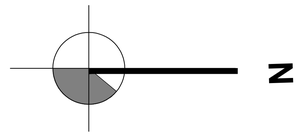
PLANO DE CIMENTACIÓN

ESC. 1:100



Cimentación
Cimentación
Hormigón: H-21
Escala: 1:100

CUADRO DE ELEMENTOS DE CIMENTACIÓN

Referencias	Dimensiones (cm)	Canto (cm)	Armado inf. X	Armado inf. Y	Armado sup. X	Armado sup. Y
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C23, C28, C29, C30, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C51, C52, C53, C54, C55, C56, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C98, C99, C100, C101, C102, C103, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C121, C122, C164 y C177	100x100	35	4ø12c/24	4ø12c/24		
C124, C134, C135, C166, C180, C182, C185, C198 y C204	100x100	35	4ø12c/24	4ø12c/24		
C125, C129, C145, C167, C168, C188 y C199	100x100	35	4ø12c/24	4ø12c/24		
C130, C133, C165, C191, C196 y C200	100x100	35	4ø12c/24	4ø12c/24		
C131	110x110	35	4ø12c/24	4ø12c/24		
C132, C189, C203	110x110	35	4ø12c/24	4ø12c/24		
C136, C138, C186, C190 y C201	110x110	35	4ø12c/24	4ø12c/24		
C137, C187 y C202	120x120	35	5ø12c/24	5ø12c/24		
C139 y C201	120x120	35	5ø12c/24	5ø12c/24		
C146, C147 y C150	100x100	35	4ø12c/24	4ø12c/24		
C153 y C164	160x160	35	4ø12c/24	4ø12c/24	6ø12c/24	6ø12c/24
C154, (C19-C34), (C27-C33), (C21-C32), (C22-C31), (C24-C29), (C25-C27), (C26-C28), (C37-C75), (C41-C56), (C48-C55), (C49-C54), (C50-C53), (C53-C105), (C56-C106), (C58-C108) y (C98-C104)	110x110	35	4ø12c/24	4ø12c/24		
C155 y C157	175x175	35	11ø12c/15	11ø12c/15		
C158	145x145	35	6ø12c/24	6ø12c/24		
C159, C169 y C140	105x105	35	6ø12c/24	6ø12c/24		
C170	130x130	35	5ø12c/24	5ø12c/24	5ø12c/24	5ø12c/24
C171, C179, C206 y C208	100x100	35	4ø12c/24	4ø12c/24		
C172, C180, C206 y C209	100x100	35	4ø12c/24	4ø12c/24		
C173	110x110	35	6ø12c/24	6ø12c/24		
C174, C182, C207 y C210	100x100	35	4ø12c/24	4ø12c/24		
C175	100x100	35	4ø12c/24	4ø12c/24		
C176	110x110	35	4ø12c/24	4ø12c/24		
C178	100x100	35	4ø12c/24	4ø12c/24		
C181	100x100	35	4ø12c/24	4ø12c/24		
C213	165x165	35	10ø12c/16	10ø12c/16		
C214	155x155	35	9ø12c/16	9ø12c/16		
C215	135x135	45	4ø16c/23	4ø16c/23	6ø16c/23	6ø16c/23
(C52-C123)	150x150	35	6ø12c/24	6ø12c/24	6ø12c/24	6ø12c/24
(C106-C120)	150x150	35	6ø12c/24	6ø12c/24	6ø12c/24	6ø12c/24
(C120-C121)	155x155	35	6ø12c/24	6ø12c/24	6ø12c/24	6ø12c/24
(C141-C125)	165x165	35	6ø12c/24	6ø12c/24	6ø12c/24	6ø12c/24
(C142-C153)	135x130	35	5ø12c/24	5ø12c/24		
(C143-C158)	135x130	35	5ø12c/24	5ø12c/24		
(C144-C169)	135x130	35	5ø12c/24	5ø12c/24		
(C145-C148) y (C181-C188)	175x175	35	8ø12c/24	8ø12c/24	8ø12c/24	8ø12c/24
(C162-C184)	135x130	35	5ø12c/24	5ø12c/24		
(C163-C183)	135x130	35	5ø12c/24	5ø12c/24	5ø12c/24	5ø12c/24
(C203-C213)	225x185	35	14ø20c/25	14ø20c/25	14ø20c/25	14ø20c/25
(C214-C217)	155x120	35	6ø12c/22	6ø12c/24	5ø12c/22	6ø12c/24
(C108-C124-C218)	190x190	45	10ø12c/18	10ø12c/18	10ø12c/18	10ø12c/18

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

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES | **PLANO DE CIMENTACIÓN**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

LAMINA: 5/36

V°B°:

FECHA: JUNIO - 2025

ESCALA: INDICADA

PLANO DESPIECE DE CIMENTACIÓN

ESC. 1:100

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

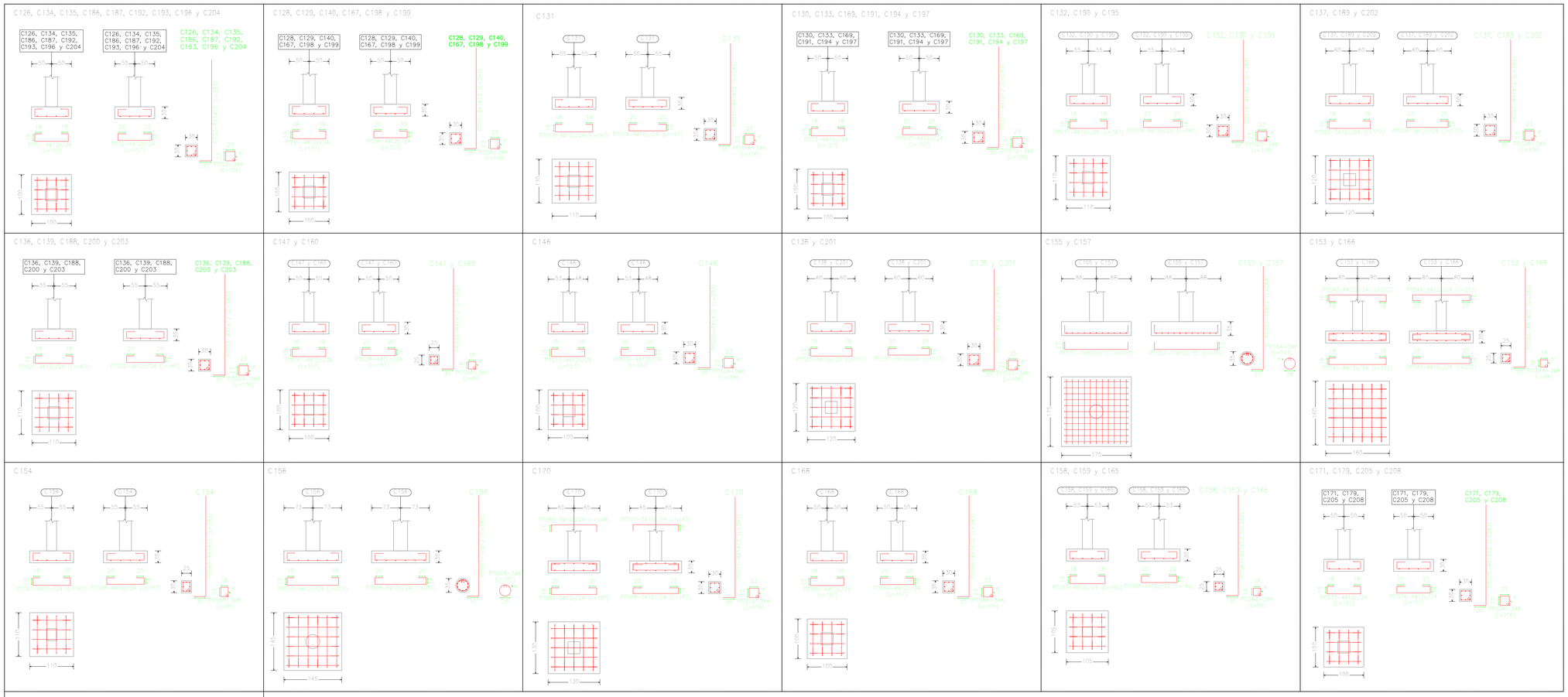
DISEÑO ESTRUCTURAL - INTERNADO RURAL
EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES	**PLANO DESPIECE DE CIMENTACIÓN**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ	**UBICACIÓN:** ENTRE RÍOS - TARIJA - BOLIVIA	**LAMINA:**
V°B°:	**FECHA:** JUNIO - 2025	6/36
	ESCALA: INDICADA	

PLANO ZAPATAS H° A°

ESC. 1:100

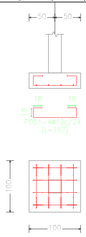


Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
C126=C134=C135=C186=C187=C192=C193=C196=C204	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=43	31.8
C128=C129=C140=C167=C198=C199	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	31.8
C130=C133=C169=C191=C194=C197	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	31.8
C131	1	ø12	5	157	785	6.9
	2	ø12	5	157	785	6.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	35.4
C132=C190=C195	1	ø12	5	157	785	6.9
	2	ø12	5	157	785	6.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	35.4
C136=C139=C188=C200=C203	1	ø12	5	167	835	7.4
	2	ø12	5	167	835	7.4
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	35.4
C137=C189=C202	1	ø12	5	177	885	7.9
	2	ø12	5	177	885	7.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	36.5
C138=C201	1	ø12	5	177	885	7.9
	2	ø12	5	177	885	7.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	36.5
C146	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	31.8
C147=C160	1	ø12	5	157	785	6.9
	2	ø12	5	157	785	6.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	35.4
C153=C166	1	ø12	11	272	2992	26.6
	2	ø12	11	272	2992	26.6
	3	ø12	11	272	2992	26.6
	4	ø12	11	272	2992	26.6
	5	ø12	11	272	2992	26.6
	6	ø12	11	272	2992	26.6
	7	ø12	11	272	2992	26.6
	8	ø12	11	272	2992	26.6
	9	ø12	11	272	2992	26.6
	10	ø12	11	272	2992	26.6
	11	ø12	11	272	2992	26.6
	12	ø12	11	272	2992	26.6
					Total=85	322.3
C154	1	ø12	5	157	785	6.9
	2	ø12	5	157	785	6.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	35.4
C155=C157	1	ø12	11	157	2761	24.2
	2	ø12	11	157	2761	24.2
	3	ø12	11	192	2816	24.7
	4	øø	1		318	0.1
					Total=85	73.2
C156	1	ø12	6	192	1216	10.8
	2	ø12	6	192	1216	10.8
	3	ø12	6	192	1216	10.8
	4	ø12	6	192	1216	10.8
	5	ø12	6	192	1216	10.8
	6	ø12	6	192	1216	10.8
	7	ø12	6	192	1216	10.8
	8	ø12	6	192	1216	10.8
	9	ø12	6	192	1216	10.8
	10	ø12	6	192	1216	10.8
	11	ø12	6	192	1216	10.8
	12	ø12	6	192	1216	10.8
					Total=85	129.5
C158=C159=C165	1	ø12	4	192	768	6.8
	2	ø12	4	192	768	6.8
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	34.4
C168	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	31.8
C170	1	ø12	5	157	785	6.9
	2	ø12	5	157	785	6.9
	3	ø12	5	192	2304	20.5
	4	øø	1		318	0.1
					Total=55	35.4
C171=C179=C205=C208	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	31.8
C172=C180=C206=C209	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1		318	0.1
					Total=45	31.8
					øø:	0.6
					ø12:	1467.1
					Total:	1467.7

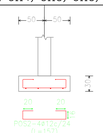
Resumen Acero Cimentación Despiece cimentación		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	611,5	147	
	ø12	7899,4	7574	
	ø16	88,4	151	
	ø20	70,0	186	8058

C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C23, C28, C29, C30, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C51, C52, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C97, C98, C99, C100, C101, C102, C103, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C121, C122 y C164

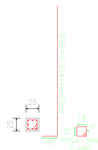
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C23, C28, C29, C30, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C51, C52, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C97, C98, C99, C100, C101, C102, C103, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C121, C122 y C164



C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C23, C28, C29, C30, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C51, C52, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C97, C98, C99, C100, C101, C102, C103, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C121, C122 y C164



C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C23, C28, C29, C30, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C51, C52, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C97, C98, C99, C100, C101, C102, C103, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C121, C122 y C164



Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
C1=C2=C3=C4=C5=C6=C7=C8=C9=C10=C11=C12=C13=C14=C15=C16=C17=C18=C23=C28=C29=C30=C35=C36=C37=C38=C39=C40=C41=C42=C43=C44=C45=C46=C51=C52=C57=C58=C59=C60=C61=C62=C63=C64=C65=C66=C67=C68=C69=C70=C71=C72=C73=C74=C79=C80=C81=C82=C83=C84=C85=C86=C87=C88=C89=C90=C91=C97=C98=C99=C100=C101=C102=C103=C110=C111=C112=C113=C114=C115=C116=C117=C118=C119=C121=C122=C164	1	ø12	4	157	628	5.6
	2	ø12	4	157	628	5.6
	3	ø12	4	192	2304	20.5
	4	øø	1	90	318	0.6
					Total=45	32.1
					øø:	0.6
					ø12:	1467.1
					Total:	1467.7

Resumen Acero Cimentación Despiece cimentación		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	611,5	147	
	ø12	7899,4	7574	
	ø16	88,4	151	
	ø20	70,0	186	8058

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CARRERA DE INGENIERÍA CIVIL

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO ZAPATAS H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

LAMINA: 7/36

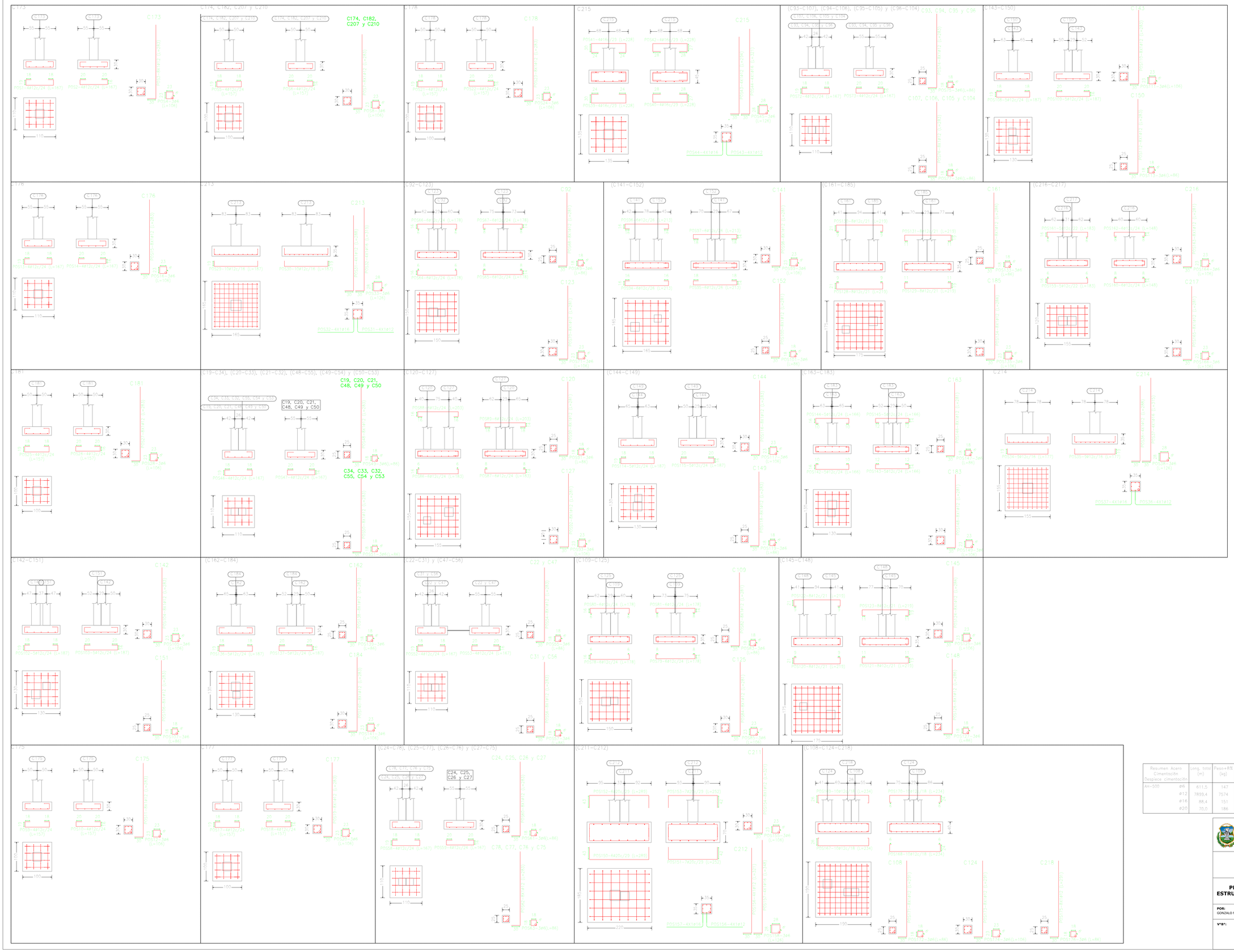
V°B°:

FECHA: JUNIO - 2025

ESCALA: INDICADA

PLANO ZAPATAS H° A°

ESC. 1:100



Resumen Acero Cimentación Despiece cimentación		Long. total (m)	Peso+8% (kg)	Total
AA-500	ø6	611.5	142	
	ø12	7839.4	7574	
	ø16	88.4	151	
	ø20	70.0	186	8058

Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	Dim.-Sol. (kg)
C173						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C174,C182,C207,C210						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C178						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C176						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C177						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C175						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C181						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C213						
	1	ø16	4	180	1920	18.6
	2	ø16	4	180	1920	18.6
	3	ø12	4	315	1260	19.3
	4	ø16	4	315	1260	19.3
					Subtotal:	75.8
C214						
	1	ø12	4	177	1416	14.1
	2	ø12	4	177	1416	14.1
	3	ø12	4	315	1260	19.3
	4	ø16	4	315	1260	19.3
					Subtotal:	67.0
C215						
	1	ø12	4	228	1824	18.1
	2	ø12	4	228	1824	18.1
	3	ø16	4	228	1824	28.8
	4	ø16	4	228	1824	28.8
	5	ø12	4	86	688	6.8
	6	ø6	4	106	424	0.4
					Subtotal:	96.2
C19–C34),(C20–C33),(C21–C32),(C48–C55),(C49–C54),(C50–C53)						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C120–C127,C92–C123						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C144–C149,C141–C152						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C163–C183,C161–C185						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C216–C217,C214						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C142–C151,C182–C184						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C22–C31,C47–C56						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C109–C125,C145–C148						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C177,C175						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C24–C78),(C25–C77),(C26–C76) y (C27–C75)						
	1	ø12	4	147	588	5.2
	2	ø12	4	147	588	5.2
	3	ø12	4	283	1248	20.1
	4	ø6	4	106	424	0.4
					Subtotal:	31.0
C211–C212						
	1	ø12	15	234	3510	31.2
	2	ø12	15	234	3510	31.2
	3	ø20	4	280	1120	27.7
	4	ø20	4	280	1120	27.7
	5	ø16	4	252	1008	39.8
	6	ø16	4	252	1008	39.8
	7	ø12	4	86	344	3.1
	8	ø6	4	106	424	0.4
					Subtotal:	195.9
C108–C124–C218						
	1	ø12	15	234	3510	31.2
	2	ø12	15	234	3510	31.2
	3	ø16	4	234	1248	20.8
	4	ø16	4	234	1248	20.8
	5	ø12	4	86	344	3.1
	6	ø6	4	106	424	0.4
					Subtotal:	107.3
					Peso+8%:	1179
					ø6:	611.5
					ø12:	7839.4
					ø16:	88.4
					ø20:	70.0
					Total:	8658.3

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

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO ZAPATAS H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

LAMINA: 8/36

V°B°:

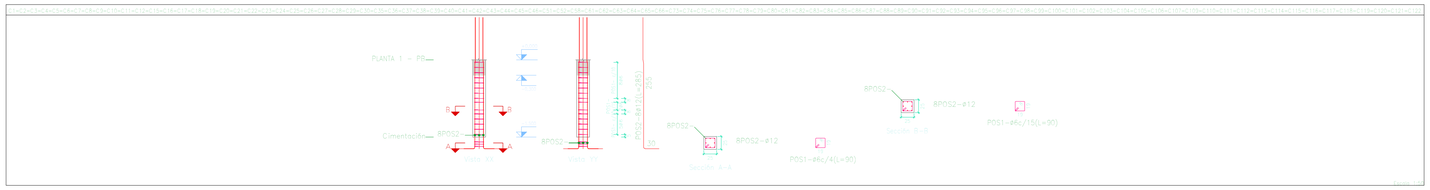
FECHA: JUNIO - 2025

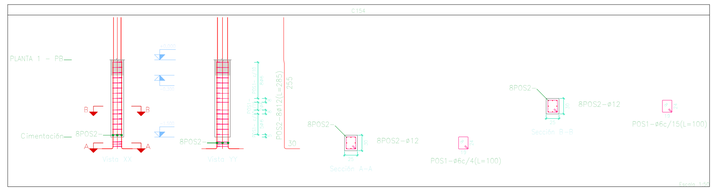
ESCALA: INDICADA

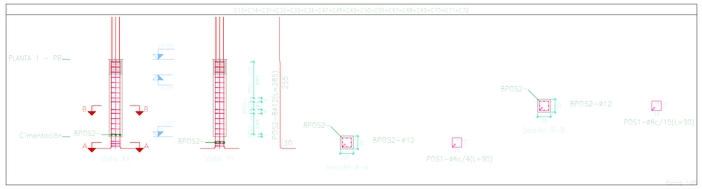
PLANO DESPIECE DE PILARES

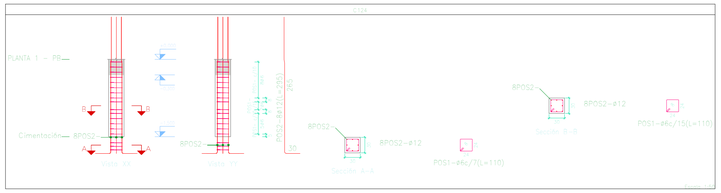
ESC. 1:50

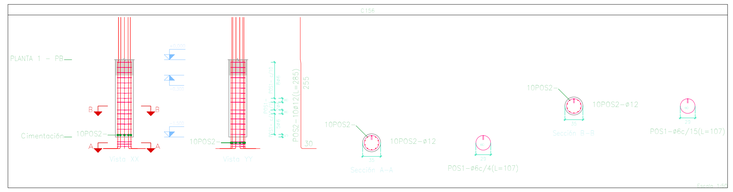
Planta: PLANTA 1 - PB
Hormigón: H-21
Acero en estribos: AH-500

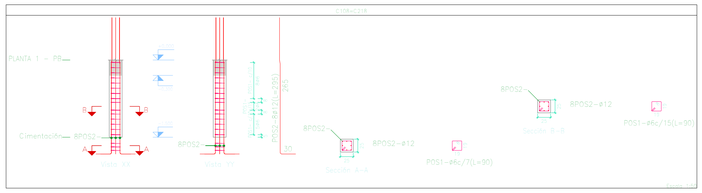


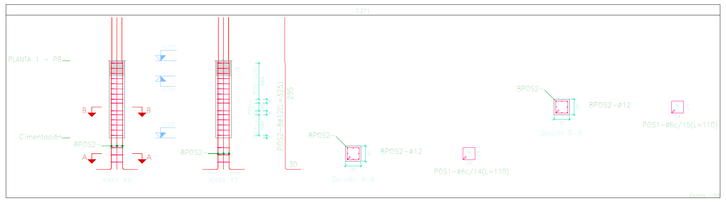


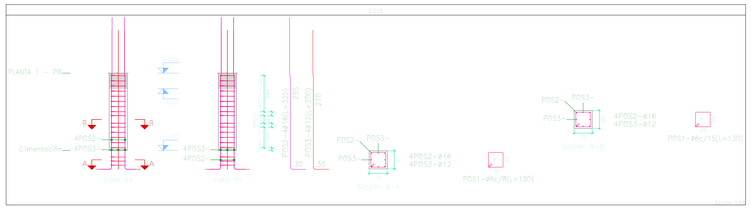


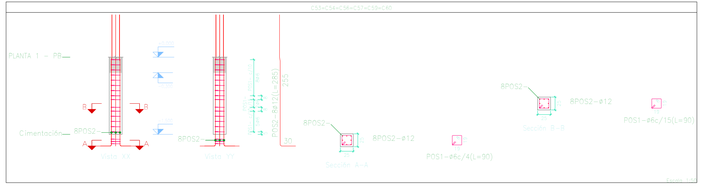


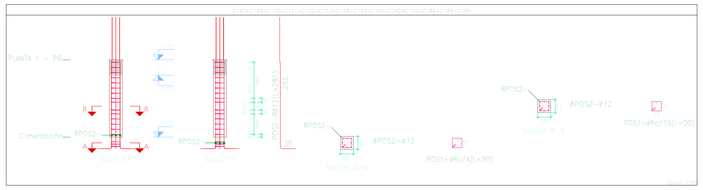


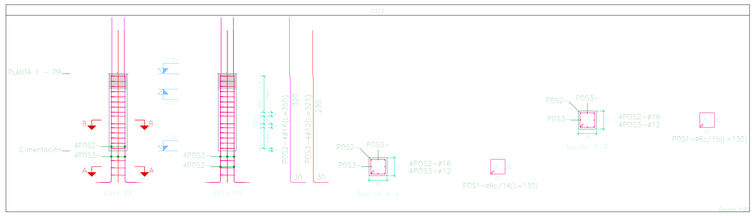


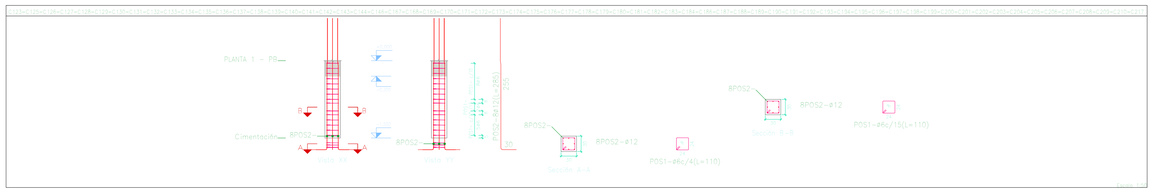


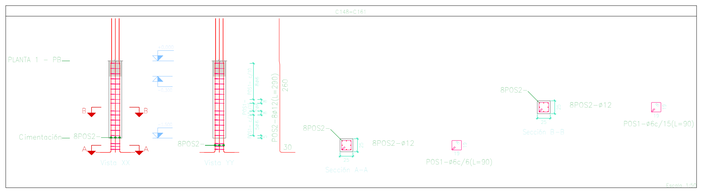


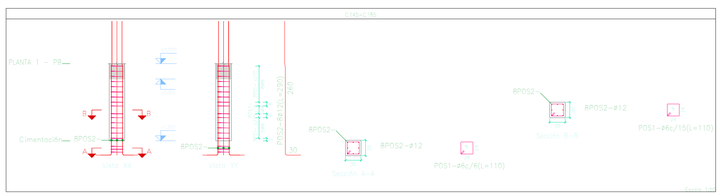


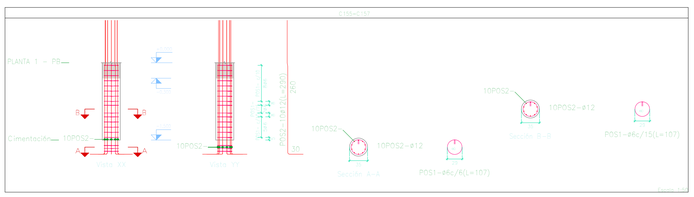


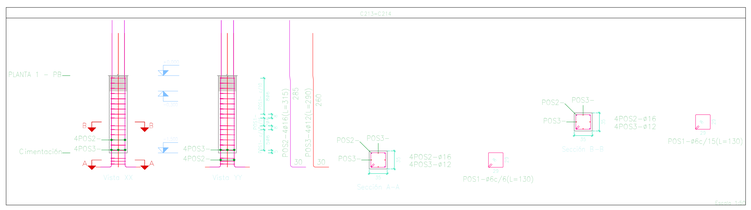


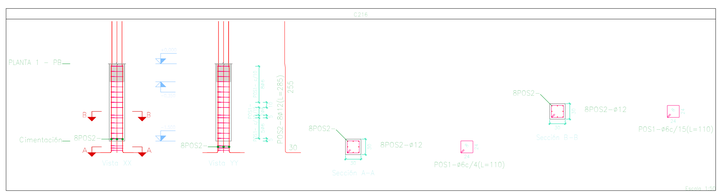












Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
C1=C2=C3=C4=C5=C6=C7=C8=C9=C10=C11=C12=C13=C14=C17=C18=C19=C20=C21=C22=C23=C24=C25=C26=C27=C28=C29=C30=C31=C32=C33=C34=C35=C36=C37=C38=C39=C40=C41=C42=C43=C44=C45=C46=C47=C48=C49=C50=C51=C52=C53=C54=C55=C56=C57=C58=C59=C60=C61=C62=C63=C64=C65=C66=C67=C68=C69=C70=C71=C72=C73=C74=C75=C76=C77=C78=C79=C80=C81=C82=C83=C84=C85=C86=C87=C88=C89=C90=C91=C92=C93=C94=C95=C96=C97=C98=C99=C100=C101=C102=C103=C104=C105=C106=C107=C108=C109=C110=C111=C112=C113=C114=C115=C116=C117=C118=C119=C120=C121=C122=C123=C124=C125=C126=C127=C128=C129=C130=C131=C132=C133=C134=C135=C136=C137=C138=C139=C140=C141=C142=C143=C144=C145=C146=C147=C148=C149=C150=C151=C152=C153=C154=C155=C156=C157=C158=C159=C160=C161=C162=C163=C164=C165=C166=C167=C168=C169=C170=C171=C172							
	1	ø6	18	20 / 5 / 5 / 20	50	1820	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C45=C46=C48=C57=C58=C60							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C108=C219							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C1=C2=C3=C4=C5=C6=C7=C8=C9=C10=C11=C12=C13=C14=C17=C18=C19=C20=C21=C22=C23=C24=C25=C26=C27=C28=C29=C30=C31=C32=C33=C34=C35=C36=C37=C38=C39=C40=C41=C42=C43=C44=C45=C46=C47=C48=C49=C50=C51=C52=C53=C54=C55=C56=C57=C58=C59=C60=C61=C62=C63=C64=C65=C66=C67=C68=C69=C70=C71=C72							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C124=C125=C126=C127=C128=C129=C131=C132=C133=C138=C139=C140=C141=C142=C143=C144=C145=C146=C147=C148=C149=C150=C151=C152=C153=C154=C155=C156=C157=C158=C159=C160=C161=C162=C163=C164=C165=C166=C167=C168=C169=C170=C171=C172=C173=C174=C175=C176=C177=C178=C179=C180=C181=C182=C183=C184=C185=C186=C187=C188=C189=C190=C191=C192=C193=C194=C195=C196=C197=C198=C199=C200=C201=C202=C203=C204=C205=C206=C207=C208=C209=C210=C211							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C156							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C221							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C215							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 204 / 5	214	2690	21.1
						Total ø6:	3.6
						Total ø12:	21.1
C45=C46=C48=C57=C58=C60=C147=C149=C150=C152=C153=C158=C159=C160=C162=C163=C164=C165=C166							
	1	ø6	18	20 / 5 / 5 / 20	50	1825	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C168=C212							
	1	ø6	18	20 / 5 / 5 / 20	50	1820	3.6
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	3.6
						Total ø12:	20.2
C124							
	1	ø6	18	20 / 5 / 5 / 20	50	1860	4.0
	2	ø12	8	5 / 135 / 5	145	2280	20.2
						Total ø6:	4.0
						Total ø12:	20.2
C156=C157							
	1	ø6	18	20 / 5 / 5 / 20	50	1930	4.3
	2	ø12	10	5 / 135 / 5	145	2900	25.7
						Total ø6:	4.3
						Total ø12:	25.7
C158							
	1	ø6	18	20 / 5 / 5 / 20	50	1930	4.3
	2	ø12	10	5 / 135 / 5	145	2900	25.7
						Total ø6:	4.3
						Total ø12:	25.7
C217							
	1	ø6	18	20 / 5 / 5 / 20	50	2340	5.2
	2	ø16	4	5 / 201 / 5 / 145	355	1420	27.1
	3	ø12	4	5 / 203 / 5	213	1280	11.3
						Total ø6:	5.2
						Total ø16:	27.1
C217=C214							
	1	ø6	18	20 / 5 / 5 / 20	50	2340	5.2
	2	ø16	4	5 / 168 / 5 / 157	315	1260	24.0
	3	ø12	4	5 / 135 / 5	145	1160	10.3
						Total ø6:	5.2
						Total ø16:	24.0
						Total ø12:	10.3
C215							
	1	ø6	18	20 / 5 / 5 / 20	50	2340	5.2
	2	ø16	4	5 / 171 / 5 / 145	325	1300	28.8
	3	ø12	4	5 / 135 / 5	145	1200	10.7
						Total ø6:	5.2
						Total ø16:	28.8
						Total ø12:	10.7
						ø6:	207.4
						ø12:	1952.7
						ø16:	52.2
						Total:	2212.3

Resumen Acero Pilares		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	1827.0	917	
	ø12	4952.7	4749	
	ø16	52.2	89	5755

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO COLUMNAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

V°B°:

ESCALA: INDICADA

LAMINA: 9/36

PLANO DESPIECE DE PILARES

ESC. 1:50

Planta: PLANTA 2 - HABITACIONES
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500

Elemento	Pos.	Ø.Nm.	Nº.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
C1=C2=C3=C4=C5=C6=C7=C8=C9=C10=C11=C12=C15=C16=C17=C18=C19=C20=C21=C22=C23=C24=C25=C26=C27=C28=C29=C30=C35=C36=C37=C38=C39=C40=C41=C42=C43=C44=C45=C46=C51=C52=C58=C61=C62=C63=C64=C65=C66=C67=C68=C69=C70=C71=C72=C73=C74=C81=C82=C83=C84=C85=C86=C87=C88=C89=C90=C91=C92=C93=C94=C95=C96=C97=C98=C99=C100=C101=C102=C103=C104=C105=C106=C107=C109=C110=C111=C112=C113=C114=C115=C116=C117=C118=C119=C120=C121=C122	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	27	30 / 20	90	2430	5,4
						Total AH-500 (kg)	32,24
C123=C125=C126=C127=C128=C129=C130=C131=C132=C133=C134=C135=C136=C137=C138=C139=C140=C141=C142=C143=C144=C146=C167=C168=C169=C170=C171=C172=C173=C174=C175=C176=C177=C178=C179=C180=C181=C182=C183=C184=C186=C187=C188=C189=C190=C191=C192=C193=C194=C195=C196=C197=C198=C199=C200=C201=C202=C203=C204=C205=C206=C207=C208=C209=C210=C217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C3=C4=C5=C6=C7=C8=C9=C10=C11=C12=C15=C16=C17=C18=C19=C20=C21=C22=C23=C24=C25=C26=C27=C28=C29=C30=C35=C36=C37=C38=C39=C40=C41=C42=C43=C44=C45=C46=C51=C52=C58=C61=C62=C63=C64=C65=C66=C67=C68=C69=C70=C71=C72=C73=C74=C81=C82=C83=C84=C85=C86=C87=C88=C89=C90=C91=C92=C93=C94=C95=C96=C97=C98=C99=C100=C101=C102=C103=C104=C105=C106=C107=C109=C110=C111=C112=C113=C114=C115=C116=C117=C118=C119=C120=C121=C122	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	27	30 / 20	90	2430	5,4
						Total AH-500 (kg)	32,3
C34=C54=C55=C56=C57=C59=C60	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C123=C125=C126=C127=C128=C129=C130=C131=C132=C133=C134=C135=C136=C137=C138=C139=C140=C141=C142=C143=C144=C146=C167=C168=C169=C170=C171=C172=C173=C174=C175=C176=C177=C178=C179=C180=C181=C182=C183=C184=C186=C187=C188=C189=C190=C191=C192=C193=C194=C195=C196=C197=C198=C199=C200=C201=C202=C203=C204=C205=C206=C207=C208=C209=C210=C217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C124	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C144=C185	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C211	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C216	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=14=C=15=C=16=C=17=C=18=C=19=C=20=C=21=C=22=C=23=C=24=C=25=C=26=C=27=C=28=C=29=C=30=C=35=C=36=C=37=C=38=C=39=C=40=C=41=C=42=C=43=C=44=C=45=C=46=C=51=C=52=C=58=C=61=C=62=C=63=C=64=C=65=C=66=C=67=C=68=C=69=C=70=C=71=C=72=C=73=C=74=C=81=C=82=C=83=C=84=C=85=C=86=C=87=C=88=C=89=C=90=C=91=C=92=C=93=C=94=C=95=C=96=C=97=C=98=C=99=C=100=C=101=C=102=C=103=C=104=C=105=C=106=C=107=C=109=C=110=C=111=C=112=C=113=C=114=C=115=C=116=C=117=C=118=C=119=C=120=C=121=C=122	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C=34=C=54=C=55=C=56=C=57=C=59=C=60	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C=123=C=125=C=126=C=127=C=128=C=129=C=130=C=131=C=132=C=133=C=134=C=135=C=136=C=137=C=138=C=139=C=140=C=141=C=142=C=143=C=144=C=146=C=167=C=168=C=169=C=170=C=171=C=172=C=173=C=174=C=175=C=176=C=177=C=178=C=179=C=180=C=181=C=182=C=183=C=184=C=186=C=187=C=188=C=189=C=190=C=191=C=192=C=193=C=194=C=195=C=196=C=197=C=198=C=199=C=200=C=201=C=202=C=203=C=204=C=205=C=206=C=207=C=208=C=209=C=210=C=217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=124	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=144=C=185	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=211	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=216	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=14=C=15=C=16=C=17=C=18=C=19=C=20=C=21=C=22=C=23=C=24=C=25=C=26=C=27=C=28=C=29=C=30=C=35=C=36=C=37=C=38=C=39=C=40=C=41=C=42=C=43=C=44=C=45=C=46=C=51=C=52=C=58=C=61=C=62=C=63=C=64=C=65=C=66=C=67=C=68=C=69=C=70=C=71=C=72=C=73=C=74=C=81=C=82=C=83=C=84=C=85=C=86=C=87=C=88=C=89=C=90=C=91=C=92=C=93=C=94=C=95=C=96=C=97=C=98=C=99=C=100=C=101=C=102=C=103=C=104=C=105=C=106=C=107=C=109=C=110=C=111=C=112=C=113=C=114=C=115=C=116=C=117=C=118=C=119=C=120=C=121=C=122	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C=34=C=54=C=55=C=56=C=57=C=59=C=60	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	90	2520	5,6
						Total AH-500 (kg)	32,5
C=123=C=125=C=126=C=127=C=128=C=129=C=130=C=131=C=132=C=133=C=134=C=135=C=136=C=137=C=138=C=139=C=140=C=141=C=142=C=143=C=144=C=146=C=167=C=168=C=169=C=170=C=171=C=172=C=173=C=174=C=175=C=176=C=177=C=178=C=179=C=180=C=181=C=182=C=183=C=184=C=186=C=187=C=188=C=189=C=190=C=191=C=192=C=193=C=194=C=195=C=196=C=197=C=198=C=199=C=200=C=201=C=202=C=203=C=204=C=205=C=206=C=207=C=208=C=209=C=210=C=217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=124	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=144=C=185	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=211	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=216	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=123=C=125=C=126=C=127=C=128=C=129=C=130=C=131=C=132=C=133=C=134=C=135=C=136=C=137=C=138=C=139=C=140=C=141=C=142=C=143=C=144=C=146=C=167=C=168=C=169=C=170=C=171=C=172=C=173=C=174=C=175=C=176=C=177=C=178=C=179=C=180=C=181=C=182=C=183=C=184=C=186=C=187=C=188=C=189=C=190=C=191=C=192=C=193=C=194=C=195=C=196=C=197=C=198=C=199=C=200=C=201=C=202=C=203=C=204=C=205=C=206=C=207=C=208=C=209=C=210=C=217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=124	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=144=C=185	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=211	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=216	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=123=C=125=C=126=C=127=C=128=C=129=C=130=C=131=C=132=C=133=C=134=C=135=C=136=C=137=C=138=C=139=C=140=C=141=C=142=C=143=C=144=C=146=C=167=C=168=C=169=C=170=C=171=C=172=C=173=C=174=C=175=C=176=C=177=C=178=C=179=C=180=C=181=C=182=C=183=C=184=C=186=C=187=C=188=C=189=C=190=C=191=C=192=C=193=C=194=C=195=C=196=C=197=C=198=C=199=C=200=C=201=C=202=C=203=C=204=C=205=C=206=C=207=C=208=C=209=C=210=C=217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=124	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=144=C=185	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=211	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=216	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=123=C=125=C=126=C=127=C=128=C=129=C=130=C=131=C=132=C=133=C=134=C=135=C=136=C=137=C=138=C=139=C=140=C=141=C=142=C=143=C=144=C=146=C=167=C=168=C=169=C=170=C=171=C=172=C=173=C=174=C=175=C=176=C=177=C=178=C=179=C=180=C=181=C=182=C=183=C=184=C=186=C=187=C=188=C=189=C=190=C=191=C=192=C=193=C=194=C=195=C=196=C=197=C=198=C=199=C=200=C=201=C=202=C=203=C=204=C=205=C=206=C=207=C=208=C=209=C=210=C=217	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=124	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=144=C=185	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=211	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=216	1	ø12	8	50 / 30	245	2000	26,9
	2	ø6	28	30 / 20	110	3080	6,8
						Total AH-500 (kg)	33,7
C=14=C=15=C=16=C=17=C=18=C=19=C=20=C=21=C=22=C=23=C=24=C=25=C=26=C=27=C=28=C=29=C=30=C=35=C=36=C=37=C=38=C=39=C=40=C=41=C=42=C=43=C=44=C=45=C=46=C=51=C=52=C=58=C=61=C=62=C=63=C=64=C=65=C=66=C=67=C=68=C=69=C=70=C=71=C=72=C=73=C=74=C=81=C=82=C=83=C=84=C=85=C=86=C=87=C=88=C=89=C=90=C=91=C=92=C=93=C=94=C=95=C=96=C=97=C=98=C=99=C=100=C=101=C=102=C=103=C=104=C=105=C=106=C=107=C=109=C=110=C=111=C=112=C=113=C=114=C=115=C=116=C=117=C=118=C=119=C=120=C=121=C=122	1	ø16	4	50 / 30 / 110	440	1760	21,8
	2	ø12	4	50 / 30	415	1660	14,7
	3	ø6	28	30 / 20	135	3640	8,1
						Total AH-500 (kg)	54,6
C=34=C=54=C=55=C=56=C=57=C=59=C=60	1	ø16	4	50 / 30 / 110	440	1760	21,8
	2	ø12	4	50 / 30	415	1660	14,7
	3	ø6	28	30 / 20	135	3640	8,1
						Total AH-500 (kg)	54,6
C=123=C=125=C=126=C=127=C=128=C=129=C=130=C=131=C=132=C=133=C=134=C=135=C=136=C=137=C=138=C=139=C=140=C=141=C=142=C=143=C=144=C=146=C=167=C=168=C=169=C=170=C=171=C=172=C=173=C=174=C=175=C=176=C=177=C=178=C=179=C=180=C=181=C=182=C=183=C=184=C=186=C=187=C=188=C=189=C=190=C=191=C=192=C=193=C=194=C=195=C=196=C=197=C=198=C=199=C=200=C=201=C=202=C=203=C=204=C=205=C=206=C=207=C=208=C=209=C=210=C=217	1	ø16	4	50 / 30 / 110	440	1760	21,8
	2	ø12	4	50 / 30	415	1660	14,7
	3	ø6	28	30 / 20	135	3640	8,1
						Total AH-500 (kg)	54,6
						AH-500 ø6	1567,3
						AH-500 ø12	6685,9
						AH-500 ø16	70,4
						Total AH-500 (kg)	8323,6

Resumen Acero Pilares		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	5867,3	1406	
	ø12	6685,9	6411	
	ø16	70,4	120	7937

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

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO COLUMNAS DE Hº Aº

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

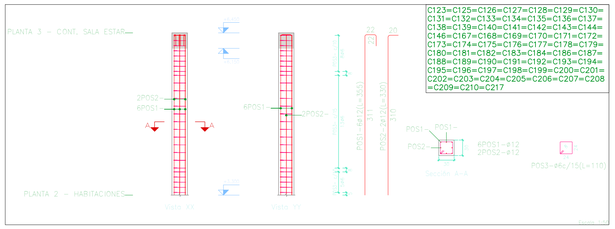
ESCALA: INDICADA

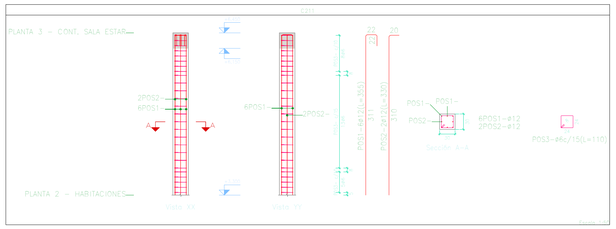
LAMINA: 10/36

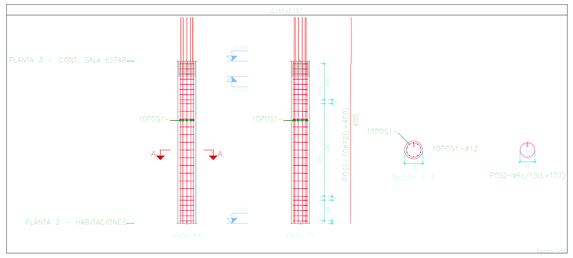
PLANO DESPIECE DE PILARES

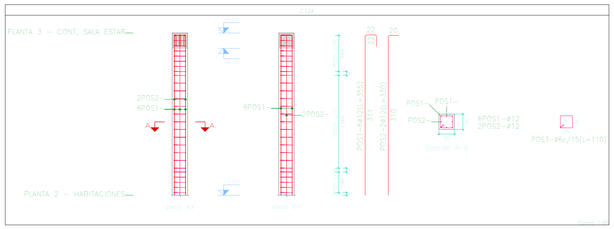
ESC. 1:50

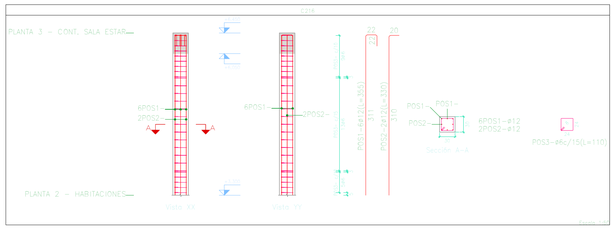
Planta: PLANTA 3 – CONT. SALA ESTAR
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500

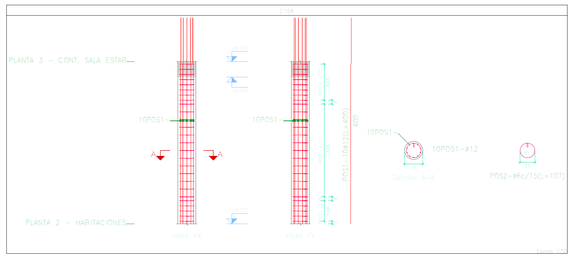


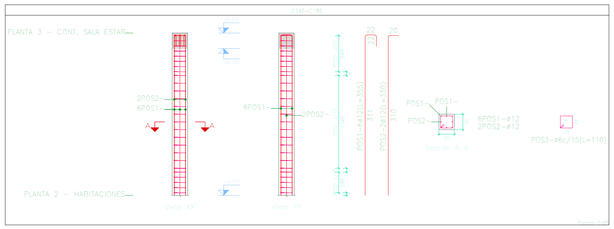


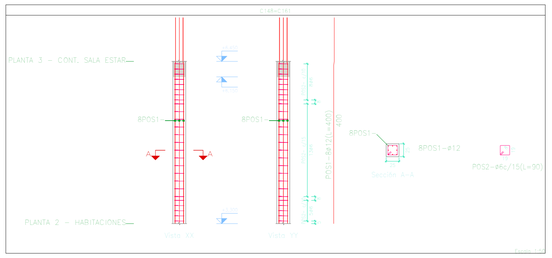


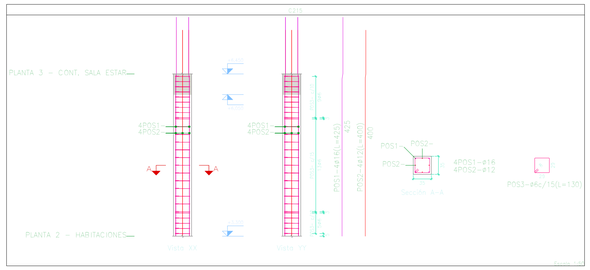


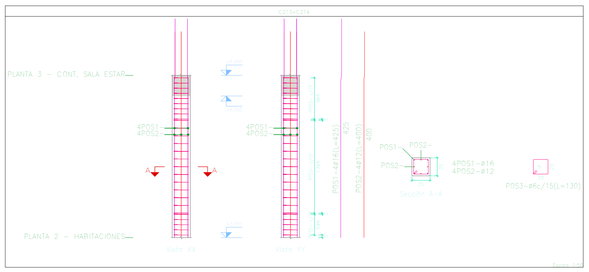


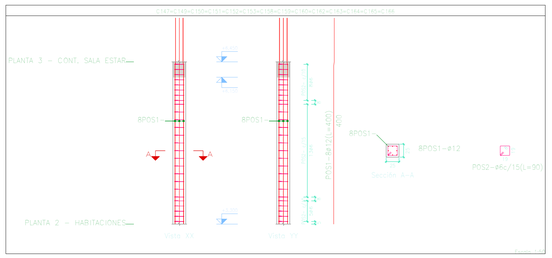


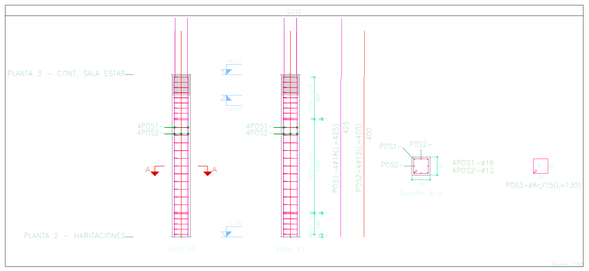


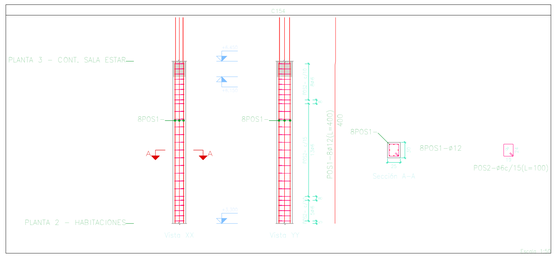












Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
C123=C125=C126=C127=C128=C129=C130=C131=C132=C133=C134=C135=C136=C137=C138=C139=C140=C141=C142=C143=C144=C146=C167=C168=C169=C170=C171=C172=C173=C174=C175=C176=C177=C178=C179=C180=C181=C182=C163=C184=C186=C187=C188=C189=C190=C191=C192=C193=C194=C195=C196=C197=C198=C199=C200=C201=C202=C203=C204=C205=C206=C207=C208=C209=C210=C217	1	ø12	2	350	350	700	6.21
	2	ø12	2	330	330	660	5.9
	3	ø6	28	110	110	3080	6.3
					Inter+5%	4540	18.41
					Total	22.13	
C124	1	ø12	2	350	350	700	6.21
	2	ø12	2	330	330	660	5.9
	3	ø6	28	110	110	3080	6.3
					Inter+5%	4440	18.41
					Total	22.13	
C145=C185	1	ø12	2	350	350	700	6.21
	2	ø12	2	330	330	660	5.9
	3	ø6	28	110	110	3080	6.3
					Inter+5%	4440	18.41
					Total	22.13	
C211	1	ø12	2	350	350	700	6.21
	2	ø12	2	330	330	660	5.9
	3	ø6	28	110	110	3080	6.3
					Inter+5%	4440	18.41
					Total	22.13	
C214	1	ø12	2	350	350	700	6.21
	2	ø12	2	330	330	660	5.9
	3	ø6	27	110	110	3025	6.4
					Inter+5%	4385	18.51
					Total	22.1	
C167=C169=C170=C172=C173=C175=C176=C178=C179=C181=C182=C184=C186=C188=C189=C191=C192=C194=C196=C197=C199=C200=C202=C203=C205=C206=C208	1	ø12	8	508	400	3200	28.4
	2	ø6	28	90	2240	5.2	
					Inter+5%	5440	33.6
					Total	39.2	
C168=C181	1	ø12	8	508	400	3200	28.4
	2	ø6	28	90	2240	5.2	
					Inter+5%	5440	33.6
					Total	39.2	
C154	1	ø12	8	508	400	3200	28.4
	2	ø6	28	100	2800	6.4	
					Inter+5%	6000	34.8
					Total	40.7	
C155=C157	1	ø12	8	508	400	3200	28.4
	2	ø6	28	107	2792	6.2	
					Inter+5%	6000	34.6
					Total	40.7	90.5
C156	1	ø12	8	508	400	3200	28.4
	2	ø6	28	107	2792	6.2	
					Inter+5%	6000	34.6
					Total	40.7	
C212	1	ø16	8	505 (4.1%)	425	3400	26.8
	2	ø12	8	508 (4%)	400	3200	14.2
	3	ø6	27	110	130	3510	7.8
					Inter+5%	6610	52.7
					Total	60.5	
C213=C214	1	ø16	8	505 (4.1%)	425	3400	26.8
	2	ø12	8	508 (4%)	400	3200	14.2
	3	ø6	27	110	130	3510	7.8
					Inter+5%	6610	52.7
					Total	60.5	
C215	1	ø16	8	505 (4.1%)	425	3400	26.8
	2	ø12	8	508 (4%)	400	3200	14.2
	3	ø6	27	110	130	3510	7.8
					Inter+5%	6610	52.7
					Total	60.5	
					ø6:	4.072	
					ø12:	2.992.2	
					ø16:	1.154	
					Total:	3.550.5	

Resumen Acero Pilares		Long. total (m)	Peso+8% (kg)	Totales
AH-500	ø6	2656,0	637	
	ø12	2708,9	2597	
	ø16	68,0	116	3350

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO COLUMNAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

ESCALA: INDICADA

V°B°:

LAMINA: 11/36

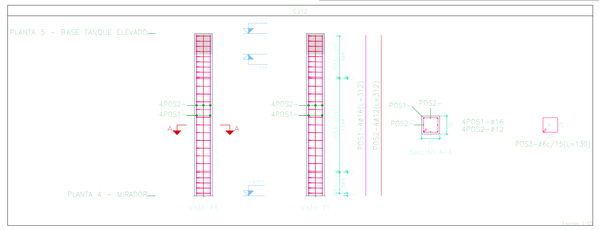
PLANO DESPIECE DE PILARES

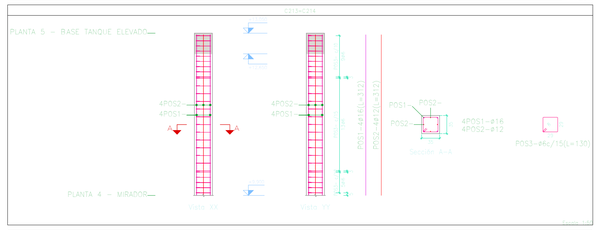
ESC. 1:50

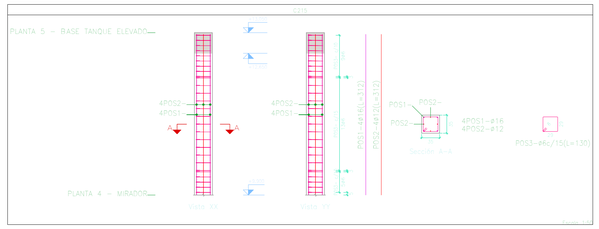
Planta: PLANTA 5 – BASE TANQUE ELEVADO
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500

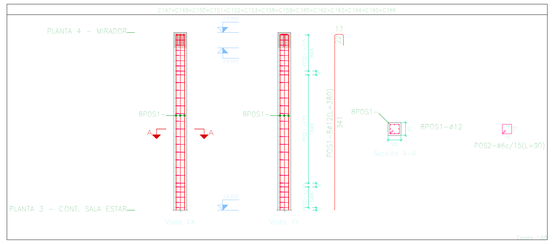
Resumen Acero Pilares		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	140,4	34	
	ø12	49,9	48	
	ø16	49,9	85	167

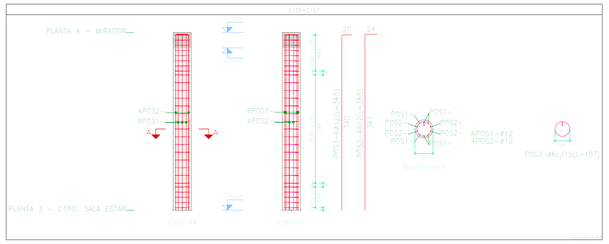
Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
C212	1	ø16	4	312	312	1248	18,7
	2	ø12	4	312	312	1248	11,1
	3	ø6	27	30 / 30	130	3510	7,8
						Tramo+8%	47,7
C215x30/14	1	ø16	4	312	312	1248	18,7
	2	ø12	4	312	312	1248	11,1
	3	ø6	27	30 / 30	130	3510	7,8
						Tramo+8%	47,7
C210	1	ø16	4	312	312	1248	18,7
	2	ø12	4	312	312	1248	11,1
	3	ø6	27	30 / 30	130	3510	7,8
						Tramo+8%	47,7
						ø6:	32,6
						ø12:	80,0
						ø16:	93,2
						Total:	205,8

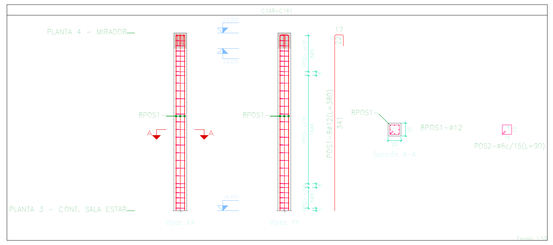


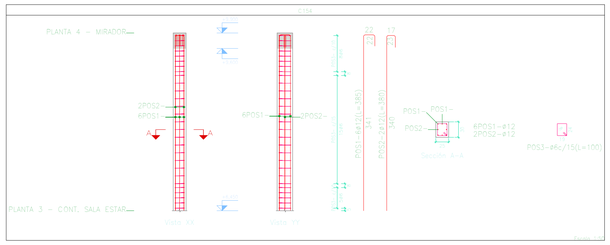


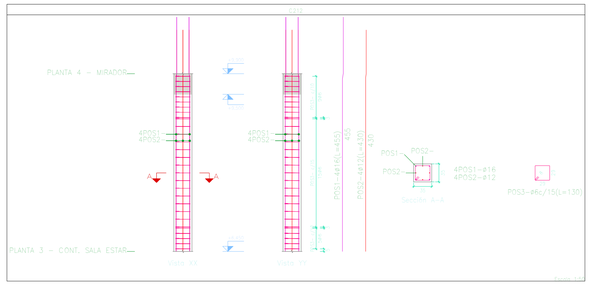


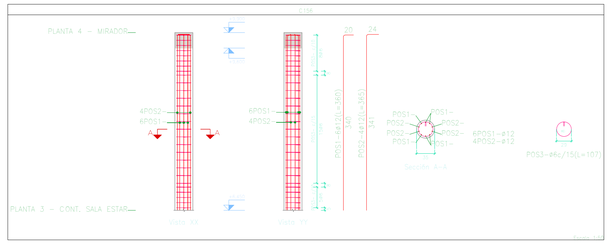


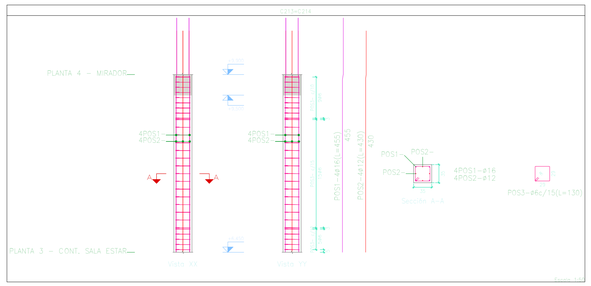


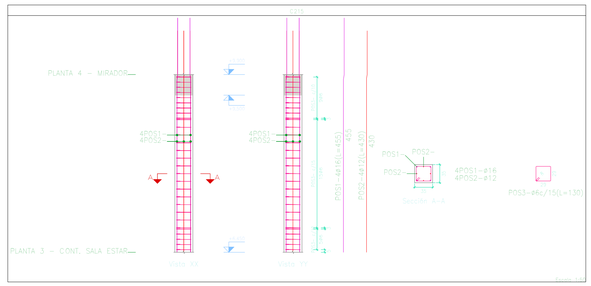












Planta: PLANTA 4 – MIRADOR
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500

Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
C18x40/40 C15x30/14 C18x40/40 C15x30/14 C18x40/40 C18x40/40	1	ø12	4	340	340	1360	12,1
	2	ø6	28	30 / 30	90	2520	5,6
						Tramo+8% (+6)	19,2 (+0,4)
C18x40/40	1	ø12	4	340	340	1360	12,1
	2	ø6	28	30 / 30	90	2520	5,6
						Tramo+8% (+0)	19,2 (+0,4)
C15x4	1	ø12	4	340	340	1360	12,1
	2	ø12	4	340	340	1360	12,1
	3	ø6	28	30 / 30	100	2800	6,2
						Tramo+8%	30,1
C15x30/14	1	ø12	4	340	340	1360	12,1
	2	ø12	4	340	340	1360	12,1
	3	ø6	28	30 / 30	100	2800	6,2
						Tramo+8% (+2)	31,3 (+0,4)
C15x4	1	ø12	4	340	340	1360	12,1
	2	ø12	4	340	340	1360	12,1
	3	ø6	28	30 / 30	101	2828	6,2
						Tramo+8%	31,3
C210	1	ø16	4	340 (+0,45)	450	1825	28,7
	2	ø12	4	340	340	1360	12,1
	3	ø6	28	30 / 30	130	3770	8,4
						Tramo+8%	49,2
C210x30/14	1	ø16	4	340 (+0,45)	450	1825	28,7
	2	ø12	4	340	340	1360	12,1
	3	ø6	28	30 / 30	130	3770	8,4
						Tramo+8%	49,2
C210	1	ø16	4	340 (+0,45)	450	1825	28,7
	2	ø12	4	340	340	1360	12,1
	3	ø6	28	30 / 30	130	3770	8,4
						Tramo+8%	49,2
						ø6:	115,3
						ø12:	347,2
						ø16:	104,4
						Total:	567,0
						ø6:	124,5
						ø12:	447,5
						ø16:	104,4
						Total:	676,4

Resumen Acero Pilares		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	671,9	161	
	ø12	494,5	666	
	ø16	72,8	124	951

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LAMINA: 12/36

V°B°:

FECHA: JUNIO - 2025

ESCALA: INDICADA

CUADRO DE PILARES

ESC. 1:50

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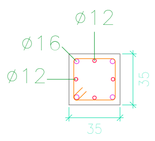
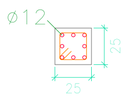
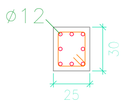
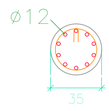
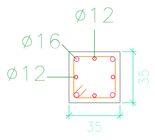
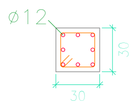
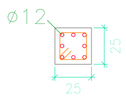
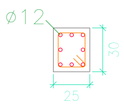
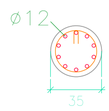
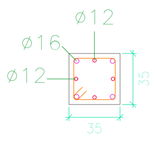
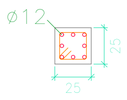
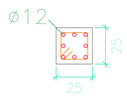
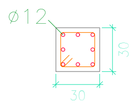
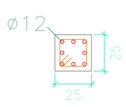
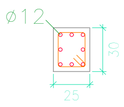
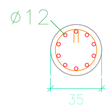
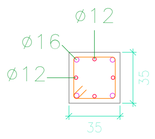
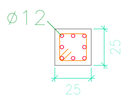
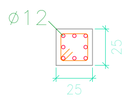
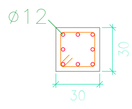
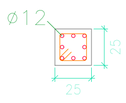
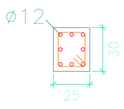
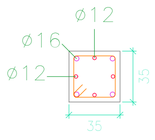
						 1ø6(131) Arm. Long.: 4ø16+4ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 230 a 315 / 9 / 10 45 a 230 / 13 / 15 0 a 45 / 5 / 10	PLANTA 4 – MIRADOR
			 1ø6(91) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 270 a 345 / 8 / 10 45 a 270 / 15 / 15 0 a 45 / 5 / 10	 1ø6(101) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 270 a 345 / 8 / 10 45 a 270 / 15 / 15 0 a 45 / 5 / 10	 1ø6(109) Arm. Long.: 10ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 270 a 345 / 8 / 10 45 a 270 / 15 / 15 0 a 45 / 5 / 10	 1ø6(131) Arm. Long.: 4ø16+4ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 260 a 345 / 9 / 10 45 a 260 / 15 / 15 0 a 45 / 5 / 10	PLANTA 3 – CONT. SALA ESTAR
		 1ø6(111) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 240 a 315 / 8 / 10 45 a 230 / 13 / 15 0 a 45 / 5 / 10	 1ø6(91) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 240 a 315 / 8 / 10 45 a 240 / 13 / 15 0 a 45 / 5 / 10	 1ø6(101) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 240 a 315 / 8 / 10 45 a 240 / 13 / 15 0 a 45 / 5 / 10	 1ø6(109) Arm. Long.: 10ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 240 a 315 / 8 / 10 45 a 240 / 13 / 15 0 a 45 / 5 / 10	 1ø6(131) Arm. Long.: 4ø16+4ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 230 a 315 / 9 / 10 45 a 230 / 13 / 15 0 a 45 / 5 / 10	PLANTA 2 – HABITACIONES
 1ø6(91) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 255 a 330 / 8 / 10 45 a 245 / 14 / 15 0 a 45 / 5 / 10	 1ø6(91) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 235 a 330 / 10 / 10 45 a 235 / 13 / 15 0 a 45 / 5 / 10	 1ø6(111) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 245 a 330 / 9 / 10 45 a 245 / 14 / 15 0 a 45 / 5 / 10	 1ø6(91) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 245 a 330 / 9 / 10 45 a 245 / 14 / 15 0 a 45 / 5 / 10	 1ø6(101) Arm. Long.: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 215 a 330 / 12 / 10 45 a 215 / 12 / 15 0 a 45 / 5 / 10	 1ø6(109) Arm. Long.: 10ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 215 a 330 / 12 / 10 45 a 215 / 12 / 15 0 a 45 / 5 / 10	 1ø6(131) Arm. Long.: 4ø16+4ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 245 a 330 / 9 / 10 45 a 245 / 14 / 15 0 a 45 / 5 / 10	PLANTA 1 – PB
 1ø6(91) Arm. Long.: 8ø12 Arranque: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 75 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	 1ø6(91) Arm. Long.: 8ø12 Arranque: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 75 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	 1ø6(111) Arm. Long.: 8ø12 Arranque: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 70 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	 1ø6(91) Arm. Long.: 8ø12 Arranque: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 75 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	 1ø6(101) Arm. Long.: 8ø12 Arranque: 8ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 75 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	 1ø6(109) Arm. Long.: 10ø12 Arranque: 10ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 75 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	 1ø6(131) Arm. Long.: 4ø16+4ø12 Arranque: 4ø16+4ø12 Estribos: ø6 Intervalo (cm) / N° / Separación (cm) 75 a 150 / 8 / 10 45 a 75 / 2 / 15 0 a 45 / 5 / 10 Arranque / 3 / -	Cimentación

Cuadro de pilares
Escala 1:50
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500

Resumen Acero Cuadro de pilares		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	13162.5	3155	
	ø12	15091.9	14471	
	ø16	313.3	534	18160

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

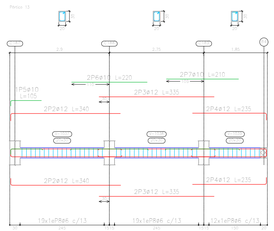
PLANOS ESTRUCTURALES | **CUADRO DE PILARES**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ
UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA
LAMINA: 13/36
V°B°:
FECHA: JUNIO - 2025
ESCALA: INDICADA

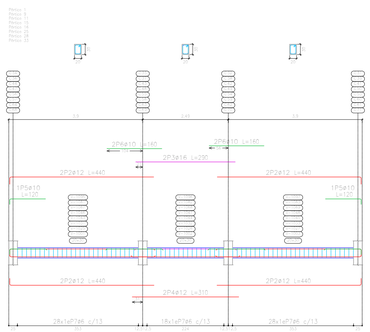
PLANO VIGAS DE H° A°

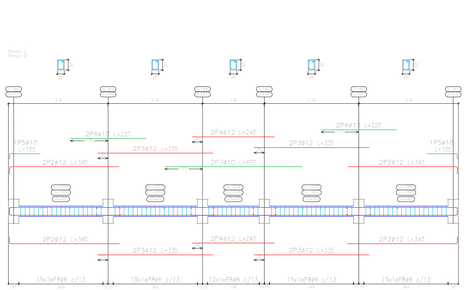
ESC. 1:75

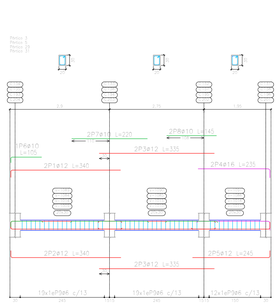
PLANTA 1 - PB
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

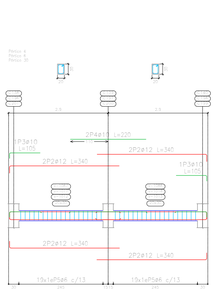


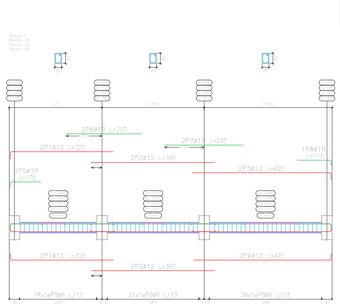
Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 1=Pórtico 5=Pórtico 11 Pórtico 13=Pórtico 14=Pórtico 15 Pórtico 28=Pórtico 33	1	ø12	2	315	680	680	6.0
	2	ø12	4	320	680	2640	23.4
	3	ø16	2	290	290	580	5.2
	4	ø12	2	110	620	620	5.5
	5	ø10	2	170	370	740	1.7
	6	ø10	4	90	160	640	1.5
	7	ø6	34	25 / 35	34	4956	10.4
						Total+4% (kg)	52.2
Pórtico 2=Pórtico 27	1	ø12	2	315	680	680	6.0
	2	ø12	4	320	680	2040	18.1
	3	ø12	4	440	440	2680	23.8
	4	ø12	2	440	440	880	8.5
	5	ø10	2	90	105	210	0.5
	6	ø10	4	220	220	880	2.4
	7	ø10	2	200	420	840	2.3
	8	ø6	38	25 / 35	38	5172	10.4
						Total+4% (kg)	101.1
							104.4
Pórtico 3=Pórtico 9=Pórtico 29 Pórtico 31	1	ø12	2	315	680	680	6.0
	2	ø12	2	320	680	680	6.0
	3	ø12	4	320	320	1340	11.9
	4	ø16	4	470 / 20	470	470	7.4
	5	ø12	2	370 / 20	390	690	6.1
	6	ø10	2	90	105	105	0.6
	7	ø10	2	220	220	440	1.7
	8	ø10	2	210	240	240	0.9
	9	ø6	34	25 / 35	34	4705	10.4
						Total+4% (kg)	51.1
							52.2
Pórtico 4=Pórtico 8=Pórtico 30	1	ø12	2	315	680	680	6.0
	2	ø12	4	320	680	2040	18.1
	3	ø10	2	90	105	210	0.3
	4	ø10	2	220	220	440	1.7
	5	ø6	38	25 / 35	38	5172	11.5
						Total+4% (kg)	33.5
							33.5
Pórtico 7=Pórtico 10=Pórtico 12 Pórtico 14	1	ø12	4	220	620	1280	11.4
	2	ø12	4	360	360	1440	12.8
	3	ø12	2	420 / 20	420	860	7.7
	4	ø12	2	420 / 20	420	840	7.5
	5	ø10	2	90	105	210	0.5
	6	ø10	2	220	220	440	1.7
	7	ø10	2	220	220	440	1.2
	8	ø10	2	110 / 20	110	110	0.3
	9	ø6	41	25 / 35	34	6119	13.8
						Total+4% (kg)	44.4
							51.4
Pórtico 6	1	ø12	2	315	680	680	6.0
	2	ø12	2	320	680	680	6.0
	3	ø12	4	320	320	1340	11.9
	4	ø12	2	210	470	470	4.2
	5	ø12	2	370 / 20	390	470	4.2
	6	ø10	2	90	105	105	0.6
	7	ø10	2	220	220	440	1.7
	8	ø10	2	210	210	420	2.6
	9	ø6	34	25 / 35	34	4705	10.4
						Total+4% (kg)	50.1
Pórtico 17	1	ø12	2	315	680	680	6.0
	2	ø12	2	320	680	680	6.0
	3	ø12	4	320	320	1340	11.9
	4	ø12	4	370 / 20	390	580	6.1
	5	ø10	2	90	105	105	0.6
	6	ø10	2	220	220	440	1.7
	7	ø10	2	210	210	420	2.6
	8	ø6	34	25 / 35	34	4705	10.4
						Total+4% (kg)	50.4
						ø6:	124.6
						ø10:	48.5
						ø12:	413.3
						ø16:	12.6
						Total:	612.0

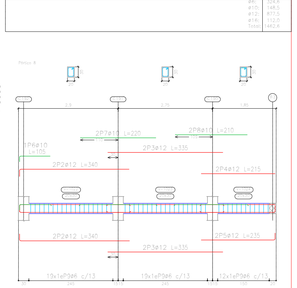












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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

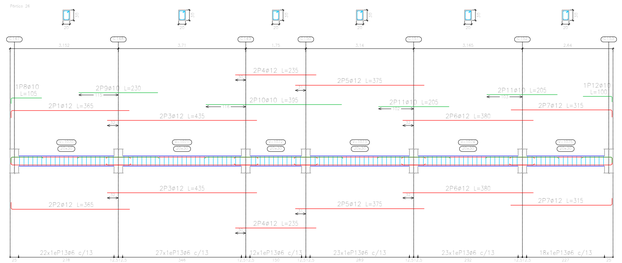
ESCALA: INDICADA

LAMINA: 14/36

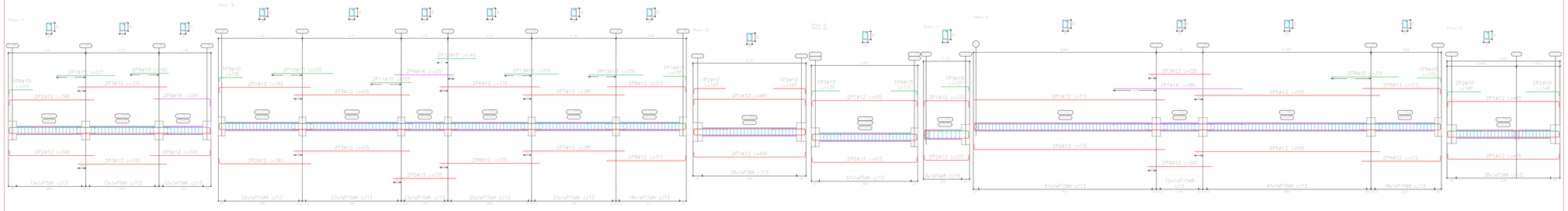
PLANO VIGAS DE H° A°

ESC. 1:75

PLANTA 1 – PB
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75



Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 17	1	ø12	2	315	345	690	6.1
	2	ø12	2	320	340	680	6.0
	3	ø12	4	435	375	1500	13.3
	4	ø16	2	245	245	490	7.7
	5	ø12	2	240	240	480	4.4
	6	ø10	2	80	100	200	0.8
	7	ø10	2	220	220	440	2.7
	8	ø10	2	145	145	290	1.8
	9	ø6	20	34	4700	1554	
						Total ø6:	1554
Pórtico 18	1	ø12	2	345	365	730	6.5
	2	ø12	2	360	360	720	6.3
	3	ø12	4	435	375	1500	13.3
	4	ø16	2	225	225	450	7.1
	5	ø12	2	235	235	470	4.2
	6	ø12	4	375	375	1500	13.3
	7	ø12	4	380	380	1520	13.5
	8	ø12	4	314	314	1256	11.2
	9	ø10	2	55	110	220	0.8
	10	ø10	2	130	230	460	2.8
	11	ø10	2	155	155	310	1.9
	12	ø10	2	140	140	280	1.7
	13	ø10	2	105	105	210	1.3
	14	ø10	2	55	110	220	0.8
	15	ø6	120	34	6700	2278	
						Total ø6:	2278
Pórtico 19	1	ø12	4	410	460	1840	16.3
	2	ø12	2	120	140	280	2.5
	3	ø6	28	34	2952	1.8	
						Total ø6:	1.8
Pórtico 20/Pórtico 24	1	ø12	2	365	415	830	7.7
	2	ø12	2	365	433	866	7.7
	3	ø10	2	120	120	240	0.9
	4	ø10	2	55	115	230	0.9
	5	ø6	71	34	2558	5.4	
						Total ø6:	24.4
						Total ø12:	24.4
Pórtico 21	1	ø12	2	365	211	422	3.8
	2	ø12	2	365	201	402	3.7
	3	ø10	2	120	120	240	0.9
	4	ø6	5	34	154	5.2	2.1
						Total ø6:	11.1
Pórtico 22	1	ø12	2	365	1435	2870	12.7
	2	ø12	2	365	1435	2870	12.7
	3	ø12	2	435	435	870	4.3
	4	ø12	2	240	480	960	4.3
	5	ø12	4	435	1380	5520	24.7
	6	ø12	2	365	1365	2730	12.7
	7	ø16	2	485	485	970	7.7
	8	ø10	2	245	245	490	3.1
	9	ø10	2	80	100	200	0.8
	10	ø6	120	34	5252	1.8	24.7
						Total ø6:	1.8
						Total ø12:	112.7
Pórtico 23	1	ø12	4	410	460	1840	16.3
	2	ø10	2	120	140	280	0.9
	3	ø6	28	34	2952	1.8	
						Total ø6:	1.8
						Total ø12:	16.3
Pórtico 26	1	ø12	2	365	345	690	6.1
	2	ø12	2	360	345	690	6.1
	3	ø12	4	435	375	1500	13.3
	4	ø12	4	375	375	1500	13.3
	5	ø12	4	375	375	1500	13.3
	6	ø12	4	380	380	1520	13.5
	7	ø12	4	314	314	1256	11.2
	8	ø10	2	55	110	220	0.8
	9	ø10	2	130	230	460	2.8
	10	ø10	2	185	185	370	2.3
	11	ø10	2	135	275	550	3.3
	12	ø10	2	55	110	220	0.8
	13	ø6	120	34	6700	2278	
						Total ø6:	2278
						Total ø12:	124.9
						ø6:	2324
						ø10:	460
						ø12:	3422
						ø16:	15.7
						Total:	6221



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

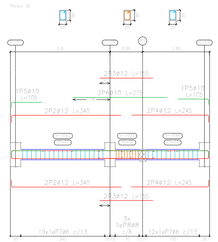
DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

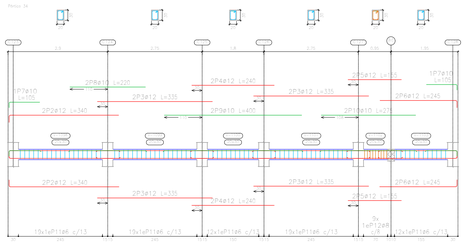
PLANOS ESTRUCTURALES	**PLANO VIGAS DE H° A°**

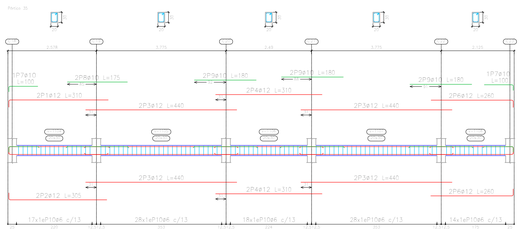
POR: GONZALO MARIO CASTELLÓN SÁNCHEZ	**UBICACIÓN:** ENTRE RÍOS - TARIJA - BOLIVIA	**LAMINA:**
V°B°:	**FECHA:** JUNIO - 2025	**15/36**
	ESCALA: INDICADA	

PLANO VIGAS DE H° A°

ESC. 1:75

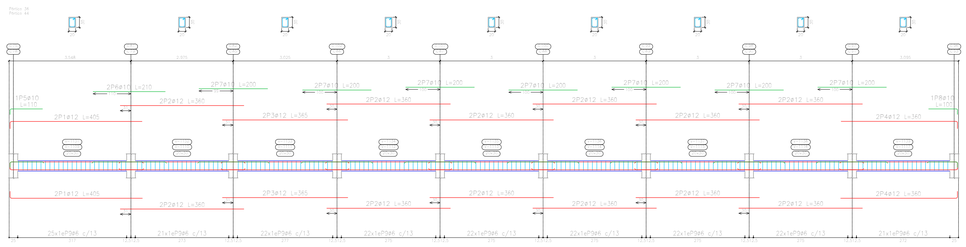


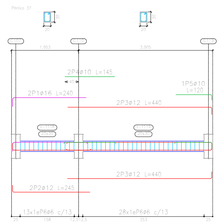


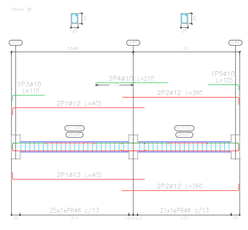


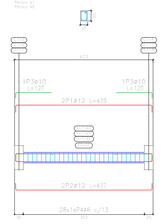
PLANTA 1 - PB
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

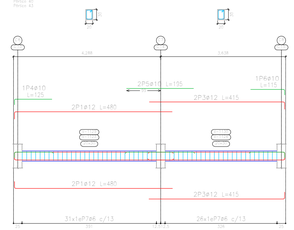
Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	UM-500 (kg)
Pórtico 32	1	ø12	2	210	340	680	6.0
	2	ø12	2	350	340	680	6.0
	3	ø12	4	365	155	620	5.5
	4	ø12	4	245	245	980	8.7
	5	ø12	2	365	155	310	2.7
	6	ø12	2	275	275	550	4.9
	7	ø6	31	94	2814	1.1	6.5
	8	ø8	9	97	873	2.0	3.4
						Total=kg	44.1
Pórtico 34	1	ø12	2	210	340	680	6.0
	2	ø12	2	350	340	680	6.0
	3	ø12	8	335	2680	1.0	23.8
	4	ø12	4	245	980	1.0	8.5
	5	ø12	4	155	620	1.0	5.5
	6	ø12	4	245	980	1.0	8.7
	7	ø12	2	145	290	1.0	2.6
	8	ø12	2	195	390	1.0	3.5
	9	ø12	2	405	810	1.0	7.2
	10	ø12	2	275	550	1.0	4.9
	11	ø6	91	94	8554	1.1	19.9
	12	ø8	9	97	873	2.0	3.4
						Total=kg	98.4
Pórtico 36	1	ø12	2	265	315	630	5.5
	2	ø12	2	280	355	710	6.3
	3	ø12	8	440	3520	1.0	31.3
	4	ø12	4	310	1240	1.0	11.0
	5	ø12	2	265	530	1.0	4.7
	6	ø12	2	245	490	1.0	4.3
	7	ø10	2	155	310	1.0	1.2
	8	ø10	2	175	350	1.0	2.2
	9	ø10	6	180	1080	1.0	6.7
	10	ø6	105	94	9870	1.1	21.0
						Total=kg	102.0
Pórtico 38=Pórtico 44	1	ø12	4	365	1460	1.0	12.9
	2	ø12	24	365	8760	1.0	76.7
	3	ø12	4	365	1460	1.0	12.9
	4	ø12	4	365	1460	1.0	12.9
	5	ø12	2	110	220	1.0	0.7
	6	ø10	2	215	430	1.0	2.6
	7	ø10	14	200	2800	1.0	17.3
	8	ø10	1	155	155	1.0	0.6
	9	ø6	105	94	9870	1.1	21.0
						Total=kg	194.0
Pórtico 39	1	ø16	3	415	245	735	7.6
	2	ø12	3	265	245	795	4.4
	3	ø12	4	415	440	1760	15.6
	4	ø10	2	145	290	580	1.6
	5	ø10	1	125	125	125	0.7
	6	ø6	41	94	3854	1.1	8.6
						Total=kg	41.6
Pórtico 38	1	ø12	4	365	1460	1.0	12.9
	2	ø12	4	365	1460	1.0	12.9
	3	ø10	1	110	110	1.0	0.7
	4	ø10	2	215	430	1.0	2.6
	5	ø10	1	175	175	1.0	1.0
	6	ø6	46	94	4324	1.1	9.6
						Total=kg	27.7
Pórtico 39=Pórtico 41=Pórtico 43	1	ø12	3	365	439	439	3.9
	2	ø12	3	365	437	874	7.8
	3	ø10	1	155	155	155	1.0
	4	ø6	26	94	2432	1.1	5.4
						Total=kg	24.1
Pórtico 40=Pórtico 42	1	ø12	4	415	480	1920	17.0
	2	ø12	2	415	415	830	7.4
	3	ø12	2	415	415	830	7.4
	4	ø10	1	125	125	125	0.8
	5	ø10	2	195	390	780	2.4
	6	ø10	1	175	175	175	0.7
	7	ø6	57	94	5358	1.1	11.9
						Total=kg	51.4
						Total	102.4
						ø6	102.4
						ø8	7.4
						ø10	30.1
						ø12	581.5
						ø16	7.6
						Total	805.2











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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

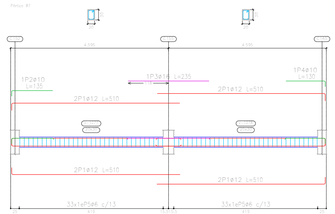
ESCALA: INDICADA

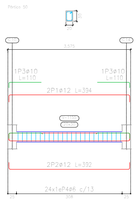
LAMINA: 16/36

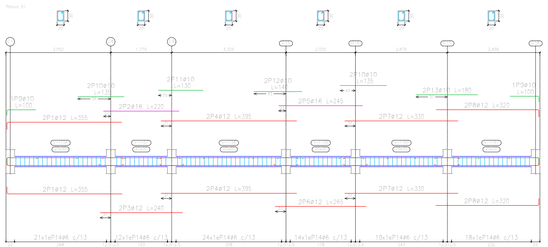
PLANO VIGAS DE H° A°

ESC. 1:75

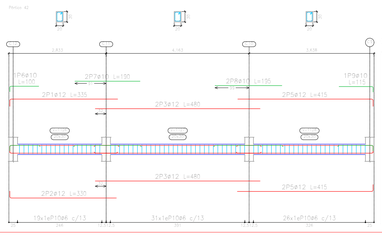
PLANTA 1 - PB
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

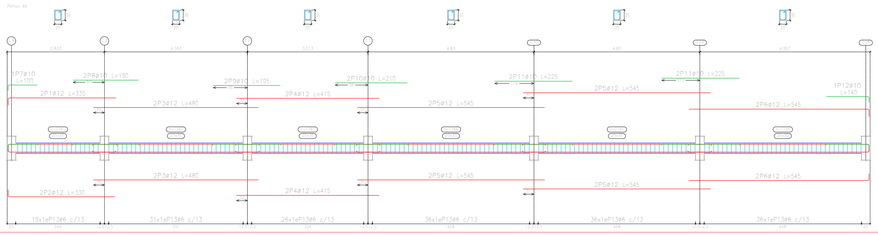


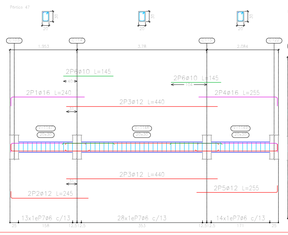


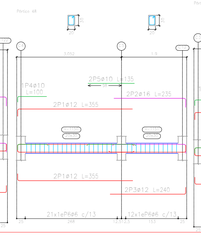


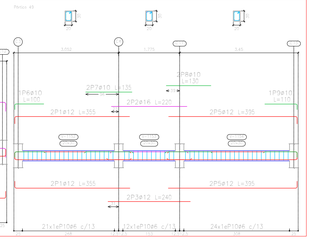
Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 42	1	ø12	2	114	335	670	5.9
	2	ø12	2	114	335	670	5.9
	3	ø12	4	420	685	1370	17.0
	4	ø12	2	124	415	830	7.4
	5	ø12	2	100 20	415	830	7.4
	6	ø10	2	94	100	200	0.6
	7	ø10	2	120	190	380	2.3
	8	ø10	2	120	135	270	2.4
	9	ø10	2	90 20	115	230	0.7
	10	ø6	76	94	94	7144	15.9
						Total=kg	70.1
Pórtico 46	1	ø12	2	114	335	670	5.9
	2	ø12	2	114	335	670	5.9
	3	ø12	4	420	685	1370	17.0
	4	ø12	4	415	415	1660	14.7
	5	ø12	8	545	545	4360	38.7
	6	ø12	4	124	545	2180	19.4
	7	ø10	2	94	100	200	0.6
	8	ø10	2	120	190	380	2.3
	9	ø10	2	120	135	270	2.4
	10	ø10	2	120	215	430	2.6
	11	ø10	4	120	225	900	5.5
	12	ø10	2	90 20	145	290	0.9
	13	ø6	184	94	94	17296	38.4
						Total=kg	166.6
Pórtico 43	1	ø16	2	114	245	490	7.6
	2	ø12	2	120	245	490	4.4
	3	ø12	4	420	440	1760	15.6
	4	ø14	2	120	255	510	8.0
	5	ø12	2	120 20	255	510	4.5
	6	ø10	14	120	145	580	3.6
	7	ø6	50	94	94	4700	11.5
						Total=kg	52.6
Pórtico 48	1	ø12	4	114	335	1340	12.0
	2	ø16	2	120 20	235	470	7.4
	3	ø12	2	120 20	245	490	4.3
	4	ø10	2	94	100	200	0.6
	5	ø10	2	120	135	270	1.7
	6	ø6	50	94	94	4700	8.9
						Total=kg	34.9
Pórtico 49	1	ø12	4	114	335	1340	11.8
	2	ø16	2	120	245	490	6.9
	3	ø12	2	120	245	490	4.3
	4	ø12	2	114	335	670	5.9
	5	ø12	2	100 20	335	670	5.9
	6	ø10	2	94	100	200	0.6
	7	ø10	2	120	135	270	1.7
	8	ø10	2	120	130	260	1.6
	9	ø10	2	90 20	110	220	0.7
	10	ø6	50	94	94	4700	11.0
						Total=kg	38.4
Pórtico 50	1	ø12	2	120	394	788	7.0
	2	ø12	2	100 20	392	784	7.0
	3	ø10	2	94	110	220	1.4
	4	ø6	24	94	94	2256	5.0
						Total=kg	22.0
Pórtico 51	1	ø12	4	114	355	1420	12.6
	2	ø16	2	120	225	450	6.9
	3	ø12	2	120	245	490	4.3
	4	ø12	8	420	335	2680	14.0
	5	ø16	2	120	245	490	7.5
	6	ø12	2	120	265	530	4.7
	7	ø12	4	120	330	1320	11.7
	8	ø12	4	120	320	1280	11.4
	9	ø10	2	94	100	200	1.2
	10	ø10	4	120	135	540	3.3
	11	ø10	2	120	130	260	1.6
	12	ø10	2	120	145	290	1.7
	13	ø10	2	120	180	360	2.2
	14	ø6	106	94	94	9964	22.5
						Total=kg	114.3
Pórtico 52	1	ø12	8	420	535	4280	38.0
	2	ø12	2	114	135	270	0.8
	3	ø16	2	120	235	470	7.4
	4	ø10	2	114	130	260	0.8
	5	ø6	146	94	94	13724	31.0
						Total=kg	58.0
						ø6:	210.8
						ø10:	47.4
						ø12:	352.4
						ø16:	31.0
						Total:	641.7











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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

LAMINA: 17/36

V°B°:

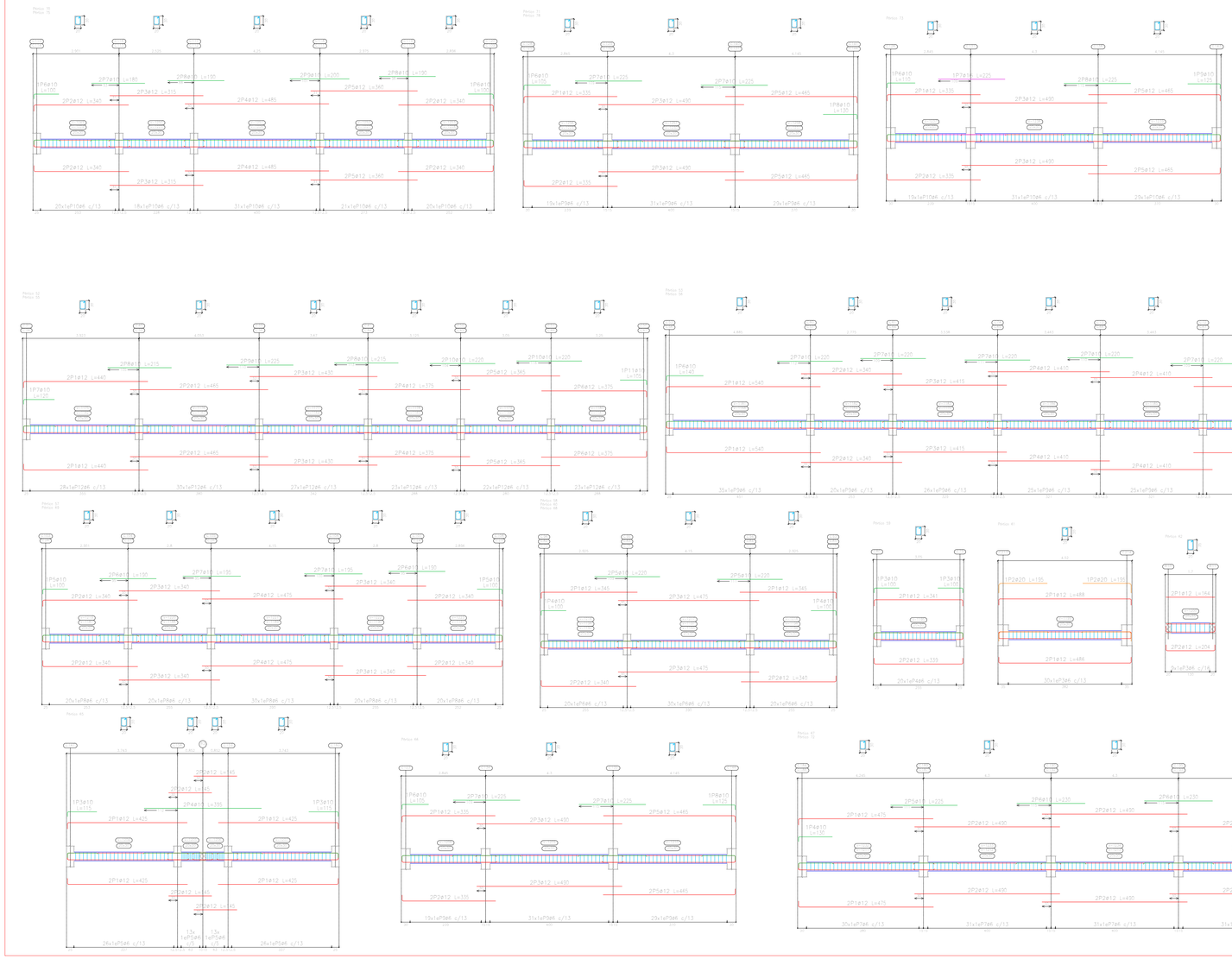
FECHA: JUNIO - 2025

ESCALA: INDICADA

PLANO VIGAS DE H° A°

ESC. 1:75

PLANTA 1 – PB
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75



Elemento	Pos.	Diám.	Núm.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 1(Pórtico 2)	1	Ø12	2	415	415	1000	16.9
	2	Ø12	12	490	490	5880	52.3
	3	Ø12	4	485	485	1940	17.2
	4	Ø10	2	120	120	240	1.4
	5	Ø10	2	225	225	450	2.6
	6	Ø10	4	230	230	1380	8.3
	7	Ø6	153	54	54	14382	31.9
					Total=	25272	141.2 (141.2)
Pórtico 2(Pórtico 3)	1	Ø12	2	345	345	690	6.1
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	315	315	1260	11.2
	4	Ø12	4	485	485	1940	17.2
	5	Ø12	2	490	490	980	17.4
	6	Ø10	2	120	120	240	1.4
	7	Ø10	2	185	185	370	2.2
	8	Ø10	4	195	195	780	4.7
	9	Ø10	2	200	200	400	2.3
	10	Ø6	153	54	54	11340	25.2
					Total=	22000	106.1 (215.4)
Pórtico 3(Pórtico 4)	1	Ø12	2	315	315	630	5.5
	2	Ø12	4	315	315	630	5.5
	3	Ø12	4	490	490	1960	17.4
	4	Ø12	2	465	465	930	8.3
	5	Ø12	2	465	465	930	8.3
	6	Ø10	2	155	155	310	1.9
	7	Ø10	4	225	225	900	5.5
	8	Ø10	2	155	155	310	1.9
	9	Ø10	2	112	112	224	1.4
	10	Ø6	153	54	54	11340	25.2
					Total=	18134	79.1 (294.5)
Pórtico 4(Pórtico 5)	1	Ø12	2	315	315	630	5.5
	2	Ø12	4	315	315	630	5.5
	3	Ø12	4	490	490	1960	17.4
	4	Ø12	2	465	465	930	8.3
	5	Ø12	2	465	465	930	8.3
	6	Ø10	2	155	155	310	1.9
	7	Ø10	4	225	225	900	5.5
	8	Ø10	2	155	155	310	1.9
	9	Ø10	2	112	112	224	1.4
	10	Ø6	153	54	54	11340	25.2
					Total=	18134	79.1 (373.6)
Pórtico 5(Pórtico 6)	1	Ø12	2	315	315	630	5.5
	2	Ø12	4	315	315	630	5.5
	3	Ø12	4	490	490	1960	17.4
	4	Ø12	2	465	465	930	8.3
	5	Ø12	2	465	465	930	8.3
	6	Ø10	2	155	155	310	1.9
	7	Ø10	4	225	225	900	5.5
	8	Ø10	2	155	155	310	1.9
	9	Ø10	2	112	112	224	1.4
	10	Ø6	153	54	54	11340	25.2
					Total=	18134	79.1 (452.7)
Pórtico 6(Pórtico 7)	1	Ø12	2	315	315	630	5.5
	2	Ø12	4	315	315	630	5.5
	3	Ø12	4	490	490	1960	17.4
	4	Ø12	2	465	465	930	8.3
	5	Ø12	2	465	465	930	8.3
	6	Ø10	2	155	155	310	1.9
	7	Ø10	4	225	225	900	5.5
	8	Ø10	2	155	155	310	1.9
	9	Ø10	2	112	112	224	1.4
	10	Ø6	153	54	54	11340	25.2
					Total=	18134	79.1 (531.8)
Pórtico 7(Pórtico 8)	1	Ø12	2	315	315	630	5.5
	2	Ø12	4	315	315	630	5.5
	3	Ø12	4	490	490	1960	17.4
	4	Ø12	2	465	465	930	8.3
	5	Ø12	2	465	465	930	8.3
	6	Ø10	2	155	155	310	1.9
	7	Ø10	4	225	225	900	5.5
	8	Ø10	2	155	155	310	1.9
	9	Ø10	2	112	112	224	1.4
	10	Ø6	153	54	54	11340	25.2
					Total=	18134	79.1 (610.9)

Elemento	Pos.	Diám.	Núm.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 8(Pórtico 9)	1	Ø12	2	415	415	1000	16.9
	2	Ø12	4	490	490	1960	16.5
	3	Ø12	4	430	430	1720	15.3
	4	Ø12	4	375	375	1500	13.3
	5	Ø12	4	365	365	1460	13.0
	6	Ø12	4	354	354	1500	13.3
	7	Ø10	2	125	125	250	1.5
	8	Ø10	4	215	215	860	5.3
	9	Ø10	2	200	200	400	2.8
	10	Ø10	4	230	230	920	5.4
	11	Ø10	2	155	155	310	1.9
	12	Ø6	153	54	54	14382	31.9
					Total=	25262	141.4 (352.1)
Pórtico 9(Pórtico 10)	1	Ø12	4	535	535	2140	19.0
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	410	410	1640	14.7
	4	Ø12	4	410	410	1640	14.7
	5	Ø12	4	354	354	1460	13.0
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	255	255	1020	6.3
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	14758	32.8
					Total=	23918	149.8 (502.0)
Pórtico 10(Pórtico 11)	1	Ø12	4	535	535	2140	19.0
	2	Ø10	2	140	140	280	1.7
	3	Ø6	153	54	54	3240	7.3
					Total=	5660	28.0 (530.1)
Pórtico 11(Pórtico 12)	1	Ø12	4	340	340	680	6.0
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	340	340	1360	12.1
	4	Ø12	4	410	410	1640	14.5
	5	Ø10	4	255	255	1020	6.3
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	195	195	780	4.7
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	10368	22.9
					Total=	19388	108.6 (639.0)
Pórtico 12(Pórtico 13)	1	Ø12	4	324	324	1360	12.1
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	475	475	1900	16.9
	4	Ø10	4	255	255	1020	6.3
	5	Ø10	2	140	140	280	1.7
	6	Ø6	153	54	54	8585	14.6
					Total=	14505	63.7 (702.7)
Pórtico 13(Pórtico 14)	1	Ø12	4	340	340	1360	12.1
	2	Ø10	4	255	255	1020	6.3
	3	Ø10	2	140	140	280	1.7
	4	Ø6	153	54	54	8262	14.0
					Total=	10922	34.1 (736.8)
Pórtico 14(Pórtico 15)	1	Ø12	4	448	448	1952	17.3
	2	Ø10	2	130	130	260	1.6
	3	Ø6	153	54	54	2808	4.7
					Total=	4020	23.6 (760.4)
Pórtico 15(Pórtico 16)	1	Ø12	4	164	164	328	2.9
	2	Ø12	4	164	164	328	2.9
	3	Ø6	153	54	54	8262	14.0
					Total=	8918	19.8 (780.2)
Pórtico 16(Pórtico 17)	1	Ø12	4	420	420	1680	14.9
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	410	410	1640	14.5
	4	Ø10	2	140	140	280	1.7
	5	Ø6	153	54	54	8262	14.0
					Total=	13222	58.2 (838.4)
Pórtico 17(Pórtico 18)	1	Ø12	4	340	340	680	6.0
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	340	340	1360	12.1
	4	Ø12	4	410	410	1640	14.5
	5	Ø10	4	255	255	1020	6.3
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	195	195	780	4.7
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	8262	14.0
					Total=	16282	78.8 (917.2)
Pórtico 18(Pórtico 19)	1	Ø12	4	324	324	1360	12.1
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	475	475	1900	16.9
	4	Ø10	4	255	255	1020	6.3
	5	Ø10	2	140	140	280	1.7
	6	Ø6	153	54	54	8585	14.6
					Total=	14505	63.7 (981.0)
Pórtico 19(Pórtico 20)	1	Ø12	4	420	420	1680	14.9
	2	Ø12	4	340	340	1360	12.1
	3	Ø10	2	140	140	280	1.7
	4	Ø6	153	54	54	8262	14.0
					Total=	11582	42.7 (1023.7)
Pórtico 20(Pórtico 21)	1	Ø12	4	448	448	1952	17.3
	2	Ø10	2	130	130	260	1.6
	3	Ø6	153	54	54	2808	4.7
					Total=	4020	23.6 (1047.3)
Pórtico 21(Pórtico 22)	1	Ø12	4	164	164	328	2.9
	2	Ø12	4	164	164	328	2.9
	3	Ø6	153	54	54	8262	14.0
					Total=	8918	19.8 (1067.1)
Pórtico 22(Pórtico 23)	1	Ø12	4	420	420	1680	14.9
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	410	410	1640	14.5
	4	Ø10	2	140	140	280	1.7
	5	Ø6	153	54	54	8262	14.0
					Total=	13222	58.2 (1125.3)
Pórtico 23(Pórtico 24)	1	Ø12	4	340	340	680	6.0
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	340	340	1360	12.1
	4	Ø12	4	410	410	1640	14.5
	5	Ø10	4	255	255	1020	6.3
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	195	195	780	4.7
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	8262	14.0
					Total=	16282	78.8 (1204.1)
Pórtico 24(Pórtico 25)	1	Ø12	4	324	324	1360	12.1
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	475	475	1900	16.9
	4	Ø10	4	255	255	1020	6.3
	5	Ø10	2	140	140	280	1.7
	6	Ø6	153	54	54	8585	14.6
					Total=	14505	63.7 (1267.8)
Pórtico 25(Pórtico 26)	1	Ø12	4	340	340	1360	12.1
	2	Ø10	4	255	255	1020	6.3
	3	Ø10	2	140	140	280	1.7
	4	Ø6	153	54	54	8262	14.0
					Total=	10922	34.1 (1301.9)
Pórtico 26(Pórtico 27)	1	Ø12	4	448	448	1952	17.3
	2	Ø10	2	130	130	260	1.6
	3	Ø6	153	54	54	2808	4.7
					Total=	4020	23.6 (1325.5)
Pórtico 27(Pórtico 28)	1	Ø12	4	164	164	328	2.9
	2	Ø12	4	164	164	328	2.9
	3	Ø6	153	54	54	8262	14.0
					Total=	8918	19.8 (1345.3)
Pórtico 28(Pórtico 29)	1	Ø12	4	420	420	1680	14.9
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	410	410	1640	14.5
	4	Ø10	2	140	140	280	1.7
	5	Ø6	153	54	54	8262	14.0
					Total=	13222	58.2 (1403.5)
Pórtico 29(Pórtico 30)	1	Ø12	4	340	340	680	6.0
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	340	340	1360	12.1
	4	Ø12	4	410	410	1640	14.5
	5	Ø10	4	255	255	1020	6.3
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	195	195	780	4.7
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	8262	14.0
					Total=	16282	78.8 (1482.3)
Pórtico 30(Pórtico 31)	1	Ø12	4	324	324	1360	12.1
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	475	475	1900	16.9
	4	Ø10	4	255	255	1020	6.3
	5	Ø10	2	140	140	280	1.7
	6	Ø6	153	54	54	8585	14.6
					Total=	14505	63.7 (1546.0)
Pórtico 31(Pórtico 32)	1	Ø12	4	340	340	1360	12.1
	2	Ø10	4	255	255	1020	6.3
	3	Ø10	2	140	140	280	1.7
	4	Ø6	153	54	54	8262	14.0
					Total=	10922	34.1 (1580.1)
Pórtico 32(Pórtico 33)	1	Ø12	4	448	448	1952	17.3
	2	Ø10	2	130	130	260	1.6
	3	Ø6	153	54	54	2808	4.7
					Total=	4020	23.6 (1603.7)
Pórtico 33(Pórtico 34)	1	Ø12	4	164	164	328	2.9
	2	Ø12	4	164	164	328	2.9
	3	Ø6	153	54	54	8262	14.0
					Total=	8918	19.8 (1623.5)
Pórtico 34(Pórtico 35)	1	Ø12	4	420	420	1680	14.9
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	410	410	1640	14.5
	4	Ø10	2	140	140	280	1.7
	5	Ø6	153	54	54	8262	14.0
					Total=	13222	58.2 (1681.7)
Pórtico 35(Pórtico 36)	1	Ø12	4	340	340	680	6.0
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	340	340	1360	12.1
	4	Ø12	4	410	410	1640	14.5
	5	Ø10	4	255	255	1020	6.3
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	195	195	780	4.7
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	8262	14.0
					Total=	16282	78.8 (1760.5)
Pórtico 36(Pórtico 37)	1	Ø12	4	324	324	1360	12.1
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	475	475	1900	16.9
	4	Ø10	4	255	255	1020	6.3
	5	Ø10	2	140	140	280	1.7
	6	Ø6	153	54	54	8585	14.6
					Total=	14505	63.7 (1824.2)
Pórtico 37(Pórtico 38)	1	Ø12	4	340	340	1360	12.1
	2	Ø10	4	255	255	1020	6.3
	3	Ø10	2	140	140	280	1.7
	4	Ø6	153	54	54	8262	14.0
					Total=	10922	34.1 (1858.3)
Pórtico 38(Pórtico 39)	1	Ø12	4	448	448	1952	17.3
	2	Ø10	2	130	130	260	1.6
	3	Ø6	153	54	54	2808	4.7
					Total=	4020	23.6 (1881.9)
Pórtico 39(Pórtico 40)	1	Ø12	4	164	164	328	2.9
	2	Ø12	4	164	164	328	2.9
	3	Ø6	153	54	54	8262	14.0
					Total=	8918	19.8 (1901.7)
Pórtico 40(Pórtico 41)	1	Ø12	4	420	420	1680	14.9
	2	Ø12	4	340	340	1360	12.1
	3	Ø12	4	410	410	1640	14.5
	4	Ø10	2	140	140	280	1.7
	5	Ø6	153	54	54	8262	14.0
					Total=	13222	58.2 (1959.9)
Pórtico 41(Pórtico 42)	1	Ø12	4	340	340	680	6.0
	2	Ø12	4	510	510	2040	18.1
	3	Ø12	4	340	340	1360	12.1
	4	Ø12	4	410	410	1640	14.5
	5	Ø10	4	255	255	1020	6.3
	6	Ø10	2	140	140	280	1.7
	7	Ø10	4	195	195	780	4.7
	8	Ø10	2	110	110	220	1.4
	9	Ø6	153	54	54	8262	14.0
					Total=	16282	78.8 (2038.7)
					Ø6:	424.2
					Ø10:	108.3
					Ø12:	1313.1
					Ø16:	19.7
					Ø20:	170.4
					Total:	2035.8

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

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

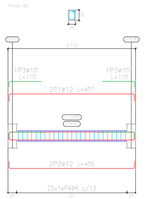
V°B°:

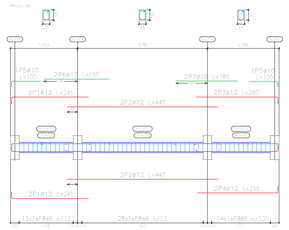
ESCALA: INDICADA

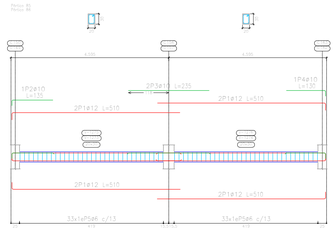
LAMINA: 18/36

PLANO VIGAS DE H° A°

ESC. 1:75



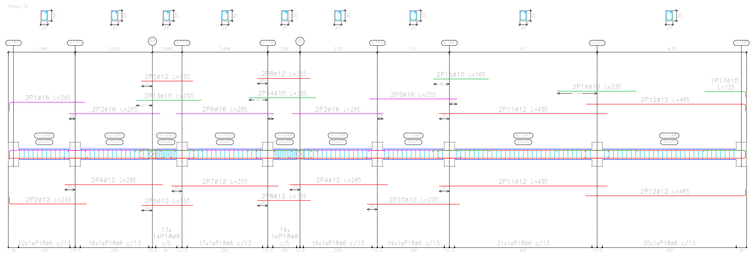


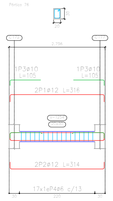


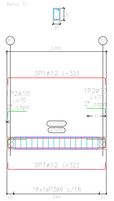
PLANTA 1 – PB
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

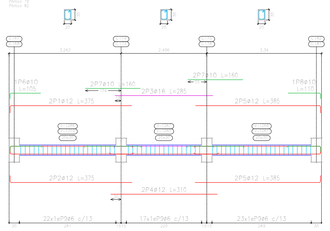
Resumen Acero Plano de pórticos		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	5883,1	1410	
	ø8	17,5	7	
	ø10	882,5	588	
	ø12	4018,6	3853	
	ø16	160,3	273	
	ø20	3,9	10	6141

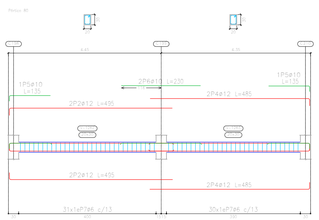
Elemento	Pos.	Diám.	Núm.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 14							
	1	ø16	2	510	240	490	7,7
	2	ø12	2	220	240	490	4,4
	3	ø16	4	265	285	1090	16,7
	4	ø12	4	265	285	1140	10,1
	5	ø12	2	150	150	300	2,7
	6	ø16	2	285	285	570	8,8
	7	ø10	2	150	150	420	2,6
	8	ø12	4	150	150	610	5,4
	9	ø16	2	255	255	510	7,9
	10	ø12	2	370	370	740	6,6
	11	ø12	4	430	430	1940	17,4
	12	ø12	5	474	485	2425	21,7
	13	ø10	2	130	130	260	2,3
	14	ø10	2	140	140	280	2,4
	15	ø10	2	140	140	320	2,8
	16	ø10	2	140	140	680	2,8
	17	ø10	2	140	140	735	2,9
	18	ø6	142	34	4532	34,0	
						Total+8%	198,4
Pórtico 15	1	ø12	2	374	370	832	5,9
	2	ø12	2	374	370	828	5,9
	3	ø10	2	90	90	210	0,9
	4	ø6	32	34	1088	8,2	
						Total+8%	17,7
Pórtico 17	1	ø12	2	374	370	1238	17,4
	2	ø10	2	90	90	180	0,8
	3	ø6	18	34	1846	3,7	
						Total+8%	23,0
Pórtico 17+Pórtico 18	1	ø12	2	710	370	740	6,7
	2	ø12	2	710	370	740	6,7
	3	ø16	2	340	285	570	9,0
	4	ø12	2	510	510	620	5,6
	5	ø12	4	724	510	1540	13,9
	6	ø10	2	90	150	170	0,7
	7	ø10	2	140	150	340	1,3
	8	ø10	2	90	150	170	0,7
	9	ø6	92	34	3128	12,0	
						Total+8%	64,2
							125,2
Pórtico 20	1	ø12	2	474	470	990	8,9
	2	ø12	2	470	470	990	8,9
	3	ø12	2	474	470	990	8,9
	4	ø12	2	474	470	990	8,9
	5	ø10	2	130	130	310	1,2
	6	ø10	2	140	130	440	0,8
	7	ø6	41	34	3734	12,1	
						Total+8%	54,1
Pórtico 21	1	ø12	4	510	510	4080	36,7
	2	ø10	2	130	130	130	0,5
	3	ø16	2	230	230	230	3,6
	4	ø10	2	130	130	130	0,5
	5	ø6	68	34	4204	13,6	
						Total+8%	55,7
Pórtico 23	1	ø12	2	340	407	814	7,3
	2	ø12	2	340	405	810	7,3
	3	ø10	2	90	110	220	1,4
	4	ø6	25	34	2350	5,2	
						Total+8%	22,7
Pórtico 24	1	ø12	4	243	243	980	8,7
	2	ø12	4	440	440	1760	15,8
	3	ø12	2	243	243	537	4,8
	4	ø12	2	243	243	535	4,8
	5	ø10	2	90	100	200	1,2
	6	ø10	2	140	140	380	2,3
	7	ø10	2	140	140	395	2,4
	8	ø6	55	34	5130	11,5	
						Total+8%	56,2
Pórtico 26+Pórtico 28	1	ø12	4	340	340	1360	12,1
	2	ø10	2	110	110	220	0,9
	3	ø10	2	110	110	220	0,9
	4	ø10	2	110	110	220	0,9
	5	ø6	54	34	4204	11,6	
						Total+8%	16,4
							141,4
						ø6:	48,5
						ø10:	383,1
						ø12:	1141,7
						ø16:	24,1
						Total:	1641,2

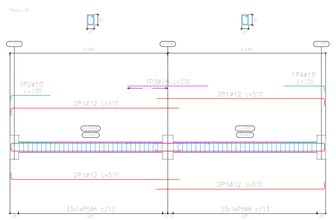












UNIVERSIDAD AUTÓNOMO JUAN MISAEL SARACHO
FACULTAD DE CIENCIAS Y TECNOLOGÍA
CARRERA DE INGENIERÍA CIVIL

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

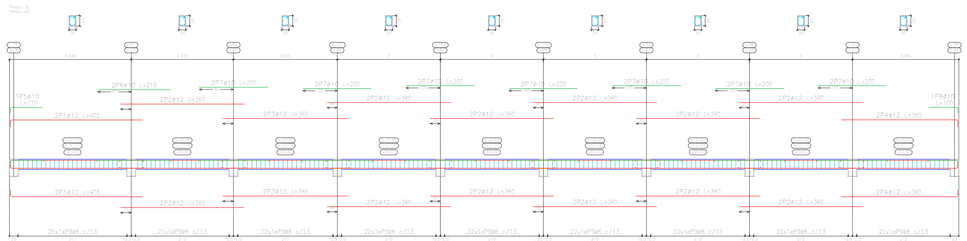
FECHA: JUNIO - 2025

ESCALA: INDICADA

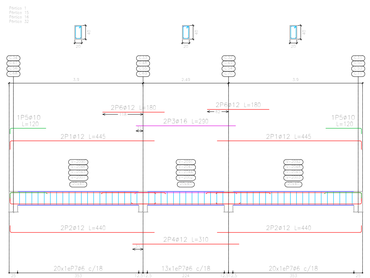
LAMINA: 19/36

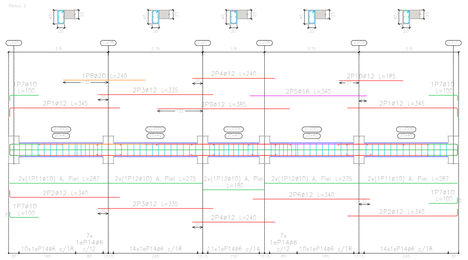
PLANO VIGAS DE H° A°

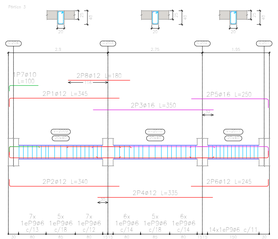
ESC. 1:75

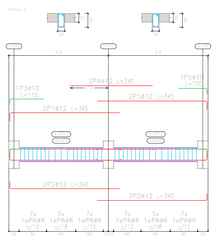


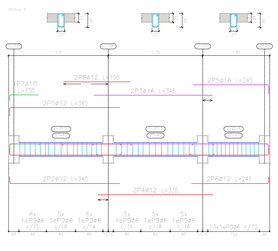
Elemento	Pos.	Diám.	Nro.	Esquema (cm)	Long. (cm)	Total (cm)	Kl-50 (kg)
Pórticos (Ejes Verticales) y Pilares (B)	1	ø12	2	420	440	1760	15.6
	2	ø12	2	420	440	1760	15.6
	3	ø16	2	520	580	580	9.2
	4	ø12	2	415	415	829	15.3
	5	ø10	2	125	125	245	1.5
	6	ø12	2	180	180	720	6.4
	7	ø6	53	14 / 14	114	6042	13.4
					Total ø10 (4)	1245.2 291.2	
Pórtico 2	1	ø12	2	320	340	1360	12.1
	2	ø12	2	320	340	1360	12.1
	3	ø12	2	380	390	1560	13.9
	4	ø12	2	420	440	880	8.1
	5	ø16	2	520	580	580	9.2
	6	ø12	2	420	440	880	8.1
	7	ø10	2	125	125	250	1.5
	8	ø12	2	120	140	280	2.5
	9	ø12	2	180	190	570	4.8
	10	ø12	2	180	190	570	5.1
	11	ø10	2	580	590	1180	7.1
	12	ø10	2	520	570	1100	6.8
	13	ø10	2	180	180	360	2.2
	14	ø6	53	14 / 14	114	8122	18.0
					Total ø10	1.0	1.0
Pórtico 3	1	ø12	2	320	340	680	6.1
	2	ø12	2	320	340	680	6.0
	3	ø16	2	520	570	570	11.0
	4	ø12	2	420	430	430	3.9
	5	ø16	2	520 / 15	535	535	7.5
	6	ø12	2	420 / 15	440	440	4.4
	7	ø10	2	24	150	150	0.6
	8	ø12	2	180	190	380	3.2
	9	ø6	53	14 / 14	114	5199	12.6
					Total ø10	1.0	1.0
Pórtico 4	1	ø12	2	320	340	1360	12.1
	2	ø12	2	320	340	1360	12.1
	3	ø10	2	120	130	130	0.7
	4	ø12	2	420	440	880	8.1
	5	ø10	2	24	150	150	0.6
	6	ø6	53	14 / 14	114	6112	9.0
					Total ø10	1.0	1.0
Pórtico 5	1	ø12	2	320	340	680	6.1
	2	ø12	2	320	340	680	6.0
	3	ø10	2	140	150	150	0.9
	4	ø10	2	120	130	130	0.8
	5	ø16	2	520 / 15	535	535	7.2
	6	ø12	2	420 / 15	440	440	4.4
	7	ø10	2	24	150	150	0.6
	8	ø12	2	180	190	380	3.5
	9	ø6	53	14 / 14	114	5132	11.4
					Total ø10	1.0	1.0
Pórtico 6	1	ø12	2	320	340	1360	12.1
	2	ø12	2	320	340	1360	12.1
	3	ø10	2	110	120	120	0.7
	4	ø12	2	240	260	680	4.2
	5	ø10	2	20	30	350	1.8
	6	ø10	2	20	30	30	0.8
	7	ø10	2	287	297	1148	7.1
	8	ø6	53	14 / 14	114	3534	7.8
					Total ø10	1.0	1.0
Pórtico 3(a)Pórtico 4(1)	1	ø12	2	324	405	1620	14.4
	2	ø12	24	320	365	8760	78.7
	3	ø12	2	360	360	1440	13.0
	4	ø12	2	320 / 15	360	1440	12.8
	5	ø10	2	24	150	150	0.7
	6	ø10	2	120	130	130	0.6
	7	ø10	2	320	330	1650	10.3
	8	ø10	2	24	150	150	0.6
	9	ø6	193	14 / 14	114	18705	41.5
					Total ø10	1.0	1.0
						ø6: ø10: ø12: ø16: ø20: Total	114.0 354.0 1254.0 1.0 18.4 1759.8

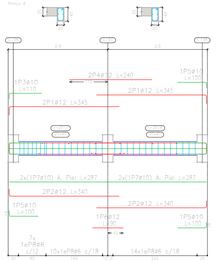












PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

ESCALA: INDICADA

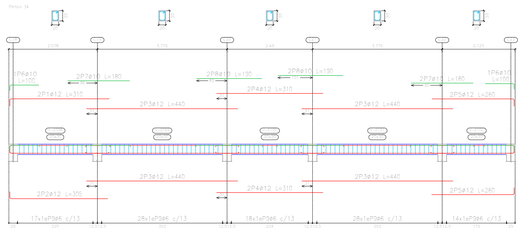
V°B°:

LAMINA: 20/36

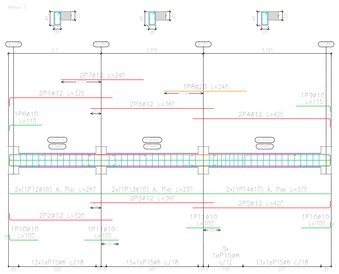
PLANO VIGAS DE H° A°

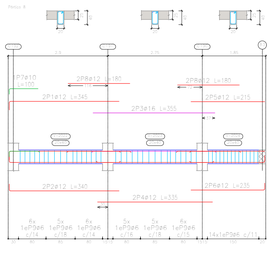
ESC. 1:75

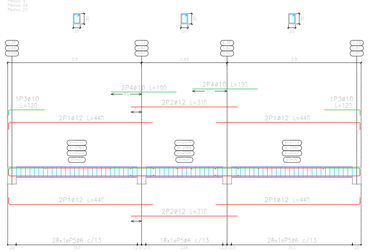
PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

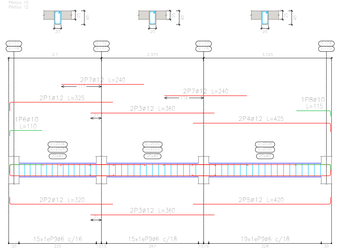


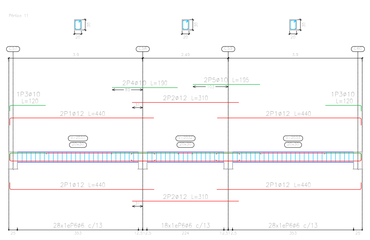
Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 7	1	ø12	2	300	305	605	5.8
	2	ø12	2	300	305	605	5.7
	3	ø12	4	360	365	1445	12.8
	4	ø12	2	420	425	850	7.5
	5	ø12	2	420	425	840	7.5
	6	ø10	2	110	115	230	0.7
	7	ø12	4	240	245	980	8.5
	8	ø10	2	240	245	245	1.5
	9	ø10	2	110	115	230	0.7
	10	ø10	2	94	100	200	1.2
	11	ø10	2	100	105	210	1.2
	12	ø10	2	247	252	504	3.1
	13	ø10	2	360	365	730	4.7
	14	ø10	2	370	375	745	4.6
	15	ø8	50	114	5700	12.6
						Subtotal kg	83.1
Pórtico 8	1	ø12	2	300	305	605	5.7
	2	ø12	2	300	305	605	6.0
	3	ø12	2	355	360	1120	11.2
	4	ø12	2	355	360	590	5.9
	5	ø12	2	375	380	760	7.6
	6	ø12	2	315	320	640	6.0
	7	ø10	2	94	100	200	1.2
	8	ø12	4	180	185	740	6.6
	9	ø8	43	114	4900	11.9
						Subtotal kg	60.6
Pórtico 9=Pórtico 14=Pórtico 17	1	ø12	4	440	445	1780	15.8
	2	ø12	4	310	315	1240	11.0
	3	ø10	2	154	159	318	1.5
	4	ø10	2	100	105	210	1.2
	5	ø8	74	94	6958	16.4
						Subtotal kg	45.9
						Total kg	105.5
Pórtico 10=Pórtico 12	1	ø12	2	300	305	605	5.8
	2	ø12	2	300	305	605	5.7
	3	ø12	4	360	365	1445	12.8
	4	ø12	2	420	425	850	7.5
	5	ø12	2	420	425	840	7.5
	6	ø10	2	110	115	230	0.7
	7	ø12	4	240	245	980	8.5
	8	ø10	2	110	115	230	0.7
	9	ø8	45	114	5085	12.4
						Subtotal kg	94.5
						Total kg	133.0
Pórtico 11	1	ø12	4	440	445	1720	15.3
	2	ø12	4	310	315	1240	11.0
	3	ø10	2	154	159	318	1.5
	4	ø10	2	100	105	210	1.2
	5	ø10	2	100	105	210	1.2
	6	ø8	74	94	6958	15.4
						Subtotal kg	45.0
Pórtico 13	1	ø12	2	300	305	605	6.1
	2	ø12	2	300	305	605	6.0
	3	ø12	2	355	360	1120	11.4
	4	ø12	2	355	360	590	5.9
	5	ø12	2	375	380	760	3.8
	6	ø12	2	315	320	640	4.0
	7	ø10	2	94	100	200	0.6
	8	ø12	4	180	185	740	6.6
	9	ø8	50	114	5700	12.6
						Subtotal kg	51.6
Pórtico 16	1	ø12	2	300	305	605	5.5
	2	ø12	2	300	305	605	5.4
	3	ø12	8	440	445	3560	31.3
	4	ø12	4	355	360	1440	11.0
	5	ø12	2	345	350	1040	9.2
	6	ø10	2	94	100	200	1.2
	7	ø10	4	180	185	740	4.4
	8	ø10	4	150	155	620	4.2
	9	ø8	195	94	18330	21.9
						Subtotal kg	97.2
						ø6	10.0
						ø10	38.8
						ø12	401.1
						ø8	74.4
						ø6	10.0
						Total kg	534.3

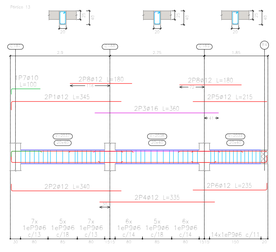












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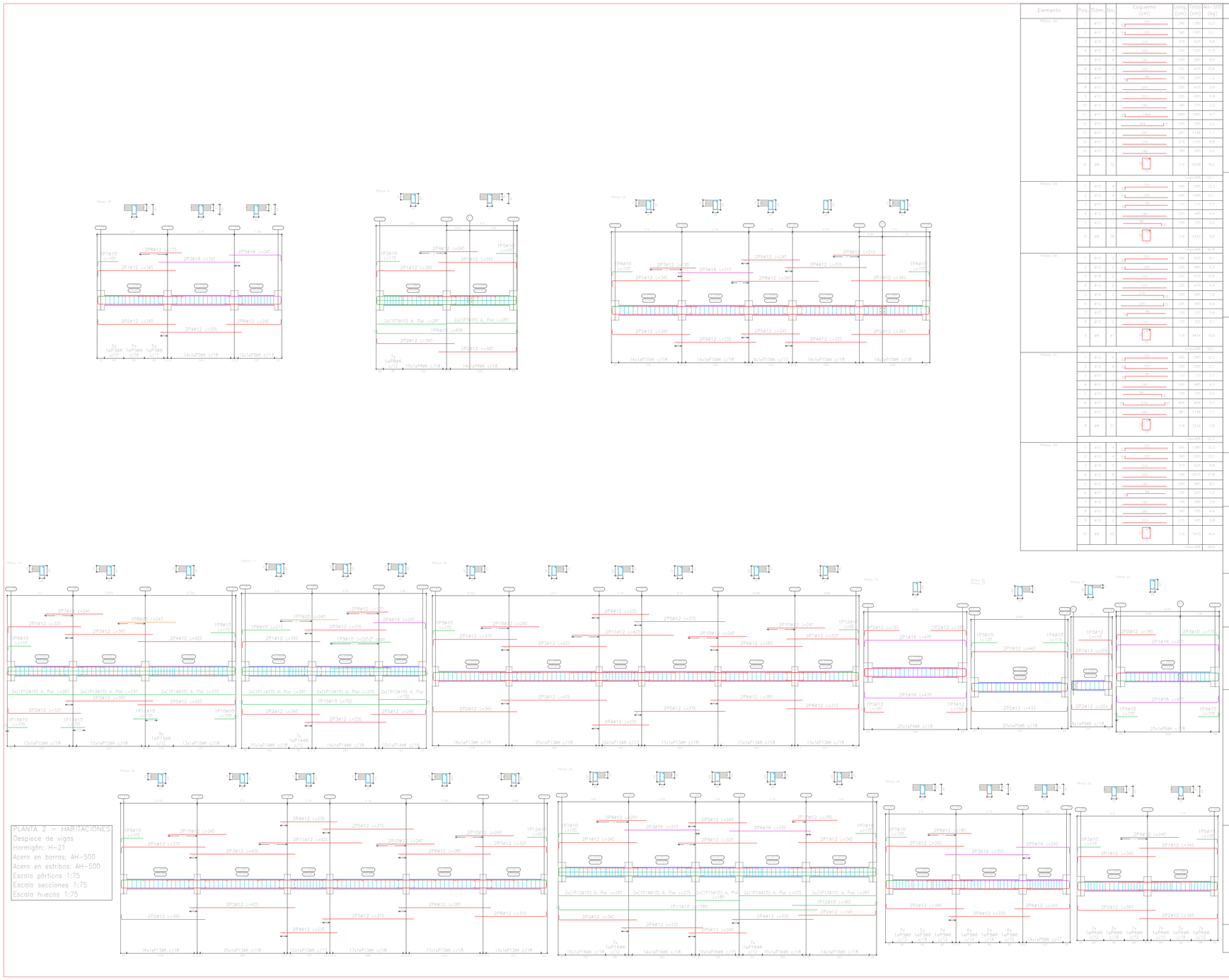
DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES	**PLANO VIGAS DE H° A°**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ	**UBICACIÓN:** ENTRE RÍOS - TARIJA - BOLIVIA	**LAMINA:**
V°B°:	**FECHA:** JUNIO - 2025	**21/36**
	ESCALA: INDICADA	

PLANO VIGAS DE H° A°

ESC. 1:75



Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórticos 29	1	ø12	4	500	345	1380	12.3
	2	ø12	4	500	345	1380	12.3
	3	ø16	4	510	315	1260	12.8
	4	ø10	4	350	345	1380	8.5
	5	ø10	4	180	345	960	5.9
	6	ø16	4	150	155	620	15.6
	7	ø10	4	90	155	620	3.8
	8	ø12	4	500	215	610	5.4
	9	ø12	4	150	215	610	5.4
	10	ø12	4	180	145	510	4.5
	11	ø10	4	1064	1065	1080	6.7
	12	ø10	4	544	345	340	2.1
	13	ø10	4	287	287	1148	7.1
	14	ø10	4	275	275	1100	6.8
	15	ø10	4	1064	145	580	3.6
	16	ø6	50	15 / 15	114	8208	18.2
					Total ø6		18.2
Pórticos 30	1	ø12	4	500	345	1380	12.3
	2	ø12	4	500	345	1380	12.3
	3	ø10	4	58	55	110	0.7
	4	ø12	4	154	245	980	8.7
	5	ø10	4	54	25	100	0.6
	6	ø6	50	15 / 15	114	4332	9.6
					Total ø6		9.6
Pórticos 31	1	ø12	4	500	345	1380	12.3
	2	ø12	4	500	345	1380	12.3
	3	ø16	4	170	170	680	6.0
	4	ø16	4	170	170	680	6.0
	5	ø12	4	170	170	680	6.0
	6	ø16	4	54	25	100	0.6
	7	ø12	4	170	170	680	6.0
	8	ø10	4	54	25	100	0.6
	9	ø12	4	170	170	680	6.0
	10	ø6	50	15 / 15	114	4674	10.4
					Total ø6		10.4
Pórticos 32	1	ø12	4	500	345	1380	12.3
	2	ø12	4	500	345	1380	12.3
	3	ø12	4	150	115	460	4.1
	4	ø12	4	150	115	460	4.1
	5	ø10	4	54	25	100	0.6
	6	ø10	4	574	495	1980	12.2
	7	ø10	4	287	287	1148	7.1
	8	ø6	50	15 / 15	114	3534	7.8
					Total ø6		7.8
Pórticos 33	1	ø12	4	500	345	1380	12.3
	2	ø12	4	500	345	1380	12.3
	3	ø16	4	510	315	1260	12.8
	4	ø12	4	510	315	2015	17.8
	5	ø12	4	150	245	980	8.3
	6	ø10	4	54	25	100	0.6
	7	ø12	4	150	145	580	5.4
	8	ø12	4	150	145	580	5.4
	9	ø12	4	514	215	430	3.8
	10	ø6	50	15 / 15	114	7610	16.4
					Total ø6		16.4

Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórticos 14	1	ø12	2	500	320	640	5.6
	2	ø12	2	500	320	640	5.7
	3	ø16	2	500	280	560	12.8
	4	ø12	2	500	420	840	7.5
	5	ø12	2	500	420	840	7.5
	6	ø10	2	90	115	230	0.7
	7	ø12	2	500	245	490	4.3
	8	ø10	2	500	245	490	3.0
	9	ø10	2	90	115	230	0.7
	10	ø10	2	54	105	210	1.2
	11	ø10	2	500	105	210	1.2
	12	ø10	2	544	287	574	3.5
	13	ø10	2	544	287	574	3.7
	14	ø10	2	550	330	660	4.6
	15	ø6	36	15 / 15	114	5109	12.6
					Total ø6		12.6
Pórticos 17	1	ø12	2	500	345	690	6.1
	2	ø12	2	500	345	690	6.0
	3	ø12	4	500	335	1340	11.9
	4	ø12	2	554	245	490	7.6
	5	ø12	2	554	245	490	4.4
	6	ø10	2	154	215	430	1.3
	7	ø10	2	150	240	480	5.9
	8	ø12	2	150	130	260	2.0
	9	ø10	2	554	250	500	1.5
	10	ø10	2	554	250	500	4.9
	11	ø10	2	154	181	362	1.6
	12	ø10	2	154	275	550	3.4
	13	ø10	2	150	192	384	2.4
	14	ø6	33	15 / 15	114	6614	15.4
					Total ø6		15.4
Pórticos 18	1	ø12	2	750	370	740	6.6
	2	ø12	2	750	380	760	6.5
	3	ø12	4	430	1140	1140	15.4
	4	ø12	4	330	235	940	8.3
	5	ø12	4	330	330	1320	11.6
	6	ø12	4	150	190	760	6.7
	7	ø12	2	500	320	640	5.7
	8	ø12	2	500	315	630	5.6
	9	ø12	2	90	105	210	0.6
	10	ø12	2	500	245	1440	12.8
	11	ø12	2	450	425	850	7.5
	12	ø10	2	54	95	190	0.6
	13	ø6	36	15 / 15	114	10920	24.0
					Total ø6		24.0
Pórticos 19	1	ø12	2	450	435	1740	15.3
	2	ø12	2	450	445	1780	15.8
	3	ø12	2	54	55	110	1.0
	4	ø6	36	15 / 15	114	4089	5.1
					Total ø6		5.1
Pórticos 20=Pórticos 23	1	ø12	2	550	445	890	7.9
	2	ø12	2	550	435	870	7.7
	3	ø12	2	154	120	240	0.7
	4	ø12	2	54	115	230	0.7
	5	ø6	36	15 / 15	114	4089	5.1
					Total ø6		5.1
					Total ø12		23.8
					Total AH		41.8
Pórticos 21	1	ø12	2	154	205	410	3.7
	2	ø12	2	154	204	409	3.6
	3	ø12	2	154	155	310	1.4
	4	ø6	36	15 / 15	114	912	2.0
					Total ø6		2.0
Pórticos 22	1	ø16	2	454	470	1940	29.7
	2	ø12	2	154	185	370	3.2
	3	ø12	2	154	175	350	2.2
	4	ø12	2	54	105	210	1.2
	5	ø6	36	15 / 15	114	5104	5.1
					Total ø6		14.1
Pórticos 25	1	ø12	2	550	335	670	6.6
	2	ø12	2	550	345	690	6.5
	3	ø12	2	450	435	1740	15.4
	4	ø12	2	330	235	940	8.3
	5	ø12	2	330	315	1260	11.1
	6	ø12	2	330	385	1540	13.5
	7	ø12	2	550	320	640	5.7
	8	ø12	2	550	315	630	5.6
	9	ø10	2	90	105	210	0.6
	10	ø12	2	550	245	1440	12.8
	11	ø12	2	450	425	850	7.5
	12	ø10	2	54	95	190	0.6
	13	ø6	36	15 / 15	114	10920	24.0
					Total ø6		30.6
Pórticos 26	1	ø12	2	550	345	690	6.1
	2	ø12	2	550	345	690	6.0
	3	ø12	2	550	335	670	11.9
	4	ø12	2	550	335	670	5.9
	5	ø12	2	550	245	490	7.7
	6	ø12	2	550	245	490	4.4
	7	ø10	2	90	105	210	0.6
	8	ø12	2	550	180	360	3.2
	9	ø6	36	15 / 15	114	5109	12.6
					Total ø6		12.6
					ø6		81.9
					ø12		86.5
					ø16		42.5
					ø10		146.5
					AH-500		358.4

PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

UNIVERSIDAD AUTÓNOMO JUAN MISAEL SARACHO
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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

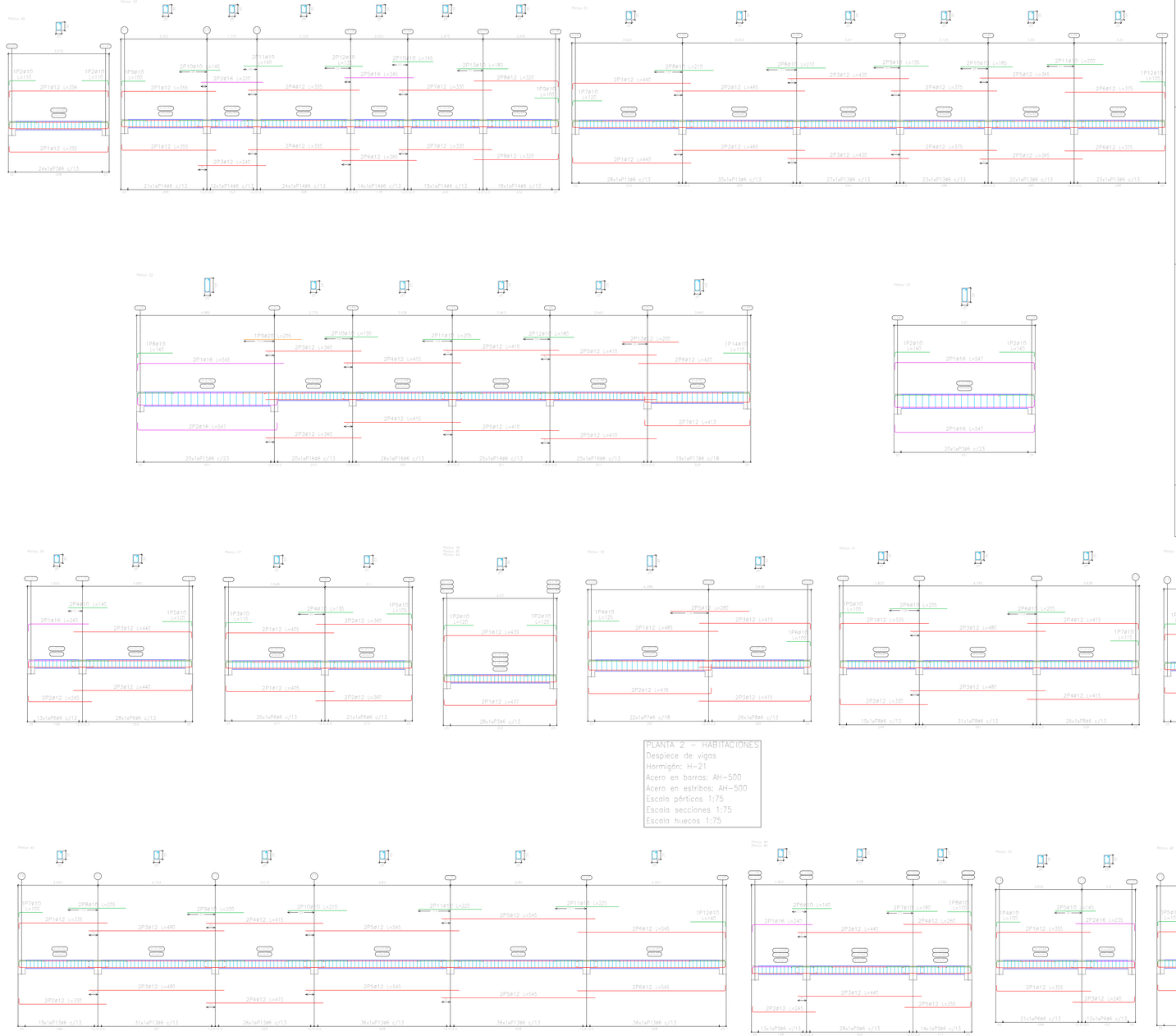
FECHA: JUNIO - 2025

ESCALA: INDICADA

LAMINA: 22/36

PLANO VIGAS DE H° A°

ESC. 1:75



Elemento	Pos.	Diám.	Nro.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 30	1	Ø12	4	114	354	1420	12.6
	2	Ø16	2	220	220	440	6.9
	3	Ø12	2	120	241	483	4.3
	4	Ø12	2	120	791	1585	14.0
	5	Ø16	2	220	241	483	7.6
	6	Ø12	2	120	261	523	4.6
	7	Ø12	2	120	333	1325	11.7
	8	Ø12	2	120	331	1285	11.4
	9	Ø10	2	54	151	303	1.2
	10	Ø10	2	141	141	283	1.1
	11	Ø10	2	141	141	283	1.1
	12	Ø10	2	146	126	255	1.1
	13	Ø10	2	146	181	365	1.5
	14	Ø6	155	54	54	8732	22.5
						Σ=+5%	114.7
Pórtico 31	1	Ø12	4	114	445	1780	15.8
	2	Ø12	2	220	445	1890	16.7
	3	Ø12	2	220	435	1740	15.3
	4	Ø12	2	220	375	1500	13.3
	5	Ø12	2	120	365	1445	13.0
	6	Ø12	2	114	375	1505	13.3
	7	Ø10	2	104	124	250	0.7
	8	Ø10	2	104	219	840	2.3
	9	Ø10	2	146	156	295	2.4
	10	Ø10	2	146	181	335	2.3
	11	Ø10	2	146	215	425	2.3
	12	Ø10	2	54	155	305	0.6
	13	Ø6	155	54	54	14382	31.9
						Σ=+5%	143.4
Pórtico 32	1	Ø16	10	114	540	5400	17.2
	2	Ø16	2	220	547	1094	17.3
	3	Ø12	4	120	541	2165	19.1
	4	Ø12	4	420	419	1680	14.7
	5	Ø12	4	420	417	1280	29.1
	6	Ø12	2	120	421	845	7.5
	7	Ø12	2	120	417	829	7.3
	8	Ø10	2	104	141	285	0.9
	9	Ø10	2	146	191	385	2.4
	10	Ø10	2	146	159	305	2.5
	11	Ø10	2	146	205	415	2.5
	12	Ø10	2	146	180	365	2.2
	13	Ø12	2	120	205	405	3.6
	14	Ø10	2	54	115	235	0.1
	15	Ø6	55	54	124	6845	5.5
	16	Ø6	50	54	54	3924	25.0
	17	Ø6	15	54	114	2166	4.8
						Σ=+5%	145.5
Pórtico 33	1	Ø16	10	220	541	5180	34.5
	2	Ø10	2	141	141	285	1.1
	3	Ø6	50	54	134	2285	5.0
						Σ=+5%	40.6

Elemento	Pos.	Diám.	Nro.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 36	1	Ø16	2	214	240	480	7.6
	2	Ø12	2	220	245	490	4.4
	3	Ø12	4	114	445	1780	15.8
	4	Ø12	2	120	145	285	2.7
	5	Ø10	2	54	150	300	0.7
	6	Ø6	45	54	54	3854	8.6
						Σ=+5%	41.7
Pórtico 37	1	Ø16	4	214	405	1620	14.4
	2	Ø12	4	114	395	1440	12.8
	3	Ø10	2	54	170	339	0.7
	4	Ø10	2	146	198	395	2.4
	5	Ø10	2	54	155	305	0.6
	6	Ø6	46	54	54	4324	9.6
						Σ=+5%	41.7
Pórtico Monterrey Adventistas 38	1	Ø12	4	220	420	1759	15.6
	2	Ø10	2	104	127	249	1.5
	3	Ø6	26	54	54	2632	5.8
						Σ=+5%	24.7
Pórtico 39	1	Ø12	4	420	495	1979	17.6
	2	Ø12	2	420	479	957	8.5
	3	Ø12	4	104	415	1660	14.7
	4	Ø10	2	104	125	139	0.8
	5	Ø10	2	146	198	395	2.0
	6	Ø10	2	54	150	300	0.6
	7	Ø6	25	54	114	2058	5.4
	8	Ø6	26	54	54	2444	5.4
						Σ=+5%	53.1
Pórtico 41	1	Ø12	4	114	155	619	5.5
	2	Ø12	2	120	150	299	2.6
	3	Ø12	4	420	490	1959	17.0
	4	Ø12	4	104	415	1659	14.7
	5	Ø10	2	54	150	299	0.6
	6	Ø10	2	104	200	399	0.7
	7	Ø10	2	54	115	111	0.7
	8	Ø6	26	54	54	2144	5.5
						Σ=+5%	51.7
Pórtico 42	1	Ø12	4	420	495	1979	17.0
	2	Ø12	2	420	410	1660	14.7
	3	Ø10	2	104	125	139	0.8
	4	Ø10	2	104	200	419	2.0
	5	Ø10	2	54	115	111	0.7
	6	Ø6	25	54	54	2558	11.9
						Σ=+5%	51.4
Pórtico 43	1	Ø12	4	114	155	619	5.5
	2	Ø12	2	120	150	299	2.6
	3	Ø12	4	420	490	1959	17.0
	4	Ø12	4	420	410	1640	14.7
	5	Ø12	4	114	540	2160	19.4
	6	Ø10	2	54	150	299	0.6
	7	Ø10	2	104	200	419	2.0
	8	Ø10	2	104	200	399	0.9
	9	Ø10	2	104	220	439	2.0
	10	Ø10	2	146	220	395	3.3
	11	Ø10	2	146	145	285	2.4
	12	Ø10	2	146	145	285	2.4
	13	Ø6	26	54	54	2558	11.9
						Σ=+5%	57.7
Pórtico Adventistas 82	1	Ø16	2	214	240	480	7.6
	2	Ø12	2	220	245	490	4.4
	3	Ø12	4	445	445	1780	15.8
	4	Ø12	2	120	241	483	4.3
	5	Ø10	2	146	191	385	2.4
	6	Ø10	2	146	191	385	2.4
	7	Ø10	2	146	192	385	2.2
	8	Ø10	2	54	150	300	0.6
	9	Ø6	55	54	54	5170	11.5
						Σ=+5%	57.2
						Σ=+5%	11.4
Pórtico 47	1	Ø12	4	114	355	1420	12.6
	2	Ø12	2	120	170	339	3.0
	3	Ø12	2	120	240	483	4.3
	4	Ø10	2	54	150	299	0.6
	5	Ø10	2	146	145	289	0.8
	6	Ø6	35	54	54	3155	6.9
						Σ=+5%	28.3
Pórtico 48	1	Ø12	4	114	355	1420	12.6
	2	Ø12	2	120	170	339	3.0
	3	Ø12	2	120	240	483	4.3
	4	Ø12	4	114	390	1560	14.0
	5	Ø10	2	54	150	299	0.6
	6	Ø10	2	146	145	289	0.8
	7	Ø10	2	146	140	289	1.7
	8	Ø10	2	54	115	111	0.7
	9	Ø6	35	54	54	3358	11.9
						Σ=+5%	58.3
Pórtico 49	1	Ø12	4	420	334	1336	14.0
	2	Ø10	2	54	150	299	0.6
	3	Ø6	26	54	54	2254	5.0
						Σ=+5%	22.2

ØR:	1.101.4
Ø10:	59.4
Ø12:	832.2
Ø16:	1.0.3
Ø20:	1.0.3
TOTAL:	1.973.7

PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

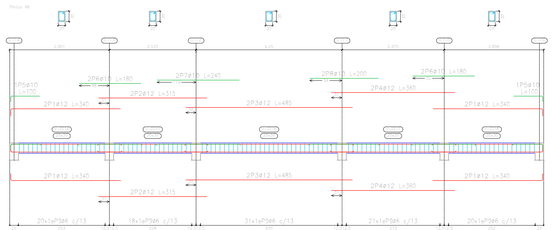
ESCALA: INDICADA

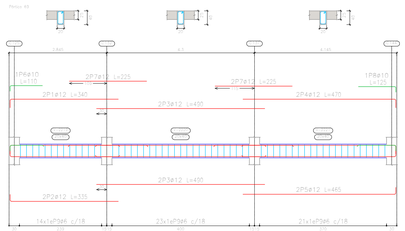
LAMINA: 23/36

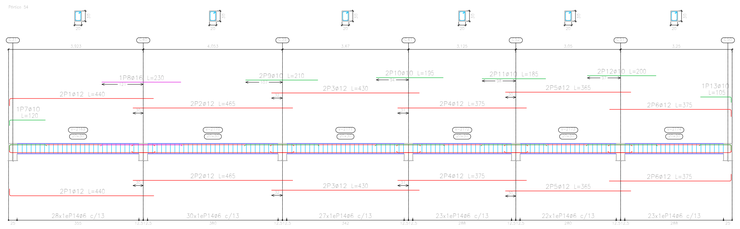
PLANO VIGAS DE H° A°

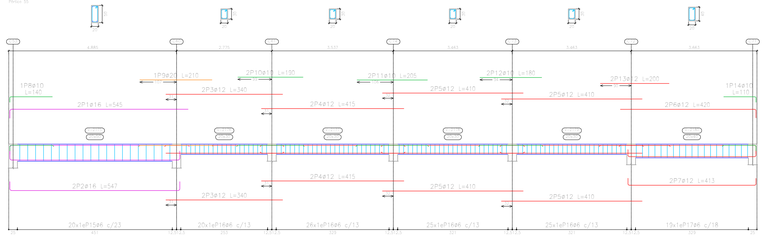
ESC. 1:75

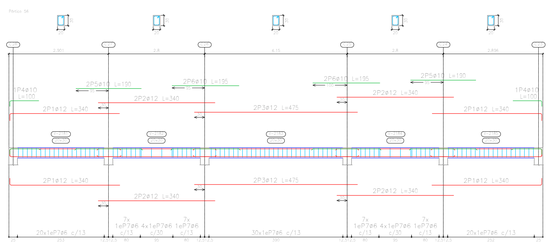
PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

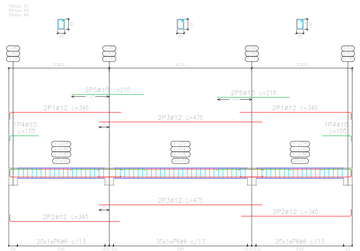


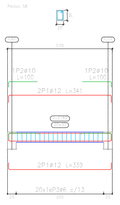


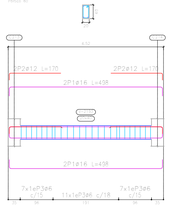


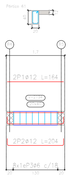


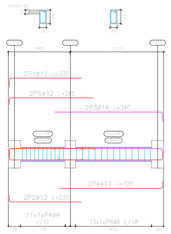


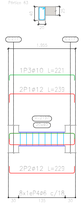


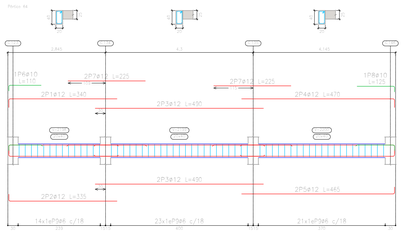


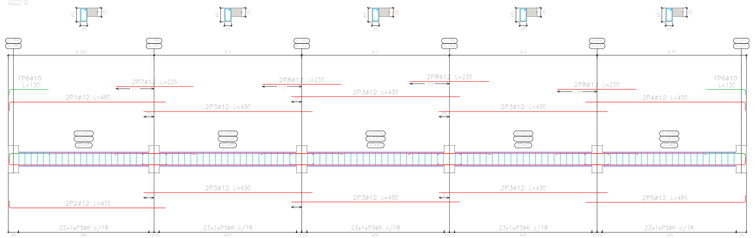


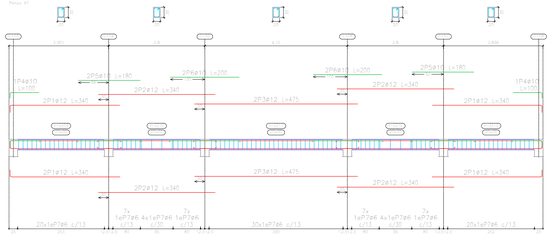












Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 47/Pórtico 50	1	ø12	2	415	485	970	8.5
	2	ø12	2	475	475	950	8.4
	3	ø12	14	490	490	6860	60.2
	4	ø12	2	540	490	980	8.7
	5	ø12	2	565	485	970	8.6
	6	ø10	2	114	130	260	1.6
	7	ø12	2	200	225	450	4.0
	8	ø12	8	140	230	1840	12.3
	9	ø6	115	35	114	13110	29.6
						Total AH-500	141.5
						Total AH-250	287.0
Pórtico 49	1	ø12	8	315	340	2720	24.1
	2	ø12	8	340	340	2720	24.1
	3	ø12	8	475	475	3800	33.5
	4	ø10	2	105	105	210	1.3
	5	ø10	8	60	145	1160	4.6
	6	ø10	8	200	200	1600	6.3
	7	ø6	106	35	94	9964	22.1
						Total AH-500	120.5
Pórtico 48	1	ø12	8	315	340	2720	24.1
	2	ø12	8	315	315	2520	22.3
	3	ø12	8	485	485	3880	34.3
	4	ø12	8	365	365	2920	25.8
	5	ø10	2	105	105	210	1.3
	6	ø10	2	60	145	290	1.8
	7	ø10	2	335	335	670	4.1
	8	ø10	2	200	200	400	2.5
	9	ø6	115	35	94	10340	22.9
						Total AH-500	117.2
Pórtico 49	1	ø12	2	315	340	680	6.0
	2	ø12	2	315	335	670	5.9
	3	ø12	4	490	490	1960	17.4
	4	ø12	2	540	470	940	8.3
	5	ø12	2	565	465	930	8.3
	6	ø10	2	105	105	210	1.3
	7	ø10	2	200	200	400	2.5
	8	ø10	2	125	125	250	1.6
	9	ø6	58	35	114	6612	14.7
						Total AH-500	75.7

Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 54	1	ø12	2	415	440	880	13.8
	2	ø12	2	485	485	970	15.3
	3	ø12	8	430	430	3440	53.3
	4	ø12	8	375	375	3000	53.3
	5	ø12	8	365	365	2920	53.6
	6	ø12	8	375	375	3000	53.3
	7	ø10	2	125	125	250	0.7
	8	ø16	2	230	230	460	3.6
	9	ø10	2	210	210	420	2.6
	10	ø10	2	195	195	390	2.4
	11	ø10	2	185	185	370	2.3
	12	ø10	2	200	200	400	2.5
	13	ø10	2	105	105	210	0.6
	14	ø6	112	35	94	14392	31.9
						Total AH-500	144.1
Pórtico 55	1	ø16	2	545	545	1090	17.2
	2	ø16	2	545	545	1090	17.2
	3	ø12	8	340	340	2720	24.1
	4	ø12	2	415	415	830	7.3
	5	ø12	8	410	410	3280	29.1
	6	ø12	2	420	420	840	7.4
	7	ø12	2	413	413	826	7.3
	8	ø10	2	145	145	290	0.5
	9	ø20	2	315	315	630	3.1
	10	ø10	2	190	190	380	2.3
	11	ø10	2	205	205	410	2.5
	12	ø10	2	180	180	360	2.2
	13	ø12	2	200	200	400	3.6
	14	ø10	2	55	110	110	0.7
	15	ø6	20	35	134	2680	5.9
	16	ø6	38	35	94	3924	20.0
	17	ø6	10	35	114	2144	4.8
						Total AH-500	151.8
Pórtico 56	1	ø12	8	340	340	2720	24.1
	2	ø12	8	340	340	2720	24.1
	3	ø12	8	475	475	3800	33.5
	4	ø10	2	105	105	210	1.3
	5	ø10	2	100	100	200	0.7
	6	ø10	2	100	100	200	0.7
	7	ø6	106	35	94	9964	22.1
						Total AH-500	110.7
Pórtico 57/Pórtico 61/Pórtico 68	1	ø12	8	340	340	2720	24.1
	2	ø12	8	340	340	2720	24.1
	3	ø12	8	475	475	3800	33.5
	4	ø10	2	105	105	210	1.3
	5	ø10	2	100	100	200	0.7
	6	ø6	90	35	94	8080	18.0
						Total AH-500	102.7
						Total AH-250	51.3
						Total	205.8
Pórtico 58	1	ø12	8	340	340	2720	24.1
	2	ø10	2	100	100	200	1.2
	3	ø6	20	35	94	1880	4.2
						Total AH-500	29.5
Pórtico 59	1	ø12	8	340	340	2720	24.1
	2	ø10	2	100	100	200	1.2
	3	ø6	20	35	94	1880	4.2
						Total AH-500	29.5
Pórtico 60	1	ø16	8	545	545	4360	68.8
	2	ø12	2	170	170	340	3.0
	3	ø6	20	35	114	2850	6.3
						Total AH-500	78.1
Pórtico 61	1	ø12	8	340	340	2720	24.1
	2	ø12	2	204	204	408	3.6
	3	ø6	8	114	114	912	2.0
						Total AH-500	30.2
Pórtico 62	1	ø12	8	235	235	1880	16.6
	2	ø12	2	235	235	470	4.2
	3	ø16	2	265	265	530	8.4
	4	ø16	2	340	340	680	10.7
	5	ø12	2	320	320	640	5.7
	6	ø12	2	235	235	470	4.2
	7	ø6	58	35	114	6612	14.7
						Total AH-500	64.5
Pórtico 63	1	ø12	8	235	235	1880	16.6
	2	ø12	2	229	229	458	4.1
	3	ø10	2	221	221	442	2.7
	4	ø6	8	114	114	912	2.0
						Total AH-500	23.4
Pórtico 64	1	ø12	2	340	340	680	6.0
	2	ø12	2	335	335	670	5.9
	3	ø12	4	490	490	1960	17.4
	4	ø12	2	470	470	940	8.3
	5	ø12	2	465	465	930	8.3
	6	ø10	2	110	110	220	0.7
	7	ø12	2	200	200	400	3.5
	8	ø10	2	125	125	250	0.8
	9	ø6	58	35	114	6612	14.7
						Total AH-500	75.7
						Ø6	1122.7
						Ø10	84.2
						Ø12	1013.1
						Ø16	98.7
						Ø20	3.1
						Total	2319.8

UNIVERSIDAD AUTÓNOMO JUAN MISAEL SARACHO
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CARRERA DE INGENIERÍA CIVIL

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

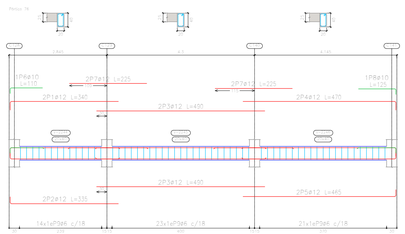
FECHA: JUNIO - 2025

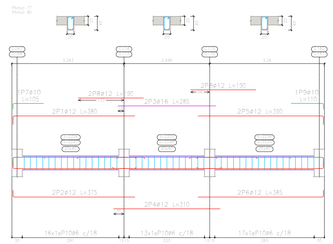
ESCALA: INDICADA

LAMINA: 24/36

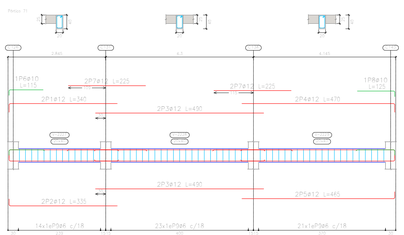
PLANO VIGAS DE H° A°

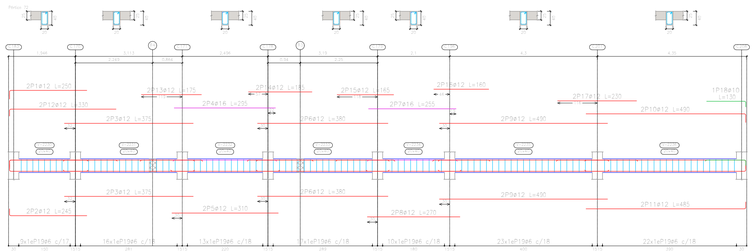
ESC. 1:75

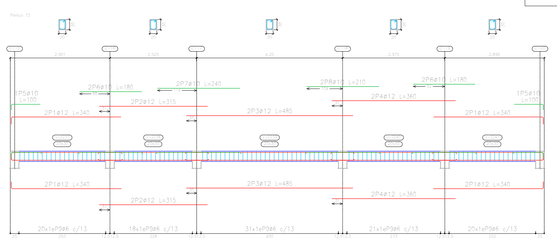


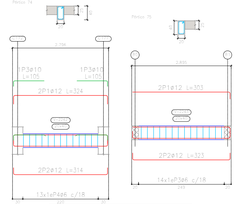


Elemento	Pos.	Diám.	Nro.	Esquema (cm)	Long. (cm)	Total (cm)	Kilo-500 (kg)
Pórtico 71	1	ø12	2	340	340	680	6.0
	2	ø12	2	340	335	670	5.9
	3	ø12	4	490	490	1960	17.4
	4	ø12	2	470	470	940	8.3
	5	ø12	2	465	465	930	8.3
	6	ø10	2	110	110	220	0.7
	7	ø12	4	220	220	880	8.0
	8	ø10	2	125	125	250	0.8
	9	ø6	16	114	6810	1361	14.7
					Total ø6		76.7
Pórtico 72	1	ø12	2	220	220	440	4.4
	2	ø12	2	220	215	430	4.4
	3	ø12	4	370	370	1480	13.2
	4	ø10	2	290	290	580	3.6
	5	ø12	2	210	210	420	3.8
	6	ø12	4	380	380	1520	13.5
	7	ø10	2	250	250	500	3.1
	8	ø12	2	270	270	540	4.8
	9	ø12	4	490	490	1960	17.4
	10	ø12	2	490	490	980	8.7
	11	ø12	2	485	485	970	8.6
	12	ø12	2	350	350	700	6.2
	13	ø12	2	170	170	340	3.1
	14	ø12	2	185	185	370	3.3
	15	ø12	2	160	160	320	2.8
	16	ø12	2	160	160	320	2.8
	17	ø12	2	230	230	460	4.1
	18	ø10	2	130	130	260	0.8
	19	ø6	170	114	19340	3481	27.8
					Total ø6		85.3
Pórtico 73	1	ø12	4	340	340	1360	12.1
	2	ø12	4	315	315	1260	11.2
	3	ø12	4	485	485	1940	17.2
	4	ø12	4	390	390	1560	13.8
	5	ø10	2	150	150	300	1.8
	6	ø10	2	180	180	720	4.4
	7	ø10	2	240	240	480	3.0
	8	ø10	2	210	210	420	2.6
	9	ø6	170	114	19340	3481	22.3
					Total ø6		77.4
Pórtico 74	1	ø12	2	314	314	628	5.6
	2	ø12	2	314	314	628	5.6
	3	ø10	2	190	190	380	1.3
	4	ø6	15	114	1482	261	2.3
					Total ø6		12.2
Pórtico 75	1	ø12	2	383	383	766	6.8
	2	ø12	2	383	383	766	6.8
	3	ø6	14	114	1596	281	2.5
					Total ø6		12.8
Pórtico 76	1	ø12	2	340	340	680	6.0
	2	ø12	2	330	330	660	5.9
	3	ø12	4	490	490	1960	17.4
	4	ø12	2	470	470	940	8.3
	5	ø12	2	465	465	930	8.3
	6	ø10	2	110	110	220	0.7
	7	ø12	4	305	305	1220	10.8
	8	ø12	2	125	125	250	2.2
	9	ø6	18	114	8812	1571	14.7
					Total ø6		76.7
Pórtico 77/Pórtico 80	1	ø12	2	380	380	760	6.7
	2	ø12	2	370	370	740	6.7
	3	ø10	2	285	285	570	3.5
	4	ø12	2	315	315	630	5.5
	5	ø12	2	300	300	600	5.3
	6	ø10	2	180	180	360	2.2
	7	ø10	2	170	170	340	2.1
	8	ø12	4	190	190	760	6.7
	9	ø12	2	110	110	220	1.9
	10	ø6	48	114	5244	934	11.6
					Total ø6		61.1
					Total		370.2
					ø6	370.2	
					ø10	125.4	
					ø12	456.5	
					ø16	28.3	
					Total	984.4	









PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

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

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

LAMINA: 25/36

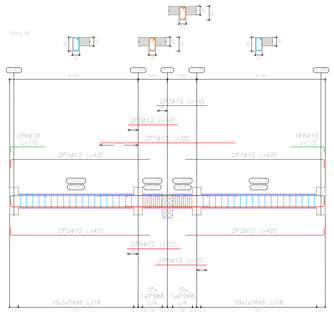
V°B°:

FECHA: JUNIO - 2025

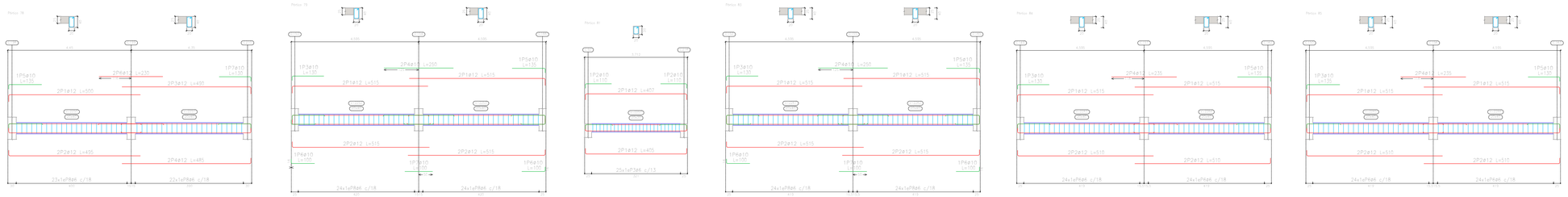
ESCALA: INDICADA

PLANO VIGAS DE H° A°

ESC. 1:75



Elemento	Pos.	Diám.	Nº.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 78	1	ø12	2	470	500	1000	8.9
	2	ø12	2	470	490	980	8.8
	3	ø12	2	480	490	980	8.7
	4	ø12	2	480	480	970	8.6
	5	ø12	2	135	135	270	0.8
	6	ø12	2	230	230	460	4.1
	7	ø12	2	114	130	260	0.9
	8	ø6	35	114	5130	11.4
					Total ø6	11.4
Pórtico 79	1	ø12	4	470	515	2060	18.3
	2	ø12	4	470	515	2060	18.3
	3	ø12	2	135	130	260	0.8
	4	ø12	2	230	250	500	3.1
	5	ø12	2	135	135	270	0.8
	6	ø12	2	85	100	200	1.2
	7	ø12	2	230	100	200	0.4
	8	ø6	48	114	5472	12.1
					Total ø6	12.1
Pórtico 81	1	ø12	2	560	407	1628	14.5
	2	ø12	2	85	110	220	1.4
	3	ø6	25	86	2150	5.2
					Total ø6	22.8
Pórtico 83	1	ø12	4	470	515	2060	18.3
	2	ø12	4	470	515	2060	18.3
	3	ø12	2	135	130	260	0.8
	4	ø12	2	230	250	500	3.1
	5	ø12	2	135	135	270	0.8
	6	ø12	2	85	100	200	1.2
	7	ø12	2	230	100	200	0.4
	8	ø6	48	114	5472	12.1
					Total ø6	12.1
Pórtico 84	1	ø12	4	470	515	2060	18.3
	2	ø12	4	470	515	2060	18.3
	3	ø12	2	135	130	260	0.8
	4	ø12	2	230	250	500	3.1
	5	ø12	2	135	135	270	0.8
	6	ø6	48	114	5472	12.1
					Total ø6	12.1
Pórtico 85	1	ø12	4	470	515	2060	18.3
	2	ø12	4	470	515	2060	18.3
	3	ø12	2	135	130	260	0.8
	4	ø12	2	230	235	470	4.2
	5	ø12	2	135	135	270	0.8
	6	ø6	48	114	5472	12.1
					Total ø6	12.1
Pórtico 86	1	ø12	2	470	430	1720	15.3
	2	ø12	2	470	425	1700	15.1
	3	ø12	2	135	145	290	0.9
	4	ø12	2	230	195	390	2.8
	5	ø12	2	135	150	300	2.7
	6	ø12	2	85	110	220	1.4
	7	ø12	2	230	100	200	0.8
	8	ø6	28	114	4130	9.6
	9	ø6	28	113	3360	9.2
					Total ø6	19.1
					Total ø6	80.4
					Total ø8	90.0
					Total ø12	126.5
					Total	345.2



PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

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

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

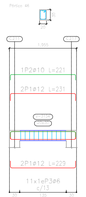
ESCALA: INDICADA

LAMINA: 26/36

PLANO VIGAS DE H° A°

ESC. 1:75

Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 4A	1	ø12	2	250	221	924	8.2
	2	ø10	2	250	221	221	1.4
	3	ø6	4	30 / 50	94	1034	2.3
						Total+8%	12.9
						ø6:	2.3
						ø10:	1.5
						ø12:	8.2
						Total:	12.0



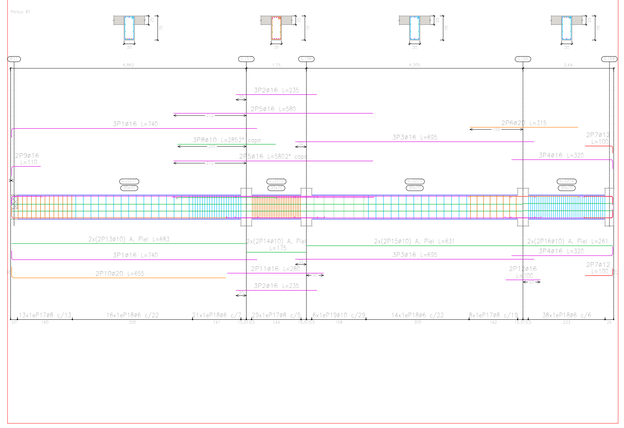
PLANTA 3 – CONT. SALA ESTAR
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

Resumen Acero Plano de pórticos		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	2745.7	658	
	ø10	417.1	278	
	ø12	1932.3	1853	
	ø16	52.0	89	
	ø20	4.8	13	2891

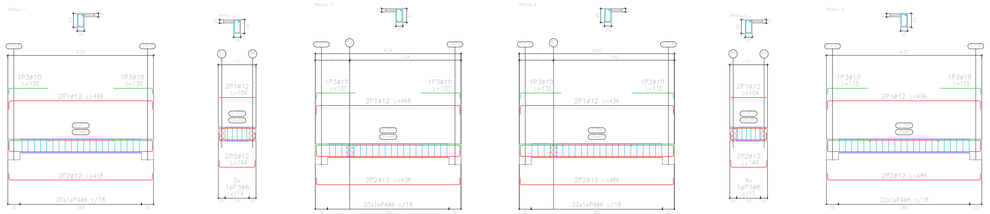
PLANTA 2 – HABITACIONES
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

Resumen Acero Plano de pórticos		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	5702.8	1367	
	ø8	121.9	52	
	ø10	781.0	520	
	ø12	4151.8	3981	
	ø16	455.2	776	
	ø20	33.2	88	6784

Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico B1	1	ø16	2	740	740	4440	70.1
	2	ø16	2	580	580	1410	22.3
	3	ø16	2	655	655	4130	65.8
	4	ø16	2	325	325	1501	23.3
	5	ø16	2	580	580	2320	36.6
	6	ø20	2	655	655	630	15.5
	7	ø12	2	655	655	655	5.8
	8	ø16	2	655	655	655	5.2
	9	ø16	2	325	325	325	5.1
	10	ø20	2	655	655	1311	32.3
	11	ø16	2	280	280	560	8.8
	12	ø16	2	320	320	640	10.1
	13	ø12	2	683	683	2731	24.4
	14	ø16	2	175	175	350	5.5
	15	ø16	2	631	631	2524	39.8
	16	ø16	2	261	261	1044	16.4
	17	ø8	30	30 / 50	132	3960	38.9
	18	ø6	30	30 / 50	194	17246	38.1
	19	ø10	2	30 / 50	250	1250	7.4
						Total+8%	890.7
						ø6:	41.4
						ø8:	52.0
						ø10:	90.2
						ø12:	3.5
						ø16:	203.8
						ø20:	61.4
						Total:	452.3



Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 1	1	ø12	2	410	468	936	8.3
	2	ø12	2	410	458	916	8.1
	3	ø10	2	125	135	270	1.4
	4	ø6	20	30 / 50	114	2280	5.1
						Total+8%	24.9
Pórtico 2	1	ø12	2	104	104	208	1.8
	2	ø12	2	104	144	288	2.6
	3	ø6	5	30 / 50	114	570	1.3
						Total+8%	9.2
Pórtico 3	1	ø12	2	410	468	936	8.3
	2	ø12	2	410	458	916	8.1
	3	ø10	2	125	135	270	1.4
	4	ø6	20	30 / 50	114	2280	5.1
						Total+8%	24.9
Pórtico 4	1	ø12	2	410	458	916	8.1
	2	ø12	2	410	468	936	8.3
	3	ø10	2	125	135	270	1.4
	4	ø6	20	30 / 50	114	2280	5.6
						Total+8%	24.7
Pórtico 5	1	ø12	2	104	104	208	1.8
	2	ø12	2	104	144	288	2.6
	3	ø6	6	30 / 50	114	684	1.5
						Total+8%	8.6
Pórtico 6	1	ø12	2	410	458	916	8.1
	2	ø12	2	410	468	936	8.3
	3	ø10	2	125	135	270	1.4
	4	ø6	20	30 / 50	114	2280	5.6
						Total+8%	24.7
						ø6:	75.2
						ø10:	2.8
						ø12:	40.6
						Total:	118.6



PLANTA 5 – BASE TANQUE ELEVADO
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

Resumen Acero Plano de pórticos		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	108.3	26	
	ø10	10.6	7	
	ø12	86.2	83	116

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

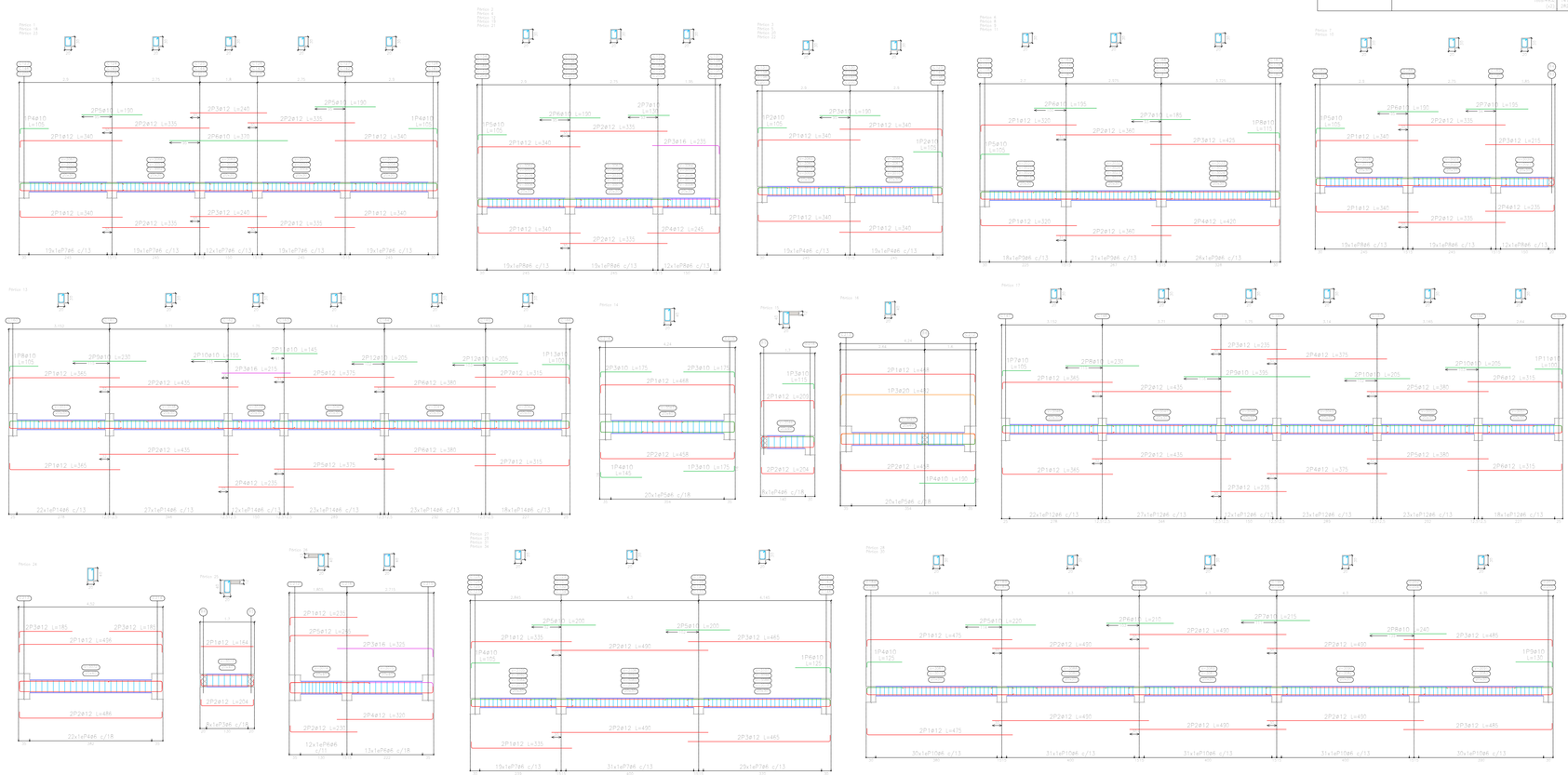
PLANOS ESTRUCTURALES | **PLANO VIGAS DE H° A°**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ
UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA
LAMINA: 27/36
V°B°:
FECHA: JUNIO - 2025
ESCALA: INDICADA

PLANO VIGAS DE H° A°

ESC. 1:75

PLANTA 3 – CONT. SALA ESTAR
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75



Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórticos 29	1	ø12	2	440	456	912	8.8
	2	ø12	2	440	486	972	8.6
	3	ø12	4	160	185	740	6.6
	4	ø6	32	20 / 20	114	3648	5.4
						Total+5%	32.0
Pórticos 25	1	ø12	2	164	144	288	2.5
	2	ø12	2	164	214	428	3.8
	3	ø6	6	20 / 20	114	912	2.0
						Total+5%	9.1
Pórticos 24	1	ø12	2	210	235	470	4.2
	2	ø12	2	210	255	510	4.5
	3	ø16	2	320	325	650	10.3
	4	ø12	2	300	325	650	5.7
	5	ø12	2	290	295	590	5.2
	6	ø6	35	20 / 20	114	3990	6.3
						Total+5%	36.1
Pórticos 21+Pórticos 26+Pórticos 31 Pórticos 34	1	ø12	4	314	335	1340	11.9
	2	ø12	4	410	450	1800	15.9
	3	ø12	4	440	465	1860	16.5
	4	ø16	2	90	105	210	0.6
	5	ø10	4	200	205	820	4.5
	6	ø10	2	120	125	250	0.8
	7	ø6	75	20 / 20	94	7050	14.5
						Total+5% (kg)	70.1 Ø6: 14.5 Ø10: 5.3 Ø12: 54.3
Pórticos 2+Pórticos 30	1	ø12	4	474	475	1900	16.9
	2	ø12	12	470	505	6060	53.9
	3	ø12	4	484	485	1940	17.2
	4	ø10	2	120	125	250	0.8
	5	ø10	10	220	225	2250	7.1
	6	ø10	2	220	225	450	1.4
	7	ø10	8	210	215	1720	5.4
	8	ø10	2	240	245	490	1.5
	9	ø10	2	140	135	270	0.8
	10	ø6	152	20 / 20	94	14288	31.5
						Total+5% (kg)	141.1 Ø6: 31.5 Ø10: 9.4 Ø12: 100.2

Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórticos 1+Pórticos 6+Pórticos 11	1	ø12	4	148	140	2720	24.1
	2	ø12	4	130	155	2480	22.0
	3	ø12	4	240	240	960	8.5
	4	ø10	2	85	105	210	1.3
	5	ø10	4	190	190	760	4.7
	6	ø10	2	370	370	740	4.6
	7	ø6	88	20 / 20	94	8272	18.4
						Total+5% (kg)	87.2 Ø6: 18.4 Ø10: 6.0
Pórticos 2+Pórticos 7+Pórticos 12+Pórticos 17+Pórticos 22	1	ø12	4	115	340	1360	12.1
	2	ø12	4	130	370	1480	13.1
	3	ø16	2	210	240	480	2.4
	4	ø12	2	210	240	480	4.4
	5	ø10	4	80	155	155	0.6
	6	ø10	2	190	195	390	2.3
	7	ø10	2	190	190	380	2.3
	8	ø6	52	20 / 20	94	4700	10.4
						Total+5% (kg)	46.9 Ø6: 10.4 Ø10: 6.4 Ø12: 36.1
Pórticos 3+Pórticos 8+Pórticos 13+Pórticos 18+Pórticos 23	1	ø12	4	148	320	1280	11.4
	2	ø12	4	130	360	1440	12.8
	3	ø12	4	204	420	840	7.5
	4	ø12	4	200	420	840	7.5
	5	ø10	2	80	155	155	0.6
	6	ø10	2	130	130	260	1.4
	7	ø10	2	185	180	370	2.3
	8	ø10	2	80	175	175	0.7
	9	ø6	61	20 / 20	94	6110	13.6
						Total+5% (kg)	61.5 Ø6: 13.6 Ø10: 5.2 Ø12: 42.7
Pórticos 4+Pórticos 9+Pórticos 14+Pórticos 19+Pórticos 24	1	ø12	4	148	340	1360	12.1
	2	ø12	4	130	410	1640	14.6
	3	ø12	4	240	410	820	7.3
	4	ø12	4	240	410	820	7.3
	5	ø10	2	80	155	155	0.6
	6	ø10	2	190	190	380	2.3
	7	ø10	2	190	190	380	2.3
	8	ø6	52	20 / 20	94	4700	10.4
						Total+5% (kg)	57.0 Ø6: 10.4 Ø10: 5.2 Ø12: 41.4
Pórticos 15	1	ø12	4	148	340	1360	12.1
	2	ø12	4	130	430	1720	15.4
	3	ø16	2	210	230	460	2.3
	4	ø12	2	210	210	420	3.7
	5	ø12	4	370	370	1480	13.2
	6	ø12	4	380	380	1520	13.5
	7	ø12	2	360	360	720	6.4
	8	ø10	2	80	155	155	0.6
	9	ø10	2	190	190	380	2.3
	10	ø10	2	140	135	270	0.8
	11	ø10	4	210	205	820	4.5
	12	ø10	2	80	155	155	0.6
	13	ø6	154	20 / 20	94	14476	32.1
						Total+5% (kg)	100.8 Ø6: 32.1 Ø10: 20.4 Ø12: 51.3
Pórticos 16	1	ø12	4	148	460	1840	16.4
	2	ø12	4	130	430	1720	15.3
	3	ø12	4	240	430	860	7.6
	4	ø12	4	240	430	860	7.6
	5	ø10	2	80	155	155	0.6
	6	ø10	2	190	190	380	2.3
	7	ø10	2	190	190	380	2.3
	8	ø6	52	20 / 20	94	4700	10.4
						Total+5% (kg)	57.5 Ø6: 10.4 Ø10: 5.2 Ø12: 41.9
Pórticos 20	1	ø12	4	148	340	1360	12.1
	2	ø12	4	130	410	1640	14.6
	3	ø12	4	240	410	820	7.3
	4	ø12	4	240	410	820	7.3
	5	ø10	2	80	155	155	0.6
	6	ø10	2	190	190	380	2.3
	7	ø10	2	190	190	380	2.3
	8	ø6	52	20 / 20	94	4700	10.4
						Total+5% (kg)	57.0 Ø6: 10.4 Ø10: 5.2 Ø12: 41.4
Pórticos 15	1	ø12	4	148	340	1360	12.1
	2	ø12	4	130	430	1720	15.4
	3	ø16	2	210	230	460	2.3
	4	ø12	2	210	210	420	3.7
	5	ø12	4	370	370	1480	13.2
	6	ø12	4	380	380	1520	13.5
	7	ø12	2	360	360	720	6.4
	8	ø10	2	80	155	155	0.6
	9	ø10	2	190	190	380	2.3
	10	ø10	2	140	135	270	0.8
	11	ø10	4	210	205	820	4.5
	12	ø10	2	80	155	155	0.6
	13	ø6	154	20 / 20	94	14476	32.1
						Total+5% (kg)	100.8 Ø6: 32.1 Ø10: 20.4 Ø12: 51.3
Pórticos 16	1	ø12	4	148	460	1840	16.4
	2	ø12	4	130	430	1720	15.3
	3	ø12	4	240	430	860	7.6
	4	ø12	4	240	430	860	7.6
	5	ø10	2	80	155	155	0.6
	6	ø10	2	190	190	380	2.3
	7	ø10	2	190	190	380	2.3
	8	ø6	52	20 / 20	94	4700	10.4
						Total+5% (kg)	57.0 Ø6: 10.4 Ø10: 5.2 Ø12: 41.4
Pórticos 17	1	ø12	4	148	340	1360	12.1
	2	ø12	4	130	430	1720	15.4
	3	ø12	4	240	240	960	8.5
	4	ø12	4	370	370	1480	13.2
	5	ø12	4	380	380	1520	13.5
	6	ø12	2	360	360	720	6.4
	7	ø10	2	80	155	155	0.6
	8	ø10	2	220	220	440	2.8
	9	ø10	2	190	190	380	2.3
	10	ø10	4	210	205	820	4.5
	11	ø10	2	80	155	155	0.6
	12	ø6	154	20 / 20	94	14476	32.1
						Total+5% (kg)	100.8 Ø6: 32.1 Ø10: 20.4 Ø12: 51.3

Ø6:	32.1
Ø10:	20.4
Ø12:	51.3
Ø16:	12.5
Ø20:	12.9
Total:	129.2

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

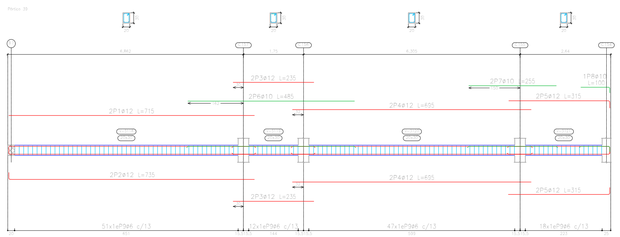
DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

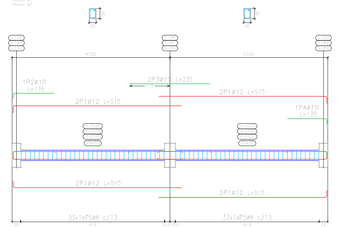
PLANOS ESTRUCTURALES	**PLANO VIGAS DE H° A°**

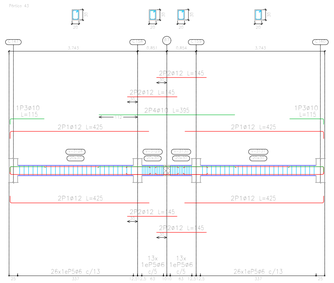
POR: GONZALO MARIO CASTELLÓN SÁNCHEZ	**UBICACIÓN:** ENTRE RÍOS - TARIJA - BOLIVIA	**LAMINA:**
V°B°:	**FECHA:** JUNIO - 2025	**28/36**
	ESCALA: INDICADA	

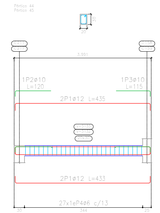
PLANO VIGAS DE H° A°

ESC. 1:75

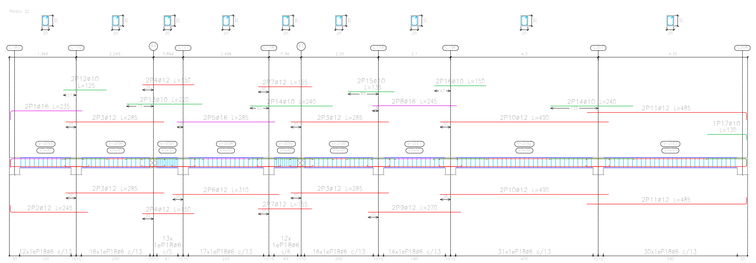


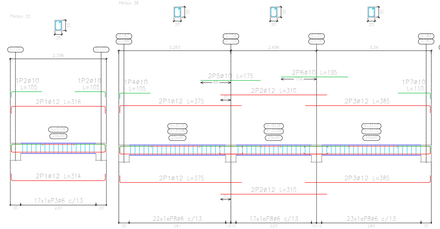


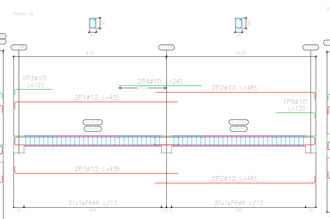


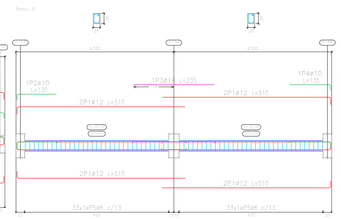


Elemento	Pos.	Diám.	No.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 32	1	ø16	2	200	235	470	7.4
	2	ø12	2	240	240	480	4.4
	3	ø12	8	280	280	2240	20.2
	4	ø12	4	150	150	600	5.5
	5	ø16	2	280	280	560	8.8
	6	ø12	4	150	150	600	5.5
	7	ø12	4	150	150	600	5.5
	8	ø16	2	245	245	490	7.7
	9	ø12	2	270	270	540	4.8
	10	ø12	8	420	420	3360	17.4
	11	ø12	8	445	445	3560	17.7
	12	ø10	2	125	125	250	1.5
	13	ø10	2	220	220	440	2.7
	14	ø10	4	240	240	960	5.9
	15	ø10	2	135	135	270	1.7
	16	ø10	2	150	150	300	1.8
	17	ø10	2	110	110	220	0.8
	18	ø6	191	30	94	18134	33.4
					Total ø6:		16.4
Pórtico 33	1	ø12	8	414	414	3312	17.7
	2	ø10	2	80	105	210	1.3
	3	ø6	112	30	94	10528	5.8
					Total ø6:		17.1
Pórtico 34/Pórtico 39	1	ø12	10	414	375	3750	16.3
	2	ø12	8	245	245	1960	17.4
	3	ø12	4	90	140	560	1.5
	4	ø10	2	80	100	200	0.6
	5	ø10	2	170	170	340	2.1
	6	ø10	2	150	150	300	2.4
	7	ø10	2	50	110	220	0.1
	8	ø6	93	30	94	8834	12.6
					Total ø6:		30.2
Pórtico 36	1	ø12	4	414	435	1740	17.4
	2	ø12	4	445	445	1780	17.7
	3	ø10	2	125	125	250	0.9
	4	ø10	2	240	240	480	3.0
	5	ø10	2	150	150	300	0.6
	6	ø6	91	30	94	8554	12.1
					Total ø6:		30.2
Pórtico 37	1	ø12	8	465	610	4880	34.3
	2	ø10	2	150	150	300	0.8
	3	ø10	2	230	230	460	3.1
	4	ø10	2	150	150	300	0.9
	5	ø6	136	30	94	12772	18.1
					Total ø6:		18.1
Pórtico 38	1	ø12	2	710	710	1420	12.1
	2	ø12	2	755	755	1510	13.1
	3	ø12	14	240	240	3360	29.7
	4	ø12	14	490	490	6860	60.6
	5	ø12	4	150	150	600	5.3
	6	ø10	2	480	510	1020	6.3
	7	ø10	2	250	250	500	3.1
	8	ø10	2	150	150	300	0.9
	9	ø6	128	30	94	12032	26.7
					Total ø6:		26.7
Pórtico 40/Pórtico 41/Pórtico 42	1	ø12	8	680	610	4880	34.3
	2	ø10	2	110	150	300	0.8
	3	ø10	2	240	230	460	2.9
	4	ø10	2	150	150	300	0.9
	5	ø6	136	30	94	12772	15.8
					Total ø6:		15.8
					Total ø12:		141.1
					Total ø10:		17.7
Pórtico 43	1	ø12	8	454	425	3400	30.2
	2	ø12	2	145	145	290	2.6
	3	ø10	2	110	110	220	1.4
	4	ø10	2	90	90	180	0.9
	5	ø6	78	30	94	7332	16.3
					Total ø6:		16.3
Pórtico 44/Pórtico 45	1	ø12	8	501	435	3480	30.9
	2	ø10	2	124	120	240	0.7
	3	ø10	2	90	110	220	0.7
	4	ø6	57	30	94	5358	5.4
					Total ø6:		5.4
					Total ø12:		62.1
					Total ø10:		18.4
					ø6:		133.8
					ø10:		18.4
					ø12:		1074.4
					ø16:		20.4
					Total:		1248.0









PLANTA 3 – CONT. SALA ESTAR
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

LAMINA: 29/36

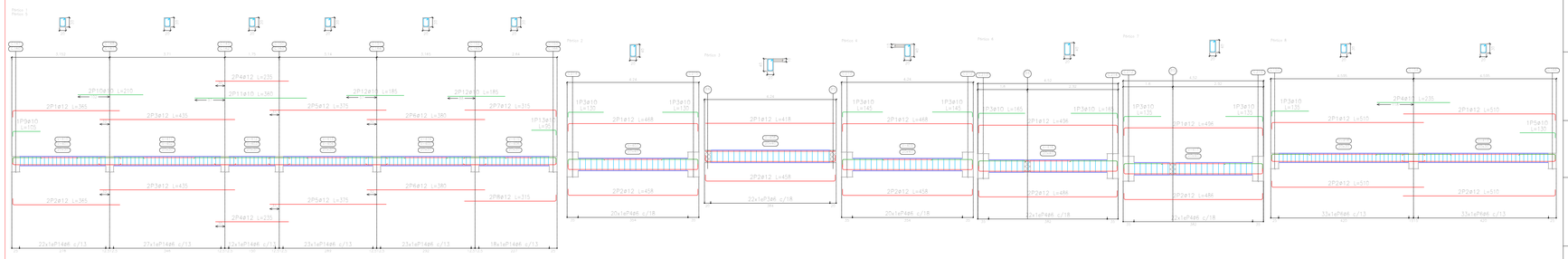
V°B°:

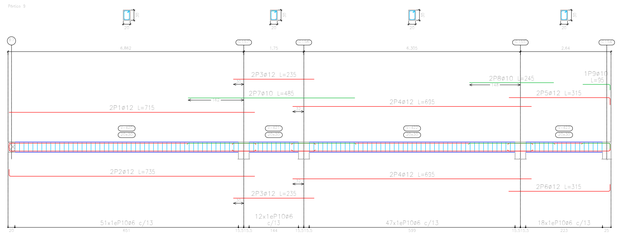
FECHA: JUNIO - 2025

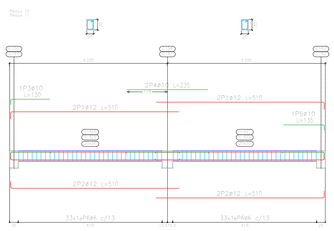
ESCALA: INDICADA

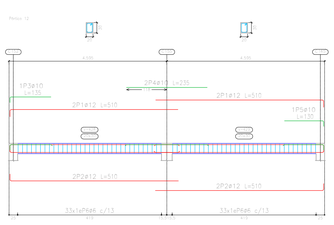
PLANO VIGAS DE H° A°

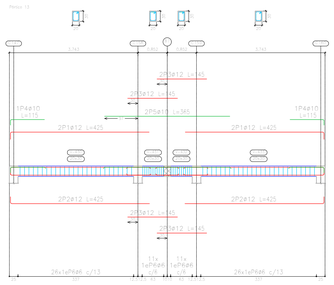
ESC. 1:75











Resumen Acero Plano de pórticos		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	793,9	190	
	ø10	107,7	72	
	ø12	549,8	527	789

PLANTA 4 – MIRADOR
Despiece de vigas
Hormigón: H-21
Acero en barras: AH-500
Acero en estribos: AH-500
Escala pórticos 1:75
Escala secciones 1:75
Escala huecos 1:75

Elemento	Pos.	Diám.	Nº.	Esquema (cm)	Long. (cm)	Total (cm)	AH-500 (kg)
Pórtico 1 (Pórtico 1)	1	ø12	2	342	350	700	6,2
	2	ø12	2	342	350	700	6,2
	3	ø12	4	435	435	1740	15,4
	4	ø12	4	235	235	940	8,3
	5	ø12	4	375	375	1500	13,3
	6	ø12	4	385	385	1520	13,5
	7	ø12	2	315	315	630	5,6
	8	ø12	2	315	315	630	5,6
	9	ø10	2	105	105	210	0,6
	10	ø10	2	210	210	420	2,6
	11	ø10	2	185	185	370	4,6
	12	ø10	4	185	185	740	4,6
	13	ø10	2	35	35	70	0,4
	14	ø6	103	35 / 15	50	11700	26,1
					Total=kg		107,7 / 95,4
Pórtico 2	1	ø12	2	418	418	836	7,3
	2	ø12	2	418	418	836	7,3
	3	ø10	2	145	145	290	1,4
	4	ø6	55	35 / 15	114	2280	5,1
					Total=kg		14,9
Pórtico 3	1	ø12	2	418	418	836	7,4
	2	ø12	2	418	418	836	7,4
	3	ø6	55	35 / 15	114	2508	5,6
					Total=kg		22,4
Pórtico 4	1	ø12	2	418	418	836	7,3
	2	ø12	2	418	418	836	7,3
	3	ø10	2	145	145	290	1,8
	4	ø6	55	35 / 15	114	2280	5,1
					Total=kg		19,2
Pórtico 5	1	ø12	2	446	446	992	8,8
	2	ø12	2	446	446	992	8,8
	3	ø10	2	145	145	290	1,7
	4	ø6	55	35 / 15	114	2508	5,6
					Total=kg		19,7
Pórtico 6	1	ø12	4	484	435	2140	18,1
	2	ø12	4	484	435	2140	18,1
	3	ø10	2	135	135	270	0,8
	4	ø10	2	235	235	470	2,7
	5	ø10	2	135	135	270	0,8
	6	ø6	54	35 / 15	114	6204	13,8
					Total=kg		53,3
Pórtico 7	1	ø12	4	484	435	2140	18,1
	2	ø12	4	484	435	2140	18,1
	3	ø10	2	135	135	270	0,8
	4	ø10	2	235	235	470	2,7
	5	ø10	2	135	135	270	0,8
	6	ø6	54	35 / 15	114	6204	13,8
					Total=kg		53,3
Pórtico 8	1	ø12	4	484	435	2140	18,1
	2	ø12	4	484	435	2140	18,1
	3	ø10	2	135	135	270	0,8
	4	ø10	2	235	235	470	2,7
	5	ø10	2	135	135	270	0,8
	6	ø6	54	35 / 15	114	6204	13,8
					Total=kg		53,3
Pórtico 9	1	ø12	2	715	715	1430	12,7
	2	ø12	2	715	715	1430	12,7
	3	ø12	4	735	735	3940	35,0
	4	ø12	4	635	635	2540	22,5
	5	ø12	2	635	635	1270	5,6
	6	ø12	2	635	635	1270	5,6
	7	ø10	2	485	485	970	6,0
	8	ø10	2	245	245	490	3,0
	9	ø10	2	95	95	190	0,6
	10	ø6	104	35 / 15	114	12010	26,7
					Total=kg		114,9
Pórtico 10 (Pórtico 11)	1	ø12	4	485	435	2140	18,1
	2	ø12	4	485	435	2140	18,1
	3	ø10	2	135	135	270	0,8
	4	ø10	2	235	235	470	2,7
	5	ø10	2	135	135	270	0,8
	6	ø6	54	35 / 15	114	6204	13,8
					Total=kg		53,3 / 53,4
Pórtico 12	1	ø12	4	484	435	2140	18,1
	2	ø12	4	484	435	2140	18,1
	3	ø10	2	135	135	270	0,8
	4	ø10	2	235	235	470	2,7
	5	ø10	2	135	135	270	0,8
	6	ø6	54	35 / 15	114	6204	13,8
					Total=kg		53,3
Pórtico 13	1	ø12	4	484	435	2140	18,1
	2	ø12	4	485	435	2140	18,1
	3	ø12	2	145	145	1140	10,1
	4	ø10	2	135	135	270	1,4
	5	ø10	2	145	145	290	1,5
	6	ø6	54	35 / 15	114	6204	13,8
					Total=kg		64,7
						ø6:	1000 / 1000
						ø10:	107,7 / 107,7
						ø12:	549,8 / 549,1
						Total:	789 / 789,1

UNIVERSIDAD AUTÓNOMO JUAN MISAEL SARACHO
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CARRERA DE INGENIERÍA CIVIL

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO VIGAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

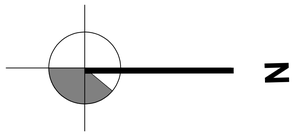
ESCALA: INDICADA

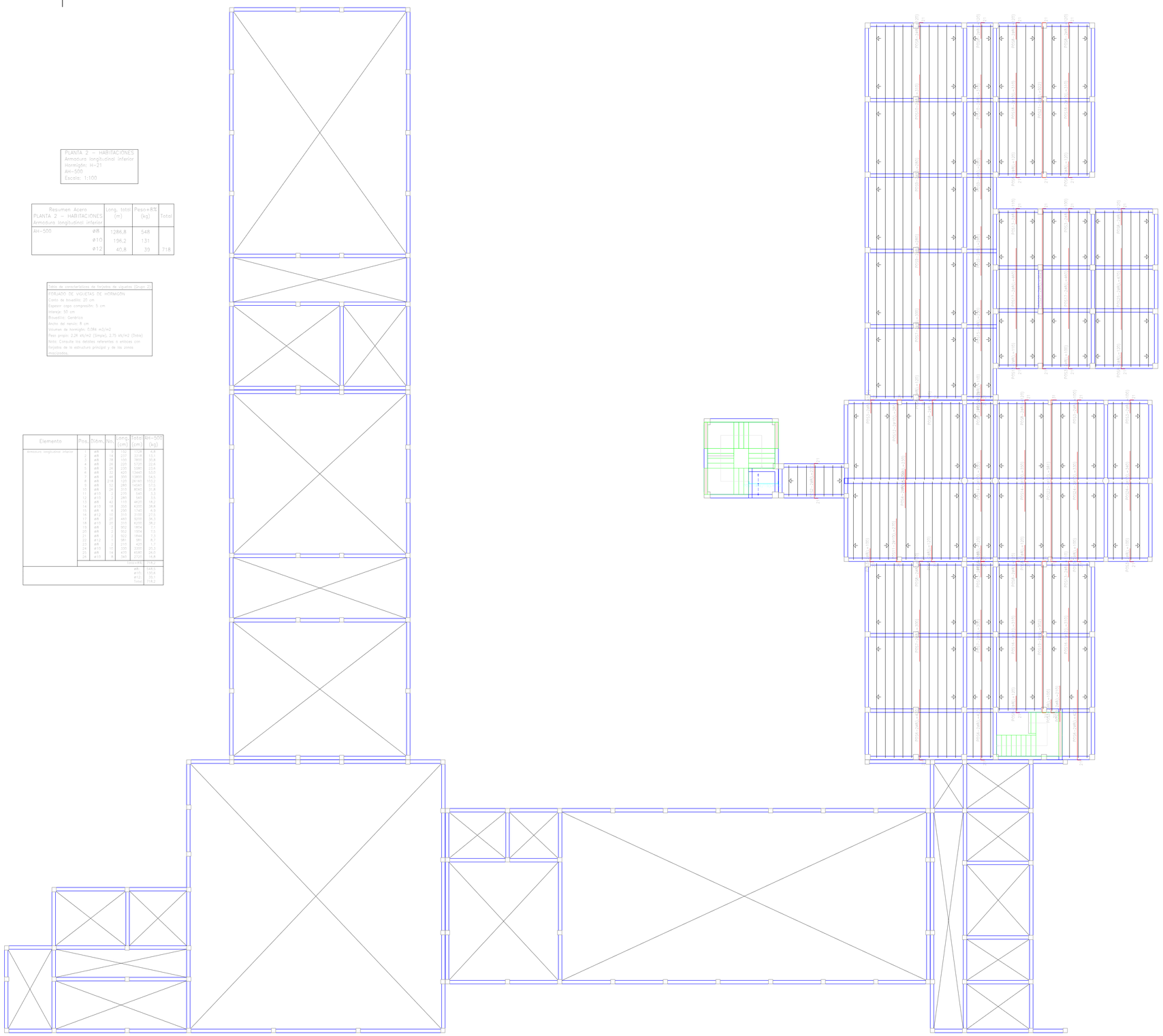
V°B°:

LAMINA: 30/36

PLANO DE LOSA ALIVIANADA H=25 CM

ESC. 1:100





PLANTA 2 – HABITACIONES
Armadura longitudinal inferior
Hormigón: H=21
AH-500
Escala: 1:100

Resumen Acero PLANTA 2 – HABITACIONES Armadura longitudinal inferior		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø8	1286,8	548	
	ø10	196,2	131	
	ø12	40,8	39	718

Tabla de características de forjados de viguetas (Grupo 2)

FORJADO DE VIGUETAS DE HORMIGÓN
Canto de bovedilla: 20 cm
Espesor capa compresión: 5 cm
Intereje: 50 cm
Bovedilla: Cerámica
Ancho del nervio: 8 cm
Volumen de hormigón: 0,064 m3/m2
Peso propio: 2,24 kN/m2 (Simple), 2,75 kN/m2 (Doble)
Nota: Consulte los detalles referentes a enlaces con forjados de la estructura principal y de las zonas macizadas.

Elemento	Pos.	Diám.	Nº.	Long. (cm)	Total (cm)	AH-500 (kg)
Armadura longitudinal inferior	1	ø8	14	237	3318	13,1
	2	ø8	14	137	1918	7,6
	3	ø8	26	305	7930	31,4
	4	ø8	26	220	5720	22,6
	5	ø8	31	425	13175	52,0
	6	ø8	44	305	13420	53,0
	7	ø8	44	300	13800	54,5
	8	ø8	318	520	165360	652,2
	9	ø8	32	490	15680	61,9
	10	ø8	35	390	13650	53,8
	11	ø8	32	510	16320	64,4
	12	ø10	2	270	540	0,3
	13	ø10	14	300	4200	16,8
	14	ø8	14	390	5460	21,5
	15	ø12	2	316	632	0,5
	16	ø8	20	490	9800	38,7
	17	ø10	2	310	620	0,4
	18	ø8	2	302	604	2,4
	19	ø8	2	902	1804	7,1
	20	ø8	1	922	1844	7,3
	21	ø8	2	211	422	1,7
	22	ø8	16	211	3376	13,3
	23	ø10	16	206	3296	20,3
	24	ø8	14	435	6090	24,0
	25	ø10	14	195	2730	16,8
				Total AH-500		1366,7
				ø8		1247,1
				ø10		202,0
				ø12		39,1
				Total		1718,2

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO DE LOSA ALIVIANADA H=25 CM

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

V°B°:

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

ESCALA: INDICADA

LAMINA: 31/36

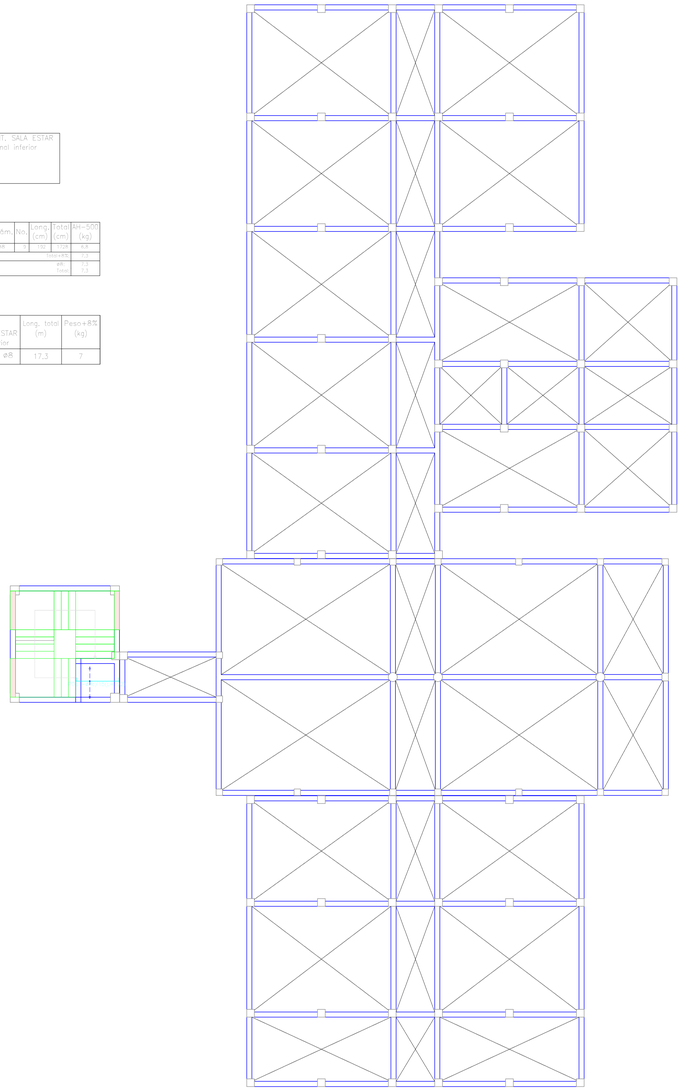
PLANO DE LOSAS DE H° A°

ESC. 1:100

PLANTA 3 – CONT. SALA ESTAR
Armadura longitudinal inferior
Hormigón: H-21
AH-500
Escala: 1:100

Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
Armadura longitudinal inferior	1	ø8	9	192	1728	6.8
					Total ø8	6.8
					ø8	7.2
					Total	7.2

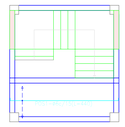
Resumen Acero PLANTA 3 – CONT. SALA ESTAR Armadura longitudinal inferior		Long. total (m)	Peso+8% (kg)
AH-500	ø8	17.3	7

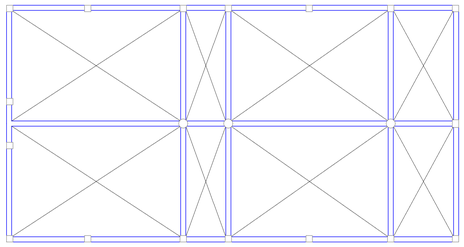


PLANTA 4 – MIRADOR
Armadura longitudinal inferior
Hormigón: H-21
AH-500
Escala: 1:100

Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
Armadura longitudinal inferior	1	ø6	12	197	2364	4.2
					Total ø6	4.2
					ø6	5.1
					Total	5.1

Resumen Acero PLANTA 4 – MIRADOR Armadura longitudinal inferior		Long. total (m)	Peso+8% (kg)
AH-500	ø6	39.6	9

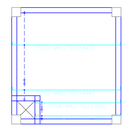




PLANTA 5 – BASE TANQUE ELEVADO
Armadura longitudinal inferior
Hormigón: H-21
AH-500
Escala: 1:100

Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
Armadura longitudinal inferior	1	ø6	12	197	2364	4.2
	2	ø6	2	446	2230	4.4
	3	ø6	2	400	1400	2.1
	4	ø6	2	355	710	0.3
					Total ø6	10.0
					ø6	10.4
					ø6	12.6
					Total	14.0

Resumen Acero PLANTA 5 – BASE TANQUE ELEVADO Armadura longitudinal inferior		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø6	97.6	23	
	ø6	29.4	13	36



UNIVERSIDAD AUTÓNOMO JUAN MISAEL SARACHO
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CARRERA DE INGENIERÍA CIVIL

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO DE LOSAS DE H° A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

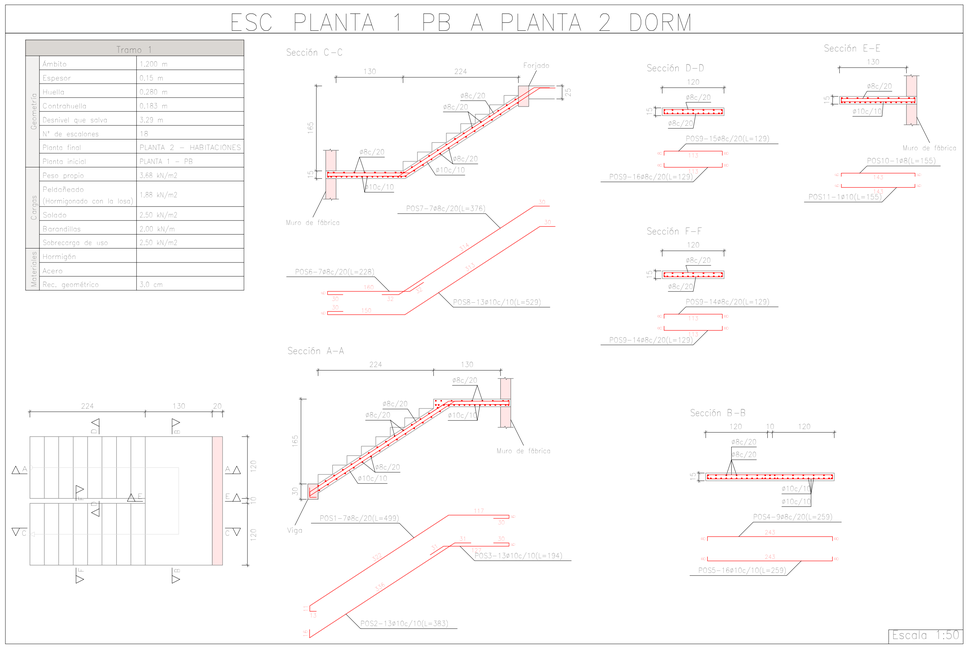
LAMINA: 32/36

V°B°:

FECHA: JUNIO - 2025

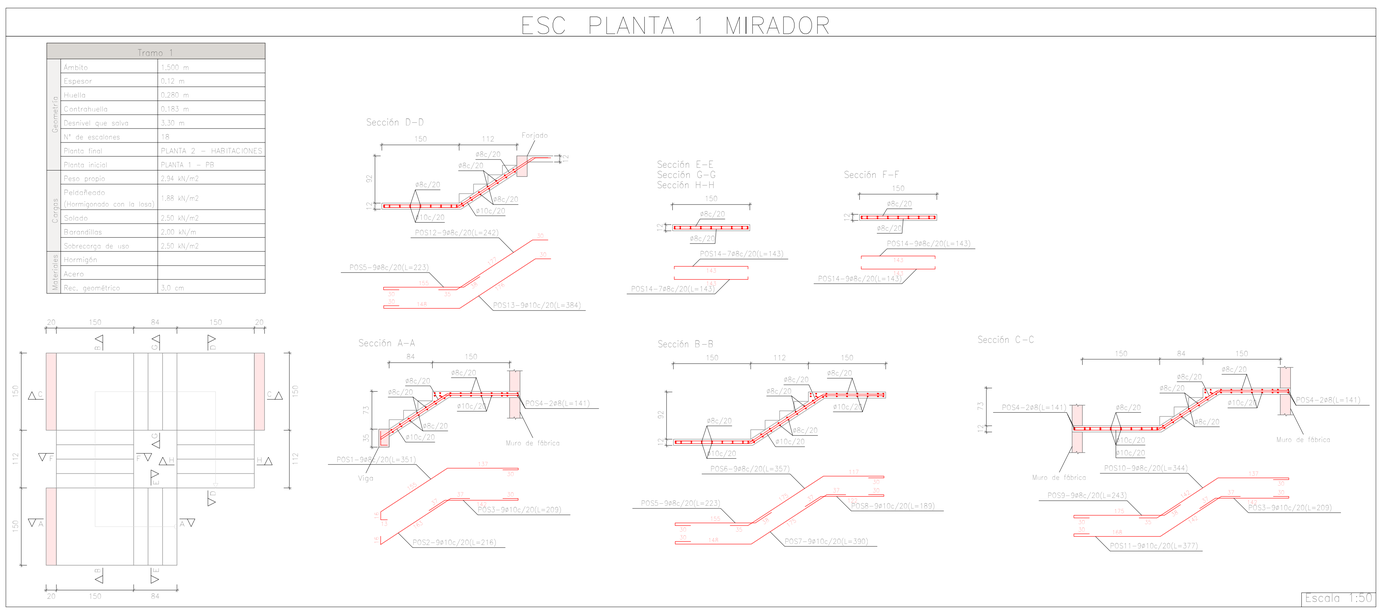
ESCALA: INDICADA

PLANO ESCALERAS DE H° A°



Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
ESC PLANTA 1 PB A PLANTA 2 DORM–Tramo 1	1	ø8	7	499	3493	13,8
	2	ø10	13	383	4979	30,7
	3	ø10	13	194	2522	15,5
	4	ø8	9	259	2331	9,2
	5	ø10	16	259	4144	25,5
	6	ø8	7	228	1596	6,3
	7	ø8	7	376	2632	10,4
	8	ø10	13	529	6877	42,4
	9	ø8	32	129	4128	16,3
	10	ø8	1	155	155	0,6
	11	ø10	1	155	155	0,9
					Total	155,7
					ø8	139,3
					ø10	16,4
					Total	155,7

Resumen Acero ESC PLANTA 1 PB A PLANTA 2 DORM		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø8	178,2	76	200
	ø10	186,8	124	



Elemento	Pos.	Diám.	No.	Long. (cm)	Total (cm)	AH-500 (kg)
ESC PLANTA 1 MIRADOR –Tramo 1	1	ø8	7	351	2457	9,7
	2	ø10	9	216	1944	12,0
	3	ø10	9	209	1882	11,6
	4	ø8	4	141	564	2,2
	5	ø8	9	223	2014	7,9
	6	ø8	9	357	3212	12,7
	7	ø10	9	390	3510	21,6
	8	ø10	9	189	1701	10,5
	9	ø8	9	243	2187	8,6
	10	ø8	9	344	3096	12,2
	11	ø10	9	377	3393	20,9
	12	ø8	9	242	2178	8,6
	13	ø10	9	384	3456	21,3
	14	ø8	2	143	286	1,1
					Total	134,4
					ø8	115,9
					ø10	118,5
					Total	234,5

Resumen Acero ESC PLANTA 1 MIRADOR		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø8	272,7	116	234
	ø10	177,7	118	

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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES

PLANO ESCALERAS DE H°A°

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

ESCALA: INDICADA

V°B°:

LAMINA: 33/36

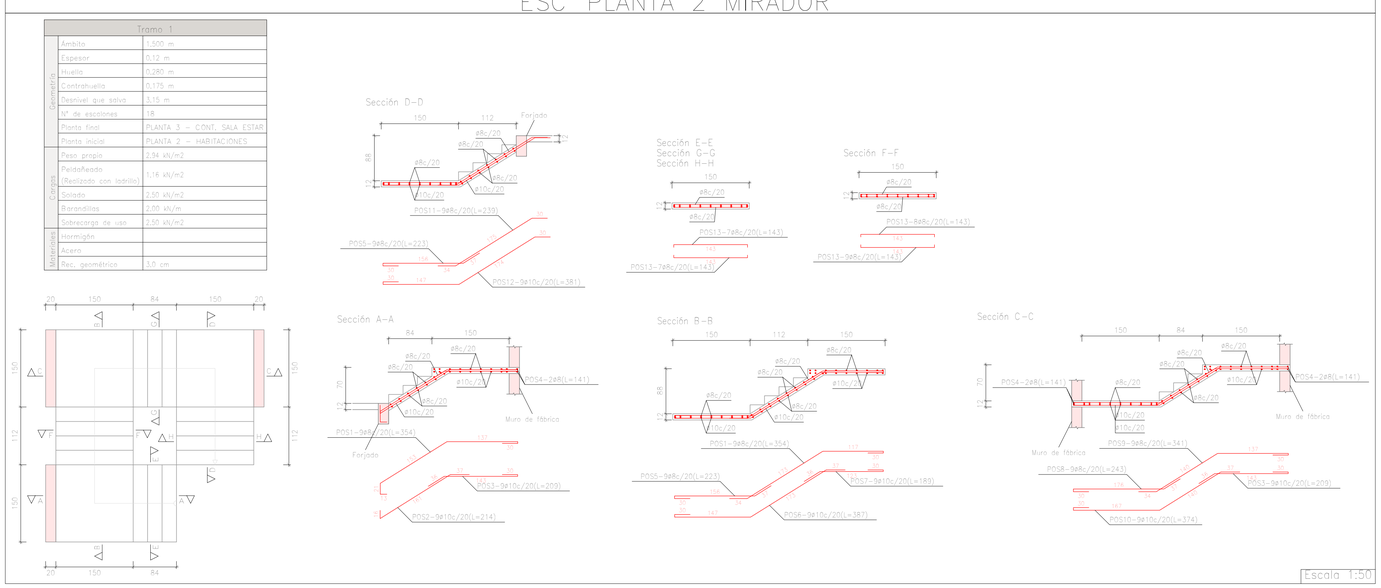
PLANO ESCALERAS DE H° A°

Resumen Acero ESC PLANTA 2 MIRADOR		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø8	270,8	115	
	ø10	176,7	118	233

Elemento	Pos.	Diám.	Nº.	Long. (cm)	Total (cm)	AH-500 (kg)
ESC PLANTA 2 MIRADOR	1	ø8	9	107	963	2,4
-Tramo 1-	2	ø10	18	214	3852	31,3
	3	ø10	18	205	3690	29,9
	4	ø8	18	223	4014	9,9
	5	ø8	18	181	3258	8,0
	6	ø10	9	143	1287	10,5
	7	ø10	9	143	1287	10,5
	8	ø8	9	143	1287	3,2
	9	ø8	9	241	2169	12,1
	10	ø10	9	374	3366	27,4
	11	ø8	9	239	2151	5,3
	12	ø10	9	341	3069	25,1
	13	ø8	9	143	1287	3,2
	14	ø8	40	143	5720	14,1
					TOTAL(kg)	233,0
					ø8	115,2
					ø10	117,8
					Total	233,0

ESC PLANTA 2 MIRADOR

Tramo 1		
Geometría	Ámbito	1,500 m
	Espesor	0,12 m
	Huella	0,280 m
	Contrahuella	0,175 m
	Desnivel que salva	3,15 m
	Nº de escalones	18
	Planta final	PLANTA 3 - CÓNT. SALA ESTAR
	Planta inicial	PLANTA 2 - HABITACIÓNES
Cargas	Peso propio	2,94 kN/m2
	Peldañeado (Realizado con ladrillo)	1,16 kN/m2
	Solado	2,50 kN/m2
	Barandillas	2,00 kN/m
	Sobrecarga de uso	2,50 kN/m2
Materiales	Hormigón	
	Acero	
	Rec. geométrico	3,0 cm

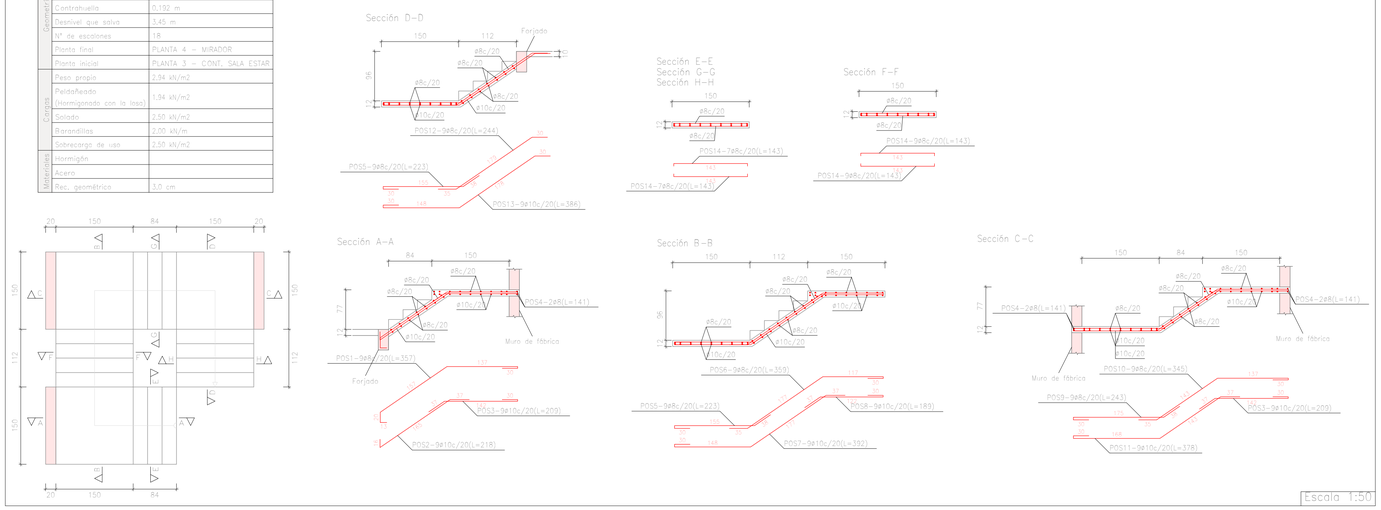


Resumen Acero ESC PLANTA 3 MIRADOR		Long. total (m)	Peso+8% (kg)	Total
AH-500	ø8	273,7	117	
	ø10	178,3	119	236

Elemento	Pos.	Diám.	Nº.	Long. (cm)	Total (cm)	AH-500 (kg)
ESC PLANTA 3 MIRADOR	1	ø8	9	107	963	2,4
-Tramo 1-	2	ø10	18	218	3922	32,1
	3	ø10	18	205	3690	30,2
	4	ø8	18	223	4014	9,9
	5	ø8	18	181	3258	8,0
	6	ø10	9	143	1287	10,5
	7	ø10	9	143	1287	10,5
	8	ø8	9	143	1287	3,2
	9	ø8	9	241	2169	12,1
	10	ø8	9	341	3069	12,1
	11	ø10	9	378	3402	27,9
	12	ø10	9	341	3069	25,1
	13	ø8	9	386	3474	8,5
	14	ø8	40	143	5720	14,1
					TOTAL(kg)	236,0
					ø8	116,7
					ø10	119,3
					Total	236,0

ESC PLANTA 3 MIRADOR

Tramo 1		
Geometría	Ámbito	1,500 m
	Espesor	0,12 m
	Huella	0,280 m
	Contrahuella	0,192 m
	Desnivel que salva	3,45 m
	Nº de escalones	18
	Planta final	PLANTA 4 - MIRADOR
	Planta inicial	PLANTA 3 - CÓNT. SALA ESTAR
Cargas	Peso propio	2,94 kN/m2
	Peldañeado (Hormigonado con la losa)	1,94 kN/m2
	Solado	2,50 kN/m2
	Barandillas	2,00 kN/m
	Sobrecarga de uso	2,50 kN/m2
Materiales	Hormigón	
	Acero	
	Rec. geométrico	3,0 cm



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CARRERA DE INGENIERÍA CIVIL

DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

PLANOS ESTRUCTURALES | **PLANO ESCALERAS DE H°A°**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ

UBICACIÓN: ENTRE RÍOS - TARIJA - BOLIVIA

FECHA: JUNIO - 2025

V°B°:

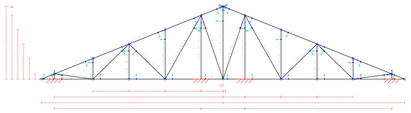
ESCALA: INDICADA

LAMINA: 34/36

PLANO DE CUBIERTAS

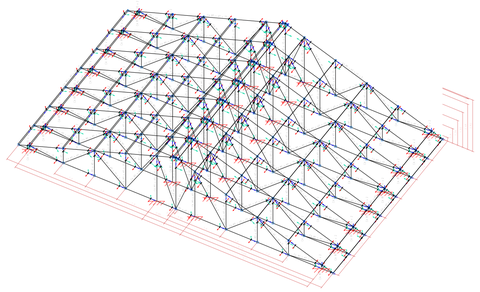
ESC. 1:100

CUBIERTA 1 – BLOQUE 1: 2D: VISTA 2D C1 – B1

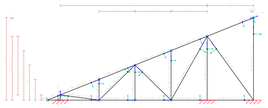


INTERNADO RURAL ENTRE RIOS
CUBIERTA 1 – BLOQUE 1
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 1 – BLOQUE 1: 3D

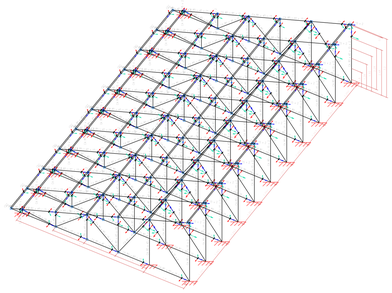


CUBIERTA 2 – BLOQUE 1: 2D: VISTA 2D C2 – B1

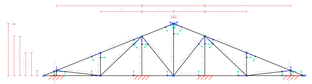


INTERNADO RURAL ENTRE RIOS
CUBIERTA 2 – BLOQUE 1
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 2 – BLOQUE 1: 3D

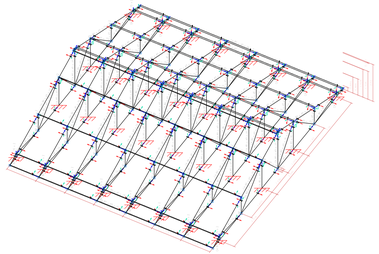


CUBIERTA 3 – BLOQUE 1: 2D: VISTA 2D C3 – B1

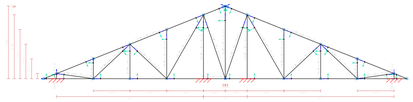


INTERNADO RURAL ENTRE RIOS
CUBIERTA 3 – BLOQUE 1
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 3 – BLOQUE 1: 3D

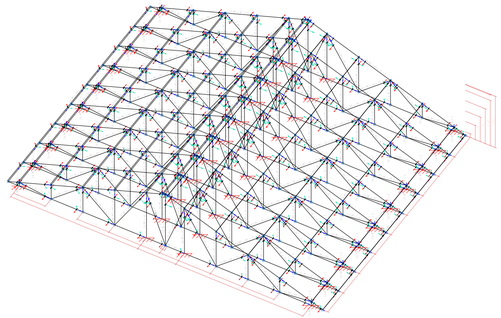


CUBIERTA 4 – BLOQUE 3: 2D: VISTA 2D C4 – B3

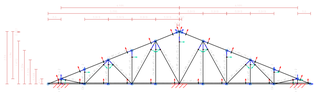


INTERNADO RURAL ENTRE RIOS
CUBIERTA 4 – BLOQUE 3
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 4 – BLOQUE 3: 3D

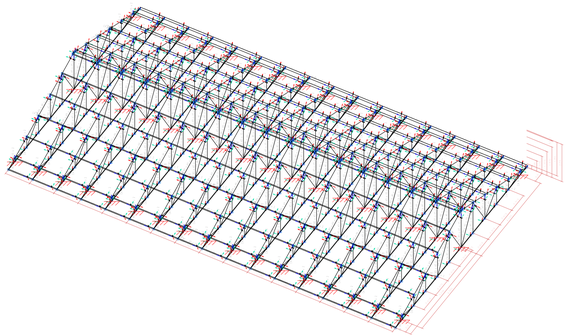


CUBIERTA 5 – BLOQUE 2: 2D: VISTA 2D C5 – B2

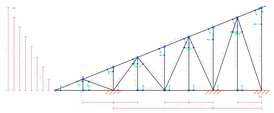


INTERNADO RURAL ENTRE RIOS
CUBIERTA 5 – BLOQUE 2
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 5 – BLOQUE 2: 3D

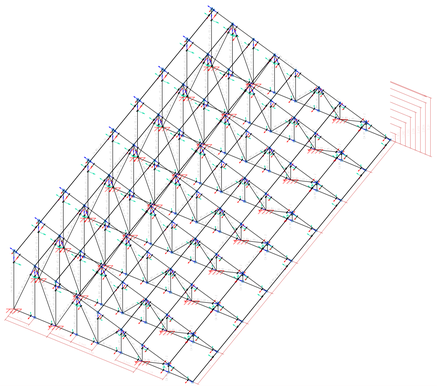


CUBIERTA 6 – BLOQUE 4: 2D: VISTA 2D C6 – B4

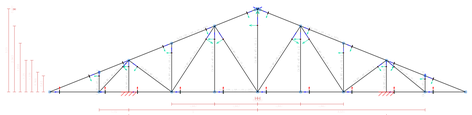


INTERNADO RURAL ENTRE RIOS
CUBIERTA 6 – BLOQUE 4
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 6 – BLOQUE 4: 3D

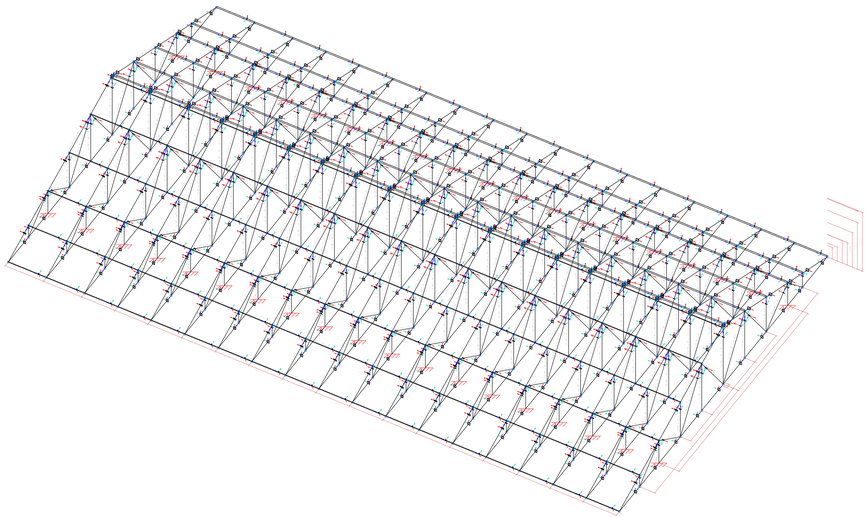


CUBIERTA 7 – BLOQUE 5: 2D: VISTA 2D C7 – B5



INTERNADO RURAL ENTRE RIOS
CUBIERTA 7 – BLOQUE 5
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 7 – BLOQUE 5: 3D



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DISEÑO ESTRUCTURAL - INTERNADO RURAL EN EL MUNICIPIO DE ENTRE RÍOS

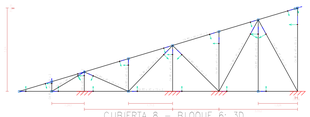
PLANOS ESTRUCTURALES	**PLANO DE CUBIERTAS**

POR: GONZALO MARIO CASTELLÓN SÁNCHEZ	**UBICACIÓN:** ENTRE RÍOS - TARIJA - BOLIVIA	**LAMINA:**
V°B°:	**FECHA:** JUNIO - 2025	35/36
	ESCALA: INDICADA	

PLANO DE CUBIERTAS

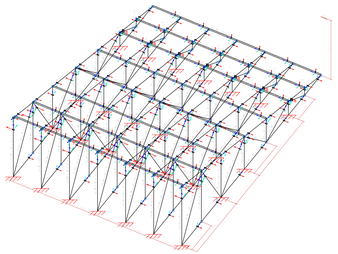
ESC. 1:100

CUBIERTA 8 – BLOQUE 6: 2D: VISTA 2D C8 –B6

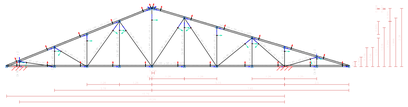


CUBIERTA 8 – BLOQUE 6: 3D

INTERNADO RURAL ENTRE RIOS
CUBIERTA 8 – BLOQUE 6
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

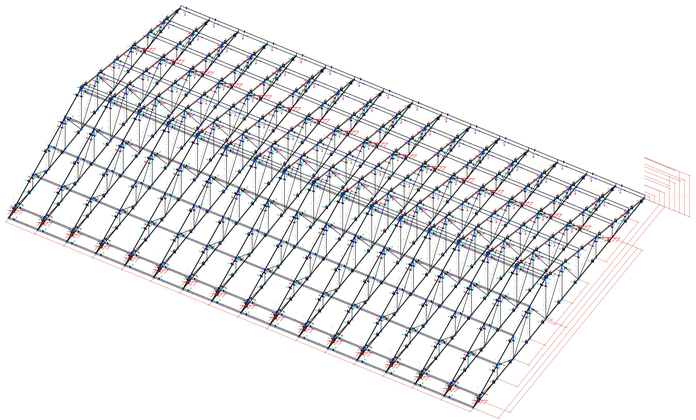


CUBIERTA 9 – BLOQUE 7: 2D: VISTA 2D C9 – B7

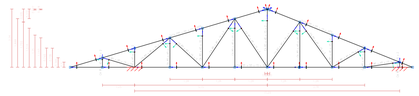


INTERNADO RURAL ENTRE RIOS
CUBIERTA 9 – BLOQUE 7
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100

CUBIERTA 9 – BLOQUE 7: 3D

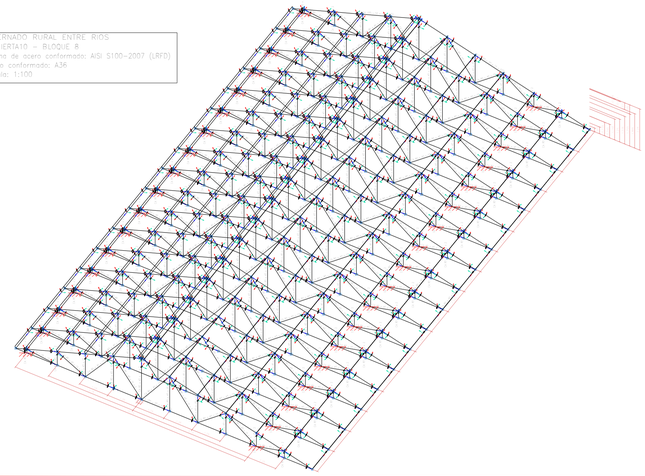


CUBIERTA10 – BLOQUE 8: 2D: VISTA 2D C10 – B8



CUBIERTA10 – BLOQUE 8: 3D

INTERNADO RURAL ENTRE RIOS
CUBIERTA10 – BLOQUE 8
Norma de acero conformado: AISI S100-2007 (LRFD)
Acero conformado: A36
Escala: 1:100



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V°B°:	**FECHA:** JUNIO - 2025	**36/36**
	ESCALA: INDICADA	