

E3

Factura

SERIE:

FOLIO: 303

FECHA: 23/9/2016 17:30:00

Documento Válido

Constructora Santa Rosalia SA de CV

CSR860912S25 PERIFERICO VICENTE LOMBARDO
TOLEDANO No. 1411 Int. No. D PLOMEROS,
CHIHUAHUA 31370
CHIHUAHUA CHIHUAHUA MEXICO

Cliente: MUNICIPIO DE CHIHUAHUA

R.F.C.: MCI651010V22

Domicilio: MINA No. 408

Teléfono:

Ciudad: CHIHUAHUA

Colonia: CENTRO
Estado: CHIHUAHUA

C.P.: 31000
País: MÉXICO

Lugar de Expedición: PERIFERICO VICENTE LOMBARDO TOLEDANO 1411 D. PLOMEROS. 31370. CHIHUAHUA. CHIHUAHUA. MEXICO

Cantidad	Unidad	Concepto / Descripción	Valor Unitario	Importe
1.00	NO APLICA	ESTIMACION ESTIMACIÓN No. 9 (NUEVE) CORRESPONDIENTE A LOS TRABAJOS EN: "CONSTRUCCION DEL EJE SESENTA (60) DEL DISTRIBUIDOR VIAL ZOOTECNIA, UBICADO EN ENTRONQUE DE PERIF. FRANCISCO R. ALMADA Y CARR. A CD. CUAUHTEMOC. COLONIA ESPERANZA Y ZOOTECNIA, EN ESTA CIUDAD DE CHIHUAHUA". DE ACUERDO AL CONTRATO DE OBRA PÚBLICA No. 040/2016 DEL 20 DE ABRIL DEL 2016. RETENCIONES PACTADAS EN EL CONTRATO 0.2% I.C.I.C. \$ 7,309.96 0.2% C.M.I.C. \$ 7,309.96 0.2% D.I.F. \$ 7,309.96 SUMA DE DESCUENTOS \$ 21,929.88 SALDO NETO A RECIBIR \$ 4,217,846.58	3,654,979.71	3,654,979.71

Importe con letra

CUATRO MILLONES DOSCIENTOS TREINTA Y NUEVE MIL SETECIENTOS
SETENTA Y SEIS PESOS 46/100

Método de Pago

NA

SUBTOTAL:	3,654,979.71
I.V.A.:	584,796.75
TOTAL:	4,239,776.46



FIRMA DE CONFORMIDAD

Este documento es una representación impresa de un CFDI

*Efectos fiscales al pago

PAGO EN UNA SOLA EXHIBICION

Emitido por:

CONTRPAQ

certificado de pago de impuestos



Serie del Certificado del emisor:	00001000000202760873
Folio fiscal:	D65A8EB0-7C06-4B78-B168-AF7E6034A4E6
No de Serie del Certificado del SAT:	00001000000202864883
Fecha y hora de certificación:	Septiembre 23 2016 - 18:30:04

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gob.mx

Verificación de Comprobantes Fiscales Digitales por Internet

A través de esta opción, Usted podrá verificar si el comprobante fue Certificado por el SAT

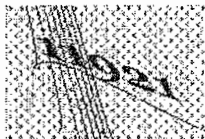
Folio Fiscal

RFC Emisor

RFC Receptor

Proporcione los dígitos de la imagen

Verificar CFDI



RFC del Emisor	Nombre o Razón Social del Emisor	RFC del Receptor	Nombre o Razón Social del Receptor
CSR860912S25	Constructora Santa Rosalia SA de CV	MCI651010V22	MUNICIPIO DE CHIHUAHUA
Folio Fiscal	Fecha de Expedición	Fecha Certificación SAT	PAC que Certificó
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Total del CFDI	Efecto del Comprobante	Estado CFDI	
\$4,239,776.46	ingreso	Vigente	

Imprimir



AYUNTAMIENTO
CHIHUAHUA
2013 - 2016

DIRECCIÓN DE OBRAS PÚBLICAS

RESUMEN DE ESTIMACION

PROGRAMA: ESTATAL-MUNICIPAL	CONTRATO No. 040/2016	CONTRATADOS
OBRA: Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.	ESTIMACIÓN No. No. 9	\$ 62,635,080.96 CON IVA
UBICACIÓN: Perif. Fco. R. Almada y Carretera Cd. Cuauhtémoc	PERÍODO EJEC. 01 AL 11 DE SEPTIEMBRE 2016	
CONTRATISTA: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.	IMPORTE ESTIMADO (CON IVA)	\$ 4,239,776.46 CON IVA
RFC CSR860912S25	ACUMULADO ANTERIOR (CON IVA)	\$ 54,689,099.74 CON IVA
	IMPORTE ACUMULADO (CON IVA)	\$ 58,928,876.20 CON IVA

TIPO DE OBRA	IMPORTE	OBSERVACIONES
<u>NORMAL</u>	\$ 1,125,327.29	
<u>EXEDENTES</u>	\$ 2,513,471.77	
<u>EXTRAORDINARIOS</u>	\$ 16,180.65	
IMPORTE TOTAL ESTIMACION (SIN IVA)	\$ 3,654,979.71	

DESCUENTOS

0.2% I.C.I.C	\$ 7,309.96
0.2% C.M.I.C.	\$ 7,309.96
0.2% D.I.F.	\$ 7,309.96
SUMA DESCUENTOS	\$ 21,929.88

RESUMEN

SUMA ESTA ESTIMACION	\$ 3,654,979.71
AMORT ANTICIPO	\$ 0.00
SUB-TOTAL	\$ 3,654,979.71
I.V.A.	\$ 584,796.75
TOTAL	\$ 4,239,776.46

(CON LETRA)

(CUATRO MILLONES DOSCIENTOS TREINTA Y NUEVE MIL SETECIENTOS SETENTA Y SEIS PESOS 46/100 M.N.)

DESCUENTOS	\$ 21,929.88
SALDO NETO A RECIBIR	\$ 4,217,846.58

AUTORIZO

ELABORO

ING. RODOLFO ARMENDARIZ RONQUILLO CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.
RESIDENTE D.O.P.M

Vo. Bo.

CONTRATISTA

REVISO

ING. XOCHITL PEREZ BLANCO

ING. ENRIQUE VILLARREAL ALEMÁN

SUBDIRECTOR DE
OBRA PUBLICA E INFRAESTRUCTURA

JEFE DEL DEPTO DE CONSTRUCCION

Vo. Bo.

ING. RAMON DAVID RAMOS ARMENTA
DIRECTOR DE OBRAS PUBLICAS Y MANTENIMIENTO

CHIHUAHUA, CHIH.,

12 DE SEPTIEMBRE 2016

RECIBIMOS DE LA DIRECCIÓN DE OBRAS PÚBLICAS Y MANTENIMIENTO DEL MPIO., LA CANTIDAD DE: \$ **4,217,846.58**
(CUATRO MILLONES DOSCIENTOS DIECISIETE MIL OCHOCIENTOS CUARENTA Y SEIS PESOS 58/100 M.N.) COMO PAGO A LA
 ESTIMACIÓN NUM. **No. 9** CONTRATO No. **040/2016** POR LA CANTIDAD DE : \$ **62,635,080.96**
SESENTA Y DOS MILLONES SEISCIENTOS TREINTA Y CINCO MIL OCHENTA PESOS 96/100 M.N. POR TRABAJOS EN LA OBRA:
 Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y
 Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.

ALCANCE DE LA ESTIMACION \$ **3,654,979.71**

AMORTIZACION DEL ANTICIPO \$ **-**

SUBTOTAL \$ **3,654,979.71**
 IVA \$ **584,796.75**
 TOTAL \$ **4,239,776.46**

RETENCIONES PACTADA EN CONTRATO

I.C.I.C. DEL 0.2% \$7,309.96
 C.M.I.C. DEL 0.2% \$7,309.96
 D.I.F. DEL 0.2% \$7,309.96
 SUMA **\$21,929.88**

RESUMEN FINANCIERO DE LA OBRA

1.- CONTRATO

	CONTRATO
IMPORTE CONTRATADO	\$ 62,635,080.96
CONVENIO MODIFICATORIO	\$ -
ESTIMACION ACUMULADA ANTERIOR	\$ 54,689,099.74
ESTA ESTIMACION	\$ 4,239,776.46
ACUMULADO HASTA EST ESTIMACION	\$ 58,928,876.20
POR EJERCER CONVENIO	\$ -
POR EJERCER	\$ 3,706,204.76

2.- AMORTIZACION DEL ANTICIPO

	CONTRATO
IMPORTE DE ANTICIPO	\$ -
ACUMULADO ANTERIOR	\$ -
ESTA ESTIMACION	\$ -
ACUMULADO ACTUAL	\$ -
POR AMORTIZAR	\$ -

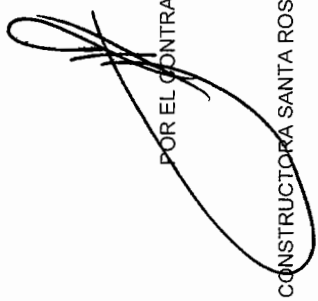
3.- RETENCIONES PACTADAS EN CONTRATO

	0.2% I.C.I.C.	0.2% C.M.I.C.	0.2% D.I.F.
ACUMULADO ANTERIOR	\$94,291.54	\$94,291.54	\$ 94,291.54
ESTA ESTIMACION	\$7,309.96	\$7,309.96	\$ 7,309.96
ACUMULADO ACTUAL	\$101,601.50	\$101,601.50	\$ 101,601.50

R E C I B I M O S

CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.
 CSR860912S25

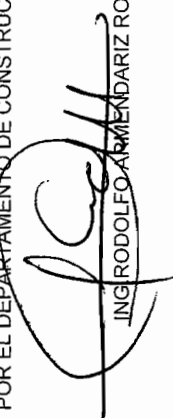
RESUMEN DE LA ESTIMACIÓN POR PARTIDAS		
No.	DESCRIPCIÓN DE LAS PARTIDAS	IMPORTE
OBRA NORMAL		
	TERRACERIAS	24,194.05
	ESTRUCTURAS	1,101,133.24
		1,125,327.29
OBRA EXCEDENTE		
	TERRACERIAS	1,820,658.68
	ESTRUCTURAS	692,813.09
		2,513,471.77
EXTRAORDINARIOS		
		16,180.65
	SUBTOTAL	3,654,979.71
	I.V.A.	584,796.75
	TOTAL	4,239,776.46



POR EL CONTRATISTA

CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

POR EL DEPARTAMENTO DE CONSTRUCCIÓN



ING. RODOLFO ALVARADO MENDEZ RONQUILLO

OBRA: Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.

CONTRATISTA: CONSTRUCTORA SANTA ROSALIA, S.A. DE C.V.

UBICACIÓN: Perif. Foo. R. Almada y Carretera No. CONTRATO: 040/2016

ESTIMACIÓN No. 9

PERIODO: 01 AL 11 DE SEPTIEMBRE 2016

No.	CONCEPTOS DESCRIPCIÓN	UNIDAD	PROYECTO VOLUMEN	ACUM. TOTAL	VOLUMENES CUM. ANTERIOR	OL. ESTIMADO	PRECIO UNITARIO	IMPORTE
OBRA NORMAL								
TERRACERIAS								
17	Formación y compactación por unidad de obra terminada: de terraplenes contenidos dentro de rampas de tierra armada (Inciso 3.01.01.005-H.11): para un grado de compactación del 90% de su PVSM según la prueba proctor estándar, con material del banco que elija el contratista, incluye el suministro del material, humectación y todas las maniobras y acarrees necesarios para su ejecución, en capas no mayores de 20 cm.	m3	5,200.00	2,700.96	2,600.00	100.96	\$239.64	24,194.05
ESTRUCTURAS								
23	Concreto hidráulico, por unidad de obra terminada (Inciso: 3.01.02.026-H.10): Simple, colado en seco en puentes y pasos a desnivel: De f'c = 250 Kg/cm2, utilizado en bancos.	m3	7.00	1.03	0.87	0.16	\$8,240.37	1,318.46
24	Concreto hidráulico, por unidad de obra terminada (Inciso: 3.01.02.026-H.10): Simple, colado en seco en puentes y pasos a desnivel: De f'c = 280 Kg/cm2, utilizado en losas.	m3	613.00	187.35	0.00	187.35	\$3,185.29	596,764.08
25	Concreto hidráulico, por unidad de obra terminada (Inciso: 3.01.02.026-H.10): Simple, colado en seco en puentes y pasos a desnivel: De f'c = 250 Kg/cm2, utilizado en cabezales.	m3	182.00	181.55	145.24	36.31	\$4,995.36	181,381.52
39	Cimbra muerta de lámina sección 4 calibre 20.	m2	2,628.00	884.25	589.50	294.75	\$303.55	89,471.36
42	Apoyo tipo TETRON FX 5000-500, por unidad de obra terminada.	pza	4.00	4.00	2.00	2.00	\$116,098.91	232,197.82
OBRA EXEDEDENTE								
TERRACERIAS								
15	Excavaciones, por unidad de obra terminada (Inciso 3.01.01.003-H.04) en cortes y adicionales abajo de la subrasante: cuando el material se desperdicia, incluye retiro del material fuera de la obra	m3	240.00	5,719.45	2,160.00	3,559.45	\$511.50	1,820,658.68
ESTRUCTURAS								
20	Excavaciones para estructuras, de acuerdo con su clasificación, a cualquier profundidad (Inciso: 3.01.02.022-H.01): Excavado, por unidad de obra terminada, cualesquiera que sean su clasificación y profundidad.	m3	1,900.00	3,960.27	3,105.33	854.94	\$241.58	206,536.41
21	Rellenos (Inciso: 3.01.02.023-H.01): De excavaciones para estructuras, con material producto de las excavaciones, compactado al 90% de su PVSM, por unidad de obra terminada.	m3	1,275.00	3,408.38	2,818.38	590.00	\$266.19	157,052.10

POR EL CONTRATISTA

POR EL DEPARTAMENTO DE CONSTRUCCIÓN

CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

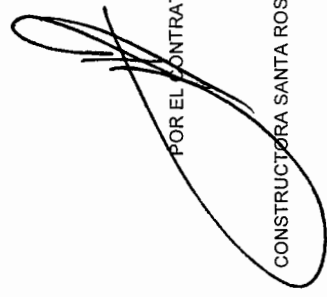
OBRA: Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.

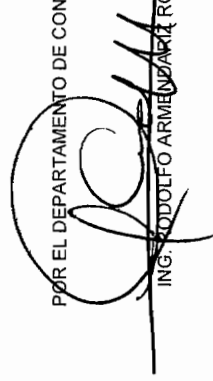
UBICACIÓN: Perif. Fco. R. Almada y Carretera No. CONTRATO: 040/2016

Cd. Cuauhtémoc ESTIMACIÓN No. No. 9

CONTRATISTA: CONSTRUCTORA SANTA ROSALIA, S.A. DE C.V. PERIODO: 01 AL 11 DE SEPTIEMBRE 2016

CONCEPTOS		PROYECTO		VOLUMENES		PRECIO UNITARIO	IMPORTE
No.	DESCRIPCIÓN	UNIDAD	VOLUMEN	ACUM. TOTAL	CUM. ANTERIO/OL. ESTIMADO		
33	Acero de Refuerzo, por unidad de obra terminada (Inciso: 3.01.02.027-H.03): Varillas con límite elástico igual o mayor a 4,200 Kg/cm2: En puentes: Suministro, habilitación y colocación y de acero para todos los elementos de la estructura.	Kg	64,967.00	89,873.00	75,136.00 14,737.00	\$22.34 \$	329,224.58
OBRA EXTRAORDINARIA							
EXT-28	Suministro y colocación de pedraplen para estabilizar desplante de tierra armada por inestabilidad del terreno y presencia de agua, incluye acomodo nivelado y bandeado del material con excavadora de oruga y todo lo necesario para su correcta ejecución	m3	0.00	1,355.00	1,310.00 45.00	\$ 359.57 \$	16,180.65
						\$	692,813.09
						\$	16,180.65


 POR EL CONTRATISTA
 CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

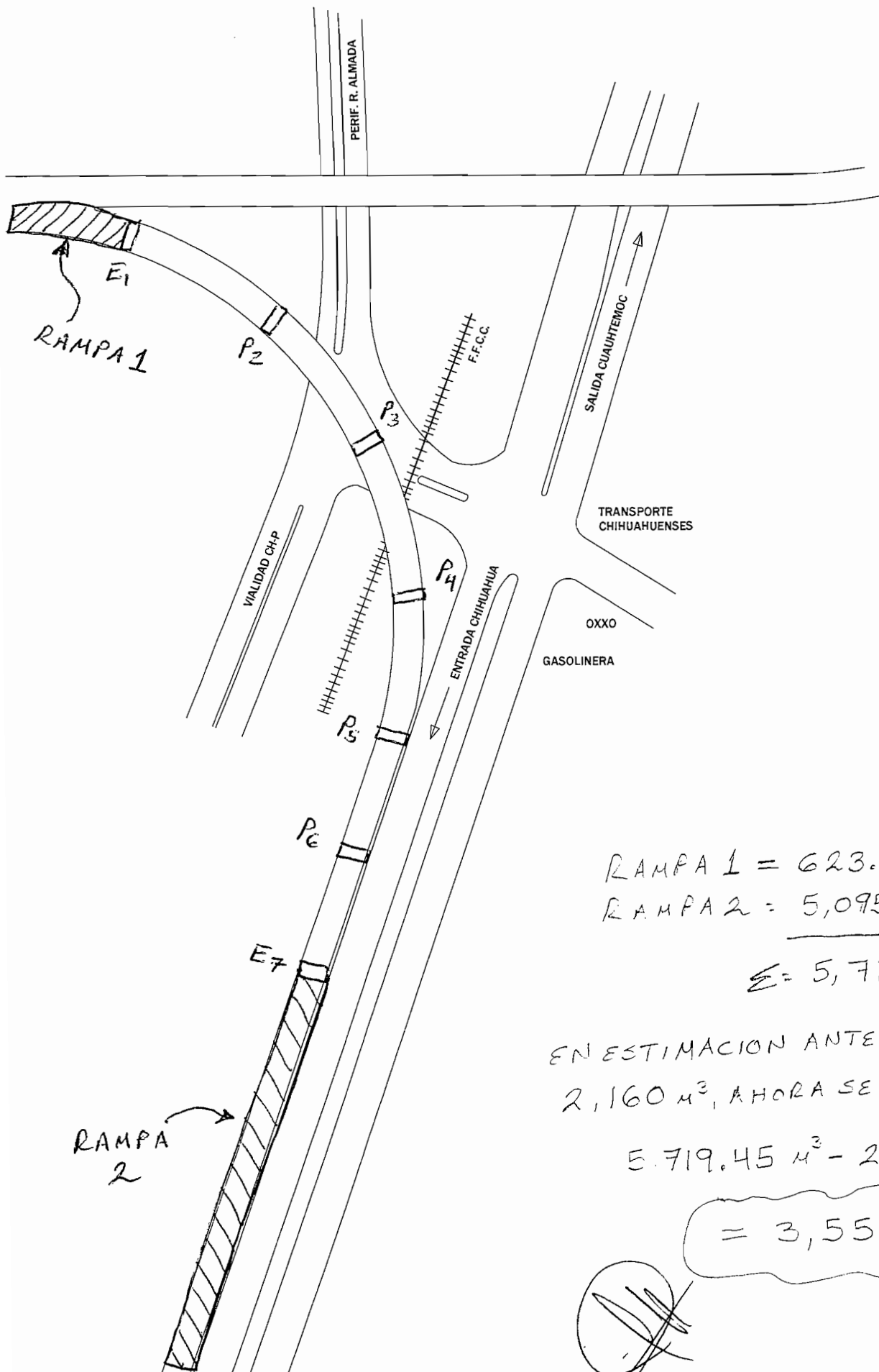

 POR EL DEPARTAMENTO DE CONSTRUCCIÓN
 ING. RODOLFO ARME

CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua. CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV		

CROQUIS	VOLUMEN A PAGAR
SE ANEXA CROQUIS	3,559.45 M3

CONTRATISTA
CONSTRUCTORA SANTA ROSALIA SA DE CV

15- EXCAVACION EN CORTE



$$RAMPA 1 = 623.59 m^3 \text{ C.M.}$$

$$RAMPA 2 = 5,095.86 m^3 \text{ C.M.}$$

$$\Sigma = 5,719.45 m^3 \text{ C.M.}$$

EN ESTIMACION ANTERIOR SE PAGARON
2,160 m³, AHORA SE PAGA EL RESTO

$$5,719.45 m^3 - 2,160 m^3$$

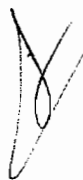
$$= 3,559.45 m^3$$



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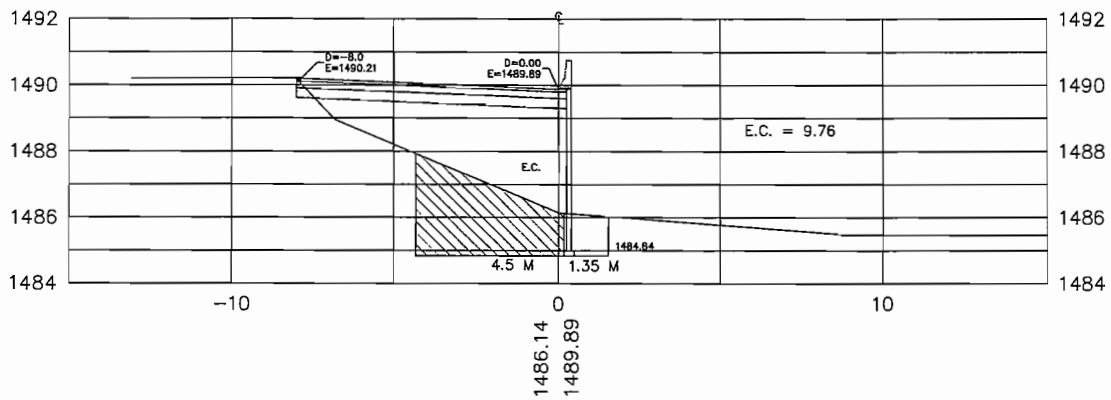
CURVA MASA RAMPA 1 EXCAVACION EN CORTE

		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
CADENAMIENTO		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
59+	999.36	5.63						
60+	000	5.59		11.22	0.00	0.32	3.59	0.00
60+	003.36	3.5		9.09	0.00	1.68	15.27	0.00
60+	003.36	6.84		10.34	0.00	0.00	0.00	0.00
60+	009.36	5.55		12.39	0.00	3.00	37.17	0.00
60+	009.36	10.18		15.73	0.00	0.00	0.00	0.00
60+	015.36	9.13		19.31	0.00	3.00	57.93	0.00
60+	015.36	12.69		21.82	0.00	0.00	0.00	0.00
60+	020	9.76		22.45	0.00	2.32	52.08	0.00
60+	023.36	9.64		19.40	0.00	1.68	32.59	0.00
60+	023.36	13.24		22.88	0.00	0.00	0.00	0.00
60+	025	12.14		25.38	0.00	0.82	20.81	0.00
60+	025	30.94		43.08	0.00	0.00	0.00	0.00
60+	029.36	39.62		70.56	0.00	2.18	153.82	0.00
60+	029.36	49.07		88.69	0.00	0.00	0.00	0.00
60+	035.36	16.99		66.06	0.00	3.00	198.18	0.00
60+	035.36	27.32		44.31	0.00	0.00	0.00	0.00
60+	038.63	4.57		31.89	0.00	1.64	52.14	0.00
				0.00	0.00	0.00	0.00	0.00
				0.00	0.00	0.00	0.00	0.00
							623.59	0.00

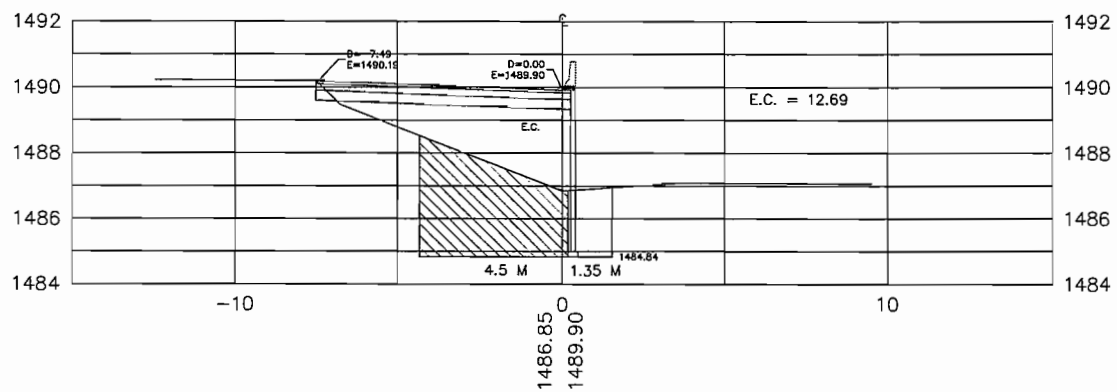



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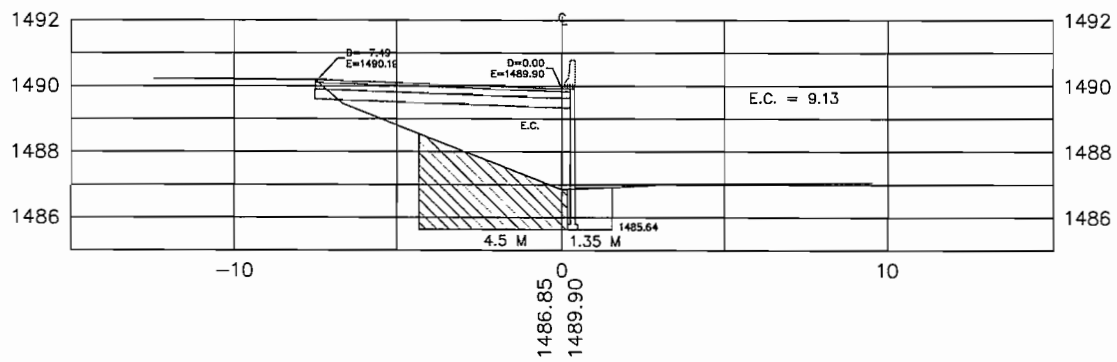
60+020



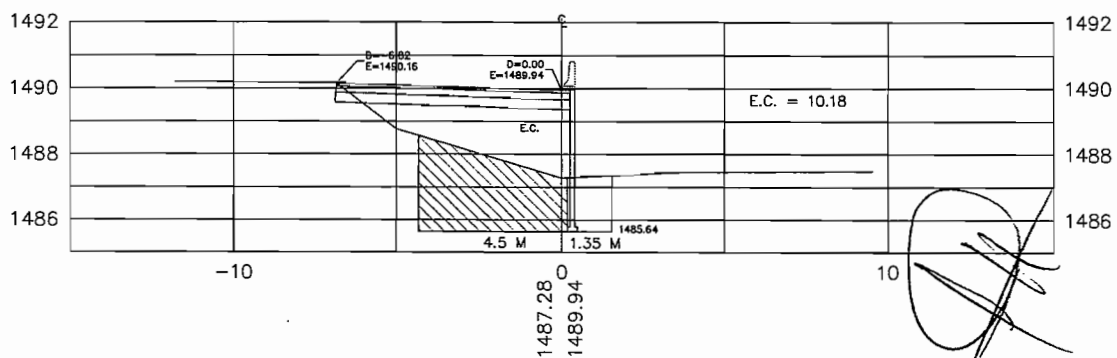
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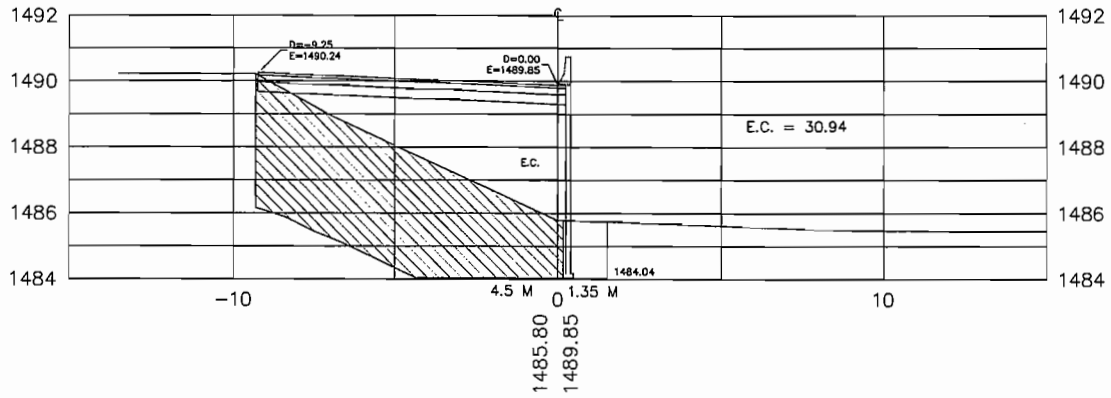
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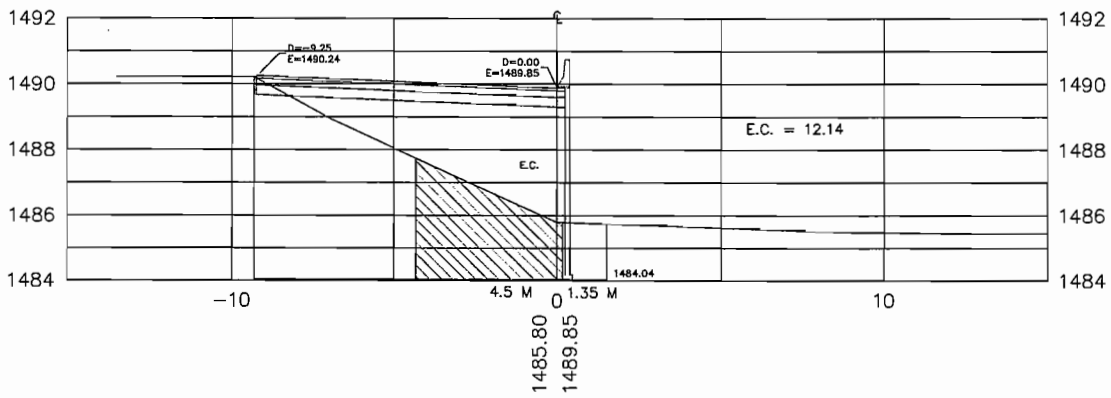
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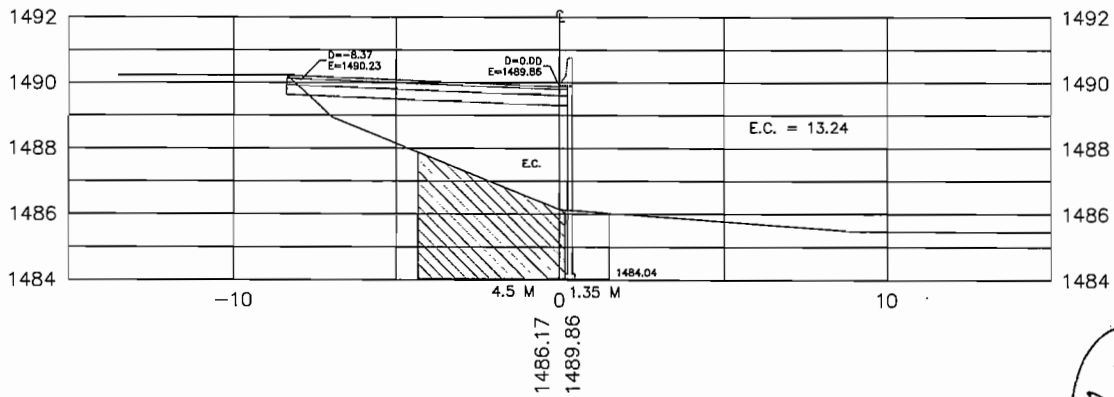
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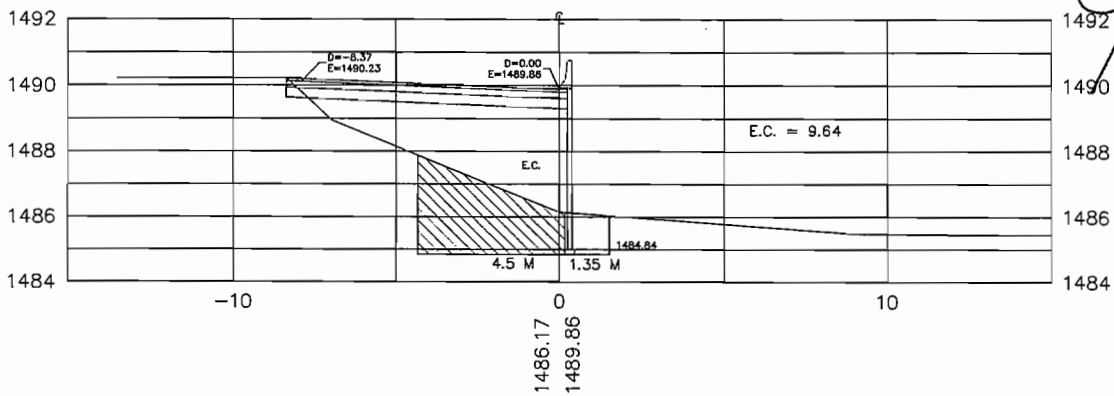
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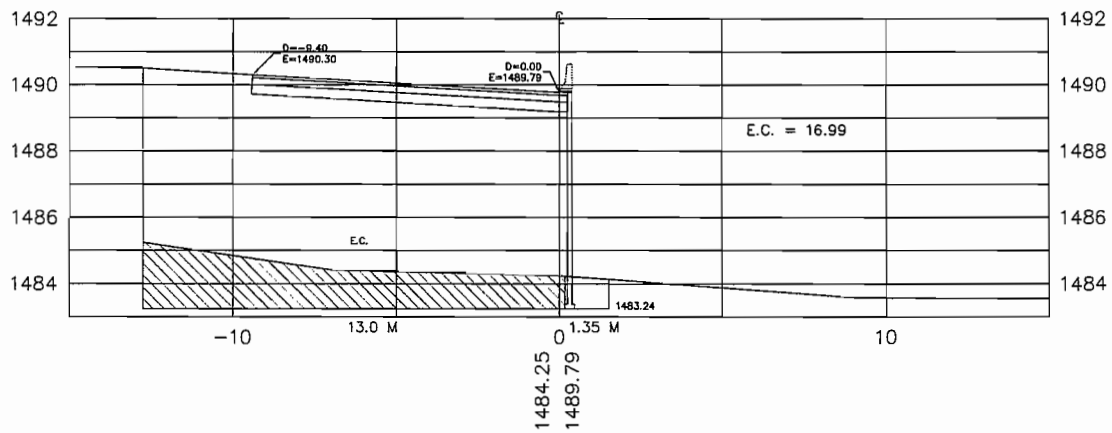
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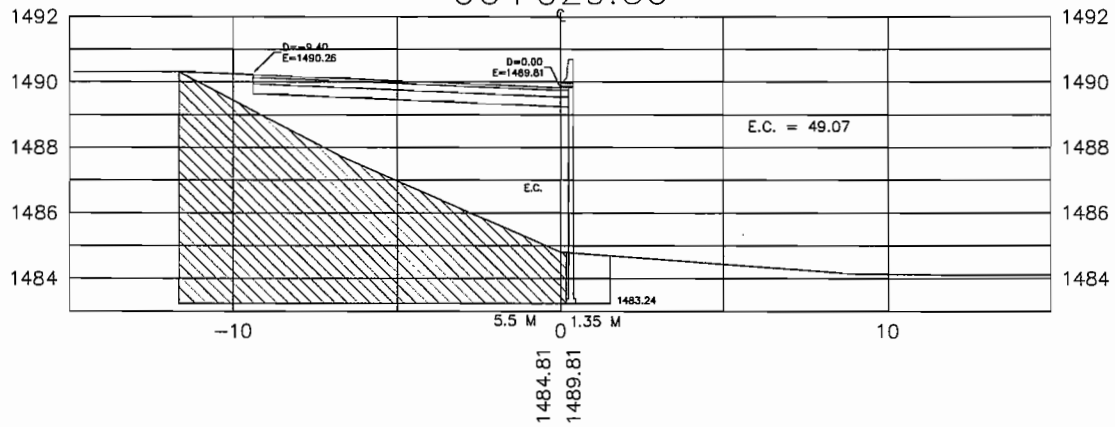
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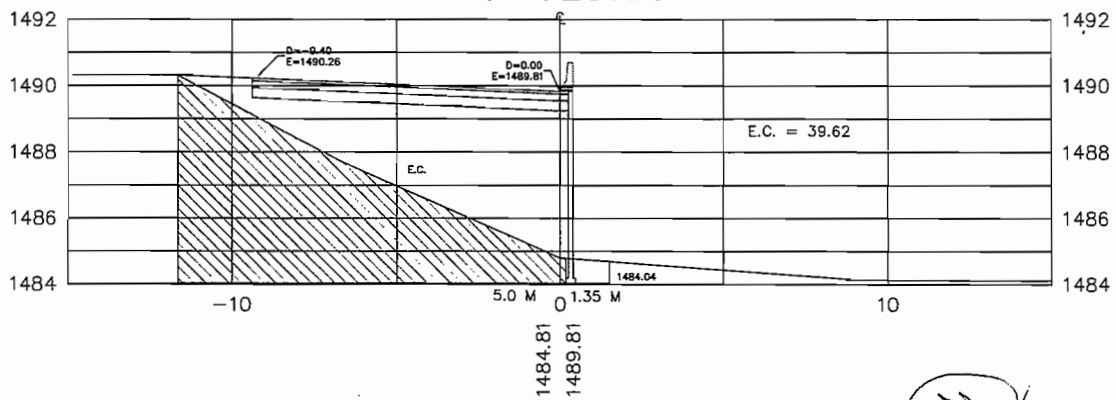
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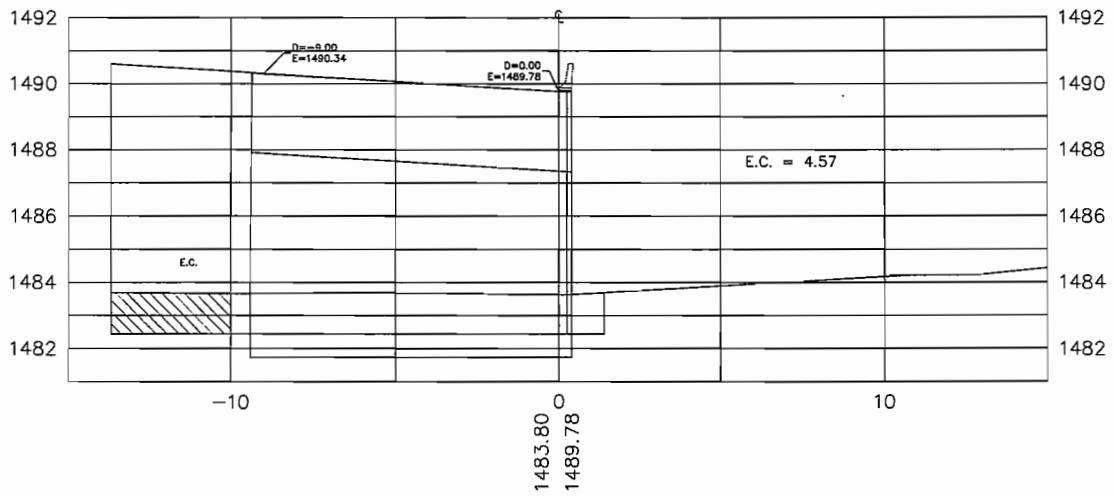
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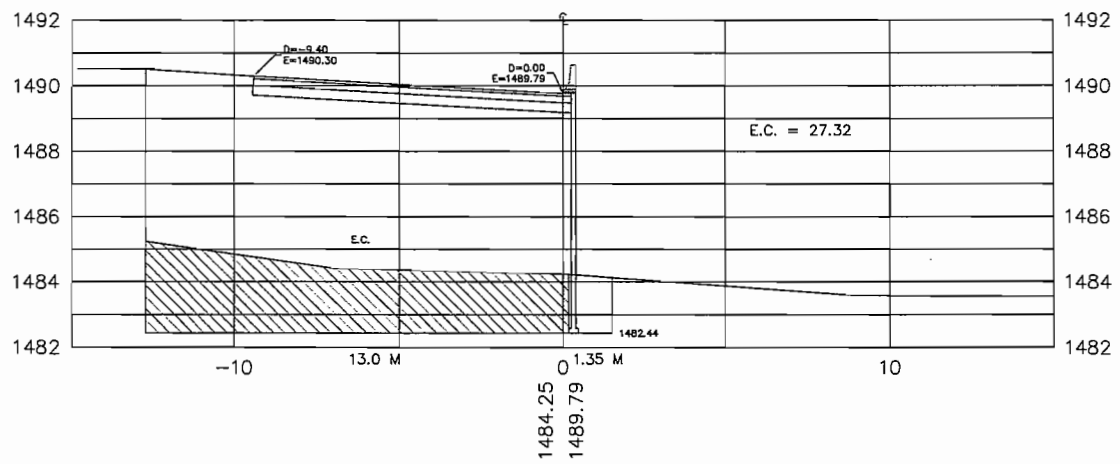
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60+038.63



60+035.36



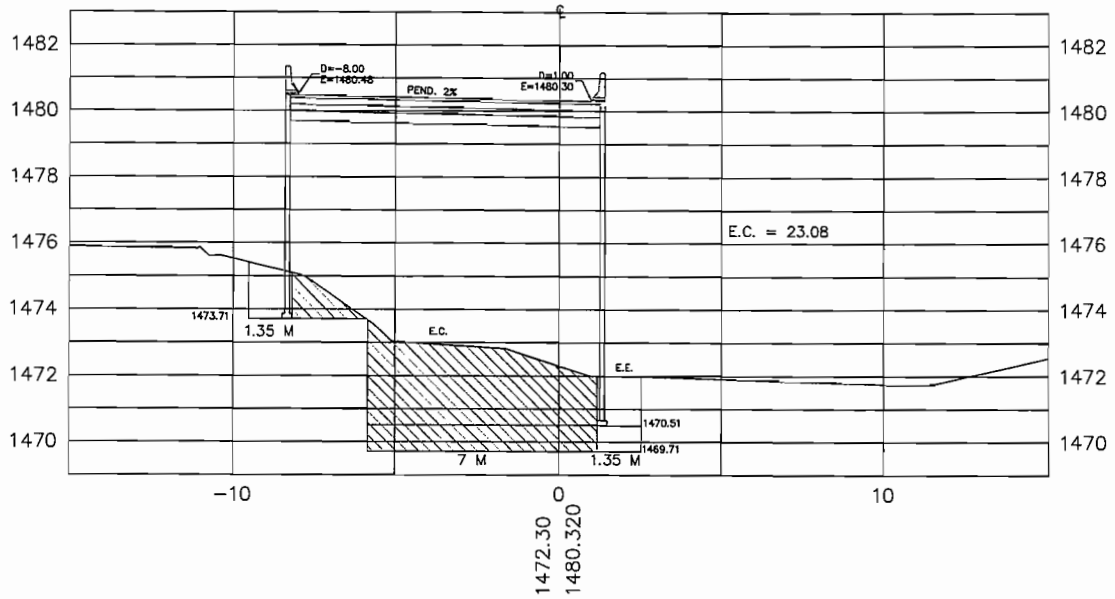
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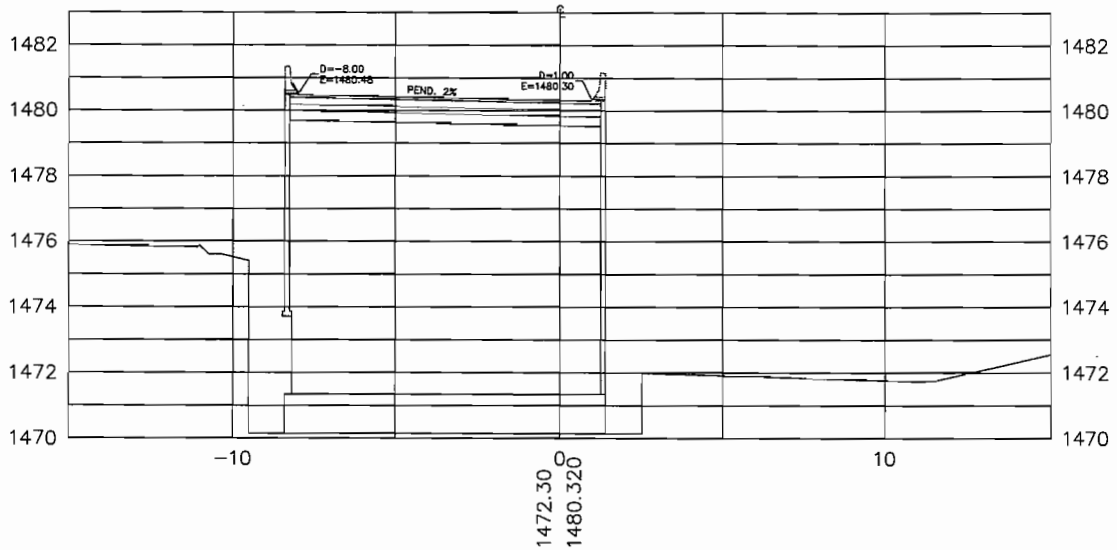
CURVA MASA RAMPA 2 EXCAVACION EN CORTE

CADENAMIENTO		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
60+	311.45	23.08						
60+	320	21.86		44.94	0.00	4.28	192.12	0.00
60+	320.69	21.94		43.8	0.00	0.34	15.11	0.00
60+	320.69	23.86		45.8	0.00	0.00	0.00	0.00
60+	340	21.8		45.66	0.00	9.66	440.85	0.00
60+	352.69	21.54		43.34	0.00	6.35	274.99	0.00
60+	352.69	23.38		44.92	0.00	0.00	0.00	0.00
60+	360	20.23		43.61	0.00	3.66	159.39	0.00
60+	362.95	20.38		40.61	0.00	1.47	59.90	0.00
60+	362.95	21.54		41.92	0.00	0.00	0.00	0.00
60+	378.69	12.87		34.41	0.00	7.87	270.81	0.00
60+	378.69	15.61		28.48	0.00	0.00	0.00	0.00
60+	380	15.44		31.05	0.00	0.66	20.34	0.00
60+	384.95	14.74		30.18	0.00	2.47	74.70	0.00
60+	384.95	19.7		34.44	0.00	0.00	0.00	0.00
60+	400	16.86		36.56	0.00	7.53	275.11	0.00
60+	412.69	16.92		33.78	0.00	6.35	214.33	0.00
60+	412.69	19.81		36.73	0.00	0.00	0.00	0.00
60+	416.95	19.42		39.23	0.00	2.13	83.56	0.00
60+	416.95	22.96		42.38	0.00	0.00	0.00	0.00
60+	420	16.71		39.67	0.00	1.53	60.50	0.00
60+	436.69	12.83		29.54	0.00	8.35	246.51	0.00
60+	436.69	14.76		27.59	0.00	0.00	0.00	0.00
60+	440	14.86		29.62	0.00	1.66	49.02	0.00
60+	452.95	12.4		27.26	0.00	6.47	176.51	0.00
60+	452.95	16.75		29.15	0.00	0.00	0.00	0.00
60+	460	14.23		30.98	0.00	3.53	109.20	0.00
60+	466.69	13.32		27.55	0.00	3.35	92.15	0.00
60+	466.69	15.64		28.96	0.00	0.00	0.00	0.00
60+	474.95	12.97		28.61	0.00	4.13	118.16	0.00
60+	474.95	15.37		28.34	0.00	0.00	0.00	0.00
60+	480	15.44		30.81	0.00	2.53	77.80	0.00
60+	498.95	13.79		29.23	0.00	9.47	276.95	0.00
60+	498.95	18.74		32.53	0.00	0.00	0.00	0.00
60+	500	18.62		37.36	0.00	0.53	19.61	0.00
60+	518.69	15.37		33.99	0.00	9.35	317.64	0.00
60+	518.69	18.33		33.7	0.00	0.00	0.00	0.00
60+	520	20.65		38.98	0.00	0.65	25.53	0.00
60+	522.95	20.24		40.89	0.00	1.48	60.31	0.00
60+	522.95	24.27		44.51	0.00	0.00	0.00	0.00
60+	540	22.07		46.34	0.00	8.52	395.05	0.00
60+	546.95	20.91		42.98	0.00	3.48	149.36	0.00
60+	546.95	20.06		40.97	0.00	0.00	0.00	0.00
60+	560	17.13		37.19	0.00	6.52	242.66	0.00
60+	560.89	15.88		33.01	0.00	0.44	14.69	0.00
60+	566.95	11.33		27.21	0.00	3.03	82.45	0.00
60+	566.95	14.39		25.72	0.00	0.00	0.00	0.00
60+	580	17.83		32.22	0.00	6.52	210.24	0.00
60+	586.95	17.73		35.56	0.00	3.48	123.57	0.00
60+	586.95	13.23		30.96	0.00	0.00	0.00	0.00
60+	598.72	11.76		24.99	0.00	5.88	147.07	0.00
60+	600	0.44		12.2	0.00	0.64	7.81	0.00
60+	615.13	0.70		1.14	0.00	7.57	8.62	0.00
60+	620	0.30		1	0.00	2.44	2.44	0.00
60+	625	0.02		0.32	0.00	2.50	0.80	0.00
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
							5,095.86	0.00

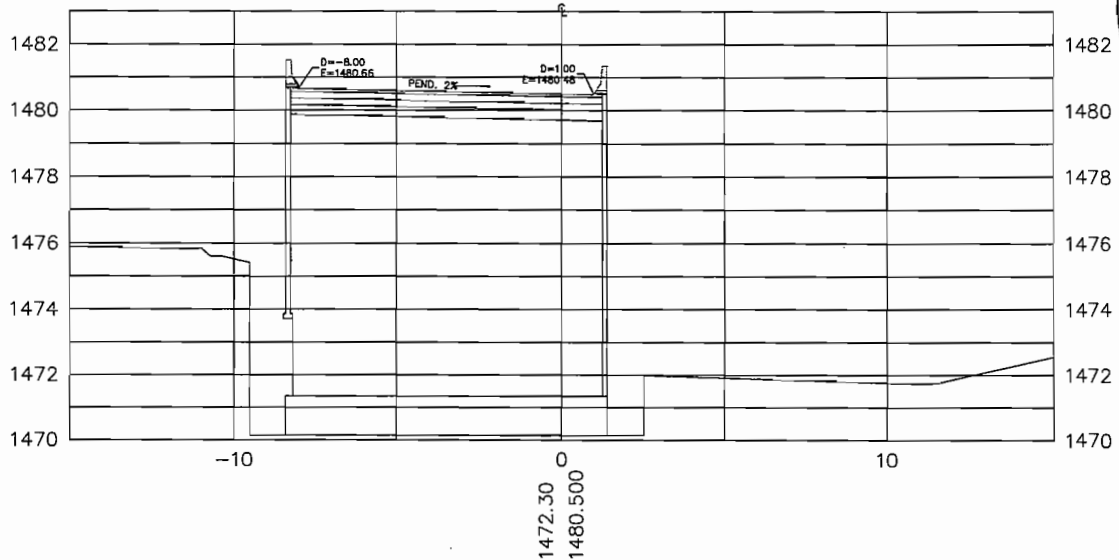
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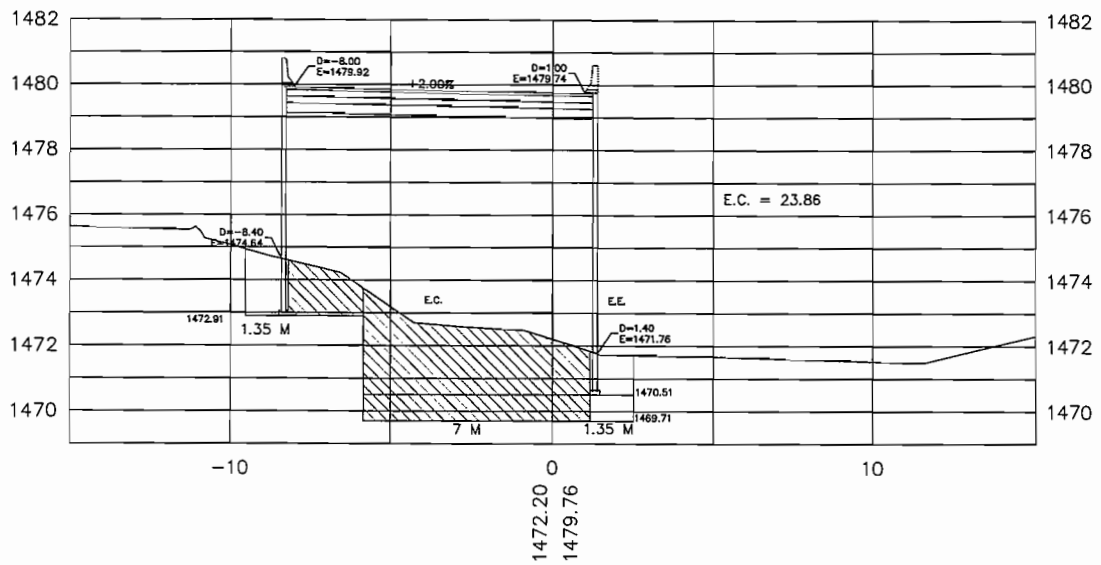
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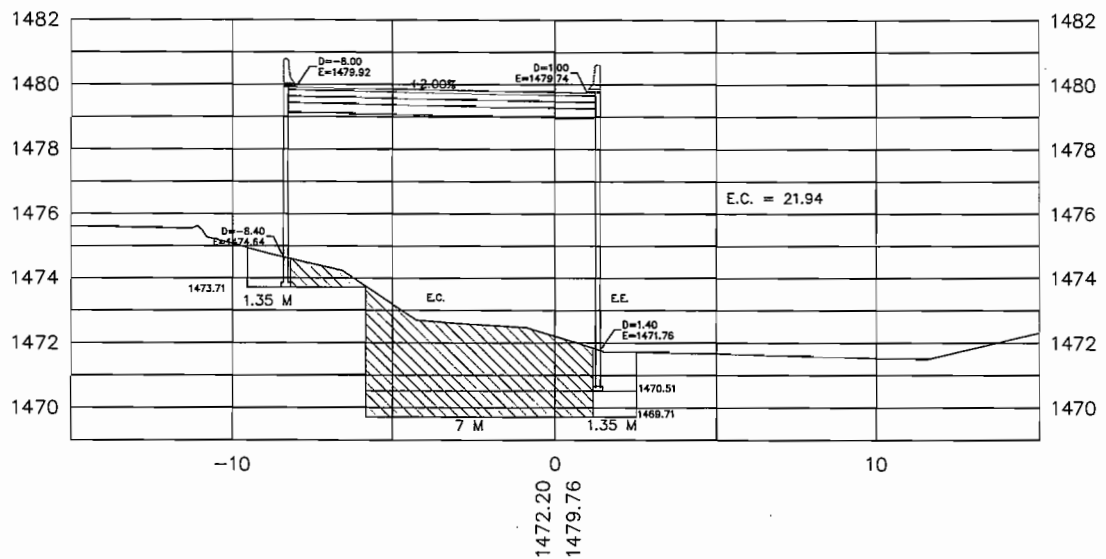
60+308.44
ESTRIBO 7



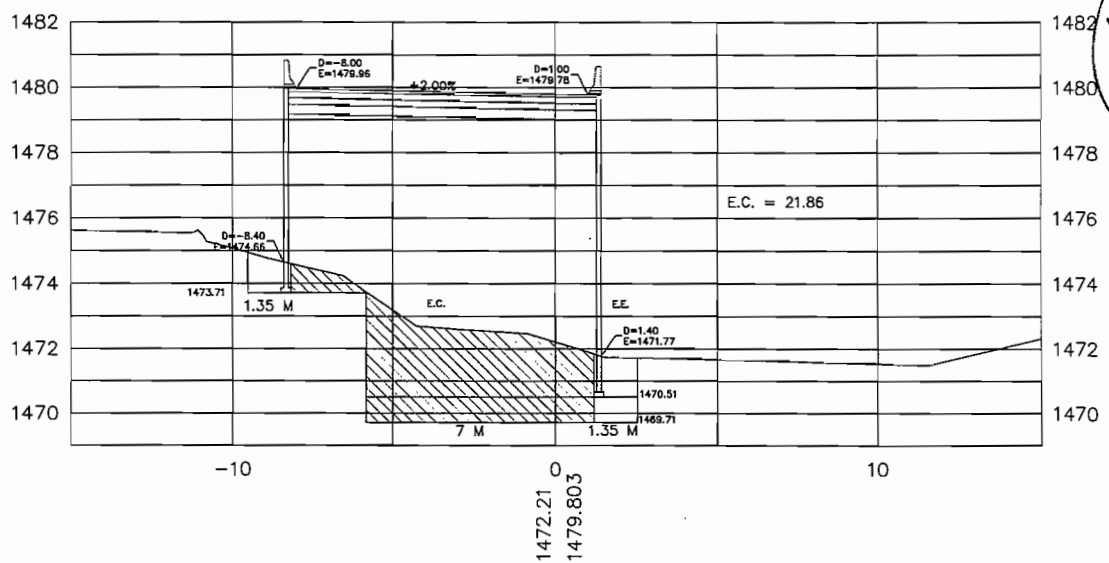
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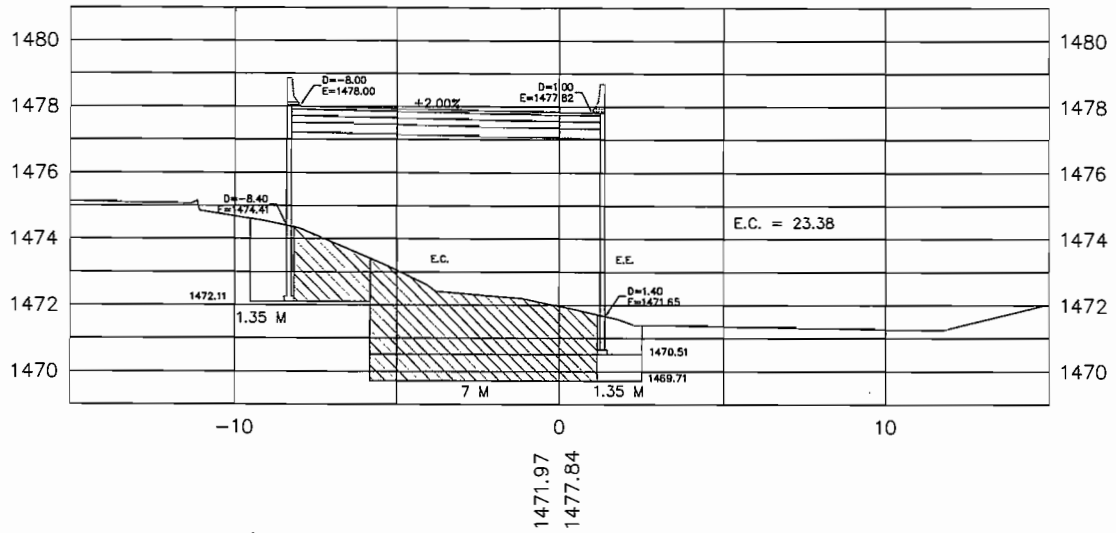
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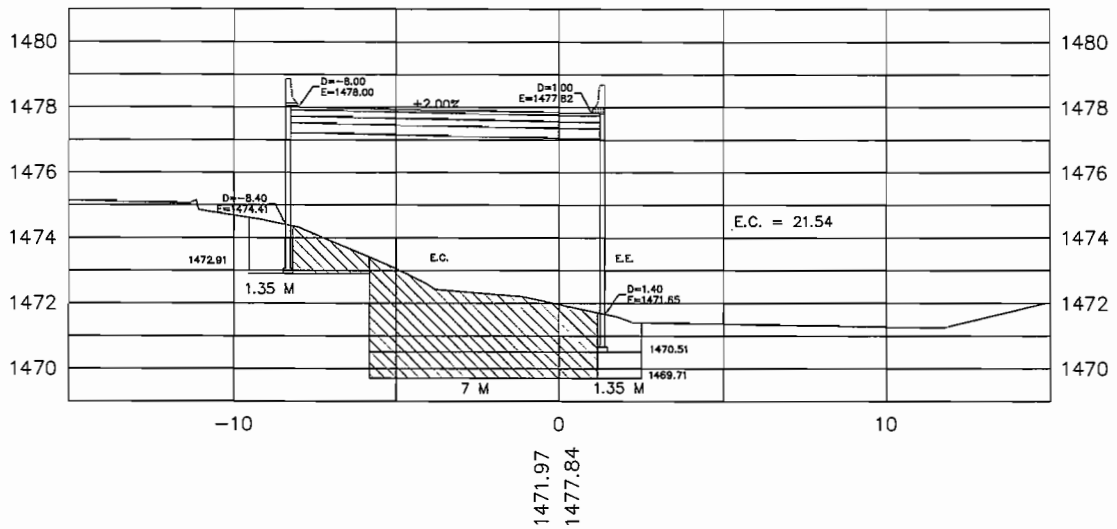
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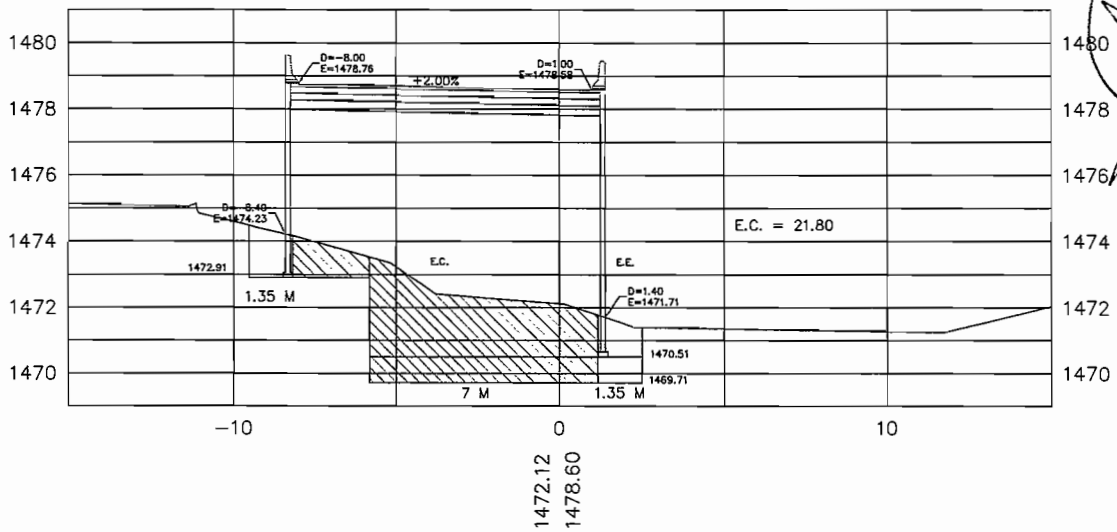
60+352.69



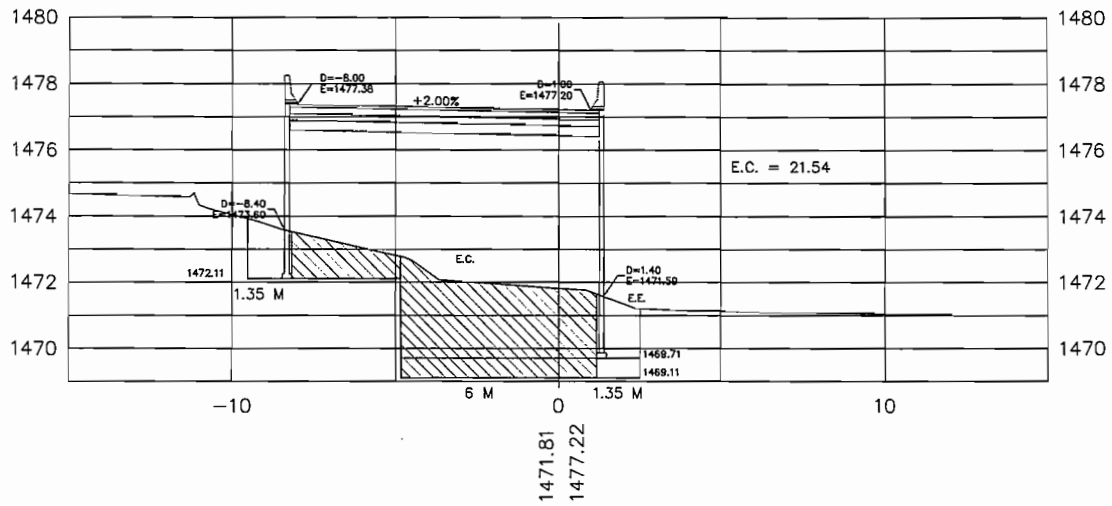
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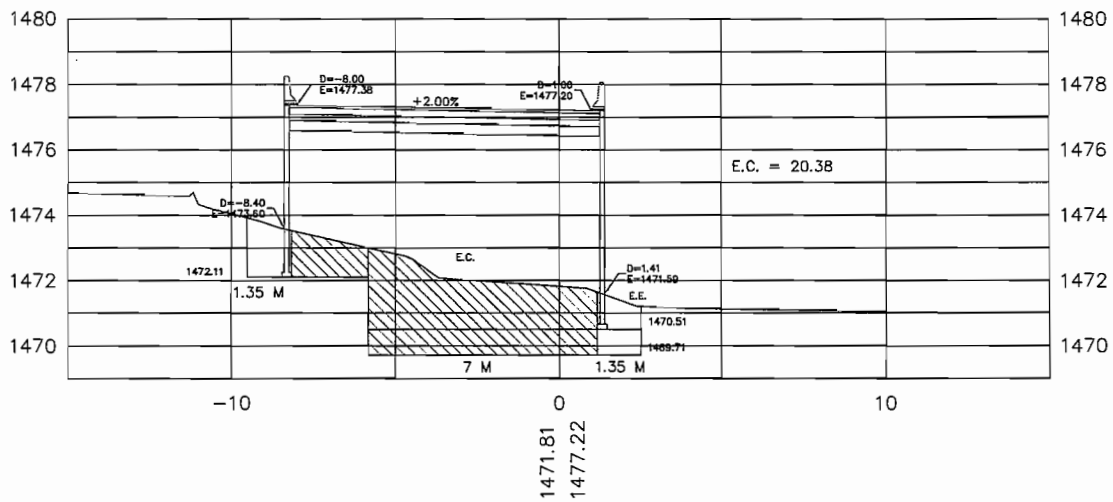
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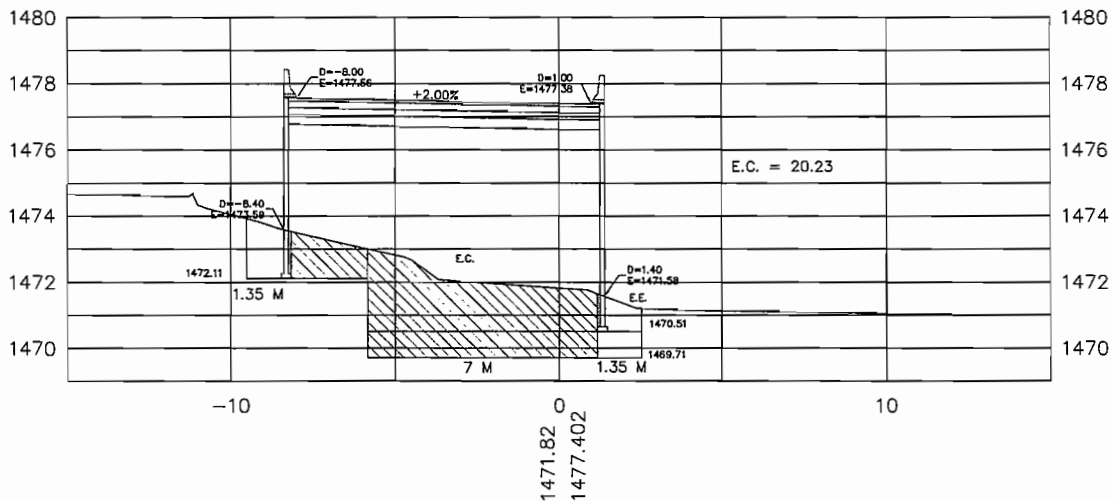
60+362.95



60+362.95

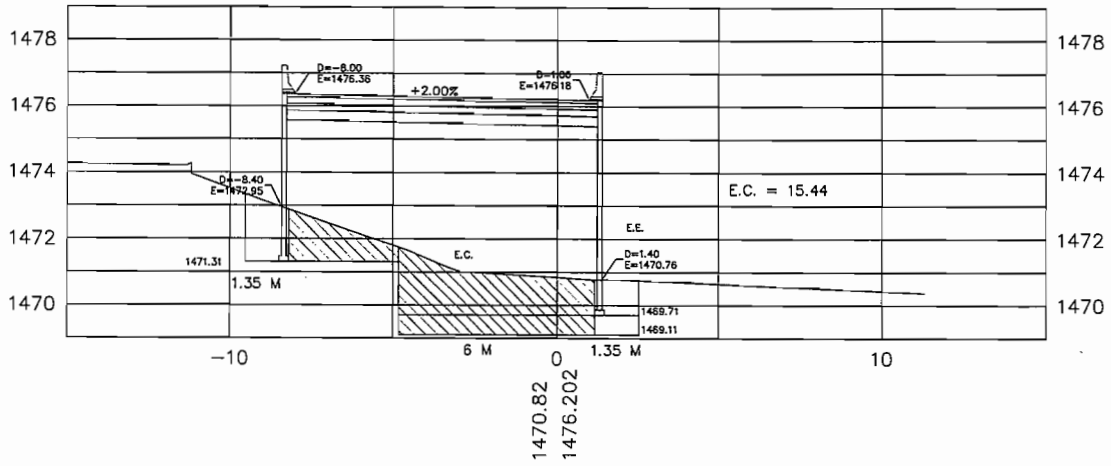


60+360

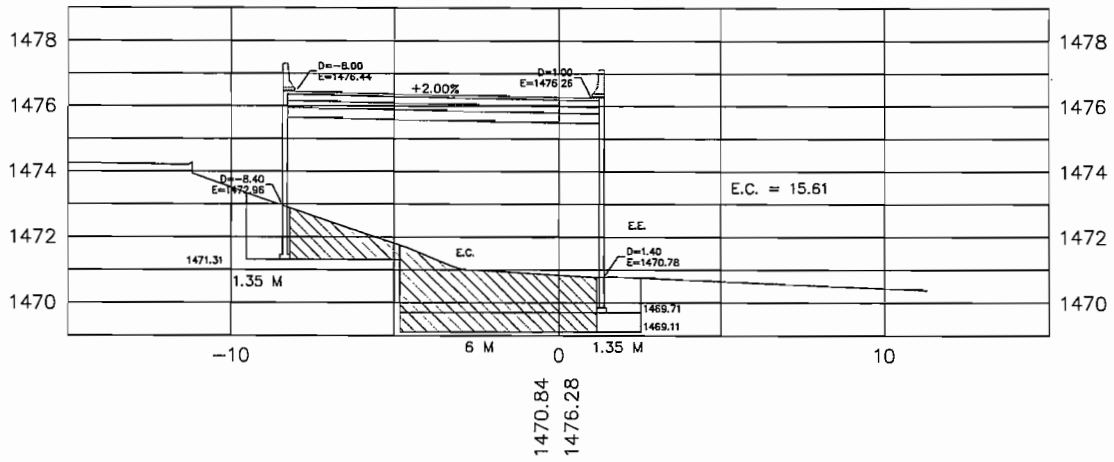


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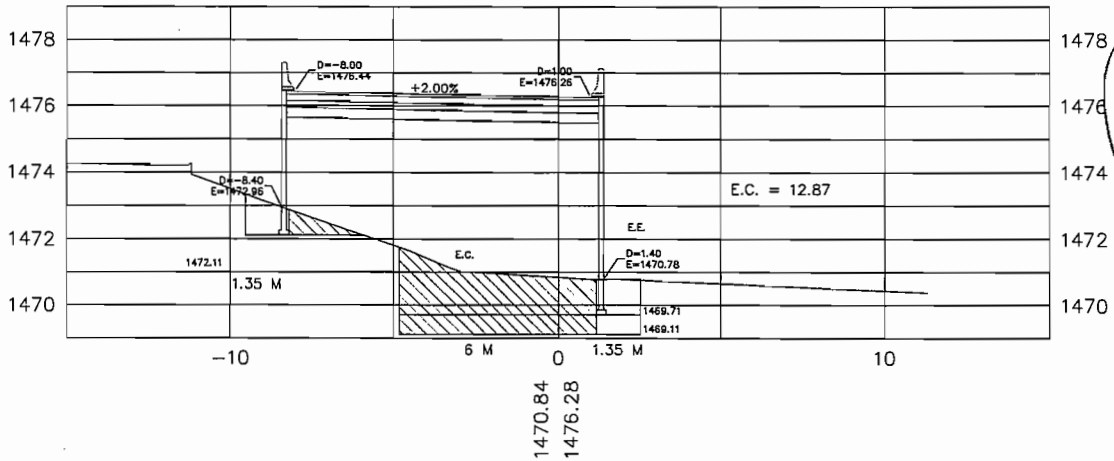
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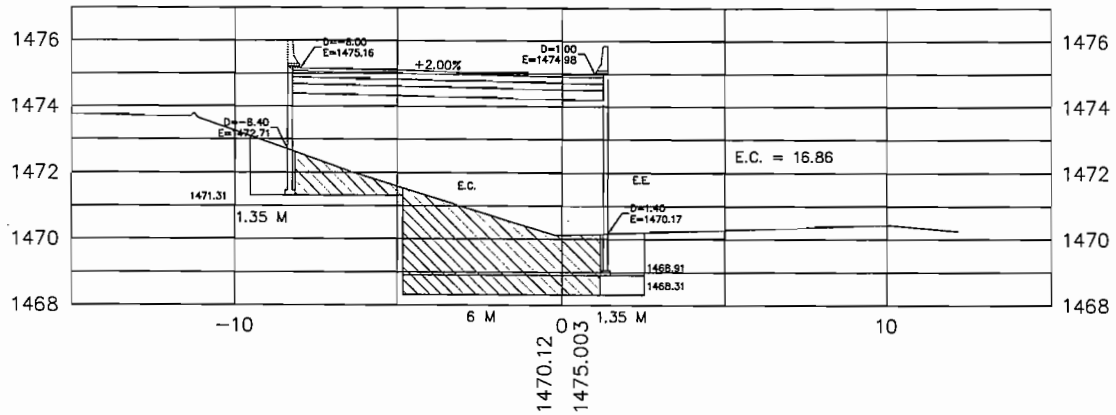
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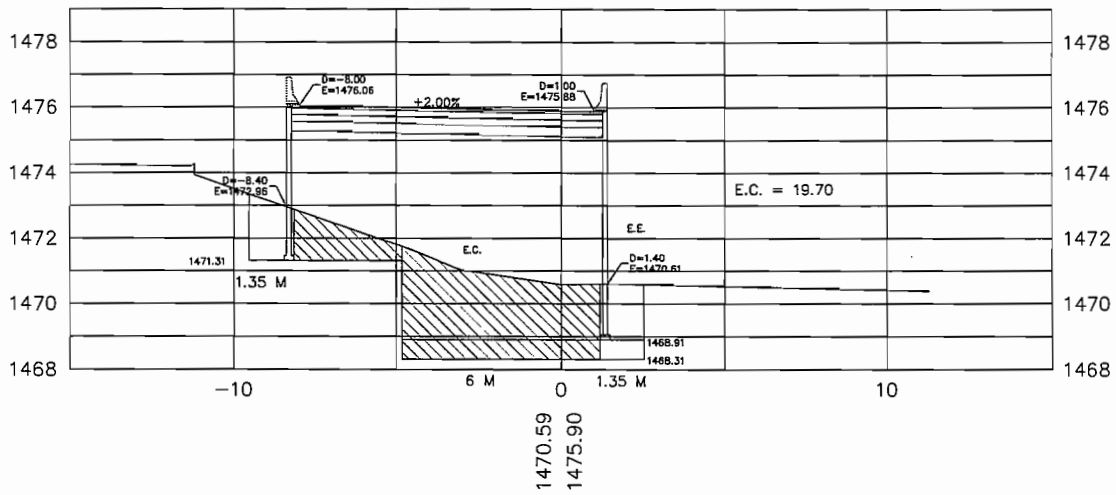
60+378.69



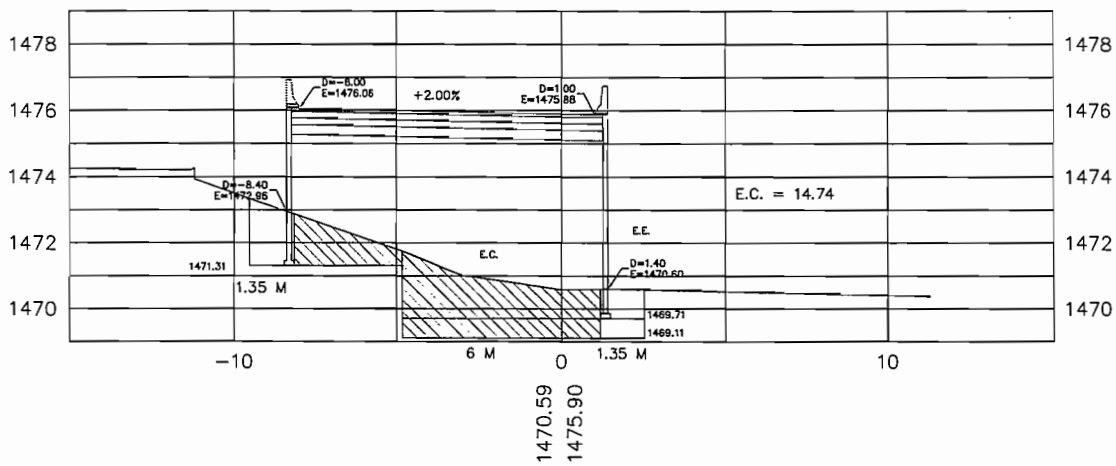
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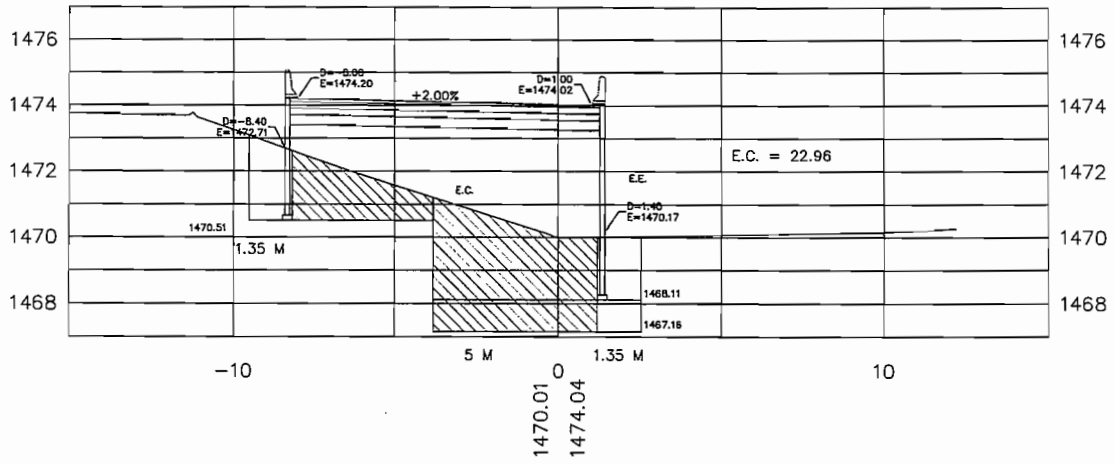
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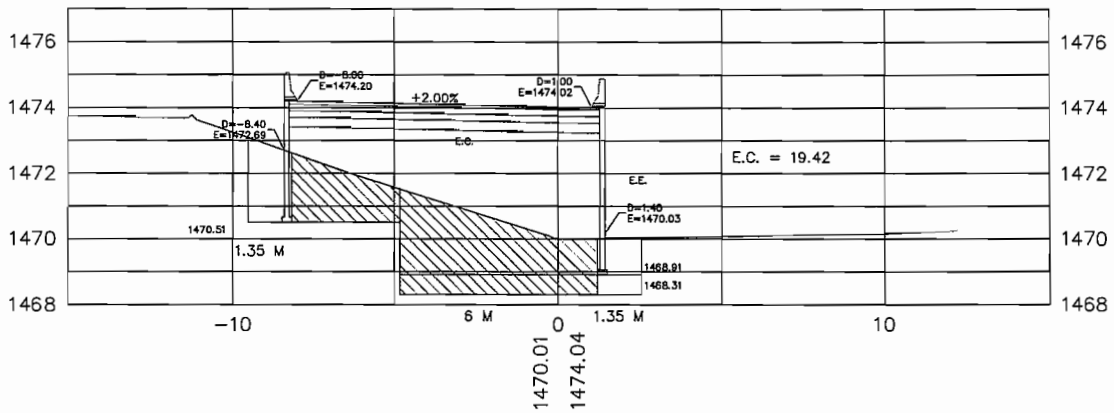
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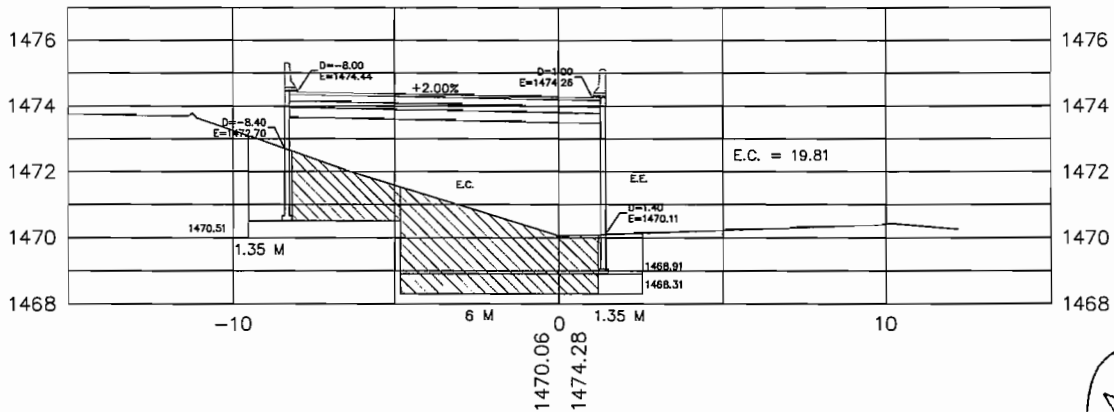
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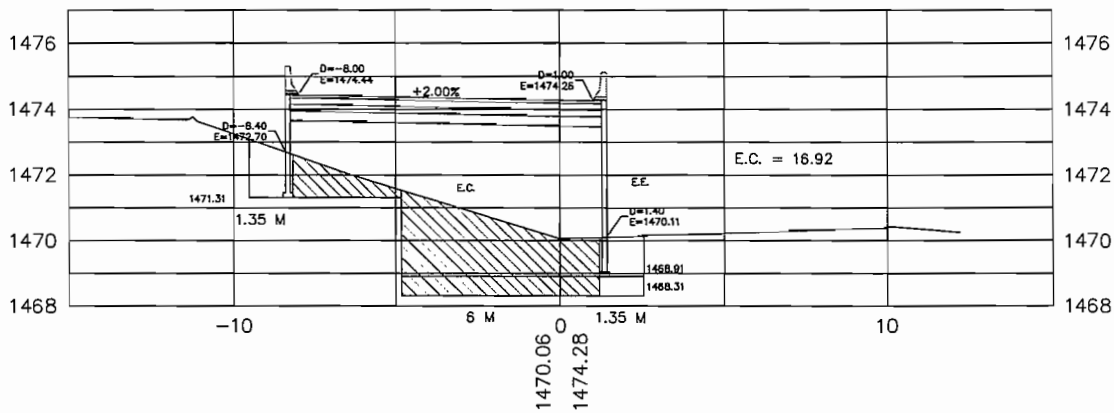
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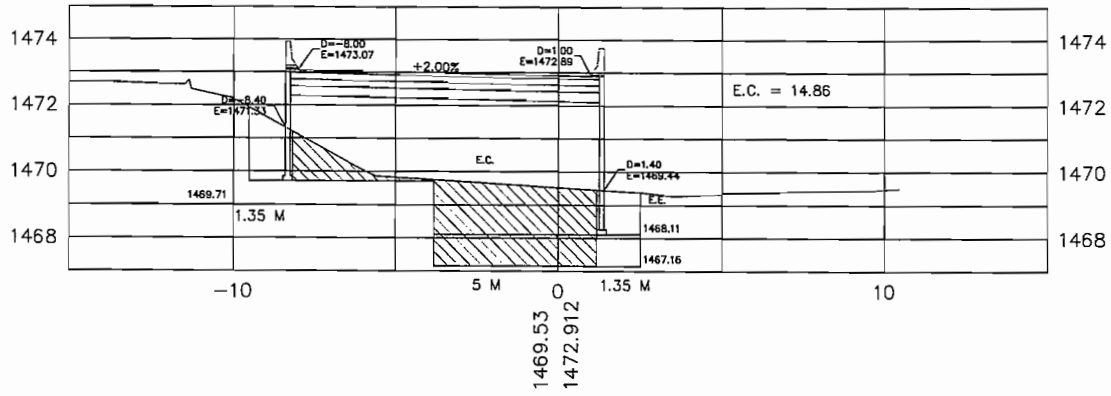
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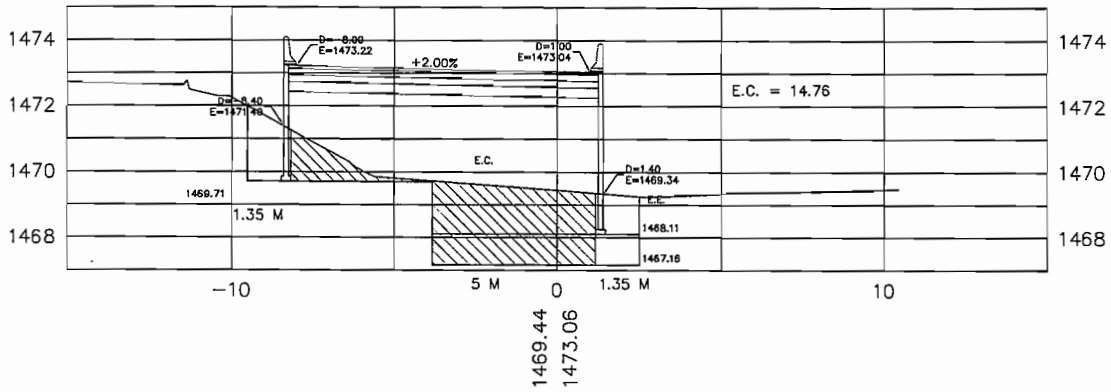
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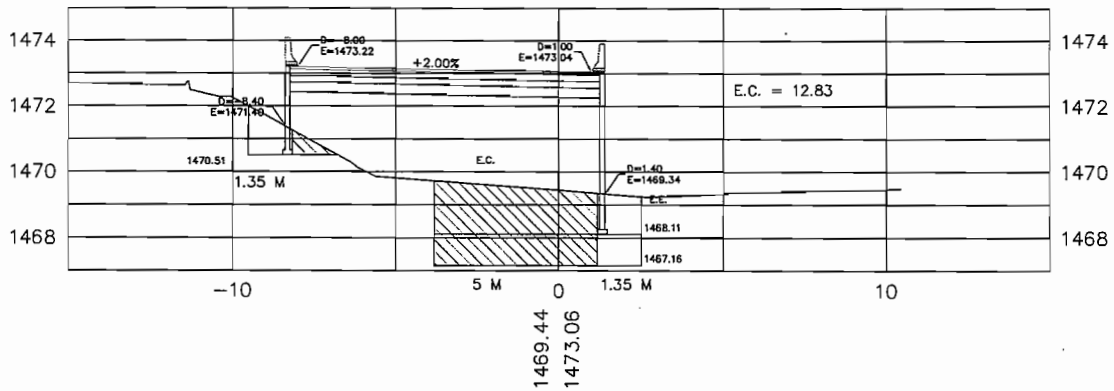
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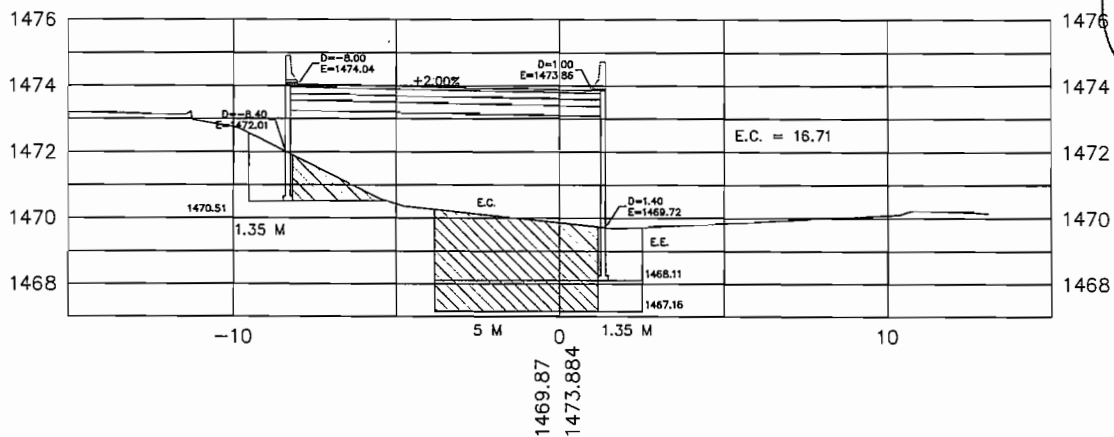
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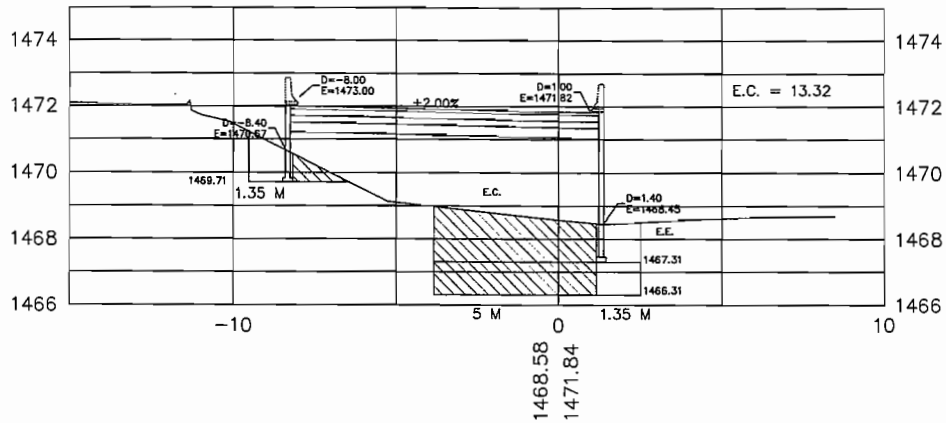
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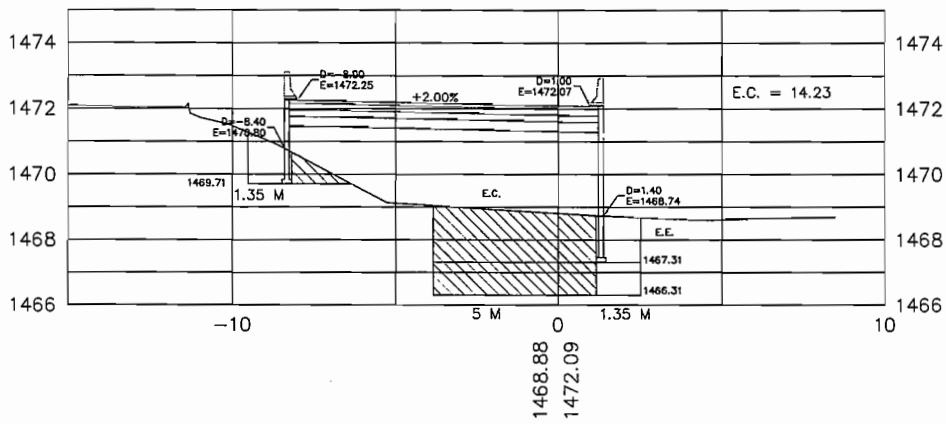
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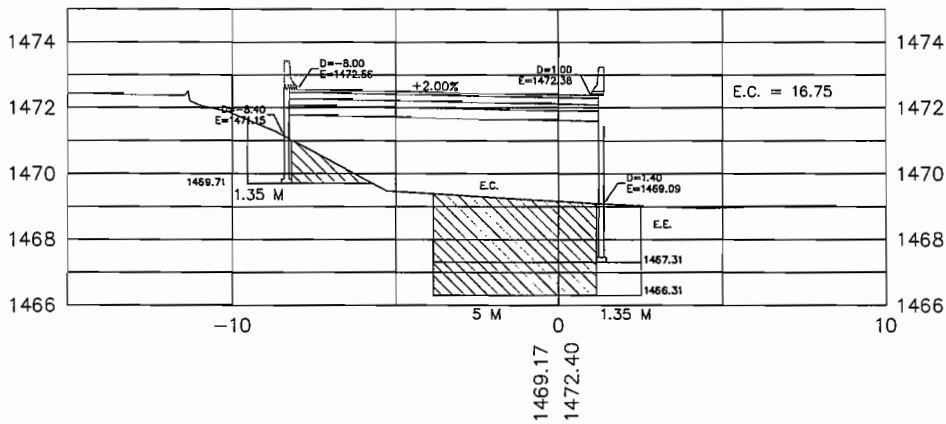
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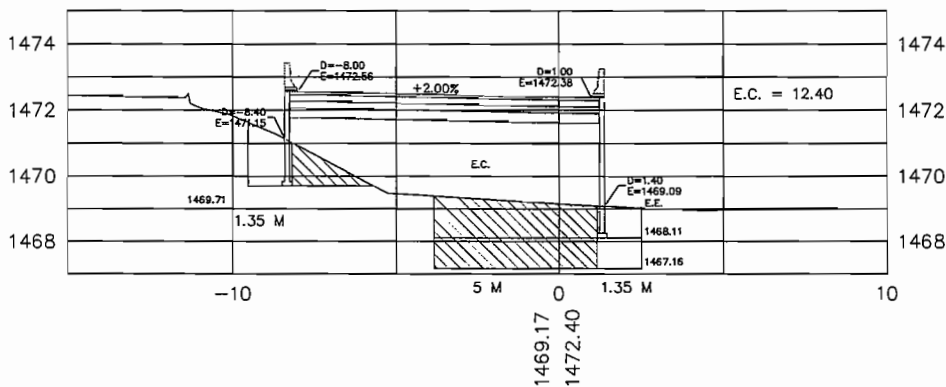
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60+452.95

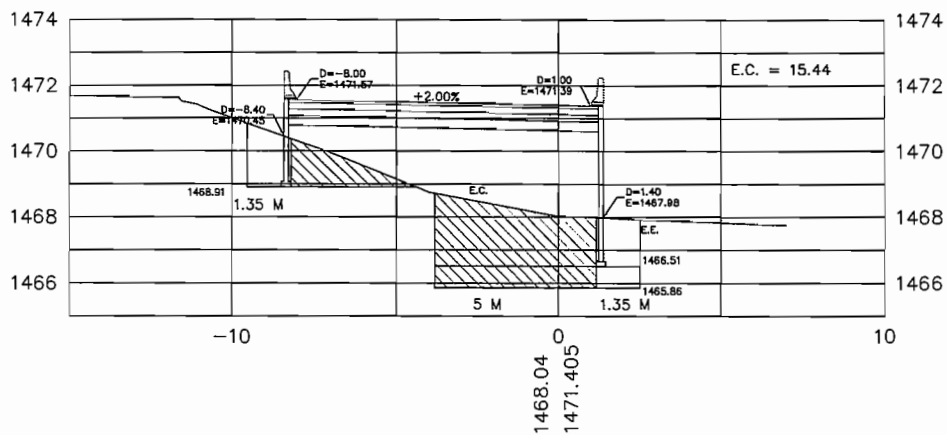


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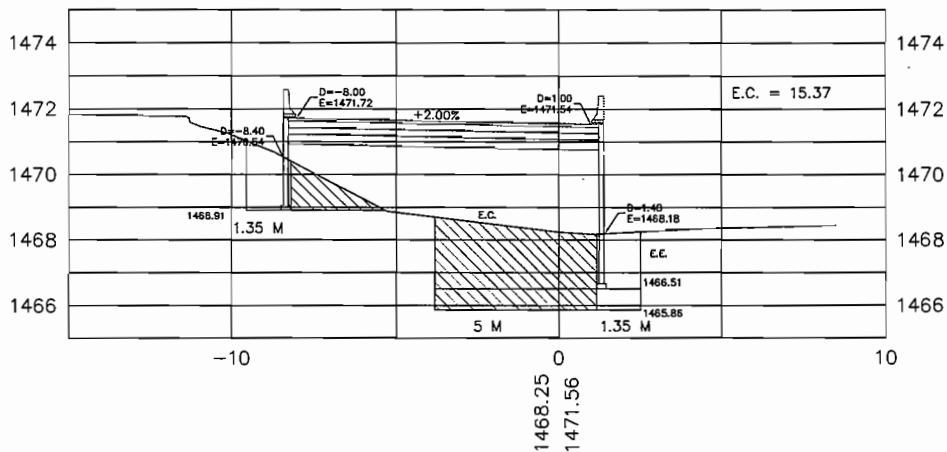


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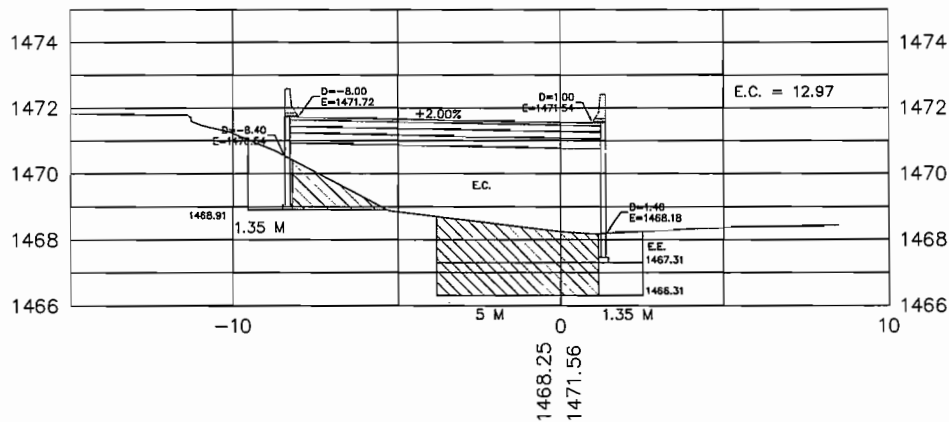
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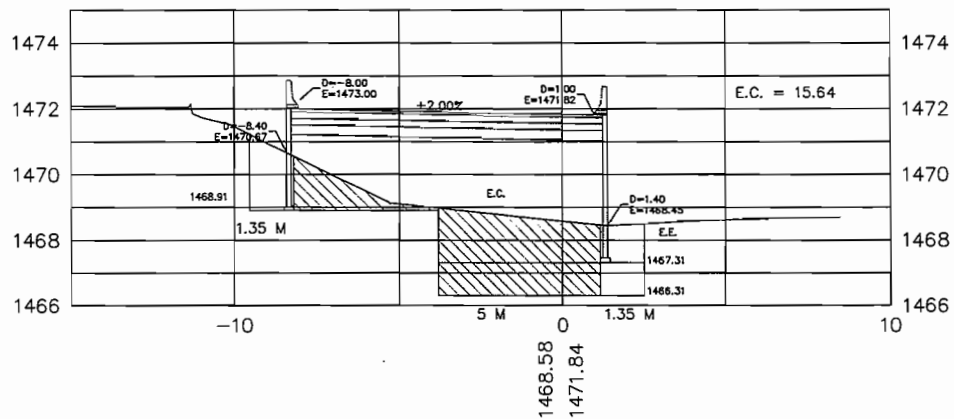
60+474.95



60+474.95



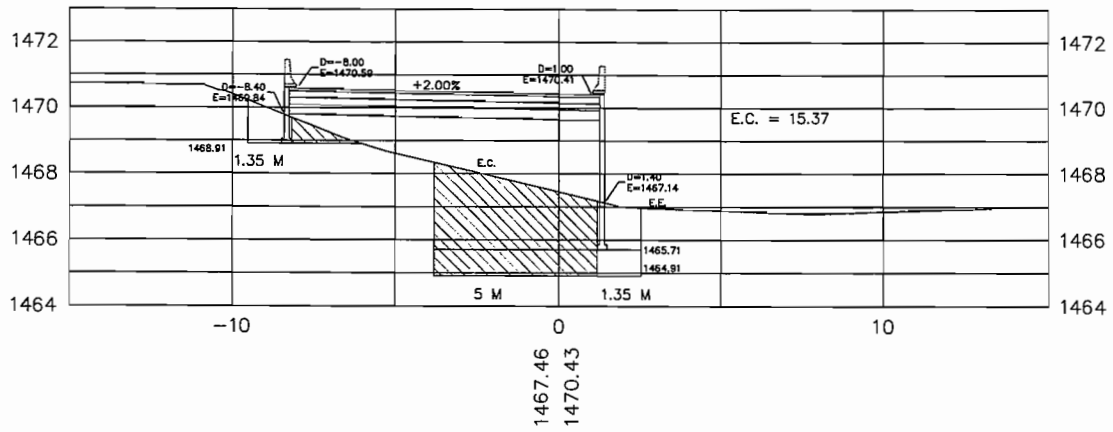
60+466.69



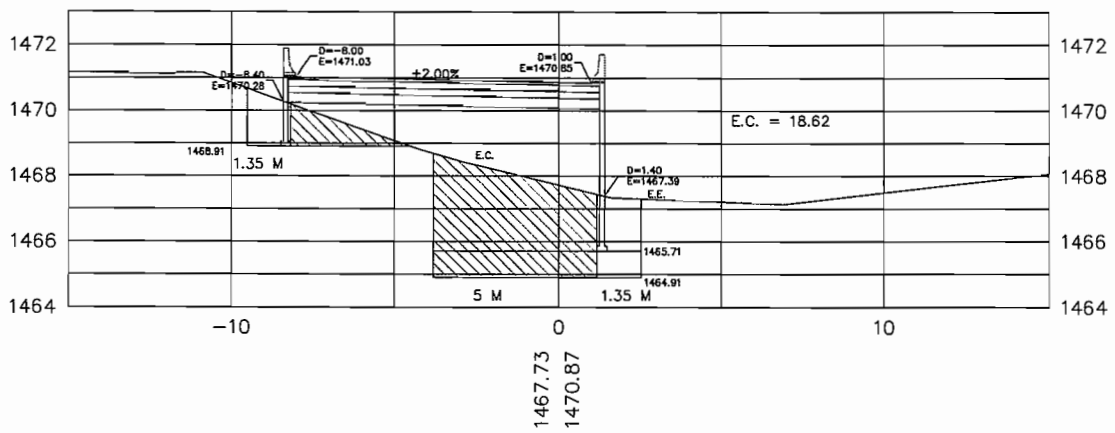
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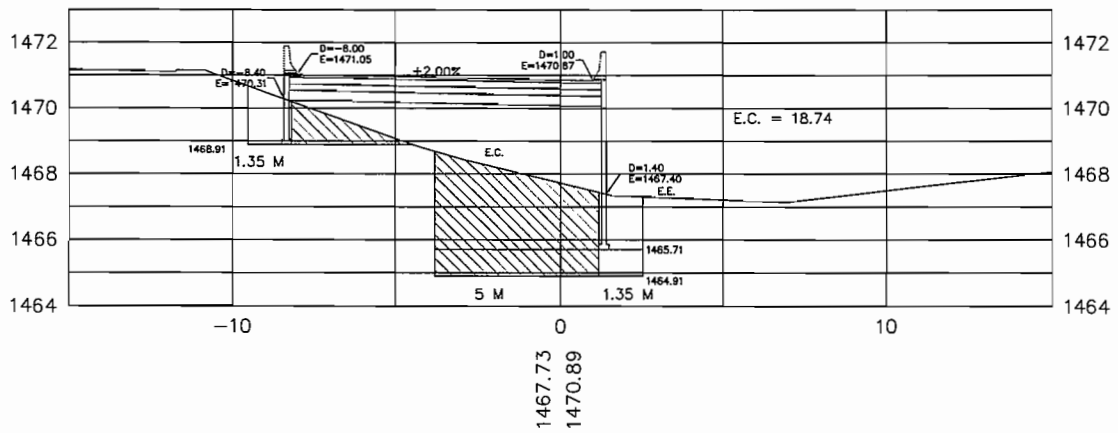
60+518.69



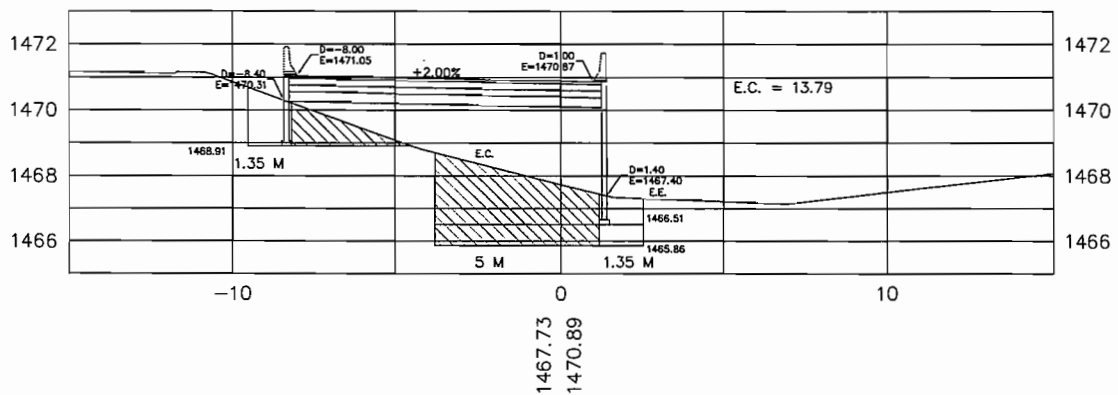
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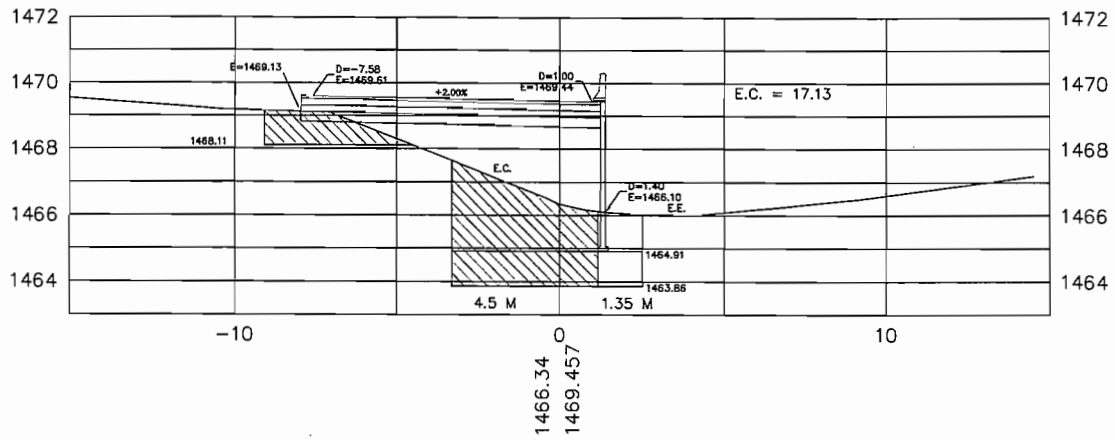
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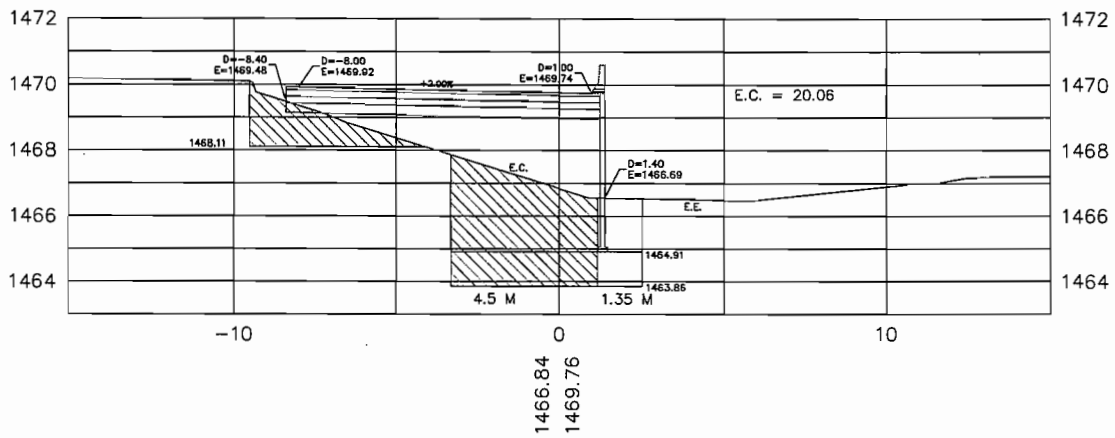
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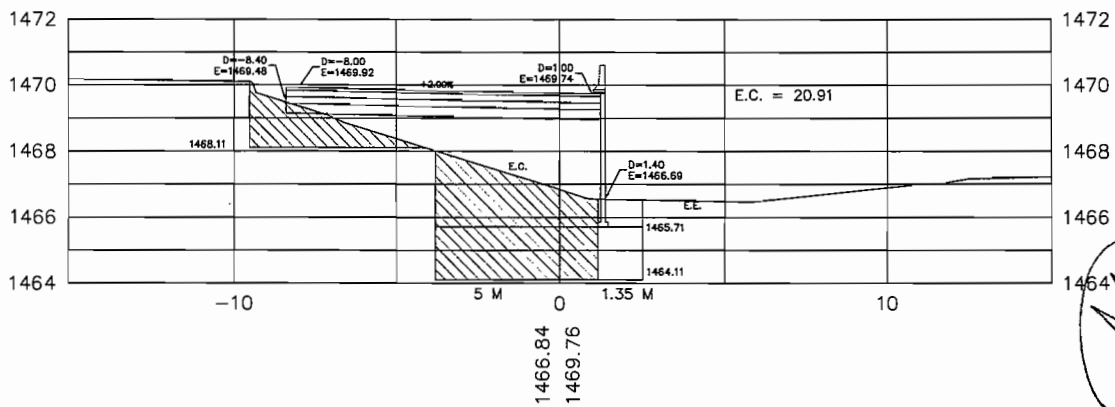
60+560



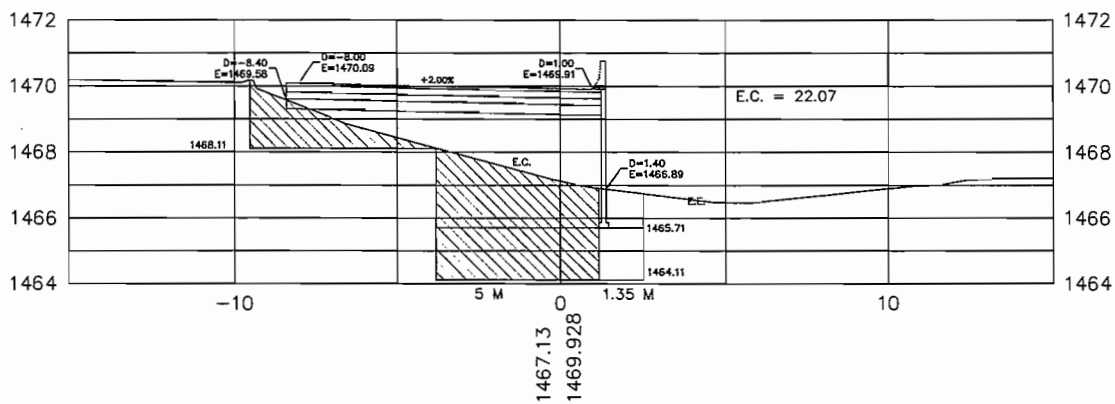
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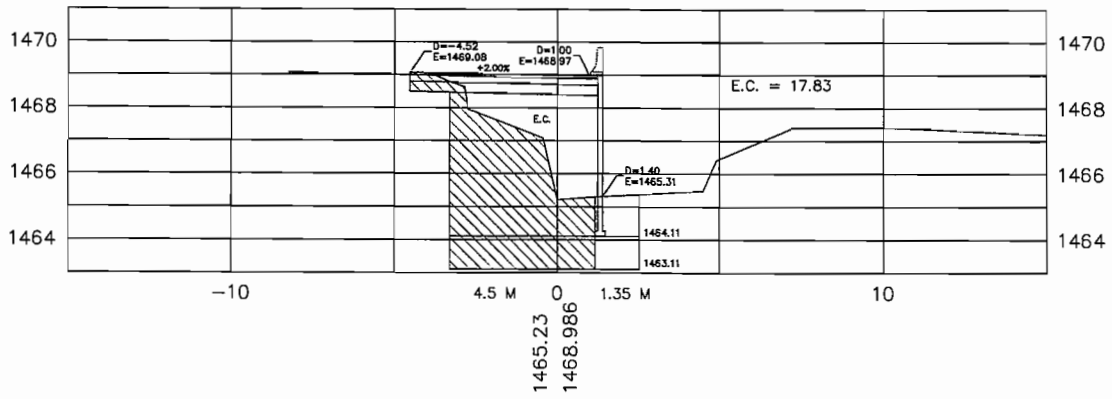
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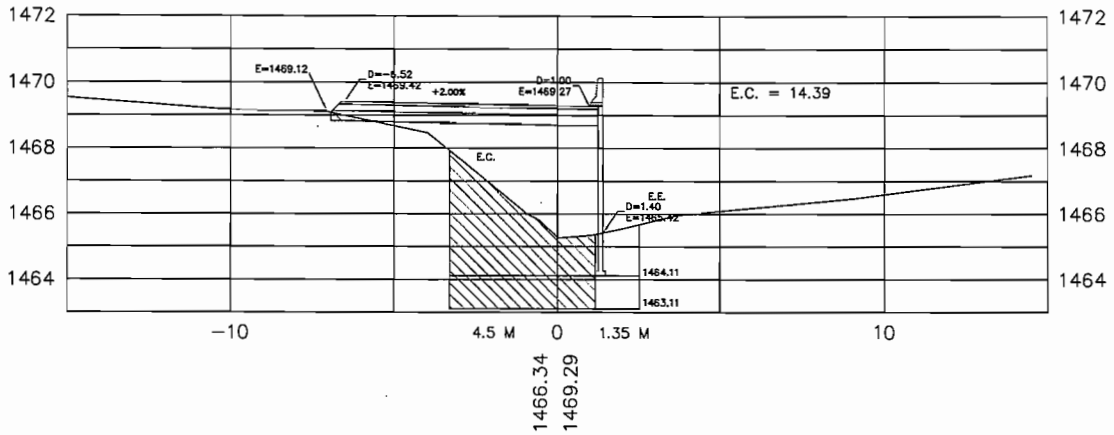
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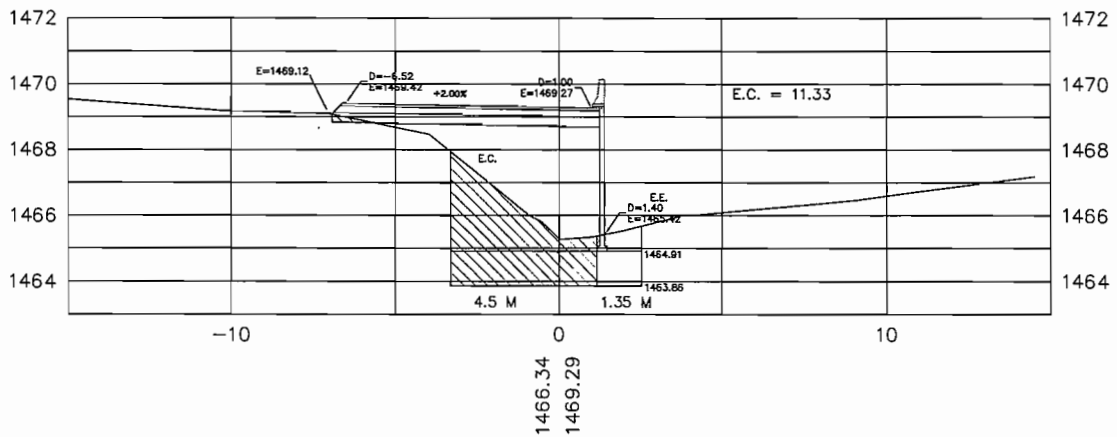
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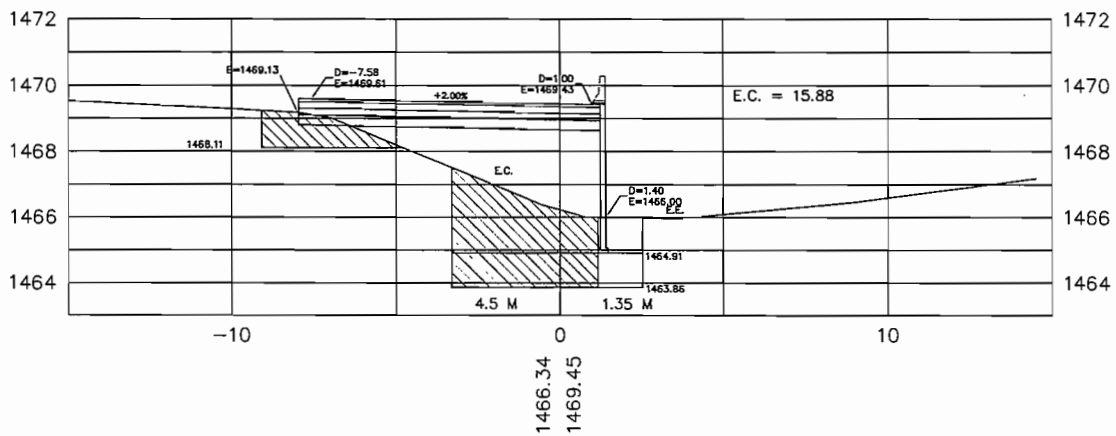
60+566.95



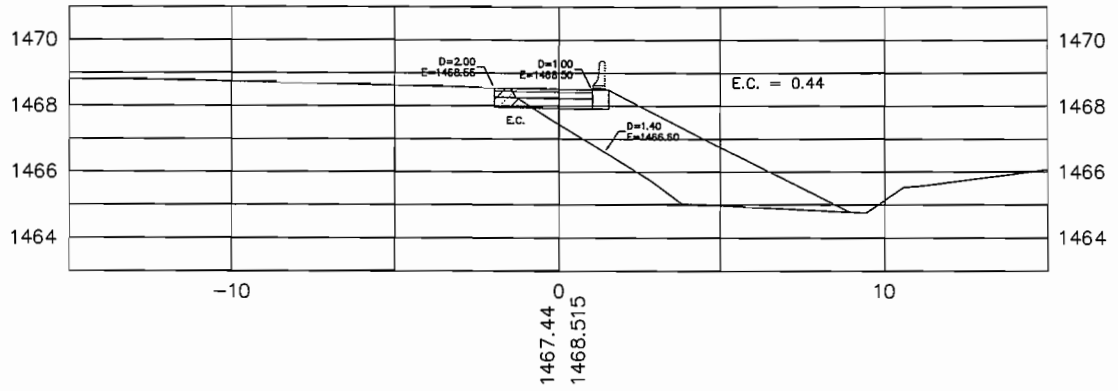
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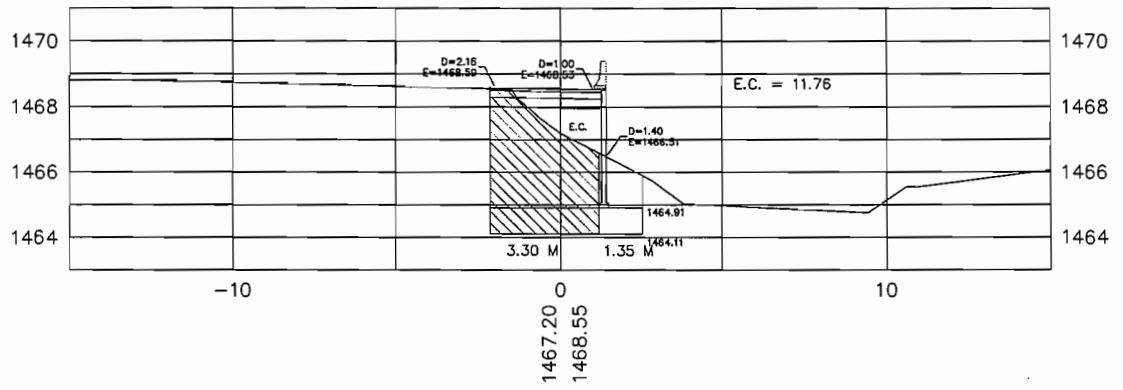
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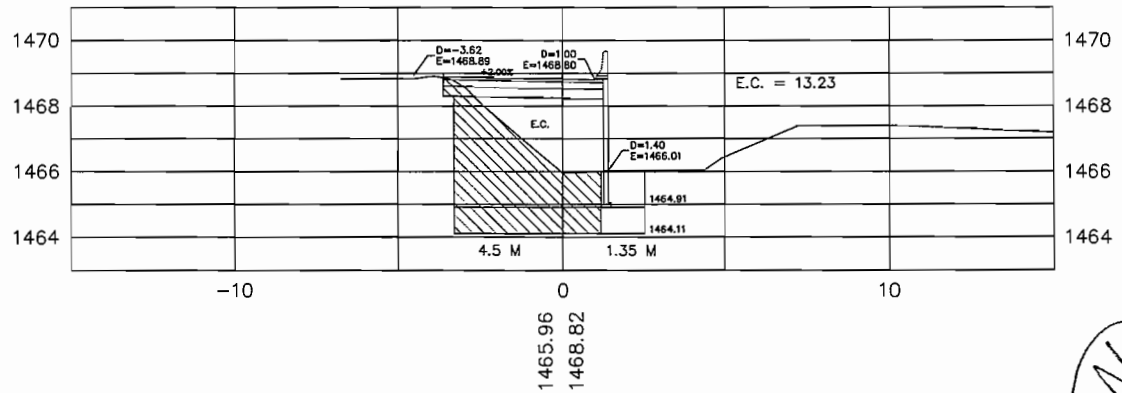
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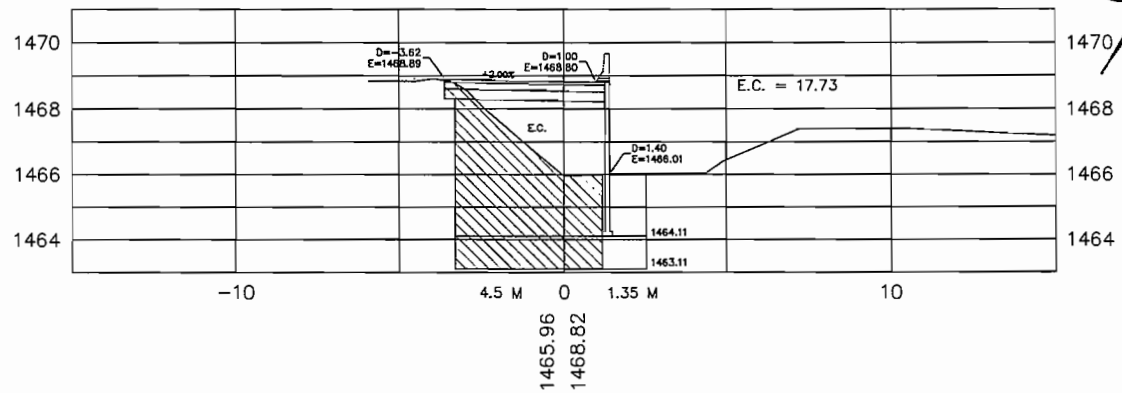
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60+586.95

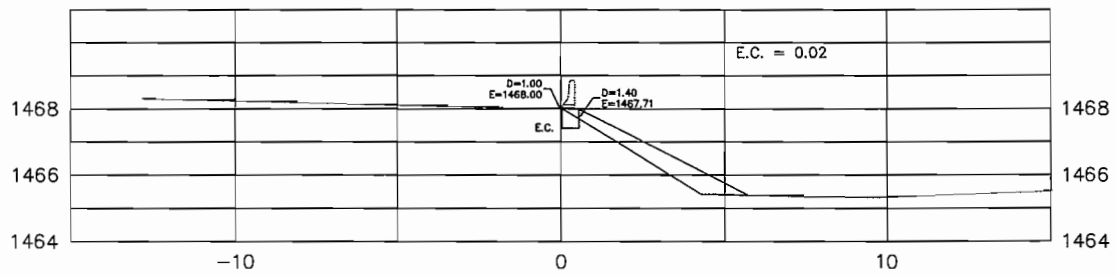


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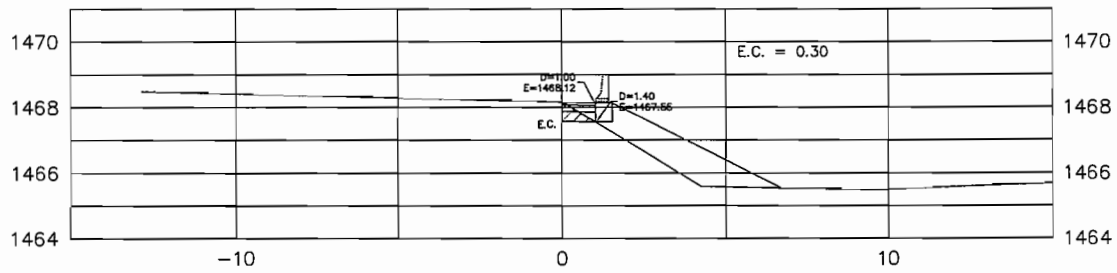
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60+625



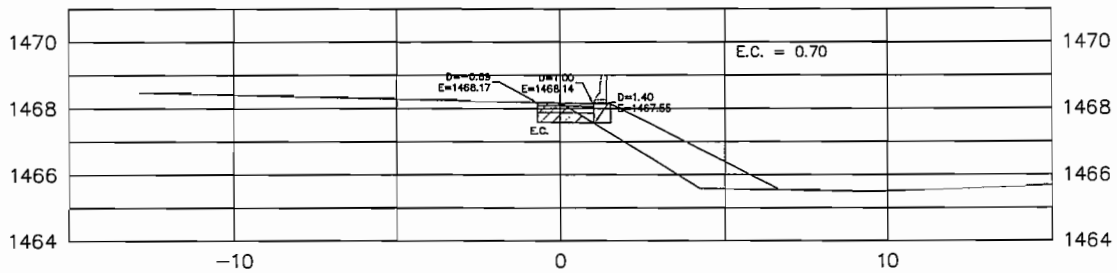
1468.00
1468.00

60+620

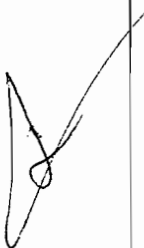


1468.14
1468.14

60+615.13



1468.13
1468.16



CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.		
		CONTRATISTA:	CONSTRUCTORA SANTA ROSALIA SA DE CV

No DE ESTIMACION:	No. 9	PERIODO:	01 AL 11 DE SEPTIEMBRE 2016
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CONCEPTO	17	OPERACIONES ARITMETICAS
Formación y compactación por unidad de obra terminada: de terraplenes contenidos dentro de rampas de tierra armada (inciso 3.01.01.005-H.11): para un grado de compactacion del 90%de su PVSM según la prueba proctor estándar, con material del banco que elija el contratista, incluye el suministro del material, humectacion y todas las maniobras y acarreos necesarios para su ejecucion, en capas no mayores de 20 cm.		VOL. = 12,430.14 M3
		PAGADOS EN ESTIMACION ANTERIOR 2,600 M3 COMO PARCIAL,
		12,430.14 M3 - 2,600 M3 = 9,830.14 M3
		SE PAGA OTRO VOLUMEN PARCIAL DE
		VOL. = 100.96 M3
		SE ANEXAN SECCIONES Y CURVA MASA

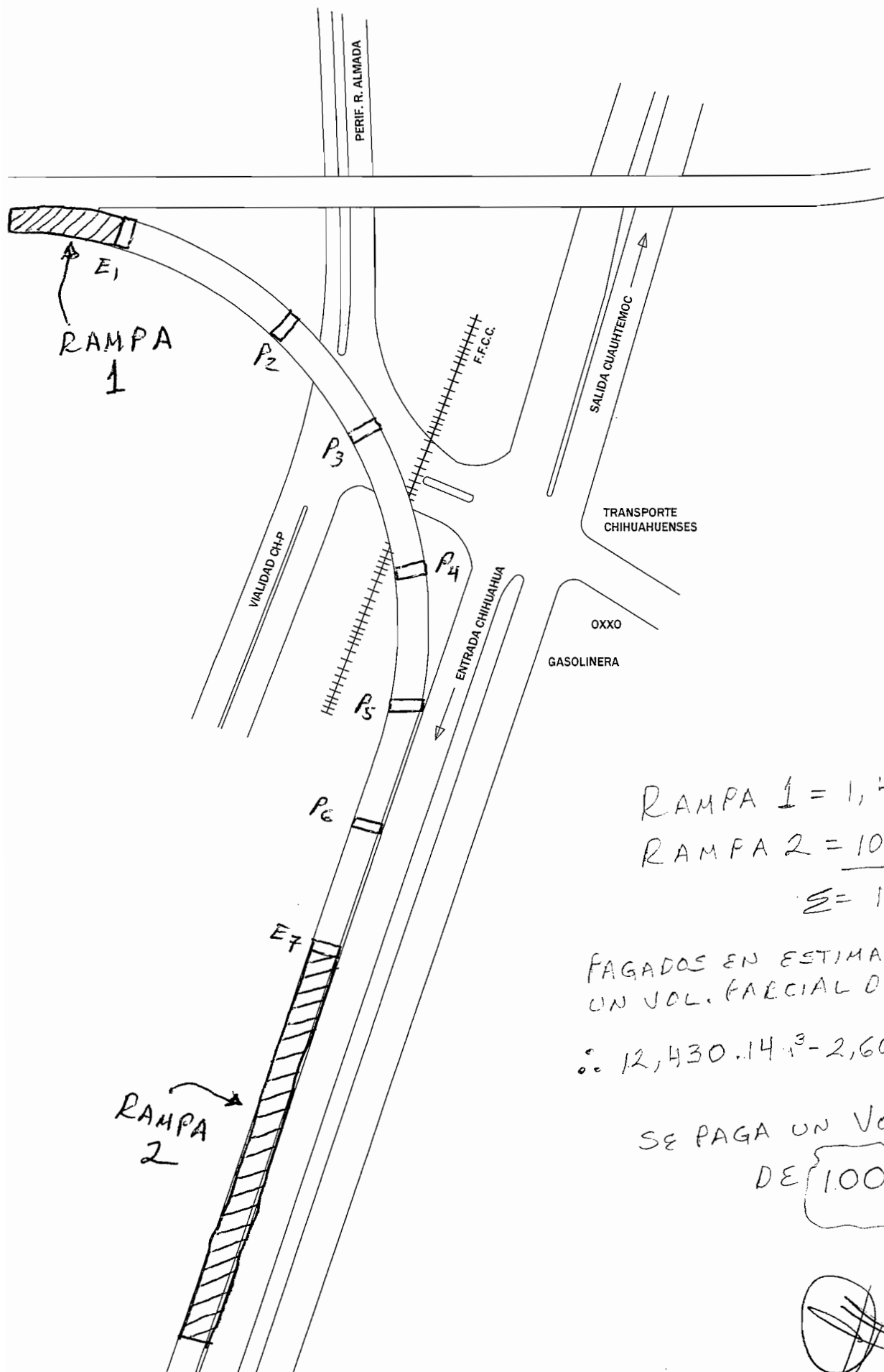


~~RESIDENTE~~
ING. RODOLFO ARMENDARIZ RONQUILLO

CROQUIS SE ANEXA CROQUIS	VOLUMEN A PAGAR 100.96 M3
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CONTRATISTA
CONSTRUCTORA SANTA ROSALIA SA DE CV

17- FORMACION DE TERRAPLEN EN RAMPA



$$\text{RAMPA 1} = 1,443.58 \text{ m}^3 \text{ C.M.}$$

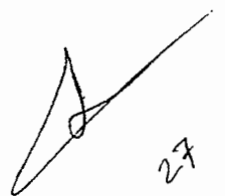
$$\text{RAMPA 2} = 10,986.56 \text{ m}^3 \text{ C.M.}$$

$$\Sigma = 12,430.14 \text{ m}^3$$

PAGADOS EN ESTIMACION ANTERIOR
UN VOL. PARCIAL DE $2,600 \text{ m}^3$

$$\therefore 12,430.14 \text{ m}^3 - 2,600 \text{ m}^3 = 9,830.14 \text{ m}^3$$

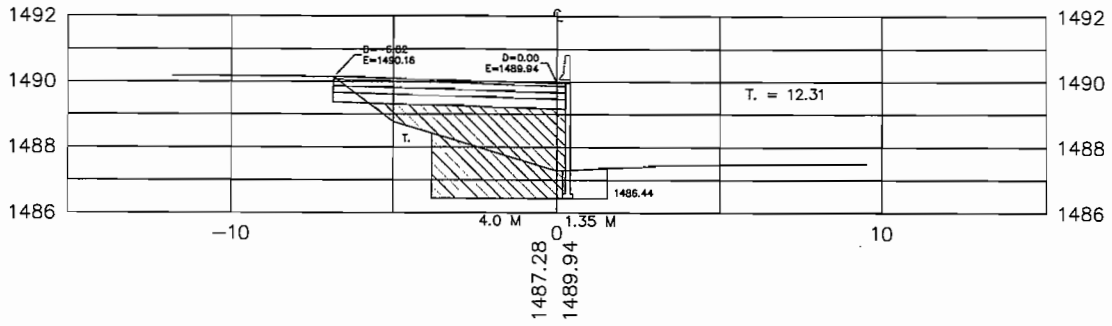
SE PAGA UN VOL. PARCIAL
DE 100.96 m^3



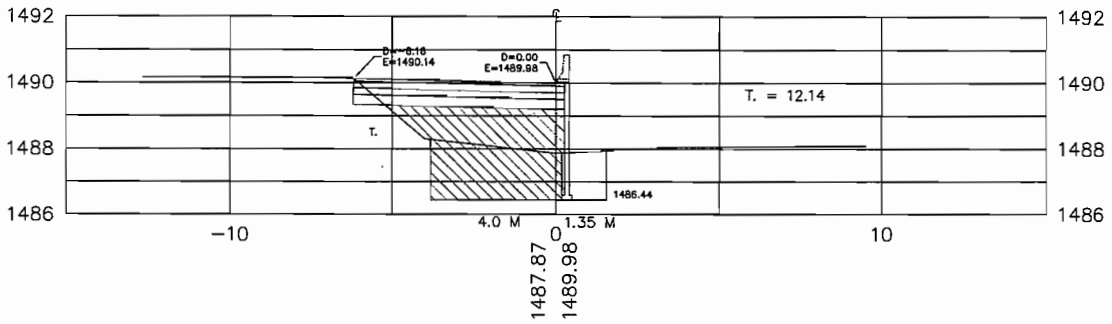
CURVA MASA RAMPA 1 TERRAPLEN

CADENAMIENTO		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
59+	999.36		8.26					
60+	000		8.28	0.00	16.54	0.32	0.00	5.29
60+	003.36		8.94	0.00	17.22	1.68	0.00	28.93
60+	003.36		12.14	0.00	21.08	0.00	0.00	0.00
60+	009.36		12.31	0.00	24.45	3.00	0.00	73.35
60+	009.36		16.94	0.00	29.25	0.00	0.00	0.00
60+	015.36		17.02	0.00	33.96	3.00	0.00	101.88
60+	015.36		20.67	0.00	37.69	0.00	0.00	0.00
60+	020		22.06	0.00	42.73	2.32	0.00	99.13
60+	023.36		22.33	0.00	44.39	1.68	0.00	74.58
60+	023.36		25.94	0.00	48.27	0.00	0.00	0.00
60+	025		26.22	0.00	52.16	0.82	0.00	42.77
60+	025		44.54	0.00	70.76	0.00	0.00	0.00
60+	029.36		64.06	0.00	108.60	2.18	0.00	236.75
60+	029.36		73.56	0.00	137.62	0.00	0.00	0.00
60+	035.36		81.81	0.00	155.37	3.00	0.00	466.11
60+	035.36		92.15	0.00	173.96	0.00	0.00	0.00
60+	038.63		100.38	0.00	192.53	1.64	0.00	314.79
				0.00	0.00	0.00	0.00	0.00
				0.00	0.00	0.00	0.00	0.00
							0.00	1,443.58

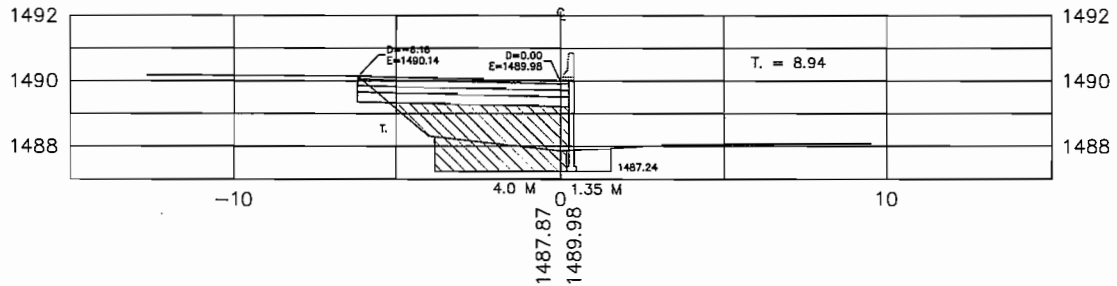
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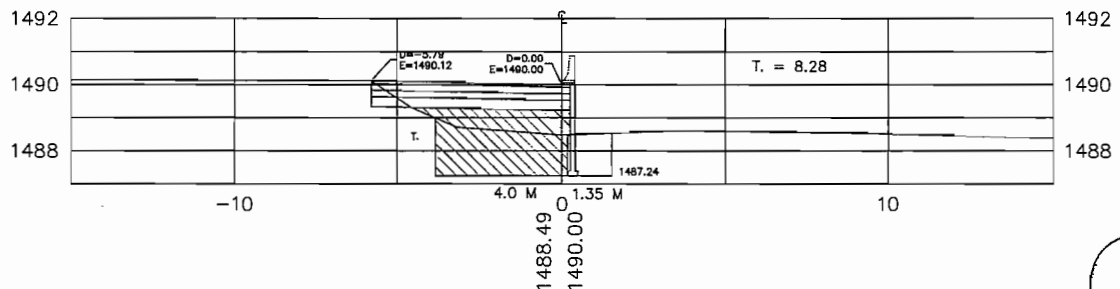
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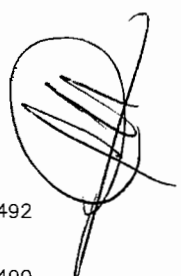
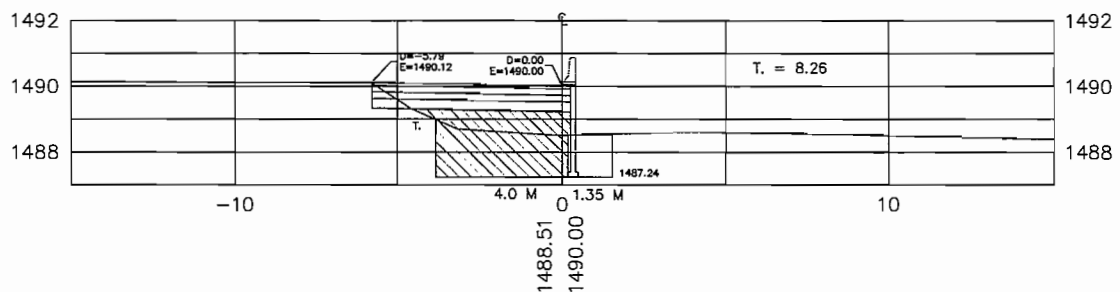
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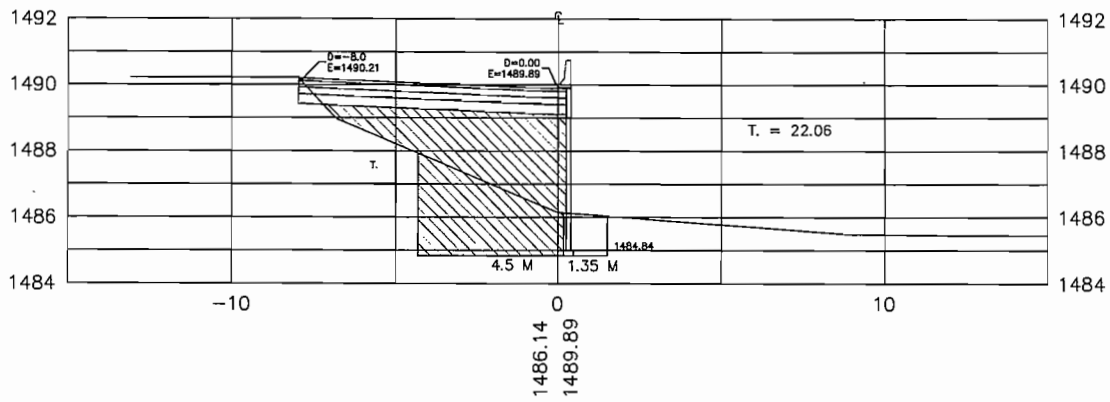
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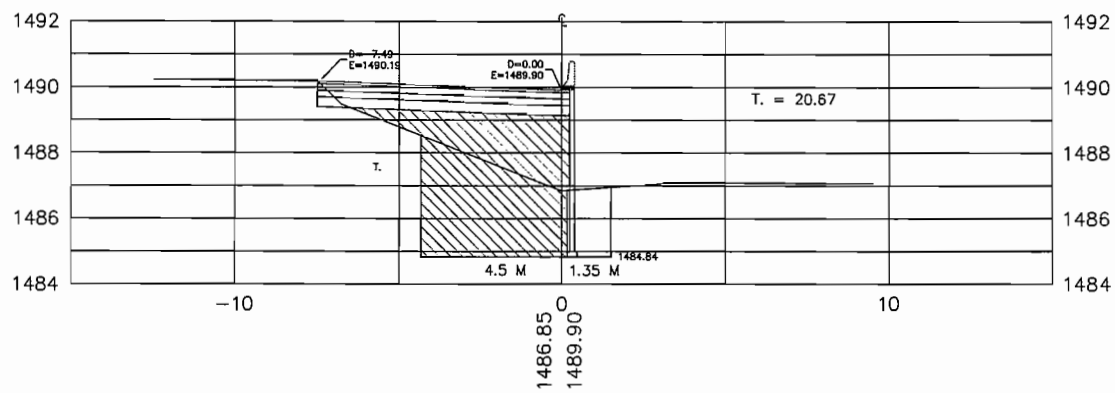
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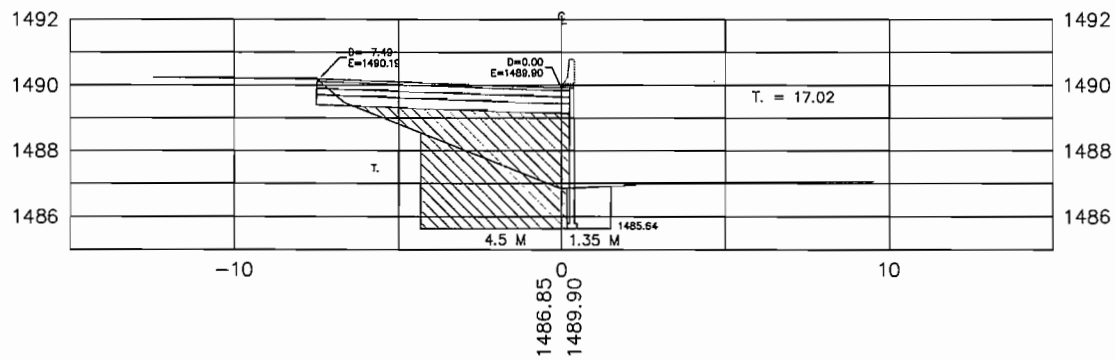
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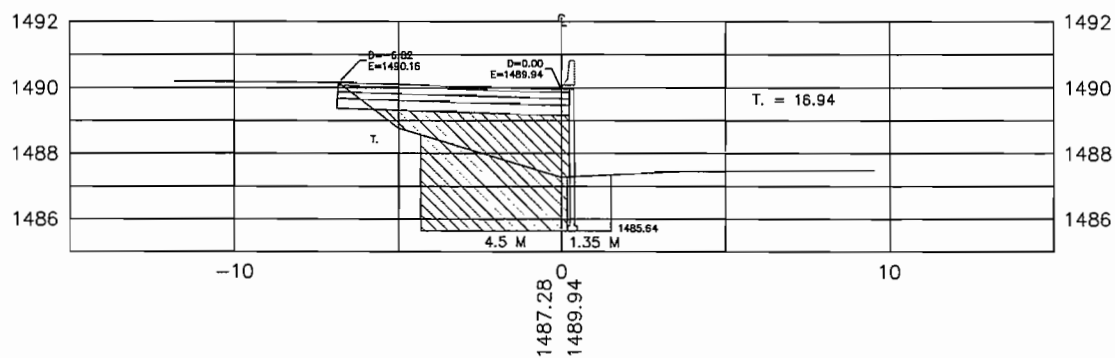
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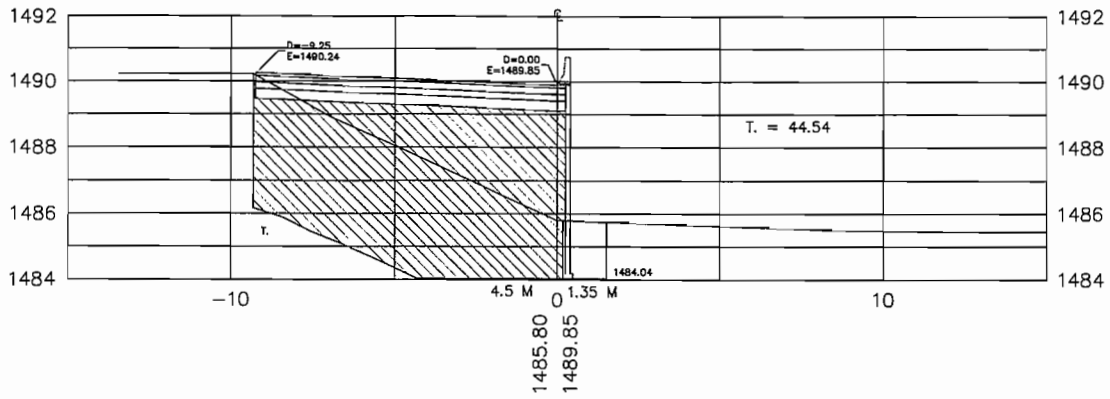
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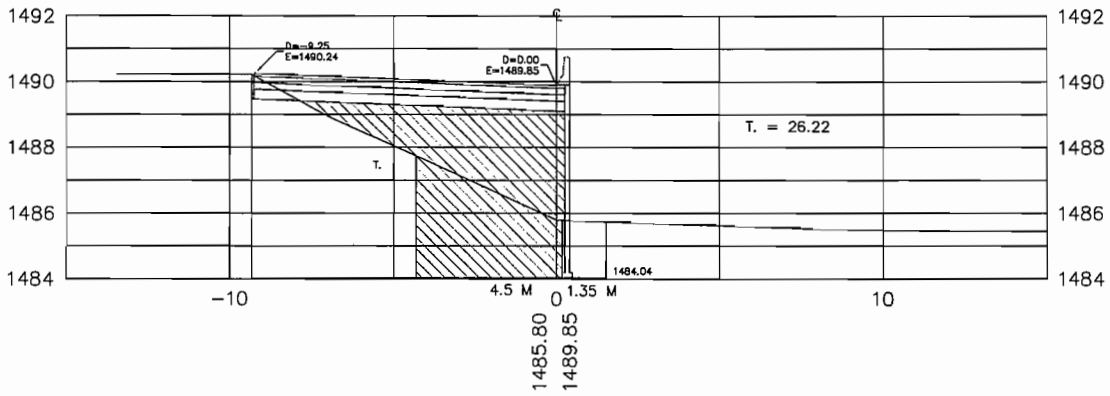
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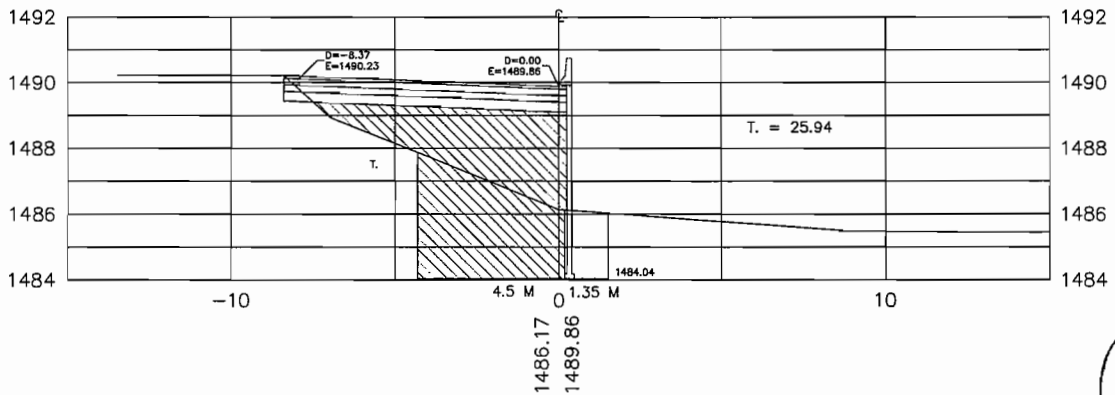
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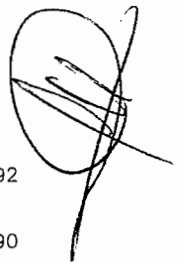
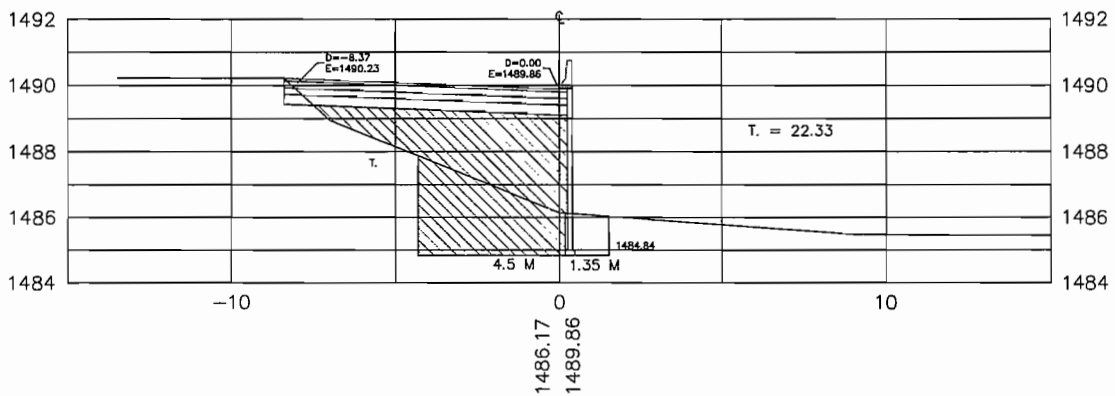
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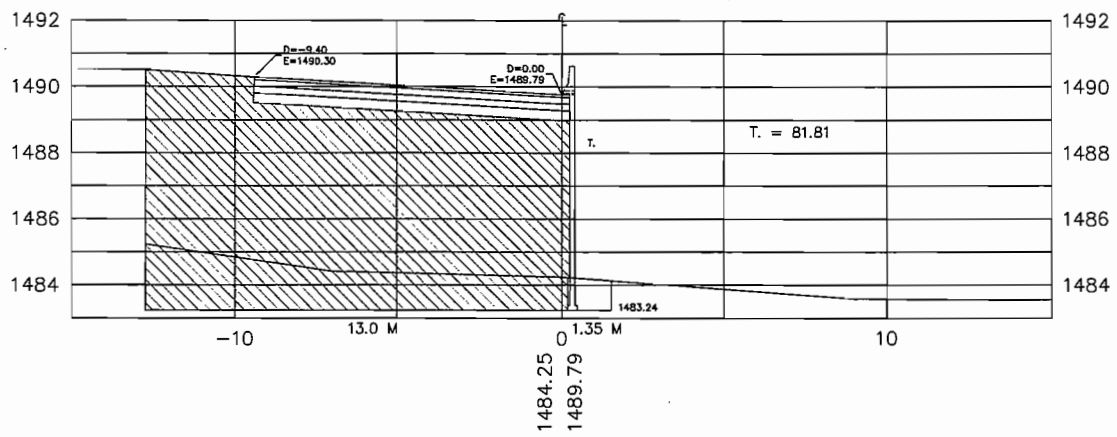
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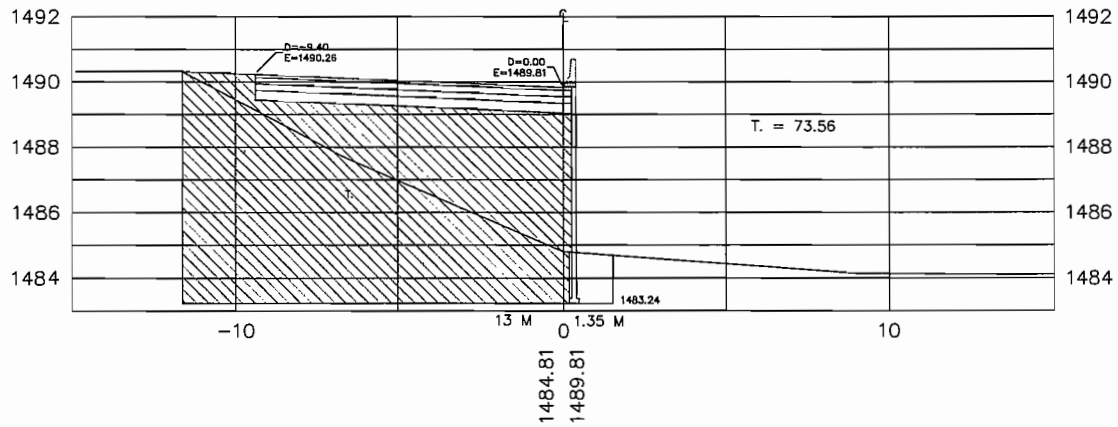
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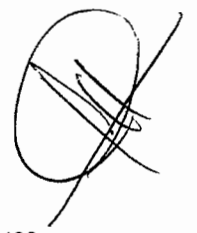
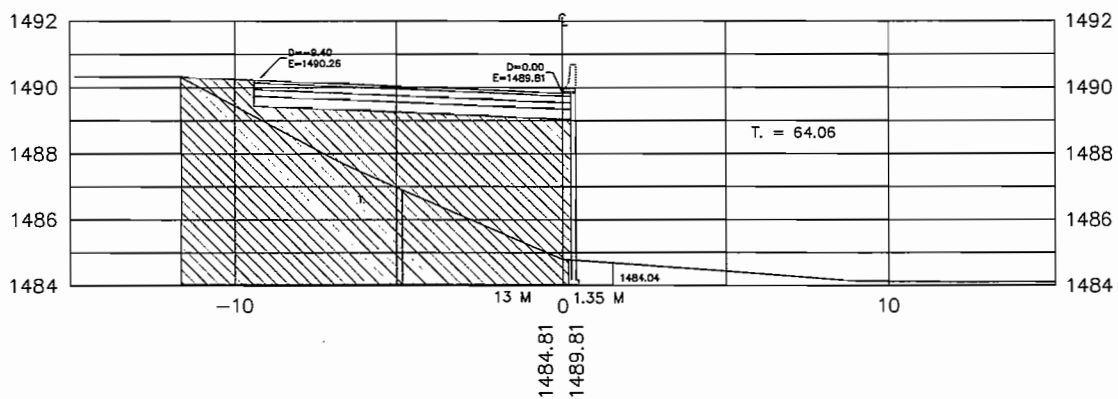
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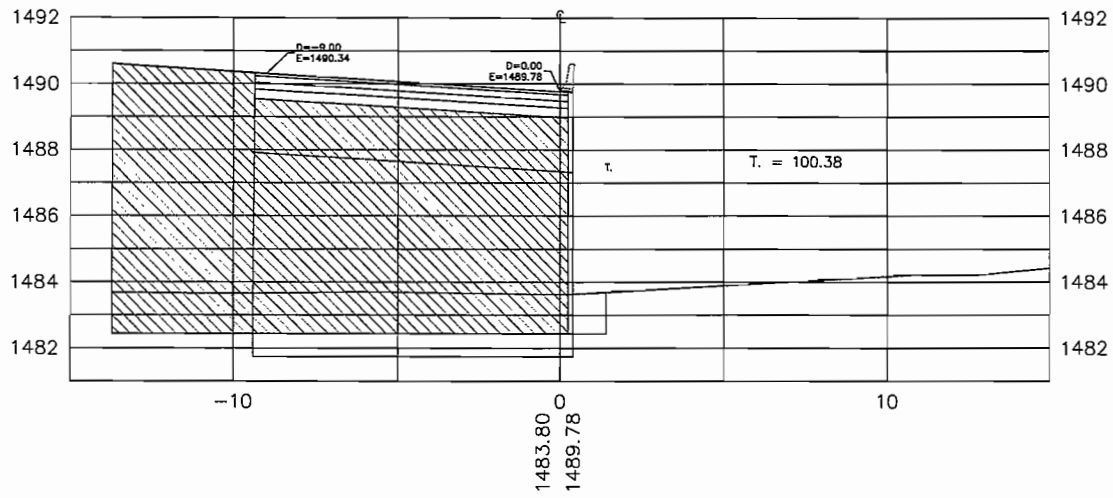
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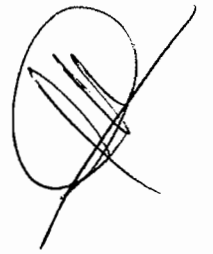
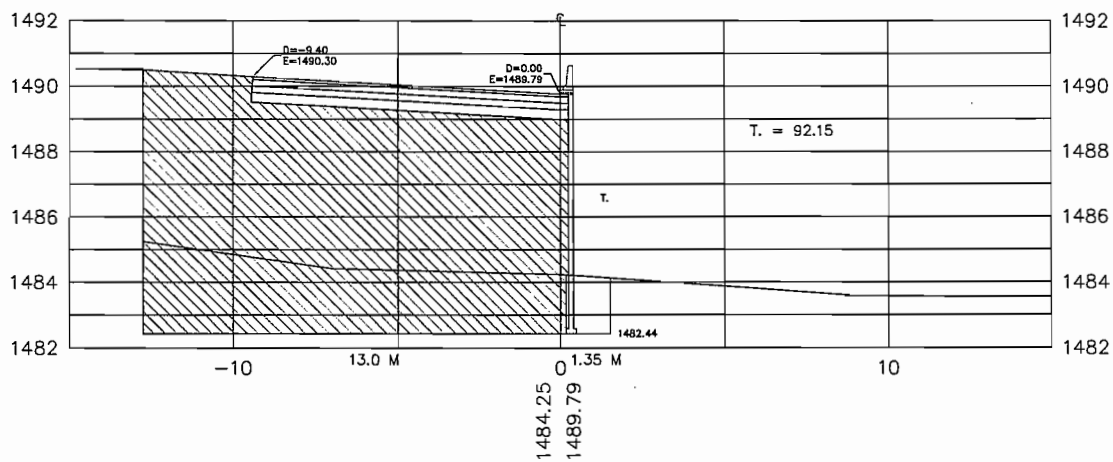
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60+038.63



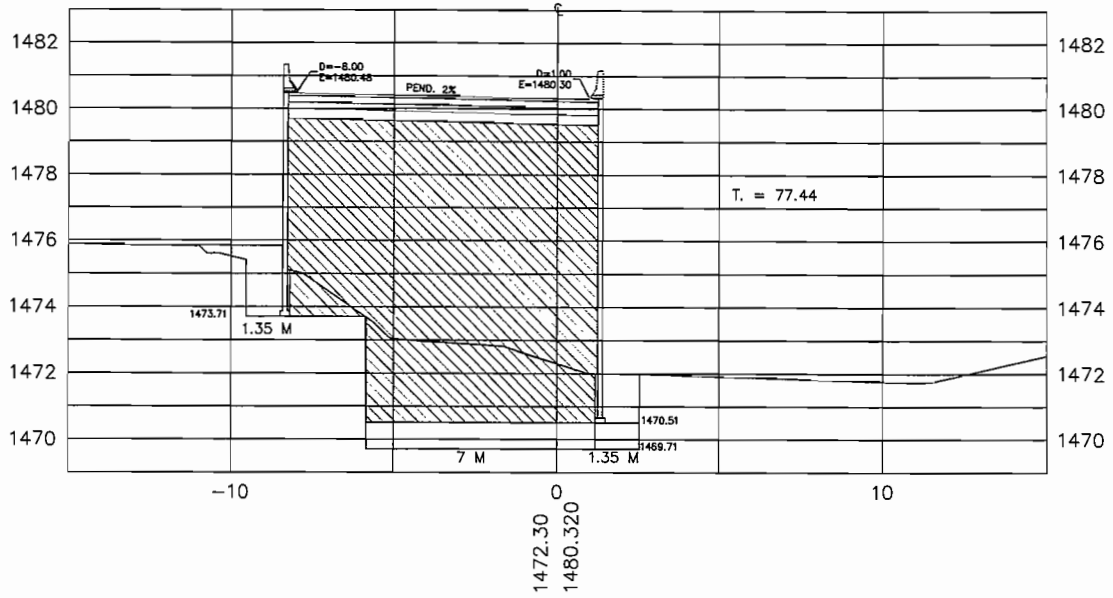
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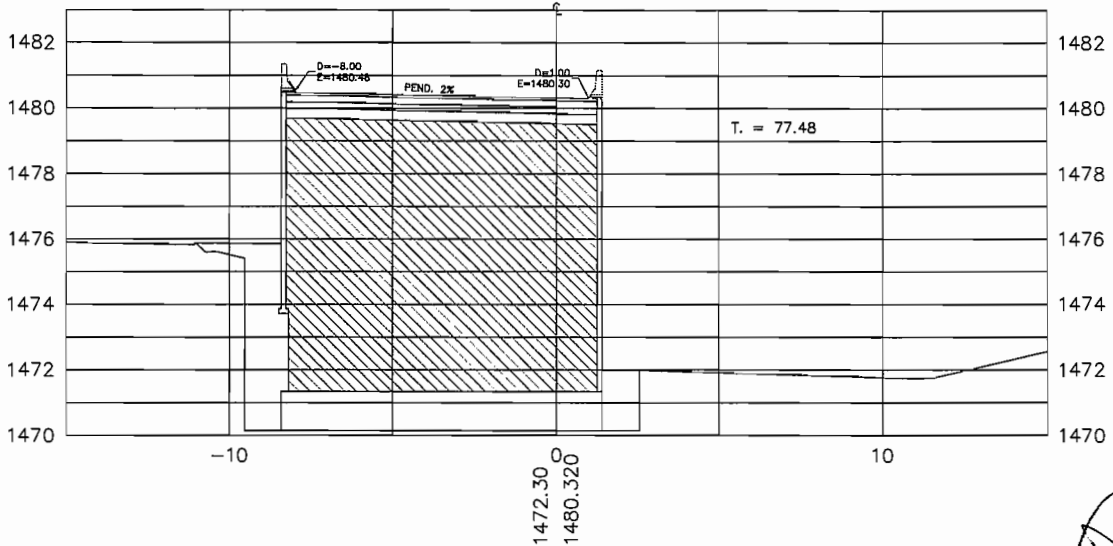
CURVA MASA RAMPA 2 TERRAPLEN

		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
CADENAMIENTO		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
60+	308.44		79.16					
60+	311.45		77.48	0	156.64	1.51	0.00	235.74
60+	311.45		77.44	0	154.92	0.00	0.00	0.00
60+	320		73.15	0	150.59	4.28	0.00	643.77
60+	320.69		72.84	0	145.99	0.34	0.00	50.37
60+	320.69		74.74	0	147.58	0.00	0.00	0.00
60+	340		63.93	0	138.67	9.66	0.00	1338.86
60+	352.69		56.62	0	120.55	6.35	0.00	764.89
60+	352.69		58.66	0	115.28	0.00	0.00	0.00
60+	360		54.68	0	113.34	3.66	0.00	414.26
60+	362.95		53.08	0	107.76	1.47	0.00	158.95
60+	362.95		56.18	0	109.26	0.00	0.00	0.00
60+	378.69		47.36	0	103.54	7.87	0.00	814.86
60+	378.69		50.11	0	97.47	0.00	0.00	0.00
60+	380		49.20	0	99.31	0.66	0.00	65.05
60+	384.95		46.36	0	95.56	2.47	0.00	236.51
60+	384.95		51.26	0	97.62	0.00	0.00	0.00
60+	400		42.52	0	93.78	7.53	0.00	705.69
60+	412.69		35.89	0	78.41	6.35	0.00	497.51
60+	412.69		38.61	0	74.50	0.00	0.00	0.00
60+	416.95		36.24	0	74.85	2.13	0.00	159.43
60+	416.95		38.62	0	74.86	0.00	0.00	0.00
60+	420		37.60	0	76.22	1.53	0.00	116.24
60+	436.69		31.20	0	68.80	8.35	0.00	574.14
60+	436.69		33.10	0	64.30	0.00	0.00	0.00
60+	440		31.60	0	64.70	1.66	0.00	107.08
60+	452.95		27.24	0	58.84	6.47	0.00	380.99
60+	452.95		31.27	0	58.51	0.00	0.00	0.00
60+	460		29.16	0	60.43	3.53	0.00	213.02
60+	466.69		27.01	0	56.17	3.35	0.00	187.89
60+	466.69		29.34	0	56.35	0.00	0.00	0.00
60+	474.95		26.54	0	55.88	4.13	0.00	230.78
60+	474.95		30.68	0	57.22	0.00	0.00	0.00
60+	480		29.11	0	59.79	2.53	0.00	150.97
60+	498.95		24.21	0	53.32	9.47	0.00	505.21
60+	498.95		28.31	0	52.52	0.00	0.00	0.00
60+	500		28.18	0	56.49	0.53	0.00	29.66
60+	518.69		24.44	0	52.62	9.35	0.00	491.73
60+	518.69		27.34	0	51.78	0.00	0.00	0.00
60+	520		30.66	0	58.00	0.65	0.00	37.99
60+	522.95		30.11	0	60.77	1.48	0.00	89.64
60+	522.95		30.19	0	60.30	0.00	0.00	0.00
60+	540		25.24	0	55.43	8.52	0.00	472.54
60+	546.95		23.79	0	49.03	3.48	0.00	170.38
60+	546.95		26.26	0	50.05	0.00	0.00	0.00
60+	560		22.33	0	48.59	6.52	0.00	317.05
60+	560.89		22.02	0	44.35	0.00	0.00	0.00
60+	566.95		17.12	0	39.14	3.03	0.00	118.59
60+	566.95		20.41	0	37.53	0.00	0.00	0.00
60+	580		18.73	0	39.14	6.52	0.00	255.39
60+	586.95		17.93	0	36.66	3.48	0.00	127.39
60+	586.95		14.33	0	32.26	0.00	0.00	0.00
60+	598.72		9.65	0	23.98	5.88	0.00	141.12
60+	600		12.35	0	22.00	0.64	0.00	14.08
60+	615.13		4.64	0	16.99	7.57	0.00	128.53
60+	620		4.65	0	9.29	2.44	0.00	22.62
60+	625		2.41	0	7.06	2.50	0.00	17.65
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
							0.00	10,986.56

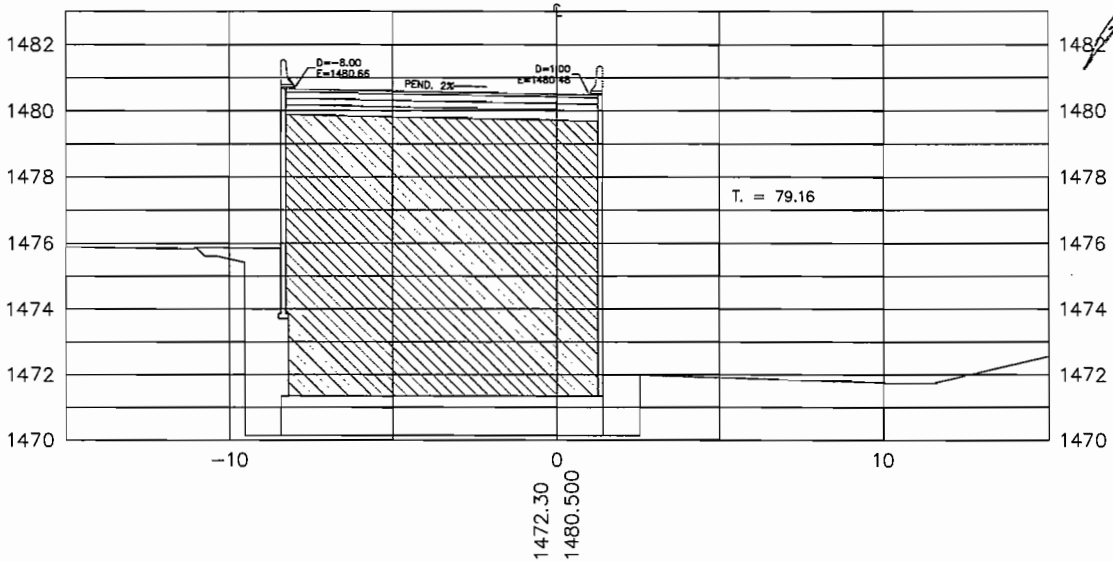
60+311.45



60+311.45

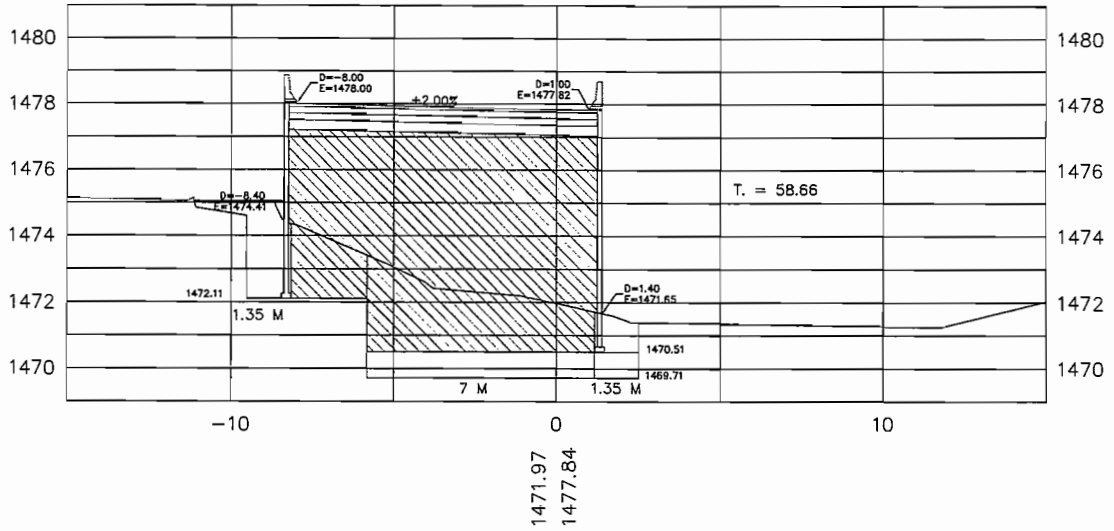


60+308.44
ESTRIBO 7

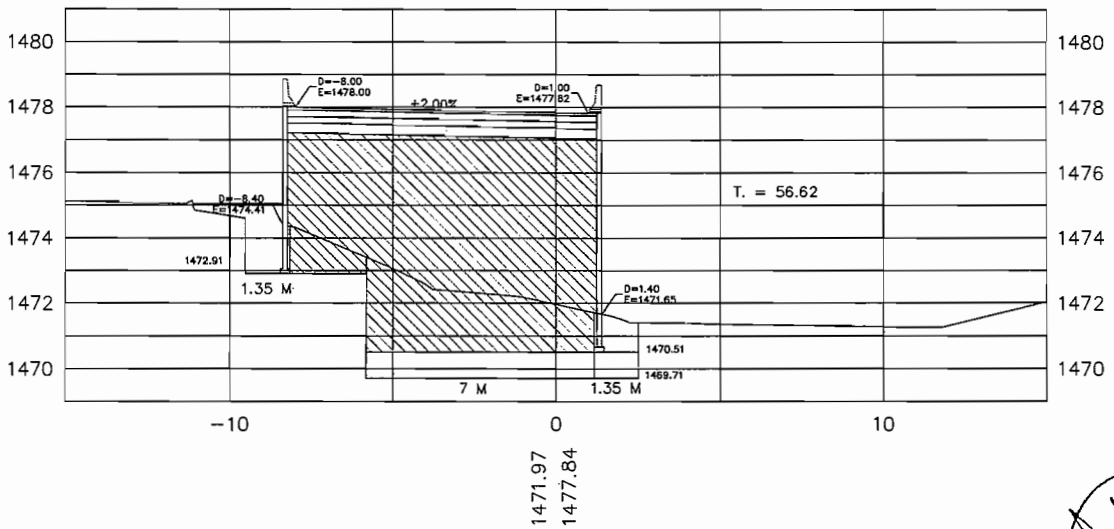


The diagram shows a cross-section of a bridge structure on a grid. The vertical axis represents elevation in meters, ranging from 1470 to 1482. The horizontal axis represents distance in meters, with markers at -10, 0, and 10. The structure consists of a central rectangular pier and two side abutments. The pier has a width of 7 M and a height of 1.35 M. The abutments have a width of 1.35 M and a height of 1.35 M. The top of the structure is at an elevation of 1479.86 M. The bottom of the structure is at an elevation of 1470.51 M. The material properties are given as $D = 8.00$ and $E = 1479.96$. The temperature is $T = 73.15$. The diagram also shows a +2.00% slope and a 1473.71 M elevation point on the left side.

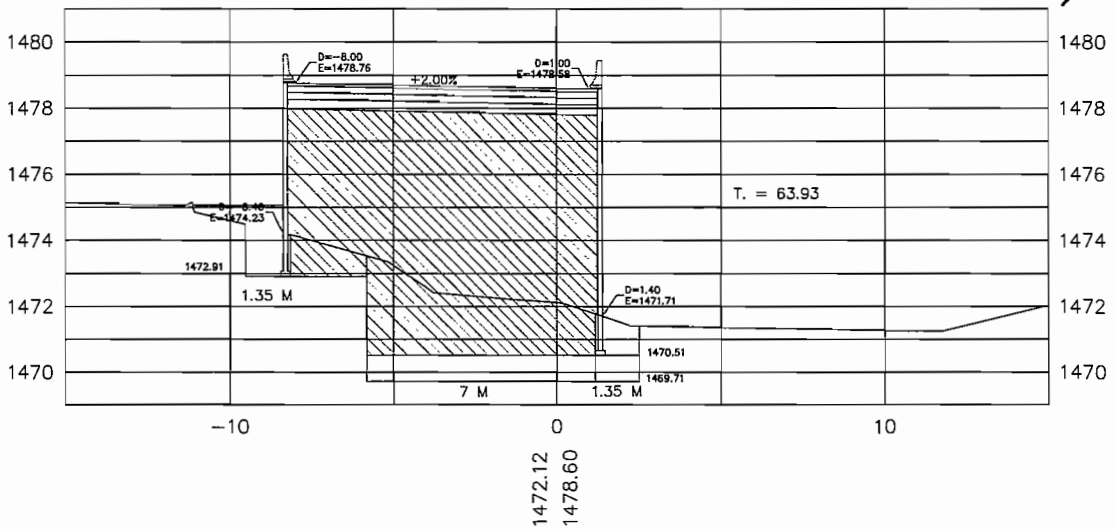
60+352.69



60+352.69



60+340



The diagram illustrates a cross-section of a dam structure. The vertical axis represents elevation in meters, ranging from 1470 to 1480. The horizontal axis represents distance in meters, with markers at -10, 0, and 10. The dam structure is shown with a hatched area representing the dam body. Key dimensions and elevations are labeled:

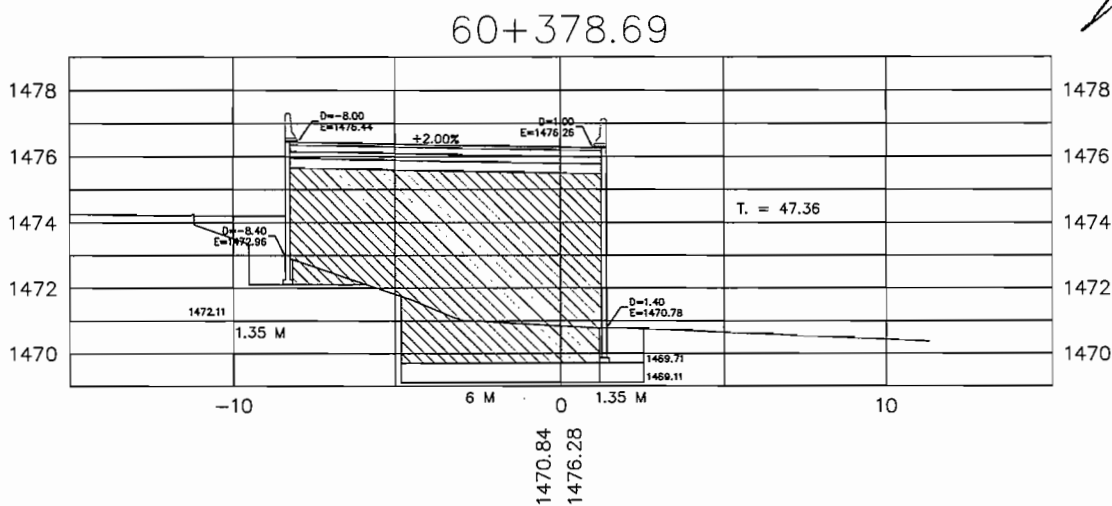
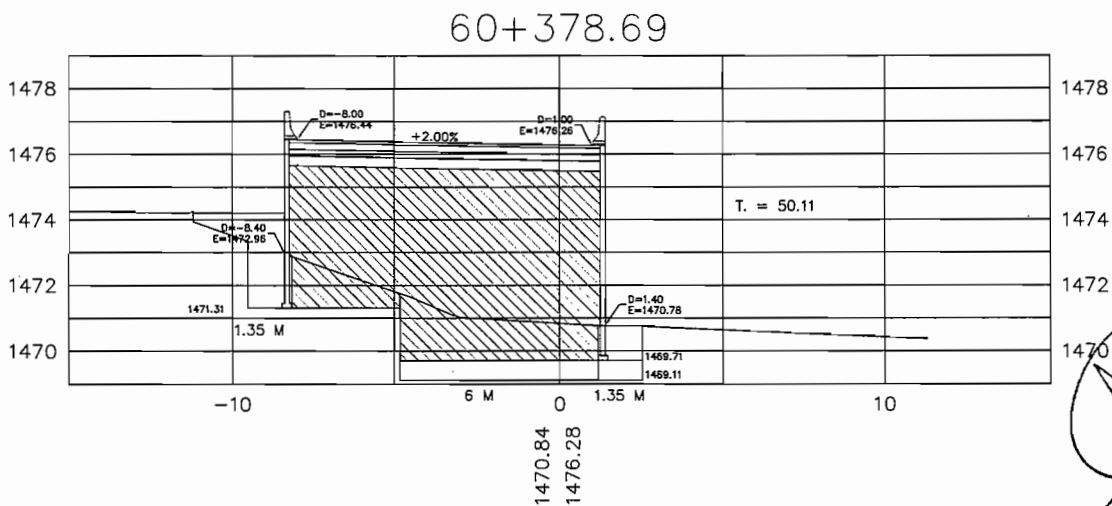
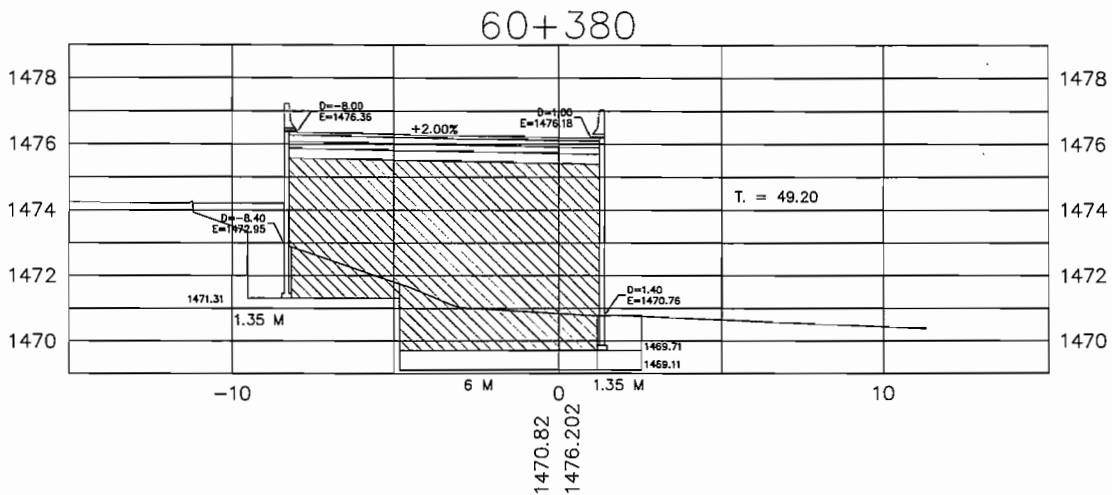
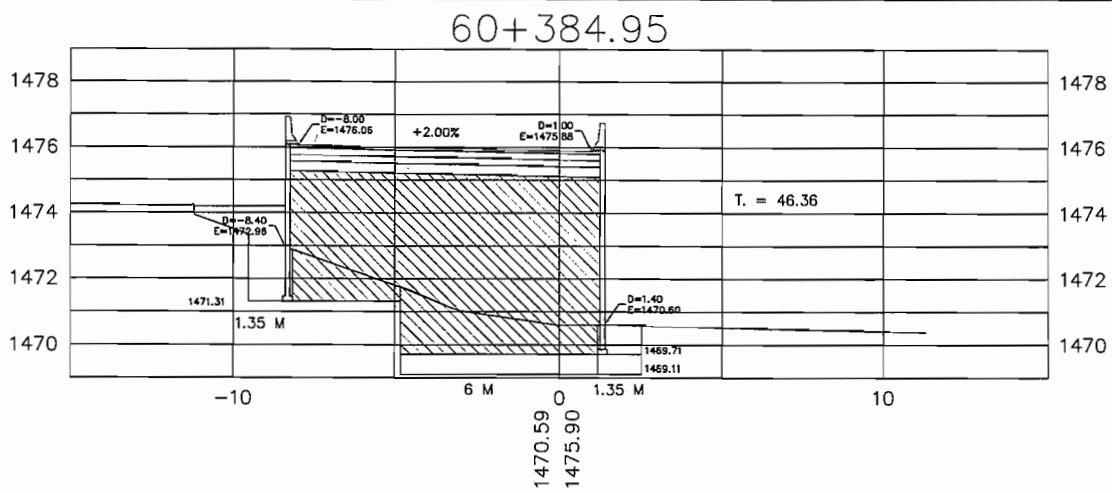
- Top Left Corner:** Elevation 1477.38, Distance -8.00.
- Top Right Corner:** Elevation 1477.20, Distance 1.00.
- Top Surface Slope:** +2.00%.
- Left Side Slope:** Elevation 1472.11, Distance -8.40.
- Left Side Slope:** Elevation 1472.11, Distance -123.40.
- Left Side Slope:** Elevation 1472.11, Distance 1.35 M.
- Right Side Slope:** Elevation 1469.71, Distance 1.40.
- Right Side Slope:** Elevation 1469.11, Distance 1431.50.
- Right Side Slope:** Elevation 1469.11, Distance 1.35 M.
- Bottom Left Corner:** Elevation 1471.81, Distance -10.
- Bottom Right Corner:** Elevation 1477.22, Distance 10.
- Temperature:** T. = 56.18.

Technical drawing of a bridge cross-section. The drawing shows a rectangular structure with a hatched interior. The top width is 7 M. The bottom width is 1.35 M. The height is 1.35 M. The top surface is at elevation 1477.38. The bottom surface is at elevation 1470.51. The side walls are at elevations 1472.11 and 1470.71. The drawing is on a grid with horizontal coordinates -10, 0, 10 and vertical coordinates 1470, 1472, 1474, 1476, 1478, 1480. The drawing is labeled "T. = 53.08".

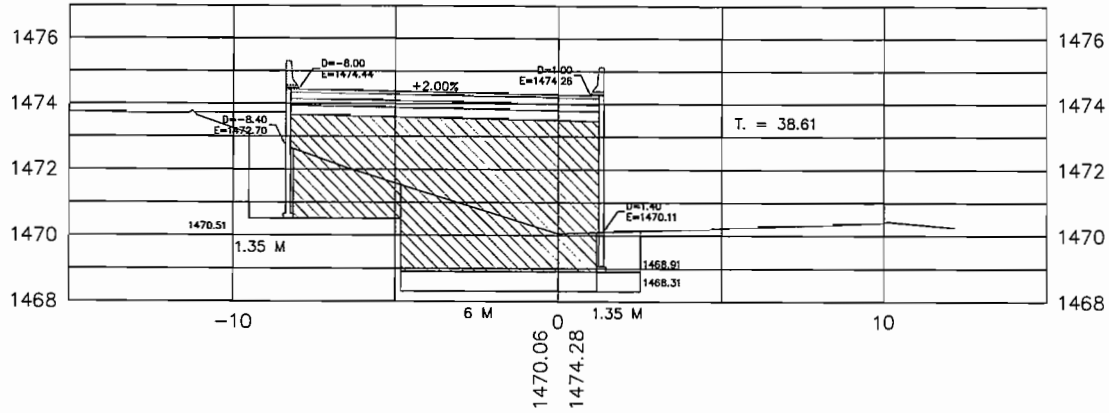
The diagram shows a cross-section of a bridge structure. The vertical axis represents elevation in meters, with labels at 1470, 1472, 1474, 1476, 1478, and 1480. The horizontal axis represents distance in meters, with labels at -10, 0, and 10. The structure is shown with a central span of 7 M and two side spans of 1.35 M. The total length is 9.7 M. The structure is divided into three main sections: a left abutment, a central pier, and a right abutment. The central pier is shown with a cross-section of 1.35 M. The structure is labeled with various dimensions and material properties:

- Top left: $D = -8.00$, $E = 1477.56$
- Top center: $+2.00\%$
- Top right: $D = 1.00$, $E = 1477.58$
- Left side: $D = -8.40$, $E = 1472.11$
- Right side: $D = 1.40$, $E = 1471.58$
- Bottom left: 1472.11
- Bottom center: 1470.51
- Bottom right: 1469.71
- Material property: $T. = 54.68$

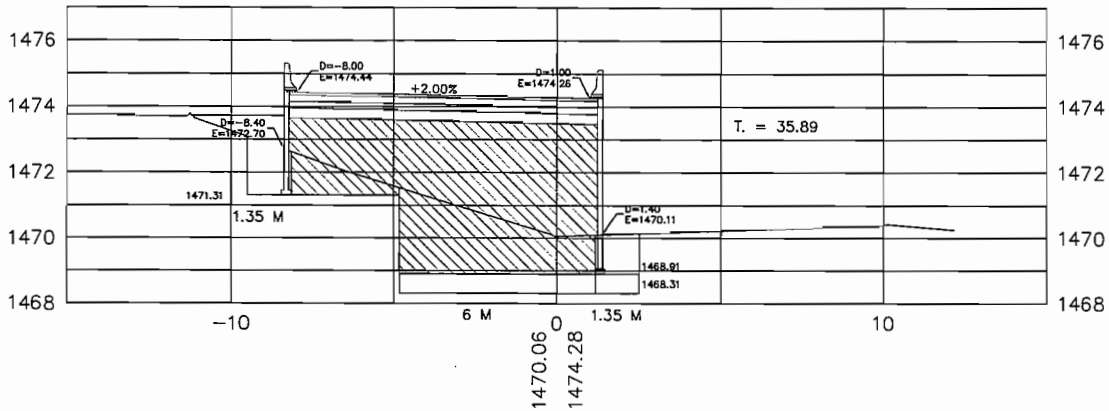
38



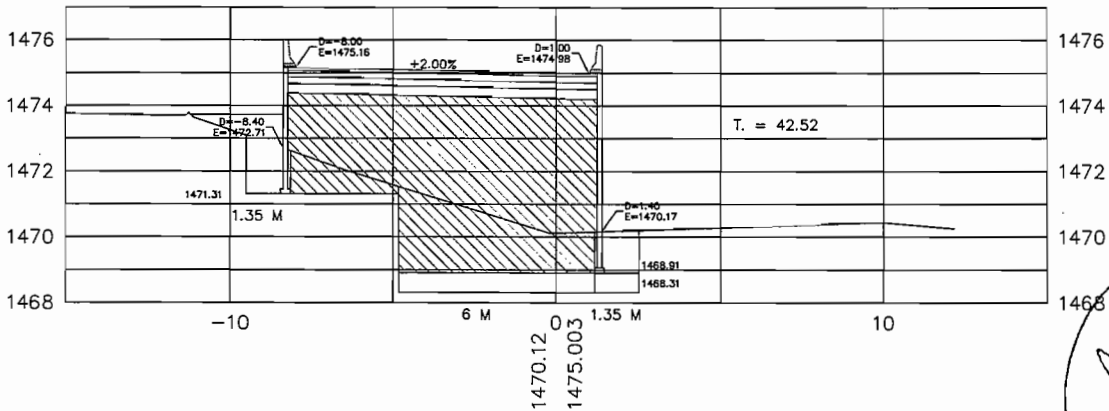
60+412.69



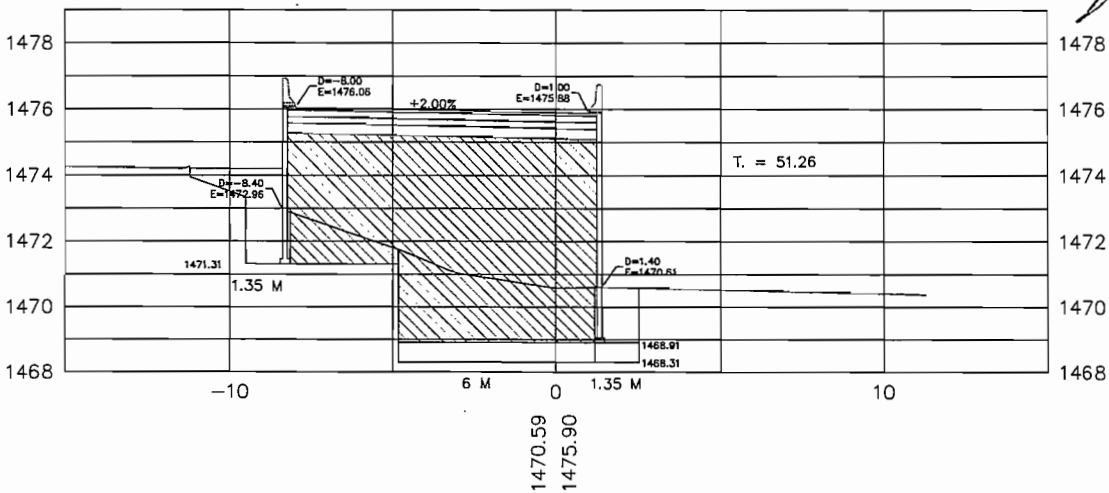
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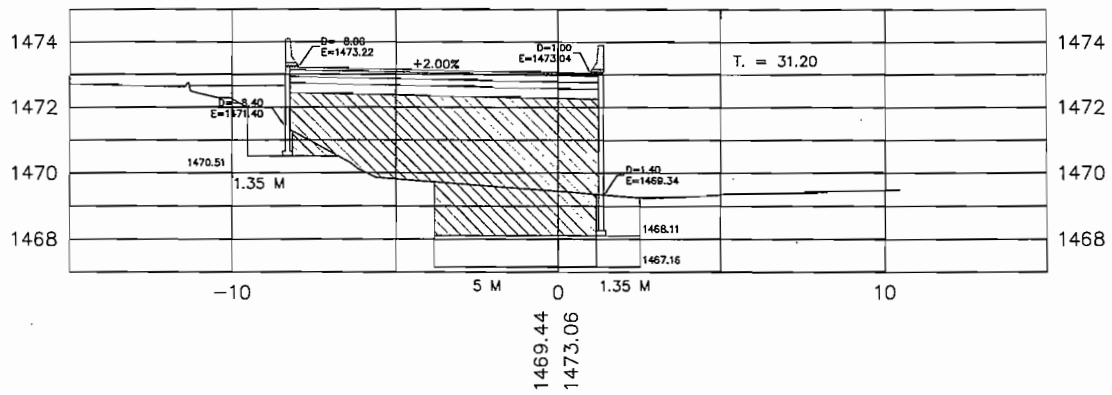
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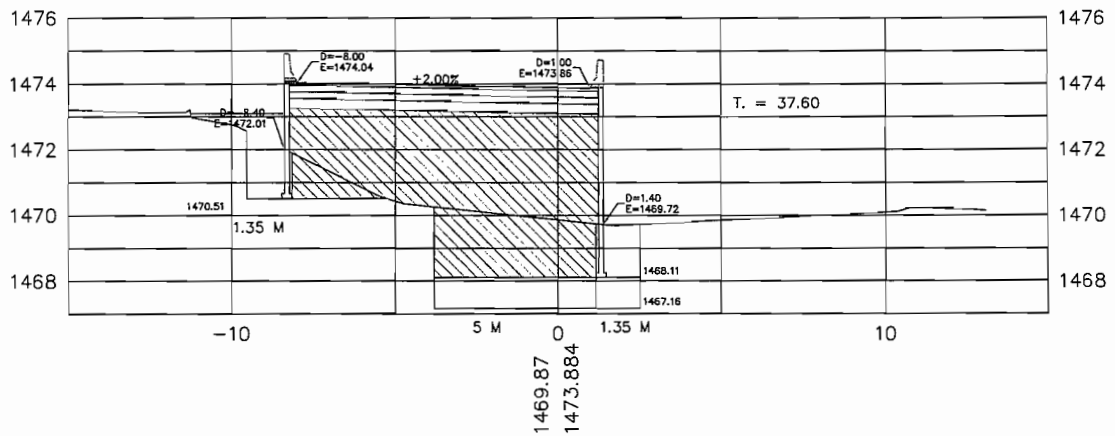
60+384.95



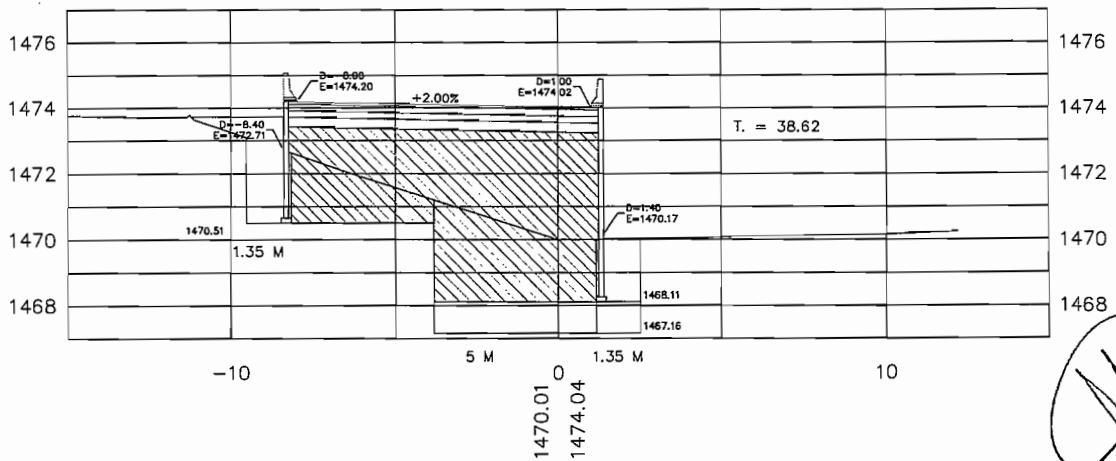
60+436.69



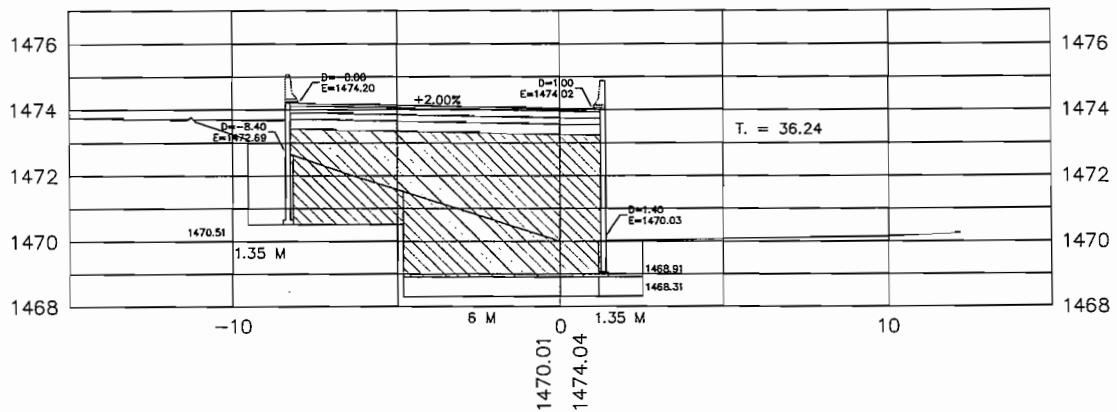
60+420



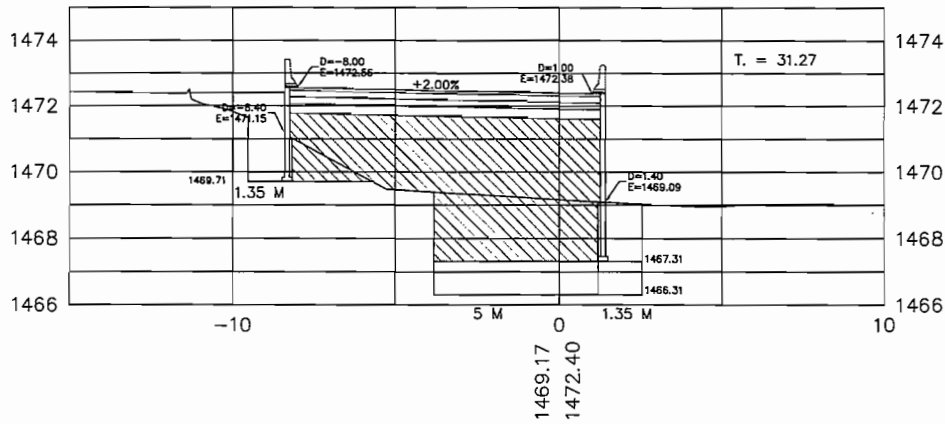
60+416.95



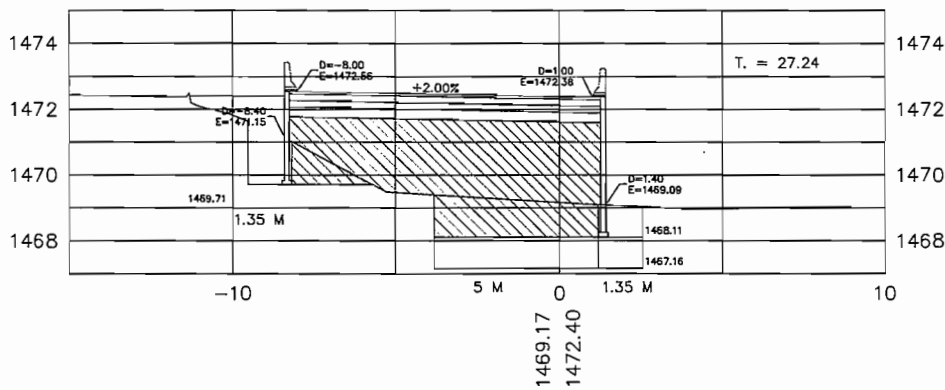
60+416.95



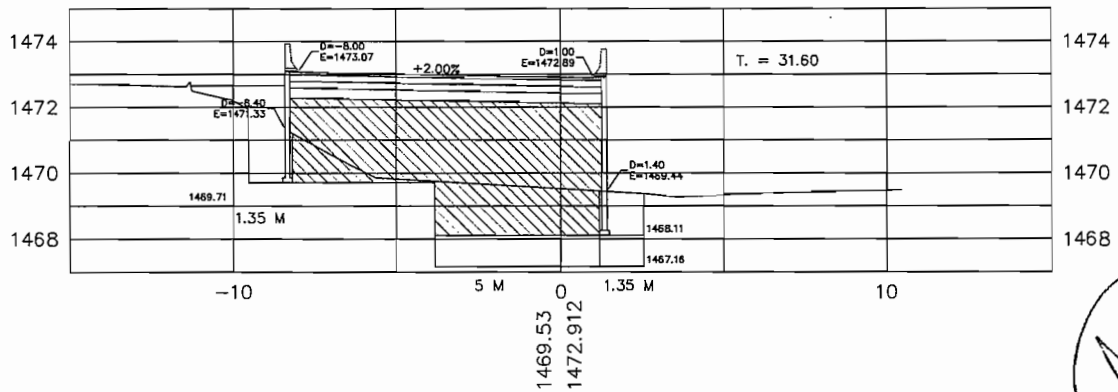
60+452.95



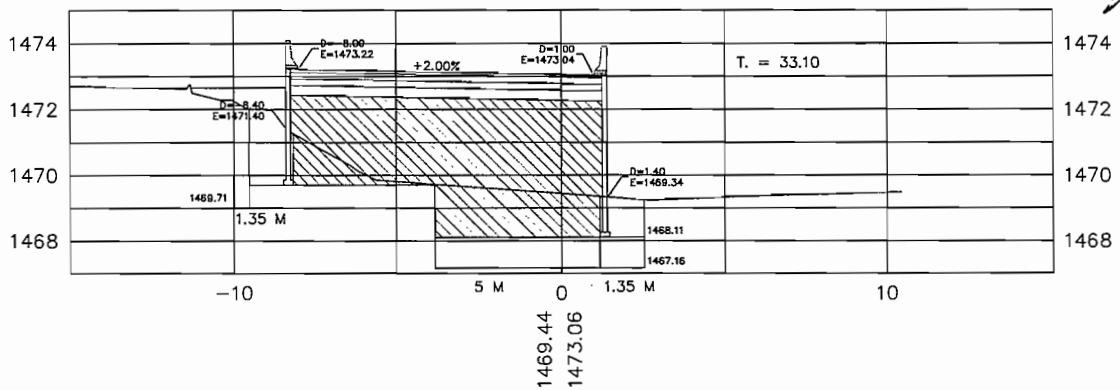
60+452.95



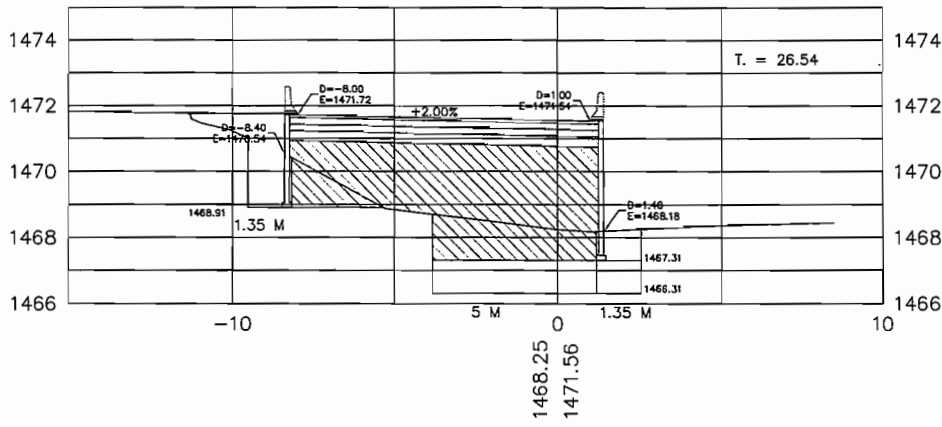
60+440



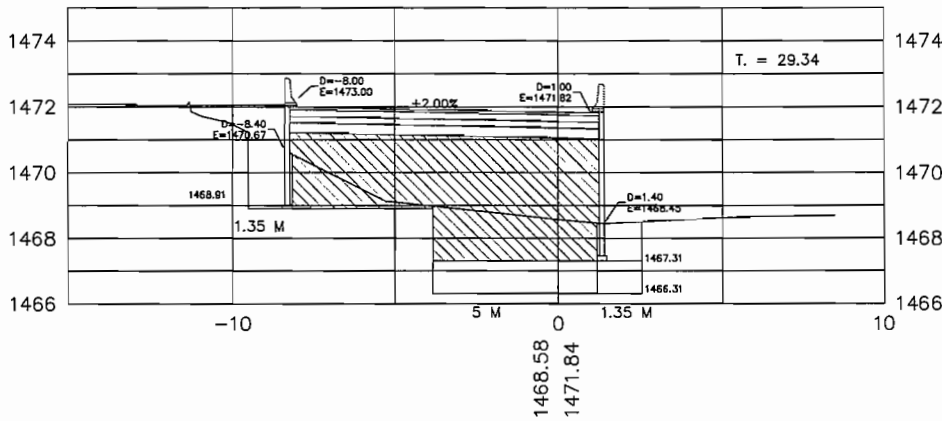
60+436.69



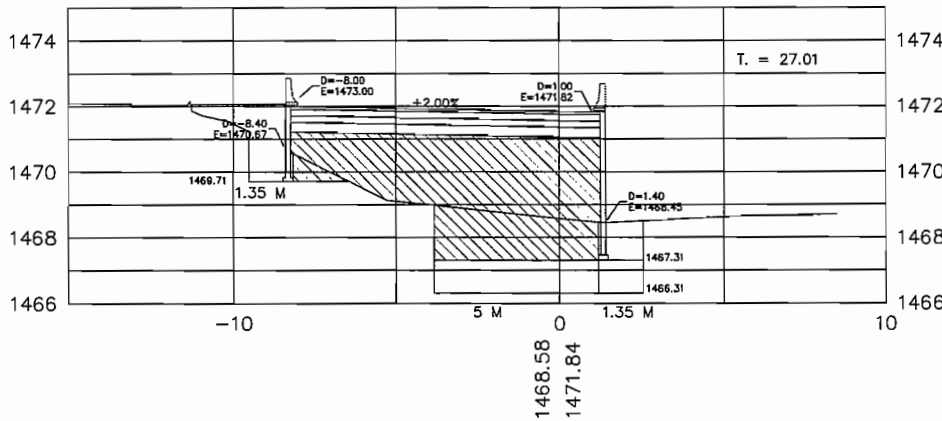
60+474.95



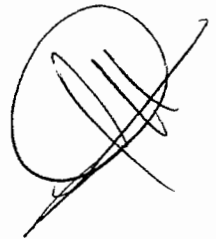
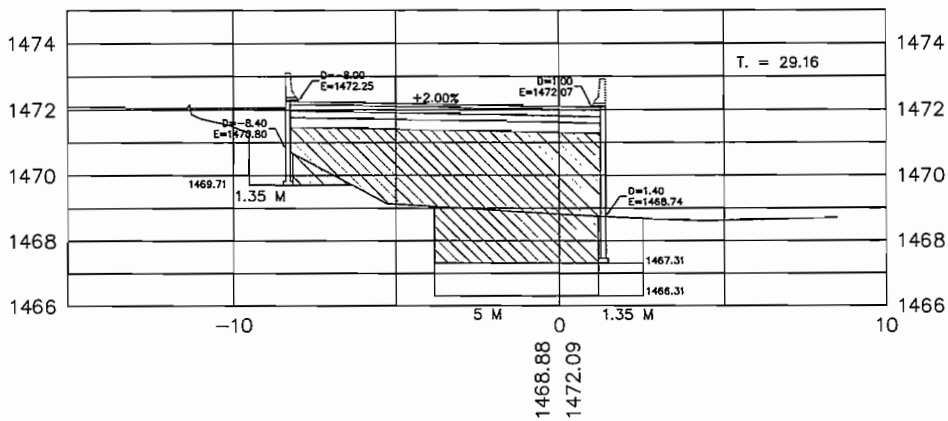
60+466.69



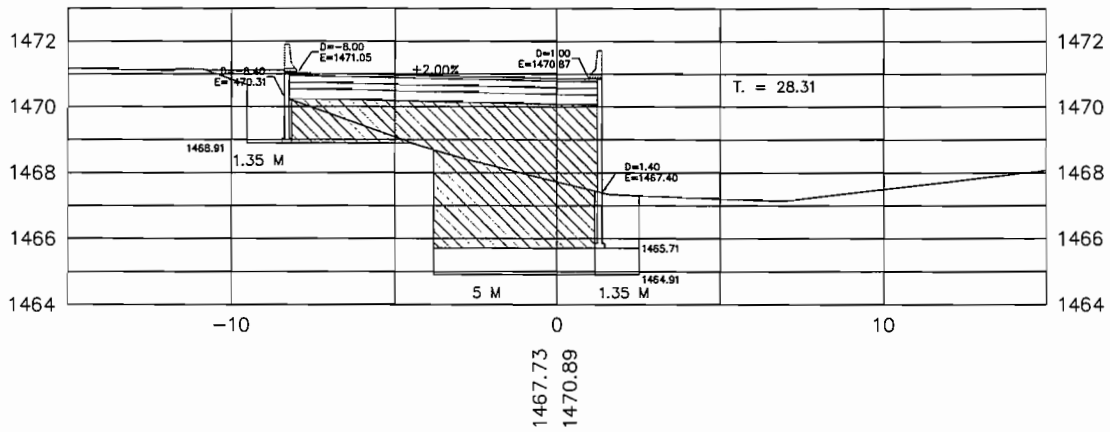
60+466.69



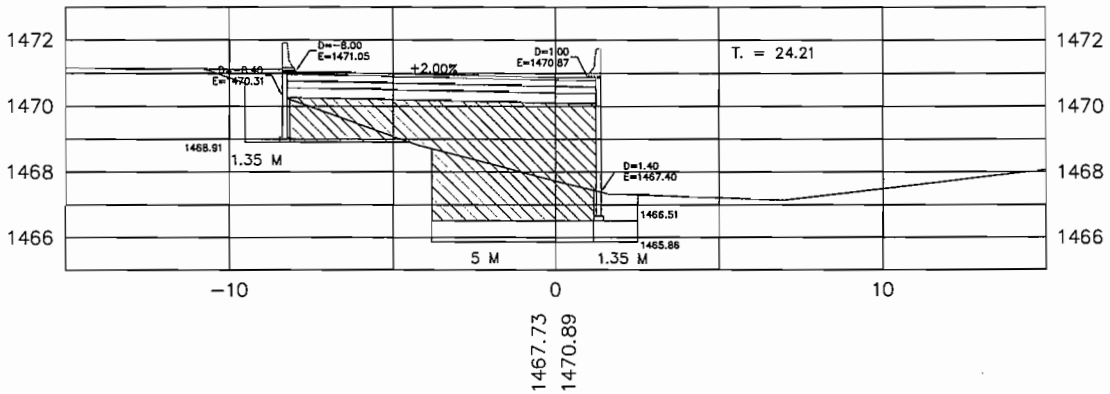
60+460



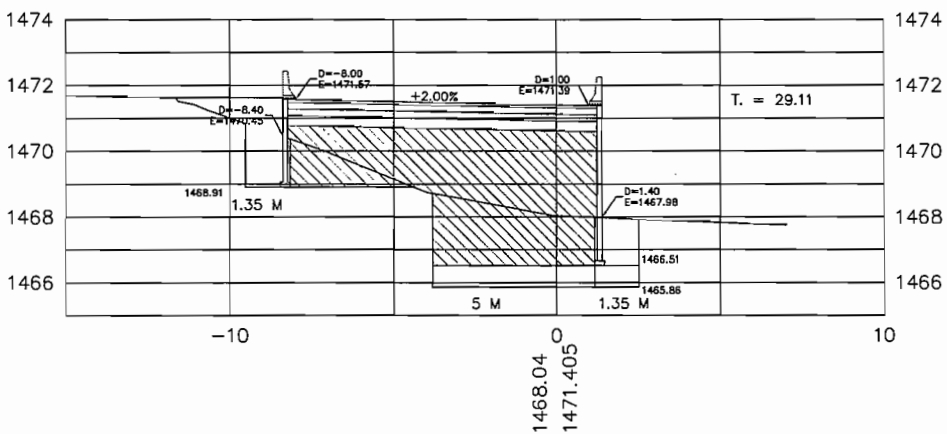
60+498.95



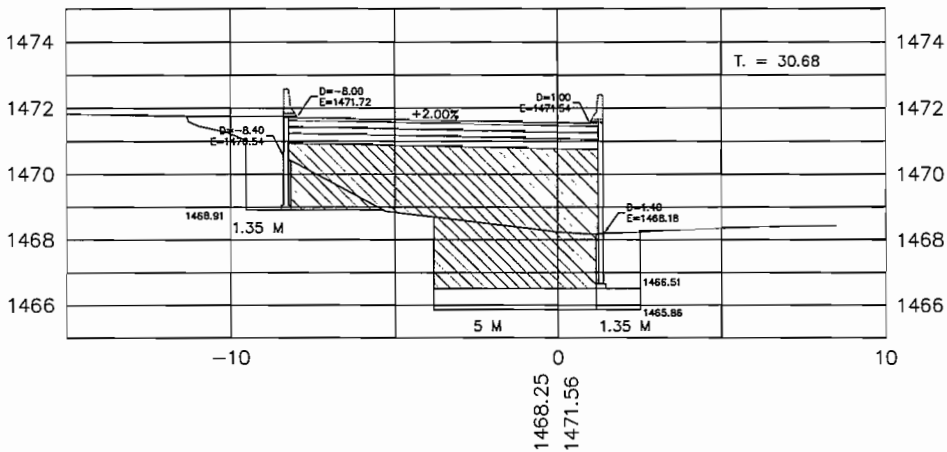
60+498.95



60+480



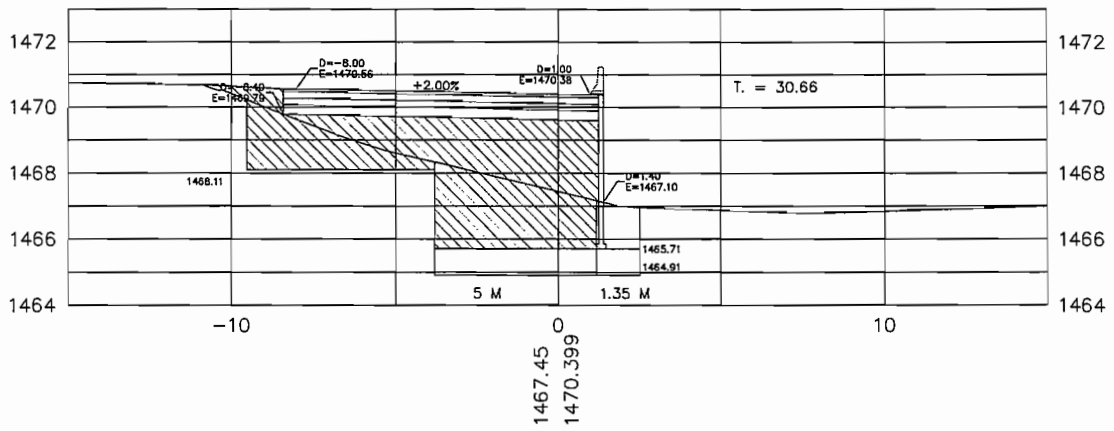
60+474.95



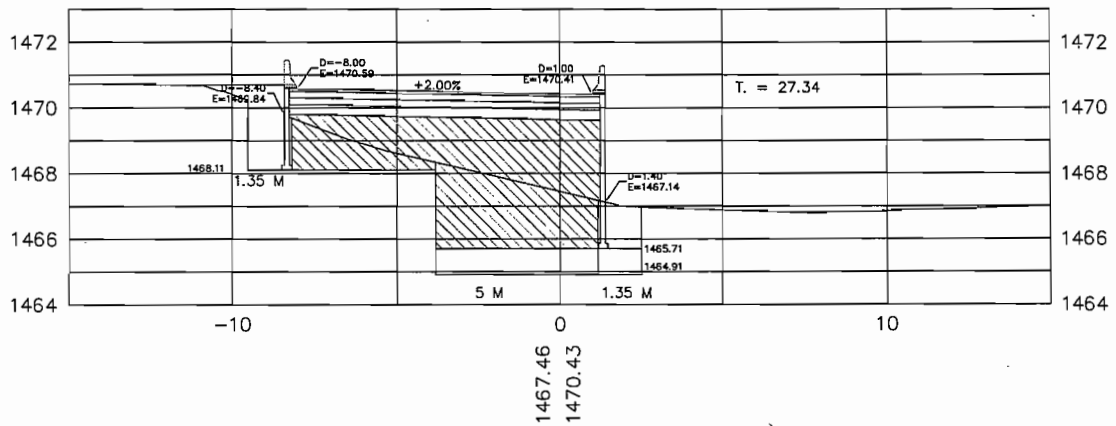
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44

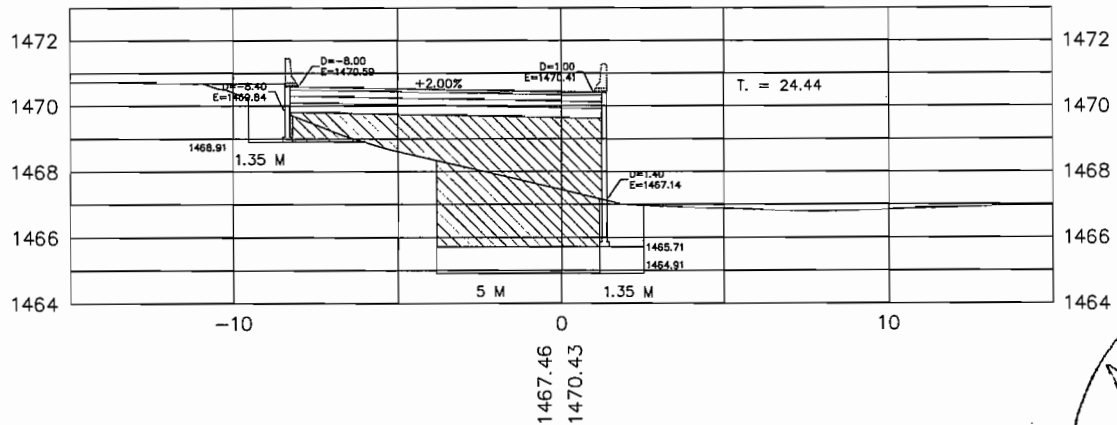
60+520



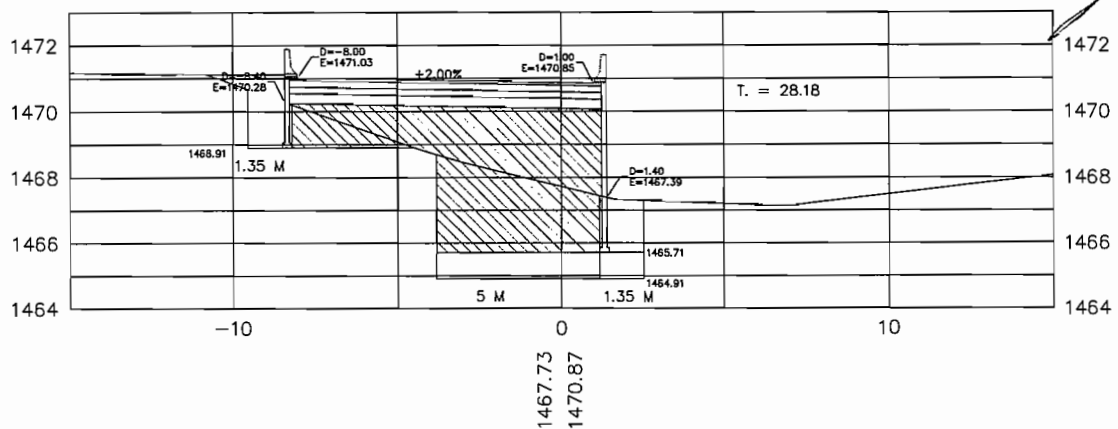
60+518.69



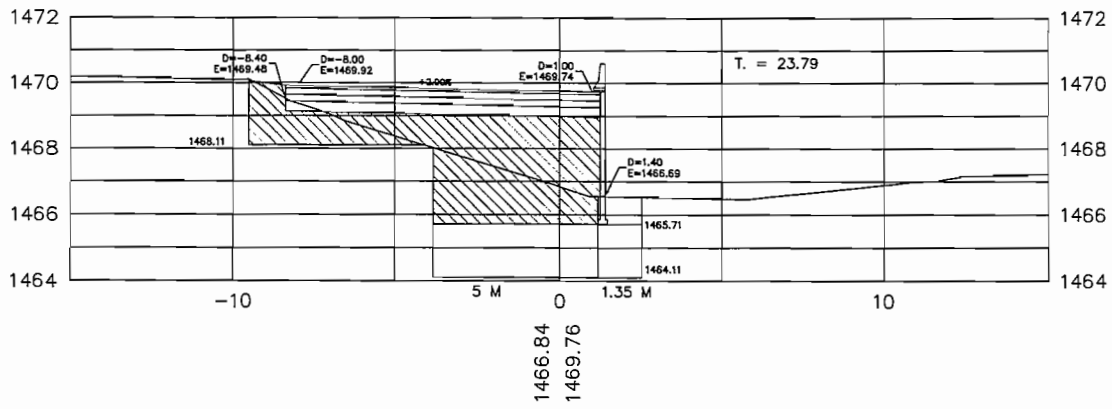
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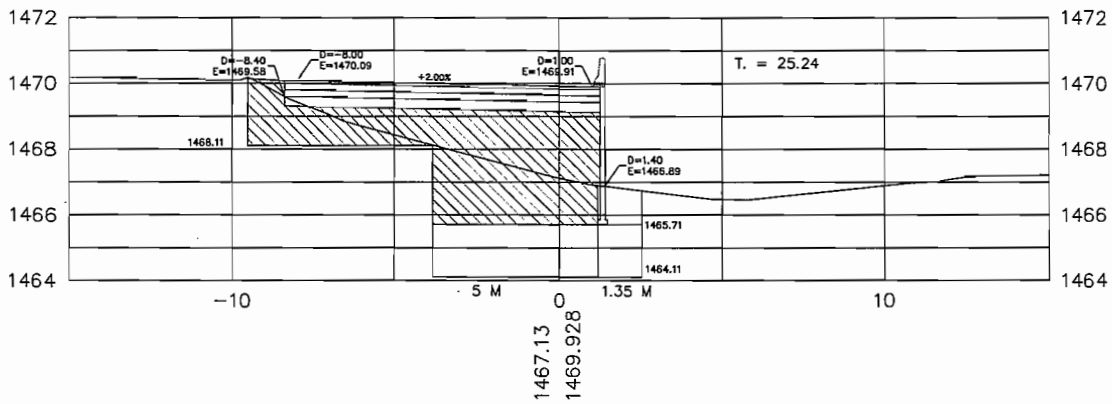
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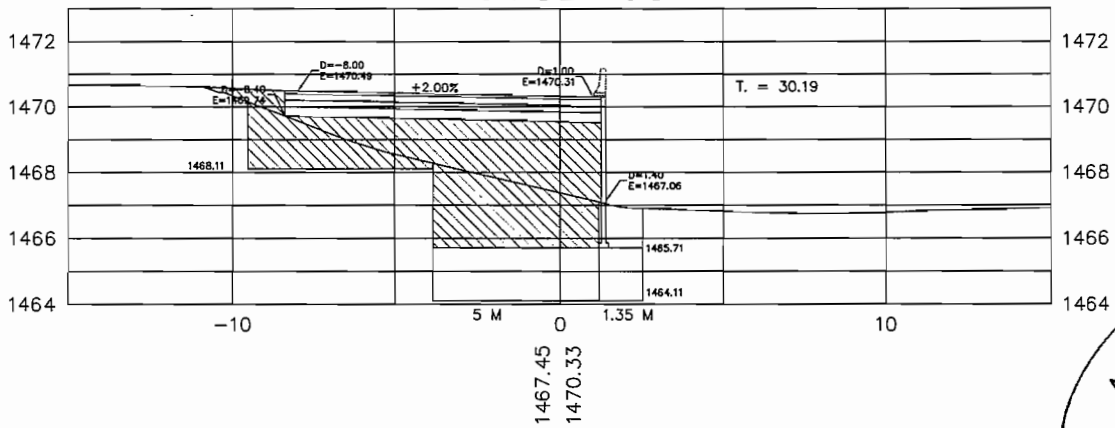
60+546.95



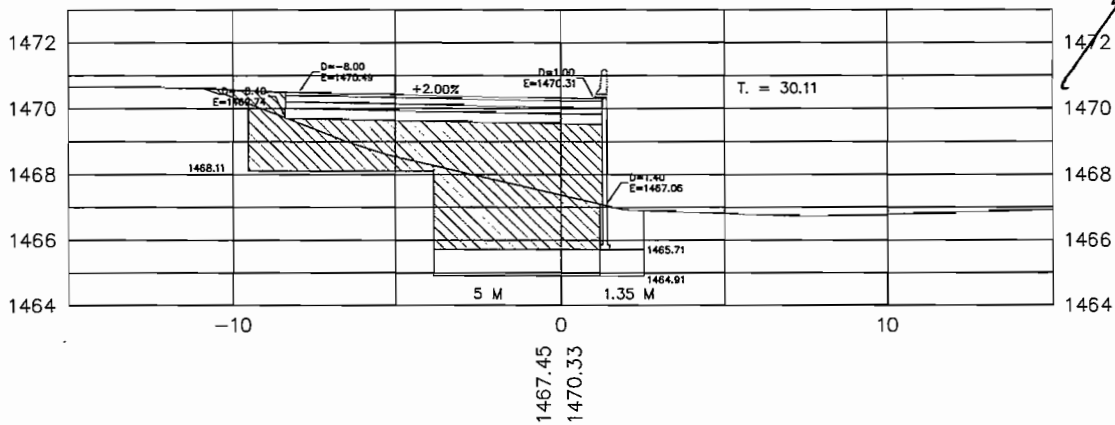
60+540



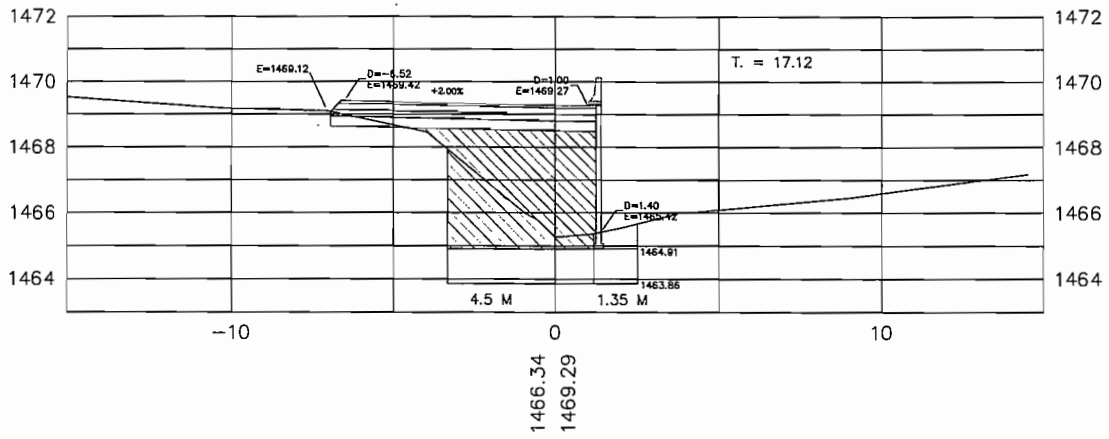
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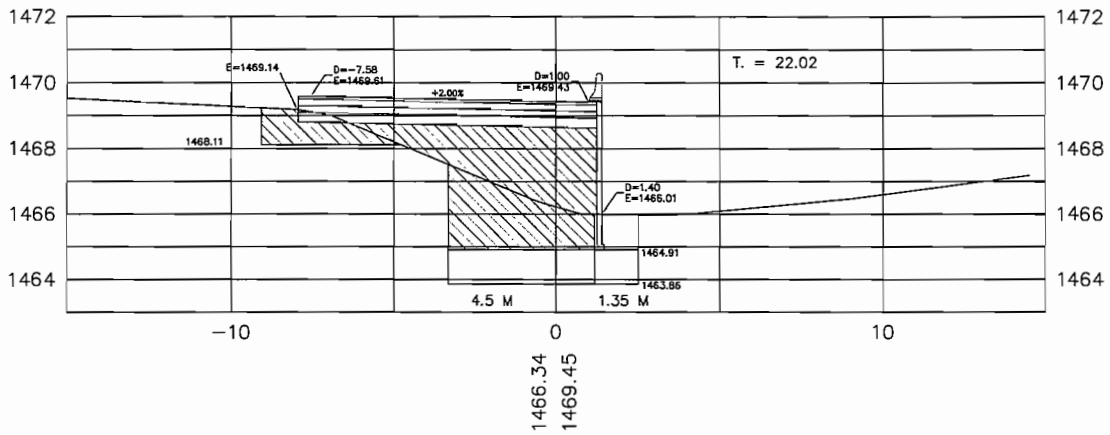
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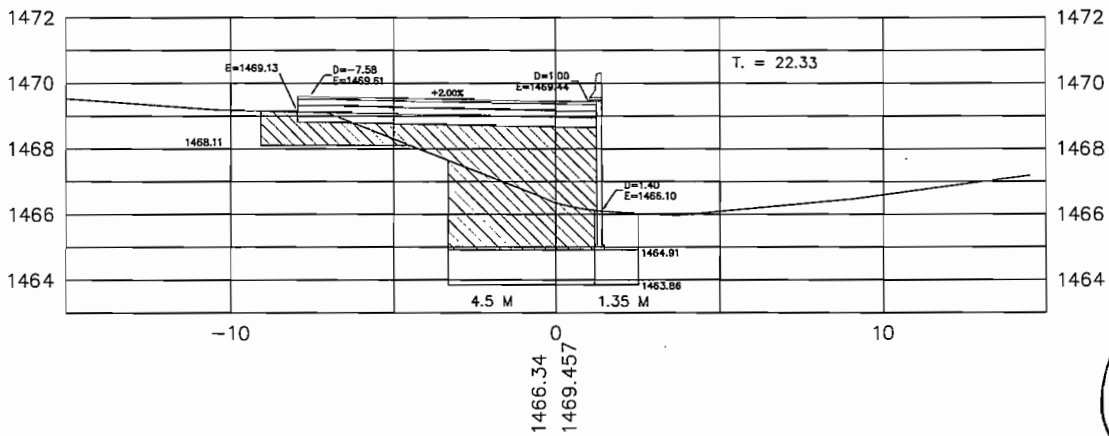
60+566.95



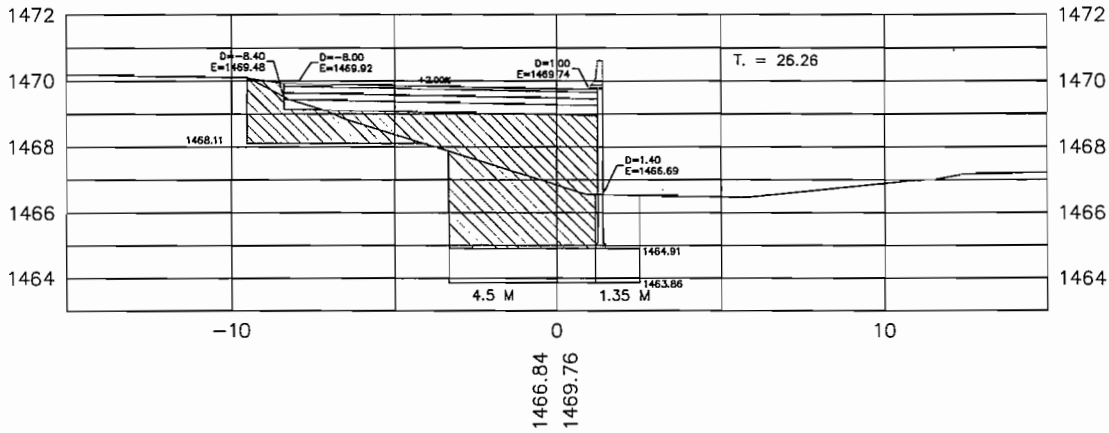
60+560.89



60+560



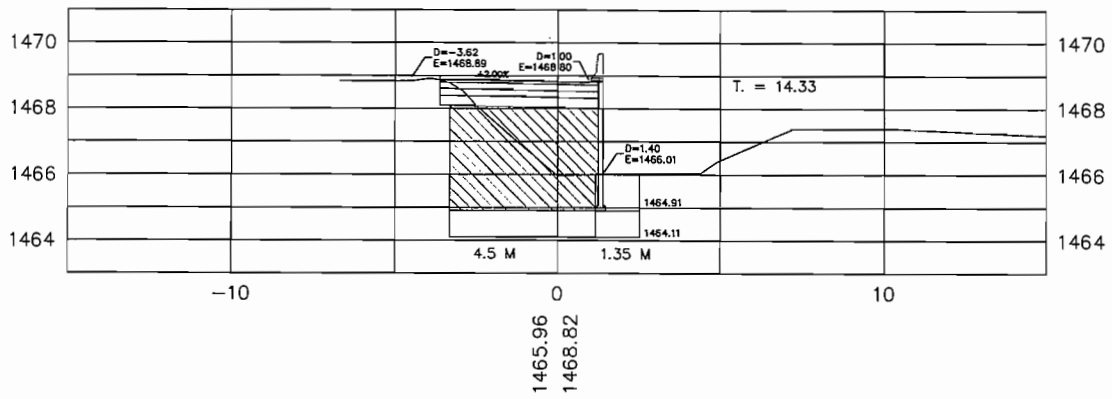
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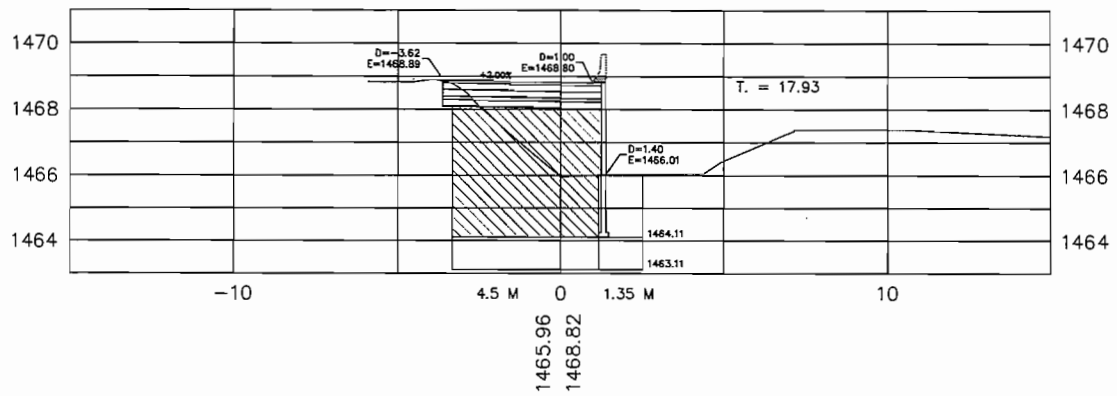
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47

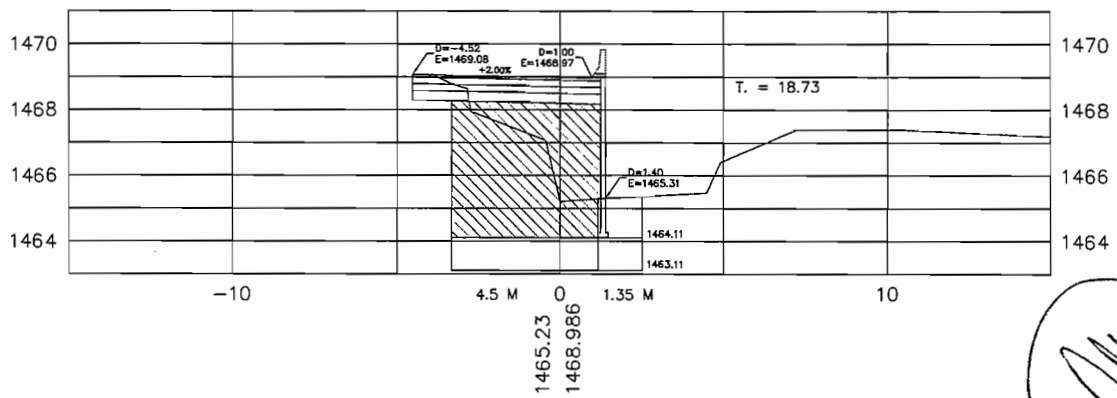
60+586.95



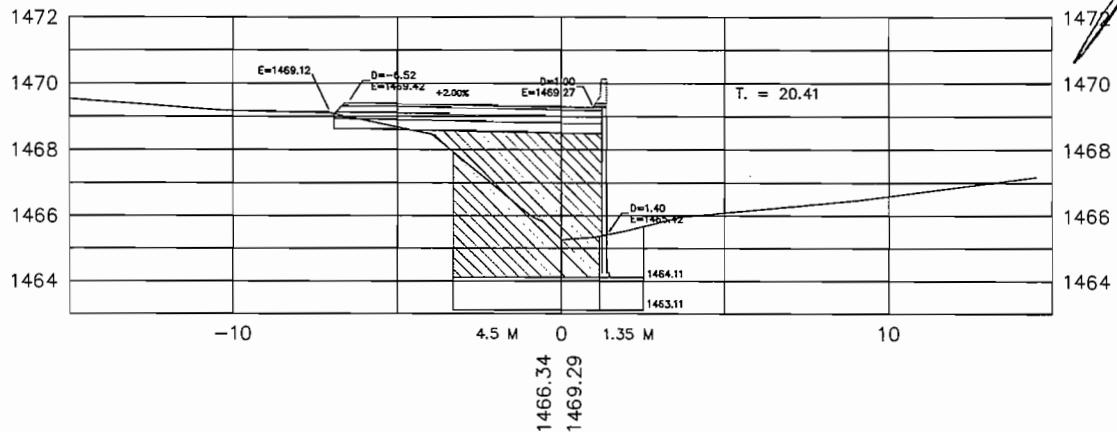
60+586.95



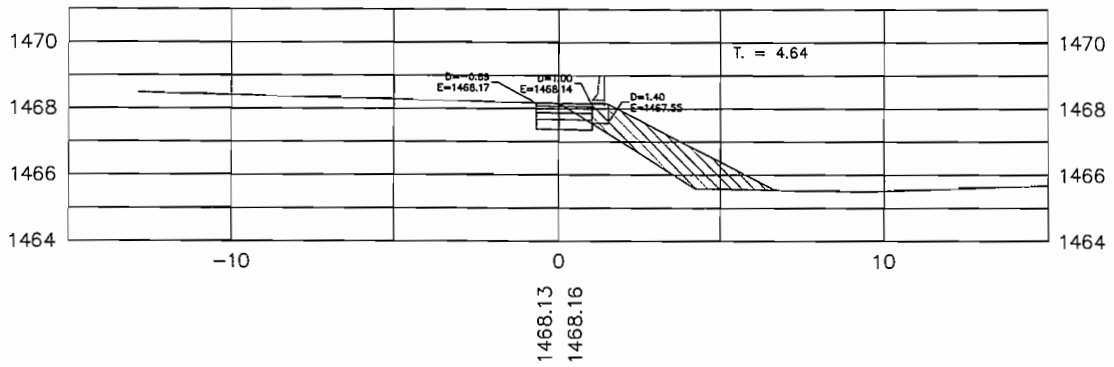
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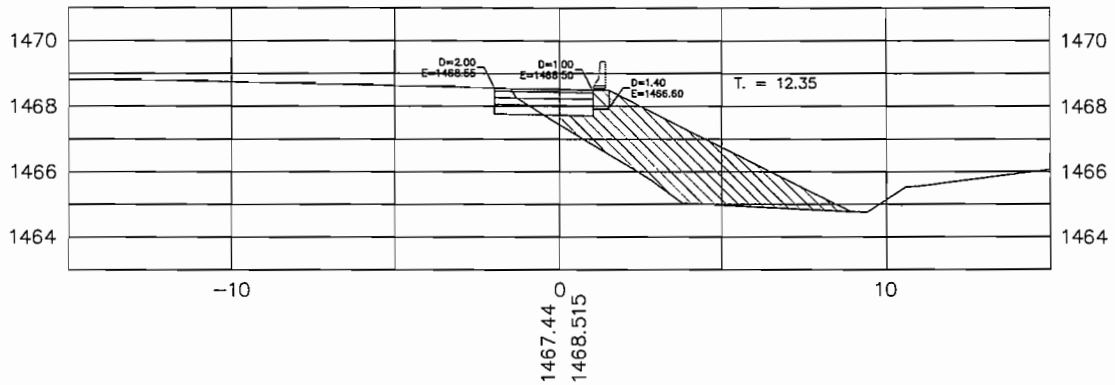
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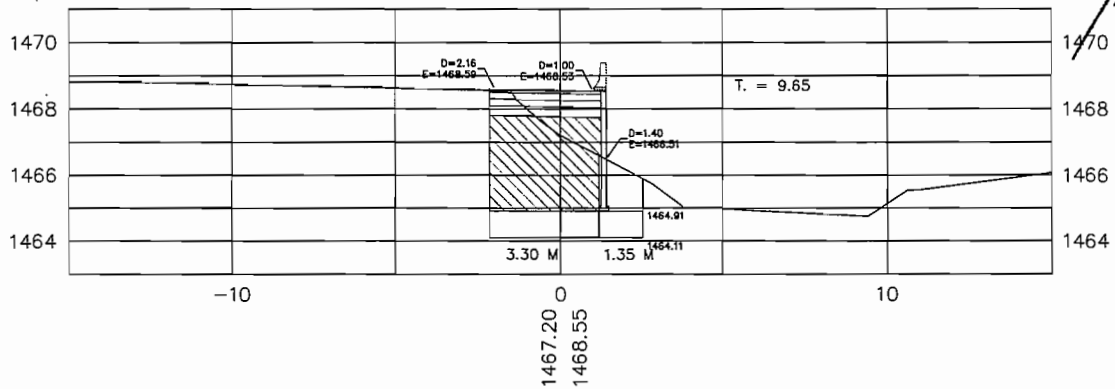
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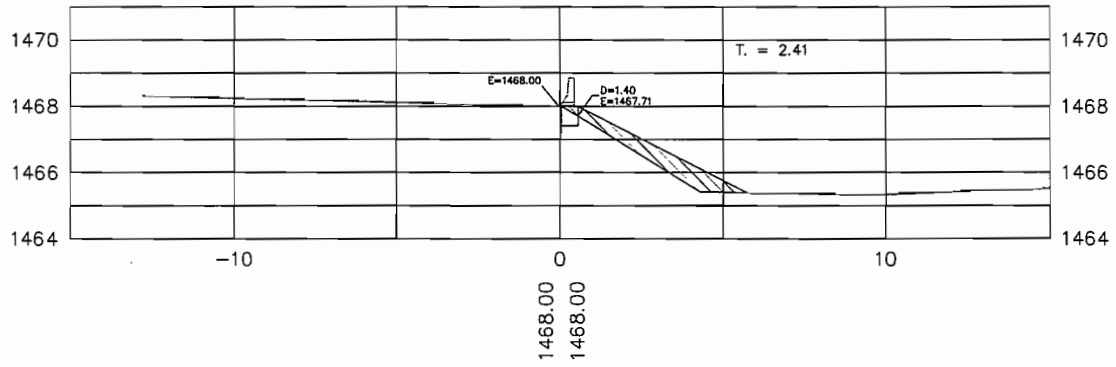
60+600



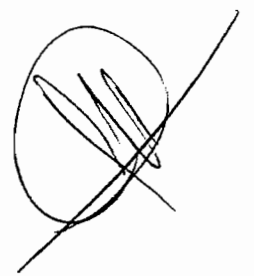
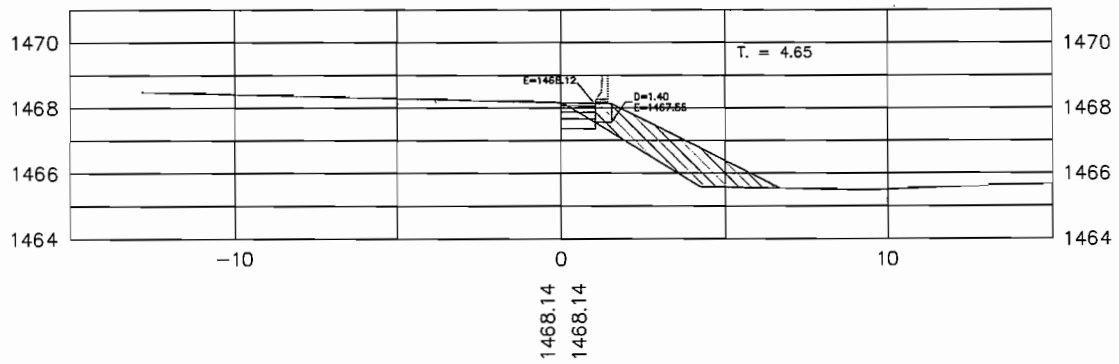
60+598.72



60+625



60+620



CONTRATO:	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA:	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua. CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV		

No DE ESTIMACION:	No. 9	PERIODO:	01 AL 11 DE SEPTIEMBRE 2016
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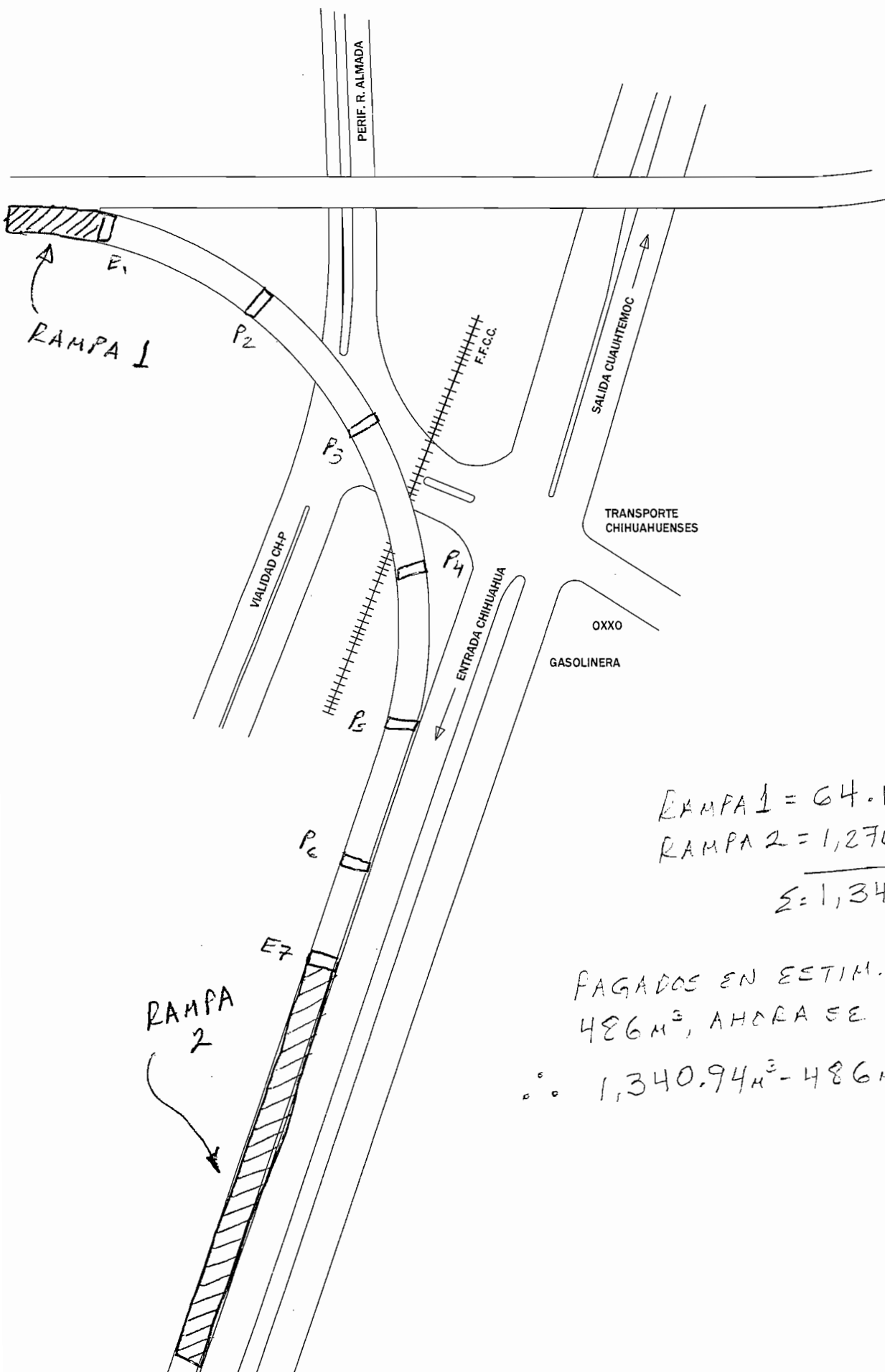
[illegible]

CROQUIS	SE ANEXA CROQUIS	VOLUMEN A PAGAR 854.94 M3
----------------	-------------------------	--

ING. RODOLFO ARMENDARIZ RONQUILLO
RESIDENTE

CONTRATISTA
CONSTRUCTORA SANTA ROSALIA SA DE CV

20- EXCAVACION PARA ESTRUCTURAS



$$RAMPA 1 = 64.18 m^3 \text{ C.M.}$$

$$RAMPA 2 = 1,276.76 m^3 \text{ C.M.}$$

$$\Sigma = 1,340.94 m^3$$

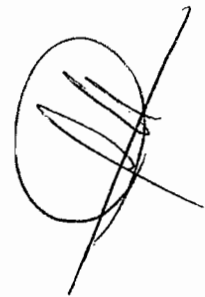
PAGADOS EN ESTIM. ANTERIOR
486 m³, AHORA SE PAGA EL RESTO

$$\therefore 1,340.94 m^3 - 486 m^3 = 854.94 m^3$$

[Handwritten signature and initials]

CURVA MASA RAMPA 1 EXCAVACION PARA ESTRUCTURAS

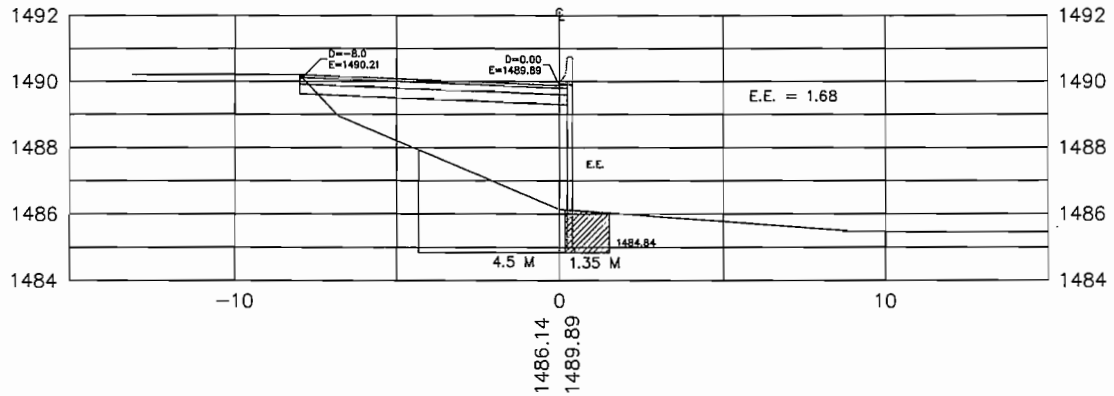
		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
CADENAMIENTO		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
59+	999.36	1.75						
60+	000	1.72		3.47	0.00	0.32	1.11	0.00
60+	003.36	0.91		2.63	0.00	1.68	4.42	0.00
60+	003.36	1.98		2.89	0.00	0.00	0.00	0.00
60+	009.36	1.19		3.17	0.00	3.00	9.51	0.00
60+	009.36	2.27		3.46	0.00	0.00	0.00	0.00
60+	015.36	1.69		3.96	0.00	3.00	11.88	0.00
60+	015.36	2.77		4.46	0.00	0.00	0.00	0.00
60+	020	1.68		4.45	0.00	2.32	10.32	0.00
60+	023.36	1.67		3.35	0.00	1.68	5.63	0.00
60+	023.36	2.76		4.43	0.00	0.00	0.00	0.00
60+	025	2.33		5.09	0.00	0.82	4.17	0.00
60+	025	2.33		4.66	0.00	0.00	0.00	0.00
60+	029.36	0.96		3.29	0.00	2.18	7.17	0.00
60+	029.36	2.04		3.00	0.00	0.00	0.00	0.00
60+	035.36	1.28		3.32	0.00	3.00	9.96	0.00
60+	035.36	2.36		3.64	0.00	0.00	0.00	0.00
				0.00	0.00	0.00	0.00	0.00
				0.00	0.00	0.00	0.00	0.00
				0.00	0.00	0.00	0.00	0.00
							64.18	0.00



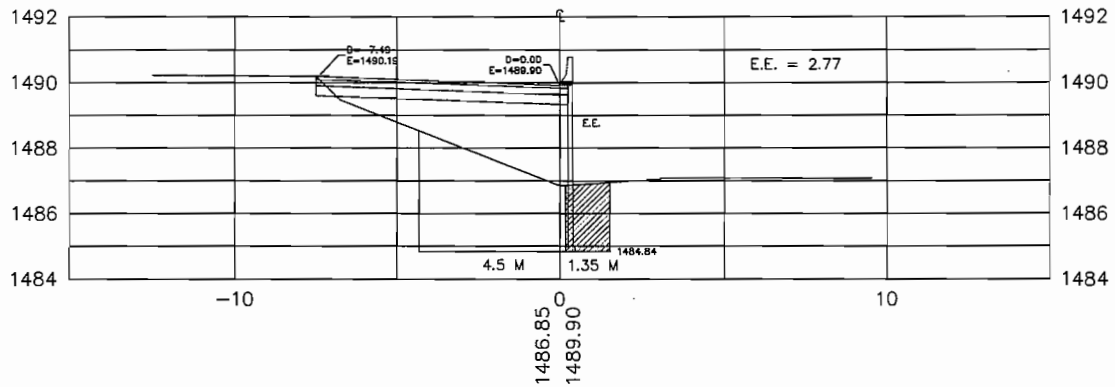
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54

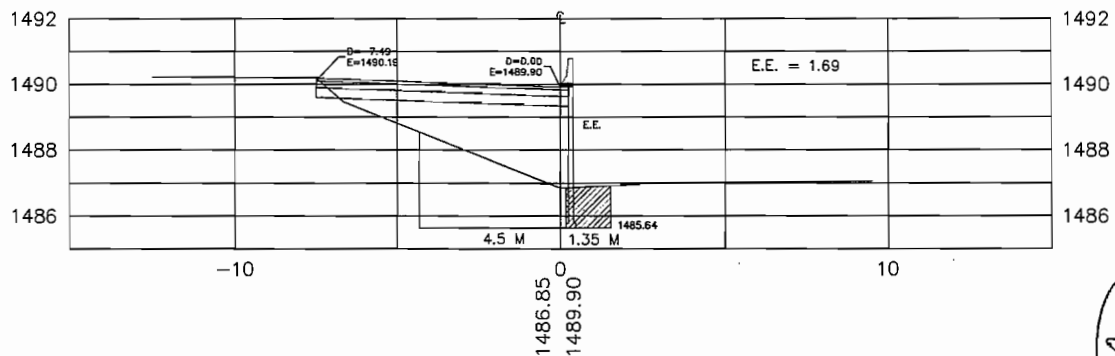
60+020



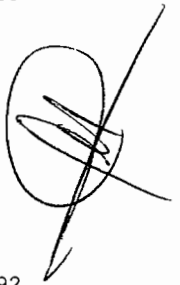
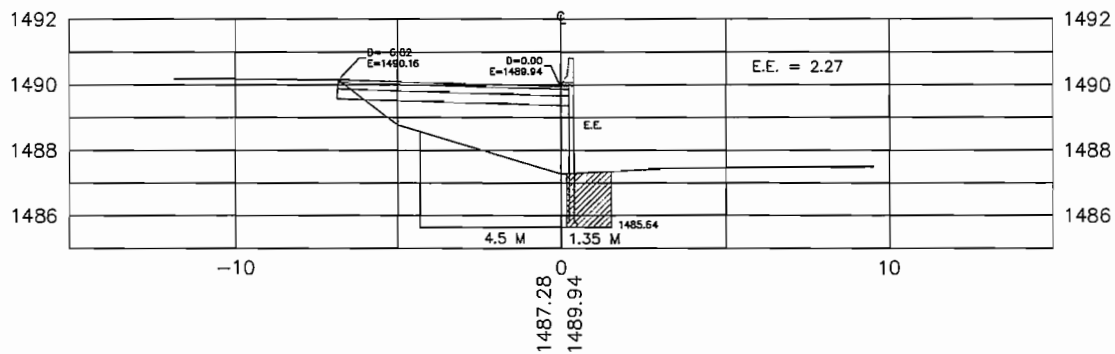
60+015.36



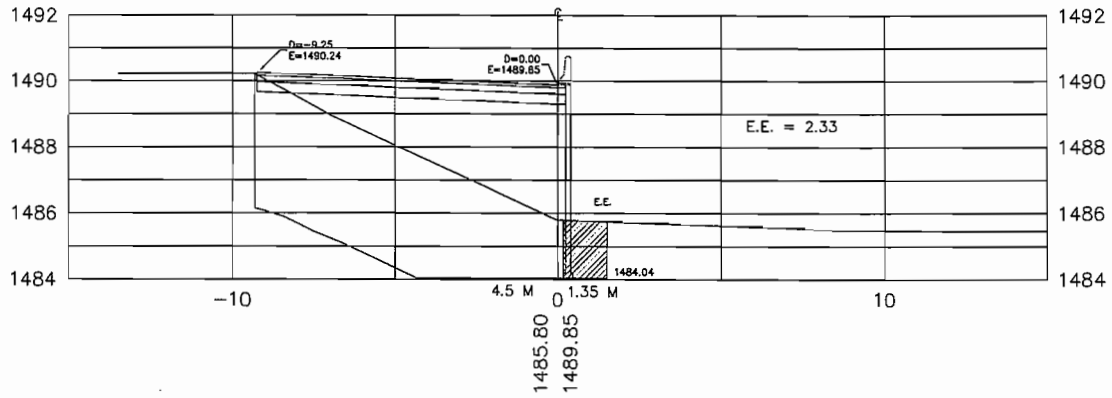
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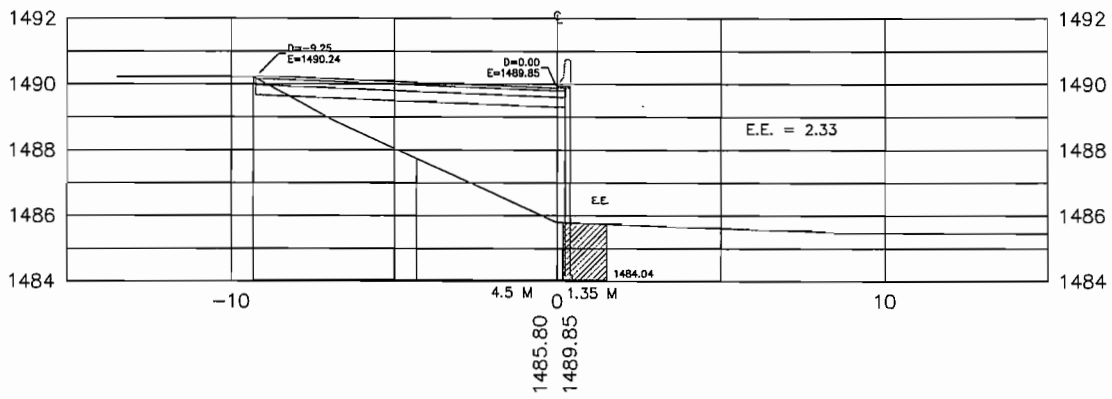
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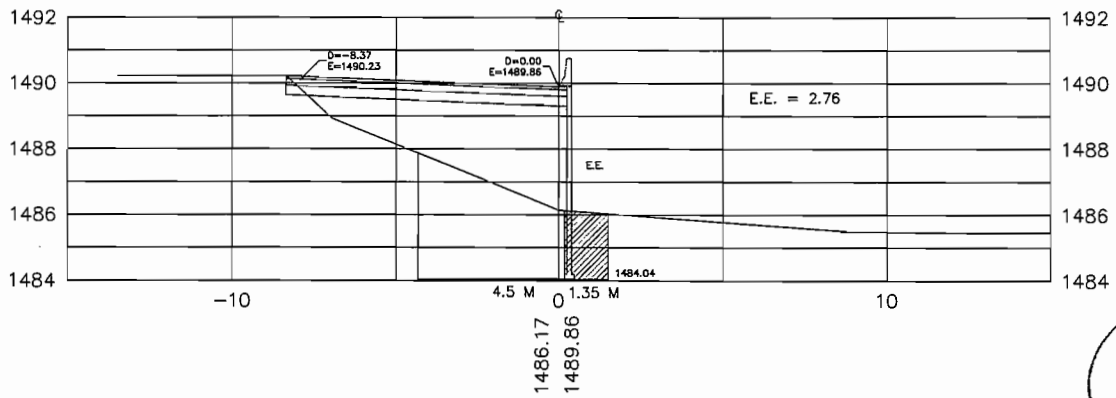
60+025



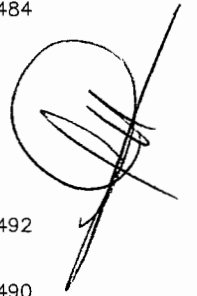
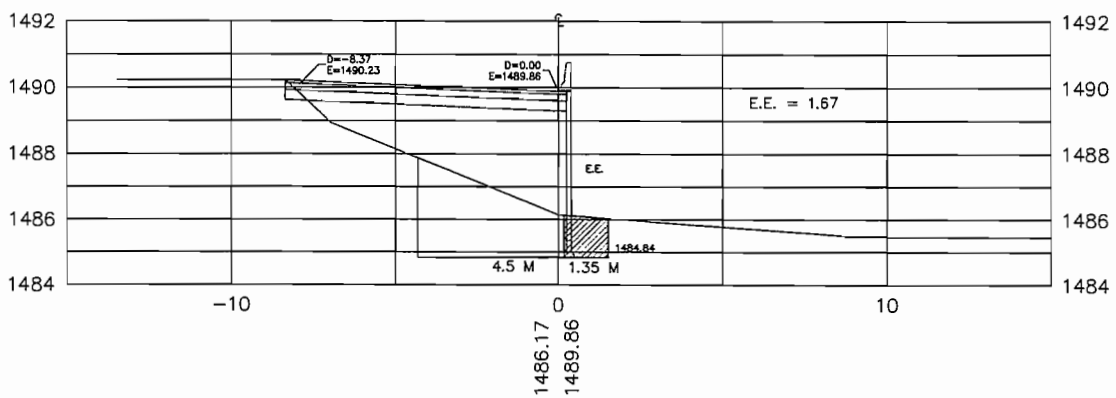
60+025



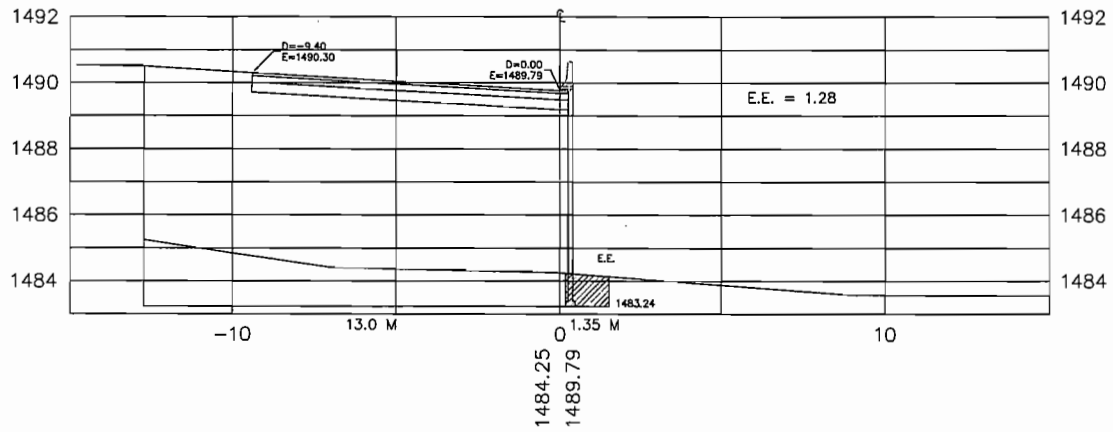
60+023.36



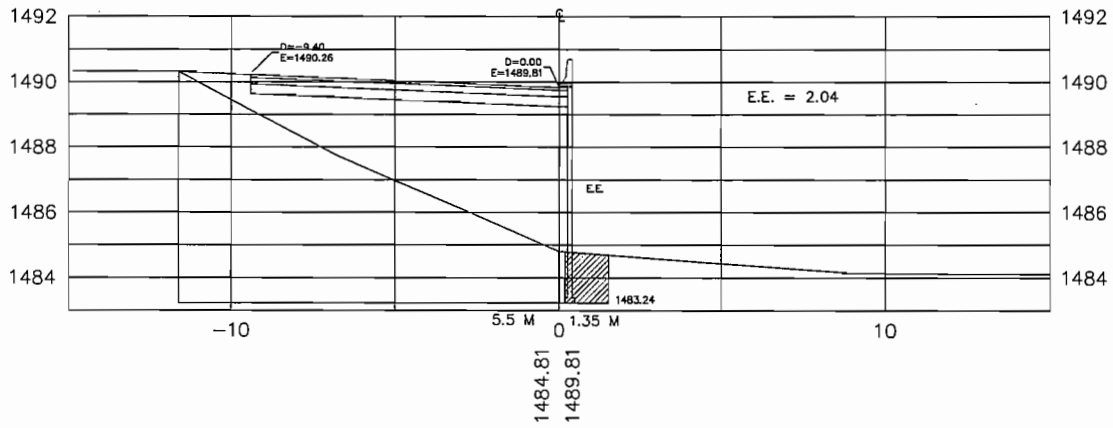
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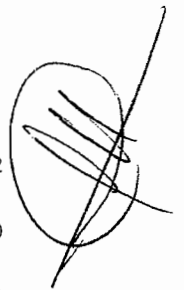
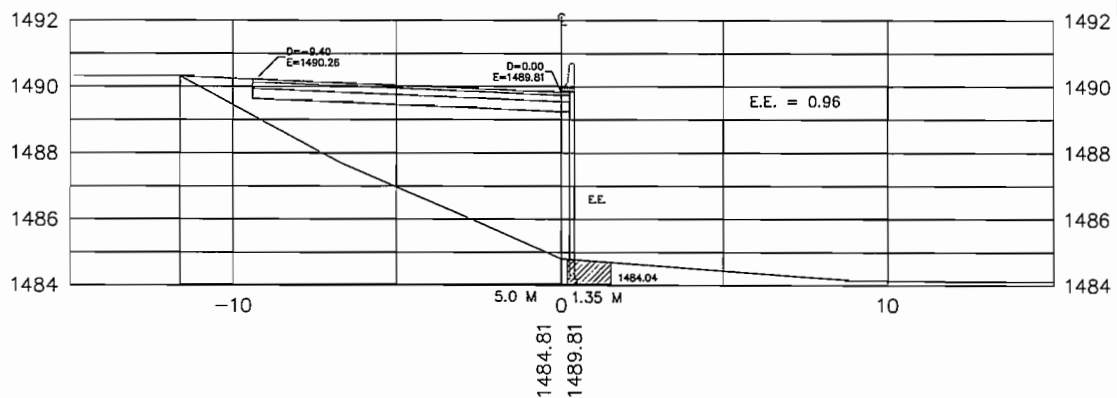
60+035.36



60+029.36



60+029.36

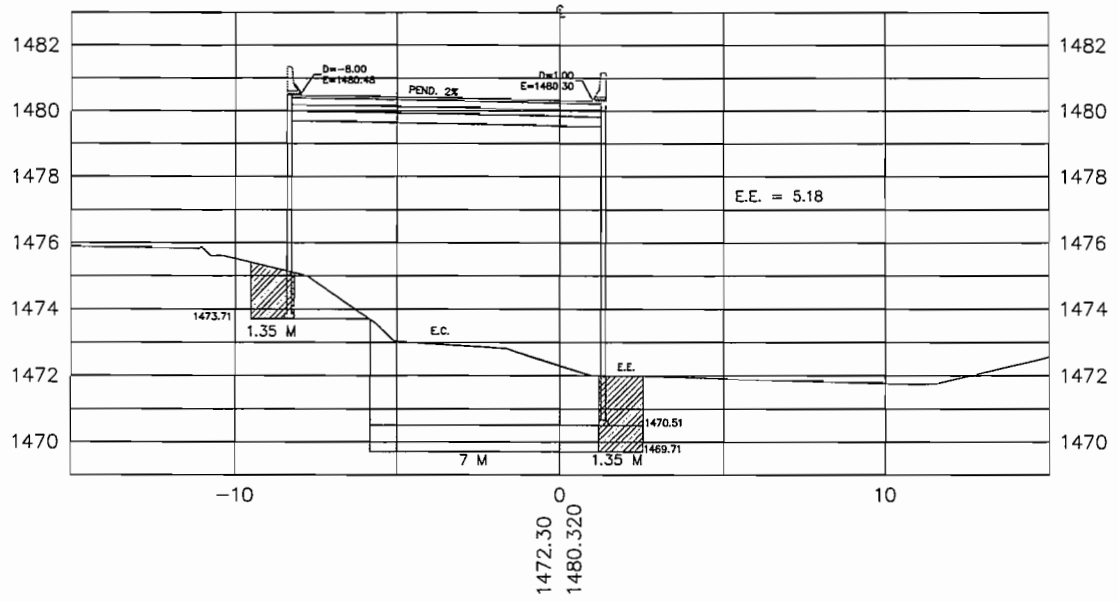




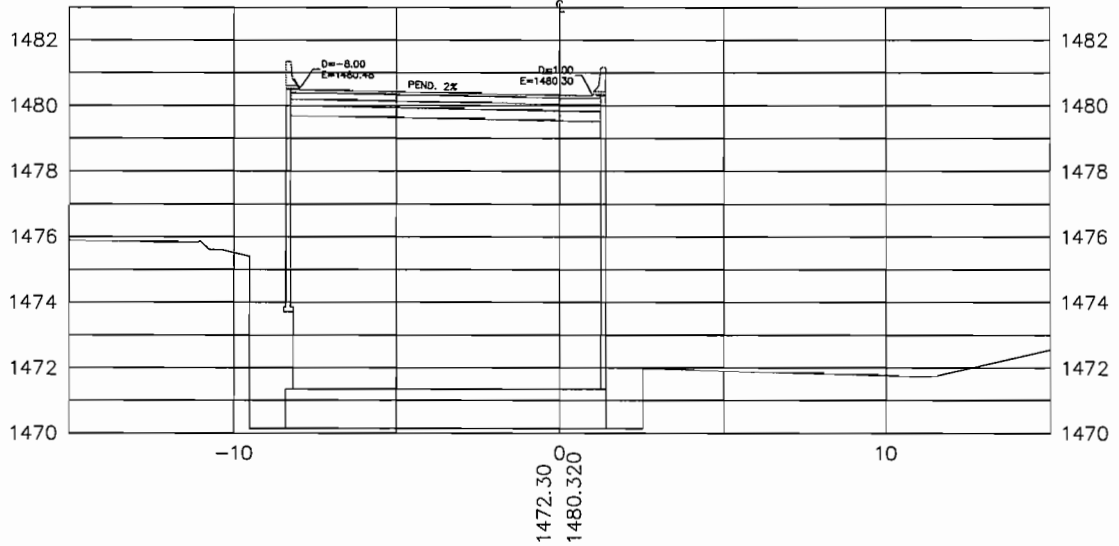
CURVA MASA RAMPA 2 EXCAVACION PARA ESTRUCTURAS

CADENAMIENTO		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
60+	311.45	5.18						
60+	320	4.17		9.35	0.00	4.28	39.97	0.00
60+	320.69	4.16		8.33	0.00	0.34	2.87	0.00
60+	320.69	5.26		9.42	0.00	0.00	0.00	0.00
60+	340	4.42		9.68	0.00	9.66	93.46	0.00
60+	352.69	4.65		9.07	0.00	6.35	57.55	0.00
60+	352.69	5.71		10.36	0.00	0.00	0.00	0.00
60+	360	4.48		10.19	0.00	3.66	37.24	0.00
60+	362.95	4.47		8.95	0.00	1.47	13.20	0.00
60+	362.95	5.28		9.75	0.00	0.00	0.00	0.00
60+	378.69	3.6		8.88	0.00	7.87	69.89	0.00
60+	378.69	4.69		8.29	0.00	0.00	0.00	0.00
60+	380	4.67		9.36	0.00	0.66	6.13	0.00
60+	384.95	4.44		9.11	0.00	2.47	22.55	0.00
60+	384.95	5.53		9.97	0.00	0.00	0.00	0.00
60+	400	4.63		10.16	0.00	7.53	76.45	0.00
60+	412.69	4.54		9.17	0.00	6.35	58.18	0.00
60+	412.69	5.62		10.16	0.00	0.00	0.00	0.00
60+	416.95	5.49		11.11	0.00	2.13	23.66	0.00
60+	416.95	7.04		12.53	0.00	0.00	0.00	0.00
60+	420	5.78		12.82	0.00	1.53	19.55	0.00
60+	436.69	4.41		10.19	0.00	8.35	85.04	0.00
60+	436.69	5.48		9.89	0.00	0.00	0.00	0.00
60+	440	5.56		11.04	0.00	1.66	18.27	0.00
60+	452.95	4.78		10.34	0.00	6.47	66.95	0.00
60+	452.95	5.94		10.72	0.00	0.00	0.00	0.00
60+	460	5.01		10.95	0.00	3.53	38.60	0.00
60+	466.69	4.52		9.53	0.00	3.35	31.88	0.00
60+	466.69	5.60		10.12	0.00	0.00	0.00	0.00
60+	474.95	5.06		10.66	0.00	4.13	44.03	0.00
60+	474.95	5.67		10.73	0.00	0.00	0.00	0.00
60+	480	5.13		10.8	0.00	2.53	27.27	0.00
60+	498.95	4.09		9.22	0.00	9.47	87.36	0.00
60+	498.95	5.38		9.47	0.00	0.00	0.00	0.00
60+	500	5.36		10.74	0.00	0.53	5.64	0.00
60+	518.69	4.31		9.67	0.00	9.35	90.37	0.00
60+	518.69	5.38		9.69	0.00	0.00	0.00	0.00
60+	520	2.88		8.26	0.00	0.65	5.41	0.00
60+	522.95	2.79		5.67	0.00	1.48	8.36	0.00
60+	522.95	3.87		6.66	0.00	0.00	0.00	0.00
60+	540	3.67		7.54	0.00	8.52	64.28	0.00
60+	546.95	3.29		6.96	0.00	3.48	24.19	0.00
60+	546.95	3.62		6.91	0.00	0.00	0.00	0.00
60+	560	2.99		6.61	0.00	6.52	43.13	0.00
60+	560.89	2.88		5.87	0.00	0.44	2.61	0.00
60+	566.95	2.24		5.12	0.00	3.03	15.51	0.00
60+	566.95	3.25		5.49	0.00	0.00	0.00	0.00
60+	580	3.01		6.26	0.00	6.52	40.85	0.00
60+	586.95	3.93		6.94	0.00	3.48	24.12	0.00
60+	586.95	2.58		6.51	0.00	0.00	0.00	0.00
60+	598.72	2.89		5.47	0.00	5.88	32.19	0.00
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
							1,276.76	0.00

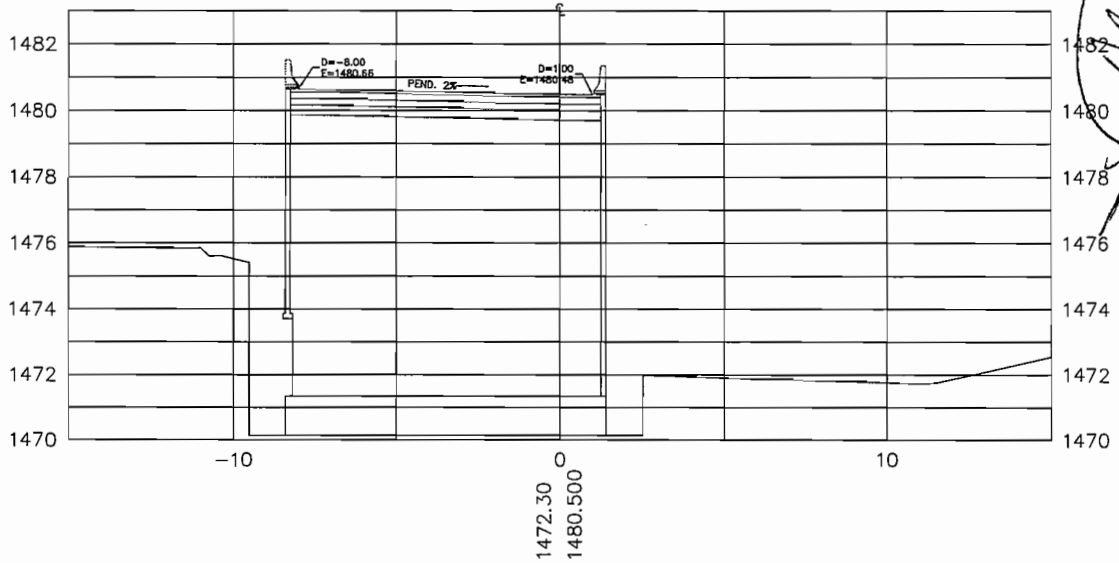
60+311.45



60+311.45

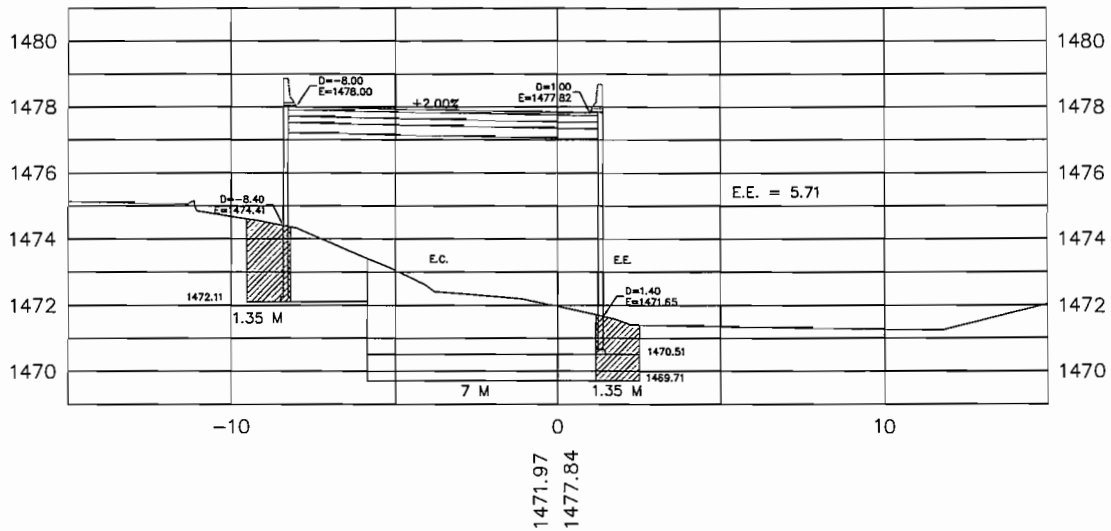


60+308.44
ESTRIBO 7

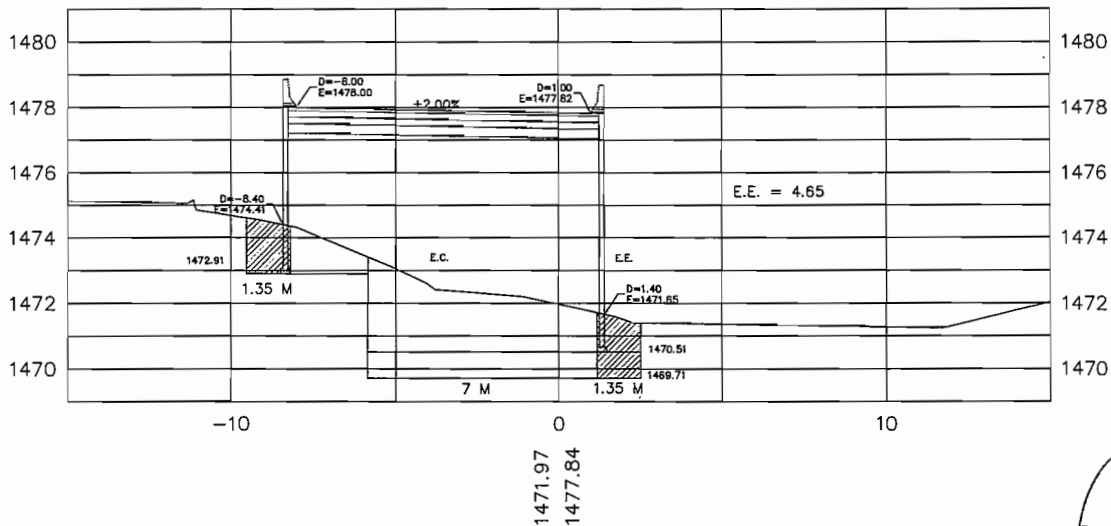


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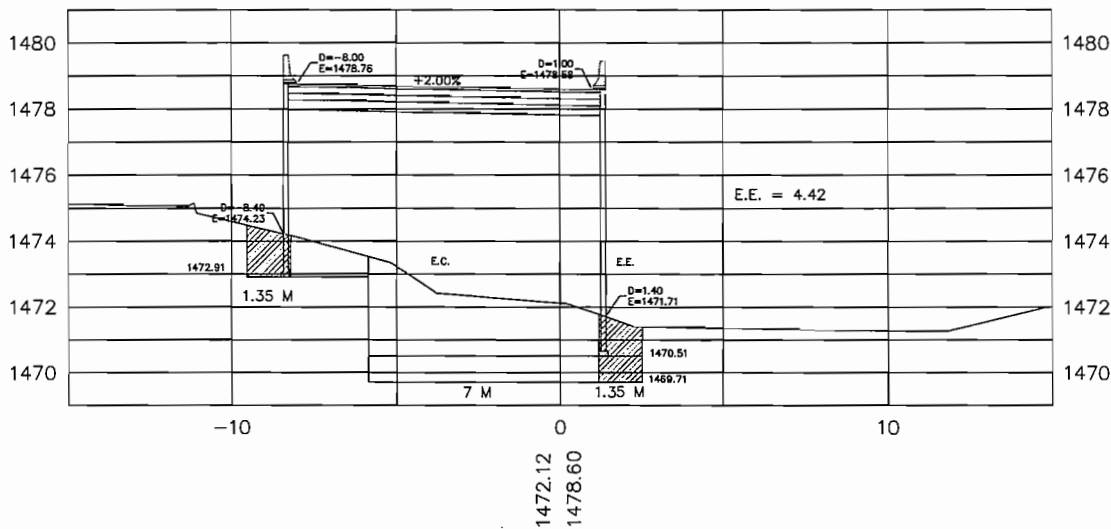
60+352.69



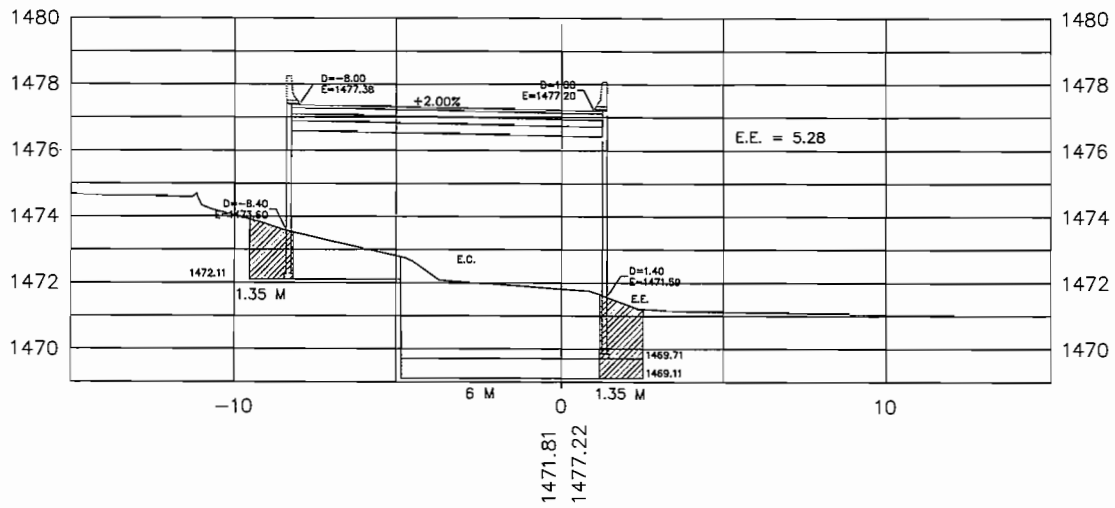
60+352.69



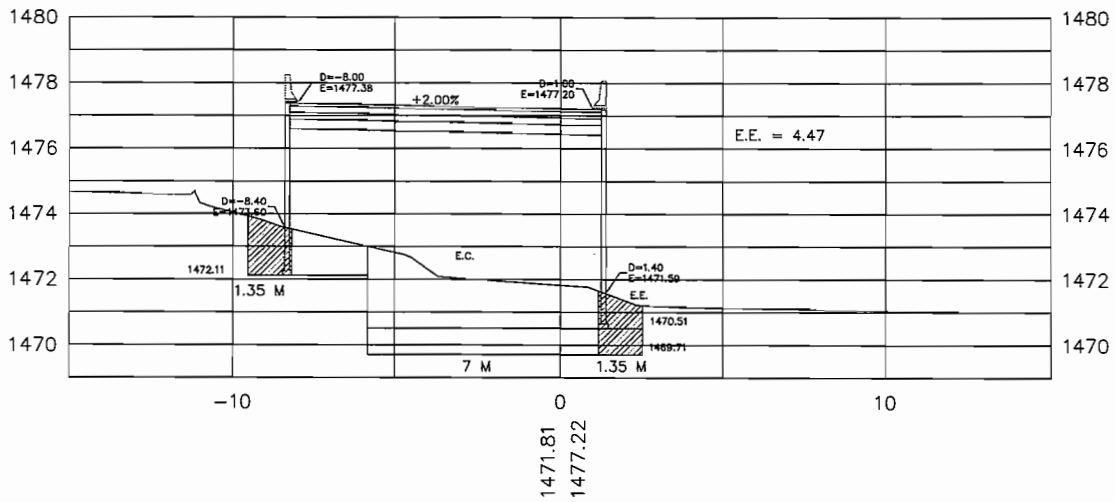
60+340



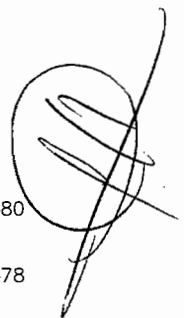
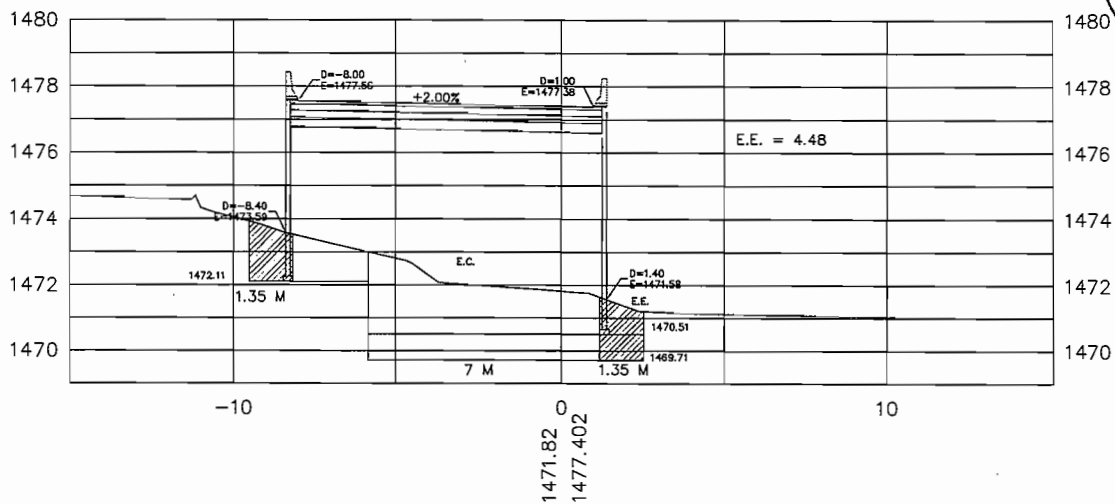
60+362.95



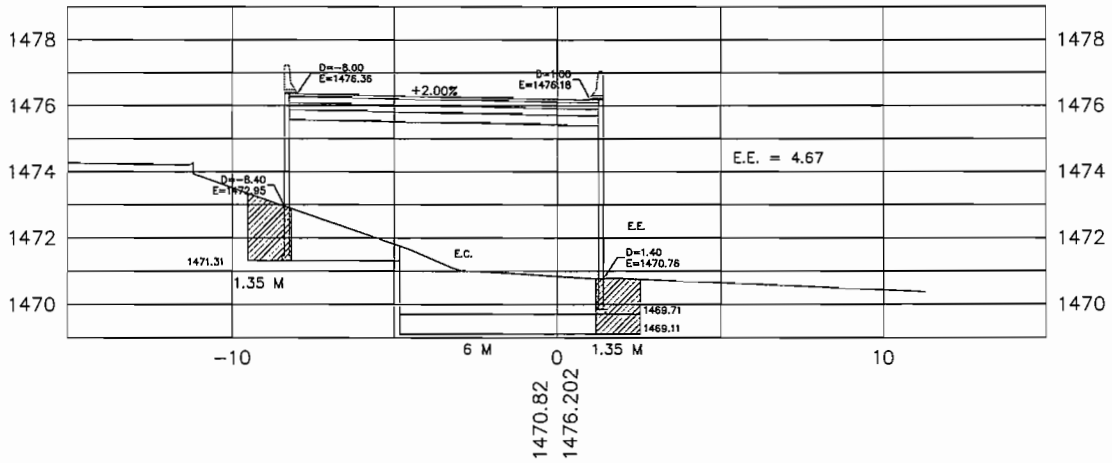
60+362.95



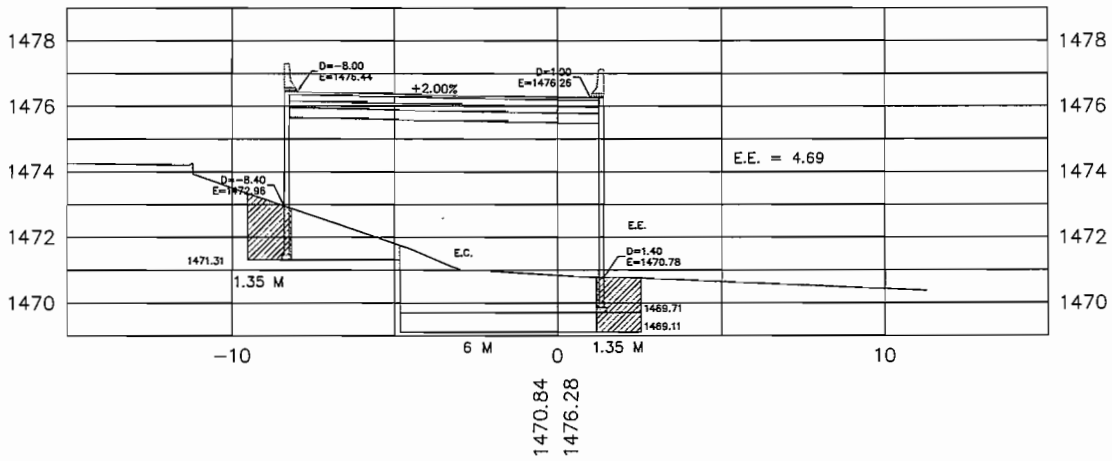
60+360



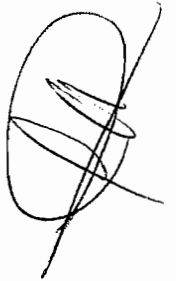
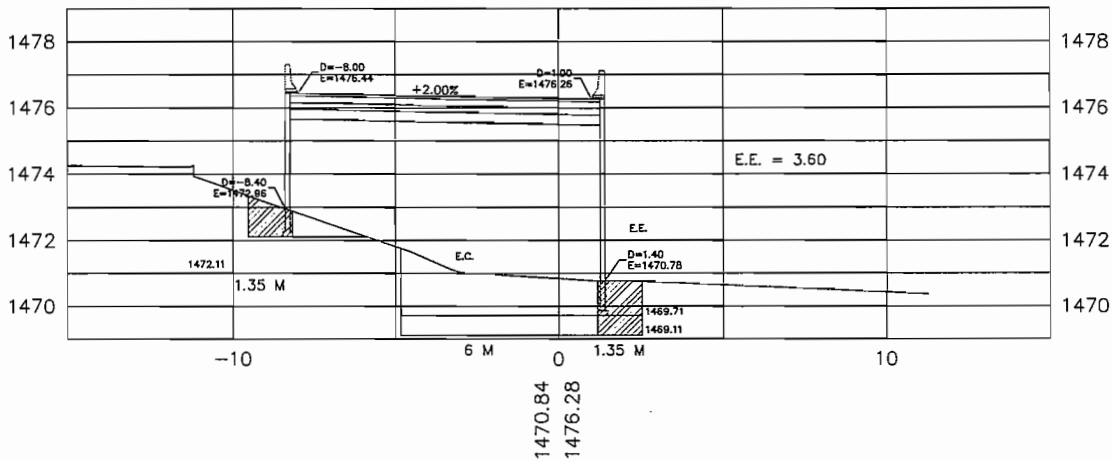
60+380



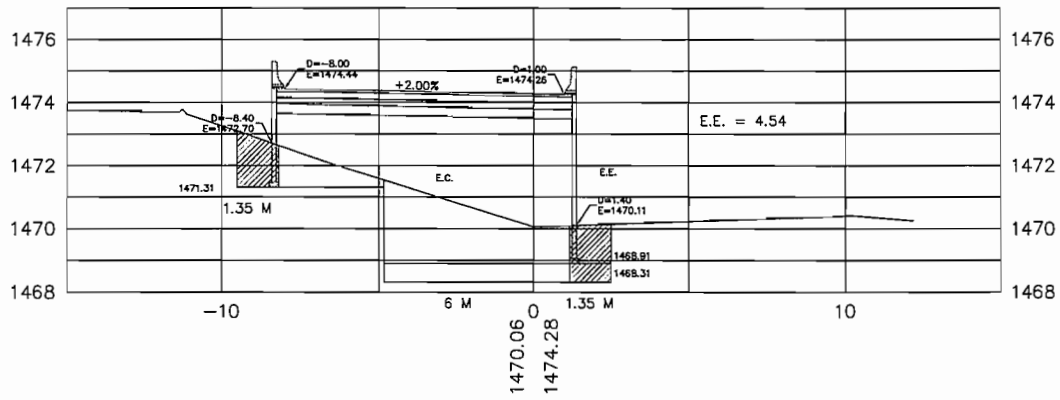
60+378.69



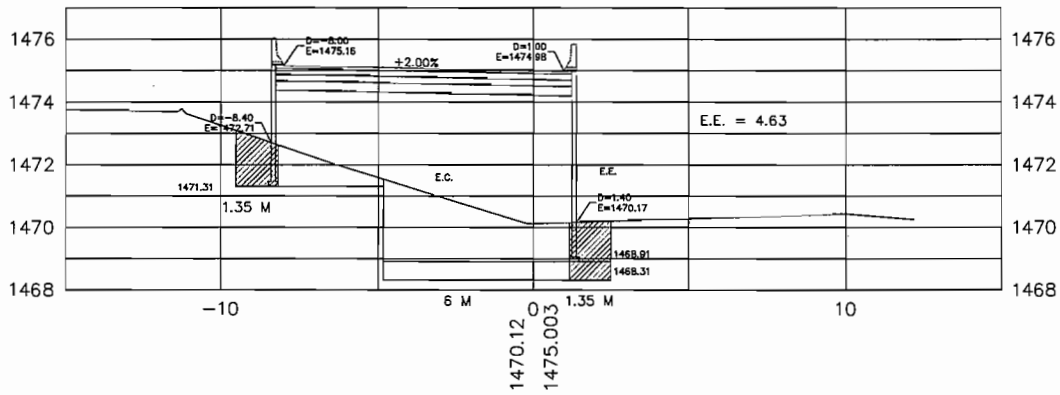
60+378.69



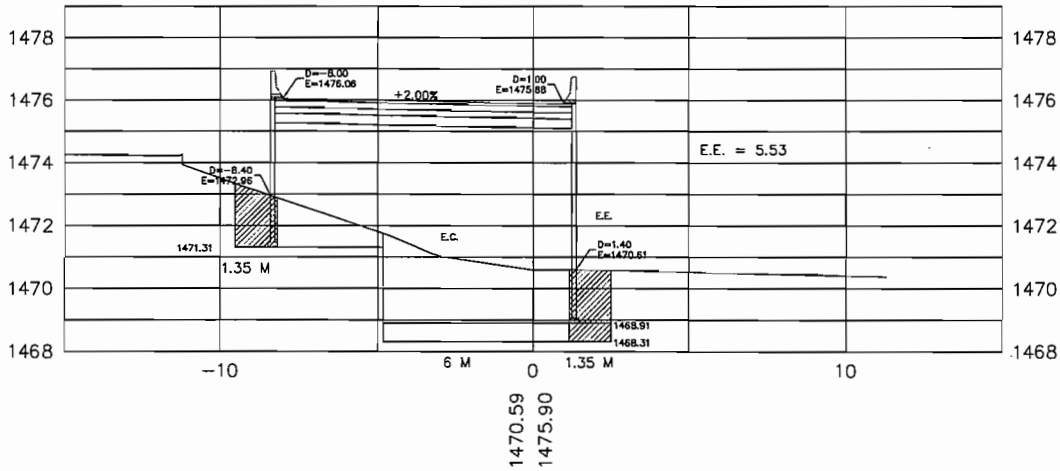
60+412.69



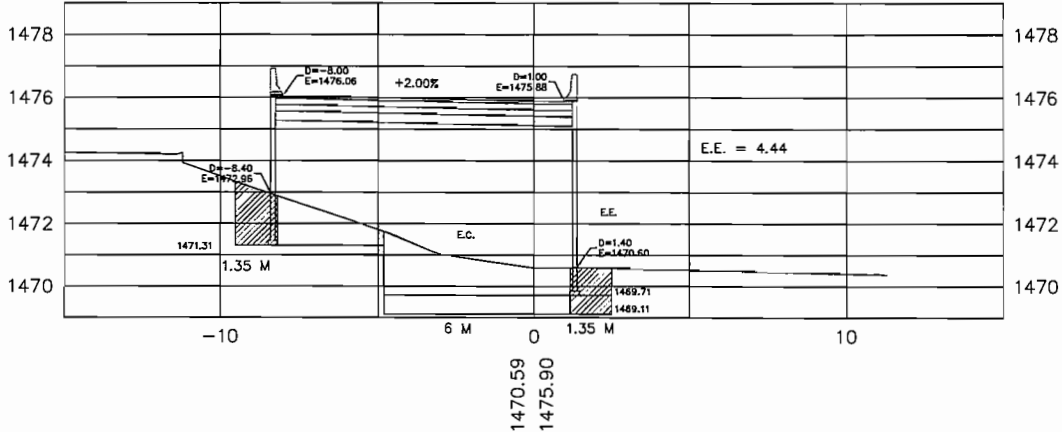
60+400



60+384.95



60+384.95



The diagram shows a cross-section of a road profile. The vertical axis represents elevation in meters, with labels 1468, 1470, 1472, 1474, and 1476. The horizontal axis represents distance in meters, with labels -10, 0, and 10. A central vertical line is labeled '0' at the bottom. A horizontal line at elevation 1474.02 is labeled '+2.00%'. A diagonal line is labeled 'E.C.'. A horizontal line at elevation 1470.17 is labeled 'E.E.'. A vertical line at distance 0 is labeled 'D=1.40 E=1470.17'. A vertical line at distance -10 is labeled 'D=8.40 E=1470.71'. A vertical line at distance -10 is labeled '1470.51'. A vertical line at distance 10 is labeled '1468.11' and '1467.16'. A vertical line at distance -10 is labeled '1.35 M'. A vertical line at distance 10 is labeled '1.35 M'. A vertical line at distance 0 is labeled '1470.01' and '1474.04'. A vertical line at distance 0 is labeled 'E.E. = 7.04'.

The diagram illustrates a cross-section of a road profile. The vertical axis represents elevation in meters, ranging from 1468 to 1476. The horizontal axis represents distance in meters, with markers at -10, 6 M, 0, 1.35 M, and 10. Key features include:

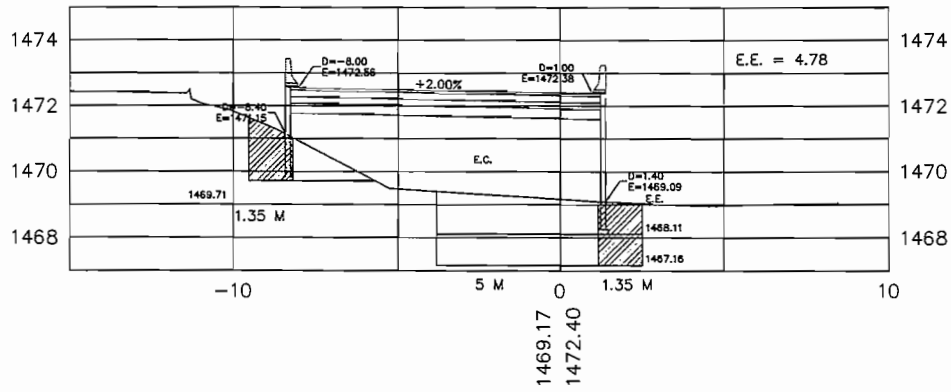
- Left Shoulder:** A hatched area with a width of 1.35 M. The top edge is labeled $D = -8.40$ and $E = 1472.69$. The bottom edge is labeled 1470.51.
- Main Roadway:** A central section with a +2.00% slope. The top edge is labeled $D = -8.88$ and $E = 1474.20$. The bottom edge is labeled $D = -7.40$ and $E = 1470.03$.
- Right Shoulder:** A hatched area with a width of 1.35 M. The top edge is labeled $D = -7.40$ and $E = 1470.03$. The bottom edge is labeled 1468.91 and 1468.31.
- Centerline:** Marked at 0 M, with elevations 1470.01 and 1474.04.
- Grade:** A line labeled E.G. (Elevación General) runs across the roadway.
- Grade Elevation:** A label E.E. = 5.49 is present on the right side of the roadway.

The diagram illustrates a cross-section of a bridge deck. The vertical axis represents elevation in meters, ranging from 1468 to 1476. The horizontal axis represents distance in meters, with markers at -10, 0, and 10. Key features include:

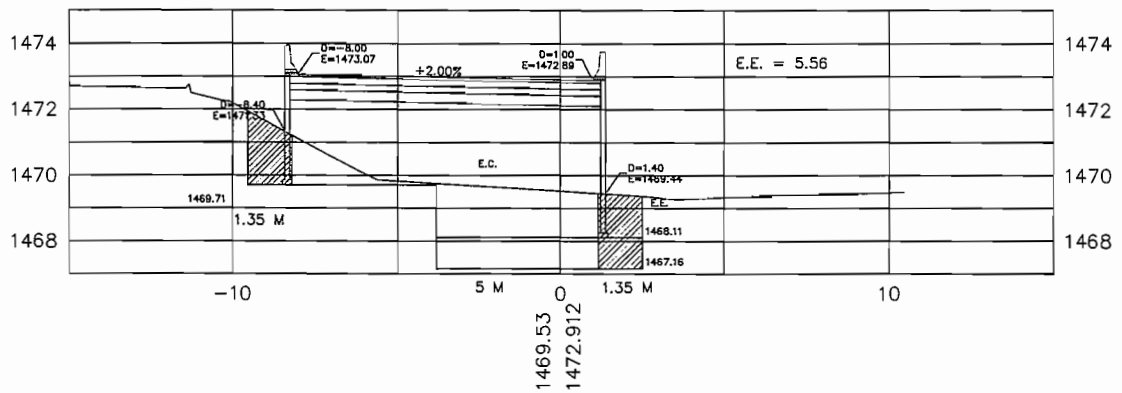
- Elevation Data:**
 - Left side: D=-8.40, E=1473.70; 1470.51
 - Right side: D=+1.00, E=1474.26; D=+1.30, E=1470.11; 1468.91; 1468.31
- Horizontal Dimensions:**
 - Distance from left edge to centerline: 1.35 M
 - Total width between abutments: 6 M
 - Distance from centerline to right edge: 1.35 M
- Structural Details:**
 - A +2.00% slope is indicated on the top surface.
 - Shaded areas represent specific components or materials.
 - Labels "E.C." and "E.E." are present within the section.
 - A note "E.E. = 5.62" is located on the right side.

CV

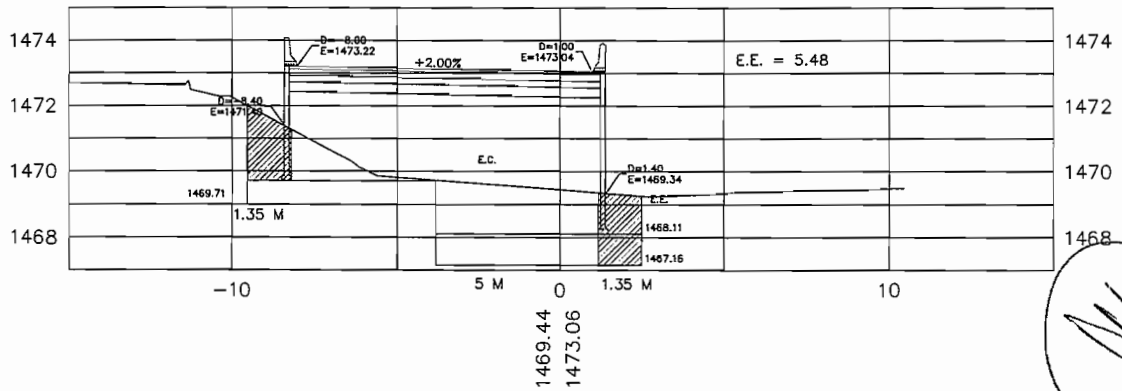
60+452.95



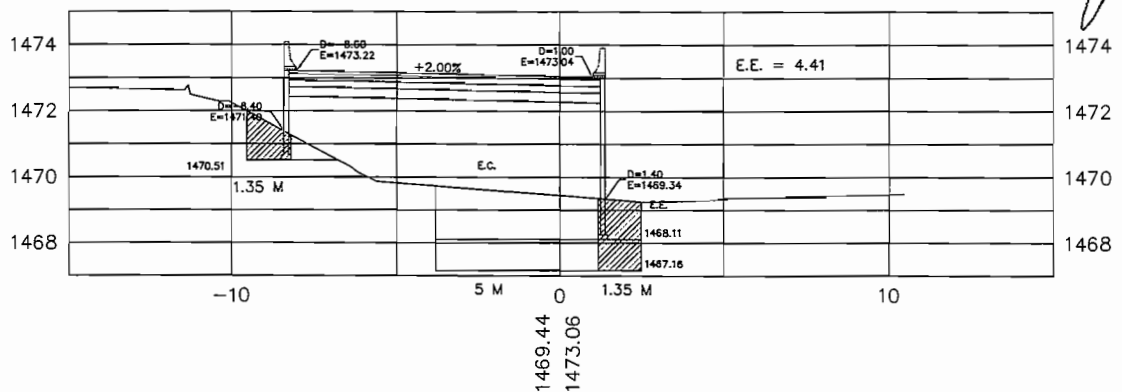
60+440



60+436.69



60+436.69



The diagram illustrates a cross-section of a road profile with the following details:

- Vertical Axis (Elevation):** Ranges from 1466 to 1474 meters.
- Horizontal Axis (Distance):** Marked at -10, 5 M, 0, 1.35 M, and 10 meters.
- Left Shoulder (D=8.40):**
 - Top edge elevation: $E=1470.67$
 - Bottom edge elevation: 1468.91
 - Width: 1.35 M
- Main Roadway (D=8.00):**
 - Top edge elevation: $E=1473.00$
 - Bottom edge elevation: 1468.58
 - Width: 5 M
- Right Shoulder (D=1.40):**
 - Top edge elevation: $E=1471.82$
 - Bottom edge elevation: 1466.31
 - Width: 1.35 M
 - Area labeled **E.E.** (Elevated Embankment)
- Centerline (E.C.):** Indicated at the 0 mark on the horizontal axis.
- Grade:** Labeled as $\pm 2.00\%$ across the main roadway.
- Right Side Elevation:** A value of 1471.84 is noted near the right edge of the diagram.
- Overall Elevation Difference:** A note on the right side states $E.E. = 5.60$.

Diagram illustrating a cross-section of a road and drainage system. The diagram shows a road with a +2.00% grade, a drainage ditch with a 1.35 M width, and a drainage structure with a 1.35 M width. The elevation of the road surface is 1472.07, and the elevation of the drainage structure is 1467.31. The diagram also shows the elevation of the ground surface (E.G.) and the elevation of the drainage structure (E.E.). The diagram is labeled with dimensions and elevations.

Point	Distance from Left Edge (M)	Elevation (m)	Notes
Top Left	-10	1472.07	Top of Road Surface
Top Right	10	1472.07	Top of Road Surface
Bottom Left	-10	1469.71	Ground Surface (E.G.)
Bottom Right	10	1468.88	Ground Surface (E.G.)
Top of Drainage Structure	1.35	1467.31	Top of Drainage Structure
Bottom of Drainage Structure	1.35	1466.31	Bottom of Drainage Structure

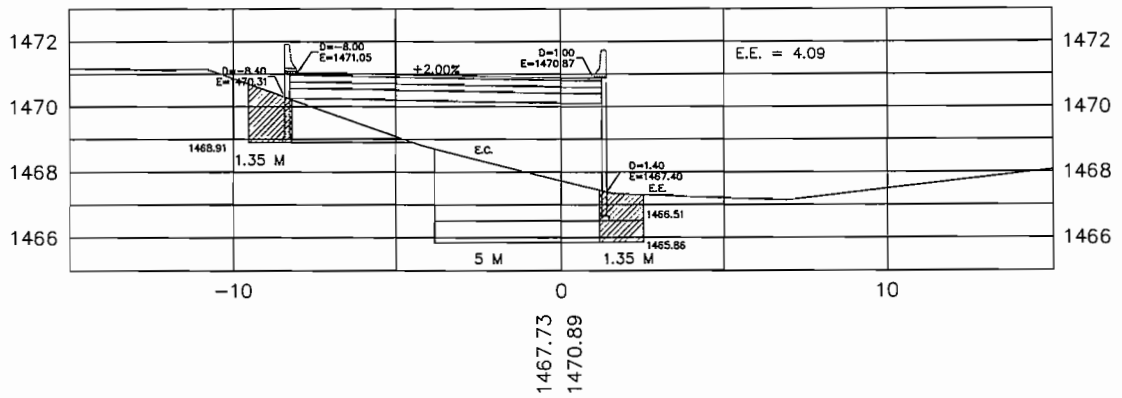
The diagram shows a cross-section of a road profile. The vertical axis represents elevation in meters, ranging from 1466 to 1474. The horizontal axis represents distance in meters, with markers at -10, 5, 0, and 10. The profile includes a road surface with a +2.00% grade. Key points are labeled with 'D' (distance from a reference point) and 'E' (elevation). A shaded area on the left is labeled 'E.E. = 5.94'. A shaded area on the right is labeled 'E.E.'. The diagram also shows a cross-section of a road with a width of 1.35 M and a distance of 5 M from the centerline to the edge of the road.

Point	D (m)	E (m)
Left Edge	-8.40	1469.71
Left Shoulder	-6.15	1470.15
Top Left	-8.00	1470.56
Top Right	1.00	1472.38
Right Shoulder	1.40	1469.09
Right Edge	1.40	1467.31
Bottom Right	1.40	1465.31

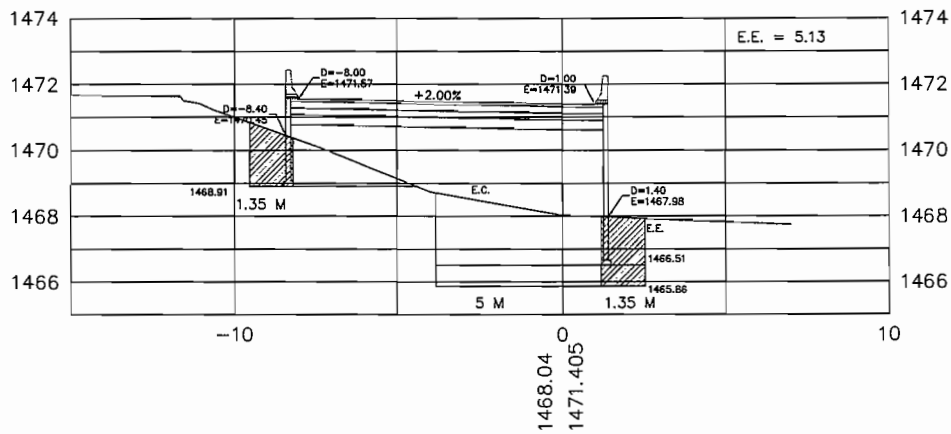


63

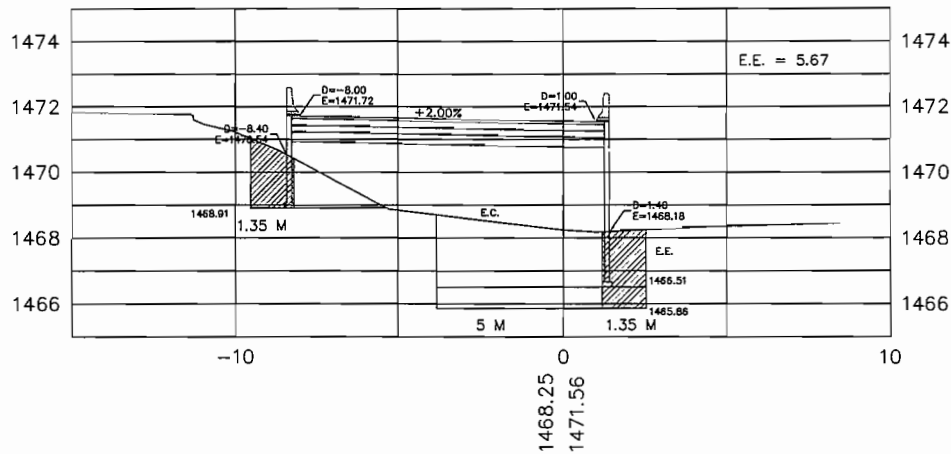
60+498.95



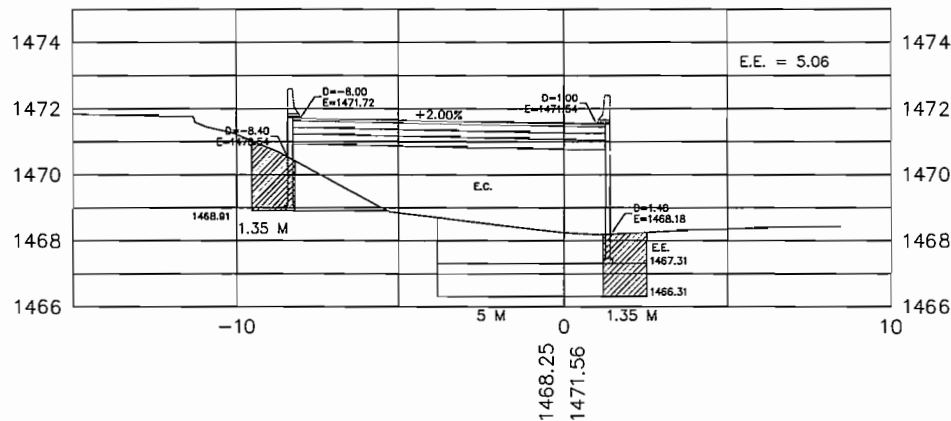
60+480



60+474.95

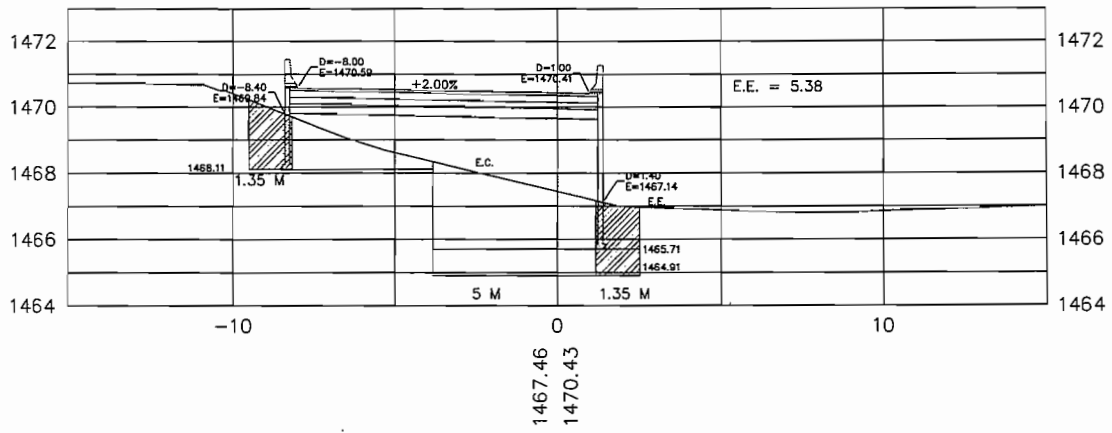


60+474.95

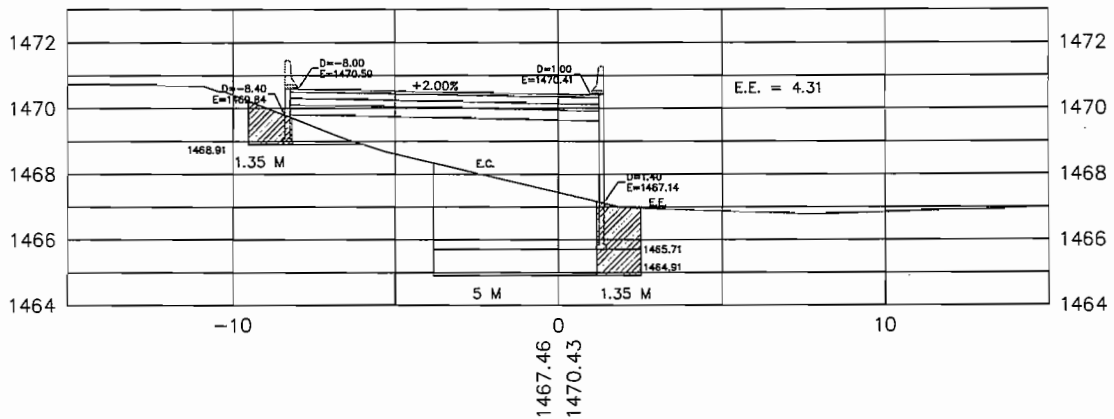


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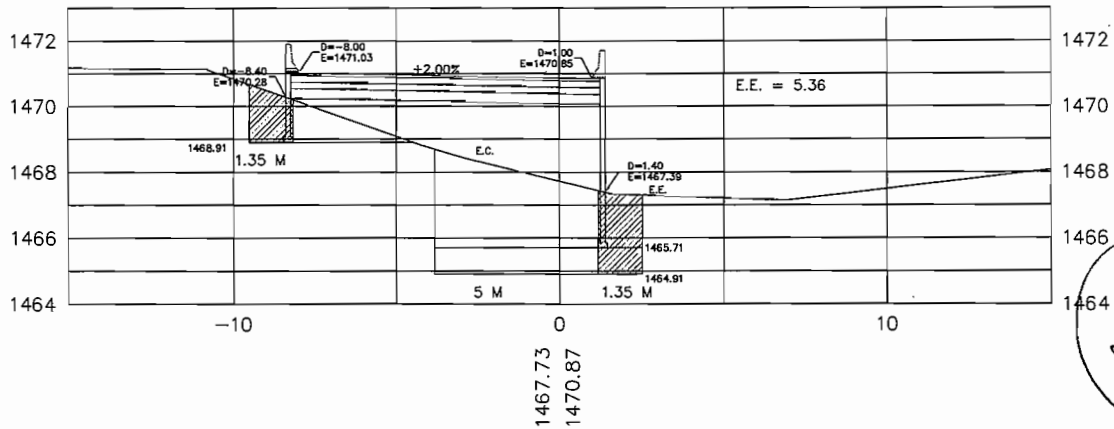
60+518.69



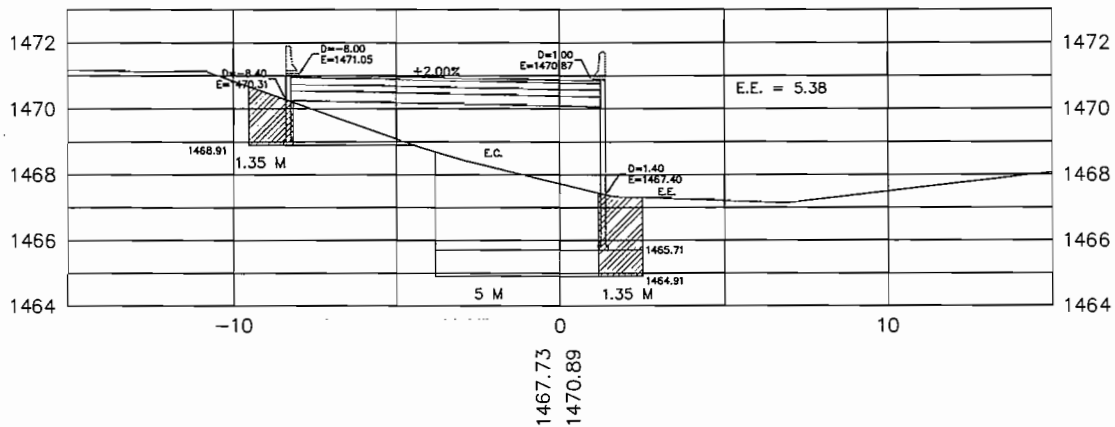
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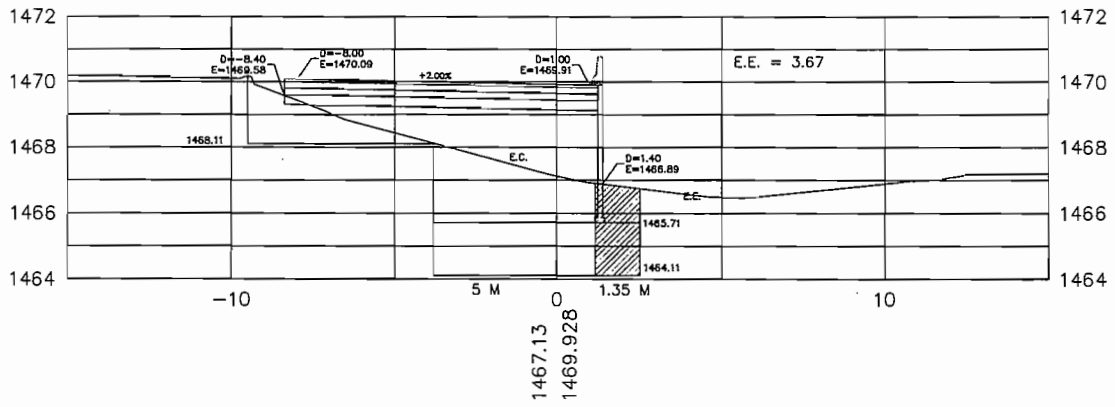
60+500



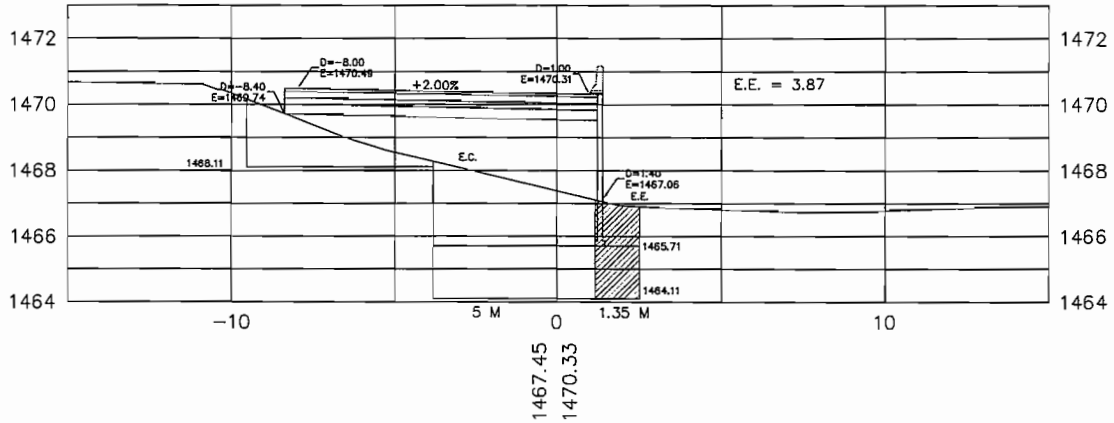
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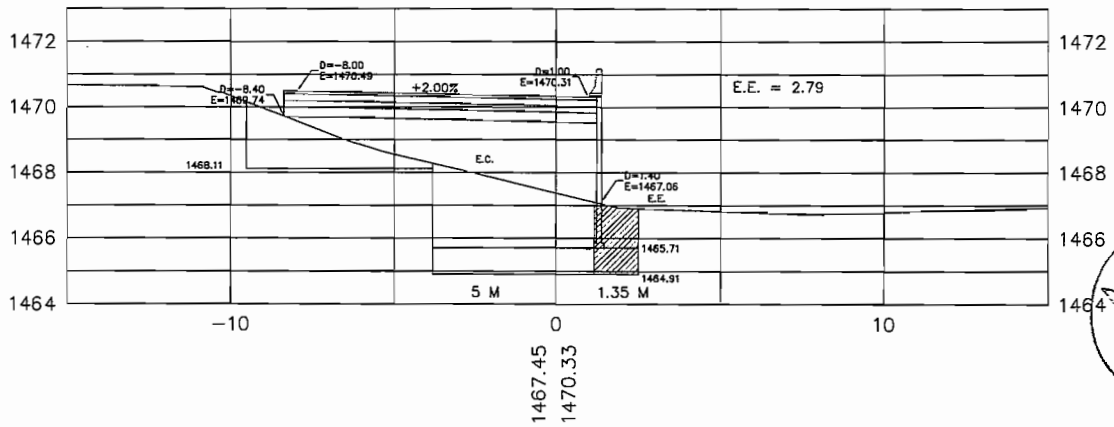
60+540



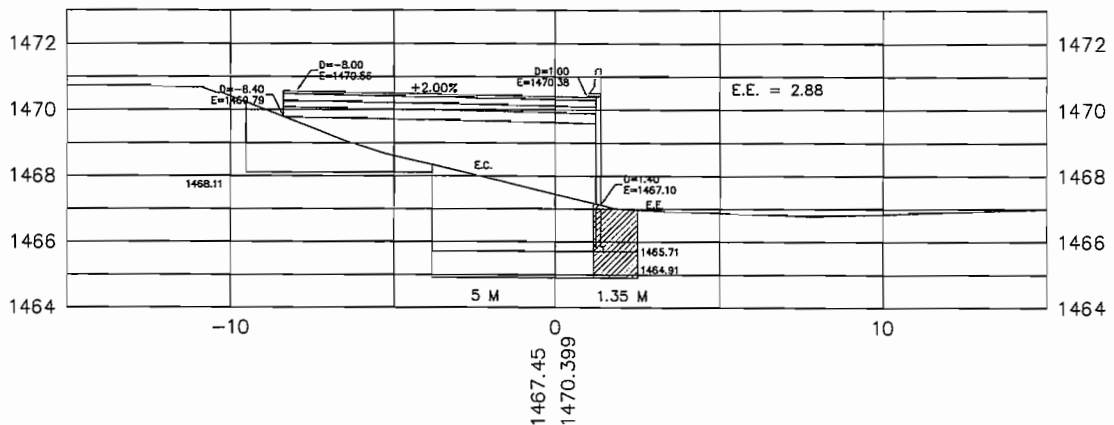
60+522.95



60+522.95

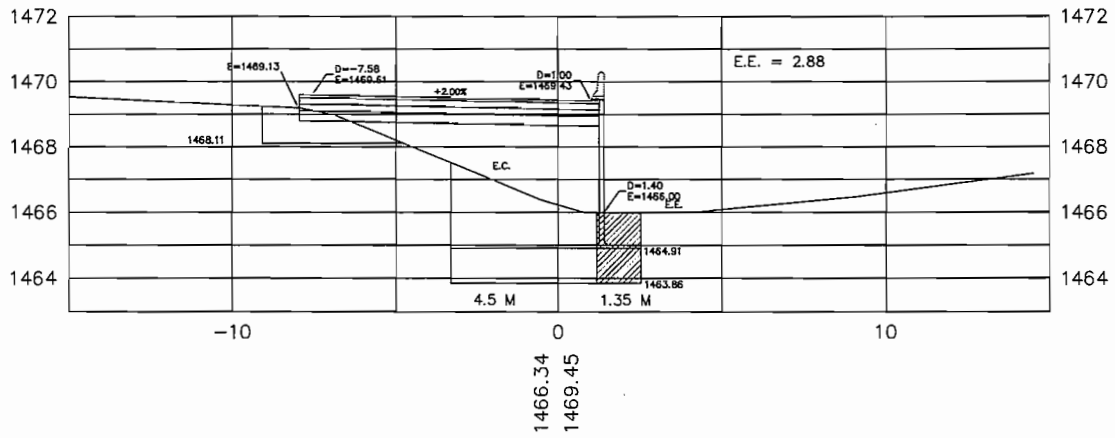


60+520

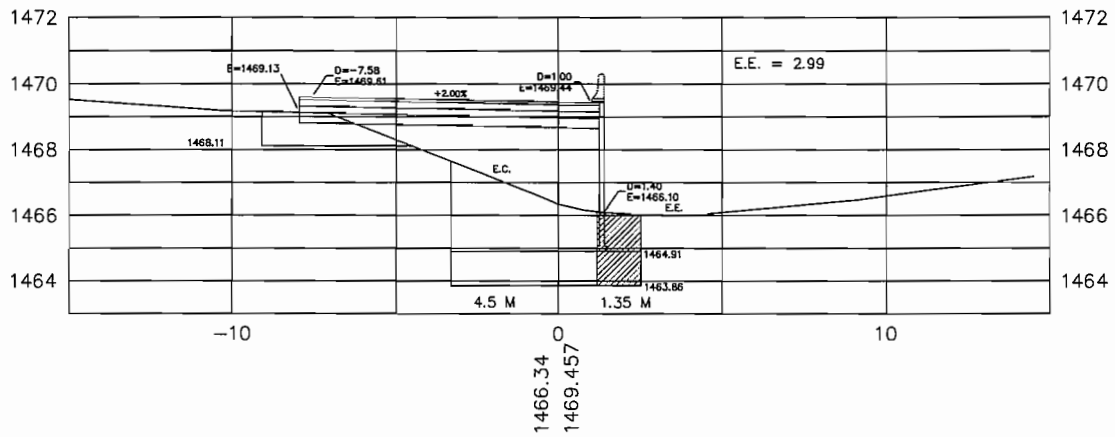


71

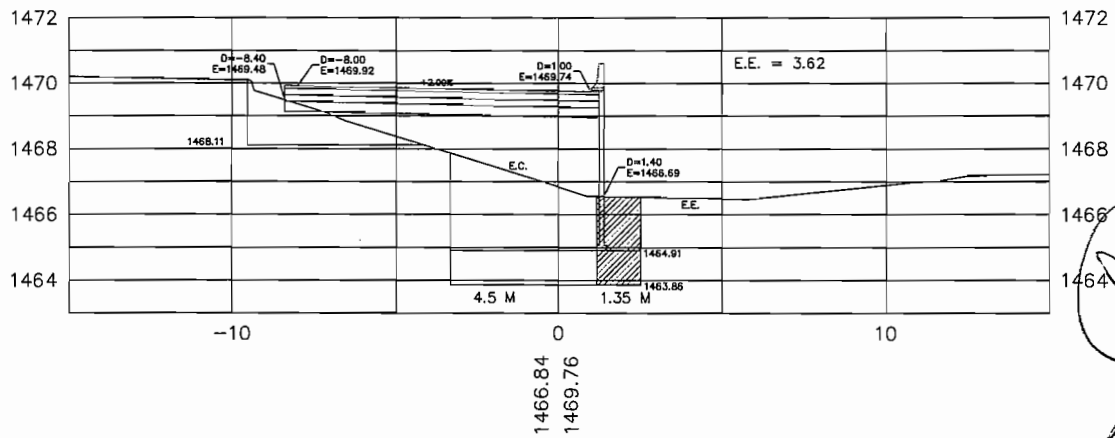
60+560.89



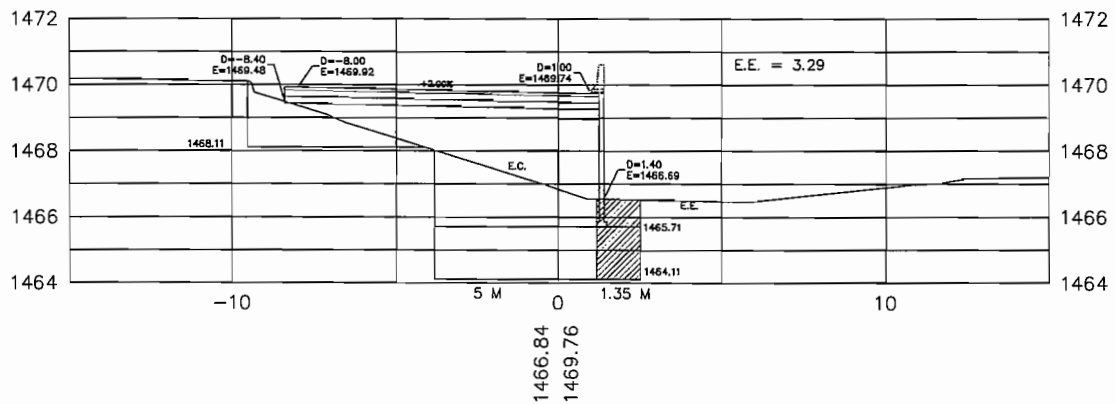
60+560



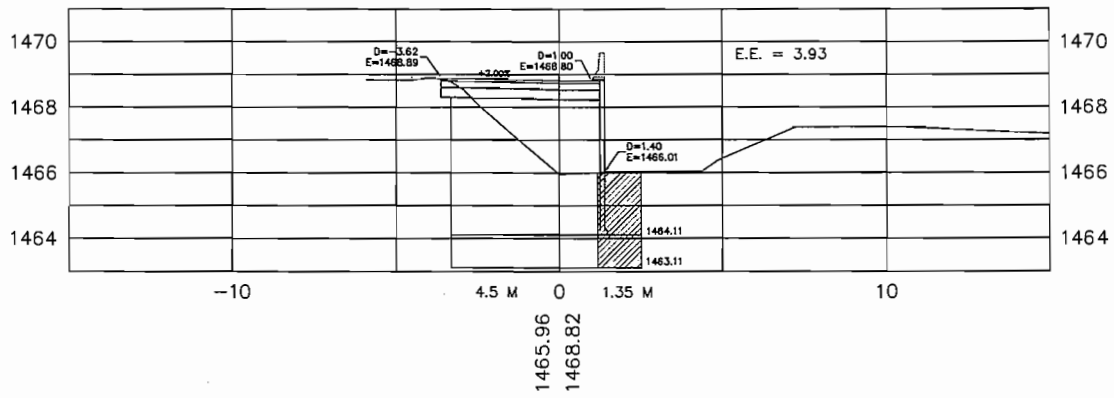
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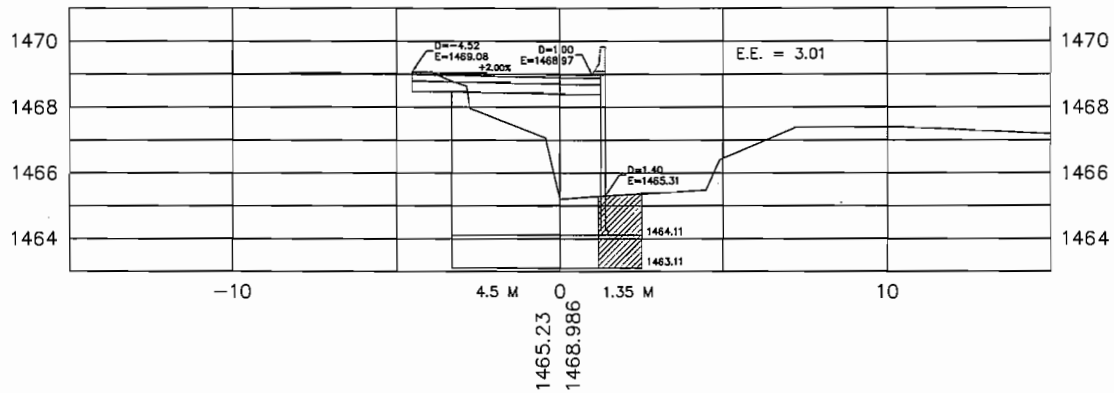
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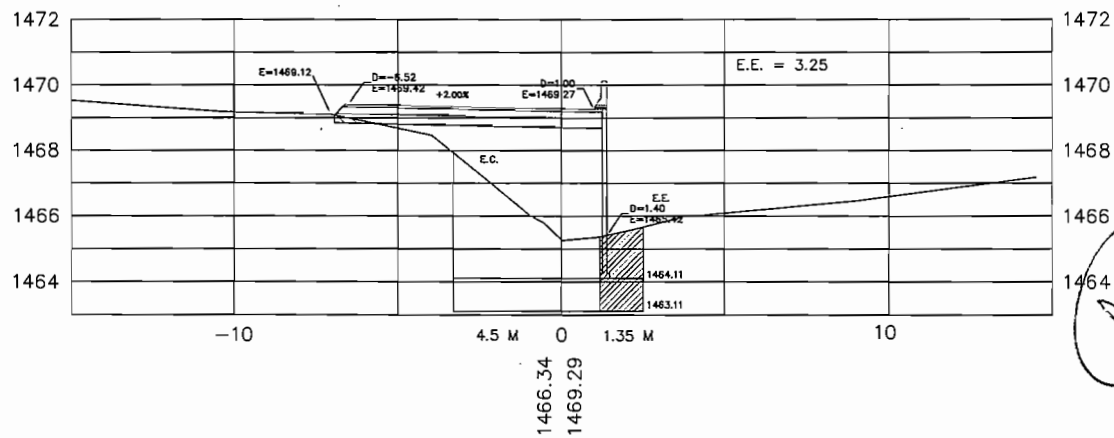
60+586.95



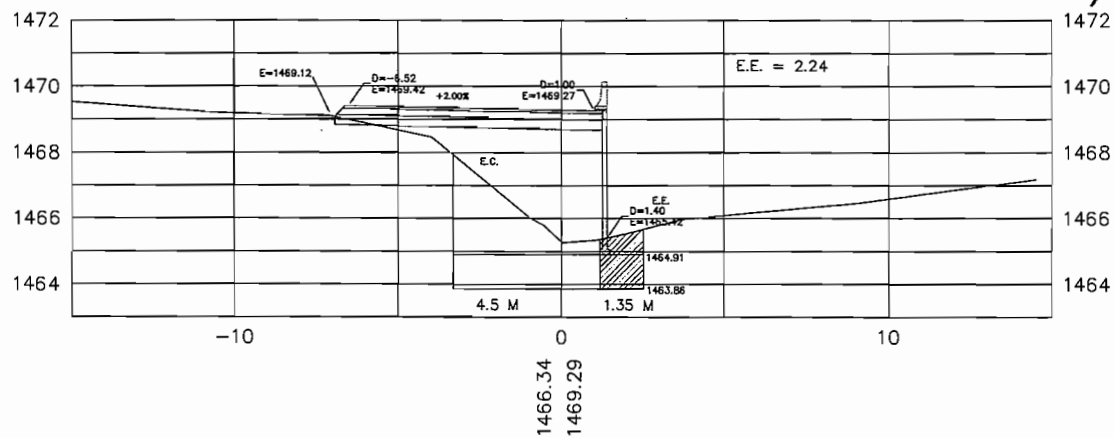
60+580



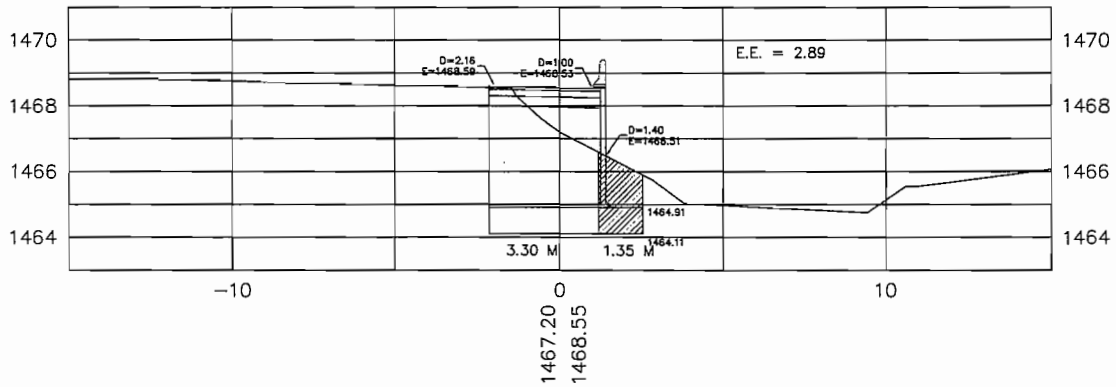
60+566.95



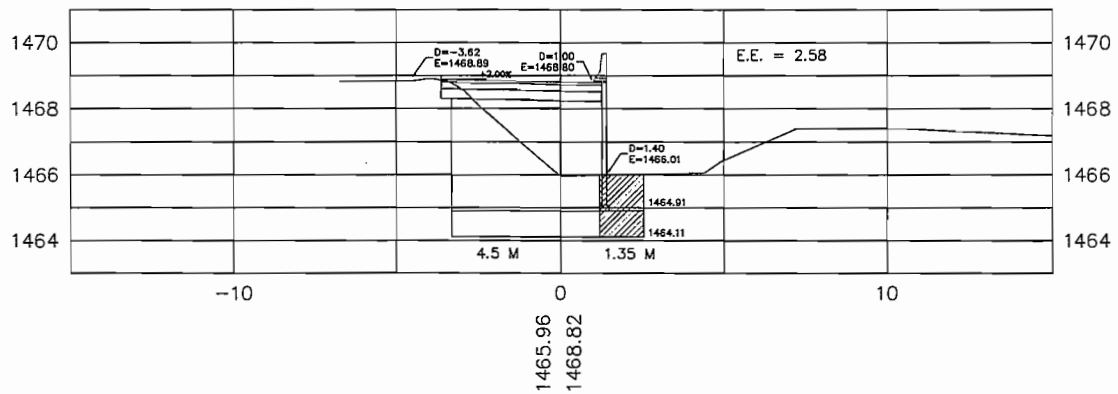
60+566.95



60+598.72



60+586.95



74

GENERADOR DE ESTIMACION

CONTRATO: 040/2016	TRAMO: Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA: Construcción del Eje Sesenta (60) del Distribuidor Vial Zooteclnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zooteclnia, en esta Ciudad de Chihuahua.	CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV

No DE ESTIMACION: No. 9	PERIODO: 01 AL 11 DE SEPTIEMBRE 2016
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CONCEPTO	21	OPERACIONES ARITMETICAS
Rellenos (Inciso: 3.01.02.023-H.01): De excavaciones para estructuras, con material producto de las excavaciones, compactado al 90% de su PVSM, por unidad de obra terminada.		
		VOL. = 1,226.52 M3
		PAGADO EN ESTIMACION ANTERIOR
		450 M3, AHORA SE PAGA OTRO VOL. PARCIAL
		1,226.52 M3 -450 M3 = 776.52 M3
		SE PAGA OTRO VOLUMEN PARCIAL DE
		VOL. = 590 M3
		SE ANEXAN SECCIONES Y CURVA MASA

CROQUIS	VOLUMEN A PAGAR
SE ANEXA CROQUIS	590 M3

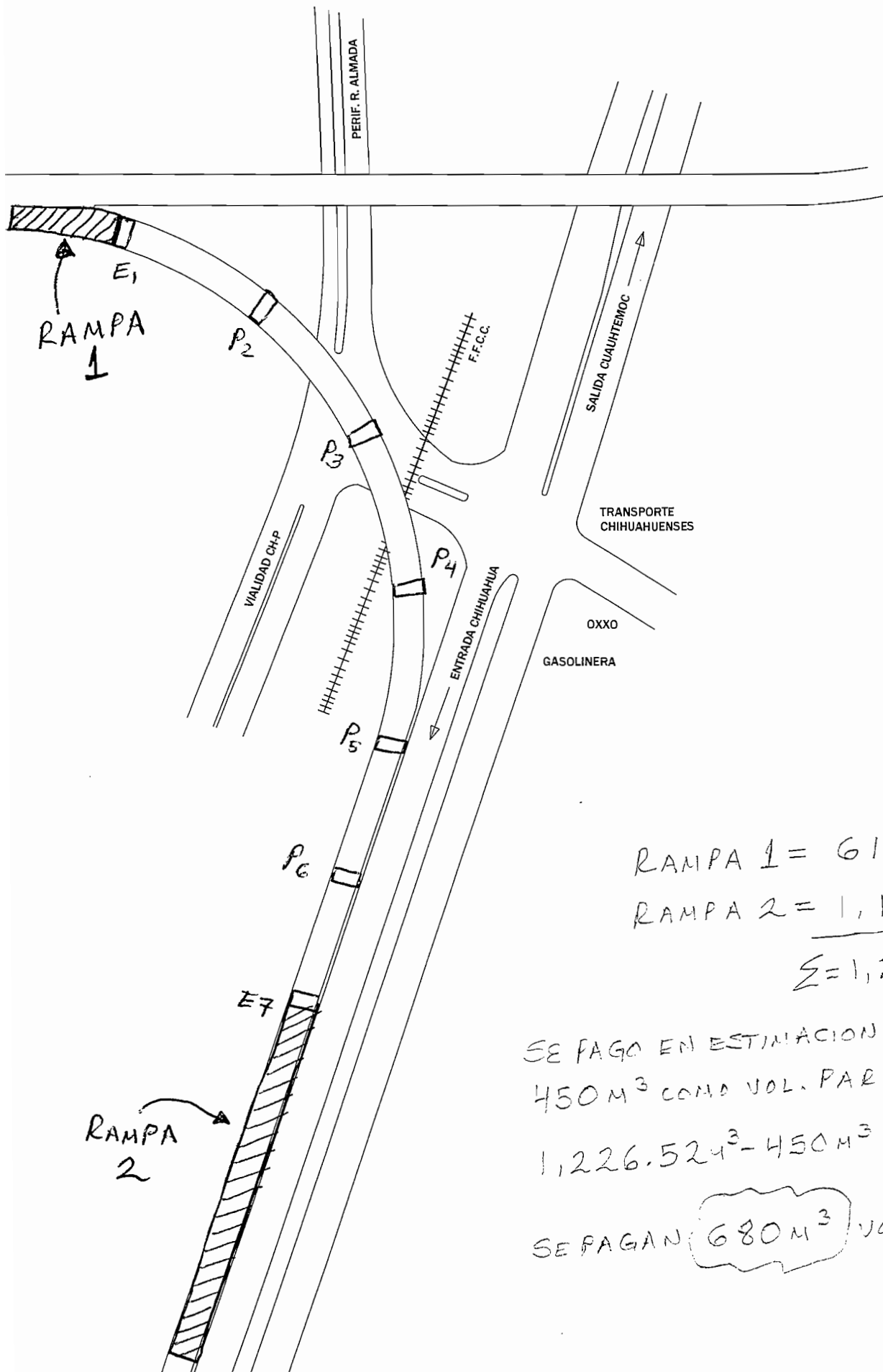


RESIDENTE
ING. RODOLFO ARMENDARIZ RONQUILLO



CONTRATISTA
CONSTRUCTORA SANTA ROSALIA SA DE CV

21- RELLENO DE EXCAVACION P/ESTRUCTURAS



$$\begin{aligned} \text{RAMPA 1} &= 61.70 \text{ m}^3 \text{ C.M.} \\ \text{RAMPA 2} &= 1,164.82 \text{ m}^3 \text{ C.M.} \end{aligned}$$

$$\Sigma = 1,226.52 \text{ m}^3$$

SE PAGO EN ESTIMACION ANTERIOR
450 m³ COMO VOL. PARCIAL

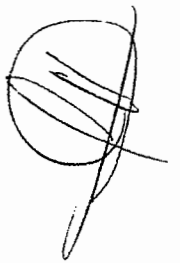
$$1,226.52 \text{ m}^3 - 450 \text{ m}^3 = 776.52 \text{ m}^3$$

SE PAGAN 680 m³ VOL. PARCIAL

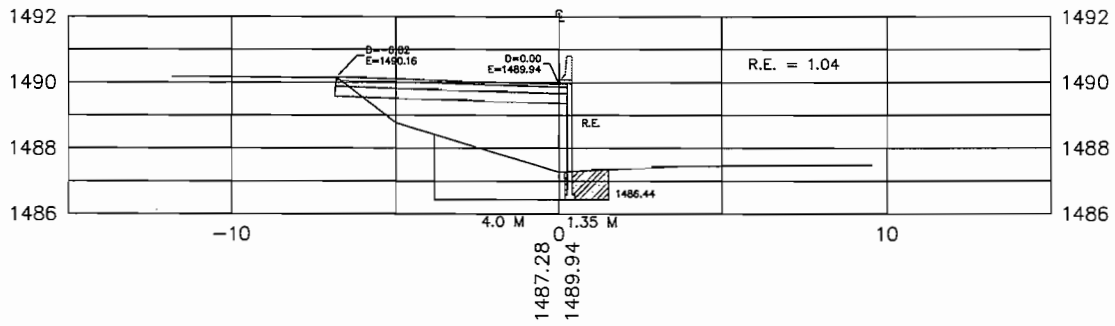
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CURVA MASA RAMPA 1 RELLENO PARA ESTRUCTURAS

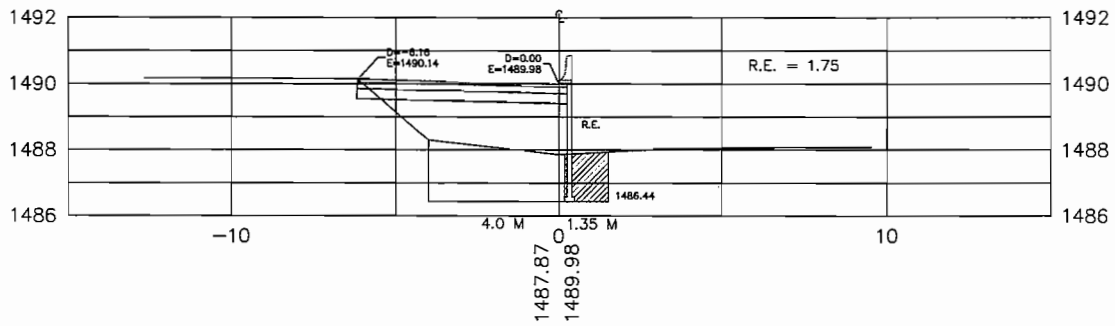
CADENAMIENTO		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
59+	999.36		1.54					
60+	000		1.51	0.00	3.05	0.32	0.00	0.98
60+	003.36		0.79	0.00	2.30	1.68	0.00	3.86
60+	003.36		1.75	0.00	2.54	0.00	0.00	0.00
60+	009.36		1.04	0.00	2.79	3.00	0.00	8.37
60+	009.36		2.01	0.00	3.05	0.00	0.00	0.00
60+	015.36		1.48	0.00	3.49	3.00	0.00	10.47
60+	015.36		2.46	0.00	3.94	0.00	0.00	0.00
60+	020		1.47	0.00	3.93	2.32	0.00	9.12
60+	023.36		1.46	0.00	2.93	1.68	0.00	4.92
60+	023.36		2.43	0.00	3.89	0.00	0.00	0.00
60+	025		2.05	0.00	4.48	0.82	0.00	3.67
60+	025		2.05	0.00	4.10	0.00	0.00	0.00
60+	029.36		0.82	0.00	2.87	2.18	0.00	6.26
60+	029.36		1.78	0.00	2.60	0.00	0.00	0.00
60+	035.36		1.11	0.00	2.89	3.00	0.00	8.67
60+	035.36		2.07	0.00	3.18	0.00	0.00	0.00
60+	038.63		1.22	0.00	3.29	1.64	0.00	5.38
60+				0.00	0.00	0.00	0.00	0.00
				0.00	0.00	0.00	0.00	0.00
							0.00	61.70



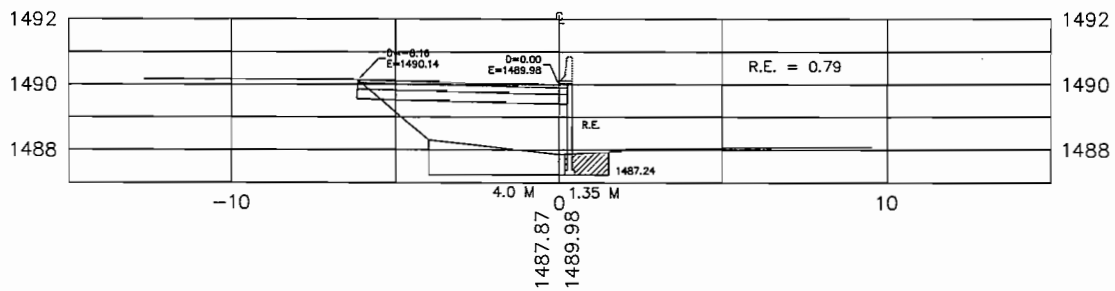
60+009.36



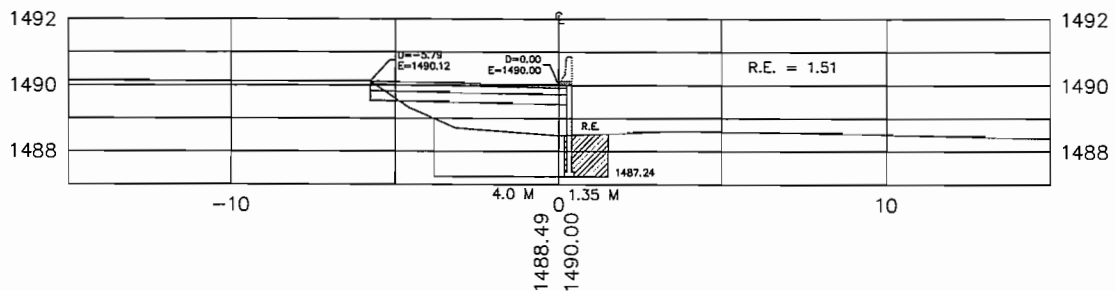
60+003.36



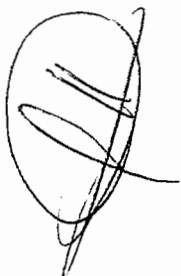
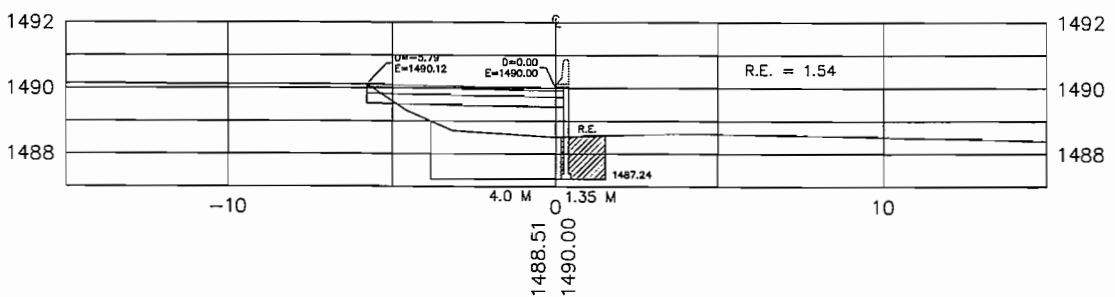
60+003.36



60+000



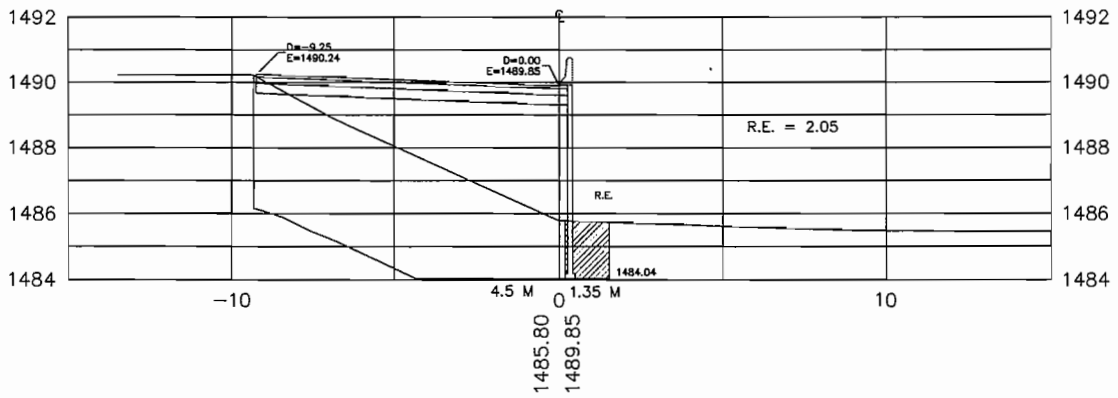
59+999.36



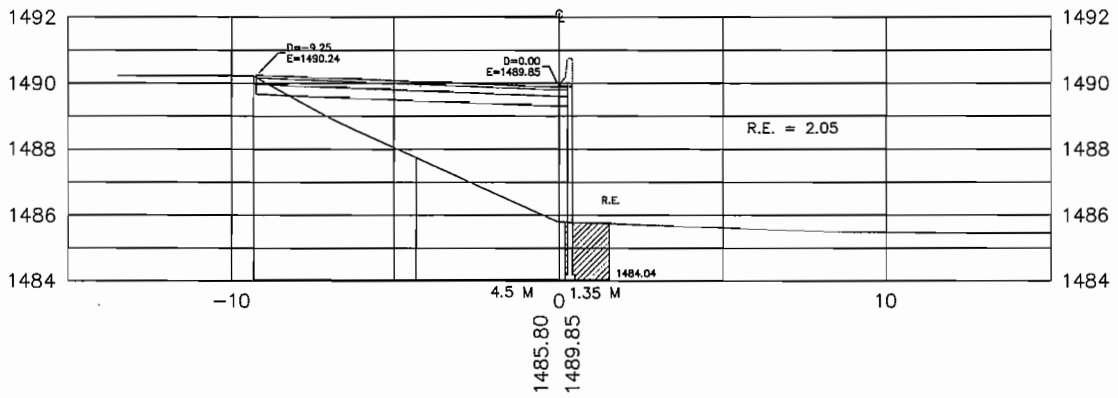
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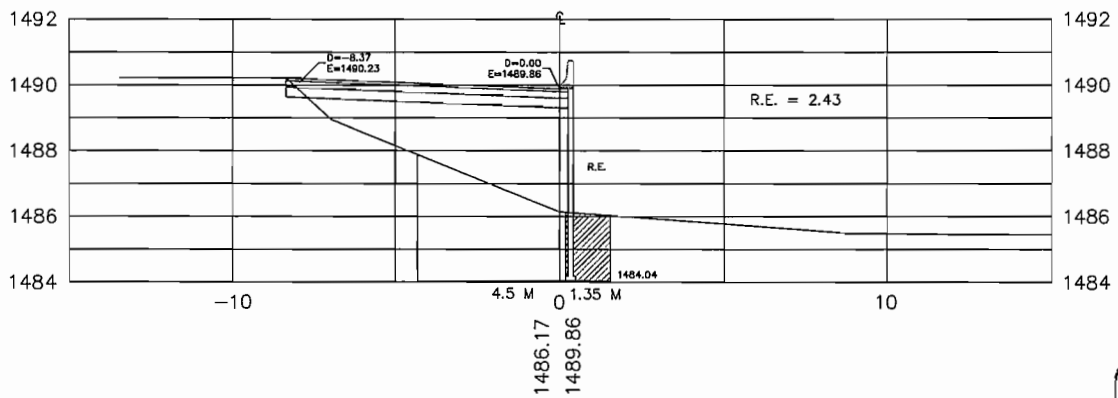
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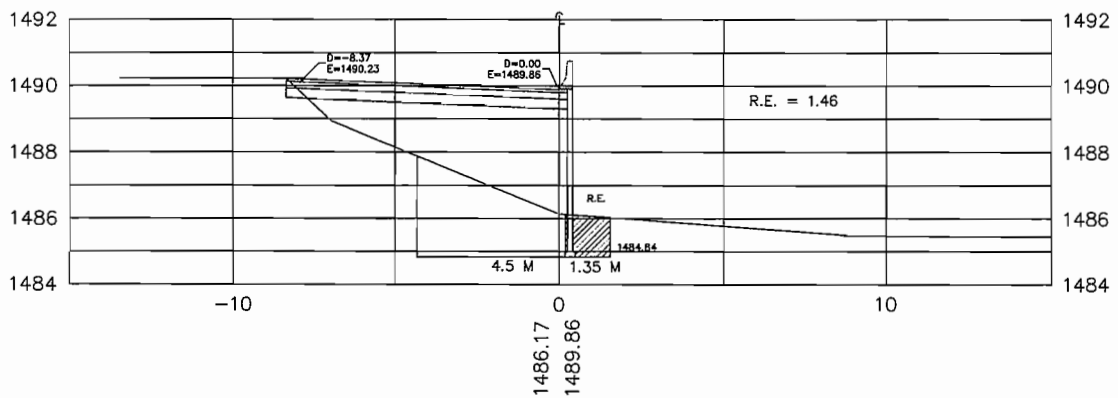
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60+023.36



60+023.36

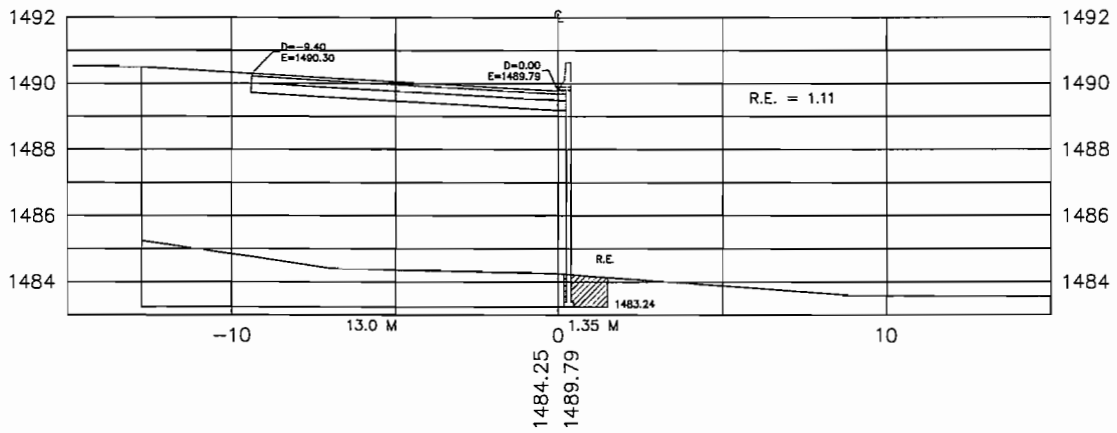


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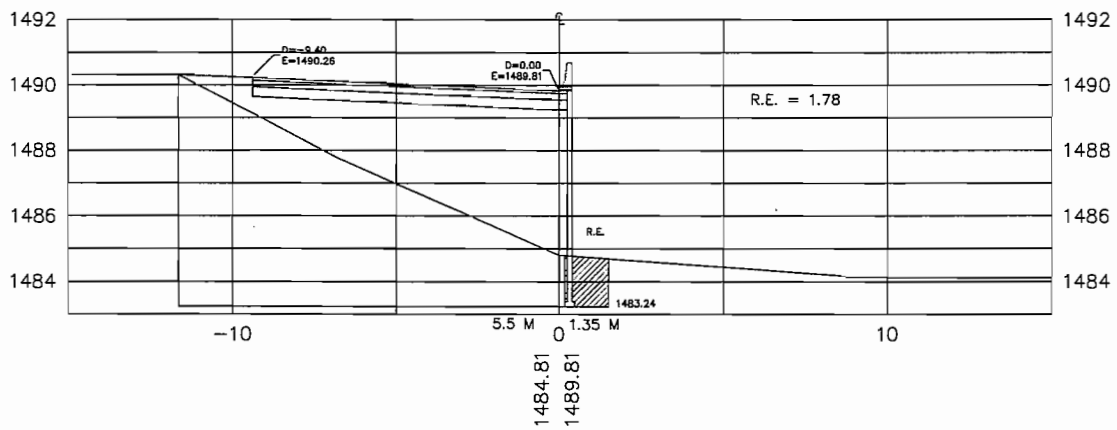
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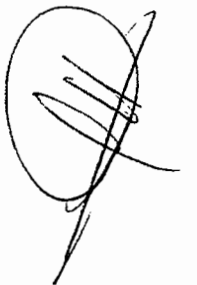
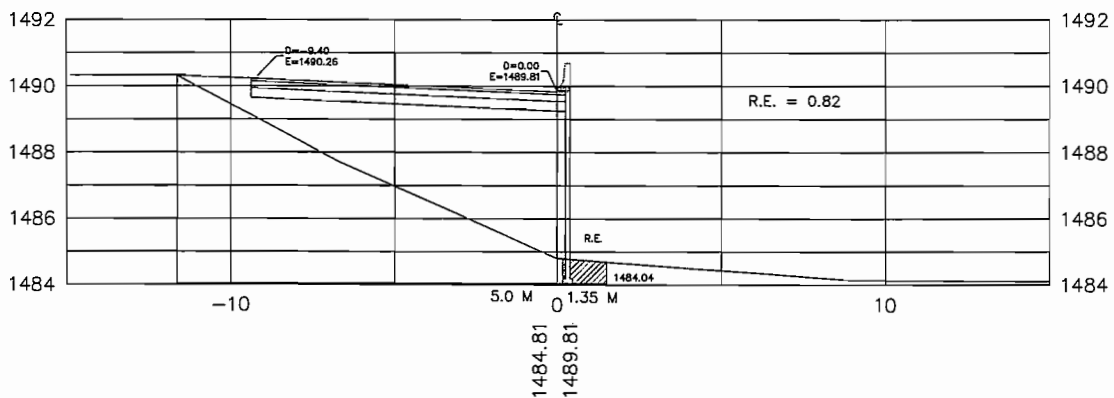
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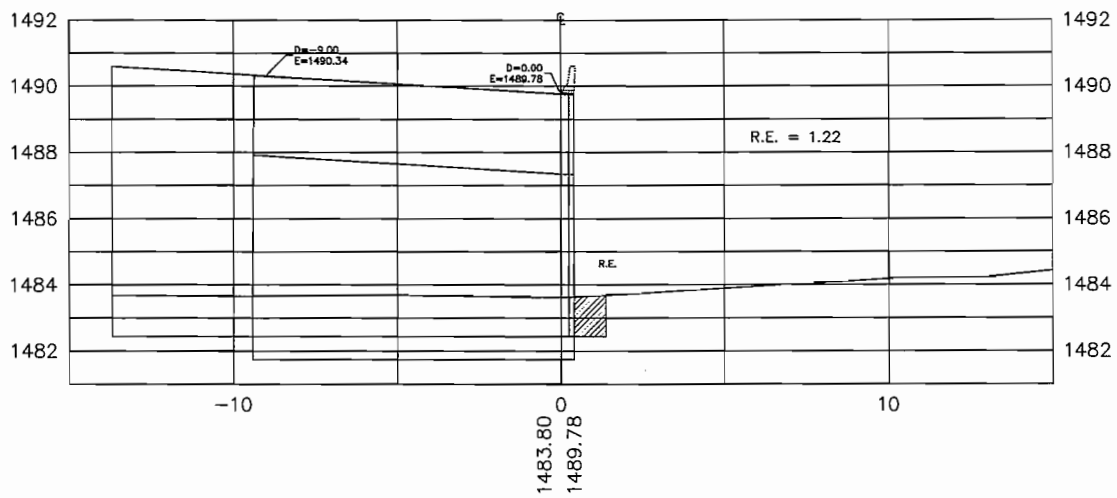
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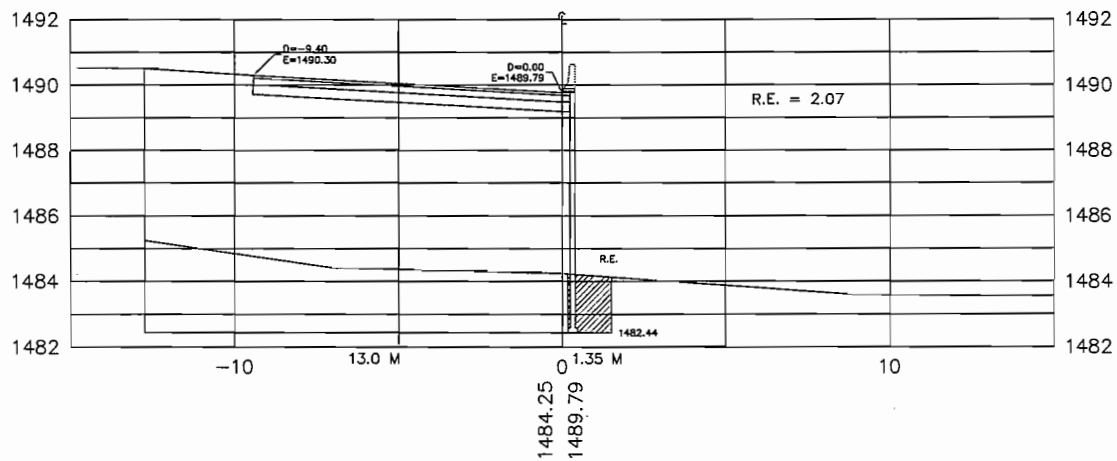
60+029.36



60+038.63



60+035.36



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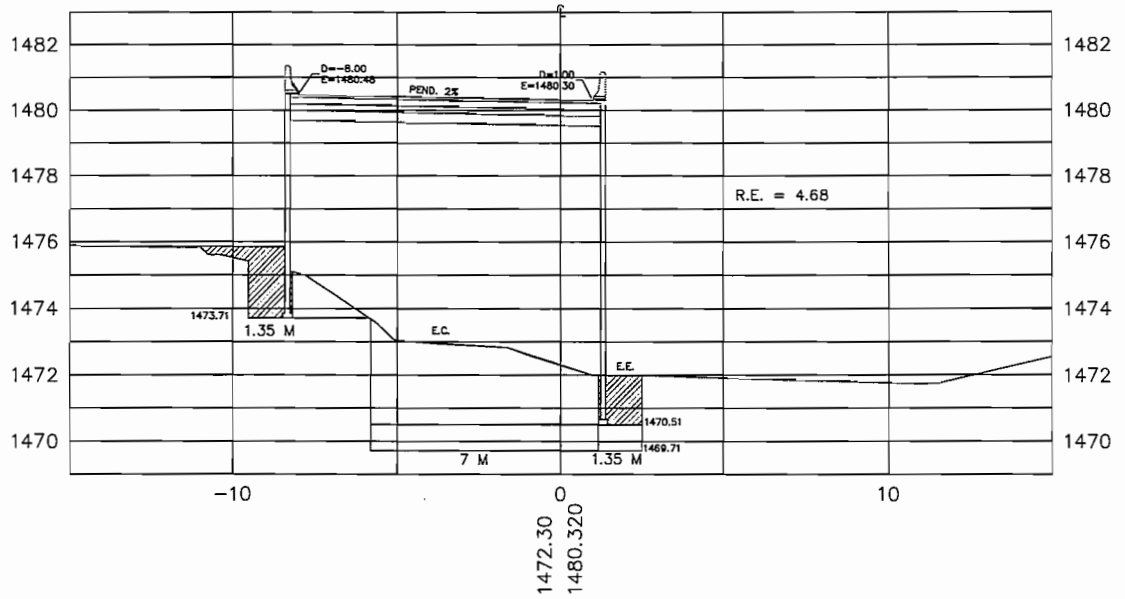
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82

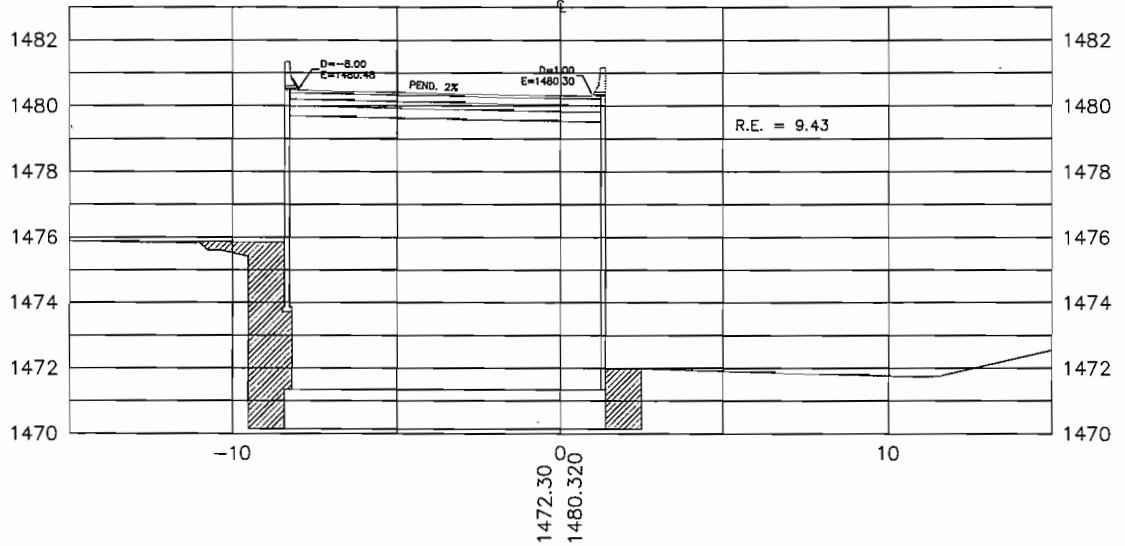
CURVA MASA RAMPA 2 RELLENO PARA ESTRUCTURAS

		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
CADENAMIENTO		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
60+	308.44		9.44					
60+	311.45		9.43	0	18.87	1.51	0.00	28.40
60+	311.45		4.68	0	14.11	0.00	0.00	0.00
60+	320		4.18	0	8.86	4.28	0.00	37.88
60+	320.69		4.19	0	8.37	0.34	0.00	2.89
60+	320.69		5.14	0	9.33	0.00	0.00	0.00
60+	340		4.29	0	9.43	9.66	0.00	91.05
60+	352.69		4.40	0	8.69	6.35	0.00	55.14
60+	352.69		5.17	0	9.57	0.00	0.00	0.00
60+	360		4.60	0	9.77	3.66	0.00	35.71
60+	362.95		4.62	0	9.22	1.47	0.00	13.60
60+	362.95		5.59	0	10.21	0.00	0.00	0.00
60+	378.69		4.52	0	10.11	7.87	0.00	79.57
60+	378.69		5.47	0	9.99	0.00	0.00	0.00
60+	380		5.48	0	10.95	0.66	0.00	7.17
60+	384.95		5.30	0	10.78	2.47	0.00	26.68
60+	384.95		6.27	0	11.57	0.00	0.00	0.00
60+	400		4.77	0	11.04	7.53	0.00	83.08
60+	412.69		4.78	0	9.55	6.35	0.00	60.59
60+	412.69		5.68	0	10.46	0.00	0.00	0.00
60+	416.95		5.47	0	11.15	2.13	0.00	23.75
60+	416.95		6.46	0	11.93	0.00	0.00	0.00
60+	420		5.39	0	11.85	1.53	0.00	18.07
60+	436.69		4.48	0	9.87	8.35	0.00	82.37
60+	436.69		5.43	0	9.91	0.00	0.00	0.00
60+	440		5.61	0	11.04	1.66	0.00	18.27
60+	452.95		5.06	0	10.67	6.47	0.00	69.09
60+	452.95		6.03	0	11.09	0.00	0.00	0.00
60+	460		5.19	0	11.22	3.53	0.00	39.55
60+	466.69		4.91	0	10.10	3.35	0.00	33.78
60+	466.69		5.87	0	10.78	0.00	0.00	0.00
60+	474.95		5.07	0	10.94	4.13	0.00	45.18
60+	474.95		5.97	0	11.04	0.00	0.00	0.00
60+	480		5.72	0	11.69	2.53	0.00	29.52
60+	498.95		2.87	0	8.59	9.47	0.00	81.39
60+	498.95		4.76	0	7.63	0.00	0.00	0.00
60+	500		4.75	0	9.51	0.53	0.00	4.99
60+	518.69		3.87	0	8.62	9.35	0.00	80.55
60+	518.69		4.88	0	8.75	0.00	0.00	0.00
60+	520		1.57	0	6.45	0.65	0.00	4.22
60+	522.95		1.49	0	3.06	1.48	0.00	4.51
60+	522.95		1.49	0	2.98	0.00	0.00	0.00
60+	540		1.31	0	2.80	8.52	0.00	23.87
60+	546.95		0.98	0	2.29	3.48	0.00	7.96
60+	546.95		1.94	0	2.92	0.00	0.00	0.00
60+	560		1.36	0	3.30	6.52	0.00	21.53
60+	560.89		1.28	0	2.64	0.00	0.00	0.00
60+	566.95		0.68	0	1.96	3.03	0.00	5.94
60+	566.95		1.68	0	2.36	0.00	0.00	0.00
60+	580		1.37	0	3.05	6.52	0.00	19.90
60+	586.95		2.14	0	3.51	3.48	0.00	12.20
60+	586.95		1.24	0	3.38	0.00	0.00	0.00
60+	598.72		1.55	0	2.79	5.88	0.00	16.42
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
							0.00	1,164.82

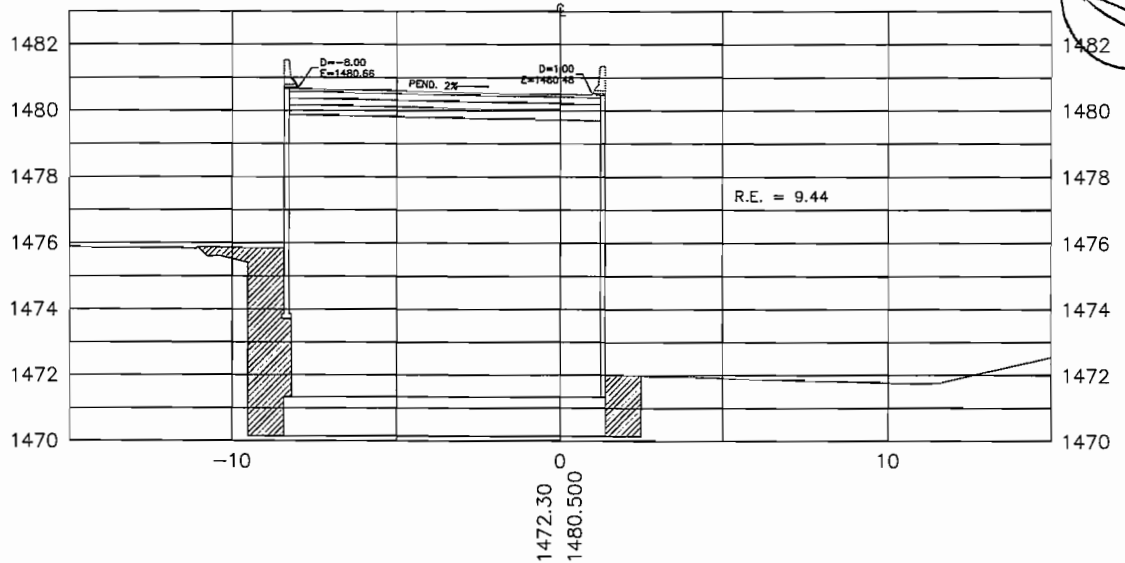
60+311.45



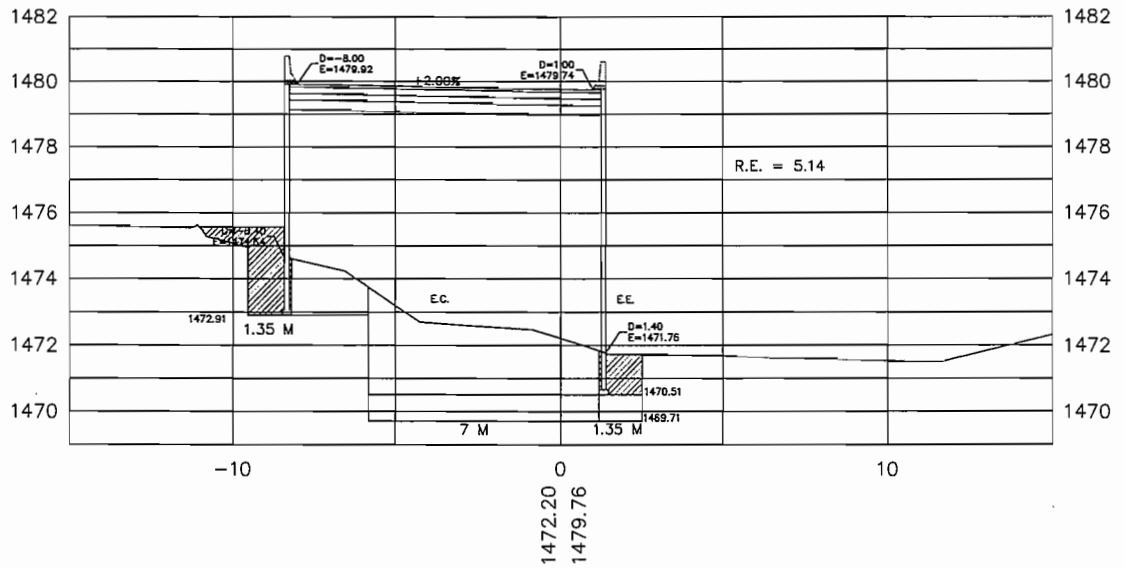
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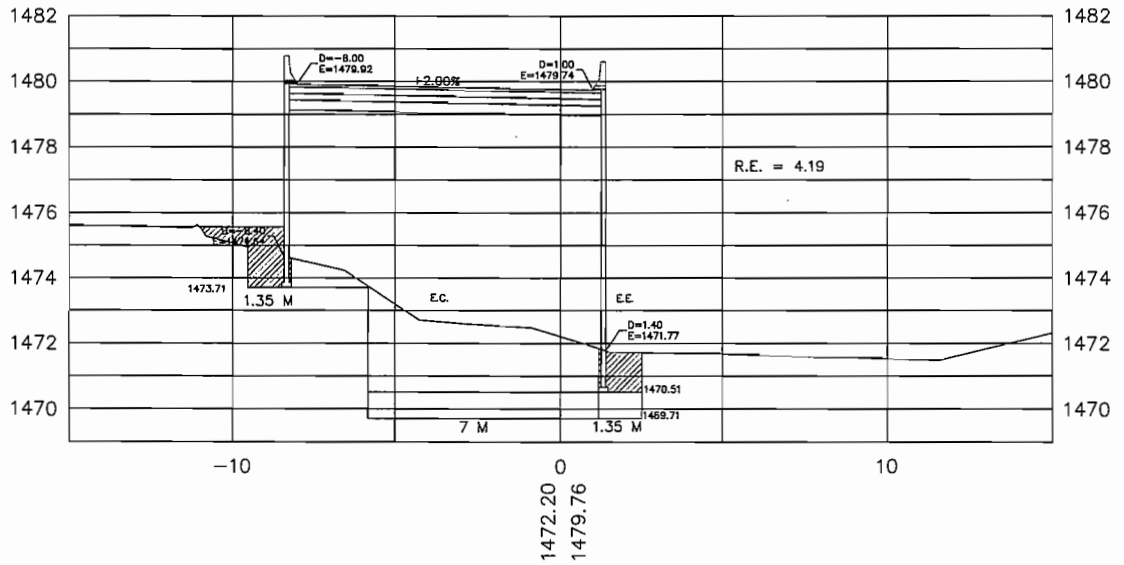
60+308.44
ESTRIBO 7



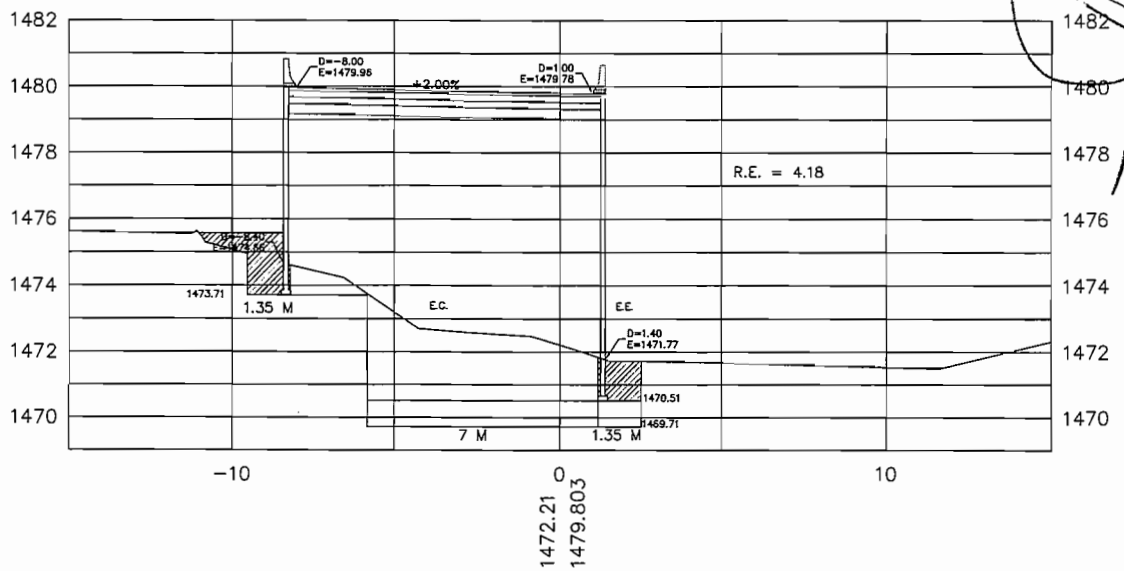
60+320.69



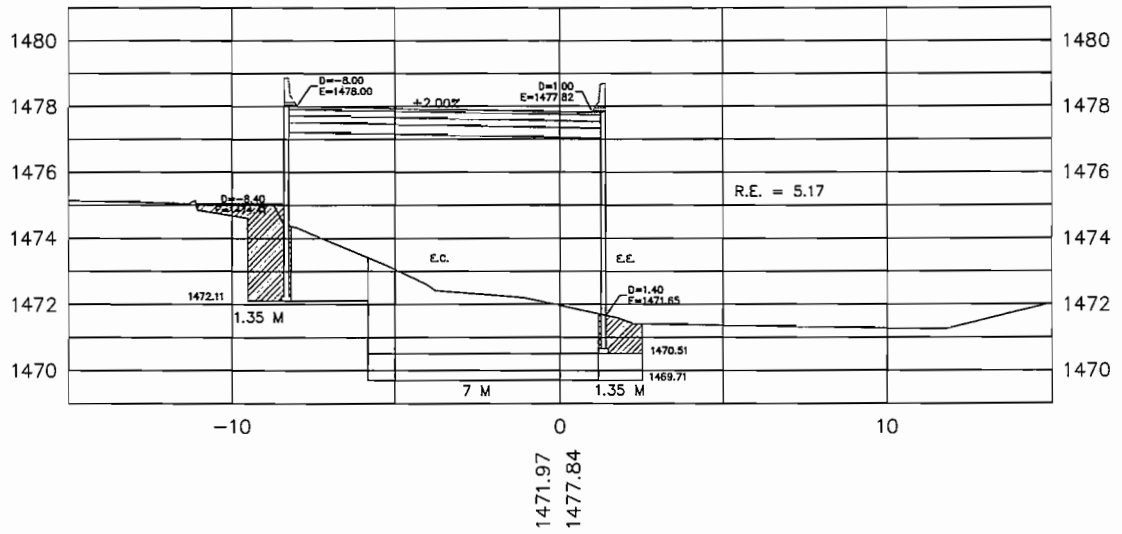
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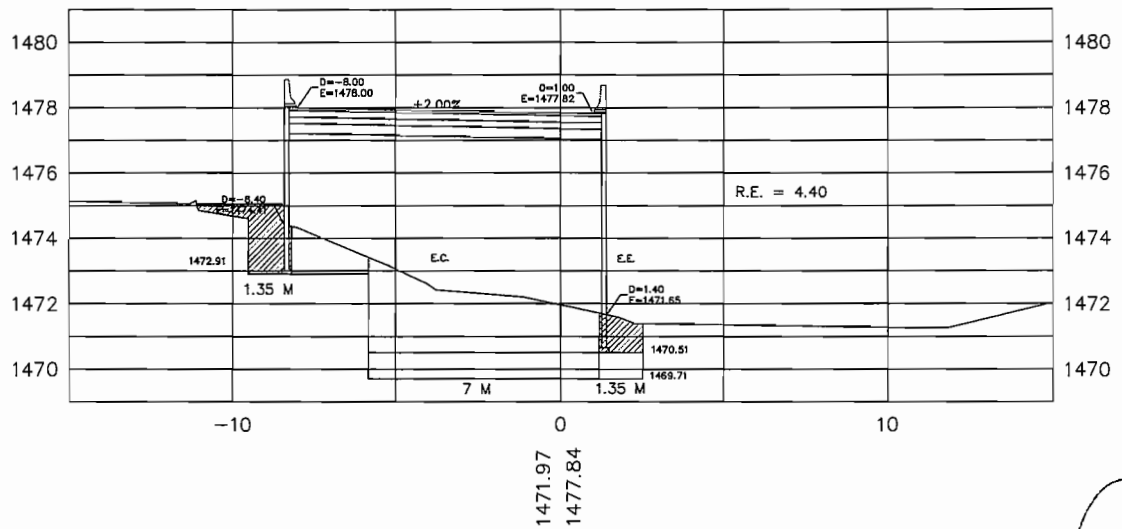
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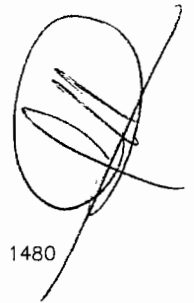
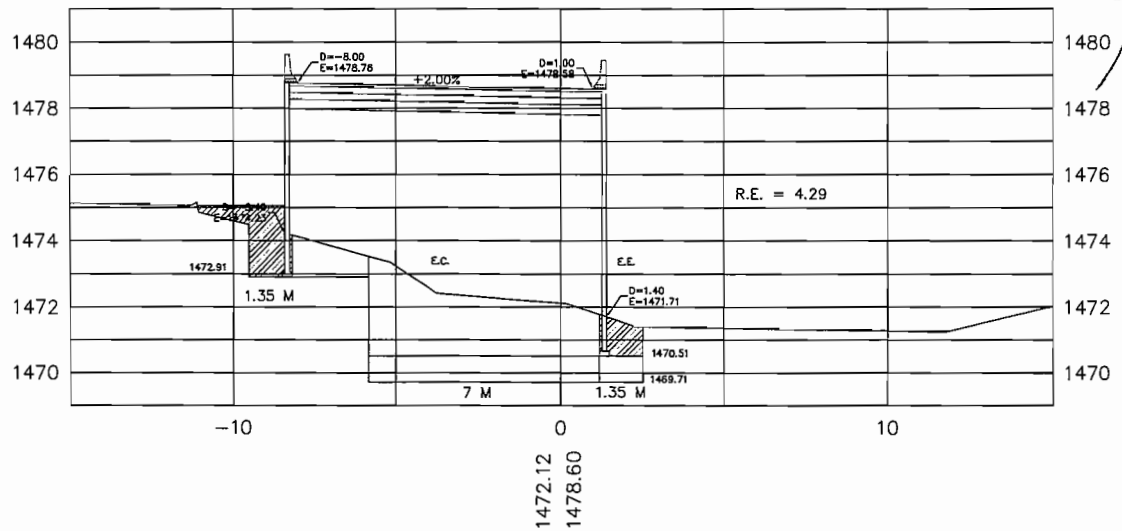
60+352.69



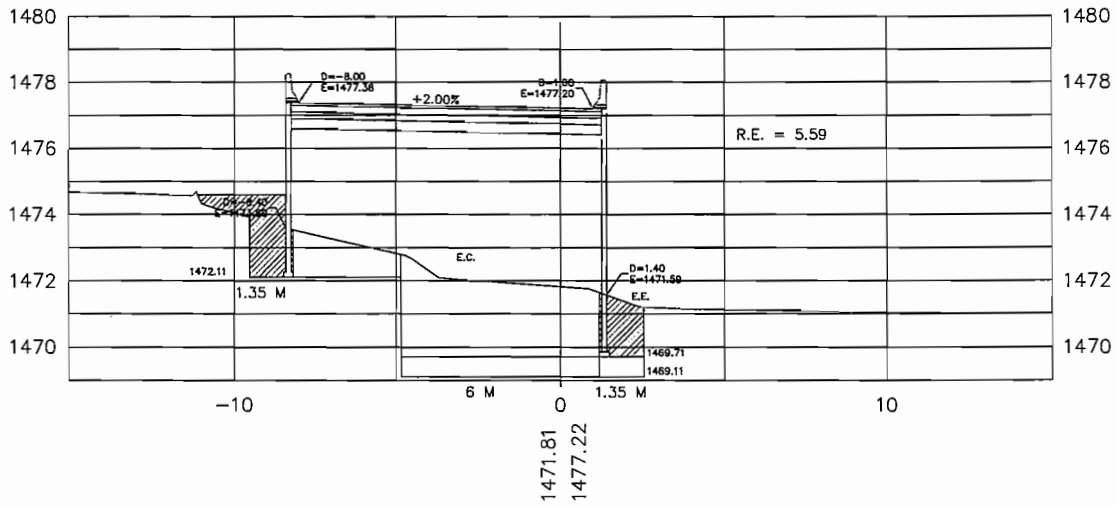
60+352.69



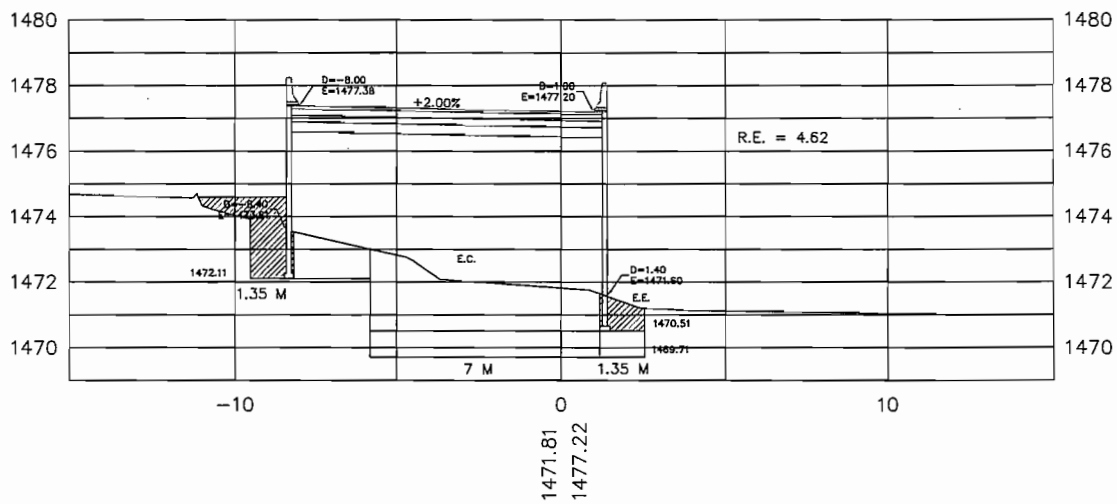
60+340



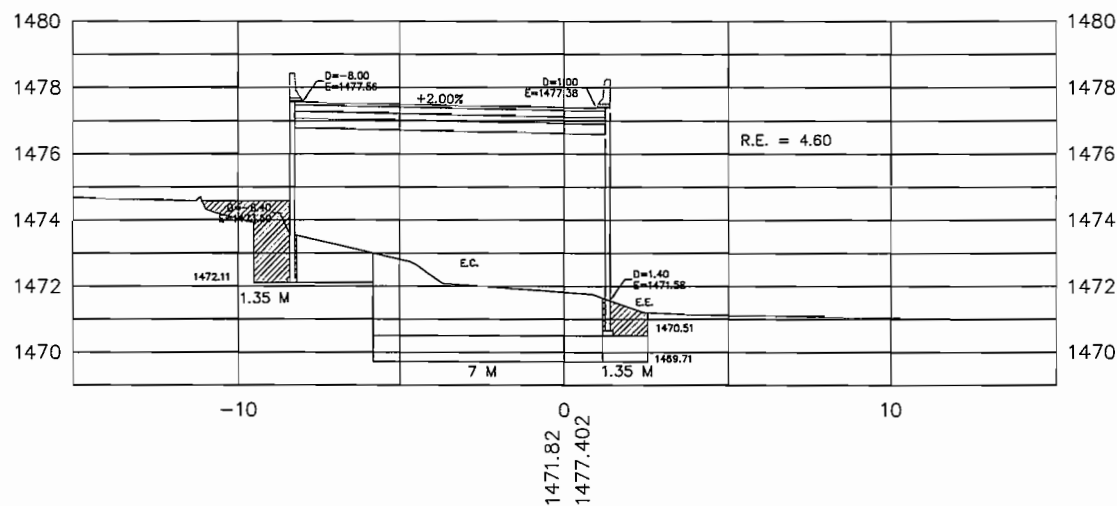
60+362.95



60+362.95



60+360

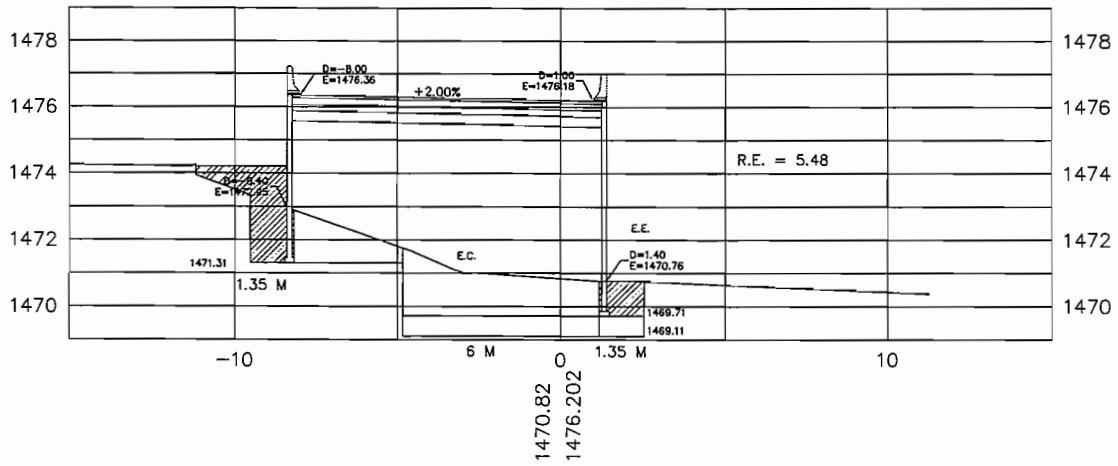


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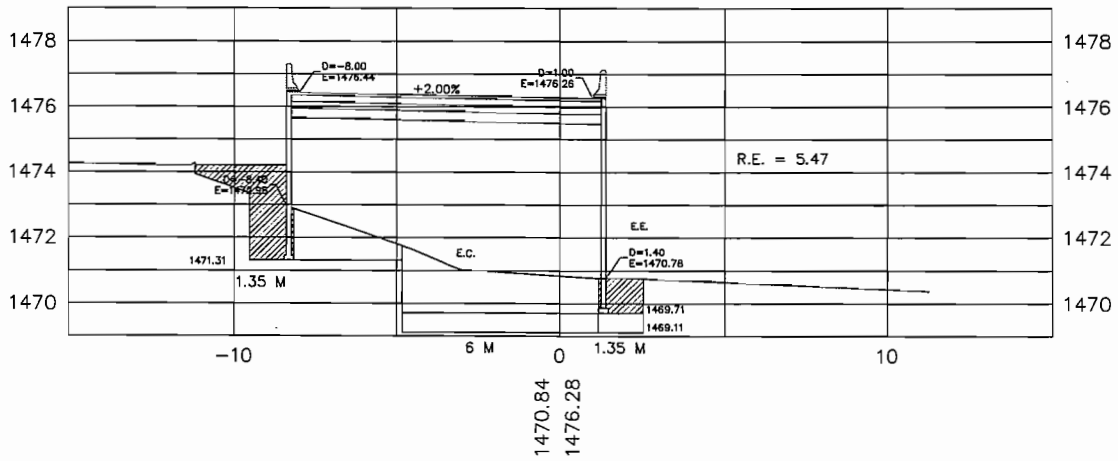
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87

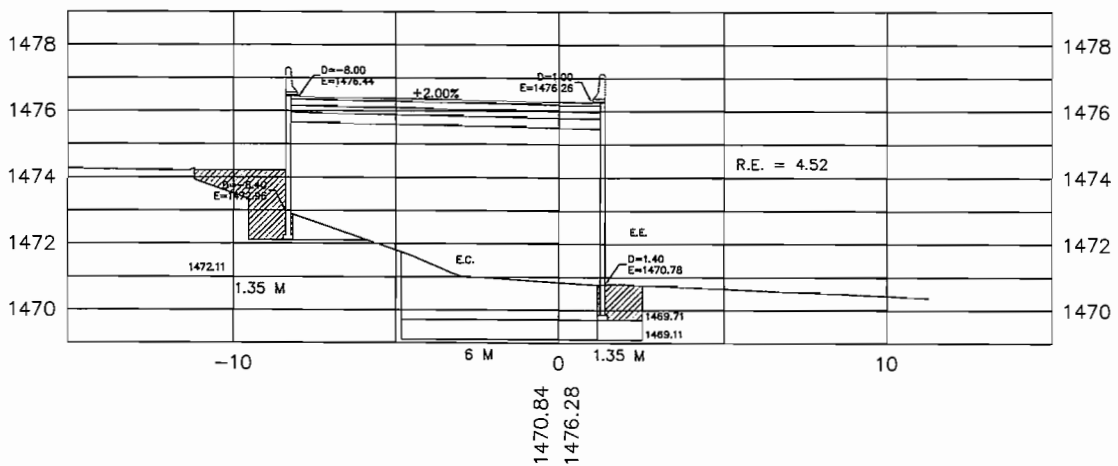
60+380



60+378.69

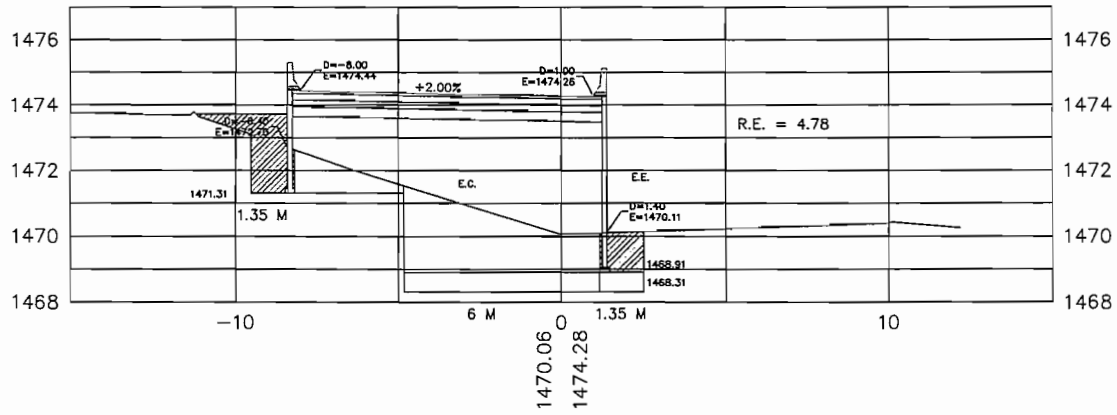


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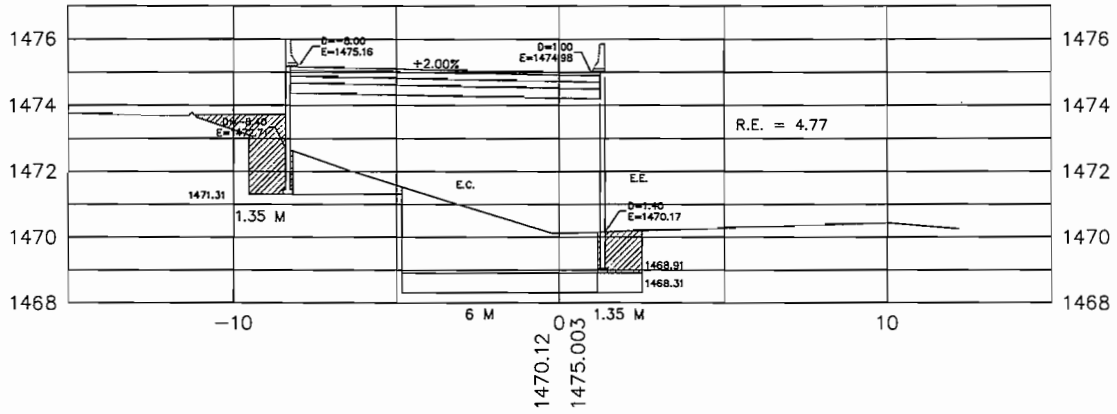


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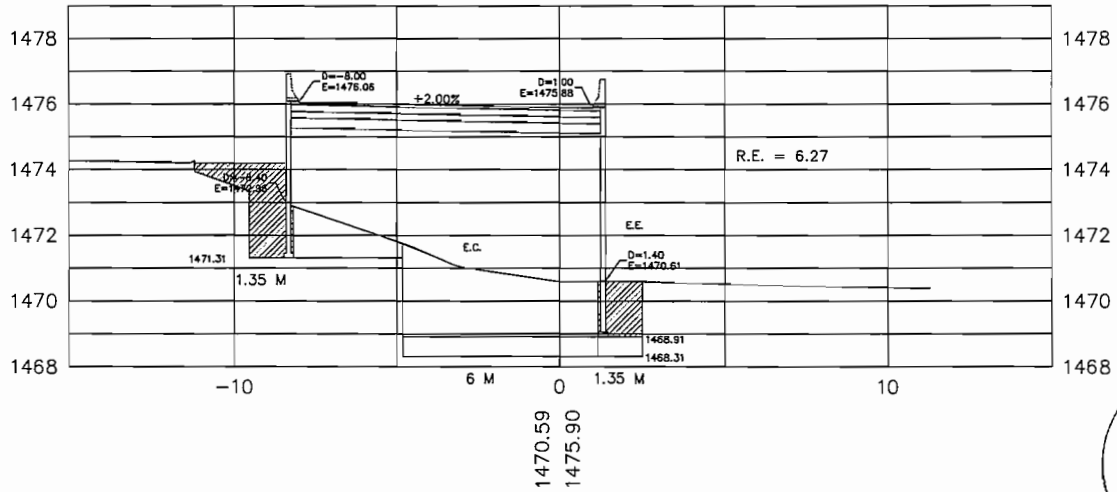
60+412.69



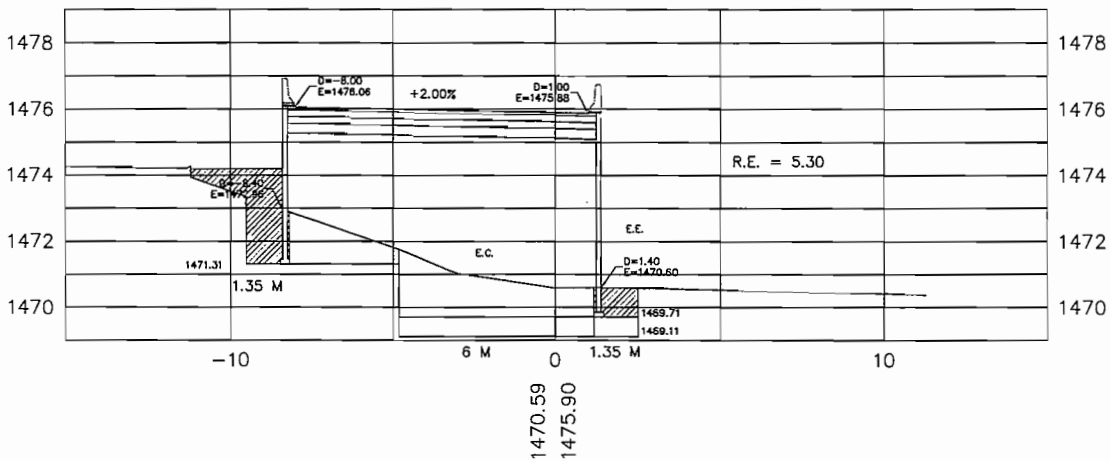
60+400



60+384.95

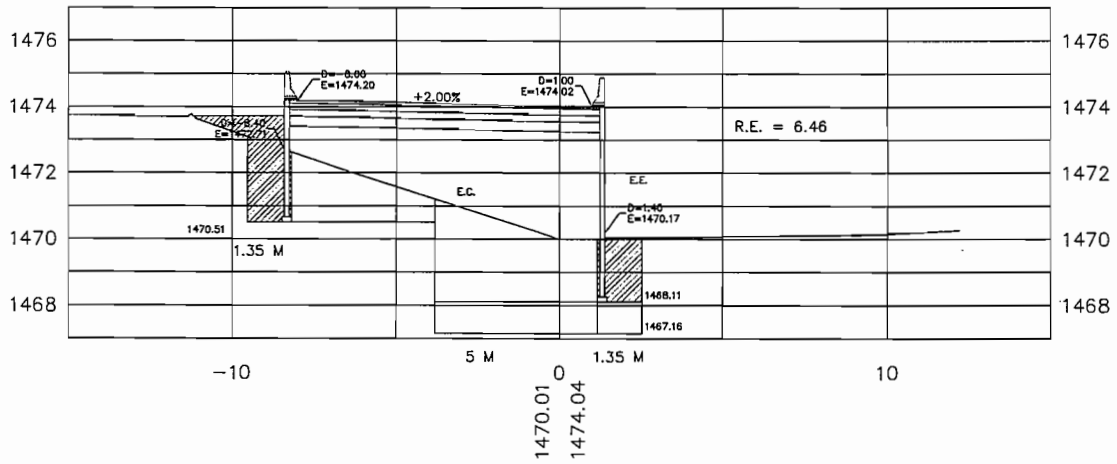


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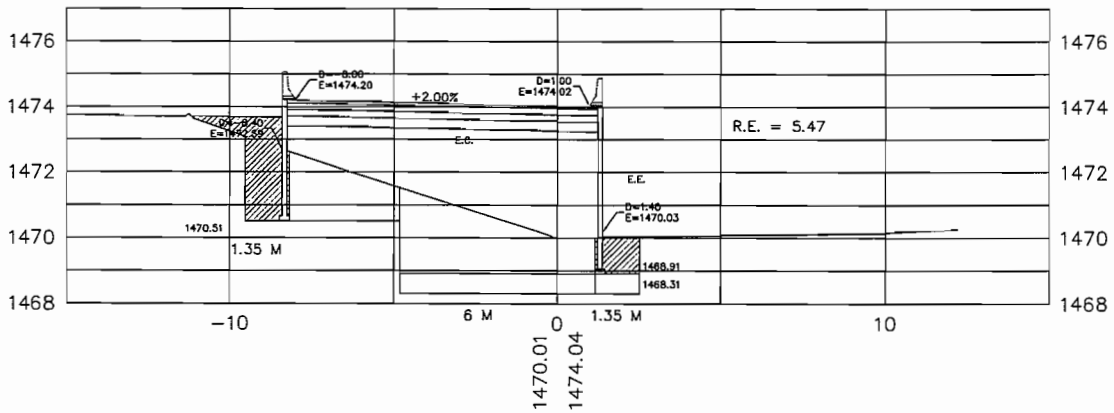


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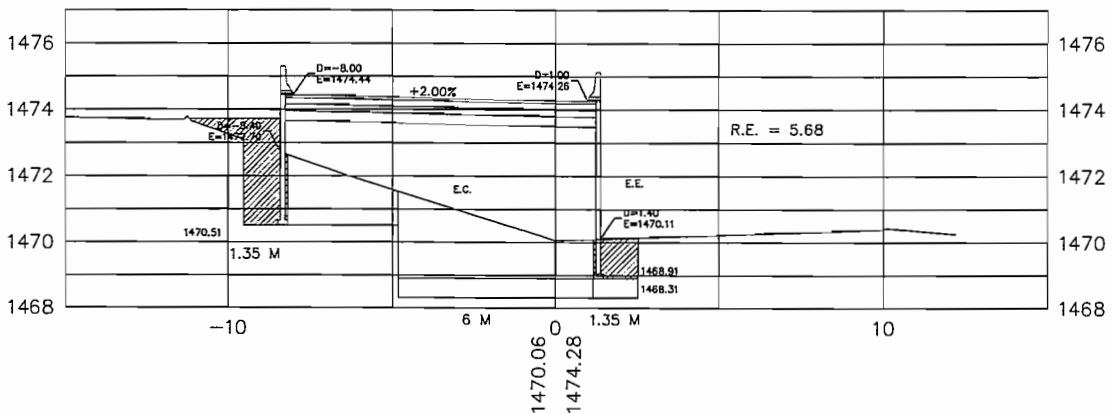
60+416.95



60+416.95

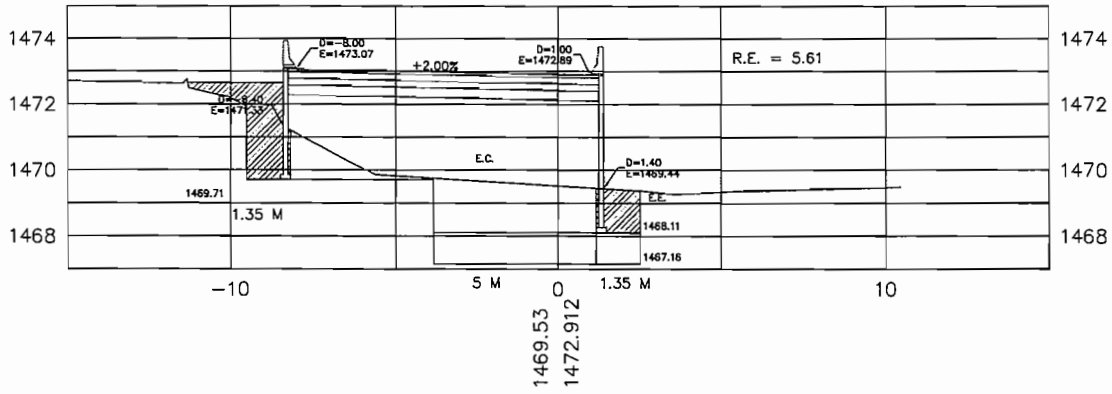


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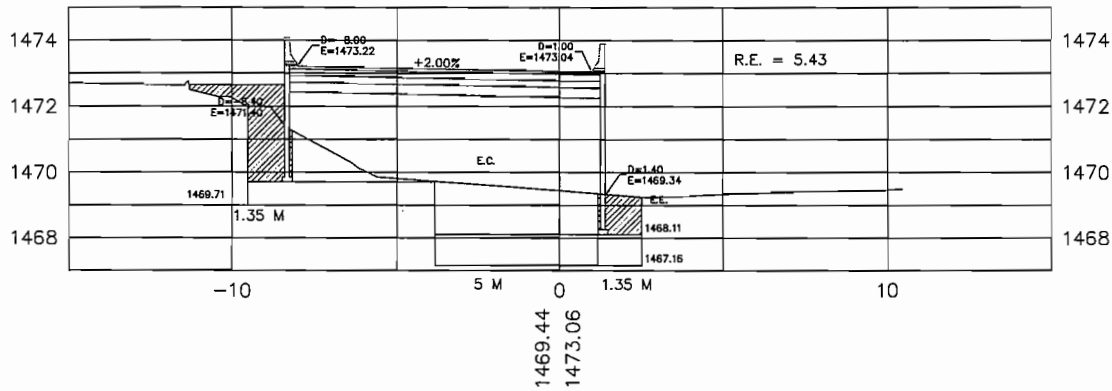


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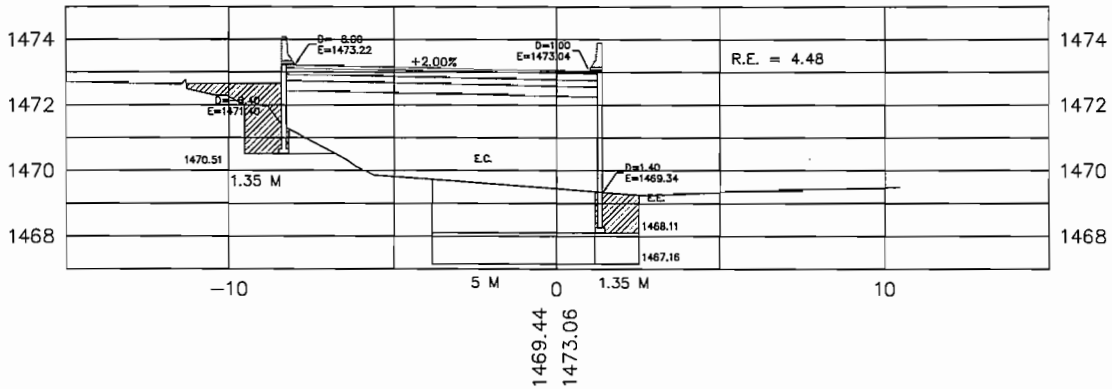
60+440



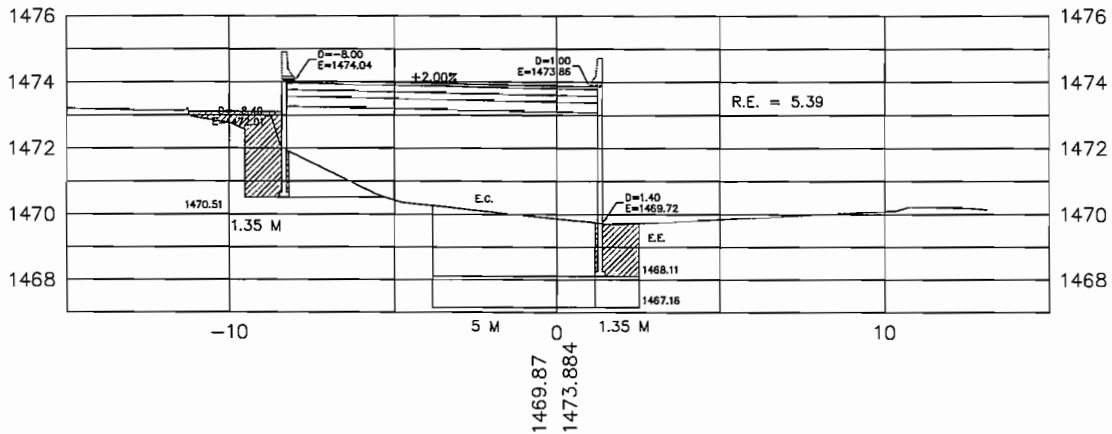
60+436.69



60+436.69

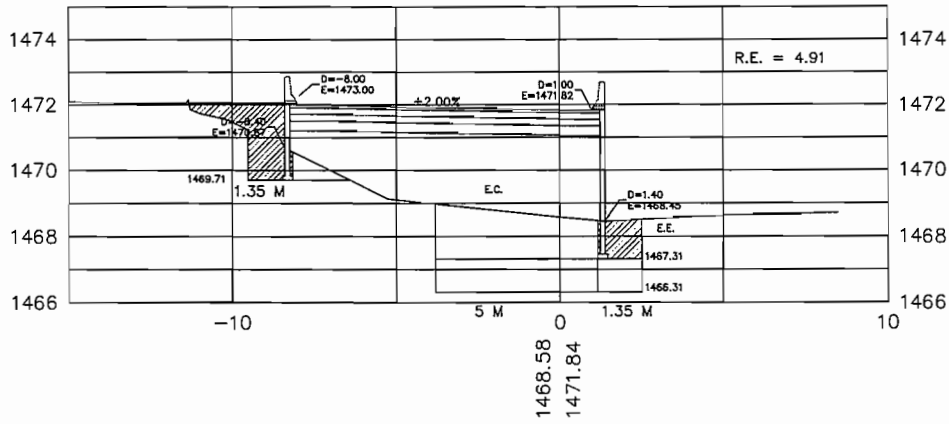


60+420

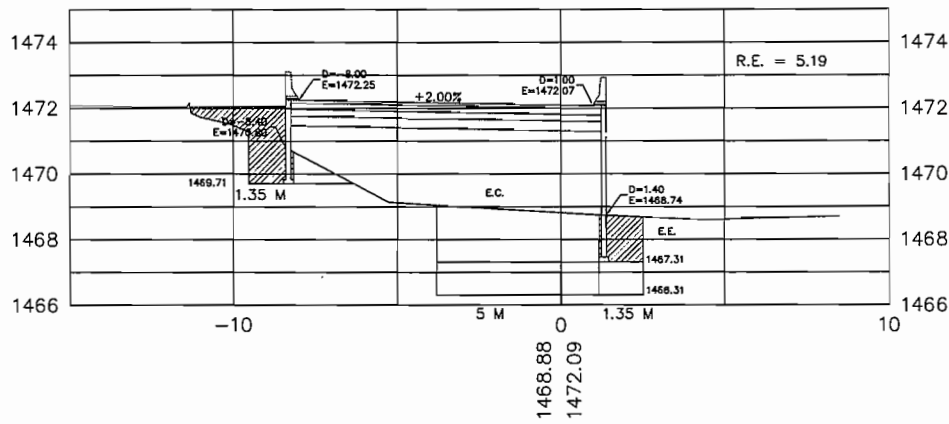


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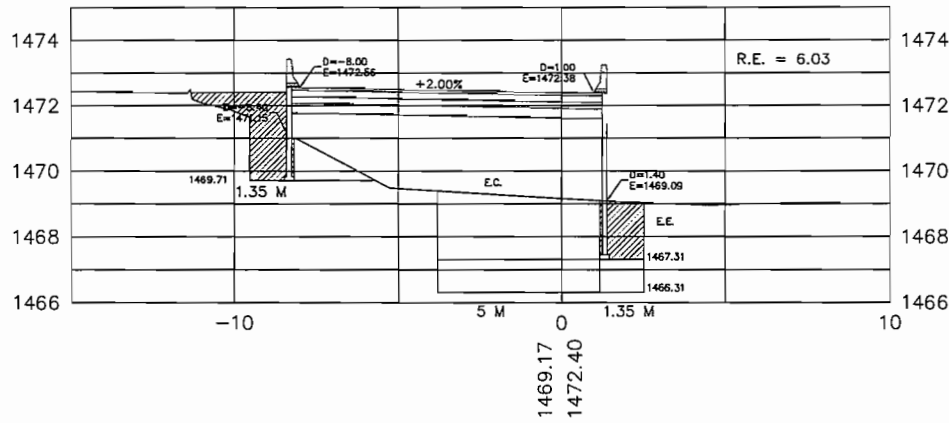
60+466.69



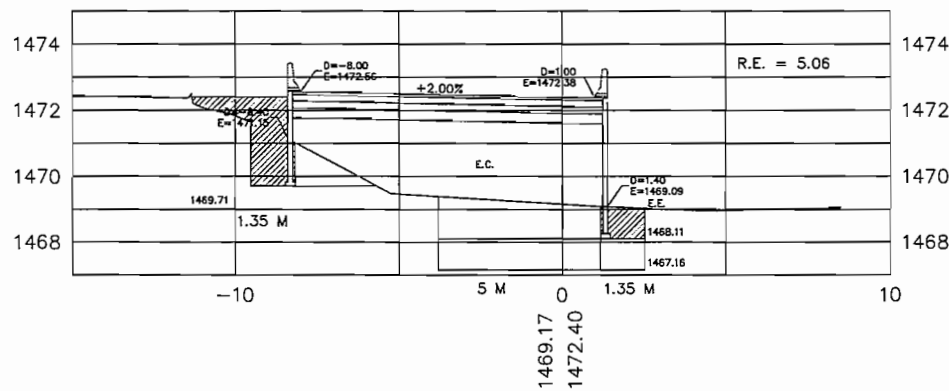
60+460



60+452.95



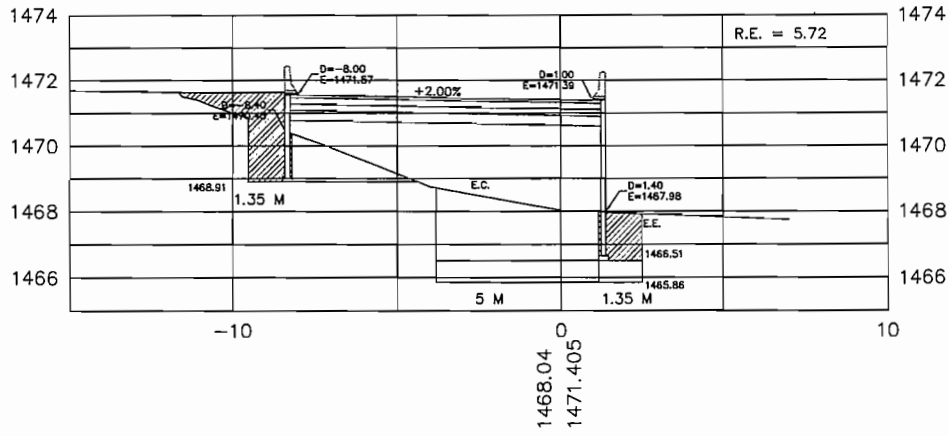
60+452.95



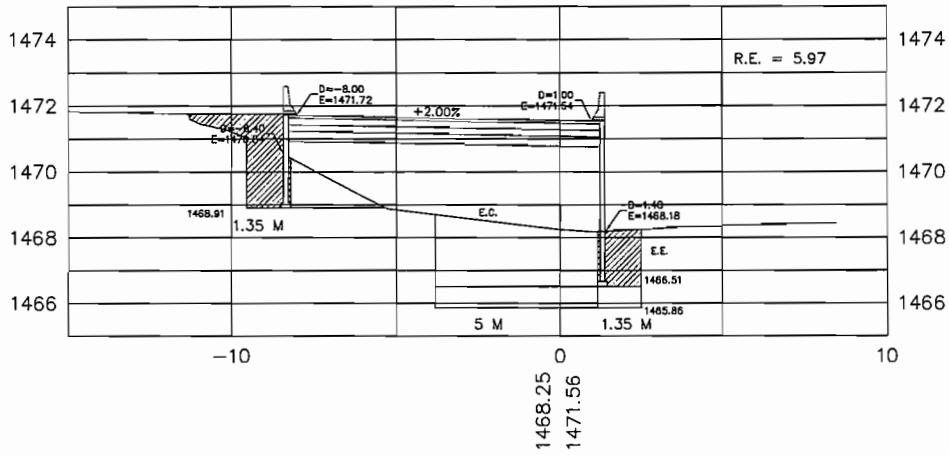
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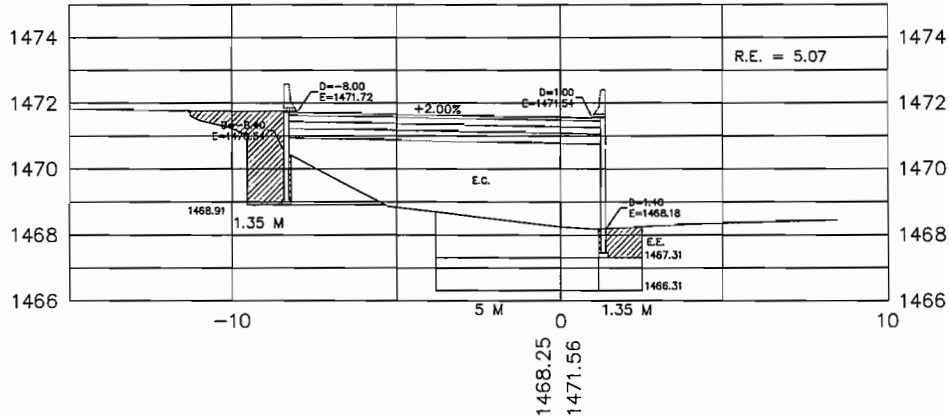
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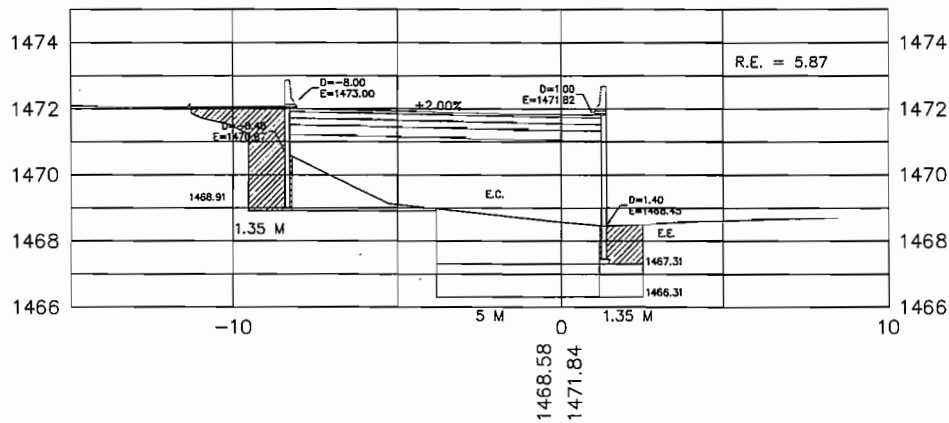
60+474.95



60+474.95

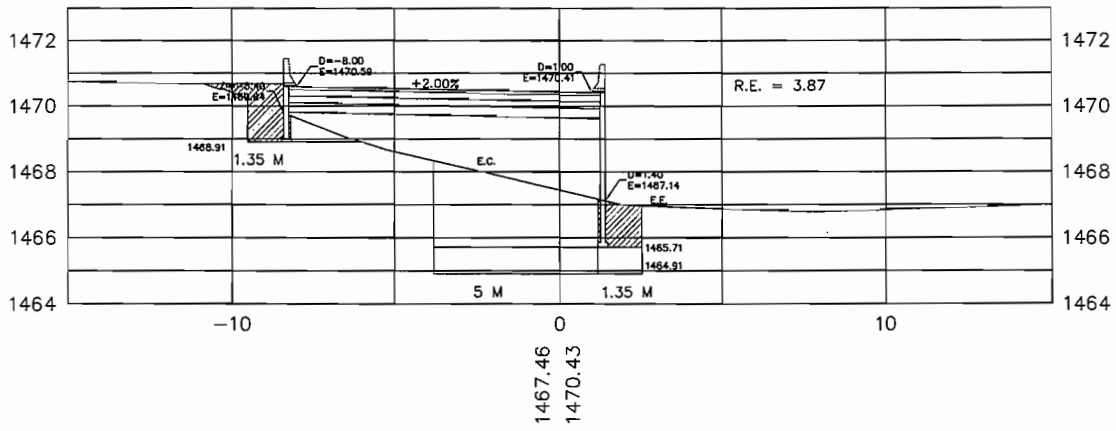


60+466.69

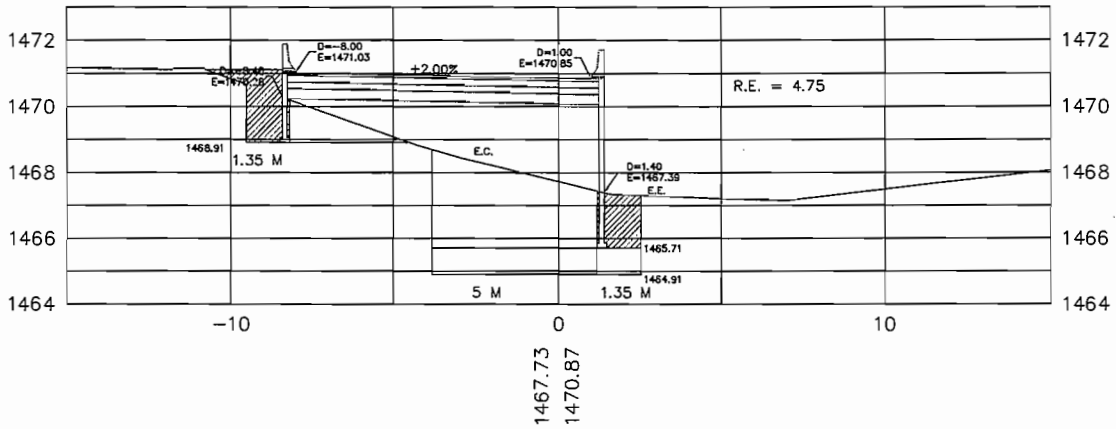


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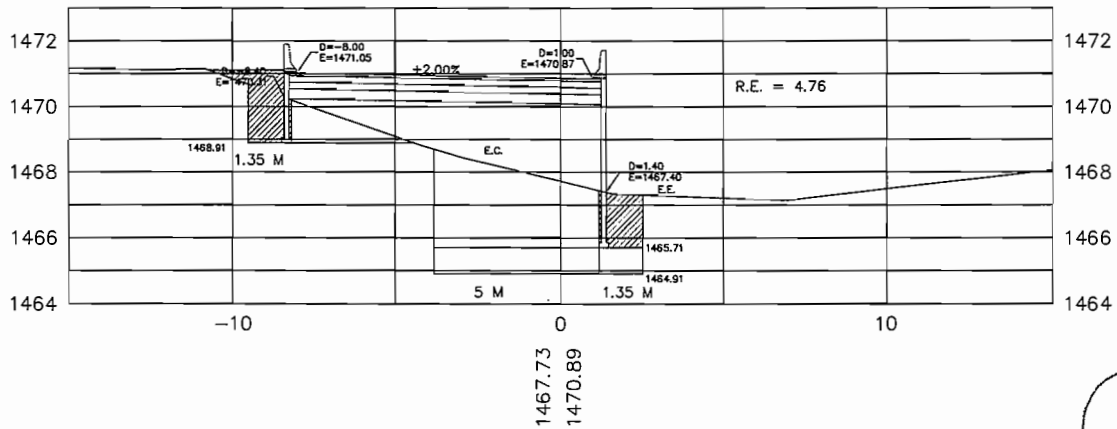
60+518.69



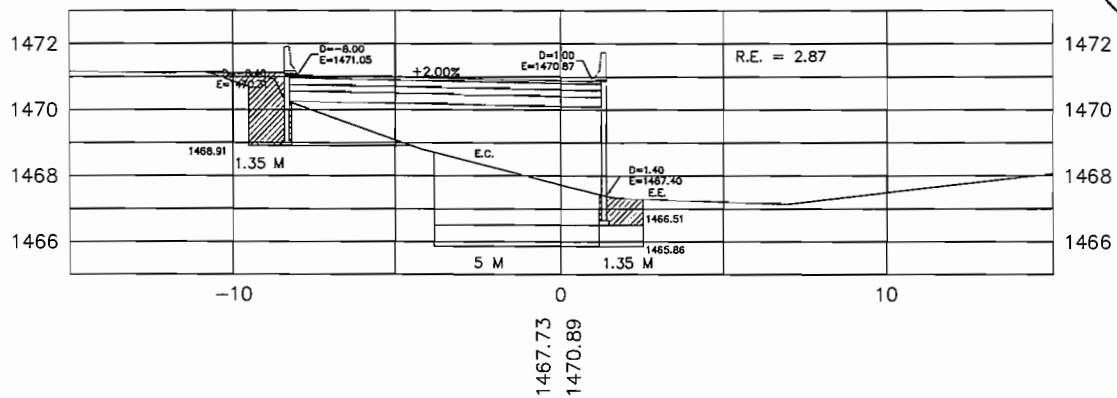
60+500



60+498.95

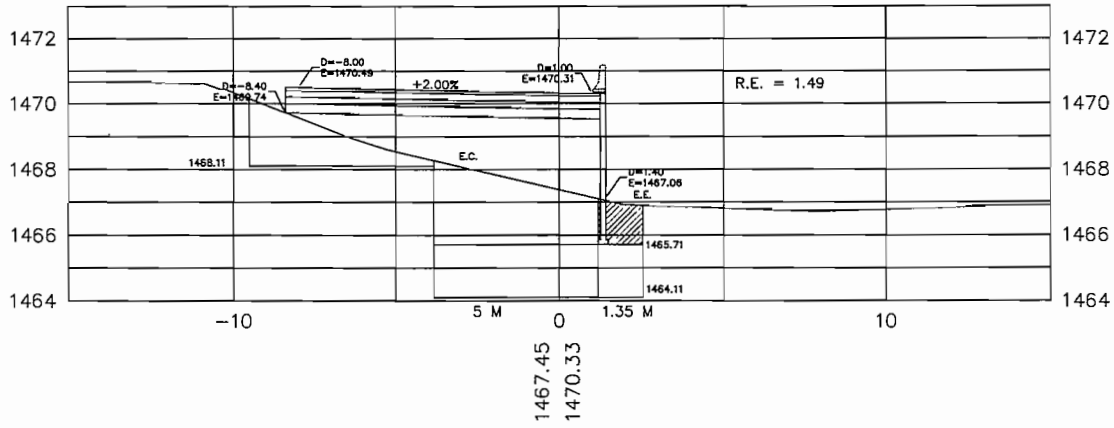


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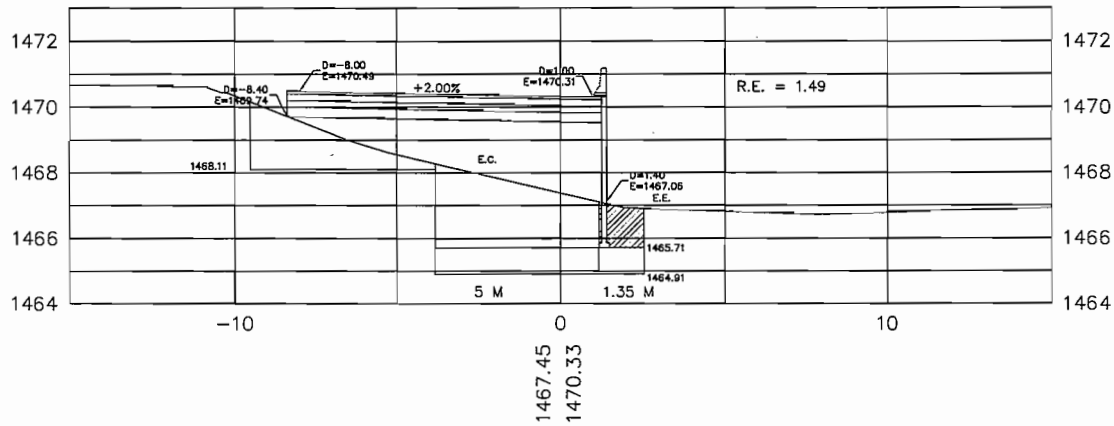


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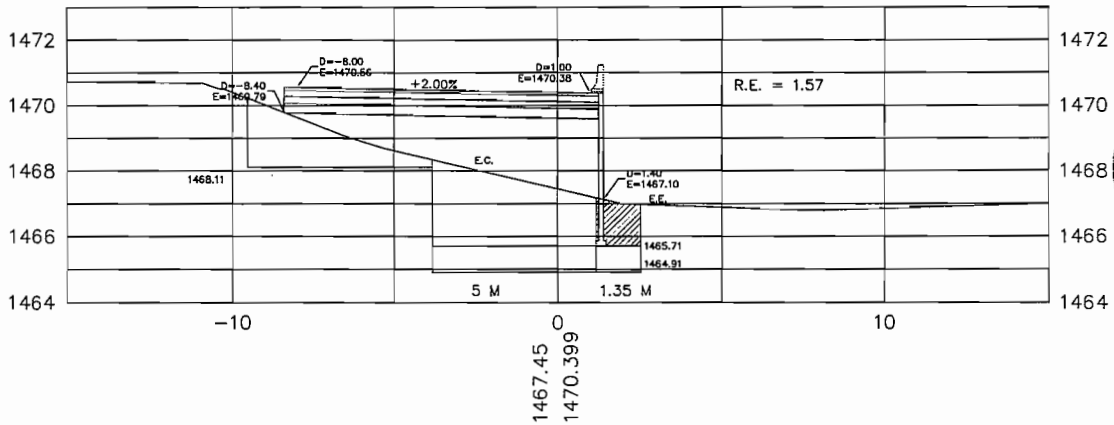
60+522.95



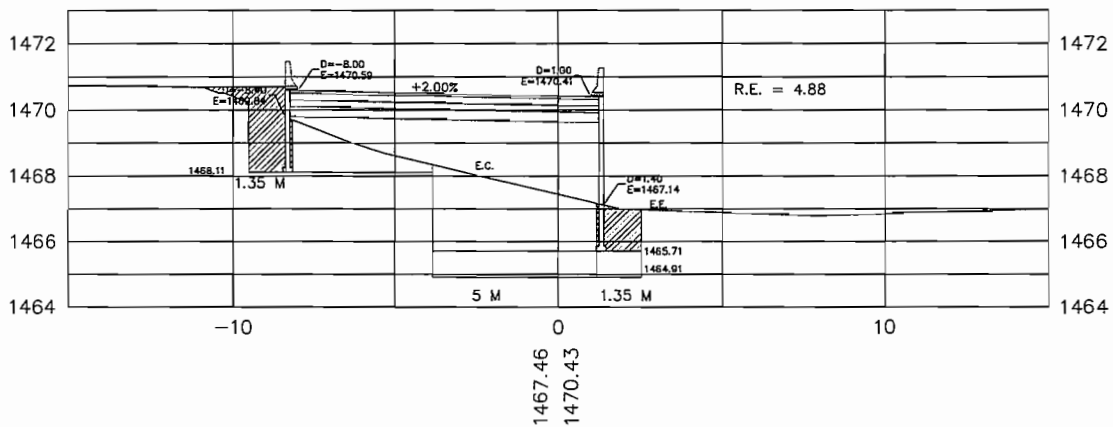
60+522.95



60+520



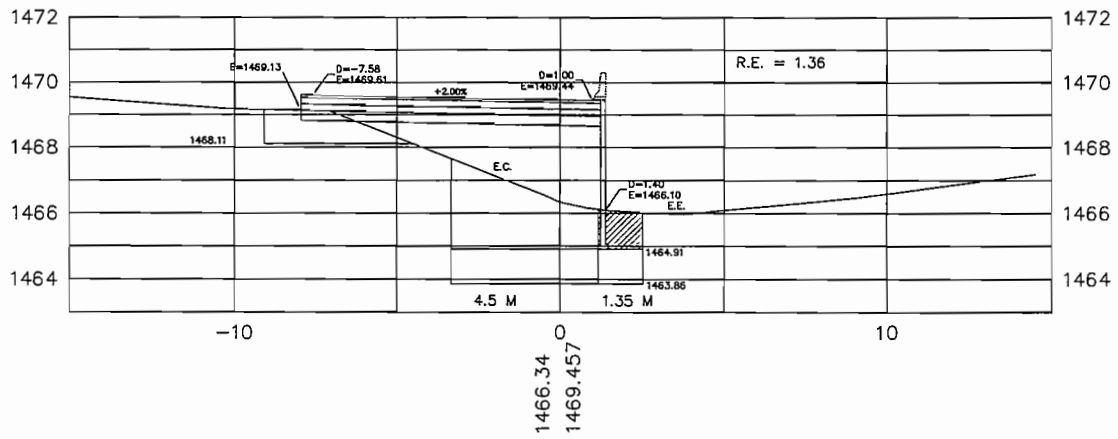
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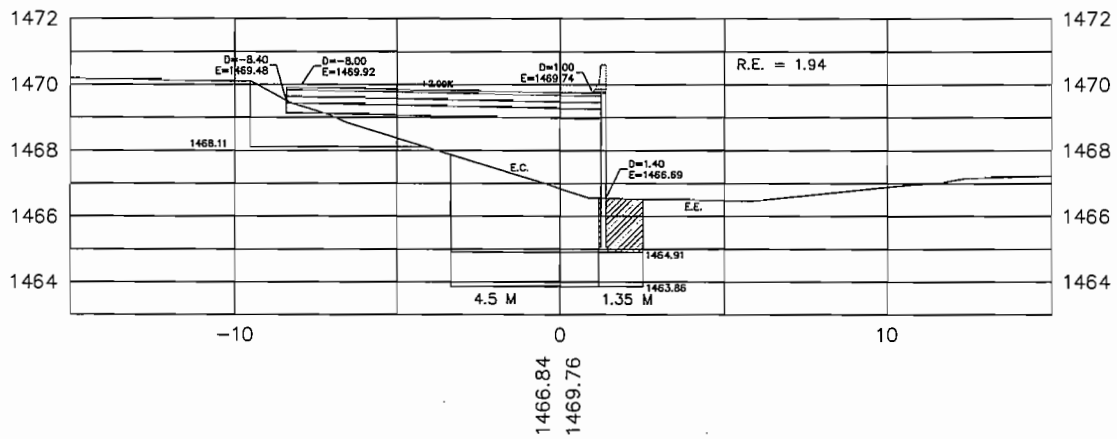
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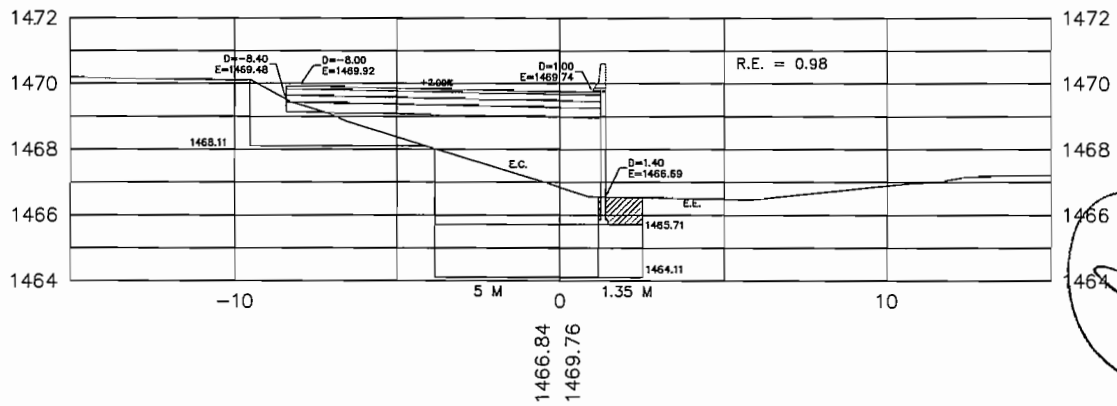
60+560



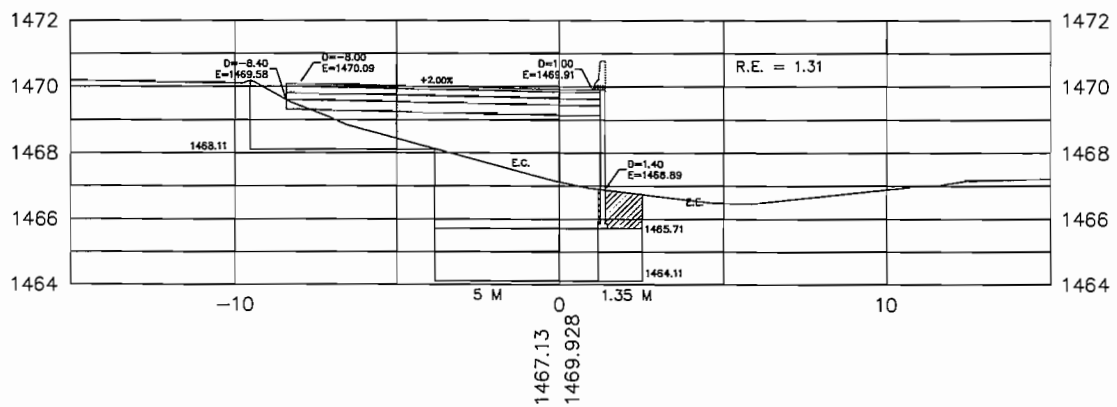
60+546.95



60+546.95

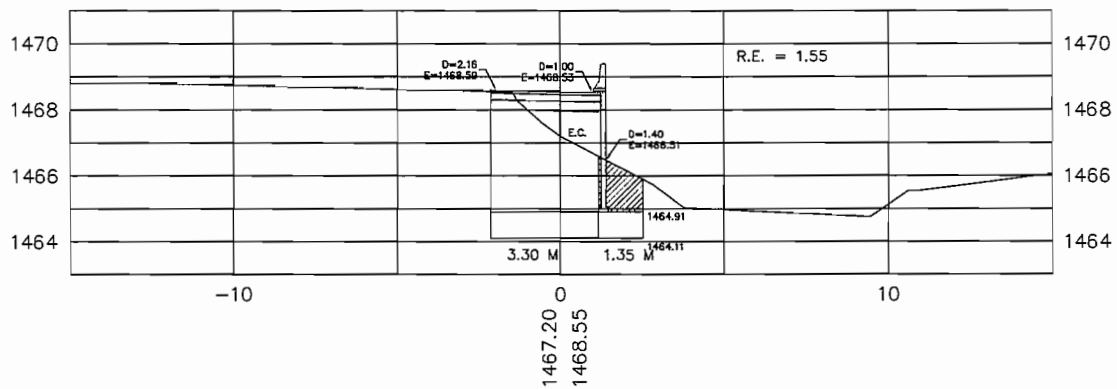


60+540

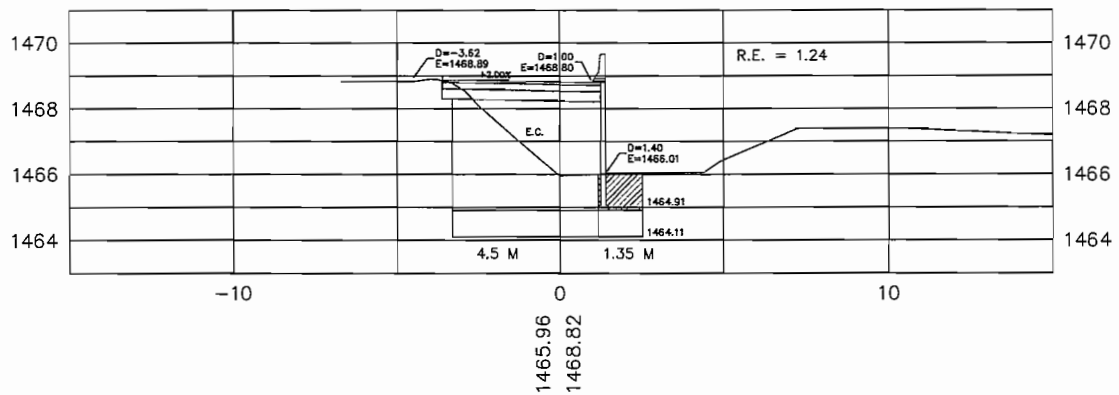


96

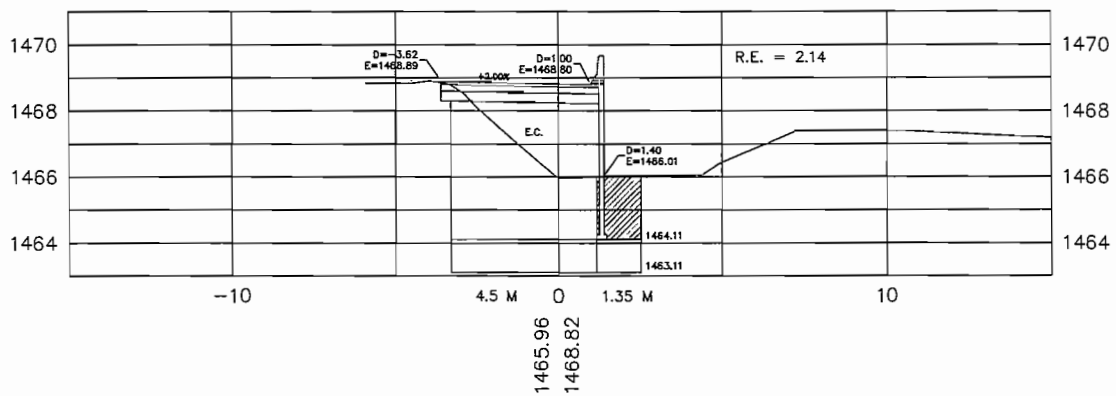
60+598.72



60+586.95



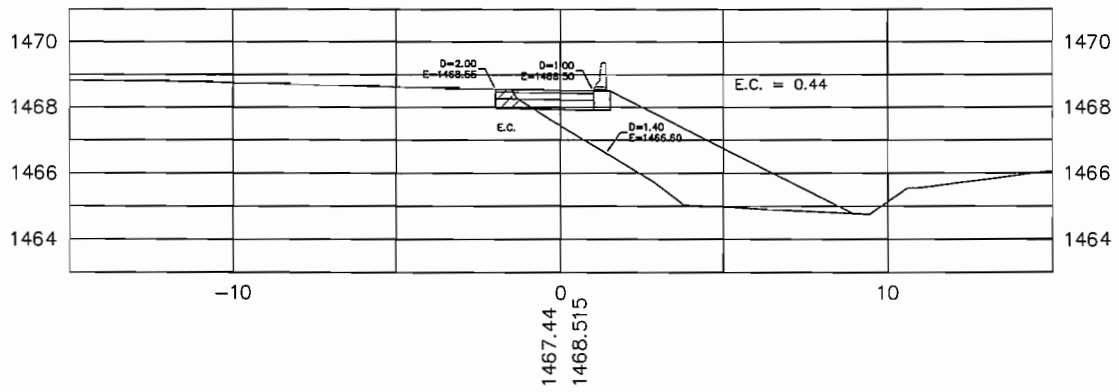
60+586.95



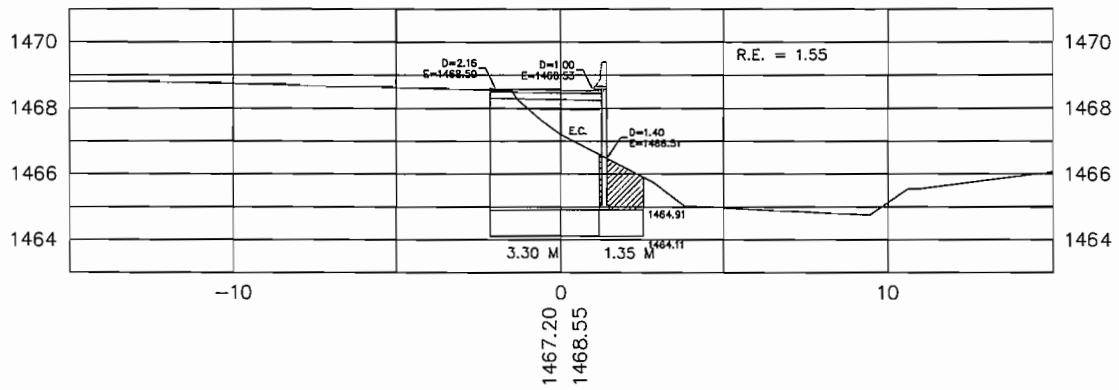
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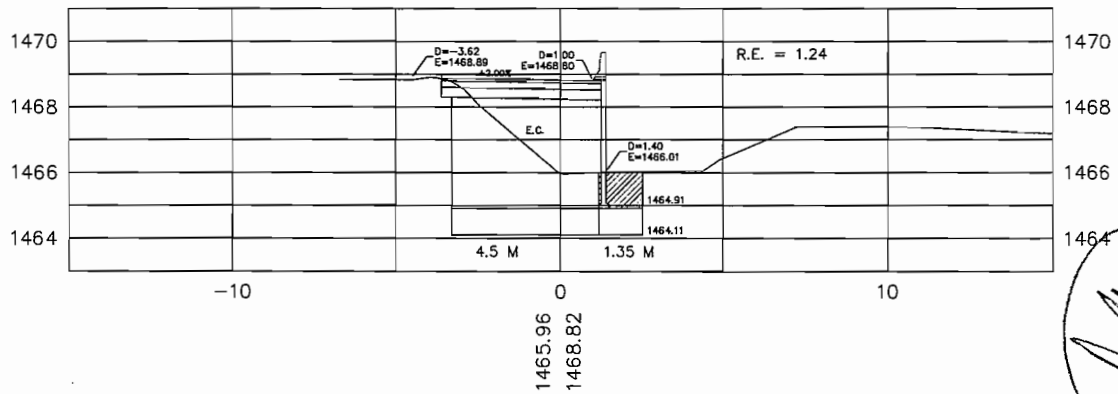
60+600



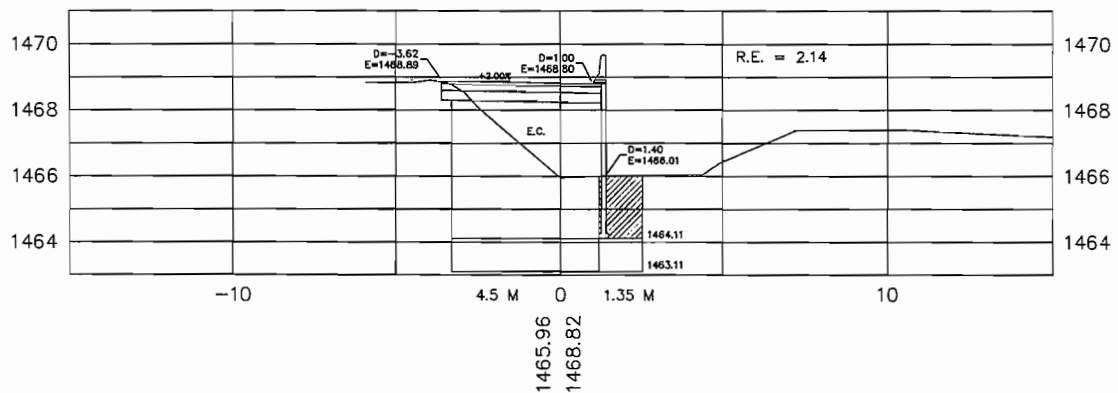
60+598.72



60+586.95



60+586.95



CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.			
OBRA :	CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV		

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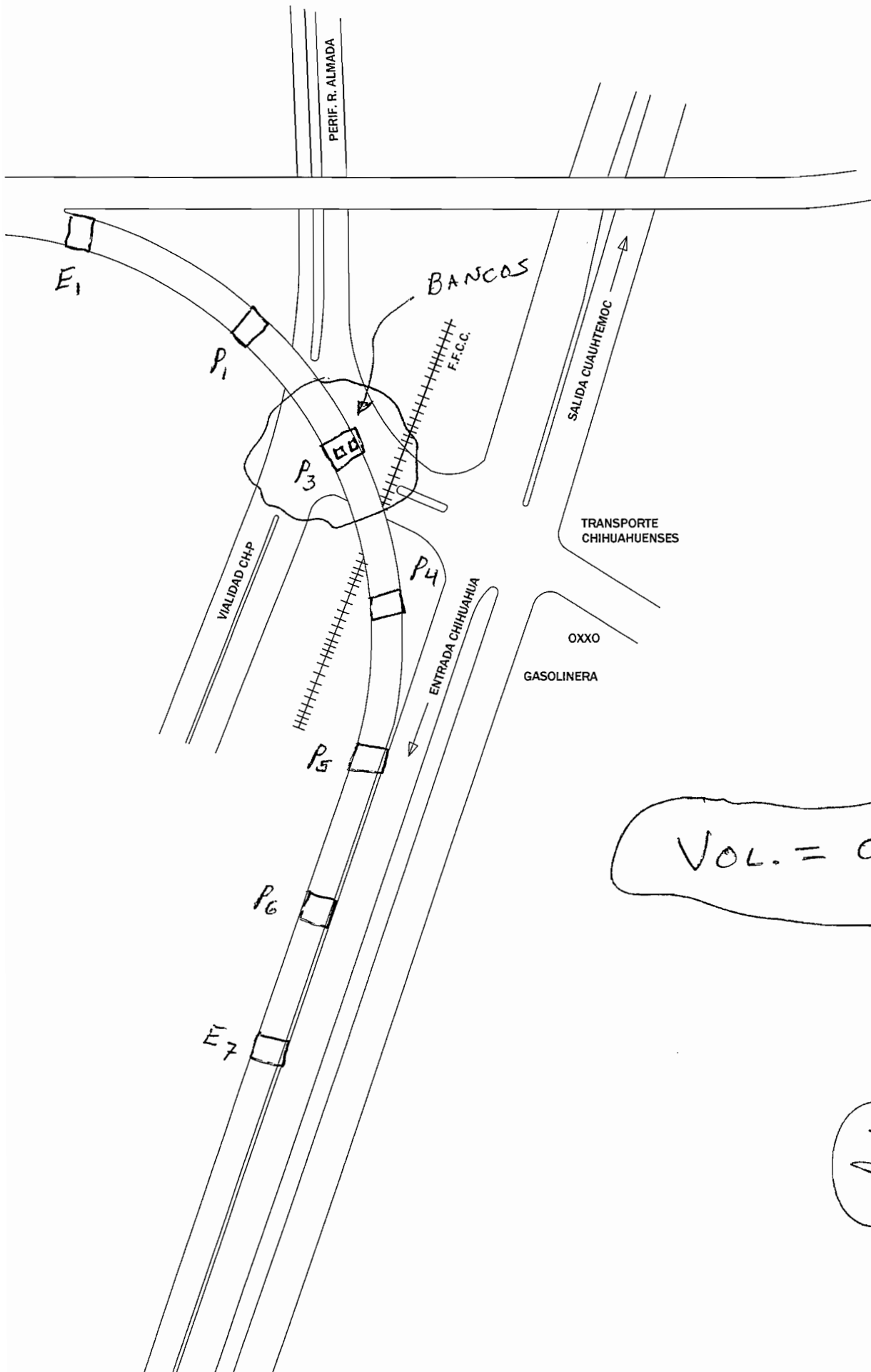
RESIDENTE 
ING. RODOLFO ARMENDARIZ RONQUILLO

CONTRATISTA

CONSTRUCTORA SANTA ROSALIA SA DE CV

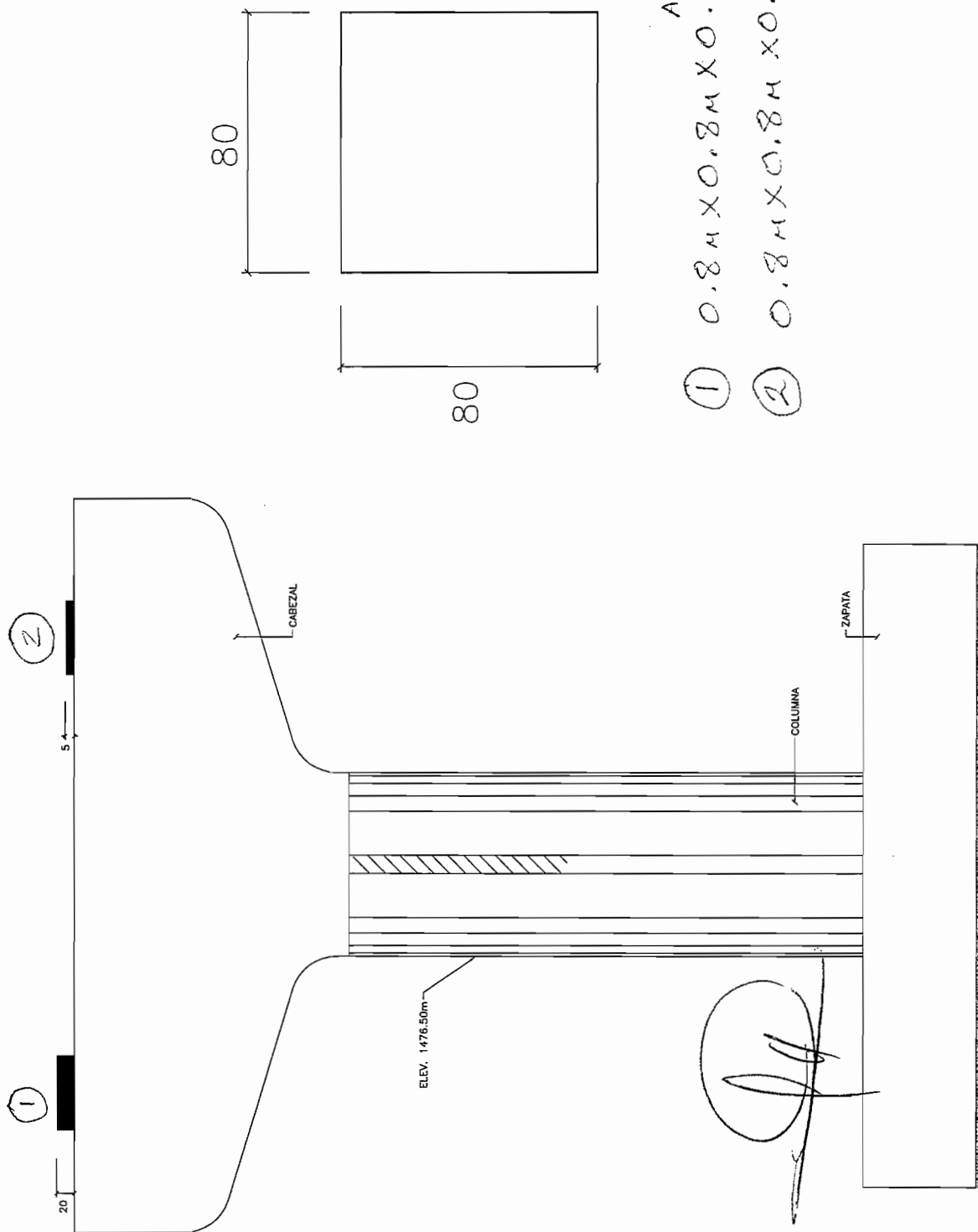
994
100

23 - CONCRETO $F'_C = 250 \text{ KG/Cm}^2$ UTILIZADO EN BANCOS


$$Vol. = 0.16 \text{ m}^3$$

101

CONCRETO EN BANCOS PILA 3



CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.		
		CONTRATISTA:	CONSTRUCTORA SANTA ROSALIA SA DE CV

[illegible]

RESIDENTE

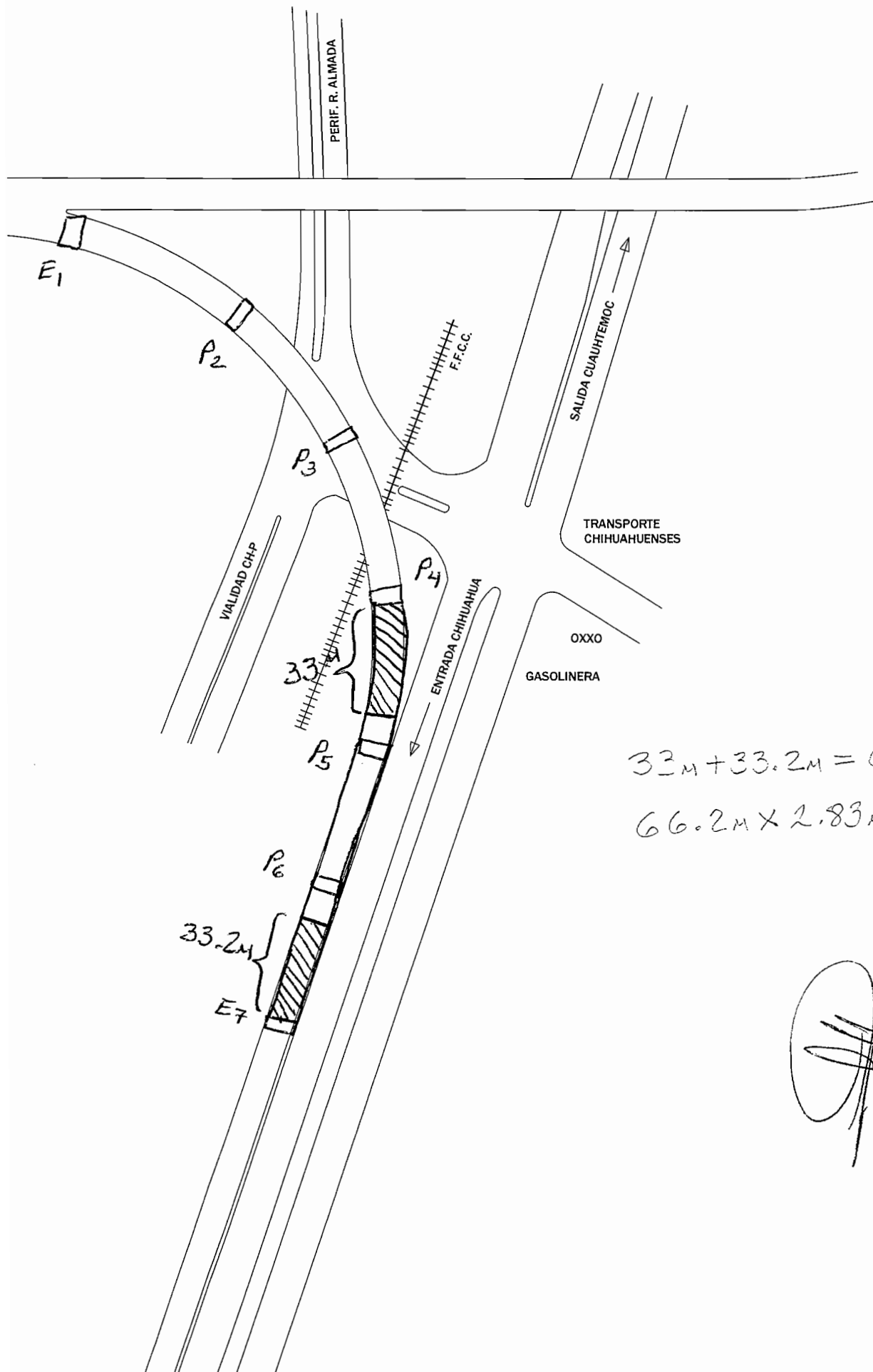
ING. RODOLFO ARMENDARIZ RONQUILLO

CONTRATISTA

CONSTRUCTORA SANTA ROSALIA SA DE CV

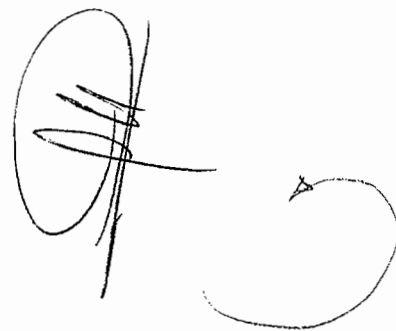
103

24- CONCRETO $F'_c = 250 \text{ KG}/\text{cm}^2$ UTILIZADO EN LOSAS



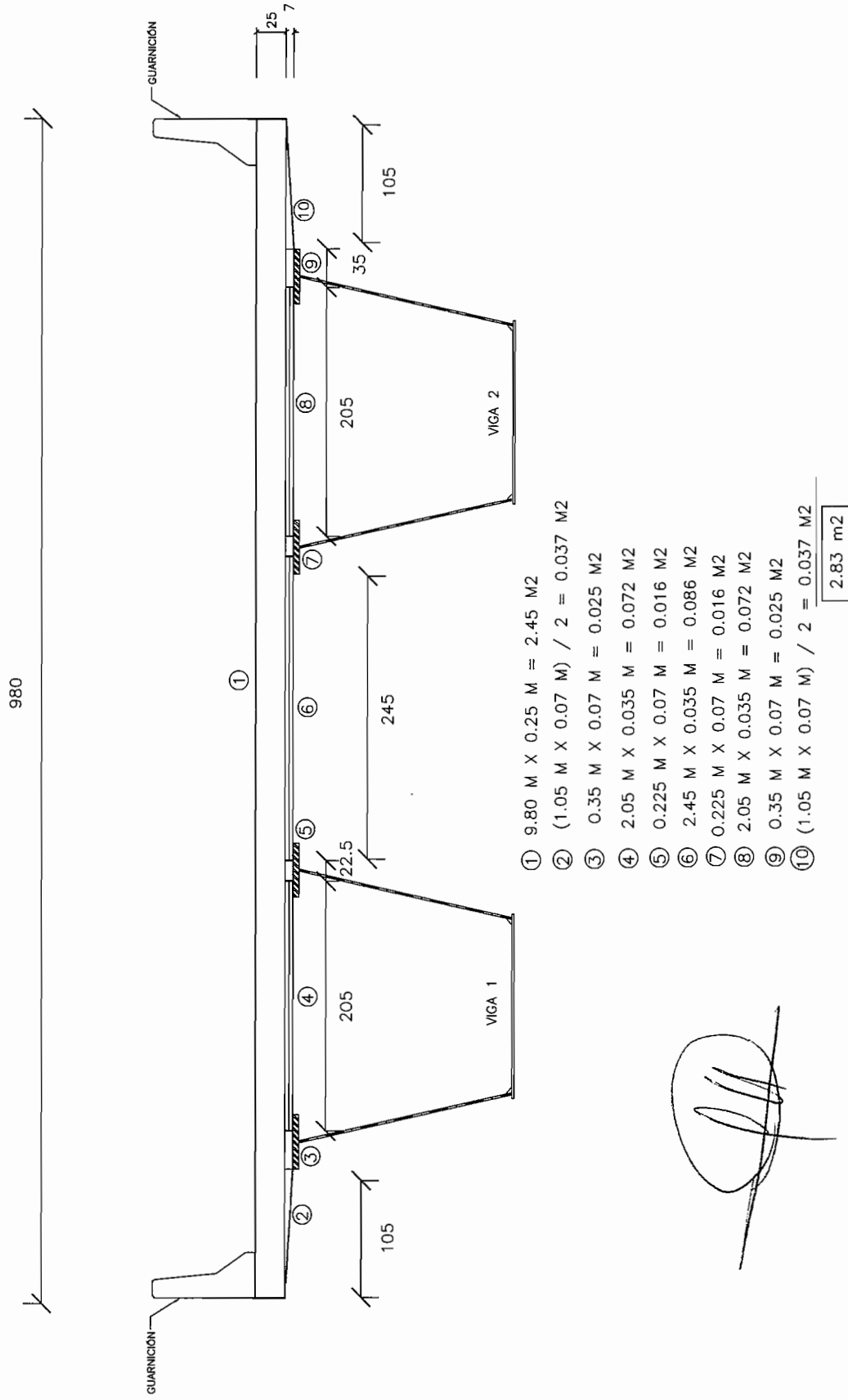
$$33\text{m} + 33.2\text{m} = 66.2\text{m}$$

$$66.2\text{m} \times 2.83\text{m}^2/\text{m} = 187.35\text{m}^3$$



104

GENERADOR DE CONCRETO EN LOSA



CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.		
		CONTRATISTA:	CONSTRUCTORA SANTA ROSALIA SA DE CV

No DE ESTIMACION:	No. 9	PERIODO:	01 AL 11 DE SEPTIEMBRE 2016
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[illegible]

CROQUIS	SE ANEXA CROQUIS	VOLUMEN	
		A PAGAR	
		36.31 M3	

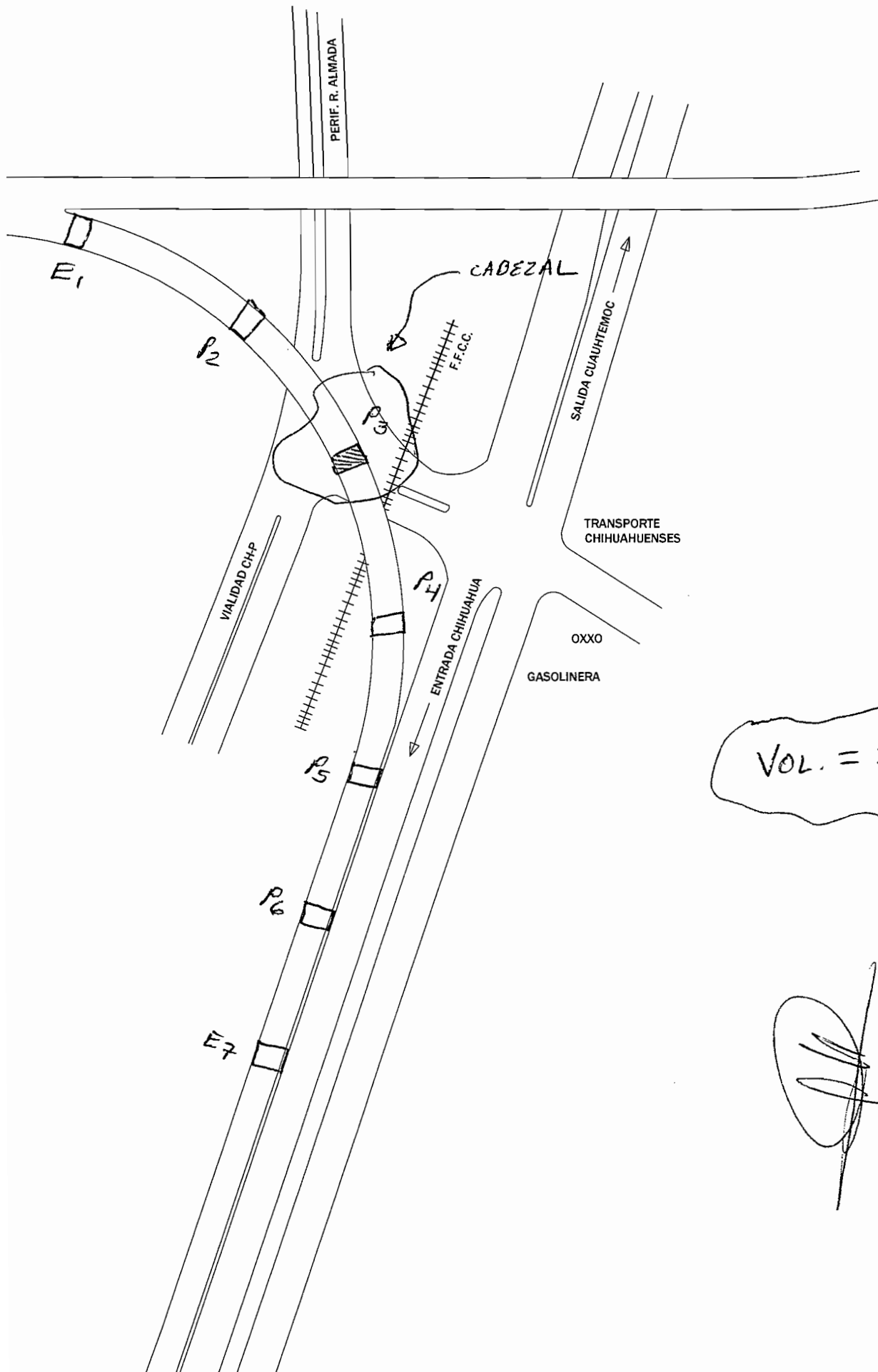
RESIDENTE

ING. RODOLFO ARMENDARIZ RONQUILLO

CONTRATISTA

CONSTRUCTORA SANTA ROSALIA SA DE CV

25- CONCRETO $F'c = 250 \text{ Kg/cm}^2$ UTILIZADO EN CABEZAL



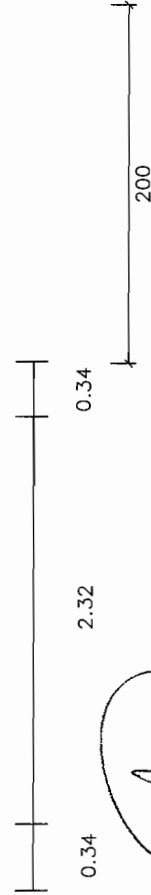
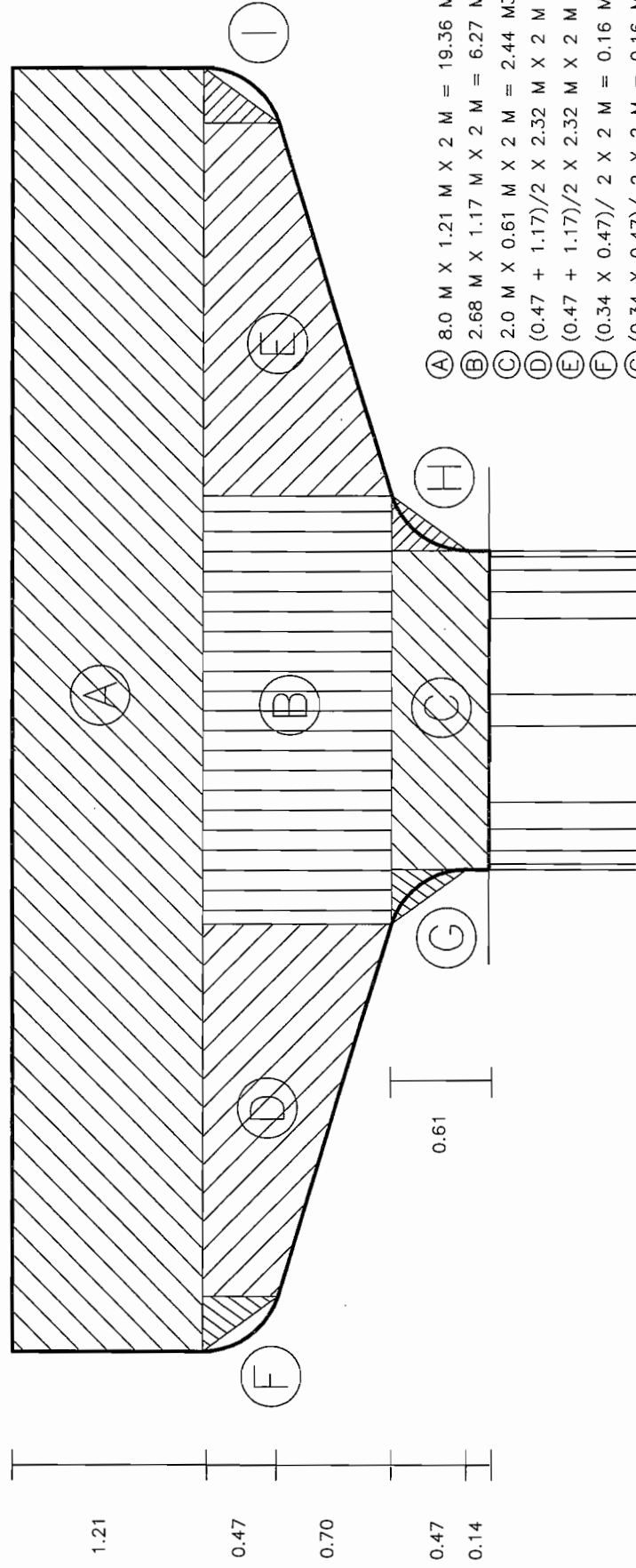
VOL. = 36.31 m^3



CONCRETO EN CABEZAL PILA 3

8.00

ANCHO DE CABEZAL = 2 M



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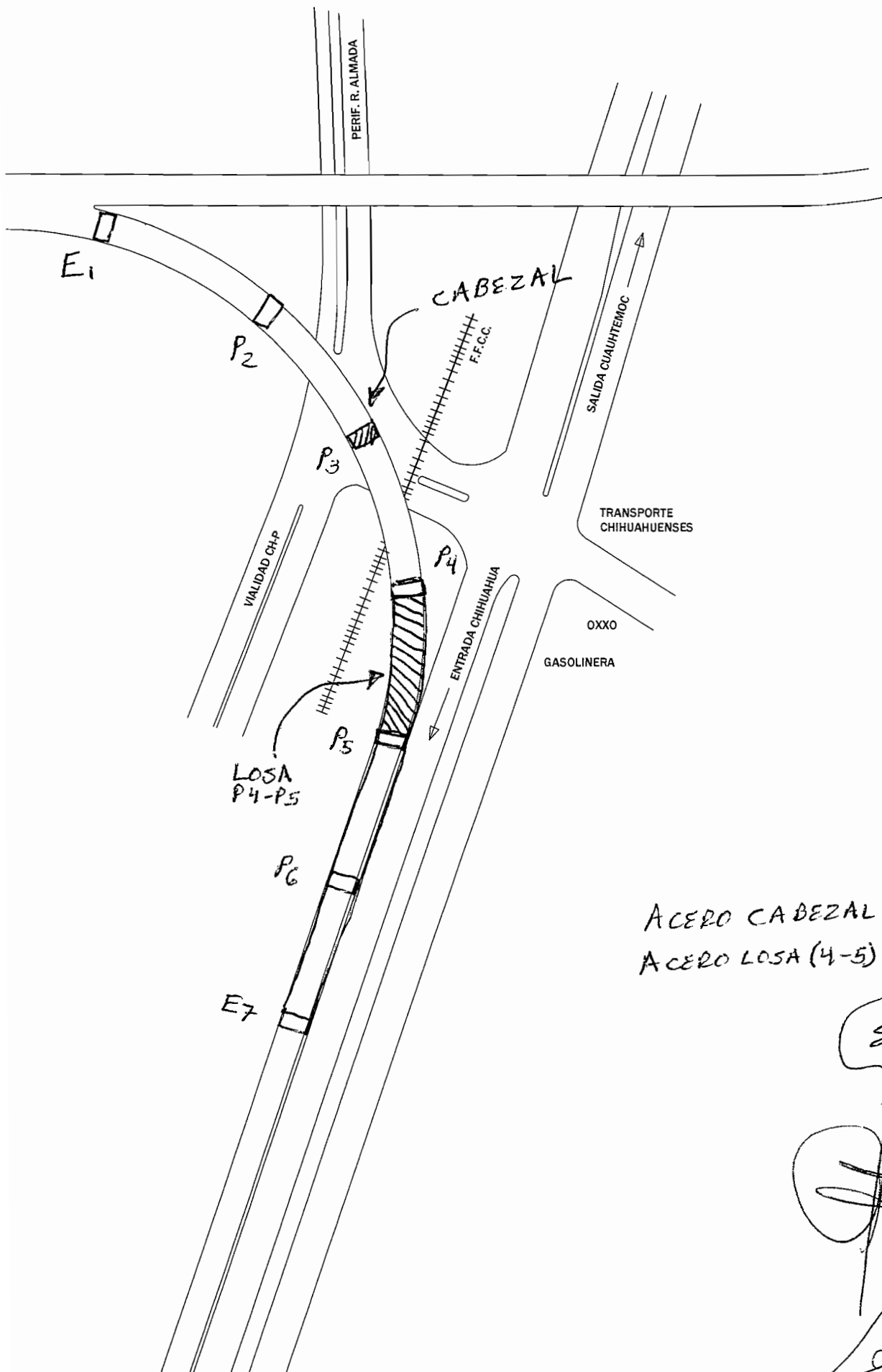
CONTRATO :	040/2016	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.	CONSTRUCTORA SANTA ROSALIA SA DE CV

[illegible]

~~RESIDENTE~~
~~ING. RODOLFO ARMENDARIZ RONQUILLO~~

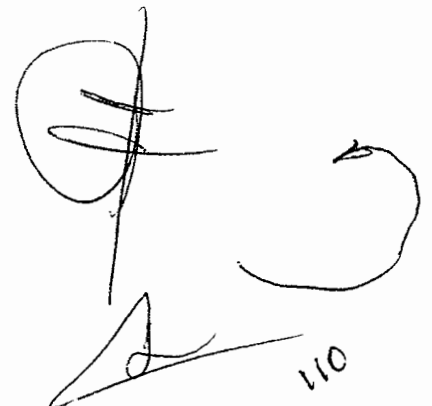
CONTRATISTA
CONSTRUCTORA SANTA ROSALIA SA DE CV

33 - ACERO PARA ELEMENTOS ESTRUCTURALES



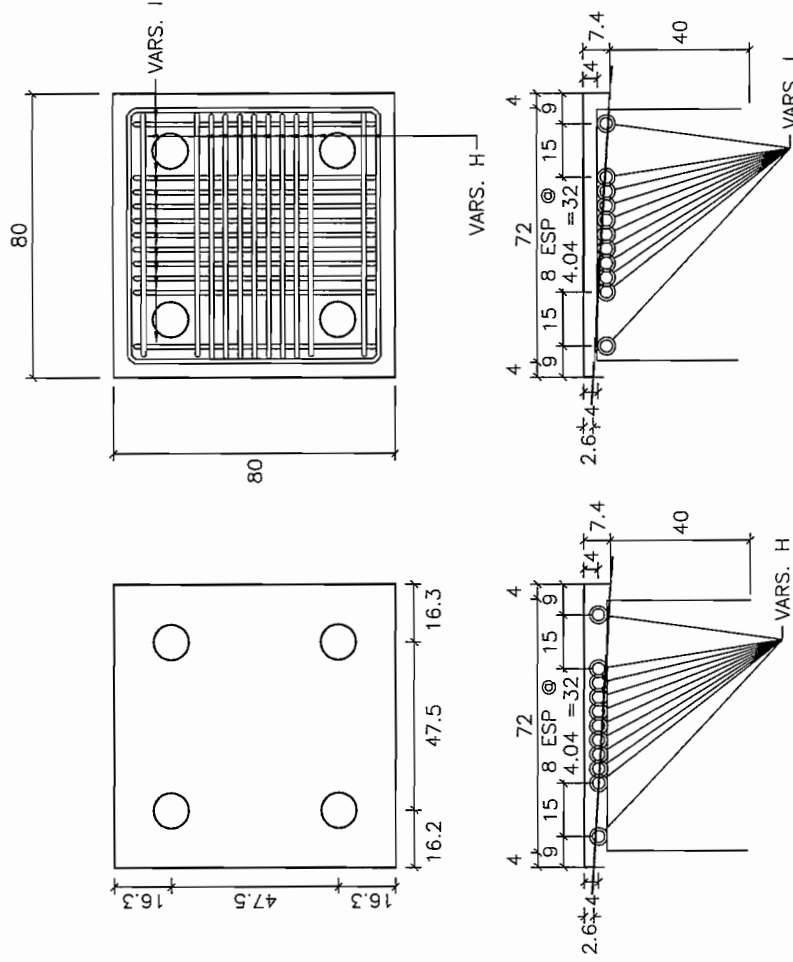
ACERO CABEZAL = 2,749 KG
ACERO LOSA (4-5) = 11,988 KG

$\Sigma_T = 14,737 \text{ KG}$



ACERO EN CABEZAL PILA # 3

MATERIALES DE UNA PILA						
LISTA DE VARILLAS						
LOC.	VAR.	DIAM.	PESO (kg/m)	NUM. PZA.	LONG. TOTAL	CROQUIS
COLUMNAS						
A1	10C	10C	6.208	40	1215	
B1	4C	4C	0.993	33	566	
A2	10C	10C	6.208	20	790	
A3	8C	8C	3.973	7	1218	
A4	5C	5C	1.552	8	790	
A5	5C	5C	1.552	4	750	
A6	5C	5C	1.552	4	350	
A7	5C	5C	1.552	5	770	
B2	5C	5C	1.552	50	562	
B3	5C	5C	1.552	50	802	
C1	5C	5C	1.552	25	690	
C2	8C	8C	3.973	50	690	
C3	5C	5C	1.552	25	690	
C4	8C	8C	3.973	50	690	
H	4C	4C	0.993	48	152	
I	4C	4C	0.993	48	152	
CABEZAL						
CUBIERTA						
BANCOS						
SUBESTRUCTURA:						
ACERO DE REFUERZO $f_y = 4200 \text{ kg/cm}^2$						
CONCRETO $f_c = 250 \text{ kg/cm}^2$						
CABEZAL						
COLUMNA						
ZAPATAS						
PLANTILLA $f_c = 150 \text{ kg/cm}^2$						
EXCAVACION APROX.						
RELLENO APROX.						
BANCOS:						
ACERO DE REFUERZO $f_y = 4200 \text{ kg/cm}^2$						
CONCRETO $f_c = 250 \text{ kg/cm}^2$						

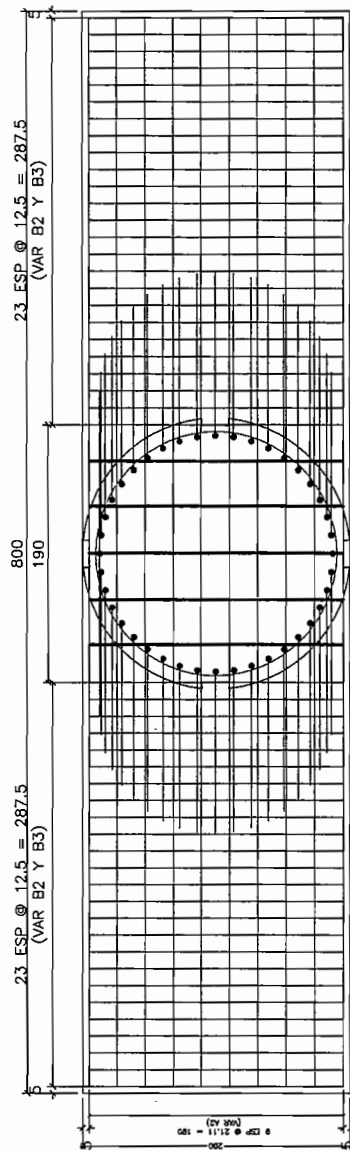
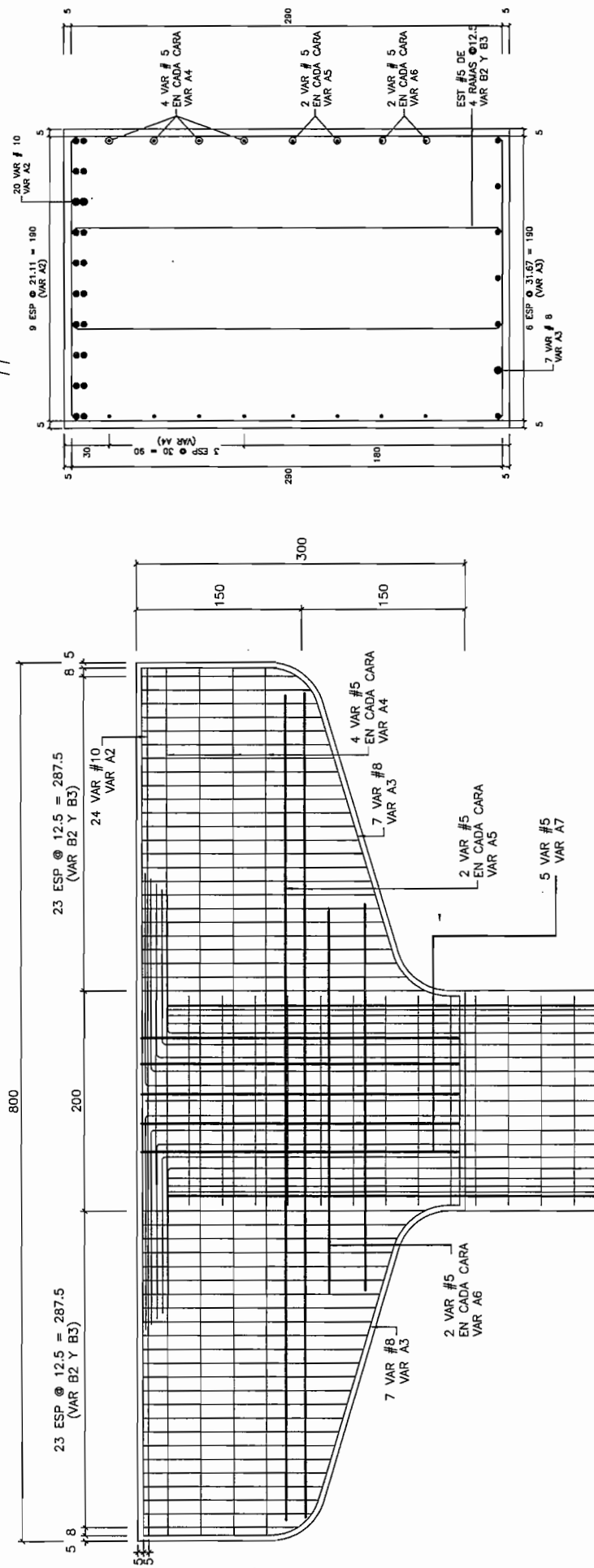


VOL. = 2,749 KG

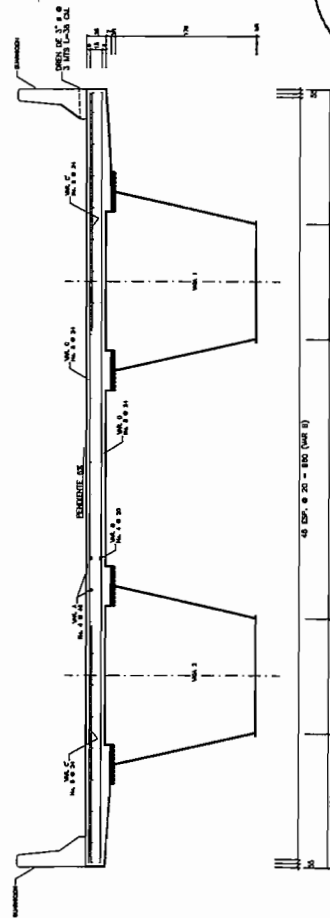
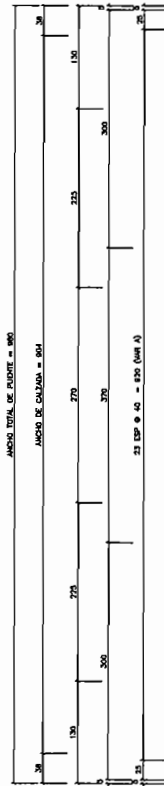
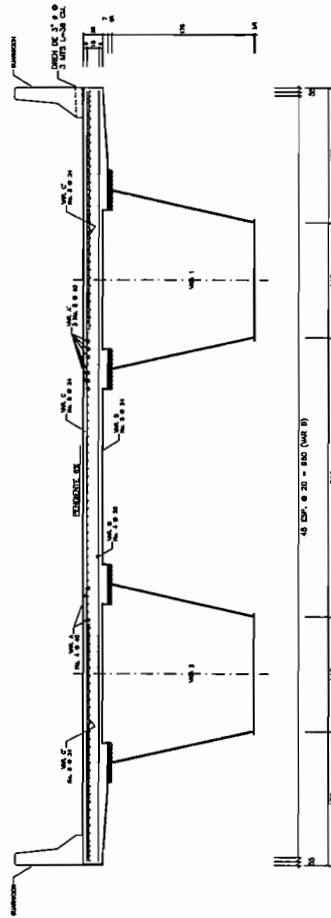
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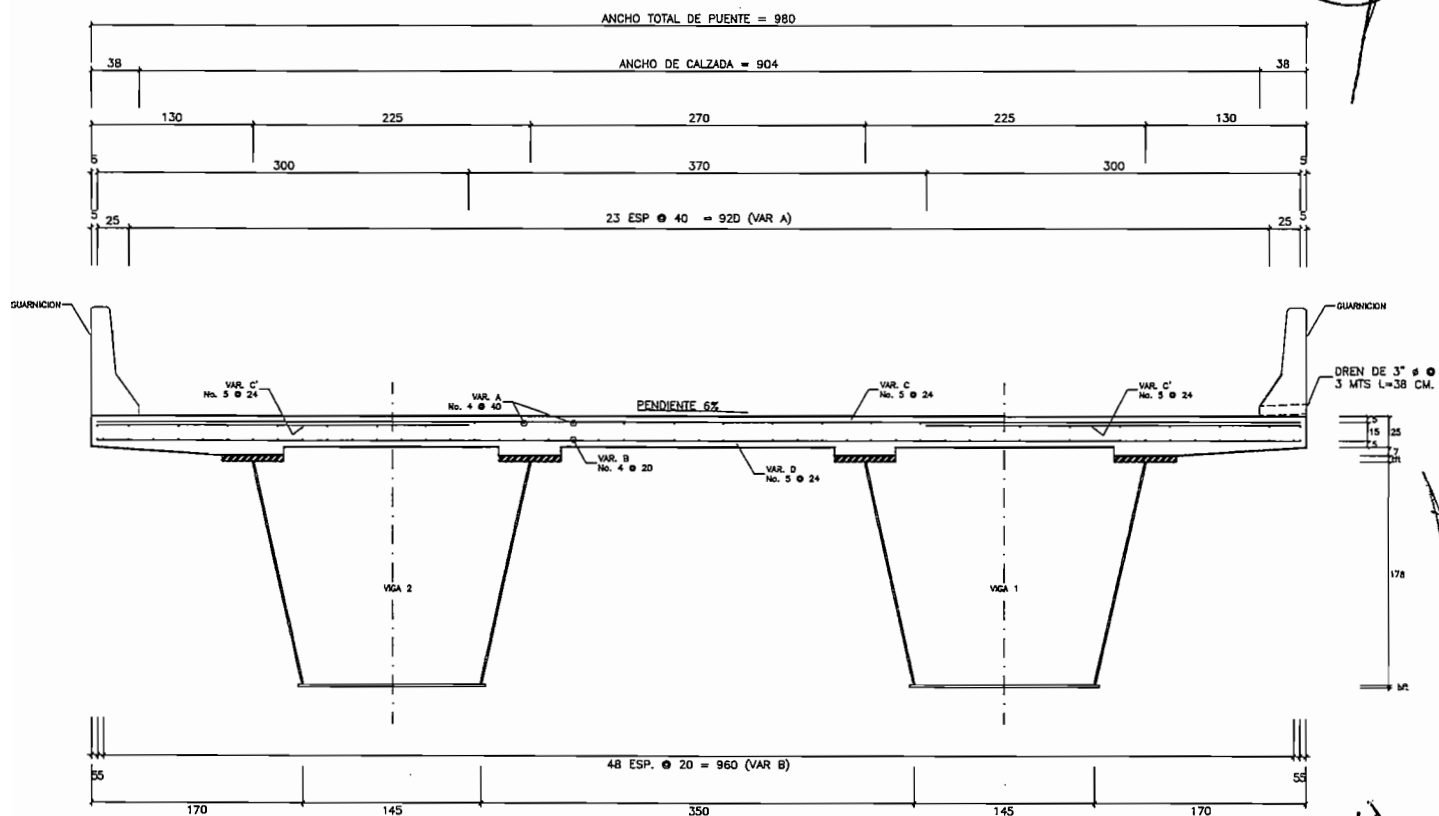
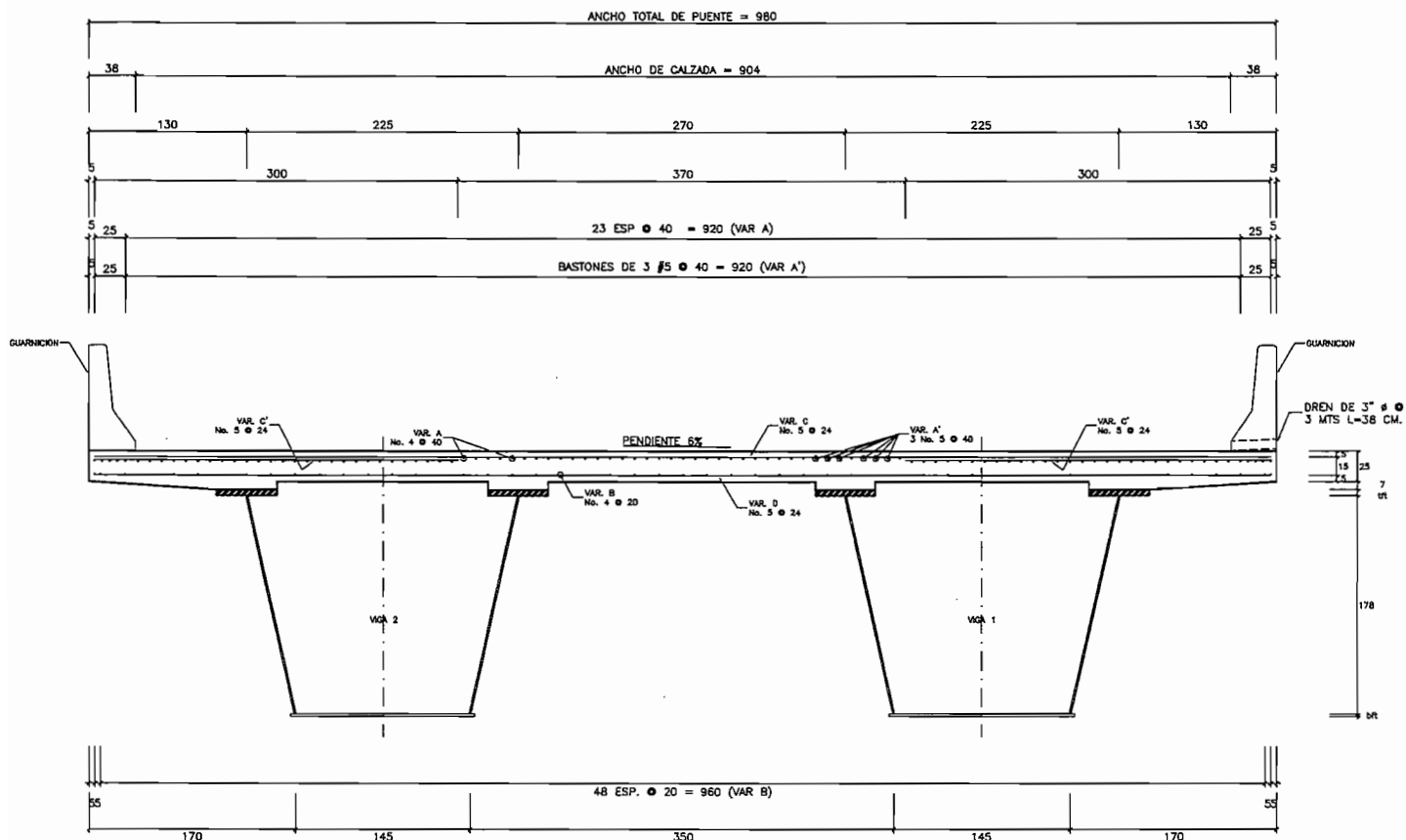
ACERO EN CABEZAL P1A # 3



112



LOSA TRAMO 4-5									
LISTA DE VARILLAS									
LOC.	VAR.	DIAM.	PESO (kg/m)	NUM. PZA.	LONG. TOTAL	CROQUIS	MAX (cm)	MIN (cm)	PESO KG
LOSA	A	4C	0.993	26	4477		4662	4292	1156
	A'	5C	1.552	75	1000		1000	—	1164
	B	4C	0.993	51	4477		4662	4292	2267
	C	5C	1.552	188	970		970	—	2830
	C'	5C	1.552	374	300		300	—	1741
	D	5C	1.552	188	970		970	—	2830
SUBESTRUCTURA:									
ACERO DE REFUERZO $f_y = 4200 \text{ kg/cm}^2$									
CONCRETO $f'_c = 250 \text{ kg/cm}^2$:									



114

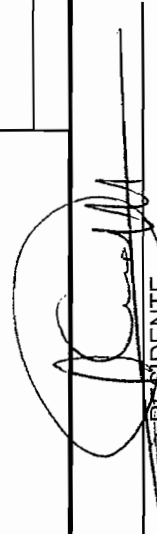
GENERADOR DE ESTIMACION

CONTRATO : 040/2016	TRAMO: Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA : Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua.	CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV

No DE ESTIMACION:	No. 9	PERIODO: 01 AL 11 DE SEPTIEMBRE 2016
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CONCEPTO	39	OPERACIONES ARITMETICAS
Cimbra muerta de lamina seccion 4 calibre 20.		
		VOL. = 294.75 M2

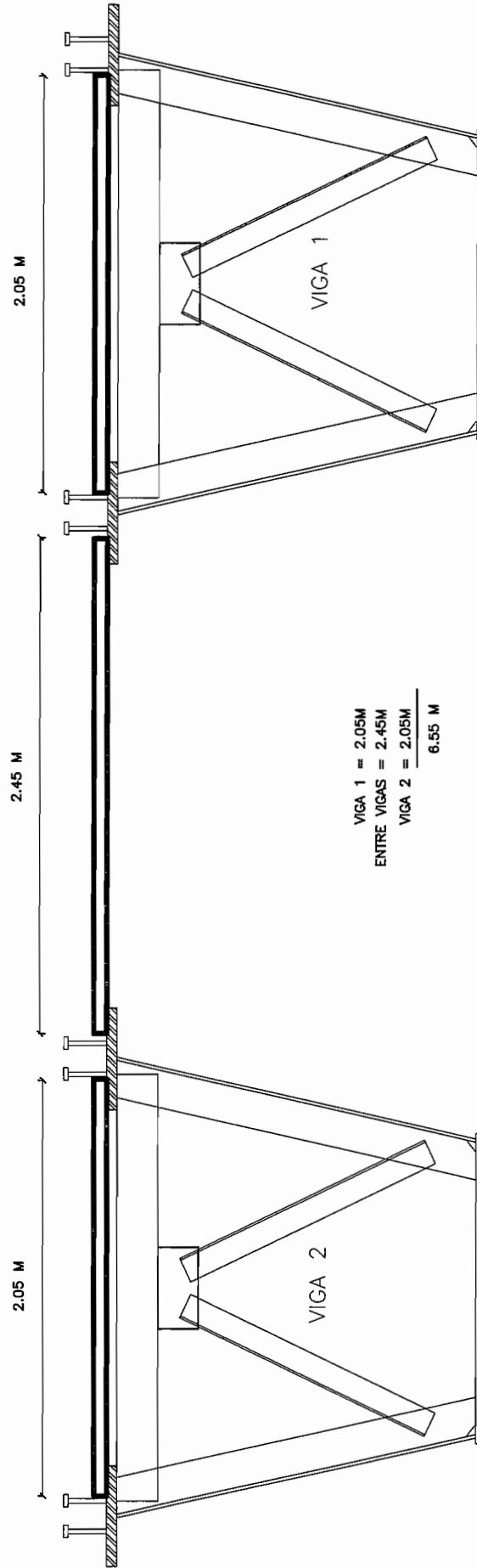
CROQUIS	VOLUMEN A PAGAR
SE ANEXA CROQUIS	294.75 M2


 PRESIDENTE
 ING. RODOLFO ARMENDARIZ RONQUILLO


 CONTRATISTA
 CONSTRUCTORA SANTA ROSALIA SA DE CV

[illegible]

CIMBRA DE LAMINA TRAMO 4-5 LONG. DE VIGA 45 M



VIGA 1 = 2.05M
 ENTRE VIGAS = 2.45M
 VIGA 2 = 2.05M
 6.55 M

6.55 M X 1 M ANCHO = 6.55 M²/ML
 6.55 M² X 45 M LARGO = 294.75 M²

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 115

CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. Almada y Carretera a Cd. Cuauhtémoc, Colonia Esperanza, y Zootecnia, en esta Ciudad de Chihuahua. CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV		

No DE ESTIMACION: No. 9 PERIODO: 01 AL 11 DE SEPTIEMBRE 2016

[illegible]

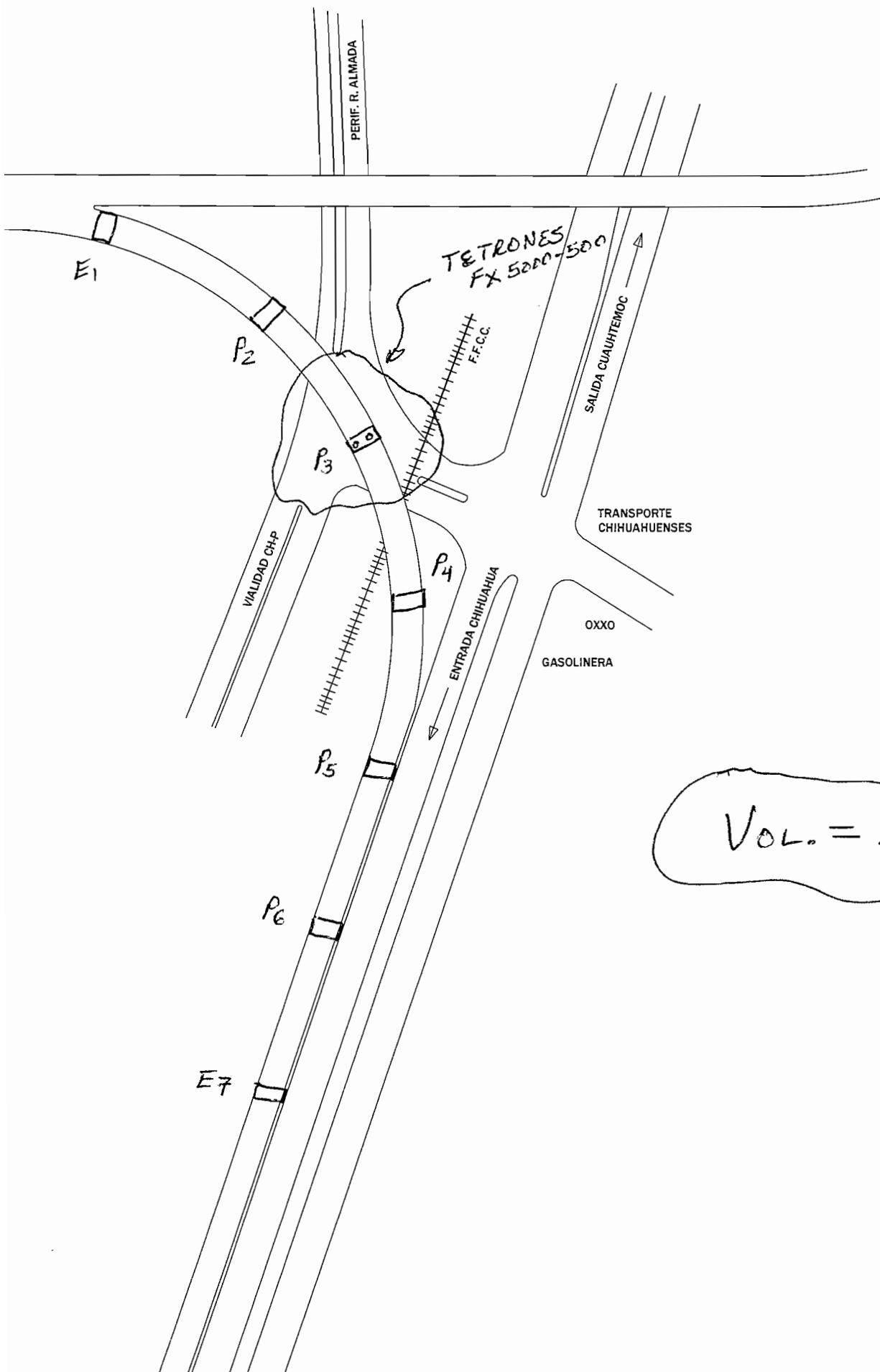
CROQUIS

SE ANEXA CROQUIS

ING. RODOLFO ARMENDARIZ RONQUILLO

CONSTRUCTORA SANTA ROSALIA SA DE CV

42 - APOYO TIPO TETRON FX 5000-500

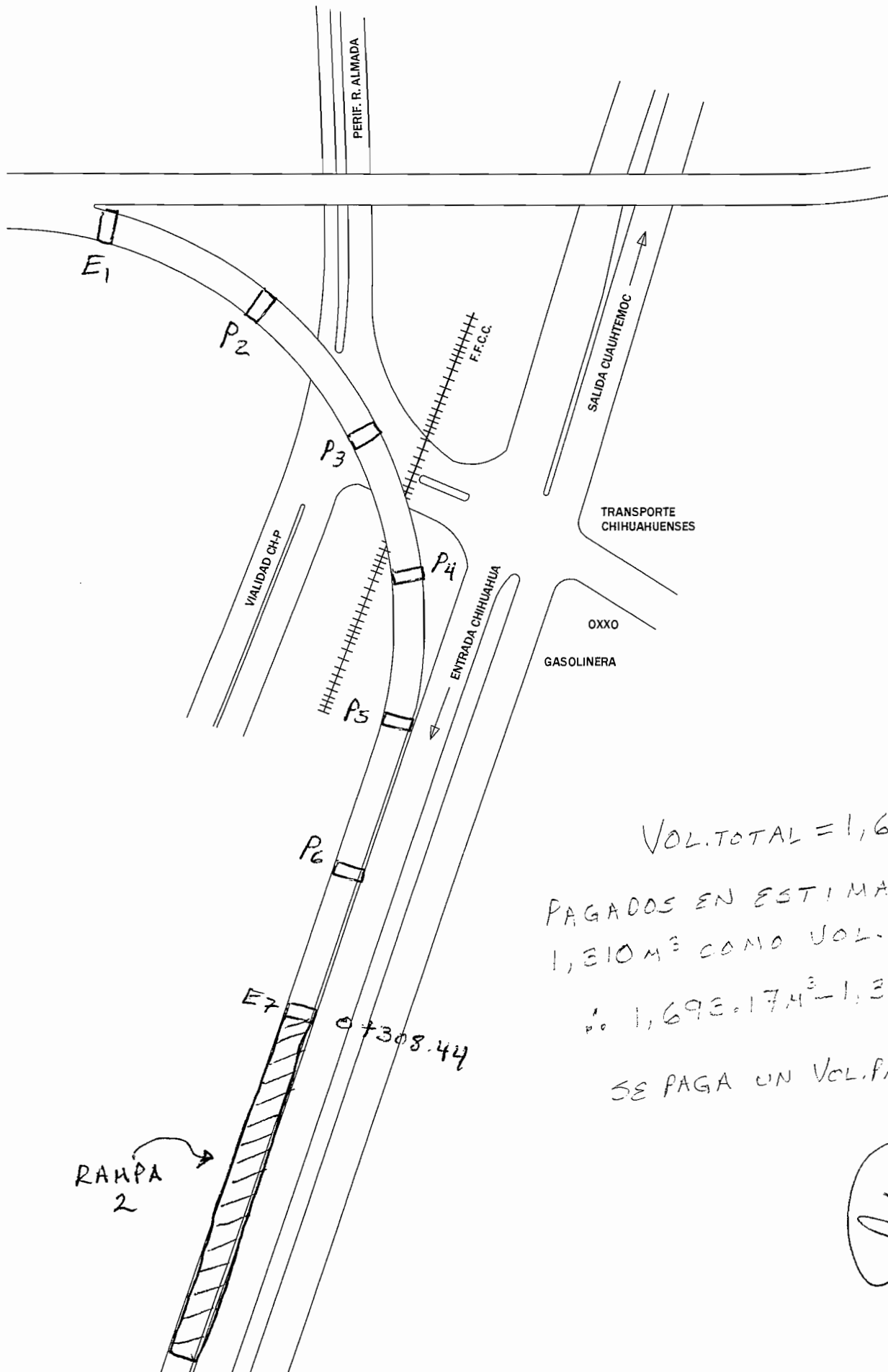


CONTRATO :	040/2016	TRAMO:	Perif. Fco. R. Almada y Carretera Cd. Cuauhtemoc
OBRA :	Construcción del Eje Sesenta (60) del Distribuidor Vial Zootecnia, Ubicado en Entronque del Periférico Francisco R. CONTRATISTA: CONSTRUCTORA SANTA ROSALIA SA DE CV		

[illegible]

CONTRATISTA
CONSTRUCTORA SANTA ROSALIA SA DE CV

EXT-28 COLOCACION DE PIEDRAPLEN



VOL. TOTAL = 1,693.17 m³ C.M.

PAGADOS EN ESTIMACION ANTERIOR
1,310 m³ COMO VOL. PARCIAL

$$\therefore 1,693.17 \text{ m}^3 - 1,310 \text{ m}^3 = 383.17 \text{ m}^3$$

SE PAGA UN VOL. PARCIAL = 45 m³

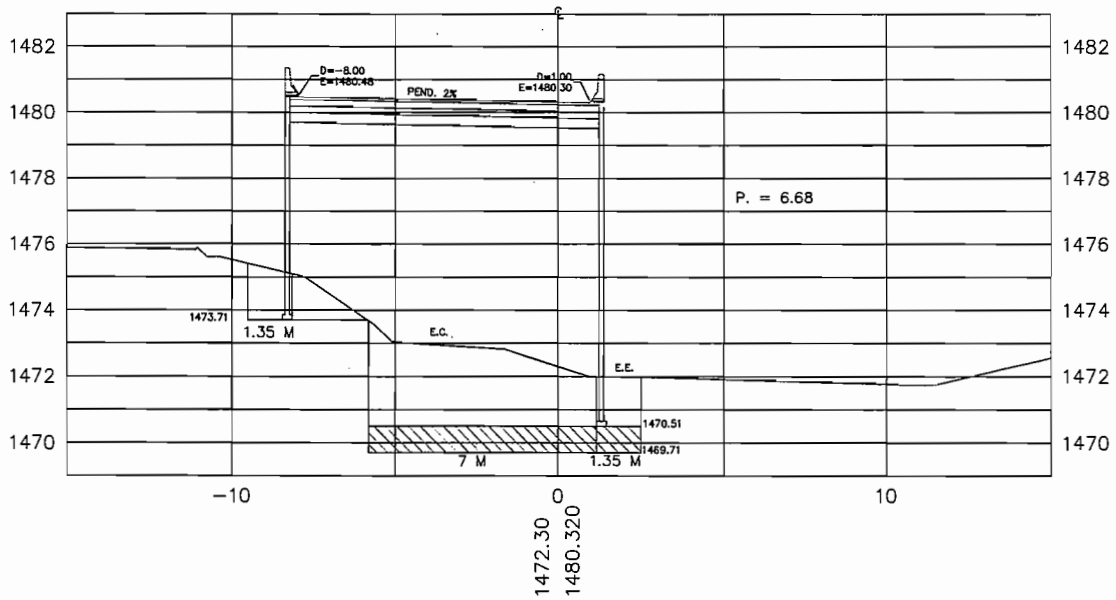


122

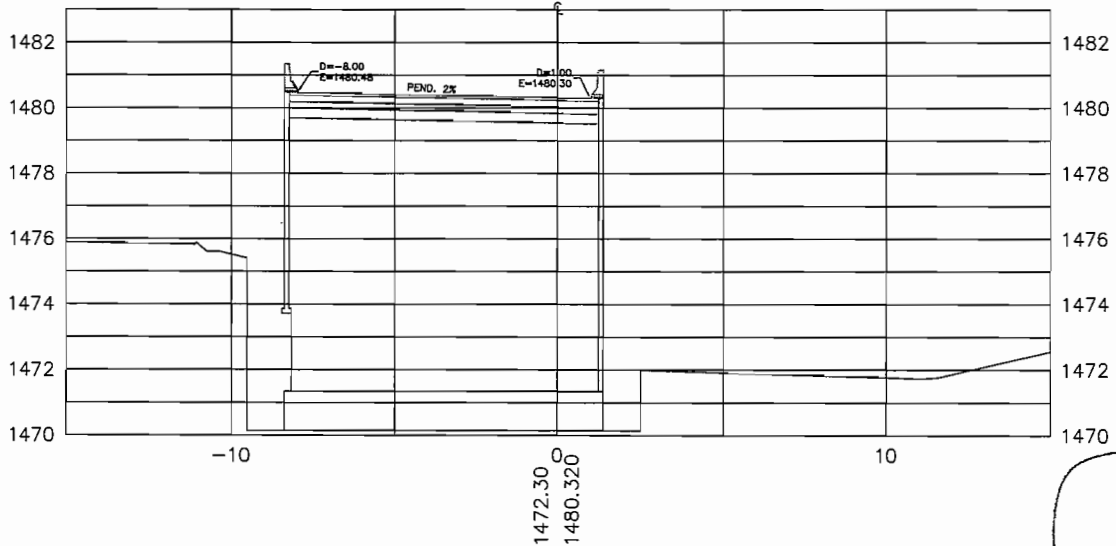
CURVA MASA RAMPA 2 RELLENO DE PIEDRAPLEN

CADENAMIENTO		AREA		AREA 1 + AREA 2		SEMIDIST.	VOLUMEN	
		CORTE	TERRAPLEN	CORTE	TERRAPLEN		VOL. CORTE	VOL. TERRAPLEN
60+	311.45		6.68					
60+	320		6.68	0	13.36	4.28	0.00	57.11
60+	320.69		6.68	0	13.36	0.34	0.00	4.61
60+	320.69		6.68	0	13.36	0.00	0.00	0.00
60+	340		6.68	0	13.36	9.66	0.00	128.99
60+	352.69		6.68	0	13.36	6.35	0.00	84.77
60+	352.69		6.68	0	13.36	0.00	0.00	0.00
60+	360		6.68	0	13.36	3.66	0.00	48.83
60+	362.95		6.68	0	13.36	1.47	0.00	19.71
60+	362.95		4.41	0	11.09	0.00	0.00	0.00
60+	378.69		4.41	0	8.82	7.87	0.00	69.41
60+	378.69		4.41	0	8.82	0.00	0.00	0.00
60+	380		4.41	0	8.82	0.66	0.00	5.78
60+	384.95		4.41	0	8.82	2.47	0.00	21.83
60+	384.95		4.41	0	8.82	0.00	0.00	0.00
60+	400		4.41	0	8.82	7.53	0.00	66.37
60+	412.69		4.41	0	8.82	6.35	0.00	55.96
60+	412.69		4.41	0	8.82	0.00	0.00	0.00
60+	416.95		4.41	0	8.82	2.13	0.00	18.79
60+	416.95		6.03	0	10.44	0.00	0.00	0.00
60+	420		6.03	0	12.06	1.53	0.00	18.39
60+	436.69		6.03	0	12.06	8.35	0.00	100.64
60+	436.69		6.03	0	12.06	0.00	0.00	0.00
60+	440		6.03	0	12.06	1.66	0.00	19.96
60+	452.95		6.03	0	12.06	6.47	0.00	78.09
60+	452.95		6.35	0	12.38	0.00	0.00	0.00
60+	460		6.35	0	12.70	3.53	0.00	44.77
60+	466.69		6.35	0	12.70	3.35	0.00	42.48
60+	466.69		6.35	0	12.70	0.00	0.00	0.00
60+	474.95		6.35	0	12.70	4.13	0.00	52.45
60+	474.95		4.13	0	10.48	0.00	0.00	0.00
60+	480		4.13	0	8.26	2.53	0.00	20.86
60+	498.95		4.13	0	8.26	9.47	0.00	78.26
60+	498.95		5.08	0	9.21	0.00	0.00	0.00
60+	500		5.08	0	10.16	0.53	0.00	5.33
60+	518.69		5.08	0	10.16	9.35	0.00	94.95
60+	518.69		5.08	0	10.16	0.00	0.00	0.00
60+	520		5.08	0	10.16	0.65	0.00	6.65
60+	522.95		5.08	0	10.16	1.48	0.00	14.99
60+	522.95		10.16	0	15.24	0.00	0.00	0.00
60+	540		10.16	0	20.32	8.52	0.00	173.23
60+	546.95		10.16	0	20.32	3.48	0.00	70.61
60+	546.95		6.14	0	16.30	0.00	0.00	0.00
60+	560		6.14	0	12.28	6.52	0.00	80.13
60+	560.89		6.14	0	12.28	0.44	0.00	5.46
60+	566.95		6.14	0	12.28	3.03	0.00	37.21
60+	566.95		5.85	0	11.99	0.00	0.00	0.00
60+	580		5.85	0	11.70	6.52	0.00	76.34
60+	586.95		5.85	0	11.70	3.48	0.00	40.66
60+	586.95		4.68	0	10.53	0.00	0.00	0.00
60+	598.72		3.74	0	8.42	5.88	0.00	49.55
60+				0	0.00	0.00	0.00	0.00
60+				0	0.00	0.00	0.00	0.00
							0.00	1,693.17

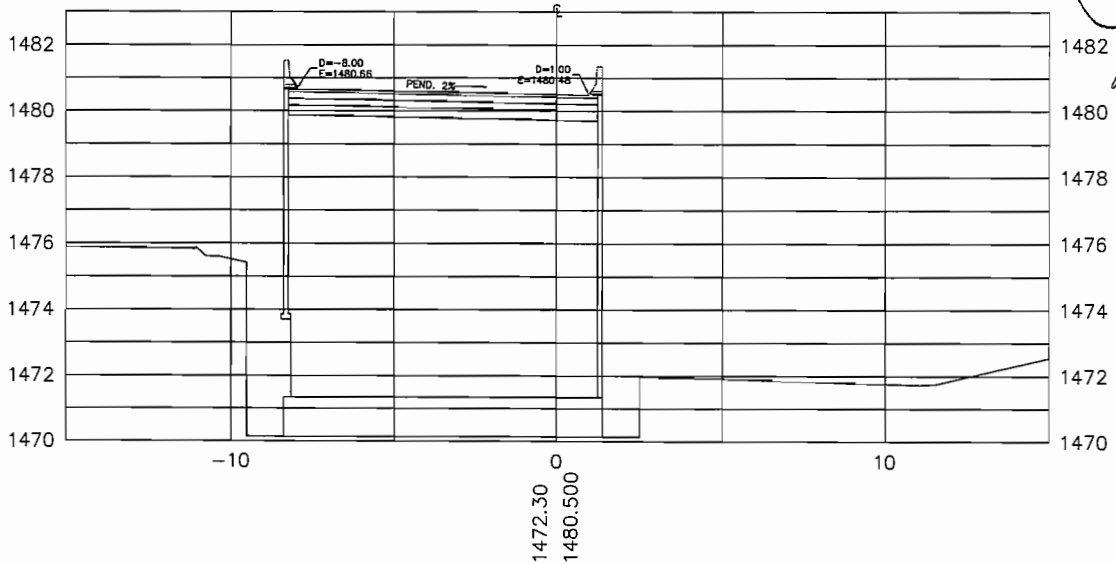
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60+311.45



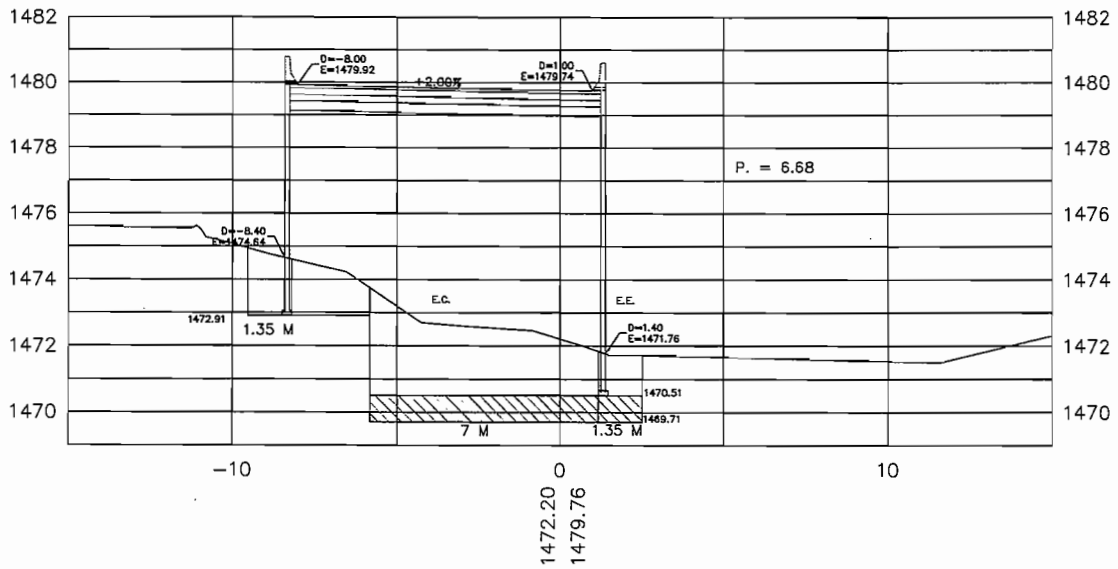
60+308.44
ESTRIBO 7



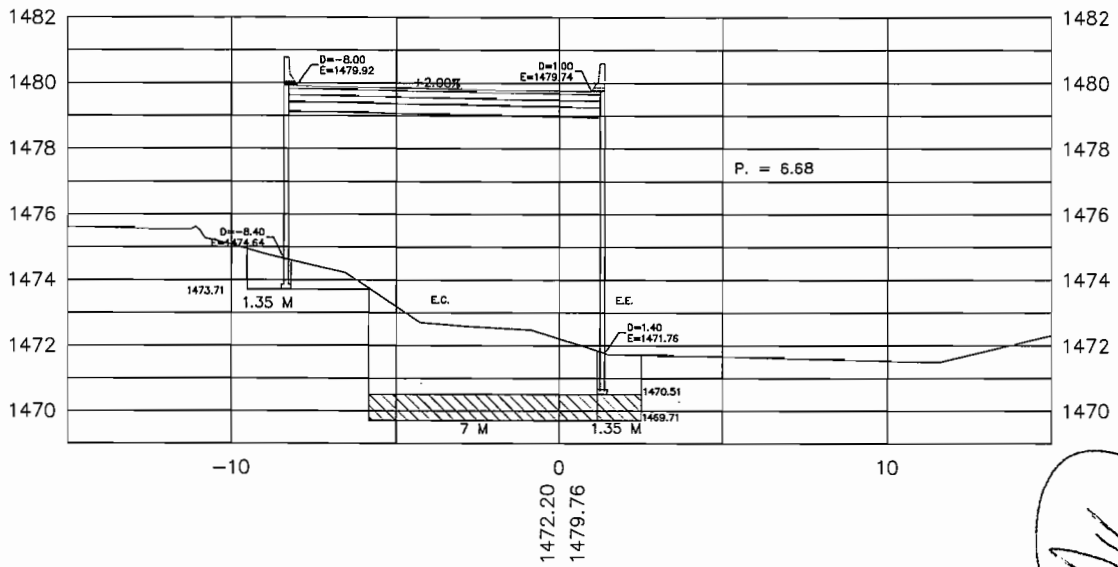
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124

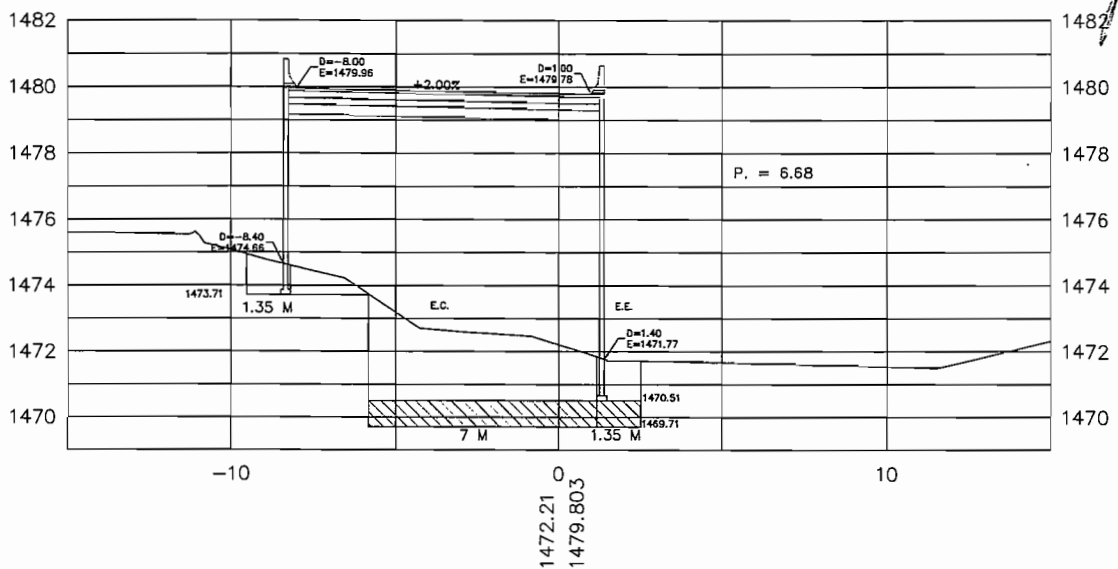
60+320.69



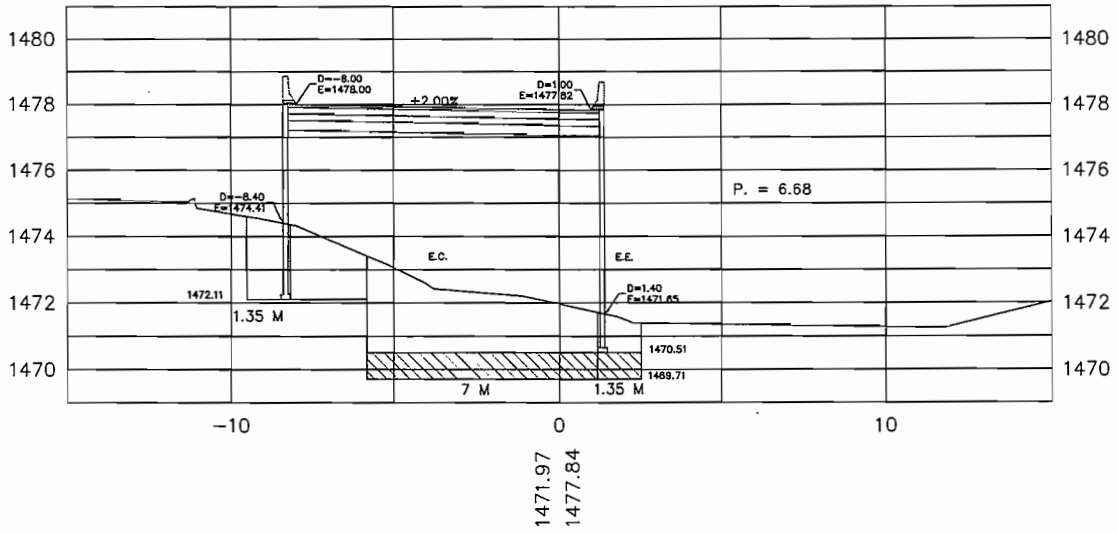
60+320.69



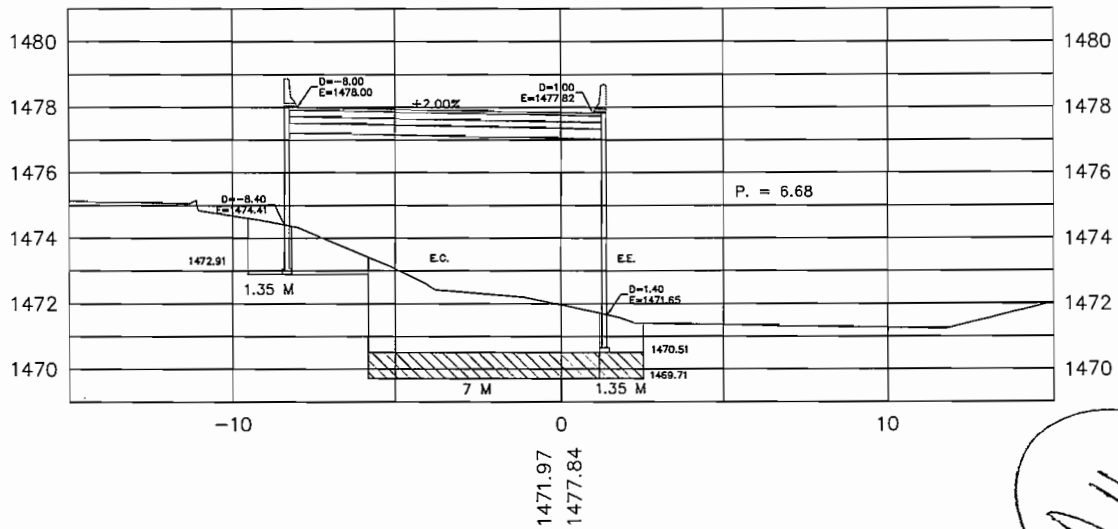
60+320



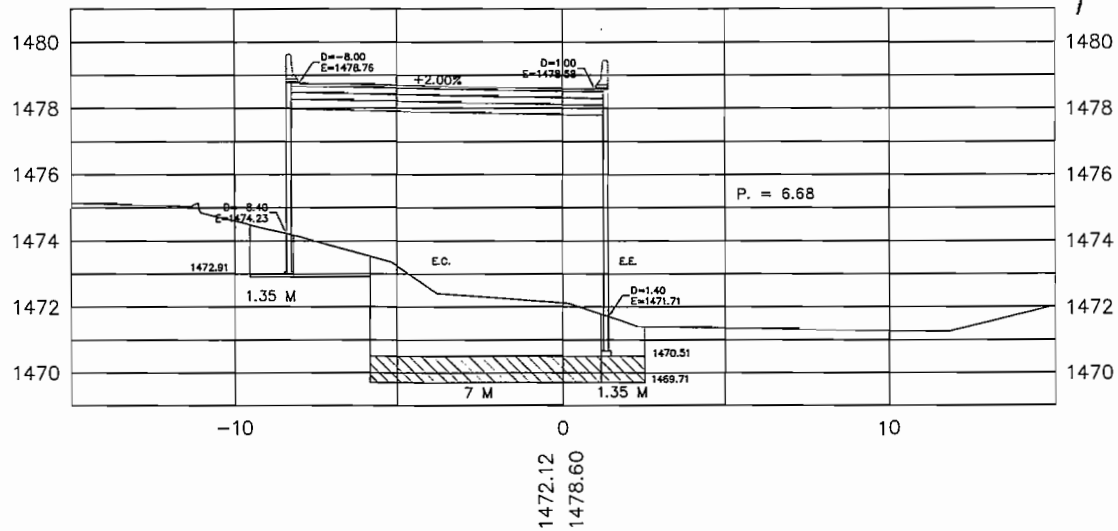
60+352.69



60+352.69



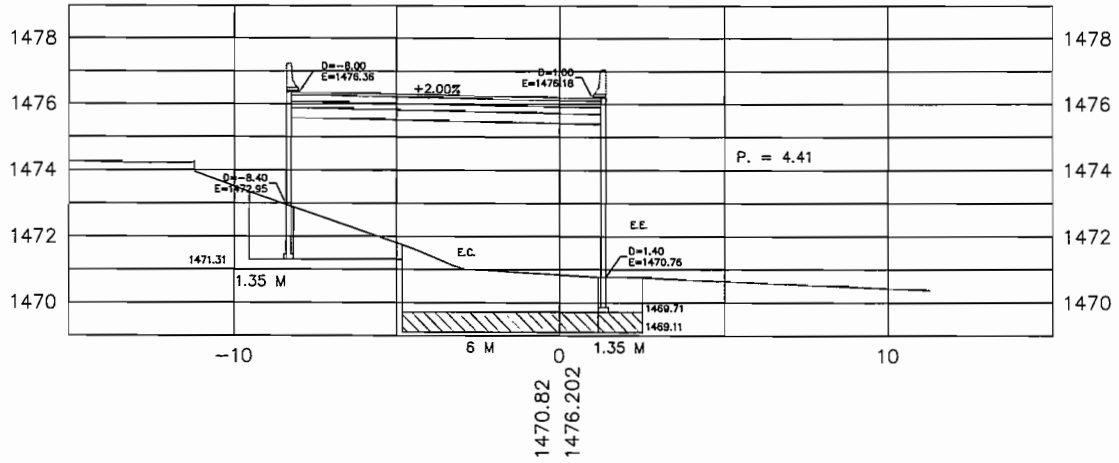
60+340



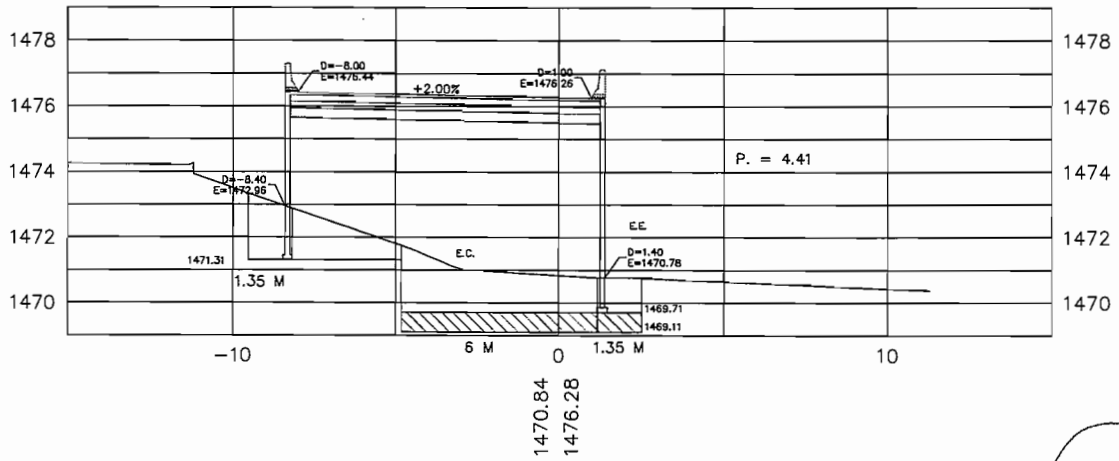
The diagram illustrates a cross-section of a bridge structure. The vertical axis represents elevation in meters, ranging from 1470 to 1480. The horizontal axis represents distance in meters, with markers at -10, 0, and 10. The structure consists of two main sections: a left section with a width of 1.35 M and a right section with a width of 1.35 M. The total width of the bridge deck is 2.70 M. The bridge is supported by a central pier with a width of 7 M. The bridge deck is shown with a +2.00% slope. The bridge is constructed with concrete (C.C.) and has a reinforcement ratio of $P_r = 6.68$. The bridge is shown with a cross-section of 1.35 M width. The bridge is shown with a cross-section of 1.35 M width. The bridge is shown with a cross-section of 1.35 M width.

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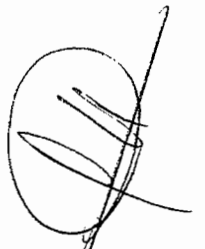
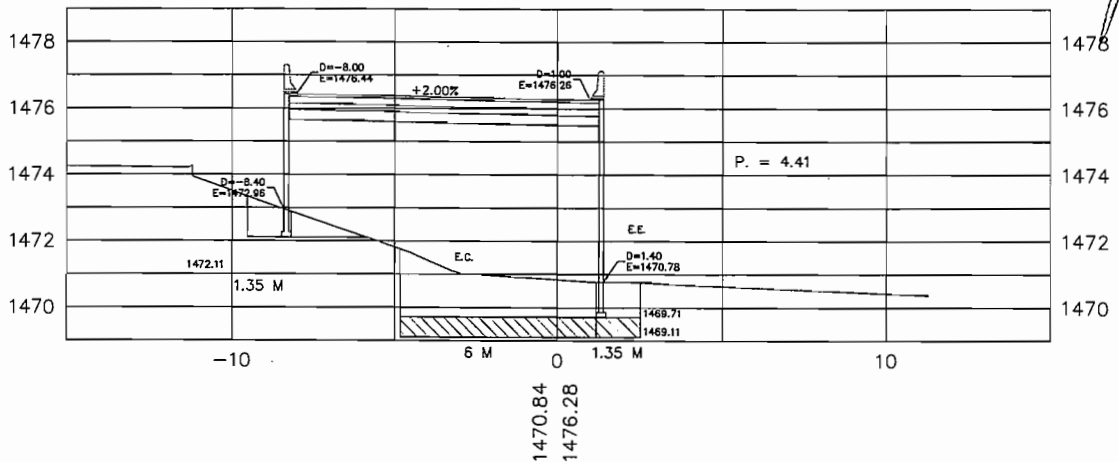
60+380



60+378.69

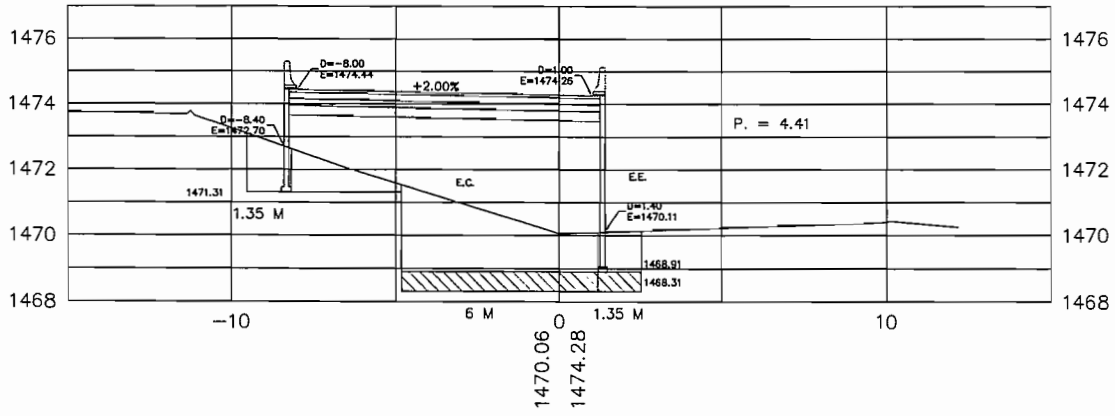


60+378.69

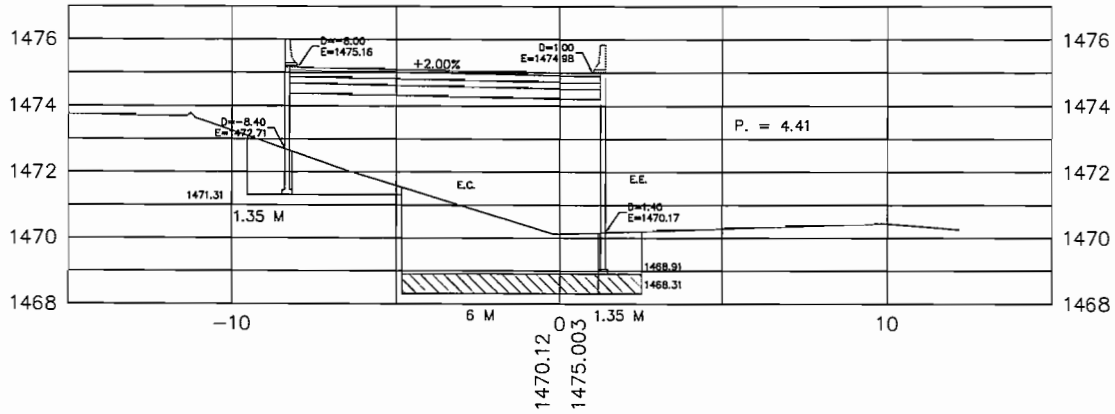


128

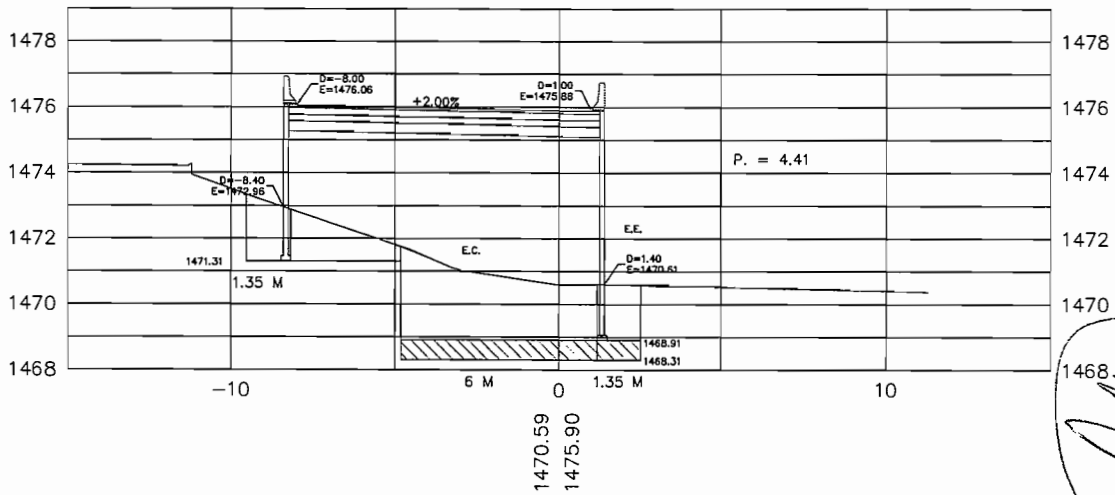
60+412.69



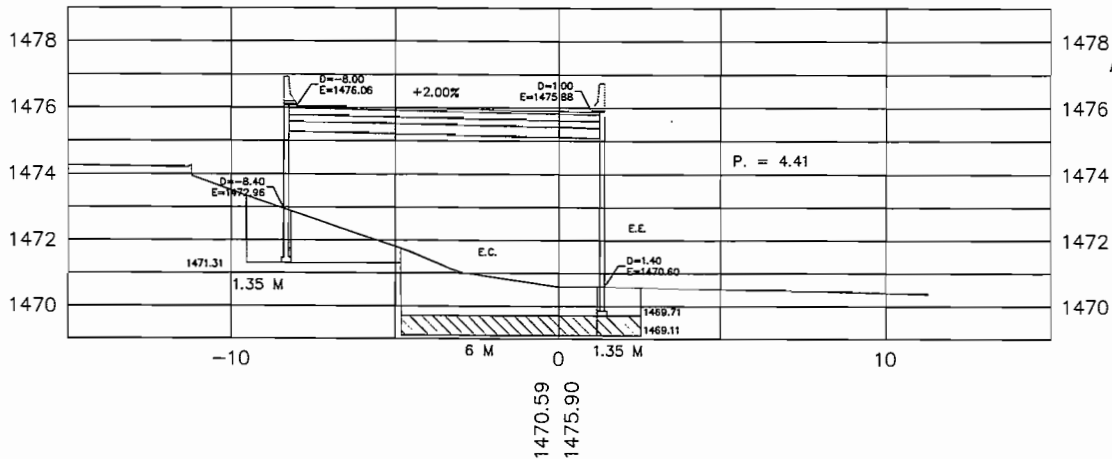
60+400

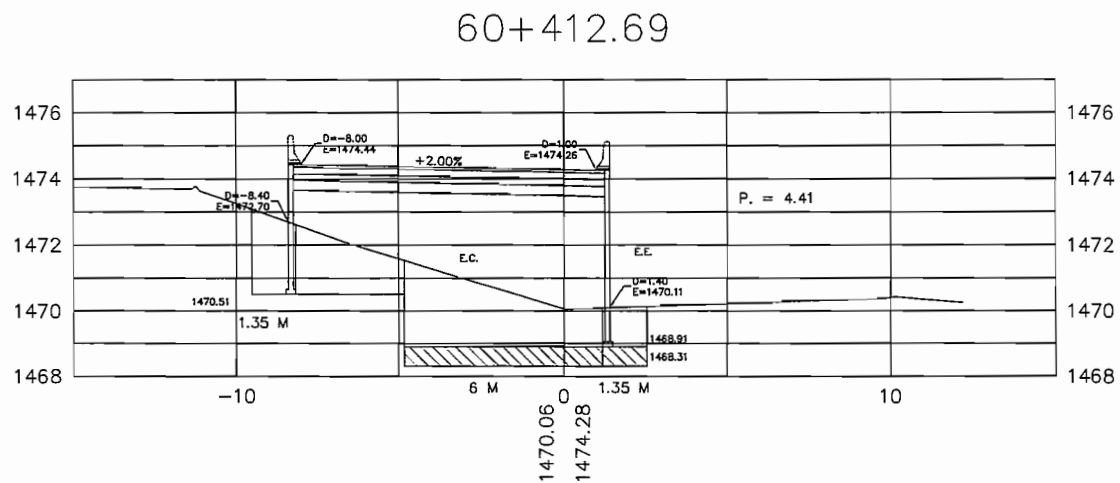
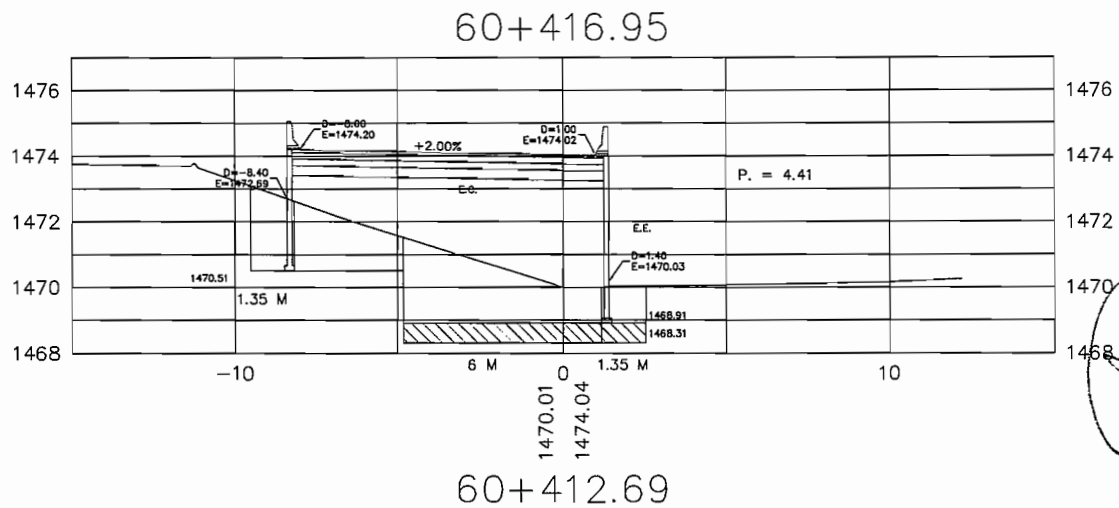
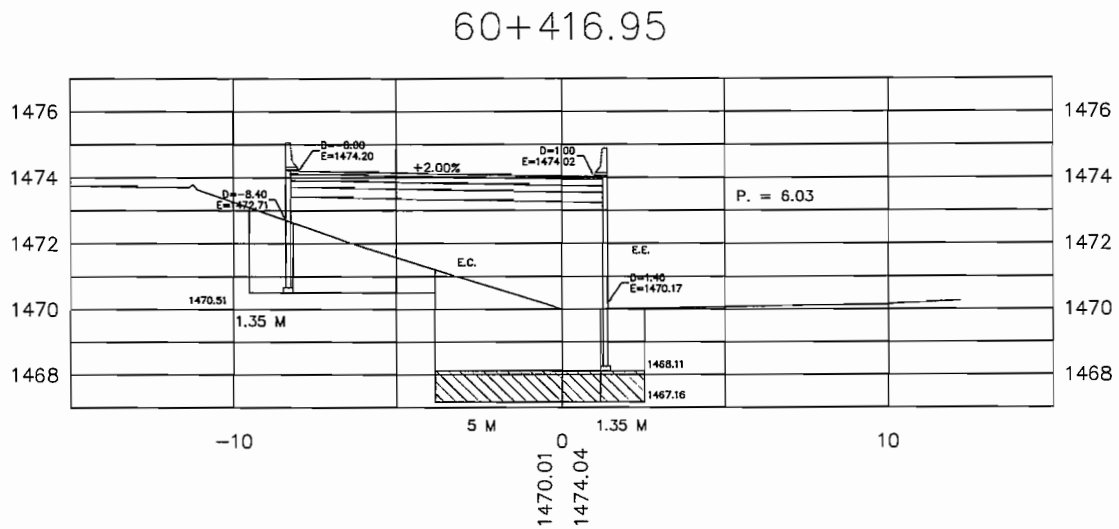
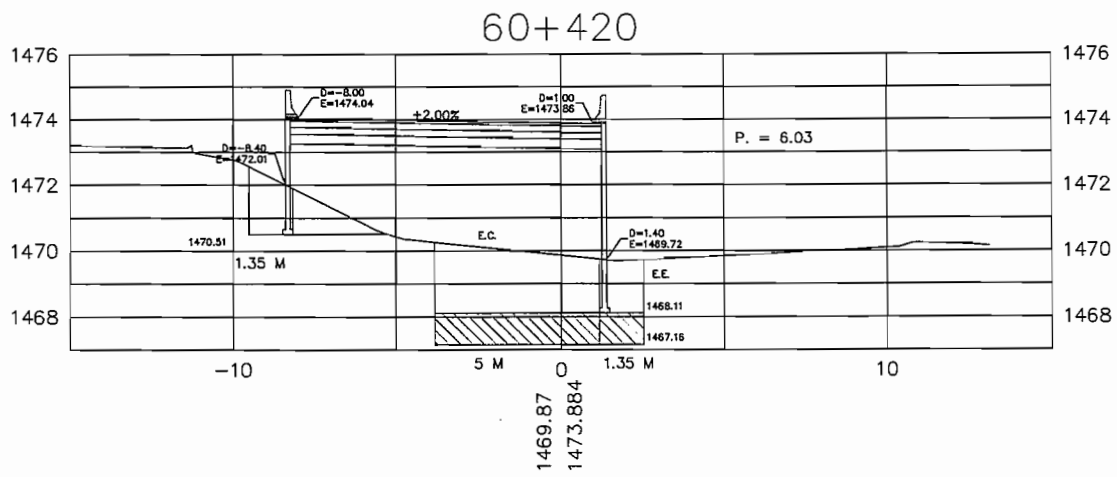


60+384.95

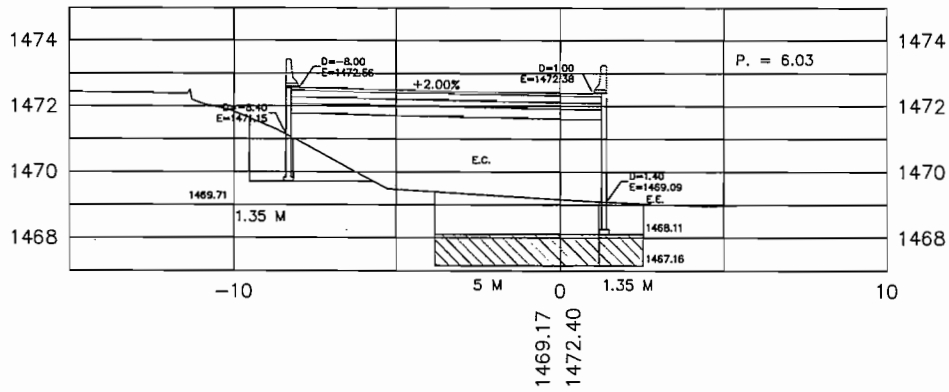


60+384.95

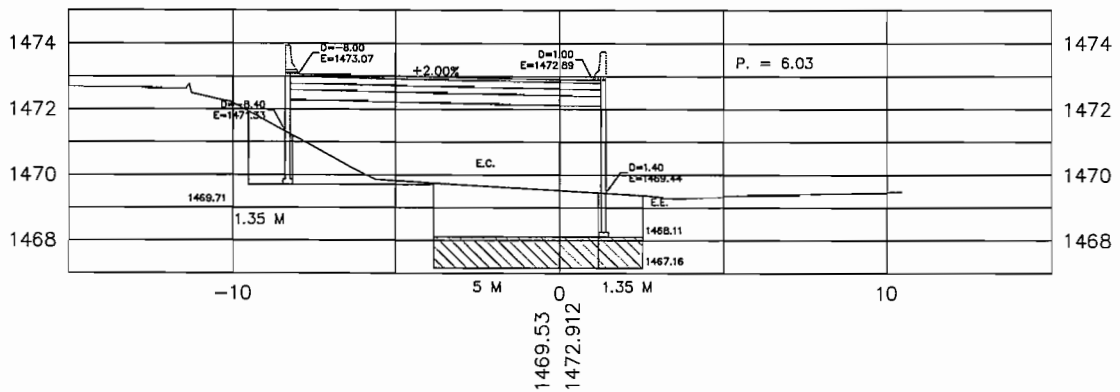




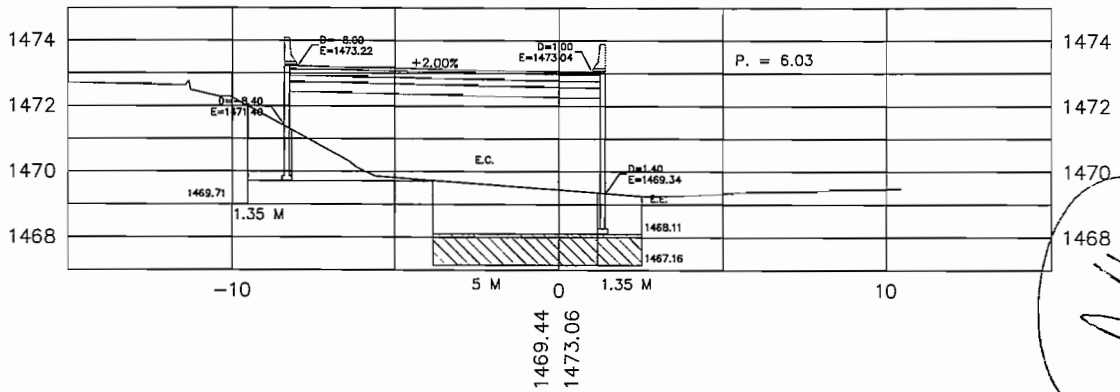
60+452.95



60+440



60+436.69



60+436.69

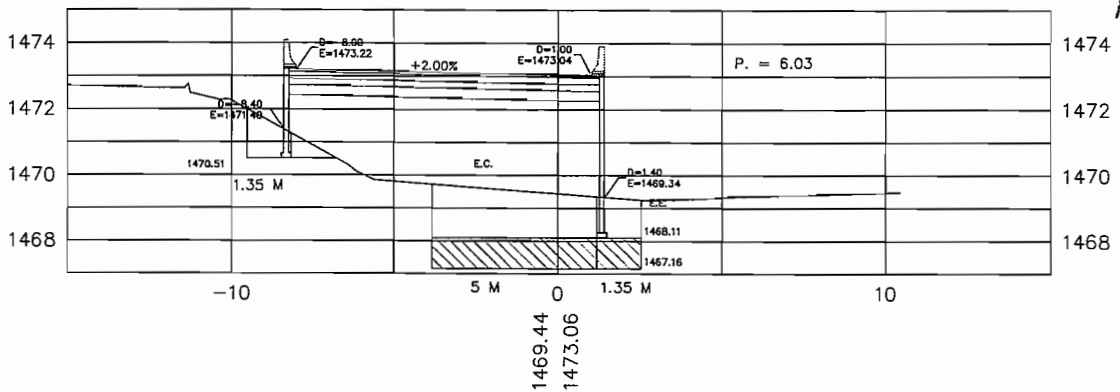


Diagram showing a cross-section of a road and drainage system. The road has a slope of $\pm 2.00\%$. The drainage ditch has a width of 1.35 M. The road width is 5 M. The elevation points are marked as follows:

- Top left: 1474
- Top right: 1472
- Top center: 1470
- Top right (P. = 6.35): 1468
- Top right (E. = 1471.82): 1468
- Top right (D = 1.40, E = 1468.31): 1468
- Top right (E. = 1468.31): 1468
- Top right (E. = 1466.31): 1466
- Bottom left: 1466
- Bottom center: 0
- Bottom right: 10

Additional labels include: D = -8.00, E = 1473.00; D = -8.40, E = 1470.67; 1.35 M; E.C.; D = 1.40, E = 1468.31; E.E.; 1468.91; 1468.58; 1471.84; 1468.31; 1466.31; P. = 6.35.

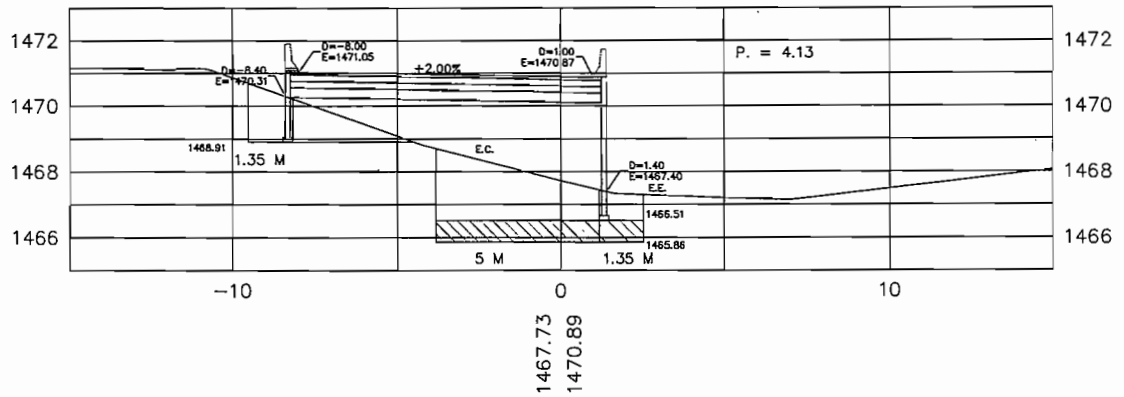
Diagram illustrating the cross-section of a bridge structure, showing two piers and a central span. The diagram includes various dimensions and elevations:

- Left Pier:** Diameter $D=8.40$, Elevation $E=1470.67$. The pier is supported by a foundation with a width of 5 M .
- Right Pier:** Diameter $D=1.40$, Elevation $E=1468.43$. The pier is supported by a foundation with a width of 1.35 M .
- Central Span:** Diameter $D=1.00$, Elevation $E=1471.82$. The span is supported by a foundation with a width of 1.35 M .
- Ground Level:** Indicated by a dashed line at elevation 1468.31 .
- Foundation:** The foundation is shown with a width of 5 M and a depth of 1.35 M .
- Scale:** The scale is indicated as $1:1000$.

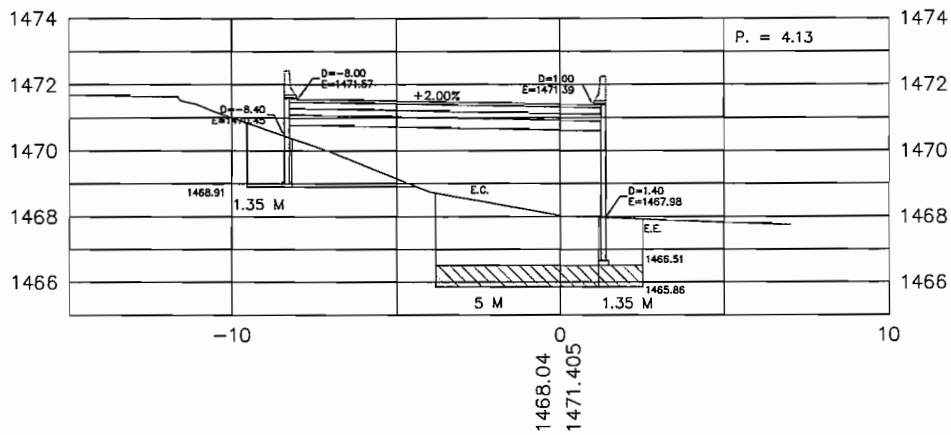
The diagram illustrates a cross-section of a bridge structure. The vertical axis represents elevation in meters, ranging from 1466 to 1474. The horizontal axis represents distance in meters, with markers at -10, 5, 0, and 10. The structure features a central span with a width of 1.35 M and a total width of 5 M. The bridge deck is shown with a top surface at elevation 1472.40 and a bottom surface at elevation 1467.31. The bridge piers are located at elevations 1469.71 and 1469.09. The bridge is supported by a foundation at elevation 1466.31. The bridge deck is labeled with a width of 1.35 M and a total width of 5 M. The bridge is supported by a foundation at elevation 1466.31. The bridge deck is labeled with a width of 1.35 M and a total width of 5 M. The bridge is supported by a foundation at elevation 1466.31.

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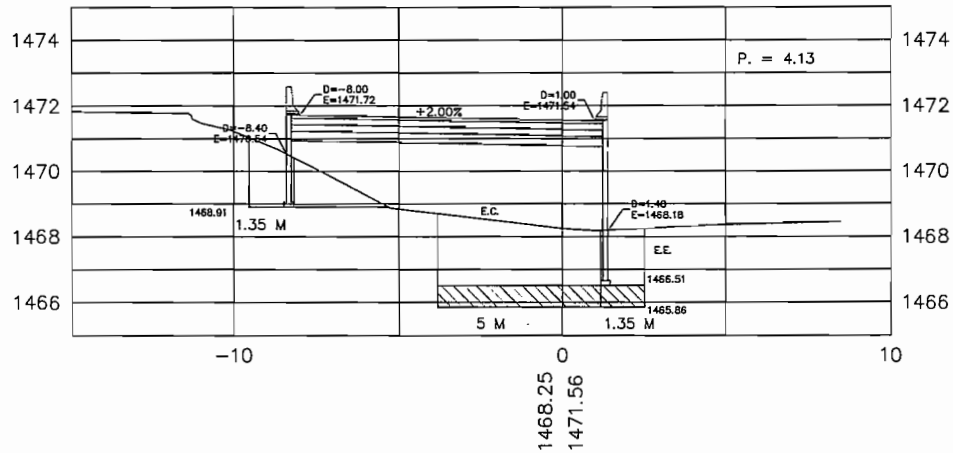
60+498.95



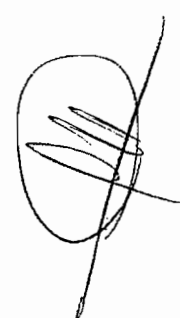
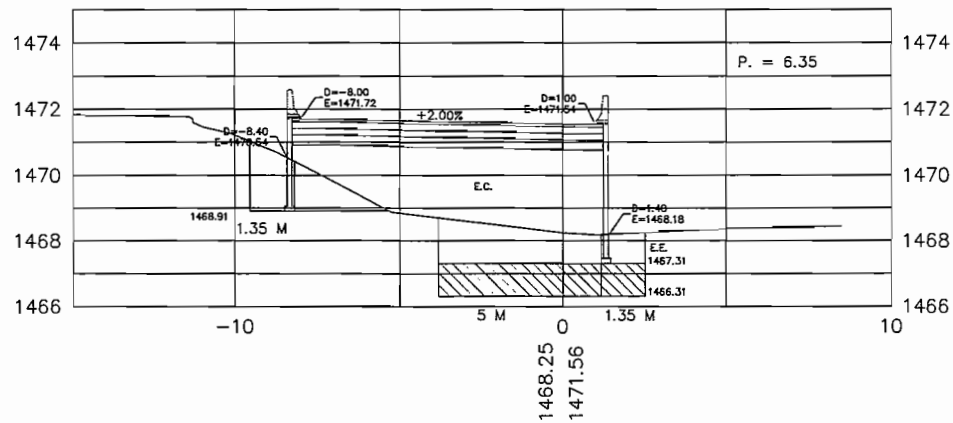
60+480



60+474.95



60+474.95



133

The diagram illustrates a cross-section of a bridge structure. The vertical axis represents elevation in meters, ranging from 1464 to 1472. The horizontal axis represents distance in meters, with markers at -10, 0, and 10. The structure features a central span of 5 M and two side spans of 1.35 M each. The bridge is supported by piers. The elevation of the bridge deck is marked as +2.00%. The structure is labeled with various dimensions and elevations, including D=-8.00, E=1470.50, D=1.00, E=1470.41, D=-8.40, E=1469.94, D=1.40, E=1467.14, and E=1465.91. The structure is labeled with 'E.C.' and 'P. = 5.08'. The structure is labeled with '1468.11' and '1465.71'.

The diagram illustrates a cross-section of a bridge structure. The vertical axis represents elevation in meters, ranging from 1464 to 1472. The horizontal axis represents distance in meters, with markers at -10, 0, and 10. The bridge deck is shown with a +2.00% slope. Key structural features include a central pier (E.C.) and two abutments. The left abutment has a height of 1.35 M and a base elevation of 1468.91. The right abutment has a height of 1.35 M and a base elevation of 1465.71. The central pier has a height of 5 M and a base elevation of 1464.91. The bridge deck is shown with a +2.00% slope. The diagram also includes a scale bar and a north arrow.

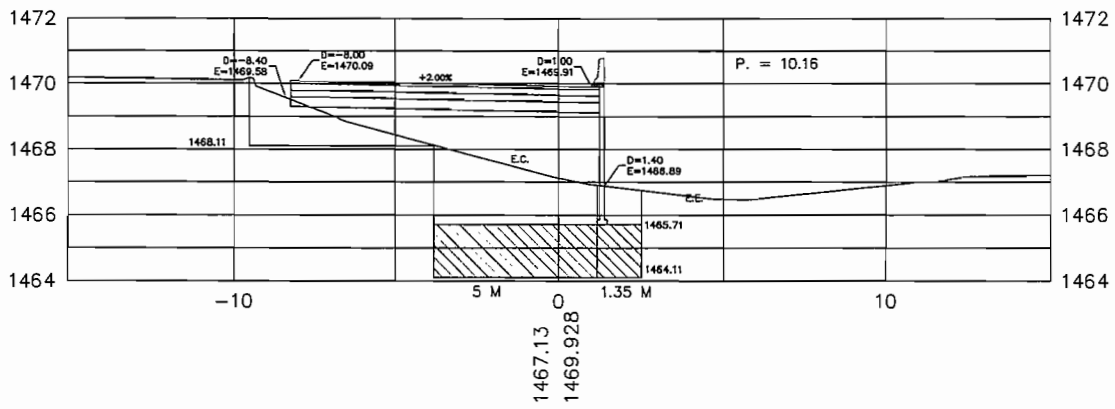
Point	Elevation (m)	Distance (m)	Notes
Left Abutment Top	1468.91	-10	Height 1.35 M
Central Pier Top	1470.46	0	Height 5 M
Right Abutment Top	1465.71	10	Height 1.35 M

The diagram illustrates a cross-section of a bridge structure. The vertical axis represents elevation in meters, with labels at 1464, 1466, 1468, 1470, and 1472. The horizontal axis represents distance in meters, with labels at -10, 0, and 10. The structure consists of two main sections: a left section and a right section. The left section has a width of 1.35 M and a height of 1.35 M. The right section has a width of 1.35 M and a height of 1.35 M. The total width of the structure is 2.70 M. The elevation of the top of the structure is 1471.03 M. The elevation of the bottom of the structure is 1464.91 M. The elevation of the top of the right section is 1467.39 M. The elevation of the bottom of the right section is 1464.91 M. The diagram also shows a 2.00% slope and a 5.08% slope. The diagram is labeled with various dimensions and elevations, including D=8.40, E=1471.03, D=1.00, E=1470.85, D=1.40, E=1467.39, and E.E. The diagram is also labeled with 1468.91, 1465.71, 1464.91, 1467.73, and 1470.87. The diagram is also labeled with 1464, 1466, 1468, 1470, and 1472. The diagram is also labeled with -10, 0, and 10. The diagram is also labeled with 1.35 M, 5 M, and 1.35 M. The diagram is also labeled with 2.00% and 5.08%.

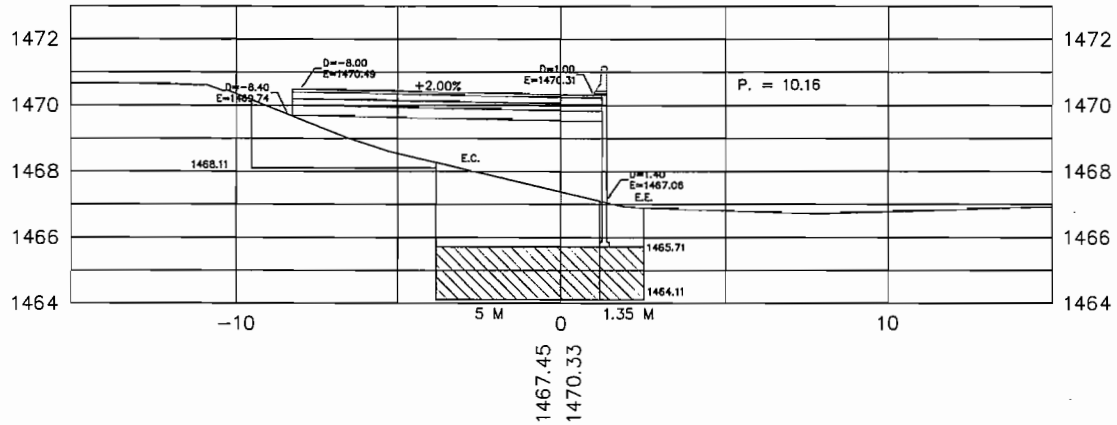
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134

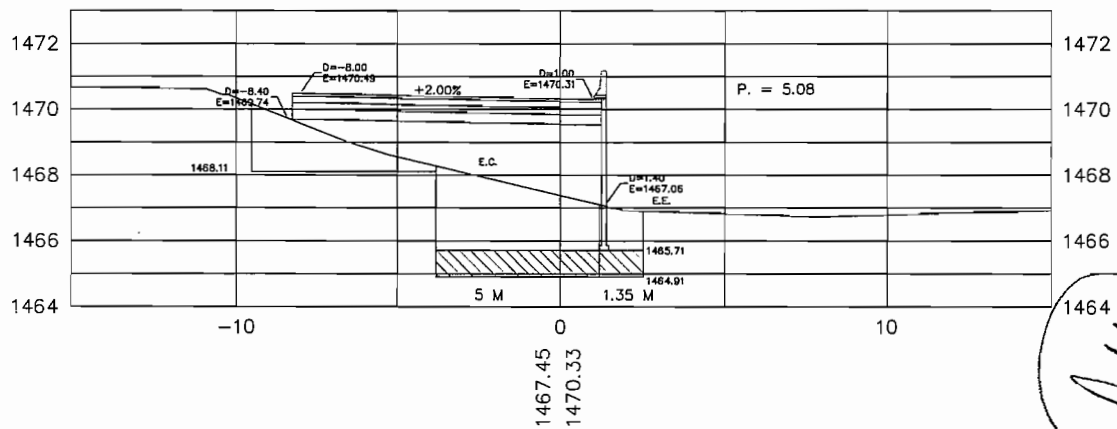
60+540



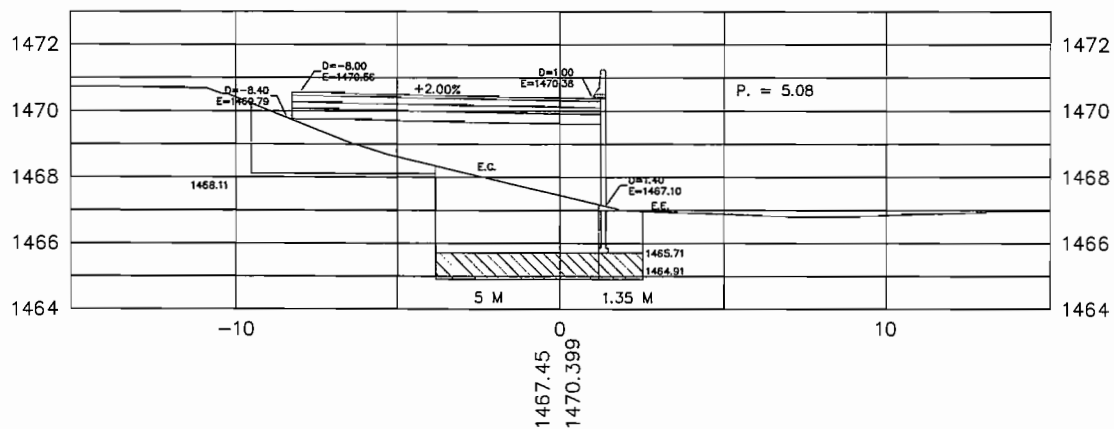
60+522.95



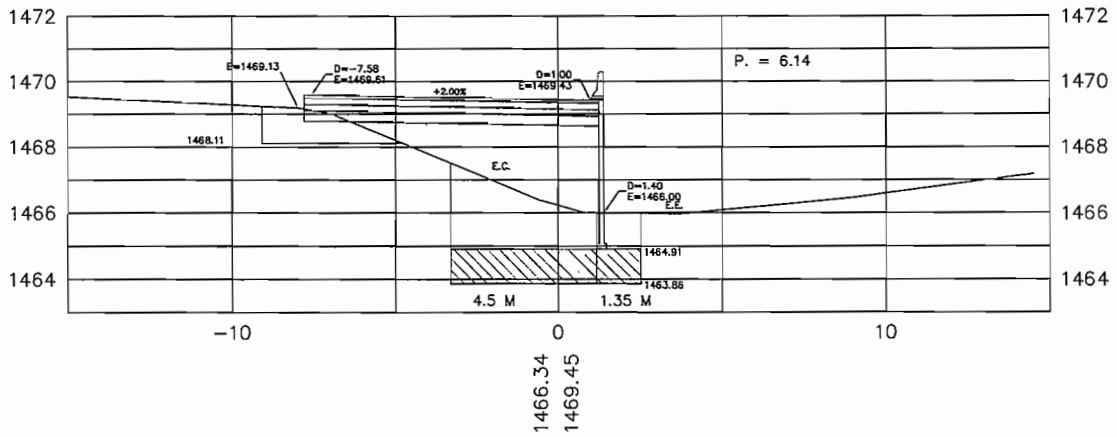
60+522.95



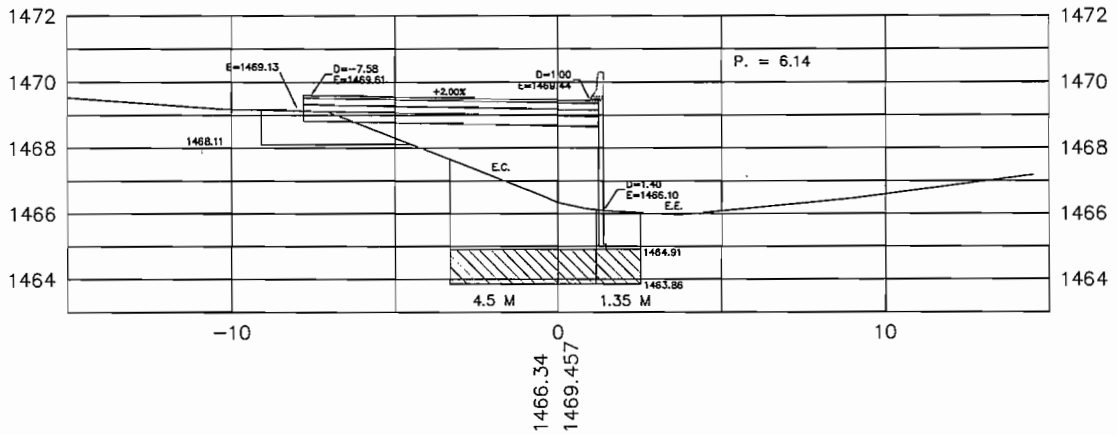
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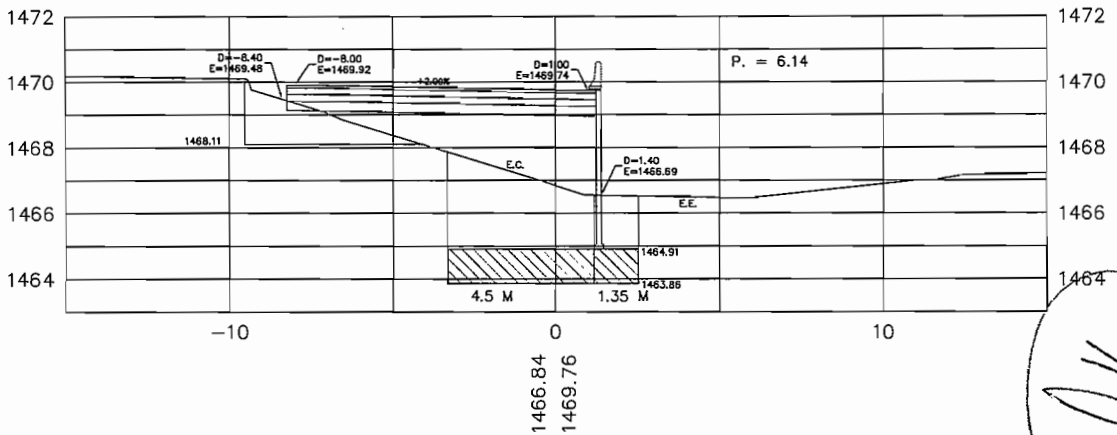
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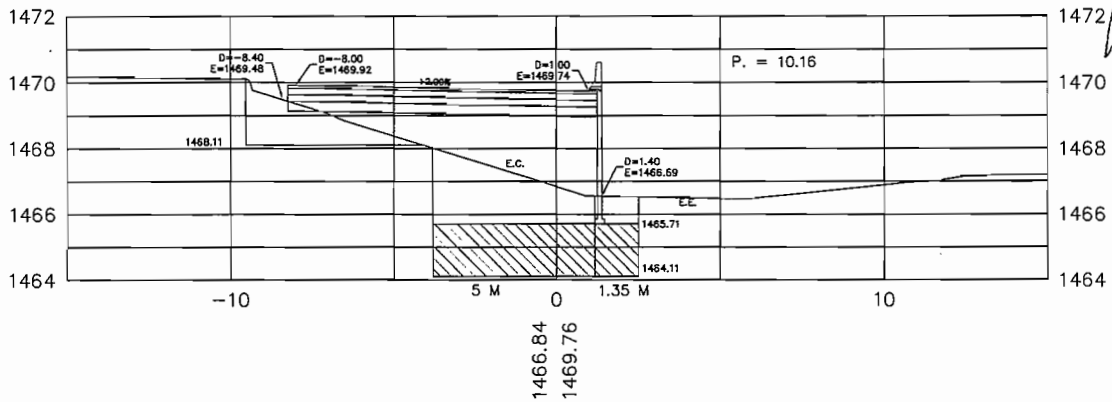
60+560



60+546.95

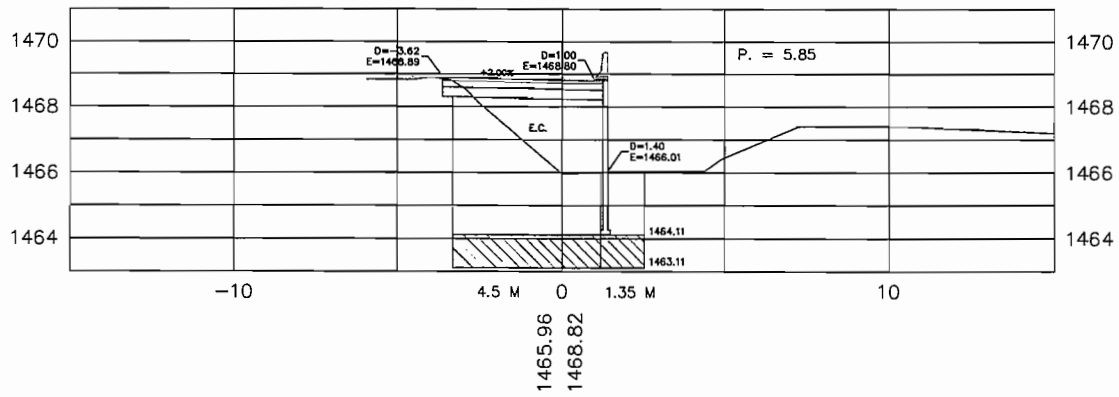


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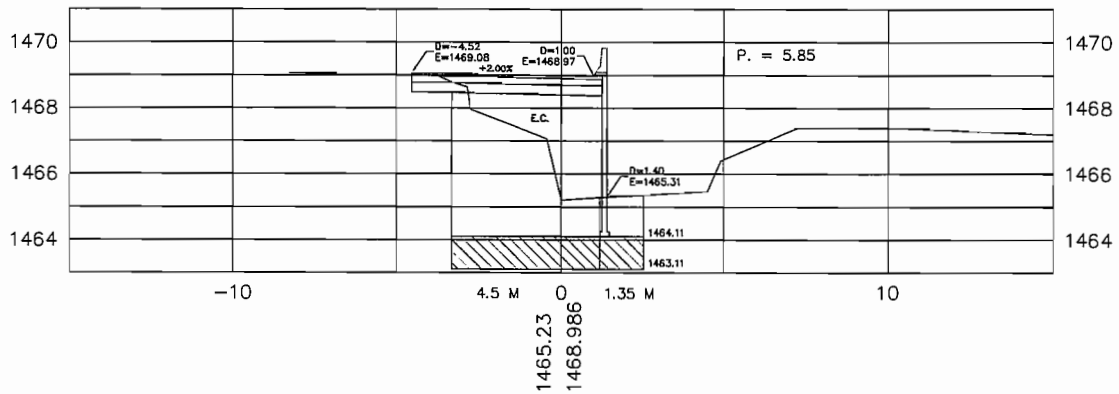


136

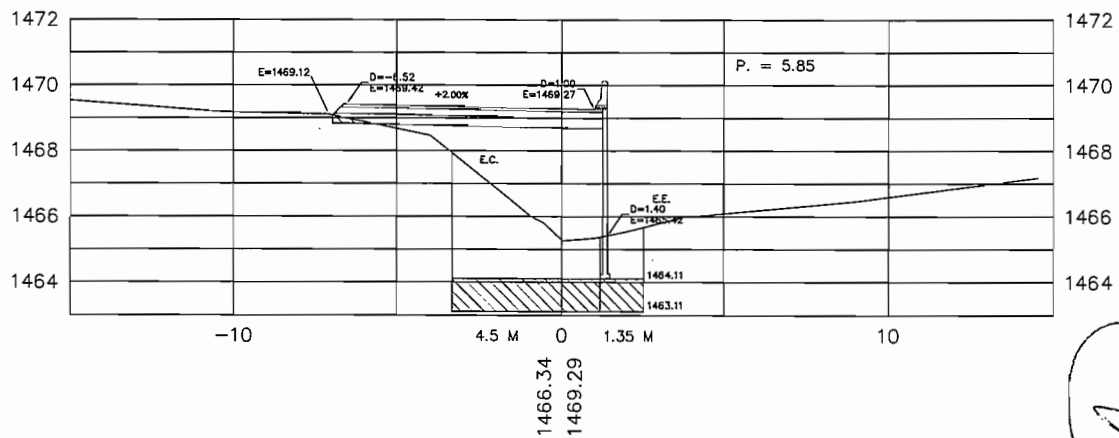
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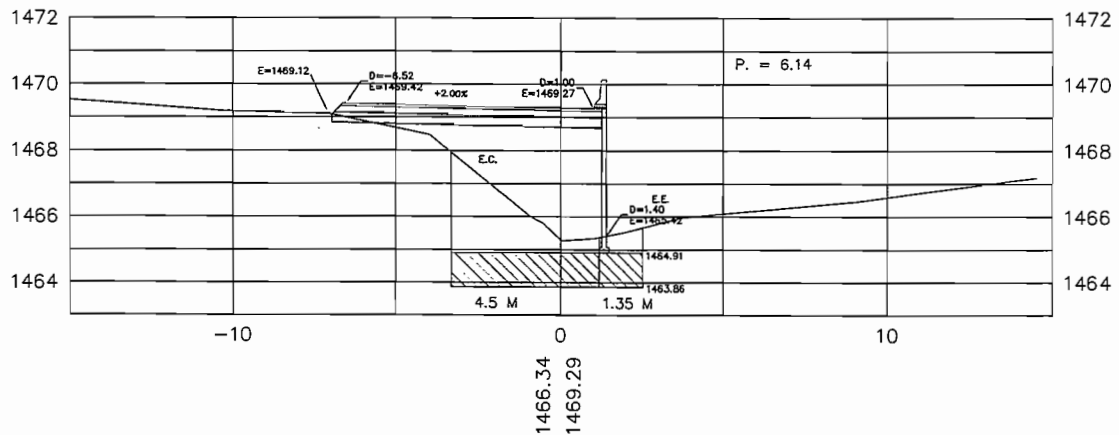
60+580



60+566.95



60+566.95

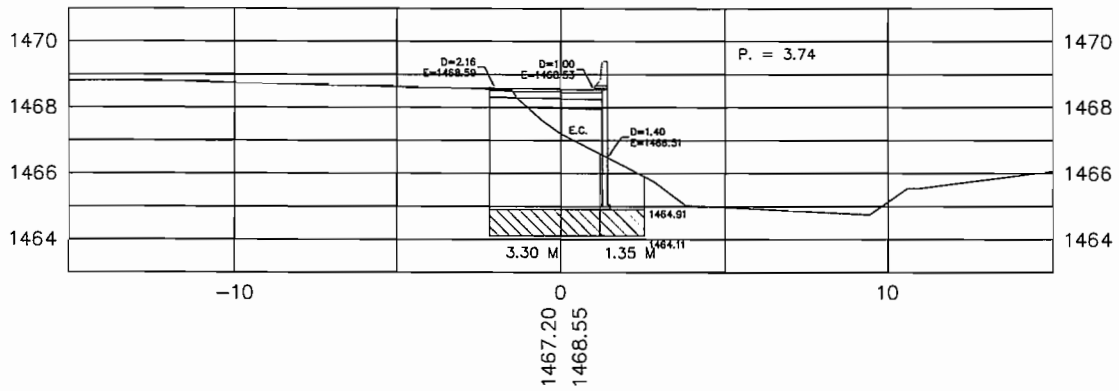


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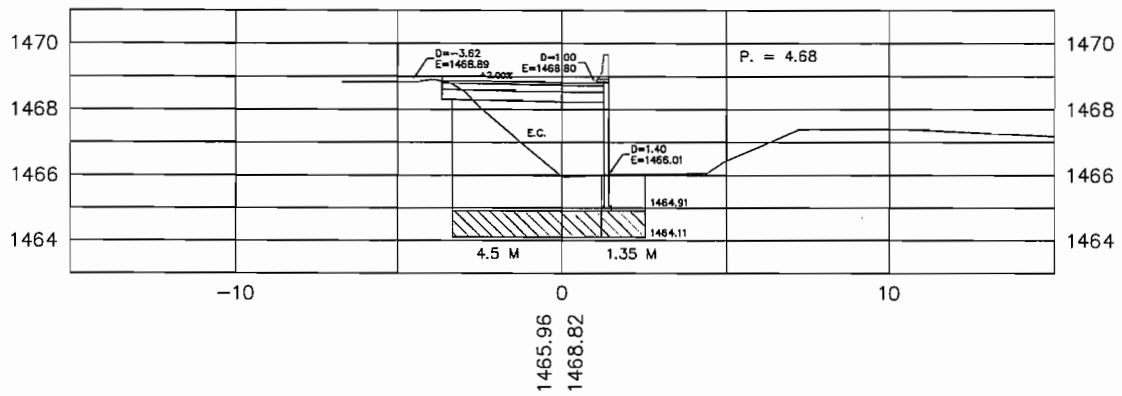
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137

60+598.72



60+586.95



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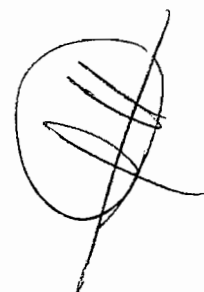
138



EXCAVACION EN CORTE EN RAMPA



EXCAVACION EN RAMPA





TERRAPLEN EN RAMPA DE TIERRA ARMADA



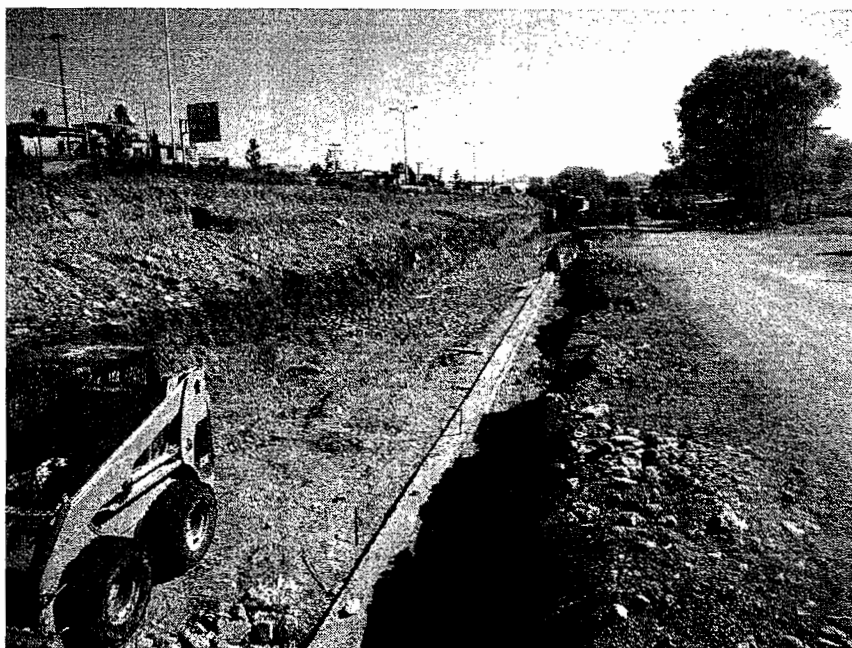
FORMACION DE TERRAPLEN EN RAMPA

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140



EXCAVACION PARA ESTRUCTURAS EN RAMPA 1



EXCAVACION PARA ESTRUCTURAS EN RAMPA DE SALIDA

11

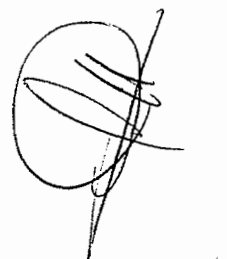
141



FORMACION DE PIEDRAPLEN EN RAMPA DE SALIDA



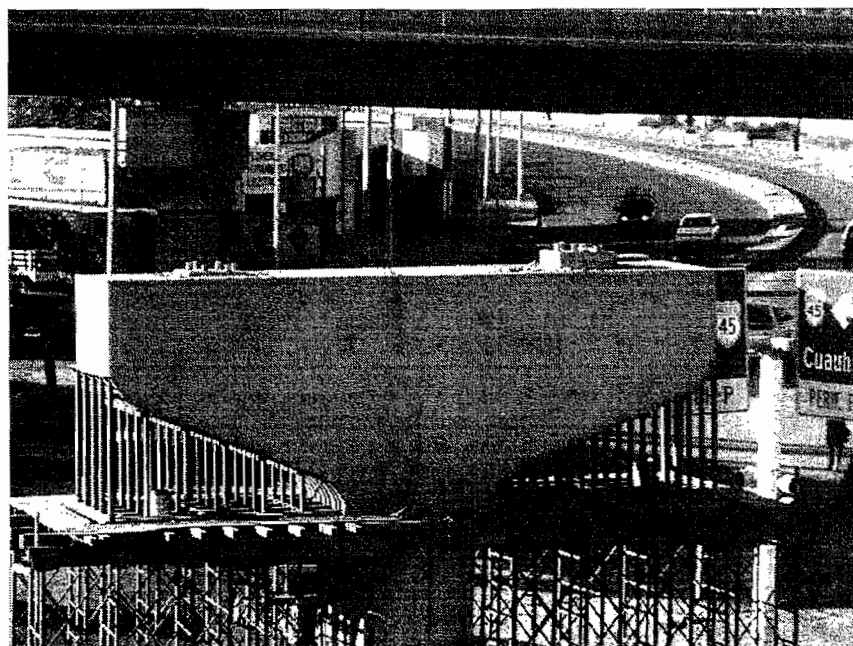
RELLENO DE ESTRUCTURAS EN RAMPA DE SALIDA



142



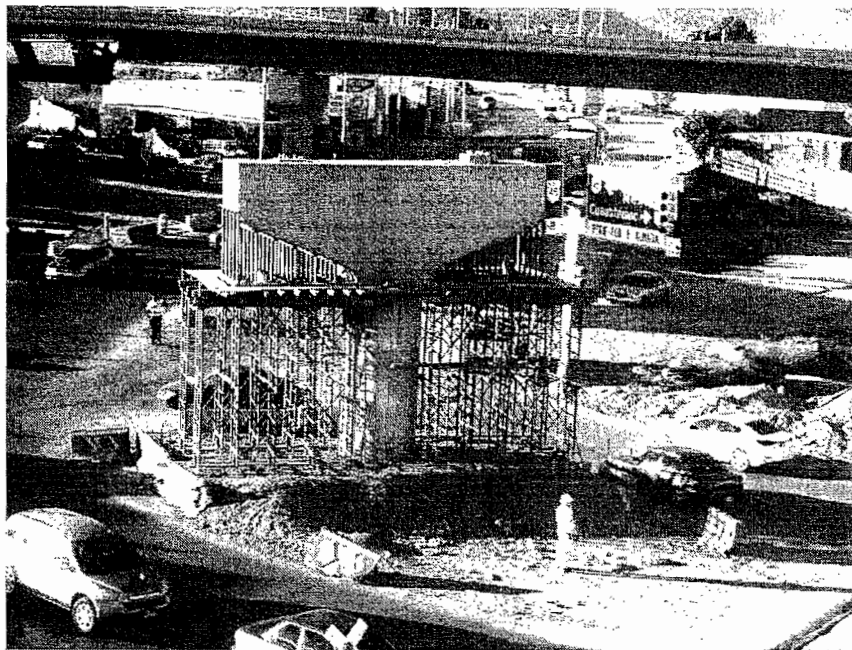
RELLENO DE ESTRUCTURAS EN RAMPA



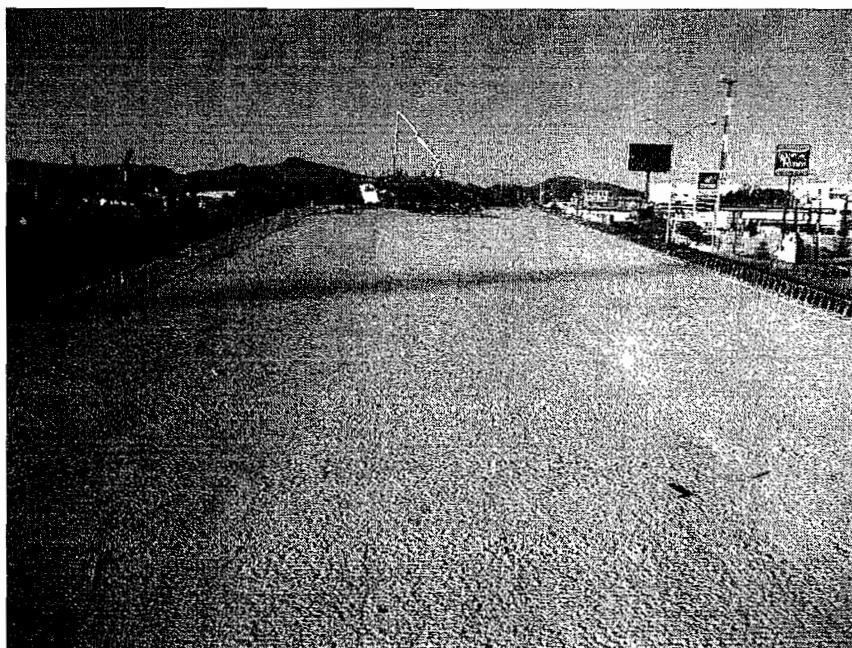
CONCRETO EN BANCOS DE PILA 3

[Handwritten signature]

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143



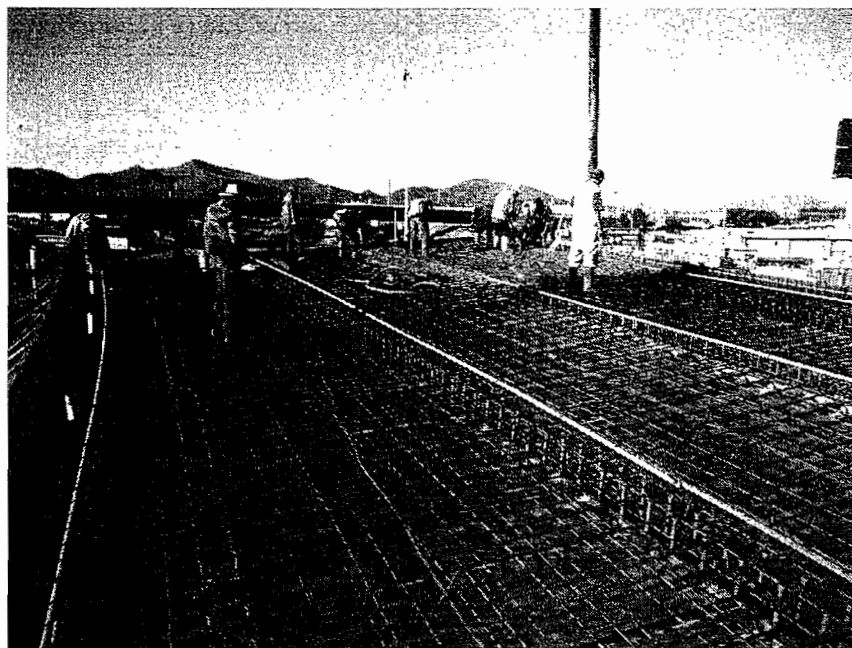
CONCRETO EN CABEZAL DE PILA 3



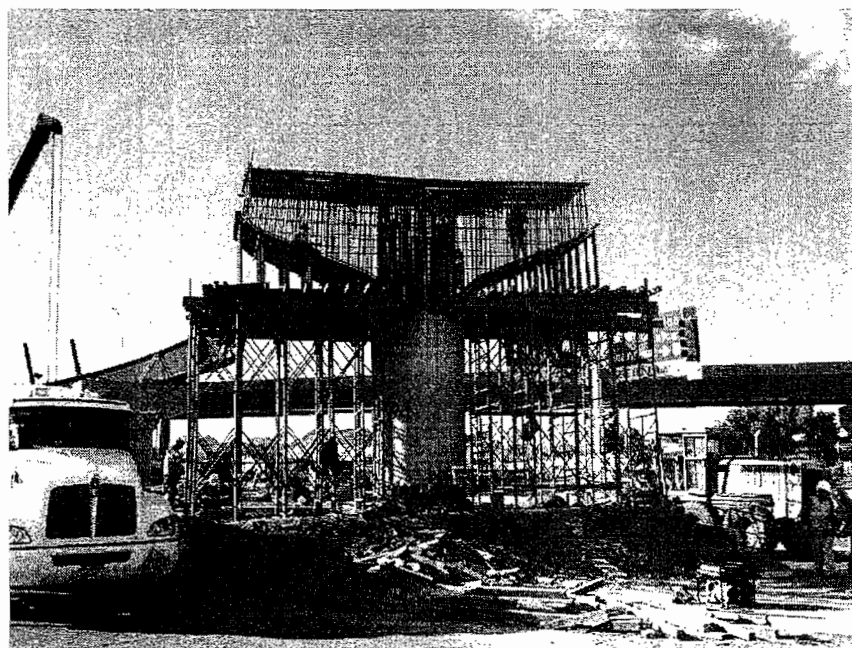
LOSA DE CONCRETO EN PUENTE

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144



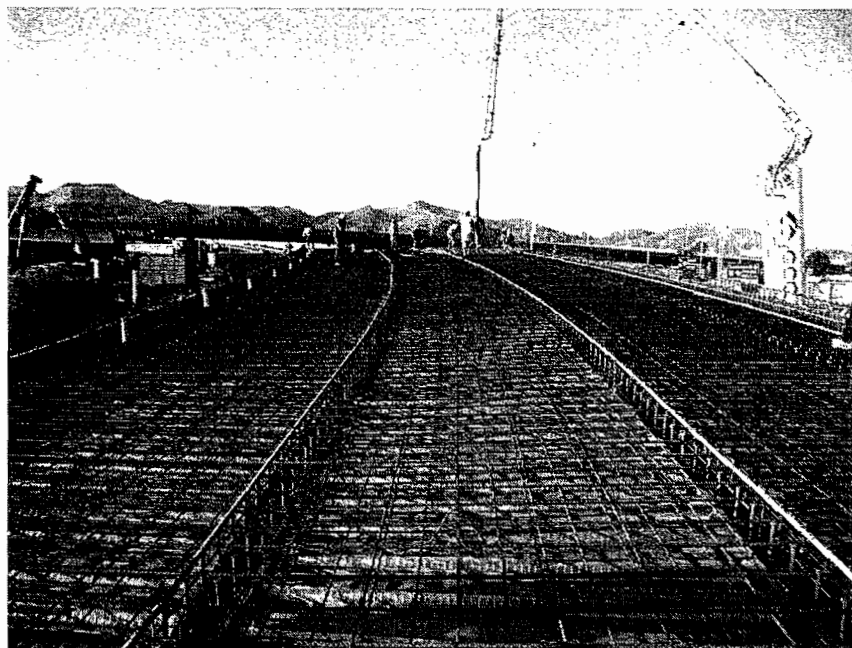
COLANDO LOSA DE PUENTE



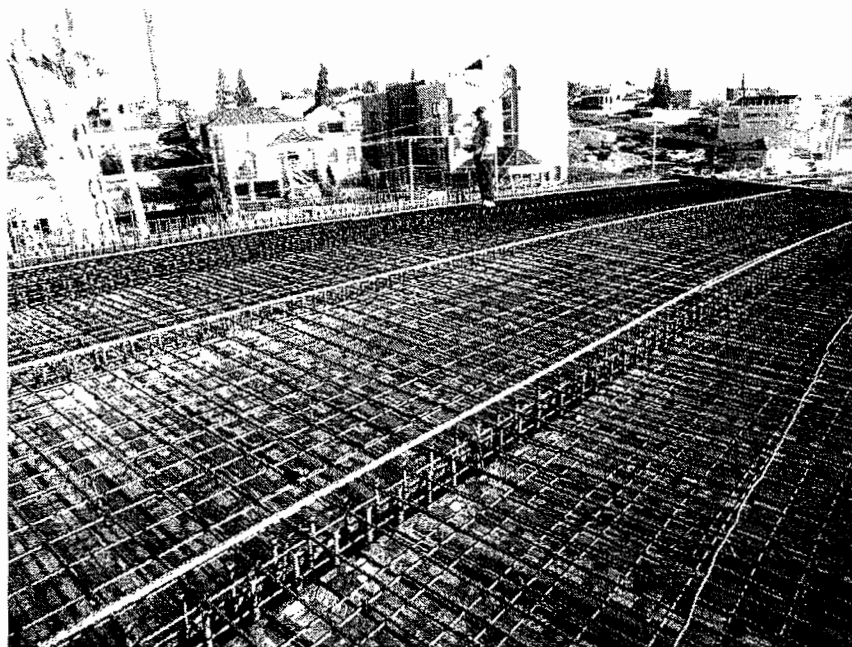
ACERO DE REFUERZO EN CABEZAL

[Handwritten signature]

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145



ACERO DE REFUERZO EN LOSA



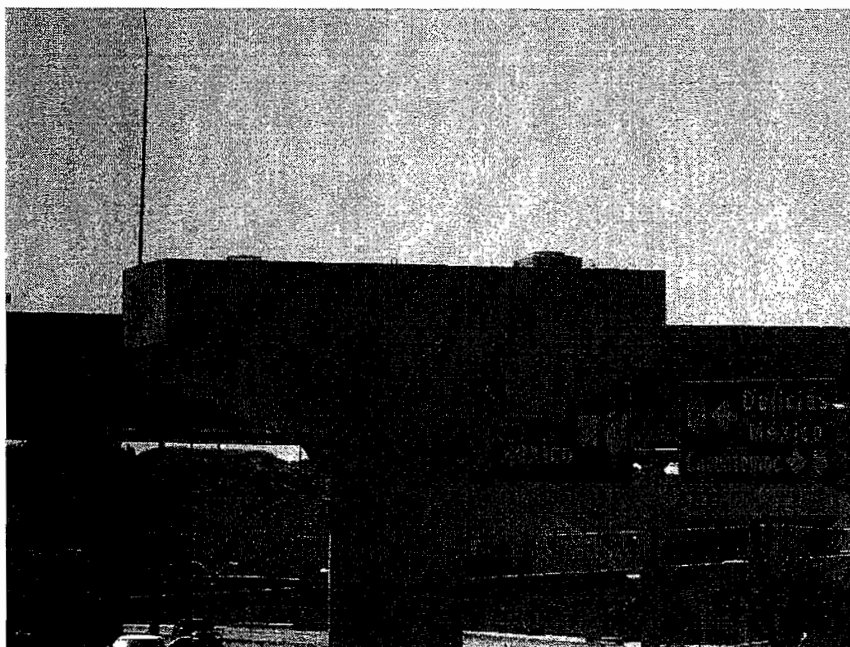
ACERO DE REFUERZO EN LOSA

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146



CIMBRA DE LAMINA EN LOSA DE PUENTE



TETRONES YA INSTALADOS EN CABEZAL

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147



LABORATORIO Y CONSULTORIA, S.A. DE C.V.

CALLE MANUEL GARCIA GARCIA NO. 10102 COL. COL.DEPORTISTAS 6144170033 Chihuahua Chihuahua. 31125

INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-08-19

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-08-20

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
17	Prueba: 1				Tipo de Capa: 5A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.7 60+378 AL 60+438				
	A		D	30	1833	1970	11,0	10,6	93,00
	B		C	30	1934	1970	11,0	8,0	98,20
	C		I	30	1829	1970	11,0	8,9	92,80
	D		D	30	1842	1970	11,0	10,7	93,50
	E		C	30	1901	1970	11,0	8,7	96,50
	F		I	30	1826	1970	11,0	9,2	92,70
Promedio de Compactación:									94,45

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:

ING. MYRNA IBARRA APARICIO
GERENTE TÉCNICO

Este informe solo afecta a los especímenes y/o muestras sometidas a prueba.

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LCO-COMP
Página 1 de 1

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MÉTODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

Fecha Informe:
2016-08-20

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: CHIHUAHUA, CHIHUAHUA.

CONTRATISTA:

No.	Elemento		Localidad		Rev (cm)	Carga (kgf)	Carga (N)	Equipo de Mezclado		Aditivo	Vibrado Tipo de Falla					
	Edad (dias)	Altura (cm)	Masa (kg)	Area (cm ²)				Resistencia (kgf/cm ²)	Resistencia (kPa)			f'c Proy (kgf/cm ²)	% Resis	Fecha		
34	CIL															
	ESCAMAS															
	C	28	15,0	30,0	12,5	176,6	12,0	45913	450268	259,94	25491,41	250	104,0	2016-07-22	0	
	LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.															
	RN:	SI(X) NO()	BOMBEADO:		SI() NO(X)	T. MAX.:	19,00	mm	VOLUMEN COLADO:	7,00	m ³	REV PROJ.:	10	cm	NO	Si
	35°C															

ATENTAMENTE:

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GERENTE TECNICO

METODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013 435-2010 ONNCCE

CONTRATISTA:

30°C

ATENTAMENTE:

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ING. MYRNA IBARRA APARICIO
GERENTE TECNICO

INFORME DE RESISTENCIA A LA COMPRESION DE CILINDROS DE CONCRETO

METODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: CHIHUAHUA, CHIHUAHUA.

CONTRATISTA:

Fecha Informe:

2016-08-11

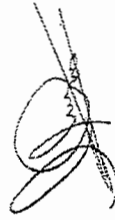
Fecha Ruptura:

2016-08-10

No.	Elemento	Edad (días)	Diam (cm)	Altura (cm)	Masa (kg)	Localidad Area (cm²)	Rev (cm)	Carga (kgf)	(N)	Resistencia (kgf/cm²)	(kPa)	f'c Proy (kgf/cm²)	% Resis	Aditivo	Fecha	Vibrado Tipo de Falla
31	ESCAMAS															
	C	28	15,0	30,0	12,5	176,6	13,0	45881	449954	259,76	25473,75	250	103,9	NO	2016-07-13	0
	LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.															
	RN:	SI(X) NO(I)	BOMBEADO:	SI(I) NO(X)	T. MAX.:	19,00	mm	VOLUMEN COLADO:	7,50	m³	REV PROY.:	10	cm			

36°C

ATENTAMENTE:



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GERENTE TECNICO

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INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

Fecha de muestreo: 2016-08-11

Fecha de Informe: 2016-08-12

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
13	Prueba: 1				Tipo de Capa: 3A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA DE ESTRIBO NO. 7 60+308 AL 60+363				
	A		D	30	1866	1970	11,0	10,4	94,70
	B		C	30	1951	1970	11,0	10,1	99,00
	C		D	30	1881	1970	11,0	9,5	95,50
Promedio de Compactación:									96,40

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

14	Prueba: 1				Tipo de Capa: 7A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO. 7 60+499 AL 60+547				
	A		D	30	1849	1970	11,0	9,2	93,90
	B		C	30	1909	1970	11,0	7,9	96,90
	C		D	30	1828	1970	11,0	9,7	92,80
Promedio de Compactación:									94,53

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:



ING. MYRNA IBARRA APARICIO
GERENTE TECNICO




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LABORATORIO Y CONSULTORIA, S.A. DE C.V.

CALLE MANUEL GARCIA GARCIA NO. 10102 COL. COL. DEPORTISTAS 6144170033 Chihuahua Chihuahua. 31125

INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-08-12

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-08-13

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
15	Prueba: 1			Tipo de Capa: 4A CAPA MURO DE TIERRA ARMADA					
	% Especificado: 90			Localización: RAMPA ESTRIBO NO.7 60+363 AL 60+417					
	A		D	30	1813	1970	11,0	8,4	92,00
	B		C	30	1940	1970	11,0	7,0	98,50
	C		C	30	1927	1970	11,0	7,5	97,80
	D		D	30	1886	1970	11,0	7,8	95,70
Promedio de Compactación:									96,00

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:

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GERENTE TECNICO

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LABORATORIO Y CONSULTORIA, S.A. DE C.V.

CALLE MANUEL GARCIA GARCIA NO. 10102 COL. COL.DEPORTISTAS 6144170033 Chihuahua Chihuahua. 31125

INFORME DE COMPACTACIONES

MÉTODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-08-18

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-08-19

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
16	Prueba: 1				Tipo de Capa: 4A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO. 7 60+308 AL 60+378				
	A		D	30	1837	1970	11,0	10,1	93,20
	B		I	30	1888	1970	11,0	9,8	95,80
	C		C	30	1925	1970	11,0	8,0	97,70
	D		D	30	1808	1970	11,0	8,1	91,80
	E		C	30	1910	1970	11,0	7,8	97,00
	F		I	30	1784	1970	11,0	8,8	90,60
	Promedio de Compactación:								94,35

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:

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GERENTE TÉCNICO

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MÉTODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

Fecha Informe:

2016-08-26

Fecha Ruptura:

2016-08-25

CONTRATISTA:

ATENÇÃO:

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GERENTE TECNICO

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MÉTODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

Fecha Informe:

2016-08-30

Fecha Ruptura:

2016-08-29

No.	Elemento			Localidad		Equipo de Mezclado				Aditivo	Vibrado			
	Edad (días)	Diam (cm)	Altura (cm)	Masa (kg)	Area (cm ²)	Rev (cm)	Carga (kgf)	Carga (N)	Resistencia (kgf/cm ²)			f'c Proy (kgf/cm ²)	% Resis	Fecha
36	CIL													
	ESCAMAS													
	C	28	15,0	30,0	12,5	176,6	11,0	46228	453358	261,72	25665,96	250	104,7	2016-08-01
	LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.													
	RN: SI(X) NO()		BOMBEADO: SI()		NO(X)		T. MAX.:							
							19,00		mm		3,00		m ³ REV PROY.: 10 cm	
	30°C													

ATENTAMENTE:

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GERENTE TECNICO

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INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D 690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

Fecha de muestreo: 2016-08-29

Fecha de informe: 2016-08-30

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		%
					Del Lugar	Máxima	Optima	Del Lugar	
22	Prueba: 1				Tipo de Capa: 1A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.1				
	A		D	30	1832	1970	11,0	6,9	93,00
	B		C	30	1910	1970	11,0	6,7	97,00
	C		I	30	1824	1970	11,0	7,6	92,60
Promedio de Compactación:									94,20

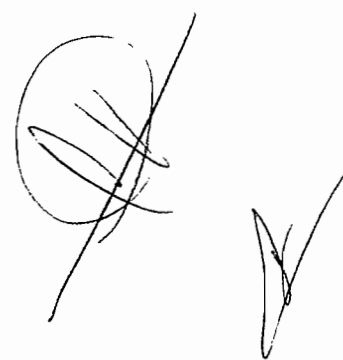
LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS: 60+029 AL 60+039

ATENTAMENTE:



ING. MYRNA IBARRA APARICIO
GERENTE TECNICO



LCO-COMP
Página 1 de 1

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INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

Fecha de muestreo: 2016-08-25

Fecha de Informe: 2016-08-26

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
18	Prueba: 1			Tipo de Capa: 6A CAPA MURO DE TIERRA ARMADA					
	% Especificado: 90			Localización: RAMPA ESTRIBO NO.7 60+380 AL 60+468					
	A		D	30	1890	1970	11,0	9,2	95,90
	B		C	30	1965	1970	11,0	8,6	99,70
	C		I	30	1916	1970	11,0	10,7	97,30
	D		D	30	1879	1970	11,0	9,5	95,40
	E		C	30	1910	1970	11,0	8,8	97,00
	F		F	30	1899	1970	11,0	8,6	96,40
	Promedio de Compactación:								96,95

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

19	Prueba: 1			Tipo de Capa: TERRENO NATURAL					
	% Especificado: 90			Localización: RAMPA ESTRIBO NO.1					
	A		D	20	1735	1920	12,5	9,4	90,40
	B		C	20	1754	1920	12,5	9,7	91,40
	C		I	20	1747	1920	12,5	9,0	91,00
Promedio de Compactación:									90,93

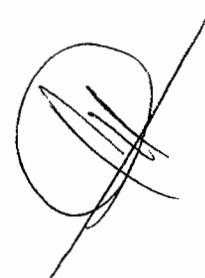
LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:



ING. MYRNA IBARRA APARICIO
GERENTE TÉCNICO




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INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

Fecha de muestreo: 2016-08-27

Fecha de Informe: 2016-08-29

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
20	Prueba: 1				Tipo de Capa: 7A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.7 60+308 AL 30+352				
	A		D	30	1875	1970	11,0	9,2	95,20
	B		C	30	1925	1970	11,0	6,4	97,70
	C		I	30	1832	1970	11,0	7,1	93,00
							Promedio de Compactación:		95,30

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

21	Prueba: 1				Tipo de Capa: 7A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.7 60+475 AL 60+547				
	A		D	30	1907	1970	11,0	7,4	96,80
	B		C	30	1920	1970	11,0	7,3	97,50
	C		I	30	1833	1970	11,0	7,7	93,00
	D		D	30	1900	1970	11,0	6,8	96,40
							Promedio de Compactación:		95,93

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:



ING. MYRNA IBARRA APARICIO
GERENTE TÉCNICO

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INFORME DE RESISTENCIA A LA COMPRESION DE CILINDROS DE CONCRETO

METODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: CHIHUAHUA, CHIHUAHUA.

CONTRATISTA:

Fecha Informe:

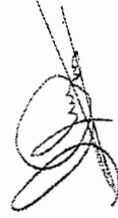
2016-09-08

Fecha Ruptura:

2016-09-07

No.	Elemento	Edad (días)	Diam (cm)	Altura (cm)	Masa (kg)	Localidad Area (cm²)	Rev (cm)	Carga (kgf)	(N)	Resistencia (kgf/cm²)	(kPa)	fc Proy (kgf/cm²)	% Resis	Aditivo	Fecha	Vibrado Tipo de Falla
39	ZAPATA															
	B	14	15.0	30.0	12.5	176.6	12.0	38103	373676	215.72	21154.91	250	86.3	NO	2016-08-24	Si 0
LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.																
RN: SI(X) NO() BOMBEADO: SI() NO(X) T. MAX.: 19.00 mm VOLUMEN COLADO: 70.00 m³ REV PROY.: 10 cm																
29°C																

ATENTAMENTE:



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GERENTE TECNICO

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INFORME DE RESISTENCIA A LA COMPRESION DE CILINDROS DE CONCRETO

MÉTODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

OBRA: 92 DISTRIBUIDOR ZOOTECNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: CHIHUAHUA, CHIHUAHUA.

CONTRATISTA:

Fecha Informe:

2016-09-05

Fecha Ruptura:

2016-09-03

No.	CIL	Elemento		Localidad			Equipo de Mezclado				Aditivo		Vibrado		
		Edad (días)	Diam (cm)	Altura (cm)	Masa (kg)	Area (cm ²)	Rev (cm)	Carga (kgf)	(N)	Resistencia (kgf/cm ²)	f'c Proy (kgf/cm ²)	% Resis	Fecha	Tipo de Falla	
37															
	CABEZAL					PILA 4				GCC	NO			Si	
	C	28	15,0	30,0	12,5	176,6	11,0	56553	554615	320,18	31398,93	300	106,7	2016-08-06	0
LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.															
RN:		SI(X) NO()		BOMBEADO:		SI() NO(X)		T. MAX.:		19,00 mm		VOLUMEN COLADO:		3,50 m³ REV PROY.: 14 cm	
33°C															

33°C

ATENTAMENTE:



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INFORME DE RESISTENCIA A LA COMPRESION DE CILINDROS DE CONCRETO

MÉTODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

OBRA: 92 DISTRIBUIDOR ZOOTECNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO
LOCALIDAD: CHIHUAHUA, CHIHUAHUA.

CONTRATISTA:

Fecha Informe:

2016-09-01

Fecha Ruptura:

2016-08-31

No.	Elemento		Localidad			Equipo de Mezclado					Aditivo	Vibrado Tipo de Falla		
	CIL	Edad (días)	Diam (cm)	Altura (cm)	Masa (kg)	Area (cm²)	Rev (cm)	Carga (kgf)	Resistencia (kgf/cm²)	Resistencia (kPa)			f'c Proy (kgf/cm²)	% Resis
39	ZAPATA													
	A	7	15,0	30,0	12,5	176,6	12,0	31100	304987	176,07	17266,57	250	70,4	2016-08-24
LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.														
RN:	SI(X) NO(I)		BOMBEADO:		SI(I) NO(X)		T. MAX.:		19,00		mm		VOLUMEN COLADO: 70,00 m³	
REV PROJ.: 10 cm														
29°C														

ATENTAMENTE:

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ING. MYRNA IBARRA APARICIO
GERENTE TECNICO

INFORME DE RESISTENCIA A LA COMPRESION DE CILINDROS DE CONCRETO

METODOS DE PRUEBA EMPLEADOS: NMX-C-083-2014, 109-2013, 156-2010, 160-2004, 161-2013, 435-2010 ONNCCE

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

REPRESENTANTE: ING. JUAN MANUEL RUACHO

LOCALIDAD: CHIHUAHUA, CHIHUAHUA.

CONTRATISTA:

Fecha Informe:

2016-09-02

Fecha Ruptura:

2016-09-01

No.	CIL	Elemento	Edad (dias)	Diam (cm)	Altura (cm)	Masa (kg)	Localidad	Rev (cm)	Carga (kgf)	Carga (N)	Resistencia (kgf/cm ²)	Resistencia (kPa)	f'c Proy (kgf/cm ²)	% Resis	Aditivo	Fecha	Vibrado Tipo de Falla
40		COLUMNA					SECCION 1 PILA 3										
	A		7	15,0	30,0	12,5	176,6	11,0	29775	292003	168,57	16531,07	250	67,4	NO	2016-08-25	0
LA RESISTENCIA OBTENIDA SE CONSIDERA ACEPTABLE.																	
RN: <u>SI(X) NO()</u> BOMBEADO: <u>SI(X) NO()</u> T. MAX.: <u>19,00</u> mm										VOLUMEN COLADO: <u>9,50</u> m ³			REV PROY.: <u>14</u> cm				
29°C																	

ATENTAMENTE:



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LABORATORIO Y CONSULTORIA, S.A. DE C.V.

CALLE MANUEL GARCIA GARCIA NO. 10102 COL. COL.DEPORTISTAS 6144170033 Chihuahua Chihuahua. 31125

INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-09-07

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-09-08

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
28	Prueba: 1				Tipo de Capa: 6A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO1 60+025 AL 60+055				
	A		D	30	1852	1970	11,0	10,2	94,00
	B		C	30	1886	1970	11,0	7,4	95,70
	C		I	30	1828	1970	11,0	8,9	92,80
Promedio de Compactación:									94,17

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:									
29	Prueba: 1				Tipo de Capa: 9A CAPA MURO DE DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.7 60+308 AL 60+428				
	A		D	30	1825	1970	11,0	10,9	92,60
	B		C	30	1900	1970	11,0	8,8	96,40
	C		I	30	1840	1970	11,0	9,7	93,40
	D		D	30	1870	1970	11,0	7,9	94,90
	E		C	30	1919	1970	11,0	10,1	97,40
	F		I	30	1844	1970	11,0	9,0	93,60
Promedio de Compactación:									94,72

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:

ING. MYRNA IBARRA APARICIO
GERENTE TECNICO

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LABORATORIO Y CONSULTORIA, S.A. DE C.V.

CALLE MANUEL GARCIA GARCIA NO. 10102-COL. COL.DEPORTISTAS 6144170033 Chihuahua Chihuahua. 31125

INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-09-06

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-09-07

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
27	Prueba: 1				Tipo de Capa: 5A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO. 1 60+025 AL 60+039				
	A		D	30	1928	1970	11,0	8,1	97,90
	B		C	30	1918	1970	11,0	8,9	97,40
	C		I	30	1888	1970	11,0	7,8	95,80
Promedio de Compactación:									97,03

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:

ING. MYRNA IBARRA APARICIO
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INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-09-05

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-09-06

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
25	Prueba: 1				Tipo de Capa: 4A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.1 60+025 AL 6+039				
	A		D	30	1919	1970	11,0	8,3	97,40
	B		C	30	1958	1970	11,0	6,8	99,40
	C		I	30	1956	1970	11,0	7,2	99,30
Promedio de Compactación:									98,70

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

26	Prueba: 1				Tipo de Capa: 8A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: CAPA RAMPA ESTRIBO NO.7 60+308 AL 60+428				
	A		D	30	1816	1970	11,0	6,8	92,20
	B		C	30	1910	1970	11,0	6,5	97,00
	C		I	30	1842	1970	11,0	8,2	93,50
	D		D	30	1889	1970	11,0	6,7	95,90
	E		C	30	1880	1970	11,0	7,5	95,40
	F		I	30	1870	1970	11,0	8,4	94,90
	G		D	30	1876	1970	11,0	8,5	95,20
Promedio de Compactación:									94,87

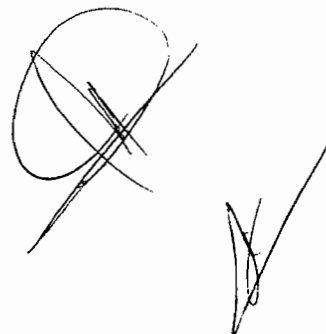
LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:



ING. MYRNA IBARRA APARICIO
GERENTE TECNICO



LCO-COMP
Página 1 de 1

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LABORATORIO Y CONSULTORIA, S.A. DE C.V.

CALLE MANUEL GARCIA GARCIA NO. 10102 COL. COL.DEPORTISTAS 6144170033 Chihuahua Chihuahua. 31125

INFORME DE COMPACTACIONES

METODOS DE PRUEBA EMPLEADOS: ASTM-D-690, 698, 1557, 2216, 2922, 3017 VIGENTES

OBRA: 92 DISTRIBUIDOR ZOOTECHNIA EJE 60

CLIENTE: CONSTRUCTORA SANTA ROSALIA S.A. DE C.V.

Fecha de muestreo: 2016-09-03

REPRESENTANTE: ING. JUAN MANUEL RUACHO

Fecha de Informe: 2016-09-05

LOCALIDAD: Chihuahua Chihuahua

CONTRATISTA:

No.	Ensaye	Estación	Lado	Profundidad Sondeo (cm)	MASA VOLUMÉTRICA		Humedad (%)		% Compactación
					Del Lugar	Máxima	Optima	Del Lugar	
24	Prueba: 1				Tipo de Capa: 3A CAPA MURO DE TIERRA ARMADA				
	% Especificado: 90				Localización: RAMPA ESTRIBO NO.1 60+025 AL 60+039				
	A		D	30	1879	1970	11,0	9,1	95,40
	B		C	30	1910	1970	11,0	8,5	97,00
	C		I	30	1871	1970	11,0	9,0	95,00
Promedio de Compactación:									95,80

LOS GRADOS DE COMPACTACION OBTENIDOS CUMPLEN CON EL ESPECIFICADO.

OBS:

ATENTAMENTE:

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GERENTE TECNICO

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