

VERSIÓN	FECHA	CONCEPTO DE LA REVISIÓN	EJECUTÓ	CONTROLÓ	APROBÓ

REFERENCIAS

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OBRA:	Villa Olimpica – Edificio UG3	CÓDIGO
TÍTULO:	Cálculo de Apoyo	V.OI-UG3
		MC
		00

					ESCALAS:	MATERIALES	VERSIÓN
					-	Hormigón H-25	0
						Acero: ADN-420	

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
	Título: Cálculo de Apoyo	Página 1
	Tema: Estructura de Hormigon Armado	Versión 0

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1. MATERIALES Y REGLAMENTOS

2.- ANÁLISIS DE CARGA

Cargas Permanentes

Hormigón Armado	2.40 t/m ³
Mamposteria de ladrillos comunes y o portantes	1.60 t/m ³
Mamposteria de ladrillos huecos	1.40 t/m ³
Contrapiso (8 cm) + Carpeta (2 cm) . En Planta Tipo	0.17 t/m ²
Terminaciones.	0.05 t/m ²
Contrapisos (15 cm) + Carpetas (2 * 2 cm) + Membrana . En Azoteas	0.33 t/m ²
Sectores Verdes en azotea - 5cm de tierra	0.14 t/m ²

En todos aquellos sectores donde se utilice un contrapiso mayor a 8cm, se deberá colocar contrapiso liviano con =400 kg/m³

Sobrecargas

Edificios de Viviendas

Azotea accesible	0.20 t/m ²
Azotea inaccesible	0.10 t/m ²
Balcones	0.50 t/m ²
Escaleras (en proyección horizontal)	0.30 t/m ²
Rellanos y corredores	0.30 t/m ²
Baños	0.20 t/m ²
Comedores y Lugares de estar	0.20 t/m ²
Dormitorios	0.20 t/m ²
Estacionamiento	0.35 t/m ²

Sala de maquinas

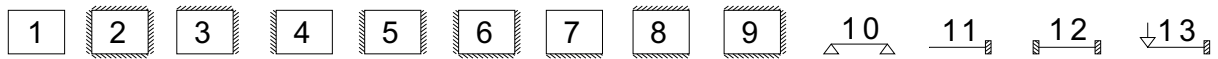
Apoyo de equipo propulsor	2.50 t/m ²
Resto de la losa	0.80 t/m ²

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2. CÁLCULO DE LOSAS

ACLARACIONES DE LOSAS.

TIPOLOGIA:



NOTAS:

La armadura que figura en cm² es la necesaria por cálculo.

Se reconocen siete diámetros para el armado: 25 - 20 - 16 - 12 - 10 - 8 - 6

Se generaron los siguientes archivos:

<nombre maestro>.LM = archivo maestro de la geometría

<nombre maestro>.LD = archivo con dimensiones y armado

<nombre maestro>.LS = archivo de salida acumulativo por plantas

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: Escaleras

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m2	p t/m2	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	sepc	Fex cm2	Fey cm2	Apx t/m	Apy t/m	RX1 t/m	RX2 t/m	RY1 t/m	RY2 t/m	OBSE		
LE1	1.00	0.30	4.3	11.3	10	231.1	0.0	0.0	0.0	14	8.4	12	12	1.7	8	15	0.0	0.0	2.15	2.15	0.00	0.00
LE4	1.00	0.30	3.4	10.9	10	144.5	0.0	0.0	0.0	12	7.0	10	10	1.4	6	15	0.0	0.0	1.70	1.70	0.00	0.00

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 8º

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m ^y	p t/m ^y	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	Fex cm ^y	í sep	Fey cm ^y	í sep	Apx cm ^y	Apy cm ^y	RX1 t/m	RX2 t/m	RY1 t/m	RY2 t/m	REYES	OBSERVACIONES
1102	0.72	0.10	3.9	2.7	10	0.0	65.6	0.0	0.0	10	0.8	6 25	4.0	8 12	0.0	0.0	0.49	0.49	0.64	0.64		
1103	0.67	0.10	4.5	2.7	1	14.3	39.7	0.0	0.0	8	1.0	6 15	3.1	8 15	0.0	0.0	0.45	0.45	0.63	0.63		
1105	0.97	0.30	19.5	1.8	13	0.0	0.0	0.0	193.1	12	0.0	8 20	7.0 10 10	8 10	0.0	0.0	0.00	0.00	1.95	0.00	Fe Sup.	Fe Inf.
P(t/m)= .2																						
1108	0.75	0.10	19.5	2.4	10	0.0	54.0	0.0	0.0	11	0.8	6 25	2.6	6 10	0.0	0.0	0.45	0.45	0.84	0.84		
1110	0.67	0.10	1.0	6.1	10	8.4	0.0	0.0	0.0	8	0.6	6 15	0.5	6 25	0.0	0.0	0.31	0.31	0.17	0.17		
1111	0.67	0.10	2.1	6.1	10	36.9	0.0	0.0	0.0	8	2.4	6 10	0.5	6 25	0.0	0.0	0.58	0.58	0.35	0.35		

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 7º

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m	p t/m²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	Fex cm²	Fey cm²	Apx t/m	Apy t/m	RX1 t/m	RX2	RY1	RY2	OBS	
1001	0.90	0.20	8.1	1.6	10	0.0	28.8	0.0	0.0	10	0.7	6 25	1.6	6 18	0.0	0.0	0.36	0.36	0.65	0.65
1002	3.05	2.50	3.9	2.7	10	0.0	277.9	0.0	0.0	14	2.2	6 12	10.9	12 10	0.0	0.0	2.06	2.06	2.69	2.69
1005	0.97	0.30	19.5	1.8	13	0.0	0.0	0.0	193.1	12	0.0	8 20 6 20	7.0 10 10 10	0.0 8 10	0.0	0.00	0.00	1.95	0.00	Fe Sup. Fe Inf
P(t/m)= .2																				
1008	0.85	0.20	3.3	2.5	4	18.5	27.5	52.3	0.0	11	0.8	6 20	1.8	6 15	1.8	0.0	0.92	0.53	0.51	0.51
1009	0.85	0.20	3.3	2.5	5	17.0	21.9	48.0	0.0	11	0.8	6 20	0.9	6 20	1.8	0.0	0.87	0.87	0.41	0.41
1011	0.96	0.20	2.3	6.1	11	48.0	0.0	56.4	0.0	10	2.3	6 12	0.7	6 25	2.3	0.0	1.21	0.70	0.40	0.40

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 6º

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m	p t/m²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	sep	Fex cm	sep	Fey cm	cm²	Apx t/m	Apy t/m	RX1 t/m	RX2	RY1	RY2	OBS						
900	1.08	0.20	10.8	4.2	10	0.0	238.1	0.0	0.0	15	1.8	6	15	9.0	12	12	0.0	0.0	1.13	1.13	1.83	1.83						
902	0.78	0.20	5.2	2.5	10	0.0	60.9	0.0	0.0	15	1.1	6	25	2.5	6	10	0.0	0.0	0.49	0.49	0.74	0.74						
903	0.71	0.30	2.2	2.6	1	17.2	12.3	0.0	0.0	8	1.2	6	15	1.0	6	15	0.0	0.0	0.45	0.45	0.39	0.39						
904	0.98	0.50	1.7	9.0	10	35.4	0.0	0.0	0.0	11	1.8	6	15	0.8	6	25	0.0	0.0	0.75	0.75	0.42	0.42						
905	0.80	0.30	11.0	1.8	13	0.0	0.0	0.0	165.6	12	0.0	8	20	6.0	10	12	0.0	0.0	0.00	0.00	1.64	0.00	Fe Sup.					
												6	20	8	12													
																								P(t/m)= .2				Fe Inf
908	0.68	0.20	3.3	3.3	4	25.1	21.2	66.1	0.0	11	0.9	6	20	0.8	6	20	2.6	0.0	0.90	0.52	0.41	0.41						
909	0.82	0.20	3.3	3.3	5	24.9	18.0	62.0	0.0	11	0.9	6	20	0.8	6	20	2.6	0.0	0.96	0.96	0.39	0.39						
911	0.61	0.20	2.3	4.5	11	31.1	0.0	35.9	0.0	8	2.4	6	10	0.5	6	25	2.4	0.0	0.72	0.42	0.26	0.26						
914	0.88	0.20	3.4	3.1	4	29.3	29.8	80.5	0.0	11	1.6	6	18	1.8	6	15	3.6	0.0	1.14	0.66	0.55	0.55						
915	0.88	0.20	3.4	3.1	5	25.1	22.0	65.7	0.0	11	0.9	6	20	1.6	6	18	2.6	0.0	1.02	1.02	0.43	0.43						
918	0.90	0.30	19.0	1.6	13	0.0	0.0	0.0	147.2	12	0.0	8	20	6.0	10	12	0.0	0.0	0.00	0.00	1.64	0.00	Fe Sup.					
												6	20	8	12													
																								P(t/m)= .2				Fe Inf

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 5º

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m	p t/m²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	Fex cm	Fey cm	Apx t/m	Apy t/m	RX1 t/m	RX2 t/m	RY1	RY2	OBS			
808	0.85	0.20	3.2	11.4	11	82.6	0.0	96.7	0.0	11	4.5	8	10	0.9	6	25	4.5	0.0	1.55	0.89	0.50	0.50
809	0.85	0.20	3.2	11.4	12	55.5	0.0	87.0	0.0	11	2.6	6	10	0.8	6	25	3.6	0.0	1.25	1.25	0.39	0.39

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 4º

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m	p t/m²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	Fex cm	Fey cm	Apx t/m	Apy t/m	RX1 t/m	RX2	RY1	RY2	OBS		
700	0.78	0.20	11.5	4.2	10	0.0	172.0	0.0	0.0	15	1.3	6 22	6.3	10 12	0.0	0.0	0.82	0.82	1.34	1.34	
702	0.78	0.20	5.2	2.5	10	0.0	60.9	0.0	0.0	15	1.1	6 25	2.5	6 10	0.0	0.0	0.49	0.49	0.74	0.74	
703	0.71	0.30	2.2	2.6	1	17.2	12.3	0.0	0.0	8	1.2	6 15	1.0	6 15	0.0	0.0	0.45	0.45	0.39	0.39	
704	0.98	0.50	1.7	9.0	10	35.4	0.0	0.0	0.0	11	1.8	6 15	0.8	6 25	0.0	0.0	0.75	0.75	0.42	0.42	
705	0.80	0.30	11.0	1.8	13	0.0	0.0	0.0	165.6	12	0.0	8 20 6 20	6.0	10 12 8 12	0.0	0.0	0.00	0.00	1.64	0.00	Fe Sup. Fe Inf
																		P(t/m)= .2			
708	0.85	0.20	3.2	11.4	11	82.6	0.0	96.7	0.0	11	4.5	8 10	0.9	6 25	4.5	0.0	1.55	0.89	0.50	0.50	
709	0.85	0.20	3.2	11.4	12	55.5	0.0	87.0	0.0	11	2.6	6 10	0.8	6 25	3.6	0.0	1.25	1.25	0.39	0.39	
718	0.90	0.30	19.0	1.6	13	0.0	0.0	0.0	147.2	12	0.0	8 20 6 20	6.0	10 12 8 12	0.0	0.0	0.00	0.00	1.64	0.00	Fe Sup. Fe Inf
																		P(t/m)= .2			

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 3º

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m	p t/m²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	Fex cm	Fey cm	Apx t/m	Apy t/m	RX1 t/m	RX2	RY1	RY2	OBS		
600	0.88	0.20	11.5	4.2	10	0.0	194.0	0.0	0.0	15	1.3	6 22	6.3	10 12	0.0	0.0	0.92	0.92	1.51	1.51	
600A	0.80	0.30	10.8	1.6	13	0.0	0.0	0.0	134.4	12	0.0	6 20 6 20	4.9 8 10	8 10 8 10	0.0	0.0	0.00	0.00	1.48	0.00	Fe Sup. Fe Inf
P(t/m)= .2																					
602	0.78	0.20	5.2	2.5	10	0.0	60.9	0.0	0.0	15	1.1	6 25	2.5	6 10	0.0	0.0	0.49	0.49	0.74	0.74	
603	0.71	0.30	2.2	2.6	1	17.2	12.3	0.0	0.0	8	1.2	6 15	1.0	6 15	0.0	0.0	0.45	0.45	0.39	0.39	
608	0.68	0.20	3.3	3.3	4	25.1	21.2	66.1	0.0	11	0.9	6 22	0.8	6 22	2.6	0.0	0.90	0.52	0.41	0.41	
609	0.82	0.20	3.3	3.3	5	24.9	18.0	62.0	0.0	11	0.9	6 22	0.8	6 22	2.6	0.0	0.96	0.96	0.39	0.39	
611	0.92	0.20	2.3	4.5	11	46.0	0.0	54.1	0.0	8	3.1	8 15	0.6	6 25	3.1	0.0	1.09	0.63	0.39	0.39	
614	0.88	0.20	3.4	3.1	4	29.3	29.8	80.5	0.0	11	1.6	6 18	1.8	6 16	3.6	0.0	1.14	0.66	0.55	0.55	
615	0.88	0.20	3.4	3.1	5	25.1	22.0	65.7	0.0	11	0.9	6 20	1.6	6 18	2.6	0.0	1.02	1.02	0.43	0.43	

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Subsuelo

n = 250 Kg/cm² s = 4200 Kg/cm²

Pos	q t/m	p t/m²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	Fex cm²	Fey cm²	Apx t/m	Apy t/m	RX1 t/m	RX2 t/m	RY1	RY2	OBS	
200	0.78	0.20	11.5	4.2	11	0.0	131.1	0.0	152.9	15	1.1	6 25	5.1	10 15	0.0	5.1	0.60	0.60	1.80	1.04
202	0.78	0.20	8.0	2.4	11	0.0	42.8	0.0	49.9	15	1.1	6 25	1.2	6 22	0.0	1.2	0.34	0.34	1.06	0.61
203	0.71	0.30	2.2	2.6	1	17.2	12.3	0.0	0.0	8	1.2	6 15	1.0	6 15	0.0	0.0	0.45	0.45	0.39	0.39
205	1.01	0.20	6.5	9.0	4	217.4	90.5	481.1	0.0	14	8.4	12 12	3.2	8 15	16.5	0.0	3.06	1.77	1.20	1.20
206	1.01	0.20	6.5	9.0	5	158.4	57.9	337.3	0.0	13	6.6	10 12	2.9	8 15	12.5	0.0	2.60	2.60	0.95	0.95
207	0.75	0.20	6.5	7.4	9	93.4	80.1	180.8	186.0	12	3.9	8 12	3.6	8 12	7.0	7.0	1.39	0.80	1.53	1.53
208	0.75	0.20	6.5	7.4	2	81.9	63.2	165.5	132.0	12	3.9	8 12	2.6	6 10	6.0	4.9	1.37	1.37	1.22	1.22
209	0.66	0.20	6.5	4.0	3	22.4	59.2	43.7	115.4	10	1.4	6 20	3.2	8 15	2.3	5.7	0.84	0.48	1.16	0.67
210	0.66	0.20	6.5	4.0	6	23.2	54.9	51.8	102.6	10	1.4	6 20	3.2	8 15	2.3	4.8	0.84	0.84	1.02	0.59

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2. CALCULO DE LOSAS

Obra: Villa Olimpica – Edificio UG3
Planta: Losa Subpresión

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento= 4

Pos	q t/m	p t/m ²	Lx m	Ly m	Tipo	Mx tcm	My tcm	X tcm	Y tcm	d cm	sep	Fex cm	sep	Fey cm	cm ²	Apx t/m	Apy t/m	RX1 t/m	RX2 t/m	RY1	RY2	OBS
00	1.50	1.50	1.5	2.5	10	42.2	0.0	0.0	0.0	20	1.2	8 15	1.1	8 15	8 15	0.0	0.0	0.79	0.79	0.56	0.56	Fe Sup
01	1.50	1.50	3.0	4.0	4	73.5	37.3	149.8	0.0	20	2.5	8 10	1.1	8 15	8 15	3.7	0.0	2.07	1.19	0.82	0.82	Fe S Fe I
02	1.50	1.50	6.0	1.5	10	0.0	42.2	0.0	0.0	20	1.1	8 15	1.2	8 15	8 15	0.0	0.0	0.56	0.56	0.98	0.98	Fe S Fe I
03	1.50	1.50	2.2	2.5	1	33.8	26.2	0.0	0.0	20	1.2	8 15	1.1	8 15	8 15	0.0	0.0	0.92	0.92	0.83	0.83	Fe S Fe I
05	1.50	1.50	6.5	6.6	4	227.5	200.9	575.6	0.0	20	6.8	10 12	7.7	10 10	8 10	17.5	0.0	3.95	2.28	1.78	1.78	Fe S Fe I
06	1.50	1.50	6.6	8.6	1	385.4	227.0	0.0	0.0	25	10.0	12 10	6.2	10 12	8 12	0.0	0.0	3.05	3.05	2.47	2.47	Fe S Fe I
07	1.50	1.50	3.5	3.5	1	67.0	67.0	0.0	0.0	20	2.5	8 15	2.3	8 15	8 15	0.0	0.0	1.31	1.31	1.31	1.31	Fe Sup Fe I
08	1.50	1.50	6.5	5.4	4	154.4	205.1	430.6	0.0	20	5.9	10 12	7.7	10 10	8 10	13.3	0.0	3.46	2.00	1.78	1.78	Fe S Fe I
09	1.50	1.50	6.5	5.4	5	144.6	180.1	372.0	0.0	20	5.9	10 12	6.3	10 12	8 12	11.8	0.0	3.18	3.18	1.41	1.41	Fe S Fe I
10	1.50	1.50	3.0	5.5	11	145.7	0.0	150.0	0.0	20	5.1	10 15	1.1	8 15	8 15	3.7	0.0	2.28	1.32	0.82	0.82	Fe S Fe I

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3. CÁLCULO DE VIGAS

ACLARACIONES DE VIGAS.

TIPOLOGIA APOYOS:



TIPOLOGIA SECCIONES: P = Placa

Placa =
Angular =

S
R

NOTAS:

La armadura que figura en cm² es la necesaria por cálculo.

Las cantidades de barras dobladas y las de adicionales se calcularon a partir del armado del tramo.

Las cantidades y diámetros en el armado de los apoyos y/o en armaduras de compresión son valores indicativos a los efectos del cómputo.

En el caso de las armaduras de compresión se especifican los adicionales a colocar a tal fin.

En las ménsulas (tipo 5) la armadura indicada en el apoyo es la que se colocará en toda la longitud de ellas, siendo la indicada para el tramo la que se debe agregar en la posición inferior.

Se reconocen 6 diámetros para el armado: 25 - 20 - 16 - 12 - 10 - 8

ESFUERZOS: surgen de los diagramas envolventes de características.

Las coordenadas son desde el borde izquierdo.

Xmx= coord. del momento máximo de tramo desde el borde izquierdo.

Mr = momento mínimo reglamentario.

R = indica dimensionado con mínimo.

Se generaron los siguientes archivos:

<nombre maestro>.VM = archivo maestro de cargas, dimensiones y armado

<nombre maestro>.VR = archivo con datos del replanteo y repeticiones

<nombre maestro>.VS = archivo de salida acumulativo por plantas

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3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 8º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho						Bdob			Adic			tens i d Kg/cm²	estr. sep. cm	OBS
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm² nº	Fe i Fe'i cm² nº	Fe d Fe'd cm² nº	Fe i Fe'i cm² nº	Fe d Fe'd cm² nº	i d nº	i d nº	i d nº									
1103 4	0.85 R	2.20	+0.9 +0.9	+0.2 +0.2	1.1	-0.3 -0.3	15 15	36 40	1.5 0.0	3 8 0 0	0.4 0.0	2 8 0 0	0.4 0.0	2 8 0 0	0 0	0 0	1.7 1.7	6 20							
1105 3	0.85 R	4.00	+1.3 +2.1	+1.0 +1.0	1.5	+0.0 -1.7	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.9 0.0	2 10 0 0	0 0	0 0	2.4 3.9	6 20							
1115 3	2.00 R	3.20	+2.5 +3.9	+1.6 +1.4	1.3	+0.0 -2.2	15 15	36 40	2.0 0.0	3 10 0 0	0.0 0.0	0 0 0 0	2.5 0.0	2 12 0 0	0 0	0 0	4.6 7.2	6 20							
1116 4	2.00 R	3.30	+3.5 +3.1	+0.8 +0.9	1.8	-2.2 -1.6	15 15	36 40	1.5 0.0	3 8 0 0	2.5 0.0	2 12 0 0	1.7 0.0	2 10 0 0	0 0	0 0	6.5 5.8	6 20							
1122 1	1.40 R	1.00	+0.7 +0.7	+0.2 +0.2	0.5	+0.0 +0.0	15 15	60 110	2.5 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0.8 0.8	6 20							
1123 1	1.05 R	4.50	+2.4 +2.4	+2.7 +2.7	2.3	+0.0 +0.0	15 15	36 40	3.5 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	4.4 4.4	6 20							
1124 1	1.60 R	2.15	+1.7 +1.7	+0.9 +0.9	1.1	+0.0 +0.0	15 15	66 110	2.5 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	1.7 1.7	6 20							
1126 1	0.40 R	1.00	+0.2 +0.2	+0.1 +0.1	0.5	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0.4 0.4	6 20							
1128 1	0.55 R	2.15	+0.6 +0.6	+0.3 +0.3	1.1	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	1.1 1.1	6 20							
M1151 5	0.20 R	1.65	+0.3 +0.0	+0.0 +0.0	0.0	-0.3 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.3 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0.6 0.0	8 20	(*)						
1151 1	0.65 R	2.25	+0.7 +0.7	+0.4 +0.4	1.1	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	1.4 1.4	6 20							
1152 1	0.50 R	6.15	+1.5 +1.5	+2.4 +2.4	3.1	+0.0 +0.0	15 15	50 55	2.2 0.0	3 10 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.1 2.1	6 20							
1153 1	0.80 R	6.15	+2.5 +2.5	+3.8 +3.8	3.1	+0.0 +0.0	15 15	50 55	3.6 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.3 3.3	6 20							
1160 1	1.15 R	2.60	+1.5 +1.5	+1.0 +1.0	1.3	+0.0 +0.0	15 15	27 30	1.7 0.0	3 10 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.7 3.7	6 20							

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a memos que se indique algo diferente

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3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 7º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob i d nº	Adic tens			estr. sep. OBS cm
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm²	nº	Fe i Fe'i cm²	nº	Fe d Fe'd cm²	nº		i d nº	i d Kg/cm²	i d	
1003 4	3.70 R	2.20	+4.1 +4.1	+0.8 +0.8	1.1	-1.5 -1.5	15 15	36 40	1.5 0.0	3 8 0 0	1.6 0.0	2 10 0 0	1.6 0.0	2 10 0 0	0 0	0 0	0 0	7.5 7.5	6 20
1005 3	3.95 R	4.00	+5.9 +9.9	+4.4 +4.4	1.5	+0.0 -7.9	15 15	36 40	6.2 0.0	3 16 0 0	0.0 0.0	0 0 0 0	10.2 0.0	5 16 0 0	1 2	0 0	0 0	11.0 18.3	6 20
1010 3	1.30 R	2.50	+1.2 +2.1	+0.5 +0.6	0.9	+0.0 -1.1	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.9 0.0	2 10 0 0	0 0	0 0	0 0	1.4 2.3	8 15 =V1012
1011 4	1.30 R	3.30	+2.1 +2.2	+0.6 +0.6	1.6	-1.1 -1.2	40 40	22 25	1.5 0.0	3 8 0 0	1.9 0.0	2 10 0 0	2.2 0.0	3 10 0 0	0 0	0 0	0 0	2.4 2.5	8 15
1015 3	2.65 R	3.30	+3.5 +5.3	+2.2 +2.0	1.4	+0.0 -3.0	15 15	36 40	2.9 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.4 0.0	3 12 0 0	0 0	0 0	0 0	6.4 9.8	6 20
1016 4	2.55 R	3.30	+4.5 +3.9	+1.0 +1.2	1.8	-3.0 -1.9	15 15	36 40	1.5 0.0	3 8 0 0	3.4 0.0	3 12 0 0	2.1 0.0	3 10 0 0	1 0	0 0	0 0	8.4 7.2	6 20
1022 3	1.10 R	3.30	+5.8 +6.3	+5.7 +5.7	1.1	+0.0 -5.6	20 20	36 40	7.8 0.0	3 20 0 0	0.0 0.0	0 0 0 0	6.5 0.0	2 20 0 0	0 0	0 0	0 0	8.0 8.8	8 20
P/X: 4.9/ 1.1 3.6/ 1.1																			
1023 4	1.00 R	3.30	+8.7 +4.1	+3.4 +3.4	1.1	-5.6 -3.2	20 20	36 40	4.5 0.0	3 16 0 0	6.5 0.0	2 20 0 0	3.6 0.0	2 16 0 0	0 0	0 0	0 0	12.1 5.7	8 15
P/X: 5.9/ 1.1 3.6/ 1.1																			
1024 3	0.70 R	3.30	+3.8 +4.1	+3.7 +3.7	1.1	+0.0 -3.6	15 15	36 40	5.1 0.0	3 16 0 0	0.0 0.0	0 0 0 0	4.1 0.0	2 16 0 0	0 0	0 0	0 0	7.0 7.6	6 20
P/X: 2.0/ 1.1 3.6/ 1.1																			
1025 4	0.70 R	3.30	+5.6 +2.7	+2.1 +2.2	1.1	-3.6 -2.1	15 15	36 40	2.8 0.0	3 12 0 0	4.1 0.0	2 16 0 0	2.3 0.0	3 10 0 0	0 0	0 0	0 0	10.4 5.0	6 12
P/X: 2.4/ 1.1 3.6/ 1.1																			
M1051 5	1.00 R	1.70	+1.7 +0.0	+0.0 +0.0	0.0	-1.4 +0.0	15 15	46 50	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	2.5 0.0	8 20 (*)
1051 1	1.30 R	5.60	+8.8 +7.5	+17.3 +17.3	2.4	+0.0 +0.0	20 20	55 60	16.4 0.0	6 20 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	1 0	0 0	0 0	8.0 6.8	8 20
P/X: 5.8/ 2.4 3.2/ 2.4																			
1052 2	1.00 R	2.75	+1.7 +1.0	+0.5 +0.5	1.8	-0.9 +0.0	15 15	46 50	1.5 0.0	3 8 0 0	0.8 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	2.5 1.5	6 20
1053 1	1.40 SP	5.10	+3.6 +3.6	+4.6 +4.6	2.5	+0.0 +0.0	83 15	36 40	5.7 0.0	3 16 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	6.6 6.6	6 20
1054 1	2.60 P	5.60	+15.9 0.11	+30.6 +13.7	2.4	+0.0 +0.0	110 20	52 60	27.7 0.0	6 25 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	15.2 13.2	8 10
P/X: 6.3/ 2.4 8.7/ 2.4																			
1055 2	3.20 P	2.75	+5.5 +3.3	+1.7 +1.7	1.8	-3.0 +0.0	74 15	55 60	1.5 0.0	3 8 0 0	2.1 0.0	3 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	6.7 4.0	6 20
1059 1	0.95 R	1.80	+0.9 +0.9	+0.4 +0.4	0.9	+0.0 +0.0	15 15	27 30	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	2.1 2.1	6 20 =V1063
1060 1	4.25 R	2.65	+5.6 +5.6	+3.7 +3.7	1.4	+0.0 +0.0	15 15	36 40	5.1 0.0	3 16 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	10.4 10.4	6 20

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras.

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a menos que se indique lo contrario.

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3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 6º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 2

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob i d nº	Adic i d nº	tens i d Kg/cm²	estr. sep. cm	OBS	
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm²	i nº	Fe i Fe'i cm²	nº	Fe d Fe'd cm²	nº						
900 3	2.40 R	3.20	+3.0 +4.7	+1.9 +1.7	1.3	+0.0 -2.7	40 40	22 25	4.0 0.0	4 12 0 0	0.0 0.0	0 0 0 0	4.9 0.0	2 16 0 0	0 0	0 0	3.4 5.3	8 15	=V910/14	
901 4	2.40 R	3.25	+4.2 +3.7	+0.9 +1.1	1.8	-2.7 -1.8	40 40	22 25	1.9 0.0	3 10 0 0	4.9 0.0	2 16 0 0	3.3 0.0	3 12 0 0	0 0	0 0	4.7 4.1	8 15	=V911	
902 2	2.40 R	1.50	+2.3 +1.4	+0.4 +0.4	0.9	-0.7 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 1.5	8 15	=V912/13	
903 4	1.40 SP	2.10 0.08	+1.5 +1.5	+0.3 +0.3	1.0	-0.5 -0.5	32 15	36 40	1.5 0.0	3 8 0 0	0.5 0.0	2 8 0 0	0.5 0.0	2 8 0 0	0 0	0 0	2.7 2.7	6 20	=V904	
905 3	1.55 P	2.10 0.08	+1.2 +2.0	+0.5 +0.5	0.8	+0.0 -0.9	60 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.9 0.0	2 8 0 0	0 0	0 0	2.3 3.8	6 20		
915 3	2.75 SP	3.25 0.11	+3.5 +5.4	+2.2 +2.0	1.3	+0.0 -3.2	50 15	36 40	2.8 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.6 0.0	2 16 0 0	0 0	0 0	6.5 10.1	6 12		
916 4	2.75 SP	3.35 0.11	+4.9 +4.3	+1.1 +1.3	1.8	-3.2 -2.3	42 15	36 40	1.5 0.0	3 8 0 0	3.6 0.0	2 16 0 0	2.5 0.0	2 12 0 0	1 1	0 0	9.0 8.0	6 20		
917 4	2.75 SP	3.30 0.11	+7.4 +6.7	+3.3 +3.3	1.5	-4.7 -4.4	31 15	36 40	4.2 0.0	4 12 0 0	5.5 0.0	3 16 0 0	5.0 0.0	2 16 0 0	0 0	0 0	13.7 12.4	8 15		
P/X: 5.0/ 1.5																				
922 3	0.80 R	3.35	+2.2 +2.5	+1.8 +1.8	1.0	+0.0 -1.9	20 20	27 30	3.2 0.0	3 12 0 0	0.0 0.0	0 0 0 0	2.9 0.0	3 12 0 0	0 0	0 0	4.1 4.7	6 20		
P/X: 2.1/ 1.0																				
923 4	0.80 R	3.30	+3.0 +1.7	+0.7 +0.8	1.2	-1.9 -1.1	20 20	27 30	1.5 0.0	3 8 0 0	2.9 0.0	3 12 0 0	1.5 0.0	3 8 0 0	0 0	0 0	5.6 3.1	6 20		
P/X: 2.1/ 1.0																				
924 3	0.95 R	3.35	+2.4 +2.8	+2.0 +1.9	1.0	+0.0 -2.1	20 20	27 30	3.5 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.1 0.0	3 12 0 0	0 0	0 0	4.5 5.3	6 20		
P/X: 2.1/ 1.0																				
925 4	0.85 R	3.30	+3.2 +1.7	+0.7 +0.8	1.3	-2.1 -1.1	20 20	27 30	1.5 0.0	3 8 0 0	3.1 0.0	3 12 0 0	1.5 0.0	3 8 0 0	0 0	0 0	5.9 3.2	6 20		
P/X: 2.1/ 1.0																				
931 3	2.95 R	3.35	+3.9 +6.0	+2.6 +2.3	1.4	+0.0 -3.5	15 15	93 100	2.3 0.0	3 10 0 0	0.0 0.0	0 0 0 0	1.4 0.0	3 8 0 0	0 0	0 0	2.8 4.3	6 20		
932 4	2.85 R	3.30	+5.1 +4.3	+1.1 +1.3	1.8	-3.5 -2.1	15 15	93 100	2.3 0.0	3 10 0 0	1.4 0.0	3 8 0 0	0.9 0.0	2 8 0 0	0 0	0 0	3.7 3.1	6 20		
M951 5	1.00 R	1.65	+1.6 +0.0	+0.0 +0.0	0.0	-1.4 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	0.9 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.0 0.0	8 20	(*)	
951 3	1.25 R	5.70	+3.2 +6.9	+2.7 +4.2	R 2.6	+0.0 -11.3	15 15	55 60	3.5 0.0	3 12 0 0	0.0 0.0	0 0 0 0	8.7 0.0	4 16 0 0	0 1	0 0	3.9 8.4	6 20		
P/X: 2.4/ 3.3																				
952 2	1.34 R	5.50	+11.1 +5.9	+11.5 +9.5	2.6	-11.3 +0.0	15 15	55 60	10.6 0.0	6 16 0 0	8.7 0.0	4 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	13.4 7.2	8 15		
P/X: 2.4/ 2.0 7.2/ 2.6																				
953 1	0.95 R	4.45	+2.1 +2.1	+2.3 +2.3	2.3	+0.0 +0.0	20 20	27 30	4.2 0.0	4 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.9 3.9	6 20		
954 3	2.50 R	5.75	+6.7 +14.5	+5.6 +8.9	R 2.7	+0.0 -24.0	20 20	55 60	7.7 0.0	4 16 0 0	0.0 0.0	0 0 0 0	20.2 0.0	6 20 0 0	0 3	0 0	6.0 13.2	6 20		
P/X: 2.4/ 3.3 3.0/ 3.3																				

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a memos que se indique algo diferente

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3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3														n = 250 Kg/cm²				s = 4200 Kg/cm²		
Planta: s/Piso 6º														Recubrimiento = 2 cm				Hoja: 2		
número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			H D cm	TRAMO		Apoyos izquierdo y derecho				Bdob i nº	Adic tens			estr. sep. OBS cm
						Mi Md tm	bm bo cm	Fe Fe' cm² nº		Fe i Fe' i cm² nº	Fe d Fe' d cm² nº	i d nº	i d nº	i d Kg/cm²						
955 2	2.50 R	5.75	+21.9 +12.1	+25.0 +21.0	2.8	-24.0 +0.0	20 20	52 60	26.4 3.7	6 5	25 8	22.3 0.0	5 0	25 0	0.0 0.0	0 0	2 1	0 0	21.1 11.7	10 10
P/X: 2.8/ 2.1 3.2/ 2.6 13.7/ 2.8																				
958 1	1.25 R	8.00	+5.0 +5.0	+10.0 +10.0	4.0	+0.0 +0.0	20 20	55 60	8.8 0.0	3 0	20 0	0.0 0.0	0 0	0 0	0.0 0.0	0 0	0 0	0 0	4.5 4.5	8 20
961 1	1.35 R	1.65	+1.1 +1.1	+0.5 +0.5	0.9	+0.0 +0.0	40 40	22 25	1.5 0.0	3 0	8 0	0.0 0.0	0 0	0 0	0.0 0.0	0 0	0 0	0 0	1.3 1.3	8 15
960 1	2.20 R	2.60	+2.9 +2.9	+1.9 +1.9	1.3	+0.0 +0.0	15 15	36 40	2.4 0.0	3 0	12 0	0.0 0.0	0 0	0 0	0.0 0.0	0 0	0 0	0 0	5.3 5.3	6 20

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras.

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a menos que se indique lo contrario.

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo										Pagina	21
	Tema: Estructura de Hormigon Armado										Versión	0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 5º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho						Bdob		Adic tens		estr. sep. OBS cm
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm² nº		Fe i Fe'i cm² nº		Fe d Fe'd cm² nº			d d nº	i i nº	i d Kg/cm²			
800 3	0.55 R	3.20	+0.7 +1.1	+0.4 +0.4 1.3		+0.0 -0.6	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.1 0.0	2 8 0 0	0 0	0 0	0 0	0 0	0.8 1.2	8 15	=V810/14
801 4	0.55 R	3.25	+0.9 +0.8	+0.2 +0.2 1.8		-0.6 -0.4	40 40	22 25	1.5 0.0	3 8 0 0	1.1 0.0	2 8 0 0	0.7 0.0	2 8 0 0	0 0	0 0	0 0	0 0	1.1 1.0	8 15	
802 2	0.55 R	1.50	+0.5 +0.3	+0.1 +0.1 0.9		-0.2 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.3 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	0.6 0.4	8 15	=V812
803 4	1.00 R P/X:	2.10 1.6/	+1.5 +2.2 1.4	+0.4 +0.4 1.4		-0.6 -0.9	15 15	36 40	1.5 0.0	3 8 0 0	0.7 0.0	2 8 0 0	0.9 0.0	2 8 0 0	0 0	0 0	0 0	0 0	2.7 4.1	6 20	
804 1	0.40 R	1.80	+0.4 +0.4	+0.2 +0.2 0.9		+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	0.7 0.7	6 20	
805 1	0.40 R P/X:	2.10 1.6/	+0.9 +1.5 1.4	+0.9 +0.9 1.4		+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	1.8 2.8	6 20	
815 3	1.10 R	3.25	+1.4 +2.2	+0.9 +0.8 1.3		+0.0 -1.2	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.3 0.0	3 8 0 0	0 0	0 0	0 0	0 0	2.6 4.0	6 20	
816 4	1.00 R	3.35	+1.8 +1.5	+0.4 +0.5 1.9		-1.2 -0.8	15 15	36 40	1.5 0.0	3 8 0 0	1.3 0.0	3 8 0 0	0.8 0.0	2 8 0 0	0 0	0 0	0 0	0 0	3.4 2.9	6 20	
831 3	1.10 R	3.25	+1.4 +2.1	+0.9 +0.8 1.4		+0.0 -1.1	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.2 0.0	2 8 0 0	0 0	0 0	0 0	0 0	2.7 4.0	6 20	
832 4	0.80 R	3.35	+1.5 +1.3	+0.3 +0.4 1.7		-1.1 -0.6	15 15	36 40	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.6 0.0	2 8 0 0	0 0	0 0	0 0	0 0	2.8 2.5	6 20	
849 1	0.80 R	4.10	+1.6 +1.6	+1.7 +1.7 2.0		+0.0 +0.0	15 15	27 30	3.0 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	4.0 4.0	6 20	=V859
851 3	1.90 SP	5.70 0.11	+4.1 +6.7	+4.4 +4.3 2.2		+0.0 -7.4	76 15	55 60	3.6 0.0	3 12 0 0	0.0 0.0	0 0 0 0	5.5 0.0	5 12 0 0	0 1	0 0	0 0	0 0	5.0 8.1	6 20	
852 2	1.90 SP	5.50 0.11	+6.6 +3.9	+3.9 +4.0 3.5		-7.4 +0.0	74 15	55 60	3.2 0.0	3 12 0 0	5.5 0.0	7 10 0 0	0.0 0.0	0 0 0 0	1 0	0 0	0 0	0 0	8.0 4.7	6 20	
854 3	3.60 P	5.75 0.11	+7.8 +12.9	+8.4 +8.4 2.2		+0.0 -14.9	137 14	55 60	6.8 0.0	4 16 0 0	0.0 0.0	0 0 0 0	12.1 0.0	6 16 0 0	0 0	0 0	0 0	0 0	10.1 16.8	8 12	
855 2	3.60 P	5.75 0.11	+12.9 +7.8	+8.4 +8.4 3.6		-14.9 +0.0	137 14	55 60	6.8 0.0	4 16 0 0	12.1 0.0	6 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	16.8 10.1	8 12	
860 1	2.20 R	2.60	+2.9 +2.9	+1.9 +1.9 1.3		+0.0 +0.0	15 15	36 40	2.4 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	5.3 5.3	6 20	
861 1	0.85 R	1.65	+0.7 +0.7	+0.3 +0.3 0.9		+0.0 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	0.8 0.8	8 15	
M851 5	1.90 R	1.65	+3.1 +0.0	+0.0 +0.0 0.0		-2.6 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	1.8 0.0	2 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	0 0	3.8 0.0	8 20	

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a memos que se indique algo diferente

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo										Pagina	22
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3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 4º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			Fe Fe' cm²	nº	Apoyos izquierdo y derecho				Bdob i nº	Adic i nº	tens i d Kg/cm²	estr. sep. cm	OBS
						Mi Md tm	bm bo cm	H D cm			Fe i Fe'i cm²	nº	Fe d Fe'd cm²	nº					
700 3	2.40 R	3.20	+3.0 +4.7	+1.9 +1.7	1.3	+0.0 -2.7	40 40	22 25	4.0 0.0	4 12 0 0	0.0 0.0	0 0 0 0	4.9 0.0	2 16 0 0	0 0	0 0	3.4 5.3	8 15	=V710/14
701 4	2.40 R	3.25	+4.2 +3.7	+0.9 +1.1	1.8	-2.7 -1.8	40 40	22 25	1.9 0.0	3 10 0 0	4.9 0.0	2 16 0 0	3.3 0.0	3 12 0 0	0 0	0 0	4.7 4.1	8 15	
702 2	2.40 R	1.50	+2.3 +1.4	+0.4 +0.4	0.9	-0.7 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 1.5	8 15	=V712/13
703 4	1.40 R	2.10	+1.5 +1.5	+0.3 +0.3	1.0	-0.5 -0.5	15 15	36 40	1.5 0.0	3 8 0 0	0.5 0.0	2 8 0 0	0.5 0.0	2 8 0 0	0 0	0 0	2.7 2.7	6 20	
704 1	1.55 R	1.80	+1.4 +1.4	+0.6 +0.6	0.9	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 2.6	6 20	
705 1	1.55 R	2.10	+1.6 +1.6	+0.9 +0.9	1.0	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.0 3.0	6 20	
715 3	2.75 R	3.25	+3.5 +5.4	+2.2 +2.0	1.3	+0.0 -3.1	15 15	36 40	2.9 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.5 0.0	3 12 0 0	0 0	0 0	6.5 10.1	6 12	
716 4	2.65 R	3.35	+4.7 +4.2	+1.1 +1.2	1.8	-3.1 -2.2	15 15	36 40	1.5 0.0	3 8 0 0	3.5 0.0	3 12 0 0	2.4 0.0	3 10 0 0	1 0	0 0	8.8 7.7	6 20	
731 3	1.75 R	3.25	+2.1 +3.5	+1.3 +1.3	1.3	+0.0 -2.3	15 15	36 40	1.7 0.0	3 10 0 0	0.0 0.0	0 0 0 0	2.6 0.0	2 12 0 0	0 0	0 0	4.0 6.6	6 20	
732 4	2.45 R	3.35	+4.1 +4.1	+1.1 +1.1	1.7	-2.3 -2.3	15 15	36 40	1.5 0.0	3 8 0 0	2.6 0.0	2 12 0 0	2.5 0.0	2 12 0 0	0 0	0 0	7.6 7.6	6 20	
751 3	1.90 SP	5.70 0.11	+4.1 +6.7	+4.4 +4.3	2.2	+0.0 -7.4	76 15	55 60	3.6 0.0	3 12 0 0	0.0 0.0	0 0 0 0	5.5 0.0	5 12 0 0	0 1	0 0	5.0 8.1	6 20	
752 2	1.90 SP	5.50 0.11	+6.6 +3.9	+3.9 +4.0	3.5	-7.4 +0.0	74 15	55 60	3.2 0.0	3 12 0 0	5.5 0.0	7 10 0 0	0.0 0.0	0 0 0 0	1 0	0 0	8.0 4.7	6 20	
754 3	3.60 R	5.75	+7.8 +12.9	+8.4 +8.4	2.2	+0.0 -14.9	14 14	55 60	7.5 0.0	4 16 0 0	0.0 0.0	0 0 0 0	12.1 0.0	6 16 0 0	0 0	0 0	10.1 16.8	8 12	=V756
755 2	3.60 R	5.75	+12.9 +7.8	+8.4 +8.4	3.6	-14.9 +0.0	14 14	55 60	7.5 0.0	4 16 0 0	12.1 0.0	6 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	16.8 10.1	8 12	
760 1	2.20 R	2.60	+2.9 +2.9	+1.9 +1.9	1.3	+0.0 +0.0	15 15	36 40	2.4 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	5.3 5.3	6 20	
758 1	1.25 R	8.00	+5.0 +5.0	+10.0 +10.0	4.0	+0.0 +0.0	20 20	55 60	8.8 0.0	3 20 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	4.5 4.5	8 20	
761 1	1.35 R	1.65	+1.1 +1.1	+0.5 +0.5	0.9	+0.0 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	1.3 1.3	8 15	
M751 5	1.90 R	1.65	+3.1 +0.0	+0.0 +0.0	0.0	-2.6 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	1.8 0.0	2 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.8 0.0	8 20	

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras

	Obra: Villa Olimpica – Edificio UG3												V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo												Pagina	23
	Tema: Estructura de Hormigon Armado												Versión	0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 3º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob d nº	Adic tens			estr. sep. cm	OBS
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm²	nº	Fe i Fe'i cm²	nº	Fe d Fe'd cm²	nº		i d nº	i d Kg/cm²	i d cm		
600 3	2.40 R	3.20	+3.0 +4.7	+1.9 +1.7 1.3		+0.0 -2.7	40 40	22 25	4.0 0.0	4 12 0 0	0.0 0 0	0 0 0 0	4.9 0.0	2 16 0 0	0 0	0 0	0 0	3.4 5.3	8 15	=V610/14
601 4	2.40 R	3.25	+4.2 +3.7	+0.9 +1.1 1.8		-2.7 -1.8	40 40	22 25	1.9 0.0	3 10 0 0	4.9 0.0	2 16 0 0	3.3 0.0	3 12 0 0	0 0	0 0	0 0	4.7 4.1	8 15	=V611
602 2	2.40 R	1.50	+2.3 +1.4	+0.4 +0.4 0.9		-0.7 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	2.6 1.5	8 15	=V612
603 4	1.40 SP	2.10 0.08	+1.5 +1.5	+0.3 +0.3 1.0		-0.5 -0.5	32 15	36 40	1.5 0.0	3 8 0 0	0.5 0.0	2 8 0 0	0.5 0.0	2 8 0 0	0 0	0 0	0 0	2.7 2.7	6 20	
605 3	1.55 P	2.10 0.08	+1.2 +2.0	+0.5 +0.5 0.8		+0.0 -0.9	60 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.9 0.0	2 8 0 0	0 0	0 0	0 0	2.3 3.8	6 20	=V604
615 3	1.10 SP	3.25 0.11	+1.4 +2.2	+0.9 +0.8 1.3		+0.0 -1.3	50 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.4 0.0	3 8 0 0	0 0	0 0	0 0	2.6 4.0	6 20	
616 4	1.10 SP	3.35 0.11	+2.0 +1.7	+0.5 +0.5 1.8		-1.3 -0.9	42 15	36 40	1.5 0.0	3 8 0 0	1.4 0.0	3 8 0 0	1.0 0.0	2 8 0 0	0 0	0 0	0 0	3.6 3.2	6 20	
622 3	0.80 R	3.35	+2.2 +2.5	+1.8 +1.8 1.0		+0.0 -1.9	20 20	27 30	3.2 0.0	3 12 0 0	0.0 0.0	0 0 0 0	2.9 0.0	3 12 0 0	0 0	0 0	0 0	4.1 4.7	6 20	
P/X: 2.1/ 1.0																				
623 4	0.80 R	3.30	+3.0 +1.7	+0.7 +0.8 1.2		-1.9 -1.1	20 20	27 30	1.5 0.0	3 8 0 0	2.9 0.0	3 12 0 0	1.5 0.0	3 8 0 0	0 0	0 0	0 0	5.6 3.1	6 20	
P/X: 2.1/ 1.0																				
624 3	0.95 R	3.35	+2.4 +2.8	+2.0 +1.9 1.0		+0.0 -2.1	20 20	27 30	3.5 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.1 0.0	3 12 0 0	0 0	0 0	0 0	4.5 5.3	6 20	
P/X: 2.1/ 1.0																				
625 4	0.85 R	3.30	+3.2 +1.7	+0.7 +0.8 1.3		-2.1 -1.1	20 20	27 30	1.5 0.0	3 8 0 0	3.1 0.0	3 12 0 0	1.5 0.0	3 8 0 0	0 0	0 0	0 0	5.9 3.2	6 20	
P/X: 2.1/ 1.0																				
631 3	1.30 R	3.35	+1.7 +2.6	+1.1 +1.0 1.4		+0.0 -1.5	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.6 0.0	2 10 0 0	0 0	0 0	0 0	3.2 4.9	6 20	
632 4	1.20 R	3.30	+2.2 +1.8	+0.4 +0.5 1.9		-1.5 -0.9	15 15	36 40	1.5 0.0	3 8 0 0	1.6 0.0	2 10 0 0	0.9 0.0	2 8 0 0	0 0	0 0	0 0	4.0 3.3	6 20	
M651 5	1.00 R	1.65	+1.6 +0.0	+0.0 +0.0 0.0		-1.4 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	0.9 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	2.0 0.0	8 20	(*)
651 3	1.25 R	5.70	+3.2 +6.3	+4.2 +4.2 2.6		+0.0 -7.6	15 15	55 60	3.6 0.0	3 12 0 0	0.0 0.0	0 0 0 0	5.7 0.0	5 12 0 0	0 0	0 0	0 0	3.9 7.6	6 20	
P/X: 2.4/ 3.3																				
652 2	1.34 R	5.50	+6.6 +3.2	+3.8 +3.8 3.2		-7.6 +0.0	15 15	55 60	3.2 0.0	3 12 0 0	5.7 0.0	7 10 0 0	0.0 0.0	0 0 0 0	1 0	0 0	0 0	8.0 3.8	6 20	
P/X: 2.4/ 2.0																				
653 1	0.95 R	4.45	+2.1 +2.1	+2.3 +2.3 2.3		+0.0 +0.0	20 20	27 30	4.2 0.0	4 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	3.9 3.9	6 20	
654 3	2.50 R	5.75	+6.6 +13.2	+8.7 +8.9 2.7		+0.0 -16.6	20 20	55 60	7.6 0.0	4 16 0 0	0.0 0.0	0 0 0 0	12.9 0.0	6 16 0 0	0 0	0 0	0 0	6.0 12.0	8 51	
P/X: 2.4/ 3.3																				
655 2	2.50 R	5.75	+13.6 +6.8	+9.2 +9.0 3.0		-16.6 +0.0	20 20	55 60	8.0 0.0	4 16 0 0	12.9 0.0	6 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	12.4 6.2	8 15	
P/X: 2.8/ 2.1																				
661 1	1.35 R	1.65	+1.1 +1.1	+0.5 +0.5 0.9		+0.0 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	1.3 1.3	8 15	

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras

	Obra: Villa Olimpica – Edificio UG3												V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo												Pagina	24
	Tema: Estructura de Hormigon Armado												Versión	0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 2º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob Adic tens			estr. sep. OBS cm	
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm² nº		Fe i Fe'i cm² nº		Fe d Fe'd cm² nº		i d nº	i d nº	i d Kg/cm²		
500 3	2.40 R	3.20	+3.0 +4.7	+1.9 +1.7	1.3	+0.0 -2.7	40 40	22 25	4.0 0.0	4 12 0 0	0.0 0.0	0 0 0 0	4.9 0.0	2 16 0 0	0 0	0 0	3.4 5.3	8 15	=V510/14
501 4	2.40 R	3.25	+4.2 +3.7	+0.9 +1.1	1.8	-2.7 -1.8	40 40	22 25	1.9 0.0	3 10 0 0	4.9 0.0	2 16 0 0	3.3 0.0	3 12 0 0	0 0	0 0	4.7 4.1	8 15	=V511
502 2	2.40 R	1.50	+2.3 +1.4	+0.4 +0.4	0.9	-0.7 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 1.5	8 15	=V512/13
503 4	1.40 R	2.10	+1.5 +1.5	+0.3 +0.3	1.0	-0.5 -0.5	15 15	36 40	1.5 0.0	3 8 0 0	0.5 0.0	2 8 0 0	0.5 0.0	2 8 0 0	0 0	0 0	2.7 2.7	6 20	
504 1	1.55 R	1.80	+1.4 +1.4	+0.6 +0.6	0.9	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 2.6	6 20	
505 1	1.55 R	2.10	+1.6 +1.6	+0.9 +0.9	1.0	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.0 3.0	6 20	
515 3	2.75 R	3.25	+3.5 +5.4	+2.2 +2.0	1.3	+0.0 -3.1	15 15	36 40	2.9 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.5 0.0	3 12 0 0	0 0	0 0	6.5 10.1	6 20	
516 4	2.65 R	3.35	+4.7 +4.2	+1.1 +1.2	1.8	-3.1 -2.2	15 15	36 40	1.5 0.0	3 8 0 0	3.5 0.0	3 12 0 0	2.4 0.0	3 10 0 0	1 0	0 0	8.8 7.7	6 20	
531 3	1.75 R	3.25	+2.1 +3.5	+1.3 +1.3	1.3	+0.0 -2.3	15 15	36 40	1.7 0.0	3 10 0 0	0.0 0.0	0 0 0 0	2.6 0.0	2 12 0 0	0 0	0 0	4.0 6.6	6 20	
532 4	2.45 R	3.35	+4.1 +4.1	+1.1 +1.1	1.7	-2.3 -2.3	15 15	36 40	1.5 0.0	3 8 0 0	2.6 0.0	2 12 0 0	2.5 0.0	2 12 0 0	0 0	0 0	7.6 7.6	6 20	
551 3	1.90 SP	5.70 0.11	+4.1 +6.7	+4.4 +4.3	2.2	+0.0 -7.4	76 15	55 60	3.6 0.0	3 12 0 0	0.0 0.0	0 0 0 0	5.5 0.0	5 12 0 0	0 1	0 0	5.0 8.1	6 20	
552 2	1.90 SP	5.50 0.11	+6.6 +3.9	+3.9 +4.0	3.5	-7.4 +0.0	74 15	55 60	3.2 0.0	3 12 0 0	5.5 0.0	7 10 0 0	0.0 0.0	0 0 0 0	1 0	0 0	8.0 4.7	6 20	
554 3	3.60 R	5.75	+7.8 +12.9	+8.4 +8.4	2.2	+0.0 -14.9	14 14	55 60	7.5 0.0	4 16 0 0	0.0 0.0	0 0 0 0	12.1 0.0	6 16 0 0	0 0	0 0	10.1 16.8	8 12	=V556
555 2	3.60 R	5.75	+12.9 +7.8	+8.4 +8.4	3.6	-14.9 +0.0	14 14	55 60	7.5 0.0	4 16 0 0	12.1 0.0	6 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	16.8 10.1	8 12	=V557
560 1	2.20 R	2.60	+2.9 +2.9	+1.9 +1.9	1.3	+0.0 +0.0	15 15	36 40	2.4 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	5.3 5.3	6 20	
558 1	1.25 R	8.00	+5.0 +5.0	+10.0 +10.0	4.0	+0.0 +0.0	20 20	55 60	8.8 0.0	3 20 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	4.5 4.5	8 20	
561 1	1.35 R	1.65	+1.1 +1.1	+0.5 +0.5	0.9	+0.0 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	1.3 1.3	8 15	
M551 5	1.90 R	1.65	+3.1 +0.0	+0.0 +0.0	0.0	-2.6 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	1.8 0.0	2 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.8 0.0	8 20	(*)

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a menos que se indique algo diferente.

	Obra: Villa Olimpica – Edificio UG3												V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo												Pagina	25
	Tema: Estructura de Hormigon Armado												Versión	0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Piso 1º

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob		Adic tens		estr. sep. OBS cm
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm²	nº	Fe i Fe'i cm²	nº	Fe d Fe'd cm²	nº	i d nº	i d nº	i d Kg/cm²		
400 3	0.55 R	3.20	+0.7 +1.1	+0.4 +0.4	1.3	+0.0 -0.6	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	1.1 0.0	2 8 0 0	0 0	0 0	0.8 1.2	8 15	=V410
401 4	0.55 R	3.25	+0.9 +0.8	+0.2 +0.2	1.8	-0.6 -0.4	40 40	22 25	1.5 0.0	3 8 0 0	1.1 0.0	2 8 0 0	0.7 0.0	2 8 0 0	0 0	0 0	1.1 1.0	8 15	=V411
402 2	0.55 R	1.50	+0.5 +0.3	+0.1 +0.1	0.9	-0.2 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.3 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0.6 0.4	8 15	=V412
403 4	1.40 R	2.10	+1.5 +1.5	+0.3 +0.3	1.0	-0.5 -0.5	15 15	36 40	1.5 0.0	3 8 0 0	0.5 0.0	2 8 0 0	0.5 0.0	2 8 0 0	0 0	0 0	2.7 2.7	6 20	
404 1	1.55 R	1.80	+1.4 +1.4	+0.6 +0.6	0.9	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 2.6	6 20	
405 1	1.55 R	2.10	+1.6 +1.6	+0.9 +0.9	1.0	+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.0 3.0	6 20	
414 1	4.10 R P/X:	6.70 0.12 97.4/	+63.2 +61.7 3.3	+186.1 +186.1 3.3		+0.0 +0.0	50 50	84 100	119.5 28.0	25 25 24 12	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	7 7	0 0	15.0 14.7	8 20	DOBLES
415 3	2.75 R	3.25	+3.5 +5.4	+2.2 +2.0	1.3	+0.0 -3.1	15 15	36 40	2.9 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.5 0.0	3 12 0 0	0 0	0 0	6.5 10.1	6 20	
416 4	2.65 R	3.35	+4.7 +4.2	+1.1 +1.2	1.8	-3.1 -2.2	15 15	36 40	1.5 0.0	3 8 0 0	3.5 0.0	3 12 0 0	2.4 0.0	3 10 0 0	1 0	0 0	8.8 7.7	6 20	
417 4	2.75 SP P/X:	3.30 0.11 5.0/	+7.4 +6.7 1.5	+3.3 +3.3	1.5	-4.7 -4.4	31 15	36 40	4.2 0.0	4 12 0 0	5.5 0.0	3 16 0 0	5.0 0.0	2 16 0 0	2 1	0 0	13.7 12.4	6 20	
424 1	5.20 P P/X:	6.70 0.12 162.8/	+100.0 +97.6 3.3	+301.8 +301.8 3.3		+0.0 +0.0	167 60	80 100	198.0 34.3	41 25 41 10	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	25 25	0 0	20.8 20.3	10 9	DOBLES
430 1	4.10 SP P/X:	6.70 0.12 79.9/	+54.3 +53.1 3.3	+156.8 +156.8 3.3		+0.0 +0.0	104 50	88 100	87.3 0.0	18 25 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	3 3	0 0	12.3 12.1	8 20	DOBLES
431 3	1.75 R	3.25	+2.1 +3.5	+1.3 +1.3	1.3	+0.0 -2.3	15 15	36 40	1.7 0.0	3 10 0 0	0.0 0.0	0 0 0 0	2.6 0.0	2 12 0 0	0 0	0 0	4.0 6.6	6 20	
432 4	2.45 R	3.35	+4.1 +4.1	+1.1 +1.1	1.7	-2.3 -2.3	15 15	36 40	1.5 0.0	3 8 0 0	2.6 0.0	2 12 0 0	2.5 0.0	2 12 0 0	0 0	0 0	7.6 7.6	6 20	
451 3	1.90 SP	5.70 0.11	+4.1 +6.7	+4.4 +4.3	2.2	+0.0 -7.4	76 15	55 60	3.6 0.0	3 12 0 0	0.0 0.0	0 0 0 0	5.5 0.0	5 12 0 0	0 1	0 0	5.0 8.1	6 15	=V470
452 2	1.90 SP	5.50 0.11	+6.6 +3.9	+3.9 +4.0	3.5	-7.4 +0.0	74 15	55 60	3.2 0.0	3 12 0 0	5.5 0.0	7 10 0 0	0.0 0.0	0 0 0 0	1 0	0 0	8.0 4.7	6 20	=V471
454 3	3.60 R	5.75	+7.8 +12.9	+8.4 +8.4	2.2	+0.0 -14.9	14 14	55 60	7.5 0.0	4 16 0 0	0.0 0.0	0 0 0 0	12.1 0.0	6 16 0 0	0 0	0 0	10.1 16.8	8 12	=V457
455 2	3.60 R	5.75	+12.9 +7.8	+8.4 +8.4	3.6	-14.9 +0.0	14 14	55 60	7.5 0.0	4 16 0 0	12.1 0.0	6 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	16.8 10.1	8 12	
460 1	2.20 R	2.60	+2.9 +2.9	+1.9 +1.9	1.3	+0.0 +0.0	15 15	36 40	2.4 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	5.3 5.3	6 20	
458 1	1.25 R	8.00	+5.0 +5.0	+10.0 +10.0	4.0	+0.0 +0.0	20 20	55 60	8.8 0.0	3 20 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	4.5 4.5	8 20	
461 1	0.55 R	1.65	+0.4 +0.4	+0.2 +0.2	0.9	+0.0 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0.5 0.5	8 15	
M451 5	1.90 R	1.65	+3.1 +0.0	+0.0 +0.0	0.0	-2.6 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	1.8 0.0	2 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.8 0.0	8 20	(*) =M459

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a menos que se indique algo diferente

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo										Pagina	26
	Tema: Estructura de Hormigon Armado										Versión	0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3
Planta: s/Planta Baja

n = 250 Kg/cm² s = 4200 Kg/cm²
Recubrimiento = 2 cm Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob Adic tens			estr. sep. OBS	
						Mi Md tm	bm bo cm	H D cm	Fe Fe' cm² nº	Fe Fe' cm² nº	Fe Fe' cm² nº	Fe Fe' cm² nº	i d nº	i d nº	i d Kg/cm²				
300 3	2.40 R	3.20	+3.0 +4.7	+1.9 +1.7 1.3		+0.0 -2.7	40 40	22 25	4.0 0.0	4 12 0 0	0.0 0.0	0 0 0 0	4.9 0.0	2 16 0 0	0 0	0 0	3.4 5.3	8 15	=V310/14
301 4	2.40 R	3.25	+4.2 +3.7	+0.9 +1.1 1.8		-2.7 -1.8	40 40	22 25	1.9 0.0	3 10 0 0	4.9 0.0	2 16 0 0	3.3 0.0	3 12 0 0	0 0	0 0	4.7 4.1	8 15	
302 2	2.40 R	1.50	+2.3 +1.4	+0.4 +0.4 0.9		-0.7 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	1.2 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 1.5	8 15	=V313
303 4	1.40 R	2.10	+1.5 +1.5	+0.3 +0.3 1.0		-0.5 -0.5	15 15	36 40	1.5 0.0	3 8 0 0	0.5 0.0	2 8 0 0	0.5 0.0	2 8 0 0	0 0	0 0	2.7 2.7	6 20	
304 1	1.55 R	1.80	+1.4 +1.4	+0.6 +0.6 0.9		+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	2.6 2.6	6 20	
305 1	1.55 R	2.10	+1.6 +1.6	+0.9 +0.9 1.0		+0.0 +0.0	15 15	36 40	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	3.0 3.0	6 20	
312 1	2.40 R P/X: 42.1/ 3.3	4.95	+20.0 +34.0	+52.8 +52.8 3.3		+0.0 +0.0	50 50	41 50	68.8 24.1	14 25 11 16	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	2 5	0 0	9.7 16.6	8 20	DOBLES
315 1	4.00 SP P/X: 151.5/ 3.3	6.70 0.12	+94.7 +94.7	+290.8 +290.8 3.3		+0.0 +0.0	124 70	85 100	183.6 29.2	38 25 36 10	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	15.9 15.9	10 10	DOBLES
316 4	2.60 SP	3.25 0.12	+3.3 +5.1	+2.1 +1.1 1.3		+0.0 -3.0	41 15	36 40	2.7 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.3 0.0	3 12 0 0	0 0	0 0	6.1 9.5	6 20	
317 2	2.50 SP	3.35 0.12	+5.2 +3.9	+1.0 +2.0 2.1	R	-3.0 -2.0	51 15	36 40	2.5 0.0	3 12 0 0	3.3 0.0	3 12 0 0	2.2 0.0	3 10 0 0	0 0	0 0	9.7 7.2	6 20	
324 1	3.10 P P/X: 109.0/ 3.3	6.70 0.12	+75.8 +73.9	+233.4 +233.4 3.3		+0.0 +0.0	177 70	89 100	126.9 0.0	26 25 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	12.2 11.9	10 12	DOBLES
325 4	1.40 P	3.25 0.12	+2.3 +2.5	+0.5 +0.6 1.6	R	-0.9 -1.8	67 15	36 40	1.5 0.0	3 8 0 0	1.0 0.0	2 8 0 0	2.0 0.0	3 10 0 0	0 0	0 0	4.2 4.7	6 20	
326 2	1.75 P	3.25 0.12	+3.4 +2.3	+1.5 +1.3 2.0		-1.8 +0.0	84 15	36 40	1.9 0.0	3 10 0 0	2.0 0.0	3 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	6.3 4.2	6 20	
330 1	1.00 R	6.60	+3.3 +3.3	+5.4 +5.4 3.3		+0.0 +0.0	15 15	55 60	4.7 0.0	4 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	4.0 4.0	6 20	
331 3	2.50 R	3.25	+3.2 +4.9	+2.0 +1.9 1.3		+0.0 -2.8	15 15	36 40	2.7 0.0	3 12 0 0	0.0 0.0	0 0 0 0	3.2 0.0	3 12 0 0	0 0	0 0	5.9 9.1	6 20	
332 4	2.40 R	3.35	+4.3 +3.8	+1.0 +1.1 1.8		-2.8 -2.0	15 15	36 40	1.5 0.0	3 8 0 0	3.2 0.0	3 12 0 0	2.1 0.0	3 10 0 0	1 0	0 0	7.9 6.9	6 20	
351 3	1.00 R	5.70	+2.2 +3.5	+2.3 +2.3 2.2		+0.0 -3.9	15 15	55 60	1.9 0.0	3 10 0 0	0.0 0.0	0 0 0 0	2.8 0.0	4 10 0 0	0 0	0 0	2.6 4.3	8 20	
352 2	1.00 R	5.50	+3.5 +2.0	+2.1 +2.1 3.5		-3.9 +0.0	15 15	55 60	1.7 0.0	3 10 0 0	2.8 0.0	4 10 0 0	0.0 0.0	0 0 0 0	0 0	0 0	4.2 2.5	6 20	
354 3	1.65 R	5.75	+3.6 +5.9	+3.8 +3.8 2.2		+0.0 -6.8	14 14	55 60	3.3 0.0	3 12 0 0	0.0 0.0	0 0 0 0	5.0 0.0	4 12 0 0	0 0	0 0	4.6 7.7	6 20	
355 2	1.65 R	5.75	+5.9 +3.6	+3.8 +3.8 3.6		-6.8 +0.0	14 14	55 60	3.3 0.0	3 12 0 0	5.0 0.0	4 12 0 0	0.0 0.0	0 0 0 0	0 0	0 0	7.7 4.6	6 20	
360 1	2.20 R	2.60	+2.9 +2.9	+1.9 +1.9 1.3		+0.0 +0.0	15 15	36 40	2.4 0.0	3 12 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	5.3 5.3	6 20	
356 3	2.85 P	5.75 0.12	+6.2 +10.2	+6.6 +6.6 2.2		+0.0 -11.8	137 14	55 60	5.4 0.0	3 16 0 0	0.0 0.0	0 0 0 0	9.1 0.0	5 16 0 0	0 0	0 0	8.0 13.3	8 20	
357 2	2.85 P	5.75 0.12	+10.2 +6.2	+6.6 +6.6 3.6		-11.8 +0.0	137 14	55 60	5.4 0.0	3 16 0 0	9.1 0.0	5 16 0 0	0.0 0.0	0 0 0 0	0 0	0 0	13.3 8.0	8 20	

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a memos que se indique algo diferente

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
	Título: Cálculo de Apoyo	Pagina 27
	Tema: Estructura de Hormigon Armado	Versión 0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3													n = 250 Kg/cm²				s = 4200 Kg/cm²				
Planta: s/Planta Baja													Recubrimiento = 2 cm				Hoja: 2				
número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	GEOMETRIA			H D cm	TRAMO		Apoyos izquierdo y derecho				Bdob d nº	Adic tens			estr. sep. cm	OBS
						Mi Md tm	bm bo cm			Fe Fe' cm² nº		Fe i Fe'i cm² nº		Fe d Fe'd cm² nº			i d nº	i d nº	i d Kg/cm²		
358 1	1.25 R	8.00	+5.0 +5.0	+10.0 +10.0	4.0	+0.0 +0.0	20 20	55 60	8.8 0.0	3 20 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	4.5 4.5	8 20		
361 1	1.35 R	1.65	+1.1 +1.1	+0.5 +0.5	0.9	+0.0 +0.0	40 40	22 25	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	1.3 1.3	8 15		
M351 5	1.00 R	1.65	+1.6 +0.0	+0.0 +0.0	0.0	-1.4 +0.0	15 15	55 60	1.5 0.0	3 8 0 0	0.9 0.0	2 8 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	2.0 0.0	8 20	(*)	
362 1	0.80 R	1.80	+0.7 +0.7	+0.3 +0.3	0.9	+0.0 +0.0	15 15	27 30	1.5 0.0	3 8 0 0	0.0 0.0	0 0 0 0	0.0 0.0	0 0 0 0	0 0	0 0	0 0	1.8 1.8	6 20		

Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a menos que se indique algo diferente

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00	
	Título: Cálculo de Apoyo										Pagina	28
	Tema: Estructura de Hormigon Armado										Versión	0

3. CALCULO DE VIGAS

Obra: Villa Olimpica – Edificio UG3

Planta: s/Subsuelo

n = 250 Kg/cm²

s = 4200 Kg/cm²

Recubrimiento = 2 cm

Hoja: 1

número y tipo	q sec. t/m	L Dl m	Ri Rd t	Mtr. Mr tm	Xmx m	Mi Md tm	GEOMETRIA			TRAMO		Apoyos izquierdo y derecho				Bdob i d nº	Adic tens			estr. sep. cm	OBS
							bm bo cm	H D cm	Fe Fe' cm² nº	Fe i Fe'i cm² nº	Fe d Fe'd cm² nº	i d nº	i d nº	i d Kg/cm²							
204 1	0.80 SP	1.60 0.11	+0.6 +0.6	+0.3 +0.3	0.8	+0.0 +0.0	36	36	1.5	3	8	0.0	0	0	0.0	0	0	0	0	1.2	6
							15	40	0.0	0	0	0.0	0	0	0.0	0	0	1.2	20		
205 1	1.20 SP	2.00 0.11	+1.2 +1.2	+0.6 +0.6	1.0	+0.0 +0.0	42	36	1.5	3	8	0.0	0	0	0.0	0	0	0	0	2.2	6
							15	40	0.0	0	0	0.0	0	0	0.0	0	0	2.2	20		
210 3	3.20 R	3.25 0.11	+4.4 +6.0	+3.0 +2.4	1.4	+0.0 -2.6	15	36	4.1	4	12	0.0	0	0	2.9	4	10	1	0	8.1	6
							15	40	0.0	0	0	0.0	0	0	0.0	0	0	11.1	20		
211 4	3.20 R	3.30 0.11	+5.3 +6.6	-0.1 +1.5	1.6	-2.6 -6.8	15	36	1.9	3	10	2.9	3	12	8.4	3	20	0	0	9.8	8
							15	40	0.0	0	0	0.0	0	0	0.0	0	0	12.1	20		
212 2	2.95 R	5.00 0.11	+8.7 +6.0	+6.1 +5.2	3.0	-6.8 +0.0	15	36	9.1	5	16	8.4	4	16	0.0	0	0	2	0	16.2	8
							15	40	0.0	0	0	0.0	0	0	0.0	0	0	11.1	20		
213 4	2.95 R	1.60 0.11	+2.4 +2.4	+0.3 +0.3	0.8	-0.6 -0.6	15	36	1.5	3	8	0.7	2	8	0.7	2	8	0	0	4.4	6
							15	40	0.0	0	0	0.0	0	0	0.0	0	0	4.4	20		
220 3	2.95 P	6.50 0.14	+7.1 +12.0	+8.6 +8.8	2.5	+0.0 -16.0	154	43	9.0	5	16	0.0	0	0	17.3	6	20	0	0	11.1	8
							15	50	0.0	0	0	0.0	0	0	3.2	0	0	1	18.7	10	
221 2	3.00 P	6.60 0.14	+12.3 +7.5	+9.3 +9.2	4.2	-16.0 +0.0	156	43	9.8	5	16	17.3	9	16	0.0	0	0	0	0	19.1	8
							15	50	0.0	0	0	3.2	0	0	0.0	0	0	0	11.6	10	
222 4	3.50 P	3.20 0.14	+5.4 +5.8	+1.4 +1.5	1.5	-2.8 -3.4	66	27	2.3	3	10	4.3	2	16	5.5	3	16	0	0	13.3	8
							15	30	0.0	0	0	0.0	0	0	0.0	0	0	0	14.3	15	
223 2	2.95 P	3.20 0.14	+5.8 +3.7	+2.3 +2.1	2.0	-3.4 +0.0	83	27	3.8	4	12	5.5	3	16	0.0	0	0	0	0	14.3	8
							15	30	0.0	0	0	0.0	0	0	0.0	0	0	0	9.0	15	
230 3	2.90 P	6.50 0.12	+7.3 +11.5	+9.2 +8.6	2.5	+0.0 -13.8	154	44	9.4	5	16	0.0	0	0	14.9	7	16	0	0	11.1	8
							15	50	0.0	0	0	0.0	0	0	0.5	0	0	0	17.5	12	
231 2	2.45 P	6.00 0.12	+9.6 +5.1	+5.2 +6.2	4.0	-13.8 +0.0	143	55	4.3	4	12	10.8	5	16	0.0	0	0	0	0	11.7	8
							15	60	0.0	0	0	0.0	0	0	0.0	0	0	0	6.1	12	
232 4	2.90 P	3.20 0.12	+4.3 +5.0	+1.1 +1.2	1.5	-2.1 -3.2	66	27	1.8	3	10	3.2	3	12	5.0	2	16	0	0	10.7	8
							15	30	0.0	0	0	0.0	0	0	0.0	0	0	0	12.2	15	
233 2	2.90 P	3.20 0.12	+5.6 +3.7	+2.3 +2.1	2.0	-3.2 +0.0	83	27	3.9	4	12	5.0	2	16	0.0	0	0	1	0	13.9	8
							15	30	0.0	0	0	0.0	0	0	0.0	0	0	1	9.0	15	
254 1	2.95 P	8.50 0.14	+12.5 +12.5	+26.6 +26.6	4.3	+0.0 +0.0	247	53	22.8	8	20	0.0	0	0	0.0	0	0	0	0	11.8	8
							20	60	0.0	0	0	0.0	0	0	0.0	0	0	0	11.8	15	
255 4	3.55 P	5.50 0.14	+9.7 +9.9	+4.4 +4.5	2.8	-8.8 -9.3	108	55	3.6	3	12	6.4	3	16	6.9	3	16	1	0	8.8	6
							20	60	0.0	0	0	0.0	0	0	0.0	0	0	1	9.0	20	
256 2	2.55 P	5.50 0.14	+8.7 +5.3	+5.5 +5.4	3.5	-9.3 +0.0	137	55	4.5	4	12	6.9	6	12	0.0	0	0	1	0	7.9	6
							20	60	0.0	0	0	0.0	0	0	0.0	0	0	0	4.8	20	
260 1	2.20 SP	2.50 0.08	+2.8 +2.8	+1.7 +1.7	1.3	+0.0 +0.0	48	27	2.9	3	12	0.0	0	0	0.0	0	0	0	0	6.8	6
							15	30	0.0	0	0	0.0	0	0	0.0	0	0	0	6.8	20	

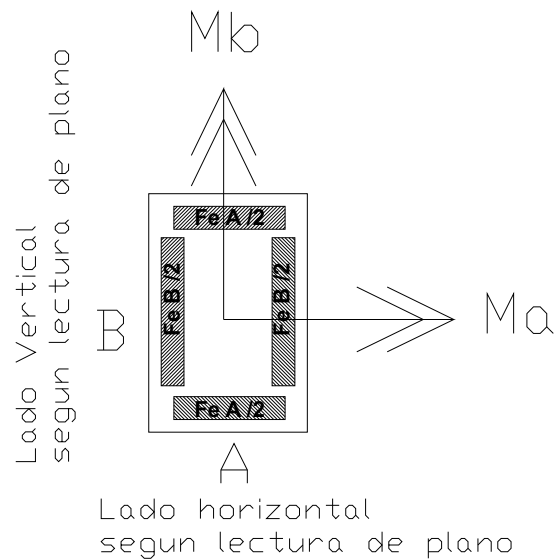
Las vigas de altura mayor a 50cm tendrán Arm. Piel 6c/20 en ambas caras

(*) Las ménsulas tendrán Arm. Piel 8c/15 en ambas caras a menos que se indique algo diferente

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
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4. CÁLCULO DE COLUMNAS

TIPOLOGIA DE COLUMNAS:



La armadura que figura en cm² es la necesaria por cálculo.

Se reconocen cuatro diámetros para el armado: 12 - 16 - 20 - 25

Las barras totales a colocar en cada columna son la suma de las que figuran en renglones de esa columna.

Las barras que se ubican en las esquinas son las que corresponden al lado de mayor Fe y si los Fe son iguales a las del mayor lado.

Se generaron los siguientes archivos:

<nombre maestro>.CM = archivo maestro de cargas

<nombre maestro>.CD = archivo con dimensiones y armado

<nombre maestro>.CS = archivo de salida acumulativo por plantas

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4. CALCULO DE COLUMNAS

TIPIFICACIÓN DE COLS - Piso 8º

Nº Columna	Igualacion
------------	------------

T05A	T05A	*
T05B	T05B	*
T06A	T06A	*
T06B	T06B	*
T06C	T06C	*
C15	C15	*
C16	C16	*
C17	C16	
C18	C19	
C19	C19	*
C20	C16	
C21	C15	
C22	C22	*
C23	C23	*
C24	C24	*
C25	C24	
C26	C24	
C27	C24	
C28	C23	
C29	C22	
C38	C38	*
C38A	C38	
C39A	C39A	*
C40A	C39A	
C41A	C39A	
C42A	C39A	
C43A	C38	
C44	C38	

TIPIFICACIÓN DE COLS - Pisos 7º

Nº Columna	Igualacion
------------	------------

T05A	T05A	*
T05B	T05B	*
T06A	T06A	*
T06B	T06B	*
T06C	T06C	*
C11	C12	
C12	C12	*
C13	C12	
C14	C14	*
C15	C15	*
C16	C16	*
C17	C16	
C18	C16	
C19	C19	*
C20	C19	
C21	C15	
C30	C30	*
C31	C31	*
C32	C32	*
C33	C31	
C34	C32	
C35	C31	
C36	C30	
C38	C38	*
C39	C39	*
C40	C39	
C41	C39	
C42	C39	
C43	C39	
C44	C38	

* indica las columnas que se calculan.

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
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4. CALCULO DE COLUMNAS

TIPIFICACIÓN DE COLS - Plantas Tipo

Nº Columna	Igualacion
T01	T01 *
C02	C02 *
C03	C02
C04	C02
T05A	T05A *
T05B	T05B *
T05C	T05C *
T06A	T06A *
T06B	T06B *
T06C	T06C *
C08	C02
C09	C02
C10	C02
C11	C12
C12	C12 *
C13	C13 *
C14	C14 *
C15	C15 *
C16	C16 *
C17	C16
C18	C19
C19	C19 *
C20	C16
C21	C15
C30	C30 *
C31	C31 *
C32	C32 *
C33	C31
C34	C32
C35	C31
C36	C30
C54	C54 *
C55	C55 *
C56	C55
C57	C55
C58	C55
C59	C55
C60	C54

TIPIFICACIÓN DE COLS - Piso 1º

Nº Columna	Igualacion
T01	T01 *
C02	C02 *
C03	C02
C04	C02
T05A	T05A *
T05B	T05B *
T05C	T05C *
T06A	T06A *
T06B	T06B *
T06C	T06C *
C08	C02
C09	C02
C10	C02
C11	C12
C12	C12 *
C13	C13 *
C14	C14 *
C15	C15 *
C17	C17 *
C18	C19
C19	C19 *
C20	C20 *
C21	C21 *
C30	C30 *
C32	C32 *
C33	C33 *
C34	C34 *
C35	C33
C36	C36 *
C54	C54 *
C56	C56 *
C57	C57 *
C58	C57
C59	C57
C60	C60 *

* indica las columnas que se calculan.

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
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4. CALCULO DE COLUMNAS

TIPIFICACIÓN DE COLS - Planta Baja

Nº Columna	Igualacion
------------	------------

T01	T01	*
C02	C02	*
C03	C02	
C04	C02	
T05A	T05A	*
T05B	T05B	*
T05C	T05C	*
T06A	T06A	*
T06B	T06B	*
T06C	T06C	*
C08	C02	
C09	C09	*
C11	C11	*
C12	C12	*
C13	C13	*
C14	C14	*
C15	C15	*
C17	C17	*
C19	C19	*
C20	C20	*
C21	C21	*
C30	C30	*
C32	C32	*
C34	C34	*
C35	C35	*
C36	C36	*
C54	C54	*
C56	C56	*
C57	C57	*
C58	C57	
C59	C57	
C60	C60	*

TIPIFICACIÓN DE COLS - Subsuelo

Nº Columna	Igualacion
------------	------------

T01A	T01A	*
T01B	T01B	*
C02	C02	*
C03	C02	
C04	C02	
T05A	T05A	*
T05B	T05B	*
T05C	T05C	*
T06A	T06A	*
T06B	T06B	*
T06C	T06C	*
C08	C08	*
C09	C09	*
C11	C11	*
C12	C12	*
C13	C13	*
C14	C14	*
C15	C15	*
C17	C17	*
C19	C19	*
C20	C20	*
C21	C21	*
C30	C30	*
C32	C32	*
C34	C34	*
C35	C35	*
C36	C36	*
C54	C54	*
C56	C56	*
C57	C57	*
C58	C58	*
C59	C57	
C60	C60	*

* indica las columnas que se calculan.

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
	Título: Cálculo de Apoyo	Pagina 33
	Tema: Estructura de Hormigon Armado	Versión 0

4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 8º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 3.00 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep		OBSERVACIONES
T05A	0.0	1.3	0.0	0.0	1.3	3.3	2.9	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6	14	
T05B	0.0	0.9	0.0	0.0	1.2	2.4	2.4	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6	14	
T06A	0.0	2.1	1.5	0.0	2.8	5.6	6.7	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6	14	
T06B	0.0	0.9	1.5	0.0	2.8	5.6	5.5	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6	14	
T06C	0.0	1.1	0.0	0.0	0.0	3.1	1.4	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6	14	
15	0.0	2.5	0.3	0.7	0.0	0.5	4.0	0.5 0.5	600	a 20 b 30	0.2 1.4	4.5	0 0 4 12	6	14	
16	0.0	3.9	3.5	0.0	0.0	0.9	8.3	0.5 0.5	1050	a 14 b 75	0.0 2.7	5.3	0 0 6 12	6	14	
19	0.0	3.9	3.5	0.0	0.0	0.9	8.3	0.5 0.0	1050	a 14 b 75	0.0 2.7	5.3	0 0 6 12	6	14	
22	0.0	0.7	0.7	1.5	0.0	0.3	3.2	0.5 0.5	400	a 20 b 20	1.7 1.7	4.5	4 12 0 0	6	14	
23	0.0	0.7	2.4	1.5	0.0	0.3	4.9	0.5 0.5	400	a 20 b 20	1.3 1.3	4.5	4 12 0 0	6	14	
24	0.0	2.4	1.7	1.5	0.0	0.3	5.9	0.5 0.5	400	a 20 b 20	1.1 1.1	4.5	4 12 0 0	6	14	
38	0.0	1.5	0.2	0.0	0.0	0.3	2.0	0.5 0.5	400	a 20 b 20	1.9 1.9	4.5	4 12 0 0	6	14	
39A	0.0	0.6	1.5	0.0	0.0	0.3	2.4	0.5 0.5	400	a 20 b 20	1.8 1.8	4.5	4 12 0 0	6	14	

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00				
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4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3

Planta : Piso 7º

n = 250 Kg/cm²

Altura = 3.20 m

s = 4200 Kg/cm²

Hoja: 1

T05A	2.9	5.9	0.9	0.0	5.4	2.5	17.6	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14	
T05B	2.4	4.1	0.0	0.0	5.1	1.8	13.4	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6 14	
T06A	6.7	5.9	5.6	0.0	2.8	4.2	25.2	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14	
T06B	5.5	4.1	5.6	0.0	0.0	4.2	19.4	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14	
T06C	1.4	5.0	0.0	0.0	0.0	2.3	8.8	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6 14	
12	0.0	2.1	2.1	0.0	0.0	0.5	4.4	0.5 0.0	729	a 27 b 27	0.0 0.0	4.5	4 12 0 0	6 14	30
14	0.0	1.2	0.9	0.0	0.0	0.2	2.3	0.5 0.5	400	a 20 b 20	1.7 1.7	4.5	4 12 0 0	6 14	
15	4.0	3.5	1.7	8.8	0.0	0.4	18.4	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14	
16	8.3	5.3	4.5	15.9	0.0	0.7	34.6	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	14/75-75/15 seg corresponda
19	8.3	5.3	4.5	15.9	0.0	0.7	34.6	0.5 0.0	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	
30	0.0	7.5	1.7	0.0	0.0	0.7	9.4	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	
31	0.0	13.7	5.5	0.0	0.0	0.8	20.0	0.0 0.5	1350	a 45 b 30	0.0 0.0	6.8	4 12 2 12	6 14	
32	0.0	13.7	5.5	0.0	0.0	0.7	19.9	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	
38	2.0	3.8	1.0	0.0	0.0	0.5	7.2	0.5 0.5	840	a 14 b 60	0.0 2.0	4.5	0 0 4 12	6 14	
39	0.0	4.1	5.6	3.3	0.0	0.5	13.1	0.5 0.5	840	a 14 b 60	0.0 0.8	4.5	0 0 4 12	6 14	

	Obra: Villa Olimpica – Edificio UG3	V.OL-UG3-E.MC-00
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4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 6º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 2.80 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm²	Lados cm	Fe cm²	Fmin cm²	cant	sep	OBSERVACIONES
T01	0.0	3.0	3.0	0.0	0.0	4.3	6.2	0.0 0.0	6900	a 15 b 460	0.0 0.0	34.5	2 12 30 12	6 14	
02	0.0	4.7	4.2	0.0	0.0	0.5	9.1	0.0 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14	30
T05A	17.6	1.2	0.9	0.0	3.0	2.5	25.2	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14	
T05B	13.4	1.4	1.5	0.0	0.0	1.8	18.1	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6 14	
T05C	0.0	1.2	1.2	0.0	6.5	2.5	9.1	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14	
T06A	25.2	2.0	2.9	1.1	1.0	4.2	36.4	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14	
T06B	19.4	2.9	1.5	0.0	0.0	4.2	28.0	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14	
T06C	8.8	5.0	0.0	0.0	0.0	2.3	16.1	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6 14	
12	4.4	1.4	2.0	0.0	5.0	0.5	13.3	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6 14	30
13	4.7	1.2	1.1	0.0	0.0	0.5	7.2	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6 14	30
14	2.3	1.0	0.0	0.0	0.0	0.2	3.6	0.5 0.5	400	a 20 b 20	1.3 1.3	4.5	4 12 0 0	6 14	
15	18.4	3.5	1.0	3.2	0.0	0.4	26.5	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14	
16	34.6	5.3	4.9	6.7	0.0	0.7	52.2	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	14/75-75/15 seg corresponda
19	34.6	4.3	7.4	5.0	6.7	0.7	58.7	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	
30	9.4	6.9	11.1	0.0	0.0	0.7	28.1	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	
31	19.4	14.5	21.9	0.0	0.0	0.8	56.6	0.0 0.5	1350	a 45 b 30	0.0 0.0	6.8	4 12 2 12	6 14	
32	19.9	14.5	21.9	0.0	0.0	0.7	56.9	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	
54	0.0	3.9	5.9	0.0	0.0	0.4	10.0	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14	
55	0.0	6.0	5.1	12.1	0.0	0.7	23.4	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	14/75-75/15 seg corresponda

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00			
	Título: Cálculo de Apoyo										Pagina 36			
	Tema: Estructura de Hormigon Armado										Versión 0			

4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 5º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 2.80 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm²	Lados cm	Fe cm²	Fmin cm²	cant	sep	OBSERVACIONES	
T01	6.2	0.7	0.7	0.0	0.0	4.3	12.0	0.0 0.0	6900	a 15 b 460	0.0 0.0	34.5	2 12 30 12	6 14		
02	9.1	1.1	0.9	0.0	0.0	0.5	11.6	0.0 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14	30	
T05A	25.2	0.5	0.4	0.0	0.0	2.5	28.6	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14		
T05B	18.1	0.0	0.0	0.0	0.0	1.8	19.9	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6 14		
T05C	9.1	2.2	0.4	0.0	0.0	2.5	14.2	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14		
T06A	35.3	1.5	2.9	0.7	0.0	4.2	44.6	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14		
T06B	28.0	2.0	2.9	0.0	0.0	4.2	37.1	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14		
T06C	16.1	5.0	1.0	0.0	0.0	2.3	24.5	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6 14		
12	13.3	0.5	1.1	0.0	0.0	0.5	15.4	0.5 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14	30	
13	7.2	0.7	0.7	0.0	0.0	0.5	9.1	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6 14	30	
14	3.6	1.0	0.0	0.0	0.0	0.2	4.8	0.5 0.5	400	a 20 b 20	1.0 1.0	4.5	4 12 0 0	6 14		
15	26.5	1.4	4.1	3.1	0.0	0.4	35.4	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14		
16	52.2	2.2	1.8	7.8	0.0	0.7	64.6	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	14/75-75/15 seg corresponda	
19	58.7	1.8	1.5	7.8	0.0	0.7	70.4	0.5 0.5	1050	a 14 b 75	0.0 1.5	5.3	0 0 6 12	6 14		
30	28.1	6.7	6.6	0.0	0.0	0.7	42.1	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14		
31	56.1	12.9	12.9	0.0	0.0	0.8	82.7	0.0 0.5	1350	a 45 b 30	0.0 0.0	6.8	4 12 2 12	6 14		
32	56.9	12.9	12.9	0.0	0.0	0.7	83.4	0.0 0.5	1050	a 14 b 75	0.0 0.5	6.0	2 12 4 12	6 14		
54	10.0	1.4	3.9	0.0	0.0	0.4	15.7	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14		
55	23.4	2.1	1.5	7.8	0.0	0.7	35.5	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14	14/75-75/15 seg corresponda	

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00					
	Título: Cálculo de Apoyo										Pagina 37					
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4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 4º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 2.80 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep				OBSERVACIONES
T01	12.0	3.0	3.0	0.0	0.0	4.3	22.3	0.0 0.0	6900	a 15 b 460	0.0 0.0	34.5	2 12 30 12	6 14				
02	11.6	4.7	4.2	0.0	0.0	0.5	21.0	0.0 0.0	729	a 27 b 27	0.0 0.0	4.5	4 12 0 0	6 14				30
T05A	28.6	1.2	0.0	0.0	3.0	2.5	35.3	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14				
T05B	19.9	1.4	1.5	0.0	0.0	1.8	24.5	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6 14				
T05C	14.2	1.2	1.2	0.0	0.0	2.5	19.1	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14				
T06A	44.6	2.0	2.0	1.1	0.0	4.2	53.9	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14				
T06B	37.1	2.9	1.5	0.0	0.0	4.2	45.7	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14				
T06C	24.5	5.0	0.0	0.0	0.0	2.3	31.8	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6 14				
12	15.4	1.4	2.0	5.0	0.0	0.5	24.2	0.5 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14				30
13	9.1	1.2	1.1	0.0	0.0	0.5	11.9	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6 14				30
14	4.8	1.0	0.0	0.0	0.0	0.2	6.1	0.5 0.5	400	a 20 b 20	0.6 0.6	4.5	4 12 0 0	6 14				
15	35.4	3.5	4.1	3.1	0.0	0.4	46.5	0.5 0.5	600	a 20 b 30	0.0 0.8	4.5	0 0 4 12	6 14				
16	64.6	5.4	4.7	7.8	0.0	0.7	83.2	0.5 0.5	1050	a 14 b 75	0.0 7.4	7.4	0 0 8 12	6 14				14/75-75/15 seg corresponda
19	70.4	4.7	4.2	7.8	5.0	0.7	92.8	0.5 0.5	1050	a 14 b 75	0.0 13.1	13.1	0 0 12 12	6 14				
30	42.1	6.7	6.6	0.0	0.0	0.7	56.0	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14				
31	82.5	12.9	12.9	0.0	0.0	0.8	109.1	0.0 0.5	1350	a 45 b 30	0.0 0.0	7.9	4 12 4 12	6 14				
32	83.4	12.9	12.9	0.0	0.0	0.7	109.8	0.0 0.5	1050	a 14 b 75	5.9 17.6	17.6	0 0 16 12	6 14				
54	15.7	2.1	3.9	0.0	0.0	0.4	22.1	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14				
55	35.5	3.5	4.1	7.8	0.0	0.7	51.6	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6 14				14/75-75/15 seg corresponda

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00			
	Título: Cálculo de Apoyo										Pagina 38			
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4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 3º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 2.80 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep		OBSERVACIONES
T01	22.3	3.0	3.0	0.0	0.0	4.3	32.6	0.0 0.0	6900	a 15 b 460	0.0 0.0	34.5	2 12 30 12	6	14	
02	21.0	4.7	4.2	0.0	0.0	0.5	30.4	0.0 0.0	875	a 35 b 25	0.0 0.0	4.5	4 12 0 0	6	14	
T05A	35.3	1.2	0.0	0.0	3.0	2.5	41.9	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6	14	
T05B	24.5	1.4	1.5	0.0	0.0	1.8	29.2	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6	14	
T05C	19.1	1.2	1.2	0.0	0.0	2.5	24.0	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6	14	
T06A	53.9	2.0	2.0	1.1	0.0	4.2	63.2	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6	14	
T06B	45.7	2.9	1.5	0.0	0.0	4.2	54.3	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6	14	
T06C	31.8	5.0	0.0	0.0	0.0	2.3	39.1	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6	14	
12	24.2	1.4	2.0	0.0	0.0	0.5	28.1	0.5 0.0	729		0.0 0.0	4.5	4 12 0 0	6	14	30
13	11.9	1.2	1.1	0.0	0.0	0.5	14.6	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6	14	30
14	6.1	1.0	0.0	0.0	0.0	0.2	7.3	0.5 0.5	400	a 20 b 20	0.4 0.4	4.5	4 12 0 0	6	14	
15	46.5	1.4	4.1	3.1	0.0	0.4	55.5	0.5 0.5	600	a 20 b 30	1.1 5.2	5.2	0 0 6 12	6	14	
16	83.2	2.2	2.0	6.7	0.0	0.7	94.8	0.5 0.5	1050	a 14 b 75	0.0 14.4	14.4	0 0 14 12	6	14	14/75-75/15 seg corresponda
19	92.8	2.0	1.7	0.0	6.7	0.7	103.9	0.5 0.5	1050	a 14 b 75	2.9 20.9	20.9	0 0 10 16	6	19	
30	56.0	6.3	6.6	0.0	0.0	0.7	69.6	0.0 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6	14	
31	108.8	13.2	13.6	0.0	0.0	0.8	136.3	0.0 0.5	1350	a 45 b 30	5.8 5.4	9.9	8 12 2 12	6	14	
32	109.8	13.2	13.6	0.0	0.0	0.8	137.4	0.0 0.5	1260	a 14 b 90	9.4 24.6	24.6	0 0 12 16	6	19	
54	22.1	1.7	3.2	0.0	0.0	0.4	27.4	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6	14	
55	51.6	2.6	2.2	6.8	0.0	0.7	63.8	0.5 0.5	1050	a 14 b 75	0.0 0.0	5.3	2 12 4 12	6	14	14/75-75/15 seg corresponda

	Obra: Villa Olimpica – Edificio UG3							V.OL-UG3-E.MC-00			
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4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 2º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 2.80 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep	OBSERVACIONES
T01	32.6	3.0	3.0	0.0	0.0	4.3	42.9	0.0 0.0	6900	a 15 b 460	0.0 0.0	34.5	2 12 30 12	6 14	
02	30.3	4.7	4.2	0.0	0.0	0.5	39.8	0.0 0.0	875	a 35 b 25	0.0 0.0	4.5	4 12 0 0	6 14	
T05A	41.9	1.2	0.0	0.0	3.0	2.5	48.6	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14	
T05B	29.2	1.4	1.5	0.0	0.0	1.8	33.9	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6 14	
T05C	24.0	1.2	1.2	0.0	0.0	2.5	28.9	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14	
T06A	63.2	2.0	2.0	1.1	0.0	4.2	72.4	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14	
T06B	54.3	2.9	1.5	0.0	0.0	4.2	62.8	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14	
T06C	39.1	5.0	0.0	0.0	0.0	2.3	46.5	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6 14	
12	28.1	1.4	2.0	5.0	0.0	0.5	36.9	0.5 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14	30
13	14.6	1.2	1.1	0.0	0.0	0.5	17.4	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6 14	30
14	7.3	1.0	0.0	0.0	0.0	0.2	8.6	0.5 0.5	400	a 20 b 20	0.1 0.1	4.5	4 12 0 0	6 14	
15	55.5	3.5	4.1	3.1	0.0	0.4	66.6	0.5 0.5	600	a 20 b 30	6.7 11.4	11.4	0 0 6 16	6 19	
16	94.8	5.4	4.7	7.8	0.0	0.7	113.3	0.5 0.5	1050	a 14 b 75	7.7 26.8	26.8	0 0 14 16	6 19	14/75-75/15 seg corresponda
19	103.9	4.7	4.2	7.8	5.0	0.9	126.4	0.5 0.5	1500	a 20 b 75	0.0 0.9	9.1	0 0 8 12	6 14	
30	69.6	6.7	6.6	0.0	0.0	0.7	83.5	0.0 0.5	1050	a 14 b 75	0.0 0.6	6.1	0 0 8 12	6 14	
31	136.2	12.9	12.9	0.0	0.0	0.8	162.7	0.0 0.5	1350	a 45 b 30	19.2 19.2	19.2	10 16 4 20	6 19	
32	137.4	12.9	12.9	0.0	0.0	0.9	164.1	0.0 0.5	1500	a 20 b 75	11.9 18.1	18.1	2 25 16 12	6 14	
54	27.4	2.1	3.9	0.0	0.0	0.4	33.7	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14	
55	63.8	3.5	4.1	7.8	0.0	0.7	79.9	0.5 0.5	1050	a 14 b 75	0.0 5.7	5.8	0 0 6 12	6 14	14/75-75/15 seg corresponda

	Obra: Villa Olimpica – Edificio UG3										V.OL-UG3-E.MC-00			
	Título: Cálculo de Apoyo										Pagina 40			
	Tema: Estructura de Hormigon Armado										Versión 0			

4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta : Piso 1º

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 2.80 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep	OBSERVACIONES	
T01	42.9	0.7	0.7	0.0	0.0	4.3	48.6	0.0 0.0	6900	a 15 b 460	0.0 0.0	34.5	2 12 30 12	6 14		
02	39.7	1.1	0.9	0.0	0.0	0.5	42.1	0.0 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14	30	
T05A	48.6	0.5	0.4	1.0	0.0	2.5	53.0	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14		
T05B	33.9	0.0	0.0	0.0	0.0	1.8	35.7	0.0 0.0	2850	a 190 b 15	0.0 0.0	14.3	12 12 2 12	6 14		
T05C	28.9	2.2	0.4	1.0	0.0	2.5	35.0	0.0 0.0	3975	a 15 b 265	0.0 0.0	19.9	2 12 16 12	6 14		
T06A	72.4	1.5	2.9	0.7	0.0	4.2	81.7	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14		
T06B	62.8	2.0	2.9	0.0	0.0	4.2	71.9	0.0 0.0	6705	a 447 b 15	0.0 0.0	33.5	30 12 0 0	6 14		
T06C	46.5	5.0	1.0	0.0	0.0	2.3	54.8	0.0 0.0	3750	a 15 b 250	0.0 0.0	18.8	2 12 16 12	6 14		
12	36.9	1.0	1.1	5.0	0.0	0.5	44.5	0.5 0.0	729		0.0 0.0	4.5	4 12 0 0	6 14	30	
13	17.4	1.1	1.1	0.0	0.0	0.5	20.0	0.5 0.5	729		0.0 0.0	4.5	4 12 0 0	6 14	30	
14	8.6	1.0	0.0	0.0	0.0	0.2	9.8	0.5 0.5	400	a 20 b 20	0.0 0.0	4.5	4 12 0 0	6 14		
15	66.6	63.2	4.1	3.1	0.0	1.3	137.3	0.5 0.5	2100	a 30 b 70	0.0 0.0	10.5	4 12 6 12	6 14		
17	113.3	61.7	4.7	7.8	0.0	1.6	189.1	2.0 0.5	2550	a 30 b 85	0.0 0.0	13.7	4 12 8 12	6 14		
19	126.2	4.2	7.4	7.8	5.0	0.9	151.4	0.5 0.5	1500	a 20 b 75	5.4 14.8	14.8	2 12 14 12	6 14		
20	113.3	5.4	4.7	7.8	0.0	0.9	132.1	0.5 0.5	1500	a 20 b 75	0.0 3.8	9.6	0 0 10 12	6 14	14/75-75/15 seg corresponda	
21	35.4	3.5	3.1	4.1	0.0	0.4	46.3	0.5 0.5	600	a 20 b 30	0.0 0.8	4.5	0 0 4 12	6 14		
30	83.5	6.7	6.6	100.0	0.0	1.4	198.2	2.0 0.5	2250	a 30 b 75	0.0 0.0	14.4	4 12 10 12	6 14		
32	164.0	97.6	12.9	12.9	0.0	2.1	289.6	2.0 0.5	3400	a 40 b 85	0.0 0.0	21.0	6 12 14 12	6 14		
33	162.7	12.9	12.9	0.0	0.0	1.0	189.5	0.0 0.5	1650	a 55 b 30	18.3 17.7	18.3	10 16 4 20	6 19		
34	164.1	12.9	12.9	0.0	0.0	1.6	191.5	0.0 0.5	2550	a 30 b 85	0.0 0.0	13.9	4 12 8 12	6 14		
36	83.5	6.7	6.6	0.0	0.0	0.7	97.5	0.0 0.5	1050	a 14 b 75	0.0 9.3	9.3	0 0 8 12	6 14		
54	33.7	54.3	3.9	0.0	0.0	0.9	92.3	2.0 0.5	1400	a 20 b 70	0.0 2.5	7.0	0 0 6 12	6 14		
56	79.9	79.9	4.1	7.8	0.0	1.3	173.0	2.0 0.5	2100	a 30 b 70	0.0 0.0	12.5	4 12 8 12	6 14		
57	79.9	4.1	4.1	7.8	0.0	0.7	96.6	0.5 0.5	1050	a 14 b 75	0.0 15.7	15.7	0 0 14 12	6 14	14/75-75/15 seg corresponda	
60	33.7	2.1	3.9	0.0	0.0	0.4	40.1	0.5 0.5	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14		

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4. CALCULO DE COLUMNAS

Obra : Villa Olimpica – Edificio UG3
Planta: Planta Baja

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 4.30 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep	OBSERVACIONES
T01	48.6	3.0	3.0	0.0	0.0	9.5	61.7	0.0 0.0	9200	a 20 b 460	0.0 0.0	46.0	2 12 40 12	6 14	
02	42.1	4.7	4.2	0.0	0.0	2.0	53.0	0.5 0.0	1936		0.0 0.0	9.7	4 12 6 12	6 14	50
T05A	53.0	1.4	0.0	0.0	3.0	5.5	61.5	0.0 0.0	5300	a 20 b 265	0.0 0.0	26.5	2 12 22 12	6 14	
T05B	35.7	1.4	1.5	0.0	0.0	3.9	41.5	0.0 0.0	3800	a 190 b 20	0.0 0.0	19.0	16 12 2 12	6 14	
T05C	35.0	1.4	1.6	1.0	0.0	5.5	43.1	0.0 0.0	5300	a 20 b 265	0.0 0.0	26.5	2 12 22 12	6 14	
T06A	81.7	1.6	2.9	1.1	1.4	9.2	95.6	0.0 0.0	8940	a 447 b 20	0.0 0.0	44.7	38 12 2 12	6 14	
T06B	71.9	1.5	2.9	0.0	0.0	9.2	83.2	0.0 0.0	8940	a 447 b 20	0.0 0.0	44.7	38 12 2 12	6 14	
T06C	54.8	5.0	1.0	0.0	0.0	5.2	64.7	0.0 0.0	5000	a 20 b 250	0.0 0.0	25.0	2 12 20 12	6 14	
09	42.1	4.2	20.0	0.0	0.0	2.0	66.7	2.0 0.0	1936		0.0 0.0	9.7	4 12 6 12	6 14	50
11	44.5	34.0	1.4	5.0	0.0	2.0	85.3	2.0 0.5	1936		0.0 0.0	9.7	4 12 6 12	6 14	50
12	44.5	2.3	4.0	5.0	0.0	2.0	56.5	0.5 0.5	1936		0.0 0.0	9.7	4 12 6 12	6 14	50
13	20.0	3.7	1.1	0.0	0.0	2.0	25.6	0.5 0.5	1936		0.0 0.0	9.7	4 12 6 12	6 14	50
14	9.8	1.0	1.0	0.0	0.0	0.4	12.3	0.5 0.5	400	a 20 b 20	1.1 1.1	4.5	4 12 0 0	6 14	
15	137.3	2.2	1.6	0.0	0.0	2.2	143.3	0.0 0.5	2100	a 30 b 70	0.0 0.0	10.5	4 12 6 12	6 14	
17	188.7	94.7	3.6	0.0	0.0	2.6	289.6	2.0 0.5	2550	a 30 b 85	26.5 48.6	48.6	4 25 16 20	8 24	
19	151.4	94.7	3.3	6.2	5.0	2.6	262.4	2.0 0.5	2550	a 85 b 30	26.2 14.4	26.2	14 16 4 16	6 19	
20	132.1	5.1	5.2	6.2	0.0	2.2	150.8	0.5 0.5	2100	a 70 b 30	0.0 0.0	10.9	8 12 2 12	6 14	
21	46.3	3.9	1.6	3.6	0.0	0.9	56.1	0.5 0.5	900	a 30 b 30	0.0 0.0	4.5	4 12 0 0	6 14	
30	198.2	3.5	3.5	0.0	0.0	2.3	207.5	0.0 0.5	2250	a 30 b 75	0.0 7.4	15.0	0 0 14 12	6 14	
32	289.2	75.8	5.9	5.9	0.0	3.5	380.3	2.0 0.5	3400	a 40 b 85	32.2 41.6	41.6	6 20 14 20	8 24	
34	191.1	73.9	2.3	10.2	10.2	2.6	290.3	2.0 0.5	2550	a 30 b 85	26.9 49.0	49.0	4 25 16 20	8 24	
35	189.5	2.5	3.4	10.2	10.2	2.0	217.8	0.5 0.5	1950	a 65 b 30	30.2 20.0	30.2	10 20 4 16	8 24	
36	97.5	2.3	5.9	5.9	0.0	2.1	113.7	0.5 0.5	2000	a 25 b 80	0.0 0.0	10.0	2 12 8 12	6 14	
54	92.3	2.0	0.0	0.0	0.0	1.4	95.8	0.0 0.5	1400	a 20 b 70	0.0 0.0	7.0	2 12 4 12	6 14	
56	173.0	3.2	3.6	0.0	0.0	2.2	182.0	0.5 0.5	2100	a 30 b 70	0.0 3.3	13.2	0 0 12 12	6 14	
57	96.6	4.9	4.3	6.2	0.0	1.2	113.2	0.5 0.5	1200	a 60 b 20	18.9 2.2	18.9	10 16 0 0	6 19	
60	40.1	3.2	3.6	0.0	0.0	0.6	47.5	0.5 0.5	600	a 20 b 30	0.7 6.3	6.3	0 0 6 12	6 14	

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4. CALCULO DE COLUMNAS

Obra: Villa Olimpica – Edificio UG3
Planta: Subsuelo

n = 250 Kg/cm² s = 4200 Kg/cm²
Altura = 3.00 m Hoja: 1

Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm ²	Lados cm	Fe cm ²	Fmin cm ²	cant	sep		OBSERVACIONES
T01A	31.0	0.0	0.0	0.0	0.0	1.0	31.3	0.0 0.0	1400	a 20 b 70	0.0 0.0	7.0	2 12 4 12	6	14	
T01B	31.0	4.4	0.0	0.0	0.0	1.0	35.7	0.0 0.0	1400	a 20 b 70	0.0 0.0	7.0	2 12 4 12	6	14	
02	53.0	0.0	0.0	0.0	0.0	1.4	54.4	0.5 0.0	1936		0.0 0.0	9.7	4 12 6 12	6	14	50
T05A	61.5	2.0	6.0	0.0	0.0	3.8	73.3	0.0 0.0	5300	a 20 b 265	0.0 0.0	26.5	2 12 22 12	6	14	
T05B	41.5	0.0	0.0	0.0	0.0	2.7	44.3	0.0 0.0	3800	a 190 b 20	0.0 0.0	19.0	16 12 2 12	6	14	
T05C	43.1	0.6	1.2	1.0	0.0	3.8	49.7	0.0 0.0	5300	a 20 b 265	0.0 0.0	26.5	2 12 22 12	6	14	
T06A	95.6	1.2	2.8	0.6	1.0	6.4	107.7	0.0 0.0	8940	a 447 b 20	0.0 0.0	44.7	38 12 2 12	6	14	
T06B	83.2	2.8	1.0	0.0	0.0	6.4	93.5	0.0 0.0	8940	a 447 b 20	0.0 0.0	44.7	38 12 2 12	6	14	
T06C	64.7	5.0	1.0	0.0	0.0	3.6	74.3	0.0 0.0	5000	a 20 b 250	0.0 0.0	25.0	2 12 20 12	6	14	
08	53.0	6.0	5.3	0.0	0.0	1.4	64.6	0.5 0.0	1936		0.0 0.0	9.7	4 12 6 12	6	14	50
09	66.7	6.6	8.7	12.5	0.0	1.4	95.9	0.5 0.5	1936		0.0 0.0	9.7	4 12 6 12	6	14	50
11	85.3	6.0	2.4	0.0	0.0	1.4	95.1	0.5 0.0	1936		0.0 0.0	9.7	4 12 6 12	6	14	50
12	56.5	2.4	6.6	12.5	0.0	1.4	79.4	0.5 0.5	1936		0.0 0.0	9.7	4 12 6 12	6	14	50
13	25.6	6.0	5.3	0.0	0.0	1.4	38.3	0.5 0.0	1936		0.0 0.0	9.7	4 12 6 12	6	14	50
14	12.3	0.0	0.0	0.0	0.0	0.3	12.5	0.5 0.0	400	a 20 b 20	0.0 0.0	4.5	4 12 0 0	6	14	
15	143.3	7.1	0.0	0.0	0.0	1.5	151.9	0.0 0.5	2100	a 30 b 70	0.0 0.0	11.0	4 12 6 12	6	14	
17	289.6	12.0	12.3	12.5	9.7	2.2	338.0	0.5 0.5	3000	a 75 b 40	34.0 28.7	34.0	12 20 6 20	8	24	
19	262.3	7.5	5.4	12.5	9.7	1.8	299.1	0.5 0.5	2550	a 85 b 30	34.2 29.9	34.2	18 16 4 25	6	19	
20	150.8	5.8	5.8	0.0	0.0	1.5	163.9	0.5 0.5	2100	a 70 b 30	0.0 0.0	11.9	8 12 2 12	6	14	
21	56.1	3.7	0.0	0.0	0.0	0.6	60.4	0.5 0.5	900	a 30 b 30	0.0 0.0	4.5	4 12 0 0	6	14	
30	207.5	7.1	0.0	0.0	0.0	1.6	216.2	0.0 0.5	2250	a 30 b 75	2.6 3.5	15.7	2 12 12 12	6	14	
32	380.3	12.0	12.3	9.9	8.7	2.6	425.7	0.5 0.5	3600	a 90 b 40	51.0 43.3	51.0	16 20 6 25	8	24	
34	290.3	5.1	4.3	9.9	8.7	2.0	320.2	0.5 0.5	2750	a 110 b 25	42.6 29.9	42.6	22 16 4 25	6	19	
35	217.9	5.0	5.6	0.0	0.0	1.4	229.9	0.5 0.5	2000	a 25 b 80	21.4 30.1	30.1	4 25 16 16	6	19	
36	113.7	3.7	0.0	0.0	0.0	1.4	118.8	0.5 0.5	2000	a 25 b 80	0.0 0.0	10.0	2 12 8 12	6	14	

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4. CALCULO DE COLUMNAS

Obra: Villa Olimpica – Edificio UG3												n = 250 Kg/cm²				s = 4200 Kg/cm²			
Planta: Subsuelo												Altura = 3.00 m				Hoja: 2			
Pos.	Nsup t	Rv1 t	Rv2 t	Rv3 t	Rv4 t	P.p t	Ntot. t	M tm	Sup. cm²	Lados cm	Fe cm²	Fmin cm²	cant				sep		OBSERVACIONES
54	95.8	0.0	0.0	0.0	0.0	1.0	96.8	0.0 0.0	1400	a 20 b 70	0.0 0.0	7.0	2 12 4 12	6 14					
56	182.0	5.3	0.0	0.0	0.0	1.5	188.8	0.5 0.0	2100	a 30 b 70	0.0 0.0	13.7	4 12 8 12	6 14					
57	113.5	0.0	0.0	0.0	0.0	0.9	114.4	0.5 0.0	1200	a 60 b 20	7.3 1.9	8.3	8 12 0 0	6 14					
58	113.5	5.3	0.0	0.0	0.0	0.9	118.9	0.0 0.5	1200	a 60 b 20	14.0 3.3	14.0	12 12 0 0	6 14					
60	47.5	0.0	0.0	0.0	0.0	0.4	48.0	0.0 0.0	600	a 20 b 30	0.0 0.0	4.5	4 12 0 0	6 14					

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5. CÁLCULO DE FUNDACIONES

LONGITUDES			T. FRICCIÓN			T. PUNTA	DIAMETRO	Qf	Qp	Qadm
L1	L2	L3	1	2	3					
m	m	m	t/m2	t/m2	t/m2	t/m2	m	t	t	t
8,00	5,00	0,00	0,00	2,00	0,00	120,0	0,60	18,85	33,93	52,8
0,00	0,00	0,00	0,00	0,00	0,00	120,0	1,00	0,00	94,25	94,2
0,00	0,00	0,00	0,00	2,50	0,00	120,0	1,20	0,00	135,72	135,7

Resumen Armado Pilotes

NIVEL DE PUNTA = -13 m del NTN

RESUMEN DE ARMADO

Diámetro		Fe (cm ²)	Armado
60.00	E 8 c/ 20	14.1	12 12
100.00	E 8 c/ 20	39.3	20 16
120.00	E 8 c/ 20	56.5	18

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5. CALCULO DE FUNDACIONES

DIMENSIONAMIENTO DE MÉNSULAS CORTAS DE FUNDACIONES

Hormigon H-25 ($f_{bk}= 250 \text{ kg/cm}^2$)

	Br =	200	kg/cm2											
MÉNSULAS	b0	D	e	Me	P	M(-)	1/3 Fe2 méns.c.	Fe1 + 2/3 Fe2		MÉNSULAS				
	(cm)	(cm)	(m)	(tm)	(t)	(tm)	(cm2)	(cm2)						
MC01	60	100	0.50	0.0	36.4	18.2	3.6	4	12	17.2	4	25	MC01	E (4) 8c/15
MC05	60	100	0.50	0.0	30.0	15.0	3.0	3	12	14.2	5	20	MC05	E (4) 8c/15
MC15	100	100	0.50	0.0	151.9	76.0	15.1	6	20	71.8	15	25	MC15	E (6) 10c/15
MC21	100	100	0.50	0.0	65.7	32.9	6.5	6	12	31.0	10	20	MC21	E (6) 8c/10
MC30	100	100	0.50	0.0	216.2	108.1	21.4	7	20	102.2	21	25	MC30	E (6) 10c/10
MC54	100	100	0.50	0.0	96.8	48.4	9.6	6	16	45.7	15	20	MC54	E (6) 8c/15

DIMENSIONAMIENTO DE CONTRAMÉNSULAS DE APEOS EN FUNDACIONES Y VIGAS RIGIDIZADORAS

Hormigon H-25 ($f_{bk}= 250 \text{ kg/cm}^2$)

	T01 =	8.6	t/m2		T02 =	20.6	t/m2		T03 =	344	t/m2										
VIGAS	b0	D	long.	M(+)	M(-)	QRmax	Fe inf.	Fe sup.	inf.	sup		red		Ra- mas	estr.	sep	estr.	Fe dobl a 45°	VIGAS		
	(cm)	(cm)	(m)	(tm)	(tm)	(t)	(cm2)	(cm2)				(kg/cm2)	(kg/cm2)	(cant.)		(cm)	(kg/cm2)	(cm2)	adop		
VC01	60	100	4.2	7.0	23.4	8.3	3.90	12.98	4	12	5	20	1.58	0.63	4	8	20	4.00	0.0	--	VC01
VC05	60	100	7.0	19.5	33.9	10.8	10.82	18.85	4	20	4	25	2.04	0.82	4	8	20	4.00	0.0	--	VC05
VC15	100	100	5.0	16.6	85.6	25.7	9.51	47.56	6	20	10	25	2.91	1.16	6	8	20	3.60	0.0	--	VC15
VC21	100	100	2.5	4.1	35.3	21.2	3.92	19.59	6	16	7	20	2.40	0.96	6	8	20	3.60	0.0	--	VC21
VC30	100	100	2.5	4.1	110.5	66.3	12.28	61.40	7	16	13	25	7.51	3.00	6	8	20	3.60	0.0	--	VC30
VC54	100	100	6.5	28.0	121.9	28.1	15.55	67.74	5	20	14	25	3.19	1.28	6	8	20	3.60	0.0	--	VC54

NOTA: En las vigas de altura mayor a 0.60m se dispondrá una piel del 8c/0.20

DIMENSIONAMIENTO DE VIGAS DE FUNDACIÓN

Hormigon H-25 ($f_{bk}= 210 \text{ kg/cm}^2$)

Tao 01 =	8.6			20.6			34.4													
VIGAS	b0	D	long.	M(+)	M(-)	QRmax	Fe inf.	Fe sup.	inf.	sup.			Ra- red mas		estr	sep	Fe estr. dobl a 45°		VIGAS	
	(cm)	(cm)	(m)	(tm)	(tm)	(t)	(cm2)	(cm2)					(kg/cm2)	(kg/cm2)	(cant.)	(cm)	(kg/cm2)	(cm2)	adop	
VF05	30	60	2.2	0.7	1.1	2.0	0.7	1.1	2	10	3	10	1.25	0.50	2	8	20	4.00	0.0	-- VF05
VF02	30	60	3.2	2.0	3.3	4.2	2.0	3.3	2	12	3	12	2.62	1.05	2	8	20	4.00	0.0	-- VF02
VF02A	30	100	3.2	2.4	37.2	17.5	4.1	20.7	3	16	5	25	6.45	2.58	2	8	20	4.00	0.0	-- VF02A
VF03	30	60	1.5	0.5	1.0	2.6	0.5	1.0	2	10	3	10	1.63	0.65	2	8	20	4.00	0.0	-- VF03
VF16	30	60	5.6	9.0	16.7	11.9	9.0	16.7	3	20	4	25	7.48	2.99	2	8	20	4.00	0.0	-- VF16
VF17	30	60	2.5	1.4	2.4	3.9	1.4	2.4	2	10	3	12	2.43	0.97	2	8	20	4.00	0.0	-- VF17
VF31	80	100	5.5	10.9	243.8	66.5	27.1	135.5	6	25	28	25	9.21	4.12	4	8	10	6.00	0.0	-- VF31
VF32	30	60	2.5	1.2	2.0	3.3	1.2	2.0	2	10	3	10	2.04	0.82	2	8	20	4.00	0.0	-- VF32
VF54	40	80	7.5	26.9	49.2	26.3	19.2	35.2	4	25	8	25	9.16	4.08	2	8	15	4.00	0.0	-- VF54
VF55	30	60	4.0	6.7	13.3	13.3	6.7	13.3	4	16	5	20	8.35	3.34	2	8	20	4.00	0.0	-- VF55

NOTA: En las vigas de altura mayor a 0.60m se dispondrá una piel del 8c/0.20

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5. CALCULO DE FUNDACIONES

DIMENSIONAMIENTO DE CABEZALES 2 PILOTES 100 - Gener

Hormigon H-25 ($f_{bk} = 250 \text{ kg/cm}^2$)
 $f_{br} = 200 \text{ kg/cm}^2$

$L = 1 \text{ m}$
 $N = 229.9 \text{ t}$ (Carga en columna)
 $L = 2.50 \text{ m}$ (Con separación de 2.5)
 $a = 0.75 \text{ m}$ (Dimensión columna)
 $f_A = 1.8 \text{ ton/cm}^2$ (Tensión trabajo del acero)
 $h = 1.49 \text{ m}$ (Altura cálculo de cabezal)

Dimensiones cabezal

$D = 1.50 \text{ m}$
 $A = 3.80 \text{ m}$
 $B = 1.30 \text{ m}$
 $T = N / 4 * h * (L - a / 2) \quad T = 82.1 \text{ t}$
 $A_p = T / f_A = 45.62 \text{ cm}^2$
 $A_s = 9.12 \text{ cm}^2$

Adopción de armaduras:

Fe ppal: 10 25
Jaula vertical: 12 c/15
Jaula Horizontal: 12 c/15

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5. CALCULO DE FUNDACIONES

DIMENSIONAMIENTO DE CABEZALES 2 PILOTES 100 - Tabs

Hormigon H-25 ($f_{bk} = 250 \text{ kg/cm}^2$)
 $f_{br} = 200 \text{ kg/cm}^2$

$L = 1 \text{ m}$
 $N = 110 \text{ t}$ (Carga en columna)
 $L = 2.50 \text{ m}$ (Con separación de 2.5)
 $a = 2 \text{ m}$ (Dimensión columna)
 $f_A = 1.8 \text{ ton/cm}^2$ (Tensión trabajo del acero)
 $h = 1.05 \text{ m}$ (Altura cálculo de cabezal)

Dimensiones cabezal

$D = 1.00 \text{ m}$
 $A = 3.80 \text{ m}$
 $B = 1.30 \text{ m}$
 $T = N / 4 * h * (L - a/2) \quad T = 39.3 \text{ t}$
 $A_p = T / f_A = 21.83 \text{ cm}^2$
 $A_s = 4.37 \text{ cm}^2$

Adopción de armaduras:

Fe ppal: 7 20
Jaula vertical: 10 c/15
Jaula Horizontal: 10 c/15

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5. CALCULO DE FUNDACIONES

Obra : Villa Olimpica - Edificio UG3

DIMENSIONAMIENTO DE CABEZALES 2 PILOTES 120

Hormigon H-25 ($f_{bk} = 250 \text{ kg/cm}^2$)

Br = 200 kg/cm^2

1.2 m

N = 338 t (Carga en columna)

L = 3.00 m (Con separación de 2.5)

a = 0.75 m (Dimensión columna)

$A = 1.8 \text{ ton/cm}^2$ (Tensión trabajo del acero)

h = 1.84 m (Altura cálculo de cabezal)

Dimensiones cabezal

D = 1.90 m

A = 4.50 m

B = 1.50 m

T = $N / 4 * h * (L - a/2)$ T = 120.7 t

$A_p = T / A = 67.06 \text{ cm}^2$

$A_s = 13.41 \text{ cm}^2$

Adopción de armaduras:

Fe ppal: 14 25

Jaula vertical: 12 c/15

Jaula Horizontal: 12 c/15

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5. CALCULO DE FUNDACIONES

Obra : Villa Olimpica - Edificio UG3

CABEZALES 1 PILOTE 60

Hormigon H-25 ($f_{bk} = 250 \text{ kg/cm}^2$)

Br = 200 kg/cm^2

0.6 m

$A = 1.8 \text{ ton/cm}^2$ (Tensión trabajo del acero)

Dimensiones cabezal

D= 0.60 m

A= 1.00 m

B= 1.00 m

Adopción de armaduras:

Jaula vertical: 10 c/15 Idem ambas direcciones

Jaula Horizontal: 10 c/15 Idem ambas direcciones

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5. CALCULO DE FUNDACIONES

DIMENSIONAMIENTO DE CABEZALES 3 PILOTES 120

Hormigon H-25 ($f_{bk} = 250 \text{ kg/cm}^2$)
 $B_r = 200 \text{ kg/cm}^2$

1.2 m
 $N = 425.8 \text{ t}$ (Carga en columna)
 $L = 3.00 \text{ m}$ (Con separación de 2.5)
 $a = 0.9 \text{ m}$ (Dimensión columna)
 $\sigma_A = 1.8 \text{ ton/cm}^2$ (Tensión trabajo del acero)
 $h = 2.09 \text{ m}$ (Altura cálculo de cabezal)

Dimensiones cabezal

$D = 2.10 \text{ m}$
 $A = 4.50 \text{ m}$
 $B = 4.50 \text{ m}$
 $T = N / 4 * h * (L - a / 2) \quad T = 57.7 \text{ t}$
 $A_p = T / \sigma_A = 32.05 \text{ cm}^2$
 $A_s = 6.41 \text{ cm}^2$

Adopción de armaduras:

Fe ppal: 12 25
 Jaula vertical: 12 c/15
 Jaula Horizontal: 12 c/15

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5. CALCULO DE FUNDACIONES

Obra : Villa Olimpica - Edificio UG3

CABEZALES 1 PILOTE 100

Hormigon H-25 ($f_{bk} = 250 \text{ kg/cm}^2$)

$f_{br} = 200 \text{ kg/cm}^2$

1 m

$f_A = 1.8 \text{ ton/cm}^2$ (Tensión trabajo del acero)

Dimensiones cabezal

D= 1.00 m

A= 1.30 m

B= 1.30 m

Adopción de armaduras:

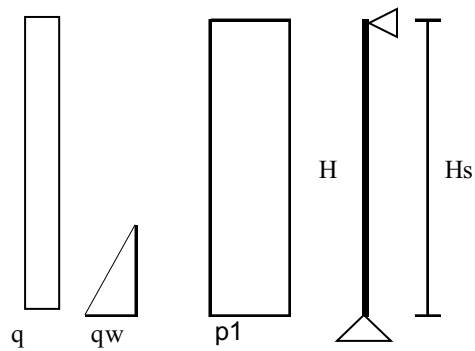
Jaula vertical: 12 c/15 Idem ambas direcciones

Jaula Horizontal: 12 c/15 Idem ambas direcciones

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6. CÁLCULO DE TABIQUE DE SUBSUELO

Etapas definitivas



$$\begin{aligned}
 q &= 1.00 \text{ t/m} & \text{donde: } H_s &= 3.20 \text{ m} & H &= 3.20 \text{ m} \\
 p_1 &= 0.65 \cdot K_a \cdot \gamma \cdot H = 1.31 \text{ t/m} & & & & = 1.80 \text{ t/m}^3 \\
 q_w &= 2.00 \text{ t/m} & K_a &= 0.35
 \end{aligned}$$

resulta:

$$M_{\text{máx}} = 4.24 \text{ tm/m} \quad \text{Interior} \quad 12.5 \text{ cm}^2/\text{m}$$

se adopta: $e = 20 \text{ cm}$ recubrimiento = 3 cm

Armado:

vertical 16 c/ 15cm en cara interior

vertical 12 c/ 15cm en cara exterior

horizontal 8 c/ 15cm en cada cara



G O B I E R N O D E L A C I U D A D D E B U E N O S A I R E S

**Hoja Adicional de Firmas
Informe gráfico**

Número:

Buenos Aires,

Referencia: CALCULO DE APOYO UG3

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