844,308
403,00	1844,305
403,50	1844,302
404,00	1844,298
404,50	1844,295
405,00	1844,292
405,50	1844,288
406,00	1844,285
406,50	1844,282
407,00	1844,279
407,50	1844,275
408,00	1844,272
408,50	1844,269
409,00	1844,265
409,50	1844,262
410,00	1844,259
410,50	1844,255
411,00	1844,252
411,50	1844,249
412,00	1844,245
412,50	1844,242
413,00	1844,239
413,50	1844,235
414,00	1844,232
414,50	1844,229
415,00	1844,225
415,50	1844,223
416,00	1844,220
416,50	1844,218
417,00	1844,215
417,50	1844,212
418,00	1844,210
418,50	1844,207
419,00	1844,204
419,50	1844,202

420,00	1844,199
420,50	1844,197
421,00	1844,194
421,50	1844,191
422,00	1844,189
422,50	1844,186
423,00	1844,183
423,50	1844,181
424,00	1844,178
424,50	1844,176
425,00	1844,173
425,50	1844,170
426,00	1844,168
426,50	1844,165
427,00	1844,162
427,50	1844,160
428,00	1844,157
428,50	1844,155
429,00	1844,152
429,50	1844,149
430,00	1844,147
430,50	1844,144
431,00	1844,141
431,50	1844,139
432,00	1844,136
432,50	1844,133
433,00	1844,131
433,50	1844,128
434,00	1844,126
434,50	1844,123
435,00	1844,120
435,50	1844,117
436,00	1844,113
436,50	1844,110
437,00	1844,107
437,50	1844,103
438,00	1844,100
438,50	1844,096
439,00	1844,093
439,50	1844,089
440,00	1844,086
440,50	1844,083
441,00	1844,079

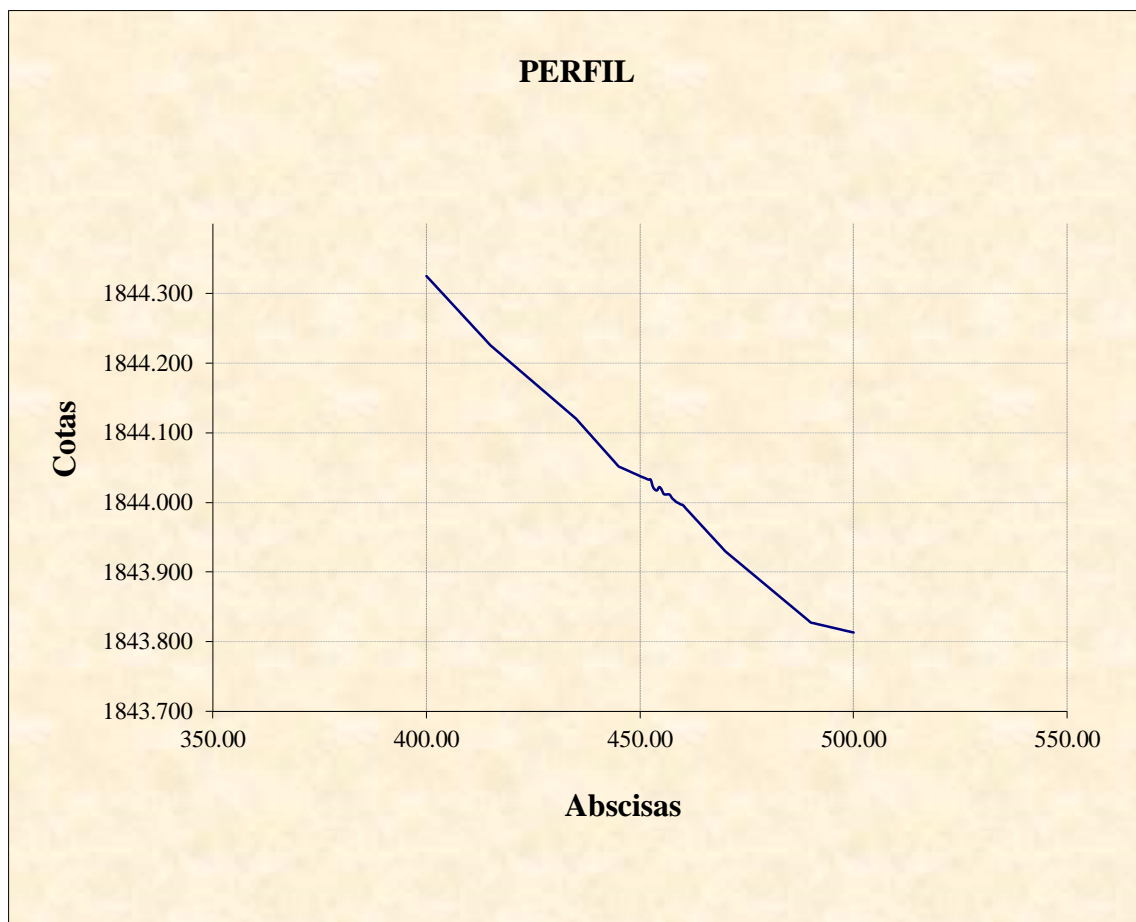
441,50	1844,076
442,00	1844,072
442,50	1844,069
443,00	1844,065
443,50	1844,062
444,00	1844,059
444,50	1844,055
445,00	1844,052
445,50	1844,050
446,00	1844,049
446,50	1844,048
447,00	1844,046
447,50	1844,045
448,00	1844,043
448,50	1844,042
449,00	1844,041
449,50	1844,039
450,00	1844,038
450,50	1844,037
451,00	1844,035
451,50	1844,034
452,00	1844,033
452,50	1844,033
453,00	1844,023
453,50	1844,018
454,00	1844,017
454,50	1844,022
455,00	1844,019
455,50	1844,013
456,00	1844,011
456,50	1844,012
457,00	1844,011
457,50	1844,006
458,00	1844,003
458,50	1844,001
459,00	1843,999
459,50	1843,997
460,00	1843,996
460,50	1843,993
461,00	1843,990
461,50	1843,986
462,00	1843,983
462,50	1843,980

463,00	1843,976
463,50	1843,973
464,00	1843,970
464,50	1843,966
465,00	1843,963
465,50	1843,960
466,00	1843,956
466,50	1843,953
467,00	1843,950
467,50	1843,946
468,00	1843,943
468,50	1843,940
469,00	1843,936
469,50	1843,933
470,00	1843,930
470,50	1843,927
471,00	1843,925
471,50	1843,922
472,00	1843,920
472,50	1843,917
473,00	1843,914
473,50	1843,912
474,00	1843,909
474,50	1843,907
475,00	1843,904
475,50	1843,902
476,00	1843,899
476,50	1843,897
477,00	1843,894
477,50	1843,891
478,00	1843,889
478,50	1843,886
479,00	1843,884
479,50	1843,881
480,00	1843,879
480,50	1843,876
481,00	1843,874
481,50	1843,871
482,00	1843,868
482,50	1843,866
483,00	1843,863
483,50	1843,861
484,00	1843,858
484,50	1843,856
485,00	1843,853
485,50	1843,851
486,00	1843,848

486,50	1843,846
487,00	1843,843
487,50	1843,840
488,00	1843,838
488,50	1843,835
489,00	1843,833
489,50	1843,830
490,00	1843,828
490,50	1843,827
491,00	1843,826
491,50	1843,825
492,00	1843,825
492,50	1843,824
493,00	1843,823
493,50	1843,823
494,00	1843,822
494,50	1843,821
495,00	1843,820
495,50	1843,820
496,00	1843,819
496,50	1843,818
497,00	1843,818
497,50	1843,817
498,00	1843,816
498,50	1843,815
499,00	1843,815
499,50	1843,814
500,00	1843,813

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>
<b>Delta X :</b>		<b>0,50</b>	m			
<b>IRI :</b>		<b>1,67</b>	m/Km			
<b>FECHA:</b>	7/5/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>
<b>PROG. INI.</b>	0+400					<b>IRI (m/Km)</b>
<b>PROG. FIN.</b>	0+500			400	420	20,00
				420	440	20,00
				440	460	20,00
				460	480	20,00
				480	500	20,00
						1,67

**Perfil del tramo 400 + 500 Av. San Luis**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**6**

Abscisa	Cota
500,00	1843,813
500,50	1843,813
501,00	1843,812
501,50	1843,811
502,00	1843,810
502,50	1843,810
503,00	1843,809
503,50	1843,808
504,00	1843,808
504,50	1843,807
505,00	1843,806
505,50	1843,805
506,00	1843,805
506,50	1843,804
507,00	1843,803
507,50	1843,803
508,00	1843,802
508,50	1843,801
509,00	1843,800
509,50	1843,800
510,00	1843,799
510,50	1843,797
511,00	1843,795
511,50	1843,793
512,00	1843,790
512,50	1843,788
513,00	1843,786
513,50	1843,784
514,00	1843,782
514,50	1843,780
515,00	1843,778
515,50	1843,776
516,00	1843,773
516,50	1843,771
517,00	1843,769
517,50	1843,767
518,00	1843,765
518,50	1843,763
519,00	1843,761

519,50	1843,758
520,00	1843,756
520,50	1843,755
521,00	1843,753
521,50	1843,751
522,00	1843,750
522,50	1843,748
523,00	1843,747
523,50	1843,745
524,00	1843,743
524,50	1843,742
525,00	1843,740
525,50	1843,738
526,00	1843,735
526,50	1843,733
527,00	1843,730
527,50	1843,728
528,00	1843,725
528,50	1843,723
529,00	1843,720
529,50	1843,718
530,00	1843,715
530,50	1843,714
531,00	1843,713
531,50	1843,712
532,00	1843,712
532,50	1843,711
533,00	1843,710
533,50	1843,709
534,00	1843,708
534,50	1843,707
535,00	1843,706
535,50	1843,705
536,00	1843,704
536,50	1843,704
537,00	1843,703
537,50	1843,702
538,00	1843,701
538,50	1843,700
539,00	1843,699
539,50	1843,698
540,00	1843,697
540,50	1843,696

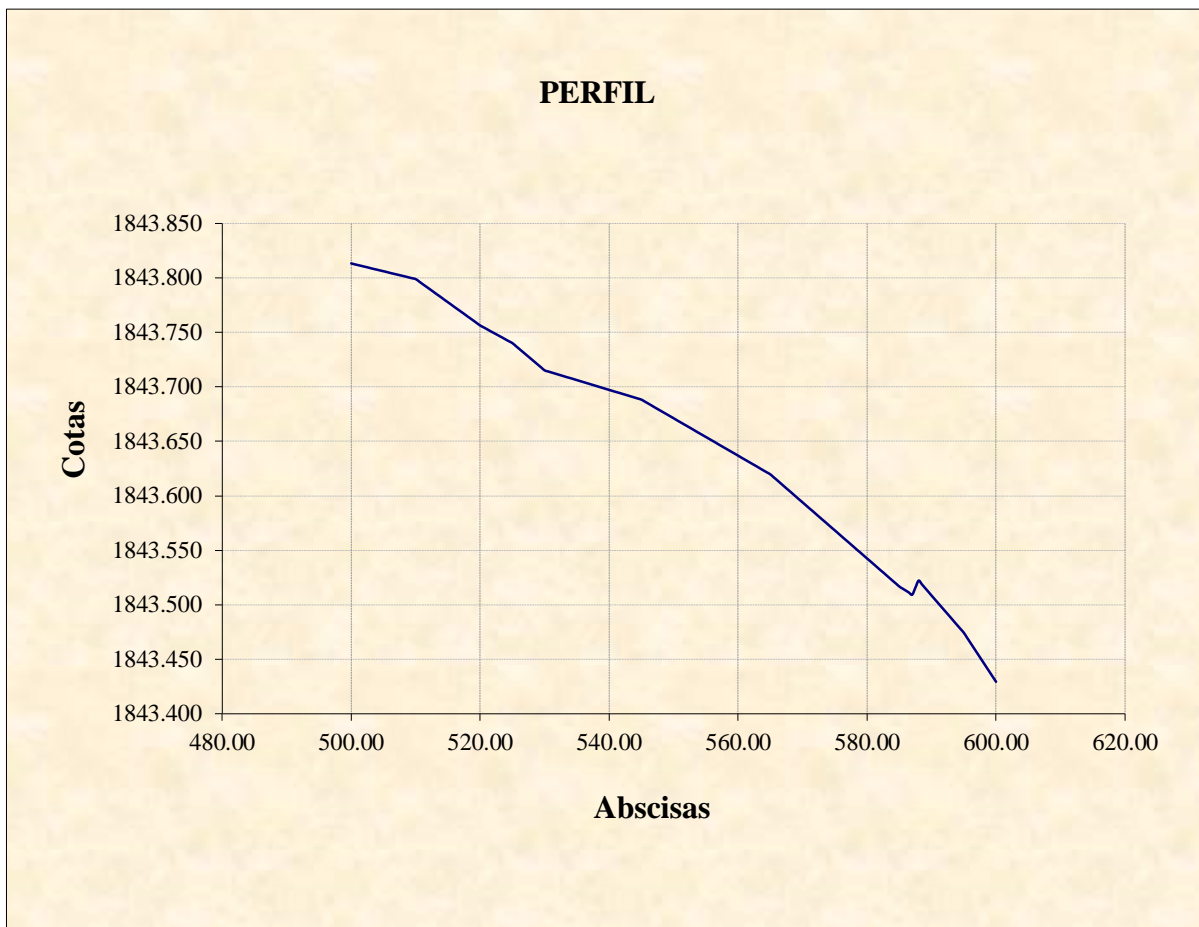
541,00	1843,695
541,50	1843,695
542,00	1843,694
542,50	1843,693
543,00	1843,692
543,50	1843,691
544,00	1843,690
544,50	1843,689
545,00	1843,688
545,50	1843,687
546,00	1843,685
546,50	1843,683
547,00	1843,681
547,50	1843,680
548,00	1843,678
548,50	1843,676
549,00	1843,675
549,50	1843,673
550,00	1843,671
550,50	1843,669
551,00	1843,668
551,50	1843,666
552,00	1843,664
552,50	1843,663
553,00	1843,661
553,50	1843,659
554,00	1843,657
554,50	1843,656
555,00	1843,654
555,50	1843,652
556,00	1843,651
556,50	1843,649
557,00	1843,647
557,50	1843,645
558,00	1843,644
558,50	1843,642
559,00	1843,640
559,50	1843,639
560,00	1843,637
560,50	1843,635
561,00	1843,633
561,50	1843,632
562,00	1843,630

562,50	1843,628
563,00	1843,627
563,50	1843,625
564,00	1843,623
564,50	1843,621
565,00	1843,620
565,50	1843,617
566,00	1843,615
566,50	1843,612
567,00	1843,609
567,50	1843,607
568,00	1843,604
568,50	1843,602
569,00	1843,599
569,50	1843,597
570,00	1843,594
570,50	1843,591
571,00	1843,589
571,50	1843,586
572,00	1843,584
572,50	1843,581
573,00	1843,579
573,50	1843,576
574,00	1843,573
574,50	1843,571
575,00	1843,568
575,50	1843,566
576,00	1843,563
576,50	1843,561
577,00	1843,558
577,50	1843,555
578,00	1843,553
578,50	1843,550
579,00	1843,548
579,50	1843,545
580,00	1843,543
580,50	1843,540
581,00	1843,537
581,50	1843,535
582,00	1843,532
582,50	1843,530
583,00	1843,527
583,50	1843,525
584,00	1843,522
584,50	1843,519
585,00	1843,517
585,50	1843,515

586,00	1843,513
586,50	1843,511
587,00	1843,509
587,50	1843,516
588,00	1843,522
588,50	1843,519
589,00	1843,515
589,50	1843,512
590,00	1843,509
590,50	1843,505
591,00	1843,502
591,50	1843,498
592,00	1843,495
592,50	1843,492
593,00	1843,488
593,50	1843,485
594,00	1843,481
594,50	1843,478
595,00	1843,474
595,50	1843,470
596,00	1843,465
596,50	1843,461
597,00	1843,456
597,50	1843,452
598,00	1843,447
598,50	1843,443
599,00	1843,438
599,50	1843,434
600,00	1843,429

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>		<b>0,50</b>	m					
<b>IRI :</b>		<b>1,32</b>	m/Km					
<b>FECHA:</b>	7/5/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	0+500			500	520	20,00	0,71	
<b>PROG. FIN.</b>	0+600			520	540	20,00	1,27	
				540	560	20,00	0,65	
				560	580	20,00	0,88	
				580	600	20,00	3,11	1,32

**Perfil del tramo 500 + 600 Av. San Luis**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**7**

<b>Abscisa</b>	<b>Cota</b>
600,00	1843,429
600,50	1843,425
601,00	1843,421
601,50	1843,416
602,00	1843,412
602,50	1843,407
603,00	1843,403
603,50	1843,398
604,00	1843,394
604,50	1843,390
605,00	1843,385
605,50	1843,381
606,00	1843,377
606,50	1843,374
607,00	1843,370
607,50	1843,366
608,00	1843,362
608,50	1843,358
609,00	1843,354
609,50	1843,351
610,00	1843,347
610,50	1843,343
611,00	1843,339
611,50	1843,335
612,00	1843,331
612,50	1843,328
613,00	1843,324
613,50	1843,320
614,00	1843,316
614,50	1843,312
615,00	1843,308
615,50	1843,304
616,00	1843,301
616,50	1843,297
617,00	1843,293
617,50	1843,289
618,00	1843,285
618,50	1843,281
619,00	1843,278
619,50	1843,274

620,00	1843,270
620,50	1843,266
621,00	1843,263
621,50	1843,259
622,00	1843,256
622,50	1843,252
623,00	1843,248
623,50	1843,245
624,00	1843,241
624,50	1843,238
625,00	1843,234
625,50	1843,230
626,00	1843,227
626,50	1843,223
627,00	1843,220
627,50	1843,216
628,00	1843,213
628,50	1843,209
629,00	1843,205
629,50	1843,202
630,00	1843,198
630,50	1843,195
631,00	1843,191
631,50	1843,188
632,00	1843,184
632,50	1843,180
633,00	1843,177
633,50	1843,173
634,00	1843,170
634,50	1843,166
635,00	1843,163
635,50	1843,159
636,00	1843,155
636,50	1843,152
637,00	1843,148
637,50	1843,145
638,00	1843,141
638,50	1843,137
639,00	1843,134
639,50	1843,130
640,00	1843,127
640,50	1843,123
641,00	1843,119

641,50	1843,114
642,00	1843,110
642,50	1843,106
643,00	1843,102
643,50	1843,098
644,00	1843,094
644,50	1843,090
645,00	1843,086
645,50	1843,082
646,00	1843,078
646,50	1843,073
647,00	1843,069
647,50	1843,065
648,00	1843,061
648,50	1843,057
649,00	1843,053
649,50	1843,049
650,00	1843,045
650,50	1843,041
651,00	1843,036
651,50	1843,032
652,00	1843,028
652,50	1843,024
653,00	1843,020
653,50	1843,016
654,00	1843,012
654,50	1843,008
655,00	1843,004
655,50	1843,000
656,00	1842,995
656,50	1842,991
657,00	1842,987
657,50	1842,983
658,00	1842,979
658,50	1842,975
659,00	1842,971
659,50	1842,967
660,00	1842,963
660,50	1842,957
661,00	1842,952
661,50	1842,947
662,00	1842,941
662,50	1842,936

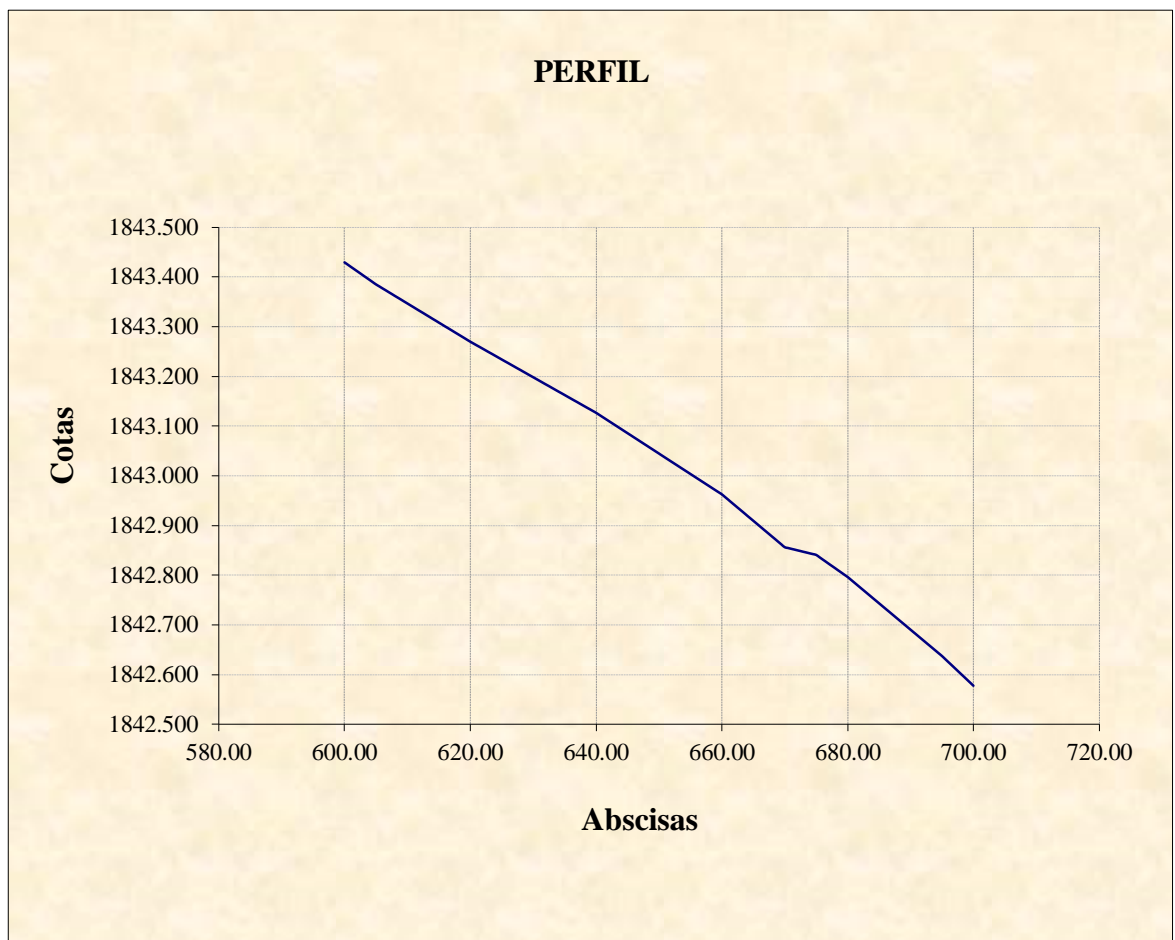
663,00	1842,931
663,50	1842,925
664,00	1842,920
664,50	1842,915
665,00	1842,909
665,50	1842,904
666,00	1842,899
666,50	1842,893
667,00	1842,888
667,50	1842,883
668,00	1842,878
668,50	1842,872
669,00	1842,867
669,50	1842,862
670,00	1842,856
670,50	1842,855
671,00	1842,853
671,50	1842,852
672,00	1842,850
672,50	1842,849
673,00	1842,847
673,50	1842,845
674,00	1842,844
674,50	1842,842
675,00	1842,841
675,50	1842,836
676,00	1842,832
676,50	1842,827
677,00	1842,823
677,50	1842,819
678,00	1842,814
678,50	1842,810
679,00	1842,805
679,50	1842,801
680,00	1842,796
680,50	1842,791
681,00	1842,786
681,50	1842,780
682,00	1842,775
682,50	1842,770
683,00	1842,765
683,50	1842,759
684,00	1842,754
684,50	1842,749
685,00	1842,743
685,50	1842,738
686,00	1842,733

686,50	1842,727
687,00	1842,722
687,50	1842,717
688,00	1842,712
688,50	1842,706
689,00	1842,701
689,50	1842,696
690,00	1842,690
690,50	1842,685
691,00	1842,680
691,50	1842,674
692,00	1842,669
692,50	1842,664
693,00	1842,659
693,50	1842,653
694,00	1842,648
694,50	1842,643
695,00	1842,637
695,50	1842,631
696,00	1842,625
696,50	1842,619
697,00	1842,613
697,50	1842,607
698,00	1842,601
698,50	1842,596
699,00	1842,590
699,50	1842,584
700,00	1842,578



<b>Longitud Tramo :</b>	<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>				<b>20</b>
<b>Delta X :</b>	<b>0,50</b>	m					
<b>IRI :</b>	<b>1,61</b>	m/Km	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>FECHA:</b>	7/5/2023		600	620	20,00	1,26	
<b>PROG. INI.</b>	0+600		620	640	20,00	0,94	
<b>PROG. FIN.</b>	0+700		640	660	20,00	1,08	
			660	680	20,00	3,26	
			680	700	20,00	1,50	1,61

### Perfil del tramo 600 + 700 Av. San Luis



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**8**

<b>Abscisa</b>	<b>Cota</b>
700,00	1842,578
700,50	1842,572
701,00	1842,566
701,50	1842,560
702,00	1842,554
702,50	1842,548
703,00	1842,542
703,50	1842,536
704,00	1842,530
704,50	1842,524
705,00	1842,518
705,50	1842,512
706,00	1842,506
706,50	1842,500
707,00	1842,494
707,50	1842,488
708,00	1842,482
708,50	1842,476
709,00	1842,470
709,50	1842,464
710,00	1842,458
710,50	1842,452
711,00	1842,446
711,50	1842,440
712,00	1842,434
712,50	1842,428
713,00	1842,422
713,50	1842,416
714,00	1842,410
714,50	1842,404
715,00	1842,398
715,50	1842,392
716,00	1842,386
716,50	1842,380
717,00	1842,374
717,50	1842,368
718,00	1842,363
718,50	1842,357
719,00	1842,351
719,50	1842,345

720,00	1842,339
720,50	1842,333
721,00	1842,327
721,50	1842,321
722,00	1842,315
722,50	1842,309
723,00	1842,303
723,50	1842,297
724,00	1842,291
724,50	1842,285
725,00	1842,279
725,50	1842,273
726,00	1842,267
726,50	1842,261
727,00	1842,255
727,50	1842,249
728,00	1842,243
728,50	1842,237
729,00	1842,232
729,50	1842,226
730,00	1842,220
730,50	1842,214
731,00	1842,208
731,50	1842,202
732,00	1842,196
732,50	1842,190
733,00	1842,184
733,50	1842,178
734,00	1842,172
734,50	1842,166
735,00	1842,160
735,50	1842,155
736,00	1842,149
736,50	1842,144
737,00	1842,139
737,50	1842,133
738,00	1842,128
738,50	1842,122
739,00	1842,117
739,50	1842,112
740,00	1842,106
740,50	1842,101
741,00	1842,096

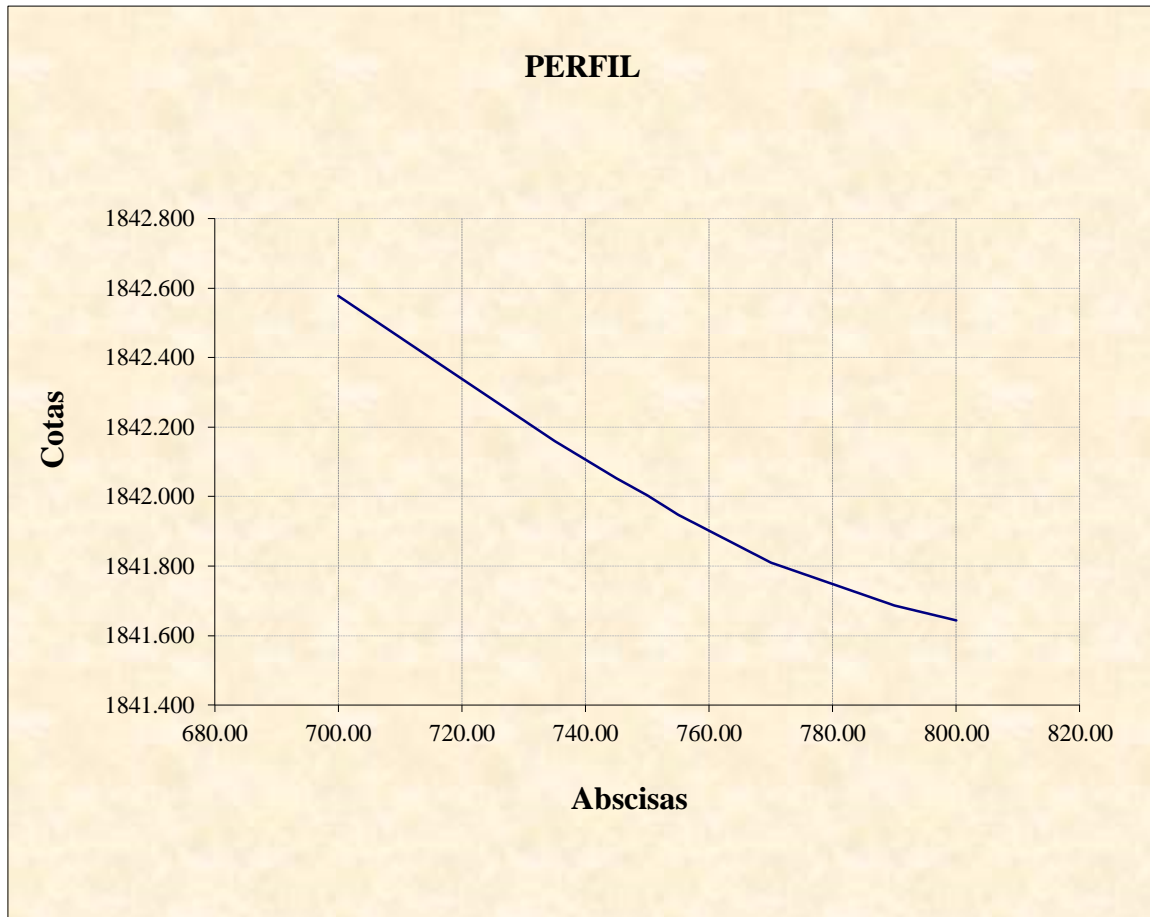
741,50	1842,090
742,00	1842,085
742,50	1842,080
743,00	1842,074
743,50	1842,069
744,00	1842,063
744,50	1842,058
745,00	1842,053
745,50	1842,048
746,00	1842,043
746,50	1842,038
747,00	1842,033
747,50	1842,028
748,00	1842,023
748,50	1842,018
749,00	1842,013
749,50	1842,009
750,00	1842,004
750,50	1841,998
751,00	1841,992
751,50	1841,987
752,00	1841,981
752,50	1841,976
753,00	1841,970
753,50	1841,965
754,00	1841,959
754,50	1841,953
755,00	1841,948
755,50	1841,943
756,00	1841,939
756,50	1841,934
757,00	1841,929
757,50	1841,925
758,00	1841,920
758,50	1841,916
759,00	1841,911
759,50	1841,906
760,00	1841,902
760,50	1841,897
761,00	1841,893
761,50	1841,888
762,00	1841,883
762,50	1841,879

763,00	1841,874
763,50	1841,870
764,00	1841,865
764,50	1841,861
765,00	1841,856
765,50	1841,851
766,00	1841,847
766,50	1841,842
767,00	1841,838
767,50	1841,833
768,00	1841,828
768,50	1841,824
769,00	1841,819
769,50	1841,815
770,00	1841,810
770,50	1841,807
771,00	1841,804
771,50	1841,801
772,00	1841,798
772,50	1841,795
773,00	1841,792
773,50	1841,788
774,00	1841,785
774,50	1841,782
775,00	1841,779
775,50	1841,776
776,00	1841,773
776,50	1841,770
777,00	1841,767
777,50	1841,764
778,00	1841,761
778,50	1841,758
779,00	1841,754
779,50	1841,751
780,00	1841,748
780,50	1841,745
781,00	1841,742
781,50	1841,739
782,00	1841,736
782,50	1841,733
783,00	1841,730
783,50	1841,727
784,00	1841,724
784,50	1841,721
785,00	1841,717
785,50	1841,714
786,00	1841,711

786,50	1841,708
787,00	1841,705
787,50	1841,702
788,00	1841,699
788,50	1841,696
789,00	1841,693
789,50	1841,690
790,00	1841,687
790,50	1841,684
791,00	1841,682
791,50	1841,680
792,00	1841,678
792,50	1841,676
793,00	1841,674
793,50	1841,672
794,00	1841,669
794,50	1841,667
795,00	1841,665
795,50	1841,663
796,00	1841,661
796,50	1841,659
797,00	1841,657
797,50	1841,654
798,00	1841,652
798,50	1841,650
799,00	1841,648
799,50	1841,646
800,00	1841,644

<b>Longitud Tramo :</b>	<b>100,00</b>	<b>m</b>				
<b>Delta X :</b>	<b>0,50</b>	<b>m</b>				
<b>IRI :</b>	<b>1,56</b>	<b>m/Km</b>				
<b>FECHA:</b>	<b>7/5/2023</b>		<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud d (m)</b>	<b>IRI (m/Km)</b>
<b>PROG. INI.</b>	<b>0+700</b>		700	720	20,00	1,57
<b>PROG. FIN.</b>	<b>0+800</b>		720	740	20,00	1,65
			740	760	20,00	1,67
			760	780	20,00	1,75
			780	800	20,00	1,15
						1,56

**Perfil del tramo 700 + 800 Av. San Luis**



**CÁLCULO DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL IRI POR EL  
MÉTODO DE MIRA Y NIVEL**

**9**

<b>Abscisa</b>	<b>Cota</b>
800,00	1841,644
800,50	1841,642
801,00	1841,639
801,50	1841,637
802,00	1841,635
802,50	1841,633
803,00	1841,631
803,50	1841,629
804,00	1841,627
804,50	1841,624
805,00	1841,622
805,50	1841,620
806,00	1841,618
806,50	1841,616
807,00	1841,614
807,50	1841,612
808,00	1841,610
808,50	1841,607
809,00	1841,605
809,50	1841,603
810,00	1841,601
810,50	1841,600
811,00	1841,599
811,50	1841,598
812,00	1841,597
812,50	1841,596
813,00	1841,595
813,50	1841,595
814,00	1841,594
814,50	1841,593
815,00	1841,592
815,50	1841,591
816,00	1841,590
816,50	1841,589
817,00	1841,588
817,50	1841,587

818,00	1841,586
818,50	1841,585
819,00	1841,585
819,50	1841,584
820,00	1841,583
820,50	1841,580
821,00	1841,577
821,50	1841,574
822,00	1841,571
822,50	1841,568
823,00	1841,565
823,50	1841,561
824,00	1841,558
824,50	1841,555
825,00	1841,552
825,50	1841,551
826,00	1841,550
826,50	1841,550
827,00	1841,549
827,50	1841,548
828,00	1841,547
828,50	1841,546
829,00	1841,545
829,50	1841,544
830,00	1841,543
830,50	1841,542
831,00	1841,542
831,50	1841,541
832,00	1841,540
832,50	1841,539
833,00	1841,539
833,50	1841,538
834,00	1841,537
834,50	1841,536
835,00	1841,536
835,50	1841,535
836,00	1841,534
836,50	1841,533

837,00	1841,533
837,50	1841,532
838,00	1841,531
838,50	1841,531
839,00	1841,530
839,50	1841,529
840,00	1841,528
840,50	1841,528
841,00	1841,527
841,50	1841,526
842,00	1841,525
842,50	1841,525
843,00	1841,524
843,50	1841,523
844,00	1841,522
844,50	1841,522
845,00	1841,527
845,50	1841,520
846,00	1841,519
846,50	1841,519
847,00	1841,518
847,50	1841,517
848,00	1841,516
848,50	1841,515
849,00	1841,515
849,50	1841,514
850,00	1841,519
850,50	1841,512
851,00	1841,511
851,50	1841,511
852,00	1841,510
852,50	1841,509
853,00	1841,508
853,50	1841,507
854,00	1841,507
854,50	1841,506
855,00	1841,505
855,50	1841,504

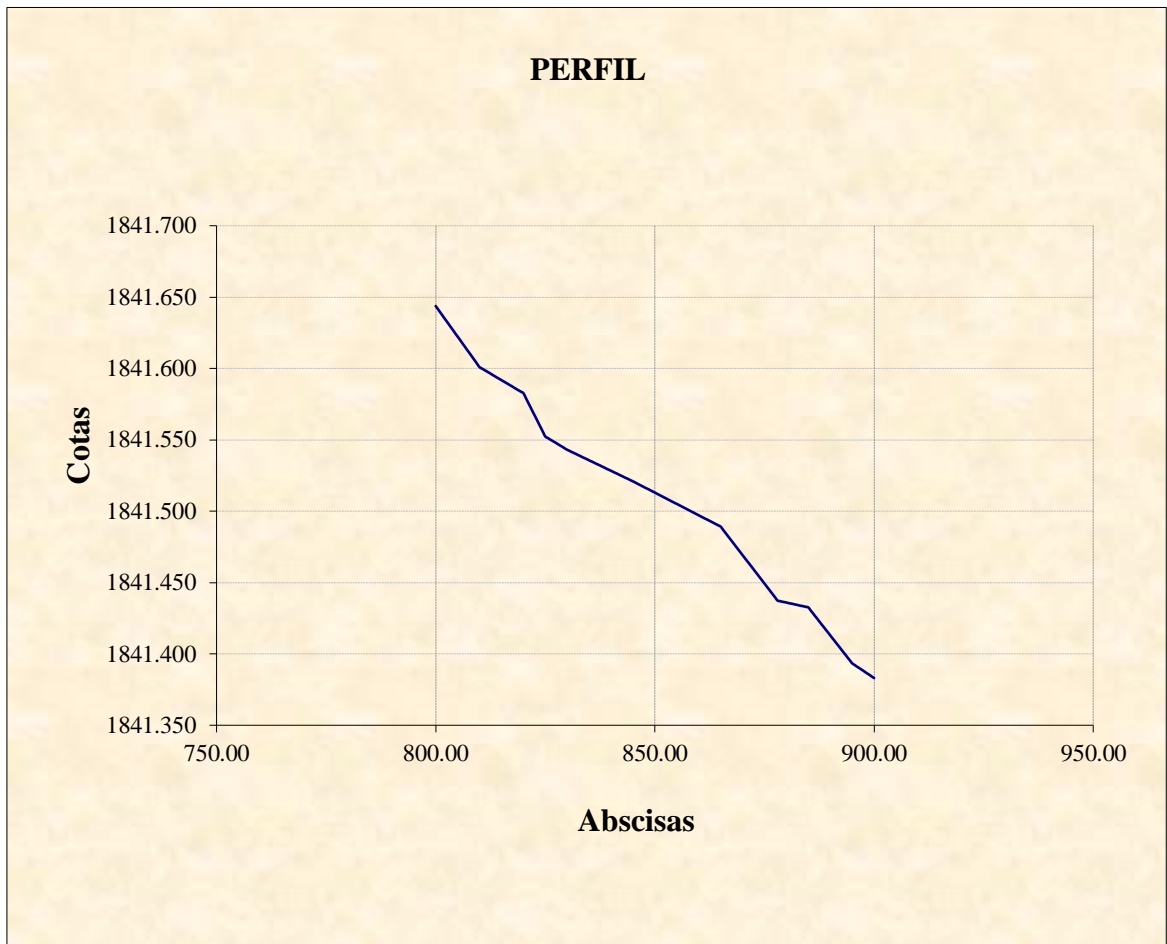
856,00	1841,504
856,50	1841,503
857,00	1841,502
857,50	1841,501
858,00	1841,500
858,50	1841,500
859,00	1841,499
859,50	1841,498
860,00	1841,497
860,50	1841,496
861,00	1841,496
861,50	1841,495
862,00	1841,494
862,50	1841,493
863,00	1841,492
863,50	1841,492
864,00	1841,491
864,50	1841,496
865,00	1841,489
865,50	1841,487
866,00	1841,485
866,50	1841,483
867,00	1841,481
867,50	1841,479
868,00	1841,477
868,50	1841,475
869,00	1841,473
869,50	1841,471
870,00	1841,469
870,50	1841,467
871,00	1841,465
871,50	1841,463
872,00	1841,461
872,50	1841,459
873,00	1841,457
873,50	1841,455
874,00	1841,453
874,50	1841,451
875,00	1841,449
875,50	1841,447
876,00	1841,445

876,50	1841,443
877,00	1841,441
877,50	1841,439
878,00	1841,437
878,50	1841,437
879,00	1841,437
879,50	1841,436
880,00	1841,436
880,50	1841,436
881,00	1841,435
881,50	1841,435
882,00	1841,435
882,50	1841,434
883,00	1841,434
883,50	1841,434
884,00	1841,433
884,50	1841,433
885,00	1841,433
885,50	1841,437
886,00	1841,429
886,50	1841,427
887,00	1841,425
887,50	1841,423
888,00	1841,421
888,50	1841,419
889,00	1841,417
889,50	1841,415
890,00	1841,413
890,50	1841,411
891,00	1841,409
891,50	1841,407
892,00	1841,405
892,50	1841,403
893,00	1841,401
893,50	1841,399
894,00	1841,397
894,50	1841,395
895,00	1841,393
895,50	1841,392
896,00	1841,391
896,50	1841,390

897,00	1841,389
897,50	1841,388
898,00	1841,387
898,50	1841,386
899,00	1841,385
899,50	1841,384
900,00	1841,383

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>		<b>0,50</b>	m				
<b>IRI :</b>		<b>1,52</b>	m/Km				
<b>FECHA:</b>	7/5/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>
<b>PROG. INI.</b>	0+800			800	820	20,00	1,00
<b>PROG. FIN.</b>	0+900			820	840	20,00	1,68
				840	860	20,00	1,65
				860	880	20,00	1,62
				880	900	20,00	1,67
							1,52

**Perfil del tramo 800 + 900 Av. San Luis**



**CALCULO DEL INDICE DE RUGOSIDAD INTERNASIONAL IRI POR EL  
METODO DE MIRA Y NIVEL**

**10**

<b>Abscisa</b>	<b>Cota</b>
900,00	1841,383
900,50	1841,383
901,00	1841,382
901,50	1841,382
902,00	1841,381
902,50	1841,380
903,00	1841,380
903,50	1841,379
904,00	1841,379
904,50	1841,378
905,00	1841,378
905,50	1841,377
906,00	1841,376
906,50	1841,375
907,00	1841,374
907,50	1841,373
908,00	1841,367
908,50	1841,371
909,00	1841,370
909,50	1841,369
910,00	1841,368
910,50	1841,367
911,00	1841,366
911,50	1841,365
912,00	1841,364
912,50	1841,363
913,00	1841,363
913,50	1841,362
914,00	1841,361
914,50	1841,360
915,00	1841,352
915,50	1841,358
916,00	1841,357
916,50	1841,356
917,00	1841,355
917,50	1841,354

918,00	1841,353
918,50	1841,352
919,00	1841,351
919,50	1841,350
920,00	1841,349
920,50	1841,348
921,00	1841,346
921,50	1841,345
922,00	1841,344
922,50	1841,342
923,00	1841,341
923,50	1841,339
924,00	1841,338
924,50	1841,338
925,00	1841,336
925,50	1841,335
926,00	1841,331
926,50	1841,329
927,00	1841,331
927,50	1841,329
928,00	1841,326
928,50	1841,324
929,00	1841,324
929,50	1841,322
930,00	1841,321
930,50	1841,319
931,00	1841,318
931,50	1841,316
932,00	1841,315
932,50	1841,314
933,00	1841,311
933,50	1841,309
934,00	1841,308
934,50	1841,306
935,00	1841,305
935,50	1841,303
936,00	1841,302
936,50	1841,302

937,00	1841,301
937,50	1841,299
938,00	1841,298
938,50	1841,296
939,00	1841,295
939,50	1841,294
940,00	1841,292
940,50	1841,291
941,00	1841,290
941,50	1841,289
942,00	1841,288
942,50	1841,287
943,00	1841,285
943,50	1841,284
944,00	1841,283
944,50	1841,282
945,00	1841,281
945,50	1841,281
946,00	1841,280
946,50	1841,279
947,00	1841,278
947,50	1841,274
948,00	1841,273
948,50	1841,272
949,00	1841,270
949,50	1841,271
950,00	1841,273
950,50	1841,269
951,00	1841,267
951,50	1841,266
952,00	1841,265
952,50	1841,264
953,00	1841,263
953,50	1841,262
954,00	1841,259
954,50	1841,258
955,00	1841,257
955,50	1841,255



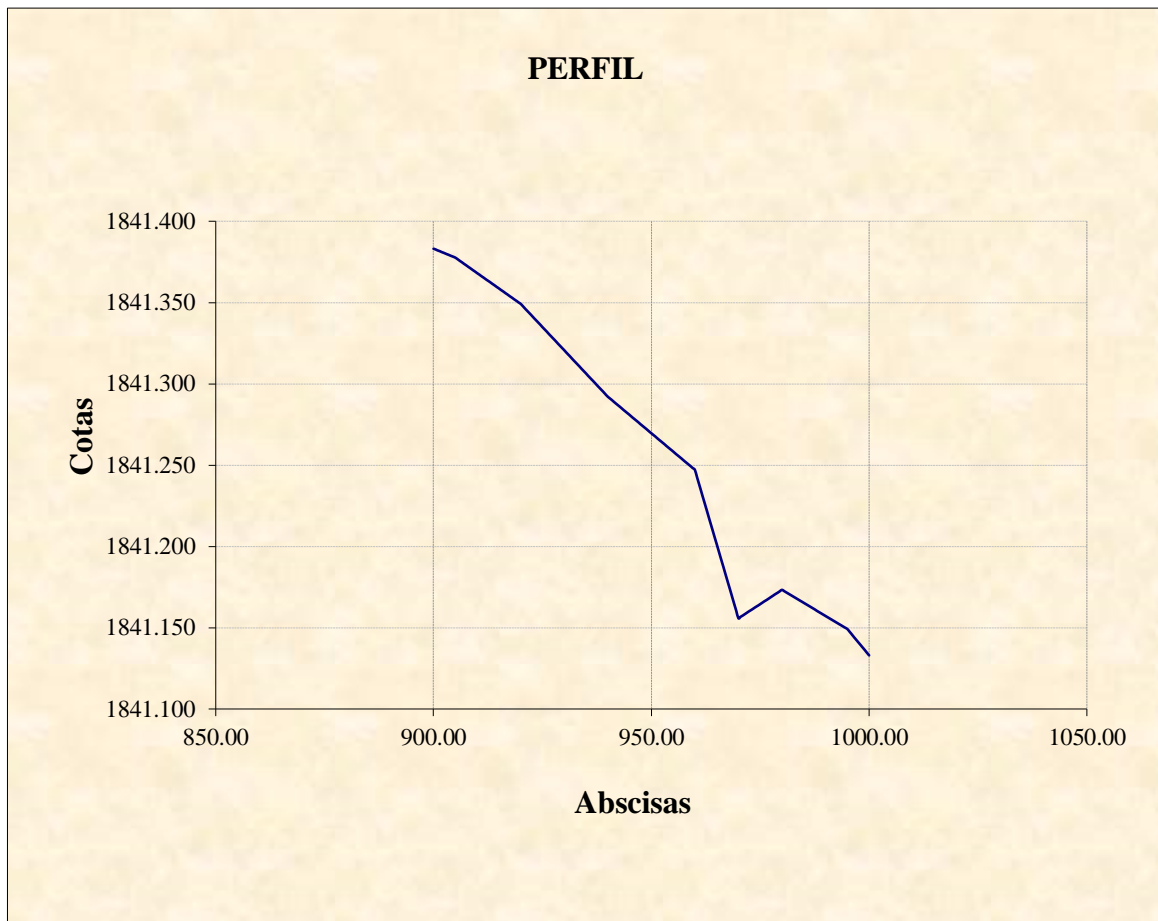
956,00	1841,255
956,50	1841,250
957,00	1841,252
957,50	1841,251
958,00	1841,250
958,50	1841,251
959,00	1841,249
959,50	1841,248
960,00	1841,250
960,50	1841,245
961,00	1841,241
961,50	1841,236
962,00	1841,231
962,50	1841,227
963,00	1841,222
963,50	1841,218
964,00	1841,213
964,50	1841,209
965,00	1841,204
965,50	1841,199
966,00	1841,195
966,50	1841,190
967,00	1841,186
967,50	1841,181
968,00	1841,181
968,50	1841,173
969,00	1841,172
969,50	1841,166
970,00	1841,165
970,50	1841,159
971,00	1841,160
971,50	1841,161
972,00	1841,162
972,50	1841,163
973,00	1841,164
973,50	1841,163
974,00	1841,163
974,50	1841,164
975,00	1841,164
975,50	1841,165
976,00	1841,166

976,50	1841,167
977,00	1841,165
977,50	1841,169
978,00	1841,167
978,50	1841,169
979,00	1841,172
979,50	1841,172
980,00	1841,171
980,50	1841,173
981,00	1841,172
981,50	1841,171
982,00	1841,170
982,50	1841,169
983,00	1841,169
983,50	1841,168
984,00	1841,167
984,50	1841,166
985,00	1841,159
985,50	1841,165
986,00	1841,164
986,50	1841,163
987,00	1841,162
987,50	1841,161
988,00	1841,160
988,50	1841,160
989,00	1841,159
989,50	1841,158
990,00	1841,157
990,50	1841,156
991,00	1841,156
991,50	1841,155
992,00	1841,154
992,50	1841,153
993,00	1841,152
993,50	1841,152
994,00	1841,151
994,50	1841,150
995,00	1841,149
995,50	1841,148
996,00	1841,146
996,50	1841,144

997,00	1841,140
997,50	1841,141
998,00	1841,140
998,50	1841,138
999,00	1841,136
999,50	1841,135
1000,00	1841,133

<b>Longitud Tramo :</b>		<b>100,00</b> m	<b>Longitud Subtramo (m) :</b>		<b>20</b>	
<b>Delta X :</b>		<b>0,50</b> m	<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	
<b>IRI :</b>		<b>1,55</b> m/Km			<b>IRI (m/Km)</b>	
<b>FECHA:</b>	7/5/2023		900	920	20,00	1,65
<b>PROG. INI.</b>	0+900		920	940	20,00	1,64
<b>PROG. FIN.</b>	1+000		940	960	20,00	1,59
			960	980	20,00	1,48
			980	1000	20,00	1,41
						1,55

**Perfil del tramo 900 + 1000 Av. San Luis**



<b>Abscisa</b>	<b>Cota</b>
1000,00	1841,133
1000,50	1841,131
1001,00	1841,130
1001,50	1841,128
1002,00	1841,127
1002,50	1841,125
1003,00	1841,123
1003,50	1841,122
1004,00	1841,120
1004,50	1841,119
1005,00	1841,117
1005,50	1841,115
1006,00	1841,114
1006,50	1841,112
1007,00	1841,110
1007,50	1841,108
1008,00	1841,107
1008,50	1841,106
1009,00	1841,104
1009,50	1841,102
1010,00	1841,101
1010,50	1841,099
1011,00	1841,089
1011,50	1841,095
1012,00	1841,094
1012,50	1841,092
1013,00	1841,091
1013,50	1841,089
1014,00	1841,087
1014,50	1841,086
1015,00	1841,085
1015,50	1841,082
1016,00	1841,080
1016,50	1841,077
1017,00	1841,075
1017,50	1841,073

1018,00	1841,070
1018,50	1841,067
1019,00	1841,065
1019,50	1841,062
1020,00	1841,060
1020,50	1841,058
1021,00	1841,056
1021,50	1841,053
1022,00	1841,051
1022,50	1841,048
1023,00	1841,046
1023,50	1841,044
1024,00	1841,041
1024,50	1841,039
1025,00	1841,036
1025,50	1841,032
1026,00	1841,032
1026,50	1841,030
1027,00	1841,029
1027,50	1841,028
1028,00	1841,027
1028,50	1841,025
1029,00	1841,024
1029,50	1841,023
1030,00	1841,022
1030,50	1841,020
1031,00	1841,019
1031,50	1841,018
1032,00	1841,017
1032,50	1841,016
1033,00	1841,014
1033,50	1841,013
1034,00	1841,012
1034,50	1841,011
1035,00	1841,009
1035,50	1841,006
1036,00	1841,002
1036,50	1840,999

1037,00	1840,995
1037,50	1840,992
1038,00	1840,988
1038,50	1840,984
1039,00	1840,981
1039,50	1840,977
1040,00	1840,974
1040,50	1840,971
1041,00	1840,969
1041,50	1840,966
1042,00	1840,964
1042,50	1840,961
1043,00	1840,959
1043,50	1840,956
1044,00	1840,953
1044,50	1840,951
1045,00	1840,948
1045,50	1840,946
1046,00	1840,943
1046,50	1840,940
1047,00	1840,938
1047,50	1840,936
1048,00	1840,933
1048,50	1840,932
1049,00	1840,931
1049,50	1840,929
1050,00	1840,928
1050,50	1840,927
1051,00	1840,926
1051,50	1840,925
1052,00	1840,924
1052,50	1840,924
1053,00	1840,925
1053,50	1840,926
1054,00	1840,927
1054,50	1840,928
1055,00	1840,929
1055,50	1840,932

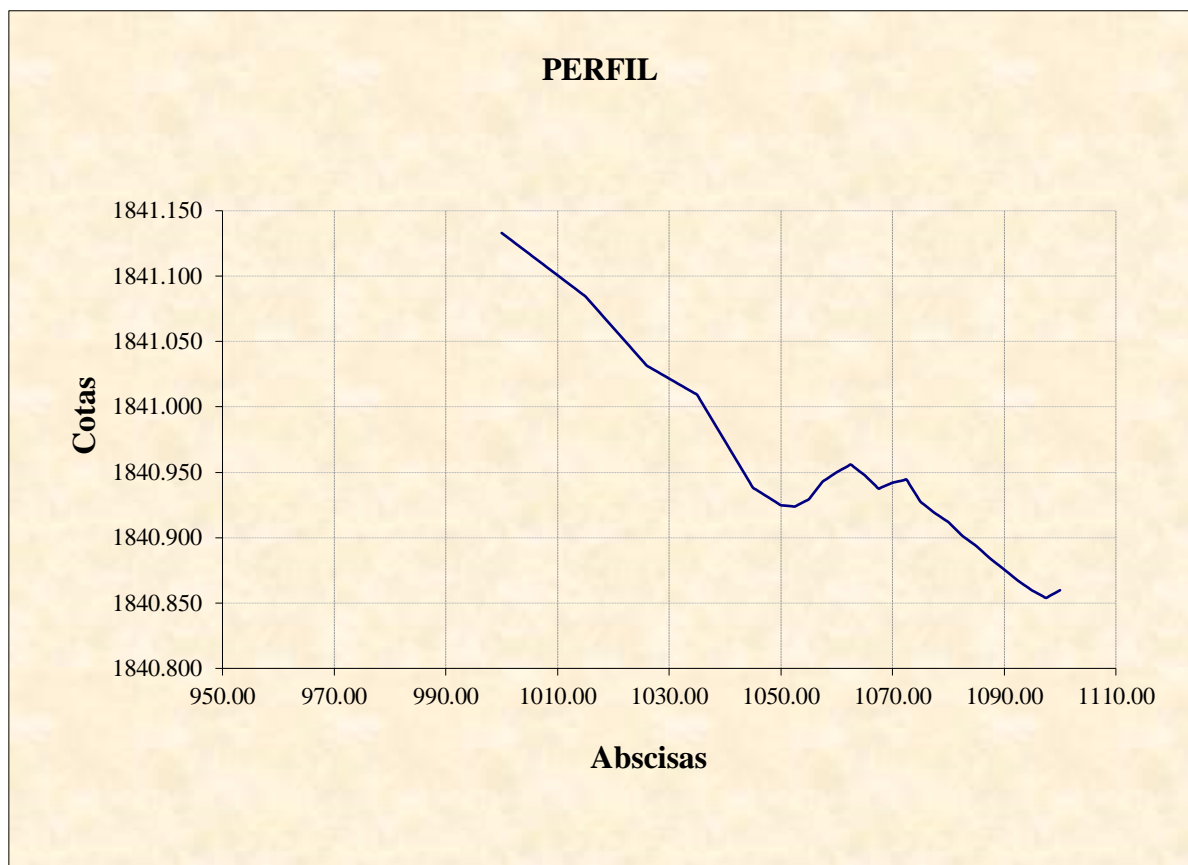
1056,00	1840,935
1056,50	1840,938
1057,00	1840,940
1057,50	1840,943
1058,00	1840,944
1058,50	1840,946
1059,00	1840,947
1059,50	1840,949
1060,00	1840,950
1060,50	1840,951
1061,00	1840,952
1061,50	1840,954
1062,00	1840,955
1062,50	1840,956
1063,00	1840,954
1063,50	1840,953
1064,00	1840,951
1064,50	1840,949
1065,00	1840,948
1065,50	1840,946
1066,00	1840,944
1066,50	1840,942
1067,00	1840,940
1067,50	1840,939
1068,00	1840,937
1068,50	1840,939
1069,00	1840,939
1069,50	1840,939
1070,00	1840,938
1070,50	1840,937
1071,00	1840,935
1071,50	1840,933
1072,00	1840,932
1072,50	1840,931
1073,00	1840,930
1073,50	1840,931
1074,00	1840,930
1074,50	1840,929
1075,00	1840,928
1075,50	1840,926
1076,00	1840,924

1076,50	1840,922
1077,00	1840,921
1077,50	1840,919
1078,00	1840,918
1078,50	1840,916
1079,00	1840,915
1079,50	1840,913
1080,00	1840,912
1080,50	1840,910
1081,00	1840,908
1081,50	1840,906
1082,00	1840,904
1082,50	1840,901
1083,00	1840,900
1083,50	1840,898
1084,00	1840,897
1084,50	1840,895
1085,00	1840,894
1085,50	1840,892
1086,00	1840,882
1086,50	1840,888
1087,00	1840,886
1087,50	1840,884
1088,00	1840,882
1088,50	1840,881
1089,00	1840,879
1089,50	1840,877
1090,00	1840,876
1090,50	1840,874
1091,00	1840,872
1091,50	1840,870
1092,00	1840,869
1092,50	1840,867
1093,00	1840,866
1093,50	1840,864
1094,00	1840,863
1094,50	1840,861
1095,00	1840,860
1095,50	1840,859
1096,00	1840,857
1096,50	1840,856

1097,00	1840,855
1097,50	1840,854
1098,00	1840,855
1098,50	1840,856
1099,00	1840,857
1099,50	1840,859
1100,00	1840,860

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>		<b>0,50</b>	m					
<b>IRI :</b>		<b>1,77</b>	m/Km					
<b>FECHA:</b>	7/5/2023			<b>Abscisa Inicial</b>	<b>Abscisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	1+000			1000	1020	20,00	1,68	
<b>PROG. FIN.</b>	1+100			1020	1040	20,00	1,65	
				1040	1060	20,00	1,89	
				1060	1080	20,00	1,85	
				1080	1100	20,00	1,78	1,77

**Perfil del tramo 1000 + 1100 Av. San Luis**



<b>Abscisa</b>	<b>Cota</b>
1100,00	1840,860
1100,50	1840,859
1101,00	1840,859
1101,50	1840,858
1102,00	1840,857
1102,50	1840,857
1103,00	1840,852
1103,50	1840,848
1104,00	1840,843
1104,50	1840,839
1105,00	1840,835
1105,50	1840,830
1106,00	1840,826
1106,50	1840,821
1107,00	1840,817
1107,50	1840,812
1108,00	1840,807
1108,50	1840,803
1109,00	1840,798
1109,50	1840,794
1110,00	1840,789
1110,50	1840,789
1111,00	1840,789
1111,50	1840,789
1112,00	1840,789
1112,50	1840,789
1113,00	1840,792
1113,50	1840,795
1114,00	1840,797
1114,50	1840,800
1115,00	1840,803
1115,50	1840,804
1116,00	1840,805
1116,50	1840,806
1117,00	1840,806
1117,50	1840,807
1118,00	1840,806
1118,50	1840,805
1119,00	1840,804
1119,50	1840,803

1120,00	1840,801
1120,50	1840,799
1121,00	1840,797
1121,50	1840,795
1122,00	1840,792
1122,50	1840,790
1123,00	1840,789
1123,50	1840,788
1124,00	1840,788
1124,50	1840,787
1125,00	1840,786
1125,50	1840,786
1126,00	1840,786
1126,50	1840,785
1127,00	1840,785
1127,50	1840,785
1128,00	1840,785
1128,50	1840,785
1129,00	1840,785
1129,50	1840,785
1130,00	1840,785
1130,50	1840,784
1131,00	1840,784
1131,50	1840,783
1132,00	1840,783
1132,50	1840,782
1133,00	1840,782
1133,50	1840,783
1134,00	1840,783
1134,50	1840,783
1135,00	1840,783
1135,50	1840,784
1136,00	1840,785
1136,50	1840,786
1137,00	1840,787
1137,50	1840,788
1138,00	1840,787
1138,50	1840,786
1139,00	1840,785
1139,50	1840,785
1140,00	1840,784
1140,50	1840,781
1141,00	1840,778

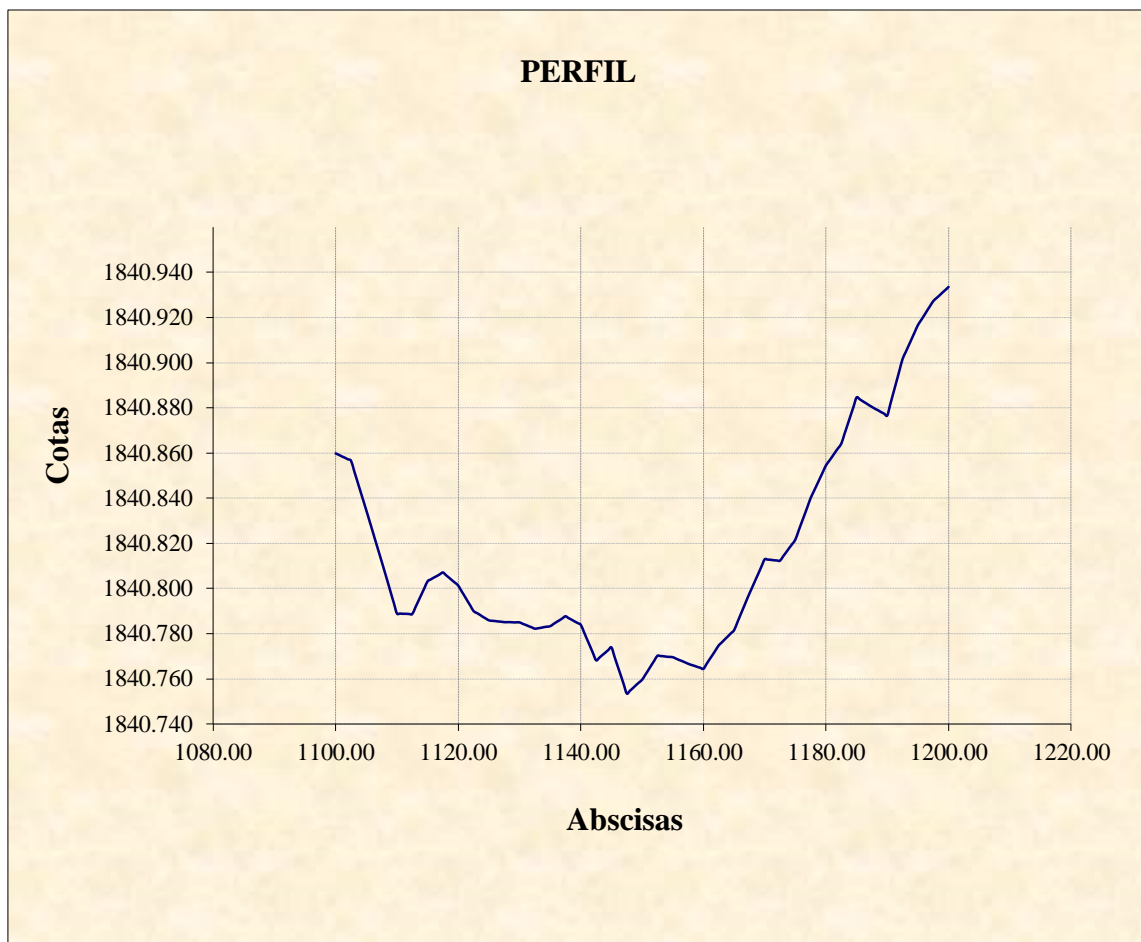
1141,50	1840,775
1142,00	1840,771
1142,50	1840,768
1143,00	1840,769
1143,50	1840,771
1144,00	1840,772
1144,50	1840,773
1145,00	1840,774
1145,50	1840,770
1146,00	1840,766
1146,50	1840,762
1147,00	1840,758
1147,50	1840,754
1148,00	1840,755
1148,50	1840,756
1149,00	1840,757
1149,50	1840,758
1150,00	1840,760
1150,50	1840,762
1151,00	1840,764
1151,50	1840,766
1152,00	1840,768
1152,50	1840,770
1153,00	1840,770
1153,50	1840,770
1154,00	1840,770
1154,50	1840,770
1155,00	1840,770
1155,50	1840,769
1156,00	1840,768
1156,50	1840,768
1157,00	1840,767
1157,50	1840,767
1158,00	1840,766
1158,50	1840,766
1159,00	1840,765
1159,50	1840,765
1160,00	1840,764
1160,50	1840,767
1161,00	1840,769
1161,50	1840,771
1162,00	1840,773
1162,50	1840,775

1163,00	1840,776
1163,50	1840,778
1164,00	1840,779
1164,50	1840,780
1165,00	1840,782
1165,50	1840,785
1166,00	1840,788
1166,50	1840,791
1167,00	1840,795
1167,50	1840,798
1168,00	1840,801
1168,50	1840,804
1169,00	1840,807
1169,50	1840,810
1170,00	1840,813
1170,50	1840,813
1171,00	1840,813
1171,50	1840,813
1172,00	1840,812
1172,50	1840,812
1173,00	1840,814
1173,50	1840,816
1174,00	1840,818
1174,50	1840,820
1175,00	1840,822
1175,50	1840,825
1176,00	1840,829
1176,50	1840,833
1177,00	1840,836
1177,50	1840,840
1178,00	1840,843
1178,50	1840,846
1179,00	1840,849
1179,50	1840,852
1180,00	1840,855
1180,50	1840,856
1181,00	1840,858
1181,50	1840,860
1182,00	1840,862
1182,50	1840,864
1183,00	1840,868
1183,50	1840,872
1184,00	1840,876
1184,50	1840,881
1185,00	1840,885
1185,50	1840,884
1186,00	1840,883

1186,50	1840,882
1187,00	1840,881
1187,50	1840,880
1188,00	1840,880
1188,50	1840,879
1189,00	1840,878
1189,50	1840,877
1190,00	1840,877
1190,50	1840,882
1191,00	1840,887
1191,50	1840,892
1192,00	1840,897
1192,50	1840,902
1193,00	1840,905
1193,50	1840,908
1194,00	1840,911
1194,50	1840,914
1195,00	1840,917
1195,50	1840,919
1196,00	1840,921
1196,50	1840,923
1197,00	1840,925
1197,50	1840,927
1198,00	1840,929
1198,50	1840,930
1199,00	1840,931
1199,50	1840,932
1200,00	1840,934

<b>Longitud Tramo :</b>		<b>100,00</b>	m	<b>Longitud Subtramo (m) :</b>		<b>20</b>		
<b>Delta X :</b>		<b>0,50</b>	m					
<b>IRI :</b>		<b>3,26</b>	m/Km					
<b>FECHA:</b>	7/5/2023			<b>Abcisa Inicial</b>	<b>Abcisa Final</b>	<b>Longitud (m)</b>	<b>IRI (m/Km)</b>	
<b>PROG. INI.</b>	1+100			1100	1120	20,00	4,77	
<b>PROG. FIN.</b>	1+200			1120	1140	20,00	1,49	
				1140	1160	20,00	3,93	
				1160	1180	20,00	2,22	
				1180	1200	20,00	3,88	3,26

**Perfil del tramo 1100 + 1200 Av. San Luis**





**TABLA RESUMEN DE RESULTADOS**

**CADA 100 METROS**

<b>PROGRESIVA</b>	<b>IRI(m/Km)</b>
<b>100</b>	<b>2,36</b>
<b>200</b>	<b>2,75</b>
<b>300</b>	<b>3,26</b>
<b>400</b>	<b>2,02</b>
<b>500</b>	<b>1,67</b>
<b>600</b>	<b>1,32</b>
<b>700</b>	<b>1,61</b>
<b>800</b>	<b>1,56</b>
<b>900</b>	<b>1,52</b>
<b>1000</b>	<b>1,55</b>
<b>1100</b>	<b>1,77</b>
<b>1200</b>	<b>3,26</b>

**CADA 400 METROS**

<b>PROGRESIVA</b>	<b>IRI(m/Km)</b>
<b>000 + 400</b>	<b>2,60</b>
<b>400 + 800</b>	<b>1,54</b>
<b>800 + 1200</b>	<b>2,02</b>



**ANEXO IV. DATOS Y  
RESULTADOS SOFTWARE  
ABAKAL**

## DATOS POR EL SOFTWARE ABAKAL

### AVENIDA LOS MOLLES

TIPO DE CÁLCULO = ESTADÍSTICO

COEFICIENTE DE AJUSTE = 2,5

VELOCIDAD = 30 Km/h

#### INFORME IRI ABAKAL

Desplazamiento	IRI
0	4,03
100	4,03
100	3,76
200	3,76
200	4,44
300	4,44
300	4,91
400	4,91
400	4,42
500	4,42
500	5,30
600	5,30
600	6,00
700	6,00
700	6,00
800	6,00
800	6,00
900	6,00
900	6,00
1000	6,00
1000	6,00
1100	6,00
1100	3,03
1200	3,03
1200	4,08
1300	4,08
1300	2,38

1400	2,38
1400	4,53
1500	4,53
1500	2,25
1600	2,25
1600	2,56
1700	2,56
1700	4,19
1800	4,19
1800	2,05
1900	2,05
1900	5,57
2000	5,57
2000	4,46
2100	4,46
2100	3,93
2200	3,93
2200	3,53
2300	3,53
2300	2,90
2400	2,90
2400	1,74
2500	1,74
2500	1,60
2600	1,60
2600	1,85
2700	1,85
2700	1,55
2800	1,55

**TABLA CONTROL (COEF, AJUSTE = 2,5)**

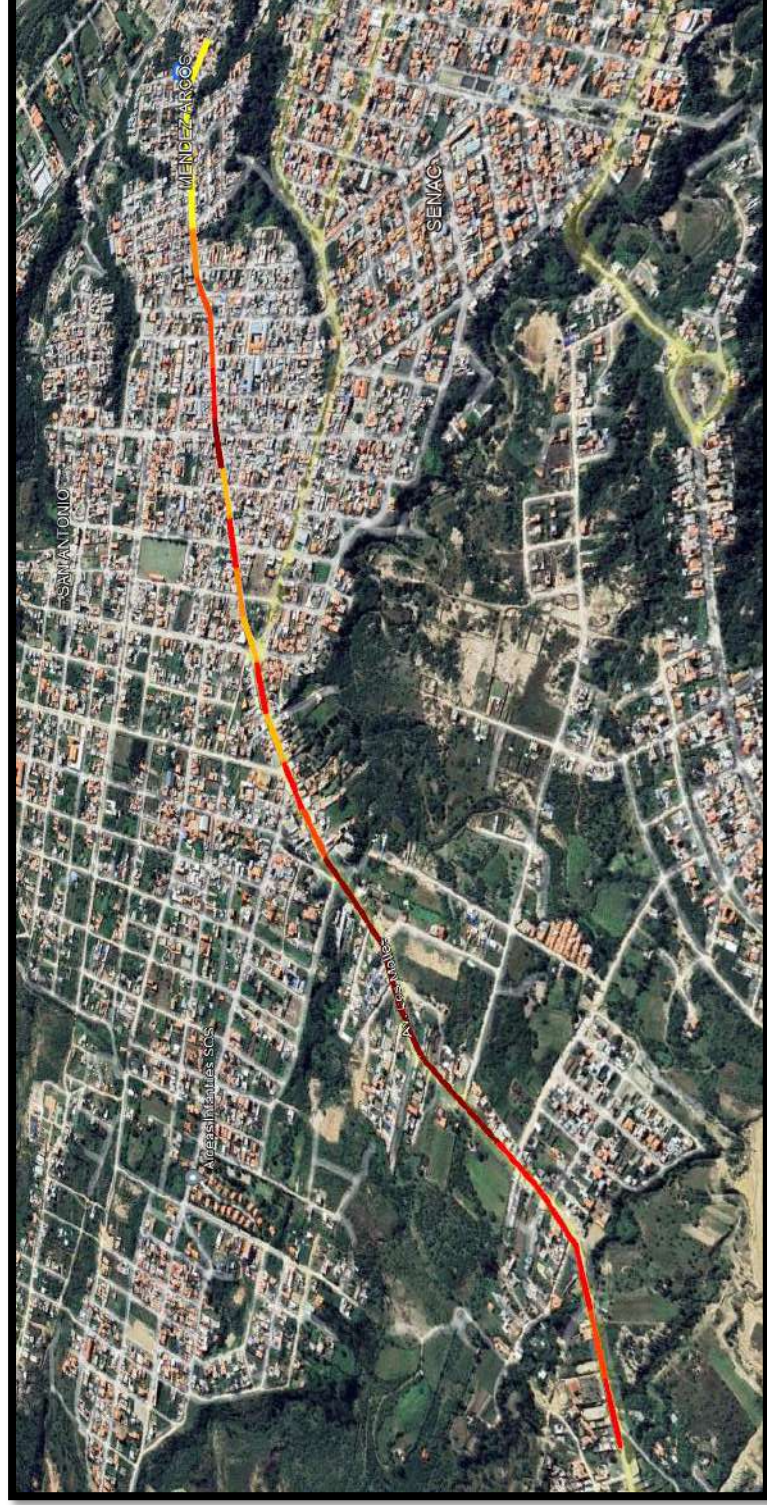
Latitud	Longitud	Altitud	Velocidad	Desplazamiento	Valor IRI
-21.543.645	-64.769.433	1,993,85	38,41	0	4,03
-21.543.395	-64.768.458	1,994,41	36,07	100	3,76
-21.543.144	-64.767.523	1,993,97	25,42	200	4,44
-21.542.517	-64.766.808	1,991,88	13,03	300	4,91
-21.541.713	-64.766.195	1,990,78	36,25	400	4,42
-21.540.908	-64.765.596	1,986,55	27,79	500	5,30
-21.540.172	-64.765.026	1,986,16	28,55	600	6,00
-21.539.676	-64.764.208	1,980,85	32,04	700	6,00
-21.539.292	-64.763.257	1,974,43	29,12	800	6,00
-21.538.616	-64.762.535	1,968,06	35,68	900	6,00
-21.537.948	-64.761.800	1,969,08	31,57	1,000,00	6,00
-21537426	-64760955	1,969,96	30,17	1,100,00	3,03
-21536966	-64760084	1,968,92	30,20	1,200,00	4,08
-21536535	-64759193	1,967,74	31,50	1,300,00	2,38
-21536284	-64758209	1,964,69	23,94	1,400,00	4,53
-21535903	-64757338	1,963,24	26,17	1,500,00	2,25
-21535717	-64756391	1,963,90	33,73	1,600,00	2,56
-21535543	-64755417	1,963,76	30,35	1,700,00	4,19
-21535336	-64754419	1,962,81	25,42	1,800,00	2,05
-21535152	-64753449	1,964,84	24,62	1,900,00	5,57
-21535088	-64752434	1,963,47	26,75	2,000,00	4,46
-21534987	-64751405	1,962,68	23,62	2,100,00	3,93
-21534552	-64750539	1,954,88	15,23	2,200,00	3,53
-21534418	-64749562	1,952,72	17,50	2,300,00	2,90
-21534366	-64748597	1,950,99	29,30	2,400,00	1,74
-21534226	-64747647	1,951,07	30,64	2,500,00	1,60
-21534271	-64746696	1,949,88	25,16	2,600,00	1,85
-21534824	-64745908	1,951,78	22,72	2,700,00	1,55

**CADA 400 METROS**

PROGRESIVA	IRI(m/Km)
000 + 400	4,29
400 + 800	5,43
800 + 1200	5,26
1200 + 1600	3,31
1600 + 2000	3,59
2000 + 2400	3,71
2400 + 2800	1,69

- Archivo informe IRI.kml, Mapa generado en Google Earth.

Avenida Los Molles, coeficiente = 2,5



Fuente: Elaboración propia.

TIPO DE CÁLCULO = ESTADÍSTICO

COEFICIENTE DE AJUSTE = 3

VELOCIDAD = 30 Km/h

**INFORME IRI  
ABAKAL**

Desplazamiento	IRI
0	4,83
100	4,83
100	4,51
200	4,51
200	5,33
300	5,33
300	5,90
400	5,90
400	5,31
500	5,31
500	6,00
600	6,00
600	6,00
700	6,00
700	6,00
800	6,00
800	6,00
900	6,00
900	6,00
1000	6,00
1000	6,00
1100	6,00
1100	3,64
1200	3,64
1200	4,89
1300	4,89
1300	2,86

1400	2,86
1400	5,43
1500	5,43
1500	2,70
1600	2,70
1600	3,07
1700	3,07
1700	5,03
1800	5,03
1800	2,46
1900	2,46
1900	6,00
2000	6,00
2000	5,36
2100	5,36
2100	4,71
2200	4,71
2200	4,23
2300	4,23
2300	3,48
2400	3,48
2400	2,08
2500	2,08
2500	1,92
2600	1,92
2600	2,22
2700	2,22
2700	1,86
2800	1,86

**TABLA CONTROL (COEF, AJUSTE = 3)**

Latitud	Longitud	Altitud	Velocidad	Desplazamiento	Valor IRI
-21.543.645	-64.769.433	1,993,85	38,41	0	4,83
-21.543.395	-64.768.458	1,994,41	36,07	100	4,51
-21.543.144	-64.767.523	1,993,97	25,42	200	5,33
-21.542.517	-64.766.808	1,991,88	13,03	300	5,90
-21.541.713	-64.766.195	1,990,78	36,25	400	5,31
-21.540.908	-64.765.596	1,986,55	27,79	500	6,00
-21.540.172	-64.765.026	1,986,16	28,55	600	6,00
-21.539.676	-64.764.208	1,980,85	32,04	700	6,00
-21.539.292	-64.763.257	1,974,43	29,12	800	6,00
-21.538.616	-64.762.535	1,968,06	35,68	900	6,00
-21.537.948	-64.761.800	1,969,08	31,57	1,000,00	6,00
-21537426	-64760955	1,969,96	30,17	1,100,00	3,64
-21536966	-64760084	1,968,92	30,20	1,200,00	4,89
-21536535	-64759193	1,967,74	31,50	1,300,00	2,86
-21536284	-64758209	1,964,69	23,94	1,400,00	5,43
-21535903	-64757338	1,963,24	26,17	1,500,00	2,70
-21535717	-64756391	1,963,90	33,73	1,600,00	3,07
-21535543	-64755417	1,963,76	30,35	1,700,00	5,03
-21535336	-64754419	1,962,81	25,42	1,800,00	2,46
-21535152	-64753449	1,964,84	24,62	1,900,00	6,00
-21535088	-64752434	1,963,47	26,75	2,000,00	5,36
-21534987	-64751405	1,962,68	23,62	2,100,00	4,71
-21534552	-64750539	1,954,88	15,23	2,200,00	4,23
-21534418	-64749562	1,952,72	17,50	2,300,00	3,48
-21534366	-64748597	1,950,99	29,30	2,400,00	2,08
-21534226	-64747647	1,951,07	30,64	2,500,00	1,92
-21534271	-64746696	1,949,88	25,16	2,600,00	2,22
-21534824	-64745908	1,951,78	22,72	2,700,00	1,86

**CADA 400 METROS**

PROGRESIVA	IRI(m/Km)
000 + 400	5,14
400 + 800	5,83
800 + 1200	5,41
1200 + 1600	3,97
1600 + 2000	4,14
2400 + 2600	4,45
2600 + 2800	2,02



- Archivo informe IRI.kml, Mapa generado en Google Earth.

### Avenida Los Molles, coeficiente = 3



Fuente: Elaboración propia.

## DATOS POR EL SOFTWARE ABAKAL

### AVENIDA SAN LUIS

TIPO DE CÁLCULO = ESTADÍSTICO

COEFICIENTE DE AJUSTE = 2,5

VELOCIDAD = 30 Km/h

#### INFORME IRI ABAKAL

Desplazamiento	IRI
0	3,15
100	3,15
100	2,60
200	2,60
200	3,43
300	3,43
300	1,81
400	1,81
400	1,72
500	1,72
500	1,63
600	1,63
600	1,26
700	1,26
700	1,37
800	1,37
800	1,68
900	1,68
900	2,47
1000	2,47
1000	2,02
1100	2,02

1100	2,07
1200	2,07
1200	1,44
1300	1,44
1300	2,61
1400	2,61
1400	1,67
1500	1,67
1500	2,01
1600	2,01
1600	1,85
1700	1,85
1700	1,81
1800	1,81
1800	1,85
1900	1,85
1900	2,29
2000	2,29
2000	1,58
2100	1,58
2100	2,33
2200	2,33
2200	2,12
2300	2,12
2300	2,42
2400	2,42

**TABLA CONTROL (COEF, AJUSTE = 2,5)**

Latitud	Longitud	Altitud	Velocidad	Desplazamiento	Valor IRI
-21.556.881	-64.709.155	1,887,39	33,84	0	3,15
-21.557.793	-64.709.302	1,883,94	32,76	100	2,60
-21.558.661	-64.708.882	1,879,95	31,14	200	3,43
-21.559.484	-64.708.304	1,876,37	32,36	300	1,81
-21.560.244	-64.707.752	1,875,22	33,88	400	1,72
-21.561.027	-64.707.197	1,872,60	33,26	500	1,63
-21.561.747	-64.706.476	1,872,51	34,38	600	1,26
-21.562.355	-64.705.667	1,872,27	33,01	700	1,37
-21.562.955	-64.704.835	1,872,27	32,69	800	1,68
-21.563.514	-64.704.057	1,871,86	33,66	900	2,47
-21.564.085	-64.703.280	1,872,07	25,24	1,000,00	2,02
-21564644	-64702517	1,872,00	32,18	1,100,00	2,07
-21565237	-64701737	1,874,83	31,50	1,200,00	1,44
-21565985	-64701172	1,877,74	32,44	1,300,00	2,61
-21566811	-64700730	1,880,68	34,78	1,400,00	1,67
-21567626	-64700294	1,883,24	33,62	1,500,00	2,01
-21568405	-64699792	1,883,95	32,87	1,600,00	1,85
-21569116	-64699137	1,883,19	18,29	1,700,00	1,81
-21569812	-64698431	1,882,31	32,80	1,800,00	1,85
-21570489	-64697690	1,881,34	33,34	1,900,00	2,29
-21571152	-64696914	1,880,15	31,75	2,000,00	1,58
-21571774	-64696158	1,876,26	31,57	2,100,00	2,33
-21572383	-64695435	1,872,34	31,07	2,200,00	2,12
-21573171	-64694818	1,868,31	31,57	2,300,00	2,42

**CADA 400 METROS**

PROGRESIVA	IRI(m/Km)
000 + 400	2,75
400 + 800	1,50
800 + 1200	2,06
1200 + 1600	1,93
1600 + 2000	1,95
2000 + 2400	2,11

- Archivo informe IRL.kml, Mapa generado en Google Earth.

Avenida San Luis, coeficiente = 2,5



Fuente: Elaboración propia.

TIPO DE CÁLCULO = ESTADÍSTICO

COEFICIENTE DE AJUSTE = 3

VELOCIDAD = 30 Km/h

**INFORME IRI  
ABAKAL**

Desplazamiento	IRI
0	3,78
100	3,78
100	3,13
200	3,13
200	4,11
300	4,11
300	2,17
400	2,17
400	2,06
500	2,06
500	1,95
600	1,95
600	1,51
700	1,51
700	1,64
800	1,64
800	2,02
900	2,02
900	2,97
1000	2,97
1000	2,42
1100	2,42

1100	2,48
1200	2,48
1200	1,73
1300	1,73
1300	3,13
1400	3,13
1400	2,01
1500	2,01
1500	2,41
1600	2,41
1600	2,21
1700	2,21
1700	2,17
1800	2,17
1800	2,23
1900	2,23
1900	2,74
2000	2,74
2000	1,90
2100	1,90
2100	2,80
2200	2,80
2200	2,55
2300	2,55
2300	2,90
2400	2,90

**TABLA CONTROL (COEF, AJUSTE = 3)**

Latitud	Longitud	Altitud	Velocidad	Desplazamiento	Valor IRI
-21.556.881	-64.709.155	1,887,39	33,84	0	3,78
-21.557.793	-64.709.302	1,883,94	32,76	100	3,13
-21.558.661	-64.708.882	1,879,95	31,14	200	4,11
-21.559.484	-64.708.304	1,876,37	32,36	300	2,17
-21.560.244	-64.707.752	1,875,22	33,88	400	2,06
-21.561.027	-64.707.197	1,872,60	33,26	500	1,95
-21.561.747	-64.706.476	1,872,51	34,38	600	1,51
-21.562.355	-64.705.667	1,872,27	33,01	700	1,64
-21.562.955	-64.704.835	1,872,27	32,69	800	2,02
-21.563.514	-64.704.057	1,871,86	33,66	900	2,97
-21.564.085	-64.703.280	1,872,07	25,24	1,000,00	2,42
-21564644	-64702517	1,872,00	32,18	1,100,00	2,48
-21565237	-64701737	1,874,83	31,50	1,200,00	1,73
-21565985	-64701172	1,877,74	32,44	1,300,00	3,13
-21566811	-64700730	1,880,68	34,78	1,400,00	2,01
-21567626	-64700294	1,883,24	33,62	1,500,00	2,41
-21568405	-64699792	1,883,95	32,87	1,600,00	2,21
-21569116	-64699137	1,883,19	18,29	1,700,00	2,17
-21569812	-64698431	1,882,31	32,80	1,800,00	2,23
-21570489	-64697690	1,881,34	33,34	1,900,00	2,74
-21571152	-64696914	1,880,15	31,75	2,000,00	1,90
-21571774	-64696158	1,876,26	31,57	2,100,00	2,80
-21572383	-64695435	1,872,34	31,07	2,200,00	2,55
-21573171	-64694818	1,868,31	31,57	2,300,00	2,90

**CADA 400 METROS**

PROGRESIVA	IRI(m/Km)
000 + 400	3,30
400 + 800	1,79
800 + 1200	2,47
1200 + 1600	2,32
1600 + 2000	2,34
2000 + 2400	2,54

- Archivo informe IRI.kml, Mapa generado en Google Earth.

Avenida San Luis, coeficiente = 3



Fuente: Elaboración propia.

**ANEXO V.**  
**PRESUPUESTO**



## ANÁLISIS DE PRECIOS UNITARIOS

DATOS GENERALES	
<b>Proyecto</b>	: DETERMINACIÓN DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL, USANDO EL APLICATIVO INTELIGENTE ABAKAL IRI Y EL RUGOSÍMETRO DE MERLÍN EN LAS AVENIDAS DE LA CIUDAD DE LEVANTAMIENTO DE PERFIL CON MIRA Y NIVEL
<b>Actividad</b>	: LEVANTAMIENTO DE PERFIL CON MIRA Y NIVEL
<b>Cantidad</b>	: 1,00
<b>Unidad</b>	: M
<b>Moneda</b>	: Bs.

1. MATERIALES					
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL	
<b>TOTAL MATERIALES</b>				0,00	

2. MANO DE OBRA					
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL	
1	Topógrafo	Hr	0,03	25,00	0,70
2	Ayudante	Hr	0,03	12,50	0,35
<b>SUBTOTAL MANO DE OBRA</b>				1,05	
CARGAS SOCIALES (% DEL SUBTOTAL DE MANO DE OBRA)			55,00%	0,58	
IMPUESTOS IVA M.O. (% DE SUBTOTAL DE M.O. + CARGAS SOCIALES)			14,94%	0,24	
<b>TOTAL MANO DE OBRA</b>				1,87	

3. EQUIPO, MAQUINARIA Y HERRAMIENTAS					
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL	
1	Equipo Nivel de ingeniero	Hr	0,03	12,50	0,35
HERRAMIENTAS (% DEL TOTAL DE MANO DE OBRA)			5,00%	0,09	
<b>TOTAL EQUIPO, MAQUINARIA Y HERRAMIENTAS</b>				0,44	

4. GASTOS GENERALES Y ADMINISTRATIVOS			COSTO TOTAL	
GASTOS GENERALES = (% DE 1 + 2 + 3)			3,00%	0,07
<b>TOTAL GASTOS GENERALES Y ADMINISTRATIVOS</b>			<b>0,07</b>	

5. UTILIDAD			COSTO TOTAL	
UTILIDAD = (% DE 1 + 2 + 3 + 4)			10,00%	0,24
<b>TOTAL UTILIDAD</b>			<b>0,24</b>	

6. IMPUESTOS			COSTO TOTAL	
IMPUESTOS IT (% DE 1 + 2 + 3 + 4 + 5)			3,09%	0,08
<b>TOTAL IMPUESTOS</b>			<b>0,08</b>	
<b>TOTAL PRECIO UNITARIO (1 + 2 + 3 + 4 + 5 + 6)</b>			<b>2,70</b>	

## ANÁLISIS DE PRECIOS UNITARIOS

DATOS GENERALES	
<b>Proyecto</b>	: DETERMINACIÓN DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL, USANDO EL APLICATIVO INTELIGENTE ABAKAL IRI Y EL RUGOSÍMETRO DE MERLÍN EN LAS AVENIDAS DE LA CIUDAD DE MERLÍN
<b>Actividad</b>	: MEDICIÓN CON RUGOSÍMETRO DE MERLÍN
<b>Cantidad</b>	: 1,00
<b>Unidad</b>	: M
<b>Moneda</b>	: Bs.

1. MATERIALES				
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL
<b>TOTAL MATERIALES</b>				0,00

2. MANO DE OBRA				
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL
1	Topógrafo	Hr	0,003	21,43
2	Ayudante	Hr	0,003	10,00
<b>SUBTOTAL MANO DE OBRA</b>				0,08
CARGAS SOCIALES (% DEL SUBTOTAL DE MANO DE OBRA)			55,00%	0,04
IMPUESTOS IVA M.O. (% DE SUBTOTAL DE M.O. + CARGAS SOCIALES)			14,94%	0,02
<b>TOTAL MANO DE OBRA</b>				0,14

3. EQUIPO, MAQUINARIA Y HERRAMIENTAS				
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL
1	Alquiler del Merlín	Hr	1,00	0,95
HERRAMIENTAS (% DEL TOTAL DE MANO DE OBRA)				5,00%
<b>TOTAL EQUIPO, MAQUINARIA Y HERRAMIENTAS</b>				0,96

4. GASTOS GENERALES Y ADMINISTRATIVOS			COSTO TOTAL
GASTOS GENERALES = (% DE 1 + 2 + 3)		3,00%	0,03
<b>TOTAL GASTOS GENERALES Y ADMINISTRATIVOS</b>			0,03

5. UTILIDAD			COSTO TOTAL
UTILIDAD = (% DE 1 + 2 + 3 + 4)		10,00%	0,11
<b>TOTAL UTILIDAD</b>			0,11

6. IMPUESTOS			COSTO TOTAL
IMPUESTOS IT (% DE 1 + 2 + 3 + 4 + 5)		3,09%	0,04
<b>TOTAL IMPUESTOS</b>			0,04
<b>TOTAL PRECIO UNITARIO (1 + 2 + 3 + 4 + 5 + 6)</b>			1,28

## ANÁLISIS DE PRECIOS UNITARIOS

DATOS GENERALES	
<b>Proyecto</b>	: DETERMINACIÓN DEL ÍNDICE DE RUGOSIDAD INTERNACIONAL, USANDO EL APLICATIVO INTELIGENTE ABAKAL IRI Y EL RUGOSÍMETRO DE MERLÍN EN LAS AVENIDAS DE LA CIUDAD DE
<b>Actividad</b>	: ABAKAL IRI
<b>Cantidad</b>	: 1,00
<b>Unidad</b>	: KM
<b>Moneda</b>	: Bs.

1. MATERIALES				
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL
<b>TOTAL MATERIALES</b>				0,00

2. MANO DE OBRA				
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL
1	Conductor	Hr	0,05	15,00
<b>SUBTOTAL MANO DE OBRA</b>				0,75
CARGAS SOCIALES (% DEL SUBTOTAL DE MANO DE OBRA)			55,00%	0,41
IMPUESTOS IVA M.O. (% DE SUBTOTAL DE M.O. + CARGAS SOCIALES)			14,94%	0,17
<b>TOTAL MANO DE OBRA</b>				1,34

3. EQUIPO, MAQUINARIA Y HERRAMIENTAS				
DESCRIPCIÓN	UNIDAD	CANTIDAD	PRECIO UNITARIO	TOTAL
1	Porta Celular	PZA	1,0	35,00
1	Vehículo Toyota Ipsum	PZA	0,05	40,00
1	Dispositivo movil	Hr	0,0003	1.500,00
<b>HERRAMIENTAS (% DEL TOTAL DE MANO DE OBRA)</b>				5,00%
<b>TOTAL EQUIPO, MAQUINARIA Y HERRAMIENTAS</b>				37,50

4. GASTOS GENERALES Y ADMINISTRATIVOS			COSTO TOTAL
<b>GASTOS GENERALES = (% DE 1 + 2 + 3)</b>			3,00%
<b>TOTAL GASTOS GENERALES Y ADMINISTRATIVOS</b>			1,17

5. UTILIDAD			COSTO TOTAL
<b>UTILIDAD = (% DE 1 + 2 + 3 + 4)</b>			10,00%
<b>TOTAL UTILIDAD</b>			4,00

6. IMPUESTOS			COSTO TOTAL
<b>IMPUESTOS IT (% DE 1 + 2 + 3 + 4 + 5)</b>			3,09%
<b>TOTAL IMPUESTOS</b>			1,36
<b>TOTAL PRECIO UNITARIO (1 + 2 + 3 + 4 + 5 + 6)</b>			45,36

## Presupuesto General

Ítem	Descripción	Unidad	Cantidad	Precio Unitario (Numeral)	Precio (Bs/Km)	Precio Total (Bs)
1	Levantamiento De Perfil Con Mira Y Nivel	m	2400,00	2,70	2700,00	6.480,00
2	Medición Con Rugosímetro De Merlín	m	5200,00	1,28	1280,00	6.656,00
3	Abakal Iri	km	5,20	45,36	45,36	235,87

**ANEXO VI.**  
**METODOLOGÍA DE**  
**PROCEDIMIENTO**

## Metodología para la Determinación del Índice de Rugosidad con Abakal

- 1. Calcular el IRI de Referencia:** Se refiere al método de medición que utilizaremos como patrón de medida, para calibrar el dispositivo.
- 2. Definir los factores del estudio:** Este paso es esencial para la preparación y ejecución del estudio. Se deben establecer factores fijos y variables:
  - **Factores fijos:** Se refiere a elementos invariables a lo largo del estudio, como el modelo de celular, la aplicación móvil para medir el IRI, la configuración de la aplicación, la ubicación del celular en el automóvil y el modelo del sujetador.
  - **Factores variables:** Son aquellos elementos que pueden variar en el estudio. En entornos urbanos, estos pueden ser la velocidad del vehículo (30 km/h o 40 km/h), el tipo de vehículo (automóvil), la presión de las llantas (3 PSI por debajo o por encima de lo recomendado), el peso del vehículo y la dirección del recorrido.
- 3. Preparación del equipo:** En esta etapa, se deben considerar los siguientes aspectos:
  - a) Colocación del soporte:** El soporte seleccionado debe asegurar la estabilidad del celular en relación al tablero al que se fije.

Soporte celular



**Fuente:** Elaboración propia.

Se recomienda ubicarlo en la ventana frontal del parabrisas debido a:

- La facilidad para que el copiloto maneje el teléfono móvil.
- Investigaciones anteriores sobre el impacto de la ubicación del dispositivo en el vehículo.
- Estudios anteriores han demostrado una menor variabilidad en los resultados, en comparación con los obtenidos al ubicar el dispositivo en la puerta del copiloto, bolsillo del conductor o parte trasera del asiento del conductor.

**b) Dispositivo móvil:** En cuanto al teléfono celular a utilizar, basándose en investigaciones previas, se sugiere que sea un modelo Samsung de la serie Galaxy, y también los modelos de celulares Xiaomi, En nuestro caso se utilizó la serie redmi note 9S.

Dispositivo móvil



**Fuente:** Elaboración propia.

- c) **Ajustes iniciales en la aplicación móvil:** Se requiere realizar la configuración inicial de la aplicación, activando lo recomendado, conexión a una red e importante activando el GPS, para el registro de la zona de estudio.

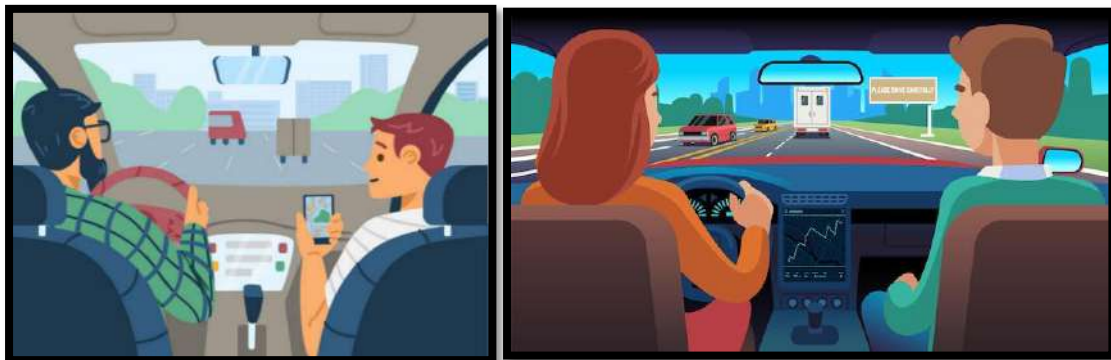


**Fuente:** Elaboración propia.

4. **Preparación del Vehículo:** Una vez que se han definido los factores a examinar, se procede con la ejecución del estudio. Para lo cual debe considerarse lo siguiente:

- a) **Cantidad de ocupantes a bordo:** Se ha determinado que se requieren dos personas a bordo del vehículo durante las mediciones. Esta elección se basa en el objetivo de reducir la variabilidad de los resultados, ya que se observa que este factor tiene un efecto en el Índice de Rugosidad Internacional (IRI). Asimismo, esta cantidad está relacionada con la necesidad de tener dos personas, para manejar el vehículo y operar la aplicación simultáneamente.

Cantidad de ocupantes



**Fuente:** Elaboración propia.



**b) Selección del vehículo:** La mejor opción de vehículo a ser empleado es el automóvil. Se ocupó el Toyota Ipsum (XM1). Los resultados indicaron que, en este tipo de vehículo, los efectos de los factores estudiados sobre el IRI muestran coherencia en los tramos evaluados. Además, su sistema de suspensión resulta ideal, ya que permite capturar la verdadera rugosidad del trayecto en términos de comodidad al conducir.

Vehículo de estudio



**Fuente:** Elaboración propia.

### Tabla de descripción

Especificaciones técnicas completas  
Toyota Ipsum (XM1) 2.0 i (135 Hp)

### Rendimiento

Marca	Toyota (/toyota/list)
Modelo	Ipsum (/toyota/ipsum/list)
Generación	Ipsum (XM1) (/toyota/ipsum/ipsum-xm1/details)
Motor	2.0 i (135 Hp)
Puertas	5
Potencia	135 HPW
Capacidad del tanque de combustible	60 Litros
Año de puesta en producción	1996 año
Año de finalización de producción	2001 año
Tipo de carrocería	Monovolumen
Asientos	6
Longitud	4530 MM

Ancho	1695 MM
Alto	1620 MM
Distancia entre ejes	2735 MM
Vía delantera	1470 MM
Vía trasera	1450
Consumo de combustible (economía) - urbano	8.62 Litros/100 km
Peso	1380 kilos
Peso máximo	1655 kilos

### **Motor**

Posición del motor	Anterior, transversalmente
Capacidad del motor	1998 cm3
Sistema de combustible	6000 rpm
Posición de cilindros	En línea

### **Conducción**

Tamaño de neumáticos	195/70 R14
Tamaño de llantas	-
Dirección asistida	Dirección hidráulica

### **Transmisión**

Suspensión delantera	Resorte helicoidal
Suspensión trasera	Resorte helicoidal
Número de cambios (caja de cambios automática)	4

- c) **Tipo de llantas:** El tipo de llantas es un factor crucial, ya que diferentes diseños y materiales de llantas pueden afectar las mediciones de rugosidad. Se debe asegurar que las llantas estén en buen estado y sean representantes de las condiciones normales de conducción.

Tipo de llantas

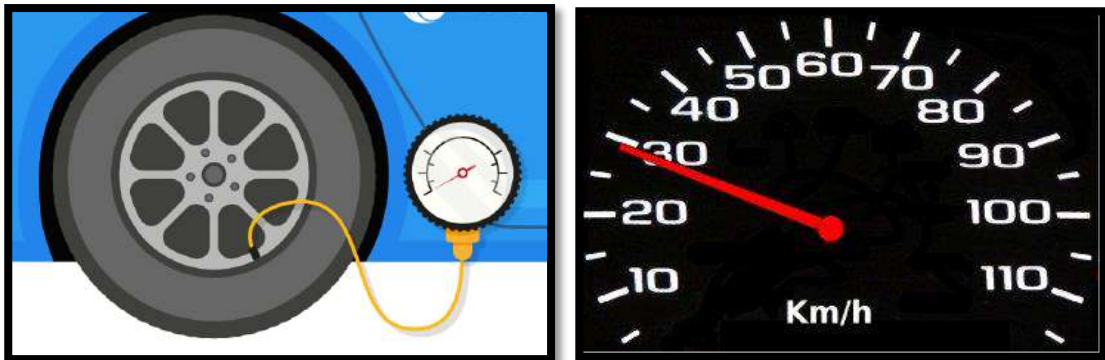


**Fuente:** Elaboración propia.

En la investigación se tomó en cuenta el tipo de llanta ENERGY XM2 PLUS 195/70 R14 91H, llanta H/T o Highway Terrain. El cual es específicamente para conducción en asfalto, pavimento en zona urbana y carretera.

- d) **Presión y velocidad:** Al referirnos al contexto del vehículo, al analizar la Figura 3.28 Mira Nivel/Abakal y Figura 3.32 Merlín/Abakal, podemos concluir que la condición óptima para la conducción durante las mediciones se encuentra con una presión 40psi, Coef = 3 y con una velocidad de 30 kilómetros por hora. Esto se debe a que en esta situación se observa una variabilidad menor y velocidad de manera constante que evite inconvenientes de tráfico en la zona de estudio. Por ende, una mayor consistencia en los resultados obtenidos.

Presión y velocidad



**Fuente:** Elaboración propia.

## 5. Configuración de la aplicación Abakal.

Aplicación Abakal



Fuente: Elaboración propia.

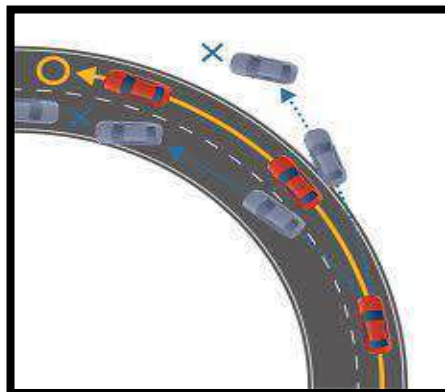
Revisar Manual de Usuario de aplicación Abakal **Anexo VII**.

## 6. Proceso de medición:

**a. Recorrido por la carretera:** Con la aplicación configurada y el vehículo listo, comienza a recorrer la sección de carretera donde se tomarán las mediciones. Es importante mantener una velocidad constante y uniforme durante el recorrido para obtener datos precisos.

**b. Registro de datos:** La aplicación Abakal registrará automáticamente los datos de rugosidad mientras se realiza el recorrido. Asegúrese de mantener la estabilidad del vehículo y evitar cambios bruscos que puedan afectar la precisión de las mediciones.

Estabilidad del vehículo



Fuente: Elaboración propia.

## **7. Análisis de los resultados:**

**a. Revisión de datos recopilados:** Una vez completado el recorrido, revisa los datos recopilados por la aplicación. Verifique la coherencia y la calidad de las mediciones realizadas.

**b. Interpretación de los resultados:** Interpretar los resultados del IRI obtenidos, identificando áreas con diferentes niveles de rugosidad y evaluando la condiciones del pavimento.

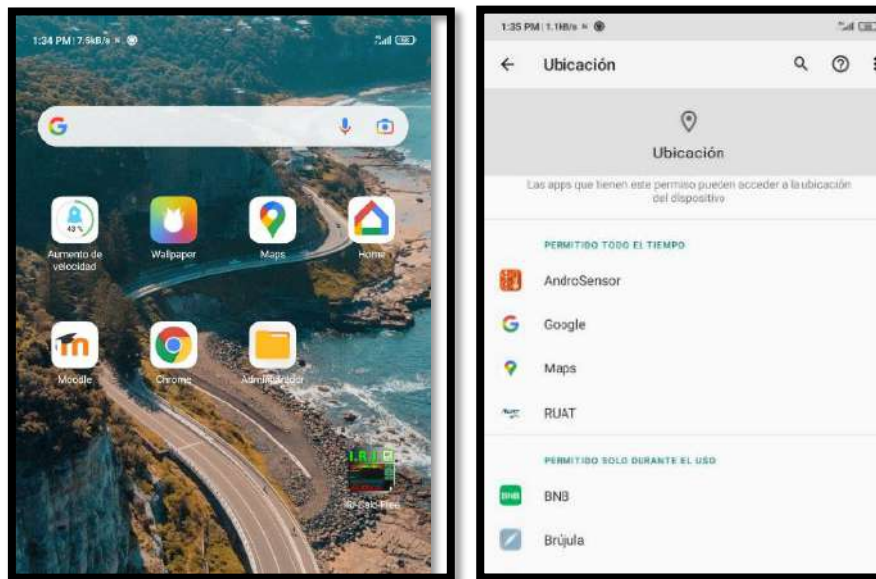
**ANEXO VII.**  
**MANUAL DE USUARIO**  
**ABAKAL**

## Guía para el uso de Abakal en la Determinación del Índice de Rugosidad

### Paso 1: Instalación de la aplicación ABAKAL IRI y activación del GPS

- Descarga e instala la aplicación ABAKAL IRI en tu dispositivo móvil desde la tienda de aplicaciones.
- Asegúrate de activar la función GPS en tu dispositivo móvil.

#### Instalación en el dispositivo

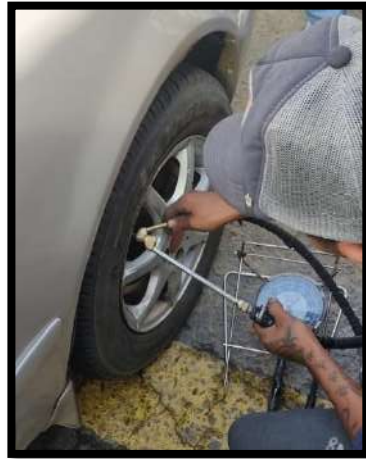


**Fuente:** Elaboración propia.

## **Paso 2: Control de presión de llantas**

- Verifica que la presión de cada una de las llantas del vehículo sea de 40 bar.

Presión de llantas



**Fuente:** Elaboración propia.

## **Paso 3: Montaje del soporte del teléfono en el parabrisas**

- Coloca el soporte del teléfono en el parabrisas de manera que quede fijo, estable y fácil de alcanzar con las manos.

Posición del soporte



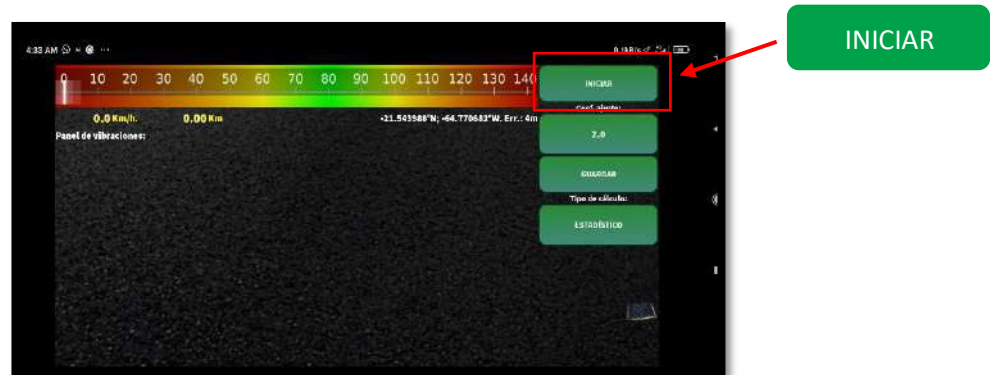
**Fuente:** Elaboración propia.



#### Paso 4: Inicio de la aplicación ABAKAL IRI y registro de datos

- Abre la aplicación ABAKAL IRI en tu dispositivo móvil, asegurándote de verificar antes los datos móviles y el GPS.
- Una vez dentro de la aplicación, pulsa el botón "Iniciar".

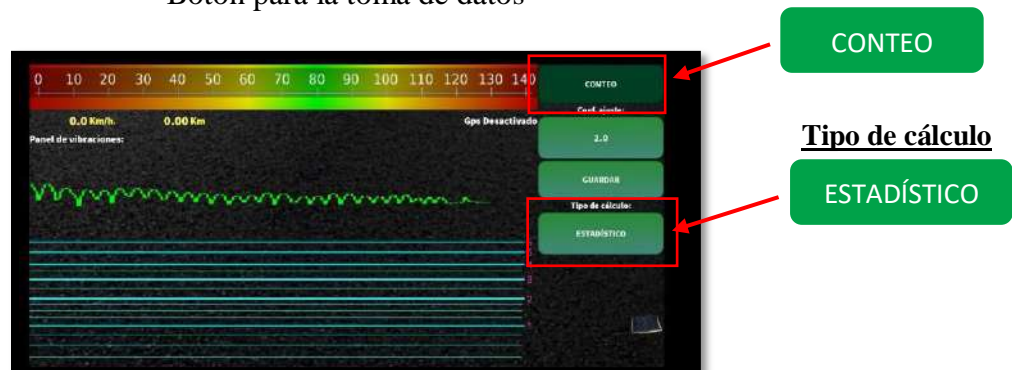
Dar inicio al programa



Fuente: Elaboración propia.

- Seguidamente, presiona el botón "Conteo" para que empiece a registrar los datos. El programa registrará de acuerdo al método que esté activo, ya sea el método estadístico o el método máximo.

Botón para la toma de datos

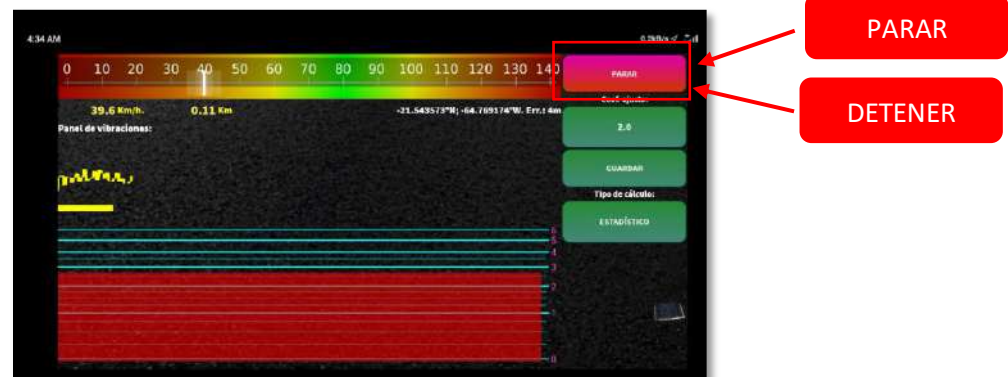


Fuente: Elaboración propia.

## Paso 5: Finalización del estudio de la ruta y guardado de datos

- Cuando se haya completado el estudio de la ruta, selecciona la opción "Parar" y luego pulsa el botón "Detener".

Botón para finalizar la toma de datos



**Fuente:** Elaboración propia.

- Para finalizar con la toma de datos, presiona el botón "Guardar" para que los datos se transfieran a una carpeta específica en el dispositivo.

Botón para guardar los datos

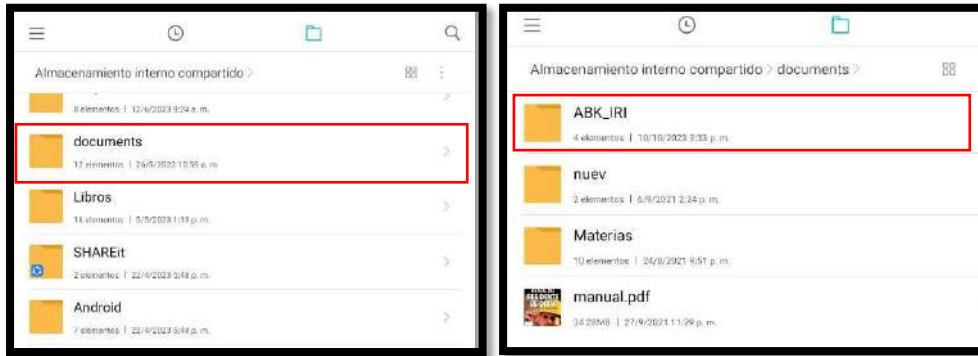


**Fuente:** Elaboración propia.

## Paso 6: Acceso a los datos registrados

- Dirígete al almacenamiento del dispositivo y busca la carpeta "DOCUMENTOS /ABK\_IRI".

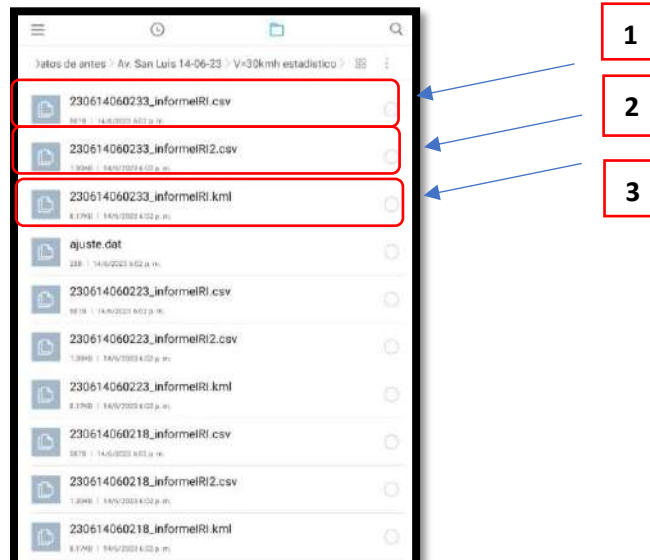
### Almacenamiento



**Fuente:** Elaboración propia.

- En esta carpeta encontrarás tres archivos:
  1. **Informe IRI.csv:** Archivo Excel que muestra los desplazamientos y valores del IRI.
  2. **Informe IRI2.csv:** Tabla de control que muestra la distancia, altitud, longitud, velocidad, desplazamiento y valor del IRI.
  3. **Informe IRI.kml:** Archivo que contiene el trazo en Google Earth.

### Destino de los datos guardados por el programa

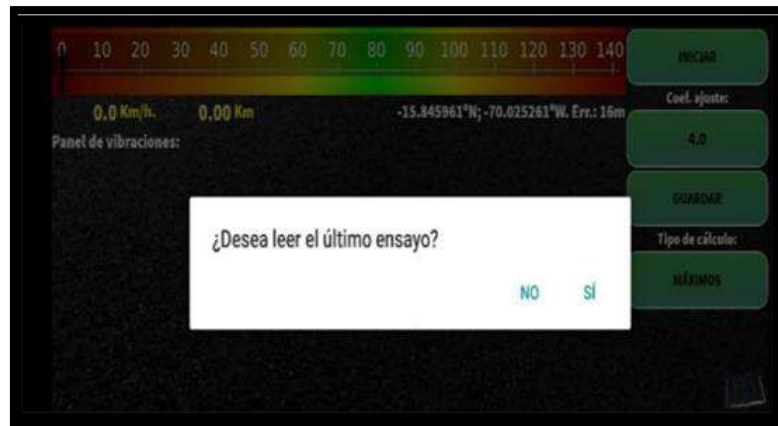


**Fuente:** Elaboración propia.

## Paso 7: Lectura del último ensayo y ajuste de coeficiente

- Al abrir el software nuevamente, se te preguntará si deseas leer el último ensayo. Responde "sí" si deseas utilizar la información de ese ensayo.

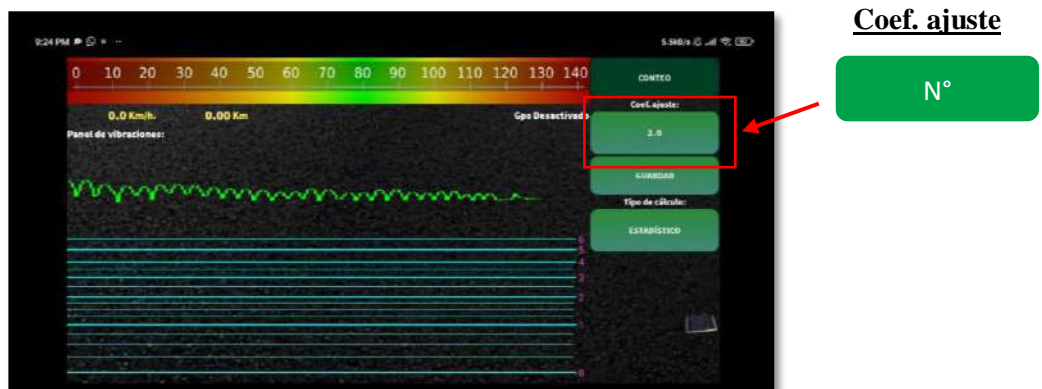
### Lectura del último ensayo



**Fuente:** Elaboración propia.

- Esto te permitirá cambiar el coeficiente de ajuste, guardar y comparar los resultados con otro método (Rugosímetro de MERLÍN) en la misma área de estudio.

### Coeficiente de ajuste



**Fuente:** Elaboración propia.

- Este paso es crucial porque nos permite comparar los datos, para encontrar un coeficiente de ajuste que se aproxime a los resultados de la otra metodología.

### Valor de coeficiente de ajuste



**Fuente:** Elaboración propia.