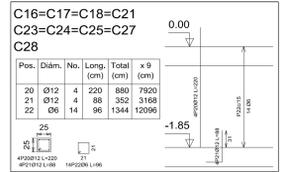
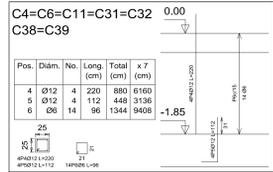
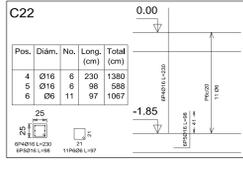
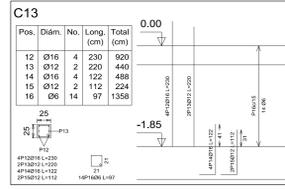
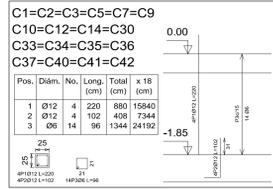
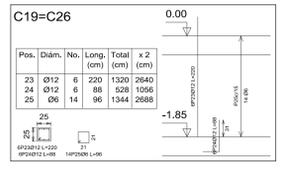
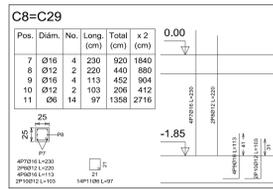


COLUMNAS DE HORMIGÓN ARMADO ESC. 1:50

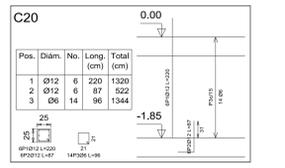
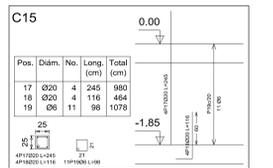
PLANTA BAJA NIVEL +0.00 Esc. 1:50



Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C13	12	Ø16	4	230	920	13.8
	13	Ø12	2	220	440	3.6
	14	Ø16	4	122	488	5.5
	15	Ø12	2	112	224	1.8
C22	4	Ø16	6	230	1380	19.8
	5	Ø16	6	98	588	8.4
	6	Ø6	11	97	1067	15.4
	Total					47.6



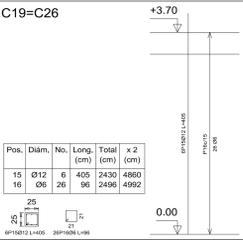
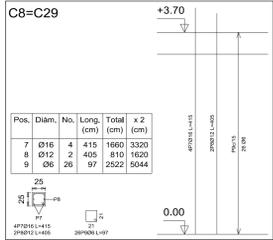
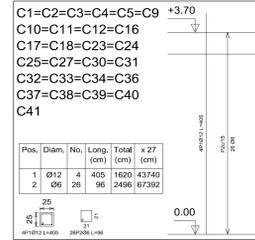
Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C19	17	Ø20	4	245	980	14.2
	18	Ø20	4	116	464	6.6
	19	Ø6	11	96	1078	19.4
	Total					39.8



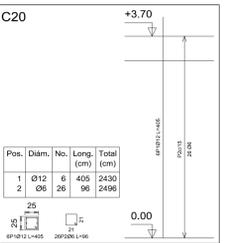
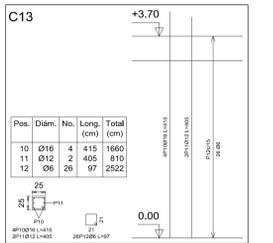
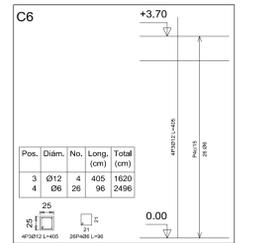
Resumen Acero PLANTA BAJA Pilares	Long. total (m)	Peso+10% (kg)	Total (kg)
AH-500CN Ø6	559.5	137	781
Ø12	510.6	499	781
Ø16	61.2	106	781
Ø20	14.4	39	781

Pilares que terminan en PLANTA BAJA
 Hormigón: H-25 , Control Normal
 Acero: AH-500 , Control Normal
 Escala: 1:50

PRIMER PISO NIVEL +3.70 Esc. 1:50



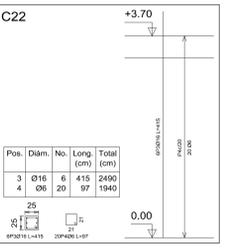
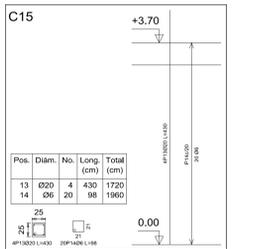
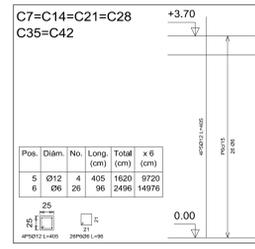
Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C8	7	Ø16	4	415	1660	23.2
	8	Ø12	2	405	810	5.5
	9	Ø6	26	96	2496	35.3
	Total					64.0



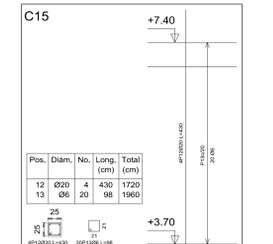
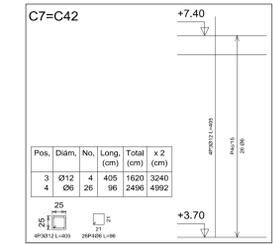
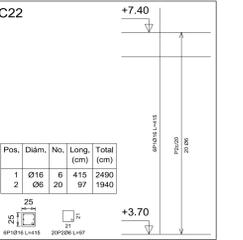
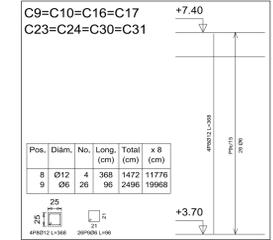
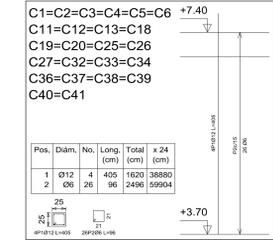
Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C20	1	Ø12	6	405	2430	21.6
	2	Ø6	26	96	2496	35.4
C22	1	Ø16	6	415	2490	35.4
	2	Ø6	26	97	2522	35.4

Resumen Acero PRIMER PISO Pilares	Long. total (m)	Peso+10% (kg)	Total (kg)
AH-500CN Ø6	1038.2	253	1063
Ø12	648.0	630	1063
Ø16	74.7	130	1063
Ø20	17.2	47	1063

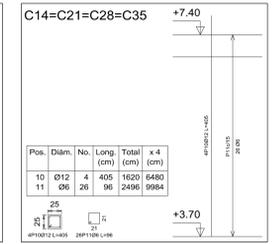
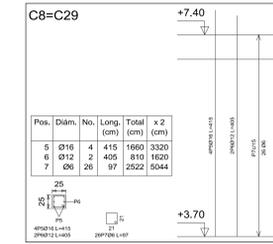
Pilares que terminan en PRIMER PISO
 Hormigón: H-25 , Control Normal
 Acero: AH-500 , Control Normal
 Escala: 1:50



SEGUNDO PISO NIVEL +7.40 Esc. 1:50



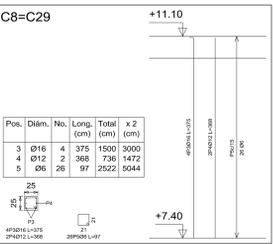
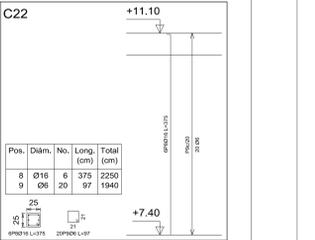
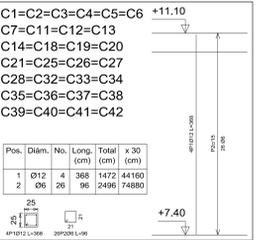
Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C7	3	Ø12	4	405	1620	14.4
	4	Ø6	26	96	2496	35.4
	Total					49.8



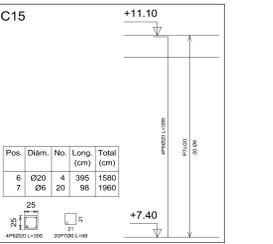
Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C22	1	Ø16	6	415	2490	35.4
	2	Ø6	26	97	2522	35.4

Pilares que terminan en SEGUNDO PISO
 Hormigón: H-25 , Control Normal
 Acero: AH-500 , Control Normal
 Escala: 1:50

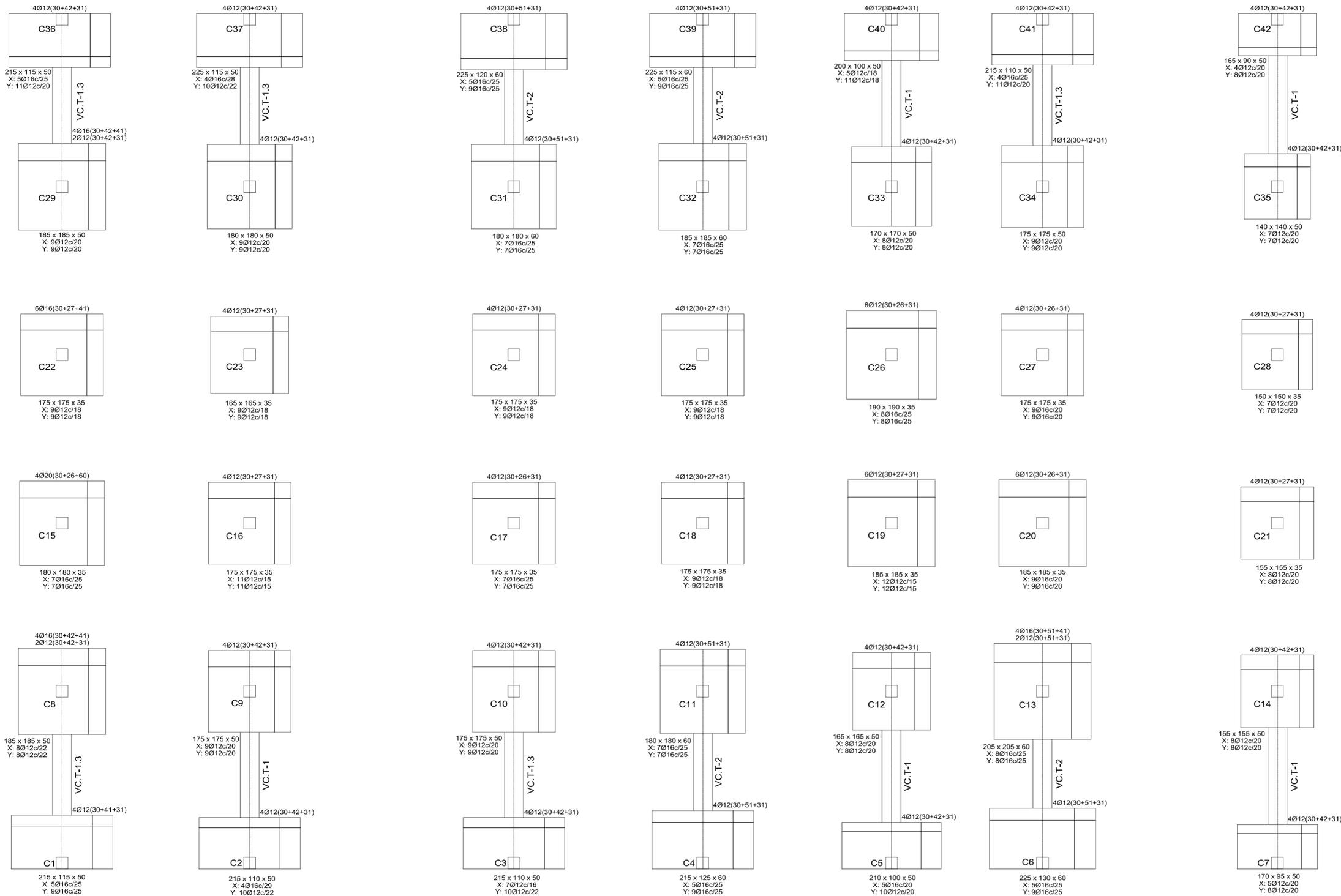
AZOTEA NIVEL +11.10 Esc. 1:50



Elemento	Pos.	Díam.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C8	3	Ø16	4	375	1500	21.6
	4	Ø12	2	368	736	16.2
	5	Ø6	26	96	2496	35.4
	Total					73.2



VISTA EN PLANTA DE CIMENTACIONES ESCALA. 1:50



Referencias	Dimensiones (cm)	Canto (cm)	Armado inf. X	Armado inf. Y
C1	215x115	50	5Ø16c/25	8Ø12c/25
C2	215x110	50	4Ø16c/29	10Ø12c/22
C3	215x110	50	7Ø12c/16	10Ø12c/22
C4	215x125	60	5Ø16c/25	9Ø16c/25
C5	210x100	50	5Ø16c/20	10Ø12c/20
C6	225x130	60	5Ø16c/25	9Ø16c/25
C7	170x95	50	5Ø12c/20	8Ø12c/20
C8	185x185	50	8Ø12c/22	8Ø12c/22
C9, C10 y C34	175x175	50	9Ø12c/20	9Ø12c/20
C11 y C31	180x180	60	7Ø16c/25	7Ø16c/25
C12	165x165	50	8Ø12c/20	8Ø12c/20
C13	205x205	60	8Ø16c/25	8Ø16c/25
C14	155x155	50	8Ø12c/20	8Ø12c/20
C15	180x180	35	7Ø16c/25	7Ø16c/25
C16	175x175	35	11Ø12c/15	11Ø12c/15
C17	175x175	35	7Ø16c/25	7Ø16c/25
C18, C22, C24 y C25	175x175	35	9Ø12c/18	9Ø12c/18
C19	185x185	35	12Ø12c/15	12Ø12c/15
C20	185x185	35	9Ø16c/20	9Ø16c/20
C21	155x155	35	8Ø12c/20	8Ø12c/20
C23	165x165	35	9Ø12c/18	9Ø12c/18
C26	190x190	35	8Ø16c/25	8Ø16c/25
C27	175x175	35	9Ø16c/20	9Ø16c/20
C28	150x150	35	7Ø12c/20	7Ø12c/20
C29	185x185	50	9Ø12c/20	9Ø12c/20
C30	180x180	50	9Ø12c/20	9Ø12c/20
C32	185x185	60	7Ø16c/25	7Ø16c/25
C33	170x170	50	8Ø12c/20	8Ø12c/20
C35	140x140	50	7Ø12c/20	7Ø12c/20
C36	215x115	50	5Ø16c/25	11Ø12c/20
C37	225x115	50	4Ø16c/29	10Ø12c/22
C38	225x120	60	5Ø16c/25	9Ø16c/25
C39	225x115	60	5Ø16c/25	9Ø16c/25
C40	200 x 100 x 50	X: 5Ø12c/18 Y: 11Ø12c/18		
C41	215 x 110 x 50	X: 4Ø16c/25 Y: 11Ø12c/20		
C42	165 x 90 x 50	X: 4Ø12c/20 Y: 8Ø12c/20		

Resumen Acero Cimentación	Long. total (m)	Peso+10% (kg)	Total
AH-500CN Ø6	118.4	29	
Ø8	195.4	85	
Ø12	1074.4	1049	
Ø16	665.4	1155	
Ø20	78.0	211	2529

Referencias	Arranques Esquinas	Arranques Cara X	Arranques Cara Y
C1	4Ø12 (30+41+31)		
C2, C3, C6, C7, C8, C10, C12, C14, C30, C33, C34, C35, C36, C37, C40, C41 y C42	4Ø12 (30+42+31)		
C4, C6, C11, C31, C32, C38 y C39	4Ø12 (30+51+31)		
C8 y C29	4Ø16 (30+42+41)		2Ø12 (30+42+31)
C13	4Ø16 (30+51+41)		2Ø12 (30+51+31)
C15	4Ø20 (30+26+60)		
C16, C18, C21, C23, C24, C25 y C28	4Ø12 (30+27+31)		
C17 y C27	4Ø12 (30+26+31)		
C19	4Ø12 (30+27+31)		2Ø12 (30+27+31)
C20	4Ø12 (30+26+31)		2Ø12 (30+26+31)
C22	4Ø16 (30+27+41)		2Ø16 (30+27+41)
C26	4Ø12 (30+26+31)		2Ø12 (30+26+31)

40	40	40
VC.T-1.3	VC.T-1	VC.T-2
Arm. sup.: 4Ø16	Arm. sup.: 4Ø16	Arm. sup.: 4Ø20
Arm. inf.: 3Ø16	Arm. inf.: 3Ø12	Arm. inf.: 3Ø12
Arm. piel: 1x2Ø12	Arm. piel: 1x2Ø12	Arm. piel: 1x2Ø12
Estribos: 1xØ8c/20	Estribos: 1xØ8c/30	Estribos: 1xØ8c/30

Cimentación
Cimentación
Hormigón: H-25 , Control Normal
Escala: 1:50

Arranques
nØx(aa+bb+cc)
+cc
+bb



UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA
CARRERA DE INGENIERÍA CIVIL

PROYECTO:
DISEÑO ESTRUCTURAL CASA DEL MAESTRO EN EL MUNICIPIO DE BERMEJO

CONTENIDO:
CIMENTACIONES EN PLANTA

PROYECTO DE INGENIERIA CIVIL II CIV 502

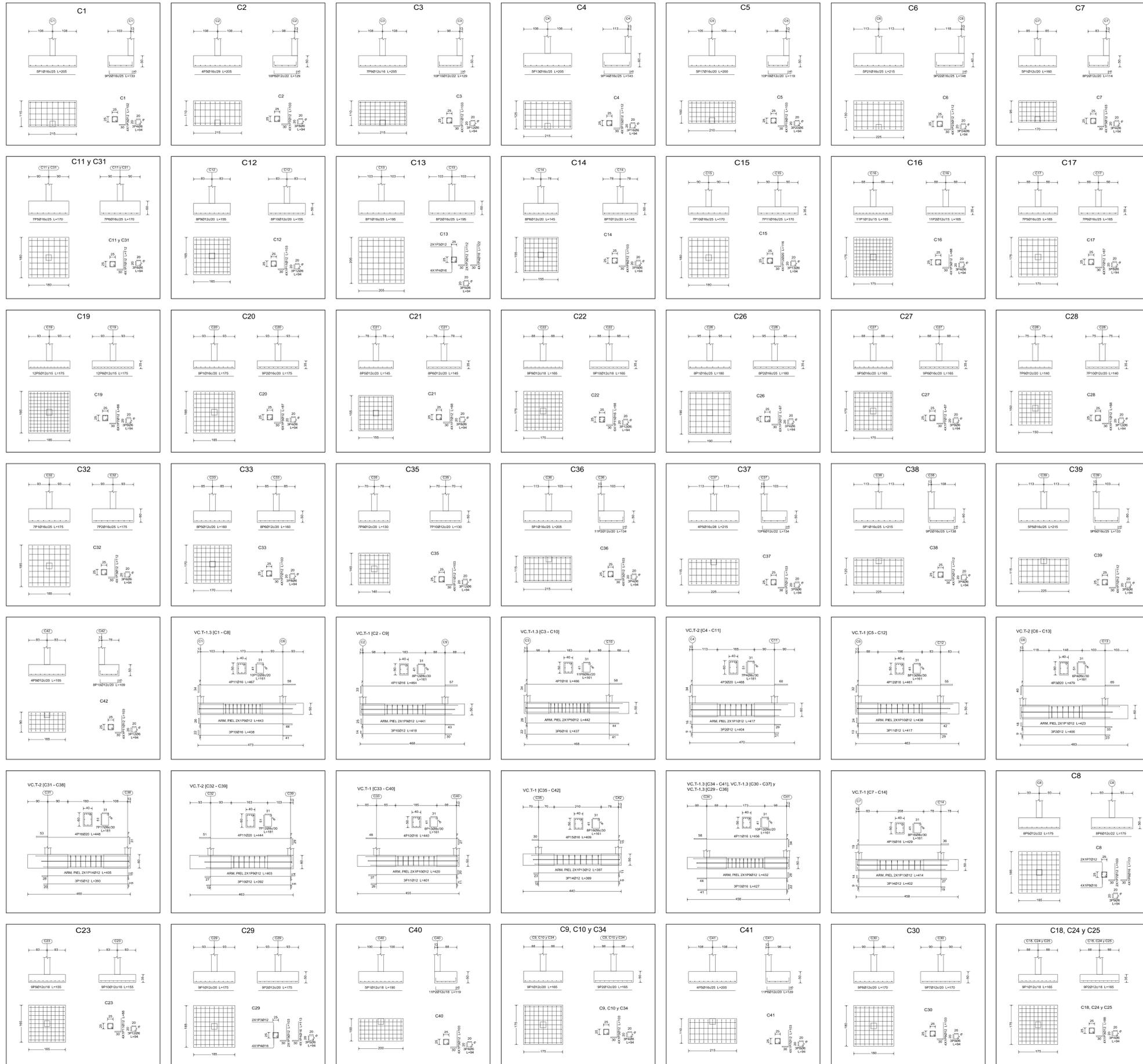
ESTUDIANTE:
RODRIGO JAVIER DELGADO OVANDO

ESCALA:
1:50

FECHA:
AGOSTO DEL 2019

PLANO:
15/18

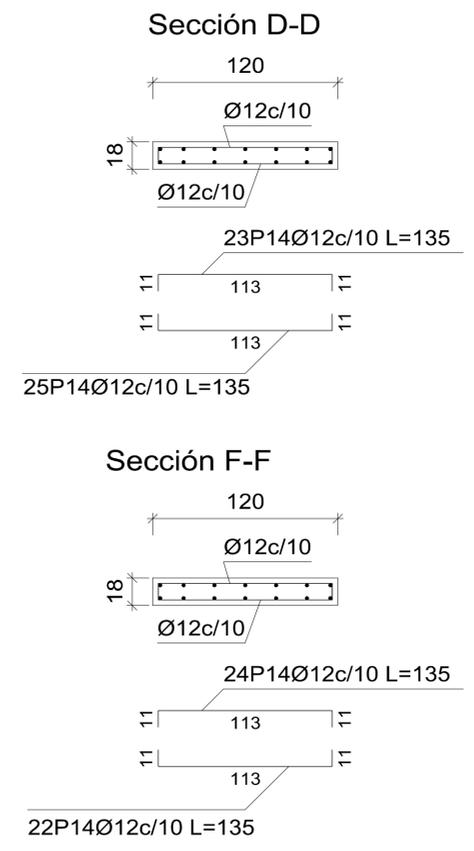
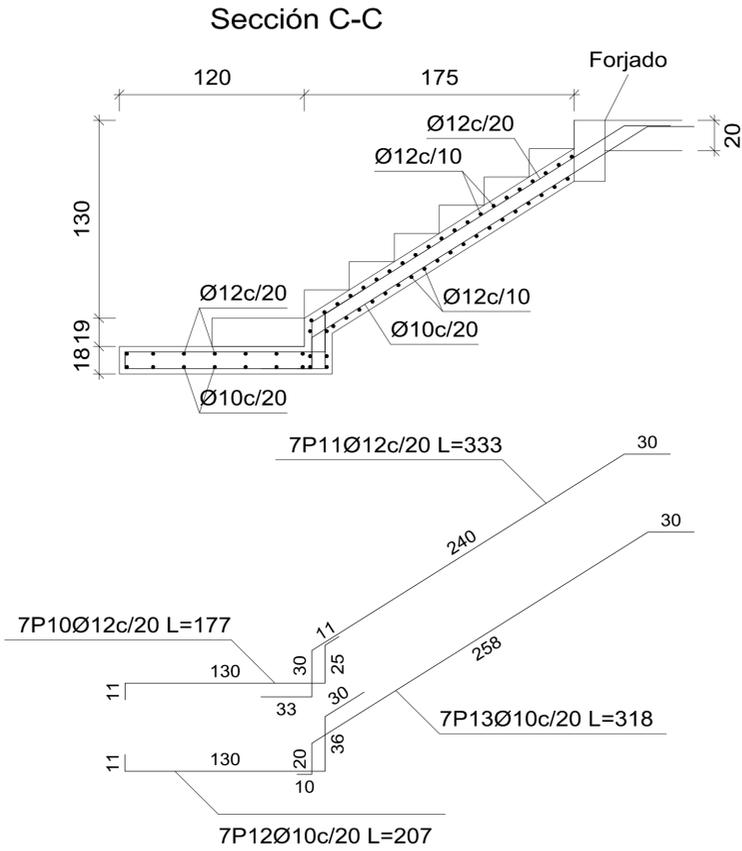
DETALLE DE ARMADURA DE CIMENTACIÓN ESC. 1:70



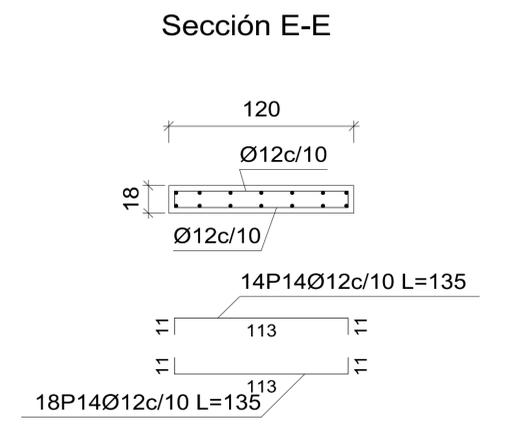
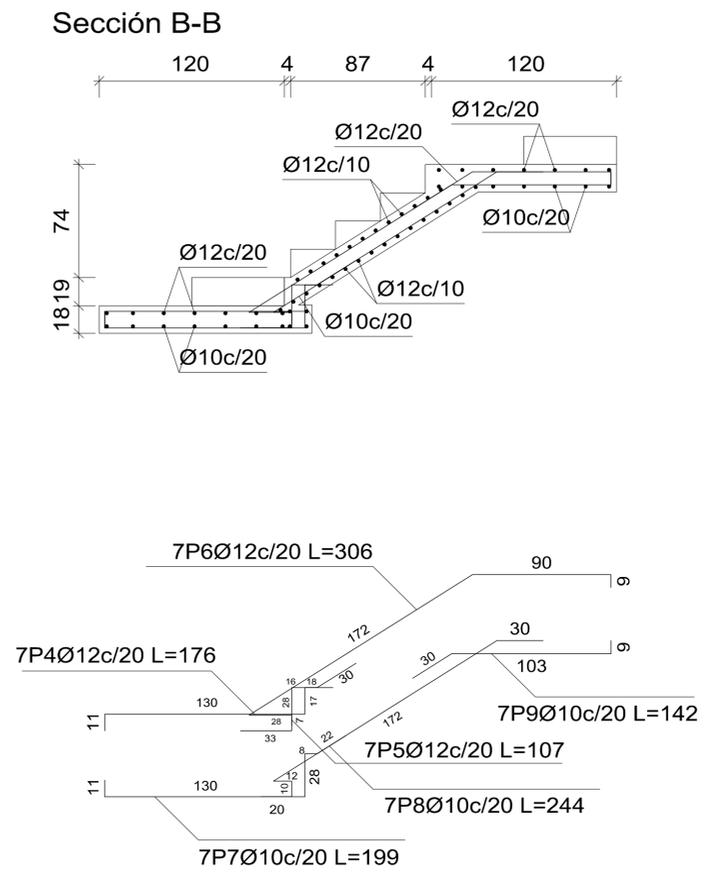
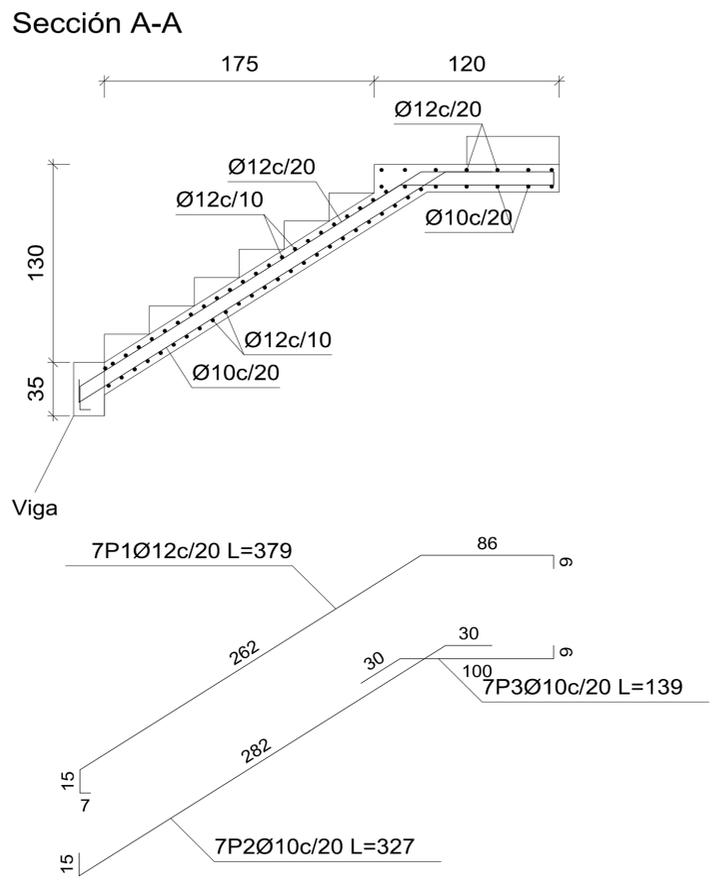
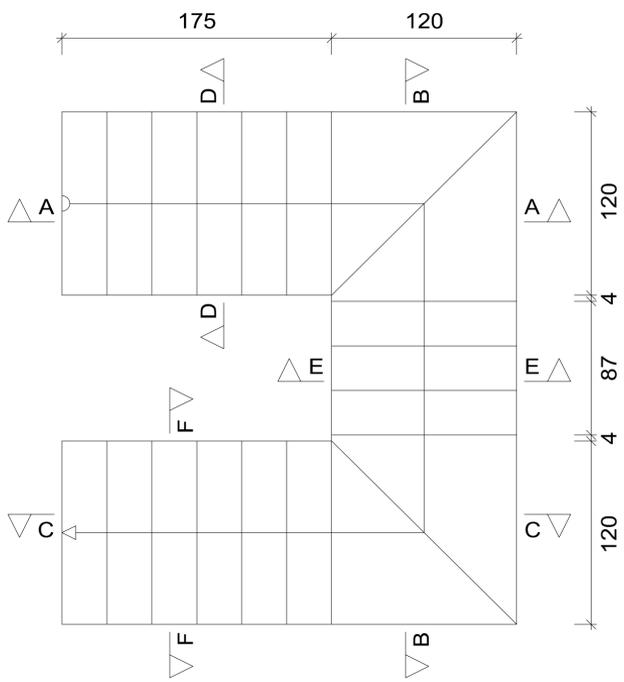
Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
C1	1	Ø16	5	205	1025	16.2
	2	Ø16	9	133	1197	19.4
	3	Ø12	4	102	408	3.6
	4	Ø6	3	94	282	0.6
Total						43.8
C2	5	Ø16	4	205	820	12.9
	6	Ø12	10	128	1280	15.6
	7	Ø12	4	103	412	3.7
	8	Ø6	3	94	282	0.6
Total						31.8
C3	9	Ø12	7	205	1435	12.7
	10	Ø12	10	128	1280	15.6
	11	Ø12	4	103	412	3.7
	12	Ø6	3	94	282	0.6
Total						31.4
C4	13	Ø16	5	205	1025	16.2
	14	Ø16	9	133	1197	19.4
	15	Ø12	4	102	408	3.6
	16	Ø6	3	94	282	0.6
Total						45.2
C5	17	Ø16	5	200	1000	15.8
	18	Ø12	10	119	1190	14.6
	19	Ø12	4	103	412	3.7
	20	Ø6	3	94	282	0.6
Total						33.8
C6	21	Ø16	5	215	1075	17.0
	22	Ø16	9	148	1332	21.6
	23	Ø12	4	112	448	4.0
	24	Ø6	3	94	282	0.6
Total						45.5
C7	25	Ø12	5	160	800	7.1
	26	Ø12	4	103	412	3.7
	27	Ø12	4	103	412	3.7
	28	Ø6	3	94	282	0.6
Total						21.5
C8	29	Ø12	9	175	1575	12.4
	30	Ø12	10	128	1280	15.6
	31	Ø12	3	103	309	1.8
	32	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C3 - C4]	33	Ø12	2	408	816	7.8
	34	Ø12	3	417	1251	11.1
	35	Ø16	4	461	1844	20.1
	36	Ø6	3	181	543	5.1
Total						56.8
C9	37	Ø12	5	160	800	7.1
	38	Ø12	4	103	412	3.7
	39	Ø12	4	103	412	3.7
	40	Ø6	3	94	282	0.6
Total						21.5
C10	41	Ø12	9	175	1575	12.4
	42	Ø12	10	128	1280	15.6
	43	Ø12	3	103	309	1.8
	44	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C5 - C12]	45	Ø12	2	408	816	7.8
	46	Ø12	3	417	1251	11.1
	47	Ø16	4	461	1844	20.1
	48	Ø6	3	181	543	5.1
Total						56.8
C11	49	Ø12	5	160	800	7.1
	50	Ø12	4	103	412	3.7
	51	Ø12	4	103	412	3.7
	52	Ø6	3	94	282	0.6
Total						21.5
C12	53	Ø12	9	175	1575	12.4
	54	Ø12	10	128	1280	15.6
	55	Ø12	3	103	309	1.8
	56	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C13 - C27]	57	Ø12	2	408	816	7.8
	58	Ø12	3	417	1251	11.1
	59	Ø16	4	461	1844	20.1
	60	Ø6	3	181	543	5.1
Total						56.8
C13	61	Ø12	5	160	800	7.1
	62	Ø12	4	103	412	3.7
	63	Ø12	4	103	412	3.7
	64	Ø6	3	94	282	0.6
Total						21.5
C14	65	Ø12	9	175	1575	12.4
	66	Ø12	10	128	1280	15.6
	67	Ø12	3	103	309	1.8
	68	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C28 - C36]	69	Ø12	2	408	816	7.8
	70	Ø12	3	417	1251	11.1
	71	Ø16	4	461	1844	20.1
	72	Ø6	3	181	543	5.1
Total						56.8
C15	73	Ø12	5	160	800	7.1
	74	Ø12	4	103	412	3.7
	75	Ø12	4	103	412	3.7
	76	Ø6	3	94	282	0.6
Total						21.5
C16	77	Ø12	9	175	1575	12.4
	78	Ø12	10	128	1280	15.6
	79	Ø12	3	103	309	1.8
	80	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C37 - C41]	81	Ø12	2	408	816	7.8
	82	Ø12	3	417	1251	11.1
	83	Ø16	4	461	1844	20.1
	84	Ø6	3	181	543	5.1
Total						56.8
C17	85	Ø12	5	160	800	7.1
	86	Ø12	4	103	412	3.7
	87	Ø12	4	103	412	3.7
	88	Ø6	3	94	282	0.6
Total						21.5
C18	89	Ø12	9	175	1575	12.4
	90	Ø12	10	128	1280	15.6
	91	Ø12	3	103	309	1.8
	92	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C42 - C48]	93	Ø12	2	408	816	7.8
	94	Ø12	3	417	1251	11.1
	95	Ø16	4	461	1844	20.1
	96	Ø6	3	181	543	5.1
Total						56.8
C19	97	Ø12	5	160	800	7.1
	98	Ø12	4	103	412	3.7
	99	Ø12	4	103	412	3.7
	100	Ø6	3	94	282	0.6
Total						21.5
C20	101	Ø12	9	175	1575	12.4
	102	Ø12	10	128	1280	15.6
	103	Ø12	3	103	309	1.8
	104	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C49 - C56]	105	Ø12	2	408	816	7.8
	106	Ø12	3	417	1251	11.1
	107	Ø16	4	461	1844	20.1
	108	Ø6	3	181	543	5.1
Total						56.8
C21	109	Ø12	5	160	800	7.1
	110	Ø12	4	103	412	3.7
	111	Ø12	4	103	412	3.7
	112	Ø6	3	94	282	0.6
Total						21.5
C22	113	Ø12	9	175	1575	12.4
	114	Ø12	10	128	1280	15.6
	115	Ø12	3	103	309	1.8
	116	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C57 - C64]	117	Ø12	2	408	816	7.8
	118	Ø12	3	417	1251	11.1
	119	Ø16	4	461	1844	20.1
	120	Ø6	3	181	543	5.1
Total						56.8
C23	121	Ø12	5	160	800	7.1
	122	Ø12	4	103	412	3.7
	123	Ø12	4	103	412	3.7
	124	Ø6	3	94	282	0.6
Total						21.5
C24	125	Ø12	9	175	1575	12.4
	126	Ø12	10	128	1280	15.6
	127	Ø12	3	103	309	1.8
	128	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C65 - C72]	129	Ø12	2	408	816	7.8
	130	Ø12	3	417	1251	11.1
	131	Ø16	4	461	1844	20.1
	132	Ø6	3	181	543	5.1
Total						56.8
C25	133	Ø12	5	160	800	7.1
	134	Ø12	4	103	412	3.7
	135	Ø12	4	103	412	3.7
	136	Ø6	3	94	282	0.6
Total						21.5
C26	137	Ø12	9	175	1575	12.4
	138	Ø12	10	128	1280	15.6
	139	Ø12	3	103	309	1.8
	140	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C73 - C80]	141	Ø12	2	408	816	7.8
	142	Ø12	3	417	1251	11.1
	143	Ø16	4	461	1844	20.1
	144	Ø6	3	181	543	5.1
Total						56.8
C27	145	Ø12	5	160	800	7.1
	146	Ø12	4	103	412	3.7
	147	Ø12	4	103	412	3.7
	148	Ø6	3	94	282	0.6
Total						21.5
C28	149	Ø12	9	175	1575	12.4
	150	Ø12	10	128	1280	15.6
	151	Ø12	3	103	309	1.8
	152	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C81 - C88]	153	Ø12	2	408	816	7.8
	154	Ø12	3	417	1251	11.1
	155	Ø16	4	461	1844	20.1
	156	Ø6	3	181	543	5.1
Total						56.8
C29	157	Ø12	5	160	800	7.1
	158	Ø12	4	103	412	3.7
	159	Ø12	4	103	412	3.7
	160	Ø6	3	94	282	0.6
Total						21.5
C30	161	Ø12	9	175	1575	12.4
	162	Ø12	10	128	1280	15.6
	163	Ø12	3	103	309	1.8
	164	Ø6	3	94	282	0.6
Total						37.7
VC-T-1 [C89 - C96]	165	Ø12	2	408	816	7.8
	166	Ø12	3	417	1251	11.1
	167	Ø16	4	461	1844	20.1
	168	Ø6	3	181	543	5.1
Total						56.8
C31	169	Ø12	5	160	800	7.1
	170	Ø12	4	103	412	3.7
	171	Ø12	4	103	412	3.7
	172	Ø6	3	94	282	0.6
Total						21.5
C32	173	Ø12	9	175	1575	12.4
	174	Ø12	10	128	1280	15.6
	175	Ø12	3	103	309</	

ESCALERA DE HORMIGÓN ARMADO ESC. 1:25

Tramo 1		
Geometría	Ámbito	1.200 m
	Espesor	0.18 m
	Huella	0.292 m
	Contrahuella	0.185 m
	Desnivel que salva	3.70 m
	Nº de escalones	20
	Tramos consecutivos iguales	3
	Planta final	CUBIERTA
Planta inicial	PLANTA BAJA	
Cargas	Peso propio	4.41 kN/m ²
	Peldañeado (Hormigonado con la losa)	1.92 kN/m ²
	Solado	1.00 kN/m ²
	Barandillas	3.00 kN/m
	Sobrecarga de uso	3.92 kN/m ²
Materiales	Hormigón	H-25, Control Normal
	Acero	AH-500, Control Normal
	Rec. geométrico	3.0 cm



Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500CN (kg)
TRAMO 1 PB-CUBIERTA	1	Ø12	7	379	2653	23.6
	2	Ø10	7	327	2289	14.1
	3	Ø10	7	139	973	6.0
	4	Ø12	7	176	1232	10.9
	5	Ø12	7	107	749	6.6
	6	Ø12	7	306	2142	19.0
	7	Ø10	7	199	1393	8.6
	8	Ø10	7	244	1708	10.5
	9	Ø10	7	142	994	6.1
	10	Ø12	7	177	1239	11.0
	11	Ø12	7	333	2331	20.7
	12	Ø10	7	207	1449	8.9
	13	Ø10	7	318	2226	13.7
	14	Ø12	126	135	17010	151.0
Total+10%:					341.8	
(x3):					1025.4	
Ø10:					224.1	
Ø12:					801.3	
Total:					1025.4	
Resumen Acero		Long. total	Peso+10%	Total		
TRAMO PB-CUBIERTA		(m)	(kg)			
AH-500CN	Ø10	331.0	224			
	Ø12	820.7	801	1025		



	UNIVERSIDAD AUTÓNOMA JUAN MISAEL SARACHO FACULTAD DE CIENCIAS Y TECNOLOGÍA CARRERA DE INGENIERÍA CIVIL		
	PROYECTO: DISEÑO ESTRUCTURAL CASA DEL MAESTRO EN EL MUNICIPIO DE BERMEJO CONTENIDO: ESCALERA DE HªA°		
PROYECTO DE INGENIERIA CIVIL II CIV 502	ESCALA: 1:25	FECHA: AGOSTO DEL 2019	
ESTUDIANTE: RODRIGO JAVIER DELGADO OVANDO	Vo Bo:	PLANO: 17/18	