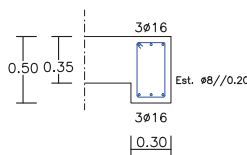
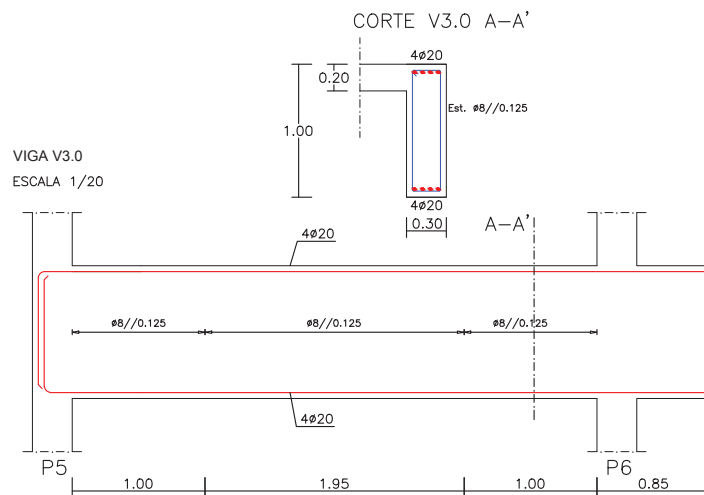
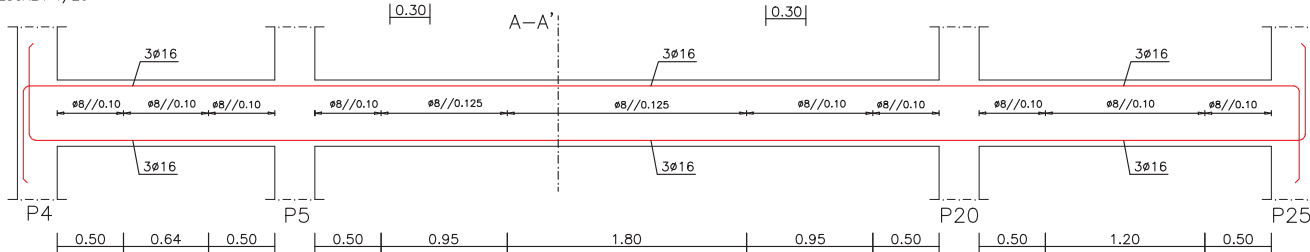
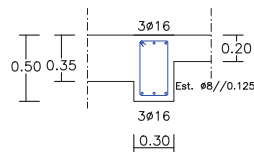


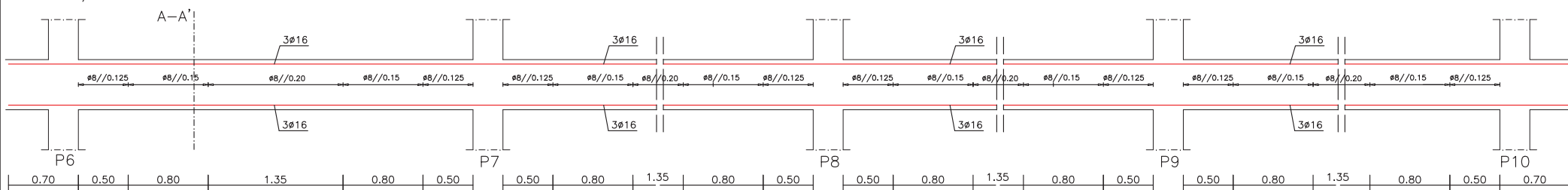
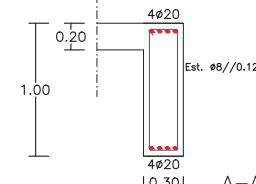
CORTE V1.0 A-A'



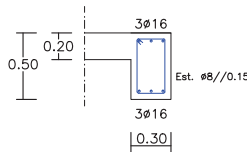
CORTE V2.0 A-A'



CORTE V3.0 A-A'



CORTE V4.0 A-A'



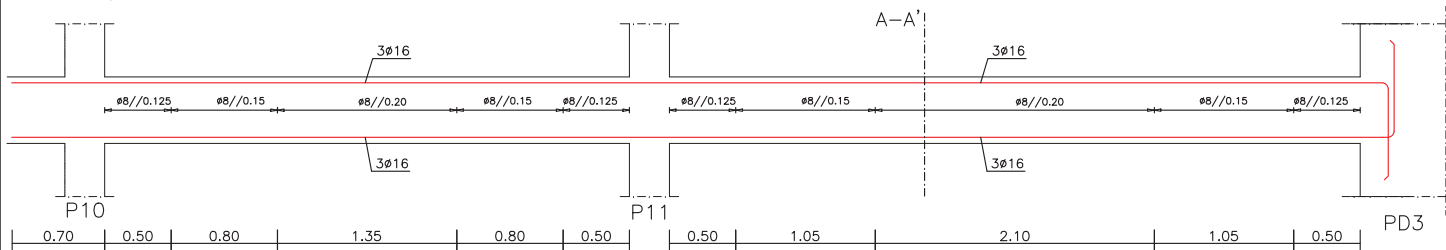
COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lbe)		
Varão	lbd (m)	lbe (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS		
Fundações	NP EN 206-1.C30/37-XS1(P)-CL0.20-Dmáx 22-S4	
Superestrutura	NP EN 206-1.C30/37-XS1(P)-CL0.20-Dmáx 22-S4	
Regularização	NP EN 206-1.C16/20-XS1(P)-CL0.20-Dmáx 22-S4	
Fundações	A400NR SD	
Superestrutura	A400NR SD	

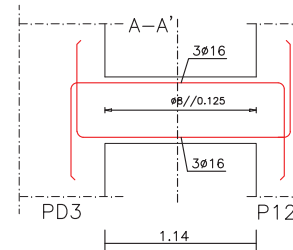
RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm

	Área Departamental de Engenharia Civil Mestrado em Engenharia Civil	
	Trabalho Final de Mestrado	
Realizado por: Suzi Miranda N° 31449	BETÃO ARMADO Vigas - 1.0 a 4.0	Folha: 1/14 N°Des. 7/10 Escala: 1/20 Data: DEZEMBRO/14

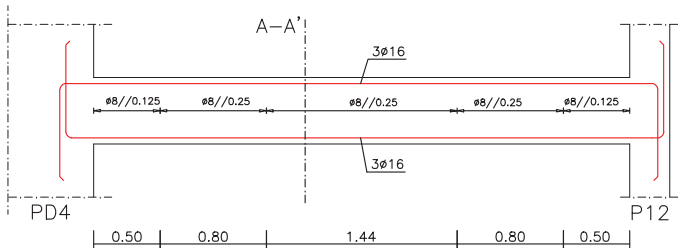
VIGA V5.0  
ESCALA 1/20



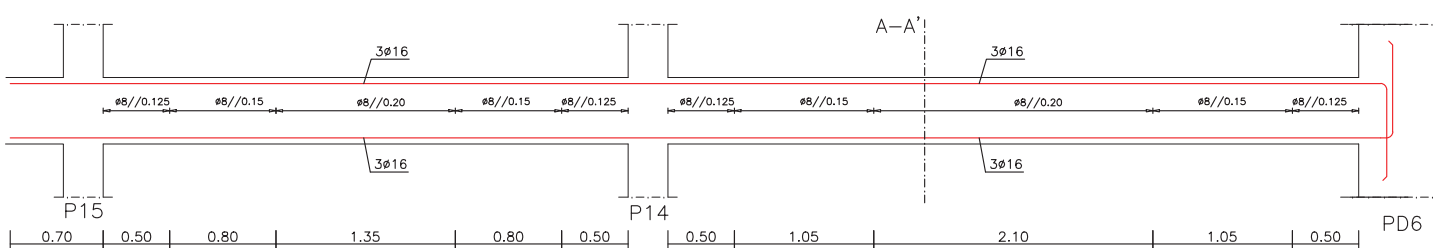
VIGA V6.0  
ESCALA 1/20



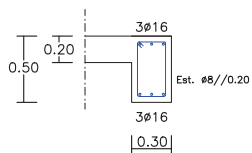
VIGA V7.0  
ESCALA 1/20



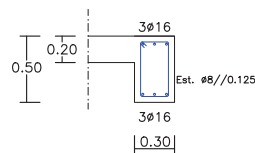
VIGA V8.0  
ESCALA 1/20



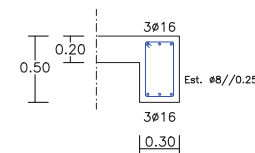
CORTE V5.0 A-A'



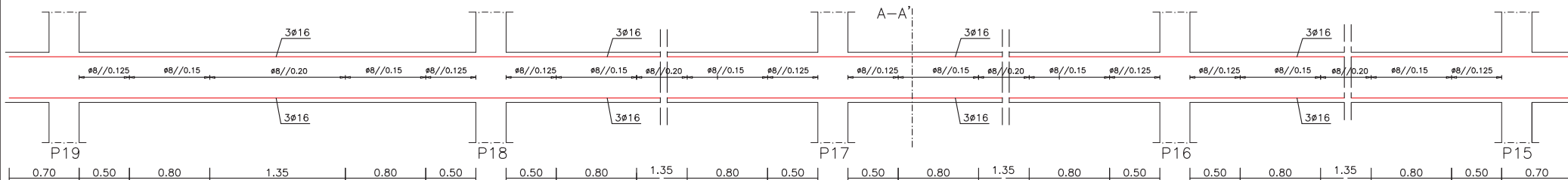
CORTE V6.0 A-A'



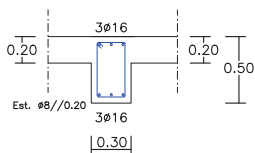
CORTE V7.0 A-A'



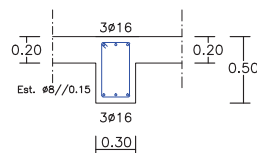
VIGA V9.0  
ESCALA 1/20



CORTE V8.0 A-A'



CORTE V9.0 A-A'



COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lb0)		
Varião	lbd (m)	lb0 (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS

Fundações	NP EN 206-1:C30/37-XS1(P)-CL0.20-Dmáx 22-S4
Superestrutura	NP EN 206-1:C30/37-XS1(P)-CL0.20-Dmáx 22-S4
Regularização	NP EN 206-1:C16/20-XS1(P)-CL0.20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

RECOBRIMENTOS

Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm



Área Departamental de Engenharia Civil  
Mestrado em Engenharia Civil

Trabalho Final de Mestrado

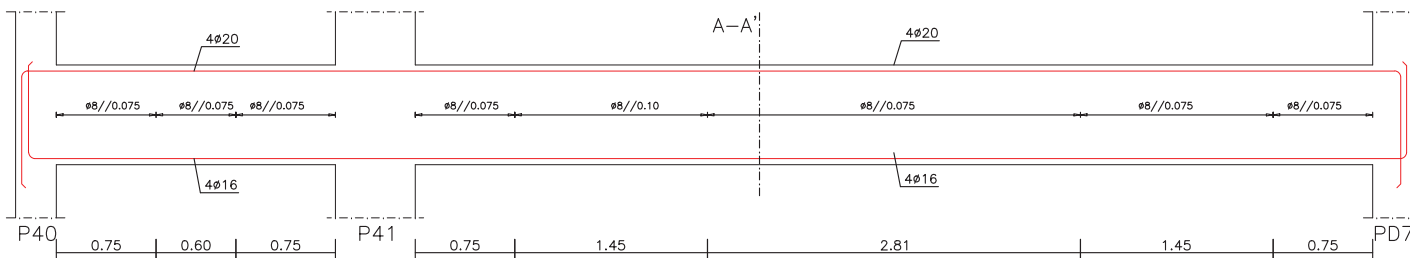
Realizado por:  
Suzi Miranda  
Nº 31449

BETÃO ARMADO  
Vigas - 5.0 a 9.0

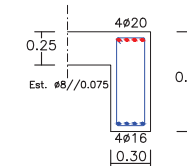
Folha:	2/14	NºDes.	7/10
Escala:	1/20		
Data:	DEZEMBRO/14		



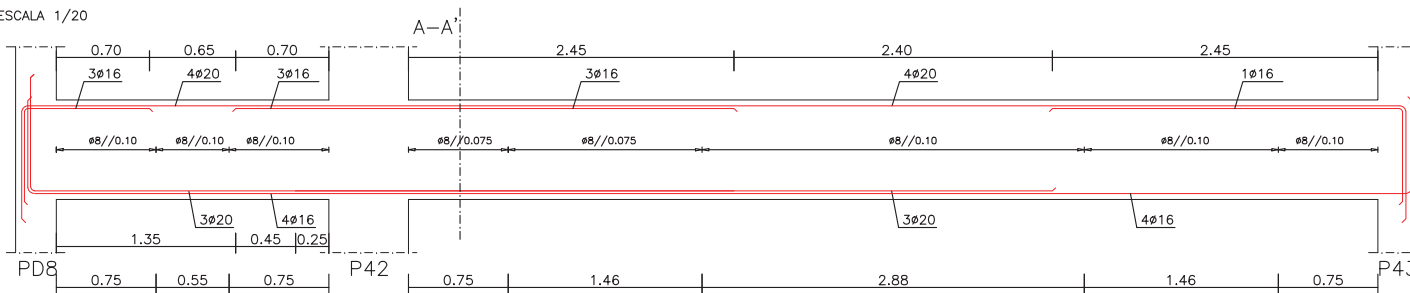
VIGA V15.0  
ESCALA 1/20



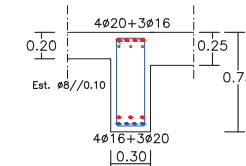
CORTE V15.0 A-A'



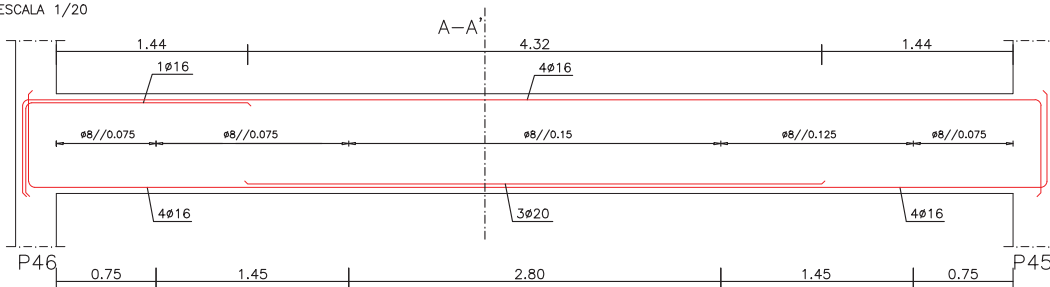
VIGA V16.0  
ESCALA 1/20



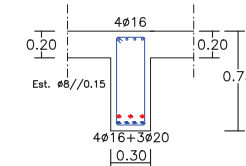
CORTE V16.0 A-A'



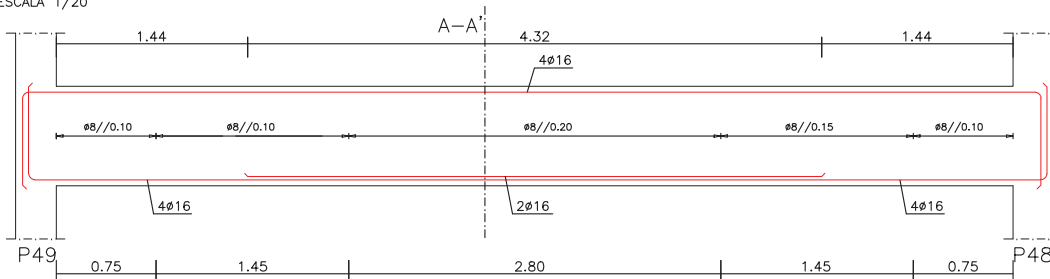
VIGA V17.0  
ESCALA 1/20



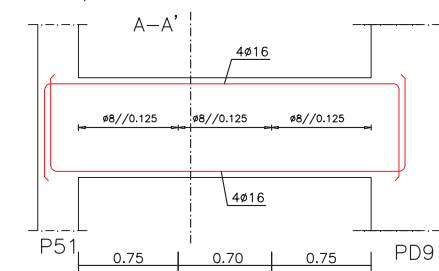
CORTE V17.0 A-A'



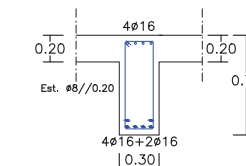
VIGA V18.0  
ESCALA 1/20



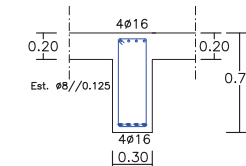
VIGA V19.0  
ESCALA 1/20



CORTE V18.0 A-A'



CORTE V19.0 A-A'



COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lbe)		
Varão	lbd (m)	lbe (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1:C30/37-XS1(P)>CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1:C30/37-XS1(P)>CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1:C16/20-XS1(P)>CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

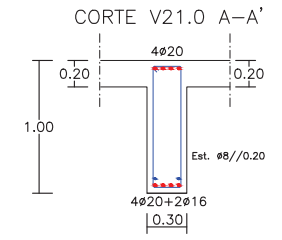
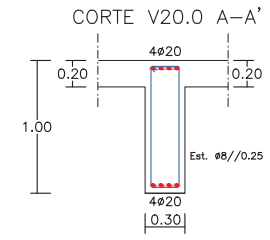
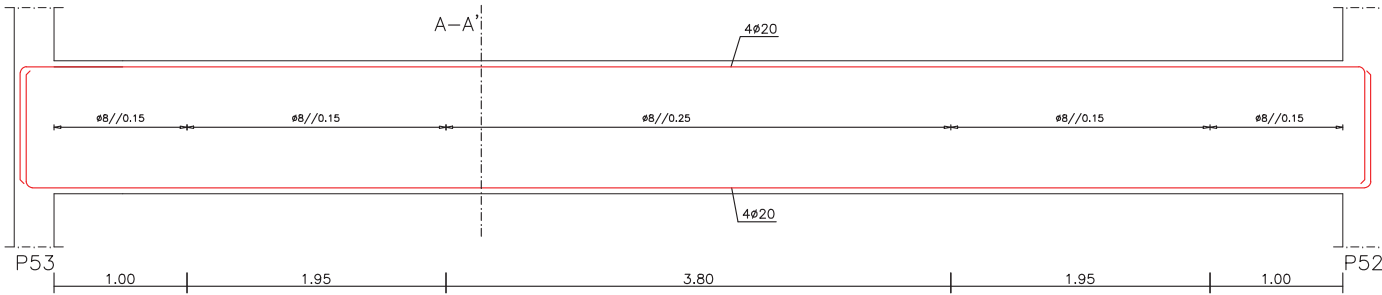
RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4.5cm
Lajes	4.5cm

**ISEL** Área Departamental de Engenharia Civil  
Mestrado em Engenharia Civil

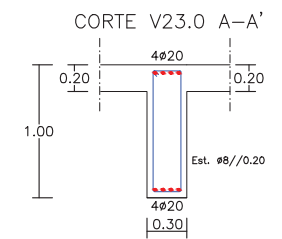
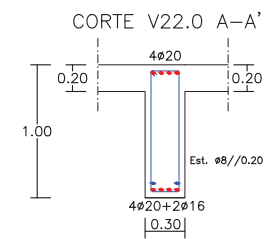
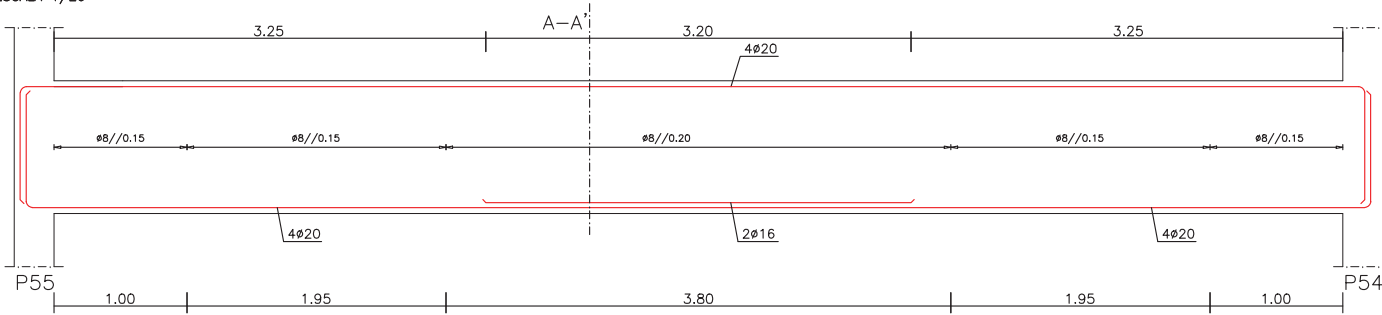
**Trabalho Final de Mestrado**

Realizado por:	<b>BETÃO ARMADO</b>	Folha:	NºDes.
Suzi Miranda	Vigas - 15.0 a 19.0	4/14	7/10
Nº 31449		Escala:	1/20
		Data:	DEZEMBRO/14

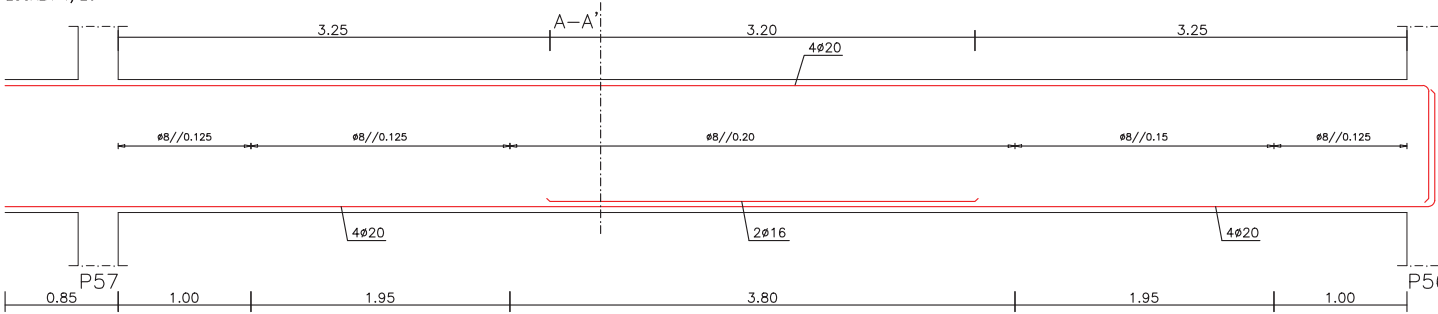
VIGA V20.0  
ESCALA 1/20



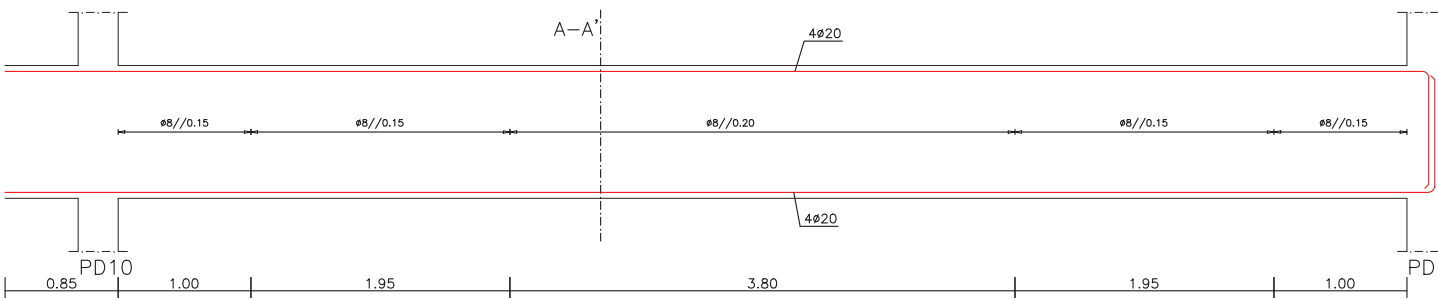
VIGA V21.0  
ESCALA 1/20



VIGA V22.0  
ESCALA 1/20



VIGA V23.0  
ESCALA 1/20



COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lbe)		
Varão	lbd (m)	lbe (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1:C30/37*XS1(P)*CL0,20*Dmáx 22*S4
Superestrutura	NP EN 206-1:C30/37*XS1(P)*CL0,20*Dmáx 22*S4
Regularização	NP EN 206-1:C16/20*XS1(P)*CL0,20*Dmáx 22*S4
Fundações	A400NR SD
Superestrutura	A400NR SD

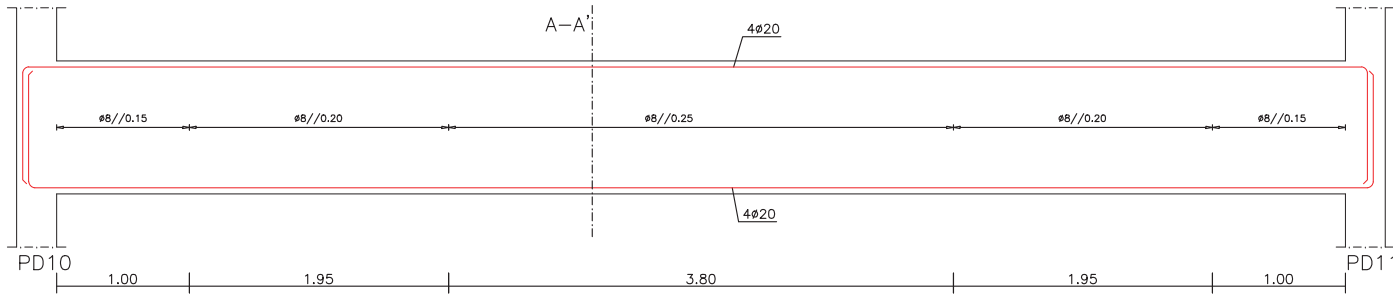
RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4.5cm
Lajes	4.5cm

Área Departamental de Engenharia Civil  
Mestrado em Engenharia Civil

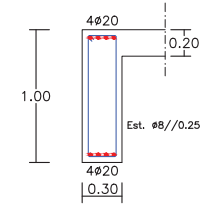
Trabalho Final de Mestrado

Realizado por:	BETÃO ARMADO	Folha:	NºDes.
Suzi Miranda	Vigas - 20.0 a 23.0	5/14	7/10
Nº 31449		Escala :	1/20
		Data :	DEZEMBRO/14

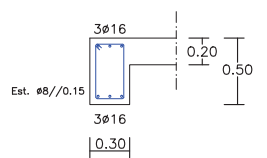
VIGA V24.0  
ESCALA 1/20



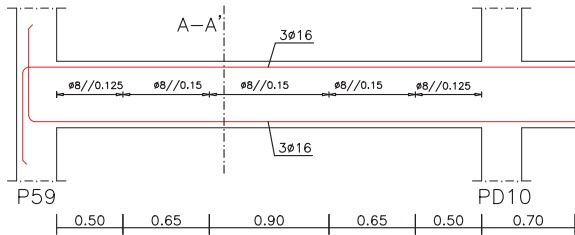
CORTE V24.0 A-A'



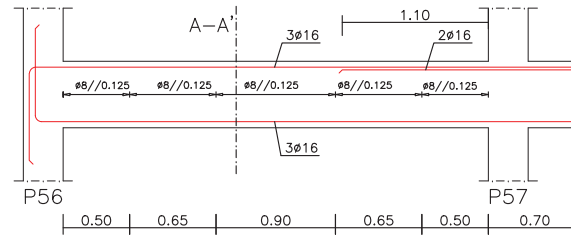
CORTE V25.0 A-A'



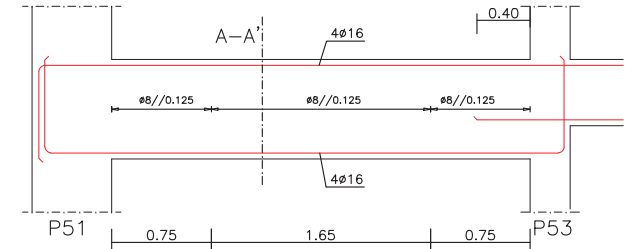
VIGA V25.0  
ESCALA 1/20



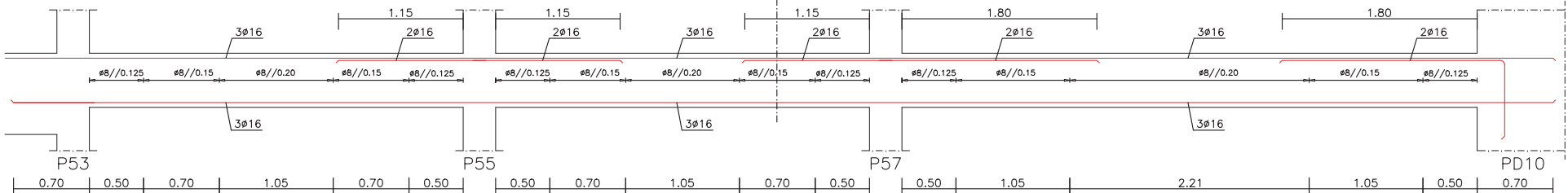
VIGA V26.0  
ESCALA 1/20



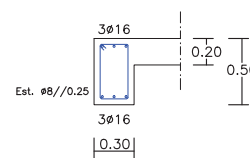
VIGA V28.0 A  
ESCALA 1/20



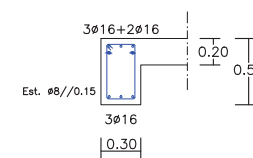
VIGA V28.0  
ESCALA 1/20



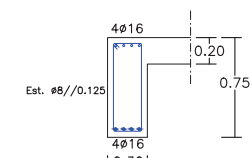
CORTE V27.0 A-A'



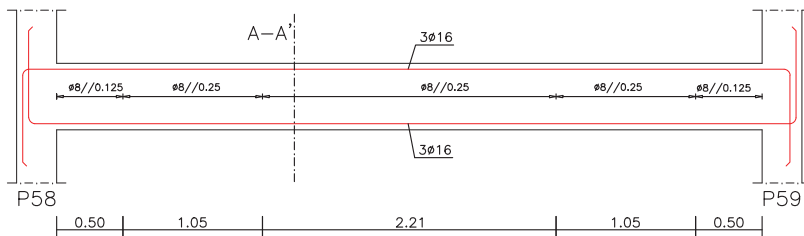
CORTE V28.0 A-A'



CORTE V28.0A A-A'



VIGA V27.0  
ESCALA 1/20



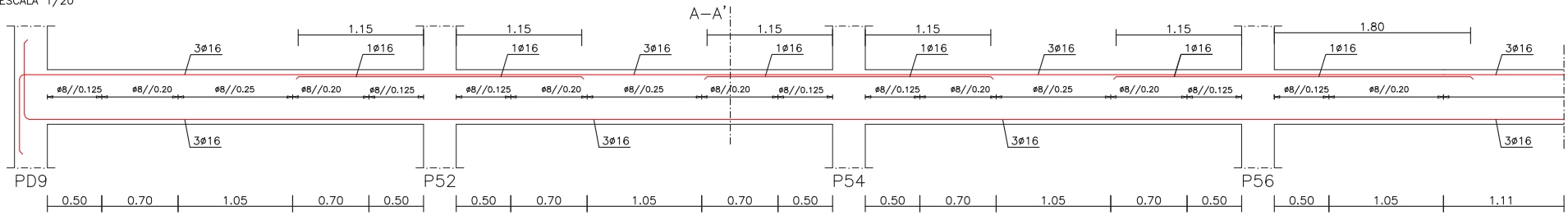
COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lbd)		
Variação	lbd (m)	lbd (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1-C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1-C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1-C16/20-XS1(P)+CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

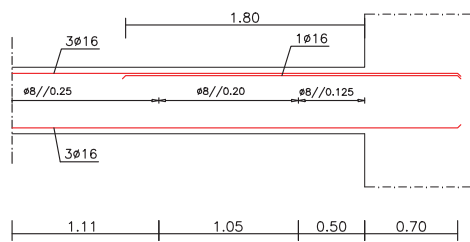
RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm

	Área Departamental de Engenharia Civil Mestrado em Engenharia Civil		
	Trabalho Final de Mestrado		
Realizado por: Suzi Miranda N° 31449	BETÃO ARMADO Vigas - 24.0 a 28.0A		Folha: 6/14 N°Des. 7/10
		Escala : 1/20	Data : DEZEMBRO/14

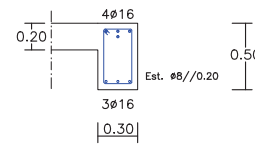
VIGA V29.0  
ESCALA 1/20



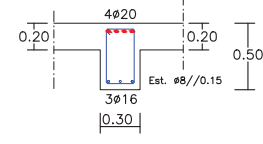
VIGA V29.0 (Continuação)  
ESCALA 1/20



CORTE V29.0 A-A'



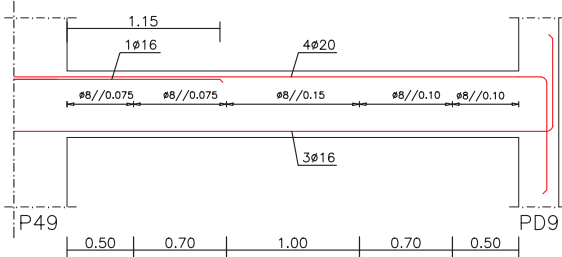
CORTE V30.0 A-A'



VIGA V30.0  
ESCALA 1/20



VIGA V30.0 (Continuação)  
ESCALA 1/20



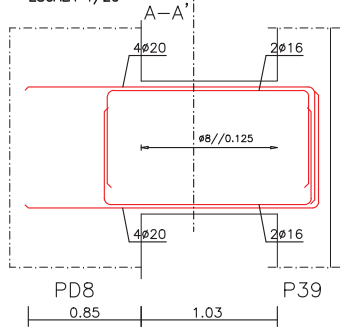
COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lbd)		
Varião	lbd (m)	lbd (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1-C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1-C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1-C16/20-XS1(P)+CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

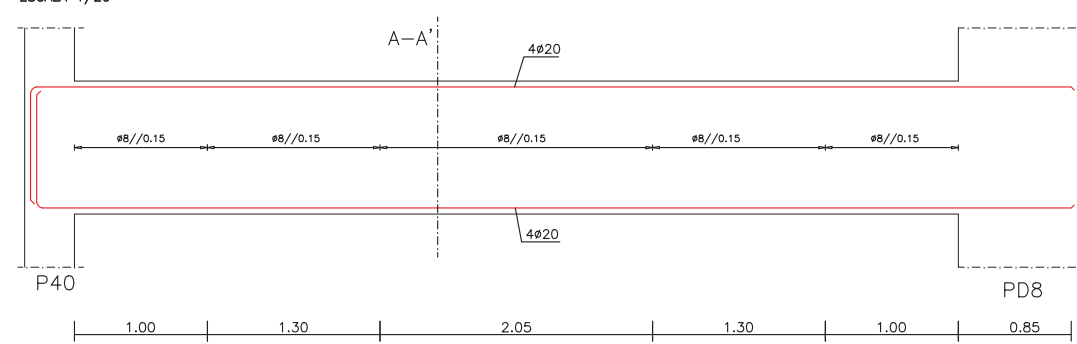
RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm

	Área Departamental de Engenharia Civil Mestrado em Engenharia Civil	
	Trabalho Final de Mestrado	
Realizado por: Suzi Miranda N° 31449	BETÃO ARMADO Vigas - 29.0 a 30.0	Folha: 7/14 N°Des. 7/10 Escala: 1/20 Data: DEZEMBRO/14

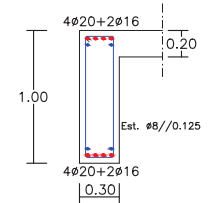
VIGA V31.0  
ESCALA 1/20



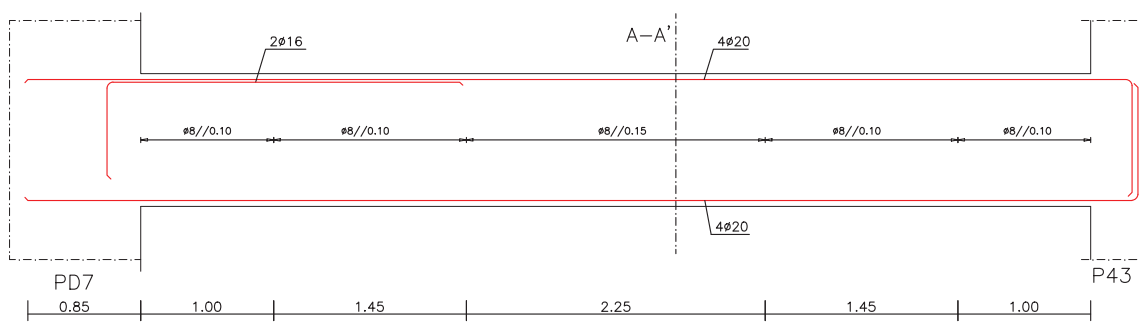
VIGA V32.0  
ESCALA 1/20



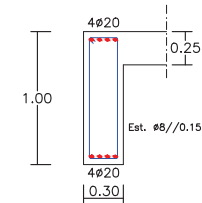
CORTE V31.0 A-A'



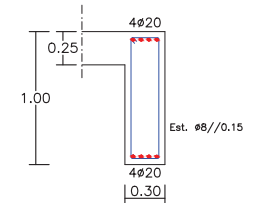
VIGA V33.0  
ESCALA 1/20



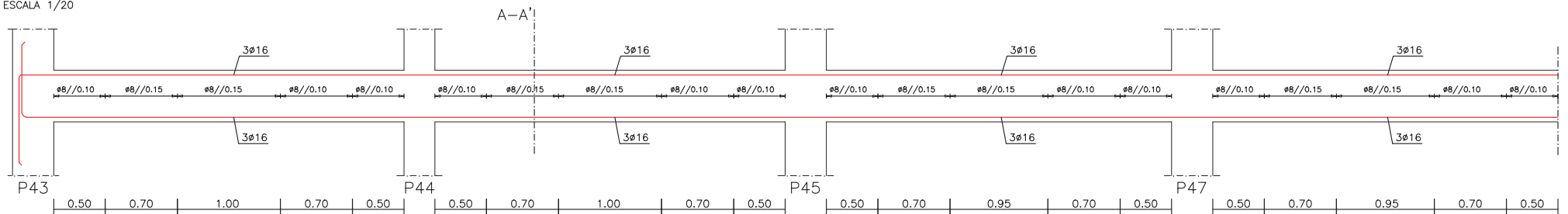
CORTE V32.0 A-A'



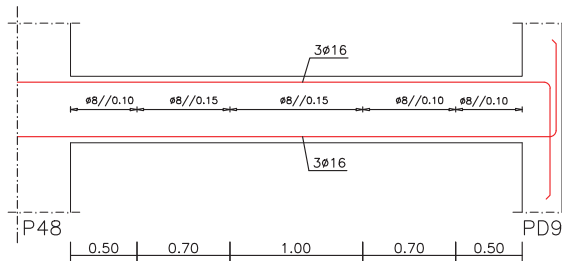
CORTE V33.0 A-A'



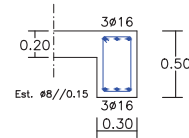
VIGA V34.0  
ESCALA 1/20



VIGA V34.0 (Continuação)  
ESCALA 1/20



CORTE V34.0 A-A'



COMPRIMENTOS AMARRAÇÃO (lbd) E EMENDA (lbd)		
Variação	lbd (m)	lbd (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1:C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1:C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1:C16/20-XS1(P)+CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm



Área Departamental de Engenharia Civil  
Mestrado em Engenharia Civil

Trabalho Final de Mestrado

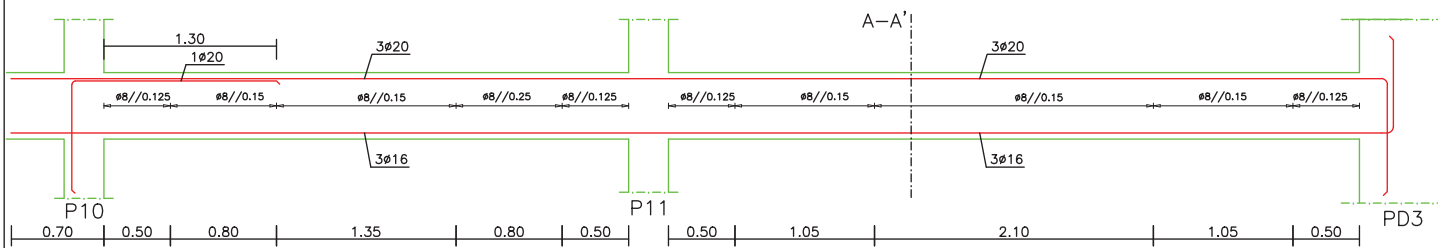
Realizado por:  
Suzi Miranda  
Nº 31449

BETÃO ARMADO  
Vigas - 31.0 a 34.0

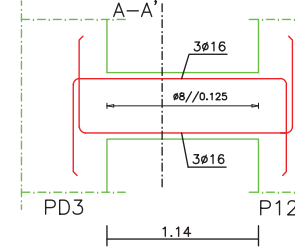
Folha: 8/14  
NºDes. 7/10  
Escala: 1/20  
Data: DEZEMBRO/14



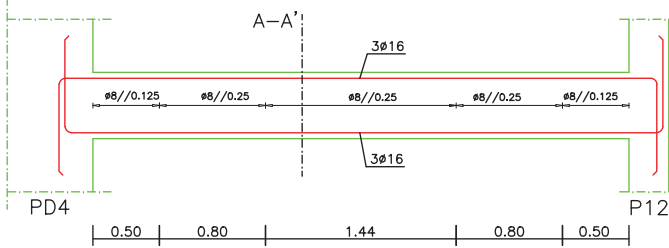
VIGA V5.1  
ESCALA 1/20



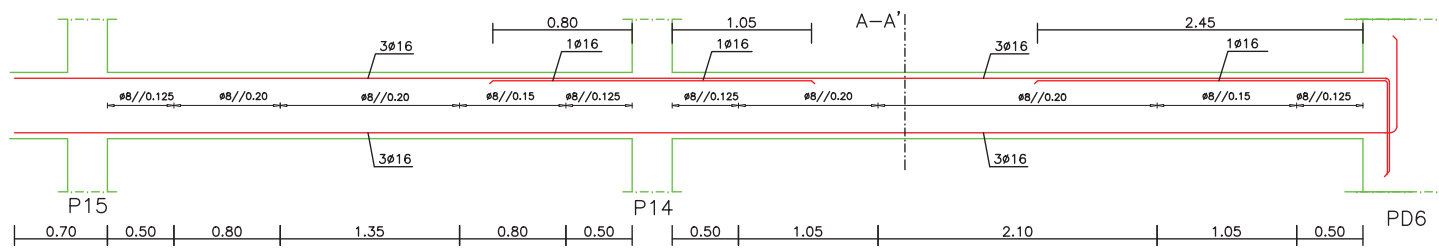
VIGA V6.1  
ESCALA 1/20



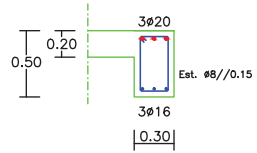
VIGA V7.1  
ESCALA 1/20



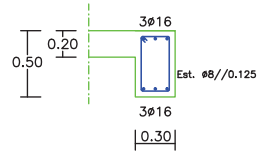
VIGA V8.1  
ESCALA 1/20



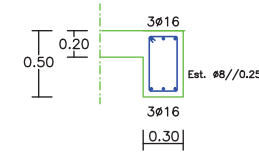
CORTE V5.1 A-A'



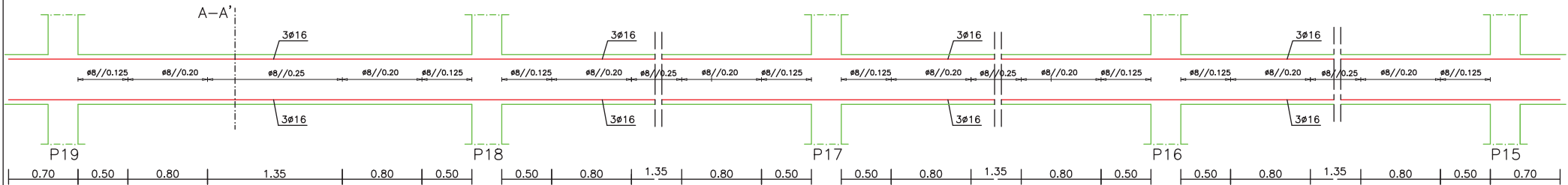
CORTE V6.1 A-A'



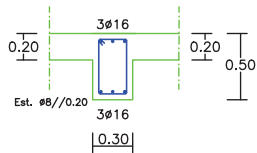
CORTE V7.1 A-A'



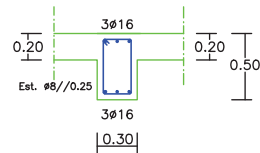
VIGA V9.1  
ESCALA 1/20



CORTE V8.1 A-A'



CORTE V9.0 A-A'



COMPRIMENTOS AMARRAÇÃO (lbd)			
E EMENDA (lbo)			
Varão	lbd (m)	lbo (m)	
Ø10	0.40	0.65	
Ø16	0.70	1.00	
Ø20	0.85	1.25	

MATERIAIS	
ACO	Fundações NP EN 206-1:C30/37*XS1(P)+CL0,20-Dmáx 22-S4
ACO	Superestrutura NP EN 206-1:C30/37*XS1(P)+CL0,20-Dmáx 22-S4
ACO	Regularização NP EN 206-1:C16/20*XS1(P)+CL0,20-Dmáx 22-S4
ACO	Fundações A400NR SD
ACO	Superestrutura A400NR SD

RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm



Área Departamental de Engenharia Civil  
Mestrado em Engenharia Civil

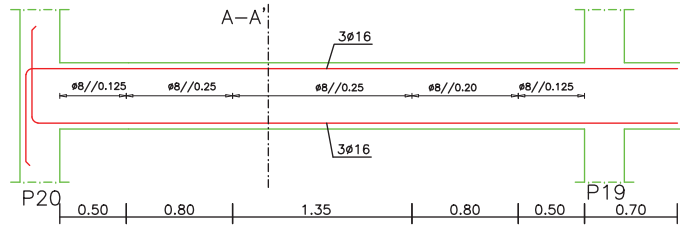
Trabalho Final de Mestrado

Realizado por:  
Suzi Miranda  
Nº 31449

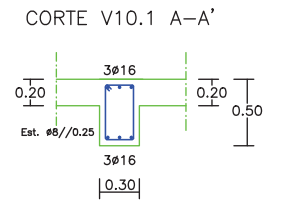
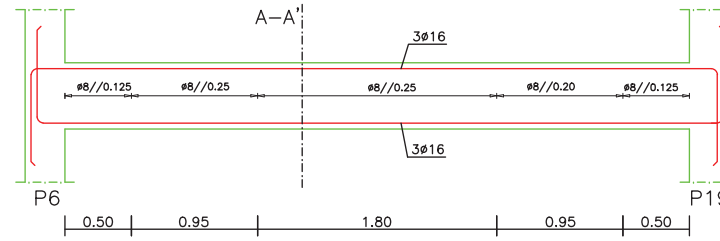
BETÃO ARMADO  
Vigas - 5.1 a 9.1

Folha: 10/14  
NºDes. 7/10  
Escala: 1/20  
Data: DEZEMBRO/14

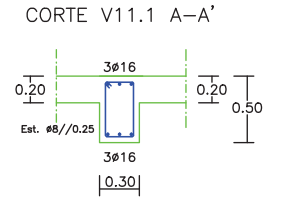
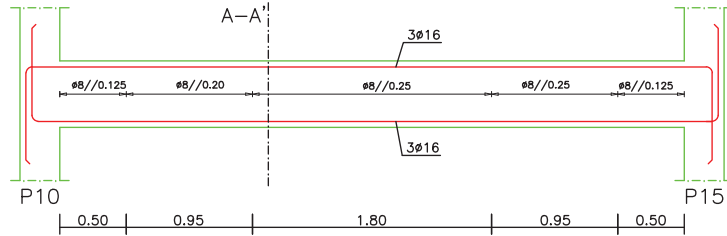
VIGA V10.1  
ESCALA 1/20



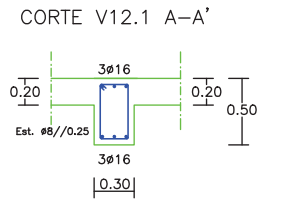
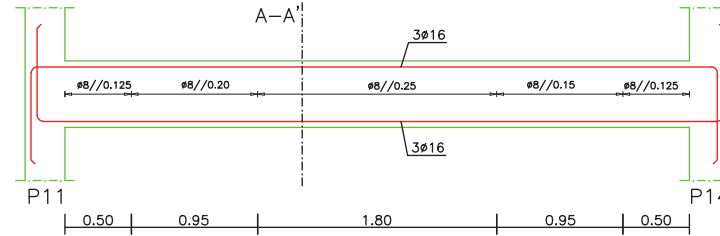
VIGA V11.1  
ESCALA 1/20



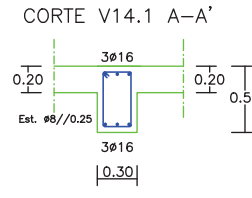
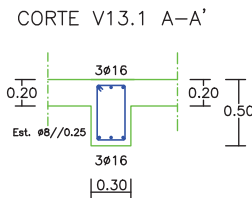
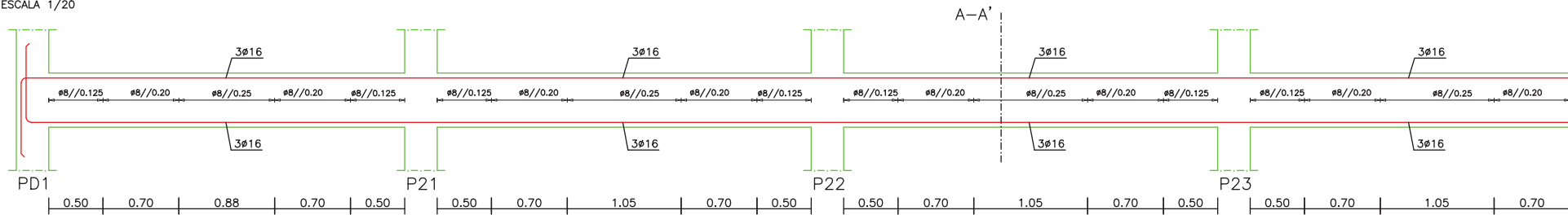
VIGA V12.1  
ESCALA 1/20



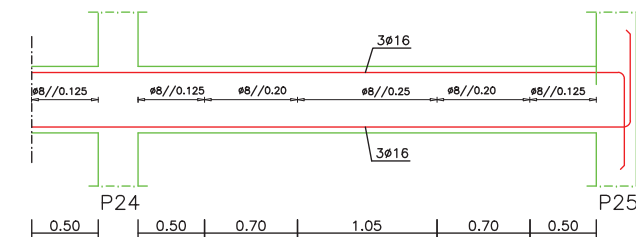
VIGA V13.1  
ESCALA 1/20



VIGA V14.1  
ESCALA 1/20



VIGA V14.1 (Continuação)  
ESCALA 1/20



COMPRIMENTOS AMARRAÇÃO (lb) E EMENDA (lb)		
Varão	lb (m)	lb (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

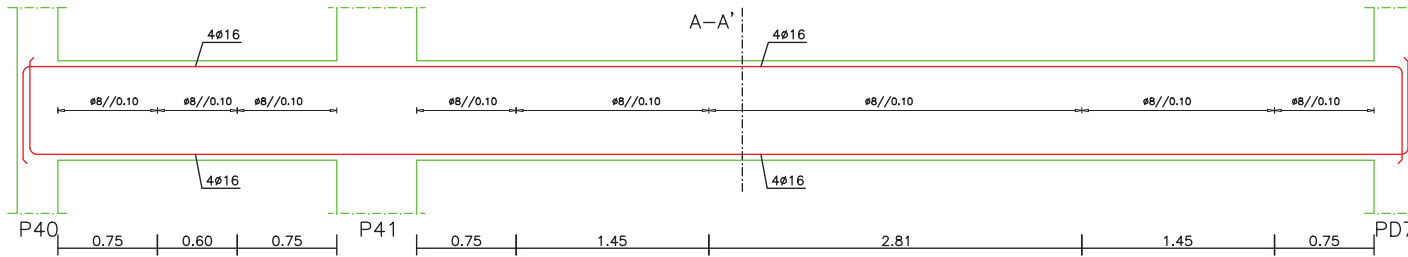
MATERIAIS	
Q	Fundações NP EN 206-1-C30/37-XS1(P)+CL0.20+Dmáx 22+S4
Q	Superestrutura NP EN 206-1-C30/37-XS1(P)+CL0.20+Dmáx 22+S4
Q	Regularização NP EN 206-1-C16/20-XS1(P)+CL0.20+Dmáx 22+S4
AC	Fundações A400NR SD
AC	Superestrutura A400NR SD

RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4.5cm
Lajes	4.5cm

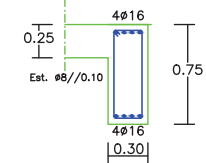
	Área Departamental de Engenharia Civil Mestrado em Engenharia Civil	
	Trabalho Final de Mestrado	
Realizado por: Suzi Miranda N° 31449	BETÃO ARMADO Vigas - 10.1 a 14.1	Folha: 11/14 N°Des. 7/10 Escala: 1/20 Data: DEZEMBRO/14

VIGA V15.1

ESCALA 1/20

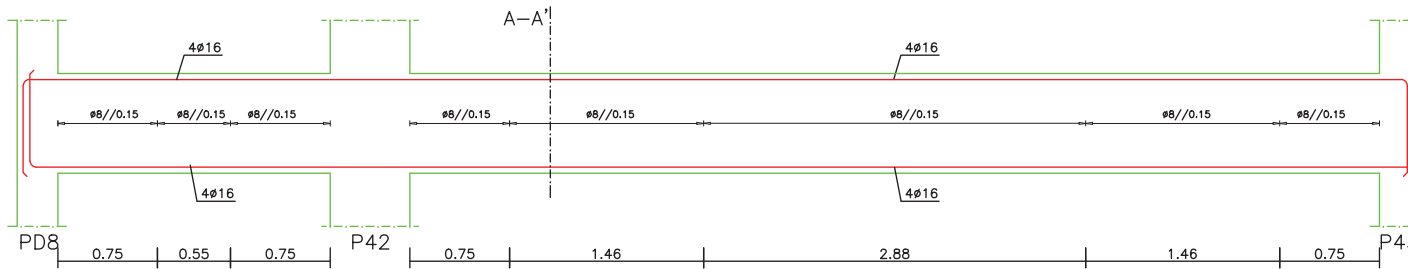


CORTE V15.1 A-A'

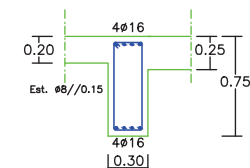


VIGA V16.1

ESCALA 1/20

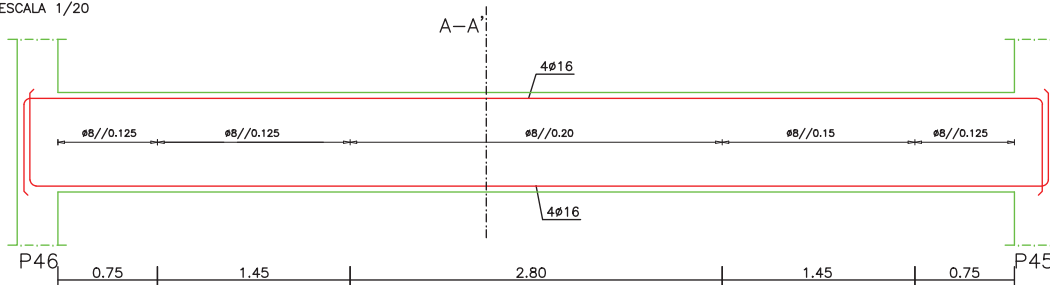


CORTE V16.1 A-A'

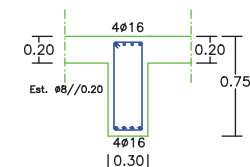


VIGA V17.1

ESCALA 1/20

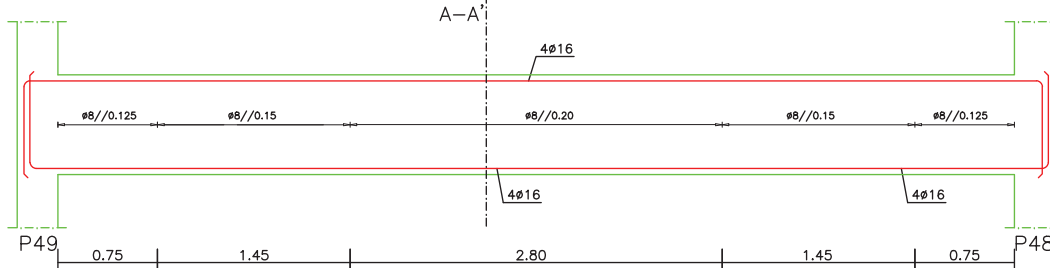


CORTE V17.1 A-A'

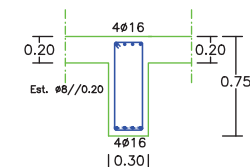


VIGA V18.1

ESCALA 1/20




CORTE V18.1 A-A'



COMPRIMENTOS AMARRAÇÃO (lbd)		
E EMENDA (lbd)		
Varão	lbd (m)	lbd (m)
Ø10	0,40	0,65
Ø16	0,70	1,00
Ø20	0,85	1,25

MATERIAIS	
Fundações	NP EN 206-1-C30/37-XS1(P)-CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1-C30/37-XS1(P)-CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1-C16/20-XS1(P)-CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4,5cm
Lajes	4,5cm



ISEL

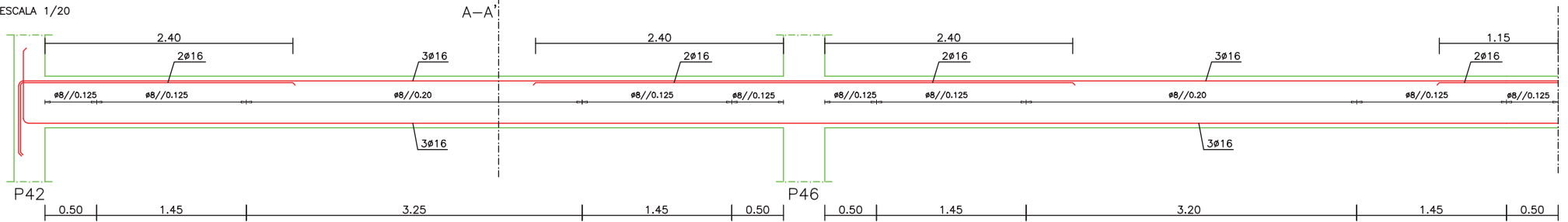
Área Departamental de Engenharia Civil  
Mestrado em Engenharia Civil

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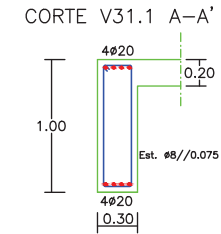
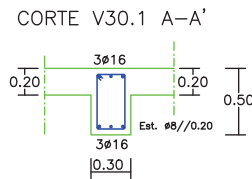
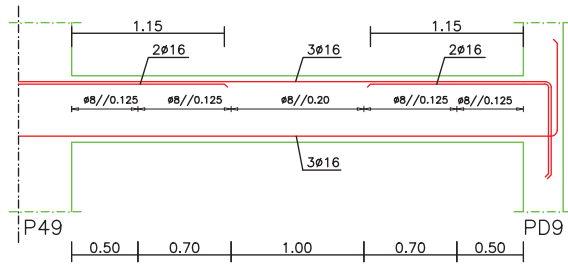
Trabalho Final de Mestrado

Realizado por:	BETÃO ARMADO	Folha:	NºDes.
Suzi Miranda	Vigas - 15.1 a 18.1	12/14	7/10
Nº 31449		Escala:	1/20
		Data:	DEZEMBRO/14

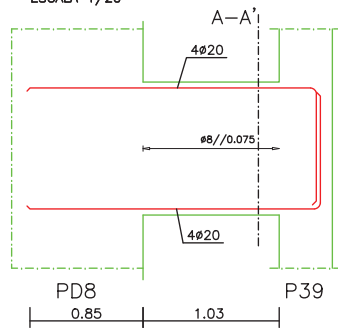
VIGA V30.1  
ESCALA 1/20



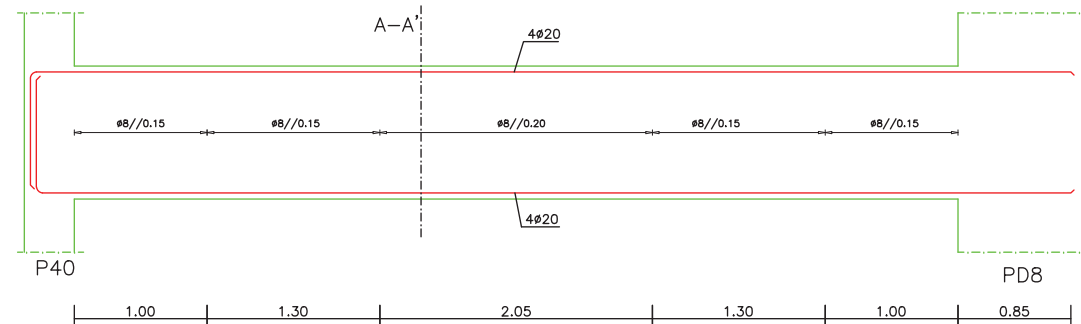
VIGA V30.1 (Continuação)  
ESCALA 1/20



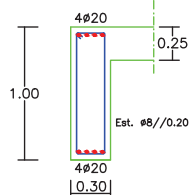
VIGA V31.1  
ESCALA 1/20



VIGA V32.1  
ESCALA 1/20



CORTE V32.1 A-A'



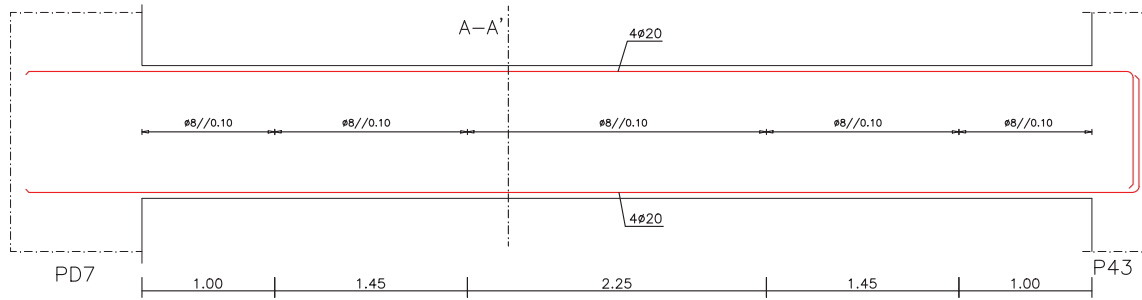
COMPRIMENTOS AMARRAÇÃO (lbd)		
E EMENDA (lbe)		
Varão	lbd (m)	lbe (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1-C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1-C30/37-XS1(P)+CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1-C16/20-XS1(P)+CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

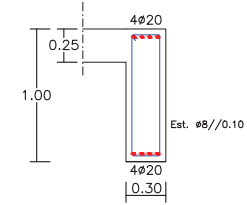
RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4.5cm
Lajes	4.5cm

	Área Departamental de Engenharia Civil Mestrado em Engenharia Civil		
	Trabalho Final de Mestrado		
Realizado por: Suzi Miranda N° 31449	BETÃO ARMADO Vigas - 30.1 a 32.1	Folha: 13/14	N°Des. 7/10
		Escala: 1/20	Data: DEZEMBRO/14

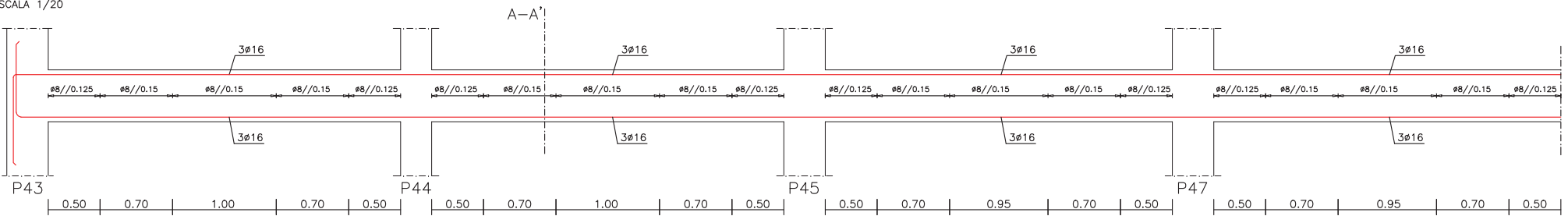
VIGA V33.1  
ESCALA 1/20



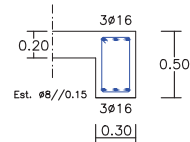
CORTE V33.1 A-A'



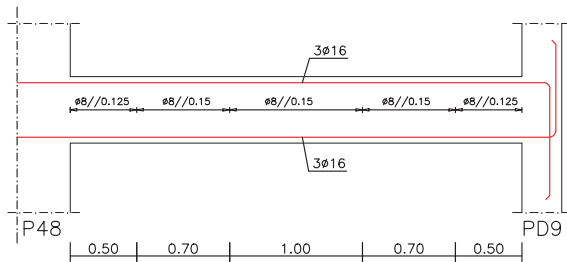
VIGA V34.1  
ESCALA 1/20



CORTE V34.1 A-A'



VIGA V34.1 (Continuação)  
ESCALA 1/20



COMPRIMENTOS AMARRAÇÃO (lbδ)		
E EMENDA (lbδ)		
Varão	lbδ (m)	lbδ (m)
Ø10	0.40	0.65
Ø16	0.70	1.00
Ø20	0.85	1.25

MATERIAIS	
Fundações	NP EN 206-1-C30/37-XS1(P)-CL0,20-Dmáx 22-S4
Superestrutura	NP EN 206-1-C30/37-XS1(P)-CL0,20-Dmáx 22-S4
Regularização	NP EN 206-1-C16/20-XS1(P)-CL0,20-Dmáx 22-S4
Fundações	A400NR SD
Superestrutura	A400NR SD

RECOBRIMENTOS	
Fundações	5cm
Pilares e Vigas	4.5cm
Lajes	4.5cm

	Área Departamental de Engenharia Civil Mestrado em Engenharia Civil	
	Trabalho Final de Mestrado	
Realizado por: Suzi Miranda N° 31449	BETÃO ARMADO Vigas - 33.1 a 34.1	Folha: 14/14 N°Des: 7/10 Escala: 1/20 Data: DEZEMBRO/14