

PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ

FACULTAD DE CIENCIAS E INGENIERÍA



**PONTIFICIA
UNIVERSIDAD
CATÓLICA
DEL PERÚ**

**DISEÑO ESTRUCTURAL DE UN EDIFICIO DE CONCRETO
ARMADO DE CINCO PISOS Y TRES SÓTANOS UBICADO EN EL
DISTRITO DE BARRANCO**

PLANOS

Tesis para optar el Título de Ingeniero Civil, que presenta el bachiller:

Minoru Alejandro Afuso Muñoz

ASESOR: César Antonio Huapaya Huapaya

Lima, agosto del 2017

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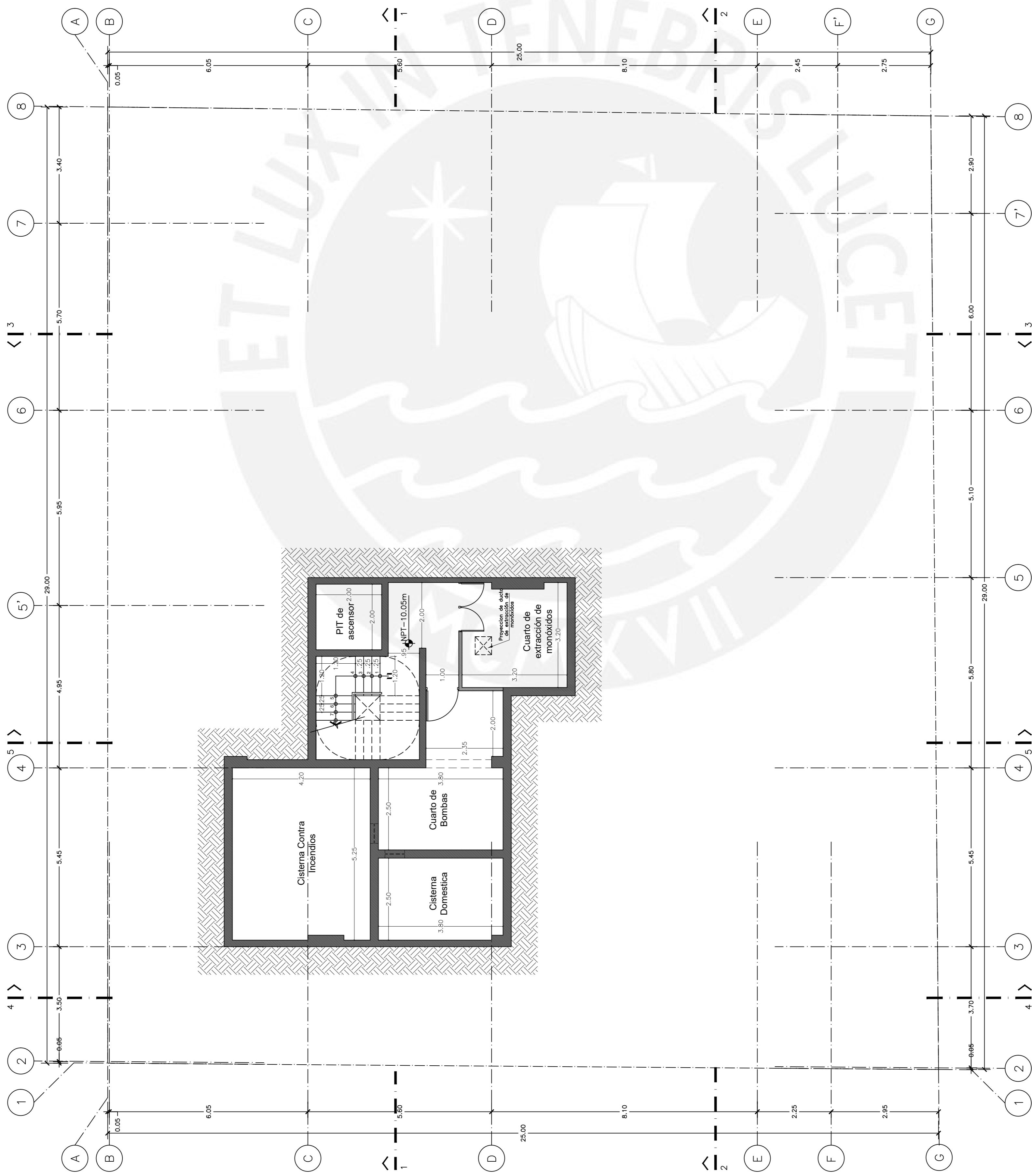
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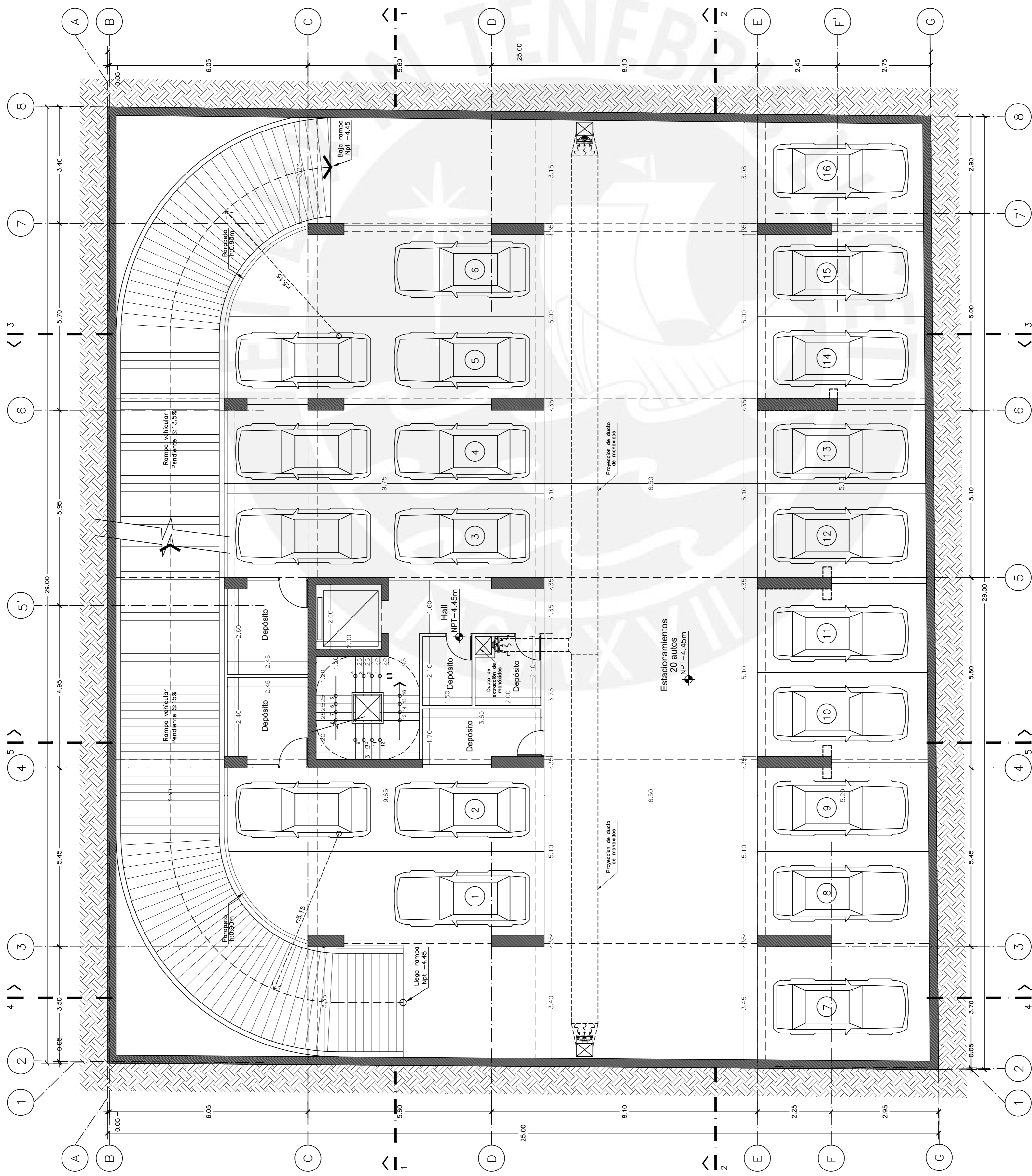
E-20 ESCALERAS



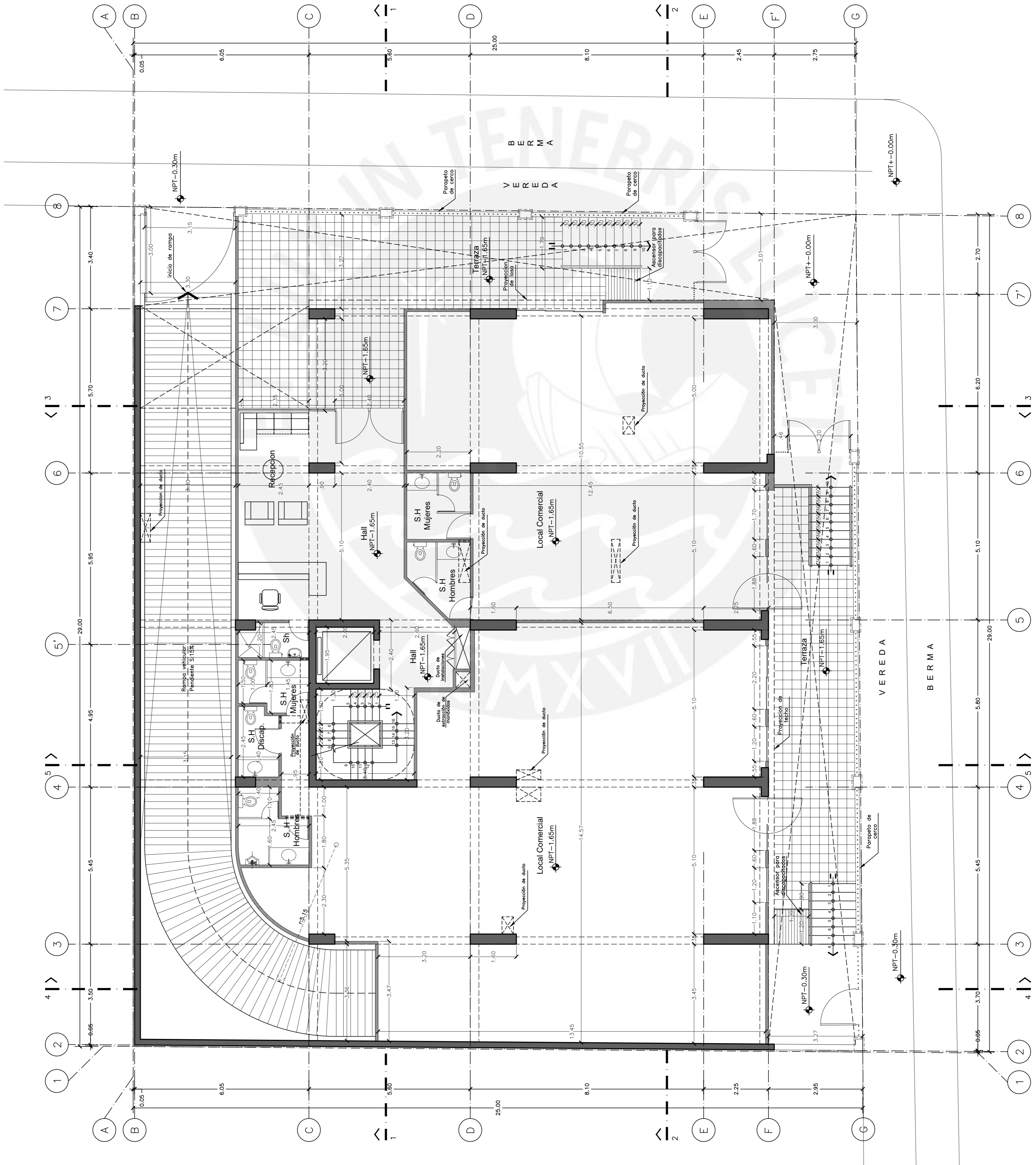
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO :	PLANTA SÓTANO 3
ESCALA	1/75
	A-01



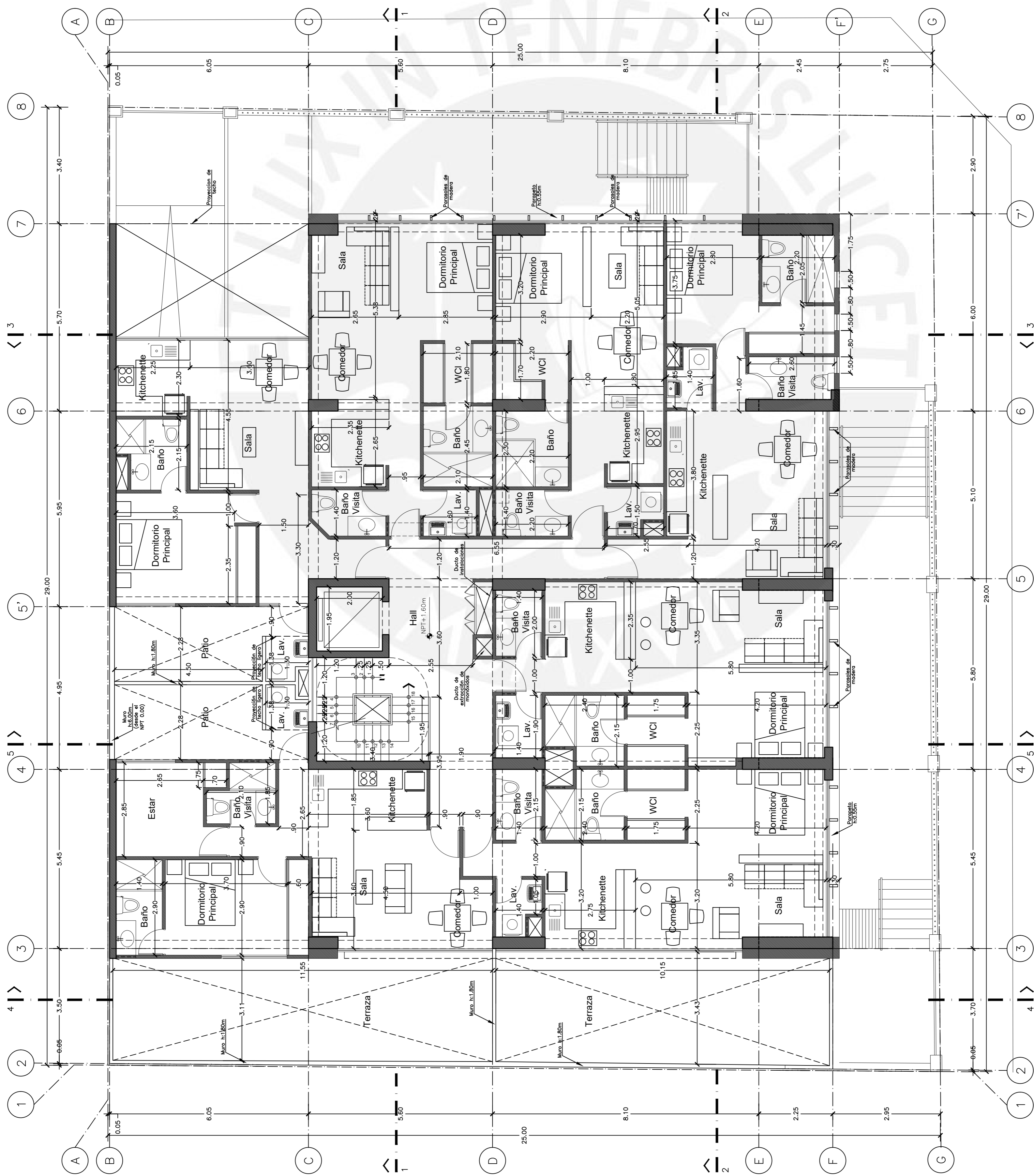
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : PLANTA SÓTANO 2
ESCALA: 1/75
A-02



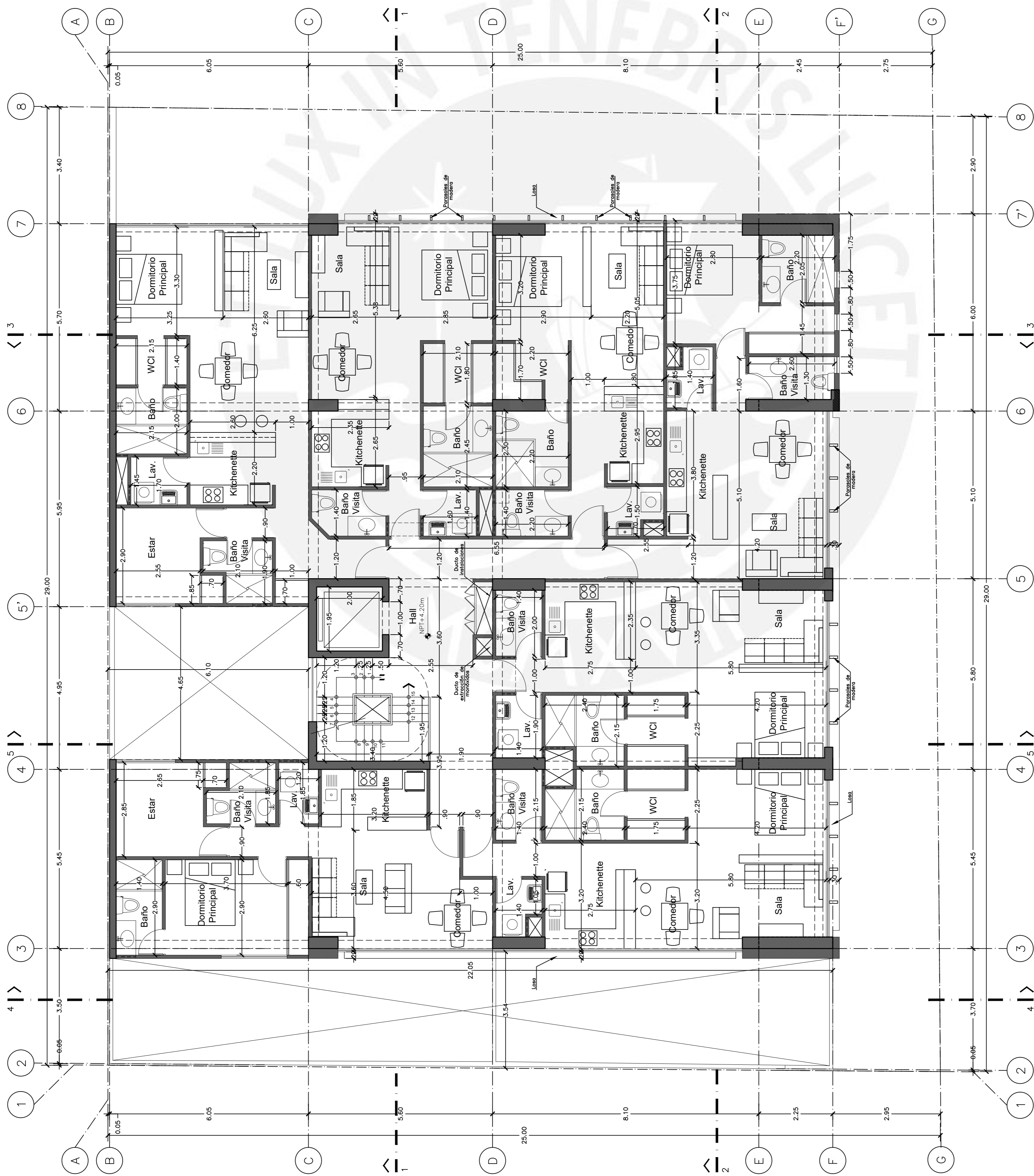
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : PLANTA SÓTANO 1
ESCALA: 1/75
A-03



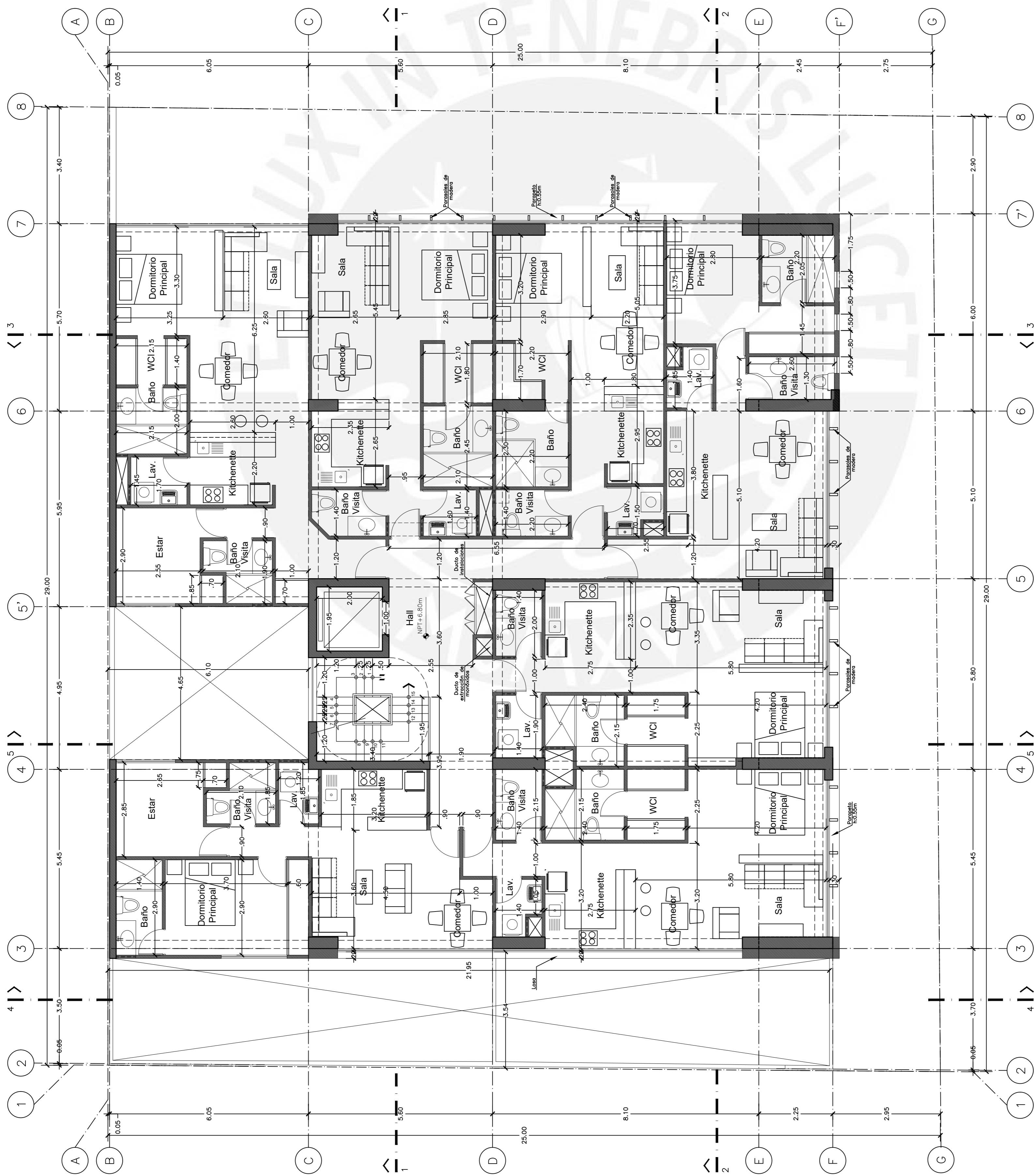
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : PLANTA PISO 1
ESCALA 1/75
A-04



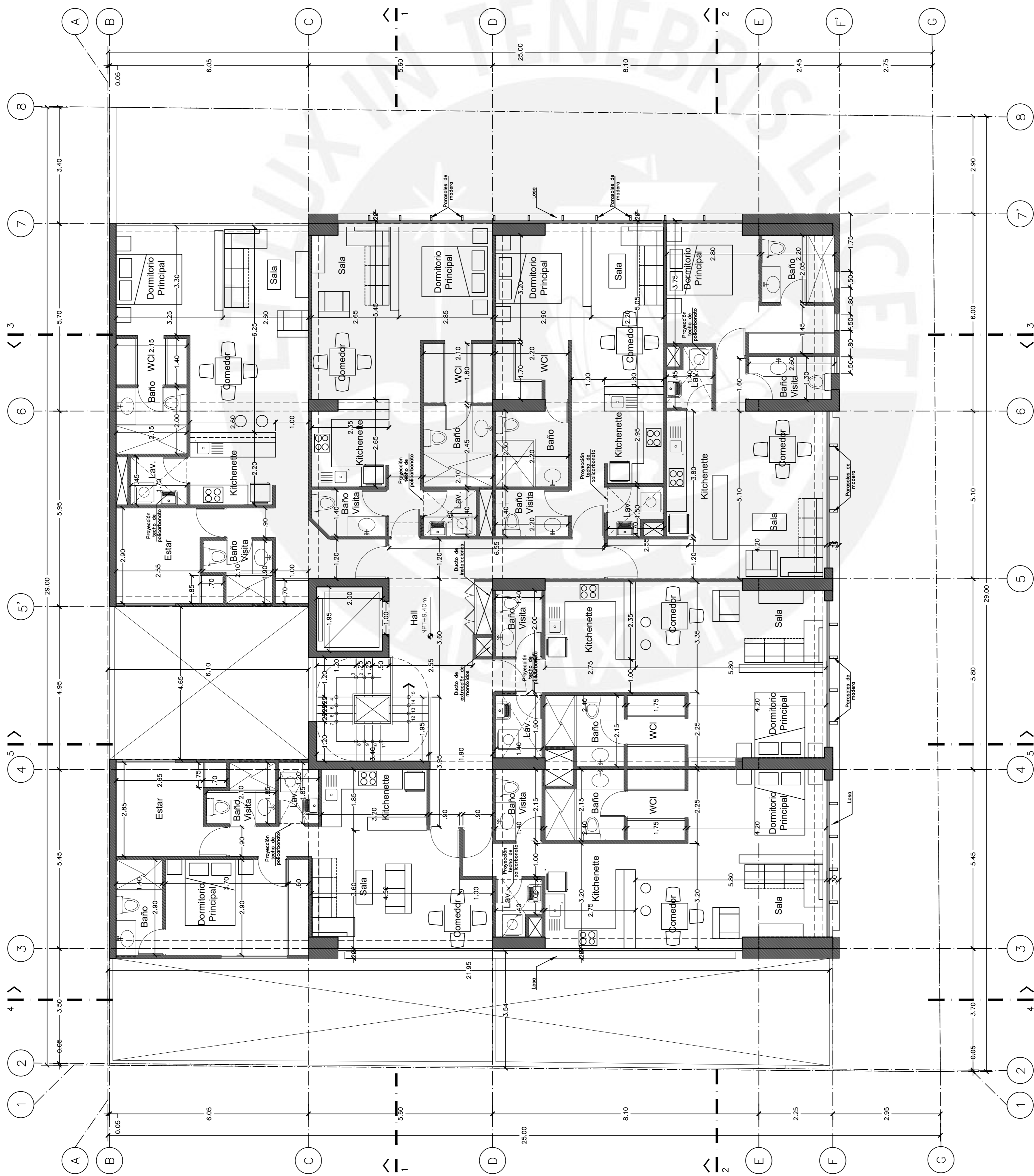
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : PLANTA PISO 2
ESCALA 1/75
A-05



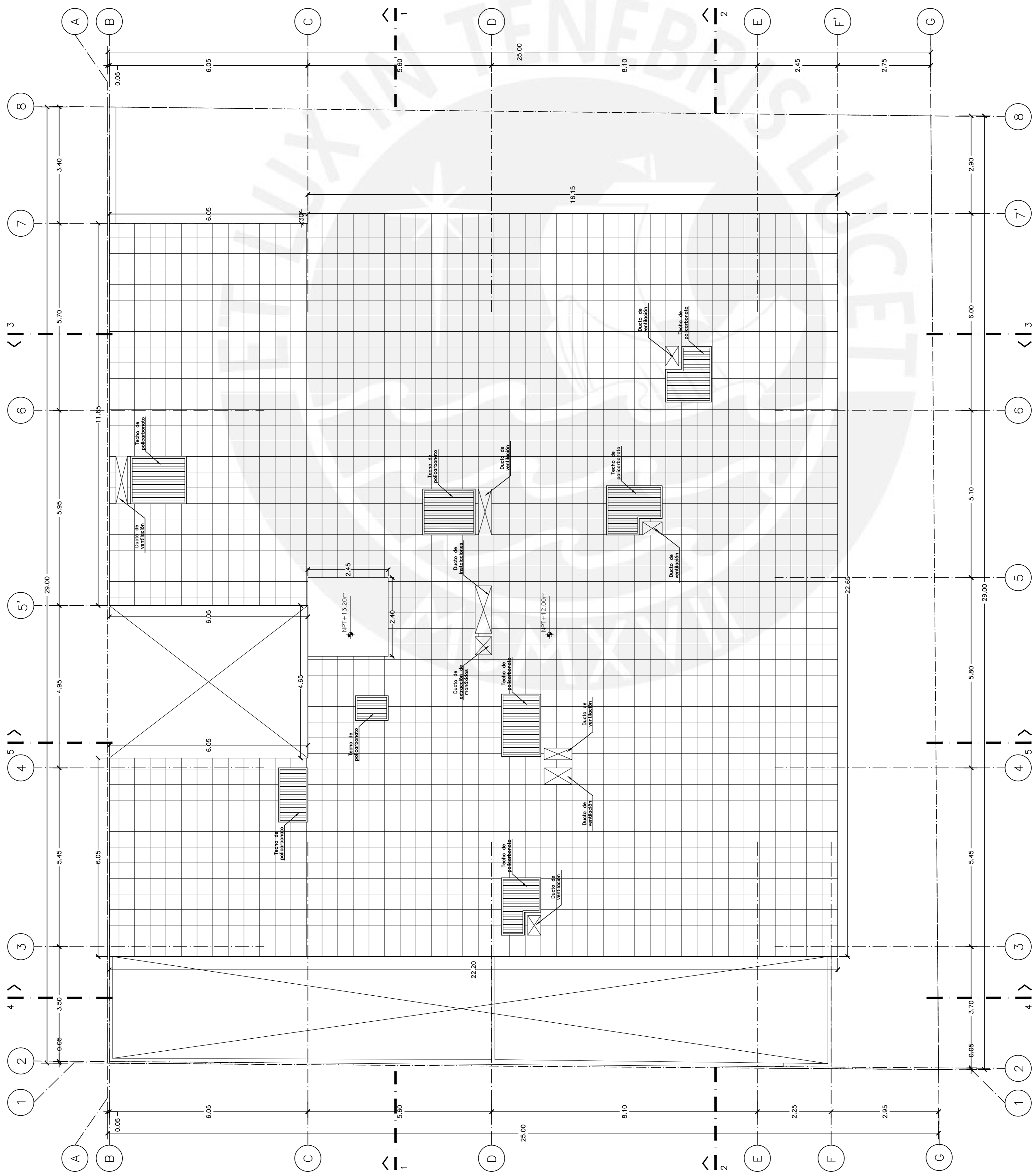
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : PLANTA PISO 3
ESCALA 1/75
A-06



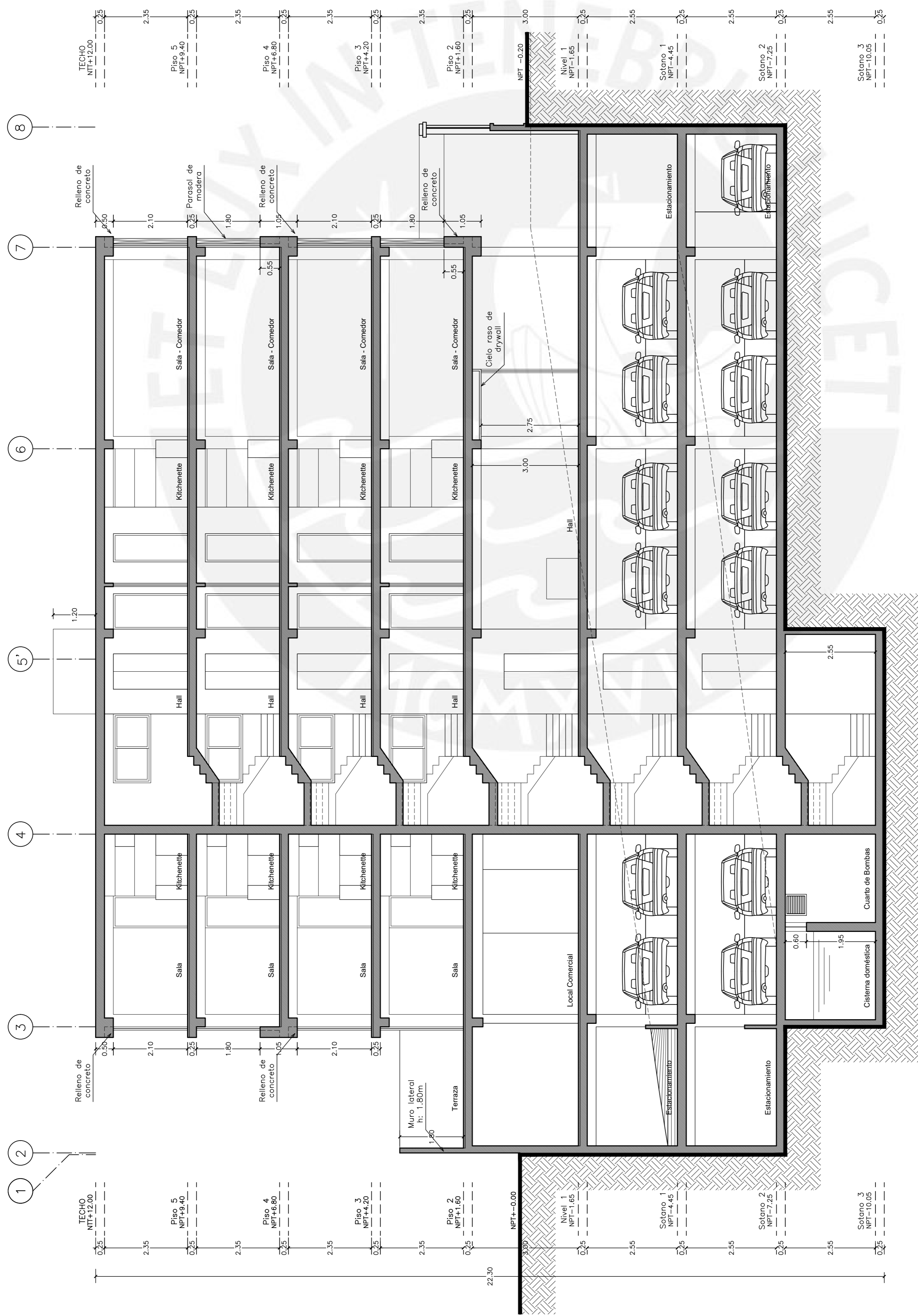
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO :	PLANTA PISO 4
ESCALA	1/75
	A-07



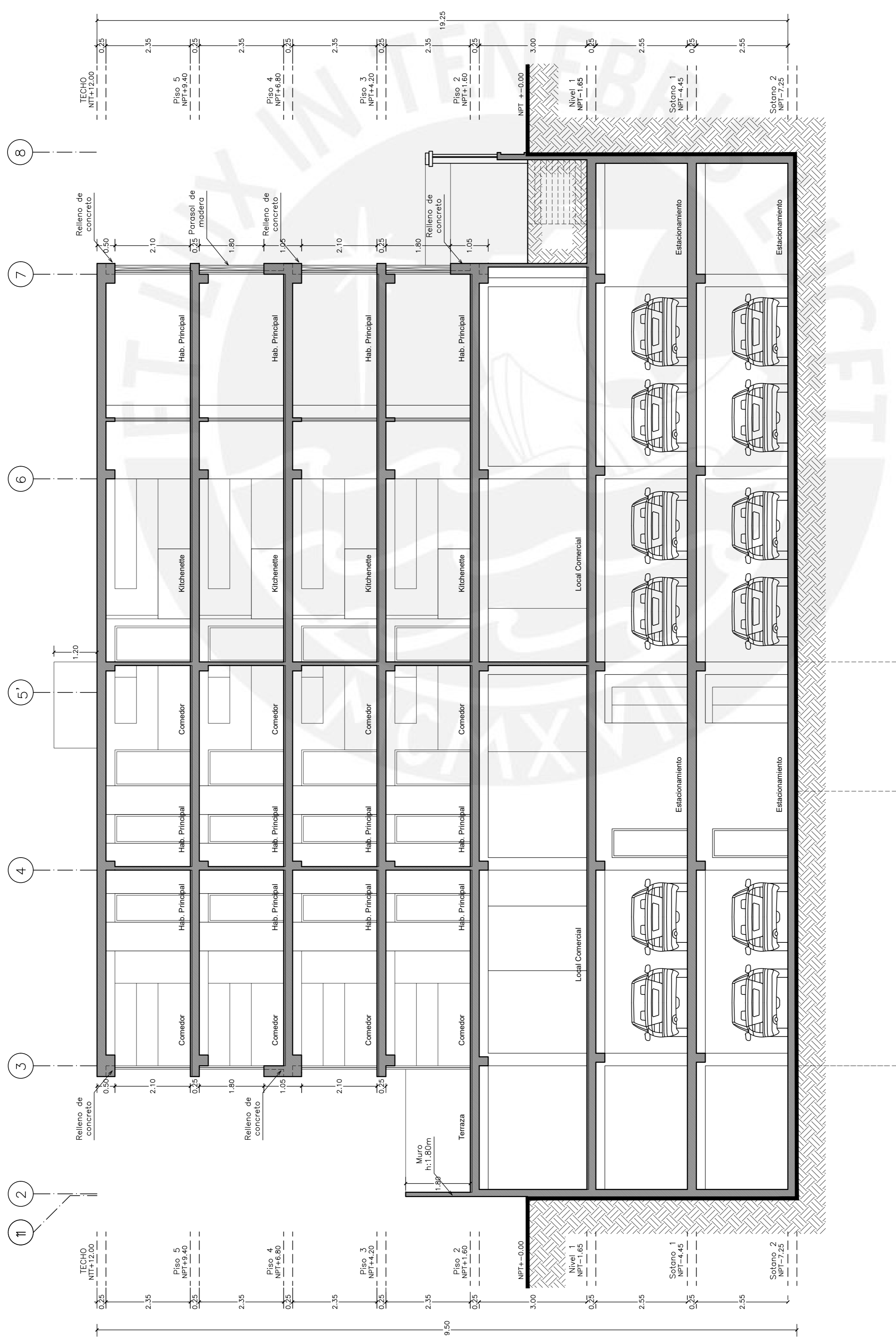
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : PLANTA PISO 5
ESCALA 1/75
A-08



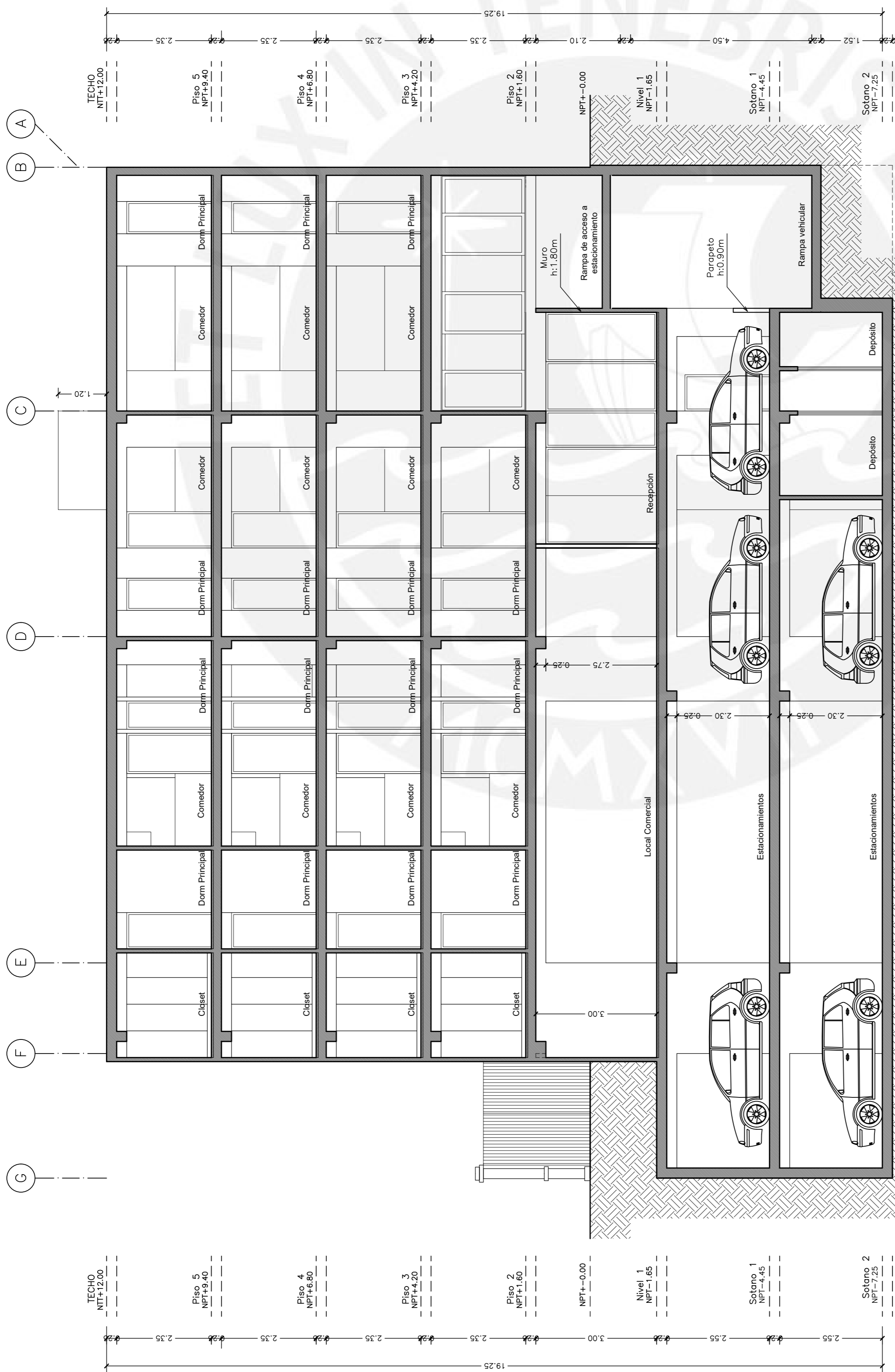
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
ESCALA	1/75
PLANO :	PLANTA TECHOS
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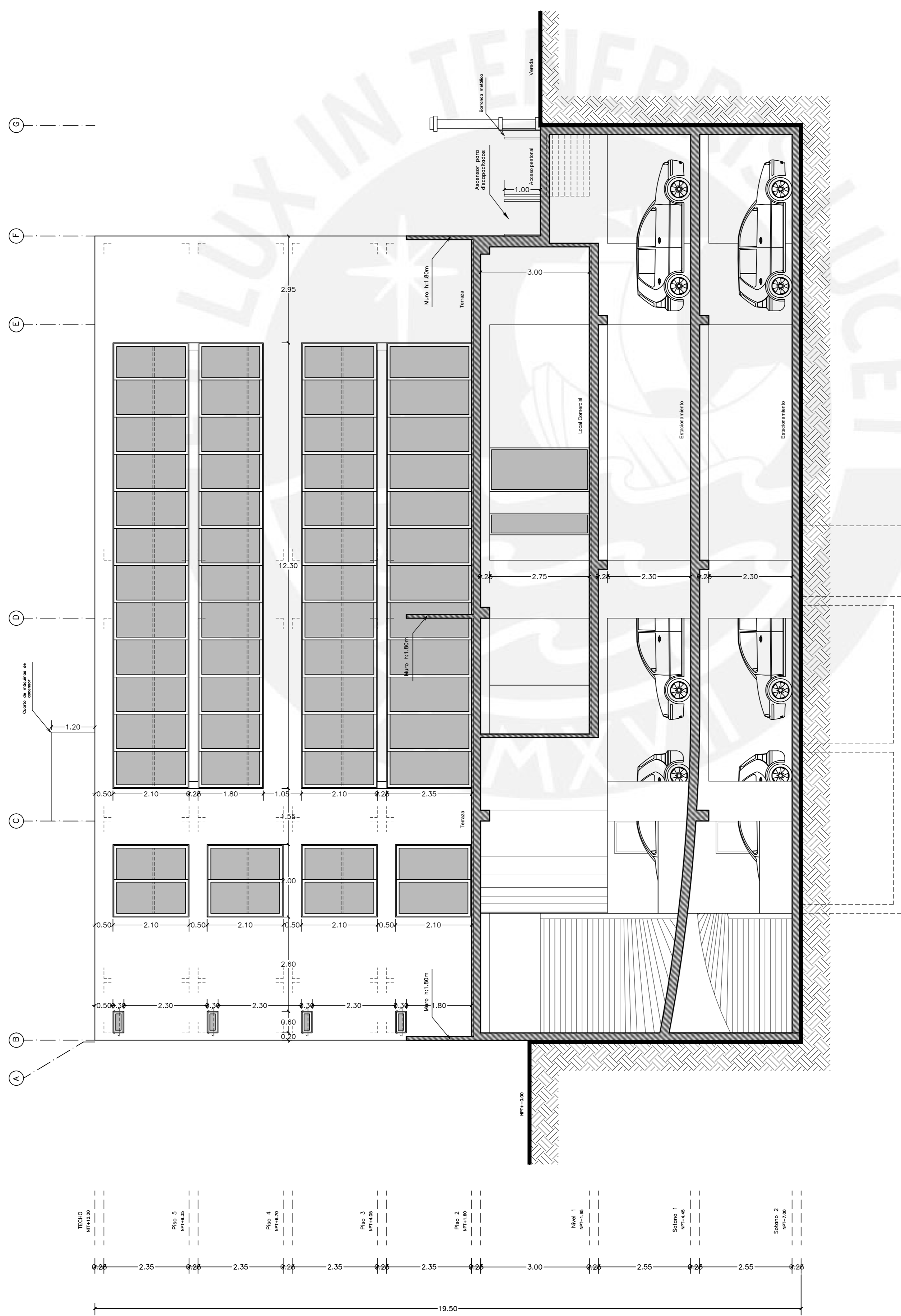
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
ESCALA	1/75
PLANO :	CORTE 1-1
	A-10



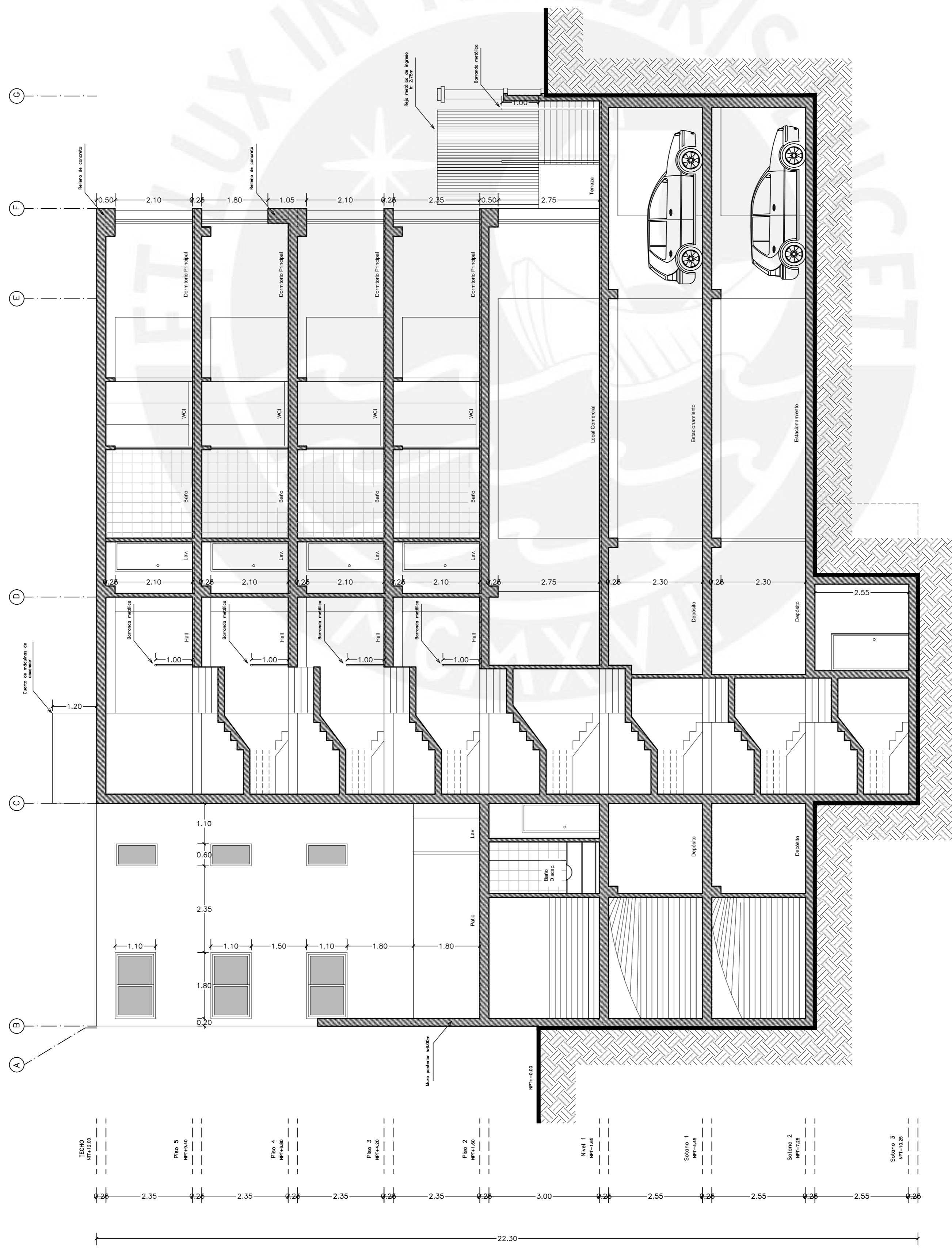
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO : CORTE 2-2
ESCALA 1/75
A-11



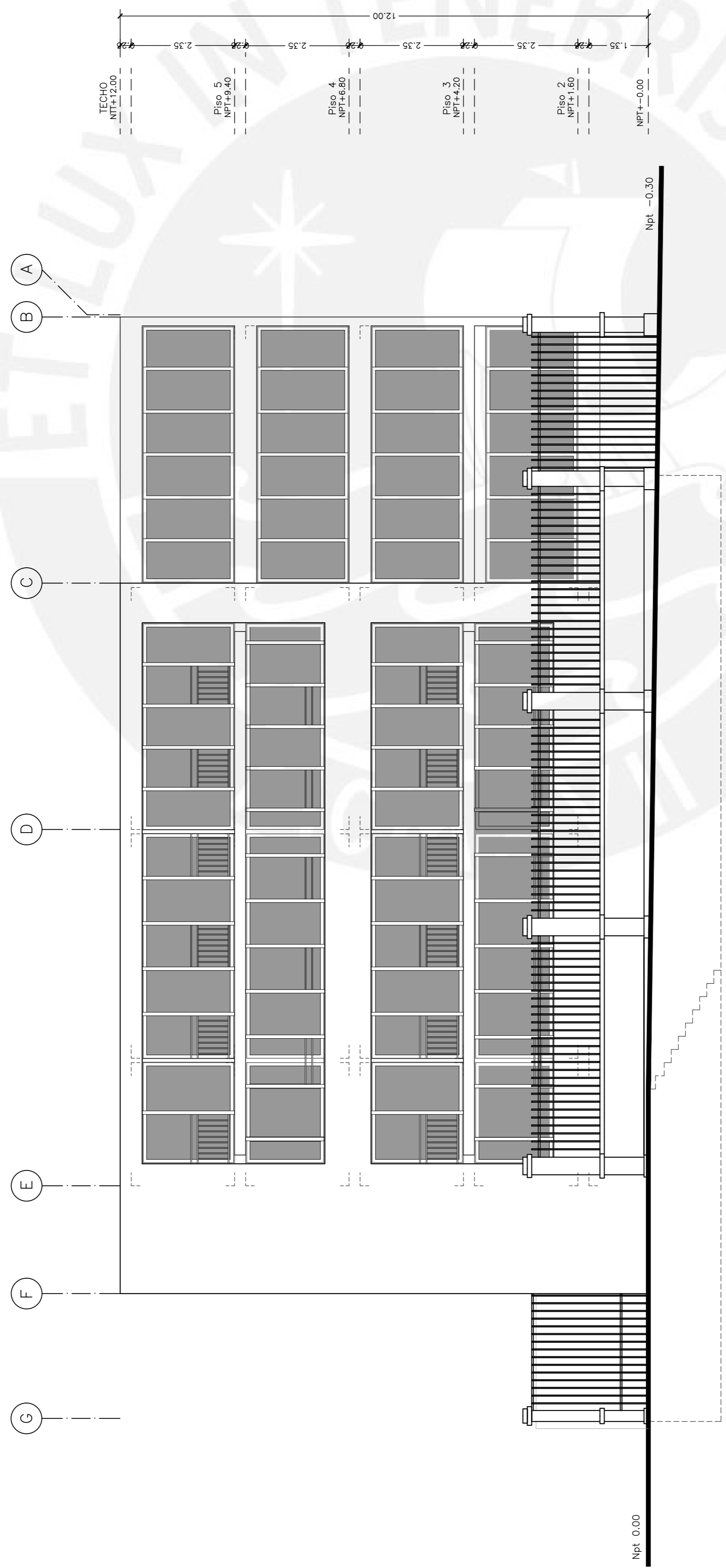
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO :	CORTE 3-3
ESCALA	1/75
	A-12



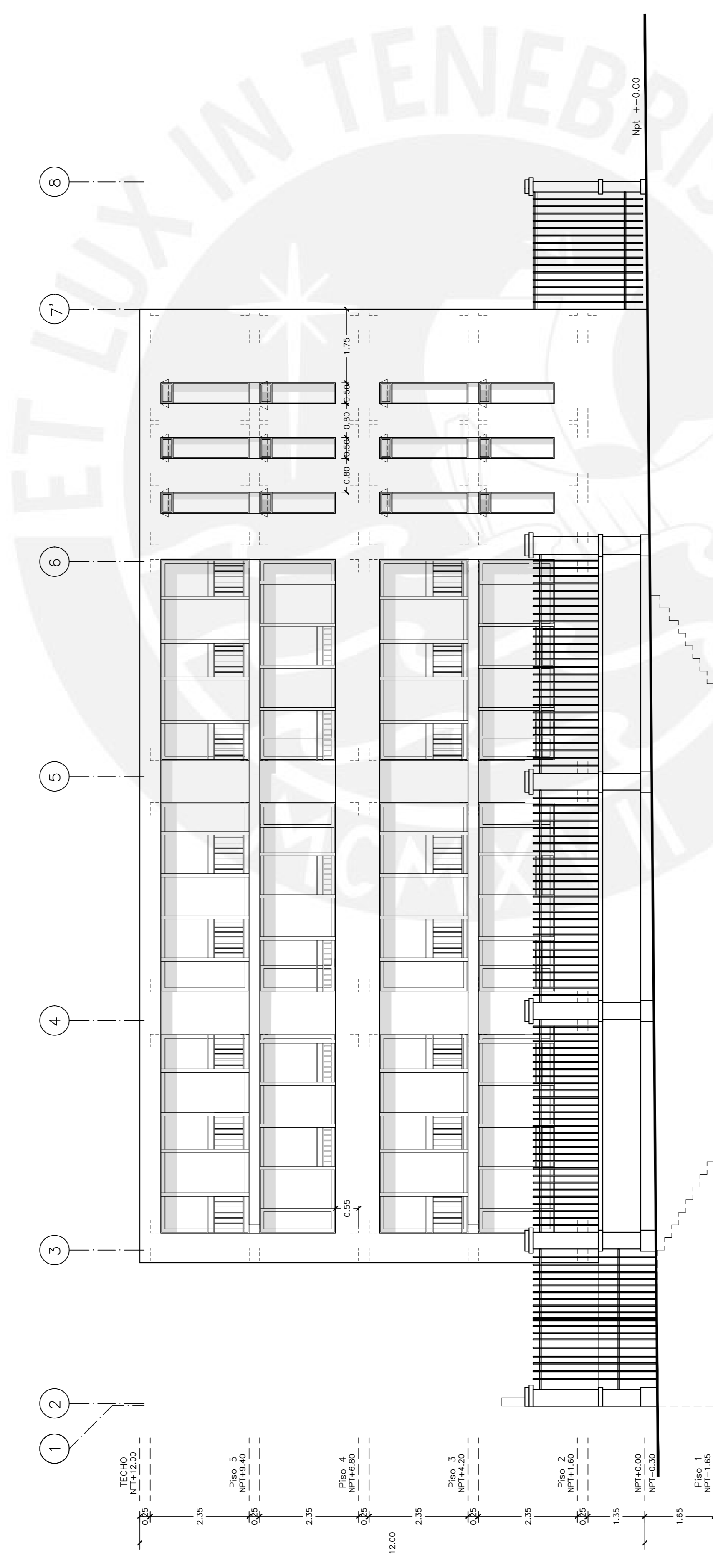
<p>TESIS : MINORU ALEJANDRO AFUSO MUÑOZ</p>
<p>PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR</p>
<p>ESCALA 1/75</p>
<p>PLANO : CORTE 4-4</p>
<p>A-13</p>



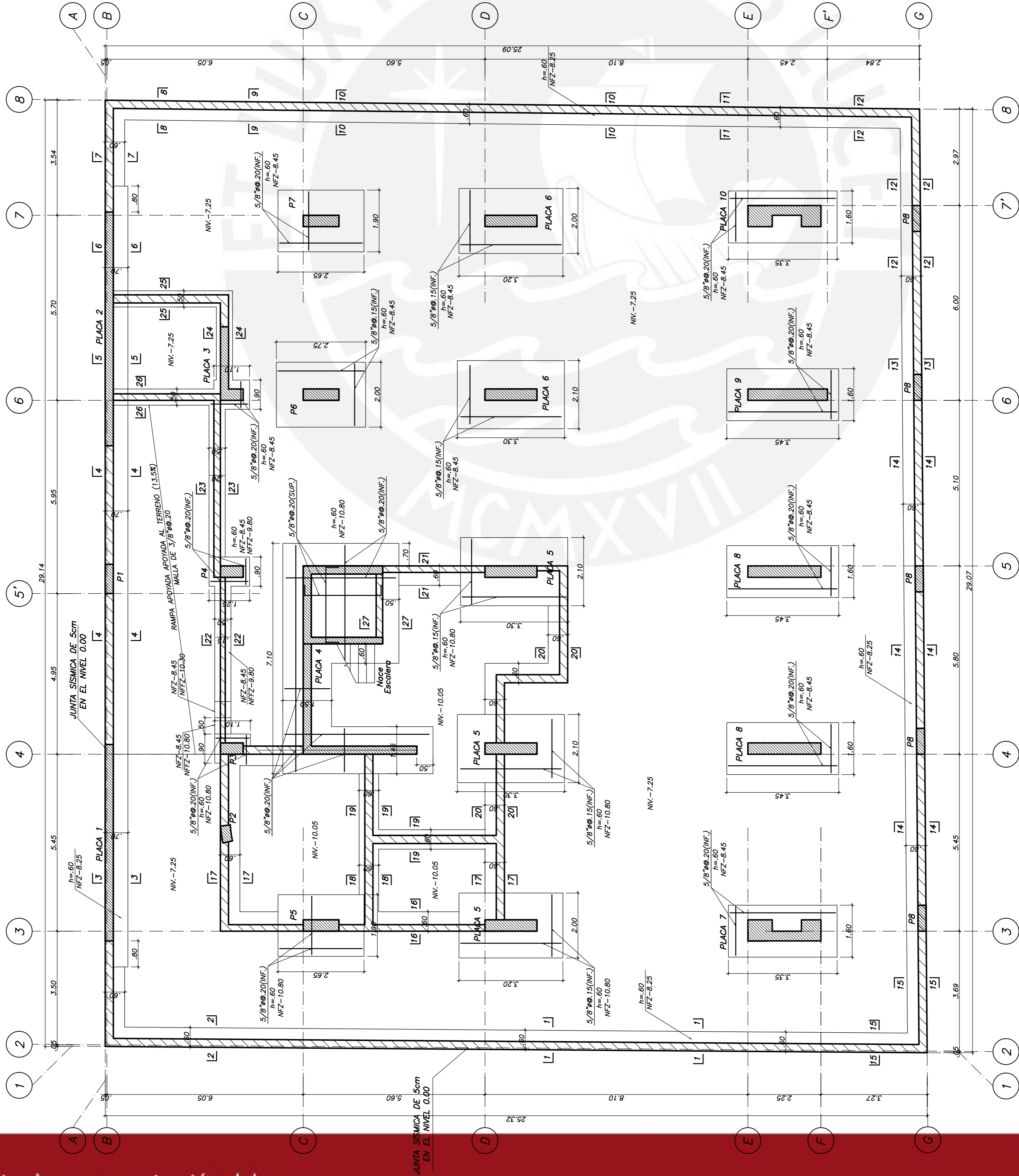
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ	ESCALA 1/75
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR	
PLANO : CORTE 5-5	A-14



TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
ESCALA	1/75
PLANO :	ELEVACIÓN CENTENARIO
	A-15



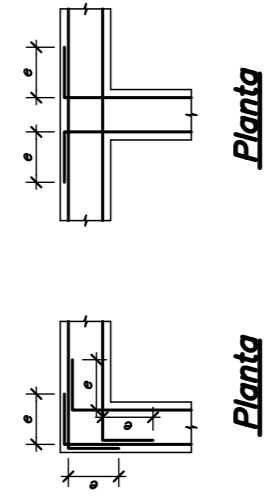
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ	
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR	ESCALA 1/75
PLANO :	ELEVACIÓN SAN MARTÍN	A-16



RESUMEN DE LAS CONDICIONES DE LA CIMENTACIÓN

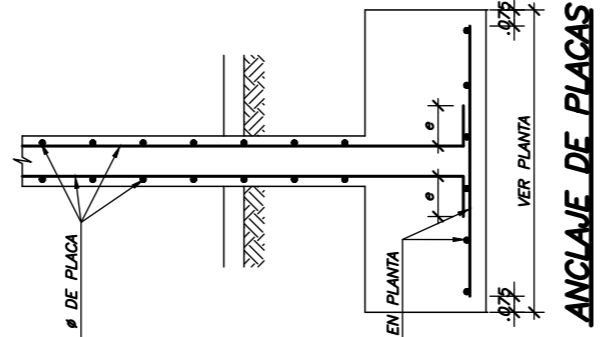
DE ACUERDO AL ESTUDIO DE SUELOS REALIZADO:

- 1) TIPO DE CIMENTACIÓN : ZAPATAS AISLADAS
- 2) PRESIÓN ADMISIBLE = 4 Kg/cm²
- 3) TIPO DE SUELO SEGUN NORMA SISMORRESISTENTE: TIPO S1 , FACTOR DE SUELO = 1.0 , T_p = 0.4 seg.



DETALLE DE REFUERZO HORIZONTAL EN ENGUENTE DE MUROS

φ	s
1"	.40
3/4"	.30
5/8"	.25
1/2"	.20
3/8"	.15



PARAMETROS SISMO-RESISTENTES

- a) SISTEMA ESTRUCTURAL SISMO-RESISTENTE: -PLACAS Y PÓRTICOS DE CONCRETO ARMADO
- b) PARAMETROS PARA DEFINIR FUERZA SISMICA O ESPECTRO DE DISEÑO :
 - FACTOR DE ZONA (ZONA 4) : Z=0.45
 - FACTOR DE CATEGORIA (CAT.C) : U=1.0
 - FACTOR DE SUELO (TIPO S1) : S=1.0
- c) PERIODOS DE VIBRACION (T) : T_x=0.35s, T_y=0.29s
- FACTOR DE REDUCCION : R_x=R_y=4.5
- c) DESPLAZAMIENTO MÁXIMO DEL ÚLTIMO NIVEL (du) Y MÁXIMO RELATIVO DE ENTREPISO (δe) :
 - ÚLTIMO NIVEL : du_x=6.19cm. du_y=3.93cm.
 - ENTREPISO : δe_x=1.62cm. δe_y=0.92cm.

ESPECIFICACIONES

- f_c = 210 Kg/cm²
- SEGUN TIPO DE ELEMENTO: ZAPATAS Y CIMIENTOS f_c = 210 Kg/cm²
- COLUMNAS Y PLACAS : f_c = 210 Kg/cm²
- LOSAS Y VIGAS : f_c = 210 Kg/cm²
- f_y = 4200 Kg/cm²
- wt = 4.0 Kg/cm²
- s/c = INDICADA

RECUBRIMIENTOS

- ZAPATAS : 7.5 cm.
- COLUMNAS, PLACAS y VIGAS PERALTADAS : 4 cm.
- MUROS Y CISTERNA : 5 cm.
- COLUMNAS e=15 : 3 cm.
- ALIGERADOS, LOSAS y VIGAS CHATAS : 2 cm.

ALBAÑILERIA

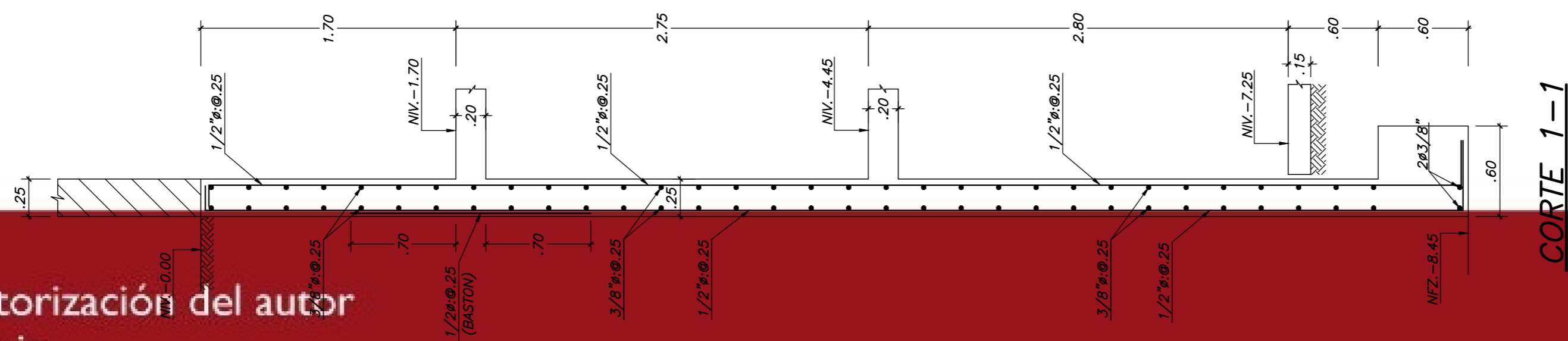
- LADRILLO MACIZO TIPO IV (e=14 cms)
- f'm = 65 Kg/cm² (KK 18 HUECOS)
- TIPO DE MORTERO : 1:4

NOTAS:

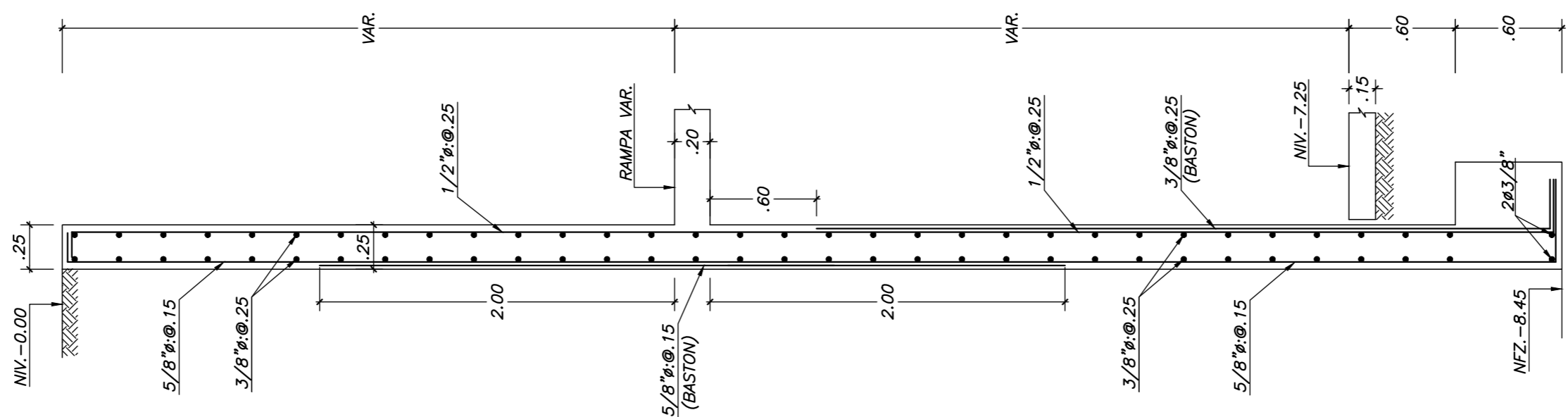
- NFZ = NIVEL DE FONDO DE ZAPATA
- h = PERALTE DE CIMIENTO
- NFP = NIVEL DE FALSO PISO

NOTA: LOS MUROS Y LA LOSA DE PISO EN CONTACTO CON EL AGUA DE LA CISTERNA DEBERÁN SER VACIADOS UTILIZANDO CONCRETO CON RELACIÓN AGUA/CEMENTO MÁXIMA DE 0.45 (f'_c=280 Kg/cm²). LOS MUROS Y LA LOSA DE PISO DEBERÁN SER VACIADOS MONOLÍTICAMENTE. EN CASO SEA NECESARIO REALIZAR UNA JUNTA DE VACIADO, SE DEBERÁ UTILIZAR WATER-STOP DE 6".

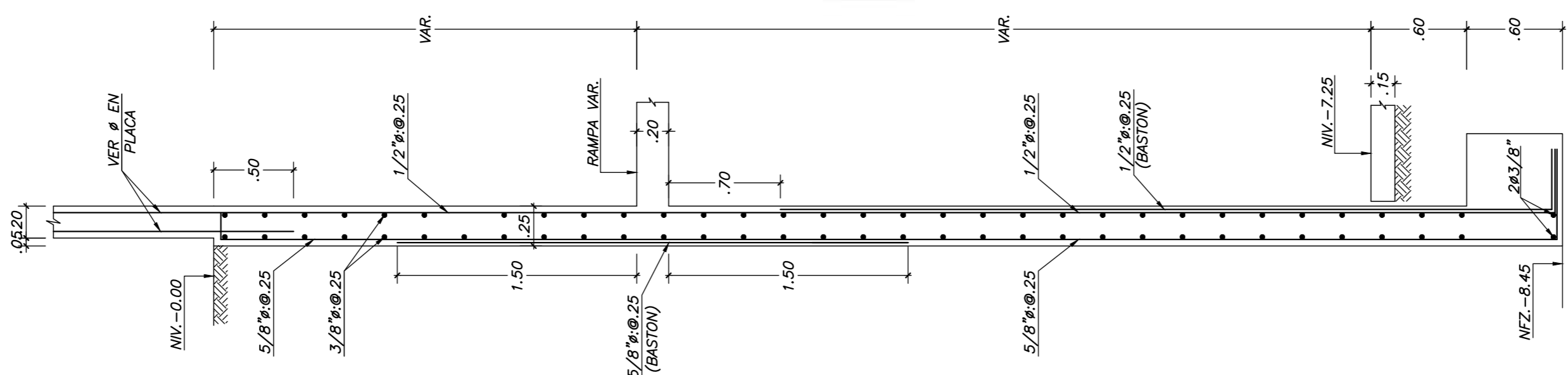
CIMENTACIÓN



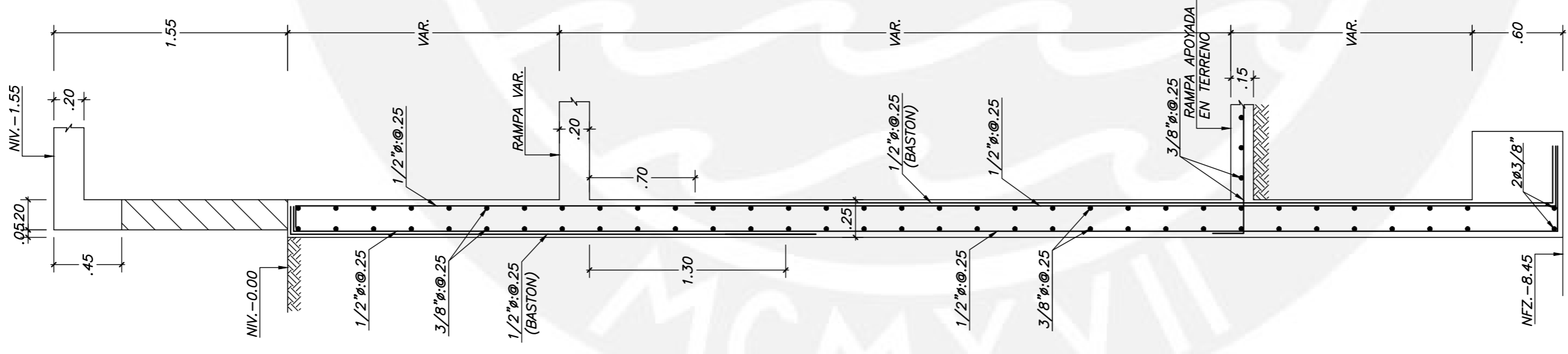
CORTE 1-1



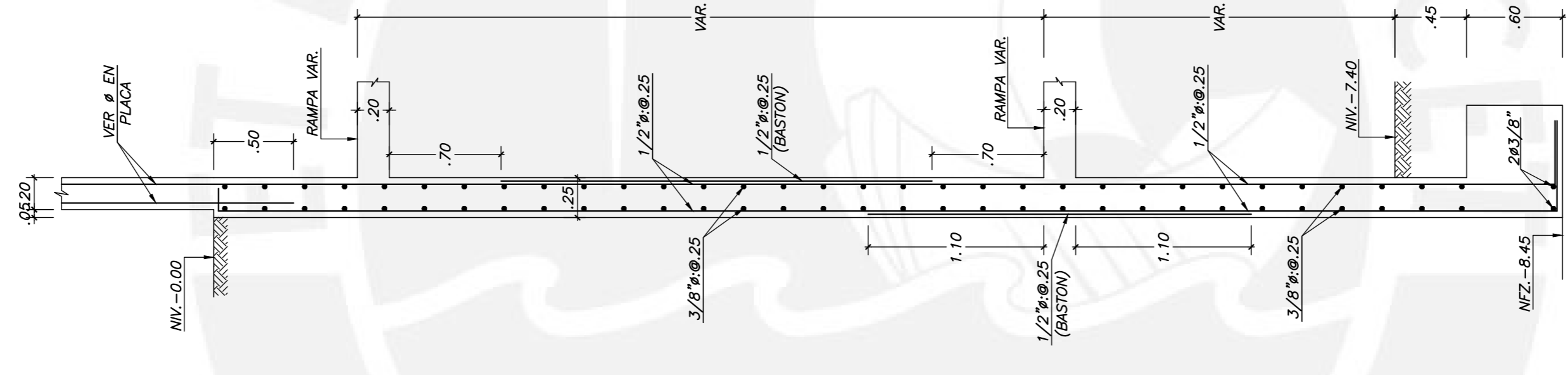
CORTE 2-2



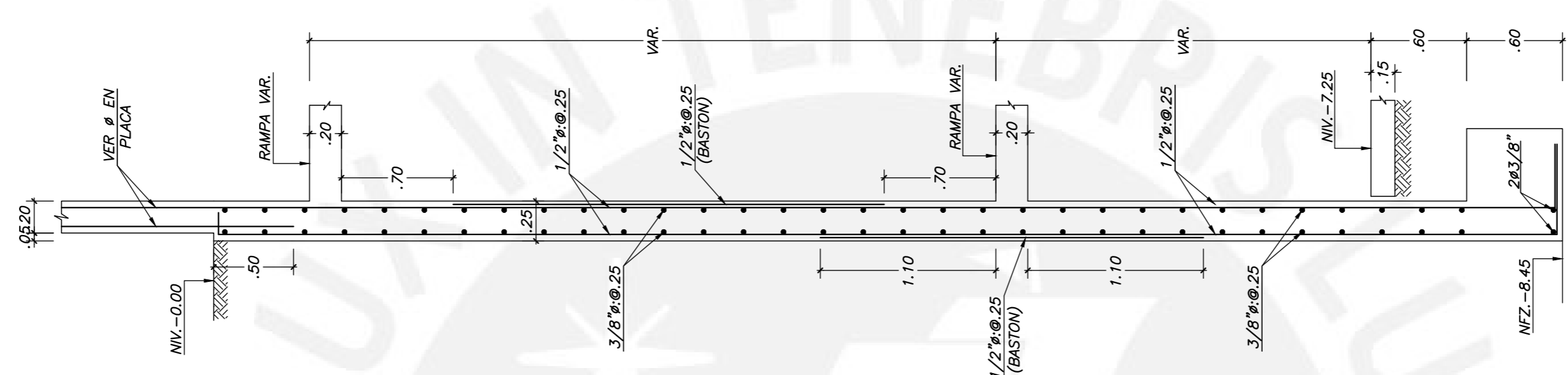
CORTE 3-3



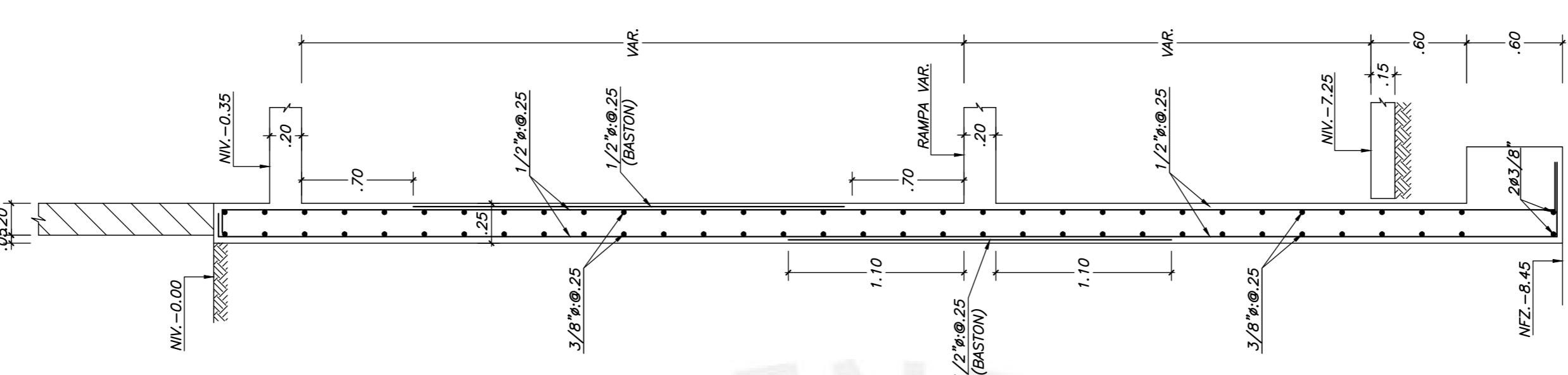
CORTE 4-4



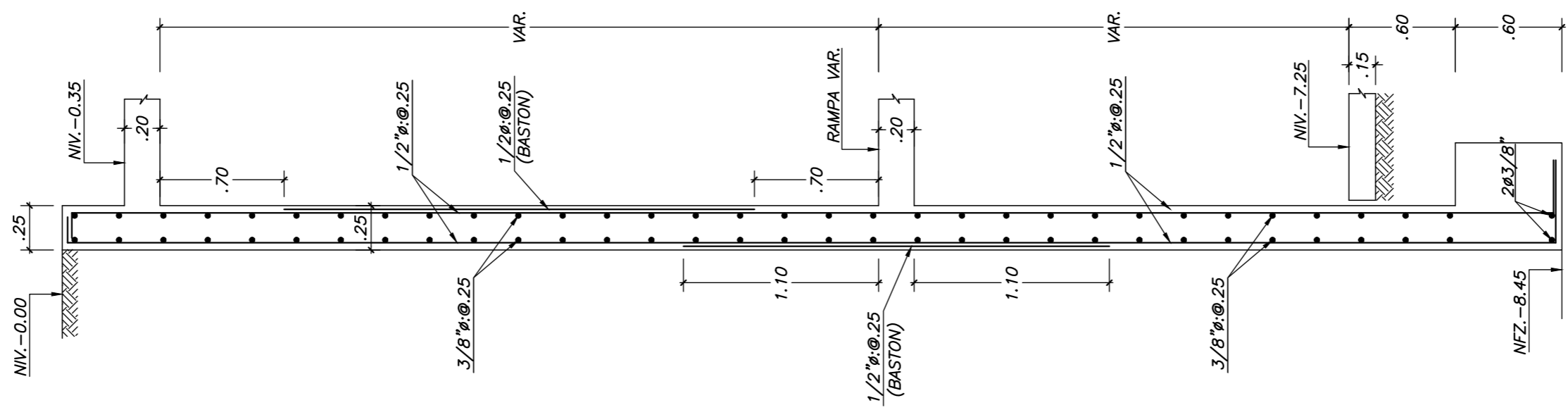
CORTE 5-5



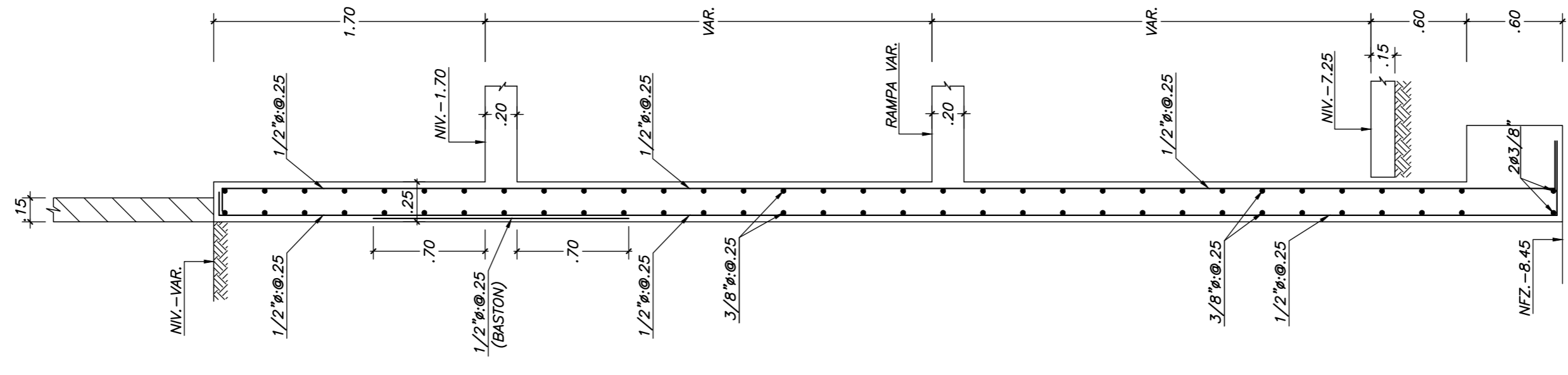
CORTE 6-6



CORTE 7-7

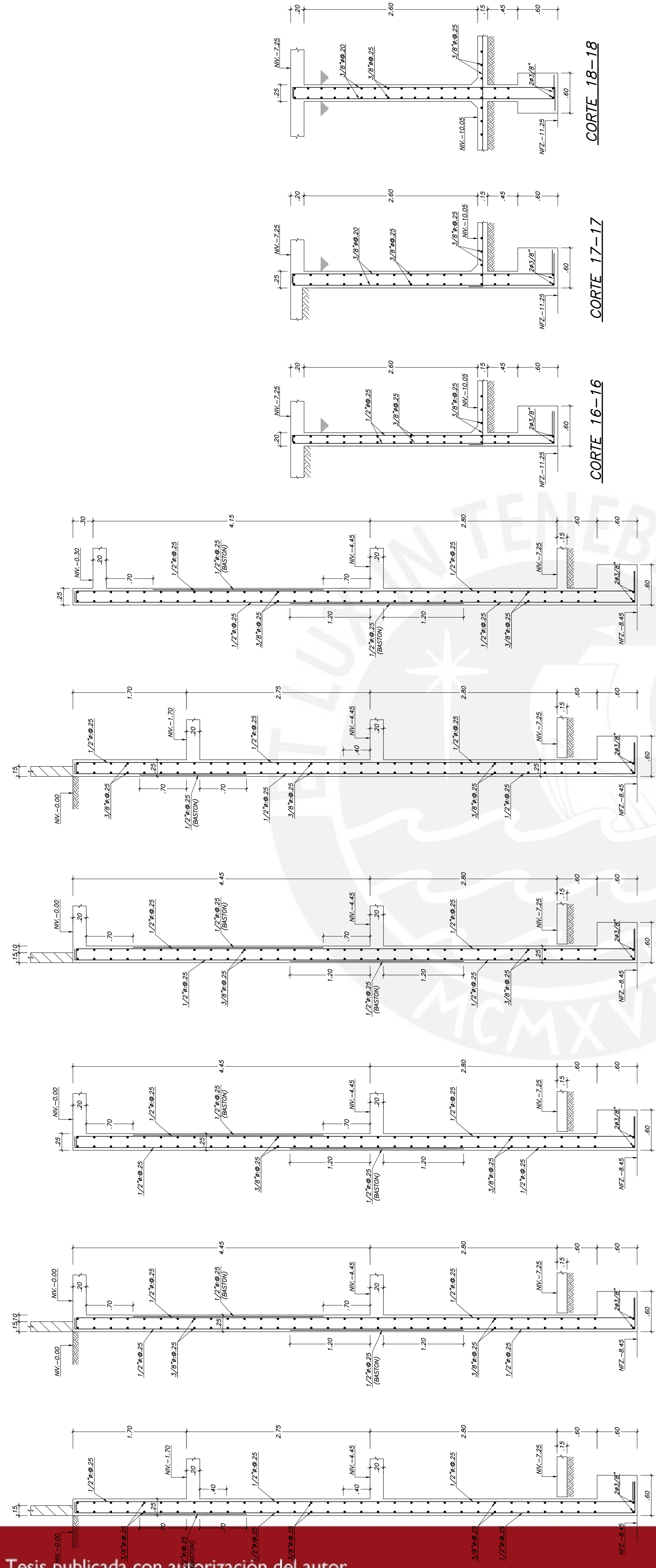


CORTE 8-8



CORTE 9-9

TESIS : MINORU ALEJANDRO AFUSO MUÑOZ	
PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR	ESCALA 1/30
PLANO : MUROS DE SÓTANO (G)	E-02



CORTE 10-10

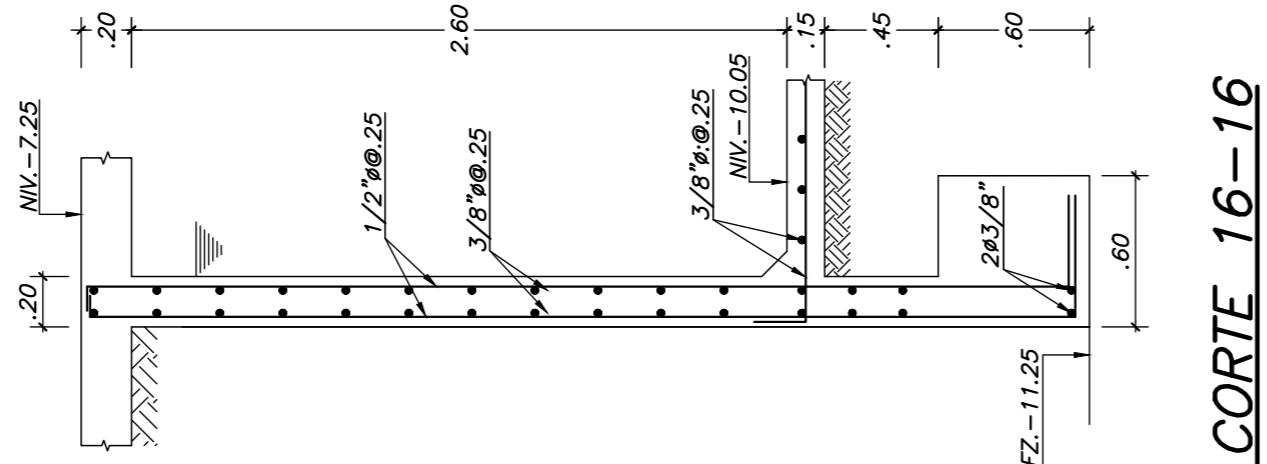
CORTE 11-11

CORTE 12-12

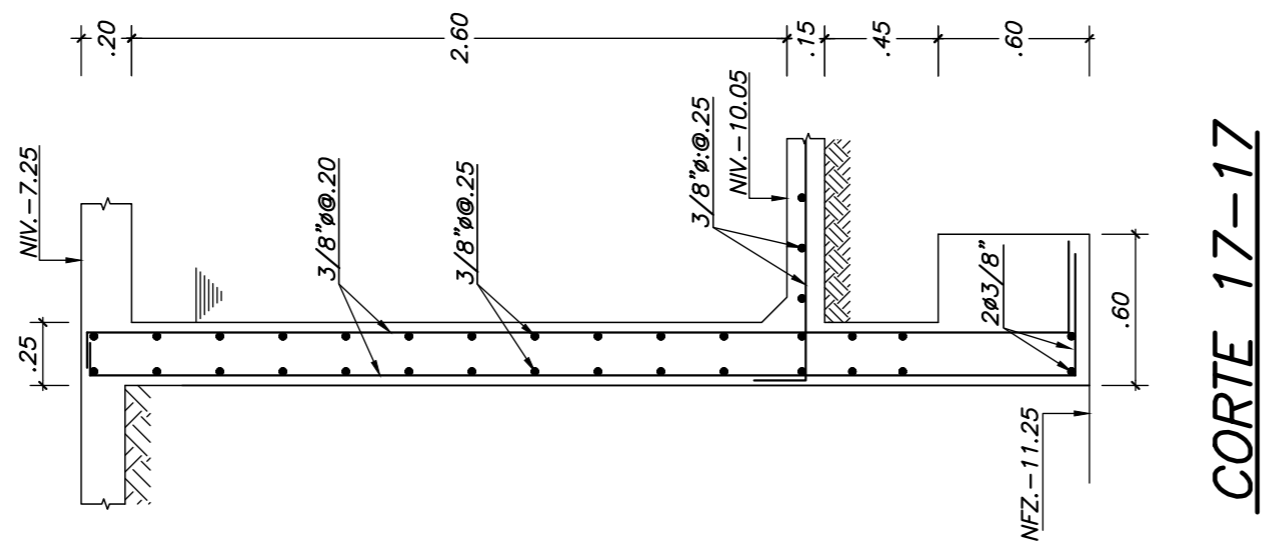
CORTE 13-13

CORTE 14-14

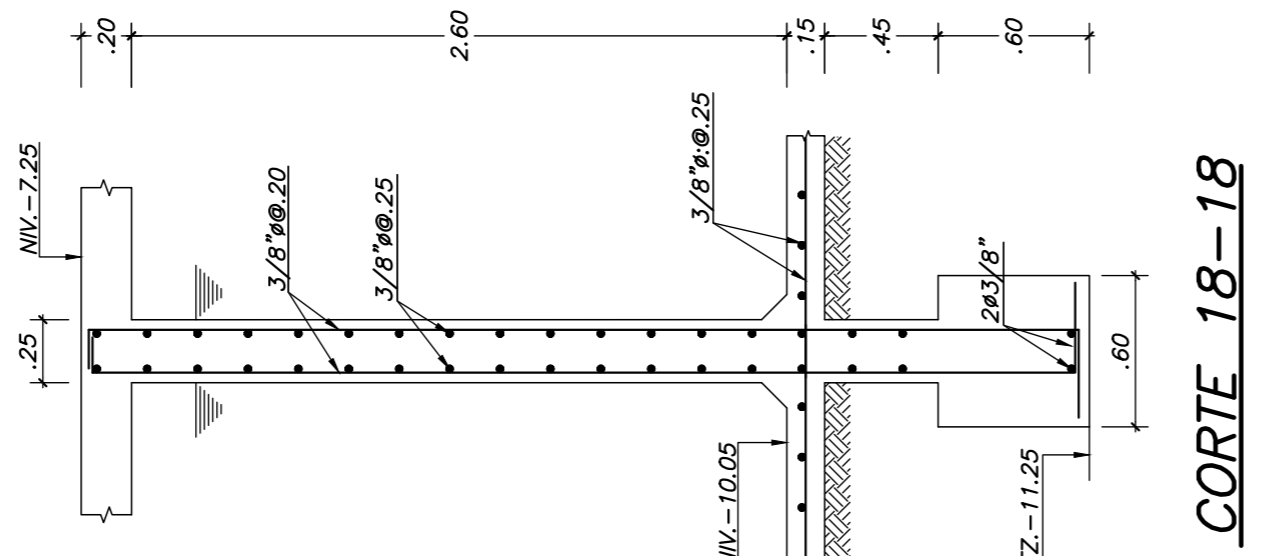
CORTE 15-15



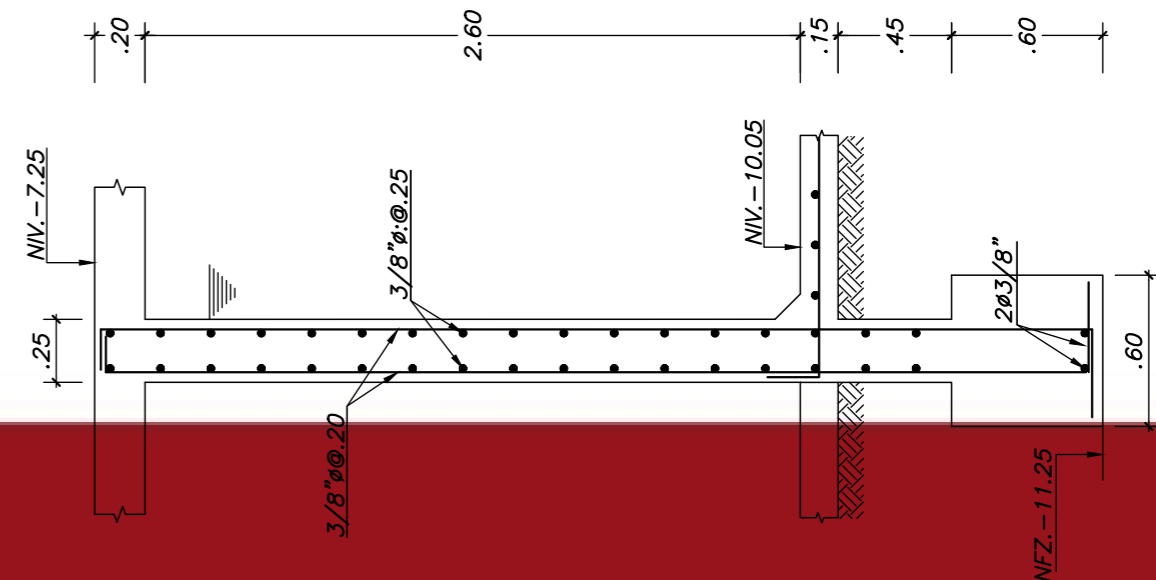
CORTE 16-16



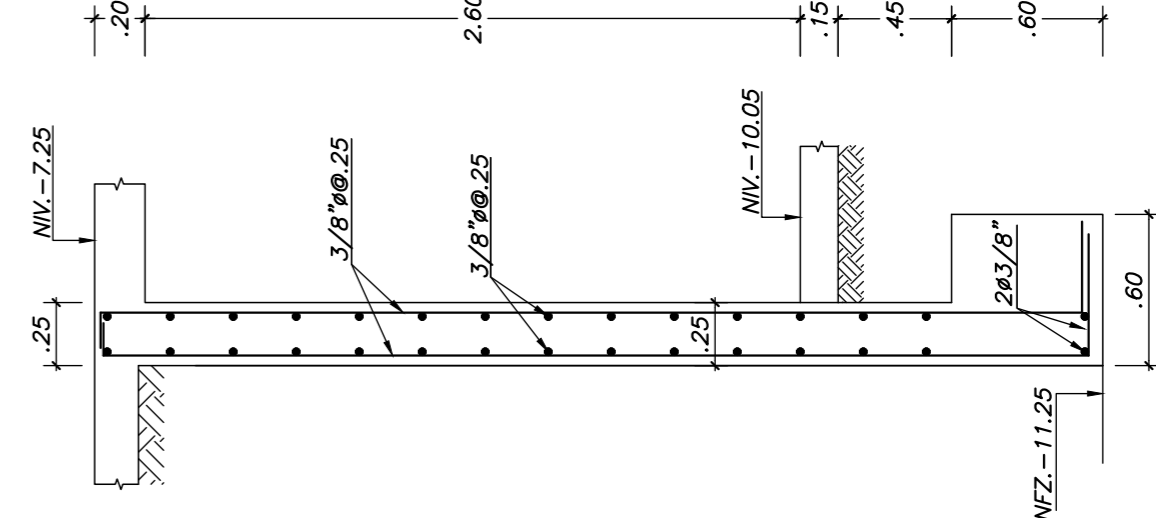
CORTE 17-17



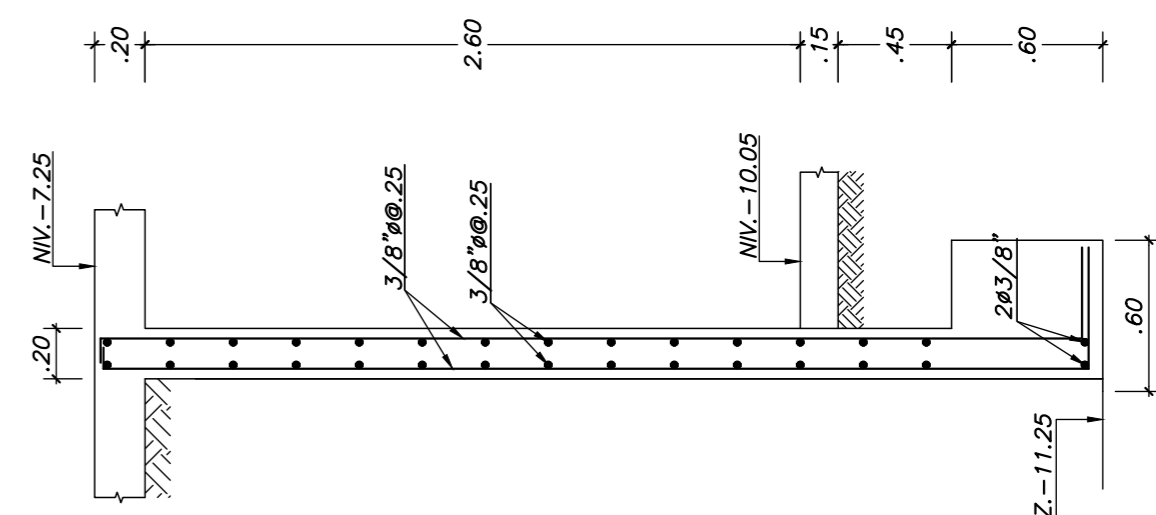
CORTE 18-18



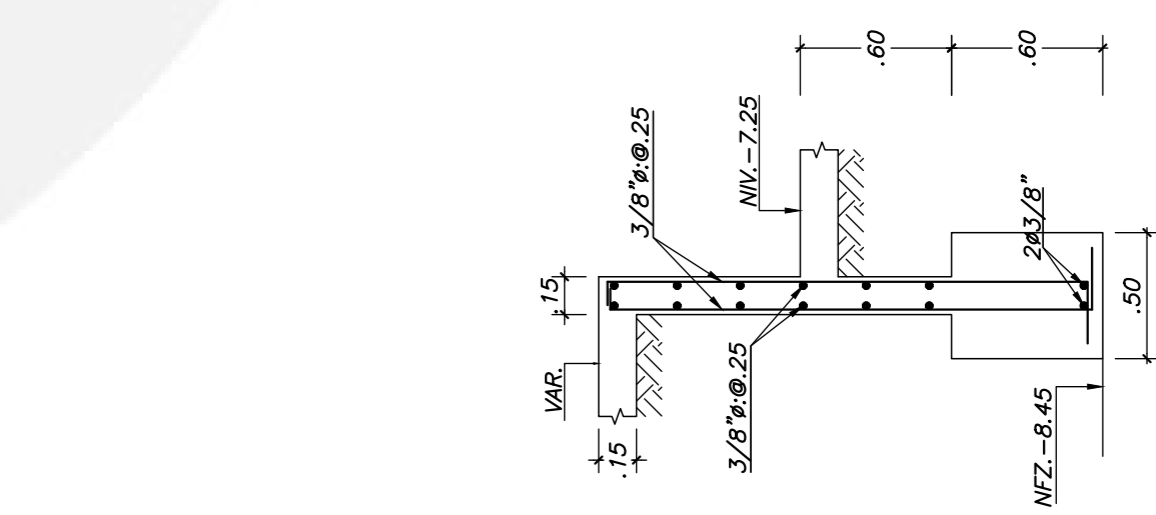
CORTE 19-19



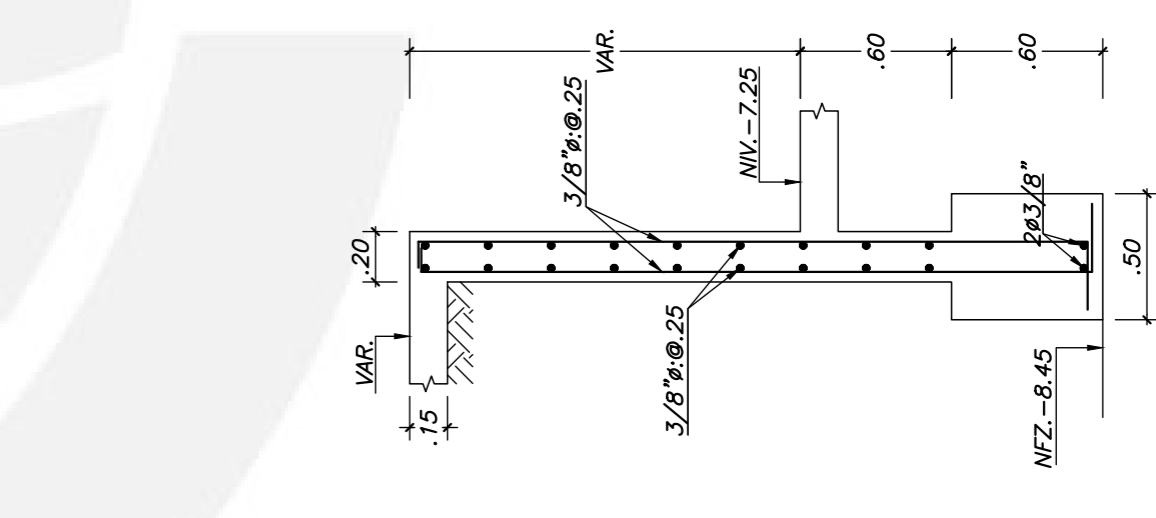
CORTE 20-20



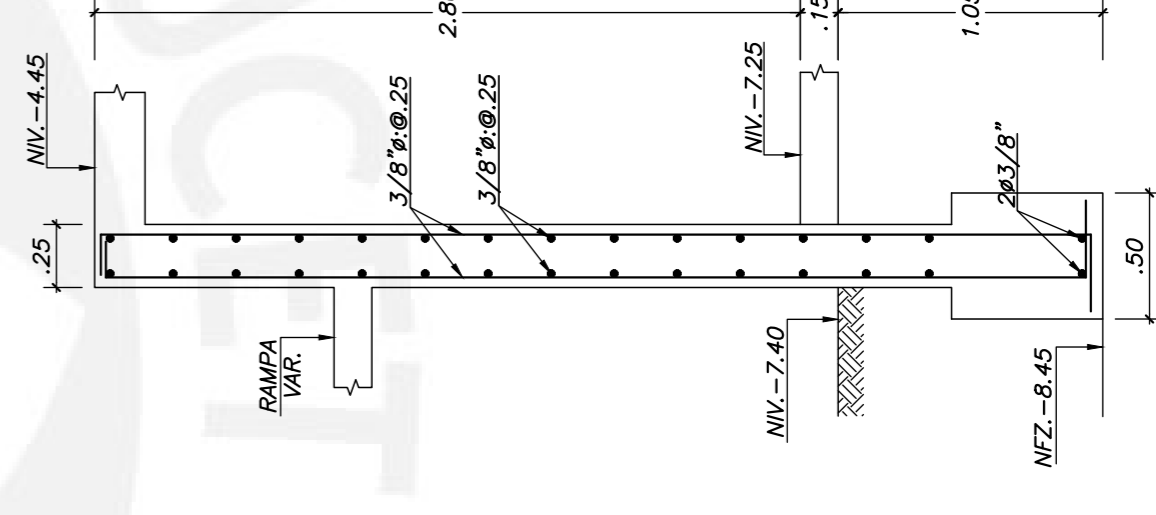
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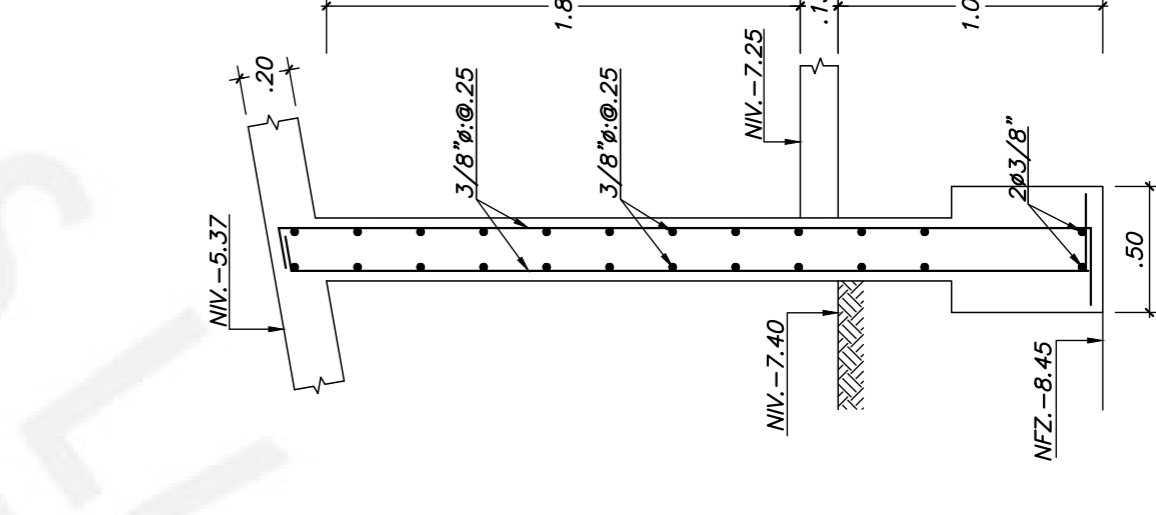
CORTE 22-22



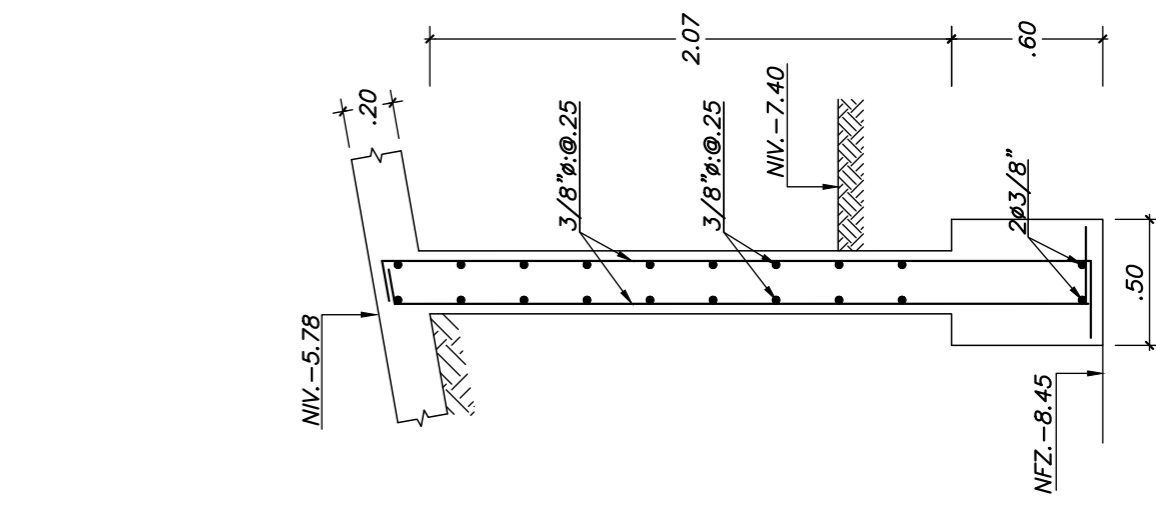
CORTE 23-23



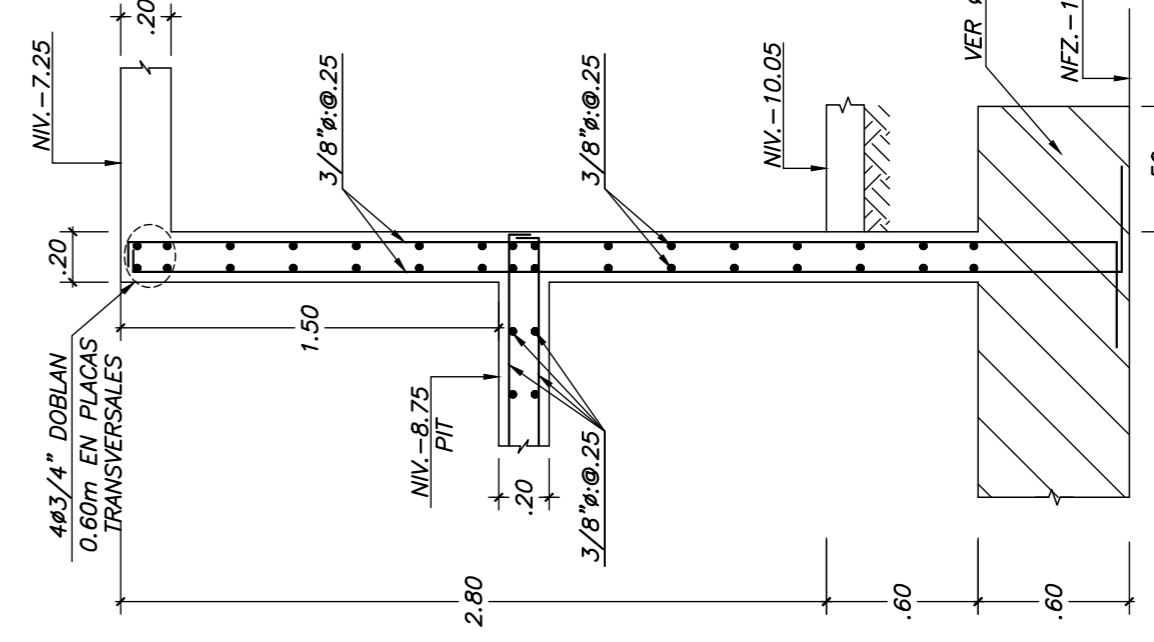
CORTE 24-24



CORTE 25-25



CORTE 26-26



CORTE 27-27

TESIS : MINORU ALEJANDRO AFUSO MUÑOZ

PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR

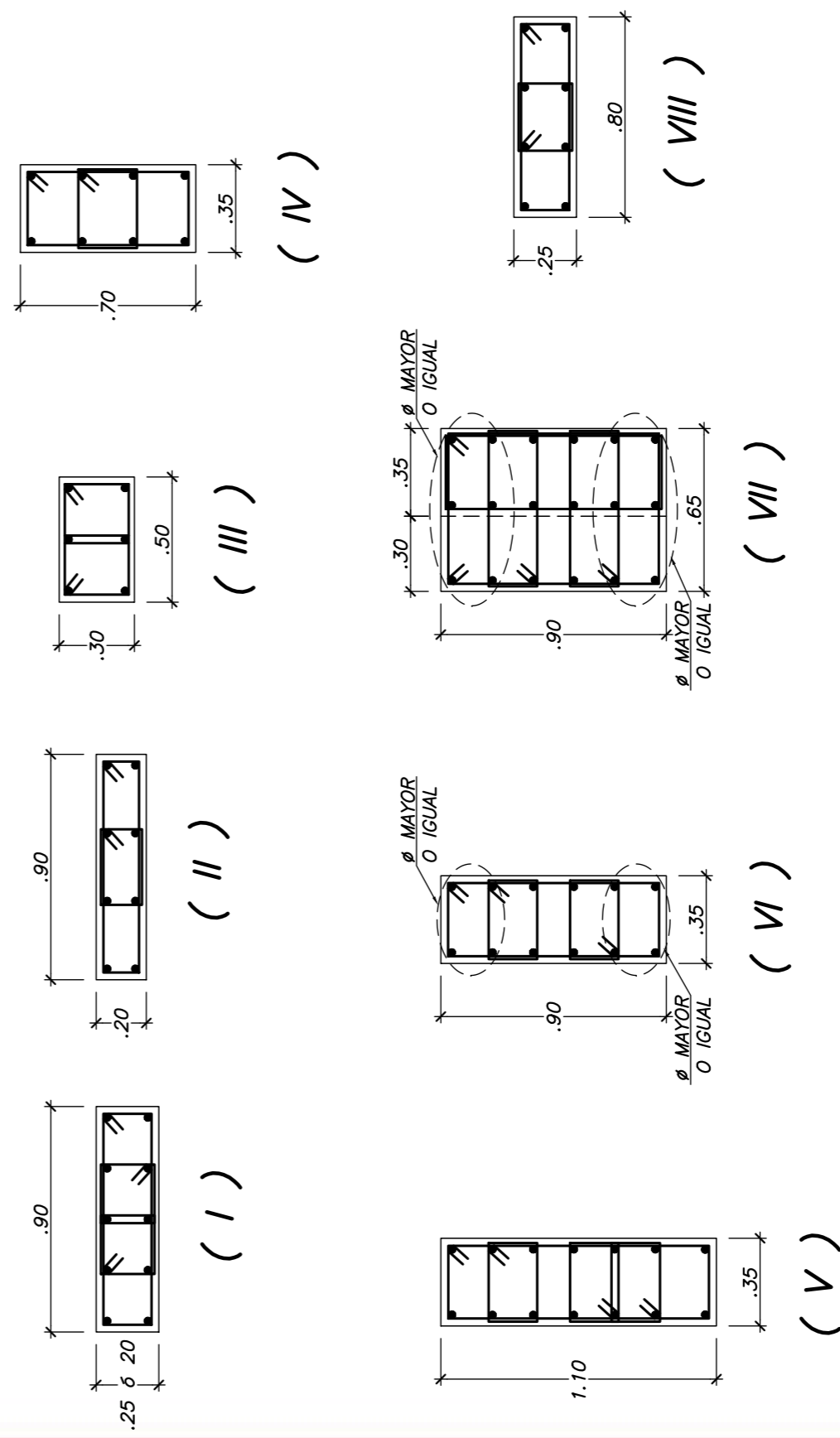
PLANO : MUROS DE SÓTANO (b)

ESCALA
1/30

E-03

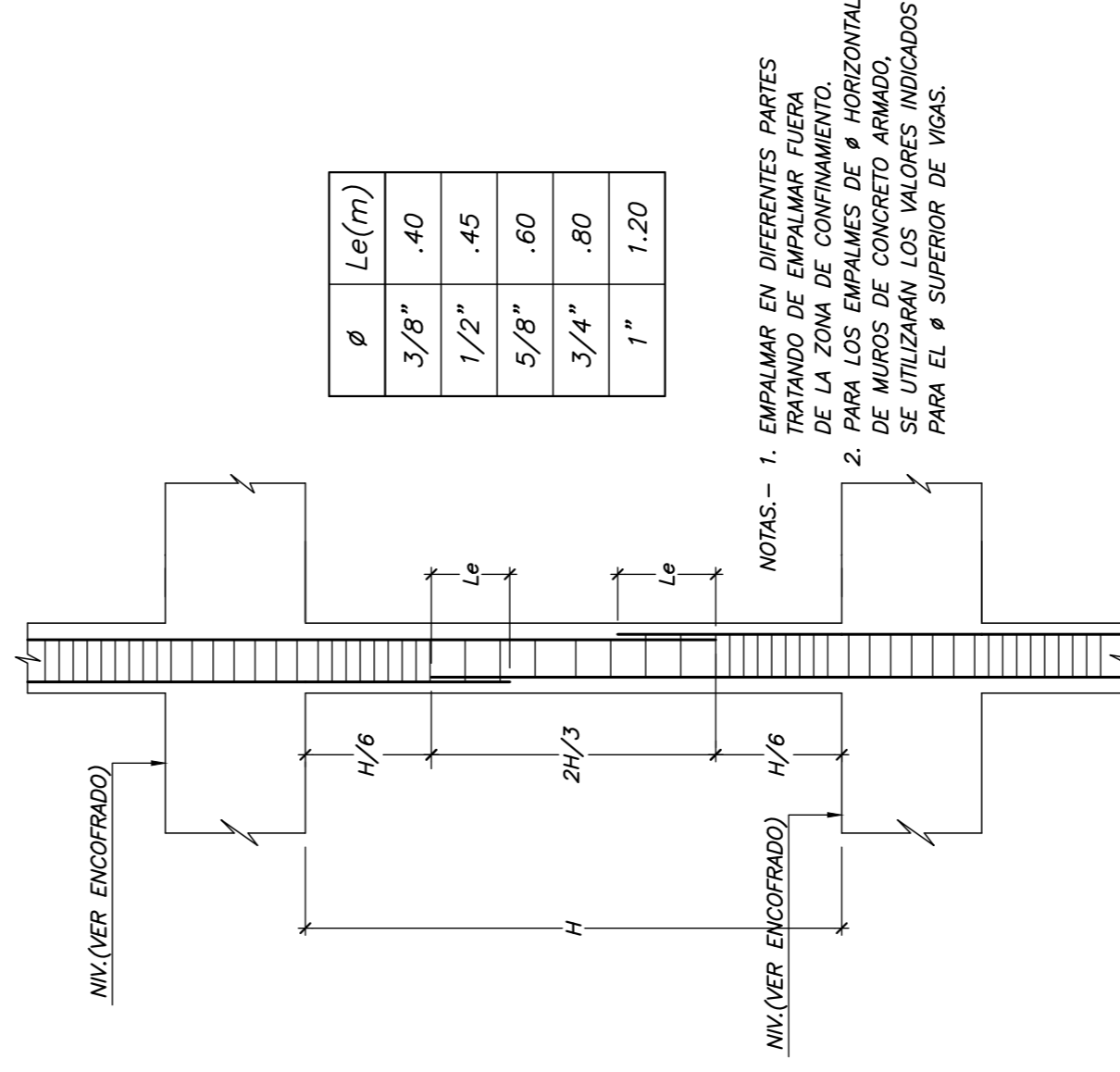
$f_c = 210 \text{ kg/cm}^2$

CUADRO DE COLUMNAS									
PISO	COLUMNA	P1	P2	P3	P4	P5	P6	P7	P8
3° SOTANO	COLUMNA	—	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	—	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	—	—	—
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
2° SOTANO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)
1° SOTANO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)
1° PISO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)
2° PISO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)
3° PISO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)
4° PISO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)
5° PISO	COLUMNA	—	.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.80x.25 8#5/8" 2.03/8"Ø.25 (VIII)
		.90x.25 10#5/8" 3.03/8"Ø.20 (I)	.50x.30 6#5/8" 2.03/8"Ø.25 (III)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x.70 8#3/4" 2.03/8"Ø.25 (IV)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)	.35x1.10 14#3/4" 4.03/8"Ø.25 (V)



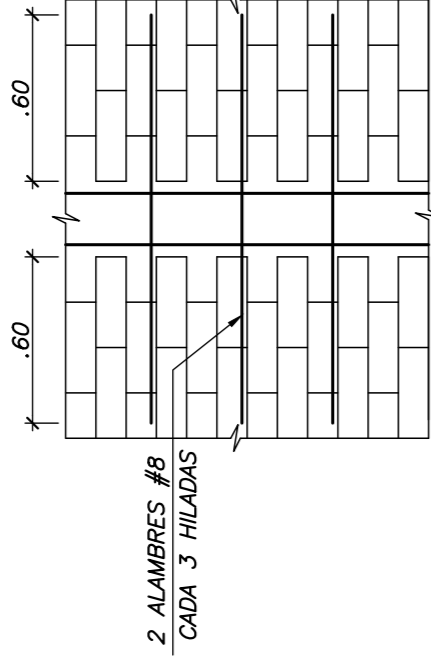
DETALLE DE DOBLADO DE ESTRIOS EN COLUMNAS Y VIGAS

DETALLE DE EMPALME DE COLUMNAS, PLACAS Y MUROS PARA REFUERZO VERTICAL



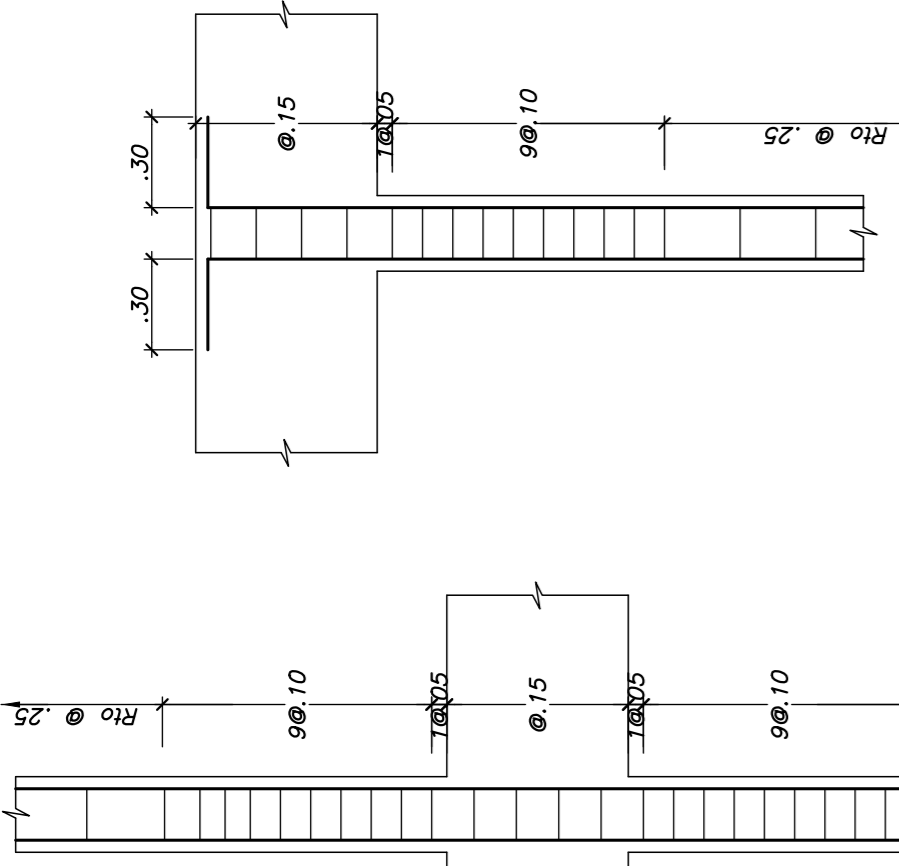
NOTAS - 1. EMPALMAR EN DIFERENTES PARTES PARA EVITAR LA FORMACION DE ZONA DE COMPRESION. 2. PARA LOS EMPALMES DE # HORIZONTAL DE MUROS DE CONCRETO ARMADO, SE UTILIZARAN LOS VALORES INDICADOS PARA EL # SUPERIOR DE VIGAS.

AMARRE DE TABIQUES DE ALBANILERIA EN COLUMNAS Y COLUMNETAS

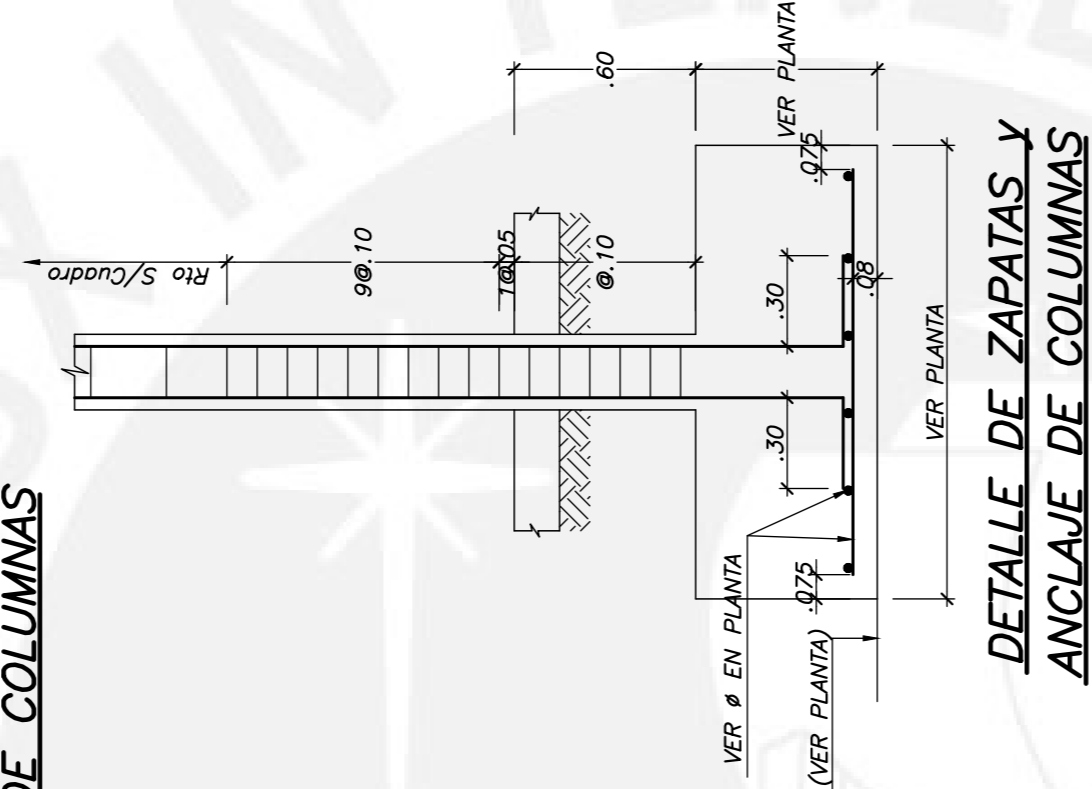


NOTAS.- 1) LAS COLUMNETAS SE VACIARAN LUEGO DE DESENCOFRRAR NIVEL SUPERIOR DEL TECHO. 2) LAS COLUMNETAS SE UBICARAN EN LOS EXTREMOS DE LOS TABIQUES Y CUANDO SE TIENE UN TABIQUE DE MAS DE 4.00 DE LARGO, SIN ARRIOSTRE DE UN TABIQUE PERPENDICULAR, SE TENDRA UNA COLUMNETA INTERMEDIA. 3) LAS COLUMNETAS SERAN DE 14x.25, CON 4#3/8"-1/2"Ø.10, RESTO Ø .25 4) CUANDO LAS COLUMNETAS MAZCAN SOBRE UN ALGERADO SE RETIRARA EL LADRILLO, REEMPLAZADO CON CONCRETO Y LOS DOBLES DE LOS FIERROS DE LAS COLUMNETAS SEAN JUNTO DE TABIQUES CON SUS COLUMNETAS SERA CON HILADAS ENFENDADAS Y CON DOS ALAMBRES #8 Ø 1#1/4", CADA 3 HILADAS QUE SE PROLONGAN EN LOS TABIQUES UNA LONGITUD DE 0.60 m.

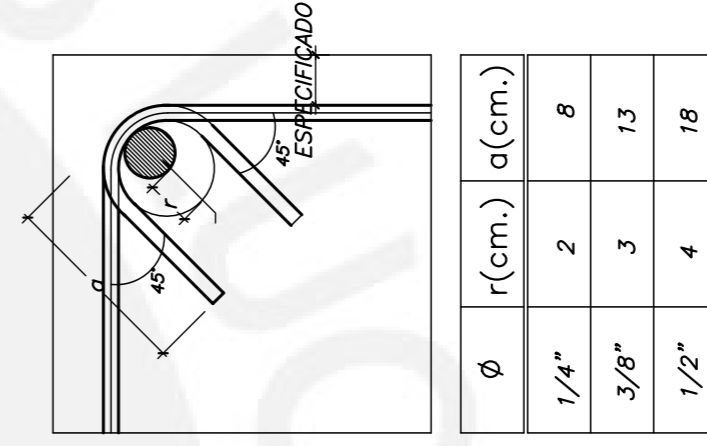
REMATE DE COLUMNAS

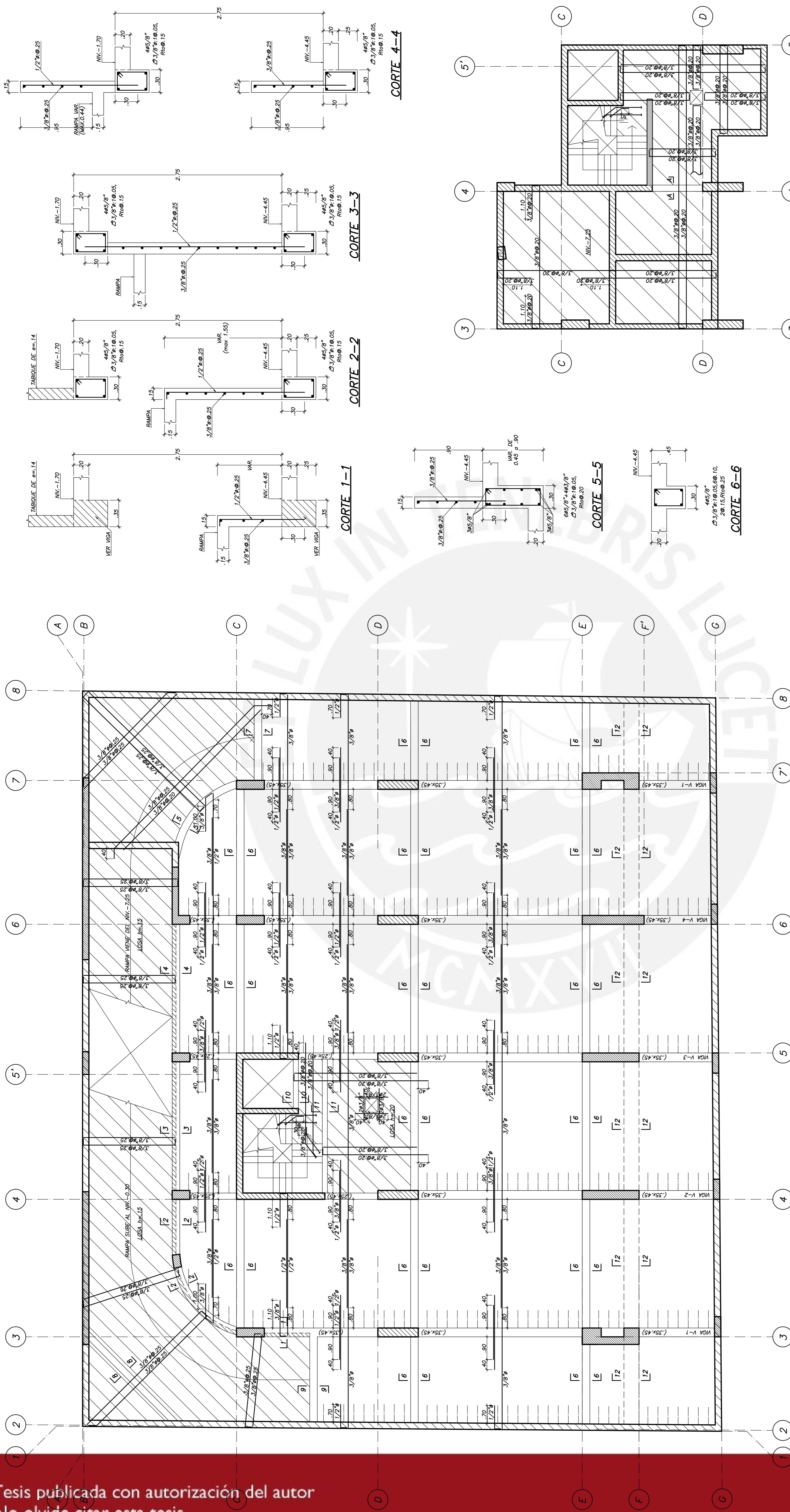


REFUERZO TRANSVERSAL DE COLUMNAS



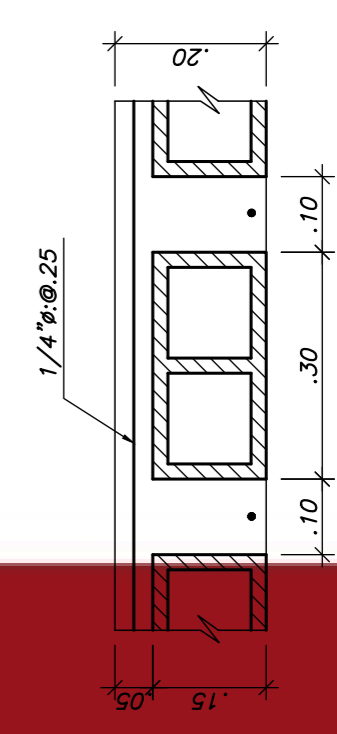
DETALLE DE ZAPATAS Y ANCLAJE DE COLUMNAS



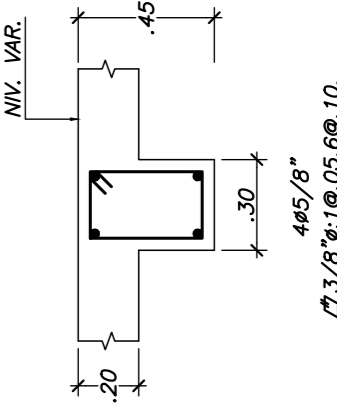


ENCOFRADO SÓTANO 2 (NIVEL -4.45)

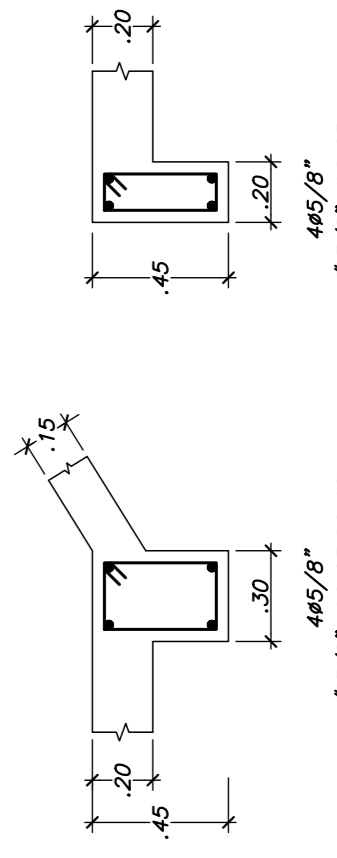
ALIGERADO h=20
LOSA MACIZA h=15 (ZONA ACHURADA)
LOSA MACIZA h=20 (ZONA ACHURADA)
S/C=250 Kg/m²



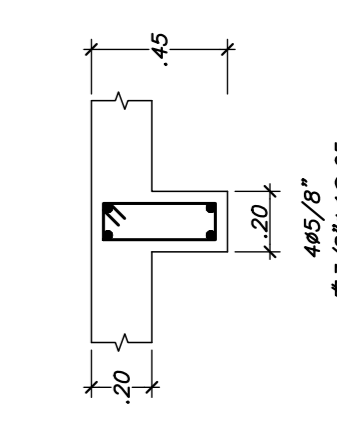
CORTE 7-7
445/8"
∅ 3/8" x 1.05, 66.10, R0.25
2.0 x 1.5, R0.25



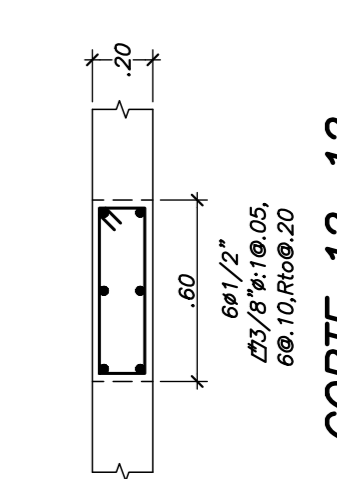
CORTE 8-8
445/8"
∅ 3/8" x 1.05, 66.10, R0.25



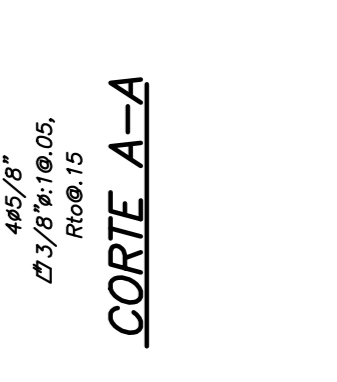
CORTE 9-9
445/8"
∅ 3/8" x 1.05, 66.10, R0.25



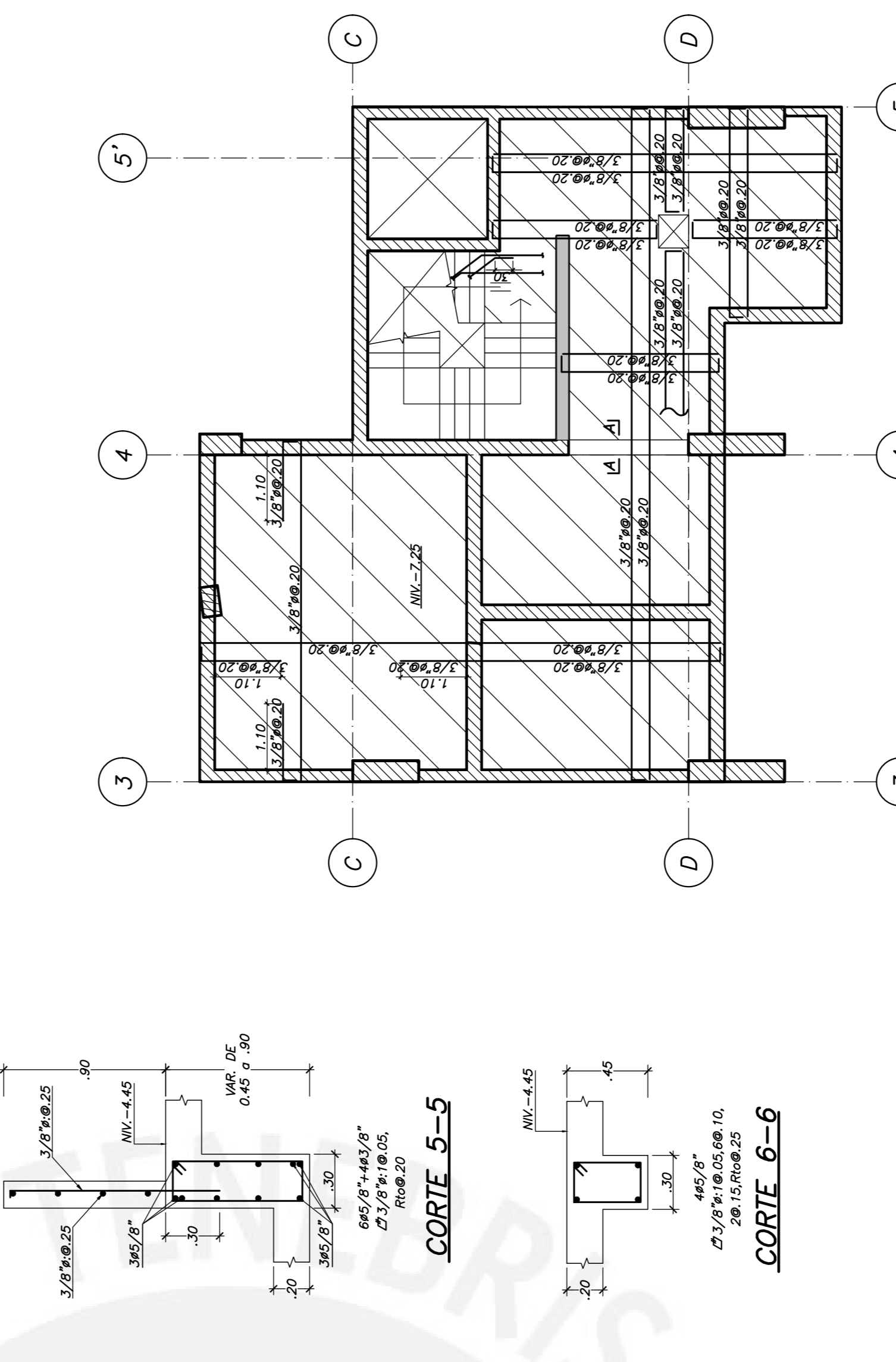
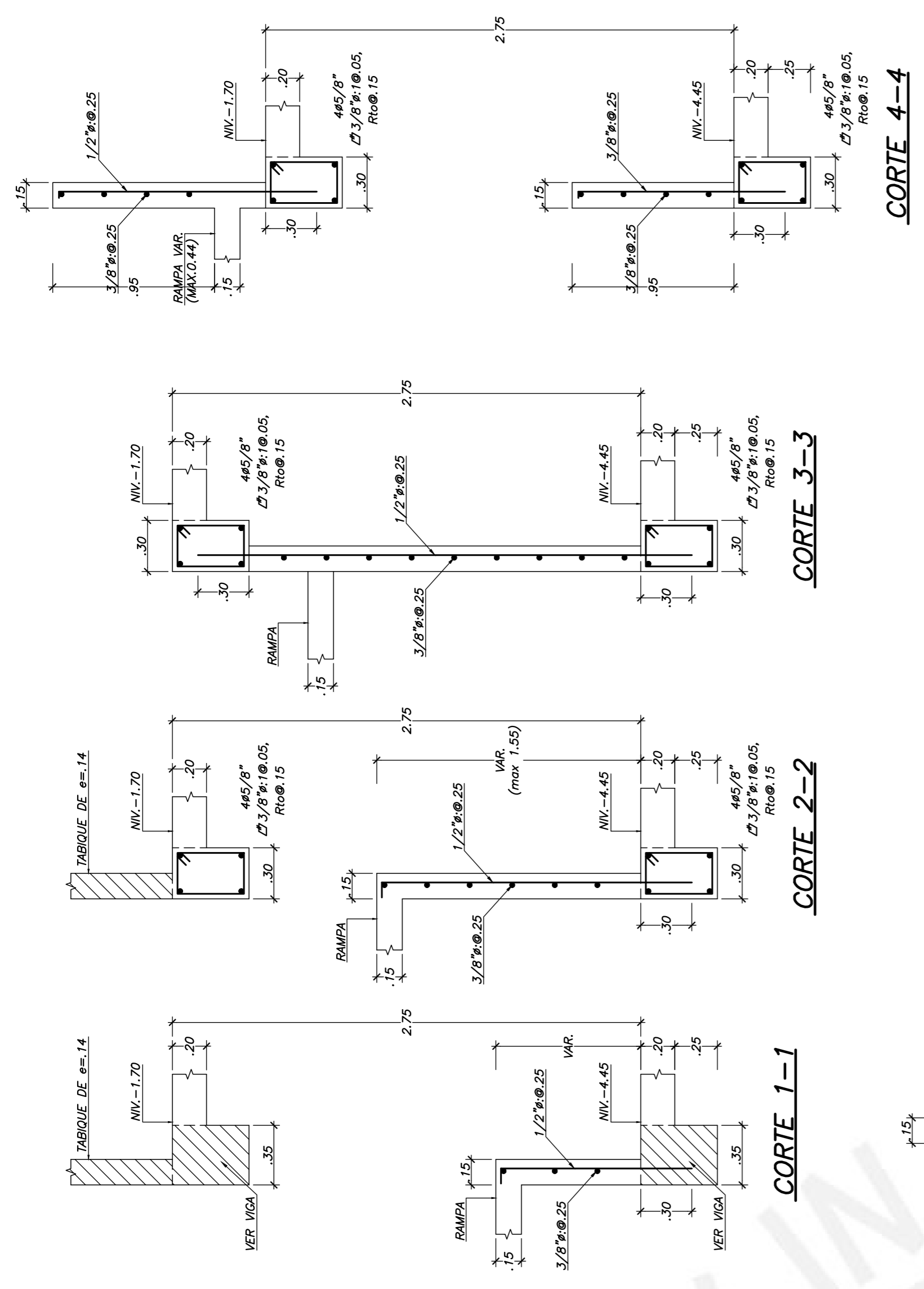
CORTE 10-10
445/8"
∅ 3/8" x 1.05, 66.10, R0.25



CORTE 11-11
445/8"
∅ 3/8" x 1.05, 66.10, R0.25

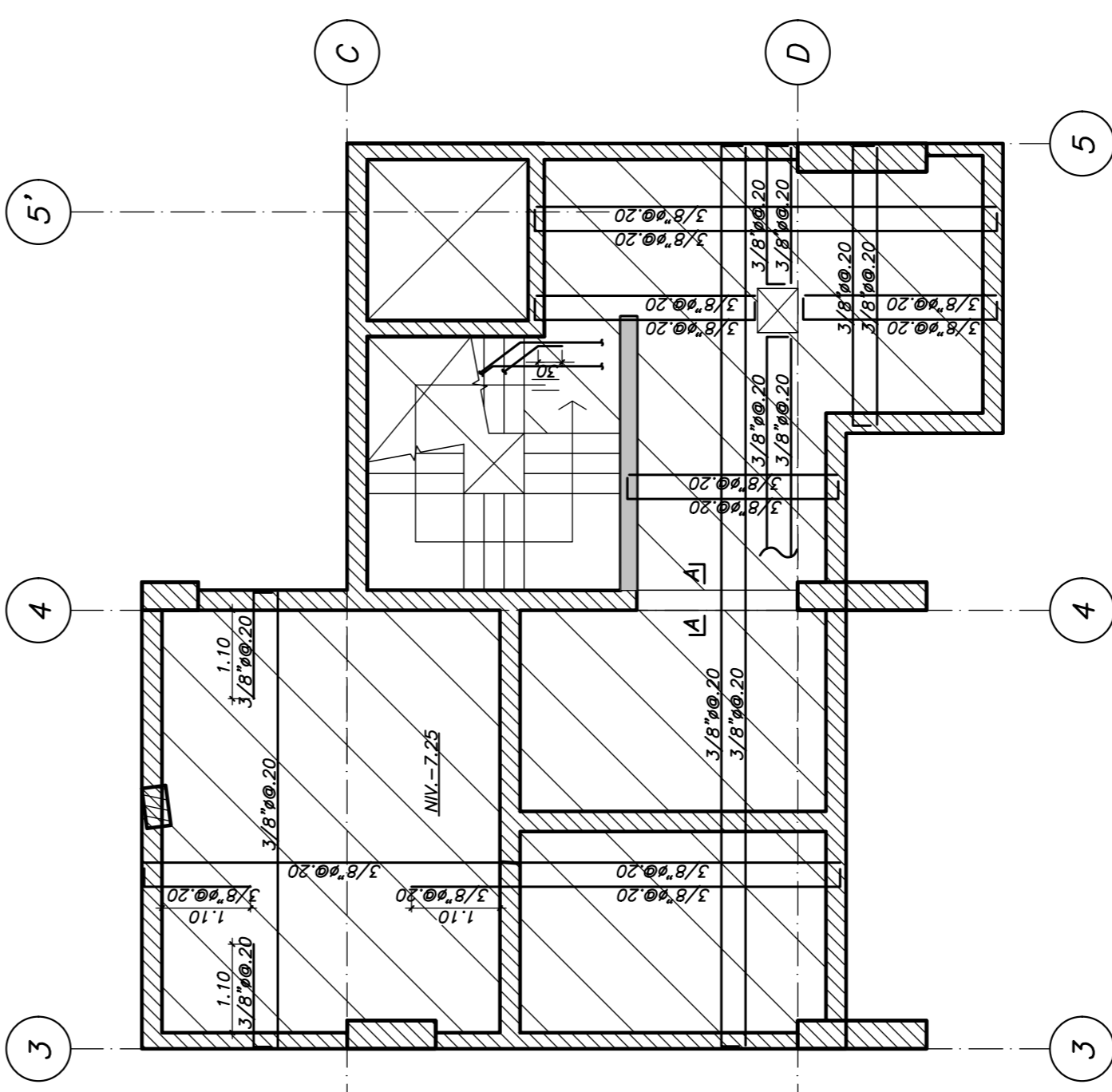


CORTE A-A
445/8"
∅ 3/8" x 1.05, 66.10, R0.25

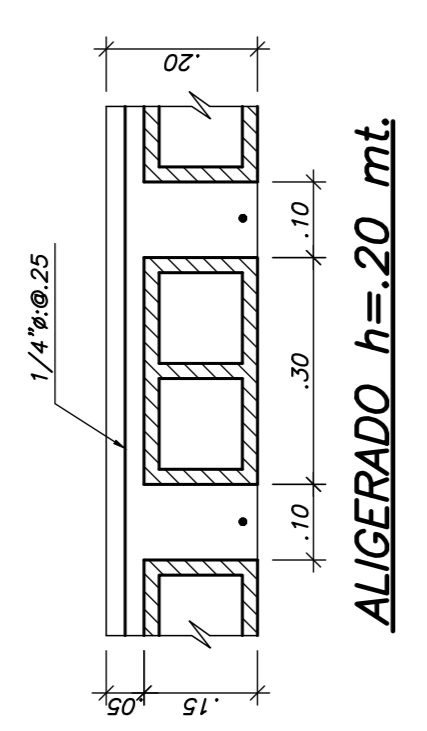
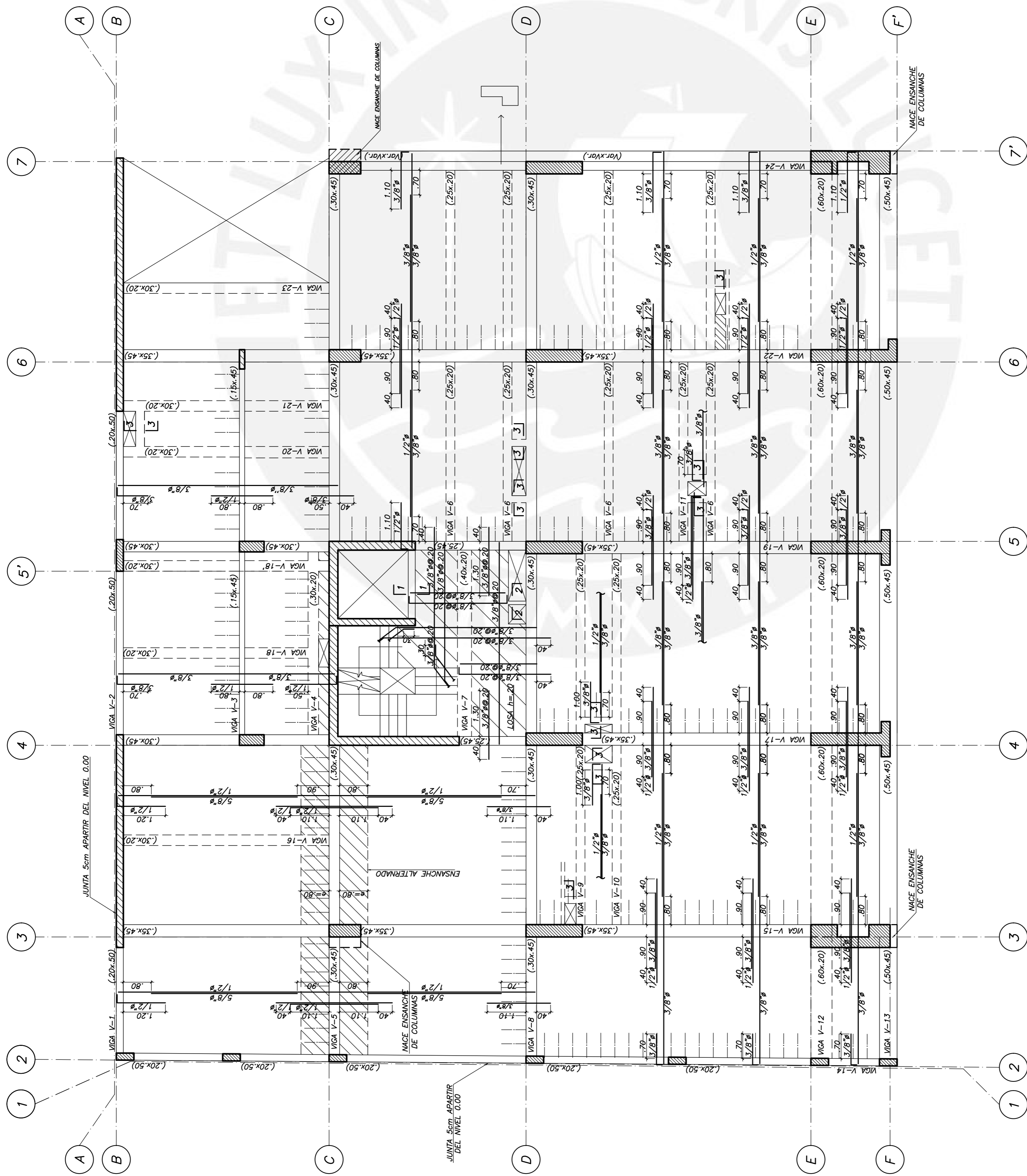


ENCOFRADO SÓTANO 3 (NIVEL -7.25)

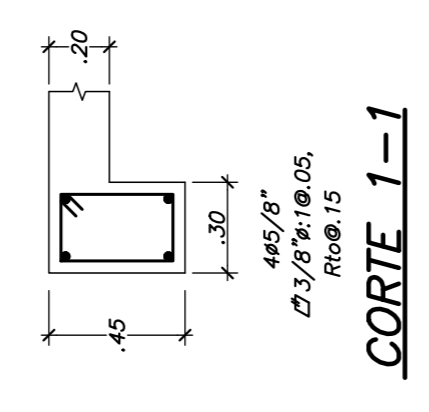
LOSA h=15 (ZONA ACHURADA)
S/C=250 Kg/m²



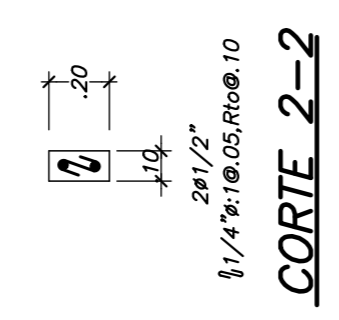
TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO :	ENCOFRADO SÓTANO 2 (NIV. -4.45) ENCOFRADO SÓTANO 3 (NIV. -7.25)
ESCALA	1/75
E-06	



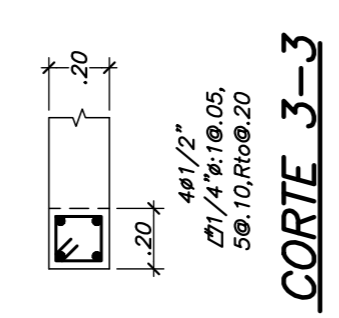
ALIGERADO $h=20$ mt.



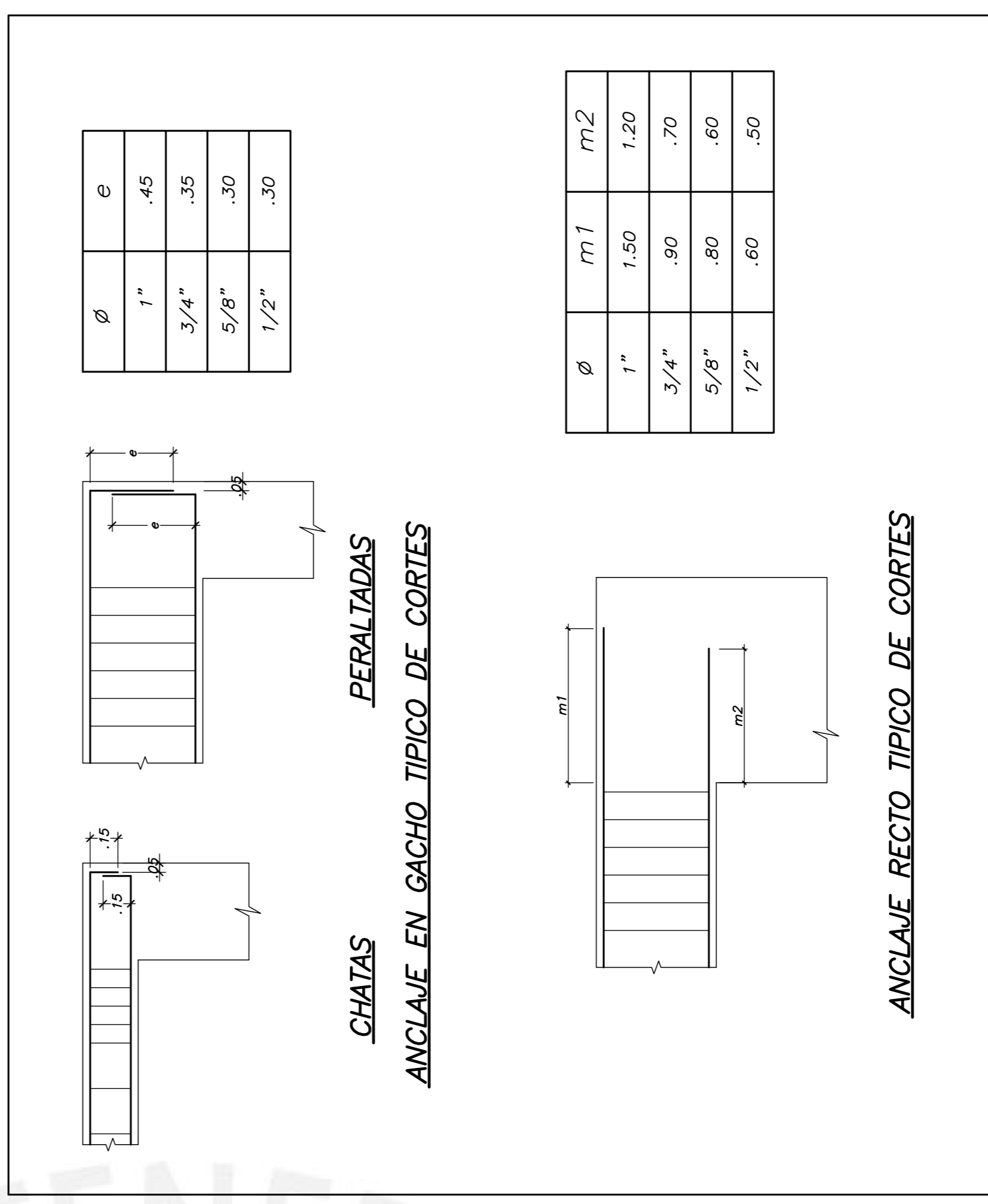
CORTE 1-1



CORTE 2-2



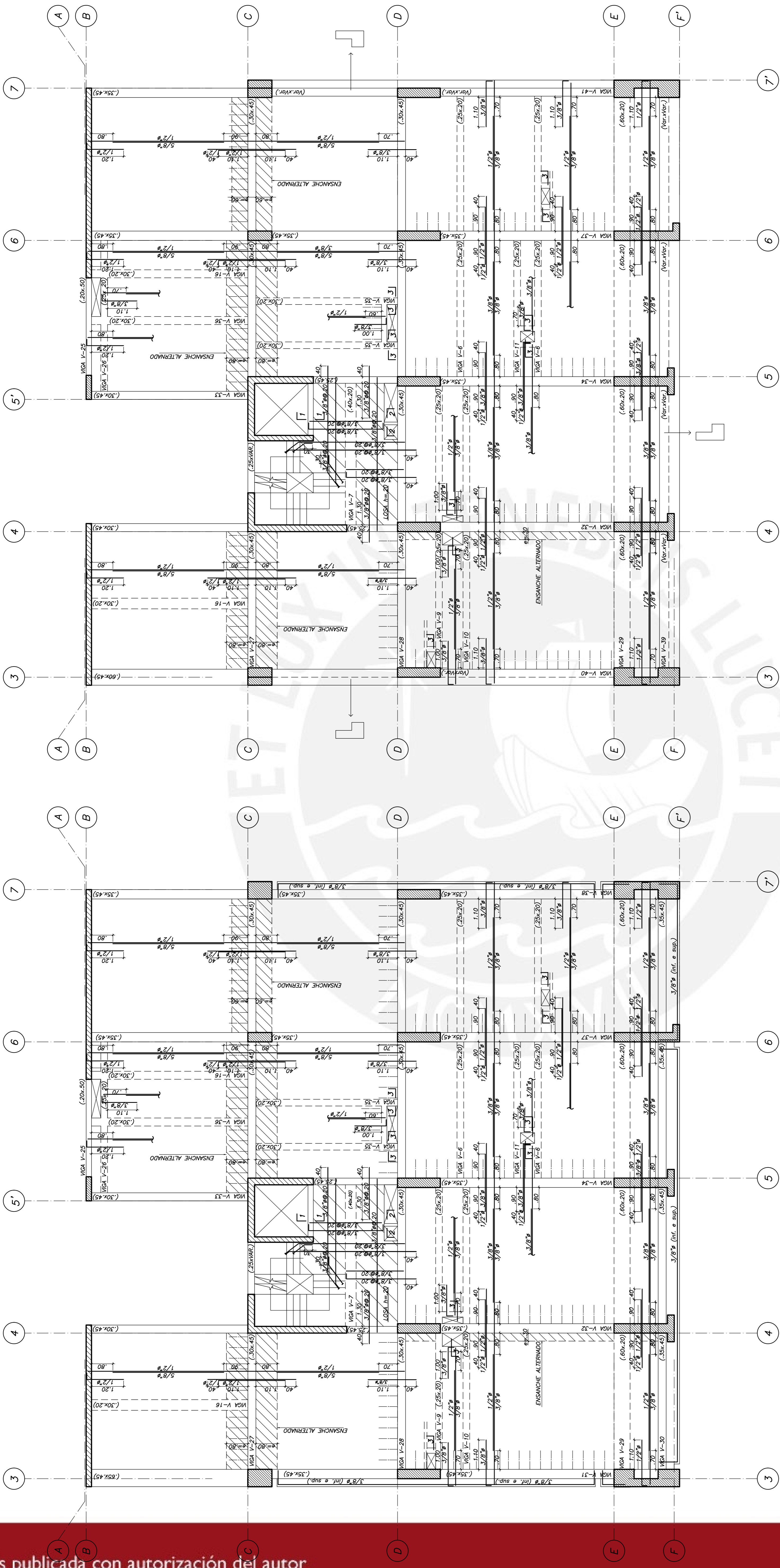
CORTE 3-3



ENCOFRADO 1° PISO (NIVEL+1.55)

ALIGERADO $h=20$
 LOSA MACIZA $h=20$ (ZONA ACHURADA)
 $S/C=200$ kg/m²

TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
ESCALA	1/75
PLANO :	ENCOFRADO 1° PISO (NIV. +1.55)
	E-08

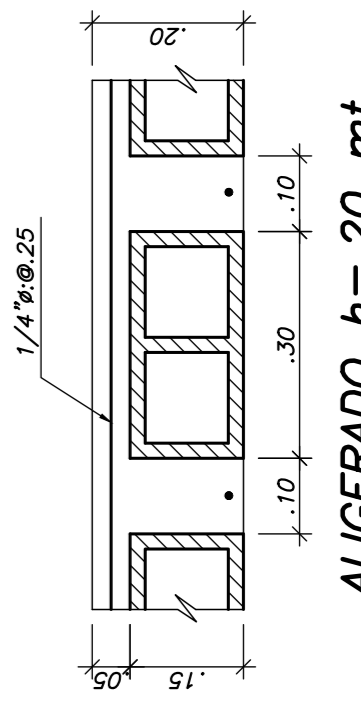


ENCOFRADO 2° PISO (NIVEL+4.15)

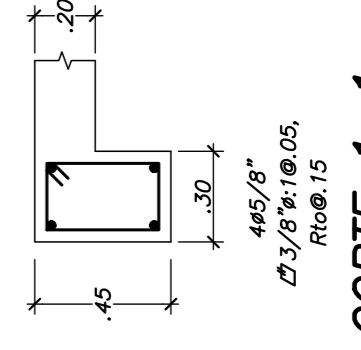
ALIGERADO h=20
LOSA MACIZA h=20 (ZONA ACHURADA)
S/C=200 Kg/m²

ENCOFRADO 3° PISO (NIVEL+6.75)

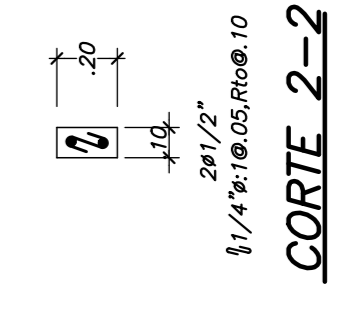
ALIGERADO h=20
LOSA MACIZA h=20 (ZONA ACHURADA)
S/C=200 Kg/m²



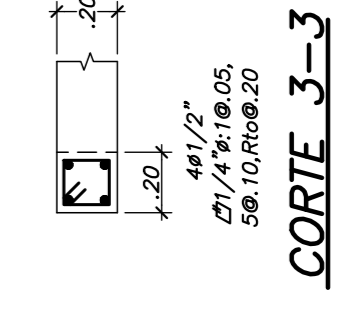
ALIGERADO h=20 mt.



CORTE 1-1



CORTE 2-2



CORTE 3-3

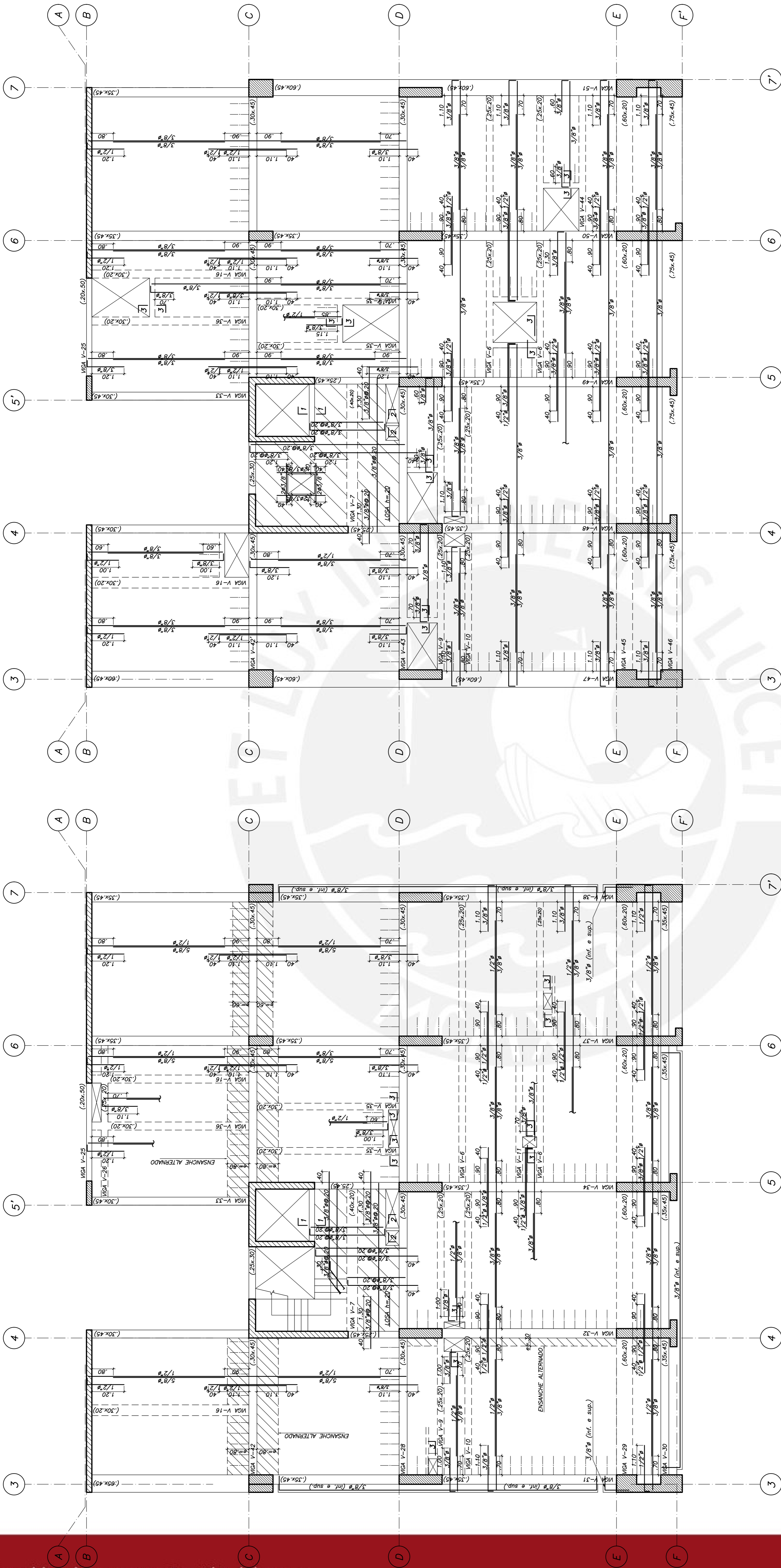
TESIS : MINORU ALEJANDRO AFUSO MUÑOZ

PROYECTO : EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR

ESCALA 1/75

PLANO : ENCOFRADO 2° PISO (NIV. +4.15)
ENCOFRADO 3° PISO (NIV. +6.75)

E-09

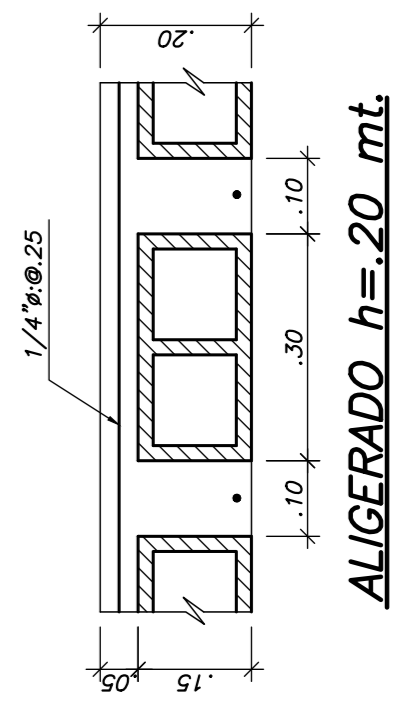


ENCOFRADO 5° PISO (NIVEL+11.95)

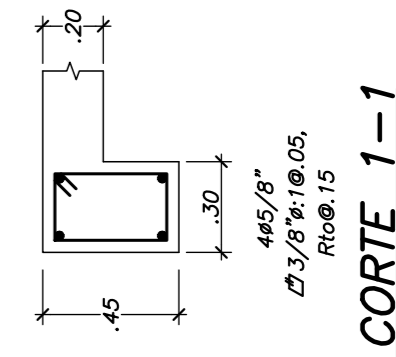
ALIGERADO h=20
LOSA MACIZA h=20 (ZONA ACHURADA)
S/C=200 Kg/m²

ENCOFRADO 4° PISO (NIVEL+9.35)

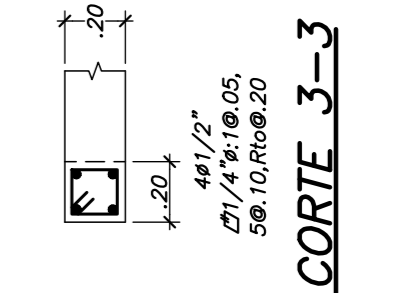
ALIGERADO h=20
LOSA MACIZA h=20 (ZONA ACHURADA)
S/C=200 Kg/m²



CORTE 1-1
ALIGERADO h=20 mt



CORTE 2-2



CORTE 3-3

441/2"
Ø1/4" x 10.05
500 x 10.05 R100.20

201/2"
Ø1/4" x 10.05 R100.10

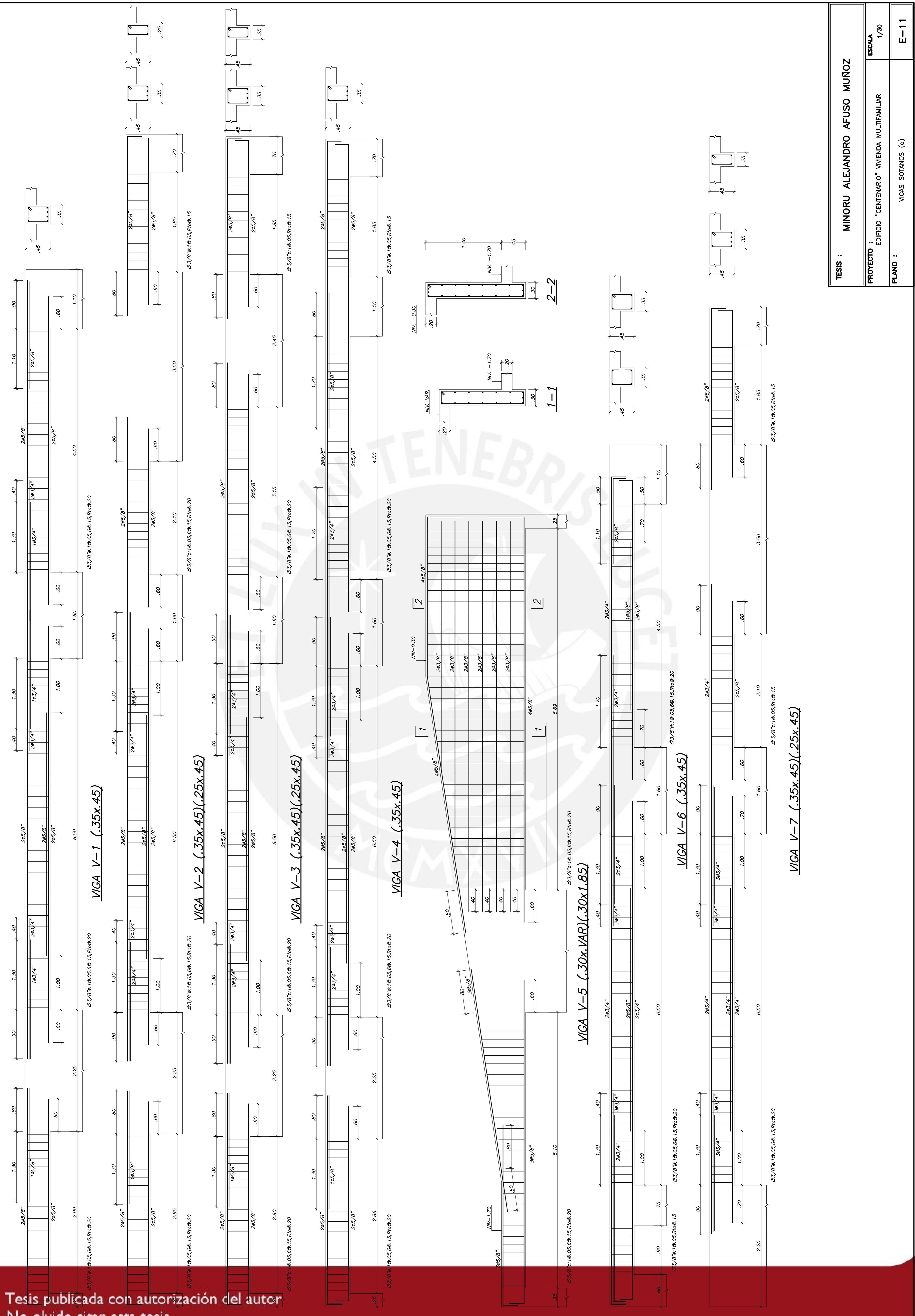
485/8"
Ø3/8" x 10.05
R100.15

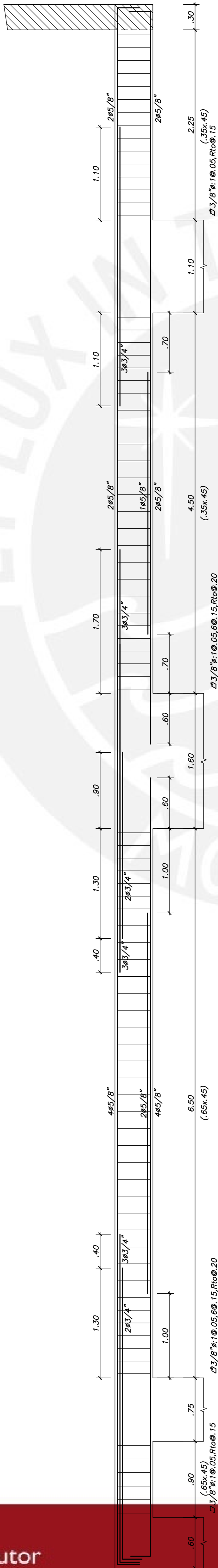
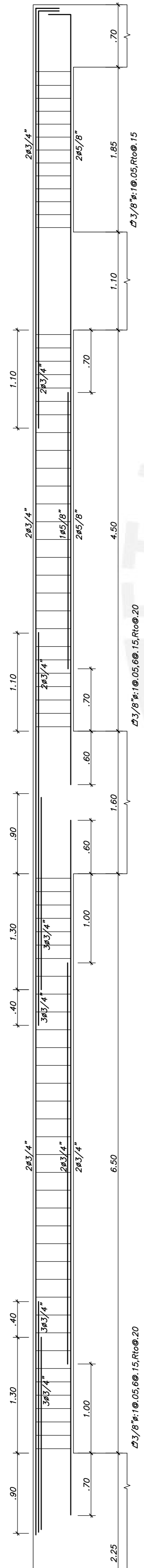
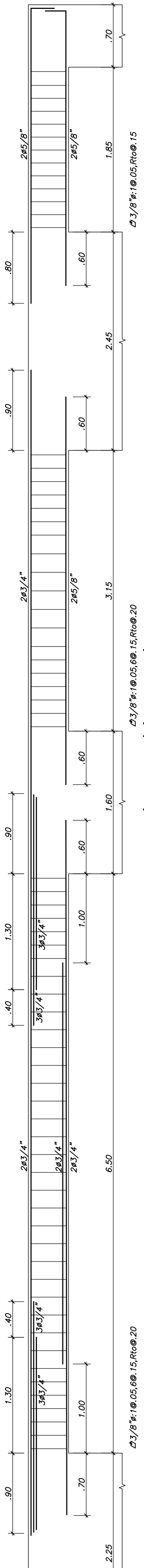
ESCALA
1/75

PROYECTO :
EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR

PLANO :
ENCOFRADO 4° PISO (NIV. +9.35)
ENCOFRADO 5° PISO (NIV. +11.95)

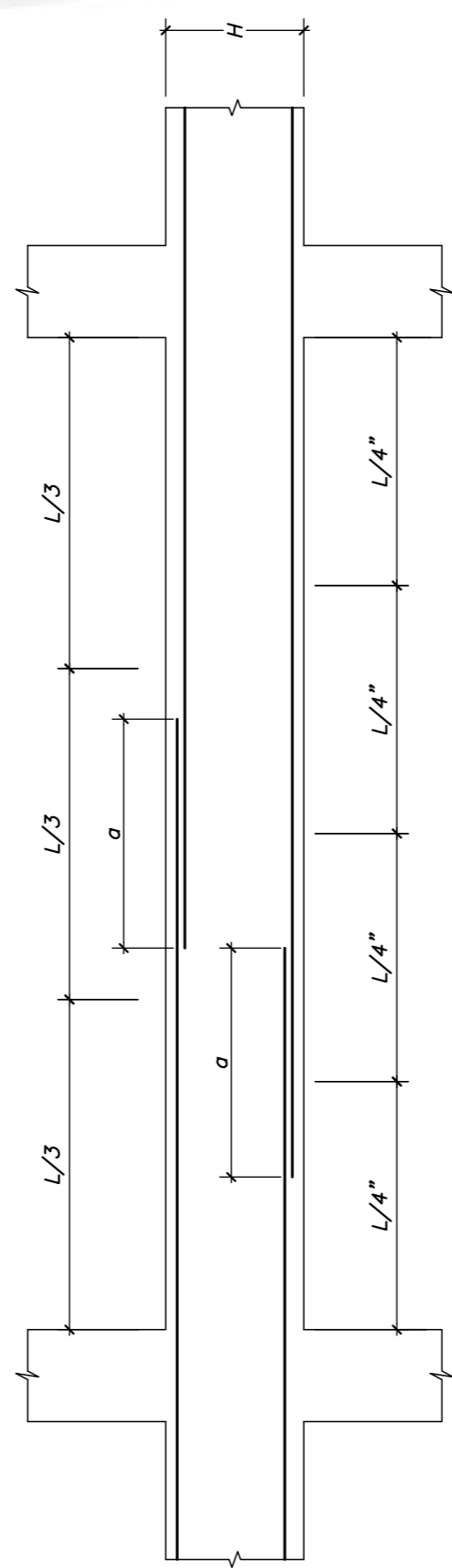
TESIS :
MINORU ALEJANDRO AFUSO MUÑOZ



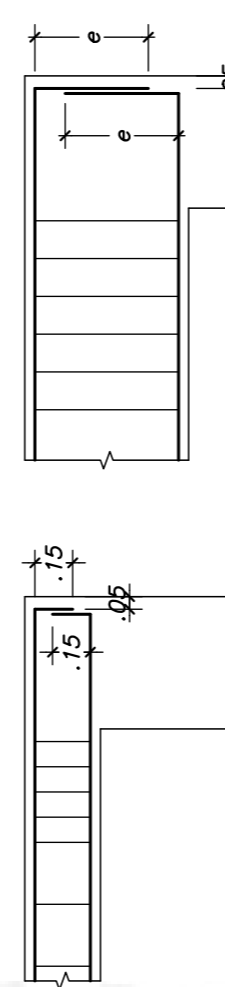
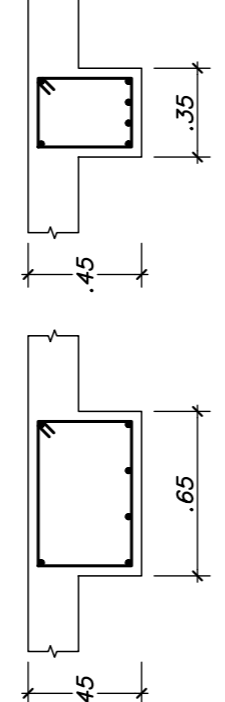
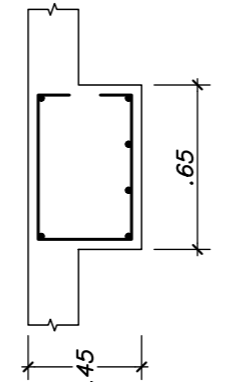
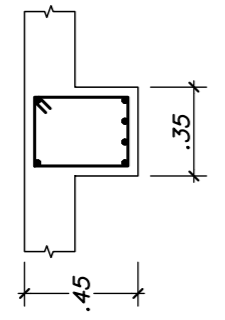
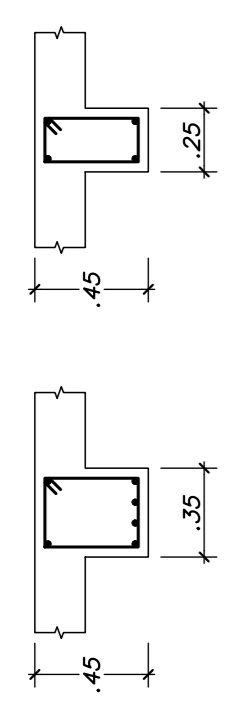


VALORES DE α	
\varnothing	REFUERZO INFERIOR
3/8"	.40
1/2"	.40
5/8"	.50
3/4"	.65
1"	1.15
	REFUERZO SUPERIOR
	.55
	.60
	.70
	.90
	1.60

NOTA-(g) NO EMPALMAR MAS DEL 50 % DEL AREA TOTAL EN UNA MISMA SECCION.
 (b) EN CASO DE NO EMPALMARSE EN LAS ZONAS INDICADAS O CON LOS PORCENTAJES ESPECIFICADOS, AUMENTAR LA LONGITUD EN UN 70 % O CONSULTAR AL PROYECTISTA.
 (c) PARA ALIGERADOS Y VIGAS CHATAS EL ACERO INFERIOR SE EMPALMARA SOBRE LOS APOYOS SIENDO LA LONGITUD DE EMPALME IGUAL A 25 cms. PARA FIERROS DE 3/8" Y 35 cms. PARA 1/2" 6 5/8".

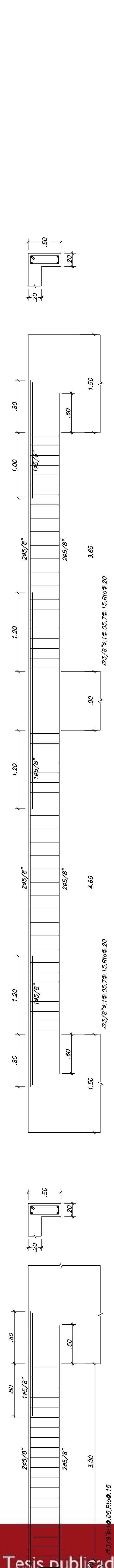


EMPALMES TRASLAPADOS PARA VIGAS, LOSAS Y ALIGERADOS

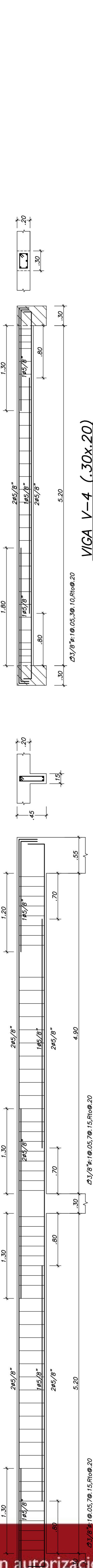


ANCLAJE TIPICO DE VIGAS
 CHATAS
 PERALTADAS

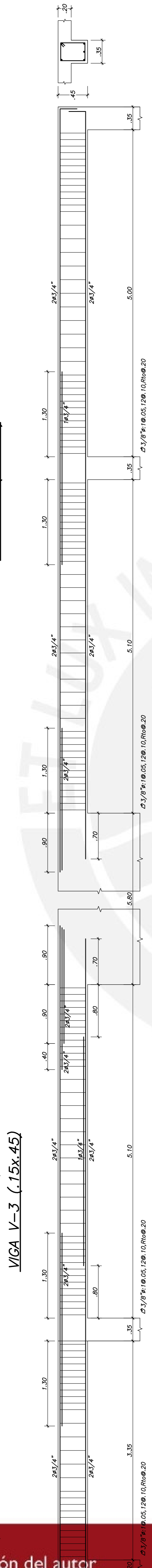
\varnothing	e
1"	.45
3/4"	.35
5/8"	.30
1/2"	.30



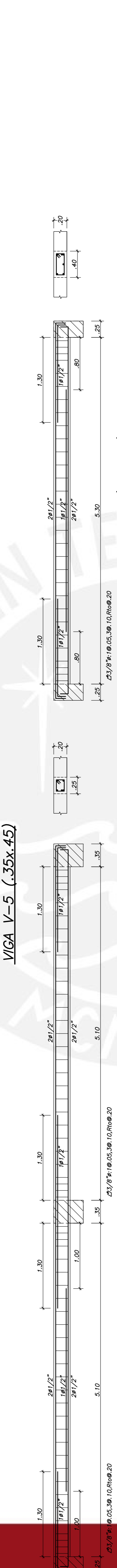
VIGA V-1 (.20x.50)



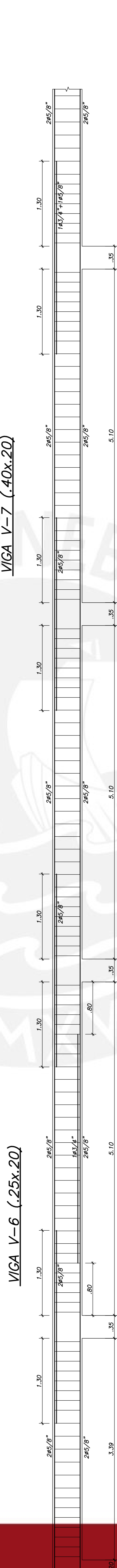
VIGA V-2 (.20x.50)



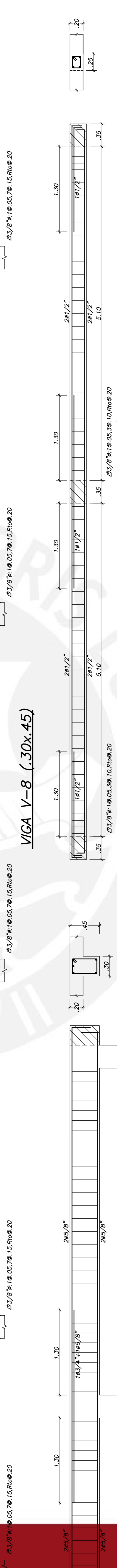
VIGA V-3 (.15x.45)



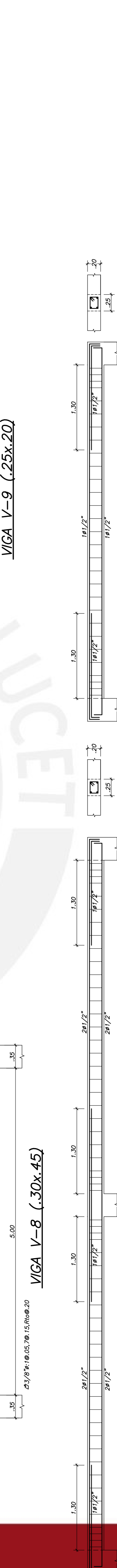
VIGA V-4 (.30x.20)



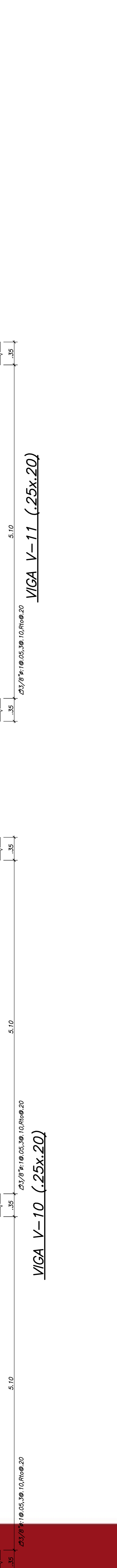
VIGA V-5 (.35x.45)



VIGA V-6 (.25x.20)



VIGA V-7 (.40x.20)



VIGA V-8 (.30x.45)

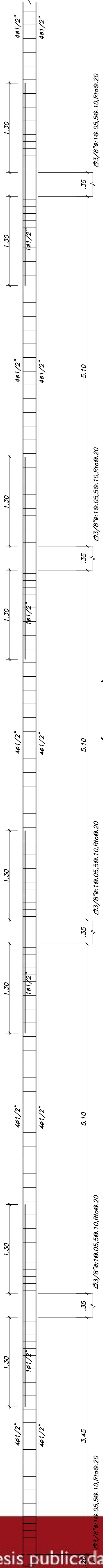


VIGA V-9 (.25x.20)

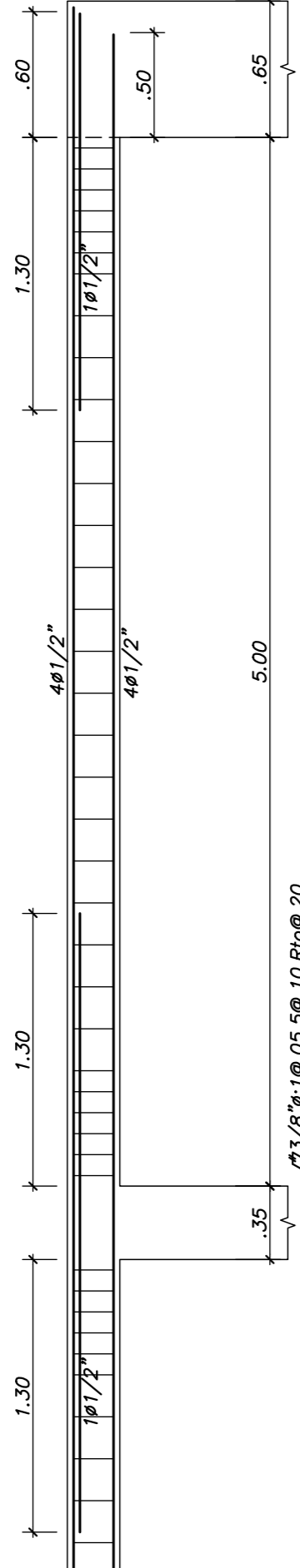


VIGA V-10 (.25x.20)

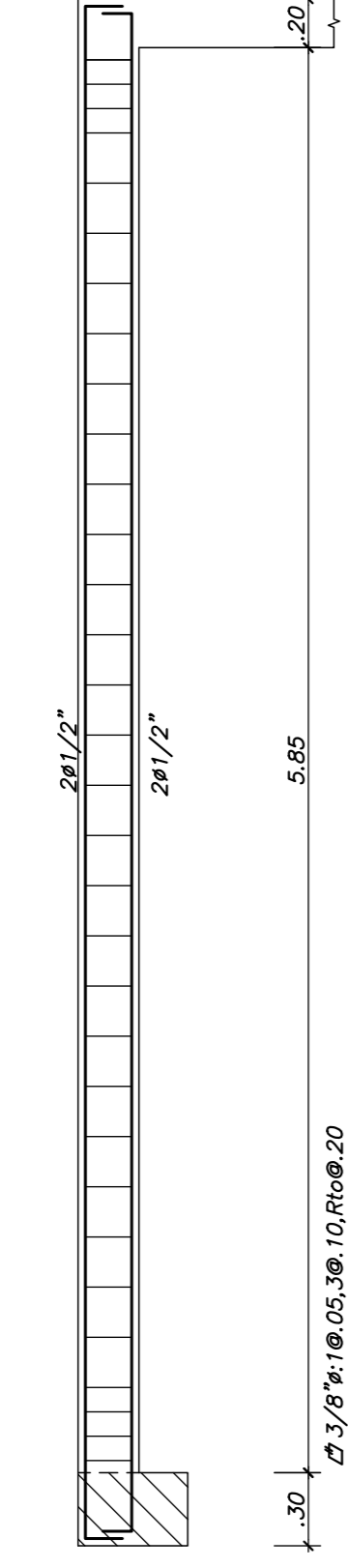
VIGA V-11 (.25x.20)



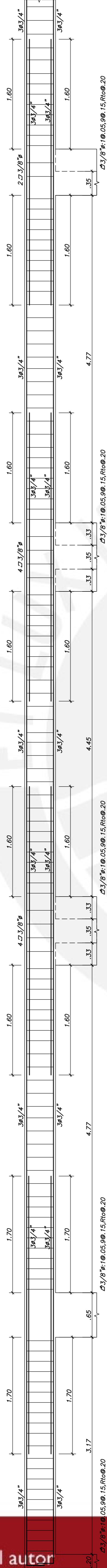
VIGA V-12 (.60x.20)



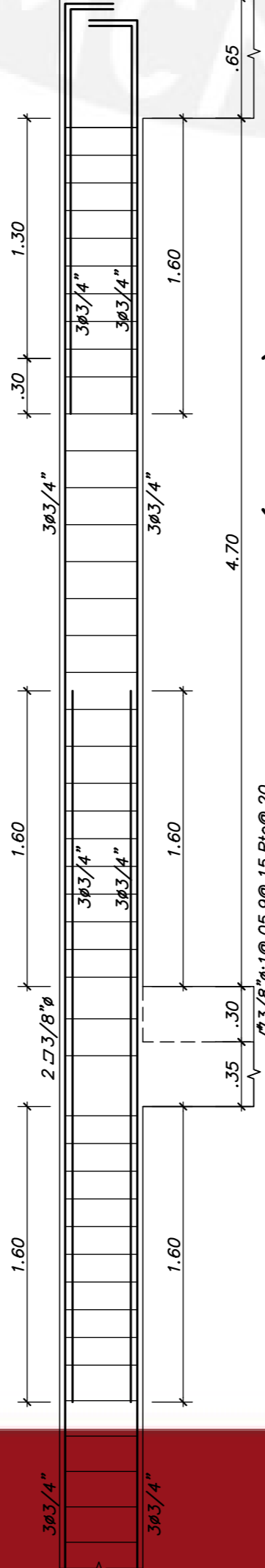
VIGA V-12 (.60x.20)



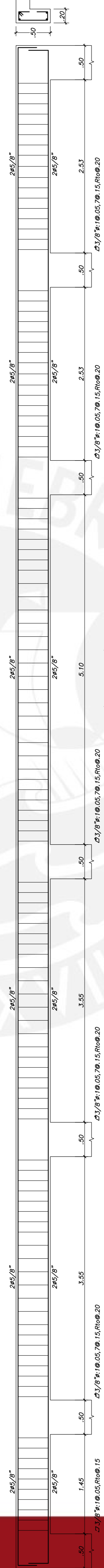
VIGA V-16 (.30x.20)



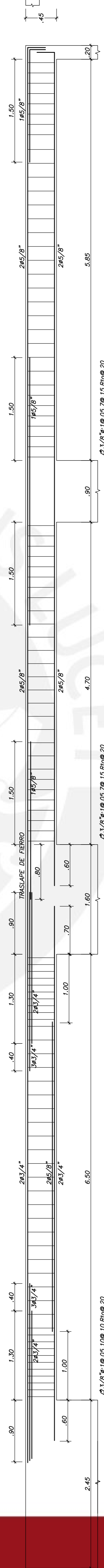
VIGA V-13 (.50x.45)



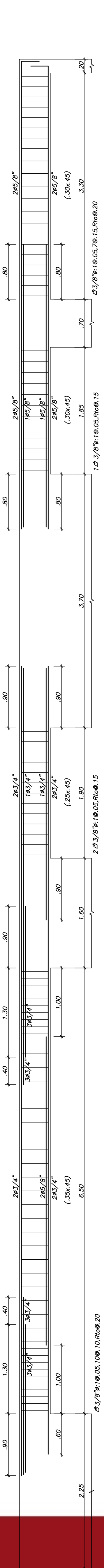
VIGA V-13 (.50x.45)



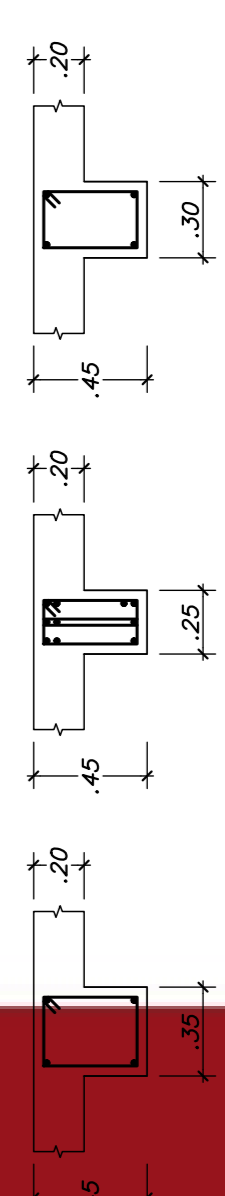
VIGA V-14 (.20x.50)



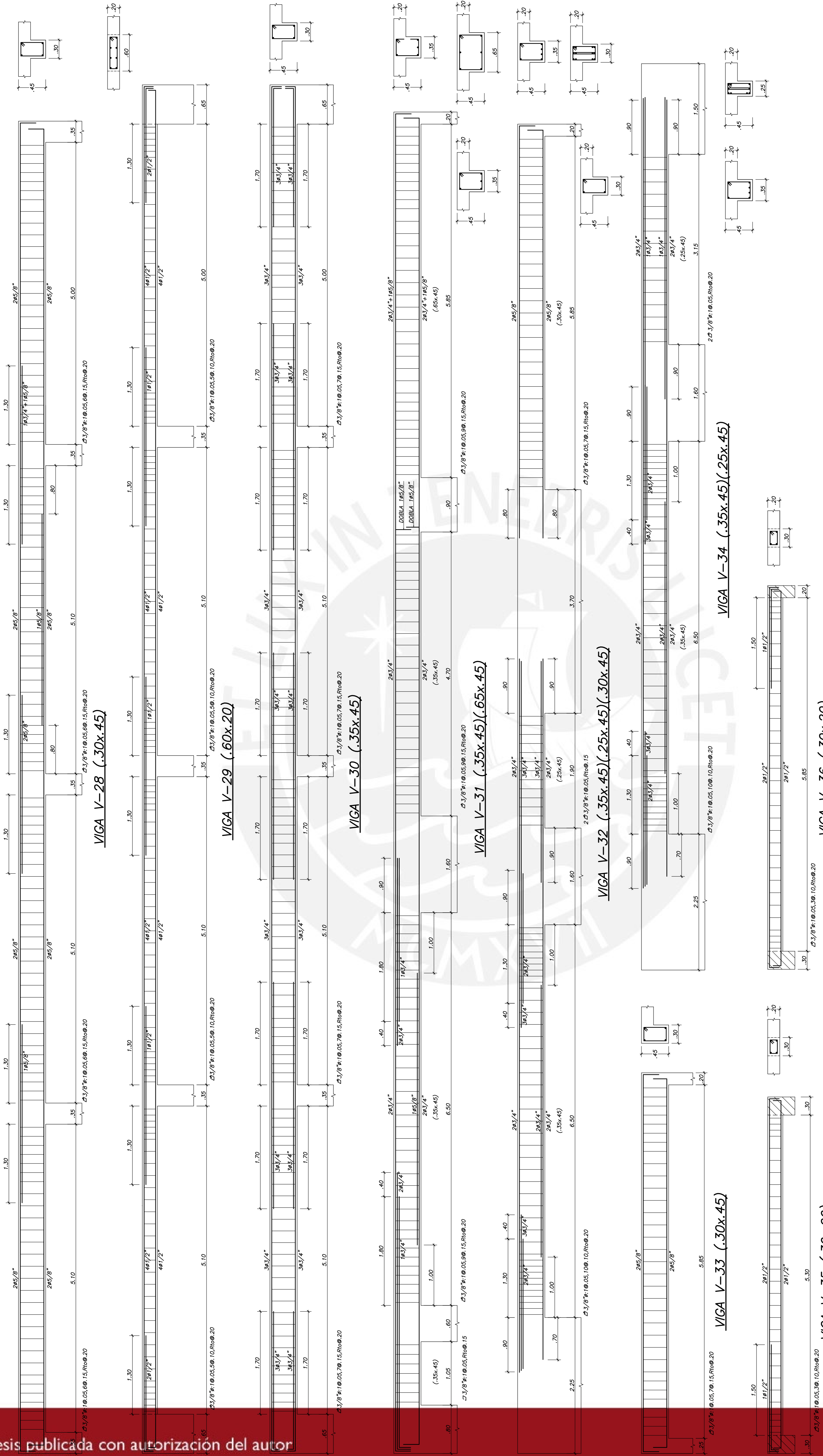
VIGA V-15 (.35x.45)



VIGA V-17 (.35x.45)(.25x.45)(.30x.45)



TESIS :	MINORU ALEJANDRO AFUSO MUÑOZ
PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
ESCALA	1/30
PLANO :	VIGAS SUPERIORES (b)
	E-14



VIGA V-28 (.30x.45)

VIGA V-29 (.60x.20)

VIGA V-30 (.35x.45)

VIGA V-31 (.35x.45)(.65x.45)

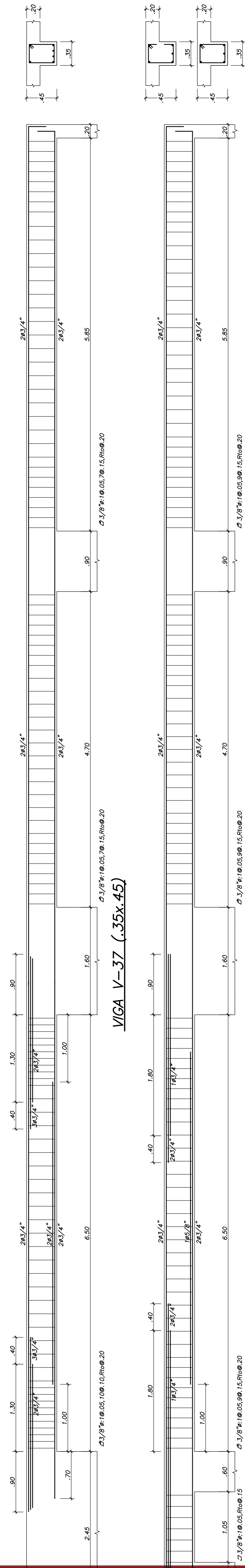
VIGA V-32 (.35x.45)(.25x.45)(.30x.45)

VIGA V-33 (.30x.45)

VIGA V-34 (.35x.45)(.25x.45)

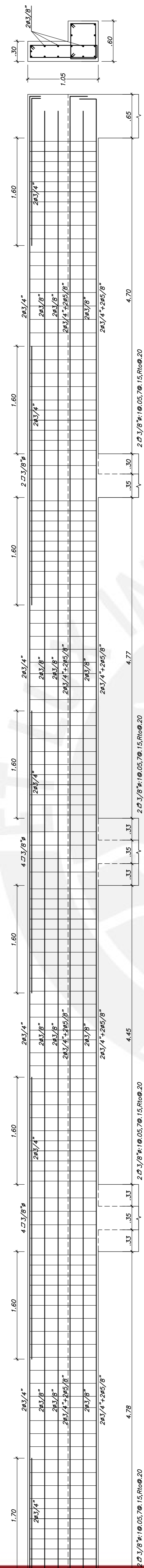
VIGA V-35 (.30x.20)

VIGA V-36 (.30x.20)

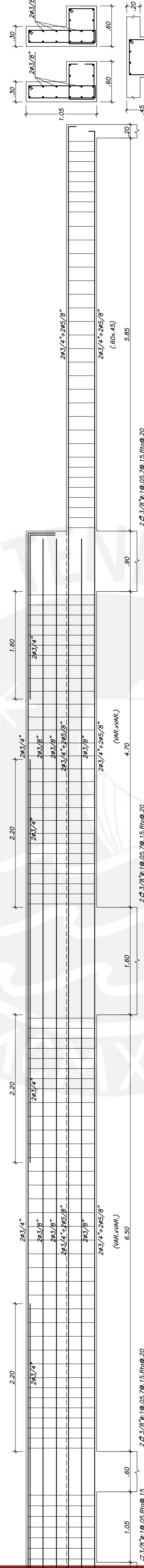


VIGA V-37 (.35x.45)

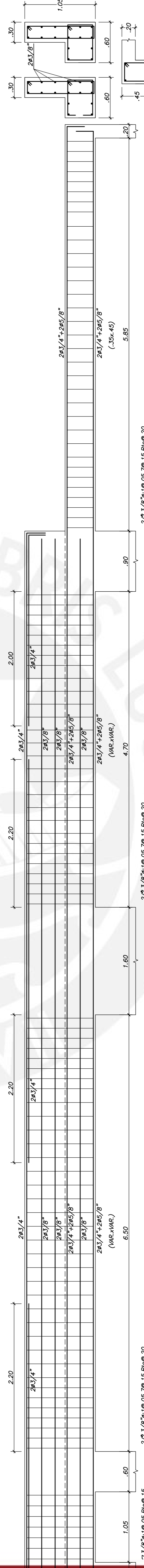
VIGA V-38 (.35x.45)



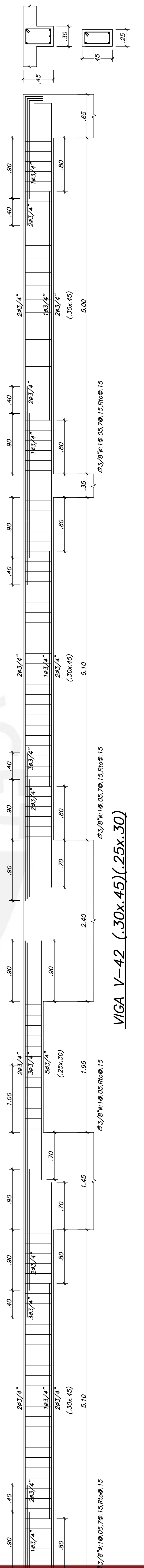
VIGA V-39 (VAR.xVAR.)



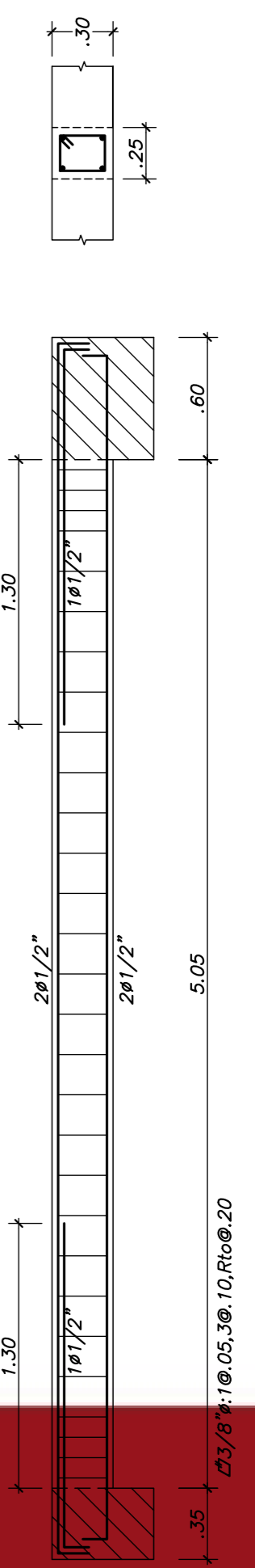
VIGA V-40 (VAR.xVAR.) (.60x.45)



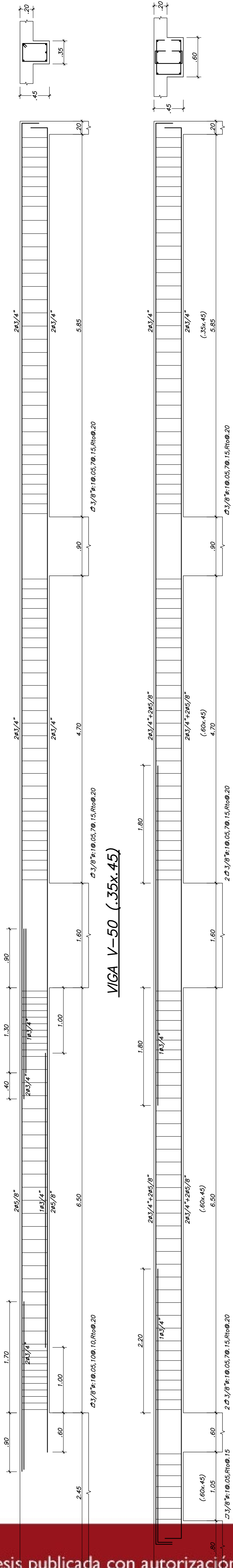
VIGA V-41 (VAR.xVAR.) (.35x.45)



VIGA V-42 (.30x.45) (.25x.30)



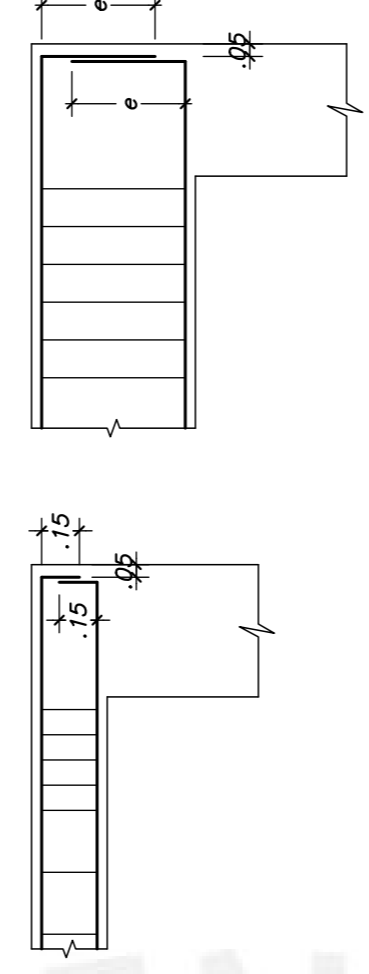
VIGA V-44 (.25x.30)



VIGA V-50 (.35x.45)

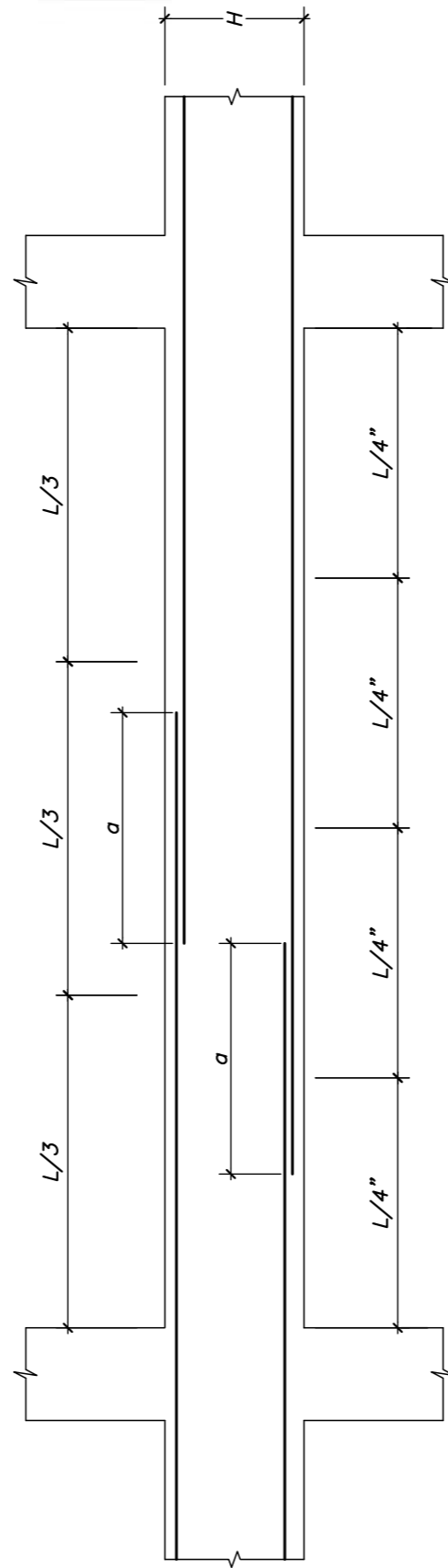
VIGA V-51 (.60x.45)(.35x.45)

Ø	VALORES DE α	
	REFUERZO INFERIOR	REFUERZO SUPERIOR
3/8"	.40	.55
1/2"	.40	.60
5/8"	.50	.70
3/4"	.65	.90
1"	1.15	1.60



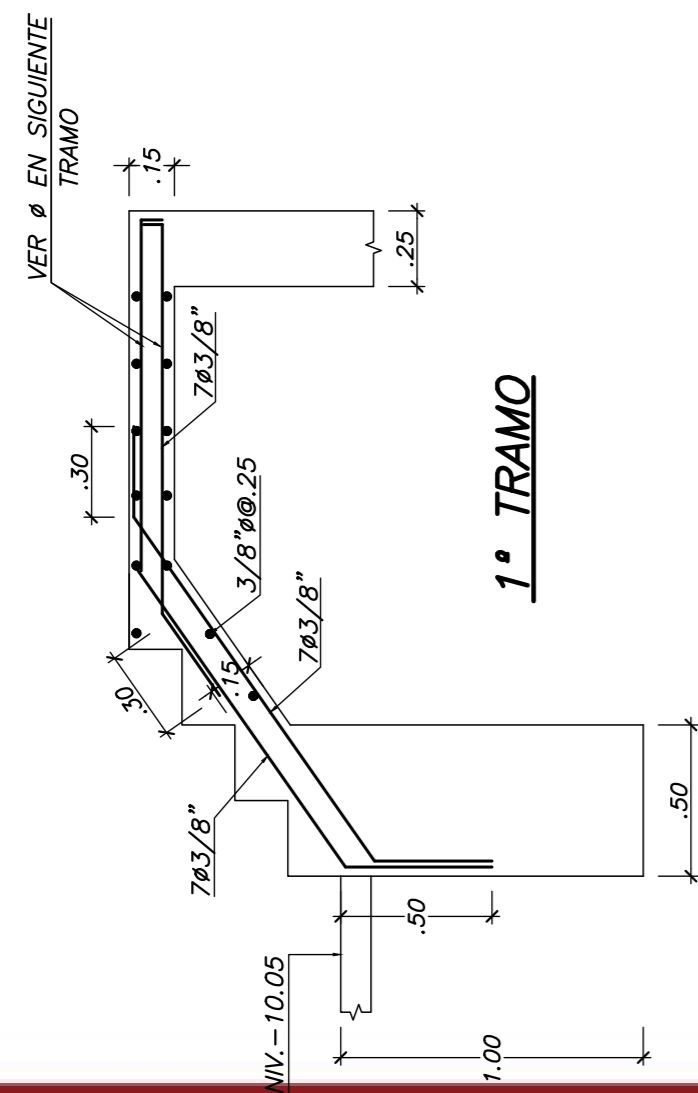
CHATAS
ANCLAJE TÍPICO DE VIGAS

Ø	e
1"	.45
3/4"	.35
5/8"	.30
1/2"	.30

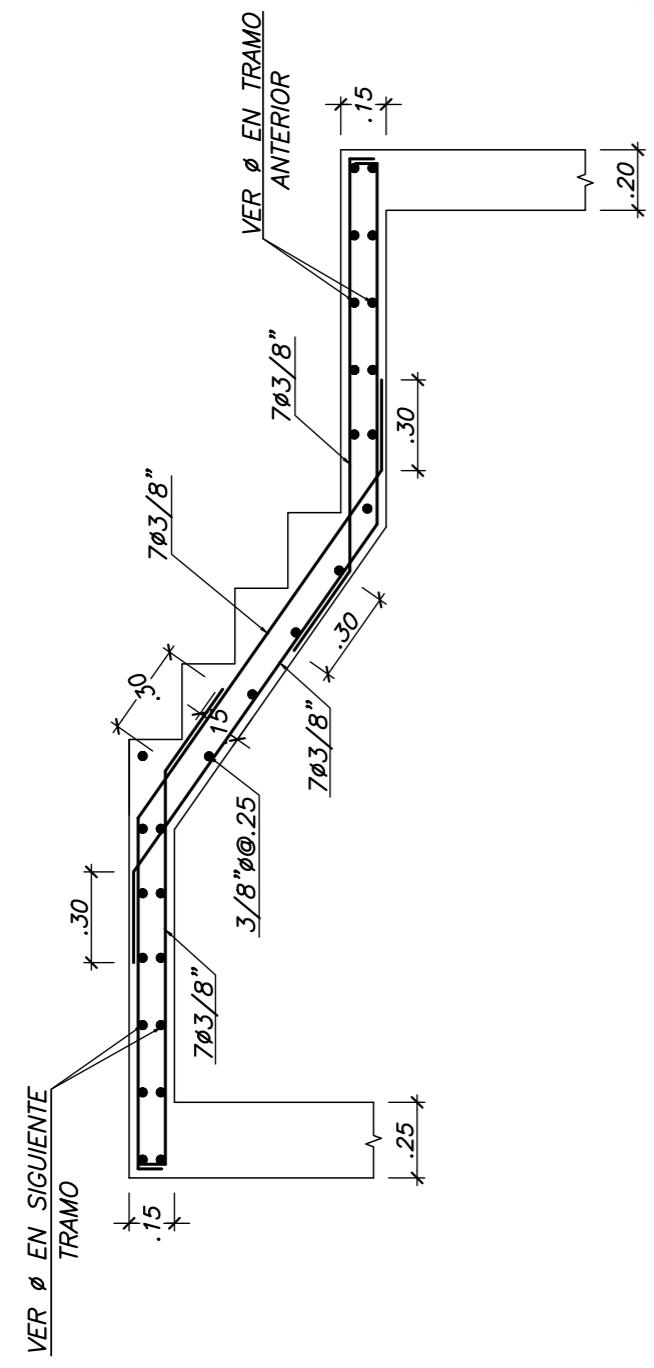


EMPALMES TRASLAPADOS PARA VIGAS, LOSAS Y ALIGERADOS

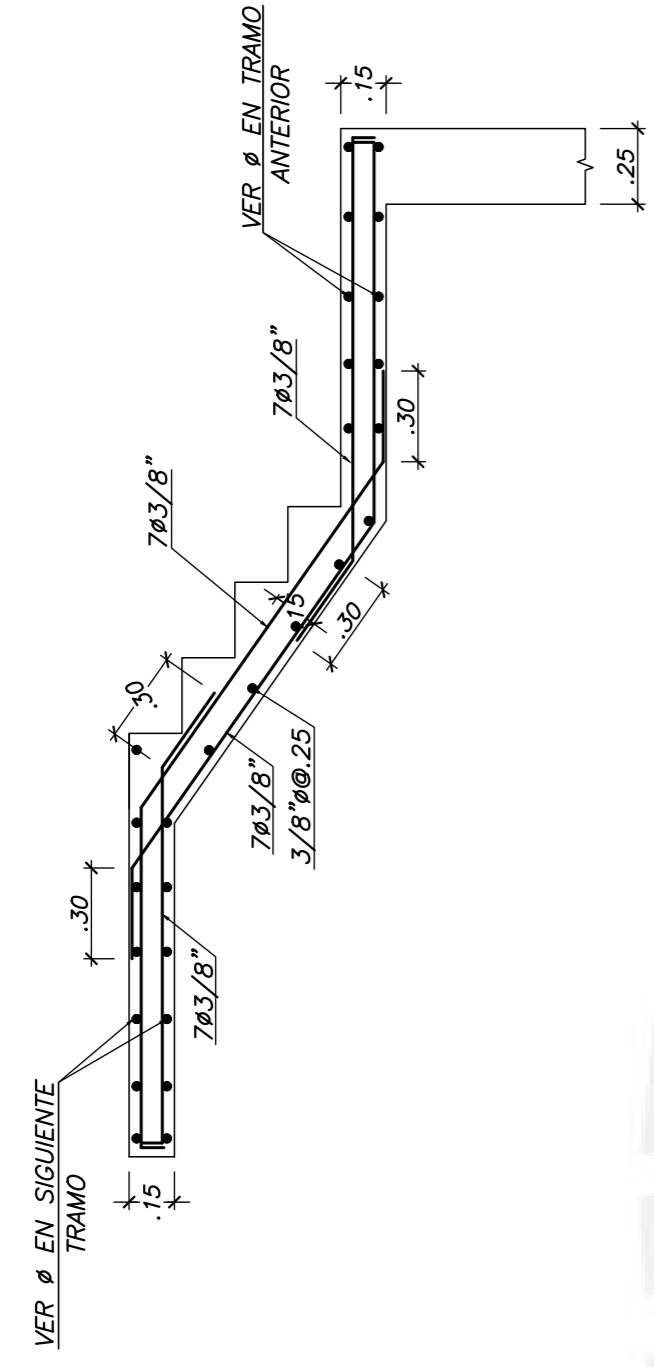
NOTA-(g) NO EMPALMAR MAS DEL 50 % DEL AREA TOTAL EN UNA MISMA SECCION.
 (b) EN CASO DE NO EMPALMARSE EN LAS ZONAS INDICADAS O CON LOS PORCENTAJES ESPECIFICADOS, AUMENTAR LA LONGITUD EN UN 70 % O CONSULTAR AL PROYECTISTA.
 (c) PARA ALIGERADOS Y VIGAS CHATAS EL ACERO INFERIOR SE EMPALMARA SOBRE LOS APOYOS SIENDO LA LONGITUD DE EMPALME IGUAL A 25 cms. PARA FIERROS DE 3/8" Y 35 cms. PARA 1/2" ó 5/8".



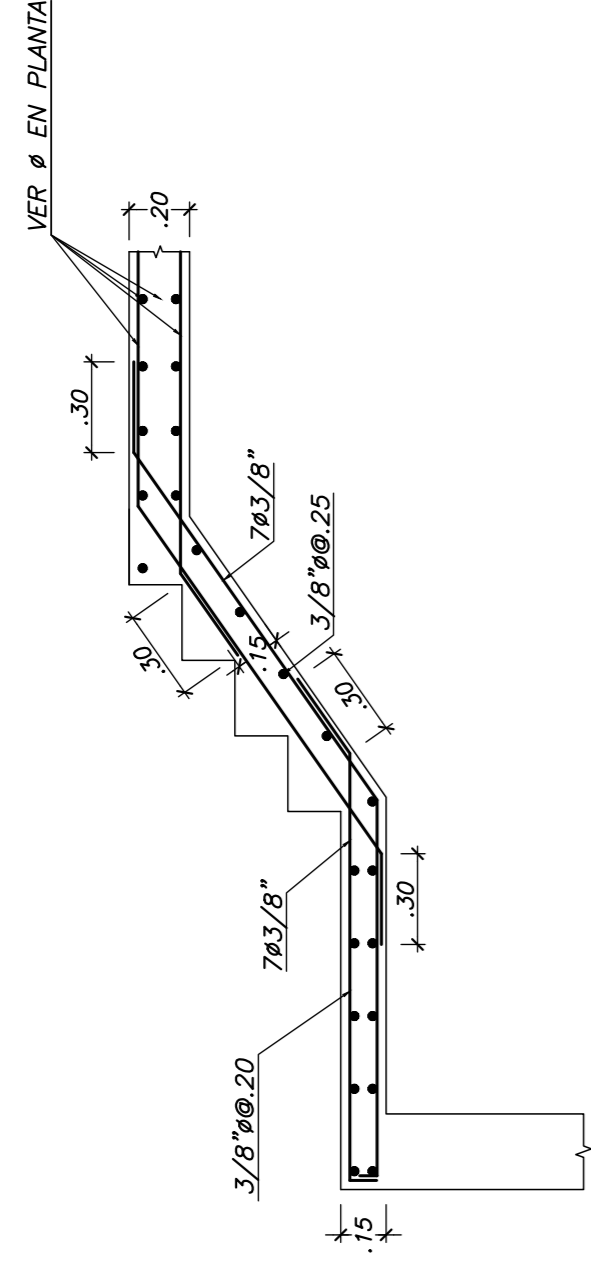
1° TRAMO



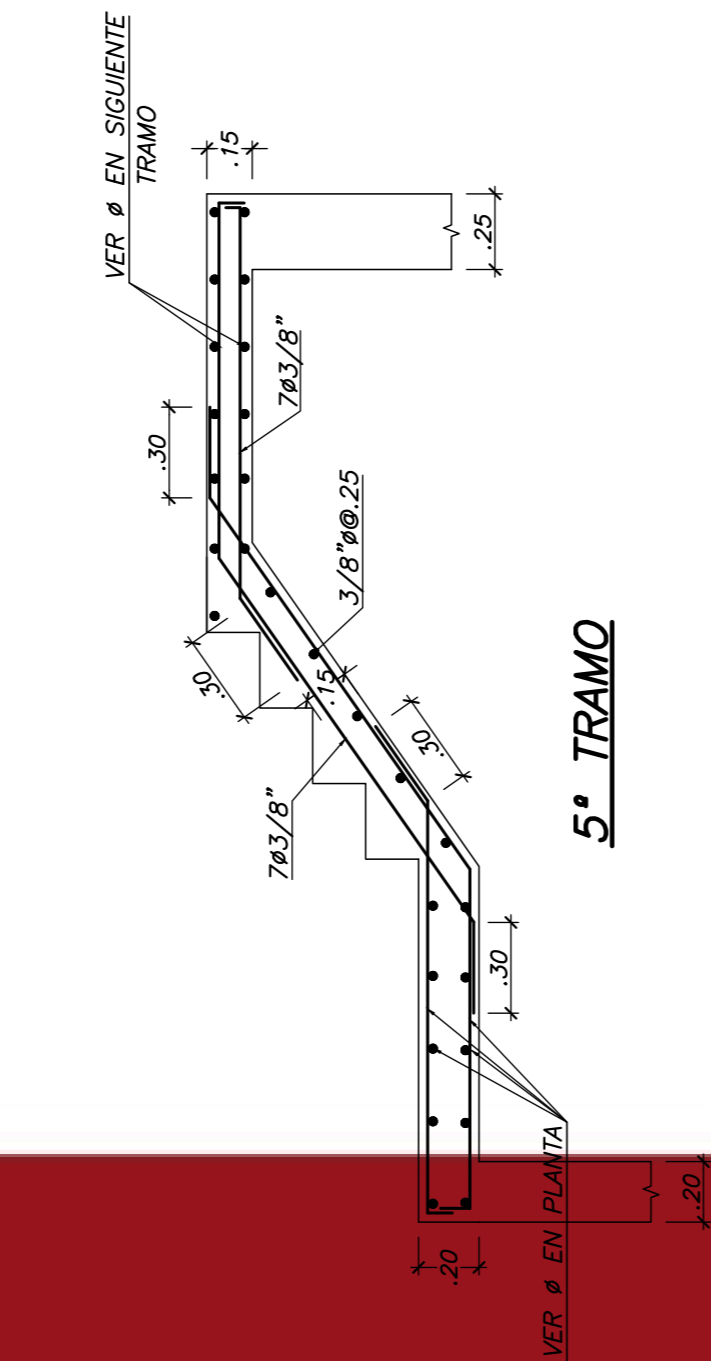
2°:6°.10°.14°.18°.22° y 26° TRAMO



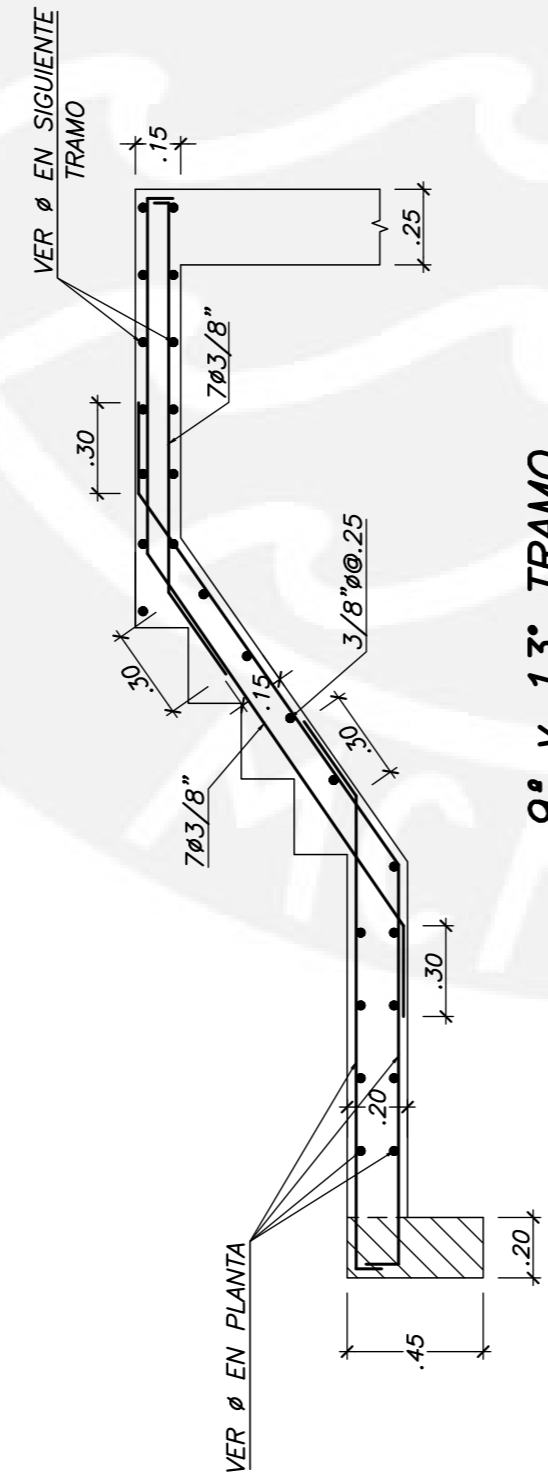
3°:7°.11°.15°.19°.23° y 27° TRAMO



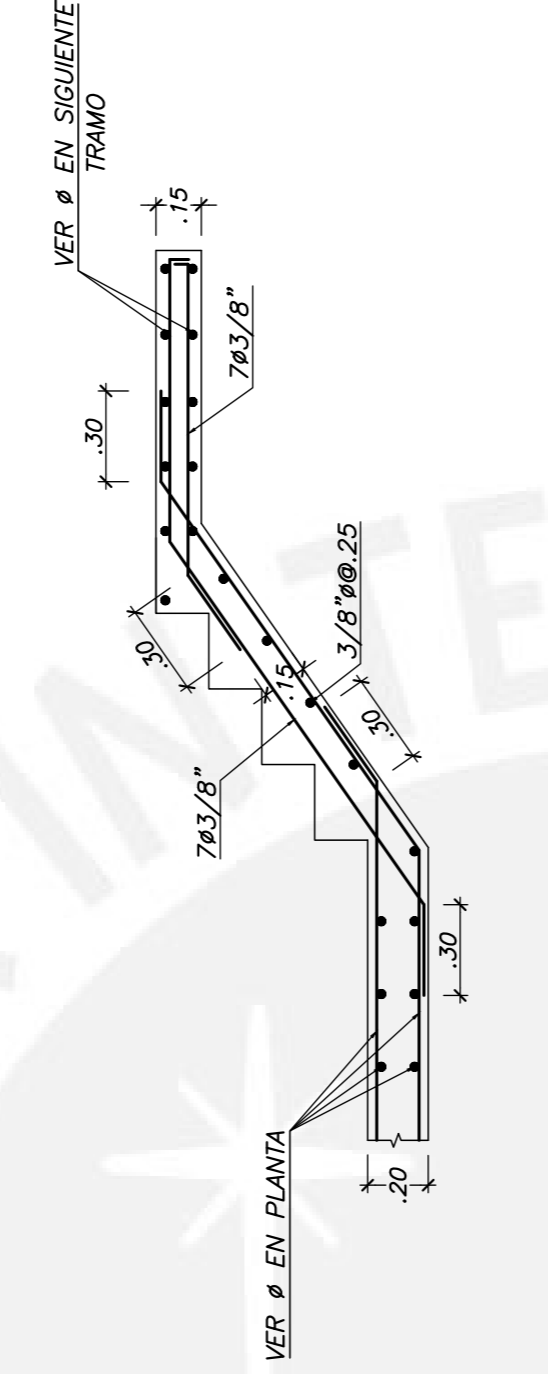
4°:8°.12°.16°.20°.24°.28° TRAMO



5° TRAMO

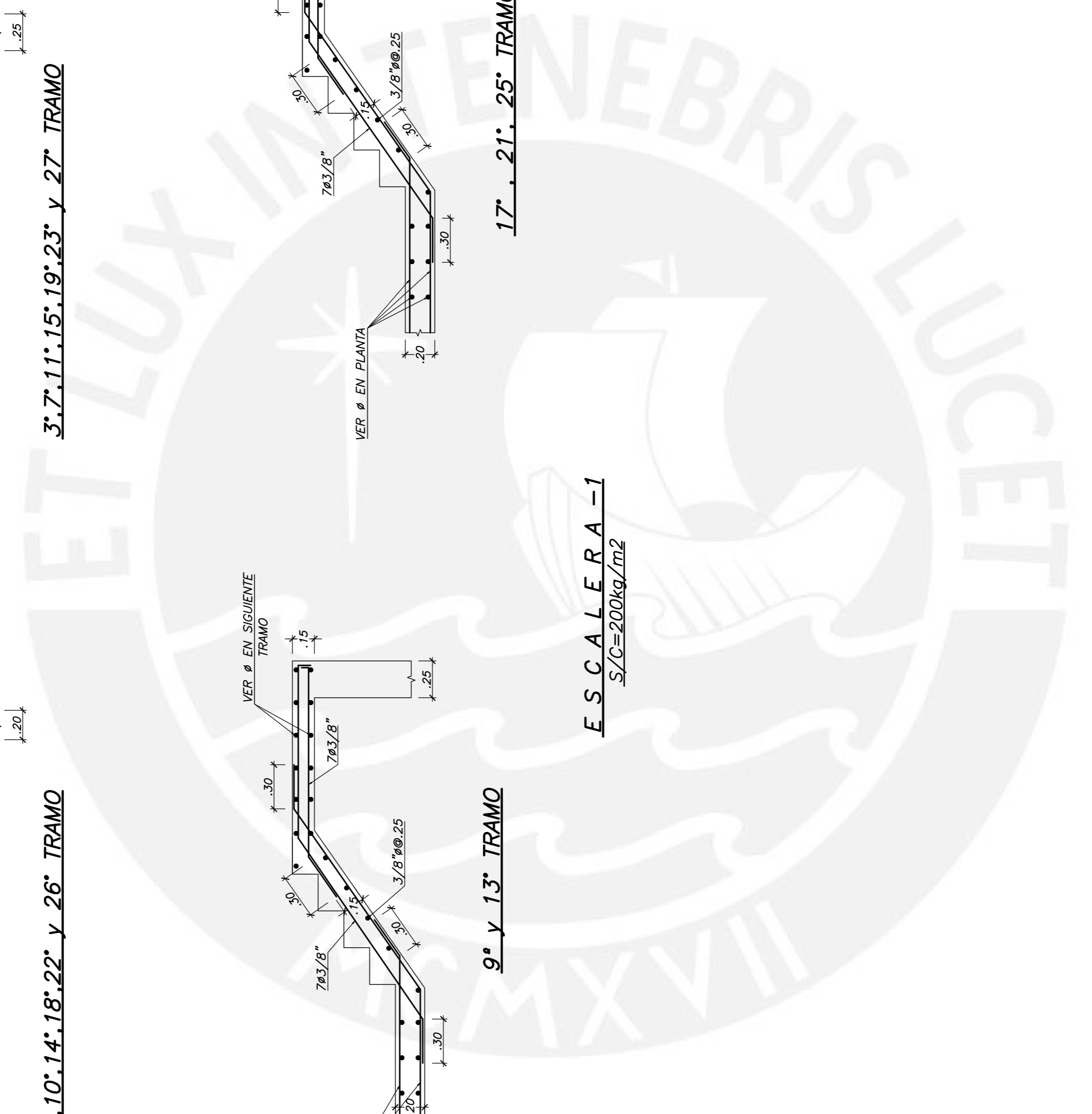


9° y 13° TRAMO



17° y 21° TRAMO

E S C A L E R A - 1
S/C=200kg/m²



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PROYECTO :	EDIFICIO "CENTENARIO" VIVIENDA MULTIFAMILIAR
PLANO :	ESCALERAS
ESCALA	1/25
	E-20