

Dicho precio se aplicará, por primera vez, a las apuestas que se realicen para el concurso número 28, cuyo sorteo se celebrará el jueves día 10 de julio de 1986.

DISPOSICION FINAL

La presente Orden entrará en vigor al día siguiente de su publicación en el «Boletín Oficial del Estado».

Lo que comunico a VV. II.
Madrid, 18 de junio de 1986.

SOLCHAGA CATALAN

Ilmos. Sres. Subsecretario y Director general del Organismo Nacional de Loterías y Apuestas del Estado.

17311 *CORRECCION de erratas de la Orden de 27 de mayo de 1986 por la que se dispone la emisión de Deuda del Estado, interior y amortizable, formalizada en Deuda desgravable del Estado.*

Padecidos errores en la inserción de la citada Orden publicada en el «Boletín Oficial del Estado» número 130, de fecha 31 de mayo de 1986, a continuación se formulan las oportunas rectificaciones:

En la página 19570, primera columna, en el enunciado de la Orden, tercera línea, donde dice: «ble, formalizada en Deuda Desgravable del Estado.», debe decir: «ble, formalizada en Deuda Desgravable del Estado.».

En la página 19571, segunda columna donde dice: «8.2 La presente Orden entrará en vigor el mismo día de su»: debe decir: «9. La presente Orden entrará en vigor el mismo día de su».

MINISTERIO DE OBRAS PUBLICAS Y URBANISMO

16335 *ORDEN de 3 de junio de 1986 por la que se aprueban los documentos «Obras de paso de carreteras. Colección de puentes de vigas pretensadas IC», «Obras de paso de carreteras. Colección de puentes de vigas pretensadas IIC» y «Obras de paso de carreteras. Colección de pequeñas obras de paso 4.2 IC». (Continuación.)*

Ilustrísimo señor:

El Ministerio de Obras Públicas y Urbanismo está facultado según el número 6 del artículo 5.º de la Ley de Carreteras 51/1974, de 19 de diciembre, para el establecimiento revisión y actualización de la normativa técnica en dicha materia.

La puesta en marcha del Plan General de Carreteras y las modificaciones últimas de las instrucciones de hormigón armado y pretensado así como la experiencia en el uso de técnicas y

materiales no tradicionales aconsejan la revisión y ampliación de la referida normativa.

La experiencia española de casi un siglo ha demostrado la eficacia y utilidad del empleo de colecciones oficiales de modelos de los elementos que más se repiten en las carreteras, como son las obras de fábrica y puentes de luces moderadas que, además de ahorrar la repetición de cálculos y dibujos permiten determinar con facilidad y suficiente aproximación la solución más adecuada en cada ocasión.

Las colecciones de puentes aprobadas hasta ahora están preparadas para que los tableros sean independientes por lo cual, cuando se construye una obra de varios vanos, es preciso una junta de pavimentos en cada estribo o pila. Modernamente se ha desarrollado la técnica de unir los tableros de dos o más tramos pero respetando la independencia de las vigas en que se apoya. Dos de las colecciones objeto de esta Orden introducen esta técnica en nuestra normativa.

Por otra parte y respecto de las pequeñas obras de fábrica, entendiéndose como tales las luces libres iguales o menores de diez metros, la colección existente en la actualidad incluye únicamente obras en arco de hormigón en masa. Sin perjuicio de que dicha colección continúe estando vigente, pues no hay ningún inconveniente en ello, se ha considerado procedente ampliar los tipos estructurales y los materiales para construirlos. En la tercera de las colecciones objeto de esta Orden de incluyen marcos, pórticos, arcos y tubos de hormigón armado y tubos de acero corrugado así como las correspondientes boquillas y aletas.

De acuerdo con lo expuesto, con el informe favorable de la Comisión Permanente de Normas de Dirección General de Carreteras, y a propuesta de dicho Centro directivo,

Este Ministerio, en virtud de las facultades que le concede el artículo 5.º, número 6, de la Ley 51/1974, de 19 de diciembre, de Carreteras, ha dispuesto:

1. Aprobar los siguientes documentos que figuran como anexo a esta Orden:

Obras de paso de carreteras. Colección de puentes de vigas pretensadas IC.

Obras de paso de carreteras. Colección de puentes de vigas pretensadas IIC.

Obras de paso de carreteras. Colección de pequeñas obras de paso 4.2 IC.

2. El uso de dichas colecciones no es obligatorio, debiendo considerarse en cada caso si las soluciones que en ellas figuran son las más adecuadas al mismo.

3. Justificando el uso, el Proyectista queda eximido de incluir en el proyecto los cálculos justificativos y mediciones detalladas del puente de que se trate.

4. Queda autorizado el empleo de las colecciones objeto de la presente Orden a partir de su publicación en el «Boletín Oficial del Estado».

Lo que comunico a V. I. para su conocimiento y efectos.
Madrid, 3 de junio de 1986.

SAENZ DE COSCULLUELA

Ilmo. Sr. Director general de Carreteras.

COLECCION DE PEQUEÑAS OBRAS DE PASO 4.2 IC

(Continuación)

VALORES COMUNES AL TIPO A
 EP = .36 EA = .30 LM = 5.45 DISTANCIA JUNTAS: 2.5
 TIPOS ARMADURA: #0 = 4 LT = .23 #M = 2 #U = 5
 ARCO DE MEDIO PUNTO TIPO 4 LH = 4.00 LV = 0.50

CARACTER. GEOTECNICAS			DIMENSIONES DE ARMADURAS										LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA				MEDICIONES POR M	
HT	TI	TC	VI	EZI	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L8	L9	MA	MB	MC	ME	MF	MG	MK	M-Z	M-A	ACERO			
1	.5	1 2	1 2	.50	.40	.50	.40	.35	.35	.85	.75	.00	.00	.00	.40	5	2	5	1	1	4	1	1.09	2.37	201.2			
				.50	.40	.60	.40	.35	.35	.85	.75	.00	.00	.00	.40	5	2	5	1	1	4	1	1.17	2.37	205.0			
				.50	.40	.90	.40	.35	.35	.85	.75	.00	.00	.00	.40	4	2	5	1	1	4	1	1.41	2.37	220.6			
1	3.0	1 2	1	.50	.40	.50	.40	.35	.35	.85	.75	.00	.00	.00	.40	7	2	5	1	1	4	1	1.09	2.37	211.6			
				.50	.40	.80	.40	.35	.35	.85	.75	.00	.00	.00	.40	6	2	5	1	1	4	1	1.33	2.37	234.7			
				.50	.45	1.10	.45	.35	.35	.90	.80	.00	.00	.00	.40	4	2	5	1	1	4	1	1.76	2.37	261.3			
1	5.0	1 2	1	.50	.40	.70	.40	.35	.35	.85	.75	.00	.00	.00	.40	10	2	5	1	1	4	1	1.25	2.37	254.7			
1	6.5	1	1	.50	.40	.90	.40	.35	.35	.85	.75	1.15	.00	.00	.40	12	4	5	4	1	5	2	1.41	2.37	332.6			
1	6.5	2	1	.50	.40	.90	.40	.35	.35	.85	.75	1.15	.00	.00	.40	12	4	5	4	1	4	2	1.41	2.37	329.2			
1	7.5	1	1	.60	.45	1.10	.45	.35	.35	.90	.80	1.35	.00	.00	.40	13	5	6	5	1	6	2	1.85	2.37	412.1			
1	7.5	2	1	.60	.45	1.10	.45	.35	.35	.90	.80	1.25	.00	.00	.40	12	4	6	4	1	5	2	1.85	2.37	363.6			
2	.5	1 2	1 2	.50	.40	.50	.40	.35	.35	.85	.75	.00	.00	.00	.40	4	2	5	1	1	4	1	1.09	2.37	194.0			
				.50	.40	.60	.40	.35	.35	.85	.75	.00	.00	.00	.40	5	2	5	1	1	4	1	1.17	2.37	205.0			
				.50	.40	.90	.40	.35	.35	.85	.75	.00	.00	.00	.40	6	2	5	1	1	4	1	1.41	2.37	220.6			
2	3.0	1 2	1	.50	.40	.50	.40	.35	.35	.85	.75	.00	.00	.00	.40	7	2	5	1	1	4	1	1.09	2.37	211.6			
				.50	.40	.70	.40	.35	.35	.85	.75	.00	.00	.00	.40	6	2	5	1	1	4	1	1.25	2.37	229.9			
				.50	.40	.90	.40	.35	.35	.85	.75	.00	.00	.00	.40	11	3	5	4	1	4	2	1.41	2.37	239.4			
2	5.0	1 2	1	.50	.40	.60	.40	.35	.35	.85	.75	1.05	.00	.00	.40	9	2	5	4	1	4	1	1.17	2.37	240.9			
				.50	.40	1.00	.40	.35	.35	.85	.75	1.05	.00	.00	.40	10	2	5	4	1	4	1	1.49	2.37	278.4			
2	6.5	1	1	.50	.40	.60	.40	.35	.35	.85	.75	1.20	.00	.00	.40	11	3	5	4	1	4	2	1.33	2.37	243.9			
2	6.5	2	1	.50	.40	.60	.40	.35	.35	.85	.75	1.20	.00	.00	.40	11	3	5	4	1	4	2	1.33	2.37	293.9			
2	7.5	1	1	.50	.40	1.00	.40	.35	.35	.85	.75	1.25	.00	.00	.40	12	4	5	4	1	5	2	1.49	2.37	341.4			
2	7.5	2	1	.50	.40	.90	.40	.35	.35	.85	.75	1.25	.00	.00	.40	12	4	5	4	1	4	2	1.41	2.37	330.1			
2	8.5	2	1	.60	.45	1.10	.45	.35	.35	.90	.80	1.35	.00	.00	.40	12	4	5	4	1	5	2	1.85	2.37	359.1			
3	.5	1 2	1 2	.50	.40	.50	.40	.35	.35	.85	.75	.00	.00	.00	.40	4	2	5	1	1	4	1	1.09	2.37	199.0			
				.50	.40	.80	.40	.35	.35	.85	.75	.00	.00	.00	.40	5	2	5	1	1	4	1	1.33	2.37	212.6			
3	3.0	1 2	1	.50	.40	.50	.40	.35	.35	.85	.75	.00	.00	.00	.40	4	2	5	1	1	4	1	1.09	2.37	204.8			
				.50	.40	.60	.40	.35	.35	.85	.75	.00	.00	.00	.40	7	2	5	1	1	4	1	1.17	2.37	215.9			
				.50	.40	.80	.40	.35	.35	.85	.75	.00	.00	.00	.40	7	2	5	1	1	4	1	1.33	2.37	224.5			
3	5.0	1 2	1	.50	.40	.50	.40	.35	.35	.85	.75	1.15	.00	.00	.40	7	2	5	4	1	4	1	1.09	2.37	218.7			
				.50	.40	.80	.40	.35	.35	.85	.75	1.15	.00	.00	.40	9	2	5	4	1	4	1	1.33	2.37	251.9			
3	6.5	1	1	.50	.40	.70	.40	.35	.35	.85	.75	1.25	.00	.00	.40	11	3	5	4	1	4	2	1.25	2.37	269.6			

VALORES COMUNES AL TIPO 4		ARCO DE MEDIO PUNTO TIPO 4										LH= 4,00 LV= 0,50															
EP= .36 EA= .30 TIPOS ARMADURAS MD= 4		LT= .23 SH= 2		L8= 5,45 NJ= 2		DISTANCIA JUNTAS: 8.5		L1		L2		L3		L4		L5		L6		L7		L9		TIPOS DE ARMADURA #A #B #C #E #F #G #K		MEDICIONES POR M M-Z M-A ACERO	
HT	TI	TC	VI	EZI	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#K	M-Z	M-A	ACERO			
3	6.5	2	.50	.40	.70	.40	.35	.35	.65	.75	1.25	.00	.00	4.20	10	2	5	4	1	4	2	1.25	2.37	269.6			
3	7.5	1	.50	.40	.80	.40	.35	.35	.65	.75	1.30	.00	.00	4.20	11	3	5	4	1	4	2	1.33	2.37	294.8			
3	7.5	2	.50	.40	.80	.40	.35	.35	.65	.75	1.30	.00	.00	4.20	11	3	5	4	1	4	2	1.33	2.37	294.8			
3	8.5	1	.60	.40	1.00	.45	.35	.35	.90	.75	1.45	.00	.00	4.20	12	4	5	5	1	4	2	1.67	2.37	350.6			
3	8.5	2	.50	.40	.90	.40	.35	.35	.65	.75	1.40	.00	.00	4.20	12	4	5	5	1	4	2	1.41	2.37	333.7			

DIRECCION GENERAL DE CARNETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 9

VALORES COMUNES AL TIPO 5		ARCO DE MEDIO PUNTO TIPO 5										LH= 4,00 LV= 1,50															
EP= .46 EA= .30 TIPOS ARMADURA: #D= 4		DISTANCIA JUNTAS: 11.5 #J= 5																									
LT= .23 #M= 2																											
LW= 5.45 #I= 3																											
LH= 4,00 LV= 1,50																											
CARACTER. TIPO	GEOTECNICAS	DIMENSIONES										LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA				MEDICIONES POR M	
		VI	EZ	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L8	L9	#A	#B	#C	#E	#F	#G	#K	M-Z	H-A	ACERO			
1	.5	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	4	2	6	2	1	4	1	1.46	3.21	260.1
						.50	.50	.60	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	5	2	6	2	1	4	1	1.56	3.21	267.4
						.50	.50	1.10	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	6	2	6	2	1	4	1	2.06	3.21	291.3
1	3.0	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	6	2	6	2	1	5	1	1.46	3.21	271.0
						.50	.50	.80	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	7	2	6	2	1	5	1	1.76	3.21	291.4
1	5.0	1	2	1	1	.50	.50	.70	.50	.40	.40	.95	.85	2.15	.00	.00	4.20	6	2	6	4	1	7	1	1.66	3.21	314.9
1	6.5	1	2	1	1	.50	.50	.90	.50	.40	.40	.95	.85	2.20	.00	2.35	4.65	10	2	6	5	2	6	1	1.86	3.21	386.1
1	7.5	1	1	1	1	.60	.50	1.10	.50	.40	.40	.95	.85	2.15	.00	2.45	5.25	12	4	6	7	4	9	2	2.16	3.21	511.0
1	7.5	2	1	1	1	.60	.50	1.10	.50	.40	.40	.95	.85	2.15	.00	2.45	5.25	12	4	6	7	4	9	2	2.16	3.21	511.0
2	.5	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	3	2	6	2	1	4	1	1.46	3.21	257.1
						.50	.50	.60	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	4	2	6	2	1	4	1	1.56	3.21	263.7
						.50	.50	.90	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	5	2	6	2	1	4	1	1.86	3.21	278.7
2	3.0	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	6	2	6	2	1	4	1	1.46	3.21	267.6
						.50	.50	.70	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	7	2	6	2	1	4	1	1.66	3.21	283.7
						.60	.50	1.00	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	7	2	6	2	1	4	1	2.06	3.21	300.9
2	5.0	1	2	1	2	.50	.50	.60	.50	.40	.40	.95	.85	2.25	.00	.00	4.20	7	2	6	5	1	6	1	1.56	3.21	297.3
						.60	.50	1.00	.50	.40	.40	.95	.85	2.25	.00	.00	4.20	9	2	6	5	1	6	1	2.06	3.21	343.5
2	6.5	1	2	1	1	.50	.50	.70	.50	.40	.40	.95	.85	2.15	.00	.00	4.20	9	2	6	7	1	7	2	1.66	3.21	352.8
2	7.5	1	1	1	1	.60	.50	.90	.50	.40	.40	.95	.85	2.15	.00	2.45	4.65	11	3	6	7	4	6	2	1.96	3.21	444.8
2	7.5	2	1	1	1	.60	.50	.90	.50	.40	.40	.95	.85	2.15	.00	.00	4.65	10	2	6	7	1	6	2	1.96	3.21	400.8
2	8.5	1	1	1	1	.70	.50	1.10	.50	.40	.40	.95	.85	2.25	.00	2.45	5.25	12	4	6	9	4	9	2	2.26	3.21	540.5
2	8.5	2	1	1	1	.70	.50	1.00	.50	.40	.40	.95	.85	2.25	.00	2.45	5.25	12	4	6	9	4	9	2	2.16	3.21	532.6
3	.5	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	3	2	6	2	1	4	1	1.46	3.21	257.1
						.50	.50	.80	.50	.40	.40	.95	.85	2.10	.00	.00	4.20	4	2	6	2	1	4	1	1.76	3.21	270.9
3	3.0	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.15	.00	.00	4.20	5	2	6	4	1	4	1	1.46	3.21	269.8
						.60	.50	.80	.50	.40	.40	.95	.85	2.15	.00	.00	4.20	6	2	6	4	1	4	1	1.86	3.21	289.5
3	5.0	1	2	1	2	.50	.50	.50	.50	.40	.40	.95	.85	2.15	.00	.00	4.20	6	2	6	7	1	5	2	1.46	3.21	304.5
						.60	.50	.80	.50	.40	.40	.95	.85	2.15	.00	.00	4.20	7	2	6	7	1	5	2	1.86	3.21	329.2
3	6.5	1	2	1	2	.50	.50	.60	.50	.40	.40	.95	.85	2.30	.00	.00	4.20	7	2	6	9	1	7	2	1.56	3.21	350.2
						.80	.50	1.10	.50	.40	.40	.95	.85	2.30	.00	.00	4.20	10	2	6	9	1	7	2	2.36	3.21	433.2
3	7.5	1	1	1	1	.60	.50	.70	.50	.40	.40	.95	.85	2.25	.00	.00	4.20	9	2	6	9	1	7	2	1.76	3.21	379.6
3	7.5	2	1	1	1	.50	.50	.70	.50	.40	.40	.95	.85	2.25	.00	.00	4.20	8	2	6	9	1	7	2	1.66	3.21	363.8

DIRECCION GENERAL DE CARRETERAS COLECCION DE ARCOS DE MEDIO PUNTO (A) 10

VALORES COMUNES AL TIPO 5		ARCO DE MEDIO PUNTO TIPO 5										MEDICIONES POR M												
EP= .46 EA= .30 TIPOS ARMADURA #D= 4		DISTANCIA JUNTAS: 11.5 #J= 5										M-Z		M-A ACERO										
LH= 4,00 LV= 1,50		DIMENSIONES		LONGITUDES DE ARMADURAS					TIPOS DE ARMADURA															
TIPO	TIPO	VI	EZ	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#K	M-Z	M-A	ACERO	
3	8.5	1	.70	.50	.90	.50	.40	.40	.95	.85	2.25	.00	.00	4.65	11	3	6	9	1	0	2	2.06	3.21	451.3
3	8.5	2	.60	.50	.80	.50	.40	.40	.95	.85	2.25	.00	.00	4.65	10	2	6	9	1	0	2	1.86	3.21	416.5

DIRECCION GENERAL DE CARRETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 11

EP= .61 TIPOS ARMADURA #D= 4		VALORES COMUNES AL TIPO 6 EA= .30 L6= 5.45 DISTANCIA JUNTAS: 16.0 #J= 4 #M= 4				ARCO DE MEDIO PUNTO TIPO 6				LH=4.00 LV=3.00													
CARACTER. GEOTECNICAS T HT	TI	DIMENSIONES		LONGITUDES DE ARMADURAS								TIPOS DE ARMADURA		MEDICIONES POR M									
		VI	EZ	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#K	M-2	M-A	ACEHO		
1	.5	1	2	.50	.65	.45	1.10	1.00	3.80	.00	.00	.00	4.20	4	2	7	4	1	5	1	2.09	4.83	389.2
1	3.0	1	2	.50	.65	.45	1.10	1.00	3.90	.00	.00	.00	4.20	6	2	7	7	1	7	1	2.09	4.83	436.3
1	5.0	1	2	.60	.65	.45	1.10	1.00	3.90	.00	.00	.00	4.20	7	2	7	7	1	7	1	2.35	4.83	452.7
1	6.5	1	2	.50	.65	.45	1.10	1.00	4.05	.00	2.35	5.25		7	2	7	9	2	9	2	2.09	4.83	557.8
1	7.5	1	2	.70	.65	.45	1.10	1.00	3.80	.00	4.80	4.65		9	2	7	9	4	10	2	2.74	4.83	634.4
1	7.5	2	1	.80	.65	.45	1.10	1.00	3.50	.00	5.10	6.25		10	3	7	10	7	11	2	3.13	4.83	777.2
2	.5	1	2	.50	.65	.45	1.10	1.00	3.50	.00	5.10	6.25		10	3	7	10	7	11	2	3.13	4.83	777.2
2	3.0	1	2	.60	.65	.45	1.10	1.00	3.90	.00	.00	4.20		5	2	7	5	1	5	1	2.09	4.83	400.4
2	5.0	1	2	.70	.65	.45	1.10	1.00	3.90	.00	.00	4.20		6	2	7	5	1	5	1	2.22	4.83	408.4
2	6.5	1	2	.80	.65	.45	1.10	1.00	3.90	.00	.00	4.20		6	2	7	5	1	5	1	2.35	4.83	412.0
2	7.5	1	2	.90	.65	.45	1.10	1.00	3.90	.00	.00	4.20		6	3	7	5	1	5	1	3.00	4.83	434.4
2	3.0	1	2	.50	.65	.45	1.10	1.00	3.90	.00	.00	4.20		7	2	7	7	1	7	1	2.09	4.83	444.7
2	5.0	1	2	.60	.65	.45	1.10	1.00	3.90	.00	.00	4.20		8	2	7	7	1	7	1	2.35	4.83	464.4
2	6.5	1	2	.70	.65	.45	1.10	1.00	3.90	.00	.00	4.20		8	2	7	7	1	7	1	3.13	4.83	490.9
2	5.0	1	2	.60	.65	.45	1.10	1.00	3.85	.00	.00	4.65		8	2	7	9	1	8	2	2.22	4.83	535.9
2	6.5	1	2	.70	.65	.45	1.10	1.00	3.85	.00	.00	4.65		9	2	7	9	1	8	2	3.00	4.83	576.3
2	7.5	1	2	.80	.65	.45	1.10	1.00	3.85	.00	2.10	5.25		9	2	7	10	2	9	2	2.35	4.83	597.9
2	5.0	1	2	.60	.65	.45	1.10	1.00	3.85	.00	4.80	4.65		10	3	7	11	4	10	2	2.74	4.83	713.2
2	6.5	1	2	.70	.65	.45	1.10	1.00	3.85	.00	4.80	4.65		10	3	7	11	4	10	2	2.74	4.83	713.2
2	8.5	1	2	1.00	.65	.45	1.35	1.00	3.80	.00	5.10	6.25		12	4	8	11	7	11	2	3.39	4.83	920.5
2	6.5	2	1	.90	.65	.45	1.35	1.00	3.80	.00	5.10	4.65		11	3	8	11	5	10	2	3.13	4.83	792.2
3	.5	1	2	.70	.65	.45	1.10	1.00	3.90	.00	.00	4.20		7	2	7	7	1	4	1	2.35	4.83	438.2
3	3.0	1	2	.80	.65	.45	1.10	1.00	3.90	.00	.00	4.20		7	2	7	7	1	4	1	2.48	4.83	442.2
3	5.0	1	2	.90	.65	.45	1.15	1.05	3.95	.00	.00	4.20		7	2	7	7	1	4	1	2.81	4.83	449.3
3	6.5	1	2	1.00	.65	.45	1.15	1.05	3.95	.00	.00	4.20		7	2	7	7	1	4	1	3.09	4.83	457.2
3	3.0	1	2	.70	.65	.45	1.10	1.00	4.05	.00	.00	4.20		8	2	7	9	1	6	2	2.35	4.83	524.1
3	5.0	1	2	.80	.65	.45	1.10	1.00	4.05	.00	.00	4.20		8	2	7	9	1	6	2	2.48	4.83	528.5
3	6.5	1	2	1.00	.65	.45	1.10	1.00	4.05	.00	.00	4.20		9	2	7	9	1	6	2	2.74	4.83	550.4
3	5.0	1	2	.70	.65	.45	1.10	1.00	3.50	2.10	2.05	4.65		9	2	7	10	2	8	2	2.35	4.83	580.2
3	6.5	1	2	1.00	.65	.45	1.10	1.00	3.50	2.10	2.05	4.65		10	2	7	10	2	8	2	2.74	4.83	615.0
3	7.5	1	2	.80	.65	.45	1.10	1.00	3.80	2.00	2.20	5.25		10	3	7	11	4	9	2	2.48	4.83	668.1
3	8.5	1	2	.90	.65	.45	1.35	1.00	3.50	1.85	2.35	5.25		11	4	8	12	4	9	2	2.61	4.83	755.3

VALORES COMUNES AL TIPO 6		ARCO DE MEDIO PUNTO TIPO 6										MEDICIONES POR M													
EP= .61 EA= .30 TIPOS ARMADURAS: #D= 4		DISTANCIA JUNTAS: 16.0 #J= 4										M-Z M-A													
TIPOS ARMADURAS: #D= 4		LONGITUDES DE ARMADURAS		DIMENSIONES		TIPOS DE ARMADURA						ACERO													
TIPO	TC	L1	L2	L3	L4	L5	L6	L7	L8	L9	#A	#B	#C	#E	#F	#G	#K	M-Z	M-A						
3	7.5	2	1	.90	.65	.50	.65	.45	.45	1.35	1.00	3.50	1.85	2.35	5.25	11	4	8	12	4	9	2	2.61	4.83	755.3
3	6.5	1	1	1.00	.65	.70	.65	.45	.45	1.35	1.00	3.50	1.60	2.75	4.65	12	4	8	12	5	10	2	3.00	4.83	825.4
3	8.5	2	1	1.00	.65	.60	.65	.45	.45	1.35	1.00	3.50	1.60	2.75	4.65	12	4	8	12	5	10	2	2.87	4.83	817.8

DIRECCION GENERAL DE CARMETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 13

VALORES COMUNES AL TIPO 7
 EA= .30 LT= .28 L= 6.80 DISTANCIA JUNTAS: 10.0
 TIPO ARMADURA: #D= 7 #H= 2 #J= 6

ARCO DE MEDIO PUNTO TIPO 7
 LH= 5.00 LV= 0.50

CARACTER. GEOTECNICAS Y HT TI TC	DIMENSIONES			LONGITUDES DE ARMADURAS									TIPOS DE ARMADURA						MEDICIONES POR M			
	VI	EZI	VE EZE	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#H	M-Z	M-A	ACERO	
1 .5 1 2 1 2	.50	.40	.60	.40	.35	.85	.85	.00	.00	.00	5.00	7	2	5	1	1	7	1	1.17	2.85	307.1	
	.50	.40	.60	.40	.35	.85	.85	.00	.00	.00	5.00	7	2	5	1	1	7	1	1.33	2.85	316.4	
	.50	.50	1.20	.50	.40	.95	.95	.00	.00	.00	5.00	7	2	5	1	1	7	1	2.06	2.85	339.9	
1 3.0 1 2 1 2	.50	.40	.70	.40	.35	.85	.85	.00	.00	.00	5.00	10	2	5	1	1	7	1	1.25	2.85	346.2	
	.50	.40	1.00	.40	.35	.85	.85	.00	.00	.00	5.00	10	2	5	1	1	7	1	1.49	2.85	364.9	
1 5.0 1 2 1 1	.50	.40	.90	.40	.35	.85	.85	.00	.00	.00	5.00	12	4	7	1	1	7	2	1.41	2.85	426.7	
1 6.5 1 2 1 1	.50	.45	1.10	.50	.35	.40	1.45	.95	1.20	.00	.00	6.00	12	4	9	4	1	7	2	1.86	2.85	512.9
1 7.5 1 2 1 1	.70	.60	1.40	.60	.45	.45	1.30	1.05	1.45	.00	.00	5.40	13	5	10	5	1	8	4	2.95	2.85	651.9
2 .5 1 2 1 2	.50	.40	.60	.40	.35	.85	.85	.00	.00	.00	5.00	6	2	5	1	1	7	1	1.17	2.85	299.9	
	.50	.40	.70	.40	.35	.85	.85	.00	.00	.00	5.00	7	2	5	1	1	7	1	1.25	2.85	311.7	
	.50	.45	1.10	.45	.35	.85	.90	.90	.00	.00	5.00	7	2	5	1	1	7	1	1.76	2.85	331.7	
2 3.0 1 2 1 2	.50	.40	.60	.40	.35	.85	.85	.00	.00	.00	5.00	8	2	5	1	1	7	1	1.17	2.85	316.3	
	.50	.40	.90	.40	.35	.85	.85	.00	.00	.00	5.00	10	2	5	1	1	7	1	1.41	2.85	358.6	
	.60	.50	1.20	.50	.40	.95	.95	.00	.00	.00	5.00	9	2	5	1	1	7	1	2.16	2.85	370.1	
2 5.0 1 2 1 2	.50	.40	.80	.40	.35	.85	.85	.00	.00	.00	5.00	11	3	6	1	1	7	2	1.33	2.85	381.2	
	.60	.55	1.30	.55	.40	.40	1.00	1.00	.00	.00	5.00	10	2	6	1	1	7	2	2.49	2.85	407.7	
2 6.5 1 2 1 1	.50	.40	1.00	.45	.35	.85	1.10	.90	1.20	.00	.00	5.40	12	4	8	4	1	7	2	1.58	2.85	471.6
2 7.5 1 2 1 1	.60	.50	1.20	.50	.40	.40	1.50	.95	1.45	.00	.00	6.00	13	5	9	5	1	7	2	2.16	2.85	582.6
2 8.0 1 1 1 1	.70	.55	1.30	.55	.40	.40	1.55	1.00	1.50	.00	.00	6.00	13	5	9	5	1	8	3	2.60	2.85	619.3
2 8.0 2 1 1 1	.70	.55	1.30	.55	.40	.40	1.55	1.00	1.50	.00	.00	6.00	13	5	9	5	1	8	3	2.60	2.85	619.3
3 .5 1 2 1 2	.50	.40	.60	.40	.35	.85	.85	.00	.00	.00	5.00	6	2	5	1	1	7	1	1.17	2.85	299.9	
	.50	.40	.70	.40	.35	.85	.85	.00	.00	.00	5.00	6	2	5	1	1	7	1	1.25	2.85	304.2	
	.50	.40	1.00	.40	.35	.85	.85	.00	.00	.00	5.00	7	2	5	1	1	7	1	1.49	2.85	325.7	
3 3.0 1 2 1 1	.50	.40	.60	.40	.35	.85	.85	.00	.00	.00	5.00	6	2	5	1	1	7	1	1.17	2.85	316.3	
	.50	.40	.80	.40	.35	.85	.85	.00	.00	.00	5.00	9	2	5	1	1	7	1	1.33	2.85	336.7	
	.50	.40	1.00	.40	.35	.85	.85	.00	.00	.00	5.00	9	2	5	1	1	7	1	1.49	2.85	347.6	
3 5.0 1 2 1 1	.50	.40	.70	.40	.35	.85	.85	.00	.00	.00	5.00	10	2	5	2	1	7	1	1.25	2.85	353.0	
	.60	.40	1.00	.40	.35	.85	.85	.00	.00	.00	5.00	11	3	5	4	1	7	1	1.57	2.85	402.6	
3 6.5 1 2 1 1	.50	.40	.80	.40	.35	.85	.85	.00	.00	.00	5.00	11	3	6	4	1	7	2	1.33	2.85	392.3	
3 7.5 1 2 1 1	.60	.40	1.00	.45	.35	.85	.90	.90	1.40	.00	.00	5.00	12	4	7	5	1	7	2	1.67	2.85	461.6
3 8.0 1 1 1 1	.60	.45	1.10	.45	.35	.85	1.15	.90	1.45	.00	.00	5.40	13	5	8	7	1	7	2	1.85	2.85	542.9
3 8.0 2 1 1 1	.60	.40	1.00	.50	.35	.85	1.10	.90	1.45	.00	.00	5.40	12	4	8	7	1	7	2	1.76	2.85	495.0

VALORES COMUNES AL TIPO 8
 EA=.30 LP=6.80 DISTANCIA JUNTAS 13.0
 TIPOS ARMADURAS #I=3 #J=6
 LH=5.00
 LV=1.50

ARCO DE MEDIO PUNTO TIPO 8

CARACTER. GEOTECNICAS T. HT. TI TC	DIMENSIONES			LONGITUDES DE ARMADURAS							TIPOS DE ARMADURA						MEDICIONES POR M				
	VI	EZI	VE EZE	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#H	M-Z	M-A	ACERO
1 .5 1 2 1 2	.50	.50	.60 .50	.40	.40	.95	.95	.00	.00	.00	.00	6	2	6	1	1	7	1	1.56	3.68	369.4
	.50	.50	.90 .50	.40	.40	.95	.95	.00	.00	.00	.00	7	2	6	1	1	7	1	1.86	3.68	391.3
1 3.0 1 2 1 2	.50	.50	.70 .50	.40	.40	.95	.95	.00	.00	.00	.00	8	2	6	1	1	7	1	1.66	3.68	392.5
	.50	.50	1.00 .50	.40	.40	.95	.95	.00	.00	.00	.00	9	2	6	1	1	7	1	1.96	3.68	419.7
1 5.0 1 2 1 1	.50	.50	.90 .50	.40	.40	.95	.95	1.65	.00	.00	.00	11	3	7	4	1	8	1	1.86	3.68	498.6
1 6.5 1 2 1 1	.60	.50	1.10 .50	.40	.40	1.20	.95	1.80	.00	2.70	.00	12	4	8	5	4	10	2	2.16	3.68	651.1
1 7.5 1 2 1 1	.70	.60	1.40 .60	.45	.45	1.30	1.05	1.95	.00	3.00	7.00	13	5	10	7	5	11	2	3.07	3.68	869.5
2 .5 1 2 1 2	.50	.50	.60 .50	.40	.40	.95	.95	.00	.00	.00	.00	6	2	6	1	1	7	1	1.56	3.68	369.4
	.50	.50	.80 .50	.40	.40	.95	.95	.00	.00	.00	.00	7	2	6	1	1	7	1	1.76	3.68	378.0
	.60	.55	1.30 .55	.40	.40	1.00	1.00	.00	.00	.00	.00	7	3	6	1	1	7	1	2.60	3.68	420.1
2 3.0 1 2 1 1	.50	.50	.60 .50	.40	.40	.95	.95	1.60	.00	.00	.00	7	2	6	2	1	7	1	1.56	3.68	387.1
	.50	.50	.90 .50	.40	.40	.95	.95	1.60	.00	.00	.00	8	2	6	2	1	7	1	1.66	3.68	412.6
	.70	.55	1.30 .55	.40	.40	1.00	1.00	1.55	.00	.00	.00	9	2	6	2	1	7	1	2.71	3.68	459.1
2 5.0 1 2 1 1	.50	.50	.80 .50	.40	.40	.95	.95	1.75	.00	.00	.00	9	2	6	5	1	8	2	1.76	3.68	454.7
	.70	.55	1.30 .55	.40	.40	1.00	1.00	1.80	.00	.00	.00	10	2	6	5	1	8	2	2.71	3.68	517.5
2 6.5 1 2 1 1	.50	.50	1.00 .50	.40	.40	.95	.95	1.85	.00	.00	.00	11	3	7	7	1	9	2	1.96	3.68	552.1
2 7.5 1 2 1 1	.70	.50	1.20 .50	.40	.40	1.20	.95	2.05	.00	3.00	.00	13	5	8	9	5	10	2	2.36	3.68	754.6
2 8.0 2 1 1	.70	.55	1.30 .55	.40	.40	1.55	1.00	2.15	.00	3.00	.00	13	5	9	9	5	10	2	2.71	3.68	797.2
3 .5 1 2 1 2	.50	.50	.60 .50	.40	.40	.95	.95	1.60	.00	.00	.00	5	2	6	2	1	7	1	1.56	3.68	375.2
	.50	.50	.70 .50	.40	.40	.95	.95	1.60	.00	.00	.00	5	2	6	2	1	7	1	1.66	3.68	379.3
	.60	.50	1.10 .50	.40	.40	.95	.95	1.60	.00	.00	.00	7	4	6	2	1	7	1	2.16	3.68	422.9
3 3.0 1 2 1 1	.50	.50	.60 .50	.40	.40	.95	.95	1.60	.00	.00	.00	7	2	6	2	1	7	1	1.56	3.68	387.1
	.50	.50	.70 .50	.40	.40	.95	.95	1.60	.00	.00	.00	7	2	6	2	1	7	1	1.66	3.68	391.8
	.70	.50	1.10 .50	.40	.40	.95	.95	1.60	.00	.00	.00	8	3	6	2	1	7	1	2.26	3.68	437.0
3 5.0 1 2 1 1	.50	.50	.60 .50	.40	.40	.95	.95	1.85	.00	.00	.00	7	2	6	7	1	7	2	1.56	3.68	419.0
	.70	.50	1.00 .50	.40	.40	.95	.95	1.85	.00	.00	.00	9	3	6	7	1	7	2	2.16	3.68	476.4
3 6.5 1 2 1 1	.50	.50	.80 .50	.40	.40	.95	.95	2.10	.00	.00	.00	9	3	6	9	1	8	2	1.76	3.68	491.5
3 7.5 1 2 1 1	.60	.50	.90 .50	.40	.40	.95	.95	2.15	.00	.00	.00	11	3	7	9	1	9	2	1.96	3.68	576.0
3 8.0 1 1 1	.70	.50	1.00 .50	.40	.40	.95	.95	2.00	.00	.00	.00	12	4	7	10	1	9	2	2.16	3.68	635.3
3 8.0 2 1 1	.70	.50	1.00 .50	.40	.40	.95	.95	2.00	.00	.00	.00	12	4	7	10	1	9	2	2.16	3.68	635.3

DIRECCION GENERAL DE CARMETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 15

VALORES COMUNES AL TIPO 9		ARCO DE MEDIO PUNTO TIPO 9										MEDICIONES POR M														
EP= .56 TIPOS ARMADURAS #D= 7		DISTANCIA JUNTAS: 16.0										H-A														
EA= .30 #M= 5		L= 6.80 #J= 6										H-Z														
LM= .28 #M= 4		L1 L2 L3 L4 L5 L6 L7 L8 L9										M-A														
LH= 5.00 LV= 2.50		LONGITUDES DE ARMADURAS										ACERO														
CARACTER. GEOTECHNICAS		DIMENSIONES										TIPOS DE ARMADURA														
T	HT	TI	TC	VI	EZ	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L8	L9	MA	MB	MC	ME	MF	MG	MH	MI	MJ	MK
1	.5	1.2	1.2	.50	.60	.60	.60	.45	.45	1.05	1.05	.00	.00	.00	.00	5.00	5	2	7	1	1	7	1	1.99	4.72	466.7
				.50	.60	.90	.60	.45	.45	1.05	1.05	.00	.00	.00	.00	5.00	6	3	7	1	1	7	1	2.35	4.72	487.9
1	3.0	1.2	1	.50	.60	.60	.60	.45	.45	1.05	1.05	2.20	.00	.00	.00	5.40	7	2	7	4	1	8	1	1.99	4.72	514.5
				.60	.60	1.00	.60	.45	.45	1.05	1.05	2.20	.00	.00	.00	5.40	8	3	7	4	1	8	1	2.59	4.72	555.0
1	5.0	1.2	1	.50	.60	.60	.60	.45	.45	1.05	1.05	2.30	.00	2.60	.00	5.40	9	3	7	7	2	10	2	2.23	4.72	637.5
1	6.5	1.2	1	.70	.60	1.10	.60	.45	.45	1.30	1.05	2.40	.00	3.00	.00	7.00	11	3	8	9	7	11	2	2.83	4.72	848.5
1	7.5	1.2	1	.80	.60	1.40	.60	.45	.45	1.30	1.05	2.50	.00	3.40	.00	6.00	13	5	8	10	9	12	2	3.31	4.72	1040.2
2	.5	1.2	1.2	.50	.60	.60	.60	.45	.45	1.05	1.05	2.15	.00	.00	.00	5.00	5	2	7	2	1	7	1	1.99	4.72	480.0
				.50	.60	.70	.60	.45	.45	1.05	1.05	2.15	.00	.00	.00	5.00	5	3	7	2	1	7	1	2.11	4.72	487.6
				.80	.60	1.40	.60	.45	.45	1.05	1.05	2.15	.00	.00	.00	5.00	7	4	7	2	1	7	1	3.31	4.72	554.0
2	3.0	1.2	1	.50	.60	.60	.60	.45	.45	1.05	1.05	2.30	.00	.00	.00	5.40	7	2	7	7	1	8	1	1.99	4.72	531.2
				.60	.60	.80	.60	.45	.45	1.05	1.05	2.30	.00	.00	.00	5.40	7	3	7	7	1	8	1	2.35	4.72	549.0
2	5.0	1.2	1	.50	.60	.60	.60	.45	.45	1.05	1.05	2.55	.00	.00	.00	6.00	7	2	7	9	1	9	2	1.99	4.72	600.1
2	6.5	1.2	1	.70	.60	.90	.60	.45	.45	1.05	1.05	2.50	.00	2.60	.00	5.40	10	3	7	10	2	10	2	2.59	4.72	717.8
2	7.5	1.2	1	.80	.60	1.10	.60	.45	.45	1.05	1.05	2.55	.00	3.00	.00	7.00	11	3	7	10	7	11	2	2.95	4.72	842.2
3	.5	1.2	1	.60	.60	.60	.60	.45	.45	1.05	1.05	2.30	.00	.00	.00	5.00	7	2	7	5	1	7	1	2.11	4.72	508.6
				.70	.60	.60	.60	.45	.45	1.05	1.05	2.30	.00	.00	.00	5.00	7	2	7	5	1	7	1	2.23	4.72	519.3
				.80	.60	.60	.60	.45	.45	1.05	1.05	2.30	.00	.00	.00	5.00	7	2	7	5	1	7	1	2.35	4.72	518.0
				.80	.60	1.10	.60	.45	.45	1.05	1.05	2.30	.00	.00	.00	5.00	7	5	7	5	1	7	1	2.95	4.72	555.5
3	3.0	1.2	1	.60	.60	.60	.60	.45	.45	1.05	1.05	2.35	.00	.00	.00	5.00	7	2	7	7	1	7	2	2.11	4.72	544.4
				.70	.60	.60	.60	.45	.45	1.05	1.05	2.35	.00	.00	.00	5.00	8	2	7	7	1	7	2	2.23	4.72	561.0
3	5.0	1.2	1	.60	.60	.60	.60	.45	.45	1.05	1.05	2.50	.00	.00	.00	5.40	8	2	7	10	1	8	2	2.11	4.72	612.9
3	6.5	1.2	1	.70	.60	.60	.60	.45	.45	1.05	1.05	3.00	.00	.00	.00	6.00	9	3	7	11	1	9	2	2.23	4.72	689.5
3	7.5	1.2	1	.80	.60	.80	.60	.45	.45	1.05	1.05	3.00	.00	2.65	.00	5.40	10	3	7	11	4	10	2	2.59	4.72	759.3

DIRECCION GENERAL DE CARRETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 16

VALORES COMUNES AL TIPO 10		ARCO DE MEDIO PUNTO TIPO 10										MEDICIONES POR M													
EPA .65 EA= .30 TIPOS ARMADURAS #0= 7		DISTANCIA JUNTAS: 10.5 #J= 5										H-A ACERO													
LH= 5.00 LV= 3.40																									
CARACTER. GEOTECNICAS T HT TI TC	DIMENSIONES		LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA				M-Z								
	VI Ezi VE EZE		L1	L2	L3	L4	L5	L6	L7	L8	L9	#A	#B	#C	#E	#F	#G	#K	H-Z	H-A					
1	.5	1 2	1 2	.50	.65	.60	.65	.45	.45	1.35	1.10	2.65	.00	.00	5.40	5	2	0	4	1	7	1	2.28	5.03	596.9
			1 3	.60	.65	.80	.65	.45	.45	1.35	1.10	2.65	.00	.00	5.40	6	4	0	4	1	7	1	2.66	5.03	621.2
1	3.0	1 2	1	.50	.65	.60	.65	.45	.45	1.35	1.10	2.75	.00	.00	6.00	7	2	0	7	1	9	1	2.28	5.03	661.7
			2	.60	.65	1.00	.65	.45	.45	1.35	1.10	2.75	.00	.00	6.00	8	4	0	7	1	9	1	3.19	5.03	715.2
1	5.0	1 2	1	.70	.65	.80	.65	.45	.45	1.35	1.10	3.05	.00	2.70	7.00	9	3	0	9	4	11	2	2.80	5.03	859.5
1	6.5	1 2	1	.80	.65	1.10	.65	.45	.45	1.35	1.10	3.40	.00	3.75	6.00	10	4	0	11	9	12	2	3.32	5.03	1046.1
1	7.5	1 2	1	1.00	.65	1.40	.65	.45	.45	1.35	1.10	3.45	.00	5.90	7.00	12	5	0	11	10	13	2	3.97	5.03	1320.7
2	.5	1 2	1	.60	.65	.60	.65	.45	.45	1.35	1.10	2.75	.00	.00	5.40	7	2	0	7	1	7	1	2.41	5.03	634.6
			2	.70	.65	.60	.65	.45	.45	1.35	1.10	2.75	.00	.00	5.40	7	2	0	7	1	7	1	2.54	5.03	638.9
			3	.80	.65	.60	.65	.45	.45	1.35	1.10	2.75	.00	.00	5.40	7	2	0	7	1	7	1	2.66	5.03	643.2
2	3.0	1 2	1	.60	.65	.60	.65	.45	.45	1.35	1.10	2.95	.00	.00	6.00	8	2	0	9	1	9	2	2.41	5.03	740.7
			2	.80	.65	.70	.65	.45	.45	1.35	1.10	2.95	.00	.00	6.00	9	3	0	9	1	9	2	2.80	5.03	772.2
2	5.0	1 2	1	.70	.65	.60	.65	.45	.45	1.35	1.10	2.95	.00	2.60	5.40	9	2	0	10	2	10	2	2.54	5.03	805.5
2	6.5	1 2	1	.90	.65	.80	.65	.45	.45	1.35	1.10	3.20	2.50	2.65	7.00	11	4	0	12	5	11	2	3.05	5.03	1004.9
2	7.5	1 2	1	1.00	.65	1.00	.65	.45	.45	1.35	1.10	3.25	.00	6.30	6.00	12	4	0	12	9	12	2	3.45	5.03	1206.0
3	.5	1 2	1	.80	.65	.60	.65	.45	.45	1.35	1.10	2.95	.00	.00	5.40	8	2	0	9	1	7	1	2.66	5.03	685.3
			2	.90	.65	.60	.65	.45	.45	1.35	1.10	2.95	.00	.00	5.40	8	2	0	9	1	7	1	2.80	5.03	690.0
			3	1.00	.65	.60	.80	.45	.55	1.40	1.25	3.05	.00	.00	5.40	8	2	0	9	1	7	1	3.26	5.03	703.3
3	3.0	1 2	1	.80	.65	.60	.65	.45	.45	1.35	1.10	2.90	.00	.00	5.40	9	2	0	10	1	8	2	2.66	5.03	762.4
			2	.90	.65	.60	.65	.45	.45	1.35	1.10	2.90	.00	.00	5.40	10	2	0	10	1	8	2	2.80	5.03	788.1
3	5.0	1 2	1	.80	.65	.60	.65	.45	.45	1.35	1.10	3.45	.00	.00	6.00	10	3	0	11	1	9	2	2.66	5.03	846.8
3	6.5	1 2	1	.90	.65	.60	.65	.45	.45	1.35	1.10	3.30	2.65	2.35	5.40	12	4	0	12	4	10	2	2.80	5.03	971.6
3	7.5	1 2	1	1.00	.65	.60	.65	.45	.45	1.35	1.10	3.55	2.50	2.65	7.00	12	5	0	14	5	11	2	2.92	5.03	1152.0

DIRECCION GENERAL DE CARNETERAS COLECCION DE ARCOS DE MEDIO PUNTO (MA 17)

CARACTER. GEOTECNICAS		VALORES COMUNES AL TIPO II										ARCO DE MEDIO PUNTO TIPO II										MEDICIONES POR M												
Y	HT	TI	TC	DIMENSIONES		LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA										M-Z	M-A							
				VI	EZI	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L8	MA	MB	MC	ME	MF	MG	MH	MI	MJ	MK	M-L	M-N	M-O	M-P	M-Q	M-R			
1	.5	1	2	1	.50	.50	.70	.50	.40	.95	.95	.95	.00	.00	.00	7	2	6	1	1	7	1	1.67	4.35	384.4	1.67	4.35	384.4						
				2	.50	.50	.80	.50	.40	.95	.95	.95	.00	.00	.00	7	2	6	1	1	7	1	1.77	4.35	389.1	1.77	4.35	389.1						
				3	.50	.50	1.00	.50	.40	.95	.95	.95	.00	.00	.00	6	2	6	1	1	7	1	1.97	4.35	410.3	1.97	4.35	410.3						
1	3.0	1	2	1	.50	.50	.80	.50	.40	.95	.95	.95	.00	.00	.00	10	2	7	1	1	7	1	1.77	4.35	443.4	1.77	4.35	443.4						
				2	.50	.50	1.20	.50	.40	.95	.95	.95	.00	.00	.00	11	3	7	1	1	7	1	2.17	4.35	492.3	2.17	4.35	492.3						
1	5.0	1	2	1	.50	.50	1.10	.50	.40	1.20	.95	1.50	.00	.00	6.20	12	4	8	4	1	6	2	2.07	4.35	582.6	2.07	4.35	582.6						
1	6.5	1	2	1	.60	.60	1.40	.60	.45	1.30	1.05	1.80	.00	.00	6.20	13	5	10	5	1	9	2	2.96	4.35	746.7	2.96	4.35	746.7						
2	.5	1	2	1	.50	.50	.70	.50	.40	.95	.95	.95	.00	.00	.00	7	2	6	1	1	7	1	1.67	4.35	384.4	1.67	4.35	384.4						
				3	.50	.50	.90	.50	.40	.95	.95	.95	.00	.00	.00	7	2	6	1	1	7	1	1.87	4.35	393.7	1.87	4.35	393.7						
				4	.70	.60	1.50	.60	.45	1.05	1.05	.00	.00	.00	5.80	4	2	6	1	1	7	1	3.20	4.35	451.5	3.20	4.35	451.5						
2	3.0	1	2	1	.50	.50	.70	.50	.40	.95	.95	1.45	.00	.00	5.80	9	2	6	2	1	7	1	1.67	4.35	414.6	1.67	4.35	414.6						
				2	.50	.50	1.10	.50	.40	.95	.95	1.45	.00	.00	5.80	10	2	6	2	1	7	1	2.07	4.35	456.1	2.07	4.35	456.1						
2	5.0	1	2	1	.50	.50	.90	.50	.40	.95	.95	1.55	.00	.00	5.80	11	3	7	4	1	7	2	1.87	4.35	493.7	1.87	4.35	493.7						
2	6.5	1	2	1	.60	.50	1.20	.50	.40	1.20	.95	1.80	.00	.00	6.20	13	5	8	7	1	8	2	2.27	4.35	660.6	2.27	4.35	660.6						
2	7.5	1	2	1	.70	.60	1.40	.60	.45	1.60	1.05	2.10	.00	.00	6.80	13	5	9	9	1	9	2	3.08	4.35	773.9	3.08	4.35	773.9						
3	.5	1	2	1	.50	.50	.70	.50	.40	.95	.95	.95	.00	.00	5.80	6	2	6	1	1	7	1	1.67	4.35	376.1	1.67	4.35	376.1						
				3	.50	.50	.80	.50	.40	.95	.95	.95	.00	.00	5.80	7	2	6	1	1	7	1	1.77	4.35	389.1	1.77	4.35	389.1						
				4	.60	.55	1.30	.55	.40	1.00	1.00	.00	.00	.00	5.80	7	3	6	1	1	7	1	2.61	4.35	422.6	2.61	4.35	422.6						
3	3.0	1	2	1	.50	.50	.70	.50	.40	.95	.95	1.45	.00	.00	5.80	8	2	6	2	1	7	1	1.67	4.35	404.0	1.67	4.35	404.0						
				2	.50	.50	.90	.50	.40	.95	.95	1.45	.00	.00	5.80	9	3	6	2	1	7	1	1.87	4.35	429.2	1.87	4.35	429.2						
				3	.70	.55	1.30	.55	.40	1.00	1.00	1.50	.00	.00	5.60	9	2	6	2	1	7	1	2.72	4.35	460.7	2.72	4.35	460.7						
3	5.0	1	2	1	.50	.50	.80	.50	.40	.95	.95	1.75	.00	.00	5.80	10	2	6	7	1	7	2	1.77	4.35	444.8	1.77	4.35	444.8						
				2	.70	.55	1.30	.55	.40	1.00	1.00	1.40	.00	.00	5.80	11	3	6	7	1	7	2	2.72	4.35	537.2	2.72	4.35	537.2						
3	6.5	1	2	1	.50	.50	.90	.50	.40	.95	.95	2.00	.00	.00	5.40	11	3	7	9	1	7	2	1.87	4.35	529.3	1.87	4.35	529.3						
3	7.5	1	2	1	.70	.50	1.10	.50	.40	1.20	.95	2.05	.00	.00	6.20	13	5	8	9	1	8	2	2.27	4.35	682.8	2.27	4.35	682.8						
3	8.0	1	2	1	.70	.50	1.20	.55	.40	1.20	1.00	2.10	.00	.00	6.20	13	5	8	9	1	8	2	2.49	4.35	694.6	2.49	4.35	694.6						

VALORES COMUNES AL TIPO 12		ARCO DE MEDIO PUNTO TIPO 12										MEDICIONES POR M									
EP= .57		DISTANCIA JUNTAS: 16.0										M-Z		M-A							
FA= .35		#J= 7										ACERO									
TIPOS ARMADURA #0= 7		#I= 4																			
LH=6.00																					
LV=2.00																					
CARACTER. GEOTECNICAS T HT	TI TC	DIMENSIONES		LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA							
		VI EZE	VE	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#H			
1	.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	7 7 7 7 7	2 2 2 2 2	7 7 7 7 7	1 1 1 1 1	7 7 7 7 7	1 1 1 1 1	2.12 2.24 2.60 2.24 2.96	5.40 5.40 5.40 5.40 5.40	497.6 502.9 536.3 556.1 620.7	
1	3.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	9 10 11 13 6	2 3 3 5 2	7 7 7 9 7	1 1 1 1 1	8 8 10 11 7	1 1 1 1 1	2.24 2.96 2.60 3.20 2.12	5.40 5.40 5.40 5.40 5.40	556.1 620.7 753.9 1008.2 501.0	
1	5.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	11 13 6	3 5 2	7 9 7	4 5 2	10 11 7	2 2 1	2.60 3.20 2.12	5.40 5.40 5.40	753.9 1008.2 501.0	
1	6.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	13 6	9 2	9 7	5 2	11 7	2 1	3.20 2.12	5.40 5.40	1008.2 501.0	
2	.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	7 7 7	2 2 2	2 2 2	1 1 1	7 7 7	1 1 1	2.12 2.36 2.36	5.40 5.40 5.40	501.0 528.2 599.7	
2	3.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	8 9	2 4	5 5	1 1	8 8	1 1	2.12 2.72	5.40 5.40	548.6 599.7	
2	5.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	10 12	4 4	7 8	9 9	1 4	9 10	2 2	2.36 2.84	5.40 5.40	677.7 836.4
2	6.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	12 13	4 5	8 9	9 10	4 5	10 11	2 2	2.84 3.32	5.40 5.40	836.4 1035.6
2	7.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	14	6	9	10	7	11	2	3.32 3.56	5.40 5.40	1035.6 1134.0
3	.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	5	2	7	4	1	7	1	2.12 2.24 3.44	5.40 5.40 5.40	502.2 511.8 584.7
3	3.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	7	2	7	7	1	7	2	2.12 2.36 3.44	5.40 5.40 5.40	551.5 566.0 653.2
3	5.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	6	2	7	9	1	8	2	2.12 2.36 3.32	5.40 5.40 5.40	608.1 716.6 709.0
3	6.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	10	4	7	10	1	9	2	2.60 2.96	5.40 5.40	709.0 829.4
3	7.5	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	11	4	7	11	4	10	2	2.96 3.20	5.40 5.40	829.4 884.9
3	8.0	1 2	.50 .60 .70 .80 .90	.60 .70 .80 .90	.45 .45 .45 .45 .45	1.05 1.05 1.05 1.05 1.05	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	.00 .00 .00 .00 .00	12	4	7	11	4	10	2	3.20	5.40	884.9

DIRECCION GENERAL DE CARRETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 19

VALORES COMUNES AL TIPO - I		ARCO DE MEDIO PUNTO TIPO 13										MEDICIONES POR M													
EP= .70		DISTANCIA JUNTASI 20.0										M-Z		M-A											
EA= .35		#J= 5										M-Z		M-A											
TIPOS ARMADURA #D= 7		#M= 6										M-Z		M-A											
LH=6.00		LW=3.30										M-Z		M-A											
LV=3.30												M-Z		M-A											
CARACTER. GEOTECHNICAS		LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA													
HT	TI	TC	VI	EZI	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L8	L9	PA	PB	PC	PE	PF	PG	PH	PI		
1	.5	1 2	1	.50	.70	.70	.70	.50	1.40	1.15	2.70	.00	.00	.00	6.20	6	4	6	4	1	8	1	2.66	7.08	675.0
			3	.70	.70	1.10	.70	.50	1.40	1.15	2.70	.00	.00	.00	6.20	7	5	6	4	1	8	1	3.50	7.08	717.7
1	3.0	1 2	1	.50	.70	.70	.70	.50	1.40	1.15	2.95	.00	3.00	6.20		6	4	6	9	2	10	2	2.66	7.08	834.8
			2	.80	.70	1.30	.70	.50	1.40	1.15	2.95	.00	3.00	6.20		9	5	6	9	2	10	2	3.92	7.08	902.6
1	5.0	1 2	1	.70	.70	1.00	.70	.50	1.40	1.15	3.05	.00	3.40	7.80		10	4	6	10	5	11	2	3.36	7.08	990.8
1	6.5	1 2	1	.90	.70	1.40	.70	.50	1.40	1.15	3.55	.00	4.20	6.80		12	4	6	11	9	12	2	4.20	7.08	1223.0
2	.5	1 2	1	.50	.70	.70	.70	.50	1.40	1.15	2.80	.00	.00	6.20		7	3	6	7	1	6	1	2.66	7.08	701.0
			2	.70	.70	.70	.70	.50	1.40	1.15	2.80	.00	.00	6.20		7	3	6	7	1	6	1	2.94	7.08	709.9
			3	.80	.70	.80	.70	.50	1.40	1.15	2.80	.00	.00	6.20		7	4	6	7	1	6	1	3.22	7.08	723.2
2	3.0	1 2	1	.60	.70	.70	.70	.50	1.40	1.15	3.10	.00	.00	6.80		8	3	6	9	1	9	2	2.80	7.08	807.0
			2	.90	.70	1.00	.70	.50	1.40	1.15	3.10	.00	.00	6.80		9	5	6	9	1	9	2	3.64	7.08	862.5
2	5.0	1 2	1	.70	.70	.70	.70	.50	1.40	1.15	3.50	.00	3.10	6.20		9	3	6	11	4	10	2	2.94	7.08	925.3
2	6.5	1 2	1	.90	.70	1.00	.70	.50	1.40	1.15	3.35	3.10	2.95	7.80		11	5	6	12	7	11	2	3.64	7.08	1113.0
2	7.5	1 2	1	1.00	.70	1.30	.70	.50	1.40	1.15	3.40	2.90	3.35	6.80		12	5	6	12	9	12	2	4.20	7.08	1239.4
2	8.0	1 2	1	1.10	.70	1.50	.70	.50	1.40	1.15	3.70	.00	7.25	6.80		13	5	6	14	9	12	2	4.62	7.08	1535.8
3	.5	1 2	1	.70	.70	.70	.70	.50	1.40	1.15	3.10	.00	.00	6.20		8	3	6	9	1	7	1	2.94	7.08	741.8
			2	.80	.70	.70	.70	.50	1.40	1.15	3.10	.00	.00	6.20		8	3	6	9	1	7	1	3.08	7.08	746.7
			3	1.00	.70	.70	.75	.50	1.40	1.20	3.15	.00	.00	6.20		8	3	6	9	1	7	1	3.48	7.08	758.5
3	3.0	1 2	1	.70	.70	.70	.70	.50	1.40	1.15	3.05	.00	.00	6.20		9	3	6	10	1	6	2	2.94	7.08	824.0
			2	1.00	.70	.70	.70	.50	1.40	1.15	3.05	.00	.00	6.20		10	3	6	10	1	6	2	3.36	7.08	862.9
3	5.0	1 2	1	.80	.70	.70	.70	.50	1.40	1.15	3.35	.00	.00	6.80		10	4	6	12	1	9	2	3.08	7.08	945.3
3	6.5	1 2	1	1.00	.70	.70	.70	.50	1.40	1.15	3.70	3.10	2.95	6.20		12	5	6	14	5	10	2	3.36	7.08	1186.9
3	7.5	1 2	1	1.10	.70	.90	.70	.50	1.40	1.15	3.70	3.10	2.95	7.80		12	5	6	14	5	11	2	3.78	7.08	1263.5
3	8.0	1 2	1	1.10	.70	1.00	.70	.50	1.40	1.15	3.75	3.10	2.95	7.80		13	5	6	14	7	11	2	3.92	7.08	1342.6

DIRECCION GENERAL DE CARRETERAS COLECCION DE ARCOS DE MEDIO PUNTO (AN 20)

V A L O R E S C O M U N E S A L T I P O 14
 EP= .57 EA= .40 LT=.40 LB=10.35 DISTANCIA JUNTAS: 16.5
 TIPOS ARMADURA #D= 9 #H= 4 #J= 7 #L= 4

ARCO DE MEDIO PUNTO TIPO 14
 LH= 7.25
 LV= 1.50

CARACTER. GEOTECNICAS T HT TI	DIMENSIONES			LONGITUDES DE ARMADURAS									TIPOS DE ARMADURA						MEDICIONES POR M		
	VI	EZI	VE. EZE	L1	L2	L3	L4	L5	L6	L7	L9	8A	8B	8C	8E	8F	8G	8K	M-Z	M-A	M-ACERO
1 .5 1 2	.60	.60	.90	.60	.45	1.05	1.60	.00	.00	.00	7.80	6	2	7	1	1	9	1	2.48	6.33	703.3
2	.60	.60	1.00	.60	.45	1.05	1.60	.00	.00	.00	7.80	6	2	7	1	1	9	1	2.60	6.33	709.1
3	.60	.60	1.30	.60	.45	1.05	1.60	.00	.00	.00	7.80	9	2	7	1	1	9	1	2.96	6.33	741.1
1 2.5 1 2	.60	.60	.90	.60	.45	1.30	1.60	.00	.00	.00	7.80	10	2	8	1	1	9	1	2.48	6.33	765.3
2	.60	.60	1.50	.60	.45	1.30	1.60	.00	.00	.00	7.80	11	3	8	1	1	9	1	3.20	6.33	835.9
1 4.0 1 2	.60	.60	1.20	.60	.45	1.60	1.60	.00	.00	.00	7.80	12	4	9	1	1	9	2	2.84	6.33	899.1
1 5.5 1 2	.60	.60	1.40	.60	.45	1.30	1.60	1.95	.00	.00	7.20	13	5	10	5	1	10	2	3.08	6.33	1039.4
1 6.5 1 2	.80	.70	1.70	.70	.50	2.20	1.70	2.05	.00	.00	8.80	14	6	11	7	1	11	2	4.30	6.33	1306.3
2 .5 1 2	.60	.60	.90	.60	.45	1.05	1.60	.00	.00	.00	7.80	8	2	7	1	1	9	1	2.48	6.33	703.3
3	.60	.60	1.20	.60	.45	1.05	1.60	.00	.00	.00	7.80	8	3	7	1	1	9	1	2.84	6.33	725.0
2 2.5 1 2	.60	.60	.90	.60	.45	1.05	1.60	.00	.00	.00	7.80	9	2	7	1	1	9	1	2.48	6.33	716.2
2	.60	.60	1.20	.60	.45	1.05	1.60	.00	.00	.00	7.80	10	3	7	1	1	9	1	2.84	6.33	761.3
2 4.0 1 2	.60	.60	1.00	.60	.45	1.30	1.60	1.85	.00	.00	7.80	11	3	8	4	1	9	2	2.60	6.33	828.6
2 5.5 1 2	.60	.60	1.20	.60	.45	1.60	1.60	2.00	.00	.00	7.80	12	4	9	7	1	9	2	2.84	6.33	930.6
2 6.5 1 2	.70	.60	1.40	.60	.45	1.30	1.60	2.10	.00	.00	7.20	13	5	10	7	1	10	2	3.20	6.33	1062.5
3 .5 1 2	.60	.60	.90	.60	.45	1.05	1.60	.00	.00	.00	7.80	7	4	7	1	1	9	1	2.48	6.33	698.4
3	.60	.60	1.00	.60	.45	1.05	1.60	.00	.00	.00	7.80	7	4	7	1	1	9	1	2.60	6.33	704.0
3 2.5 1 2	.60	.60	.90	.60	.45	1.05	1.60	1.80	.00	.00	7.80	8	4	7	2	1	9	2	2.48	6.33	737.3
2	.60	.60	1.00	.60	.45	1.05	1.60	1.80	.00	.00	7.80	8	4	7	2	1	9	2	2.60	6.33	756.7
3 4.0 1 2	.60	.60	.90	.60	.45	1.05	1.60	1.95	.00	.00	7.80	9	4	7	5	1	9	2	2.48	6.33	759.6
2	.80	.60	1.30	.60	.45	1.05	1.60	1.95	.00	.00	7.80	11	4	7	5	1	9	2	3.20	6.33	847.0
3 5.5 1 2	.60	.60	1.00	.60	.45	1.05	1.60	2.25	.00	.00	7.80	11	4	7	9	1	9	2	2.60	6.33	842.5
3	.70	.60	1.20	.60	.45	1.30	1.60	2.30	.00	.00	7.80	12	4	8	9	1	9	2	2.96	6.33	932.2
3 7.5 1 2	.80	.60	1.40	.60	.45	1.60	1.60	2.25	.00	.00	7.20	13	5	9	10	1	10	2	3.32	6.33	1079.1

DIRECCION GENERAL DE CARRIERTAS COLECCION DE ARCOS DE MEDIO PUNTO (AM 21)

CARACTER. GEOTECNICAS			DIMENSIONES										LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA										MEDICIONES POR M	
HT	TI	TC	VI	E71	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L9	MA	MB	MC	ME	MF	MG	MH	MZ	M-A	ACERO										
1	.5	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	.00	.00	.00	7.60	6	3	8	1	1	9	1	2.80	7.32	819.4										
			.60	.65	1.00	.65	.45	.45	1.35	1.65	.00	.00	.00	7.60	8	3	8	1	1	9	1	2.92	7.32	825.3										
			.60	.65	1.40	.65	.45	.45	1.35	1.65	.00	.00	.00	7.60	9	4	8	1	1	9	1	3.45	7.32	869.2										
1	2.5	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	.00	.00	.00	7.80	10	3	8	1	1	9	1	2.80	7.32	853.1										
			.70	.65	1.50	.65	.45	.45	1.35	1.65	.00	.00	.00	7.80	11	4	8	1	1	9	1	3.71	7.32	933.1										
1	4.0	1 2	.60	.65	1.20	.65	.45	.45	1.65	1.65	2.25	.00	.00	7.20	12	4	9	4	1	10	2	3.19	7.32	1035.2										
1	5.5	1 2	.70	.65	1.50	.65	.45	.45	1.35	1.65	2.35	.00	.00	8.80	13	5	10	7	1	11	2	3.71	7.32	1238.6										
1	6.5	1 2	.90	.75	1.80	.75	.50	.50	1.45	1.75	2.70	.00	3.85	7.80	14	6	10	9	7	12	2	5.02	7.32	1484.3										
2	.5	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	.00	.00	.00	7.60	7	4	8	1	1	9	1	2.80	7.32	610.3										
			.60	.65	1.20	.65	.45	.45	1.35	1.65	.00	.00	.00	7.80	8	5	8	1	1	9	1	3.19	7.32	647.0										
2	2.5	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	2.20	.00	.00	7.80	9	4	8	2	1	9	2	2.80	7.32	674.7										
			.70	.65	1.20	.65	.45	.45	1.35	1.65	2.20	.00	.00	7.80	10	5	8	2	1	9	2	3.32	7.32	929.5										
2	4.0	1 2	.60	.65	1.00	.65	.45	.45	1.35	1.65	2.35	.00	.00	7.60	10	5	8	7	1	9	2	2.92	7.32	931.0										
			1.00	.75	1.80	.75	.50	.50	1.45	1.75	2.45	.00	.00	7.80	11	4	8	7	1	9	2	5.18	7.32	1052.9										
2	5.5	1 2	.70	.65	1.20	.65	.45	.45	1.35	1.65	2.60	.00	.00	7.20	12	5	8	9	1	10	2	3.32	7.32	1057.4										
2	6.5	1 2	.80	.65	1.40	.65	.45	.45	1.65	1.65	2.55	.00	.00	8.80	13	5	9	10	1	11	2	3.71	7.32	1244.3										
2	7.5	1 2	1.00	.70	1.70	.70	.50	.50	1.40	1.70	2.70	.00	3.85	7.80	14	6	10	10	7	12	2	4.69	7.32	1500.2										
3	.5	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	2.20	.00	.00	7.60	7	5	8	2	1	9	1	2.80	7.32	628.7										
			.70	.65	.90	.65	.45	.45	1.35	1.65	2.20	.00	.00	7.60	7	5	8	2	1	9	1	2.92	7.32	634.5										
3	2.5	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	2.35	.00	.00	7.80	8	5	8	5	1	9	2	2.80	7.32	877.5										
			.70	.65	.90	.65	.45	.45	1.35	1.65	2.35	.00	.00	7.80	8	5	8	5	1	9	2	2.92	7.32	883.7										
3	4.0	1 2	.60	.65	.90	.65	.45	.45	1.35	1.65	2.60	.00	.00	7.80	8	5	8	9	1	9	2	2.80	7.32	916.9										
			1.00	.65	1.30	.65	.45	.45	1.35	1.65	2.60	.00	.00	7.80	10	5	8	9	1	9	2	3.84	7.32	1009.6										
3	5.5	1 2	.70	.65	.90	.65	.45	.45	1.35	1.65	2.55	.00	.00	7.80	10	5	8	10	1	9	2	2.92	7.32	974.4										
3	6.5	1 2	.80	.65	1.10	.65	.45	.45	1.35	1.65	3.05	.00	.00	7.20	11	5	8	11	1	10	2	3.32	7.32	1074.4										
3	7.5	1 2	1.00	.65	1.30	.65	.45	.45	1.35	1.65	2.85	.00	.00	8.80	12	5	8	12	1	11	2	3.84	7.32	1226.3										

VALORES COMUNES AL TIPO 15
 EA=.40 LT=.40 L=10.35 DISTANCIA JUNTAS: 19.0
 TIPOS ARMADURA: #D=9 #M=5 #J=7

LH=7.25
 LV=2.30
 ARCO DE MEDIO PUNTO TIPO 15

EP= .73 EA= .40
 TIPOS ARMADURAS #D= 9
 LT= .40 LB=10.35
 #H= 6 #I= 5
 #J= 7

V A L O R E S C O M U N E S A L T I P O 16
 DISTANCIA JUNTAS: 21.5
 #J= 7

LH= 7.25
 LV= 3.10

ARCO DE MEDIO PUNTO TIPO 16

CARACTER. GEOTECNICAS T HT T1 TC	DIMENSIONES			LONGITUDES DE ARMADURAS									TIPOS DE ARMADURA												MEDICIONES POR M ACERO		
	VI	EZ1	VE	FZE	L1	L2	L3	L4	L5	L6	L7	L8	L9	#A	#B	#C	#E	#F	#G	#H	#K	M-Z	H-A	MEDICIONES POR M ACERO			
1 .5 1 2 1 2 3	.60	.75	.90	.75	.50	.50	1.45	1.75	.00	.00	.00	7.80	7	5	8	1	1	9	1				3.35	8.44	900.0		
	.80	.75	1.50	.75	.50	.50	1.45	1.75	.00	.00	.00	7.80	6	5	8	1	1	9	1				4.55	8.44	963.8		
1 2.5 1 2 1 2 2	.60	.75	.90	.75	.50	.50	1.45	1.75	2.70	.00	.00	7.20	9	5	8	4	1	10	2				3.35	8.44	1004.4		
	.90	.75	1.60	.75	.50	.50	1.45	1.75	2.70	.00	.00	7.20	10	5	8	4	1	10	2				4.85	8.44	1099.8		
1 4.0 1 2 1 1 1	.60	.75	1.10	.75	.50	.50	1.45	1.75	2.80	.00	.00	8.40	10	5	8	7	1	11	2				3.65	8.44	1117.0		
1 5.5 1 2 1 1 1	.80	.75	1.50	.75	.50	.50	1.75	1.75	3.05	.00	3.55	7.60	12	5	9	9	4	12	2				4.55	8.44	1357.2		
1 6.5 1 2 1 1 1	1.00	.75	1.80	.75	.50	.50	1.45	1.75	3.00	.00	3.45	8.40	14	6	10	10	7	13	2				5.30	8.44	1712.6		
2 .5 1 2 1 2 3	.60	.75	.90	.75	.50	.50	1.45	1.75	2.65	.00	.00	7.80	7	5	8	2	1	9	1				3.35	8.44	916.4		
	.80	.75	1.10	.75	.50	.50	1.45	1.75	2.65	.00	.00	7.40	7	6	8	2	1	9	1				3.95	8.44	945.9		
2 2.5 1 2 1 2 2	.60	.75	.90	.75	.50	.50	1.45	1.75	2.80	.00	.00	7.60	8	5	8	7	1	9	2				3.35	8.44	993.2		
	.90	.75	1.20	.75	.50	.50	1.45	1.75	2.80	.00	.00	7.60	9	5	8	7	1	9	2				4.25	8.44	1047.2		
2 4.0 1 2 1 1 1	.60	.75	.90	.75	.50	.50	1.45	1.75	3.00	.00	.00	7.20	9	5	8	9	1	10	2				3.35	8.44	1054.4		
2 5.5 1 2 1 1 1	.80	.75	1.10	.75	.50	.50	1.45	1.75	3.05	.00	.00	8.80	10	6	10	1	11	2					3.95	8.44	1190.2		
2 6.5 1 2 1 1 1	1.00	.75	1.40	.75	.50	.50	1.45	1.75	3.50	.00	3.55	7.80	12	5	11	4	12	2					4.70	8.44	1385.5		
2 7.5 1 2 1 1 1	1.10	.75	1.70	.75	.50	.50	1.75	1.75	3.30	.00	3.85	7.80	13	5	9	12	7	12	2				5.30	8.44	1581.3		
3 .5 1 2 1 2 2 3	.60	.75	.90	.75	.50	.50	1.45	1.75	2.80	.00	.00	7.80	7	5	8	7	1	9	2				3.35	8.44	979.2		
	.80	.75	.90	.75	.50	.50	1.45	1.75	2.80	.00	.00	7.60	8	5	8	7	1	9	2				3.84	8.44	1005.6		
	.90	.75	.90	.75	.50	.50	1.45	1.75	2.80	.00	.00	7.80	8	5	8	7	1	9	2				3.80	8.44	1011.9		
3 2.5 1 2 1 2 2	.60	.75	.90	.75	.50	.50	1.45	1.75	3.00	.00	.00	7.80	8	5	8	9	1	9	2				3.35	8.44	1023.0		
	.90	.75	.90	.75	.50	.50	1.45	1.75	3.00	.00	.00	7.60	9	5	8	9	1	9	2				3.80	8.44	1057.0		
3 4.0 1 2 1 1 1	.70	.75	.90	.75	.50	.50	1.45	1.75	3.00	.00	.00	7.80	9	5	8	10	1	9	2				3.49	8.44	1064.4		
3 5.5 1 2 1 1 1	.90	.75	.90	.75	.50	.50	1.45	1.75	3.25	.00	.00	7.20	11	5	8	12	1	10	2				3.80	8.44	1208.6		
3 6.5 1 2 1 1 1	1.00	.75	1.00	.75	.50	.50	1.45	1.75	3.35	.00	.00	8.80	12	5	9	12	1	11	2				4.10	8.44	1325.0		
3 7.5 1 2 1 1 1	1.10	.75	1.20	.75	.50	.50	1.45	1.75	3.65	.00	3.85	7.80	12	6	8	14	5	12	2				4.55	8.44	1538.9		

DIRECCION GENERAL DE CARNETERAS COLECCION DE ARCOS DE MEDIO PUNTO (AM 23)

VALORES COMUNES AL TIPO 17		ARCO DE MEDIO PUNTO TIPO 17										LH=8,50 LV=1,00									
EP= .57 TIPO ARMADURA #D= 9		DISTANCIA JUNTAS 17,0 #J= 7																			
EA= .45 #I= 5																					
PH= 3																					
CARACTER. GEOTECNICAS T HT TI TC	DIMENSIONES			LONGITUDES DE ARMADURAS										TIPOS DE ARMADURA		MEDICIONES POR M					
	VI	EZI	VE EZE	L1	L2	L3	L4	L5	L6	L7	L9	NA	NB	NC	NE	OF	#0	#K	M-Z	H-A	ACERO
1 .5 1 2	.60	.60	1.00 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	9	2	7	1	1	9	1	2.60	7.41	741.6
2	.60	.60	1.10 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	9	2	7	1	1	9	1	2.72	7.41	747.8
3	.60	.60	1.50 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	10	2	7	1	1	9	1	3.20	7.41	796.9
1 2.5 1 2	.60	.60	1.10 .60	.45	.45	1.60	1.60	.00	.00	.00	.00	12	4	9	1	1	9	2	2.72	7.41	904.5
2	.70	.70	1.70 .70	.50	.50	1.70	1.70	.00	.00	.00	.00	12	4	9	1	1	9	2	4.16	7.41	978.1
1 4.0 1 2	.60	.60	1.30 .60	.45	.45	1.30	1.60	.00	.00	.00	.00	13	5	10	1	1	9	2	2.96	7.41	997.8
1 5.5 1 2	.70	.70	1.70 .70	.50	.50	2.20	1.70	1.90	.00	.00	.00	14	6	11	7	1	10	2	4.16	7.41	1276.8
2 .5 1 2	.60	.60	1.00 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	9	2	7	1	1	9	1	2.60	7.41	741.6
3	.60	.60	1.30 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	9	3	7	1	1	9	1	2.96	7.41	764.7
2 2.5 1 2	.60	.60	1.00 .60	.45	.45	1.30	1.60	.00	.00	.00	.00	11	3	8	1	1	9	1	2.60	7.41	816.2
2	.70	.60	1.50 .60	.45	.45	1.30	1.60	.00	.00	.00	.00	12	4	8	1	1	9	1	3.32	7.41	906.4
2 4.0 1 2	.60	.60	1.20 .60	.45	.45	1.60	1.60	1.70	.00	.00	.00	12	4	9	4	1	9	2	2.84	7.41	928.6
2 5.5 1 2	.70	.60	1.40 .60	.45	.45	1.30	1.60	1.95	.00	.00	.00	14	6	10	7	1	9	2	3.20	7.41	1104.4
2 6.5 1 2	.80	.70	1.70 .70	.50	.50	2.20	1.70	2.30	.00	.00	.00	14	6	11	9	1	10	2	4.30	7.41	1317.6
2 7.0 1 2	.90	.80	1.90 .80	.55	.55	2.30	1.80	2.45	.00	.00	.00	14	6	11	9	1	10	2	5.39	7.41	1372.9
3 .5 1 2	.60	.60	1.00 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	8	3	7	1	1	9	1	2.60	7.41	732.3
3	.60	.60	1.10 .60	.45	.45	1.05	1.60	.00	.00	.00	.00	8	4	7	1	1	9	1	2.72	7.41	742.5
3 2.5 1 2	.60	.60	1.00 .60	.45	.45	1.05	1.60	1.65	.00	.00	.00	10	3	7	2	1	9	2	2.60	7.41	766.9
2	.60	.60	1.20 .60	.45	.45	1.05	1.60	1.65	.00	.00	.00	10	4	7	2	1	9	2	2.84	7.41	805.4
3	1.10	.80	2.00 .80	.55	.55	1.25	1.80	1.85	.00	.00	.00	10	2	7	2	1	9	2	5.87	7.41	903.7
3 4.0 1 2	.60	.60	1.00 .60	.45	.45	1.30	1.60	1.90	.00	.00	.00	11	3	8	5	1	9	2	2.60	7.41	846.6
2	.90	.65	1.60 .65	.45	.45	1.35	1.65	1.95	.00	.00	.00	12	4	9	5	1	9	2	3.99	7.41	966.5
3 5.5 1 2	.60	.60	1.20 .60	.45	.45	1.60	1.60	2.20	.00	.00	.00	12	4	9	9	1	9	2	2.84	7.41	967.8
3 6.5 1 2	.80	.60	1.40 .60	.45	.45	1.30	1.60	2.30	.00	.00	.00	14	6	10	9	1	9	2	3.32	7.41	1142.5
3 7.0 1 2	.80	.60	1.50 .65	.45	.45	1.30	1.60	2.20	.00	.00	.00	14	6	10	10	1	9	2	3.59	7.41	1167.3

VALORES COMUNES AL TIPO 18
 EP= .68 EA= .45 LT= .47 L0=11.80 DISTANCIA JUNTAS: 20.5
 TIPOS ARMADURAS: 90= 9 #H= 5 #I= 5 #J= 7

ARCO DE MEDIO PUNTO TIPO 18
 LH= 8.50 LV= 2.10

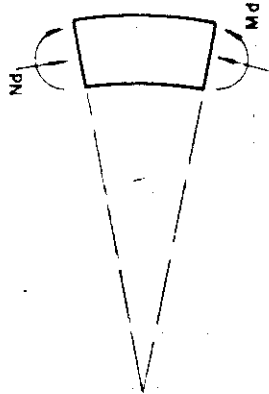
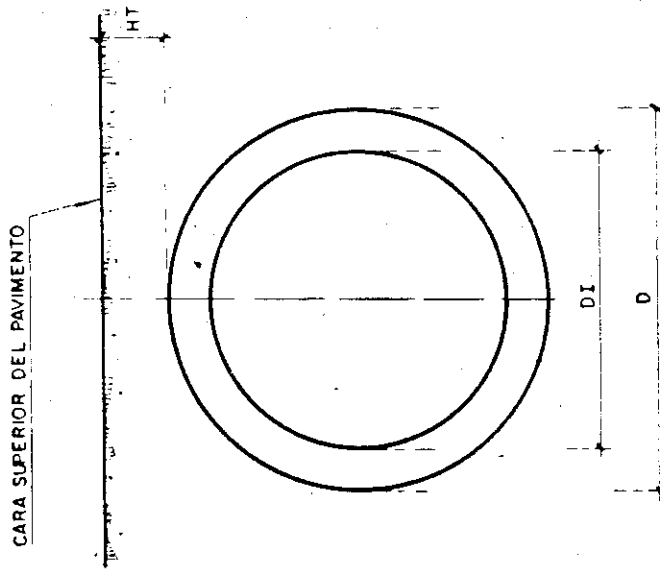
CARACTER. GEOTECNICAS T HT TI TC	DIMENSIONES				LONGITUDES DE ARMADURAS									TIPOS DE ARMADURA												MEDICIONES POR M		
	VI .60	EZ .70	VE .70	EZE .70	L1 .50	L2 .50	L3 1.40	L4 1.70	L5 .00	L6 .00	L7 .00	L8 .00	L9 .75	8A 8	8B 3	8C 0	8E 1	8F 1	8G 9	8K 1	M-Z 3.19	M-A 8.81	ACERO 888.2					
1 .5 1 2	.60	.70	1.00	.70	.50	.50	1.40	1.70	.00	.00	.00	.00	.75	8	3	0	1	1	9	1	3.19	8.81	888.2					
2 .5 1 2	.60	.70	1.20	.70	.50	.50	1.40	1.70	.00	.00	.00	.00	.75	9	4	0	1	1	9	1	3.47	8.81	919.8					
3 .5 1 2	.80	.70	1.70	.70	.50	.50	1.40	1.70	.00	.00	.00	.00	.75	10	3	8	1	1	9	1	4.45	8.81	988.1					
1 2.5 1 2	.60	.70	1.10	.70	.50	.50	1.70	2.30	.00	.00	.00	.00	.15	11	3	9	4	1	10	1	3.33	8.81	1033.6					
2 2.5 1 2	.90	.80	1.90	.80	.55	.55	1.40	1.80	2.40	.00	.00	.00	.15	12	4	9	4	1	10	1	5.57	8.81	1184.2					
1 4.0 1 2	.60	.70	1.40	.70	.50	.50	1.40	1.70	2.40	.00	.00	.00	.15	13	5	10	5	1	10	2	3.75	8.81	1225.0					
1 5.5 1 2	.60	.75	1.80	.75	.50	.50	2.25	1.75	2.70	.00	.00	.430	.75	14	6	11	9	7	12	2	4.92	8.81	1632.2					
2 .5 1 2	.60	.70	1.00	.70	.50	.50	1.40	1.70	.00	.00	.00	.00	.75	8	5	8	1	1	9	1	3.19	8.81	897.8					
3 .5 1 2	.80	.70	1.50	.70	.50	.50	1.40	1.70	.00	.00	.00	.00	.75	9	5	8	1	1	9	1	4.17	8.81	958.7					
2 2.5 1 2	.60	.70	1.00	.70	.50	.50	1.40	1.70	2.30	.00	.00	.00	.75	10	5	8	4	1	9	2	3.19	8.81	978.2					
2 2.5 1 2	.60	.70	1.50	.70	.50	.50	1.40	1.70	2.30	.00	.00	.00	.75	11	5	8	4	1	9	2	4.17	8.81	1056.9					
2 4.0 1 2	.60	.70	1.20	.70	.50	.50	1.70	1.70	2.45	.00	.00	.00	.15	11	5	9	7	1	10	2	3.47	8.81	1093.5					
2 5.5 1 2	.80	.70	1.50	.70	.50	.50	1.40	1.70	2.75	.00	.00	.00	.75	13	5	10	9	1	11	2	4.17	8.81	1358.3					
2 6.5 1 2	.90	.75	1.80	.75	.50	.50	2.25	1.75	2.75	.00	.00	.430	.75	14	6	11	10	7	11	2	5.07	8.81	1635.5					
2 7.0 1 2	1.10	.80	1.90	.80	.55	.55	2.30	1.80	3.25	.00	.00	.430	.75	14	6	11	11	7	12	2	5.89	8.81	1751.3					
3 .5 1 2	.60	.70	1.00	.70	.50	.50	1.40	1.70	2.30	.00	.00	.00	.75	7	6	8	4	1	7	2	3.19	8.81	933.4					
3 2.5 1 2	.80	.70	1.10	.70	.50	.50	1.40	1.70	2.30	.00	.00	.00	.75	8	5	8	4	1	9	2	3.61	8.81	960.6					
3 4.0 1 2	.60	.70	1.00	.70	.50	.50	1.40	1.70	2.40	.00	.00	.00	.75	8	6	8	7	1	9	2	3.19	8.81	965.1					
3 4.0 1 2	1.10	.70	1.70	.70	.50	.50	1.40	1.70	2.75	.00	.00	.00	.75	9	6	8	7	1	9	2	3.75	8.81	1006.7					
3 5.5 1 2	.60	.70	1.10	.70	.50	.50	1.40	1.70	2.75	.00	.00	.00	.75	10	6	8	9	1	9	2	3.19	8.81	1031.4					
3 6.5 1 2	.90	.70	1.40	.70	.50	.50	1.40	1.70	2.75	.00	.00	.00	.75	12	5	8	9	1	9	2	4.87	8.81	1192.1					
3 7.0 1 2	.60	.70	1.10	.70	.50	.50	1.40	1.70	3.10	.00	.00	.00	.15	11	5	8	11	1	10	2	3.61	8.81	1144.4					
3 7.0 1 2	1.00	.70	1.50	.70	.50	.50	1.70	1.70	3.20	.00	.00	.00	.15	13	6	9	11	1	10	2	4.17	8.81	1321.6					
3 7.0 1 2	1.00	.70	1.50	.70	.50	.50	1.40	1.70	3.00	.00	.00	.00	.75	13	5	10	12	1	11	2	4.45	8.81	1459.6					

DIRECCION GENERAL DE CARRITERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 25

VALORES COMUNES AL TIPO 19										ARCO DE MEDIO PUNTO TIPO 19												
EP= .74 EA= .45 LT= .47 LB=11.80 DISTANCIA JUNTAS: 22.0										LH=8.50												
TIPOS ARMADURAS #M= 9 #J= 5 #JM= 7										LV=2.70												
CARACTER. GEOTECHNICAS T HT TT TC	DIMENSIONES			LONGITUDES DE ARMADURAS							TIPOS DE ARMADURA			MEDICIONES POR M								
	VI	EZ	VE	EZE	L1	L2	L3	L4	L5	L6	L7	L9	#A	#B	#C	#E	#F	#G	#K	H-Z	M-A	ACERO
1 .5 1 2	1	.60	.75	1.00	.75	.50	1.45	1.75	.00	.00	.00	8.75	6	5	8	1	1	9	1	3.51	9.68	967.7
	2	.60	.75	1.20	.75	.50	1.45	1.75	.00	.00	.00	8.75	6	5	8	1	1	9	1	3.81	9.68	980.2
	3	.90	.80	1.50	.90	.55	1.50	1.80	.00	.00	.00	8.75	10	4	8	1	1	9	1	5.66	9.68	1092.1
1 2.5 1 2	1	.60	.75	1.10	.75	.50	1.75	1.75	2.60	.00	.00	8.15	10	5	9	4	1	10	2	3.66	9.68	1124.5
	2	1.00	.80	2.00	.80	.55	1.80	1.80	2.65	.00	.00	8.15	12	4	9	4	1	10	2	5.98	9.68	1308.1
1 4.0 1 2	1	.60	.75	1.40	.75	.50	1.45	1.75	2.70	.00	.00	9.75	12	6	10	7	1	11	2	4.11	9.68	1345.4
1 5.5 1 2	1	.90	.75	1.80	.75	.50	2.25	1.75	3.00	.00	4.30	8.75	14	6	11	9	7	12	2	5.16	9.68	1741.9
2 .5 1 2	1 2	.60	.75	1.00	.75	.50	1.45	1.75	2.60	.00	.00	8.75	8	6	8	4	1	9	1	3.51	9.68	996.7
	3	.90	.75	1.50	.75	.50	1.45	1.75	2.60	.00	.00	8.75	8	6	8	4	1	9	1	4.71	9.68	1048.0
2 2.5 1 2	1	.60	.75	1.00	.75	.50	1.45	1.75	2.70	.00	.00	8.15	9	6	8	7	1	10	2	3.51	9.68	1083.2
	2	.90	.75	1.60	.75	.50	1.45	1.75	2.70	.00	.00	8.15	11	6	8	7	1	10	2	4.86	9.68	1202.5
2 4.0 1 2	1	.70	.75	1.10	.75	.50	1.75	1.75	3.00	.00	.00	8.15	11	6	9	9	1	10	2	3.81	9.68	1217.0
2 5.5 1 2	1	.90	.75	1.50	.75	.50	1.45	1.75	3.40	.00	4.30	9.75	13	6	10	11	5	11	2	4.71	9.68	1572.6
2 6.5 1 2	1	1.00	.75	1.80	.75	.50	1.45	1.75	3.20	.00	4.30	8.75	14	6	10	12	7	12	2	5.31	9.68	1754.8
2 7.0 1 2	1	1.10	.80	2.00	.80	.55	2.30	1.60	3.30	.00	4.30	8.75	14	6	11	12	7	12	2	6.14	9.68	1891.2
3 .5 1 2	1	.60	.75	1.00	.75	.50	1.45	1.75	2.70	.00	.00	8.75	7	6	8	7	1	9	2	3.51	9.68	1033.5
	2	.70	.75	1.00	.75	.50	1.45	1.75	2.70	.00	.00	8.75	7	6	8	7	1	9	2	3.66	9.68	1039.4
	3	.90	.75	1.10	.75	.50	1.45	1.75	2.70	.00	.00	8.75	8	6	8	7	1	9	2	4.11	9.68	1073.6
3 2.5 1 2	1	.60	.75	1.00	.75	.50	1.45	1.75	2.95	.00	.00	8.75	6	6	8	9	1	9	2	3.51	9.68	1078.1
	2	1.00	.75	1.20	.75	.50	1.45	1.75	2.95	.00	.00	8.75	9	6	8	9	1	9	2	4.41	9.68	1133.7
3 4.0 1 2	1	.70	.75	1.00	.75	.50	1.45	1.75	2.95	.00	.00	8.15	9	6	8	10	1	10	2	3.66	9.68	1140.6
	2	1.20	.75	1.70	.75	.50	1.45	1.75	2.95	.00	.00	8.15	11	6	8	10	1	10	2	5.46	9.68	1286.0
3 5.5 1 2	1	.90	.75	1.40	.75	.50	1.45	1.75	3.25	.00	.00	8.15	11	6	8	12	1	10	2	4.11	9.68	1279.1
3 6.5 1 2	1	1.00	.75	1.30	.75	.50	1.45	1.75	3.30	.00	.00	9.75	12	6	8	12	1	11	2	4.56	9.68	1408.2
3 7.0 1 2	1	1.10	.75	1.50	.75	.50	1.75	1.75	3.60	.00	4.30	9.75	13	6	9	14	5	11	2	5.01	9.68	1695.9

DIRECCION GENERAL DE CARRETERAS COLECCION DE ARCOS DE MEDIO PUNTO AM 26

3.1.4 Tubos rígidos



SENTIDO POSITIVO DE ESFUERZOS

CONTROL DE CALIDAD

EJECUCION	DAÑOS MEDIOS	NIVEL	COEFICIENTE
		NORMAL	$\gamma_f = 1,60$

NOTA: Ver definición de características geotécnicas en plano CP 1

TUBO RIGIDO TIPO 1 DI = 1,50

CARACTERISTICAS GEOTECNICAS		ESFUERZOS DE CALCULO													
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3					
		HT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)
0.50	1	2	1 AL 4 5 AL 8	2.32 2.28	1.02 1.02	1.99 1.96	8.98 8.87	2.24 2.24	1.10 1.10	1.93 1.93	8.78 8.78	2.17 2.17	1.21 1.21	1.86 1.86	8.59 8.59
1.50	1	2	1 AL 4 5 AL 8	3.23 2.99	1.60 1.55	2.77 2.57	12.65 11.78	3.05 3.05	1.72 1.72	2.62 2.62	12.12 12.12	2.87 2.87	1.89 1.89	2.45 2.45	11.59 11.59
2.50	1	1	1 AL 4 5 AL 8	4.12 3.45	2.16 2.02	3.54 2.96	16.23 13.75	3.82 3.82	2.33 2.33	3.27 3.27	15.30 15.30	3.51 3.51	2.56 2.56	2.99 2.99	14.36 14.36
2.50	2	1	1 AL 4 5 AL 8	4.09 3.45	2.16 2.02	3.51 2.96	16.10 13.75	3.79 3.79	2.32 2.32	3.24 3.24	15.17 15.17	3.48 3.48	2.56 2.56	2.97 2.97	14.25 14.25
3.50	1	1	1 AL 4 5 AL 8	5.25 3.91	2.78 2.50	4.51 3.35	20.72 15.75	4.81 4.81	2.99 2.99	4.12 4.12	19.29 19.29	4.35 4.35	3.27 3.27	3.71 3.71	17.86 17.86
3.50	2	1	1 AL 4 5 AL 8	4.78 3.91	2.68 2.50	4.10 3.35	18.97 15.75	4.38 4.38	2.89 2.89	3.75 3.75	17.70 17.70	3.96 3.96	3.19 3.19	3.37 3.37	16.43 16.43
4.50	1	1	1 AL 4 5 AL 8	6.50 4.43	3.43 2.98	5.57 3.78	25.60 17.93	5.90 5.90	3.66 3.66	5.05 5.05	23.66 23.66	5.28 5.28	4.01 4.01	4.51 4.51	21.73 21.73
4.50	2	1	1 AL 4 5 AL 8	5.53 4.43	3.22 2.98	4.74 3.78	22.02 17.93	5.02 5.02	3.48 3.48	4.29 4.29	20.41 20.41	4.50 4.50	3.84 3.84	3.82 3.82	18.80 18.80
5.50	1	1	1 AL 4 5 AL 8	7.78 4.99	4.08 3.48	6.68 4.26	30.65 20.30	7.04 7.04	4.35 4.35	6.02 6.02	28.21 28.21	6.27 6.27	4.75 4.75	5.34 5.34	25.76 25.76
5.50	2	1	1 AL 4 5 AL 8	6.33 4.99	3.77 3.48	5.42 4.26	25.26 20.30	5.72 5.72	4.07 4.07	4.88 4.88	23.31 23.31	5.08 5.08	4.50 4.50	4.31 4.31	21.36 21.36
6.50	1	1	1 AL 4 5 AL 8	9.15 5.84	4.75 4.00	7.86 4.81	36.01 22.98	8.26 8.26	5.06 5.06	7.07 7.07	33.06 33.06	7.33 7.33	5.51 5.51	6.25 6.25	30.10 30.10
6.50	2	1	1 AL 4 5 AL 8	7.22 5.64	4.33 4.00	6.18 4.81	28.82 22.98	6.50 6.50	4.68 4.68	5.54 5.54	26.52 26.52	5.75 5.75	5.17 5.17	4.88 4.88	24.23 24.23
7.50	1	1	1 AL 4 5 AL 8	10.58 6.35	5.43 4.53	9.08 5.42	41.58 25.89	9.53 9.53	5.77 5.77	8.16 8.16	38.12 38.12	8.46 8.46	6.28 6.28	7.21 7.21	34.67 34.67
7.50	2	1	1 AL 4 5 AL 8	8.16 6.35	4.91 4.53	6.99 5.42	32.61 25.89	7.34 7.34	5.30 5.30	6.26 6.26	29.96 29.96	6.48 6.48	5.86 5.86	5.50 5.50	27.32 27.32
8.50	1	1	1 AL 4 5 AL 8	12.01 7.06	6.11 5.06	10.31 6.02	47.15 28.80	10.81 10.81	6.49 6.49	9.26 9.26	43.19 43.19	9.58 9.58	7.06 7.06	8.17 8.17	39.23 39.23
8.50	2	1	1 AL 4 5 AL 8	9.10 7.06	5.49 5.06	7.80 6.02	36.39 28.80	8.17 8.17	5.93 5.93	6.97 6.97	33.40 33.40	7.20 7.20	6.55 6.55	6.11 6.11	30.42 30.42

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR 2

TUBO RIGIDO TIPO 1 DI=1,50

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTECHNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3					
HT	TI TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND		
9.50	1 AL 4	13.43	6.79	11.53	52.72	12.09	7.21	10.35	48.25	10.70	7.83	9.13	43.78	10.70	7.83	9.13	43.78		
	5 AL 8	7.77	5.58	6.63	31.71	12.09	7.21	10.35	48.25	10.70	7.83	9.13	43.78	10.70	7.83	9.13	43.78		
9.50	2 AL 4	10.05	6.07	8.60	40.17	9.01	6.55	7.69	36.84	7.93	7.24	6.73	33.52	7.93	7.24	6.73	33.52		
	5 AL 8	7.77	5.58	6.63	31.71	9.01	6.55	7.69	36.84	7.93	7.24	6.73	33.52	7.93	7.24	6.73	33.52		
10.50	1 AL 4	14.86	7.47	12.76	58.29	13.36	7.93	11.45	53.31	11.82	8.60	10.09	48.34	11.82	8.60	10.09	48.34		
	5 AL 8	8.48	6.11	7.23	34.62	13.36	7.93	11.45	53.31	11.82	8.60	10.09	48.34	11.82	8.60	10.09	48.34		
10.50	2 AL 4	10.99	6.65	9.41	43.96	9.85	7.18	8.40	40.28	8.66	7.93	7.35	35.61	8.66	7.93	7.35	35.61		
	5 AL 8	8.48	6.11	7.23	34.62	9.85	7.18	8.40	40.28	8.66	7.93	7.35	35.61	8.66	7.93	7.35	35.61		

TUBO RIGIDO TIPO 2 DI=1,75														
ESFUERZOS DE CALCULO														
CARACTERISTICAS GEOTECNICAS			TERRAPLEN 1			TERRAPLEN 2			TERRAPLEN 3					
			MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND
.50	1 2	1 AL 4	3.26	1.28	2.00	10.87	3.16	1.38	2.71	10.64	3.05	1.52	2.61	10.40
		5 AL 8	3.22	1.27	2.77	10.76	3.16	1.38	2.71	10.64	3.05	1.52	2.61	10.40
1.50	1 2	1 AL 4	4.46	1.94	3.03	15.02	4.23	2.10	3.62	14.41	3.97	2.31	3.39	13.80
		5 AL 8	4.19	1.89	3.60	14.15	4.23	2.10	3.62	14.41	3.97	2.31	3.39	13.80
2.50	1 2	1 AL 4	5.58	2.58	4.79	18.90	5.18	2.79	4.43	17.84	4.76	3.08	4.06	16.77
		5 AL 8	4.81	2.44	4.12	16.45	5.18	2.79	4.43	17.84	4.76	3.08	4.06	16.77
3.50	1	1 AL 4	7.02	3.29	6.02	23.78	6.43	3.54	5.50	22.18	5.82	3.89	4.95	20.58
		5 AL 8	5.44	3.00	4.65	18.78	6.43	3.54	5.50	22.18	5.82	3.89	4.95	20.58
3.50	2	1 AL 4	6.64	3.22	5.69	22.58	6.08	3.47	5.20	21.08	5.51	3.84	4.69	19.59
		5 AL 8	5.44	3.00	4.65	18.78	6.08	3.47	5.20	21.08	5.51	3.84	4.69	19.59
4.50	1	1 AL 4	8.60	4.03	7.45	29.41	7.89	4.32	6.75	27.22	7.07	4.75	6.02	25.03
		5 AL 8	6.14	3.57	5.25	21.33	7.89	4.32	6.75	27.22	7.07	4.75	6.02	25.03
4.50	2	1 AL 4	7.65	3.84	6.56	26.14	6.96	4.15	5.94	24.25	6.23	4.59	5.30	22.35
		5 AL 8	6.14	3.57	5.25	21.33	6.96	4.15	5.94	24.25	6.23	4.59	5.30	22.35
5.50	1	1 AL 4	10.44	4.79	8.96	35.32	9.44	5.13	8.08	32.53	8.41	5.61	7.17	29.75
		5 AL 8	6.91	4.15	5.90	24.09	9.44	5.13	8.08	32.53	8.41	5.61	7.17	29.75
5.50	2	1 AL 4	8.74	4.48	7.49	29.92	7.90	4.85	6.74	27.63	7.02	5.36	5.96	25.33
		5 AL 8	6.91	4.15	5.90	24.09	7.90	4.85	6.74	27.63	7.02	5.36	5.96	25.33
6.50	1	1 AL 4	12.31	5.58	10.56	41.58	11.11	5.95	9.50	38.20	9.86	6.50	8.41	34.82
		5 AL 8	7.79	4.75	6.65	27.22	11.11	5.95	9.50	38.20	9.86	6.50	8.41	34.82
6.50	2	1 AL 4	9.94	5.14	8.51	34.07	8.96	5.56	7.65	31.38	7.93	6.15	6.73	28.69
		5 AL 8	7.79	4.75	6.65	27.22	8.96	5.56	7.65	31.38	7.93	6.15	6.73	28.69
7.50	1	1 AL 4	14.25	6.37	12.23	48.09	12.85	6.79	11.00	44.12	11.40	7.40	9.71	40.15
		5 AL 8	8.76	5.37	7.47	30.62	12.85	6.79	11.00	44.12	11.40	7.40	9.71	40.15
7.50	2	1 AL 4	11.23	5.82	9.62	38.49	10.10	6.29	8.62	35.39	8.92	6.95	7.57	32.30
		5 AL 8	8.76	5.37	7.47	30.62	10.10	6.29	8.62	35.39	8.92	6.95	7.57	32.30
8.50	1	1 AL 4	16.20	7.17	13.90	54.60	14.59	7.63	12.49	50.04	12.93	8.31	11.02	45.48
		5 AL 8	9.72	5.98	8.30	34.02	14.59	7.63	12.49	50.04	12.93	8.31	11.02	45.48
8.50	2	1 AL 4	12.52	6.50	10.72	42.90	11.24	7.02	9.59	39.40	9.92	7.76	8.41	35.91
		5 AL 8	9.72	5.98	8.30	34.02	11.24	7.02	9.59	39.40	9.92	7.76	8.41	35.91
9.50	1	1 AL 4	18.14	7.96	15.57	61.10	16.33	8.46	13.98	55.95	14.45	9.21	12.33	50.80
		5 AL 8	10.69	6.60	9.12	37.41	16.33	8.46	13.98	55.95	14.45	9.21	12.33	50.80

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR. 4

TUBO RIGIDO TIPO 2 DI=1,75

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTEKNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3					
		MD(+)	MD	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND		
9.50	2	13.80	7.17	11.02	47.31	12.38	7.74	10.57	43.42	10.91	8.56	9.25	39.52						
	5	10.69	6.60	9.12	37.41	12.38	7.74	10.57	43.42	10.91	8.56	9.25	39.52						
10.50	1	20.08	8.76	17.24	67.59	18.06	9.30	15.47	61.85	15.96	10.11	13.63	56.11						
	5	11.66	7.22	9.94	40.81	18.06	9.30	15.47	61.85	15.96	10.11	13.63	56.11						
10.50	2	15.09	7.85	12.92	51.73	13.53	8.47	11.54	47.43	11.90	9.36	10.10	43.13						
	5	11.66	7.22	9.94	40.81	13.53	8.47	11.54	47.43	11.90	9.36	10.10	43.13						

TUBO RIGIDO TIPO 3 DI=2,00

CARACTERÍSTICAS GEOTECNICAS		ESFUERZOS DE CALCULO													
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3					
		MT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)
0.50	1	2	1 AL 4	4.40	1.56	3.78	12.88	4.26	1.69	3.66	12.61	4.11	1.87	3.52	12.33
			5 AL 8	4.36	1.55	3.75	12.76	4.26	1.69	3.66	12.61	4.11	1.87	3.52	12.33
1.50	1	2	1 AL 4	5.94	2.31	5.10	17.52	5.62	2.50	4.82	16.82	5.29	2.77	4.52	16.12
			5 AL 8	5.62	2.26	4.82	16.64	5.62	2.50	4.82	16.82	5.29	2.77	4.52	16.12
2.50	1	2	1 AL 4	7.31	3.03	6.27	21.70	6.79	3.28	5.81	20.51	6.25	3.63	5.32	19.32
			5 AL 8	6.43	2.89	5.51	19.27	6.79	3.28	5.81	20.51	6.25	3.63	5.32	19.32
3.50	1	1	1 AL 4	9.02	3.81	7.73	26.84	8.27	4.11	7.07	25.07	7.49	4.54	6.37	23.30
			5 AL 8	7.26	3.53	6.21	21.94	8.27	4.11	7.07	25.07	7.49	4.54	6.37	23.30
3.50	2	1	1 AL 4	8.83	3.78	7.57	26.31	8.10	4.09	6.92	24.59	7.33	4.52	6.24	22.87
			5 AL 8	7.26	3.53	6.21	21.94	8.10	4.09	6.92	24.59	7.33	4.52	6.24	22.87
4.50	1	1	1 AL 4	11.13	4.65	9.54	33.08	10.12	5.00	8.65	30.65	9.07	5.51	7.72	28.23
			5 AL 8	8.17	4.18	6.98	24.85	10.12	5.00	8.65	30.65	9.07	5.51	7.72	28.23
4.50	2	1	1 AL 4	10.16	4.49	8.70	30.38	9.24	4.86	7.89	28.21	8.28	5.38	7.04	26.03
			5 AL 8	8.17	4.18	6.98	24.85	9.24	4.86	7.89	28.21	8.28	5.38	7.04	26.03
5.50	1	1	1 AL 4	13.43	5.52	11.52	39.85	12.15	5.92	10.39	36.75	10.83	6.50	9.22	33.64
			5 AL 8	9.17	4.84	7.83	28.01	12.15	5.92	10.39	36.75	10.83	6.50	9.22	33.64
5.50	2	1	1 AL 4	11.58	5.23	9.92	34.71	10.47	5.65	8.94	32.07	9.32	6.26	7.91	29.43
			5 AL 8	9.17	4.84	7.83	28.01	10.47	5.65	8.94	32.07	9.32	6.26	7.91	29.43
6.50	1	1	1 AL 4	15.87	6.42	13.62	47.02	14.33	6.86	12.26	43.23	12.73	7.51	10.84	39.45
			5 AL 8	10.33	5.53	8.81	31.59	14.33	6.86	12.26	43.23	12.73	7.51	10.84	39.45
6.50	2	1	1 AL 4	13.15	5.98	11.26	39.45	11.86	6.47	10.12	36.35	10.50	7.16	8.92	33.26
			5 AL 8	10.33	5.53	8.81	31.59	11.86	6.47	10.12	36.35	10.50	7.16	8.92	33.26
7.50	1	1	1 AL 4	18.42	7.33	15.80	54.47	16.61	7.82	14.21	50.01	14.73	8.54	12.55	45.55
			5 AL 8	11.59	6.23	9.89	35.47	16.61	7.82	14.21	50.01	14.73	8.54	12.55	45.55
7.50	2	1	1 AL 4	14.83	6.75	12.70	44.49	13.35	7.30	11.39	40.94	11.80	8.07	10.01	37.39
			5 AL 8	11.59	6.23	9.89	35.47	13.35	7.30	11.39	40.94	11.80	8.07	10.01	37.39
8.50	1	1	1 AL 4	20.96	8.24	17.99	61.91	18.88	8.78	16.16	56.78	16.74	9.58	14.26	51.64
			5 AL 8	12.85	6.94	10.97	39.35	18.88	8.78	16.16	56.78	16.74	9.58	14.26	51.64
8.50	2	1	1 AL 4	16.51	7.52	14.14	49.54	14.84	8.13	12.66	45.53	13.09	8.99	11.11	41.52
			5 AL 8	12.85	6.94	10.97	39.35	14.84	8.13	12.66	45.53	13.09	8.99	11.11	41.52
9.50	1	1	1 AL 4	23.50	9.15	20.17	69.35	21.15	9.74	18.11	63.54	18.73	10.61	15.97	57.73
			5 AL 8	14.11	7.64	12.04	43.23	21.15	9.74	18.11	63.54	18.73	10.61	15.97	57.73

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR. 8

TUBO RIGIDO TIPO 3 DI = 2,00

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTECHNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3					
		HT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)
9.50	2	1 AL 4 5 AL 8	18.19	8.30	15.57	54.58	16.33	8.96	13.93	50.11	14.39	9.91	12.21	45.65					
			14.11	7.64	12.04	43.23	16.33	8.96	13.93	50.11	14.39	9.91	12.21	45.65					
10.50	1	1 AL 4 5 AL 8	26.04	10.06	22.35	76.78	23.43	10.69	20.06	70.29	20.73	11.64	17.68	63.81					
			15.37	8.35	13.12	47.11	23.43	10.69	20.06	70.29	20.73	11.64	17.68	63.81					
10.50	2	1 AL 4 5 AL 8	19.87	9.07	17.01	59.62	17.82	9.80	15.20	54.70	15.69	10.83	13.31	49.78					
			15.37	8.35	13.12	47.11	17.82	9.80	15.20	54.70	15.69	10.83	13.31	49.78					

TUBO RIGIDO TIPO 4 DI = 2,25

CARACTERISTICAS GEOTECHNICAS		ESFUERZOS DE CALCULO																
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3								
		HT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND		
0.50	1 2	1 AL 4	5.76	1.87	4.95	15.01	5.57	2.03	4.78	14.69	5.37	2.24	4.59	14.37	5.37	2.24	4.59	14.37
		5 AL 8	5.71	1.86	4.90	14.89	5.57	2.03	4.78	14.69	5.37	2.24	4.59	14.37	5.37	2.24	4.59	14.37
1.50	1 2	1 AL 4	7.66	2.78	6.58	20.14	7.26	2.93	6.21	19.35	6.83	3.25	5.83	18.56	6.83	3.25	5.83	18.56
		5 AL 8	7.31	2.65	6.27	19.26	7.26	2.93	6.21	19.35	6.83	3.25	5.83	18.56	6.83	3.25	5.83	18.56
2.50	1 2	1 AL 4	9.31	3.50	7.98	24.63	8.66	3.80	7.40	23.30	7.97	4.21	6.79	21.98	7.97	4.21	6.79	21.98
		5 AL 8	8.33	3.36	7.13	22.21	8.66	3.80	7.40	23.30	7.97	4.21	6.79	21.98	7.97	4.21	6.79	21.98
3.50	1 2	1 AL 4	11.33	4.36	9.71	30.04	10.40	4.72	8.88	28.10	9.42	5.22	8.01	26.16	9.42	5.22	8.01	26.16
		5 AL 8	9.37	4.08	8.02	25.21	10.40	4.72	8.88	28.10	9.42	5.22	8.01	26.16	9.42	5.22	8.01	26.16
4.50	1	1 AL 4	13.87	5.29	11.89	36.75	12.63	5.70	10.79	34.10	11.32	6.29	9.63	31.45	11.32	6.29	9.63	31.45
		5 AL 8	10.53	4.81	9.00	28.48	12.63	5.70	10.79	34.10	11.32	6.29	9.63	31.45	11.32	6.29	9.63	31.45
4.50	2	1 AL 4	13.07	5.17	11.19	34.75	11.89	5.60	10.15	32.29	10.66	6.20	9.06	29.82	10.66	6.20	9.06	29.82
		5 AL 8	10.53	4.81	9.00	28.48	11.89	5.60	10.15	32.29	10.66	6.20	9.06	29.82	10.66	6.20	9.06	29.82
5.50	1	1 AL 4	16.73	6.26	14.34	44.24	15.15	6.73	12.95	40.83	13.50	7.40	11.49	37.43	13.50	7.40	11.49	37.43
		5 AL 8	11.80	5.56	10.07	32.04	15.15	6.73	12.95	40.83	13.50	7.40	11.49	37.43	13.50	7.40	11.49	37.43
5.50	2	1 AL 4	14.86	5.99	12.73	39.61	13.45	6.49	11.48	36.63	11.97	7.18	10.17	33.65	11.97	7.18	10.17	33.65
		5 AL 8	11.80	5.56	10.07	32.04	13.45	6.49	11.48	36.63	11.97	7.18	10.17	33.65	11.97	7.18	10.17	33.65
6.50	1	1 AL 4	19.83	7.27	17.01	52.32	17.91	7.79	15.31	48.15	15.91	8.54	13.55	43.99	15.91	8.54	13.55	43.99
		5 AL 8	13.26	6.33	11.32	36.07	17.91	7.79	15.31	48.15	15.91	8.54	13.55	43.99	15.91	8.54	13.55	43.99
6.50	2	1 AL 4	16.85	6.84	14.43	44.95	15.20	7.40	12.97	41.46	13.48	8.20	11.44	37.96	13.48	8.20	11.44	37.96
		5 AL 8	13.26	6.33	11.32	36.07	15.20	7.40	12.97	41.46	13.48	8.20	11.44	37.96	13.48	8.20	11.44	37.96
7.50	1	1 AL 4	23.06	8.29	19.78	60.71	20.80	8.87	17.79	55.78	18.45	9.70	15.72	50.86	18.45	9.70	15.72	50.86
		5 AL 8	14.85	7.12	12.68	40.43	20.80	8.87	17.79	55.78	18.45	9.70	15.72	50.86	18.45	9.70	15.72	50.86
7.50	2	1 AL 4	18.98	7.71	16.25	50.63	17.09	8.34	14.58	46.61	15.12	9.23	12.83	42.60	15.12	9.23	12.83	42.60
		5 AL 8	14.85	7.12	12.68	40.43	17.09	8.34	14.58	46.61	15.12	9.23	12.83	42.60	15.12	9.23	12.83	42.60
8.50	1	1 AL 4	26.28	9.32	22.55	69.10	23.68	9.94	20.26	63.40	20.99	10.86	17.88	57.71	20.99	10.86	17.88	57.71
		5 AL 8	16.45	7.92	14.04	44.79	23.68	9.94	20.26	63.40	20.99	10.86	17.88	57.71	20.99	10.86	17.88	57.71
8.50	2	1 AL 4	21.10	8.58	18.07	56.30	18.97	9.27	16.19	51.77	16.76	10.26	14.22	47.25	16.76	10.26	14.22	47.25
		5 AL 8	16.45	7.92	14.04	44.79	18.97	9.27	16.19	51.77	16.76	10.26	14.22	47.25	16.76	10.26	14.22	47.25
9.50	1	1 AL 4	29.49	10.34	25.31	77.47	26.56	11.02	22.73	71.02	23.52	12.02	20.04	64.57	23.52	12.02	20.04	64.57
		5 AL 8	18.05	8.71	15.40	49.16	26.56	11.02	22.73	71.02	23.52	12.02	20.04	64.57	23.52	12.02	20.04	64.57
9.50	2	1 AL 4	23.23	9.45	19.89	61.97	20.86	10.21	17.80	56.93	18.40	11.30	15.61	51.89	18.40	11.30	15.61	51.89
		5 AL 8	18.05	8.71	15.40	49.16	20.86	10.21	17.80	56.93	18.40	11.30	15.61	51.89	18.40	11.30	15.61	51.89

TUBO RIGIDO TIPO 4 DI = 2,25

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTECNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3										
		MT	TI	TC	MD(+)	MD	MD(-)	MD(+)	MD	MD(-)	MD(+)	MD	MD(-)	MD(+)	MD	MD(-)								
10.50	3	1 AL 4 5 AL 8	28.07	11.36	9.50	32.71	29.44	12.10	25.19	26.05	13.18	22.21	29.44	12.10	25.19	26.05	13.18	22.21	29.44	12.10	25.19	26.05	13.18	22.21
			16.76	85.84	19.64	53.53	29.44	78.62	29.44	78.62	26.05	71.41	26.05	71.41	22.75	11.15	19.40	20.03	12.33	17.00	22.75	11.15	19.40	20.03
10.50	2	1 AL 4 5 AL 8	21.71	10.32	9.50	25.35	22.75	11.15	19.40	20.03	12.33	17.00	22.75	11.15	19.40	20.03	12.33	17.00	22.75	11.15	19.40	20.03	12.33	17.00
			16.76	53.53	19.64	53.53	22.75	62.09	22.75	62.09	17.00	56.54	17.00	56.54	19.40	62.09	19.40	62.09	17.00	56.54	19.40	62.09	19.40	62.09

TUBO RIGIDO TIPO 5 DI=2,50

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTECNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3						
		MD(+)		MD(-)		ND		MD(+)		MD(-)		ND		MD(+)		MD(-)		ND		
		HT	TI	TC																
.50	1 2	1 AL 4	7.34	2.20	6.30	17.26	7.10	2.39	6.00	16.89	6.83	2.65	5.84	16.52	6.83	2.65	5.84	16.52		
			7.28	2.19	6.25	17.13	7.10	2.39	6.00	16.89	6.83	2.65	5.84	16.52	6.83	2.65	5.84	16.52		
1.50	1 2	1 AL 4	9.65	3.12	6.28	22.88	9.15	3.40	7.83	22.00	8.60	3.77	7.34	21.11	8.60	3.77	7.34	21.11		
			9.25	3.07	7.93	21.98	9.15	3.40	7.83	22.00	8.60	3.77	7.34	21.11	8.60	3.77	7.34	21.11		
2.50	1 2	1 AL 4	11.60	4.00	9.94	27.68	10.80	4.35	9.23	26.22	9.95	4.83	8.47	24.76	9.95	4.83	8.47	24.76		
			10.52	3.86	9.00	25.27	10.80	4.35	9.23	26.22	9.95	4.83	8.47	24.76	9.95	4.83	8.47	24.76		
3.50	1 2	1 AL 4	13.96	4.93	11.96	33.39	12.82	5.35	10.95	31.27	11.63	5.93	9.88	29.15	11.63	5.93	9.88	29.15		
			11.81	4.66	10.09	28.60	12.82	5.35	10.95	31.27	11.63	5.93	9.88	29.15	11.63	5.93	9.88	29.15		
4.50	1	1 AL 4	16.89	5.94	14.47	40.37	15.38	6.42	13.13	37.51	13.80	7.10	11.73	34.65	13.80	7.10	11.73	34.65		
			13.23	5.47	11.30	32.24	15.38	6.42	13.13	37.51	13.80	7.10	11.73	34.65	13.80	7.10	11.73	34.65		
4.50	2	1 AL 4	16.38	5.87	14.03	39.25	14.92	6.36	12.74	36.49	13.39	7.05	11.37	33.73	13.39	7.05	11.37	33.73		
			13.23	5.47	11.30	32.24	14.92	6.36	12.74	36.49	13.39	7.05	11.37	33.73	13.39	7.05	11.37	33.73		
5.50	1	1 AL 4	20.32	7.01	17.42	48.48	18.41	7.55	15.72	44.80	16.41	8.32	13.96	41.12	16.41	8.32	13.96	41.12		
			14.80	6.30	12.63	36.18	18.41	7.55	15.72	44.80	16.41	8.32	13.96	41.12	16.41	8.32	13.96	41.12		
5.50	2	1 AL 4	18.60	6.79	15.93	44.65	16.85	7.35	14.37	41.32	15.01	8.14	12.74	37.99	15.01	8.14	12.74	37.99		
			14.80	6.30	12.63	36.18	16.85	7.35	14.37	41.32	15.01	8.14	12.74	37.99	15.01	8.14	12.74	37.99		
6.50	1	1 AL 4	24.16	8.13	20.71	57.48	21.82	8.73	18.65	52.95	19.40	9.59	16.50	48.42	19.40	9.59	16.50	48.42		
			16.60	7.16	14.17	40.66	21.82	8.73	18.65	52.95	19.40	9.59	16.50	48.42	19.40	9.59	16.50	48.42		
6.50	2	1 AL 4	21.06	7.73	18.03	50.58	19.01	8.37	16.21	46.68	16.86	9.27	14.31	42.78	16.86	9.27	14.31	42.78		
			16.60	7.16	14.17	40.66	19.01	8.37	16.21	46.68	16.86	9.27	14.31	42.78	16.86	9.27	14.31	42.78		
7.50	1	1 AL 4	28.15	9.27	24.14	66.82	25.40	9.93	21.71	61.44	22.54	10.68	19.19	56.07	22.54	10.68	19.19	56.07		
			18.57	8.04	15.85	45.51	25.40	9.93	21.71	61.44	22.54	10.68	19.19	56.07	22.54	10.68	19.19	56.07		
7.50	2	1 AL 4	23.68	8.69	20.27	56.89	21.34	9.41	18.20	52.41	18.89	10.42	16.03	47.94	18.89	10.42	16.03	47.94		
			18.57	8.04	15.85	45.51	21.34	9.41	18.20	52.41	18.89	10.42	16.03	47.94	18.89	10.42	16.03	47.94		
8.50	1	1 AL 4	32.13	10.41	27.56	76.15	28.96	11.12	24.77	69.92	25.67	12.17	21.87	63.70	25.67	12.17	21.87	63.70		
			20.54	8.92	17.53	50.36	28.96	11.12	24.77	69.92	25.67	12.17	21.87	63.70	25.67	12.17	21.87	63.70		
8.50	2	1 AL 4	26.31	9.66	22.52	63.19	23.67	10.45	20.19	58.14	20.91	11.57	17.74	53.10	20.91	11.57	17.74	53.10		
			20.54	8.92	17.53	50.36	23.67	10.45	20.19	58.14	20.91	11.57	17.74	53.10	20.91	11.57	17.74	53.10		
9.50	1	1 AL 4	36.11	11.54	30.98	85.46	32.52	12.32	27.62	78.39	28.81	13.46	24.54	71.32	28.81	13.46	24.54	71.32		
			22.51	9.80	19.21	55.21	32.52	12.32	27.62	78.39	28.81	13.46	24.54	71.32	28.81	13.46	24.54	71.32		
9.50	2	1 AL 4	28.93	10.63	24.77	69.50	26.00	11.49	22.17	63.67	22.94	12.71	19.46	58.26	22.94	12.71	19.46	58.26		
			22.51	9.80	19.21	55.21	26.00	11.49	22.17	63.67	22.94	12.71	19.46	58.26	22.94	12.71	19.46	58.26		

TUBO RIGIDO TIPO 5 DI=2,50

ESTUdios DE CALCULO

CARACTERISTICAS GEOTECNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3					
		HT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND			
10.50	1	1 AL 4	40.08	12.68	34.39	94.76	36.07	13.52	30.87	86.85	31.93	14.75	27.21	76.93					
		5 AL 8	24.49	10.69	20.89	60.06	36.07	13.52	30.87	86.85	31.93	14.75	27.21	78.93					
10.50	2	1 AL 4	31.56	11.59	27.01	75.80	26.33	12.53	24.16	69.61	24.96	13.86	21.17	63.42					
		5 AL 8	24.49	10.69	20.89	60.06	26.33	12.53	24.16	69.61	24.96	13.86	21.17	63.42					

TUBO RIGIDO TIPO 6 DI=2,75

CARACTERISTICAS GEOTECNICAS		ESFUERZOS DE CALCULO												
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3				
		MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	
0.50	1 2	1 AL 4	9.16	2.55	7.86	19.63	8.85	2.78	7.59	19.20	8.51	3.09	7.28	18.78
		5 AL 8	9.09	2.55	7.81	19.49	8.85	2.78	7.59	19.20	8.51	3.09	7.28	18.78
1.50	1 2	1 AL 4	11.92	3.57	10.23	25.74	11.30	3.89	9.67	24.76	10.63	4.32	9.06	23.78
		5 AL 8	11.48	3.52	9.84	24.83	11.30	3.89	9.67	24.76	10.63	4.32	9.06	23.78
2.50	1 2	1 AL 4	14.21	4.53	12.17	30.86	13.23	4.93	11.30	29.26	12.19	5.48	10.37	27.66
		5 AL 8	13.01	4.39	11.14	28.44	13.23	4.93	11.30	29.26	12.19	5.48	10.37	27.66
3.50	1 2	1 AL 4	16.92	5.53	14.49	36.87	15.55	6.01	13.28	34.57	14.11	6.68	11.99	32.27
		5 AL 8	14.57	5.26	12.45	32.11	15.55	6.01	13.28	34.57	14.11	6.68	11.99	32.27
4.50	1	1 AL 4	20.27	6.61	17.35	44.14	18.47	7.17	15.76	41.06	16.58	7.94	14.08	37.99
		5 AL 8	16.30	6.15	13.92	36.11	18.47	7.17	15.76	41.06	16.58	7.94	14.08	37.99
4.50	2	1 AL 4	20.13	6.60	17.24	43.88	18.35	7.15	15.66	40.82	16.47	7.93	13.99	37.77
		5 AL 8	16.30	6.15	13.92	36.11	18.35	7.15	15.66	40.82	16.47	7.93	13.99	37.77
5.50	1	1 AL 4	24.29	7.78	20.81	52.80	22.02	8.40	18.80	48.85	19.64	9.28	16.69	44.89
		5 AL 8	18.19	7.07	15.53	40.45	22.02	8.40	18.80	48.85	19.64	9.28	16.69	44.89
5.50	2	1 AL 4	22.82	7.60	19.53	49.82	20.67	8.24	17.64	46.13	18.43	9.14	15.64	42.45
		5 AL 8	18.19	7.07	15.53	40.45	20.67	8.24	17.64	46.13	18.43	9.14	15.64	42.45
6.50	1	1 AL 4	28.83	9.00	24.71	62.49	26.05	9.68	22.26	57.62	23.17	10.66	19.70	52.75
		5 AL 8	20.37	8.01	17.38	45.38	26.05	9.68	22.26	57.62	23.17	10.66	19.70	52.75
6.50	2	1 AL 4	25.79	8.64	22.08	56.34	23.29	9.36	19.87	52.03	20.68	10.37	17.54	47.71
		5 AL 8	20.37	8.01	17.38	45.38	23.29	9.36	19.87	52.03	20.68	10.37	17.54	47.71
7.50	1	1 AL 4	33.67	10.25	28.87	72.79	30.38	11.00	25.97	66.98	26.97	12.08	22.95	61.18
		5 AL 8	22.76	8.98	19.42	50.71	30.38	11.00	25.97	66.98	26.97	12.08	22.95	61.18
7.50	2	1 AL 4	28.97	9.70	24.79	63.28	26.11	10.50	22.27	58.33	23.13	11.64	19.62	53.39
		5 AL 8	22.76	8.98	19.42	50.71	26.11	10.50	22.27	58.33	23.13	11.64	19.62	53.39
8.50	1	1 AL 4	38.49	11.50	33.01	83.07	34.70	12.32	29.67	76.32	30.77	13.50	26.20	69.58
		5 AL 8	25.14	9.95	21.45	56.05	34.70	12.32	29.67	76.32	30.77	13.50	26.20	69.58
8.50	2	1 AL 4	32.14	10.77	27.51	70.21	28.93	11.65	24.67	64.64	25.58	12.90	21.70	59.07
		5 AL 8	25.14	9.95	21.45	56.05	28.93	11.65	24.67	64.64	25.58	12.90	21.70	59.07
9.50	1	1 AL 4	43.31	12.76	37.15	93.32	39.01	13.64	33.37	85.65	34.57	14.92	29.44	77.97
		5 AL 8	27.53	10.92	23.48	61.38	39.01	13.64	33.37	85.65	34.57	14.92	29.44	77.97
9.50	2	1 AL 4	35.32	11.83	30.23	77.15	31.75	12.79	27.08	70.94	28.03	14.16	23.77	64.74
		5 AL 8	27.53	10.92	23.48	61.38	31.75	12.79	27.08	70.94	28.03	14.16	23.77	64.74

DIRECCION GENERAL DE CARRERAS COLECCION DE TUBOS RIGIDOS TR.12

TUBO RIGIDO TIPO 6 DI=2,75

CARACTERISTICAS GEOTECNICAS		ESFUERZOS DE CALCULO													
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3					
		HT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)
10.50	1	1	AL 4	46.12	14.01	41.29	103.57	43.32	14.96	37.06	94.96	38.35	16.34	32.67	86.36
		5	AL 8	29.91	11.89	25.52	66.72	43.32	14.96	37.06	94.96	38.35	16.34	32.67	86.36
10.50	2	1	AL 4	38.49	12.89	32.95	84.08	34.57	13.94	29.48	77.25	30.47	15.42	25.85	70.42
		5	AL 8	29.91	11.89	25.52	66.72	34.57	13.94	29.48	77.25	30.47	15.42	25.85	70.42

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR.13

TUBO RIGIDO TIPO 7 DI= 3,00

CARACTERISTICAS GEOTECNICAS		ESFUERZOS DE CALCULO																
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3								
		HT	TI	TC	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND		
.50	1 2	1 AL 4	11.23	2.93	9.64	22.11	10.85	3.20	9.29	21.63	10.43	3.57	8.91	21.15	10.43	3.57	8.91	21.15
		5 AL 8	11.16	2.93	9.58	21.97	10.85	3.20	9.29	21.63	10.43	3.57	8.91	21.15	10.43	3.57	8.91	21.15
1.50	1 2	1 AL 4	14.49	4.04	12.42	26.71	13.73	4.40	11.74	27.63	12.92	4.90	11.01	26.55	12.92	4.90	11.01	26.55
		5 AL 8	14.00	3.99	12.00	27.79	13.73	4.40	11.74	27.63	12.92	4.90	11.01	26.55	12.92	4.90	11.01	26.55
2.50	1 2	1 AL 4	17.13	5.07	14.67	34.16	15.96	5.53	13.63	32.42	14.72	6.16	12.51	30.67	14.72	6.16	12.51	30.67
		5 AL 8	15.82	4.94	13.54	31.74	15.96	5.53	13.63	32.42	14.72	6.16	12.51	30.67	14.72	6.16	12.51	30.67
3.50	1 2	1 AL 4	20.23	6.16	17.32	40.48	18.61	6.70	15.88	37.99	16.90	7.45	14.35	35.51	16.90	7.45	14.35	35.51
		5 AL 8	17.68	5.89	15.11	35.73	18.61	6.70	15.88	37.99	16.90	7.45	14.35	35.51	16.90	7.45	14.35	35.51
4.50	1 2	1 AL 4	24.02	7.32	20.56	48.06	21.90	7.94	18.69	44.76	19.68	8.82	16.71	41.45	19.68	8.82	16.71	41.45
		5 AL 8	19.73	6.86	16.85	40.10	21.90	7.94	18.69	44.76	19.68	8.82	16.71	41.45	19.68	8.82	16.71	41.45
5.50	1	1 AL 4	28.55	8.56	24.45	57.02	25.88	9.26	22.09	52.80	23.10	10.25	19.62	48.59	23.10	10.25	19.62	48.59
		5 AL 8	21.98	7.86	18.76	44.84	25.88	9.26	22.09	52.80	23.10	10.25	19.62	48.59	23.10	10.25	19.62	48.59
5.50	2	1 AL 4	27.52	8.45	23.56	55.11	24.95	9.16	21.28	51.07	22.26	10.16	18.89	47.03	22.26	10.16	18.89	47.03
		5 AL 8	21.98	7.86	18.76	44.84	24.95	9.16	21.28	51.07	22.26	10.16	18.89	47.03	22.26	10.16	18.89	47.03
6.50	1	1 AL 4	33.83	9.88	28.98	67.36	30.58	10.65	26.11	62.17	27.20	11.75	23.11	56.97	27.20	11.75	23.11	56.97
		5 AL 8	24.58	8.89	20.97	50.21	30.58	10.65	26.11	62.17	27.20	11.75	23.11	56.97	27.20	11.75	23.11	56.97
6.50	2	1 AL 4	31.06	9.58	26.58	62.23	28.06	10.38	23.93	57.50	24.93	11.51	21.15	52.77	24.93	11.51	21.15	52.77
		5 AL 8	24.58	8.89	20.97	50.21	28.06	10.38	23.93	57.50	24.93	11.51	21.15	52.77	24.93	11.51	21.15	52.77
7.50	1	1 AL 4	39.60	11.25	33.94	78.62	35.75	12.09	30.54	72.40	31.74	13.31	26.99	66.18	31.74	13.31	26.99	66.18
		5 AL 8	27.42	9.95	23.39	56.03	35.75	12.09	30.54	72.40	31.74	13.31	26.99	66.18	31.74	13.31	26.99	66.18
7.50	2	1 AL 4	34.84	10.74	29.82	69.79	31.42	11.63	26.79	64.38	27.85	12.89	23.62	58.96	27.85	12.89	23.62	58.96
		5 AL 8	27.42	9.95	23.39	56.03	31.42	11.63	26.79	64.38	27.85	12.89	23.62	58.96	27.85	12.89	23.62	58.96
8.50	1	1 AL 4	45.35	12.61	38.88	89.85	40.89	13.53	34.96	82.60	36.27	14.85	30.86	75.37	36.27	14.85	30.86	75.37
		5 AL 8	30.26	11.00	25.81	61.85	40.89	13.53	34.96	82.60	36.27	14.85	30.86	75.37	36.27	14.85	30.86	75.37
8.50	2	1 AL 4	38.62	11.90	33.05	77.36	34.77	12.88	29.66	71.26	30.76	14.27	26.09	65.15	30.76	14.27	26.09	65.15
		5 AL 8	30.26	11.00	25.81	61.85	34.77	12.88	29.66	71.26	30.76	14.27	26.09	65.15	30.76	14.27	26.09	65.15
9.50	1	1 AL 4	51.09	13.98	43.82	101.05	46.03	14.97	39.36	92.79	40.79	16.40	34.72	84.54	40.79	16.40	34.72	84.54
		5 AL 8	33.09	12.06	28.23	67.67	46.03	14.97	39.36	92.79	40.79	16.40	34.72	84.54	40.79	16.40	34.72	84.54
9.50	2	1 AL 4	42.40	13.06	36.29	84.92	38.13	14.13	32.52	78.13	33.68	15.64	28.56	71.35	33.68	15.64	28.56	71.35
		5 AL 8	33.09	12.06	28.23	67.67	38.13	14.13	32.52	78.13	33.68	15.64	28.56	71.35	33.68	15.64	28.56	71.35
10.50	1	1 AL 4	56.82	15.35	48.74	112.23	51.16	16.41	43.76	102.96	45.30	17.95	38.57	93.69	45.30	17.95	38.57	93.69
		5 AL 8	35.93	13.12	30.65	73.49	51.16	16.41	43.76	102.96	45.30	17.95	38.57	93.69	45.30	17.95	38.57	93.69

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR. 14

TUBO RIGIDO TIPO 7 DI=3,00

CARACTERISTICAS GEOTECNICAS		ESFUERZOS DE CALCULO											
		TERRAPLEN 1			TERRAPLEN 2			TERRAPLEN 3					
HT	TI TC	MD(+)	MD	MD(-)	ND	MD(+)	MD	MD(-)	ND	MD(+)	MD	MD(-)	ND
10.50	2 1 AL 4 5 AL 8	46.18	14.21	39.52	92.49	41.48	15.37	35.38	85.01	36.59	17.02	31.03	77.54
		35.93	13.12	30.65	73.49	41.48	15.37	35.38	85.01	36.59	17.02	31.03	77.54

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR 18

TUBO RIGIDO TIPO 8 DI=3,25

CARACTERÍSTICAS GEOTECNICAS		ESFUERZOS DE CALCULO											
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3			
		MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND
0.50	1 2	13.57	3.34	11.65	24.72	13.10	3.65	11.22	24.16	12.59	4.07	10.75	23.64
	5 AL 8	13.49	3.33	11.57	24.57	13.10	3.65	11.22	24.16	12.59	4.07	10.75	23.64
1.50	1 2	17.36	4.53	14.88	31.81	16.46	4.95	14.07	30.62	15.48	5.51	13.19	29.44
	5 AL 8	16.82	4.48	14.41	30.88	16.46	4.95	14.07	30.62	15.48	5.51	13.19	29.44
2.50	1 2	20.38	5.65	17.46	37.58	19.00	6.16	16.22	35.69	17.53	6.87	14.90	33.80
	5 AL 8	18.96	5.51	16.22	35.15	19.00	6.16	16.22	35.69	17.53	6.87	14.90	33.80
3.50	1 2	23.90	6.81	20.46	44.21	22.00	7.42	18.77	41.54	19.99	8.27	16.97	38.87
	5 AL 8	21.14	6.54	18.06	39.48	22.00	7.42	18.77	41.54	19.99	8.27	16.97	38.87
4.50	1 2	28.17	8.05	24.11	52.12	25.70	8.75	21.92	48.58	23.11	9.73	19.61	45.05
	5 AL 8	23.55	7.60	20.11	44.21	25.70	8.75	21.92	48.58	23.11	9.73	19.61	45.05
5.50	1	33.23	9.37	28.45	61.39	30.15	10.15	25.72	56.91	26.92	11.26	22.84	52.43
	5 AL 8	26.19	8.67	22.35	49.34	30.15	10.15	25.72	56.91	26.92	11.26	22.84	52.43
5.50	2	32.73	9.32	28.01	60.53	29.69	10.11	25.32	56.13	26.51	11.22	22.49	51.72
	5 AL 8	26.19	8.67	22.35	49.34	29.69	10.11	25.32	56.13	26.51	11.22	22.49	51.72
6.50	1	39.32	10.78	33.67	72.41	35.56	11.65	30.35	66.88	31.63	12.88	26.87	61.36
	5 AL 8	29.24	9.79	24.95	55.16	35.56	11.65	30.35	66.88	31.63	12.88	26.87	61.36
6.50	2	36.88	10.54	31.56	68.24	33.34	11.43	28.43	63.09	29.64	12.68	25.14	57.95
	5 AL 8	29.24	9.79	24.95	55.16	33.34	11.43	28.43	63.09	29.64	12.68	25.14	57.95
7.50	1	45.91	12.25	39.34	84.30	41.46	13.19	35.41	77.69	36.82	14.55	31.30	71.09
	5 AL 8	32.57	10.94	27.79	61.46	41.46	13.19	35.41	77.69	36.82	14.55	31.30	71.09
7.50	2	41.32	11.80	35.36	76.44	37.28	12.78	31.79	70.54	33.06	14.17	28.04	64.65
	5 AL 8	32.57	10.94	27.79	61.46	37.28	12.78	31.79	70.54	33.06	14.17	28.04	64.65
8.50	1	52.67	13.74	45.15	96.48	47.51	14.76	40.60	88.77	42.15	16.22	35.85	81.06
	5 AL 8	35.90	12.08	30.63	67.77	47.51	14.76	40.60	88.77	42.15	16.22	35.85	81.06
8.50	2	45.75	13.05	39.16	84.63	41.22	14.14	35.15	78.00	36.48	15.67	30.94	71.36
	5 AL 8	35.90	12.08	30.63	67.77	41.22	14.14	35.15	78.00	36.48	15.67	30.94	71.36
9.50	1	59.42	15.22	50.95	108.63	53.55	16.31	45.78	99.82	47.46	17.90	40.38	91.00
	5 AL 8	39.23	13.23	33.47	74.07	53.55	16.31	45.78	99.82	47.46	17.90	40.38	91.00
9.50	2	50.19	14.31	42.96	92.83	45.15	15.49	38.51	85.45	39.90	17.16	33.84	78.07
	5 AL 8	39.23	13.23	33.47	74.07	45.15	15.49	38.51	85.45	39.90	17.16	33.84	78.07
10.50	1	66.15	16.70	56.74	120.76	59.57	17.87	50.94	110.84	52.76	19.58	44.91	100.93
	5 AL 8	42.56	14.38	36.31	80.38	59.57	17.87	50.94	110.84	52.76	19.58	44.91	100.93

TUBO RIGIDO TIPO 8 DI=3,25

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTECHNICAS		ESFUERZOS DE CALCULO											
		TERRAPLEN 1			TERRAPLEN 2			TERRAPLEN 3					
HT	TI TC	MD(+)	ND	MD(-)	MD(+)	ND	MD(-)	MD(+)	ND	MD(-)	MD(+)	ND	MD(-)
10.50	2	54.62	15.56	46.75	101.02	49.09	16.84	41.86	43.32	18.65	43.32	18.65	36.74
	5	47.56	14.38	36.31	80.38	49.09	16.84	41.86	43.32	18.65	43.32	18.65	36.74

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS RIGIDOS TR.17

TUBO RIGIDO TIPO 9 DI= 3,50

CARACTERISTICAS GEOTECNICAS		ESFUERZOS DE CALCULO														
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3						
		MT	TI	TC		MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)	ND	MD(+)	ND	MD(-)
0.50	1 2	1 AL 4	5 AL 8	16.20	3.77	13.89	27.44	15.63	4.13	13.38	26.84	15.00	4.61	12.81	26.24	26.24
				16.10	3.76	13.81	27.29	15.63	4.13	13.38	26.84	15.00	4.61	12.81	26.24	26.24
1.50	1 2	1 AL 4	5 AL 8	20.56	5.05	17.62	35.02	19.48	5.52	16.65	33.73	18.33	6.16	15.61	32.44	32.44
				19.97	5.00	17.10	34.08	19.48	5.52	16.65	33.73	18.33	6.16	15.61	32.44	32.44
2.50	1 2	1 AL 4	5 AL 8	23.99	6.25	20.54	41.12	22.37	6.82	19.09	39.08	20.65	7.61	17.55	37.05	37.05
				22.45	6.10	19.21	38.68	22.37	6.82	19.09	39.08	20.65	7.61	17.55	37.05	37.05
3.50	1 2	1 AL 4	5 AL 8	27.95	7.49	23.92	48.07	25.74	8.17	21.95	45.21	23.40	9.11	19.86	42.35	42.35
				24.97	7.22	21.34	43.34	25.74	8.17	21.95	45.21	23.40	9.11	19.86	42.35	42.35
4.50	1 2	1 AL 4	5 AL 8	32.72	8.81	28.00	56.31	29.87	9.59	25.47	52.54	26.87	10.67	22.79	48.78	48.78
				27.77	8.35	23.71	48.43	29.87	9.59	25.47	52.54	26.87	10.67	22.79	48.78	48.78
5.50	1 2	1 AL 4	5 AL 8	38.35	10.20	32.82	65.91	34.81	11.08	29.68	61.15	31.09	12.30	26.38	56.40	56.40
				30.84	9.51	26.31	53.96	34.81	11.08	29.68	61.15	31.09	12.30	26.38	56.40	56.40
6.50	1	1 AL 4	5 AL 8	45.09	11.70	38.61	77.27	40.79	12.66	34.81	71.44	36.31	14.02	30.82	65.61	65.61
				34.37	10.72	29.32	60.23	40.79	12.66	34.81	71.44	36.31	14.02	30.82	65.61	65.61
6.50	2	1 AL 4	5 AL 8	43.27	11.53	37.03	74.38	39.14	12.51	33.38	68.81	34.82	13.89	29.53	63.24	63.24
				34.37	10.72	29.32	60.23	39.14	12.51	33.38	68.81	34.82	13.89	29.53	63.24	63.24
7.50	1	1 AL 4	5 AL 8	52.59	13.26	45.05	89.83	47.50	14.31	40.55	82.86	42.20	15.80	35.85	75.89	75.89
				38.23	11.95	32.62	67.02	47.50	14.31	40.55	82.86	42.20	15.80	35.85	75.89	75.89
7.50	2	1 AL 4	5 AL 8	48.42	12.88	41.44	83.21	43.71	13.97	37.27	76.84	38.79	15.49	32.89	70.47	70.47
				38.23	11.95	32.62	67.02	43.71	13.97	37.27	76.84	38.79	15.49	32.89	70.47	70.47
8.50	1	1 AL 4	5 AL 8	60.44	14.86	51.80	102.98	54.53	16.00	46.58	94.81	48.39	17.61	41.13	86.65	86.65
				42.10	13.19	35.91	73.81	54.53	16.00	46.58	94.81	48.39	17.61	41.13	86.65	86.65
8.50	2	1 AL 4	5 AL 8	53.56	14.24	45.84	92.03	48.28	15.42	41.17	84.86	42.75	17.10	36.26	77.69	77.69
				42.10	13.19	35.91	73.81	48.28	15.42	41.17	84.86	42.75	17.10	36.26	77.69	77.69
9.50	1	1 AL 4	5 AL 8	68.28	16.44	58.53	116.08	61.54	17.67	52.60	106.72	54.55	19.42	46.40	97.37	97.37
				45.96	14.42	39.21	80.60	61.54	17.67	52.60	106.72	54.55	19.42	46.40	97.37	97.37
9.50	2	1 AL 4	5 AL 8	58.71	15.59	58.24	100.86	52.84	16.88	45.06	92.89	46.72	18.71	39.62	84.92	84.92
				45.96	14.42	39.21	80.60	52.84	16.88	45.06	92.89	46.72	18.71	39.62	84.92	84.92
10.50	1	1 AL 4	5 AL 8	76.10	18.06	65.25	129.16	68.54	19.35	58.60	118.61	60.71	21.23	51.66	108.07	108.07
				49.82	15.66	42.50	87.39	68.54	19.35	58.60	118.61	60.71	21.23	51.66	108.07	108.07
10.50	2	1 AL 4	5 AL 8	63.85	16.94	54.64	109.69	57.41	18.33	48.95	100.91	50.69	20.31	42.98	92.14	92.14
				49.82	15.66	42.50	87.39	57.41	18.33	48.95	100.91	50.69	20.31	42.98	92.14	92.14

TUBO RIGIDO TIPO 10 DI=3,75

ESFUERZOS DE CALCULO

CARACTERISTICAS GEOTECNICAS		TERRAPLEN 1						TERRAPLEN 2						TERRAPLEN 3									
		HT		TI		TC		MD(+)		ND		MD(+)		ND		MD(+)		ND		MD(+)		ND	
		HT	TI	TC	MD(+)	ND	MD(+)	ND	MD(+)	ND	MD(+)	ND	MD(+)	ND	MD(+)	ND	MD(+)	ND	MD(+)	ND	MD(+)	ND	
.50	1	2	1 AL 4	19.11	4.23	16.39	30.27	18.44	4.63	15.77	29.61	17.69	5.16	15.09	28.95	5.16	15.09	28.95	28.95	28.95	28.95	28.95	
	5	AL 6	19.01	4.22	16.30	30.12	18.44	4.63	15.77	29.61	17.69	5.16	15.09	28.95	28.95								
1.50	1	2	1 AL 4	24.09	5.60	20.64	38.35	22.83	6.12	19.51	36.95	21.48	6.83	18.29	35.56	6.83	18.29	35.56	35.56	35.56	35.56	35.56	
	5	AL 8	23.44	5.54	20.08	37.40	22.83	6.12	19.51	36.95	21.48	6.83	18.29	35.56	35.56								
2.50	1	2	1 AL 4	27.96	6.87	23.93	44.79	26.08	7.51	22.26	42.59	24.08	8.39	20.46	40.40	8.39	20.46	40.40	40.40	40.40	40.40	40.40	
	5	AL 8	26.30	6.73	22.49	42.32	26.08	7.51	22.26	42.59	24.08	8.39	20.46	40.40	40.40								
3.50	1	2	1 AL 4	32.39	8.19	27.71	52.06	29.84	8.94	25.44	49.00	27.15	9.98	23.04	45.94	9.98	23.04	45.94	45.94	45.94	45.94	45.94	
	5	AL 8	29.19	7.92	24.94	47.32	29.84	8.94	25.44	49.00	27.15	9.98	23.04	45.94	45.94								
4.50	1	2	1 AL 4	37.69	9.59	32.24	60.62	34.43	10.45	29.35	56.62	30.99	11.64	26.28	52.62	11.64	26.28	52.62	52.62	52.62	52.62	52.62	
	5	AL 8	32.40	9.14	27.67	52.78	34.43	10.45	29.35	56.62	30.99	11.64	26.28	52.62	52.62								
5.50	1	2	1 AL 4	43.93	11.06	37.58	70.57	39.89	12.03	34.00	65.54	35.65	13.37	30.23	60.51	13.37	30.23	60.51	60.51	60.51	60.51	60.51	
	5	AL 8	35.93	10.38	30.65	58.70	39.89	12.03	34.00	65.54	35.65	13.37	30.23	60.51	60.51								
6.50	1	1	1 AL 4	51.36	12.64	43.96	82.29	46.48	13.70	39.65	76.15	41.38	15.20	35.11	70.01	15.20	35.11	70.01	70.01	70.01	70.01	70.01	
	5	AL 8	39.98	11.67	34.11	65.41	46.48	13.70	39.65	76.15	41.38	15.20	35.11	70.01	70.01								
6.50	2	1	1 AL 4	50.25	12.55	43.00	80.65	45.47	13.62	38.77	74.65	40.48	15.12	34.33	68.66	15.12	34.33	68.66	68.66	68.66	68.66	68.66	
	5	AL 8	39.98	11.67	34.11	65.41	45.47	13.62	38.77	74.65	40.48	15.12	34.33	68.66	68.66								
7.50	1	1	1 AL 4	59.89	14.31	51.29	95.65	54.12	15.47	46.19	88.30	48.09	17.10	40.84	80.94	17.10	40.84	80.94	80.94	80.94	80.94	80.94	
	5	AL 8	44.42	12.99	37.89	72.69	54.12	15.47	46.19	88.30	48.09	17.10	40.84	80.94	80.94								
7.50	2	1	1 AL 4	56.15	14.00	48.05	90.10	50.72	15.18	43.24	83.25	45.03	16.84	38.19	76.40	16.84	38.19	76.40	76.40	76.40	76.40	76.40	
	5	AL 8	44.42	12.99	37.89	72.69	50.72	15.18	43.24	83.25	45.03	16.84	38.19	76.40	76.40								
8.50	1	1	1 AL 4	68.64	16.00	58.81	109.32	61.94	17.25	52.09	100.72	54.97	19.02	46.71	92.13	19.02	46.71	92.13	92.13	92.13	92.13	92.13	
	5	AL 8	48.85	14.32	41.67	79.96	61.94	17.25	52.09	100.72	54.97	19.02	46.71	92.13	92.13								
8.50	2	1	1 AL 4	62.06	15.44	53.11	99.56	55.96	16.74	47.71	91.85	49.58	18.56	42.05	84.14	18.56	42.05	84.14	84.14	84.14	84.14	84.14	
	5	AL 8	48.85	14.32	41.67	79.96	55.96	16.74	47.71	91.85	49.58	18.56	42.05	84.14	84.14								
9.50	1	1	1 AL 4	77.65	17.72	66.55	123.38	70.00	19.05	59.81	113.51	62.06	20.96	52.77	103.63	20.96	52.77	103.63	103.63	103.63	103.63	103.63	
	5	AL 8	53.29	15.64	45.45	87.24	70.00	19.05	59.81	113.51	62.06	20.96	52.77	103.63	103.63								
9.50	2	1	1 AL 4	67.96	16.89	58.16	109.02	61.20	18.30	52.18	100.45	54.14	20.28	45.91	91.88	20.28	45.91	91.88	91.88	91.88	91.88	91.88	
	5	AL 8	53.29	15.64	45.45	87.24	61.20	18.30	52.18	100.45	54.14	20.28	45.91	91.88	91.88								
10.50	1	1	1 AL 4	86.63	19.43	74.27	137.42	78.05	20.85	66.70	126.26	69.14	22.90	58.81	115.12	22.90	58.81	115.12	115.12	115.12	115.12	115.12	
	5	AL 8	57.72	16.96	49.23	94.51	78.05	20.85	66.70	126.26	69.14	22.90	58.81	115.12	115.12								
10.50	2	1	1 AL 4	73.87	18.34	63.22	118.48	66.44	19.86	56.65	109.05	58.69	22.01	49.77	99.62	22.01	49.77	99.62	99.62	99.62	99.62	99.62	
	5	AL 8	57.72	16.96	49.23	94.51	66.44	19.86	56.65	109.05	58.69	22.01	49.77	99.62	99.62								

DIRECCION GENERAL DE CARRITERAS COLECCION DE TUBOS RIGIDOS TR.19

TUBO RIGIDO TIPO 11 DI = 4,00

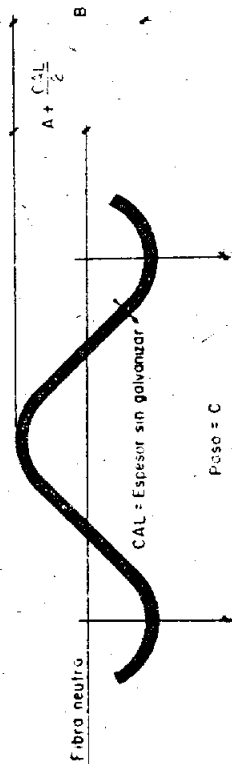
CARACTERÍSTICAS GEOTECNICAS		ESFUERZOS DE CALCULO													
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3					
		HT	TI	TC	MD(+)	MD(-)	ND	MD(+)	MD(-)	ND	MD(+)	MD(-)	ND		
0.50	1	2	1 AL 4	22.33	4.70	19.15	33.21	21.53	5.16	18.42	32.41	20.65	5.77	17.61	31.75
			5 AL 8	22.22	4.69	19.05	33.05	21.53	5.16	18.42	32.41	20.65	5.77	17.61	31.75
1.50	1	2	1 AL 4	27.96	6.16	23.95	41.78	26.50	6.74	22.64	40.27	24.93	7.54	21.23	38.77
			5 AL 8	27.26	6.10	23.35	40.81	26.50	6.74	22.64	40.27	24.93	7.54	21.23	38.77
2.50	1	2	1 AL 4	32.30	7.52	27.64	48.57	30.14	8.23	25.72	46.22	27.85	9.20	23.65	43.87
			5 AL 8	30.52	7.37	26.10	46.09	30.14	8.23	25.72	46.22	27.85	9.20	23.65	43.87
3.50	1	2	1 AL 4	37.22	8.92	31.84	56.16	34.32	9.75	29.26	52.90	31.24	10.89	26.50	49.65
			5 AL 8	33.82	8.65	28.89	51.42	34.32	9.75	29.26	52.90	31.24	10.89	26.50	49.65
4.50	1	2	1 AL 4	43.10	10.40	36.86	65.07	39.39	11.34	33.57	60.83	35.48	12.65	30.07	56.59
			5 AL 8	37.47	9.94	31.98	57.24	39.39	11.34	33.57	60.83	35.48	12.65	30.07	56.59
5.50	1	2	1 AL 4	49.96	11.95	42.74	75.36	45.39	13.01	38.68	70.05	40.59	14.48	34.41	64.75
			5 AL 8	41.47	11.27	35.39	63.56	45.39	13.01	38.68	70.05	40.59	14.48	34.41	64.75
6.50	1	1	1 AL 4	58.13	13.61	49.74	87.46	52.63	14.77	44.88	81.00	46.88	16.41	39.76	74.54
			5 AL 8	46.99	12.65	39.32	70.72	52.63	14.77	44.88	81.00	46.88	16.41	39.76	74.54
6.50	2	1	1 AL 4	57.82	13.59	49.48	87.04	52.36	14.75	44.64	80.62	46.63	16.39	39.54	74.20
			5 AL 8	46.09	12.65	39.32	70.72	52.36	14.75	44.64	80.62	46.63	16.39	39.54	74.20
7.50	1	1	1 AL 4	67.47	15.36	57.76	101.20	60.98	16.63	52.03	93.49	54.21	18.42	46.01	85.79
			5 AL 8	51.13	14.06	43.62	78.48	60.98	16.63	52.03	93.49	54.21	18.42	46.01	85.79
7.50	2	1	1 AL 4	64.54	15.13	55.23	97.13	58.32	16.42	49.72	89.79	51.81	18.22	43.93	82.46
			5 AL 8	51.13	14.06	43.62	78.48	58.32	16.42	49.72	89.79	51.81	18.22	43.93	82.46
8.50	1	1	1 AL 4	77.23	17.15	66.15	115.52	69.71	18.51	59.51	106.51	61.88	20.45	52.56	97.50
			5 AL 8	56.18	15.47	47.92	86.24	69.71	18.51	59.51	106.51	61.88	20.45	52.56	97.50
8.50	2	1	1 AL 4	71.26	16.68	60.98	107.22	64.29	18.08	54.81	96.96	56.99	20.06	48.33	90.71
			5 AL 8	56.18	15.47	47.92	86.24	64.29	18.08	54.81	96.96	56.99	20.06	48.33	90.71
9.50	1	1	1 AL 4	87.50	18.98	74.97	130.54	78.90	20.44	67.39	120.17	69.96	22.52	59.46	109.80
			5 AL 8	61.22	16.88	52.22	94.00	78.90	20.44	67.39	120.17	69.96	22.52	59.46	109.80
9.50	2	1	1 AL 4	77.98	18.22	66.73	117.30	70.25	19.74	59.90	108.13	62.18	21.90	52.72	98.97
			5 AL 8	61.22	16.88	52.22	94.00	70.25	19.74	59.90	108.13	62.18	21.90	52.72	98.97
10.50	1	1	1 AL 4	97.74	20.81	83.77	145.53	88.07	22.36	75.25	133.79	78.03	24.59	66.35	122.06
			5 AL 8	66.27	18.29	56.53	101.76	88.07	22.36	75.25	133.79	78.03	24.59	66.35	122.06
10.50	2	1	1 AL 4	84.70	19.76	72.48	127.39	76.21	21.41	64.98	117.30	67.36	23.73	57.11	107.22
			5 AL 8	66.27	18.29	56.53	101.76	76.21	21.41	64.98	117.30	67.36	23.73	57.11	107.22

3.1.5 Tubos flexibles

CARACTERISTICAS MECANICAS DE LAS CHAPAS

ESPOSOR SIN GALVANIZADO mm.	CORRUGA TIPO 1		CORRUGA TIPO 2	
	AREA # cm ²	MOMENTO DE INERCIA cm ⁴	AREA # cm ²	MOMENTO DE INERCIA cm ⁴
2,5	0,310	0,929	0,305	1,165
3,5	0,434	1,311	0,397	1,517
4,0	0,496	1,503	0,476	1,819
4,5	0,559	1,702	0,542	2,076
5,5	0,683	2,101	0,628	2,417
6,0	0,746	2,304	0,705	2,717
7,0	0,872	2,719	0,829	3,207

* Por cm de proyección horizontal sobre la fibra neutra



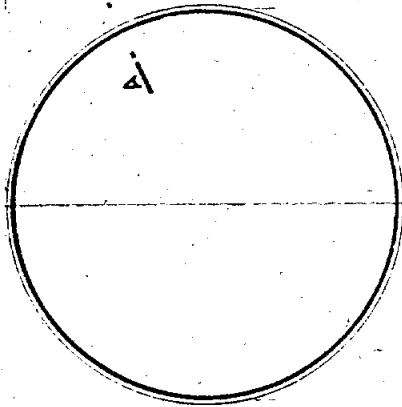
SECCION A-A

(Cotas en mm)

	CORRUGA	
	TIPO 1	TIPO 2
A	25,5 ± 0,25	27,5 ± 0,25
B	51,0 ± 0,50	55,0 ± 0,50
C	15,3 ± 1,50	200 ± 2,00

CARÁ SUPERIOR DEL PAVIMENTO

HT



NOTAS:

- Para espesores de acero y diámetros no explicitados en la colección se permite la interpolación de alturas admisibles entre las existentes
- Las tolerancias admitidas en las dimensiones de la corruga son las expresadas en el cuadro anejo a la sección A-A (~1% como máximo)
- Los cálculos de la colección se han efectuado para tubos de chapa de acero continuo. En caso de disponerse juntas, estas han de diseñarse para resistir al menos lo requerido para la chapa de que se trate

CONTROL DE CALIDAD

	NIVEL	COEFICIENTE
ACERO	$\sigma_a = 2320 \text{ kg/cm}^2$	NORMAL $\gamma_a = 1,00$
EJECUCION	DANOS MEDIOS	NORMAL $\gamma_f = 1,50$

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS FLEXIBLES IPT 1

DEFIN. GEOMETR.		TUBOS FLEXIBLES - CORRUGA TIPO 1											
		TERRAPLEN 1				TERRAPLEN 2				TERRAPLEN 3			
		C-1	C-2	C-3	C-4	C-1	C-2	C-3	C-4	C-1	C-2	C-3	C-4
1.50	2.5	1.5-11.3	1.5-11.1	1.5-10.9	1.5-10.7	1.5-10.4	1.5-10.2	1.5-10.0	1.5-9.8	1.5-9.9	1.5-9.6	1.5-9.3	1.5-9.1
3.5	3.5	1.5-16.8	1.5-16.4	1.5-16.2	1.5-15.8	1.5-15.4	1.5-15.1	1.5-14.9	1.5-14.5	1.5-14.7	1.5-14.3	1.5-13.9	1.5-13.5
4.0	4.0	1.5-19.7	1.5-19.3	1.5-19.1	1.5-18.6	1.5-18.1	1.5-17.7	1.5-17.5	1.5-17.1	1.5-17.3	1.5-16.9	1.5-16.5	1.5-16.1
4.5	4.5	1.5-21.9	1.5-21.4	1.5-21.2	1.5-20.7	1.5-20.3	1.5-20.0	1.5-19.8	1.5-19.4	1.5-19.6	1.5-19.2	1.5-18.8	1.5-18.4
5.5	5.5	1.5-26.1	1.5-25.5	1.5-25.2	1.5-24.6	1.5-23.9	1.5-23.4	1.5-23.1	1.5-22.6	1.5-22.8	1.5-22.4	1.5-22.0	1.5-21.6
6.0	6.0	1.5-28.5	1.5-27.9	1.5-27.5	1.5-26.8	1.5-26.1	1.5-25.6	1.5-25.2	1.5-24.6	1.5-24.8	1.5-24.4	1.5-24.0	1.5-23.6
7.0	7.0	1.5-30.4	1.5-29.8	1.5-29.4	1.5-28.7	1.5-27.9	1.5-27.4	1.5-27.0	1.5-26.3	1.5-26.5	1.5-26.1	1.5-25.7	1.5-25.3
1.00	2.5	1.5-9.4	1.5-9.2	1.5-9.1	1.5-8.8	1.5-8.6	1.5-8.4	1.5-8.3	1.5-8.1	1.5-8.3	1.5-8.1	1.5-7.9	1.5-7.7
3.5	3.5	1.5-14.1	1.5-13.6	1.5-13.3	1.5-12.9	1.5-12.9	1.5-12.6	1.5-12.5	1.5-12.2	1.5-12.4	1.5-12.2	1.5-12.0	1.5-11.8
4.0	4.0	1.5-16.5	1.5-16.1	1.5-15.9	1.5-15.5	1.5-15.1	1.5-14.8	1.5-14.6	1.5-14.2	1.5-14.4	1.5-14.2	1.5-14.0	1.5-13.8
4.5	4.5	1.5-18.3	1.5-17.9	1.5-17.7	1.5-17.3	1.5-16.8	1.5-16.4	1.5-16.2	1.5-15.8	1.5-16.0	1.5-15.8	1.5-15.6	1.5-15.4
5.5	5.5	1.5-21.9	1.5-21.5	1.5-21.2	1.5-20.7	1.5-20.3	1.5-19.9	1.5-19.4	1.5-19.0	1.5-19.2	1.5-19.0	1.5-18.8	1.5-18.6
6.0	6.0	1.5-23.9	1.5-23.4	1.5-23.1	1.5-22.6	1.5-21.9	1.5-21.5	1.5-21.2	1.5-20.7	1.5-20.9	1.5-20.7	1.5-20.5	1.5-20.3
7.0	7.0	1.5-25.6	1.5-25.0	1.5-24.7	1.5-24.1	1.5-23.4	1.5-23.0	1.5-22.7	1.5-22.1	1.5-22.3	1.5-22.1	1.5-21.9	1.5-21.7
2.15	2.5	1.5-8.3	1.5-8.1	1.5-8.0	1.5-7.8	1.5-7.6	1.5-7.4	1.5-7.3	1.5-7.2	1.5-7.4	1.5-7.2	1.5-7.0	1.5-6.8
3.5	3.5	1.5-12.2	1.5-12.0	1.5-11.8	1.5-11.5	1.5-11.2	1.5-11.0	1.5-10.9	1.5-10.6	1.5-10.8	1.5-10.6	1.5-10.4	1.5-10.2
4.0	4.0	1.5-14.4	1.5-14.1	1.5-13.9	1.5-13.6	1.5-13.2	1.5-12.9	1.5-12.7	1.5-12.4	1.5-12.6	1.5-12.4	1.5-12.2	1.5-12.0
4.5	4.5	1.5-16.0	1.5-15.7	1.5-15.5	1.5-15.1	1.5-14.7	1.5-14.4	1.5-14.2	1.5-13.9	1.5-14.1	1.5-13.9	1.5-13.7	1.5-13.5
5.5	5.5	1.5-19.2	1.5-18.8	1.5-18.6	1.5-18.1	1.5-17.6	1.5-17.3	1.5-17.0	1.5-16.6	1.5-16.8	1.5-16.6	1.5-16.4	1.5-16.2
6.0	6.0	1.5-20.8	1.5-20.4	1.5-20.1	1.5-19.6	1.5-19.1	1.5-18.7	1.5-18.4	1.5-18.0	1.5-18.2	1.5-18.0	1.5-17.8	1.5-17.6
7.0	7.0	1.5-22.2	1.5-21.8	1.5-21.5	1.5-20.9	1.5-20.4	1.5-20.0	1.5-19.7	1.5-19.2	1.5-19.4	1.5-19.2	1.5-19.0	1.5-18.8
2.45	2.5	1.6-7.3	1.6-7.1	1.6-7.0	1.6-6.9	1.6-6.7	1.6-6.5	1.6-6.5	1.6-6.3	1.6-6.5	1.6-6.3	1.6-6.1	1.6-5.9
3.5	3.5	1.6-10.8	1.6-10.6	1.6-10.5	1.6-10.2	1.6-9.9	1.6-9.7	1.6-9.6	1.6-9.4	1.6-9.6	1.6-9.4	1.6-9.2	1.6-9.0
4.0	4.0	1.6-12.6	1.6-12.4	1.6-12.2	1.6-11.9	1.6-11.6	1.6-11.4	1.6-11.2	1.6-10.9	1.6-11.1	1.6-10.9	1.6-10.7	1.6-10.5
4.5	4.5	1.6-14.1	1.6-13.8	1.6-13.6	1.6-13.3	1.6-12.9	1.6-12.6	1.6-12.5	1.6-12.2	1.6-12.4	1.6-12.2	1.6-12.0	1.6-11.8
5.5	5.5	1.6-16.7	1.6-16.4	1.6-16.2	1.6-15.8	1.6-15.4	1.6-15.0	1.6-14.8	1.6-14.5	1.6-14.7	1.6-14.5	1.6-14.3	1.6-14.1
6.0	6.0	1.6-18.3	1.6-17.9	1.6-17.7	1.6-17.2	1.6-16.8	1.6-16.4	1.6-16.2	1.6-15.8	1.6-16.0	1.6-15.8	1.6-15.6	1.6-15.4
7.0	7.0	1.6-19.5	1.6-19.1	1.6-18.9	1.6-18.4	1.6-17.9	1.6-17.6	1.6-17.3	1.6-16.9	1.6-17.1	1.6-16.9	1.6-16.7	1.6-16.5
2.75	2.5	1.6-6.6	1.6-6.4	1.6-6.4	1.6-6.2	1.6-6.0	1.6-5.9	1.6-5.8	1.6-5.7	1.6-5.9	1.6-5.7	1.6-5.5	1.6-5.3
3.5	3.5	1.6-9.7	1.6-9.5	1.6-9.4	1.6-9.2	1.6-8.9	1.6-8.8	1.6-8.8	1.6-8.6	1.6-8.8	1.6-8.6	1.6-8.4	1.6-8.2
4.0	4.0	1.6-11.4	1.6-11.1	1.6-11.0	1.6-10.7	1.6-10.4	1.6-10.2	1.6-10.1	1.6-9.8	1.6-10.0	1.6-9.8	1.6-9.6	1.6-9.4
4.5	4.5	1.6-12.6	1.6-12.4	1.6-12.2	1.6-11.9	1.6-11.6	1.6-11.3	1.6-11.2	1.6-10.9	1.6-11.1	1.6-10.9	1.6-10.7	1.6-10.5
5.5	5.5	1.6-15.0	1.6-14.7	1.6-14.5	1.6-14.2	1.6-13.8	1.6-13.5	1.6-13.3	1.6-13.0	1.6-13.2	1.6-13.0	1.6-12.8	1.6-12.6
6.0	6.0	1.6-16.5	1.6-16.1	1.6-15.9	1.6-15.5	1.6-15.1	1.6-14.8	1.6-14.6	1.6-14.2	1.6-14.4	1.6-14.2	1.6-14.0	1.6-13.8
7.0	7.0	1.6-17.6	1.6-17.2	1.6-17.0	1.6-16.6	1.6-16.1	1.6-15.8	1.6-15.6	1.6-15.2	1.6-15.4	1.6-15.2	1.6-15.0	1.6-14.8
3.05	2.5	1.7-5.9	1.7-5.8	1.7-5.7	1.7-5.6	1.7-5.4	1.7-5.3	1.7-5.3	1.7-5.1	1.7-5.3	1.7-5.1	1.7-4.9	1.7-4.7
3.5	3.5	1.7-8.6	1.7-8.6	1.7-8.5	1.7-8.3	1.7-8.1	1.7-7.9	1.7-7.8	1.7-7.6	1.7-7.8	1.7-7.6	1.7-7.4	1.7-7.2
4.0	4.0	1.7-10.3	1.7-10.1	1.7-10.0	1.7-9.7	1.7-9.5	1.7-9.3	1.7-9.2	1.7-8.9	1.7-9.1	1.7-8.9	1.7-8.7	1.7-8.5
4.5	4.5	1.7-11.4	1.7-11.2	1.7-11.1	1.7-10.8	1.7-10.5	1.7-10.2	1.7-10.0	1.7-9.9	1.7-10.1	1.7-9.9	1.7-9.7	1.7-9.5
5.5	5.5	1.7-13.6	1.7-13.3	1.7-13.2	1.7-12.8	1.7-12.5	1.7-12.2	1.7-12.1	1.7-11.8	1.7-12.0	1.7-11.8	1.7-11.6	1.7-11.4
6.0	6.0	1.7-14.9	1.7-14.6	1.7-14.4	1.7-14.0	1.7-13.6	1.7-13.4	1.7-13.2	1.7-12.9	1.7-13.1	1.7-12.9	1.7-12.7	1.7-12.5
7.0	7.0	1.7-16.0	1.7-15.6	1.7-15.4	1.7-15.1	1.7-14.7	1.7-14.4	1.7-14.2	1.7-13.8	1.7-14.0	1.7-13.8	1.7-13.6	1.7-13.4

TUBOS FLEXIBLES - CORRUGA TIPO 1

DEFIN. GEOMETR.	ALTURAS LÍMITES DE RECURRIMIENTO (MÍNIMA Y MÁXIMA)												
	TERRAPLEN 1			TERRAPLEN 2			TERRAPLEN 3			TERRAPLEN 3			
DI CAL	C-1	C-2	C-3	C-4	C-1	C-2	C-3	C-4	C-1	C-2	C-3	C-4	
3.35	2.5	1.7-5.3	1.7-5.2	1.7-5.1	1.7-5.0	1.7-4.8	1.7-4.7	1.7-4.7	1.7-4.6	2.2-3.7	2.2-3.6	2.2-3.6	2.2-3.5
3.5	3.5	1.7-8.1	1.7-7.9	1.7-7.9	1.7-7.6	1.7-7.4	1.7-7.3	1.7-7.2	1.7-7.2	2.2-5.7	2.2-5.6	2.2-5.5	2.2-5.4
4.0	4.0	1.7-9.4	1.7-9.2	1.7-9.1	1.7-8.5	1.7-8.5	1.7-8.4	1.7-8.4	1.7-8.2	2.2-6.6	2.2-6.5	2.2-6.4	2.2-6.2
4.5	4.5	1.7-10.5	1.7-10.3	1.7-10.2	1.7-9.9	1.7-9.5	1.7-9.3	1.7-9.1	1.7-9.1	2.2-7.4	2.2-7.2	2.2-7.1	2.2-6.9
5.5	5.5	1.7-12.6	1.7-12.3	1.7-12.2	1.7-11.9	1.7-11.5	1.7-11.3	1.7-11.2	1.7-10.9	2.2-8.6	2.2-8.6	2.2-8.5	2.2-8.3
6.0	6.0	1.7-13.7	1.7-13.4	1.7-13.2	1.7-12.9	1.7-12.5	1.7-12.3	1.7-12.1	1.7-11.8	2.2-9.6	2.2-9.4	2.2-9.3	2.2-9.0
7.0	7.0	1.7-14.6	1.7-14.3	1.7-14.2	1.7-13.8	1.7-13.4	1.7-13.2	1.7-13.0	1.7-12.7	2.2-10.3	2.2-10.0	2.2-9.9	2.2-9.7
3.65	2.5	1.7-4.9	1.7-4.8	1.7-4.8	1.7-4.7	1.7-4.5	1.7-4.4	1.7-4.4	1.7-4.3	2.3-3.5	2.3-3.4	2.3-3.3	2.3-3.3
3.5	3.5	1.7-7.5	1.7-7.3	1.7-7.2	1.7-7.0	1.7-6.8	1.7-6.7	1.7-6.6	1.7-6.5	2.3-5.2	2.3-5.1	2.3-5.1	2.3-4.9
4.0	4.0	1.7-8.7	1.7-8.5	1.7-8.4	1.7-8.2	1.7-8.0	1.7-7.8	1.7-7.7	1.7-7.6	2.3-6.1	2.3-6.0	2.3-5.9	2.3-5.8
4.5	4.5	1.7-9.7	1.7-9.5	1.7-9.4	1.7-9.2	1.7-8.9	1.7-8.7	1.7-8.6	1.7-8.4	2.3-6.8	2.3-6.7	2.3-6.6	2.3-6.4
5.5	5.5	1.7-11.6	1.7-11.3	1.7-11.2	1.7-10.9	1.7-10.6	1.7-10.4	1.7-10.3	1.7-10.0	2.3-7.9	2.3-7.9	2.3-7.8	2.3-7.7
6.0	6.0	1.7-12.7	1.7-12.4	1.7-12.2	1.7-11.9	1.7-11.6	1.7-11.4	1.7-11.2	1.7-11.0	2.3-8.9	2.3-8.7	2.3-8.6	2.3-8.4
7.0	7.0	1.7-13.5	1.7-13.2	1.7-13.1	1.7-12.8	1.7-12.4	1.7-12.2	1.7-12.0	1.7-11.7	2.3-9.5	2.3-9.3	2.3-9.2	2.3-8.9
4.00	2.5	1.6-4.6	1.6-4.5	1.6-4.4	1.6-4.3	1.6-4.2	1.6-4.1	1.6-4.1	1.6-4.0	2.3-3.2	2.3-3.1	2.3-3.1	2.3-3.0
3.5	3.5	1.6-7.0	1.6-6.8	1.6-6.7	1.6-6.7	1.6-6.4	1.6-6.3	1.6-6.2	1.6-6.2	2.3-4.9	2.3-4.8	2.3-4.7	2.3-4.6
4.0	4.0	1.6-8.2	1.6-8.0	1.6-7.9	1.6-7.9	1.6-7.5	1.6-7.3	1.6-7.2	1.6-7.1	2.3-5.7	2.3-5.6	2.3-5.5	2.3-5.4
4.5	4.5	1.6-9.0	1.6-8.8	1.6-8.7	1.6-8.5	1.6-8.3	1.6-8.1	1.6-8.0	1.6-7.8	2.3-6.3	2.3-6.2	2.3-6.1	2.3-6.0
5.5	5.5	1.6-10.7	1.6-10.5	1.6-10.4	1.6-10.1	1.6-9.9	1.6-9.7	1.6-9.5	1.6-9.2	2.3-7.5	2.3-7.4	2.3-7.3	2.3-7.1
6.0	6.0	1.6-11.8	1.6-11.5	1.6-11.4	1.6-11.1	1.6-10.8	1.6-10.6	1.6-10.4	1.6-10.2	2.3-8.2	2.3-8.1	2.3-8.0	2.3-7.8
7.0	7.0	1.6-12.7	1.6-12.4	1.6-12.2	1.6-11.9	1.6-11.6	1.6-11.4	1.6-11.2	1.6-11.0	2.3-8.9	2.3-8.7	2.3-8.6	2.3-8.4
4.30	3.5	1.6-6.5	1.6-6.4	1.6-6.3	1.6-6.2	1.6-6.0	1.6-5.9	1.6-5.8	1.6-5.7	2.4-4.6	2.4-4.5	2.4-4.4	2.4-4.3
4.0	4.0	1.6-7.7	1.6-7.5	1.6-7.4	1.6-7.2	1.6-7.0	1.6-6.9	1.6-6.8	1.6-6.6	2.4-5.4	2.4-5.2	2.4-5.2	2.4-5.1
4.5	4.5	1.6-8.5	1.6-8.3	1.6-8.2	1.6-8.0	1.6-7.8	1.6-7.6	1.6-7.5	1.6-7.3	2.4-5.9	2.4-5.8	2.4-5.7	2.4-5.6
5.5	5.5	1.6-10.1	1.6-9.9	1.6-9.8	1.6-9.6	1.6-9.3	1.6-9.1	1.6-9.0	1.6-8.8	2.4-7.1	2.4-7.0	2.4-6.9	2.4-6.7
6.0	6.0	1.6-11.0	1.6-10.8	1.6-10.7	1.6-10.4	1.6-10.1	1.6-9.9	1.6-9.8	1.6-9.5	2.4-7.7	2.4-7.6	2.4-7.5	2.4-7.3
7.0	7.0	1.6-11.8	1.6-11.6	1.6-11.4	1.6-11.1	1.6-10.8	1.6-10.6	1.6-10.5	1.6-10.2	2.4-8.3	2.4-8.1	2.4-8.0	2.4-7.8
4.60	3.5	1.9-6.1	1.9-6.0	1.9-5.9	1.9-5.8	1.9-5.6	1.9-5.5	1.9-5.4	1.9-5.3	2.4-4.3	2.4-4.2	2.4-4.1	2.4-4.0
4.0	4.0	1.9-7.2	1.9-7.1	1.9-7.0	1.9-6.8	1.9-6.6	1.9-6.5	1.9-6.4	1.9-6.2	2.4-5.0	2.4-4.9	2.4-4.9	2.4-4.8
4.5	4.5	1.9-8.0	1.9-7.9	1.9-7.8	1.9-7.6	1.9-7.4	1.9-7.2	1.9-7.1	1.9-7.0	2.4-5.6	2.4-5.5	2.4-5.5	2.4-5.3
5.5	5.5	1.9-9.7	1.9-9.5	1.9-9.3	1.9-9.1	1.9-8.9	1.9-8.7	1.9-8.6	1.9-8.4	2.4-6.8	2.4-6.6	2.4-6.5	2.4-6.4
6.0	6.0	1.9-10.4	1.9-10.2	1.9-10.1	1.9-9.8	1.9-9.5	1.9-9.3	1.9-9.2	1.9-9.0	2.4-7.3	2.4-7.1	2.4-7.0	2.4-6.9
7.0	7.0	1.9-11.2	1.9-11.0	1.9-10.8	1.9-10.6	1.9-10.3	1.9-10.1	1.9-9.9	1.9-9.7	2.4-7.9	2.4-7.7	2.4-7.6	2.4-7.4
4.90	3.5	1.9-5.8	1.9-5.7	1.9-5.6	1.9-5.5	1.9-5.3	1.9-5.2	1.9-5.2	1.9-5.0	2.5-4.1	2.5-4.0	2.5-3.9	2.5-3.9
4.0	4.0	1.9-6.7	1.9-6.6	1.9-6.5	1.9-6.4	1.9-6.2	1.9-6.1	1.9-6.0	1.9-5.8	2.5-4.7	2.5-4.6	2.5-4.6	2.5-4.5
4.5	4.5	1.9-7.5	1.9-7.4	1.9-7.3	1.9-7.1	1.9-6.9	1.9-6.8	1.9-6.7	1.9-6.5	2.5-5.3	2.5-5.2	2.5-5.1	2.5-5.0
5.5	5.5	1.9-9.1	1.9-8.9	1.9-8.8	1.9-8.6	1.9-8.4	1.9-8.2	1.9-8.1	1.9-7.9	2.5-6.4	2.5-6.2	2.5-6.2	2.5-6.0
6.0	6.0	1.9-9.8	1.9-9.6	1.9-9.5	1.9-9.3	1.9-9.0	1.9-8.8	1.9-8.7	1.9-8.5	2.5-6.9	2.5-6.7	2.5-6.7	2.5-6.5
7.0	7.0	1.9-10.5	1.9-10.3	1.9-10.1	1.9-9.9	1.9-9.6	1.9-9.4	1.9-9.3	1.9-9.1	2.5-7.3	2.5-7.2	2.5-7.1	2.5-6.9
5.20	4.0	2.0-6.4	2.0-6.3	2.0-6.2	2.0-6.1	2.0-5.9	2.0-5.8	2.0-5.7	2.0-5.6	2.6-4.5	2.6-4.4	2.6-4.3	2.6-4.2
4.5	4.5	2.0-7.2	2.0-7.0	2.0-6.9	2.0-6.9	2.0-6.6	2.0-6.4	2.0-6.4	2.0-6.2	2.6-5.0	2.6-4.9	2.6-4.9	2.6-4.7
5.5	5.5	2.0-8.6	2.0-8.4	2.0-8.3	2.0-8.1	2.0-7.9	2.0-7.7	2.0-7.6	2.0-7.4	2.6-6.0	2.6-5.9	2.6-5.8	2.6-5.7

DIRECCION GENERAL DE CARRETERAS COLECCION DE TUBOS FLEXIBLES TIF. 3

(Continuará)