

REPUBLIQUE TOGOLAISE  
Travail – Liberté – Patrie



Université  
de Lomé



CENTRE D'EXCELLENCE REGIONAL POUR LA MAITRISE DE L'ELECTRICITE  
(CERME)

## PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATE-FORMES TECHNIQUES DU CERME



Financement: Association Internationale pour le Développement (IDA)

MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES,  
TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

(Marché numéro 00804/2022/CR/UL-CERME/PI/IDA)

RAPPORT D'ETUDE D'AVANT PROJET DETAILLE ET  
D'ELABORATION DU DOSSIER D'APPEL D'OFFRES

VERSION DEFINITIVE

PLANS TECHNIQUES DE LA PHASE 1

Etabli par :

Groupement

SINGEXT CONSULTANCE / ETC-BTP / DIC-BTP / PYRAMID CONCEPT

DECEMBRE 2022

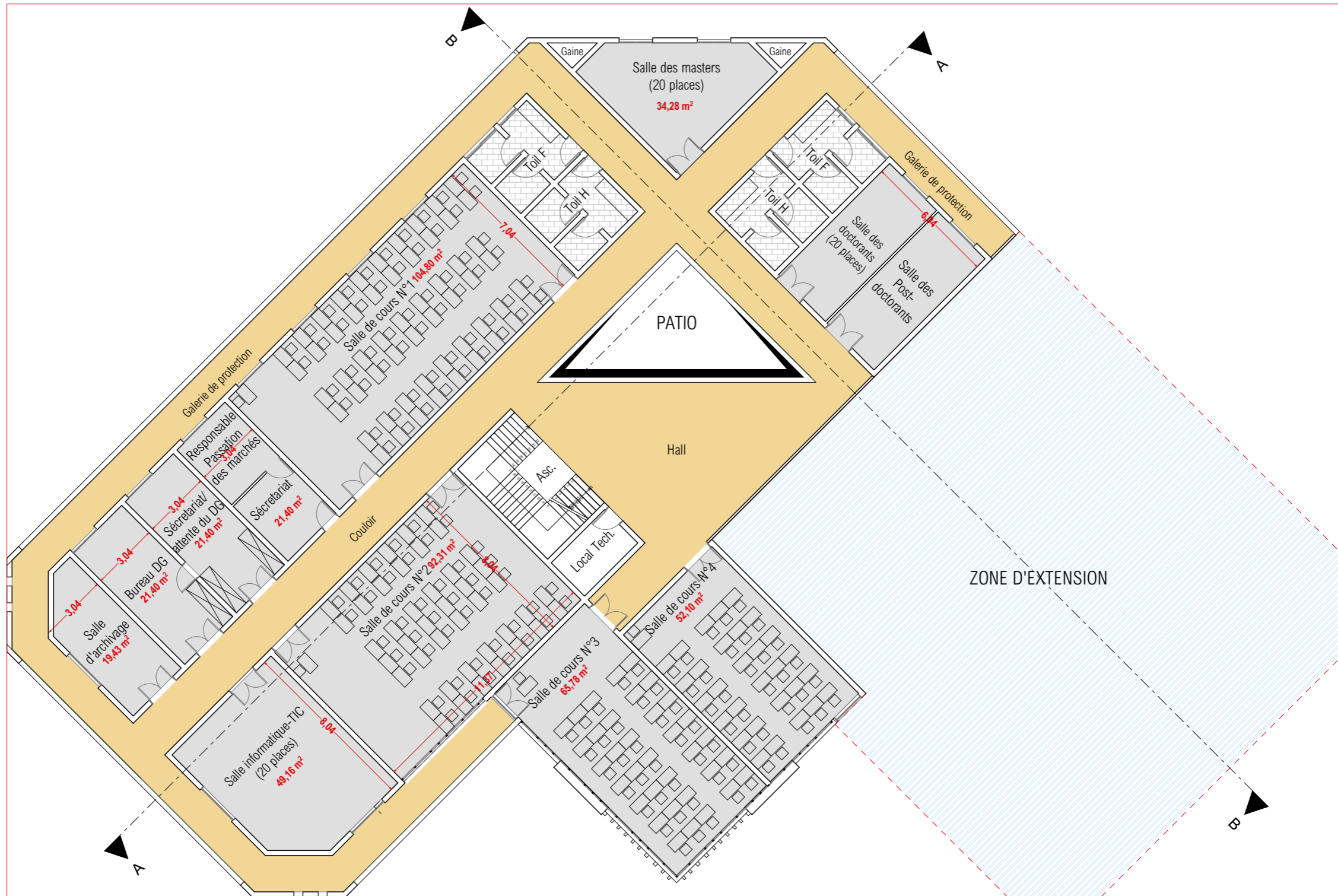
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# 1. PLANS ARCHITECTURAUX

# PLANS

(PHASE 1)



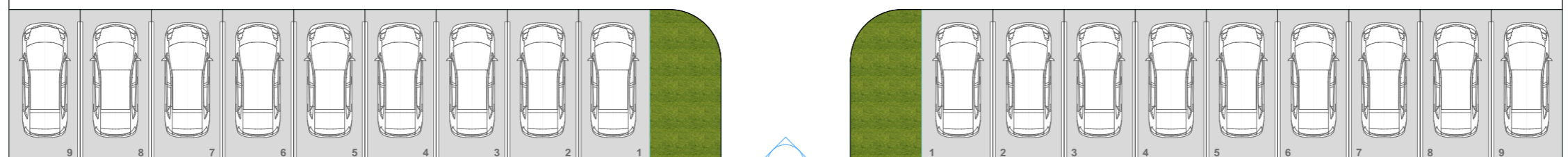
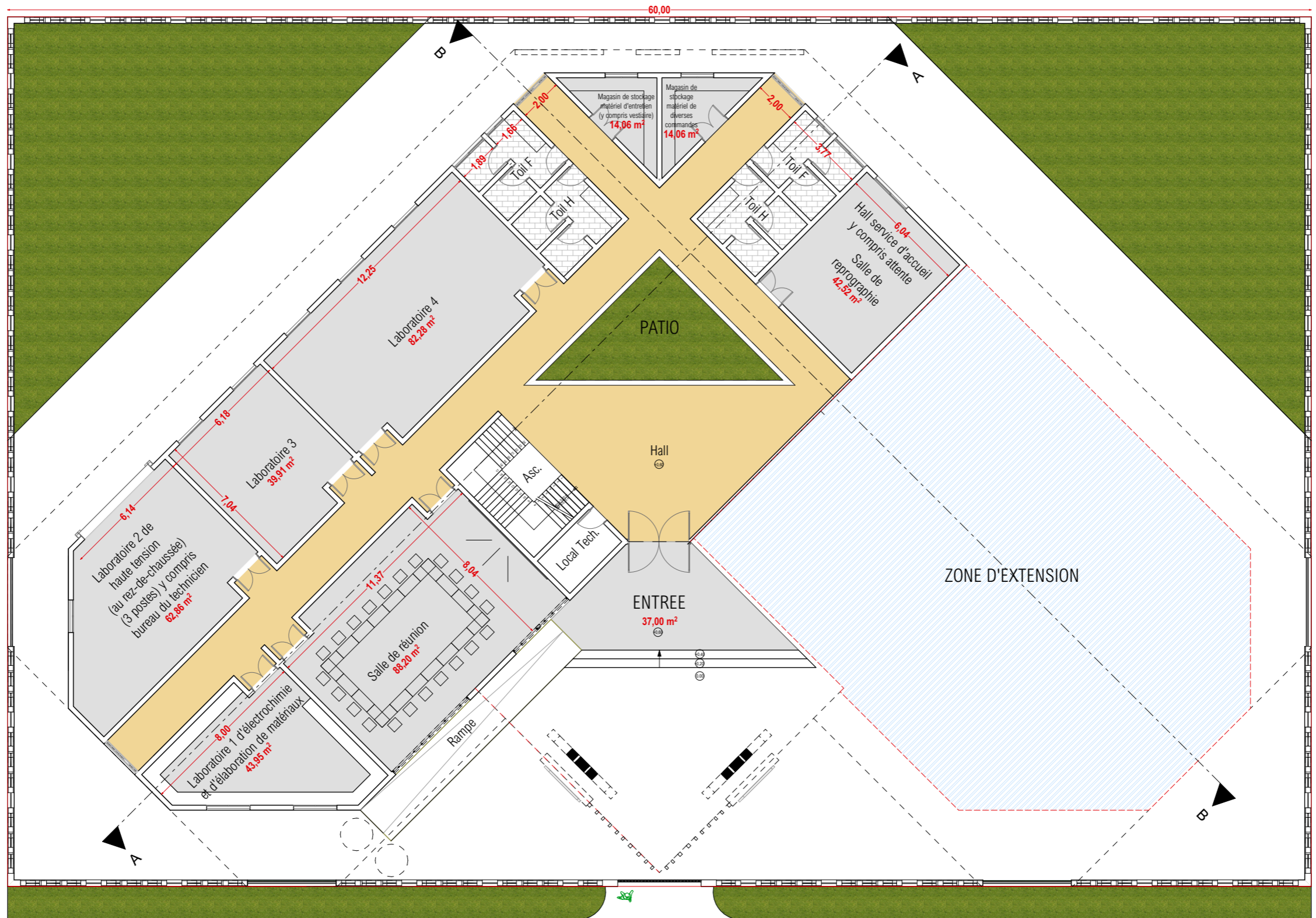
## VUE EN PLAN COTE ET AMENAGE DU PREMIER ETAGE

Ech: 1/200



Bureaux, Salle de cours





**VUE EN PLAN COTE ET AMENAGE DU REZ-DE-CHAUSSEE**  
 Ech: 1/200  
**Bureaux et Laboratoires**

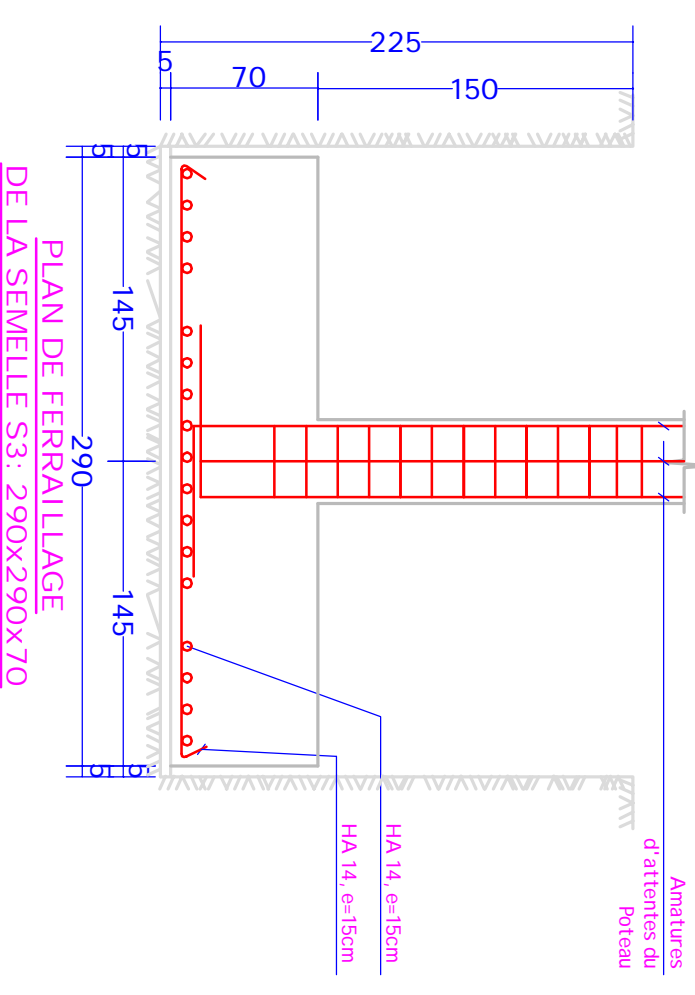
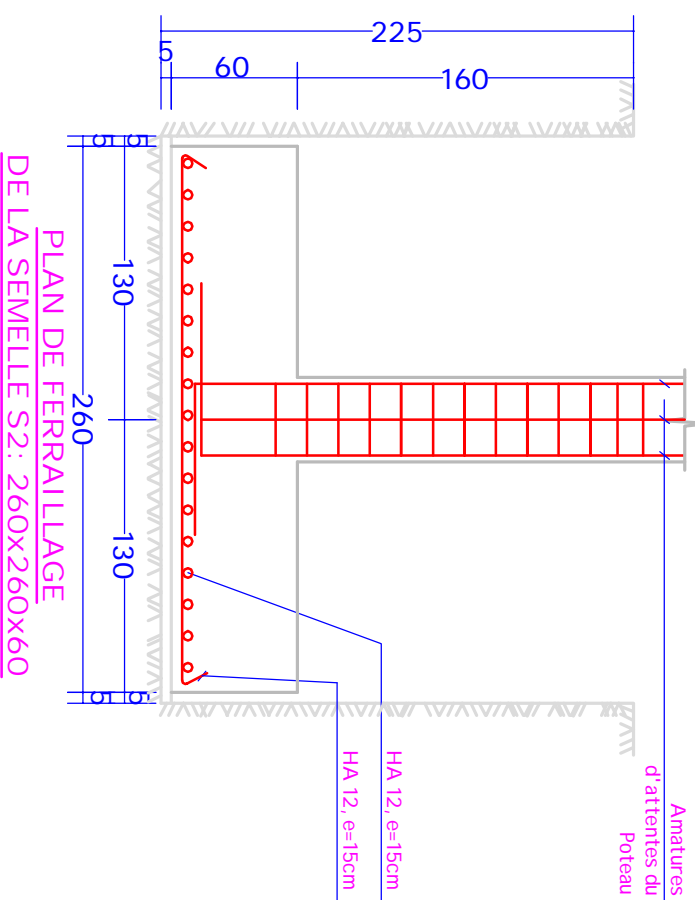
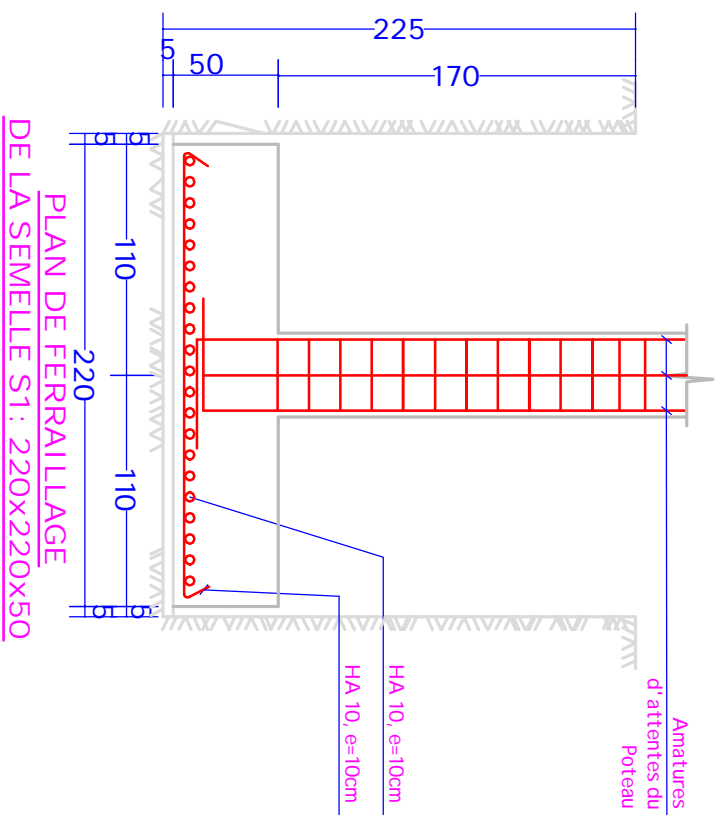
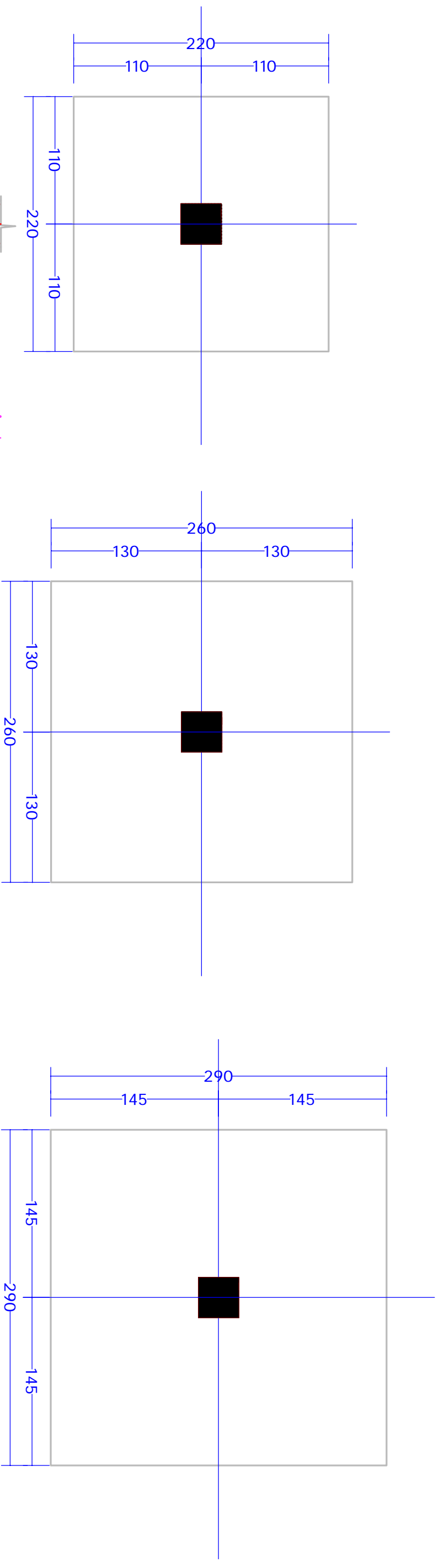
## 2. PLANS DE GROS ŒUVRE

## **2.1. FONDATION**





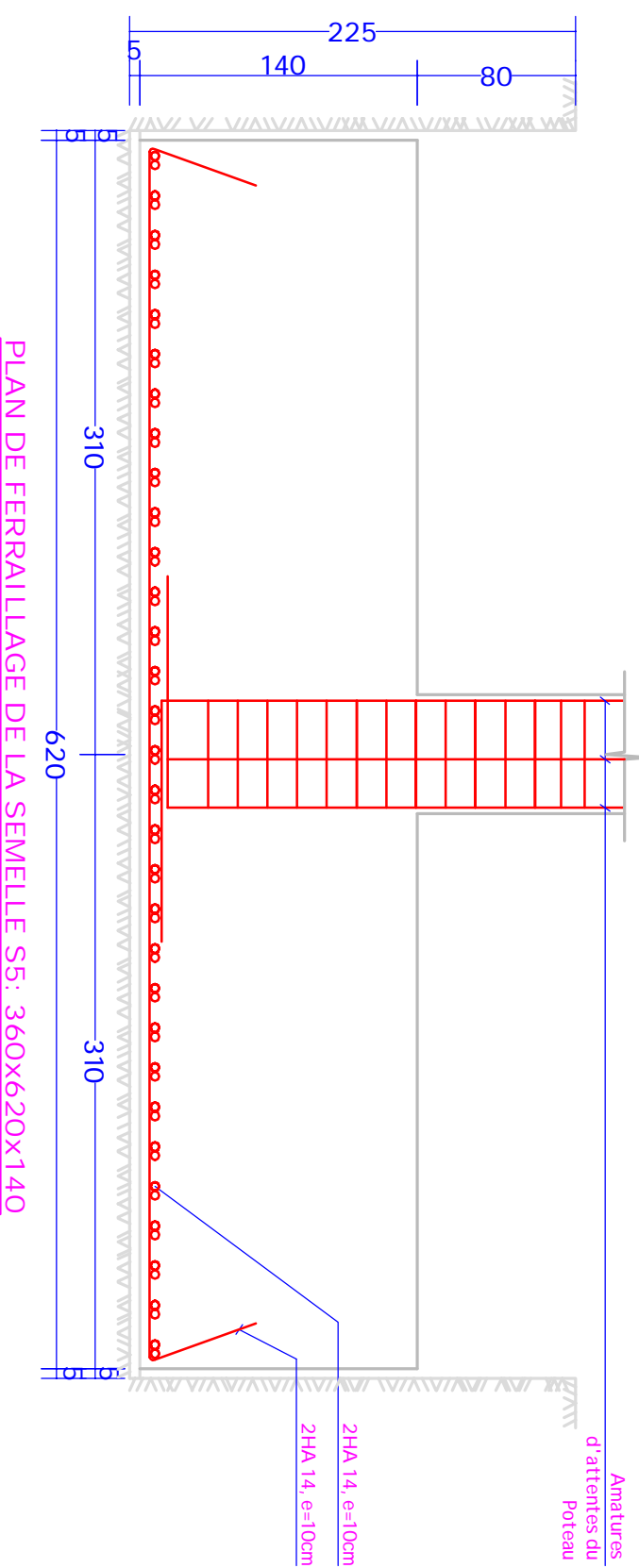
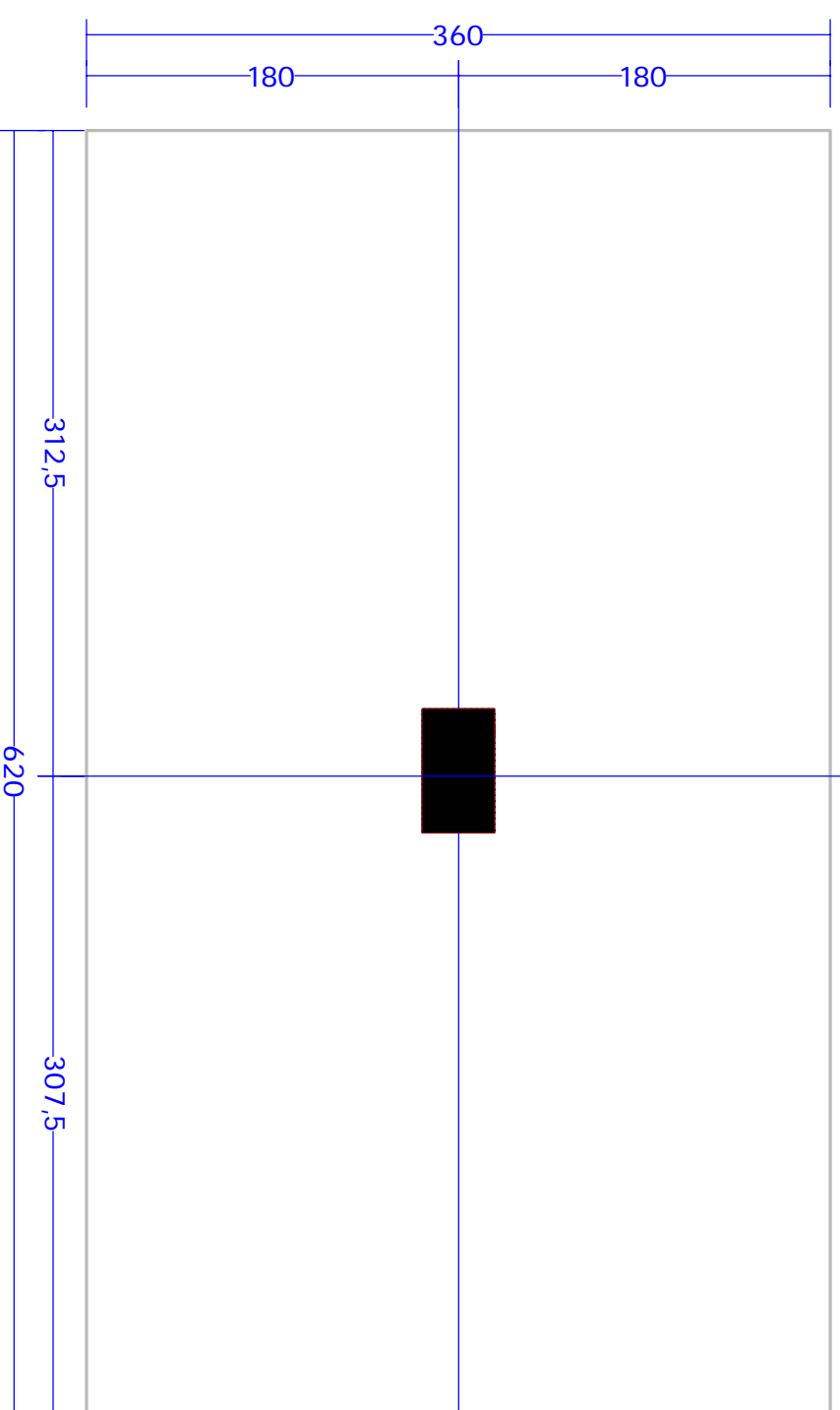
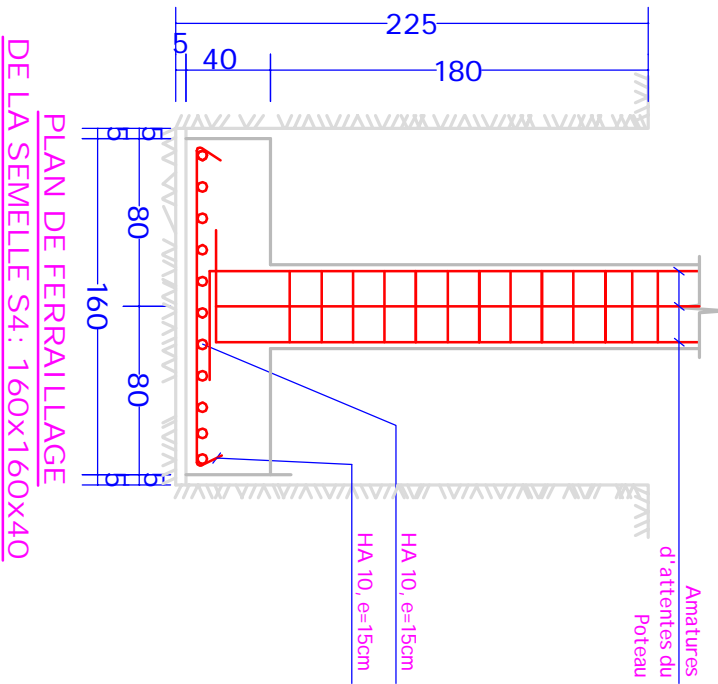
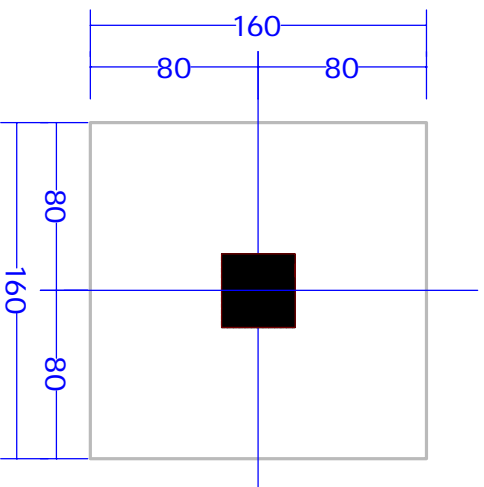
# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

<b>REPUBLICQUE TOGOLAISE</b> Travail - Liberté - Patrie	<b>FINANCEMENT</b> Banque Mondiale	<b>MAITRE D'OUVRAGE</b> Université de Lomé	<b>MAITRE D'OEUVRE</b> Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	<b>PHASE</b> Avant Projet Détailé	<b>Version</b> FINALE	<b>NOM DU PLAN</b> PLAN DE COFFRAGE DE LA FONDATION	<b>VISA</b>	<b>DECEMBF</b> 2022	<b>PLANCH</b> N°
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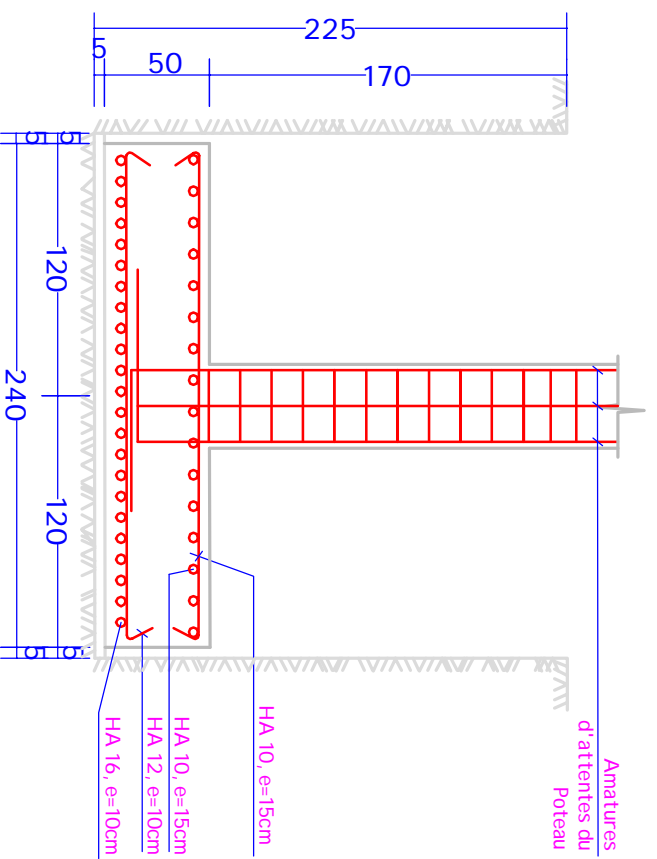
# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



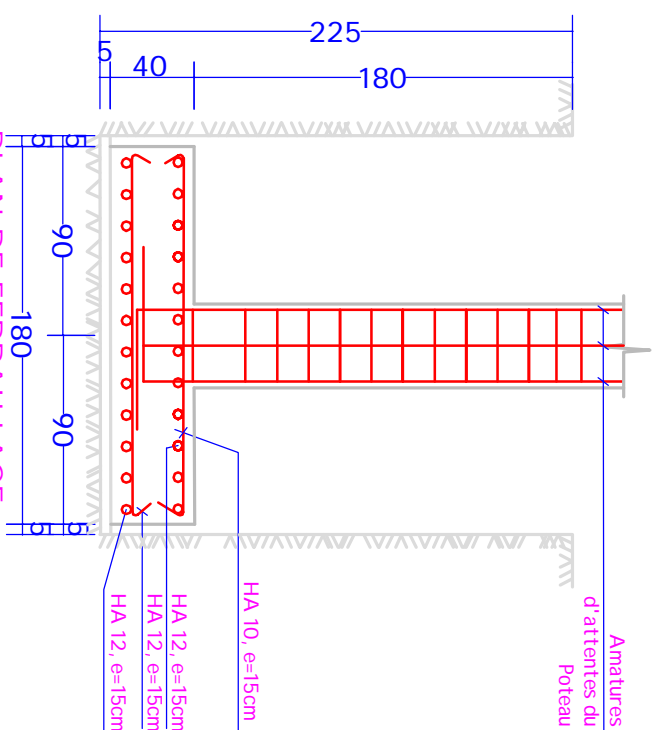
## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	VERSION	NOM DU PLAN	VISA	DECEMBF 2022
Travail - Liberté - Patrie	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	FINALE	PLAN DE COFFRAGE DE LA FONDATION		PLANCH N°

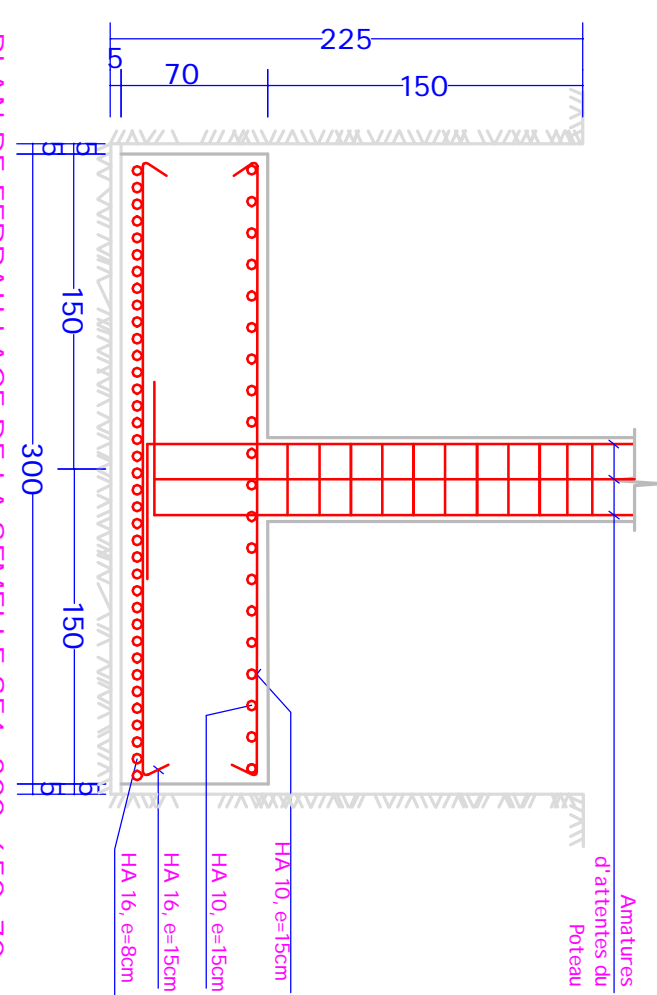
# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



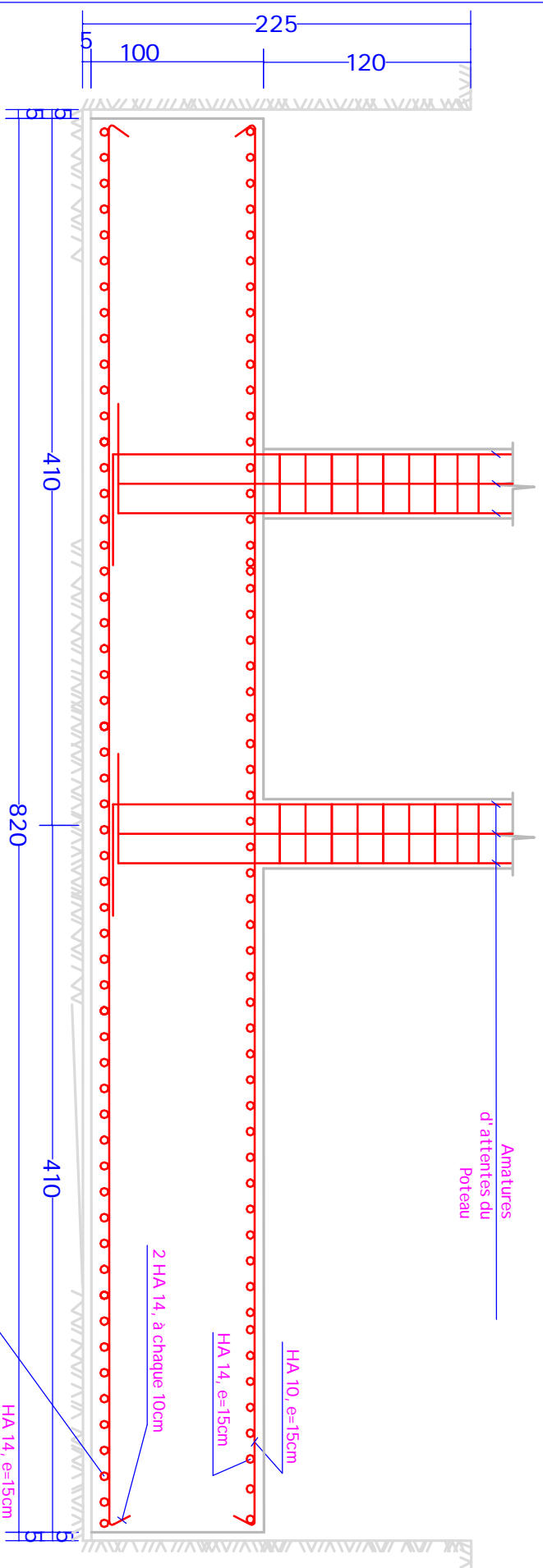
PLAN DE FERRAILLAGE  
DE LA SEMELLE SF1: 240X620X50  
(COUPE TRANSVERSALE)



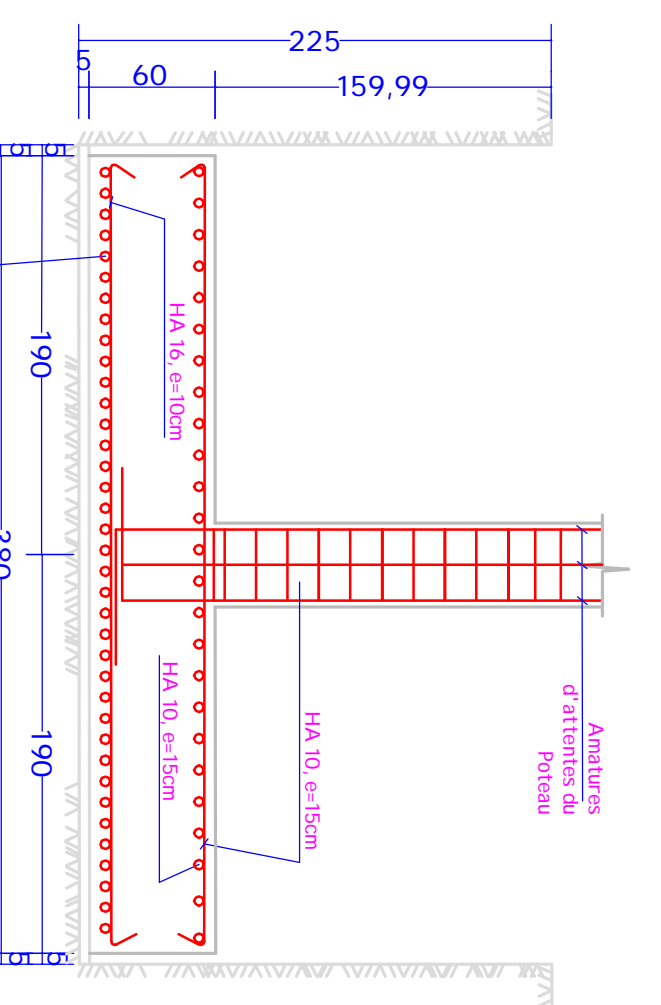
PLAN DE FERRAILLAGE  
DE LA SEMELLE SF2: 180X800X40  
(COUPE TRANSVERSALE)



PLAN DE FERRAILLAGE DE LA SEMELLE SF4: 300X650X70  
(COUPE TRANSVERSALE)



PLAN DE FERRAILLAGE DE LA SEMELLE SF3: 820X1830X100 (COUPE TRANSVERSALE)

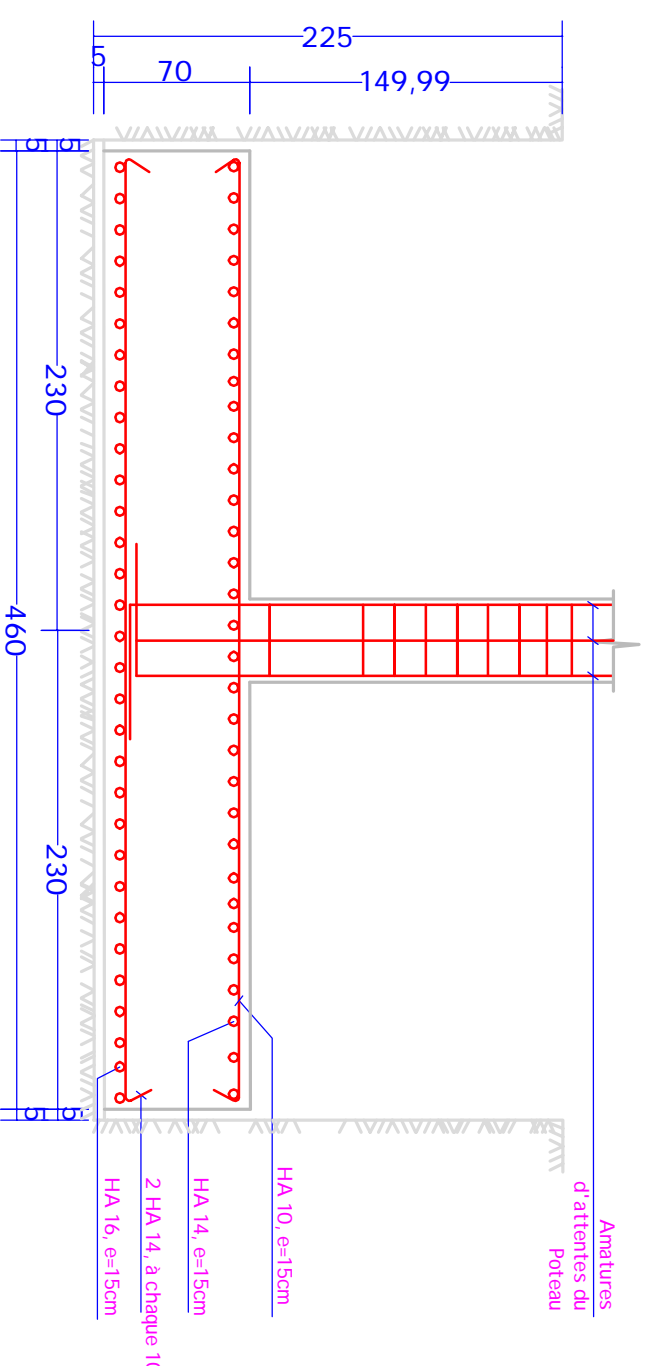
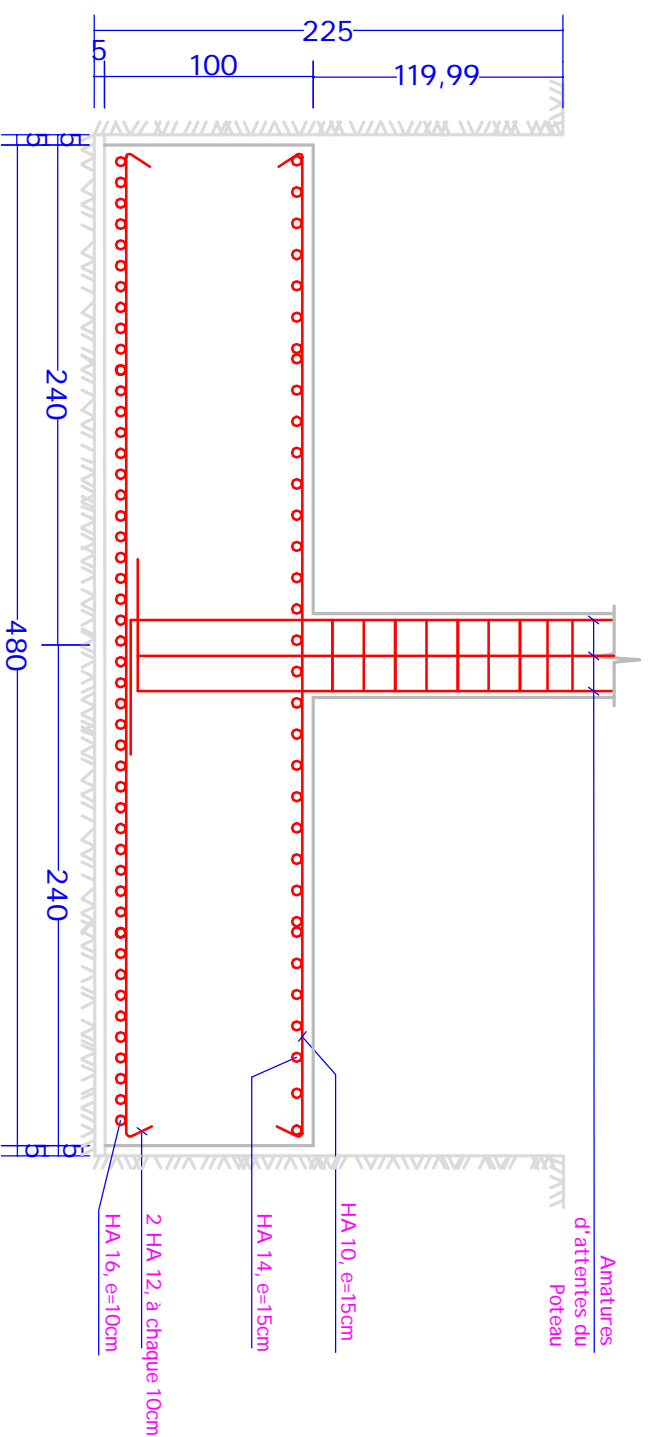
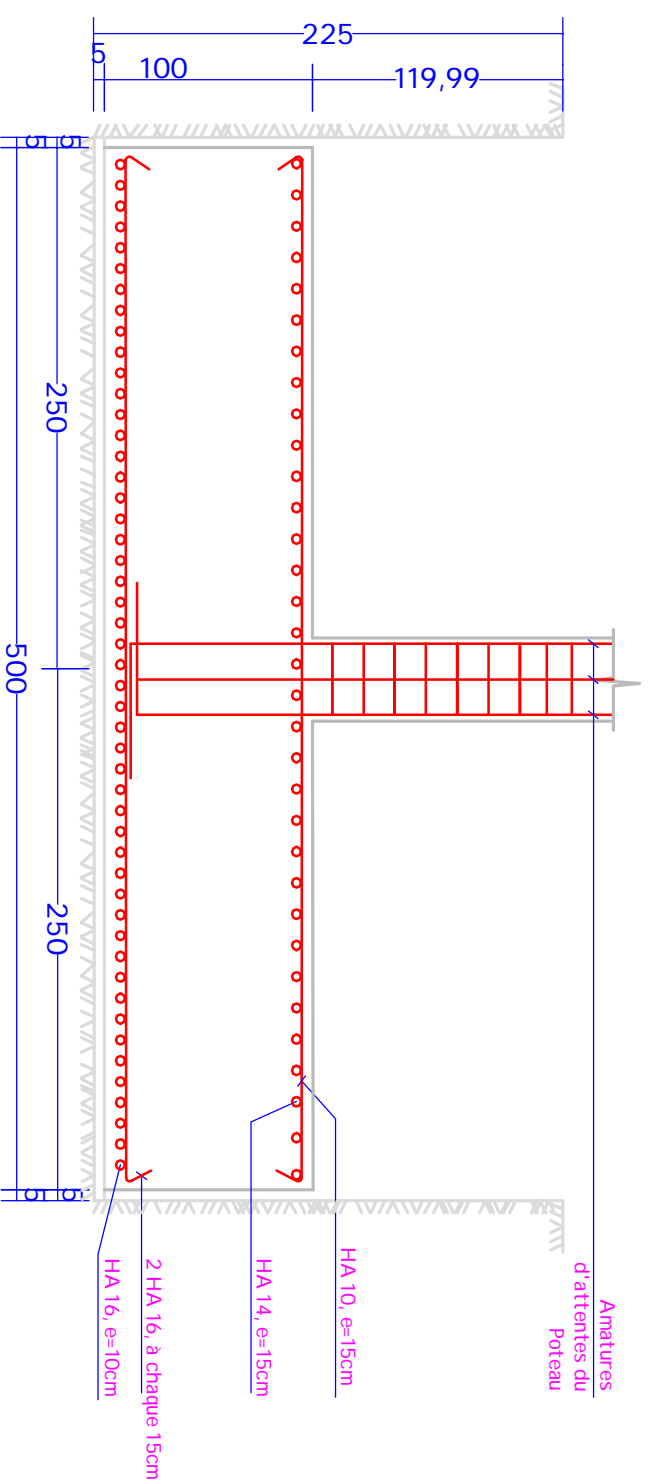
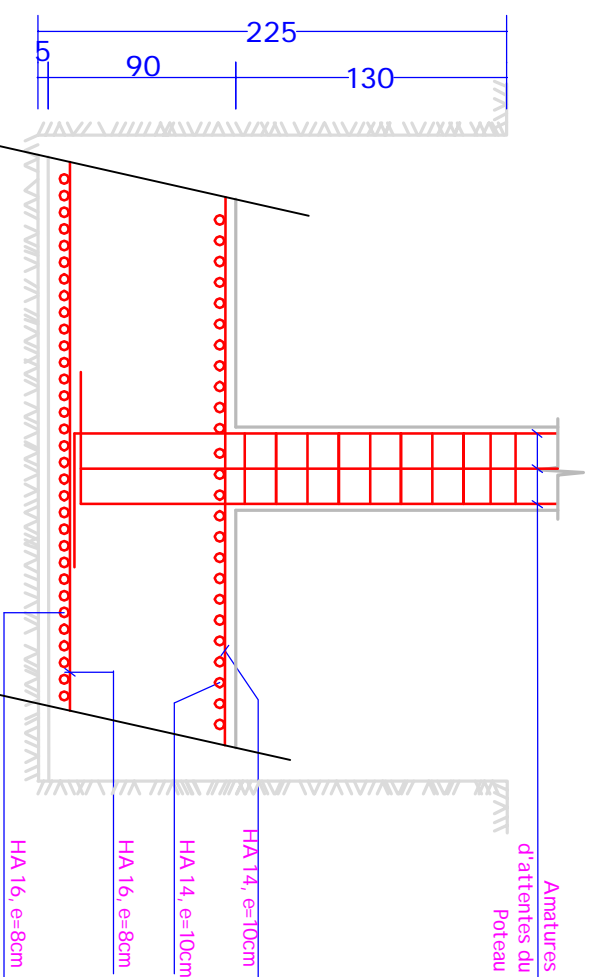


PLAN DE FERRAILLAGE DE LA SEMELLE SF5: 380X550X60  
(COUPE TRANSVERSALE)

## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE		FINANCEMENT		MAITRE D'OUVRAGE		MAITRE D'OEUVRE		PHASE		NOM DU PLAN		VISA		DECEMBF 2022	
Travail - Liberté - Patrie		Banque Mondiale		Université de Lomé		Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT		Avant Projet Détaillé		Version FINALE		PLAN DE COFFRAGE DE LA FONDATION		PLANCH N°	

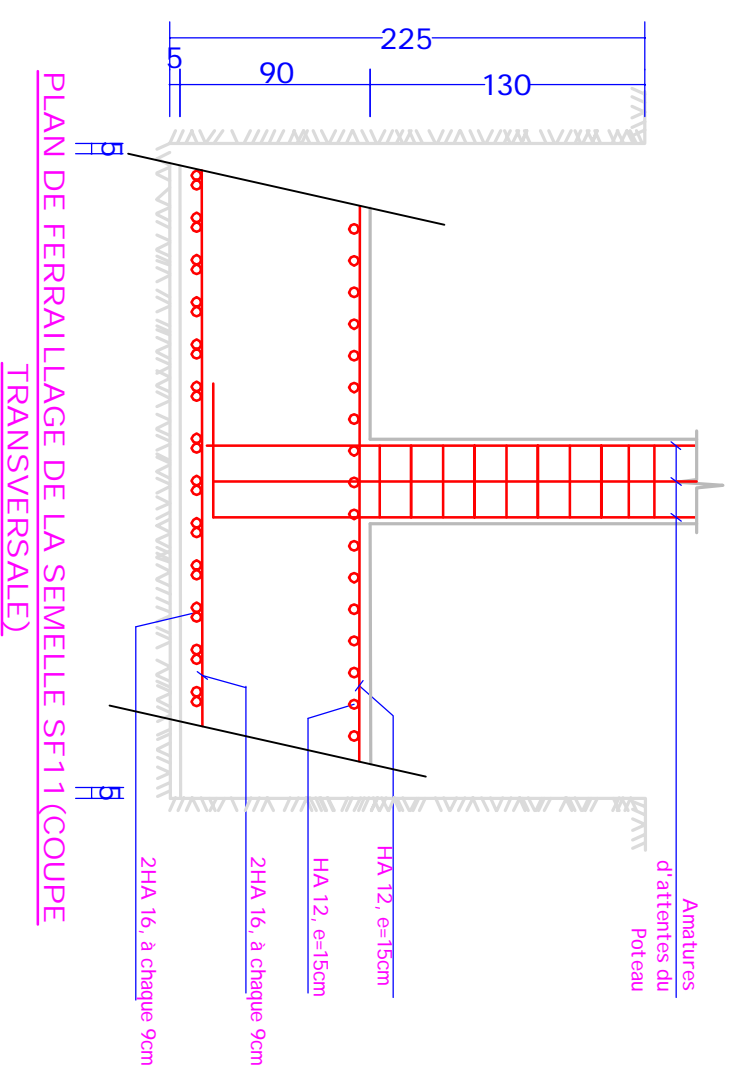
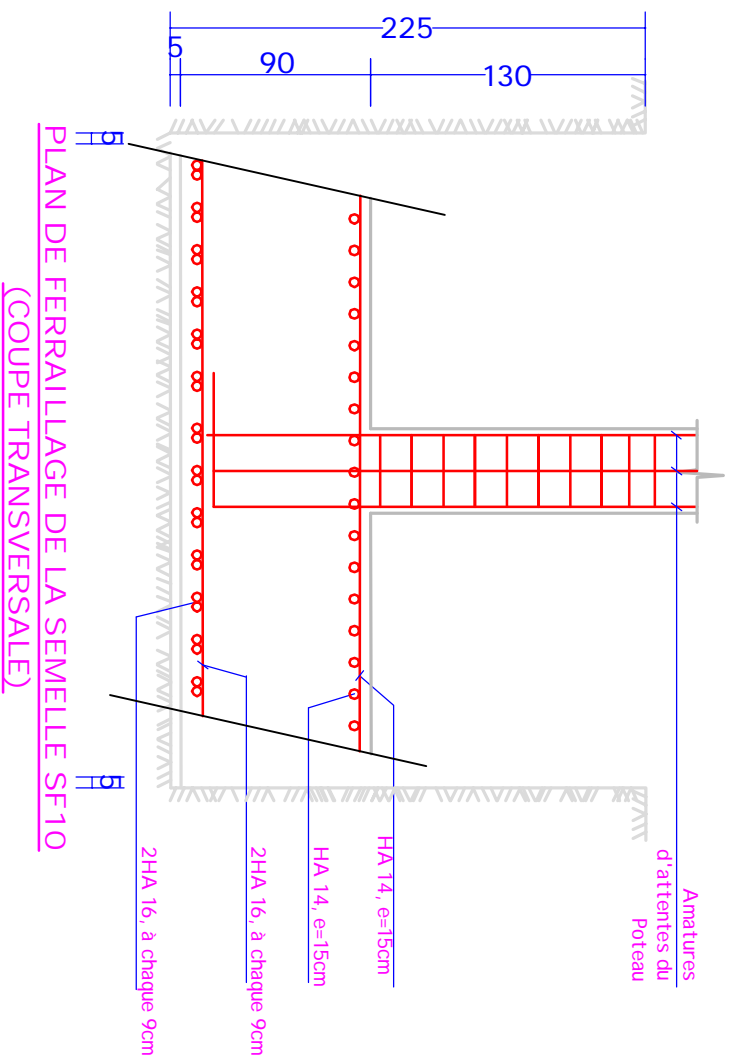
# PORJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	Version	NOM DU PLAN	VISA	DECEMBR 2022
Travail - Liberté - Patrie	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	FINALE	PLAN DE COFFRAGE DE LA FONDATION		PLANCH N°

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



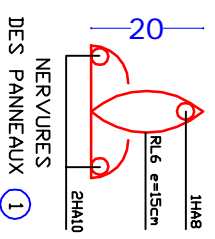
## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE Travail - Liberté - Patrie	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE		NOM DU PLAN	VISA	DECENMBF 2022
	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détailé	Version FINALE			PLAN DE COFFRAGE DE LA FONDATION

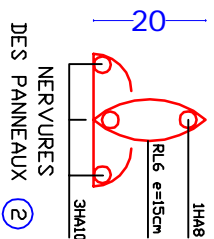
## 2.2. RDC

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME

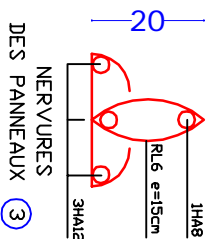
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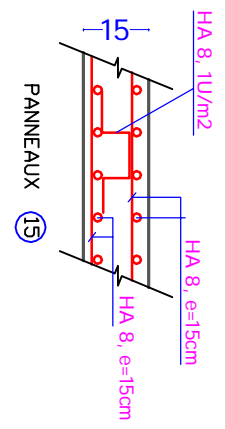
NERVURES DES PANNEAUX ①



NERVURES DES PANNEAUX ②



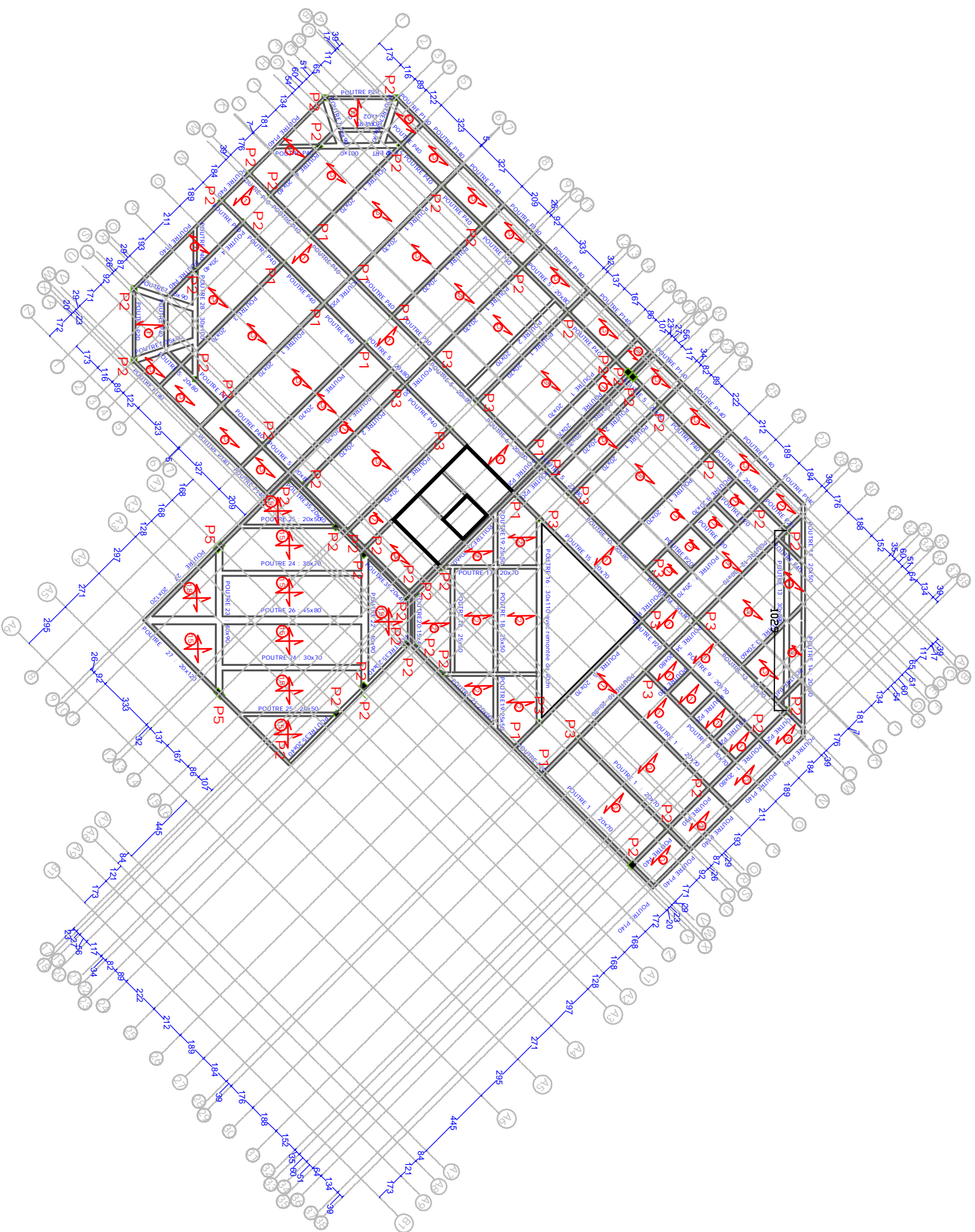
NERVURES DES PANNEAUX ③



PANNEAUX ⑮

## NOMENCLATURE DES POTEAUX

- P1: 35X35
- P2: 40X40
- P3: 40X40
- P4: 70X70
- P5: 35X60



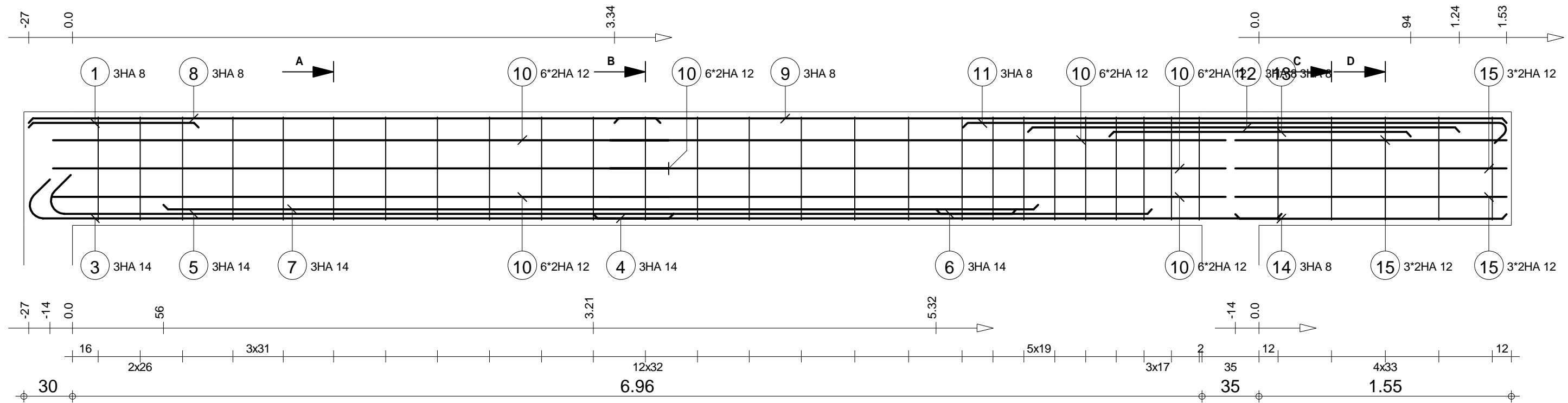
QUELQUES CARACTERISTIQUES GEOMETRIQUES ET STRUCTURELLES POUR CE NIVEAU

Hauteur du niveau=450ci

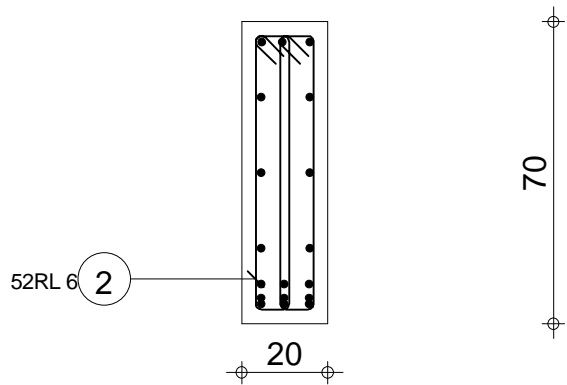
## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE Travail - Liberté - Patrie	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	Version	PLAN DE COFFRAGE DU PLANCHER HAUT DU RDC (PHASE 1 DES TRAVAUX)	VISA	DECEMBR 2022
	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	FINALE			PLANCHI N°

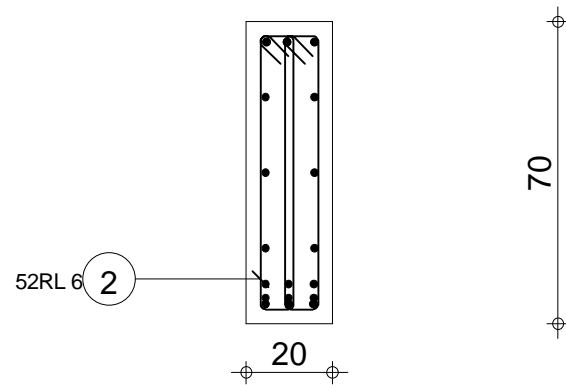




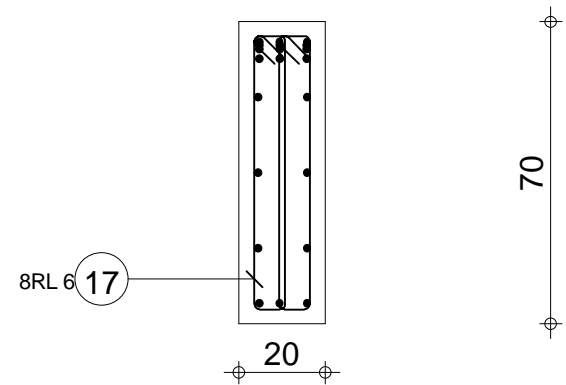
**A-A**



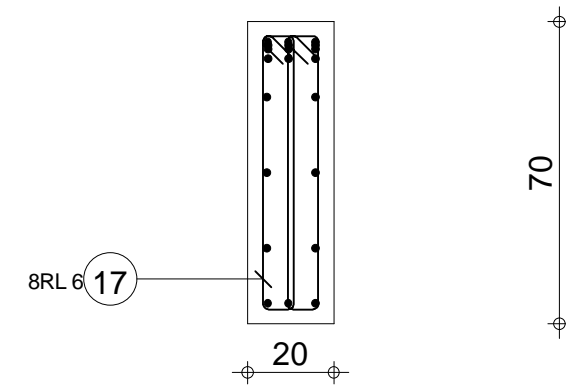
**B-B**



**C-C**





**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=1.04	00	④	3HA 14	l=4.24	00	⑦	3HA 14	l=5.38	00	⑩	6*2HA 12	l=3.79	00	⑬	3HA 8	l=1.86	00
②	52RL 6	l=1.56	31	⑤	3HA 14	l=6.20	00	⑧	3HA 8	l=3.89	00	⑪	3HA 8	l=3.48	00	⑭	3HA 8	l=1.67	00
③	3HA 14	l=4.21	00	⑥	3HA 14	l=1.33	00	⑨	3HA 8	l=5.49	00	⑫	3HA 8	l=2.66	00	⑮	3*2HA 12	l=1.67	00

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 1</b> <b>Section 20x70</b>	Tél.	Fax	<b>Nombre 1</b>	Béton : BETON25 = 1.28 m3	Acier HA 400 = 151 kg
		Enrobage inférieur 3 cm	Enrobage supérieur 3 cm		Enrobage latéral 3 cm	
		Densité = 134.4 kg/m3	Echelle pour la vue 3.97cm/m			
		Surface du coffrage = 14.8 m2	Echelle pour la section 5.71cm/m			
					Page 1/2	

Pos.	Armature		Code	Forme
16	2RL 6	l=1.56	31	
17	8RL 6	l=1.55	31	

Tél.

Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 1**  
**Section 20x70**

Nombre 1

Béton : BETON25 = 1.28 m3

Acier HA 400 = 151 kg

Acier RL 235 = 21.5 kg

Enrobage inférieur 3 cm

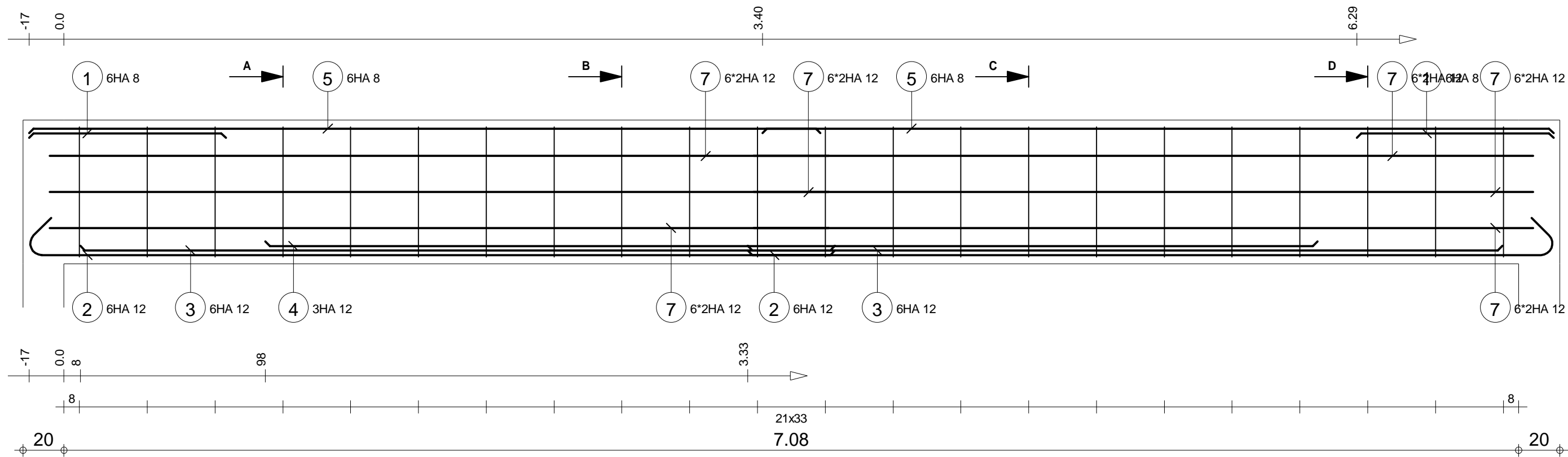
Enrobage supérieur 3 cm

Enrobage latéral 3 cm

Densité = 134.4 kg/ m3

Surface du coffrage = 14.8 m2

Page 2/2

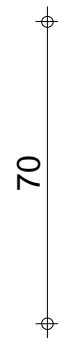
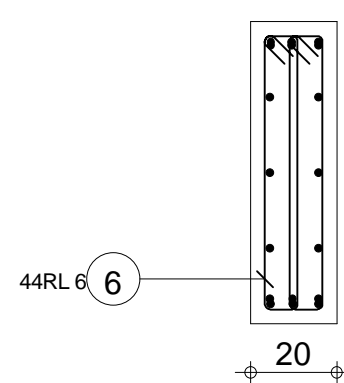
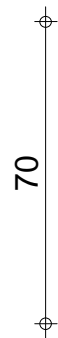
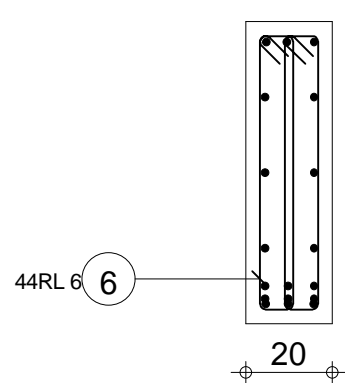
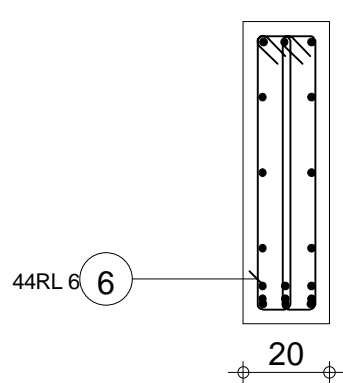
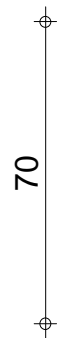
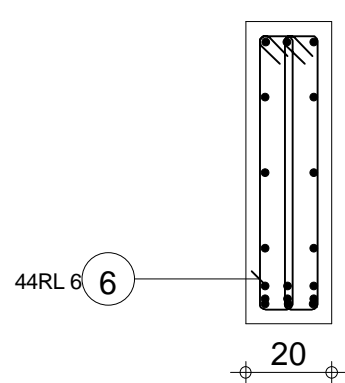


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 8	l=96	00	④	3HA 12	l=5.12	00	⑦	6*2HA 12	l=3.79	00
②	6HA 12	l=4.11	00	⑤	6HA 8	l=3.85	00				
③	6HA 12	l=3.67	00	⑥	44RL 6	l=1.56	31				

Tél.

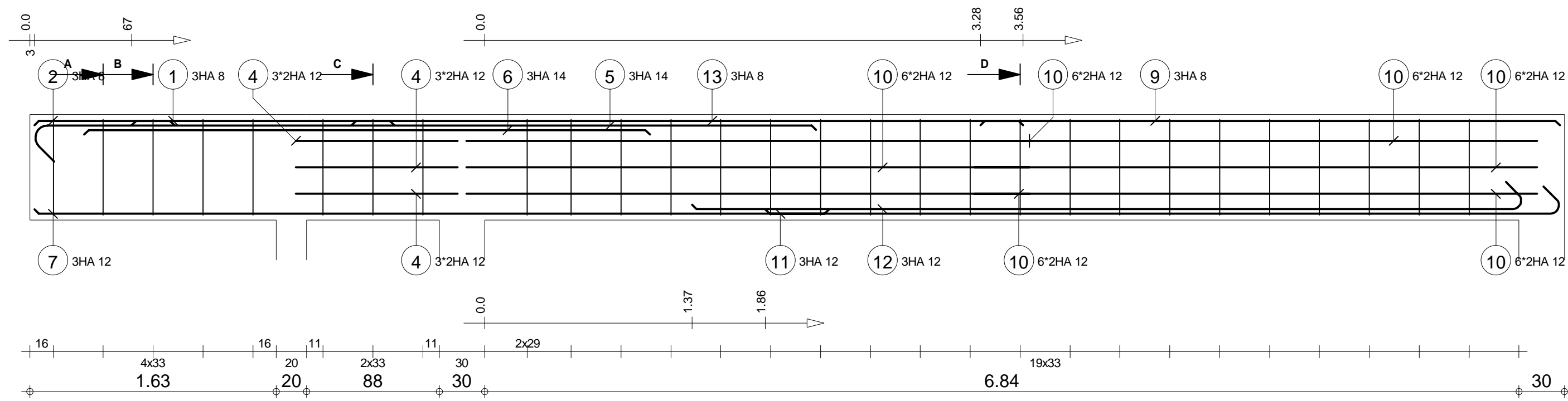
Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

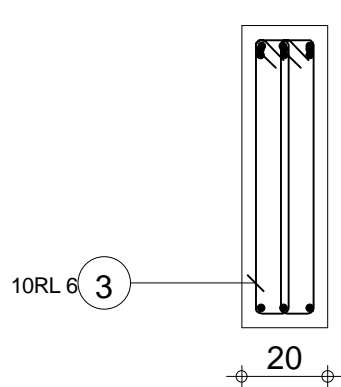
**POUTRE 2**  
**Section 20x70**

Nombre 1

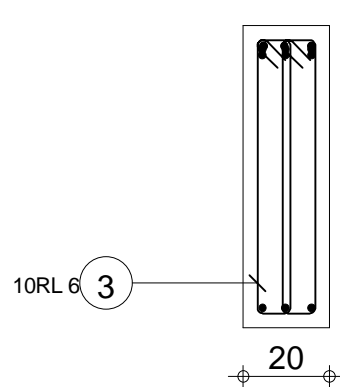
Béton : BETON25 = 1.05 m3	Acier HA 400 = 107 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 15.2 kg	
Densité = 116.2 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 12.2 m2	Echelle pour la vue 4.83cm/m	Echelle pour la section 5.71cm/m
		Page 1/1



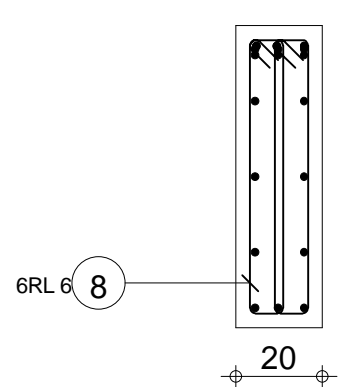
**A-A**



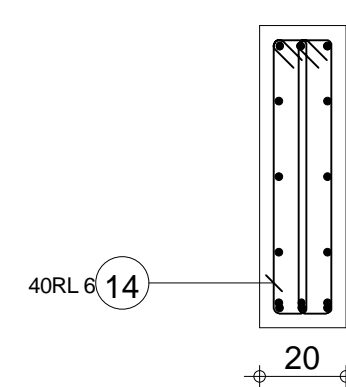
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=1.74	00	④	3*2HA 12	l=1.07	00	⑦	3HA 12	l=5.26	00	⑩	6*2HA 12	l=3.72	00	⑬	3HA 8	l=4.44	00
②	3HA 8	l=93	00	⑤	3HA 14	l=5.42	00	⑧	6RL 6	l=1.56	31	⑪	3HA 12	l=5.45	00	⑭	40RL 6	l=1.56	31
③	10RL 6	l=1.56	31	⑥	3HA 14	l=3.74	00	⑨	3HA 8	l=3.83	00	⑫	3HA 12	l=5.68	00				

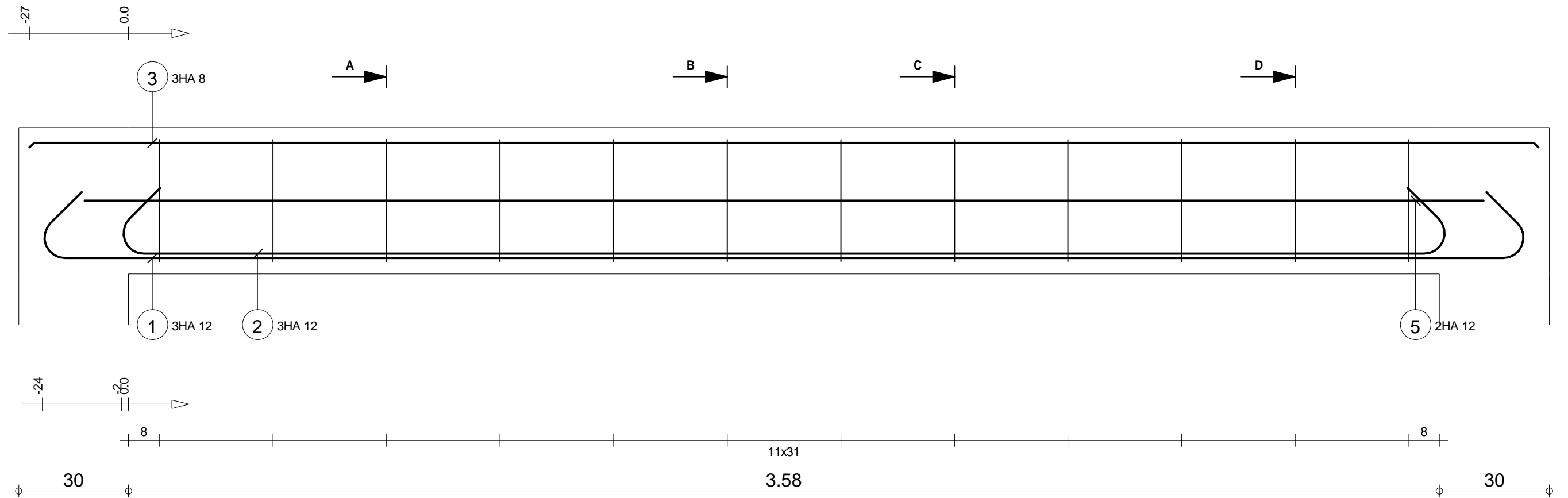
Tél. Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

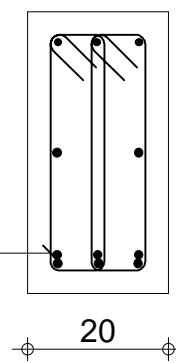
**POUTRE 3**  
**Section 20x70**

Nombre 1

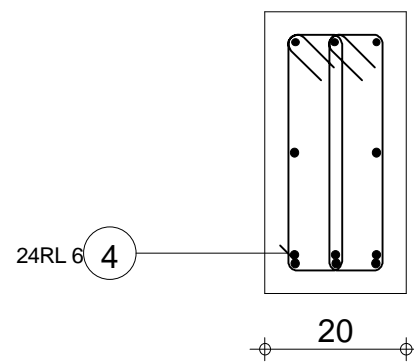
Béton : BETON25 = 1.42 m3	Acier HA 400 = 135 kg	Enrobage inférieur 3 cm	Acier RL 235 = 19.4 kg	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 108.5 kg/ m3	Echelle pour la vue 3.59cm/m	Surface du coffrage = 16.4 m2		Echelle pour la section 5.71cm/m	Page 1/1



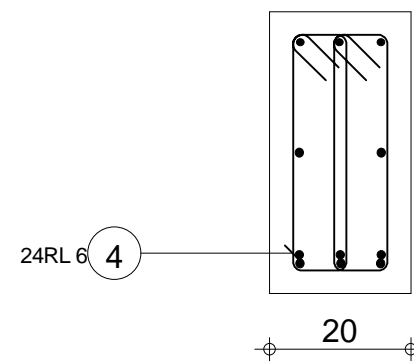
**A-A**



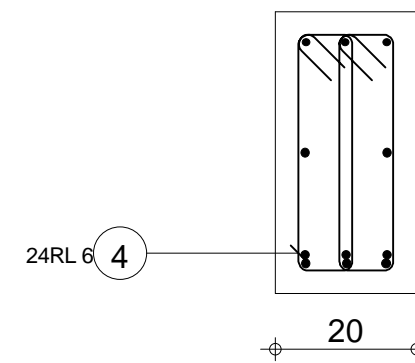
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=4.43	00	④	24RL 6	l=96	31
②	3HA 12	l=4.00	00	⑤	2HA 12	l=3.82	00
③	3HA 8	l=4.12	00				

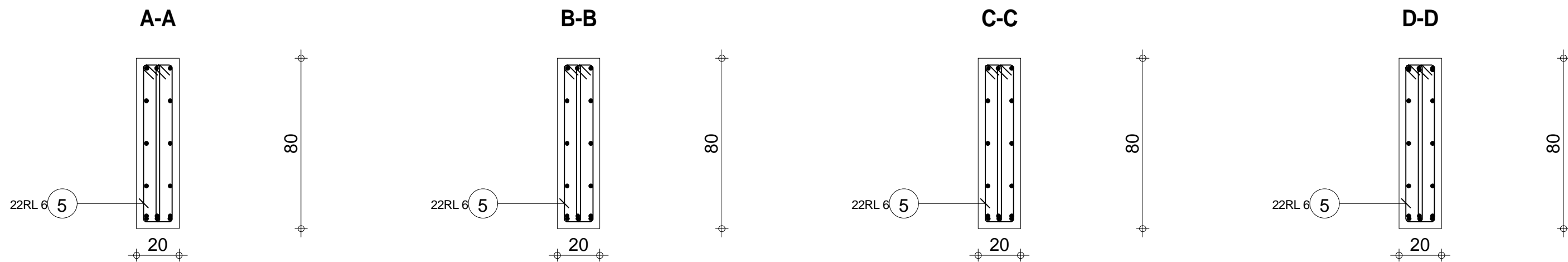
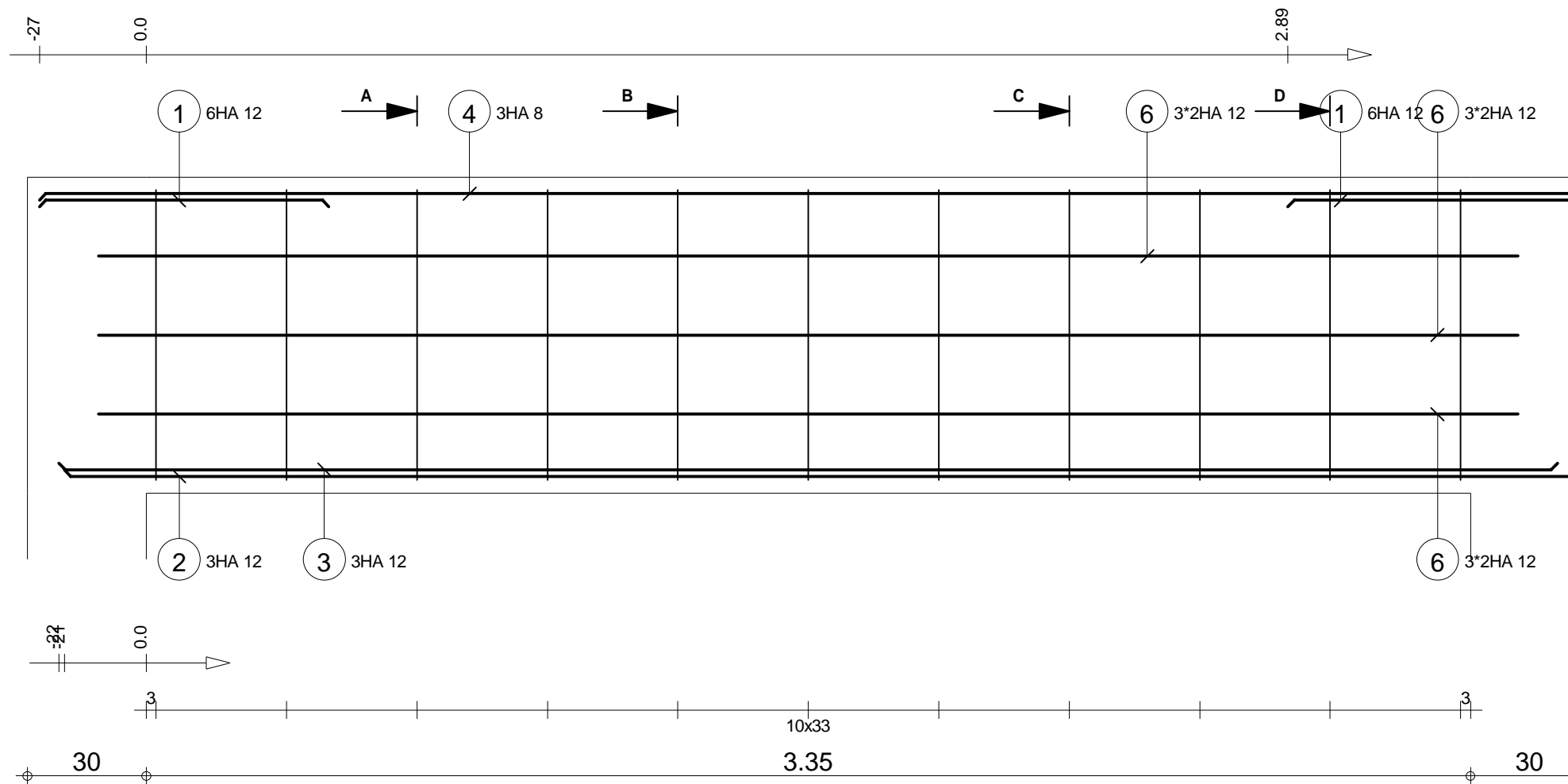
Tél. Fax

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**PROJET CERME\_PLANS GUIDES**

**POUTREE 4**  
**Section 20x40**

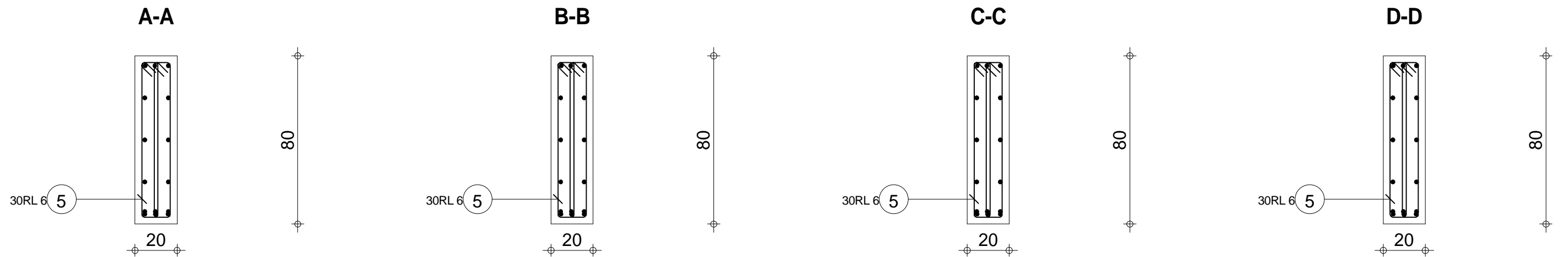
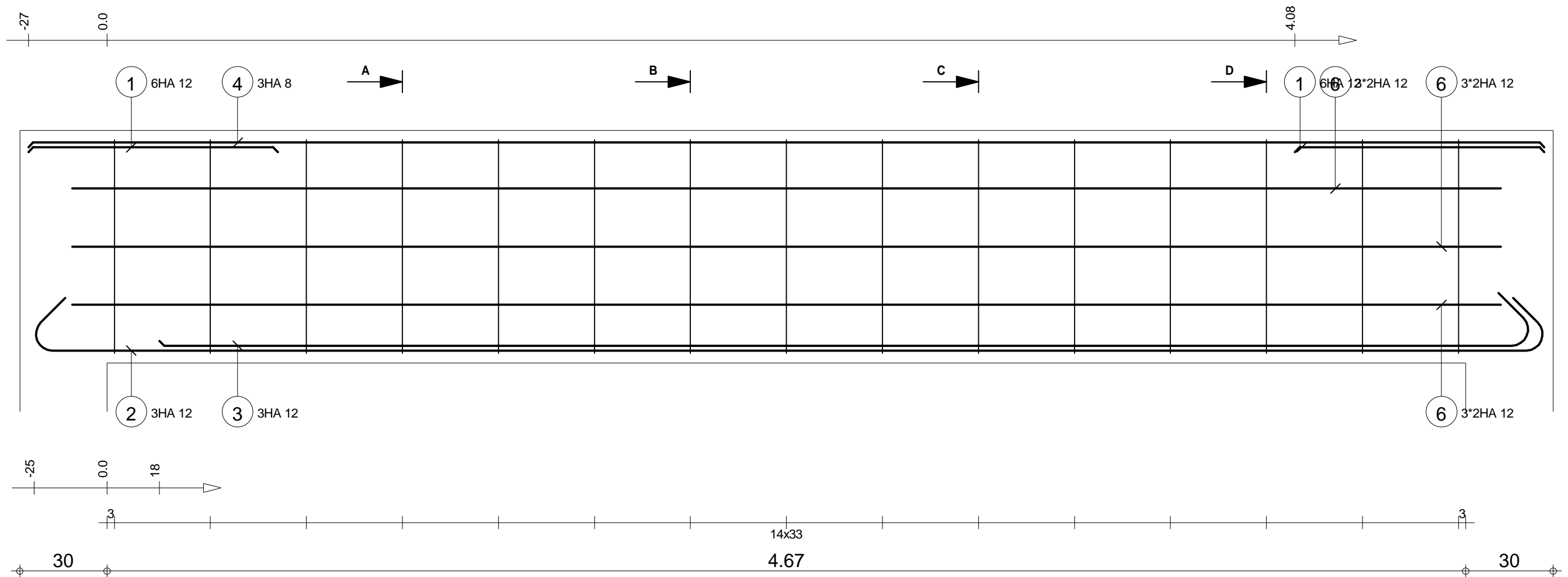
Nombre 1

Béton : BETON25 = 0.334 m3	Acier HA 400 = 34.1 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 5.11 kg	
Densité = 117.4 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 4.22 m2	Echelle pour la vue 8.45cm/m	Echelle pour la section 9.34cm/m
		Page 1/1



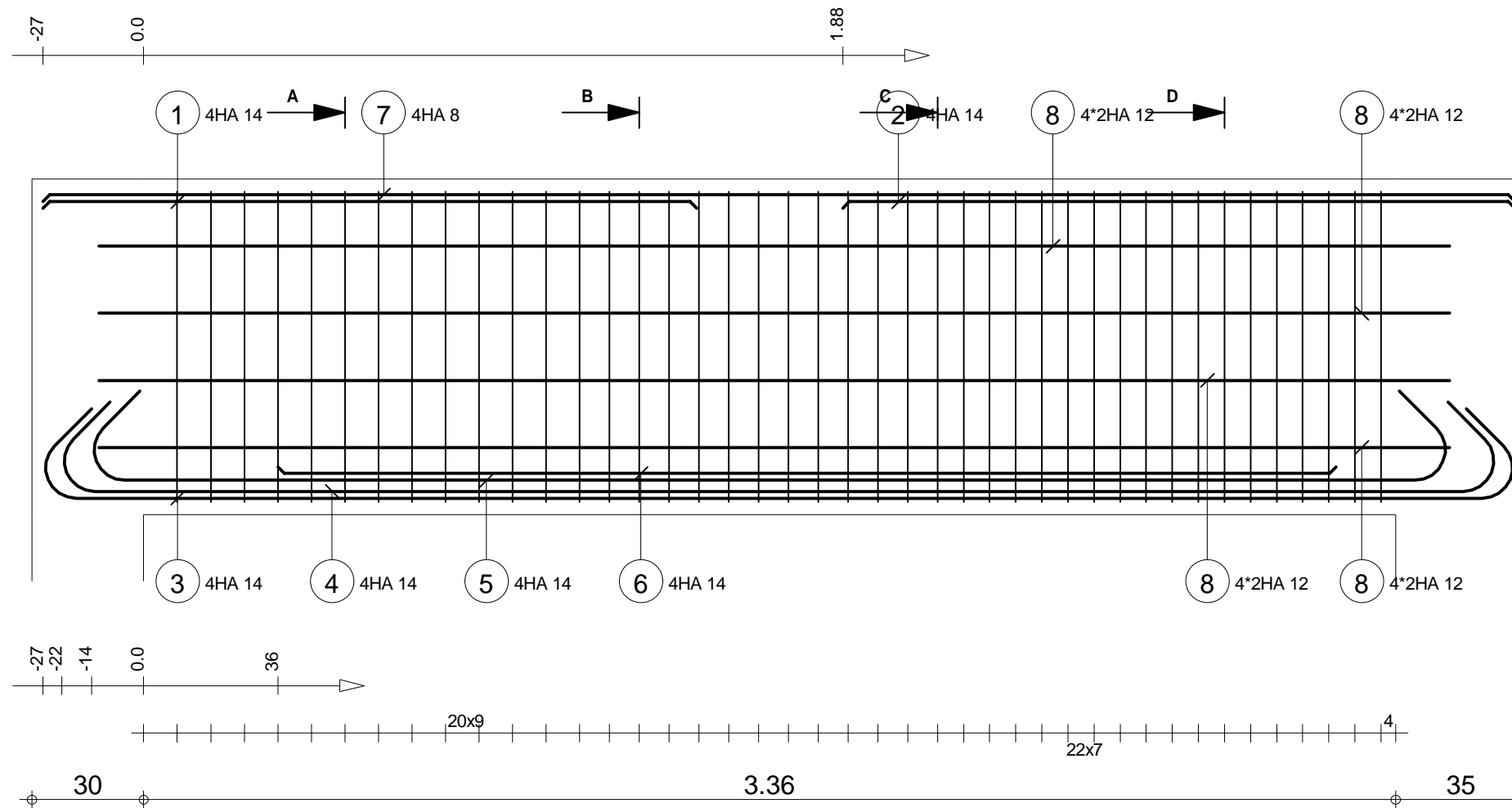
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme		
①	6HA 12	l=73	00	73	④	3HA 8	l=3.89	00	3.89
②	3HA 12	l=3.83	00	3.83	⑤	22RL 6	l=1.76	31	
③	3HA 12	l=3.79	00	3.79	⑥	3*2HA 12	l=3.59	00	3.59

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 5</b> <b>Section 20x80</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 0.632 m3	Acier HA 400 = 47.9 kg
				Enrobage inférieur 3 cm	Acier RL 235 = 8.59 kg
				Densité = 89.4 kg/ m3	Enrobage supérieur 3 cm
		Surface du coffrage = 7.31 m2	Echelle pour la vue 6.6cm/m		Page 1/1
				Echelle pour la section 5.05cm/m	



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 12	l=86	00	④	3HA 8	l=5.21	00
②	3HA 12	l=5.57	00	⑤	30RL 6	l=1.76	31
③	3HA 12	l=4.90	00	⑥	3*2HA 12	l=4.91	00

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 6</b> <b>Section 20x80</b>	Tél.                      Fax Nombre 1	Béton : BETON25 = 0.843 m3	Acier HA 400 = 64.8 kg Acier RL 235 = 11.7 kg	
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
			Densité = 90.75 kg/ m3 Surface du coffrage = 9.69 m2	Echelle pour la vue 6.6cm/m Echelle pour la section 5.05cm/m	Page 1/1

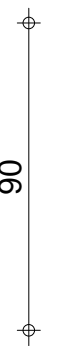
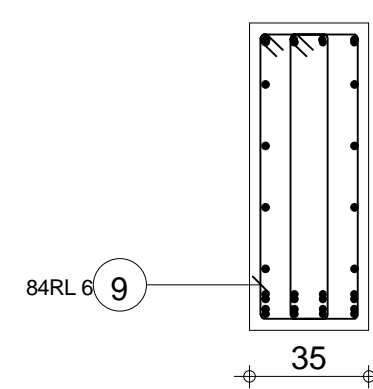
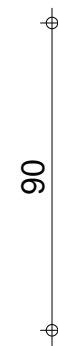
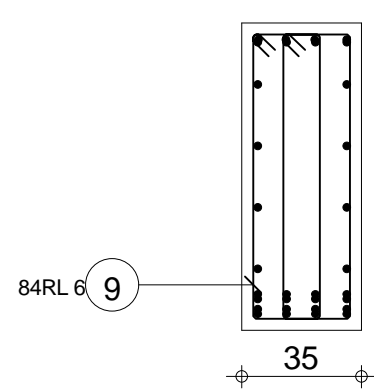
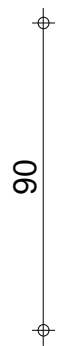
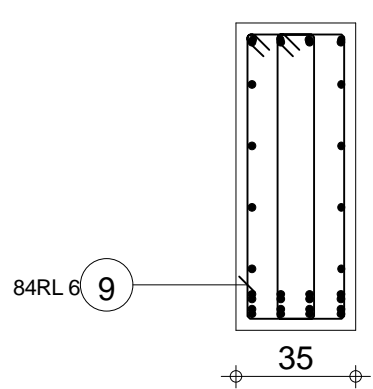
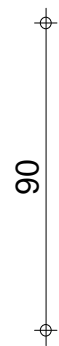
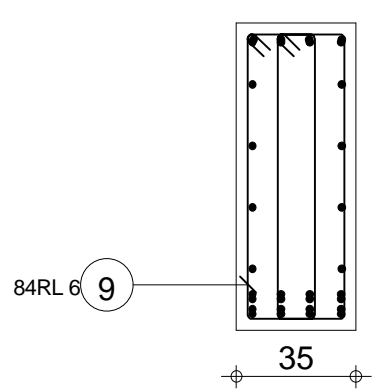


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	4HA 14	l=1.75	00	④	4HA 14	l=4.34	00	⑦	4HA 8	l=3.95	00
②	4HA 14	l=1.80	00	⑤	4HA 14	l=4.13	00	⑧	4*2HA 12	l=3.63	00
③	4HA 14	l=4.44	00	⑥	4HA 14	l=2.84	00	⑨	84RL 6	l=2.20	31

Tél.

Fax

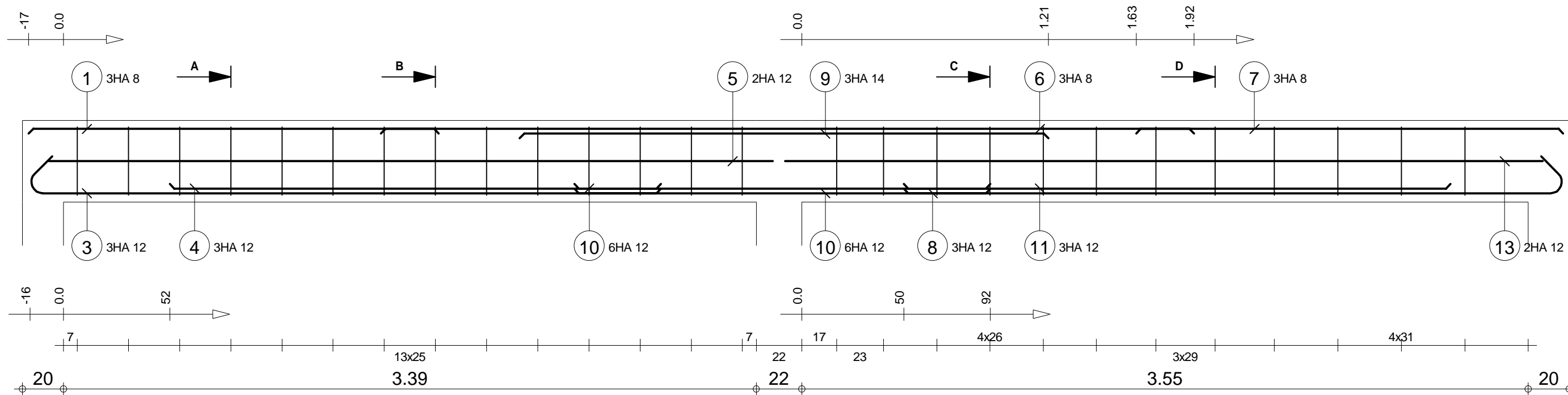
Nombre 1

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**POUTRE 7**  
**Section 35x90**

Béton : BETON25 = 1.26 m3	Acier HA 400 = 125 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 41 kg	
Densité = 131.7 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 9.02 m2	Echelle pour la vue 6.04cm/m	Echelle pour la section 4.52cm/m
		Page 1/1



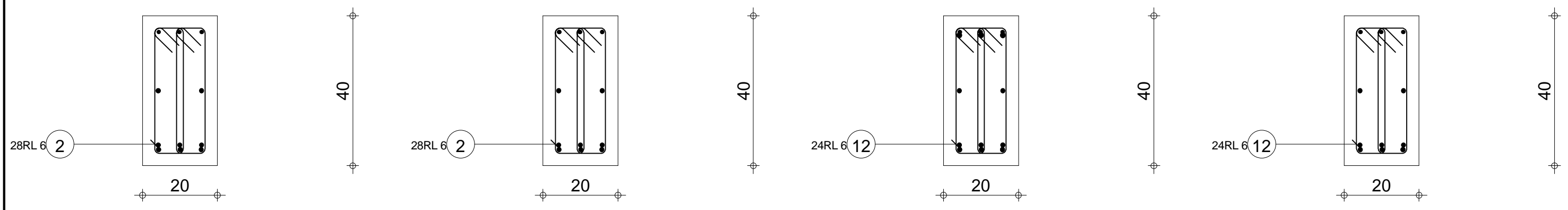


**A-A**

**B-B**

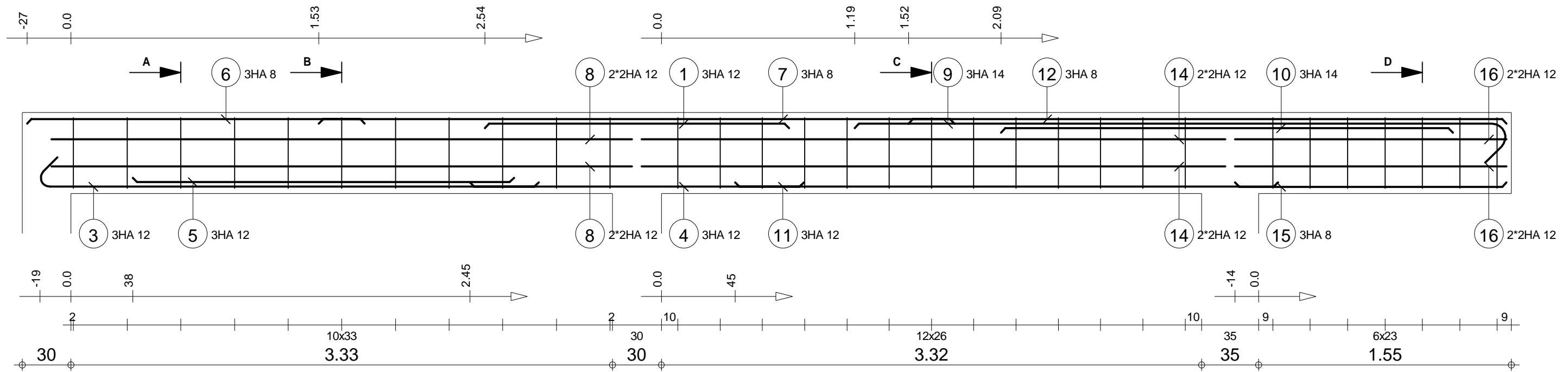
**C-C**

**D-D**

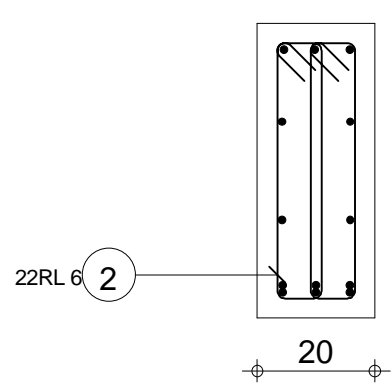


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=2.00	00	④	3HA 12	l=2.40	00	⑦	3HA 8	l=2.09	00	⑩	6HA 12	l=2.03	00	⑬	2HA 12	l=3.70	00
②	28RL 6	l=96	31	⑤	2HA 12	l=3.54	00	⑧	3HA 12	l=3.41	00	⑪	3HA 12	l=2.67	00				
③	3HA 12	l=3.27	00	⑥	3HA 8	l=3.97	00	⑨	3HA 14	l=2.58	00	⑫	24RL 6	l=96	31				

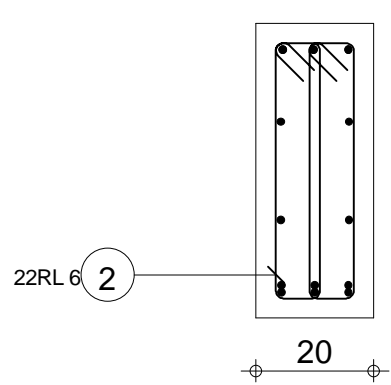
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 8</b> <b>Section 20x40</b>	Nombre 1	Béton : BETON25 = 0.605 m3		Acier HA 400 = 73.9 kg Acier RL 235 = 11.1 kg			
			Enrobage inférieur 3 cm		Enrobage supérieur 3 cm		Enrobage latéral 3 cm	
			Densité = 140.5 kg/ m3 Surface du coffrage = 7.59 m2		Echelle pour la vue 4.78cm/m Echelle pour la section 9.34cm/m		Page 1/1	
			Tél.		Fax			



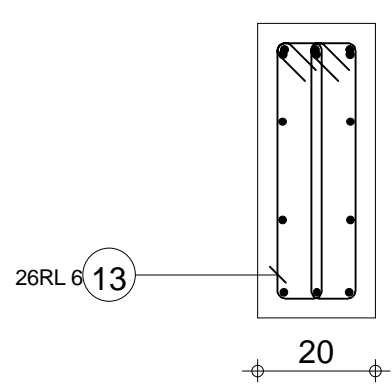
**A-A**



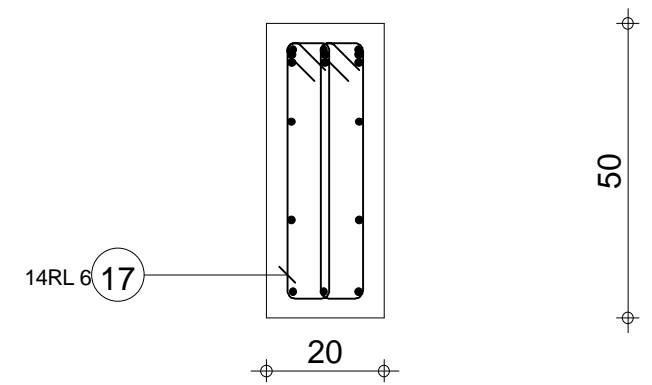
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=1.87	00	④	3HA 12	l=2.05	00	⑦	3HA 8	l=3.91	00	⑩	3HA 14	l=2.78	00	⑬	26RL 6	l=1.16	31
②	22RL 6	l=1.16	31	⑤	3HA 12	l=2.35	00	⑧	2*2HA 12	l=3.57	00	⑪	3HA 12	l=3.34	00	⑭	2*2HA 12	l=3.59	00
③	3HA 12	l=3.26	00	⑥	3HA 8	l=2.08	00	⑨	3HA 14	l=4.25	00	⑫	3HA 8	l=3.68	00	⑮	3HA 8	l=1.67	00

Tél.

Fax

Nombre 1

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**POUTRE 9**  
**Section 20x50**

Béton : BETON25 = 0.916 m3	Acier HA 400 = 105 kg
Enrobage inférieur 3 cm	Acier RL 235 = 15.9 kg
Densité = 131 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 11 m2	Enrobage latéral 3 cm
Echelle pour la vue 3.97cm/m	Page 1/2
Echelle pour la section 7.8cm/m	

Pos.	Armature		Code	Forme
16	2*2HA 12	l=1.67	00	
17	14RL 6	l=1.15*	31	

Tél.

Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 9**  
**Section 20x50**

Nombre 1

Béton : BETON25 = 0.916 m3

Acier HA 400 = 105 kg

Acier RL 235 = 15.9 kg

Enrobage inférieur 3 cm

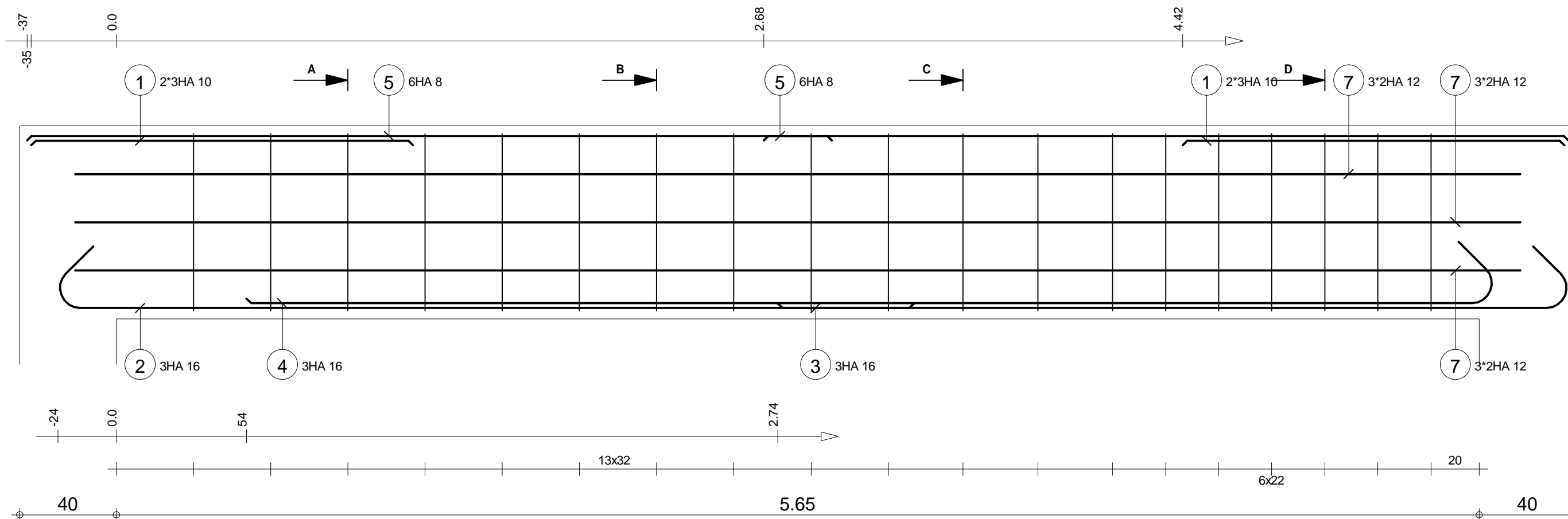
Enrobage supérieur 3 cm

Enrobage latéral 3 cm

Densité = 131 kg/ m3

Surface du coffrage = 11 m2

Page 2/2

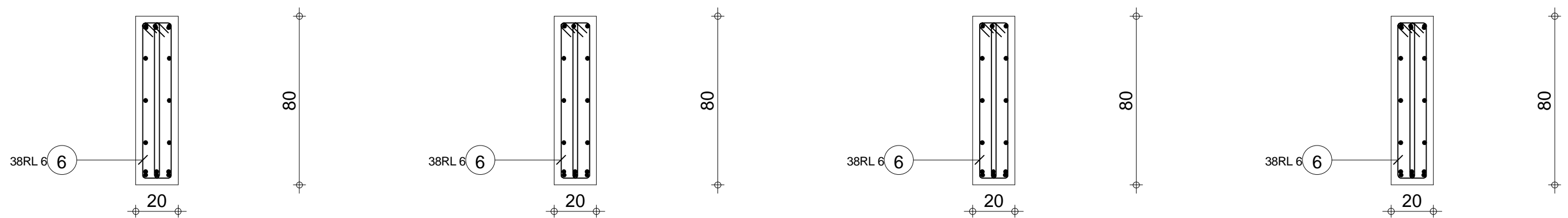


**A-A**

**B-B**

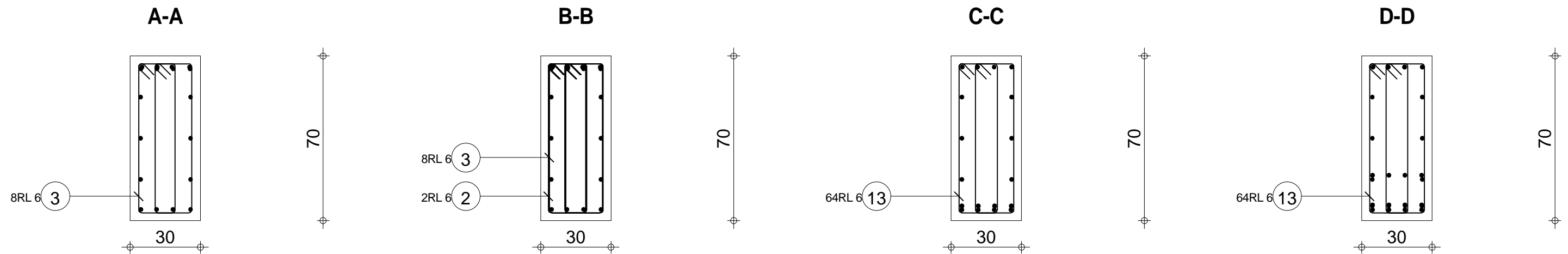
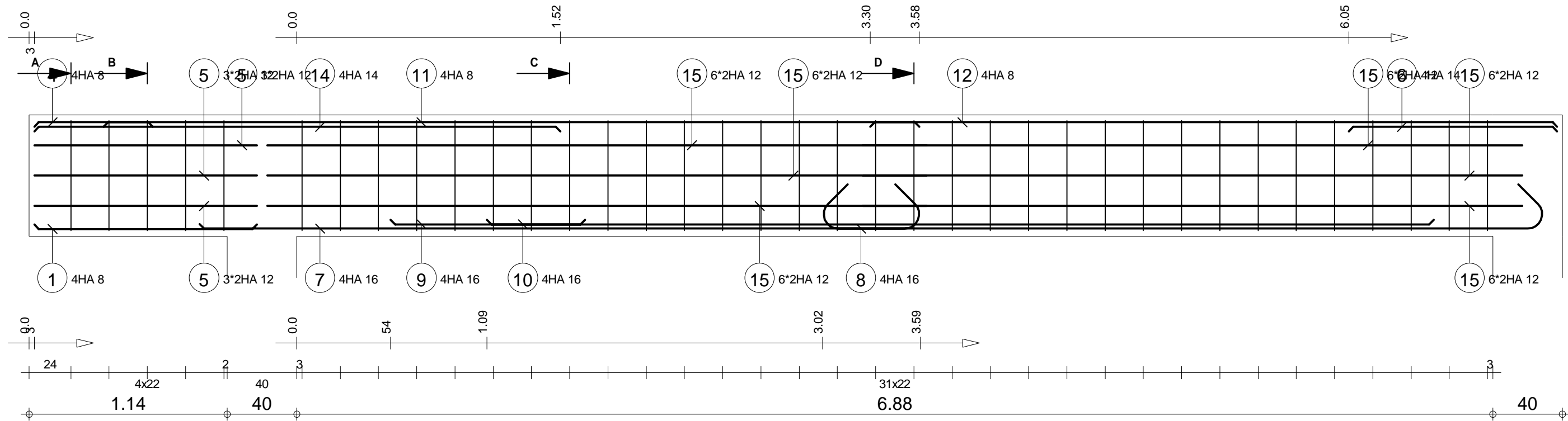
**C-C**

**D-D**



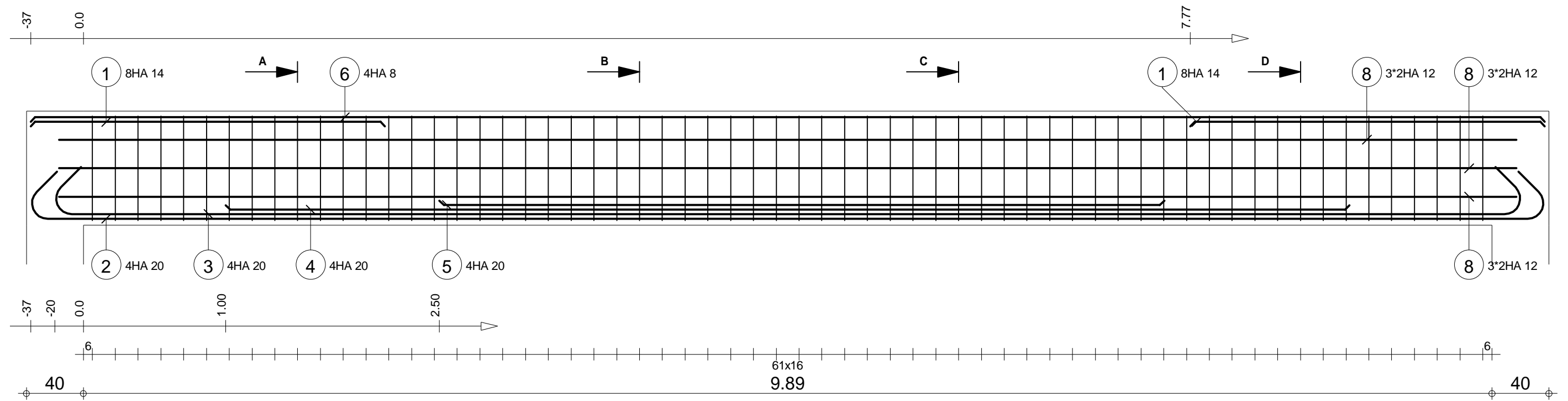
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	2*3HA 10	l=1.58	00	④	3HA 16	l=5.44	00	⑦	3*2HA 12	l=5.99	00
②	3HA 16	l=3.81	00	⑤	6HA 8	l=3.34	00				
③	3HA 16	l=3.54	00	⑥	38RL 6	l=1.76	31				

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 10</b> <b>Section 20x80</b>	Nombre 1	Béton : BETON25 = 1.03 m3		Acier HA 400 = 106 kg	
			Enrobage inférieur 3 cm		Acier RL 235 = 14.9 kg	
			Densité = 117.5 kg/ m3 Surface du coffrage = 11.8 m2		Enrobage supérieur 3 cm	
			Echelle pour la vue 5.57cm/m		Echelle pour la section 5.05cm/m	
			Page 1/1			

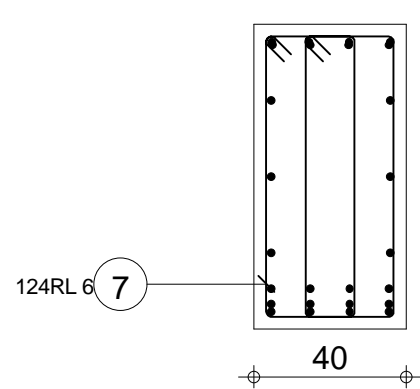


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	4HA 8	l=1.28	00	④	4HA 8	l=68	00	⑦	4HA 16	l=4.41	00	⑩	4HA 16	l=5.45	00	⑬	64RL 6	l=1.73	31
②	2RL 6	l=1.73	31	⑤	3*2HA 12	l=1.28	00	⑧	4HA 16	l=4.68	00	⑪	4HA 8	l=4.69	00	⑭	4HA 14	l=3.03	00
③	8RL 6	l=1.72	31	⑥	4HA 14	l=1.20	00	⑨	4HA 16	l=1.12	00	⑫	4HA 8	l=3.95	00	⑮	6*2HA 12	l=3.79	00

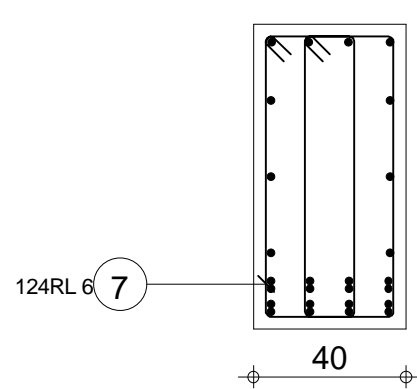
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 12</b> <b>Section 30x70</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 1.85 m3	Acier HA 400 = 183 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 28.4 kg	
				Densité = 114.6 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 15.2 m2	Echelle pour la vue 4.12cm/m	Echelle pour la section 5.71cm/m
				Page 1/1		



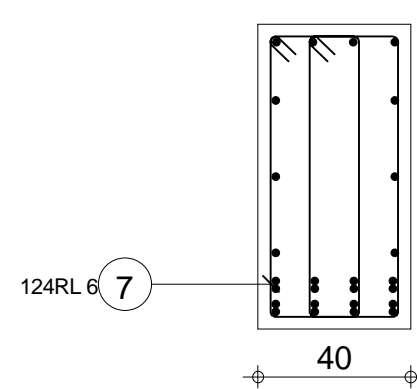
**A-A**



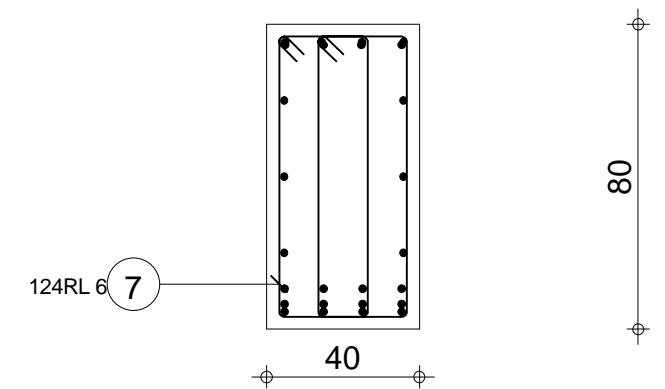
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 14	l=2.49	00	④	4HA 20	l=7.89	00	⑦	124RL 6	l=2.07	31
②	4HA 20	l=11.31	00	⑤	4HA 20	l=5.09	00	⑧	3*2HA 12	l=10.23	00
③	4HA 20	l=10.97	00	⑥	4HA 8	l=10.63	00				

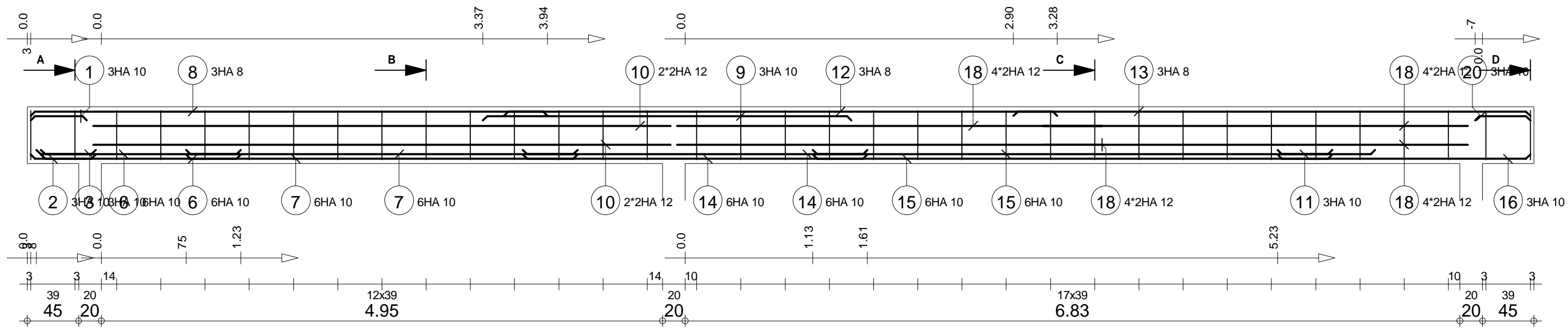
Tél. Fax

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**PROJET CERME\_PLANS GUIDES**

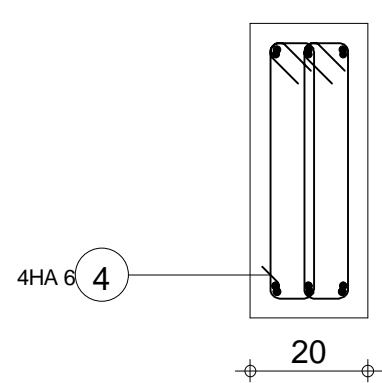
**POUTRE 13**  
**Section 40x80**

Nombre 1

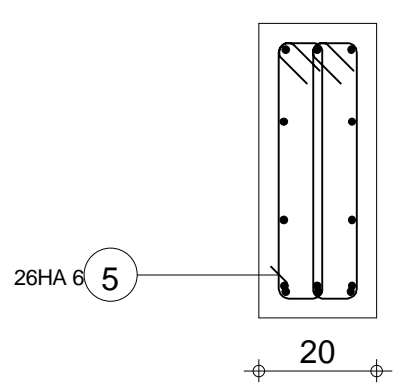
Béton : BETON25 = 3.42 m3	Acier HA 400 = 443 kg
Enrobage inférieur 3 cm	Acier RL 235 = 56.9 kg
Densité = 146.2 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 21.7 m2	Enrobage latéral 3 cm
Echelle pour la vue 3.42cm/m	Echelle pour la section 5.05cm/m
	Page 1/1



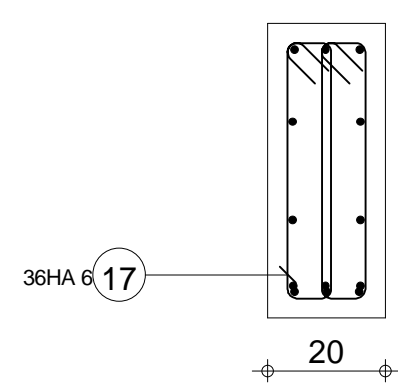
**A-A**



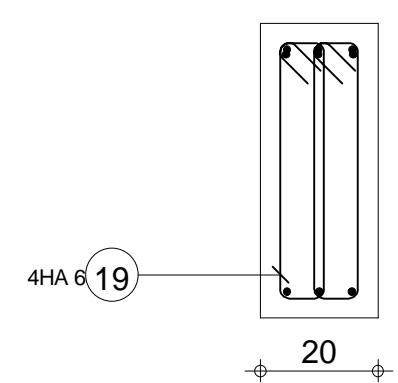
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme					
①	3HA 10	l=49	00	49	④	4HA 6	l=1.16	31	⑦	6HA 10	l=3.45	00	3.45	⑩	2*2HA 12	l=5.09	00	5.09	⑬	3HA 8	l=4.56	00	4.56	
②	3HA 10	l=57	00	57	⑤	26HA 6	l=1.16	31	⑧	3HA 8	l=4.56	00	4.56	⑪	3HA 10	l=86	00	86	⑭	6HA 10	l=3.04	00	3.04	
③	3HA 10	l=52	00	52	⑥	6HA 10	l=1.76	00	1.76	⑨	3HA 10	l=3.25	00	3.25	⑫	3HA 8	l=4.88	00	4.88	⑮	6HA 10	l=4.58	00	4.58

Tél. Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 14**  
**Section 20x50**

Nombre 1

Acier HA 500 = 124 kg  
Acier HA 500 = 18 kg

Enrobage inférieur 3 cm      Enrobage supérieur 3 cm      Enrobage latéral 3 cm  
Densité = 106.8 kg/ m3      Echelle pour la vue 2.77cm/m  
Surface du coffrage = 16 m2      Echelle pour la section 7.8cm/m

Pos.	Armature		Code	Forme
16	3HA 10	l=2.23	00	
17	36HA 6	l=1.16	31	
18	4*2HA 12	l=3.75	00	
19	4HA 6	l=1.16	31	
20	3HA 10	l=49	00	

Tél.

Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 14**  
**Section 20x50**

Nombre 1

Acier HA 500 = 124 kg

Acier HA 500 = 18 kg

Enrobage inférieur 3 cm

Enrobage supérieur 3 cm

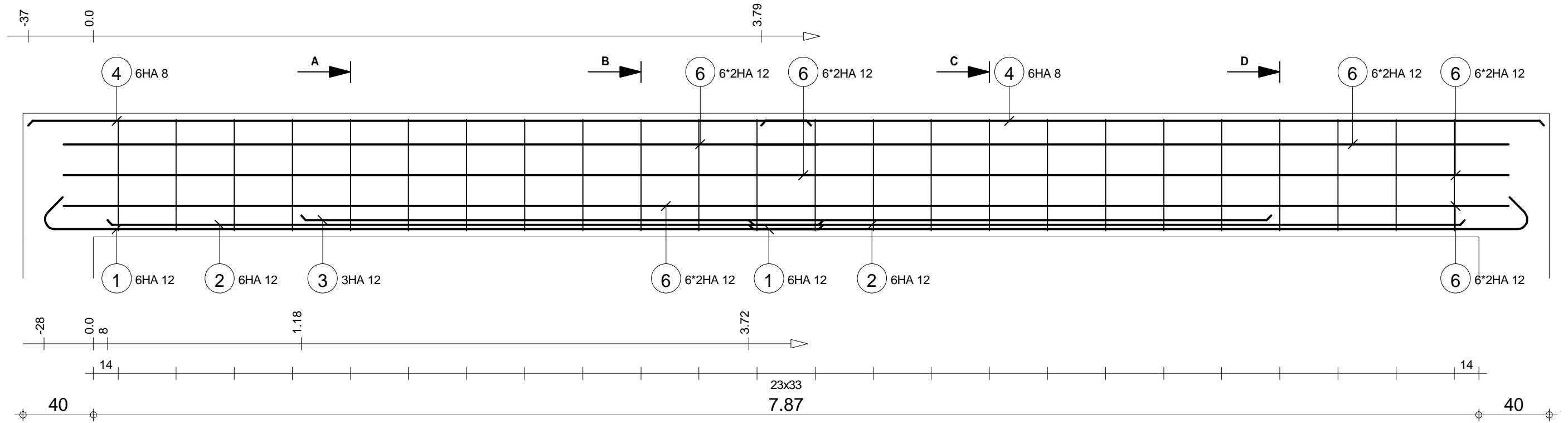
Enrobage latéral 3 cm

Densité = 106.8 kg/ m3

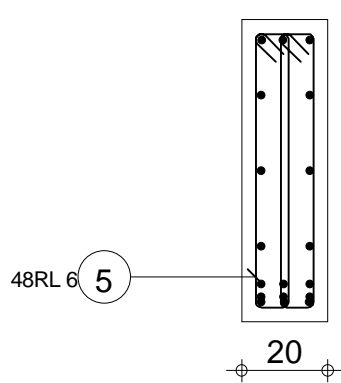
Surface du coffrage = 16 m2

Page 2/2

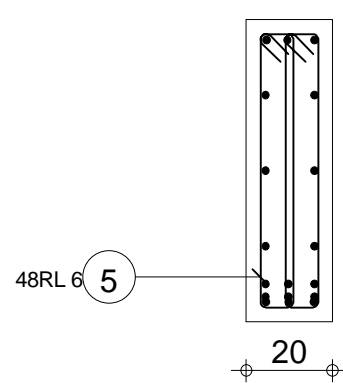




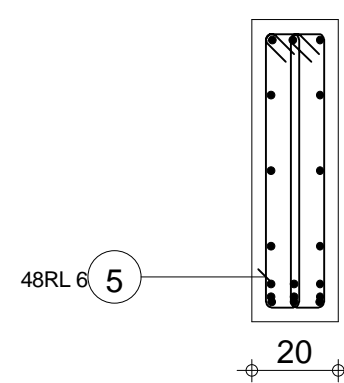
**A-A**



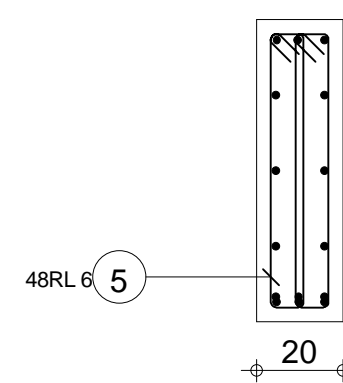
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 12	l=4.62	00	④	6HA 8	l=4.45	00
②	6HA 12	l=4.07	00	⑤	48RL 6	l=1.56	31
③	3HA 12	l=5.51	00	⑥	6*2HA 12	l=4.29	00

Tél.

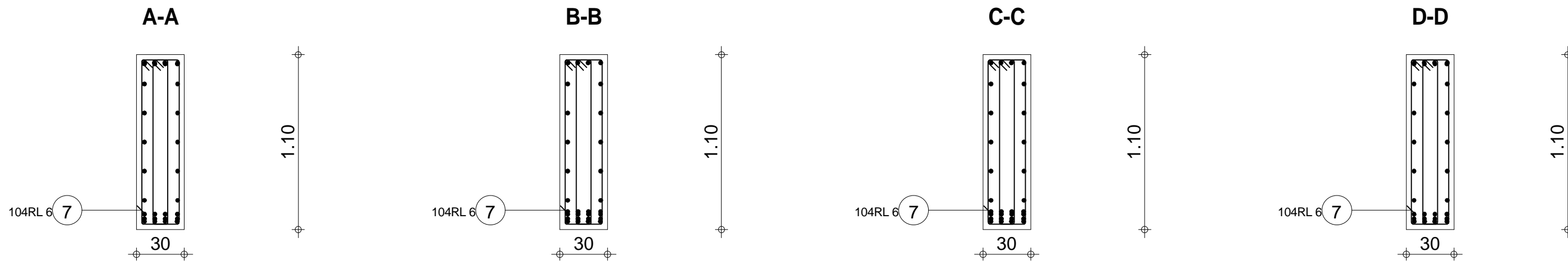
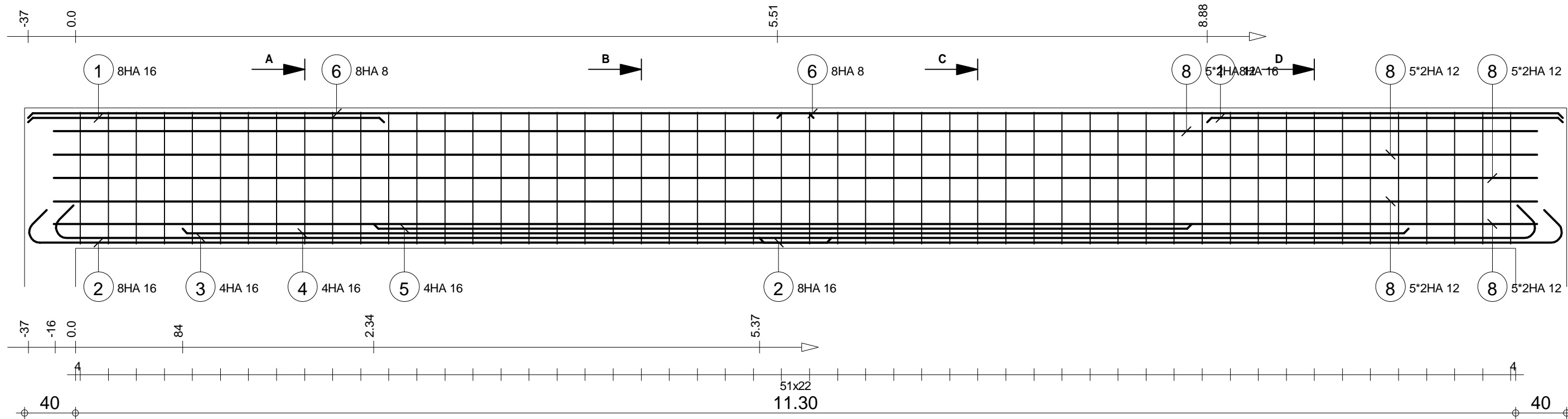
Fax

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**PROJET CERME\_PLANS GUIDES**

**POUTRE 15**  
**Section 20x70**

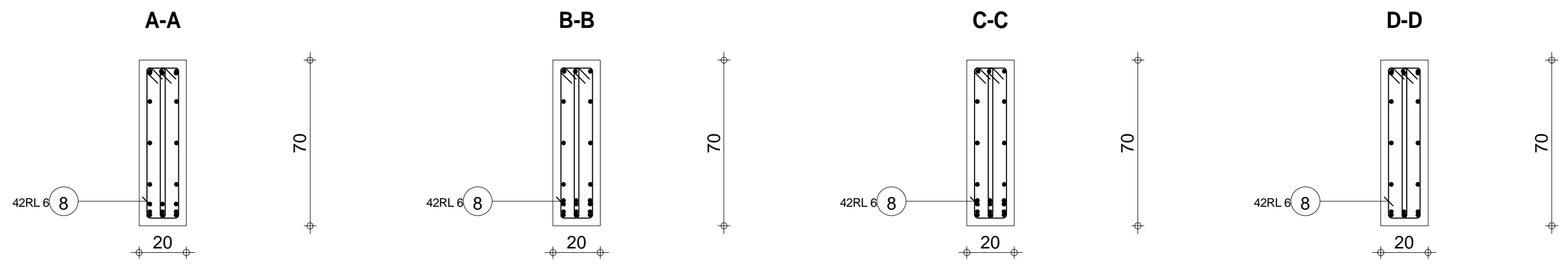
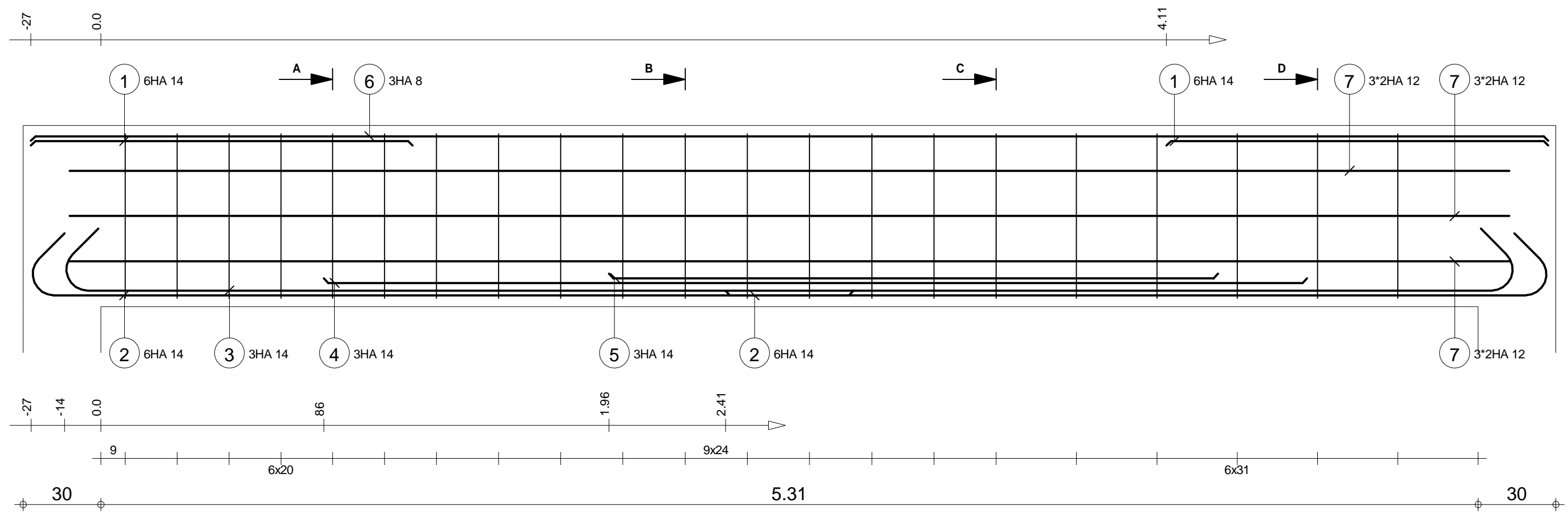
Nombre 1

Béton : BETON25 = 1.21 m3	Acier HA 400 = 117 kg	Acier RL 235 = 16.6 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 110.7 kg/ m3	Echelle pour la vue 4.18cm/m	Echelle pour la section 5.71cm/m
Surface du coffrage = 14 m2		Page 1/1



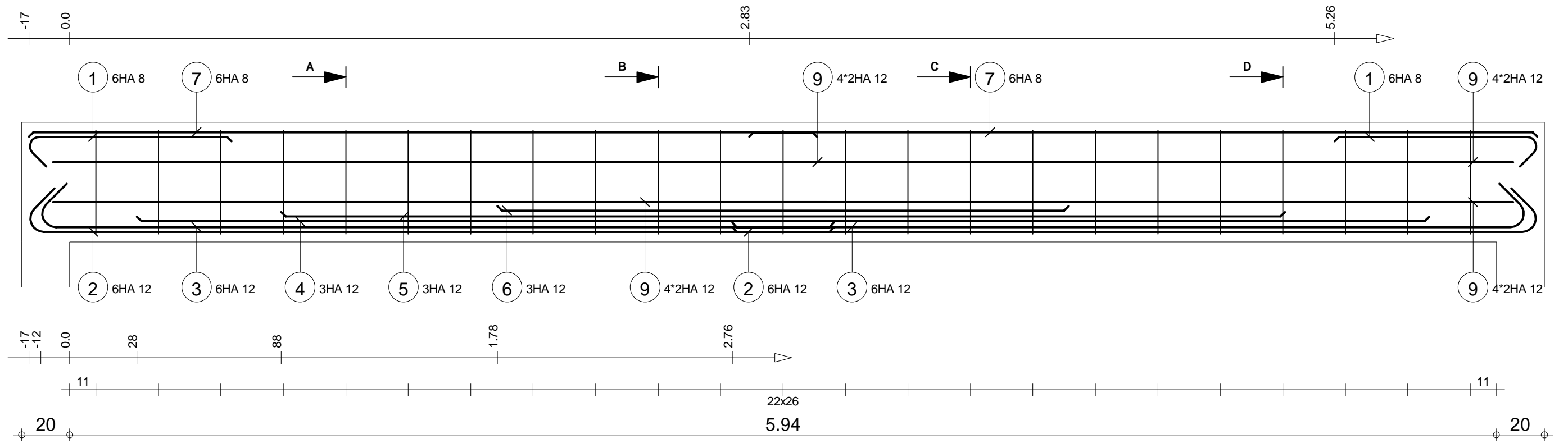
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 16	l=2.79	00	④	4HA 16	l=9.62	00	⑦	104RL 6	l=2.53	31
②	8HA 16	l=6.57	00	⑤	4HA 16	l=6.42	00	⑧	5*2HA 12	l=11.64	00
③	4HA 16	l=12.15	00	⑥	8HA 8	l=6.16	00				

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 16 AVEC REMONTEE DE 35CM</b> <b>Section 30x110</b>	Nombre 1	Tél.                      Fax		Béton : BETON25 = 3.99 m3	Acier HA 400 = 419 kg
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm	
			Densité = 119.5 kg/ m3 Surface du coffrage = 30.7 m2	Echelle pour la vue 3.03cm/m Echelle pour la section 3.76cm/m	Page 1/1	

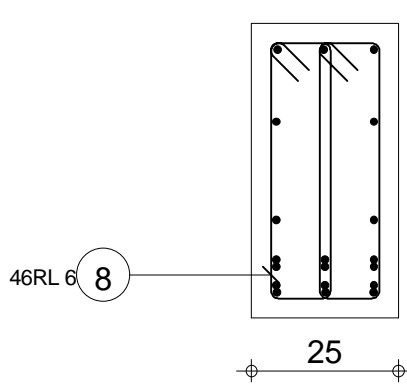


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 14	l=1.47	00	④	3HA 14	l=3.79	00	⑦	3*2HA 12	l=5.55	00
②	6HA 14	l=3.42	00	⑤	3HA 14	l=2.35	00	⑧	42RL 6	l=1.56	31
③	3HA 14	l=6.08	00	⑥	3HA 8	l=5.85	00				

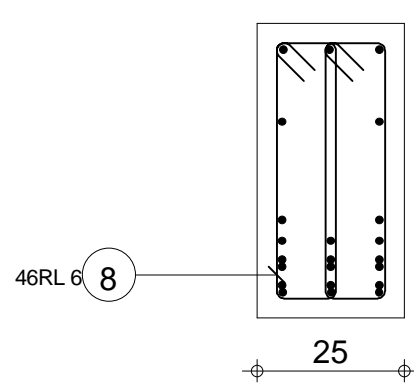
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 17</b> <b>Section 20x70</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 0.828 m3	Acier HA 400 = 116 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 14.5 kg	
				Densité = 158.2 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 9.62 m2	Echelle pour la vue 6.05cm/m	Echelle pour la section 5.71cm/m



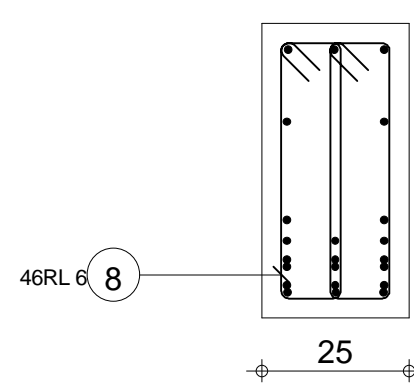
**A-A**



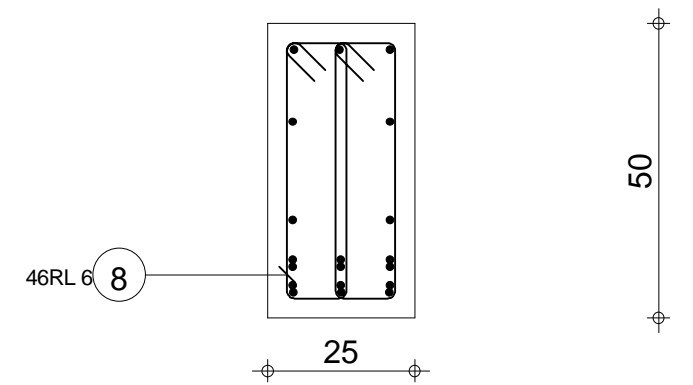
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 8	l=97	00	④	3HA 12	l=5.38	00	⑦	6HA 8	l=3.28	00
②	6HA 12	l=3.54	00	⑤	3HA 12	l=4.18	00	⑧	46RL 6	l=1.21	31
③	6HA 12	l=3.49	00	⑥	3HA 12	l=2.38	00	⑨	4*2HA 12	l=3.22	00

Tél.

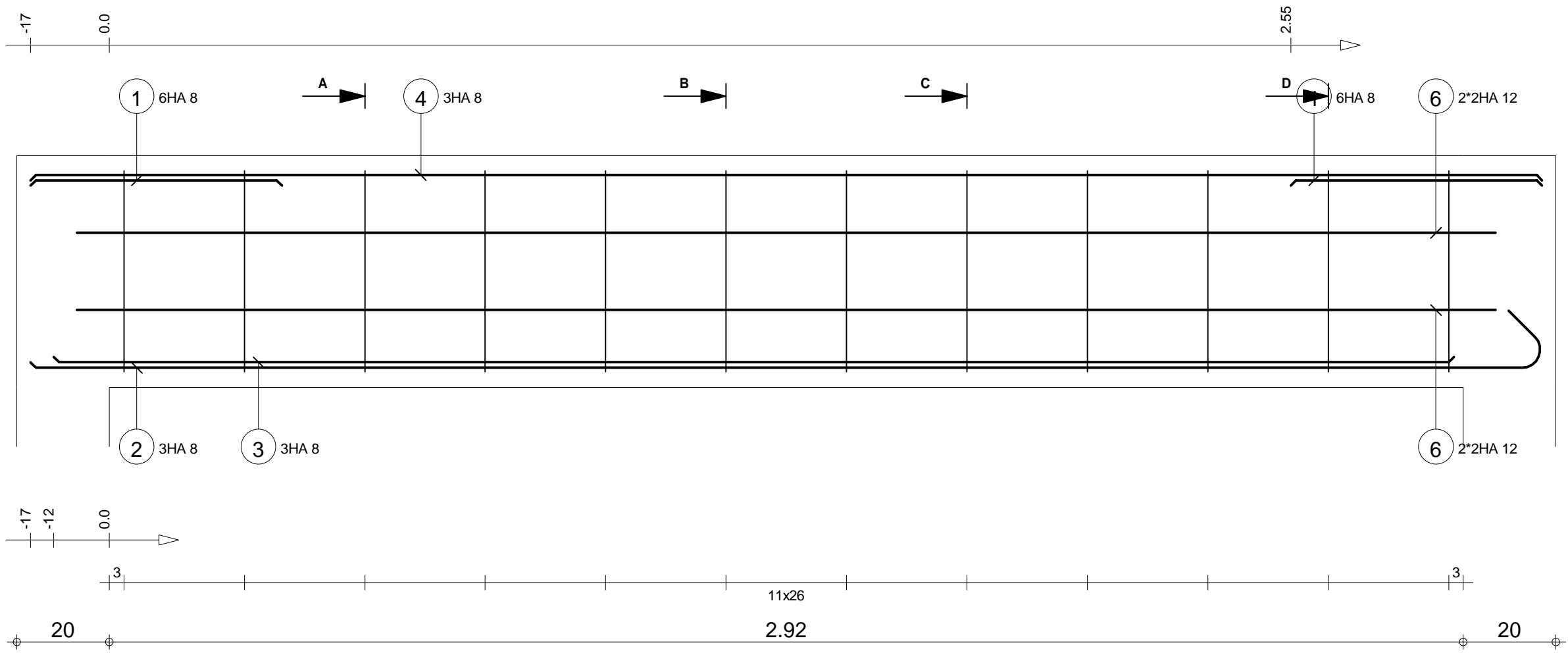
Fax

Nombre 1

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**PROJET CERME\_PLANS GUIDES**

**POUTRE 18**  
**Section 25x50**

Béton : BETON25 = 0.792 m3	Acier HA 400 = 102 kg	Acier RL 235 = 12.3 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 145.2 kg/ m3	Echelle pour la vue 5.67cm/m	Echelle pour la section 7.8cm/m
Surface du coffrage = 8.07 m2		Page 1/1

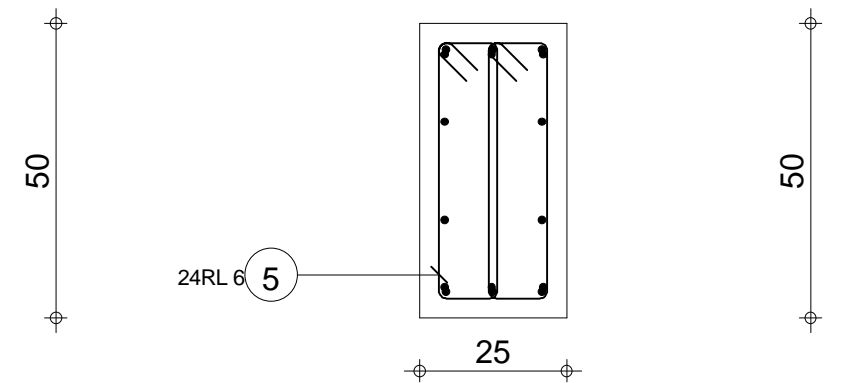
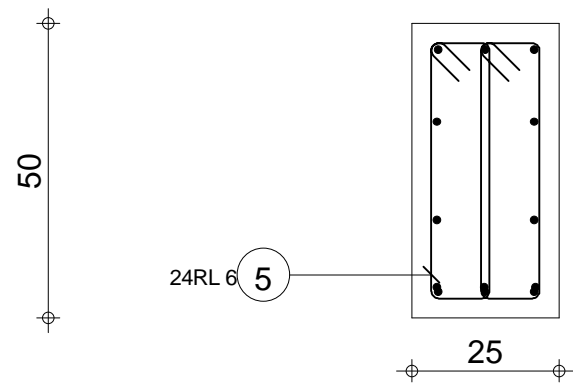
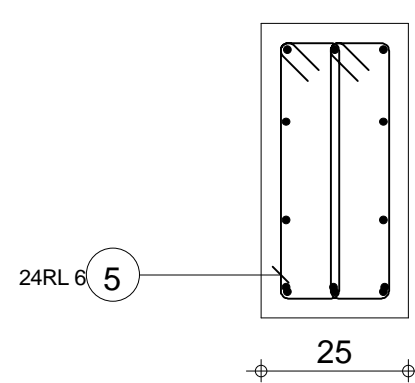
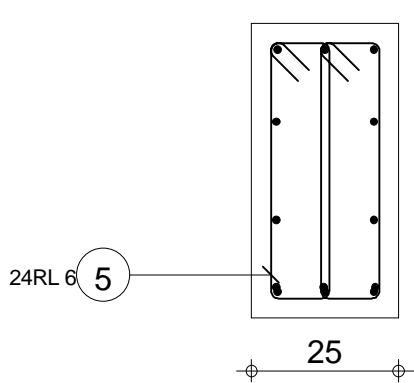


**A-A**

**B-B**

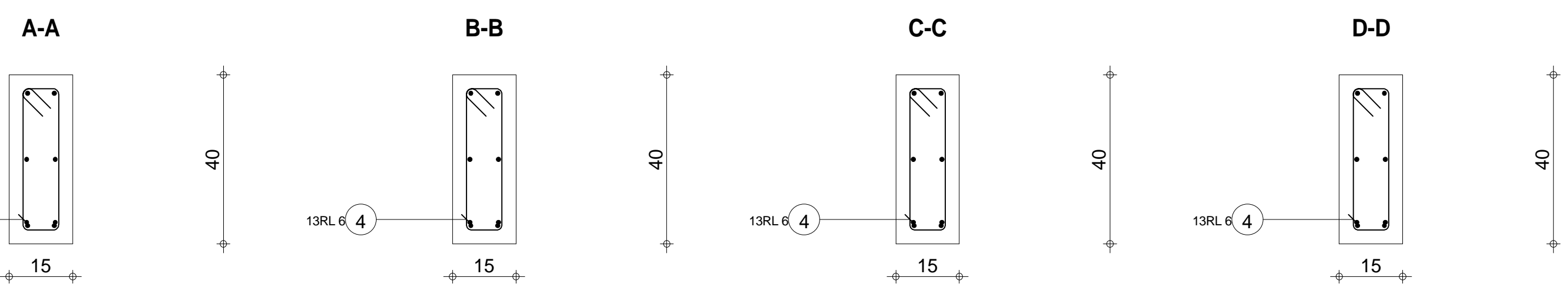
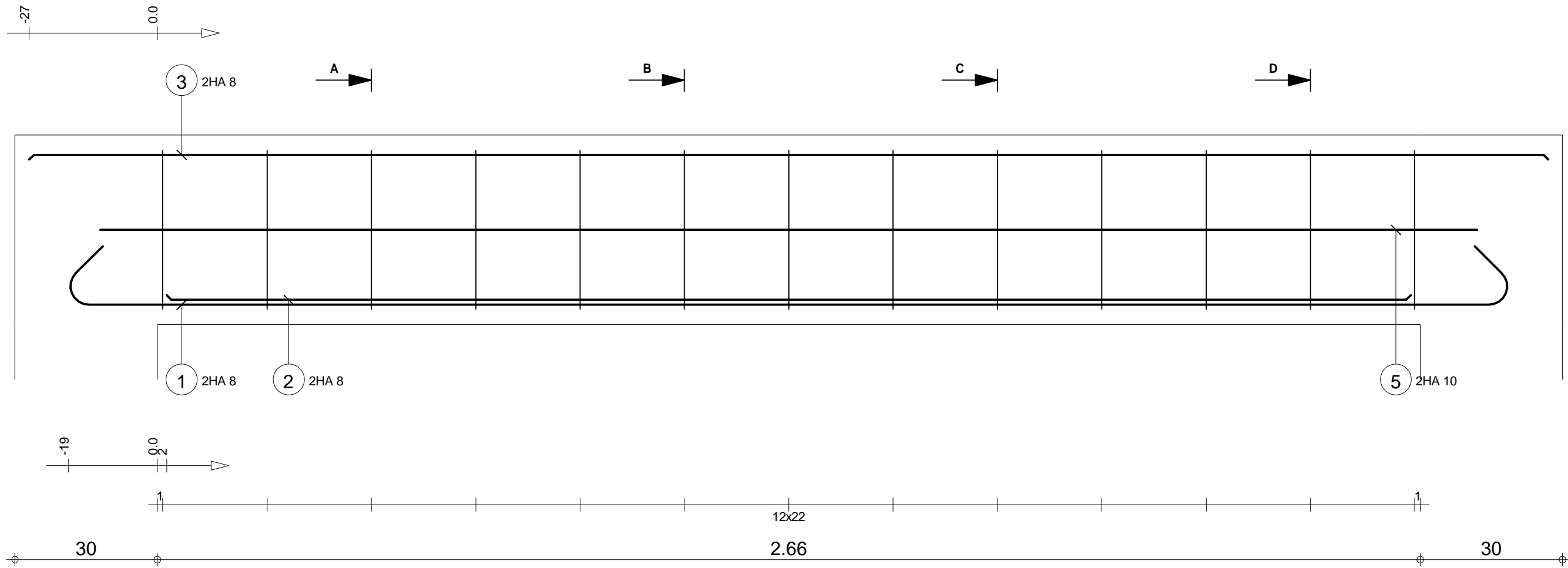
**C-C**

**D-D**



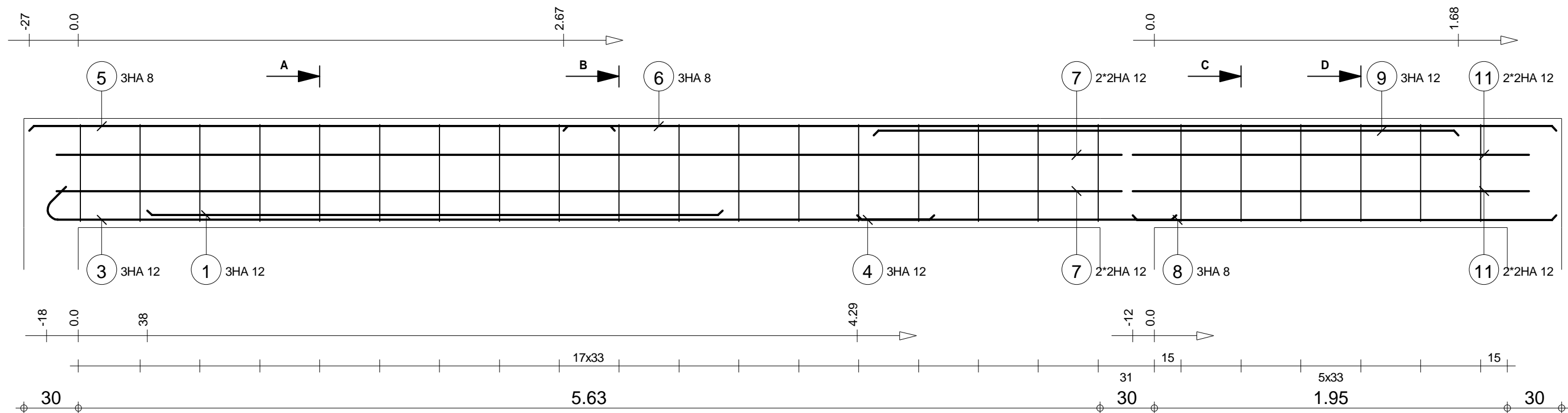
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 8	l=54	00	④	3HA 8	l=3.26	00
②	3HA 8	l=3.39	00	⑤	24RL 6	l=1.21	31
③	3HA 8	l=3.02	00	⑥	2*2HA 12	l=3.06	00

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 19</b> <b>Section 25x50</b>	Tél.                      Fax Nombre 1	Béton : BETON25 = 0.415 m3	Acier HA 400 = 23.6 kg	
			Enrobage inférieur 3 cm	Acier RL 235 = 6.42 kg	Enrobage supérieur 3 cm
			Densité = 72.29 kg/ m3	Echelle pour la vue 9.33cm/m	Enrobage latéral 3 cm
			Surface du coffrage = 4.3 m2	Echelle pour la section 7.8cm/m	
				Page 1/1	



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	
①	2HA 8	l=3.29	00	↔ 3.04 ↔	④	13RL 6	l=98	31
②	2HA 8	l=2.62	00	— 2.62 —	⑤	2HA 10	l=2.90	00
③	2HA 8	l=3.20	00	— 3.20 —				

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 20</b> <b>Section 15x40</b>	Tél. _____ Fax _____	Nombre 1	Acier HA 400 = 10.8 kg	Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Acier RL 235 = 2.81 kg			
				Densité = 69.39 kg/ m3		Echelle pour la vue 10.7cm/m	
				Surface du coffrage = 3.13 m2	Echelle pour la section 9.55cm/m	Page 1/1	

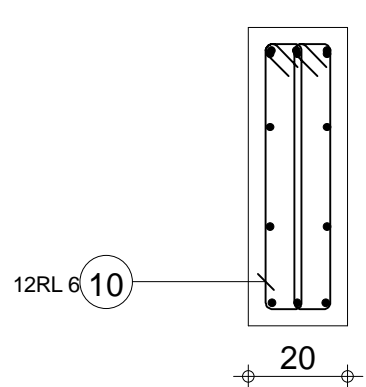
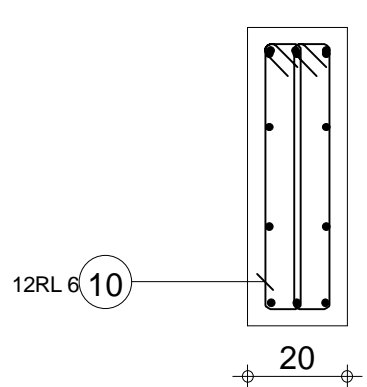
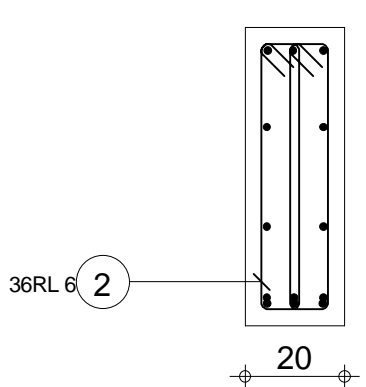
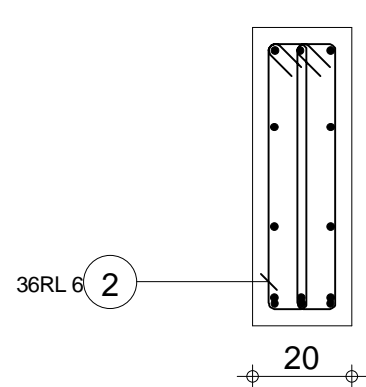


**A-A**

**B-B**

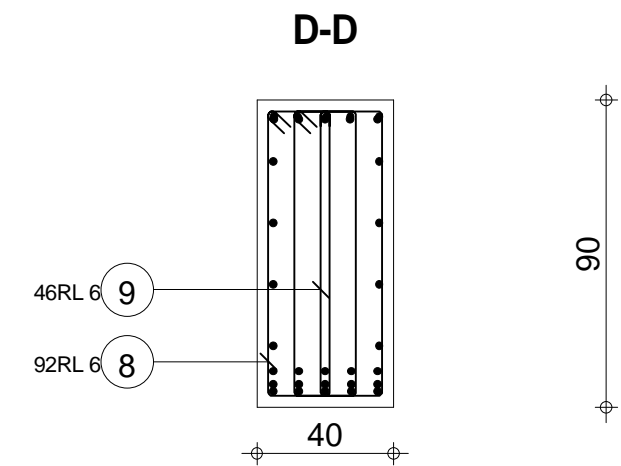
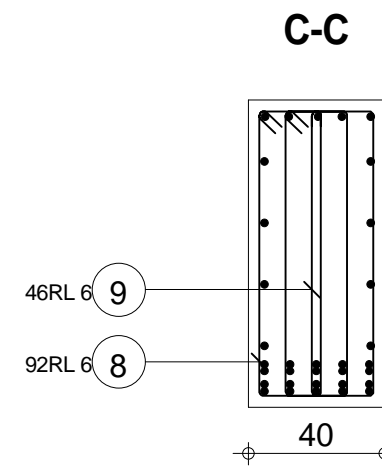
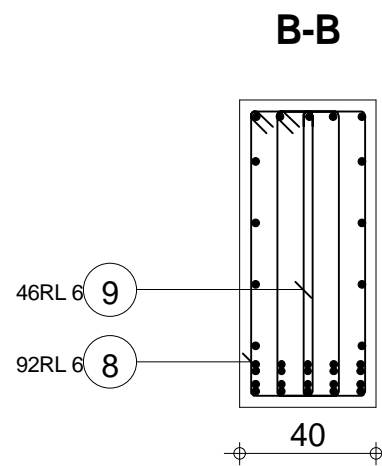
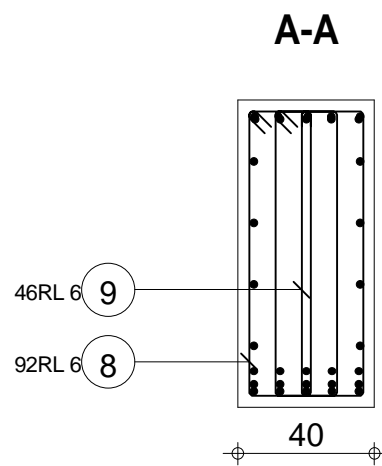
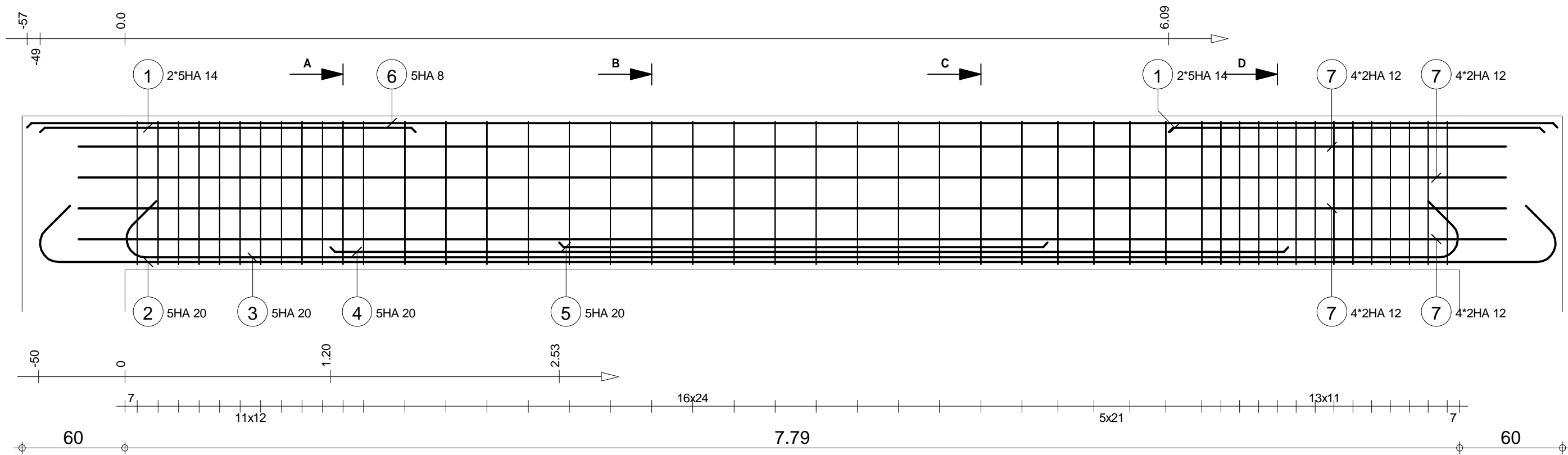
**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=3.17	00	④	3HA 12	l=1.76	00	⑦	2*2HA 12	l=5.87	00	⑩	12RL 6	l=1.35	31
②	36RL 6	l=1.36	31	⑤	3HA 8	l=3.23	00	⑧	3HA 8	l=2.34	00	⑪	2*2HA 12	l=2.19	00
③	3HA 12	l=5.08	00	⑥	3HA 8	l=5.47	00	⑨	3HA 12	l=3.22	00				

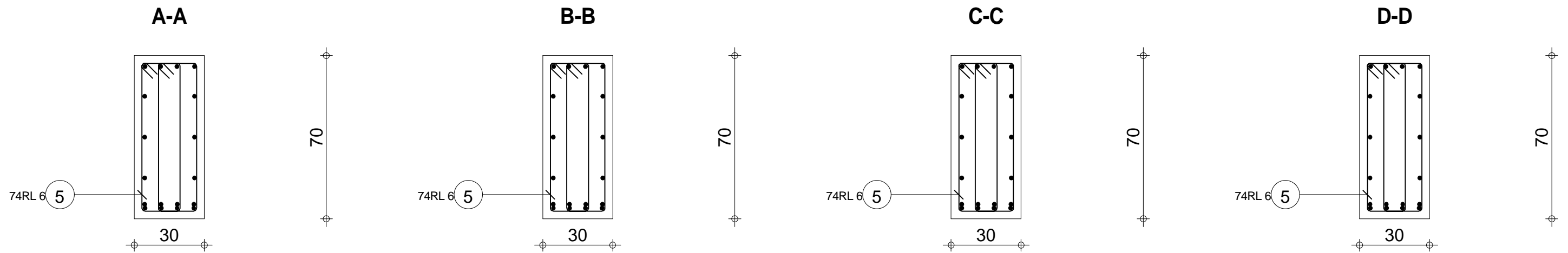
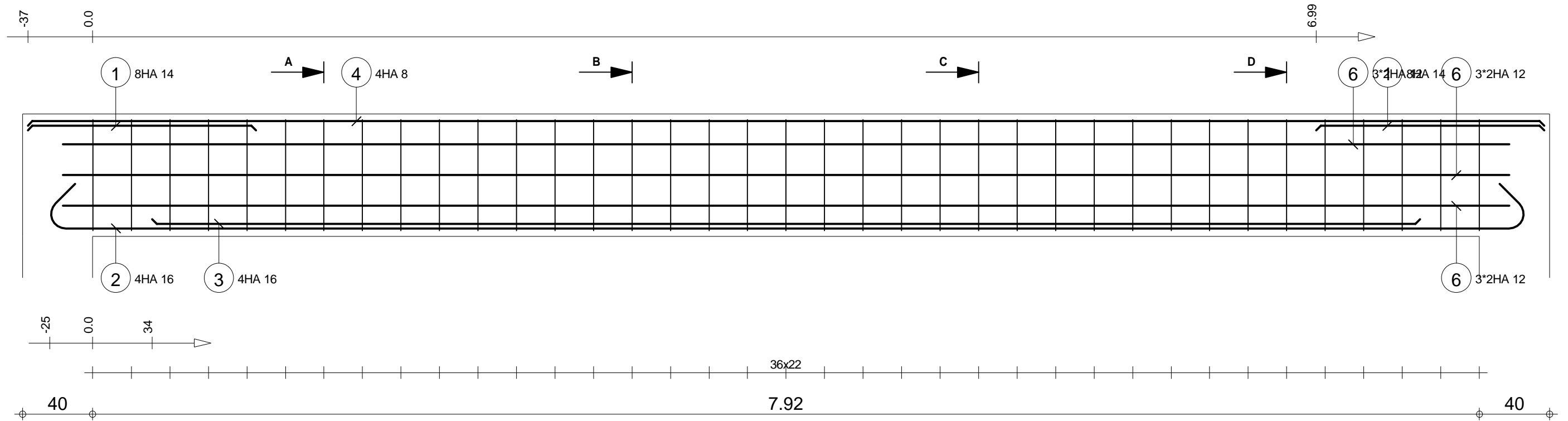
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 21</b> <b>Section 20x60</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 1.02 m3	Acier HA 400 = 76.9 kg
				Enrobage inférieur 3 cm	Acier RL 235 = 14.5 kg
				Densité = 89.61 kg/m3	Enrobage supérieur 3 cm
		Surface du coffrage = 11.9 m2		Echelle pour la vue 4.28cm/m	Enrobage latéral 3 cm
				Echelle pour la section 6.58cm/m	Page 1/1



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	2*5HA 14	l=2.19	00	④	5HA 20	l=5.59	00	⑦	4*2HA 12	l=8.33	00
②	5HA 20	l=9.54	00	⑤	5HA 20	l=2.85	00	⑧	92RL 6	l=2.32	31
③	5HA 20	l=8.46	00	⑥	5HA 8	l=8.93	00	⑨	46RL 6	l=1.80	

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 23</b> <b>Section 40x90</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 3.24 m3	Acier HA 400 = 429 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 65.7 kg	
				Densité = 152.8 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 20 m2	Echelle pour la vue 4.04cm/m	Echelle pour la section 4.52cm/m
				Page 1/1		





Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 14	l=1.30	00	④	4HA 8	l=8.66	00
②	4HA 16	l=8.96	00	⑤	74RL 6	l=1.73	31
③	4HA 16	l=7.24	00	⑥	3*2HA 12	l=8.26	00

Tél.

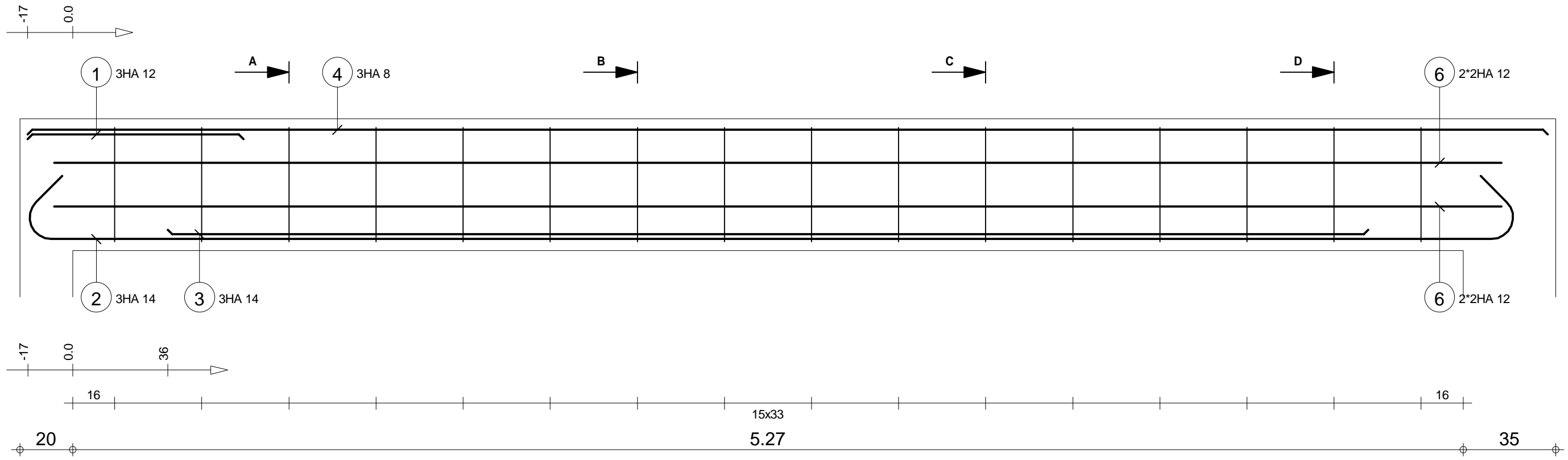
Fax

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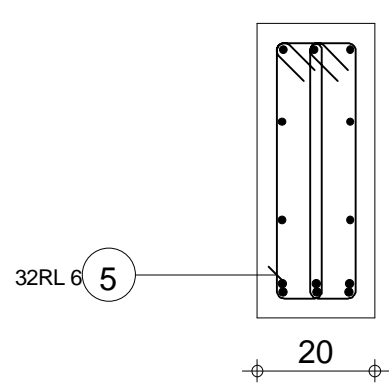
**POUTRE 24**  
**Section 30x70**

Nombre 1

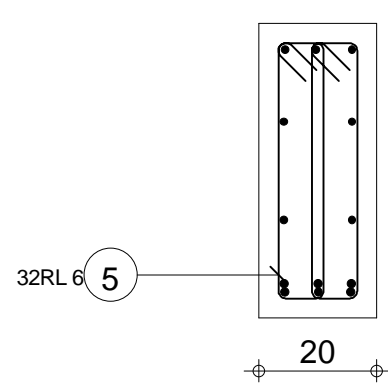
Béton : BETON25 = 1.83 m3	Acier HA 400 = 173 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 28.5 kg	
Densité = 109.8 kg/m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 15 m2	Echelle pour la vue 4.16cm/m	Echelle pour la section 5.71cm/m
		Page 1/1



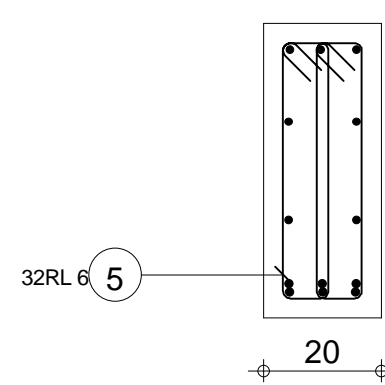
**A-A**



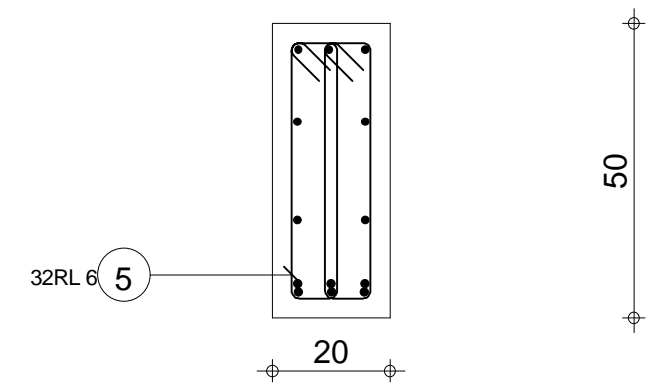
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=82	00	④	3HA 8	l=5.76	00
②	3HA 14	l=6.12	00	⑤	32RL 6	l=1.16	31
③	3HA 14	l=4.55	00	⑥	2*2HA 12	l=5.48	00

Tél.

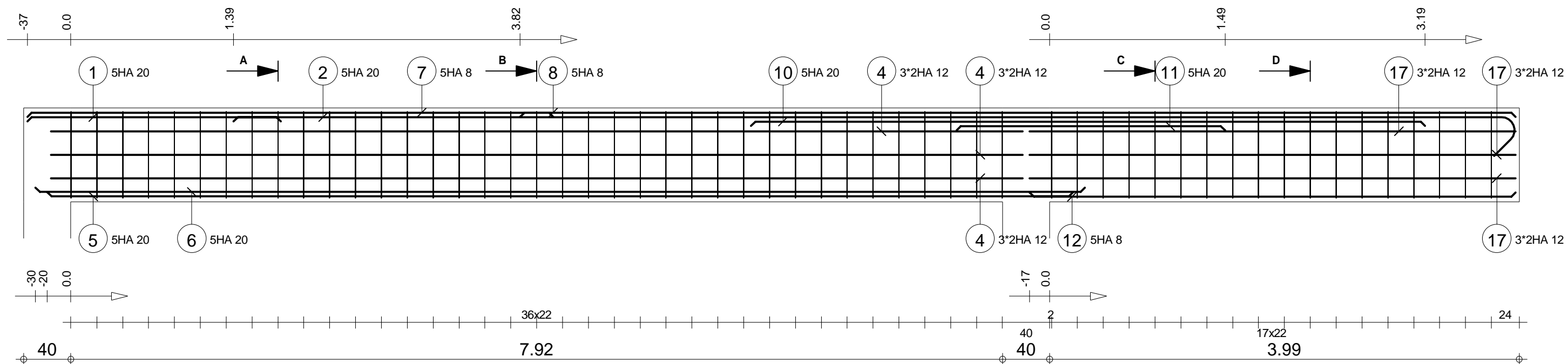
Fax

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**PROJET CERME\_PLANS GUIDES**

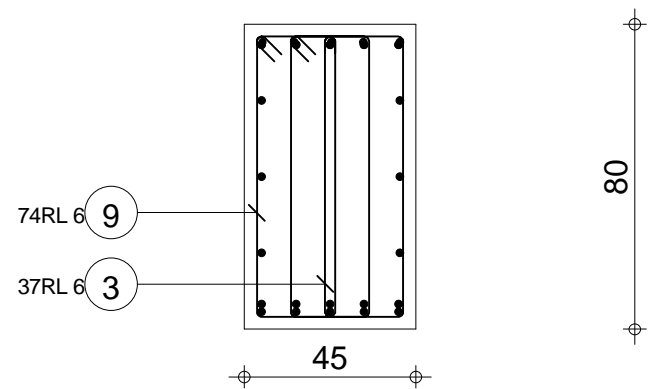
**POUTRE 25**  
**Section 20x50**

Nombre 1

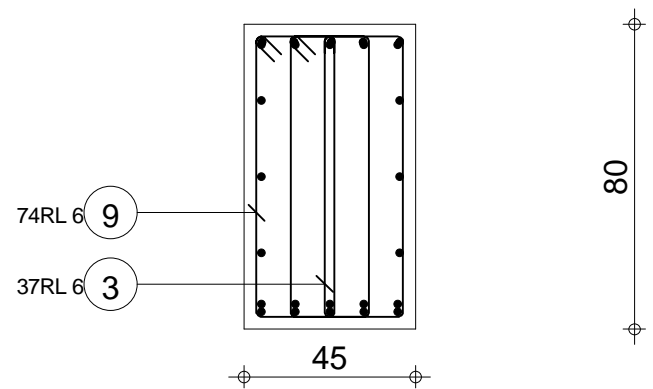
Béton : BETON25 = 0.582 m3	Acier HA 400 = 67.2 kg	Acier RL 235 = 8.24 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 129.6 kg/ m3	Echelle pour la vue 6.15cm/m	Echelle pour la section 7.8cm/m
Surface du coffrage = 7.07 m2		Page 1/1



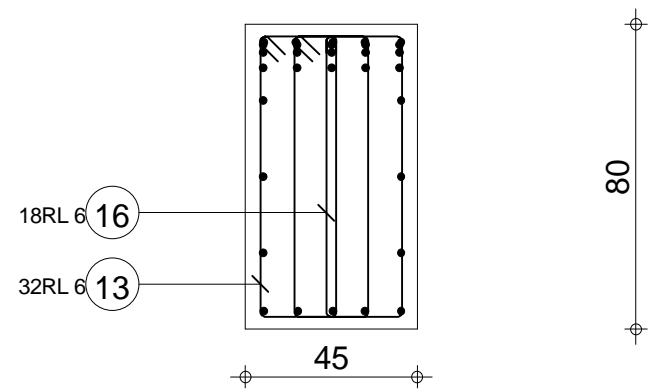
**A-A**



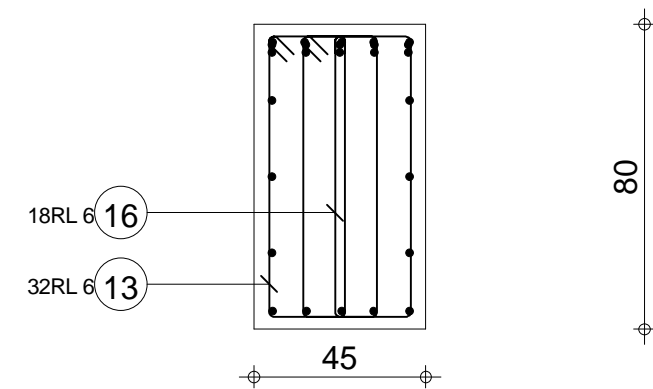
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme					
1	5HA 20	l=2.16	00	2.15	4	3*2HA 12	l=8.26	00	8.26	7	5HA 8	l=4.47	00	4.47	10	5HA 20	l=5.73	00	5.73	13	32RL 6	l=2.17	31	
2	5HA 20	l=11.24	00	10.90	5	5HA 20	l=8.72	00	8.72	8	5HA 8	l=8.47	00	8.47	11	5HA 20	l=2.28	00	2.28	14	3RL 6	l=2.20	31	
3	37RL 6	l=1.60			6	5HA 20	l=8.92	00	8.92	9	74RL 6	l=2.20	31		12	5HA 8	l=4.13	00	4.13	15	1RL 6	l=2.18	31	

Tél.



Fax

Nombre 1

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**POUTRE 26**  
**Section 45x80**

Béton : BETON25 = 4.58 m3	Acier HA 400 = 581 kg
Enrobage inférieur 3 cm	Acier RL 235 = 72.9 kg
Densité = 142.8 kg/m3	Enrobage supérieur 3 cm
Surface du coffrage = 26.4 m2	Enrobage latéral 3 cm
Echelle pour la vue 2.89cm/m	Page 1/2
Echelle pour la section 5.05cm/m	

Pos.	Armature	Code	Forme
16	18RL 6 l=1.60		
17	3*2HA 12 l=4.13	00	

Tél.

Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 26**  
**Section 45x80**

Nombre 1

Béton : BETON25 = 4.58 m3

Acier HA 400 = 581 kg

Acier RL 235 = 72.9 kg

Enrobage inférieur 3 cm

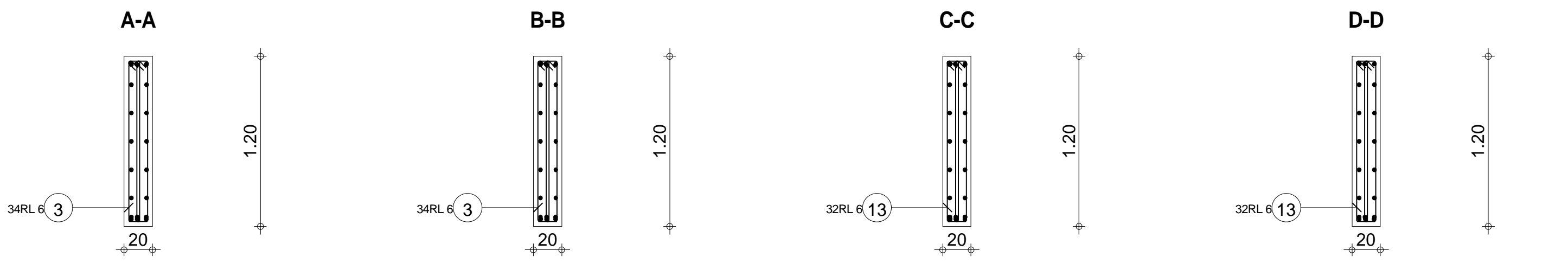
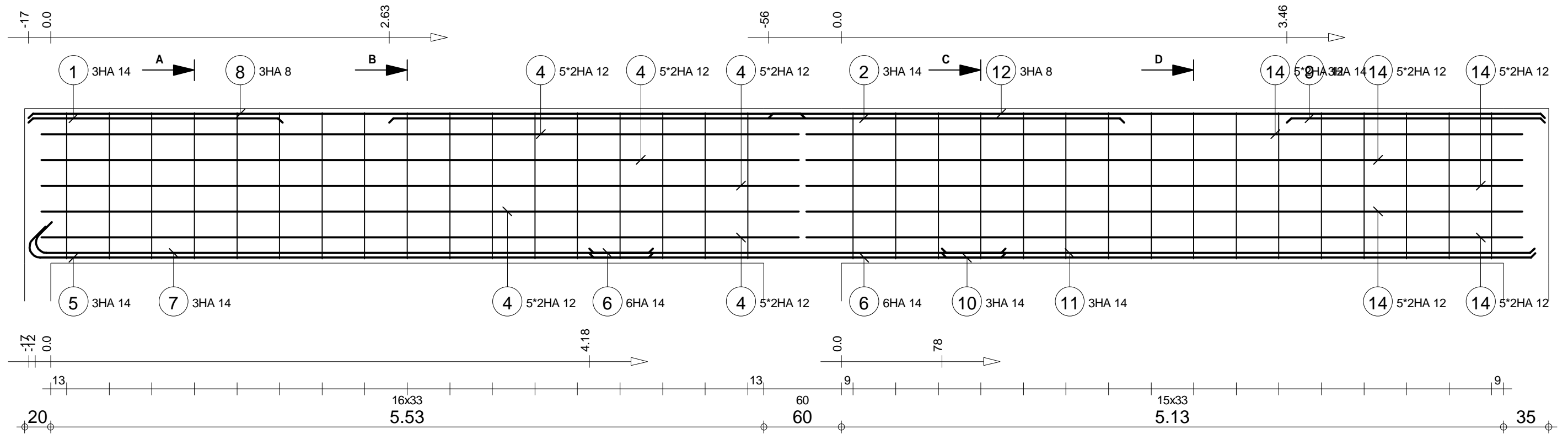
Enrobage supérieur 3 cm

Enrobage latéral 3 cm

Densité = 142.8 kg/ m3

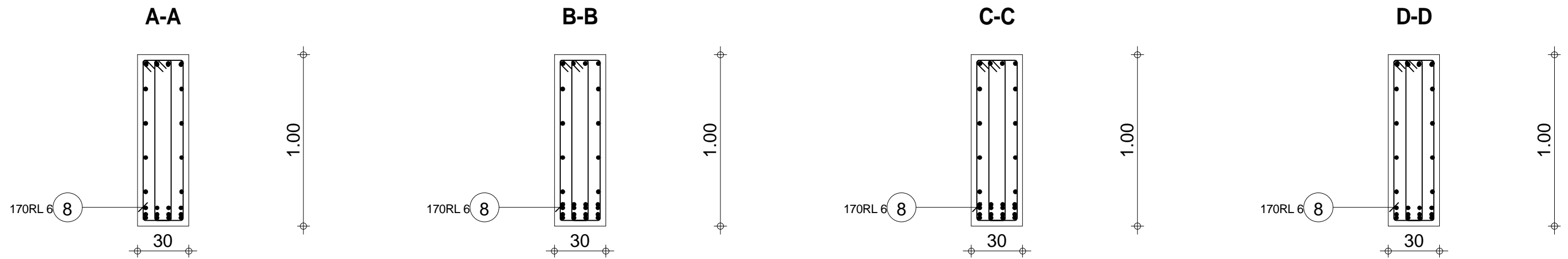
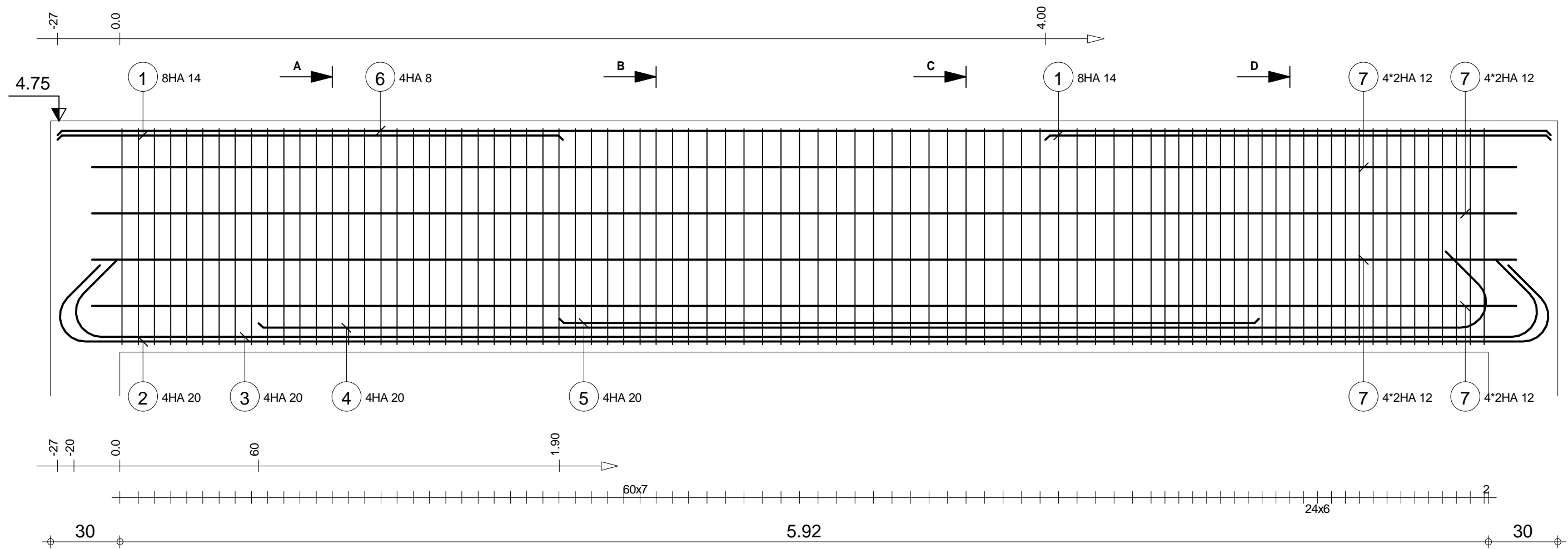
Surface du coffrage = 26.4 m2

Page 2/2



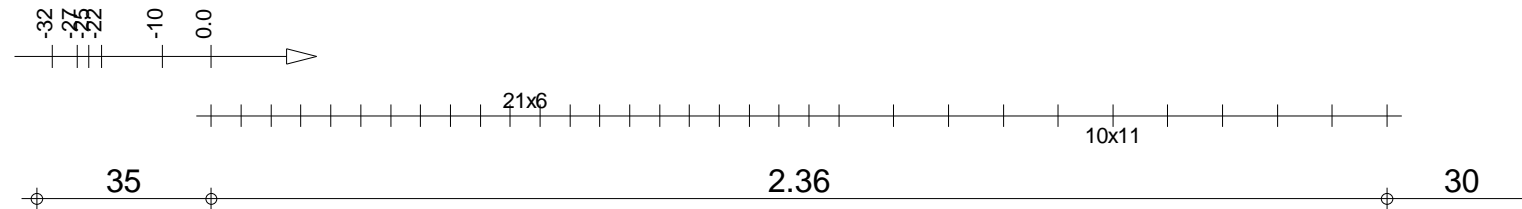
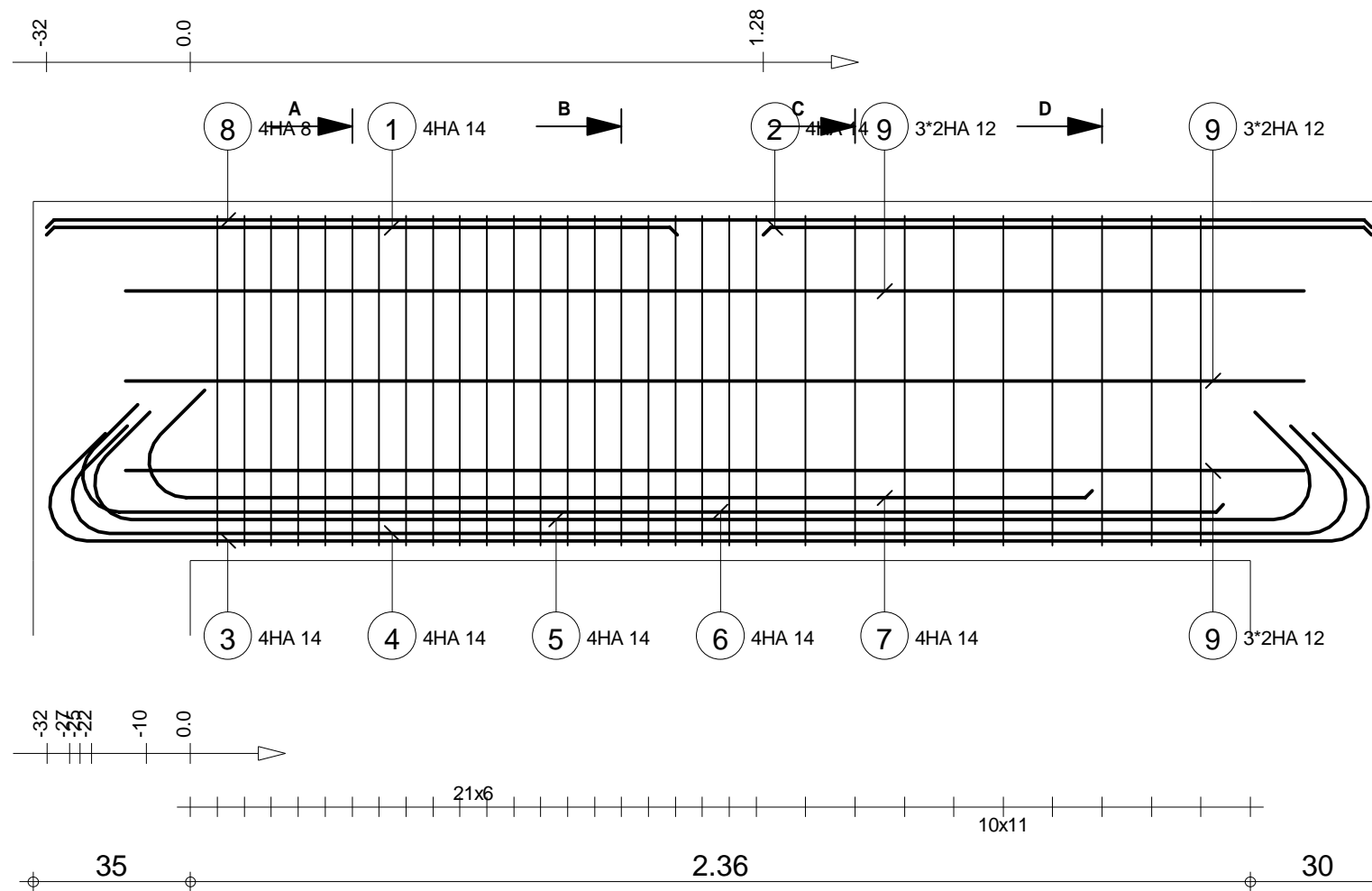
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme					
①	3HA 14	l=1.97	00	1.97	④	5*2HA 12	l=5.87	00	5.87	⑦	3HA 14	l=5.04	00	4.79	⑩	3HA 14	l=4.60	00	4.60	⑬	32RL 6	l=2.56	31	
②	3HA 14	l=5.70	00	5.70	⑤	3HA 14	l=5.09	00	4.84	⑧	3HA 8	l=6.02	00	6.02	⑪	3HA 14	l=4.59	00	4.59	⑭	5*2HA 12	l=5.55	00	5.55
③	34RL 6	l=2.56	31		⑥	6HA 14	l=3.23	00	3.23	⑨	3HA 14	l=2.00	00	2.00	⑫	3HA 8	l=6.02	00	6.02					

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 27</b> <b>Section 20x120</b>	Tél.	Fax	<b>Nombre 1</b>	Acier HA 400 = 244 kg		Acier RL 235 = 37.5 kg			
		Béton : BETON25 = 2.84 m3			Enrobage inférieur 3 cm		Enrobage supérieur 3 cm		Enrobage latéral 3 cm	
		Densité = 99.3 kg/ m3			Surface du coffrage = 31 m2		Echelle pour la vue 3.1cm/m		Echelle pour la section 3.46cm/m	
							Page 1/1			

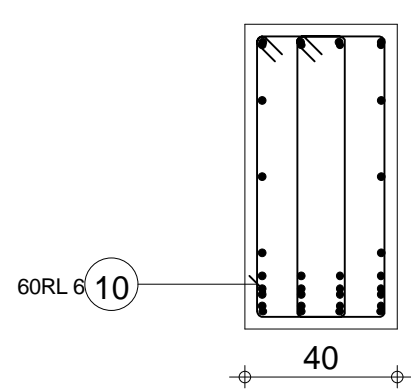


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 14	l=2.19	00	④	4HA 20	l=5.66	00	⑦	4*2HA 12	l=6.16	00
②	4HA 20	l=7.14	00	⑤	4HA 20	l=3.02	00	⑧	170RL 6	l=2.34	31
③	4HA 20	l=7.02	00	⑥	4HA 8	l=6.46	00				

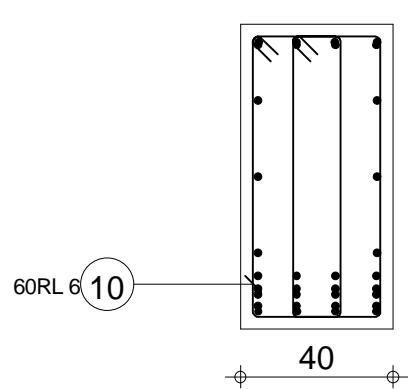
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 28</b> <b>Section 30x100</b>	Tél.                      Fax Nombre 1	Béton : BETON25 = 1.96 m3 Enrobage inférieur 3 cm Densité = 198 kg/ m3 Surface du coffrage = 15.4 m2	Acier HA 400 = 300 kg Acier RL 235 = 88.1 kg Enrobage supérieur 3 cm Echelle pour la vue 5.51 cm/m Echelle pour la section 4.1 cm/m	Enrobage latéral 3 cm Page 1/1
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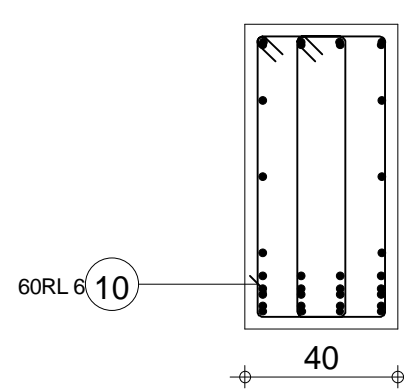
**A-A**



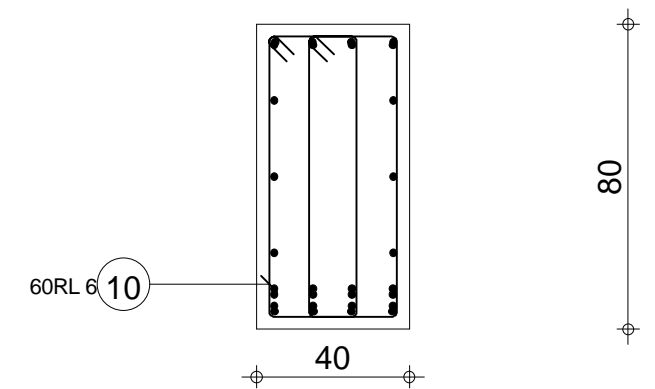
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	4HA 14	l=1.40	00	④	4HA 14	l=3.34	00	⑦	4HA 14	l=2.35	00	⑩	60RL 6	l=2.06	31
②	4HA 14	l=1.35	00	⑤	4HA 14	l=3.21	00	⑧	4HA 8	l=2.95	00				
③	4HA 14	l=3.44	00	⑥	4HA 14	l=2.79	00	⑨	3*2HA 12	l=2.63	00				

Tél.

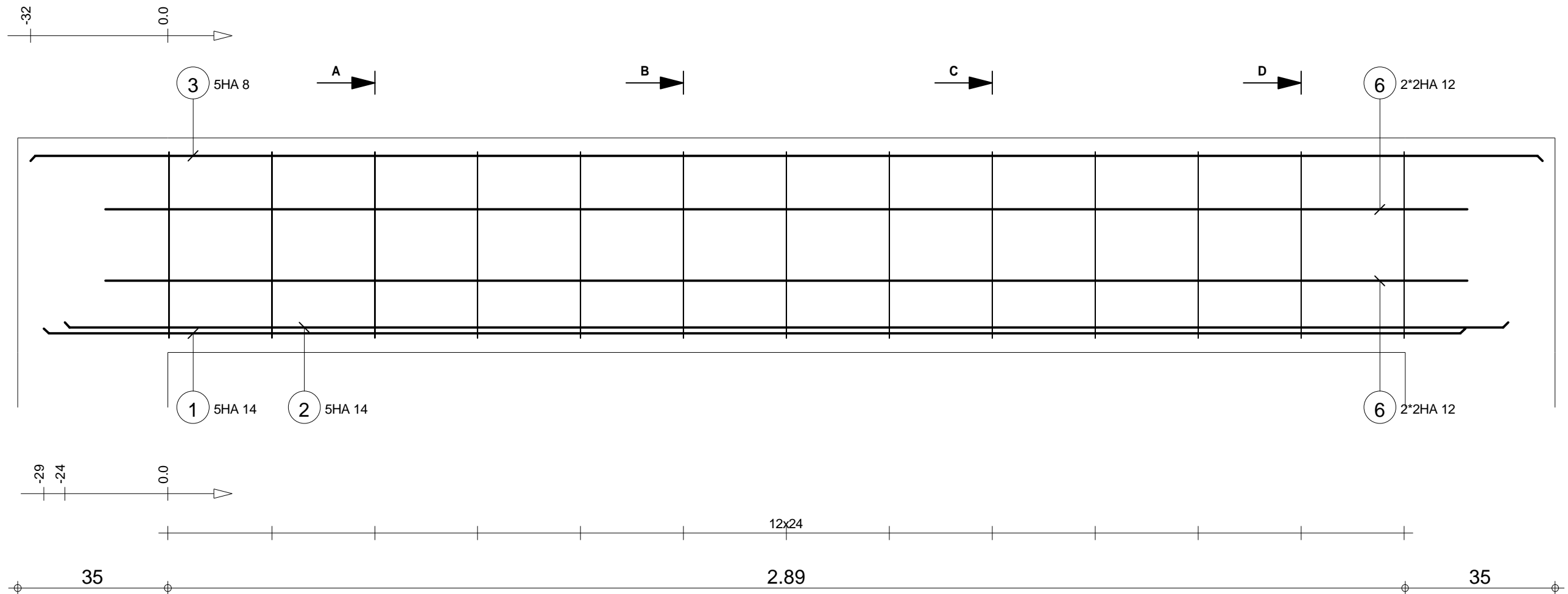
Fax

Nombre 1

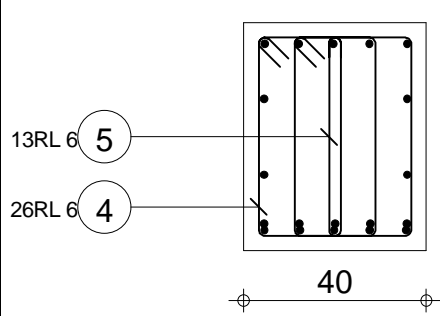
**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 29**  
**Section 40x80**

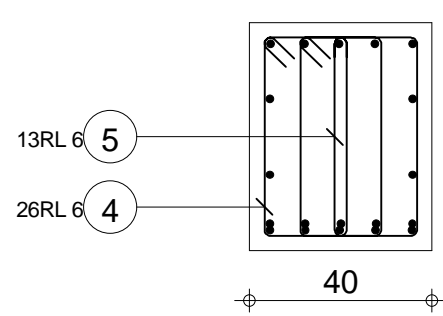
Béton : BETON25 = 0.963 m3	Acier HA 400 = 105 kg
Enrobage inférieur 3 cm	Acier RL 235 = 27.5 kg
Densité = 138.1 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 6.4 m2	Enrobage latéral 3 cm
Echelle pour la vue 6.6cm/m	Echelle pour la section 5.05cm/m
	Page 1/1



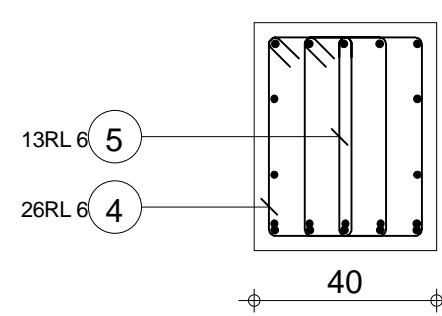
**A-A**



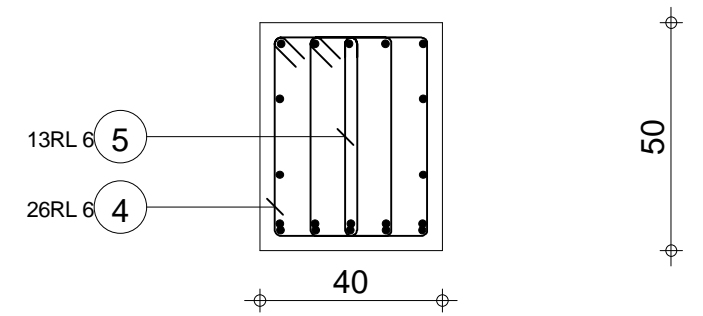
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	5HA 14	l=3.31	00	④	26RL 6	l=1.52	31
②	5HA 14	l=3.37	00	⑤	13RL 6	l=100	
③	5HA 8	l=3.53	00	⑥	2*2HA 12	l=3.18	00

Tél.

Fax

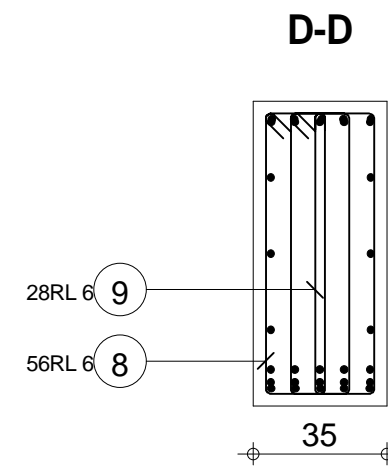
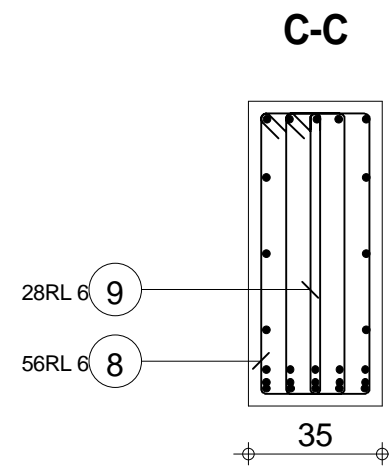
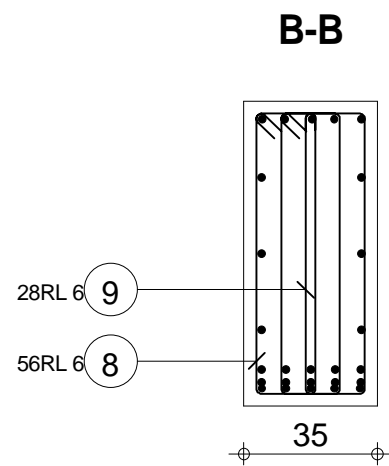
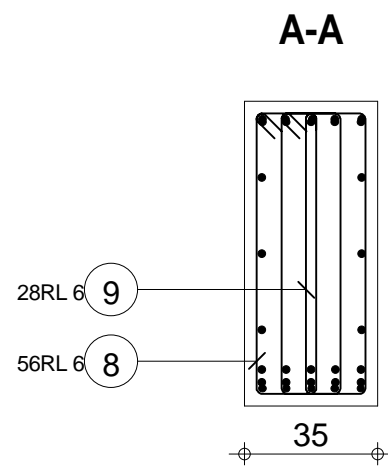
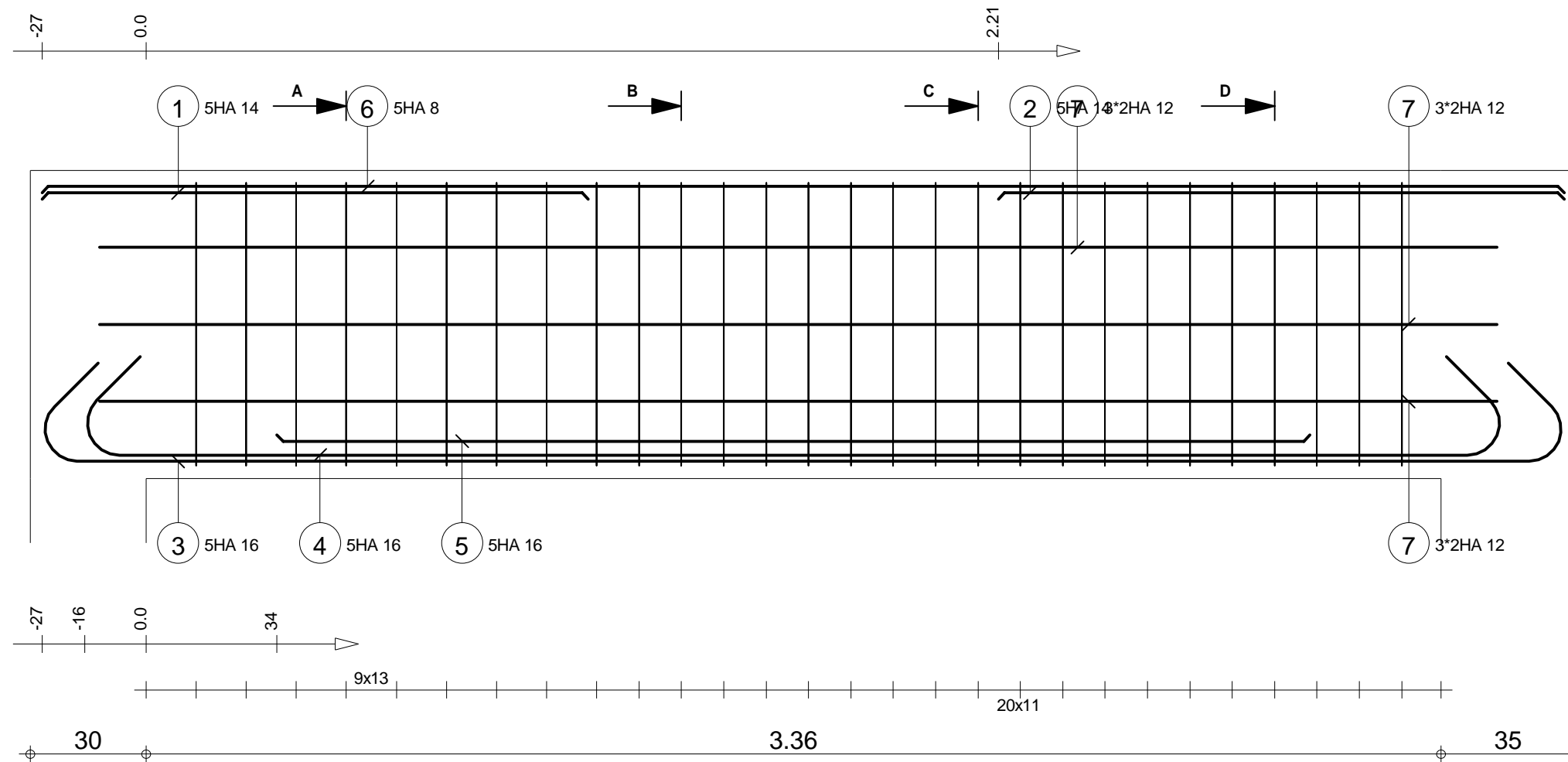
**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 30**  
**Section 40x50**

Nombre 1

Béton : BETON25 = 0.717 m3	Acier HA 400 = 58.6 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 11.6 kg	
Densité = 97.91 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 5.14 m2	Echelle pour la vue 9.33cm/m	Echelle pour la section 6.05cm/m
		Page 1/1





Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	5HA 14	l=1.42	00	④	5HA 16	l=4.21	00	⑦	3*2HA 12	l=3.63	00
②	5HA 14	l=1.47	00	⑤	5HA 16	l=2.68	00	⑧	56RL 6	l=2.04	31
③	5HA 16	l=4.48	00	⑥	5HA 8	l=3.95	00	⑨	28RL 6	l=1.60	

Tél.

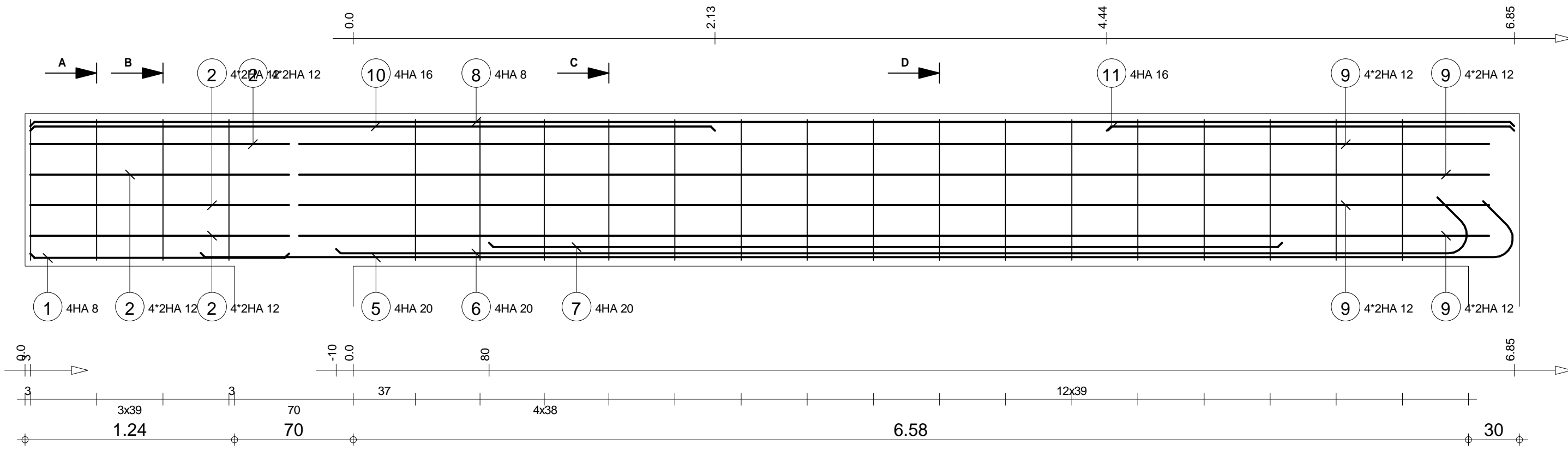
Fax

Nombre 1

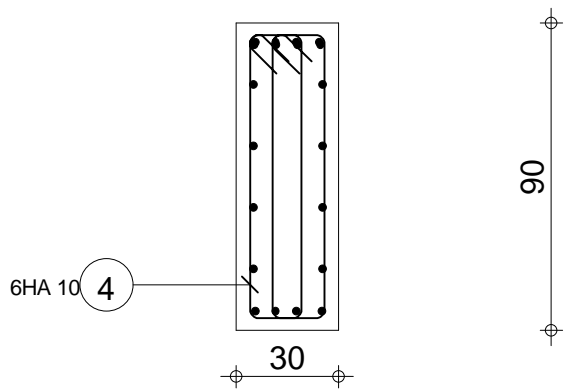
**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 31**  
**Section 35x80**

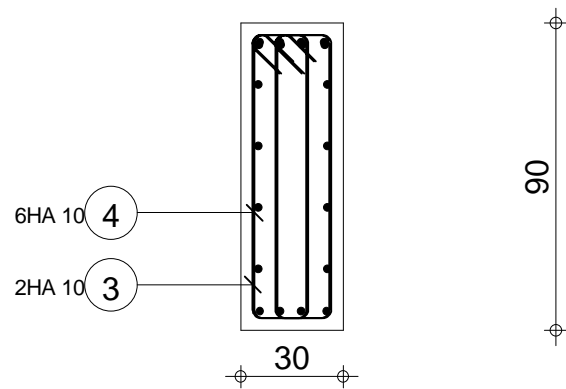
Béton : BETON25 = 1.12 m3	Acier HA 400 = 134 kg	Acier RL 235 = 35.3 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 151.8 kg/ m3	Echelle pour la vue 6.6cm/m	Echelle pour la section 5.05cm/m
Surface du coffrage = 8.16 m2		Page 1/1



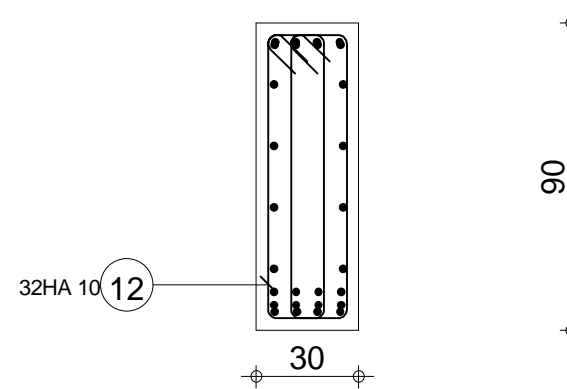
**A-A**



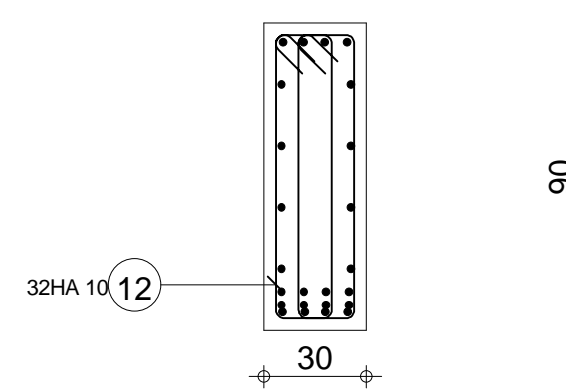
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	4HA 8	l=1.53	00	④	6HA 10	l=2.20	31	⑦	4HA 20	l=4.68	00	⑩	4HA 16	l=4.04	00
②	4*2HA 12	l=1.53	00	⑤	4HA 20	l=8.09	00	⑧	4HA 8	l=8.75	00	⑪	4HA 16	l=2.40	00
③	2HA 10	l=2.22	31	⑥	4HA 20	l=7.02	00	⑨	4*2HA 12	l=7.02	00	⑫	32HA 10	l=2.22	31

Tél.

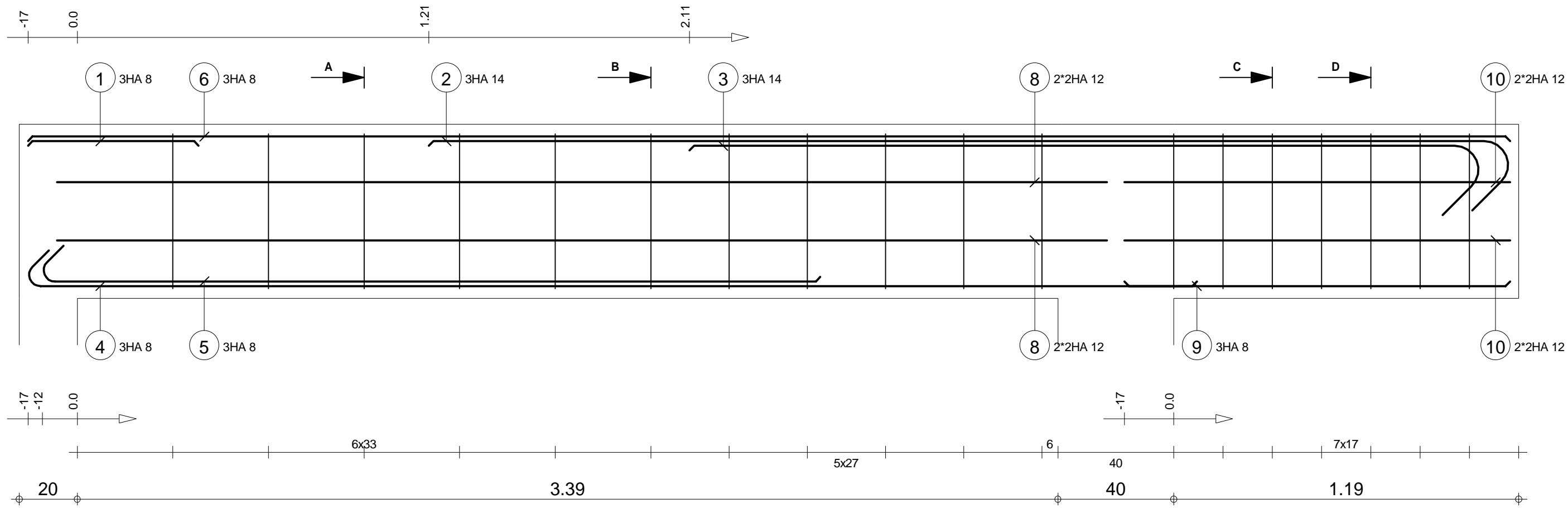
Fax

Nombre 1

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 32**  
**Section 30x90**

Béton : BETON25 = 2.38 m3	Acier HA 400 = 313 kg
Enrobage inférieur 3 cm	Acier HA 400 = 54.7 kg
Densité = 154.2 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 18.7 m2	Enrobage latéral 3 cm
Echelle pour la vue 4.12cm/m	Page 1/1
Echelle pour la section 4.52cm/m	

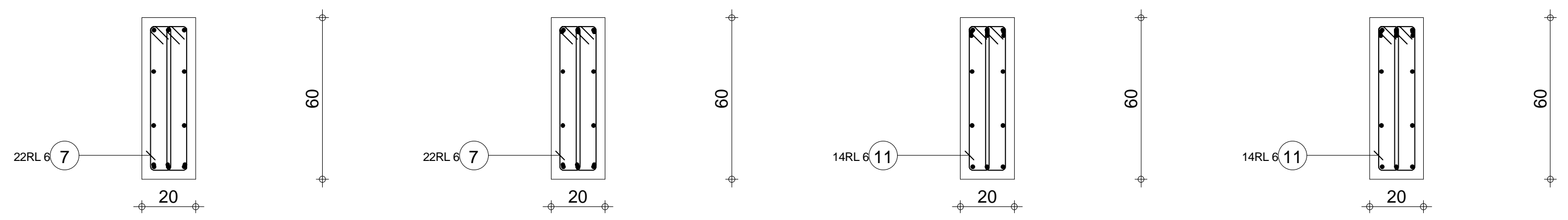


**A-A**

**B-B**

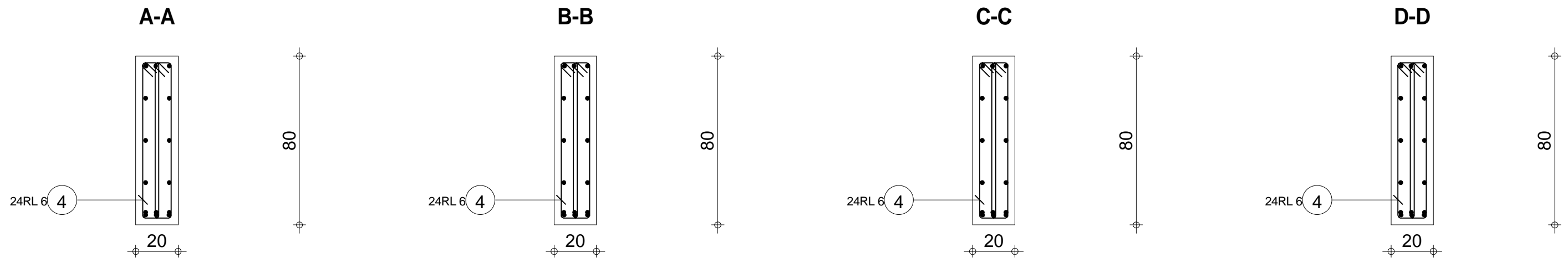
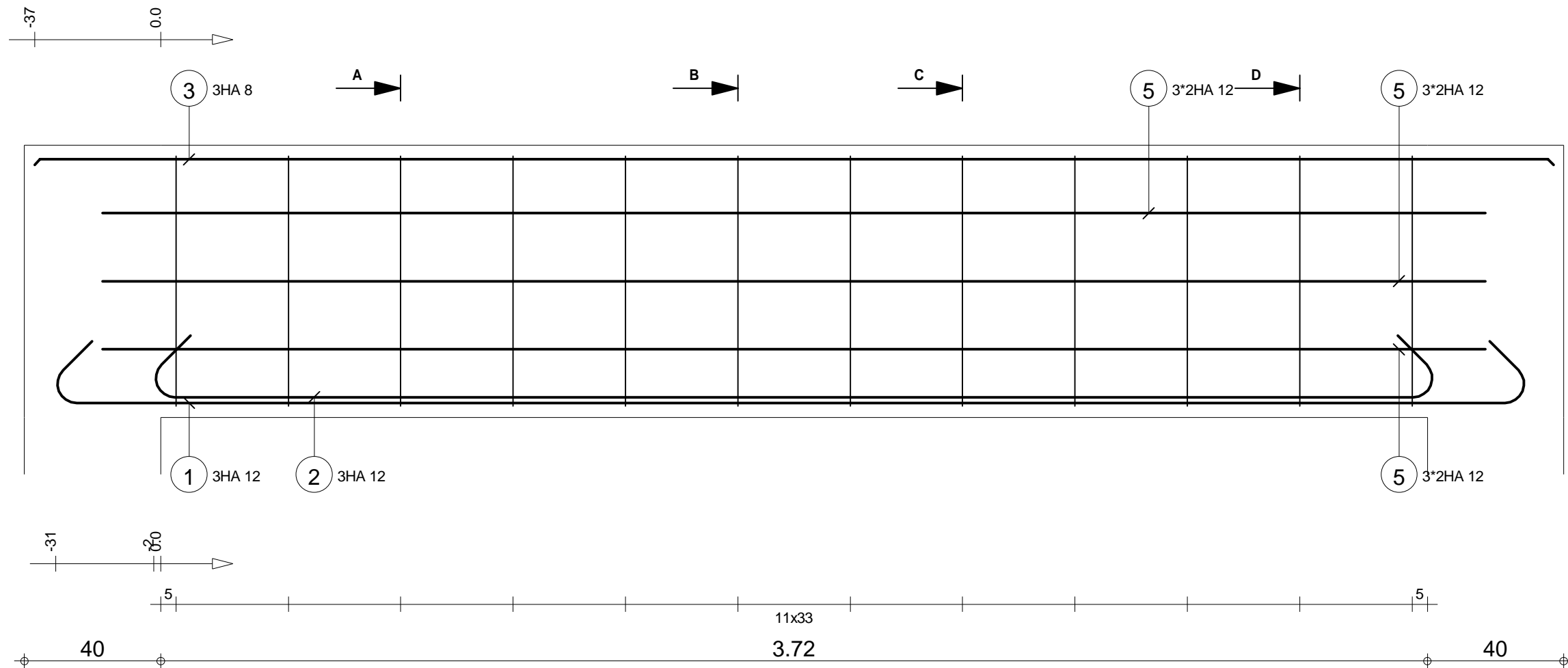
**C-C**

**D-D**



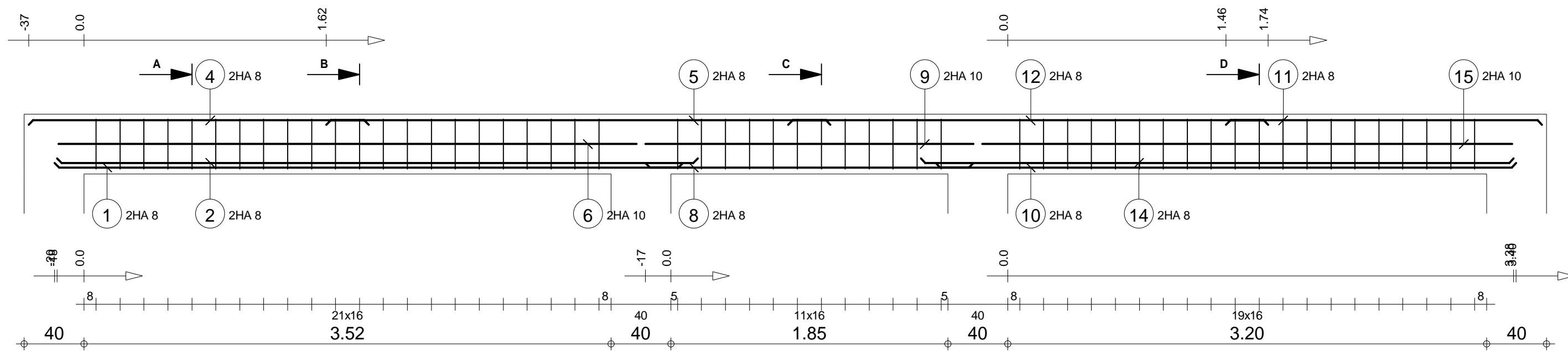
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=59	00	④	3HA 8	l=4.16	00	⑦	22RL 6	l=1.36	31	⑩	2*2HA 12	l=1.33	00
②	3HA 14	l=3.98	00	⑤	3HA 8	l=2.81	00	⑧	2*2HA 12	l=3.63	00	⑪	14RL 6	l=1.36	31
③	3HA 14	l=2.97	00	⑥	3HA 8	l=5.12	00	⑨	3HA 8	l=1.33	00				

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 33</b> <b>Section 20x60</b>	Tél. _____ Fax _____ Nombre 1	Béton : BETON25 = 0.621 m3	Acier HA 400 = 59.4 kg Acier RL 235 = 10.8 kg	
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
			Densité = 113 kg/ m3 Surface du coffrage = 7.37 m2	Echelle pour la vue 6.88cm/m Echelle pour la section 6.58cm/m	Page 1/1



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=4.70	00	④	24RL 6	l=1.76	31
②	3HA 12	l=4.14	00	⑤	3*2HA 12	l=4.06	00
③	3HA 8	l=4.46	00				

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 34</b> <b>Section 20x80</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 0.723 m3	Acier HA 400 = 50.4 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 9.37 kg	
				Densité = 82.71 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 8.3 m2	Echelle pour la vue 6.6cm/m	Echelle pour la section 5.05cm/m
					Page 1/1	

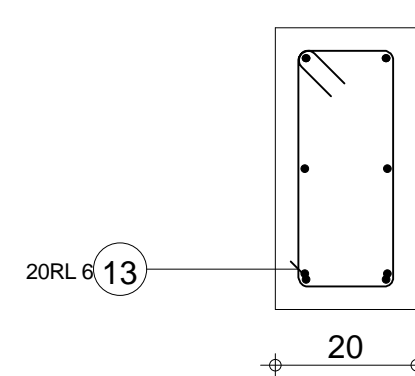
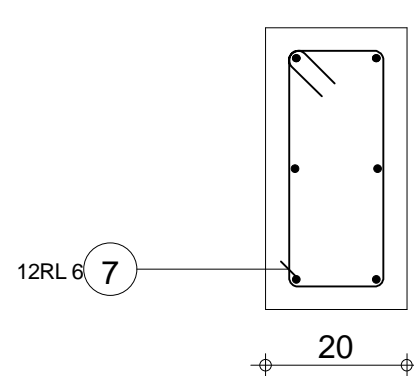
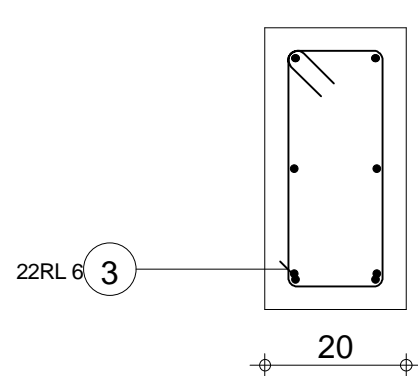
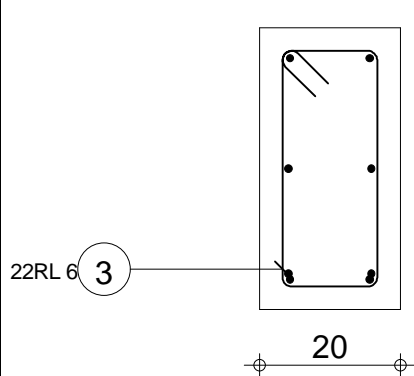


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	2HA 8	l=4.20	00	④	2HA 8	l=2.27	00	⑦	12RL 6	l=1.08	31	⑩	2HA 8	l=3.88	00	⑬	20RL 6	l=1.08	31
②	2HA 8	l=4.28	00	⑤	2HA 8	l=3.37	00	⑧	2HA 8	l=2.19	00	⑪	2HA 8	l=2.11	00	⑭	2HA 8	l=3.96	00
③	22RL 6	l=1.08	31	⑥	2HA 10	l=3.86	00	⑨	2HA 10	l=2.19	00	⑫	2HA 8	l=3.21	00	⑮	2HA 10	l=3.54	00

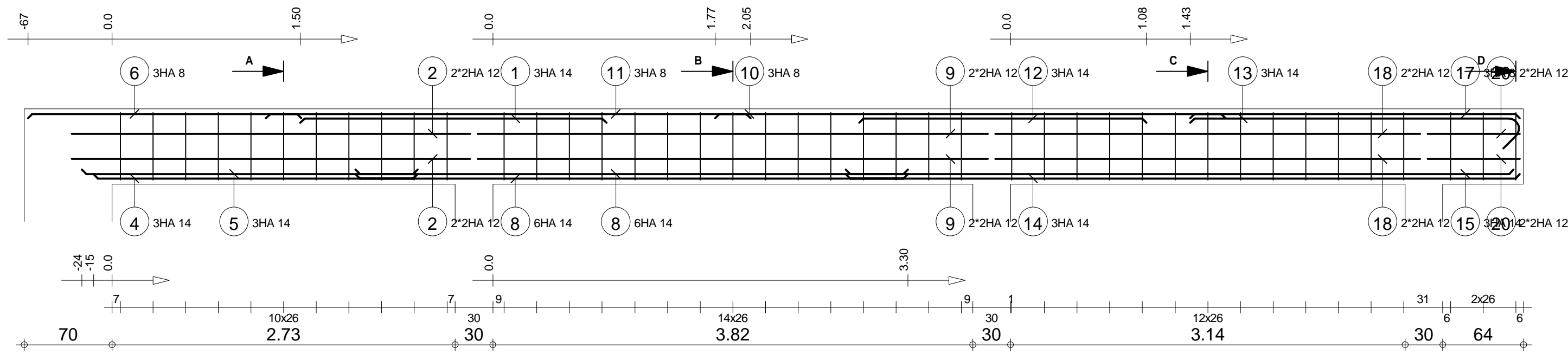
Tél. Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

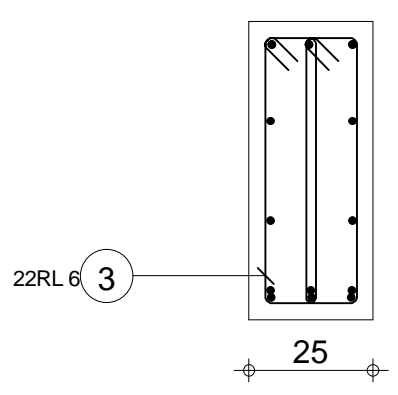
**POUTRE 35**  
**Section 20x40**

Nombre 1

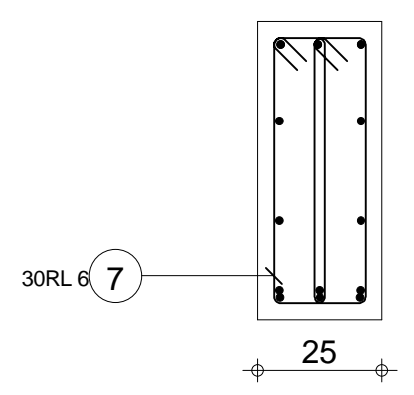
Béton : BETON25 = 0.814 m3	Acier HA 400 = 35.1 kg
Enrobage inférieur 3 cm	Acier RL 235 = 12.9 kg
Densité = 58.97 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 10 m2	Enrobage latéral 3 cm
Echelle pour la vue 3.58cm/m	Echelle pour la section 9.34cm/m
Page 1/1	



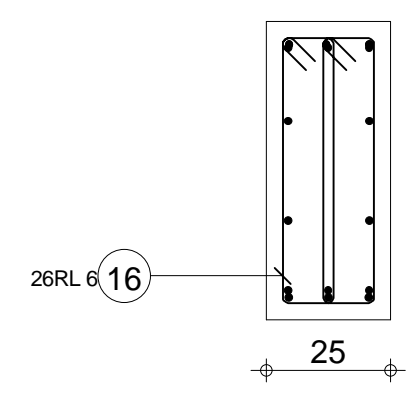
**A-A**



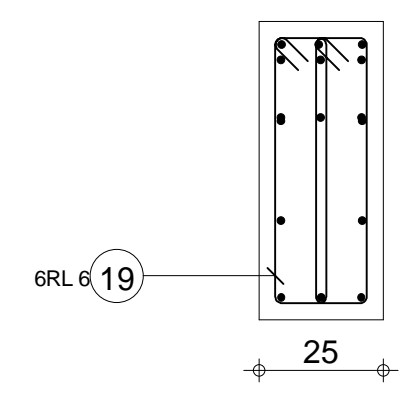
**B-B**



**C-C**


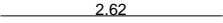
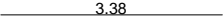

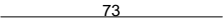


**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 14	l=2.44	00	④	3HA 14	l=2.58	00	⑦	30RL 6	l=1.41	31	⑩	3HA 8	l=4.06	00	⑬	3HA 14	l=2.87	00
②	2*2HA 12	l=3.17	00	⑤	3HA 14	l=2.67	00	⑧	6HA 14	l=4.40	00	⑪	3HA 8	l=3.86	00	⑭	3HA 14	l=5.36	00
③	22RL 6	l=1.41	31	⑥	3HA 8	l=2.18	00	⑨	2*2HA 12	l=4.06	00	⑫	3HA 14	l=2.29	00	⑮	3HA 14	l=5.31	00

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE PG1</b> <b>Section 25x60</b>	Nombre 1	Acier HA 400 = 172 kg Acier RL 235 = 26.3 kg	
			Béton : BETON25 = 1.79 m3 Enrobage inférieur 3 cm Densité = 111.2 kg/ m3 Surface du coffrage = 17.2 m2	Enrobage supérieur 3 cm Echelle pour la vue 3.07cm/m Echelle pour la section 6.58cm/m
			Enrobage latéral 3 cm Page 1/2	

Pos.	Armature		Code	Forme
16	26RL 6	l=1.41	31	
17	3HA 8	l=2.62	00	
18	2*2HA 12	l=3.38	00	
19	6RL 6	l=1.41	31	
20	2*2HA 12	l=73	00	

Tél.

Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE PG1**  
**Section 25x60**

Nombre 1

Béton : BETON25 = 1.79 m3

Acier HA 400 = 172 kg

Acier RL 235 = 26.3 kg

Enrobage inférieur 3 cm

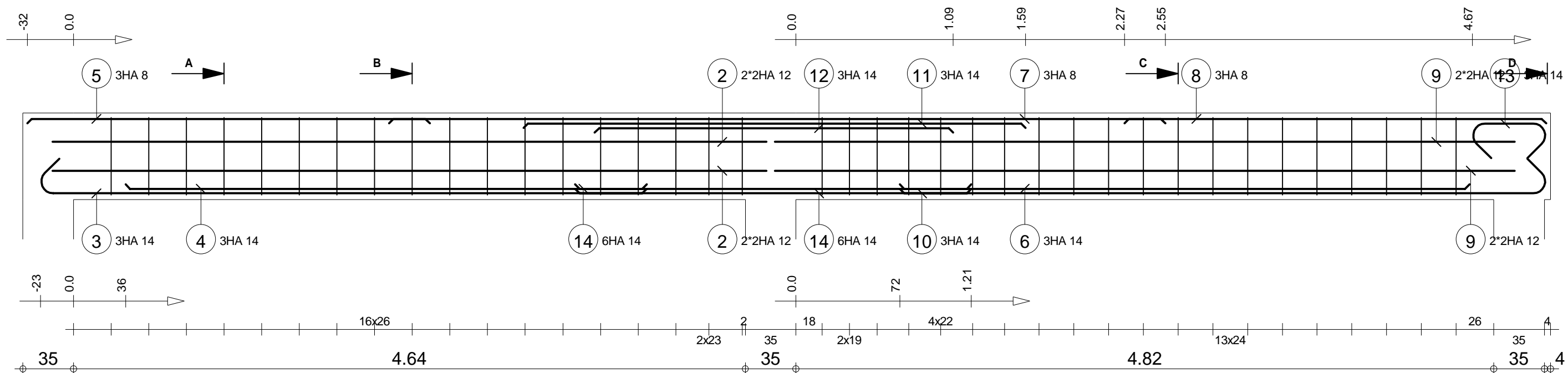
Enrobage supérieur 3 cm

Enrobage latéral 3 cm

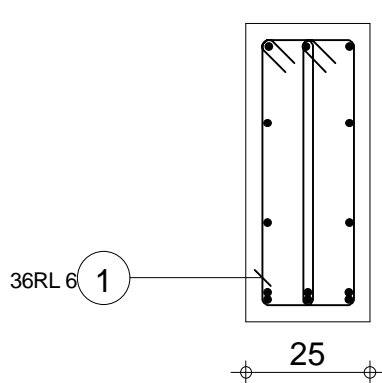
Densité = 111.2 kg/ m3

Surface du coffrage = 17.2 m2

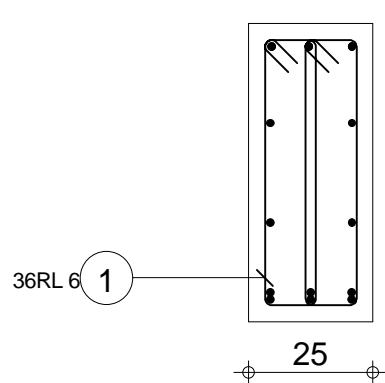
Page 2/2



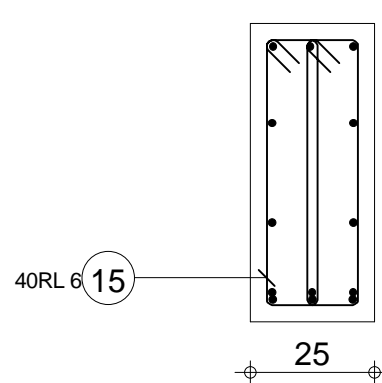
**A-A**



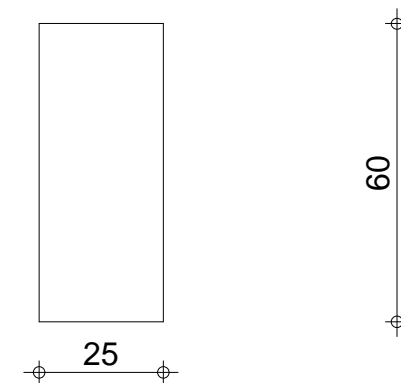
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
1	36RL 6	l=1.41	31	4	3HA 14	l=3.60	00	7	3HA 8	l=5.36	00	10	3HA 14	l=4.71	00	13	3HA 14	l=100	00
2	2*2HA 12	l=4.93	00	5	3HA 8	l=2.78	00	8	3HA 8	l=2.91	00	11	3HA 14	l=3.47	00	14	6HA 14	l=2.74	00
3	3HA 14	l=4.43	00	6	3HA 14	l=3.94	00	9	2*2HA 12	l=5.11	00	12	3HA 14	l=2.48	00	15	40RL 6	l=1.41	31

Tél.

Fax

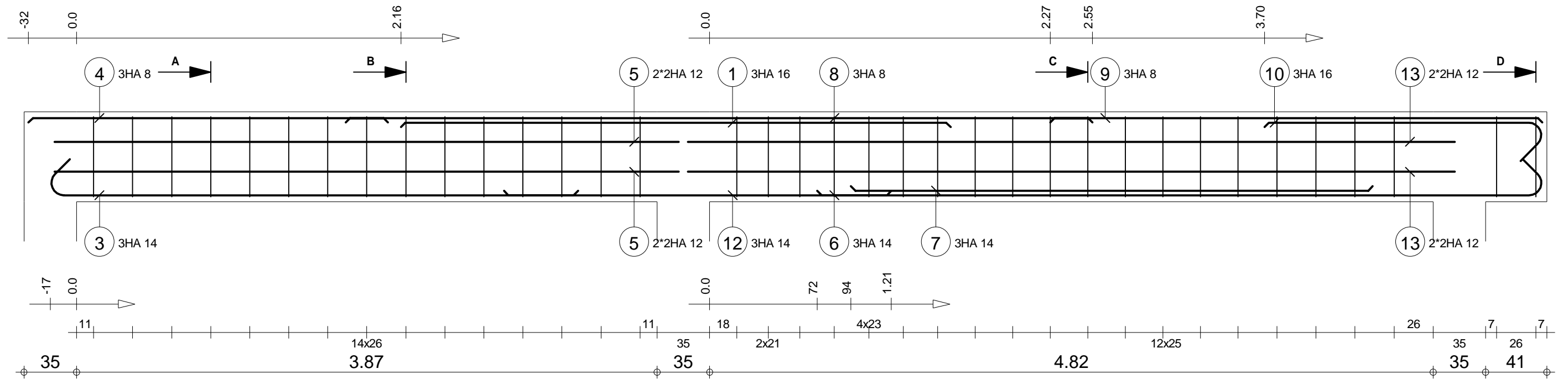
Nombre 1

**RDC**  
**PROJET CERME\_PLANS GUIDES**

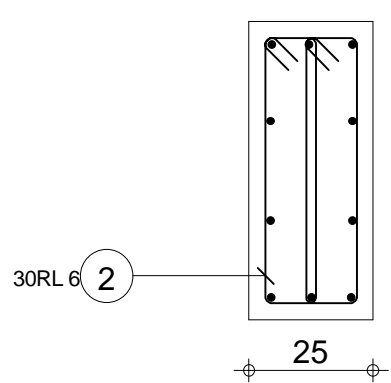
**POUTRE PG2**  
**Section 25x60**

Acier HA 400 = 154 kg	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Béton : BETON25 = 1.58 m3	Echelle pour la vue 3.46cm/m	Page 1/1
Enrobage inférieur 3 cm	Echelle pour la section 6.58cm/m	
Densité = 112.7 kg/ m3		
Surface du coffrage = 15.3 m2		

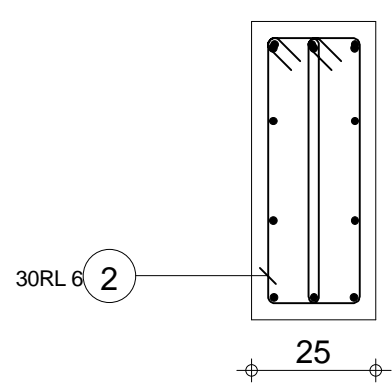




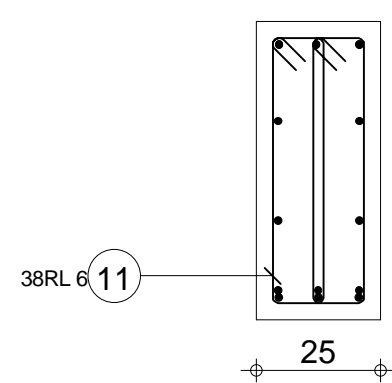
**A-A**



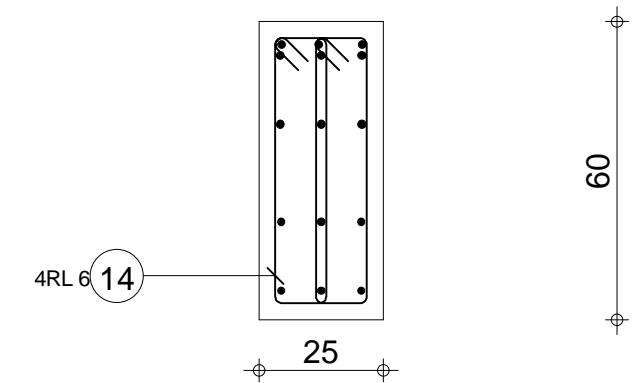
**B-B**



**C-C**

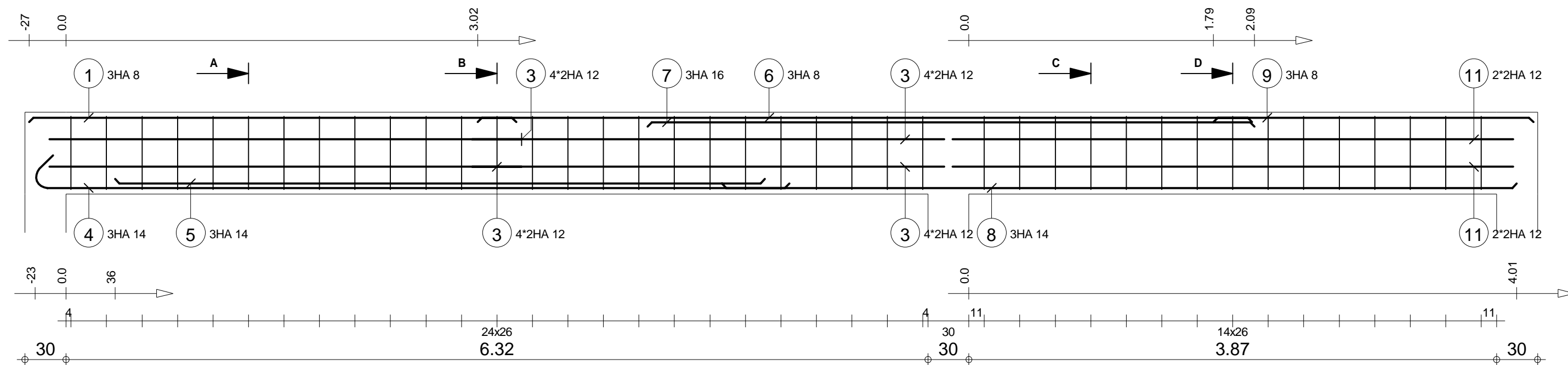


**D-D**

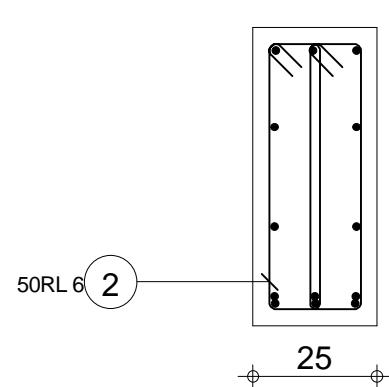


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 16	l=3.66	00	④	3HA 8	l=2.40	00	⑦	3HA 14	l=3.48	00	⑩	3HA 16	l=2.12	00	⑬	2*2HA 12	l=5.11	00
②	30RL 6	l=1.41	31	⑤	2*2HA 12	l=4.16	00	⑧	3HA 8	l=4.98	00	⑪	38RL 6	l=1.41	31	⑭	4RL 6	l=1.41	31
③	3HA 14	l=3.76	00	⑥	3HA 14	l=5.08	00	⑨	3HA 8	l=3.28	00	⑫	3HA 14	l=2.58	00				

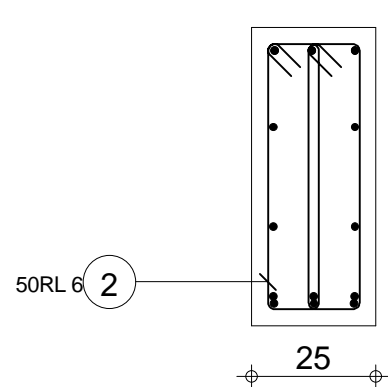
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE PG3</b> <b>Section 25x60</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 1.52 m3	Acier HA 400 = 127 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 22.5 kg	
				Densité = 98.03 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 14.7 m2	Echelle pour la vue 3.59cm/m	Echelle pour la section 6.58cm/m
				Page 1/1		



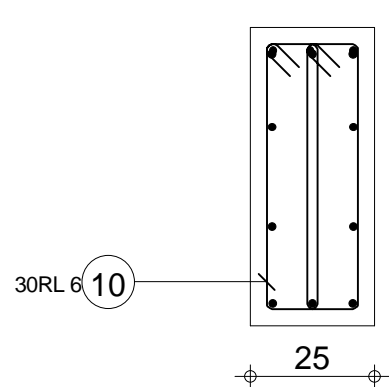
**A-A**



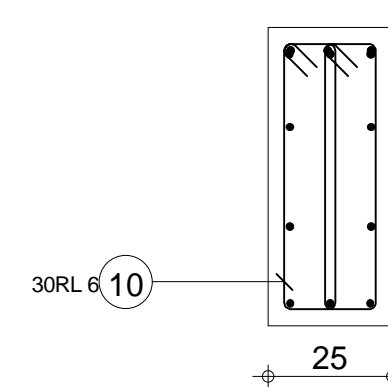
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=3.57	00	④	3HA 14	l=5.77	00	⑦	3HA 16	l=4.45	00	⑩	30RL 6	l=1.41	31
②	50RL 6	l=1.41	31	⑤	3HA 14	l=4.76	00	⑧	3HA 14	l=5.82	00	⑪	2*2HA 12	l=4.11	00
③	4*2HA 12	l=3.46	00	⑥	3HA 8	l=5.67	00	⑨	3HA 8	l=2.34	00				

Tél.

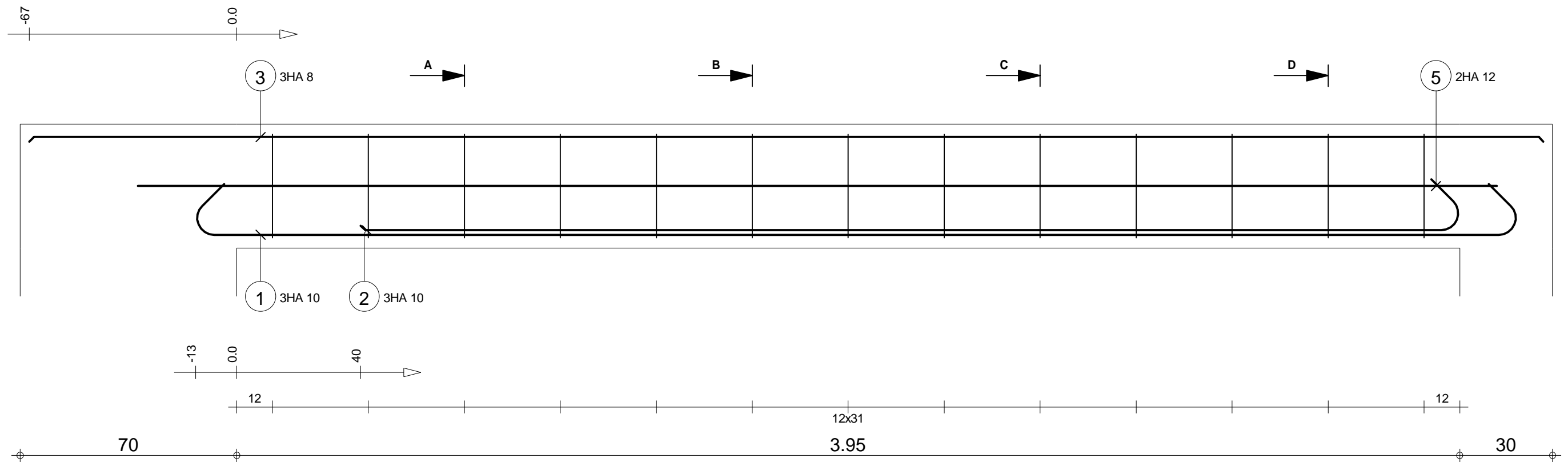
Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

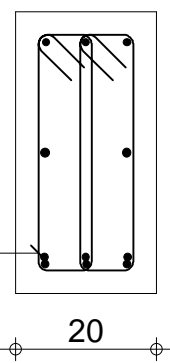
**POUTRE PG4**  
**Section 25x60**

Nombre 1

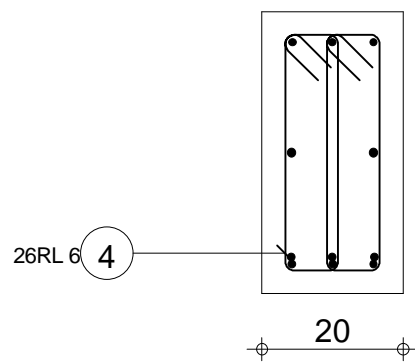
Béton : BETON25 = 1.66 m3	Acier HA 400 = 133 kg
Enrobage inférieur 3 cm	Acier RL 235 = 25 kg
Densité = 95.18 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 16.1 m2	Enrobage latéral 3 cm
Echelle pour la vue 3.3cm/m	Page 1/1
Echelle pour la section 6.58cm/m	



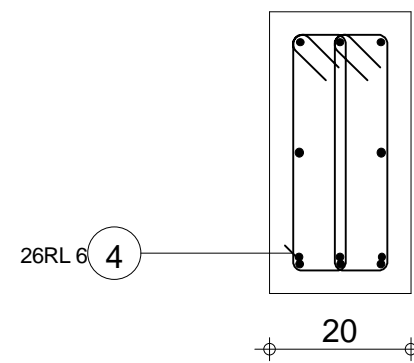
**A-A**



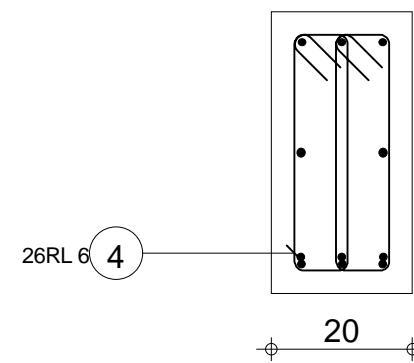
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 10	l=4.61	00	④	26RL 6	l=96	31
②	3HA 10	l=3.72	00	⑤	2HA 12	l=4.39	00
③	3HA 8	l=4.89	00				

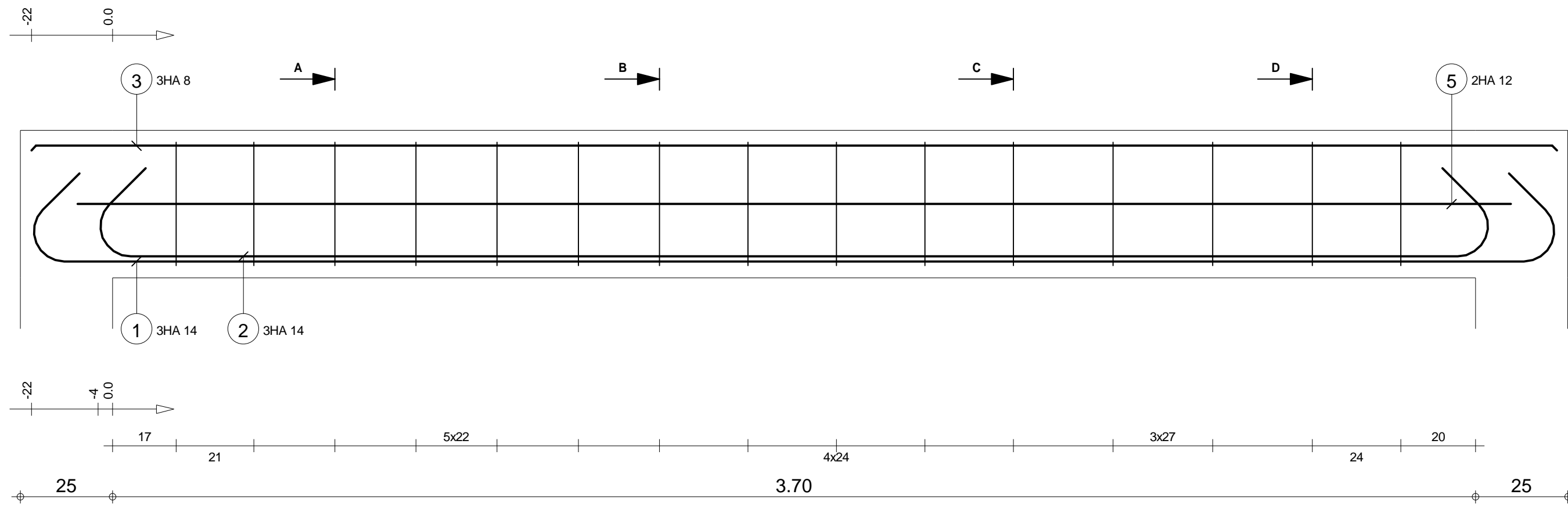
Tél. Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

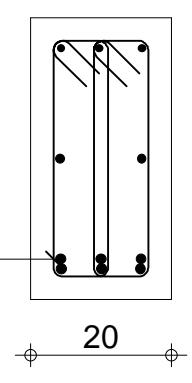
**POUTRE PG5**  
**Section 20x40**

Nombre 1

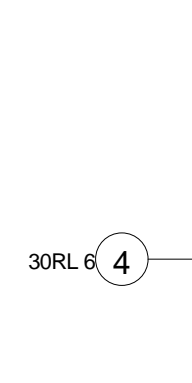
Béton : BETON25 = 0.396 m3	Acier HA 400 = 29 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 5.52 kg	
Densité = 87.12 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 4.91 m2	Echelle pour la vue 7.18cm/m	Echelle pour la section 9.34cm/m
		Page 1/1



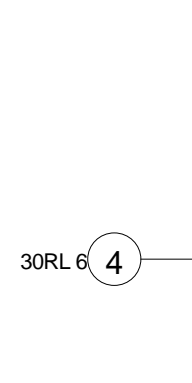
**A-A**



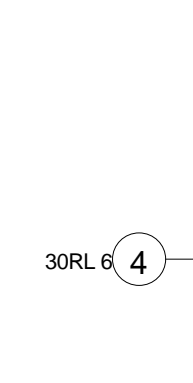
**B-B**



**C-C**

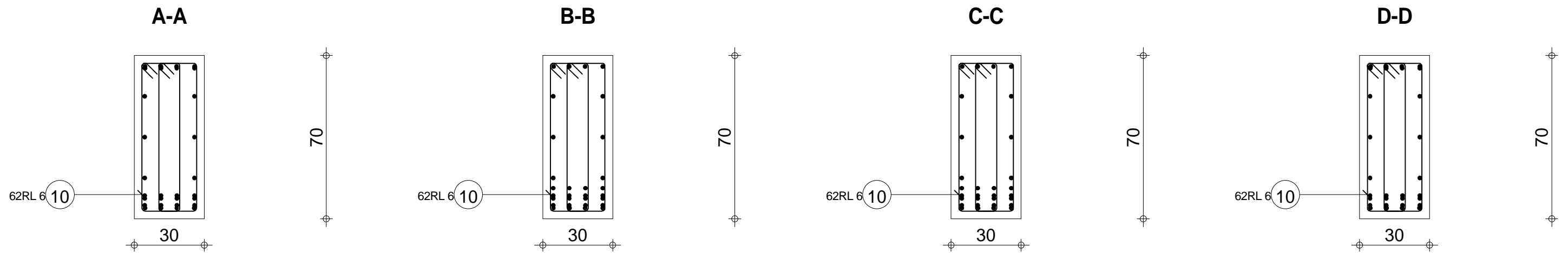
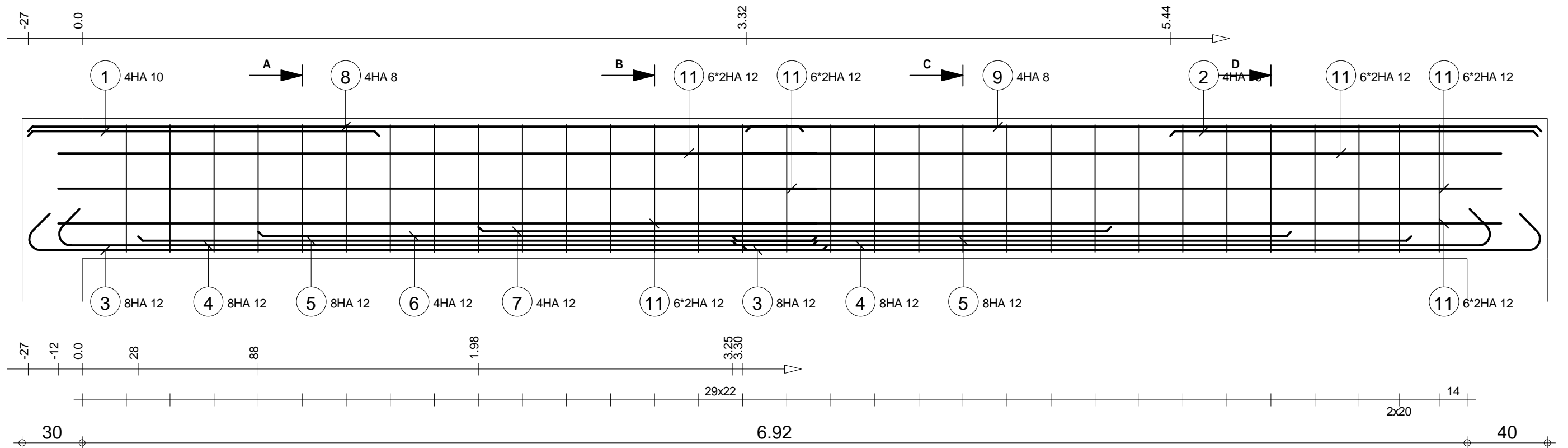


**D-D**



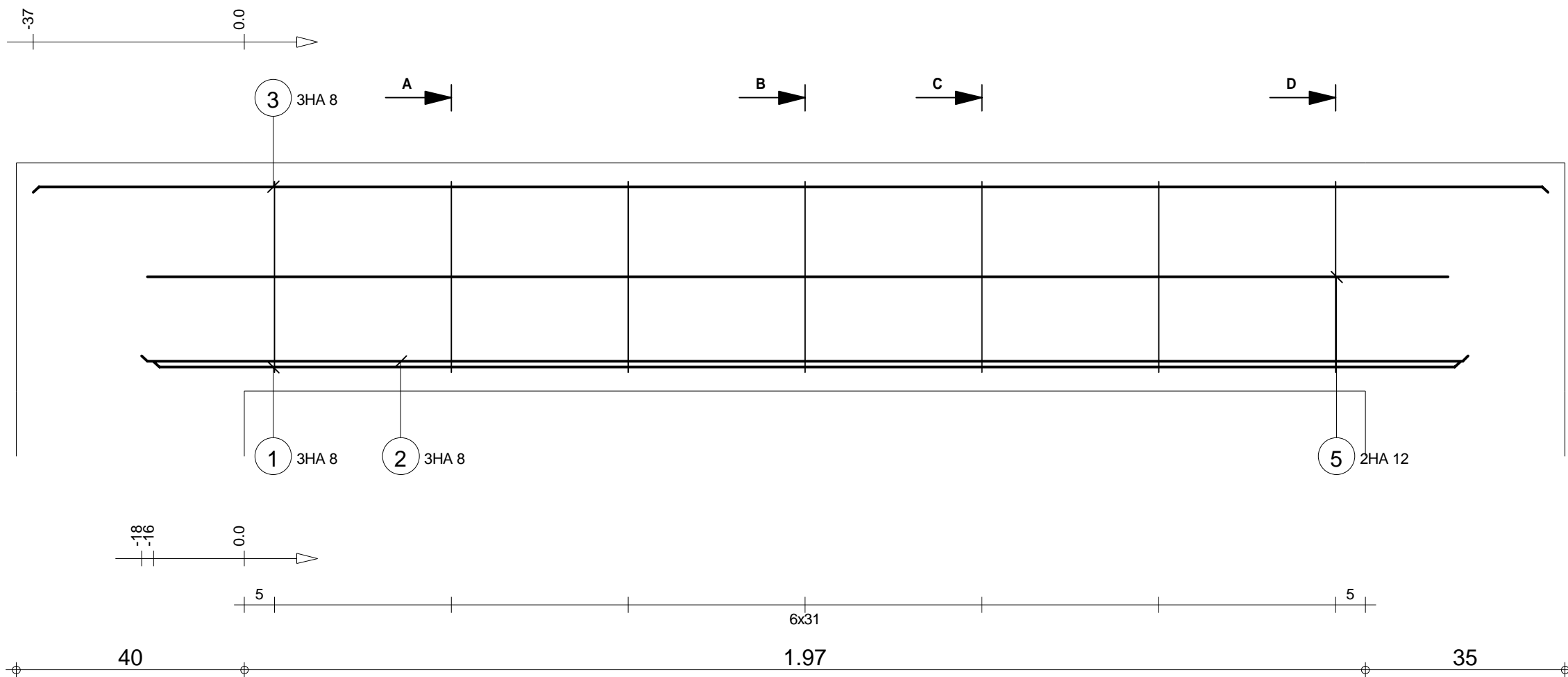
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	
①	3HA 14	l=4.62	00	↻ 4.14	④	30RL 6	l=96	31
②	3HA 14	l=4.26	00	↻ 3.78	⑤	2HA 12	l=3.89	00
③	3HA 8	l=4.14	00	— 4.14				

<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE PG6</b> <b>Section 20x40</b>	Tél.	Fax	Nombre 1	Béton : BETON25 = 0.336 m3	Acier HA 400 = 44 kg
					Enrobage inférieur 3 cm	Acier RL 235 = 6.4 kg
					Densité = 150 kg/ m3	Enrobage supérieur 3 cm
		Surface du coffrage = 4.26 m2			Echelle pour la vue 8.42cm/m	Page 1/1
					Echelle pour la section 9.34cm/m	

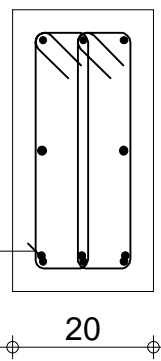


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	4HA 10	l=1.75	00	④	8HA 12	l=3.98	00	⑦	4HA 12	l=3.16	00	⑩	62RL 6	l=1.73	31
②	4HA 10	l=1.84	00	⑤	8HA 12	l=3.39	00	⑧	4HA 8	l=3.87	00	⑪	6*2HA 12	l=3.79	00
③	8HA 12	l=4.18	00	⑥	4HA 12	l=5.16	00	⑨	4HA 8	l=3.97	00				

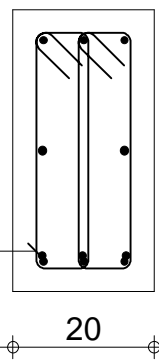
<b>RDC</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE PG7</b> <b>Section 30x70</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 1.6 m3	Acier HA 400 = 173 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 23.8 kg	
				Densité = 123.1 kg/m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 13.2 m2	Echelle pour la vue 4.74cm/m	Echelle pour la section 5.71cm/m
					Page 1/1	



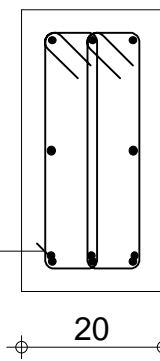
**A-A**



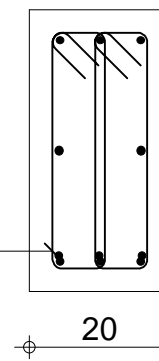
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=2.29	00	④	14RL 6	l=96	31
②	3HA 8	l=2.33	00	⑤	2HA 12	l=2.28	00
③	3HA 8	l=2.66	00				

Tél.

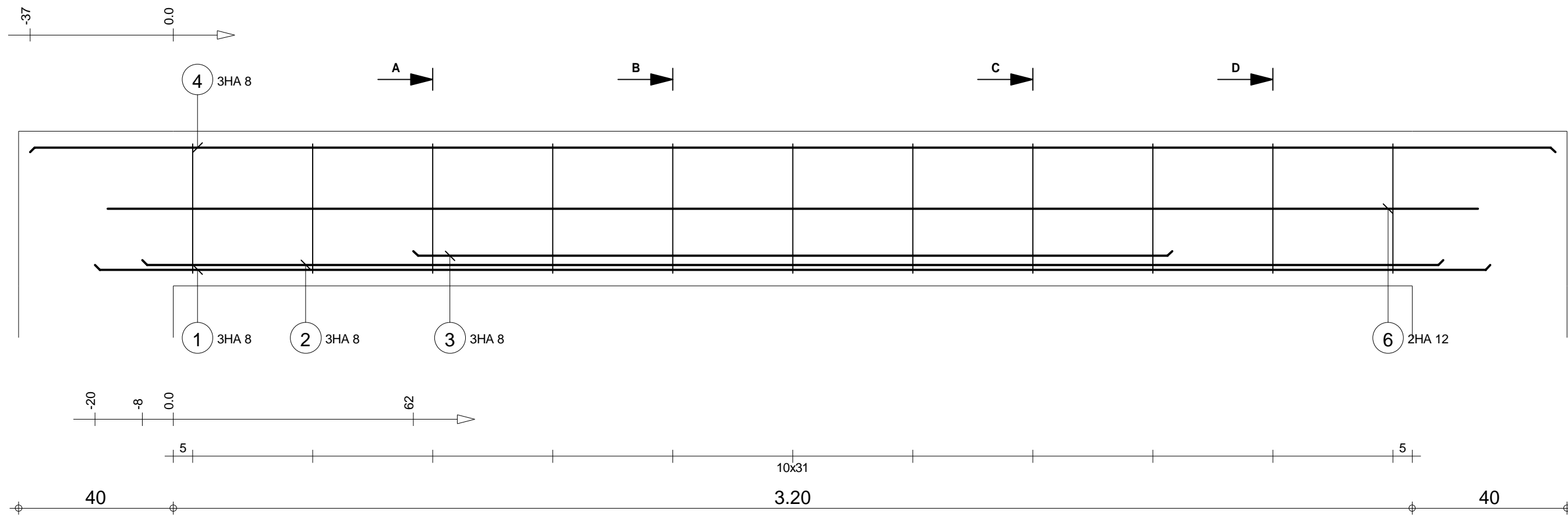
Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

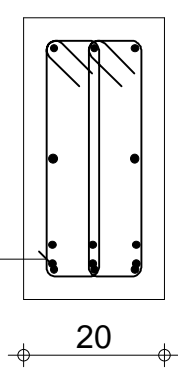
**POUTRE PG8**  
**Section 20x40**

Nombre 1

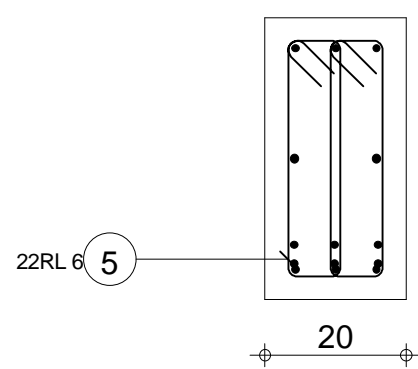
Béton : BETON25 = 0.217 m3	Acier HA 400 = 12.7 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 2.97 kg	
Densité = 71.89 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 2.73 m2	Echelle pour la vue 10.9cm/m	Echelle pour la section 9.34cm/m
		Page 1/1



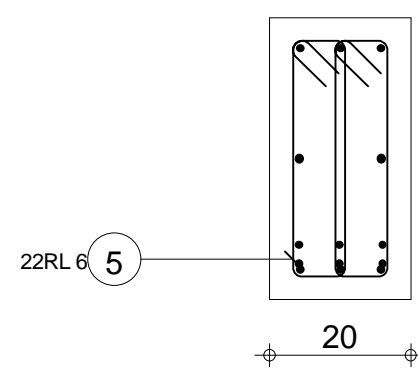
**A-A**



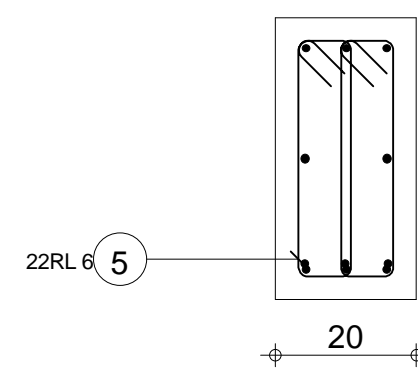
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=3.60	00	④	3HA 8	l=3.94	00
②	3HA 8	l=3.36	00	⑤	22RL 6	l=96	31
③	3HA 8	l=1.96	00	⑥	2HA 12	l=3.54	00

Tél.

Fax

**RDC**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE PG9**  
**Section 20x40**

Nombre 1

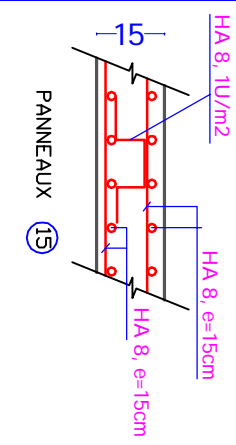
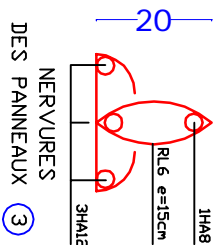
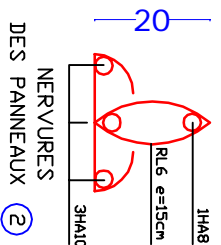
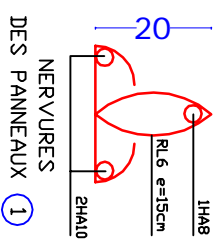
Béton : BETON25 = 0.32 m3	Acier HA 400 = 21.5 kg	Acier RL 235 = 4.66 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 81.88 kg/ m3	Echelle pour la vue 8.81 cm/m	Echelle pour la section 9.34cm/m
Surface du coffrage = 4 m2		Page 1/1

## **2.3. R+1**



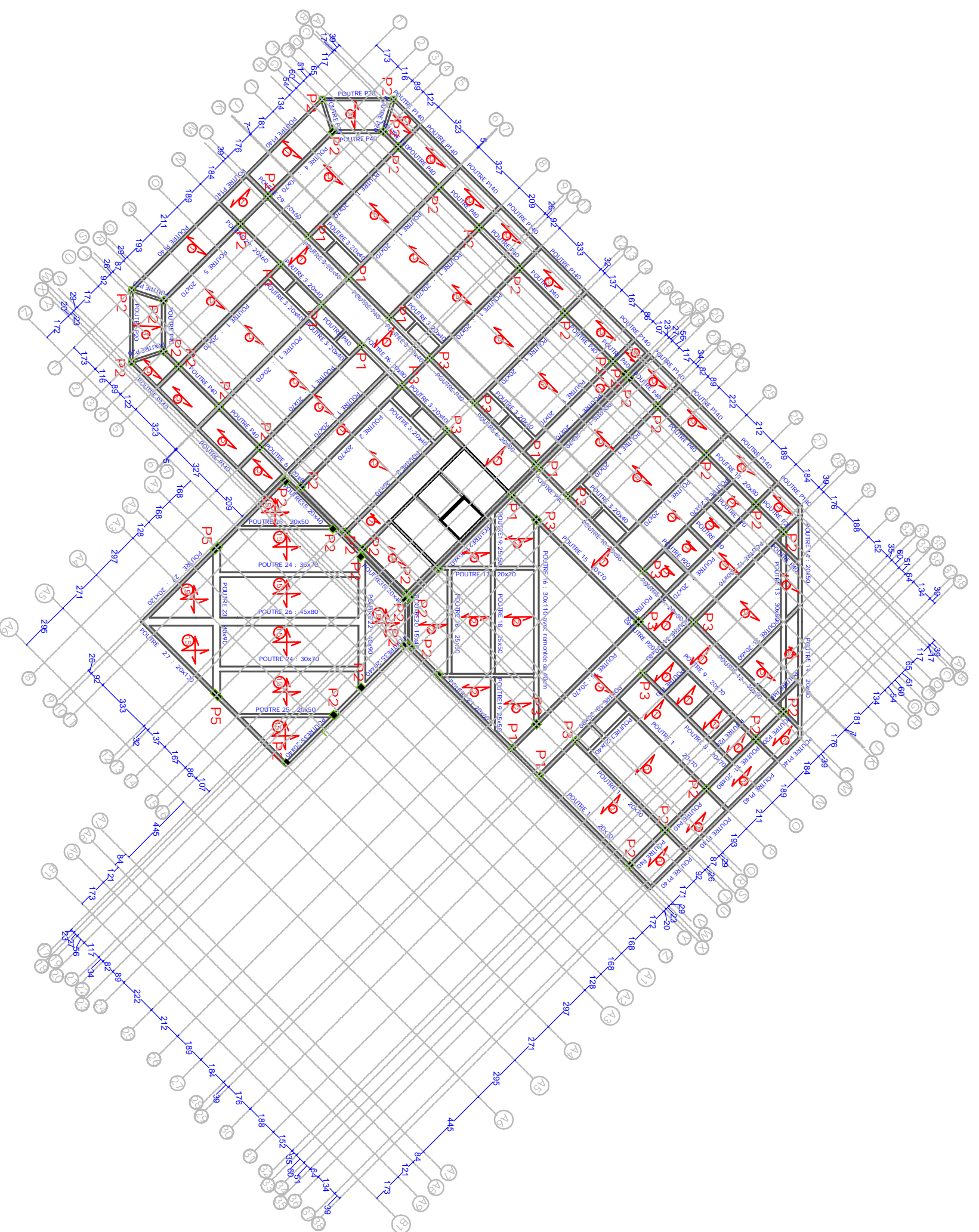
# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME

## DETAILS DES DALES



NOMENCLATURE DES POTEAUX	
P1: 35X35	
P2: 40X40	
P3: 40X40	
P4: 70X70	
P5: 35X60	

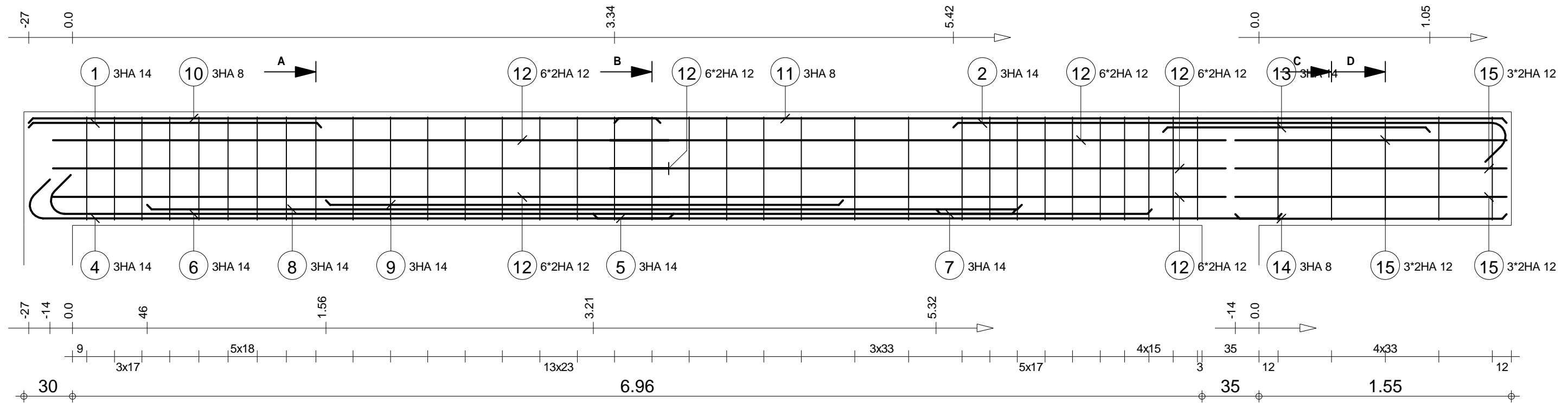
## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX



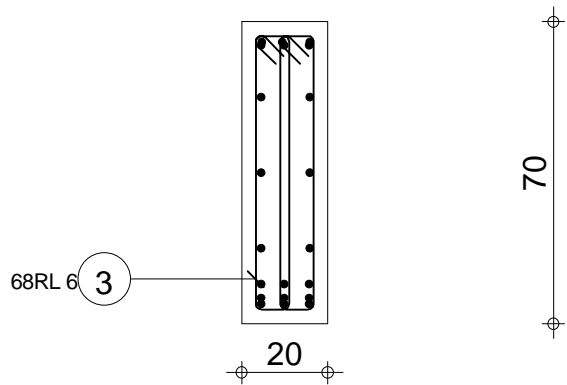
QUELQUES CARACTERISTIQUES GEOMETRIQUES ET STRUCTURELLES POUR CE NIVEAU

Hauteur du niveau=450ci

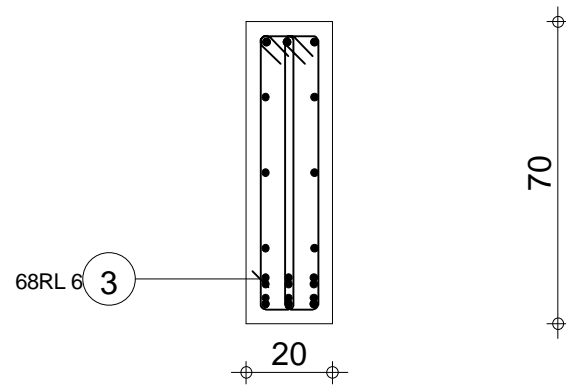
REPUBLICQUE TOGOLAISE Travail - Liberté - Patrie	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	Version	NOM DU PLAN	VISA	DECEMBR 2022
	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	FINALE	PLAN DE COFFRAGE DU PLANCHER HAUT DU R+1 (PHASE 1 DES TRAVAUX)		PLANCHI N°



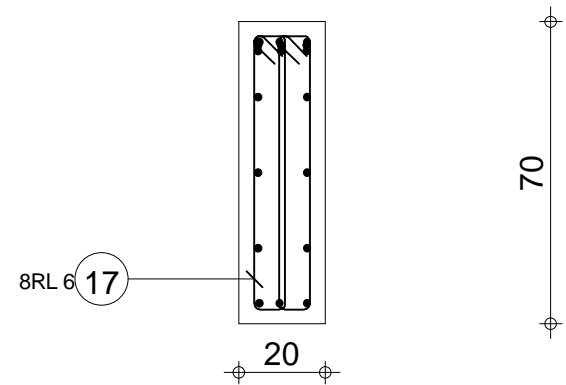
**A-A**



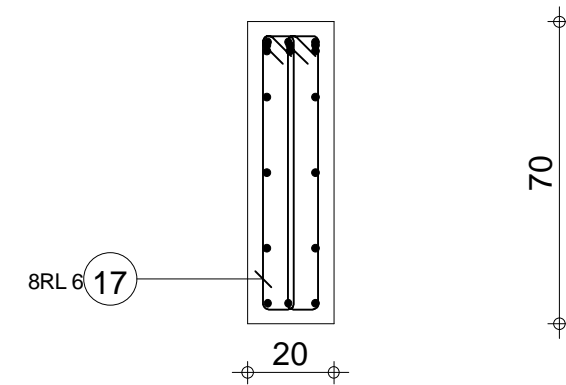
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 14	l=1.80	00	④	3HA 14	l=4.21	00	⑦	3HA 14	l=1.33	00	⑩	3HA 8	l=3.89	00	⑬	3HA 14	l=1.64	00
②	3HA 14	l=3.65	00	⑤	3HA 14	l=4.24	00	⑧	3HA 14	l=5.38	00	⑪	3HA 8	l=5.49	00	⑭	3HA 8	l=1.67	00
③	68RL 6	l=1.56	31	⑥	3HA 14	l=6.20	00	⑨	3HA 14	l=3.19	00	⑫	6*2HA 12	l=3.79	00	⑮	3*2HA 12	l=1.67	00

Tél.

Fax

Nombre 1

**R+1**

**PROJET CERME\_PLANS GUIDES**

**POUTRE 1**

**Section 20x70**

Béton : BETON25 = 1.28 m3  
 Enrobage inférieur 3 cm  
 Densité = 159.4 kg/m3  
 Surface du coffrage = 14.8 m2

Acier HA 400 = 177 kg  
 Acier RL 235 = 27 kg

Enrobage supérieur 3 cm

Enrobage latéral 3 cm

Echelle pour la vue 3.97cm/m  
 Echelle pour la section 5.71cm/m

Page 1/2

Pos.	Armature		Code	Forme
16	2RL 6	l=1.56	31	
17	8RL 6	l=1.55	31	

Tél.

Fax

**R+1****PROJET CERME\_PLANS GUIDES****POUTRE 1****Section 20x70****Nombre 1**

Béton : BETON25 = 1.28 m3

Enrobage inférieur 3 cm

Densité = 159.4 kg/ m3

Surface du coffrage = 14.8 m2

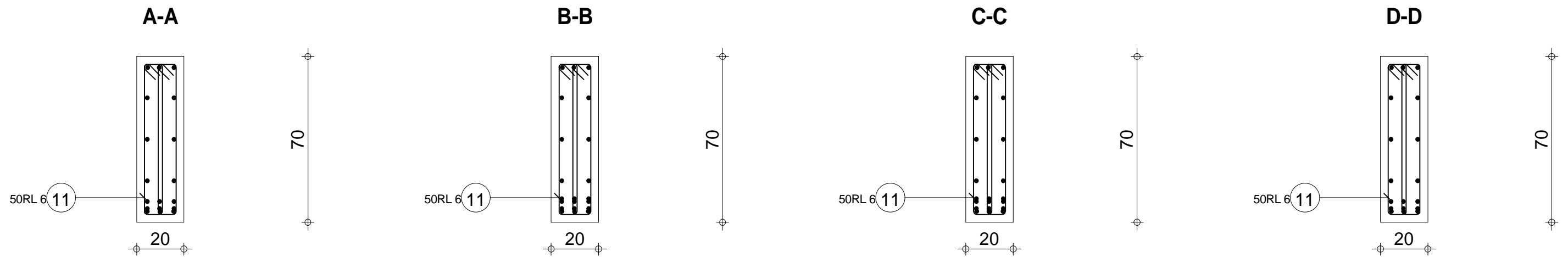
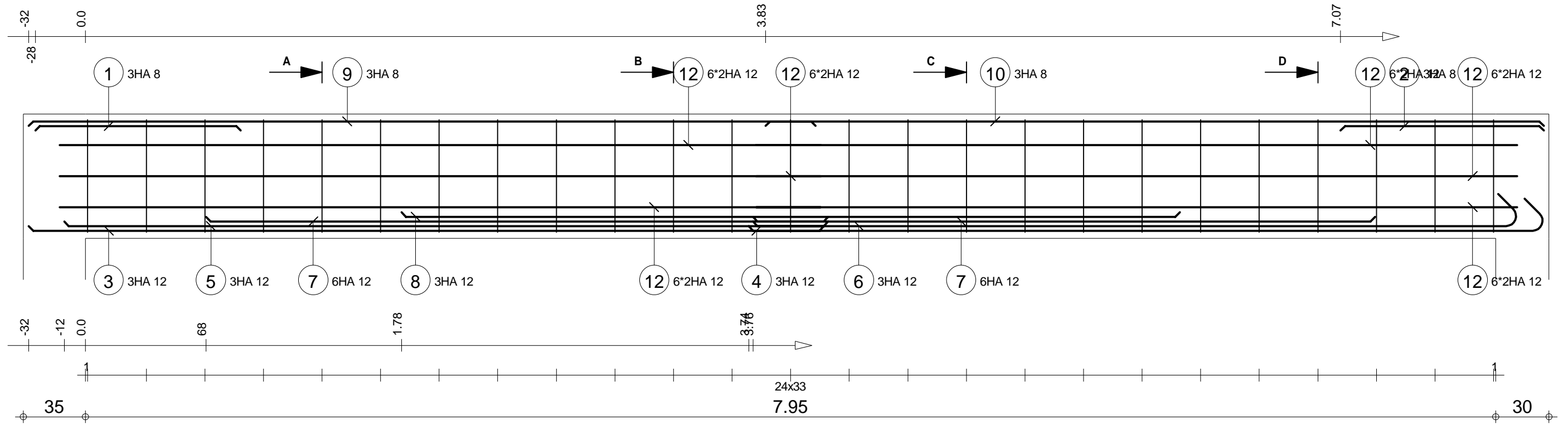
Acier HA 400 = 177 kg

Acier RL 235 = 27 kg

Enrobage supérieur 3 cm

Enrobage latéral 3 cm

Page 2/2



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=1.16	00	④	3HA 12	l=4.67	00	⑦	6HA 12	l=3.50	00	⑩	3HA 8	l=4.38	00
②	3HA 8	l=1.15	00	⑤	3HA 12	l=4.30	00	⑧	3HA 12	l=4.38	00	⑪	50RL 6	l=1.56	31
③	3HA 12	l=4.48	00	⑥	3HA 12	l=4.49	00	⑨	3HA 8	l=4.43	00	⑫	6*2HA 12	l=4.29	00

Tél.

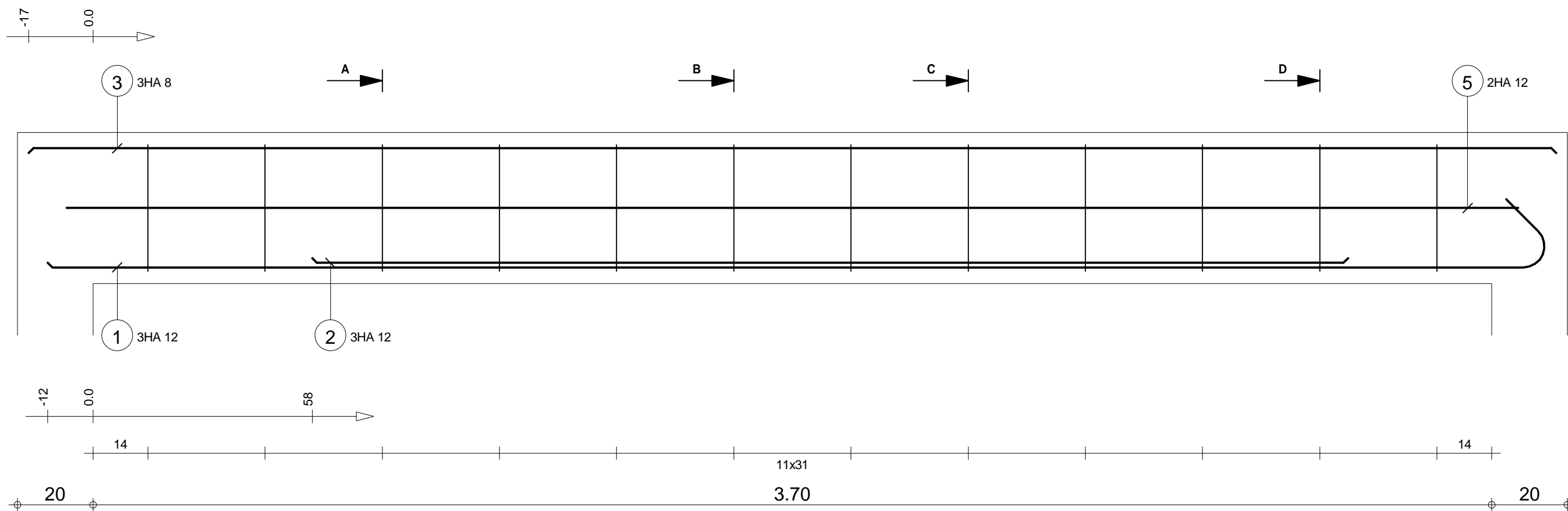
Fax

Nombre 1

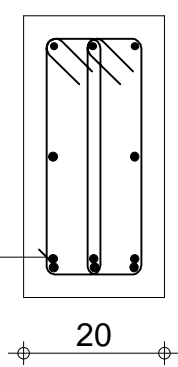
**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 2**  
**Section 20x70**

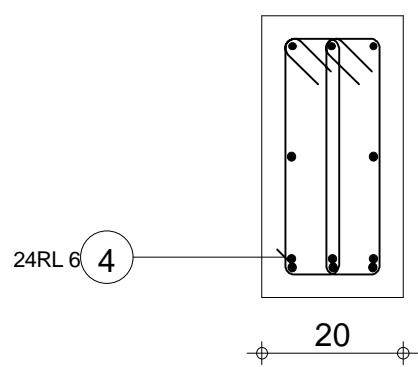
Béton : BETON25 = 1.2 m3	Acier HA 400 = 137 kg
Enrobage inférieur 3 cm	Acier RL 235 = 17.3 kg
Densité = 128.3 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 13.9 m2	Enrobage latéral 3 cm
Echelle pour la vue 4.22cm/m	Page 1/1
Echelle pour la section 5.71cm/m	



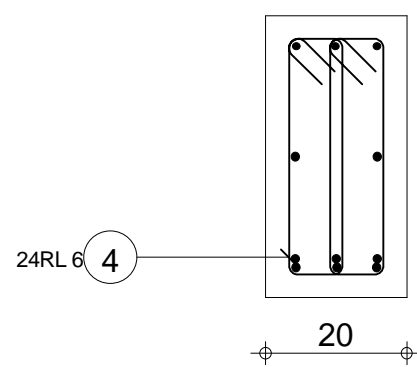
**A-A**



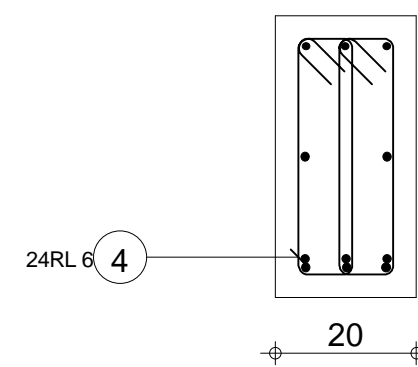
**B-B**



**C-C**

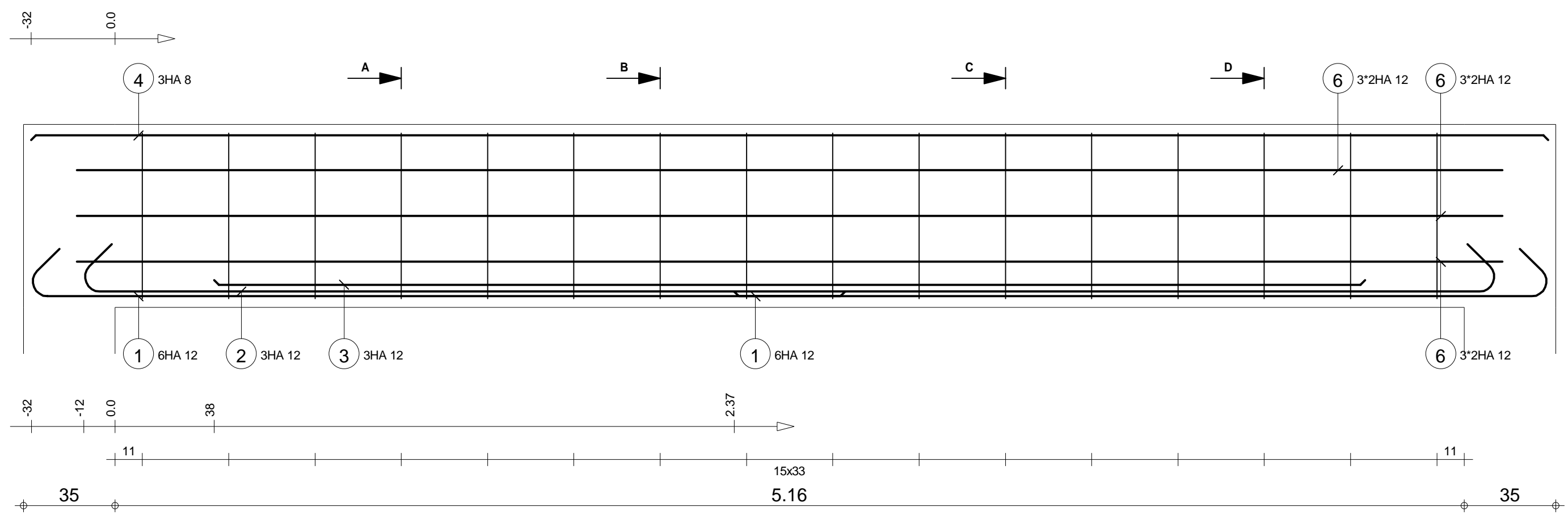


**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=4.16	00	④	24RL 6	l=96	31
②	3HA 12	l=2.74	00	⑤	2HA 12	l=3.84	00
③	3HA 8	l=4.04	00				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 3</b> <b>Section 20x40</b>	Tél.                      Fax Nombre 1	Béton : BETON25 = 0.328 m3	Acier HA 400 = 30 kg Acier RL 235 = 5.11 kg	
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
			Densité = 107 kg/ m3 Surface du coffrage = 4.18 m2	Echelle pour la vue 8.6cm/m Echelle pour la section 9.34cm/m	Page 1/1

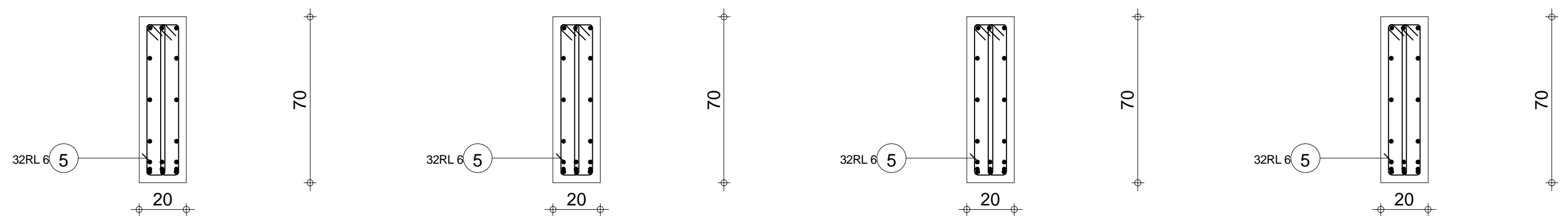


**A-A**

**B-B**

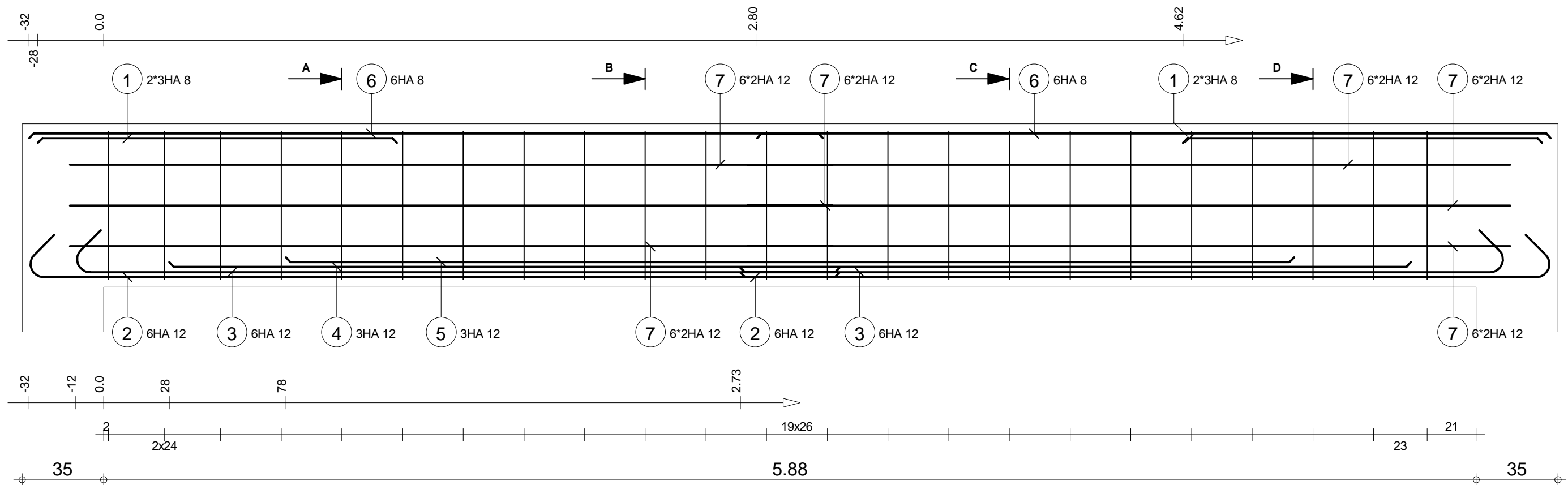
**C-C**

**D-D**

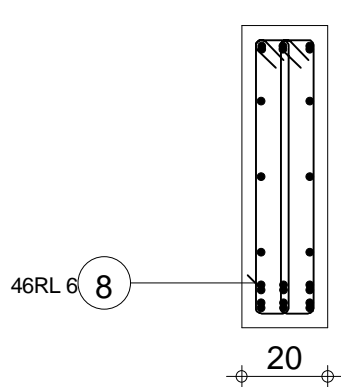


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 12	l=3.30	00	④	3HA 8	l=5.80	00
②	3HA 12	l=5.78	00	⑤	32RL 6	l=1.56	31
③	3HA 12	l=4.40	00	⑥	3*2HA 12	l=5.45	00

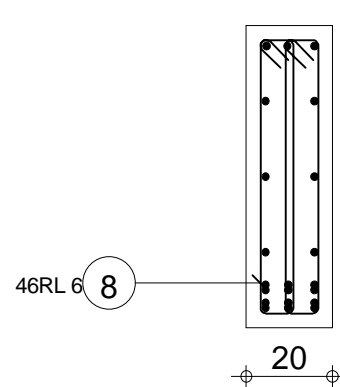
<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 4</b> <b>Section 20x70</b>	Tél.                      Fax Nombre 1	Béton : BETON25 = 0.82 m3	Acier HA 400 = 80.6 kg Acier RL 235 = 11.1 kg	
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
			Densité = 111.8 kg/ m3 Surface du coffrage = 9.52 m2	Echelle pour la vue 6.11cm/m Echelle pour la section 5.71cm/m	Page 1/1



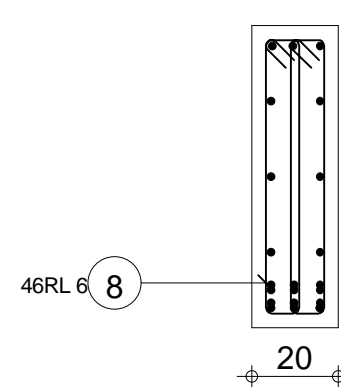
**A-A**



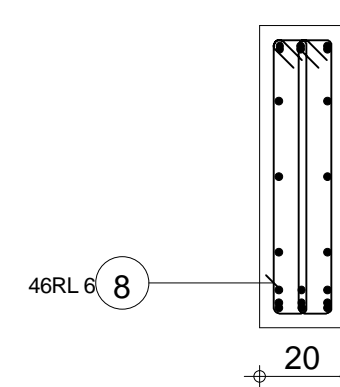
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	2*3HA 8	l=1.54	00	④	3HA 12	l=5.32	00	⑦	6*2HA 12	l=3.27	00
②	6HA 12	l=3.66	00	⑤	3HA 12	l=4.32	00	⑧	46RL 6	l=1.56	31
③	6HA 12	l=3.46	00	⑥	6HA 8	l=3.40	00				

Tél.

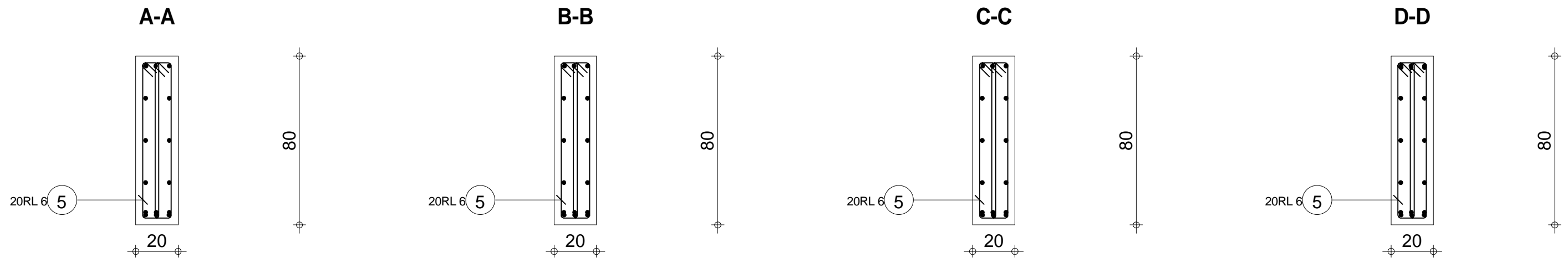
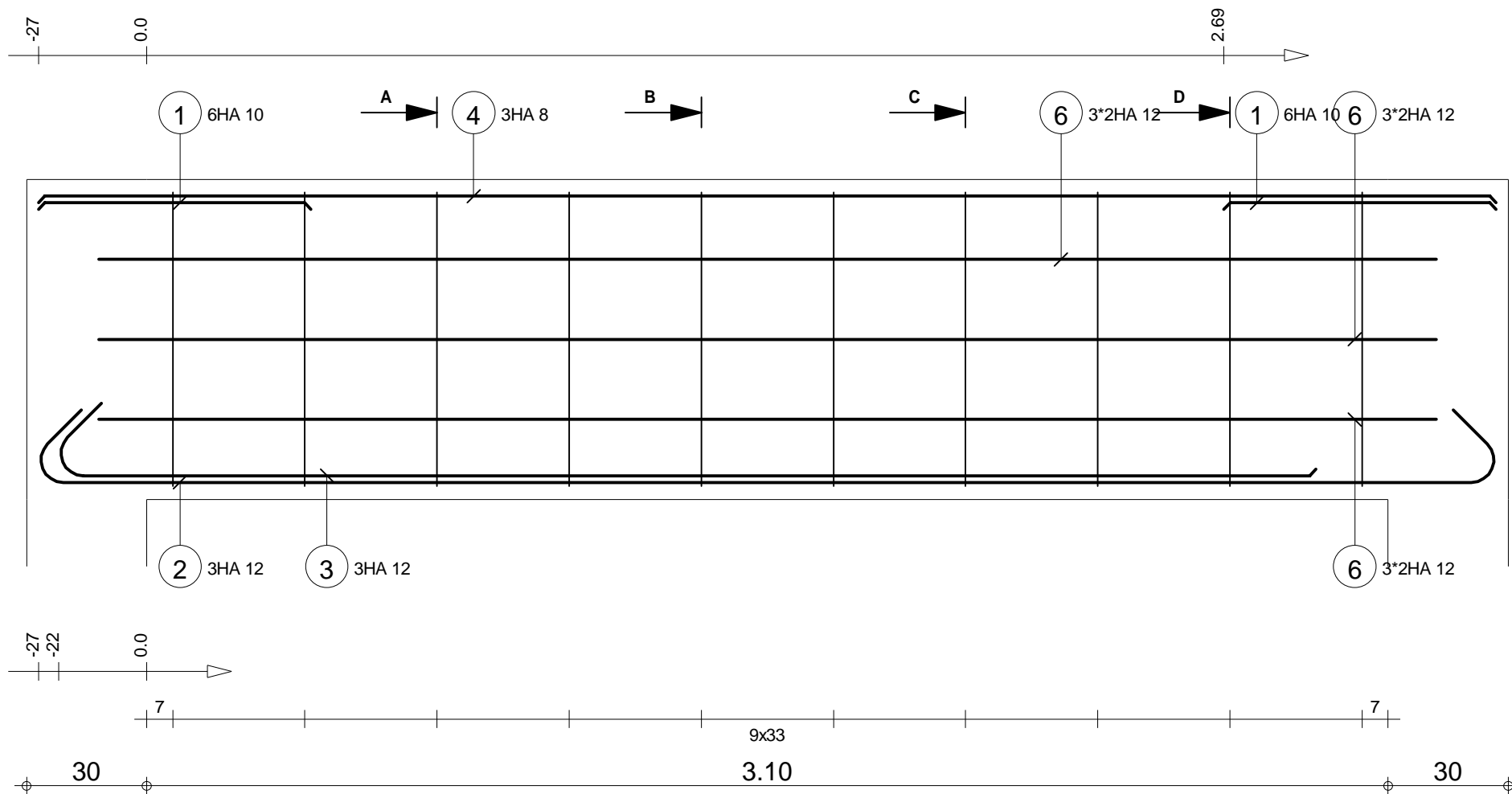
Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 5**  
**Section 20x70**

Nombre 1

Béton : BETON25 = 0.921 m3	Acier HA 400 = 110 kg	Acier RL 235 = 15.9 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 136.8 kg/ m3	Echelle pour la vue 5.46cm/m	Echelle pour la section 5.71cm/m
Surface du coffrage = 10.7 m2		Page 1/1



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 10	l=68	00	④	3HA 8	l=3.64	00
②	3HA 12	l=4.02	00	⑤	20RL 6	l=1.76	31
③	3HA 12	l=3.33	00	⑥	3*2HA 12	l=3.34	00

Tél.

Fax

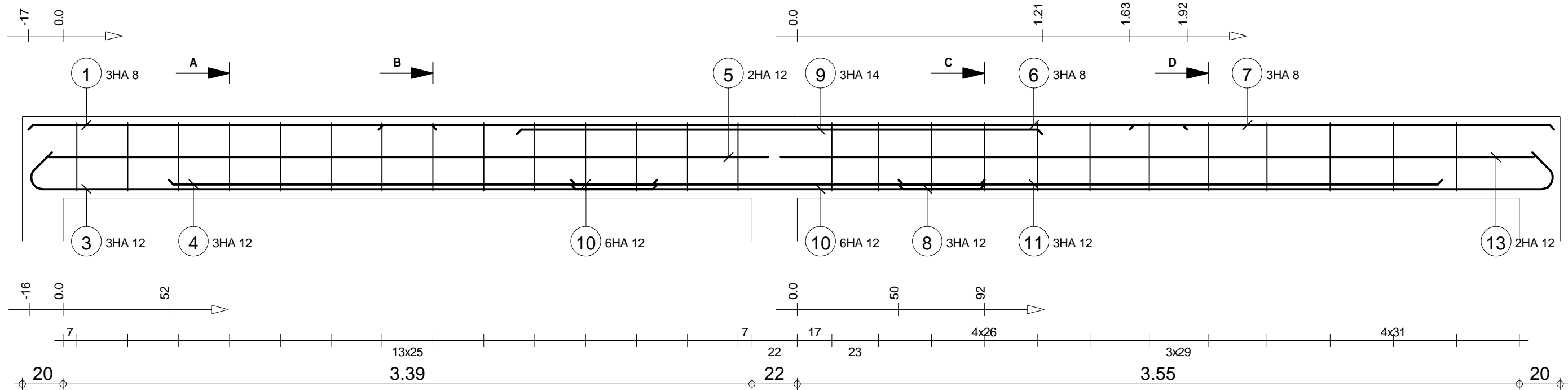
Nombre 1

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 6**  
**Section 20x80**

Béton : BETON25 = 0.592 m3	Acier HA 400 = 44.2 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 7.81 kg	
Densité = 87.84 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 6.86 m2	Echelle pour la vue 6.6cm/m	Echelle pour la section 5.05cm/m
		Page 1/1



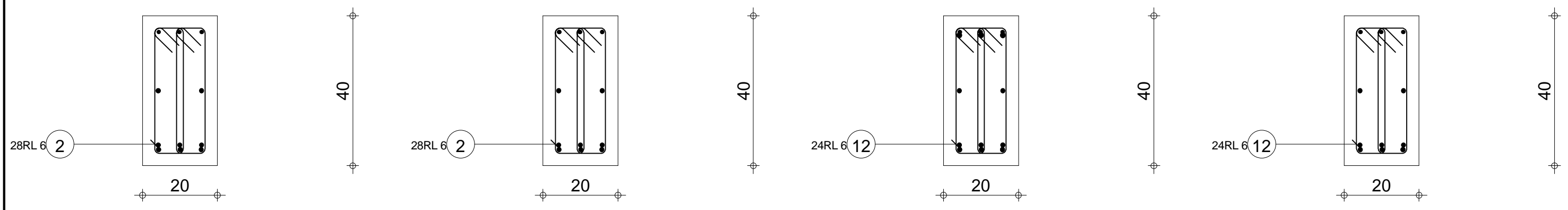


**A-A**

**B-B**

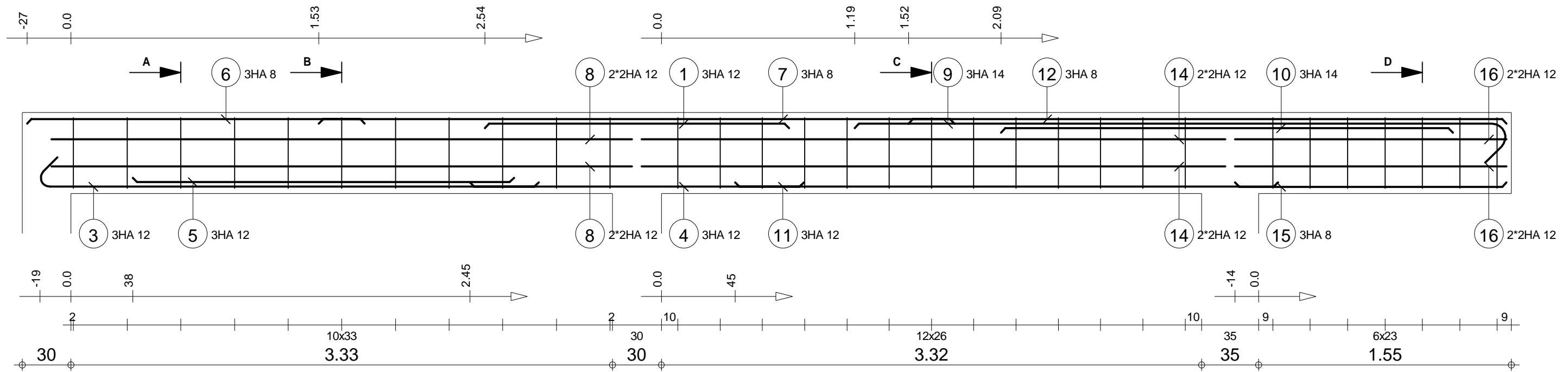
**C-C**

**D-D**

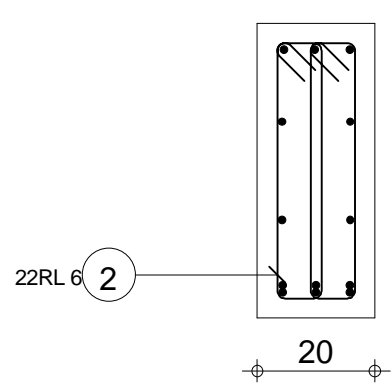


Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=2.00	00	④	3HA 12	l=2.40	00	⑦	3HA 8	l=2.09	00	⑩	6HA 12	l=2.03	00	⑬	2HA 12	l=3.70	00
②	28RL 6	l=96	31	⑤	2HA 12	l=3.54	00	⑧	3HA 12	l=3.41	00	⑪	3HA 12	l=2.67	00				
③	3HA 12	l=3.27	00	⑥	3HA 8	l=3.97	00	⑨	3HA 14	l=2.58	00	⑫	24RL 6	l=96	31				

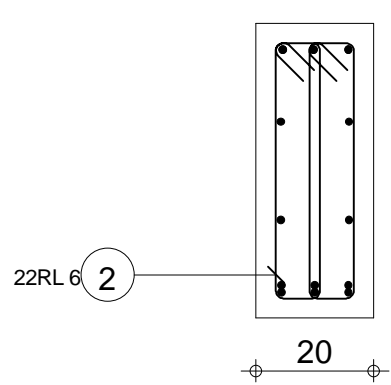
<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 8</b> <b>Section 20x40</b>	Nombre 1	Tél.	Fax	Béton : BETON25 = 0.605 m3	Acier HA 400 = 73.9 kg	
					Enrobage inférieur 3 cm	Acier RL 235 = 11.1 kg	
					Densité = 140.5 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
					Surface du coffrage = 7.59 m2	Echelle pour la vue 4.78cm/m	Echelle pour la section 9.34cm/m
						Page 1/1	



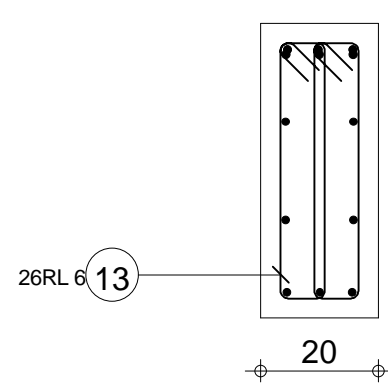
**A-A**



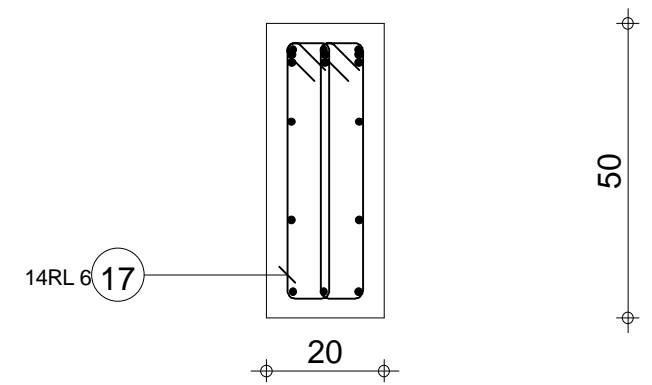
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=1.87	00	④	3HA 12	l=2.05	00	⑦	3HA 8	l=3.91	00	⑩	3HA 14	l=2.78	00	⑬	26RL 6	l=1.16	31
②	22RL 6	l=1.16	31	⑤	3HA 12	l=2.35	00	⑧	2*2HA 12	l=3.57	00	⑪	3HA 12	l=3.34	00	⑭	2*2HA 12	l=3.59	00
③	3HA 12	l=3.26	00	⑥	3HA 8	l=2.08	00	⑨	3HA 14	l=4.25	00	⑫	3HA 8	l=3.68	00	⑮	3HA 8	l=1.67	00

Tél.

Fax

Nombre 1

**R+1**

**PROJET CERME\_PLANS GUIDES**

**POUTRE 9**

**Section 20x50**

Béton : BETON25 = 0.916 m3  
 Enrobage inférieur 3 cm  
 Densité = 131 kg/ m3  
 Surface du coffrage = 11 m2

Acier HA 400 = 105 kg  
 Acier RL 235 = 15.9 kg  
 Enrobage supérieur 3 cm  
 Echelle pour la vue 3.97cm/m  
 Echelle pour la section 7.8cm/m

Enrobage latéral 3 cm

Pos.	Armature		Code	Forme
16	2*2HA 12	l=1.67	00	
17	14RL 6	l=1.15*	31	

Tél.

Fax

**R+1****PROJET CERME\_PLANS GUIDES****POUTRE 9****Section 20x50**

Nombre 1

Béton : BETON25 = 0.916 m3

Enrobage inférieur 3 cm

Densité = 131 kg/ m3

Surface du coffrage = 11 m2

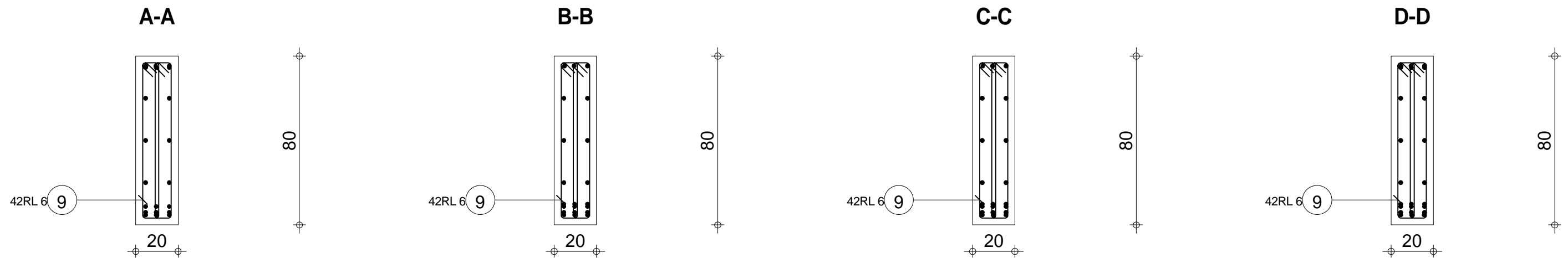
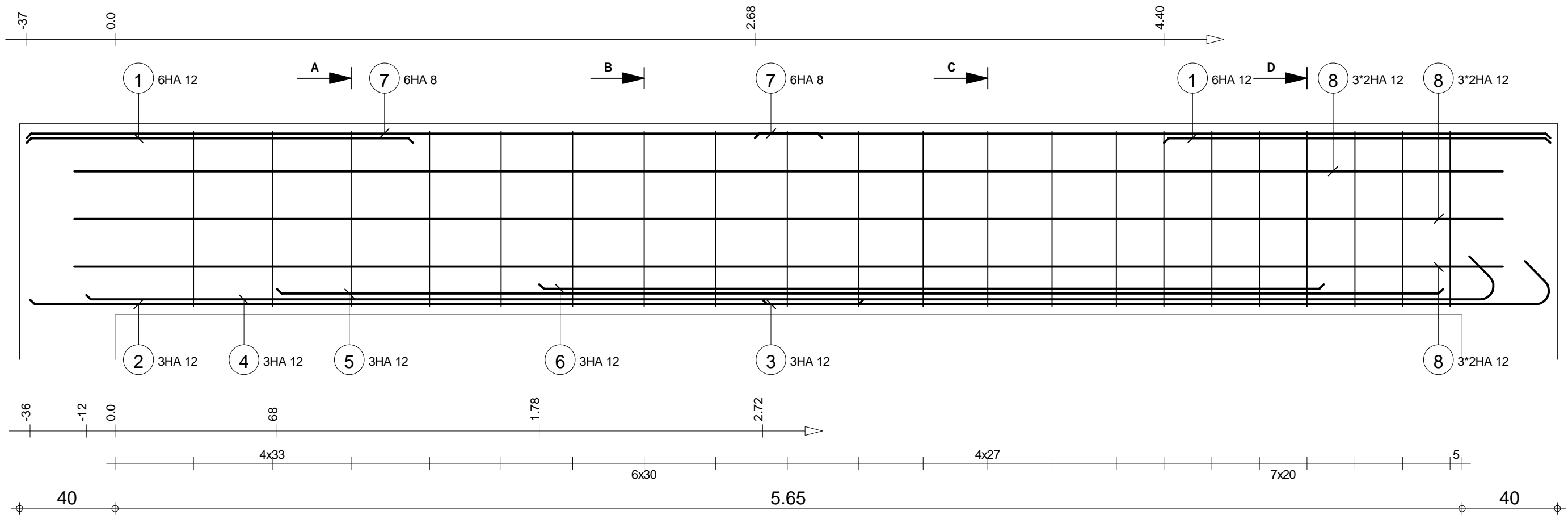
Acier HA 400 = 105 kg

Acier RL 235 = 15.9 kg

Enrobage supérieur 3 cm

Enrobage latéral 3 cm

Page 2/2



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 12	l=1.62	00	④	3HA 12	l=6.10	00	⑦	6HA 8	l=3.34	00
②	3HA 12	l=3.49	00	⑤	3HA 12	l=4.89	00	⑧	3*2HA 12	l=5.99	00
③	3HA 12	l=3.49	00	⑥	3HA 12	l=3.29	00	⑨	42RL 6	l=1.76	31

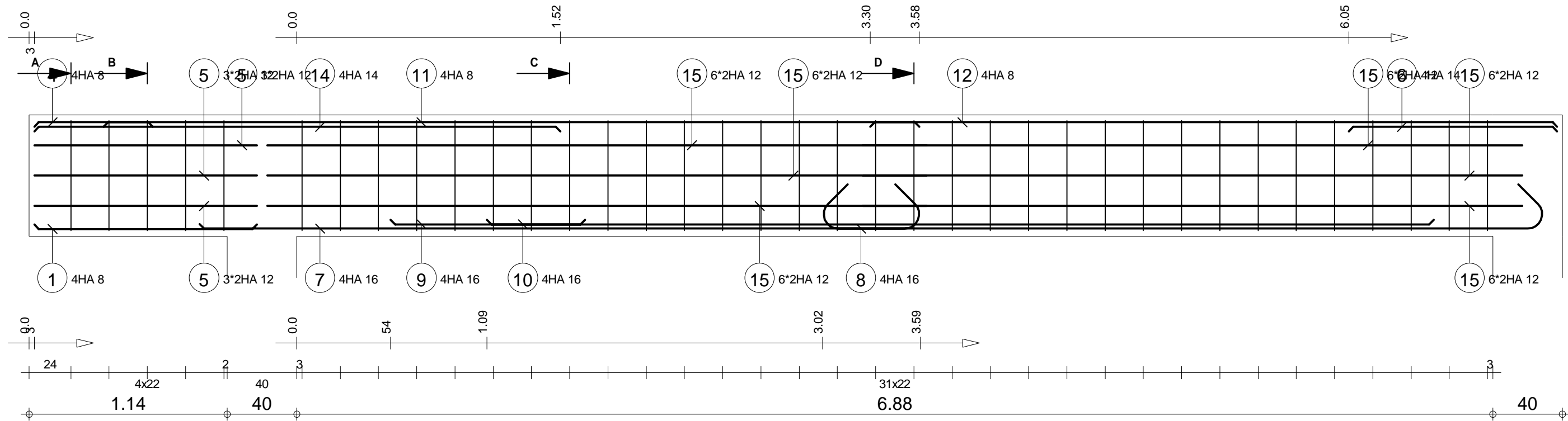
Tél. Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 10**  
**Section 20x80**

Nombre 1

Béton : BETON25 = 1.03 m3	Acier HA 400 = 105 kg	Acier RL 235 = 16.4 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 117.5 kg/ m3	Echelle pour la vue 5.57cm/m	Echelle pour la section 5.05cm/m
Surface du coffrage = 11.8 m2		Page 1/1

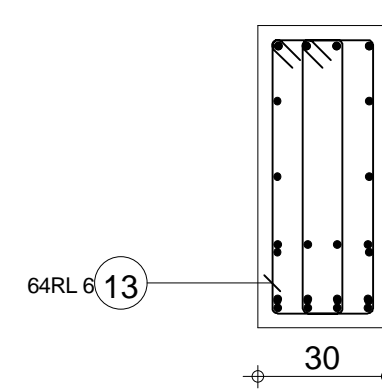
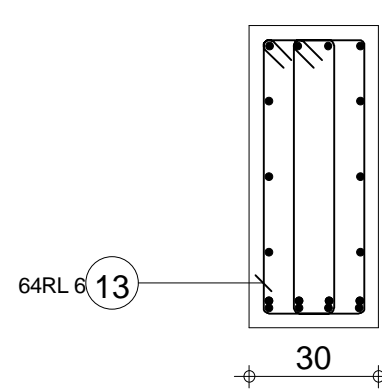
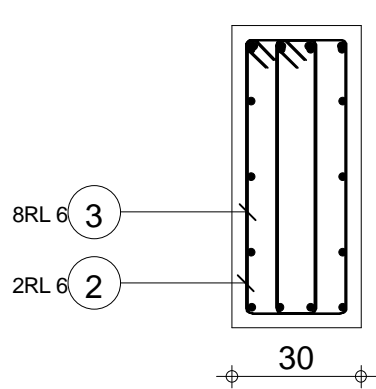
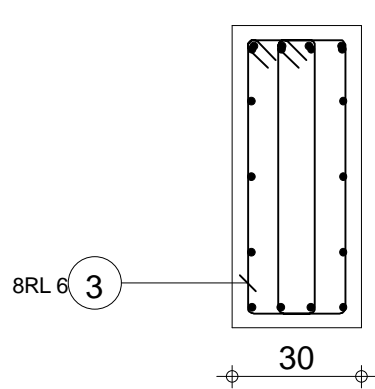


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	4HA 8	l=1.28	00	④	4HA 8	l=68	00	⑦	4HA 16	l=4.41	00	⑩	4HA 16	l=5.45	00	⑬	64RL 6	l=1.73	31
②	2RL 6	l=1.73	31	⑤	3*2HA 12	l=1.28	00	⑧	4HA 16	l=4.68	00	⑪	4HA 8	l=4.69	00	⑭	4HA 14	l=3.03	00
③	8RL 6	l=1.72	31	⑥	4HA 14	l=1.20	00	⑨	4HA 16	l=1.12	00	⑫	4HA 8	l=3.95	00	⑮	6*2HA 12	l=3.79	00

Tél.

Fax

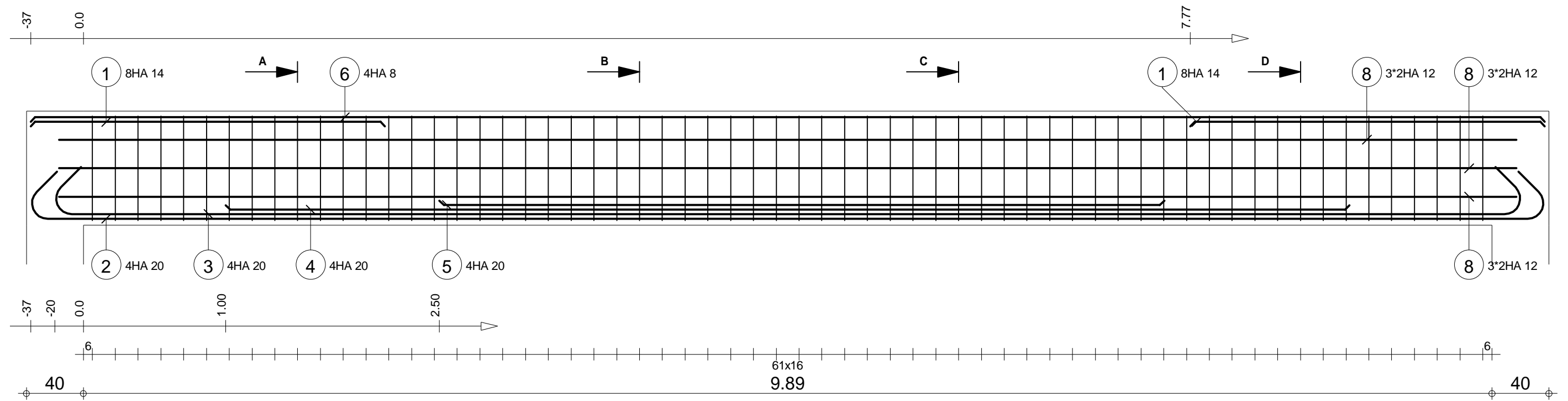
Nombre 1

**R+1**

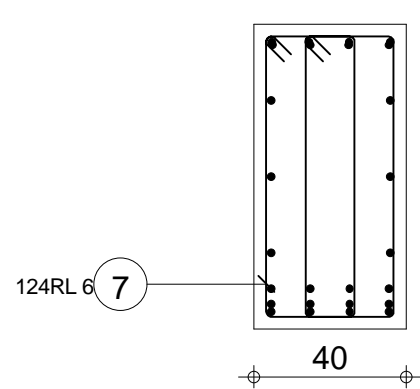
**PROJET CERME\_PLANS GUIDES**

**POUTRE 12**  
**Section 30x70**

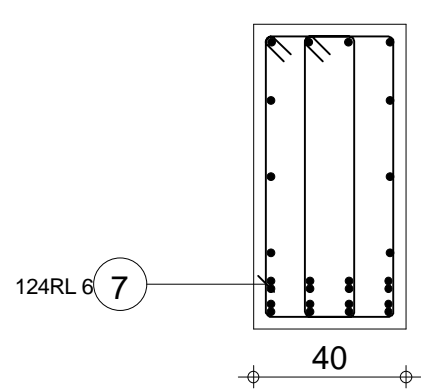
Béton : BETON25 = 1.85 m3	Acier HA 400 = 183 kg
Enrobage inférieur 3 cm	Acier RL 235 = 28.4 kg
Densité = 114.6 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 15.2 m2	Enrobage latéral 3 cm
Echelle pour la vue 4.12cm/m	Page 1/1
Echelle pour la section 5.71cm/m	



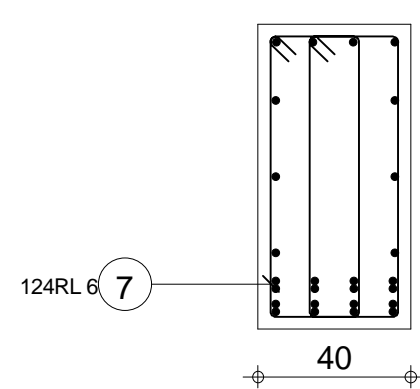
**A-A**



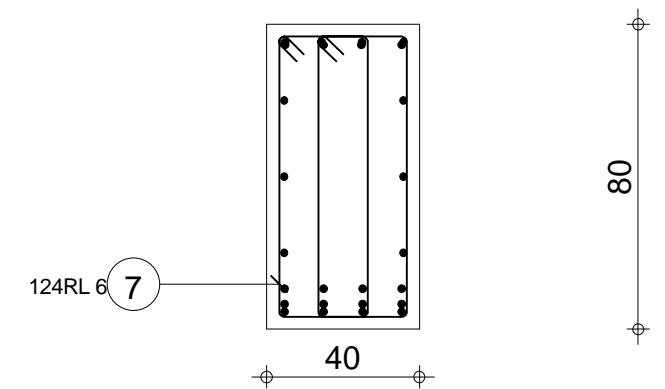
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 14	l=2.49	00	④	4HA 20	l=7.89	00	⑦	124RL 6	l=2.07	31
②	4HA 20	l=11.31	00	⑤	4HA 20	l=5.09	00	⑧	3*2HA 12	l=10.23	00
③	4HA 20	l=10.97	00	⑥	4HA 8	l=10.63	00				

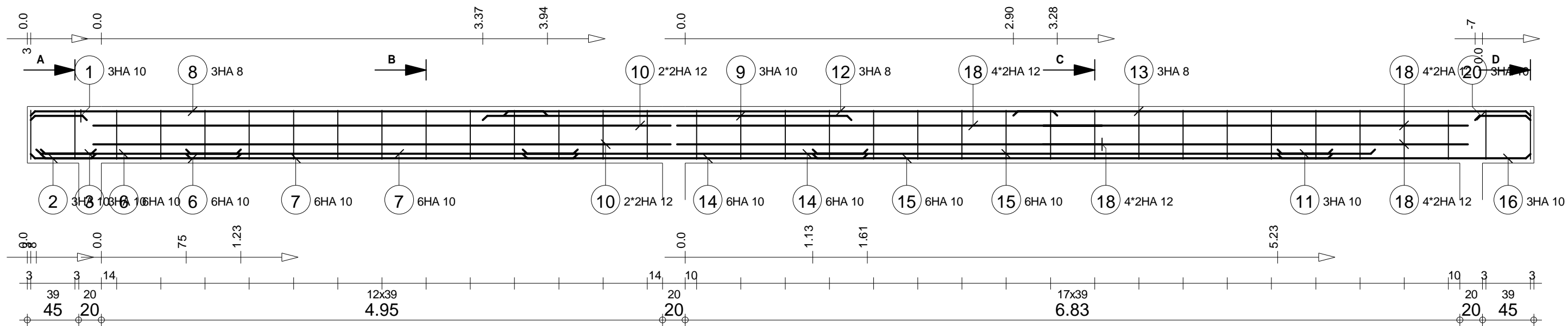
Tél. Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

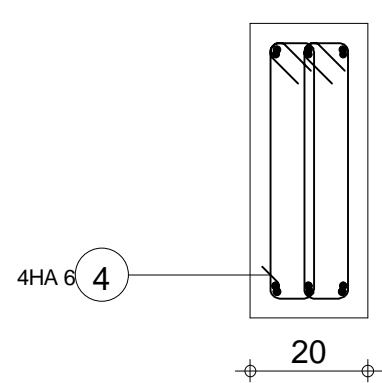
**POUTRE 13**  
**Section 40x80**

Nombre 1

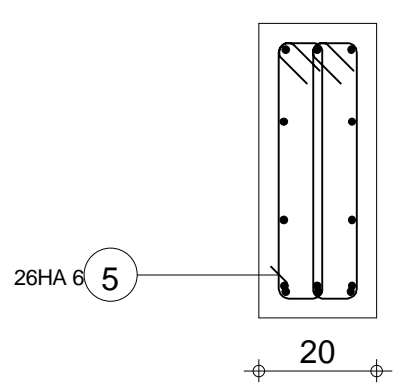
Béton : BETON25 = 3.42 m3	Acier HA 400 = 443 kg
Enrobage inférieur 3 cm	Acier RL 235 = 56.9 kg
Densité = 146.2 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 21.7 m2	Enrobage latéral 3 cm
Echelle pour la vue 3.42cm/m	Echelle pour la section 5.05cm/m
	Page 1/1



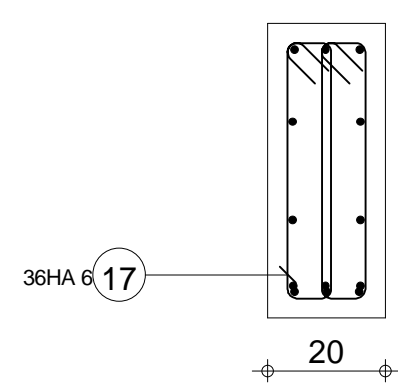
**A-A**



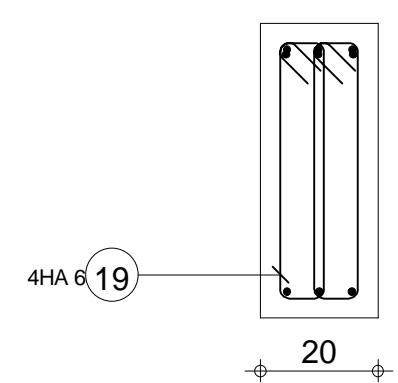
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme		
①	3HA 10	l=49	00	49	④	4HA 6	l=1.16	31	⑦	6HA 10	l=3.45	00	⑩	2*2HA 12	l=5.09	00	⑬	3HA 8	l=4.56	00	
②	3HA 10	l=57	00	57	⑤	26HA 6	l=1.16	31	⑧	3HA 8	l=4.56	00	⑪	3HA 10	l=86	00	⑭	6HA 10	l=3.04	00	
③	3HA 10	l=52	00	52	⑥	6HA 10	l=1.76	00	1.76	⑨	3HA 10	l=3.25	00	⑫	3HA 8	l=4.88	00	⑮	6HA 10	l=4.58	00

Tél. Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 14**  
**Section 20x50**

Nombre 1

Acier HA 500 = 124 kg	Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Acier HA 500 = 18 kg	Densité = 106.8 kg/ m3	Echelle pour la vue 2.77cm/m	Page 1/2
	Surface du coffrage = 16 m2	Echelle pour la section 7.8cm/m	

Pos.	Armature		Code	Forme
16	3HA 10	l=2.23	00	
17	36HA 6	l=1.16	31	
18	4*2HA 12	l=3.75	00	
19	4HA 6	l=1.16	31	
20	3HA 10	l=49	00	

Tél.

Fax

**R+1****PROJET CERME\_PLANS GUIDES****POUTRE 14****Section 20x50**

Nombre 1

Acier HA 500 = 124 kg

Acier HA 500 = 18 kg

Enrobage inférieur 3 cm

Enrobage supérieur 3 cm

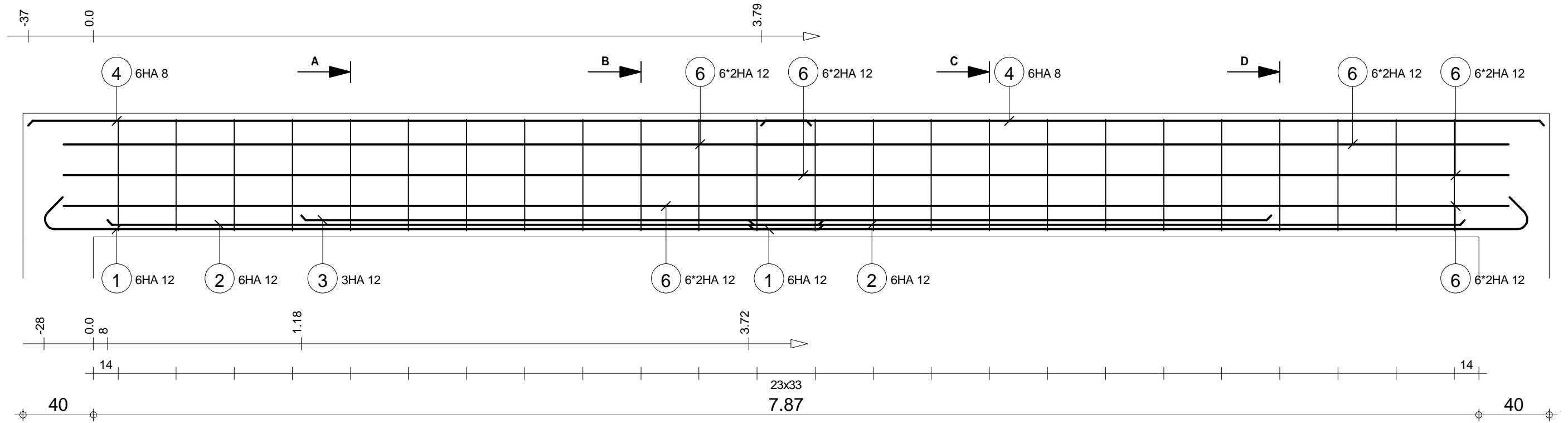
Enrobage latéral 3 cm

Densité = 106.8 kg/ m3

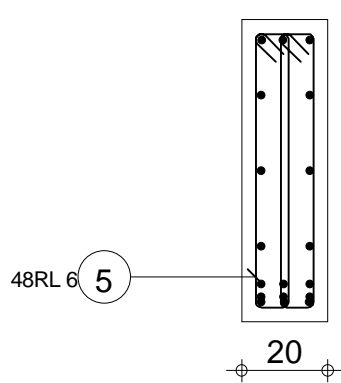
Surface du coffrage = 16 m2

Page 2/2

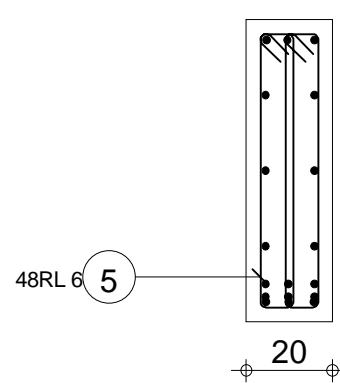




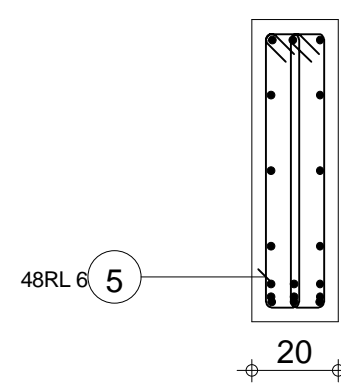
**A-A**



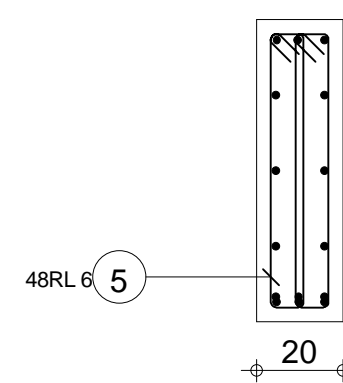
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 12	l=4.62	00	④	6HA 8	l=4.45	00
②	6HA 12	l=4.07	00	⑤	48RL 6	l=1.56	31
③	3HA 12	l=5.51	00	⑥	6*2HA 12	l=4.29	00

Tél.

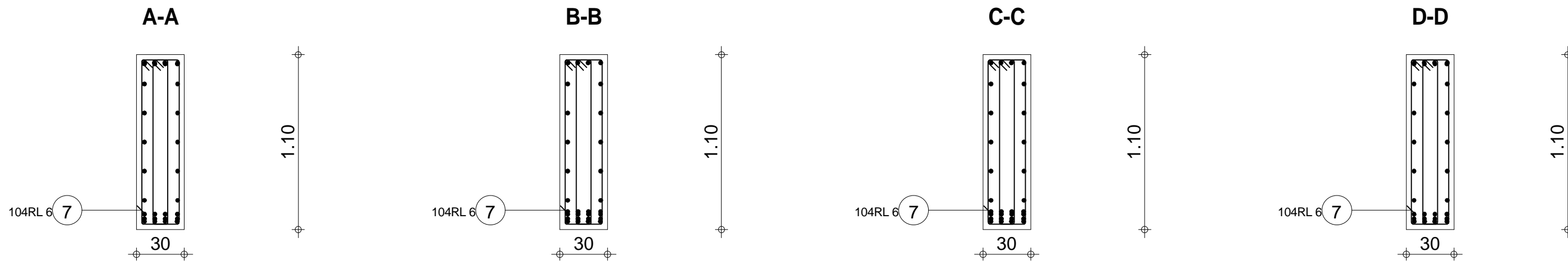
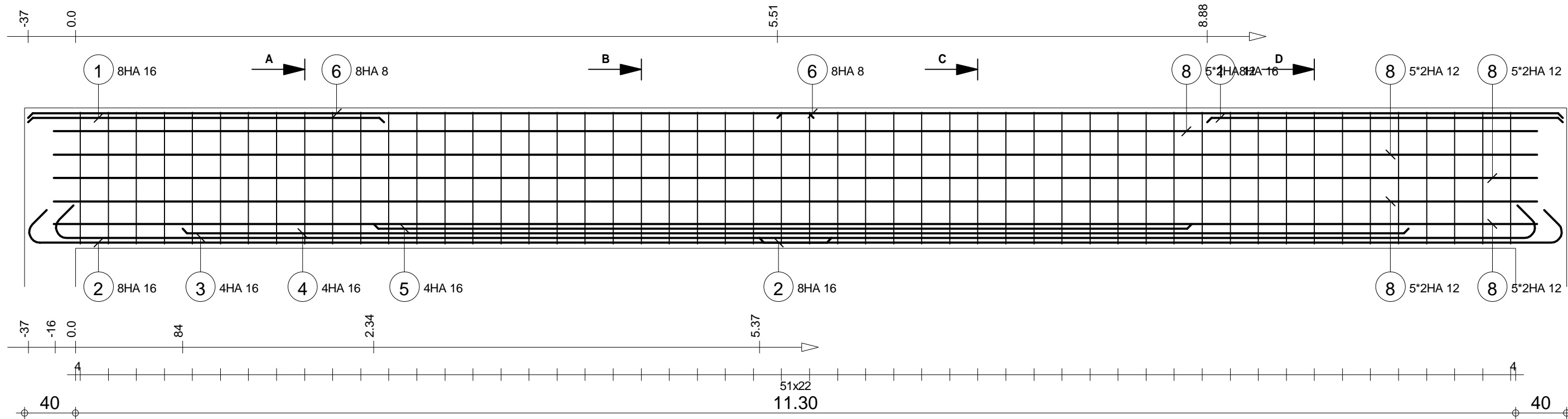
Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 15**  
**Section 20x70**

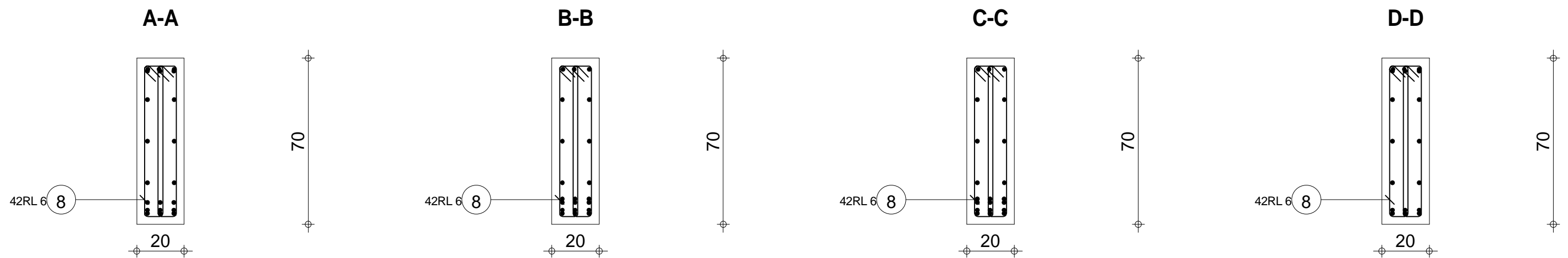
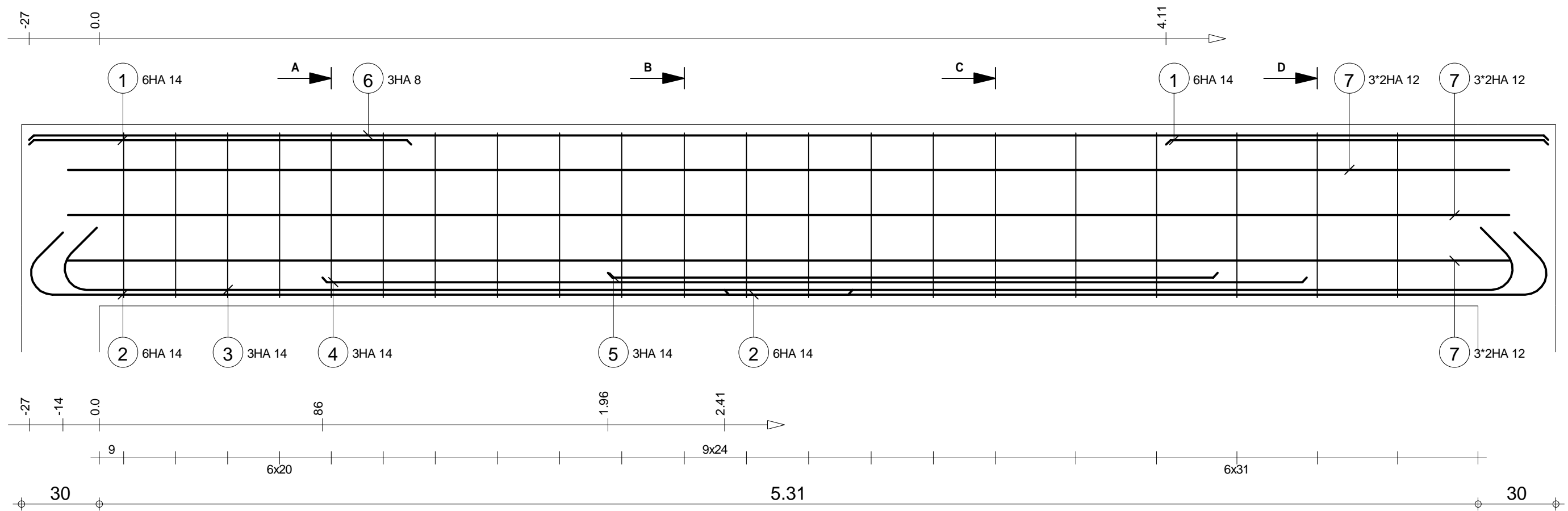
Nombre 1

Béton : BETON25 = 1.21 m3	Acier HA 400 = 117 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 16.6 kg	
Densité = 110.7 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 14 m2	Echelle pour la vue 4.18cm/m	Echelle pour la section 5.71cm/m
		Page 1/1



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 16	l=2.79	00	④	4HA 16	l=9.62	00	⑦	104RL 6	l=2.53	31
②	8HA 16	l=6.57	00	⑤	4HA 16	l=6.42	00	⑧	5*2HA 12	l=11.64	00
③	4HA 16	l=12.15	00	⑥	8HA 8	l=6.16	00				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 16 AVEC REMONTEE DE 35CM</b> <b>Section 30x110</b>	Nombre 1	Tél.                      Fax		Béton : BETON25 = 3.99 m3	Acier HA 400 = 419 kg
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm	
			Densité = 119.5 kg/ m3 Surface du coffrage = 30.7 m2	Echelle pour la vue 3.03cm/m Echelle pour la section 3.76cm/m	Page 1/1	



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 14	l=1.47	00	④	3HA 14	l=3.79	00	⑦	3*2HA 12	l=5.55	00
②	6HA 14	l=3.42	00	⑤	3HA 14	l=2.35	00	⑧	42RL 6	l=1.56	31
③	3HA 14	l=6.08	00	⑥	3HA 8	l=5.85	00				

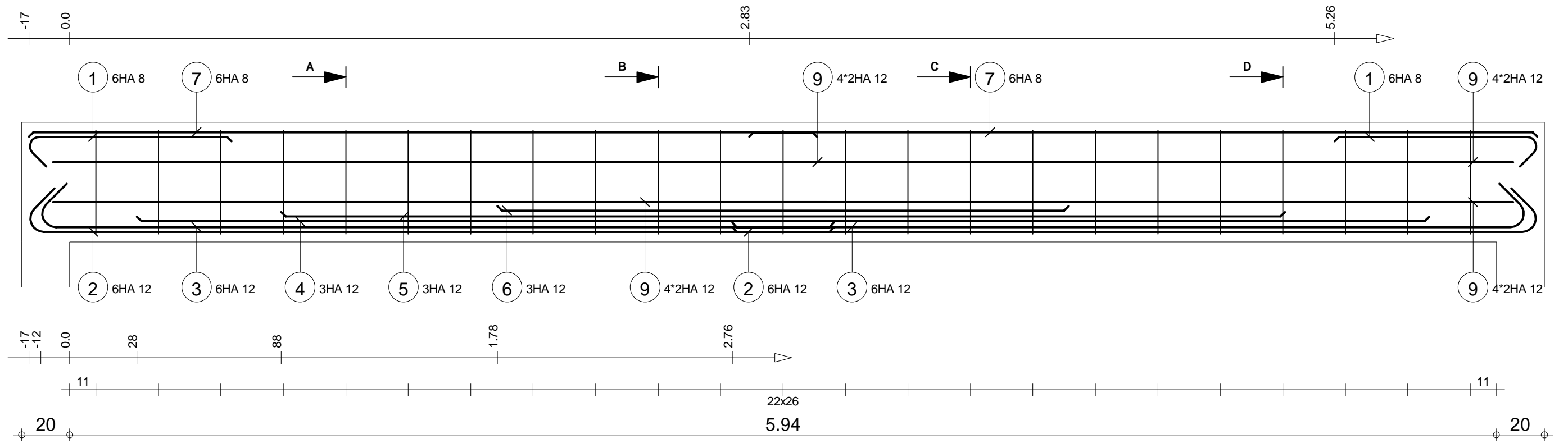
Tél. Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

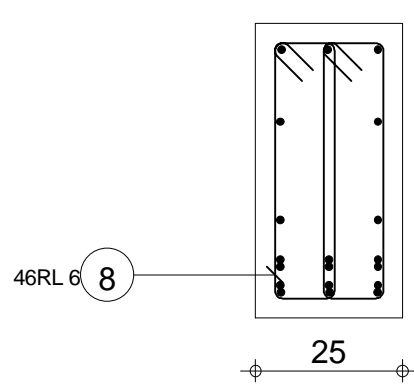
**POUTRE 17**  
**Section 20x70**

Nombre 1

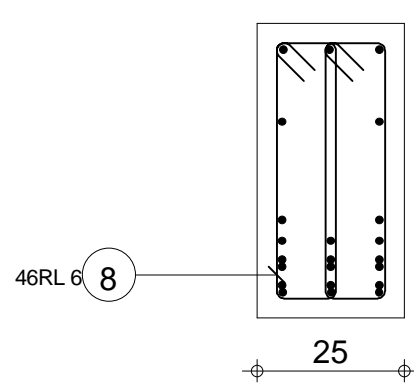
Béton : BETON25 = 0.828 m3	Acier HA 400 = 116 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 14.5 kg	
Densité = 158.2 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 9.62 m2	Echelle pour la vue 6.05cm/m	Echelle pour la section 5.71cm/m
		Page 1/1



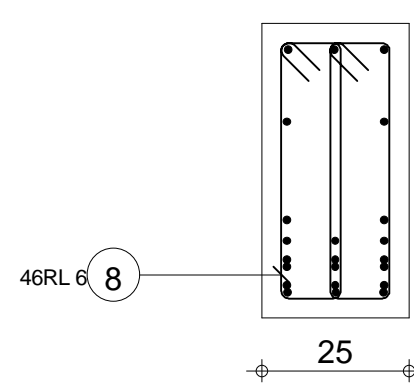
**A-A**



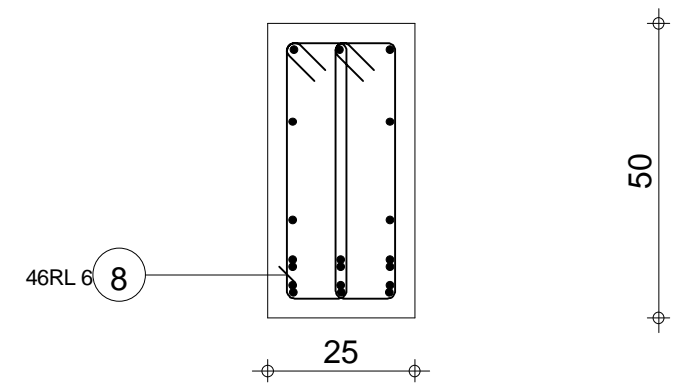
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 8	l=97	00	④	3HA 12	l=5.38	00	⑦	6HA 8	l=3.28	00
②	6HA 12	l=3.54	00	⑤	3HA 12	l=4.18	00	⑧	46RL 6	l=1.21	31
③	6HA 12	l=3.49	00	⑥	3HA 12	l=2.38	00	⑨	4*2HA 12	l=3.22	00

Tél.

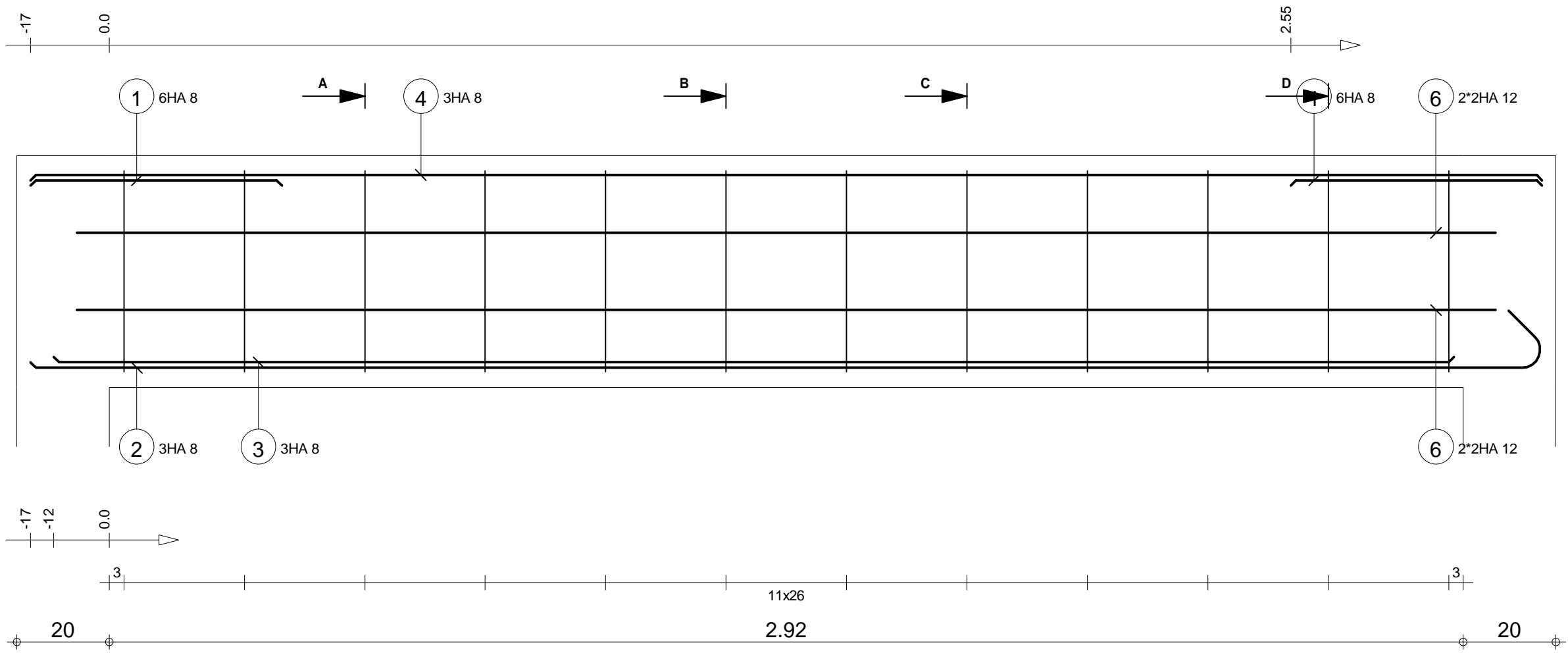
Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 18**  
**Section 25x50**

Nombre 1

Béton : BETON25 = 0.792 m3	Acier HA 400 = 102 kg	Acier RL 235 = 12.3 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 145.2 kg/ m3	Echelle pour la vue 5.67cm/m	Echelle pour la section 7.8cm/m
Surface du coffrage = 8.07 m2		Page 1/1

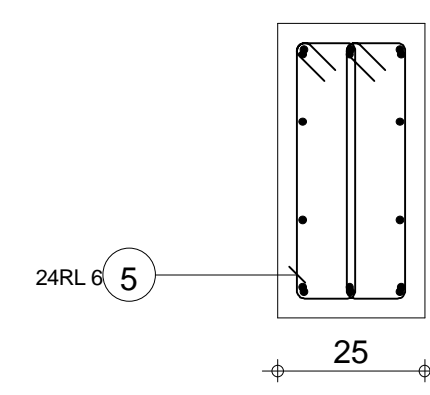
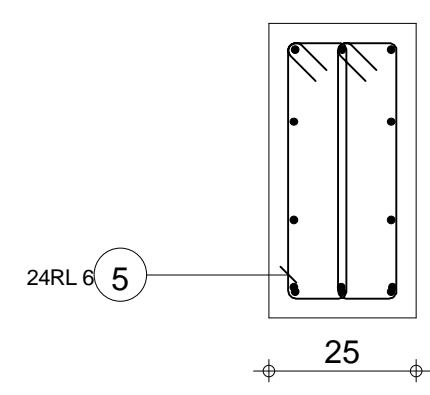
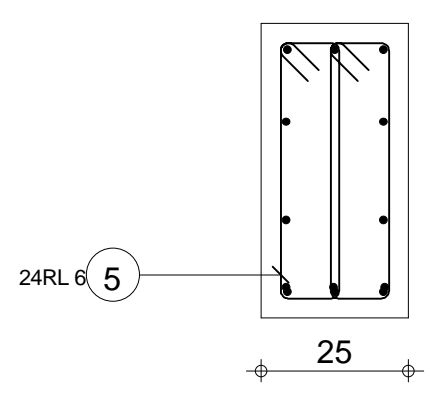
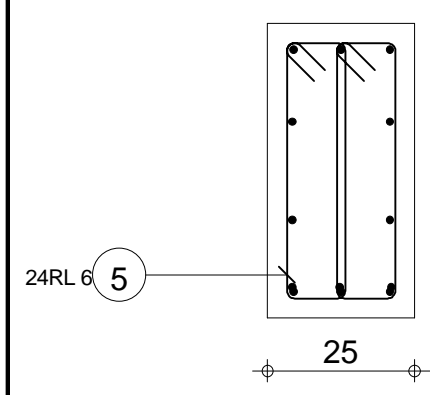


**A-A**

**B-B**

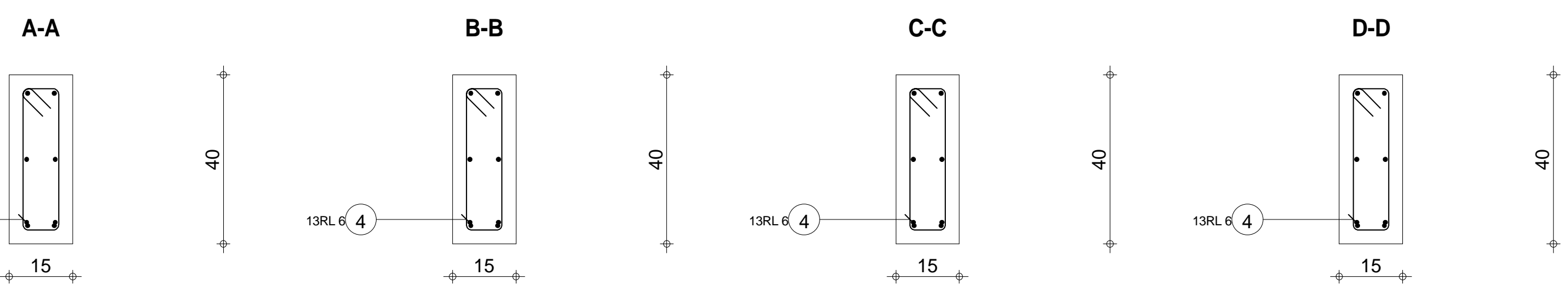
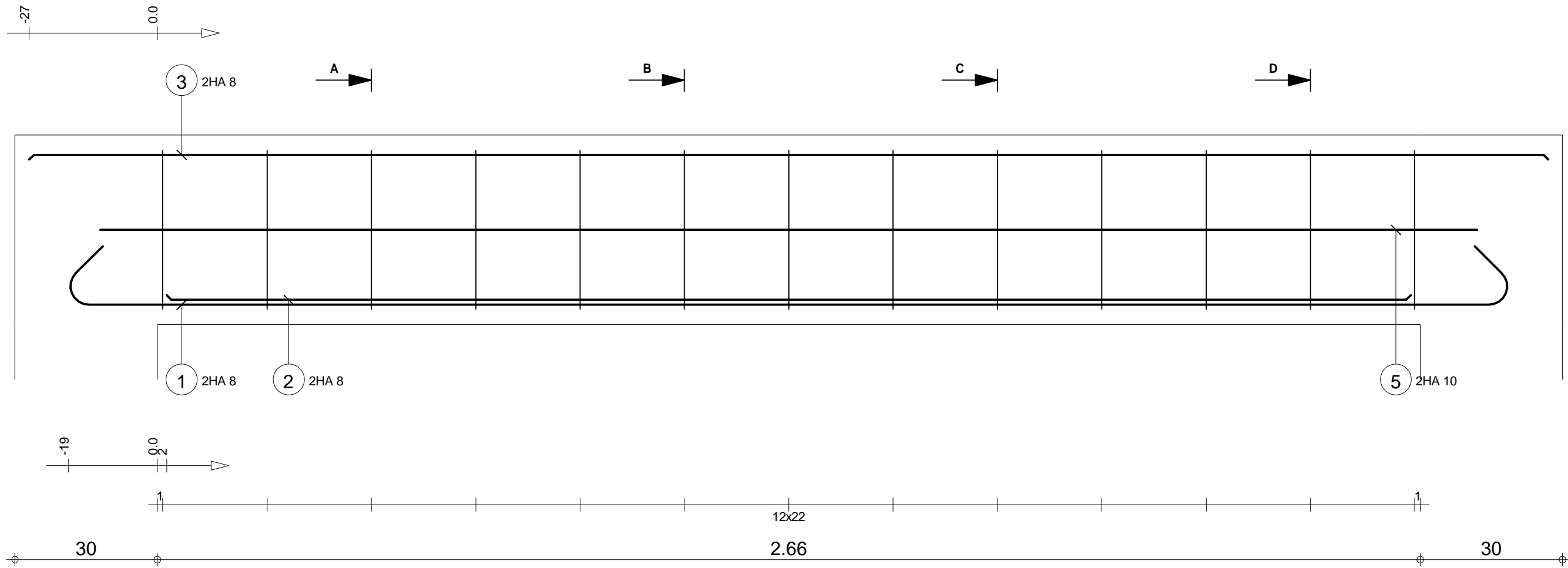
**C-C**

**D-D**



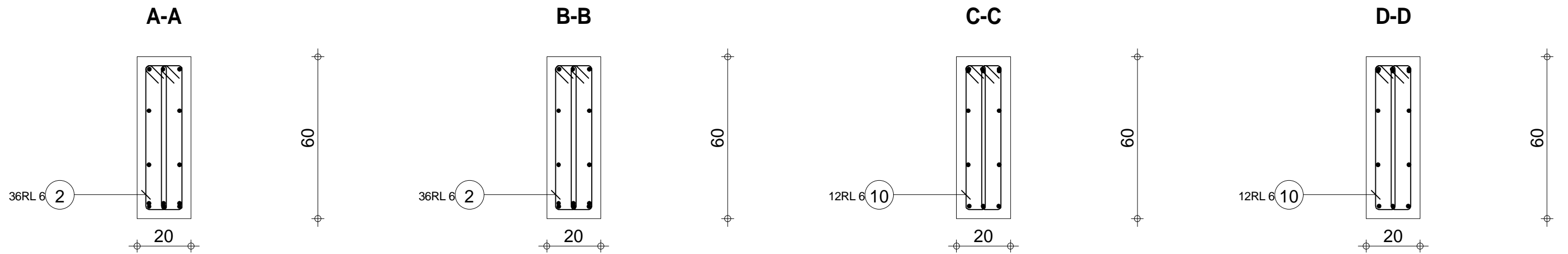
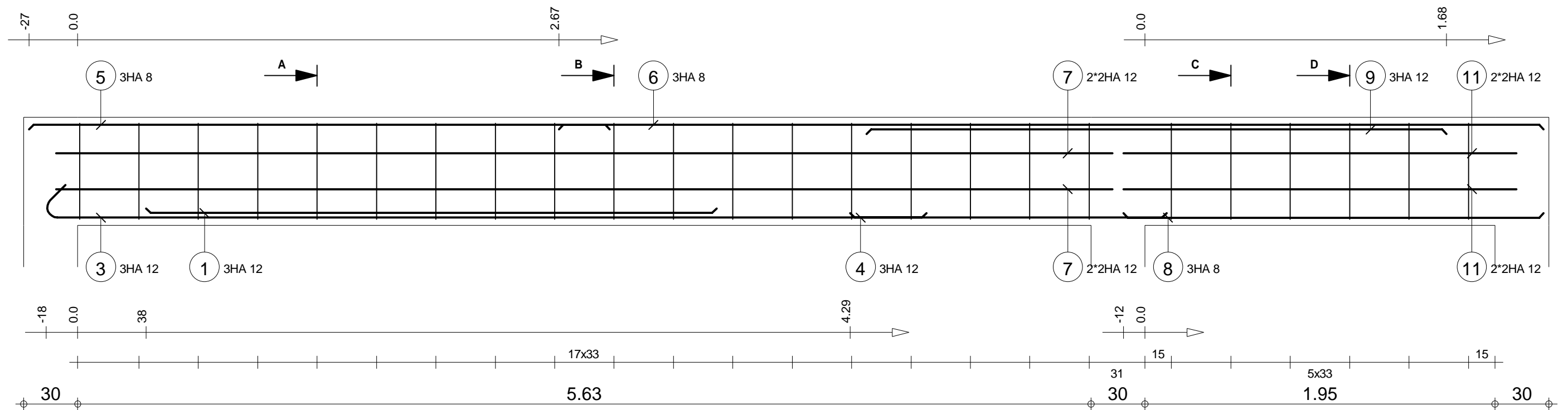
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	6HA 8	l=54	00	④	3HA 8	l=3.26	00
②	3HA 8	l=3.39	00	⑤	24RL 6	l=1.21	31
③	3HA 8	l=3.02	00	⑥	2*2HA 12	l=3.06	00

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 19</b> <b>Section 25x50</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 0.415 m3	Acier HA 400 = 23.6 kg
				Enrobage inférieur 3 cm	Acier RL 235 = 6.42 kg
				Densité = 72.29 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 4.3 m2	Enrobage latéral 3 cm	Echelle pour la vue 9.33cm/m	Echelle pour la section 7.8cm/m	Page 1/1	



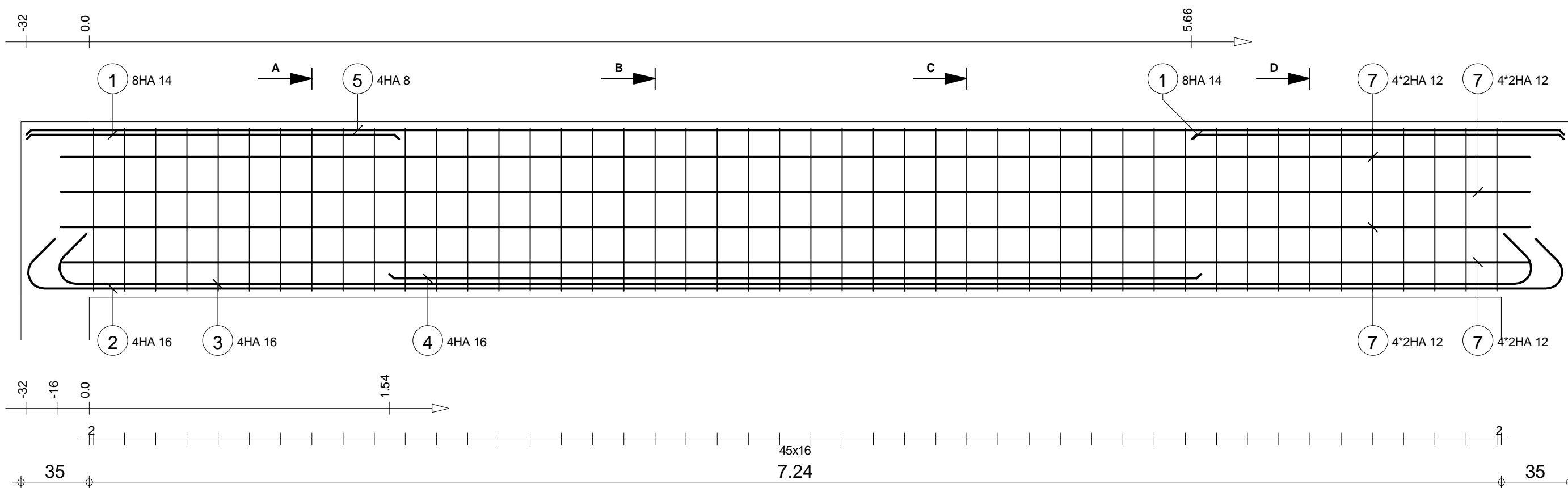
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	
①	2HA 8	l=3.29	00	↔ 3.04 ↔	④	13RL 6	l=98	31
②	2HA 8	l=2.62	00	— 2.62 —	⑤	2HA 10	l=2.90	00
③	2HA 8	l=3.20	00	— 3.20 —				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 20</b> <b>Section 15x40</b>	Tél.	Fax		Acier HA 400 = 10.8 kg Acier RL 235 = 2.81 kg
				Nombre 1	Enrobage inférieur 3 cm Enrobage supérieur 3 cm Enrobage latéral 3 cm
				Densité = 69.39 kg/ m3 Surface du coffrage = 3.13 m2	Echelle pour la vue 10.7cm/m Echelle pour la section 9.55cm/m



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=3.17	00	④	3HA 12	l=1.76	00	⑦	2*2HA 12	l=5.87	00	⑩	12RL 6	l=1.35	31
②	36RL 6	l=1.36	31	⑤	3HA 8	l=3.23	00	⑧	3HA 8	l=2.34	00	⑪	2*2HA 12	l=2.19	00
③	3HA 12	l=5.08	00	⑥	3HA 8	l=5.47	00	⑨	3HA 12	l=3.22	00				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 21</b> <b>Section 20x60</b>	Nombre 1	Tél.	Fax	Béton : BETON25 = 1.02 m3	Acier HA 400 = 76.9 kg
					Enrobage inférieur 3 cm	Acier RL 235 = 14.5 kg
					Densité = 89.61 kg/m3	Enrobage supérieur 3 cm
					Surface du coffrage = 11.9 m2	Echelle pour la vue 4.28cm/m
						Echelle pour la section 6.58cm/m
						Page 1/1

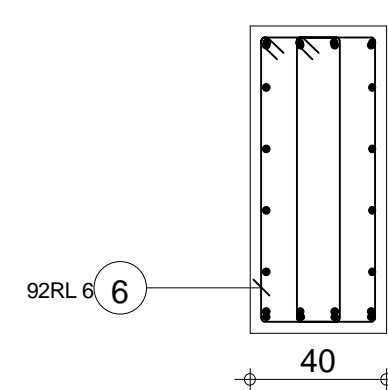
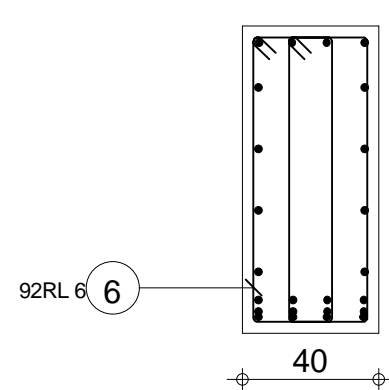
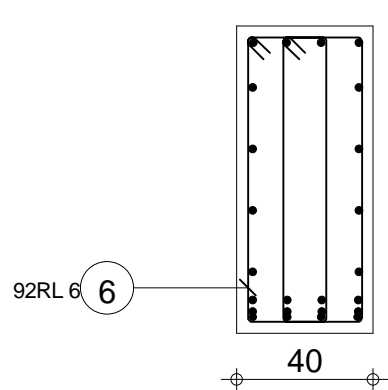
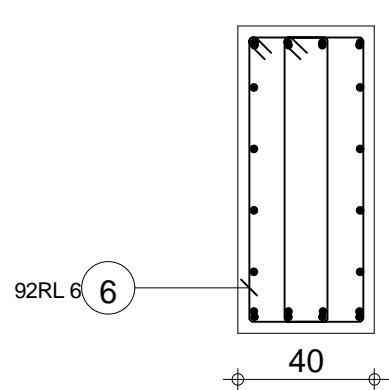


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 14	l=1.91	00	④	4HA 16	l=4.16	00	⑦	4*2HA 12	l=7.53	00
②	4HA 16	l=8.41	00	⑤	4HA 8	l=7.88	00				
③	4HA 16	l=8.09	00	⑥	92RL 6	l=2.27	31				

Tél. Fax

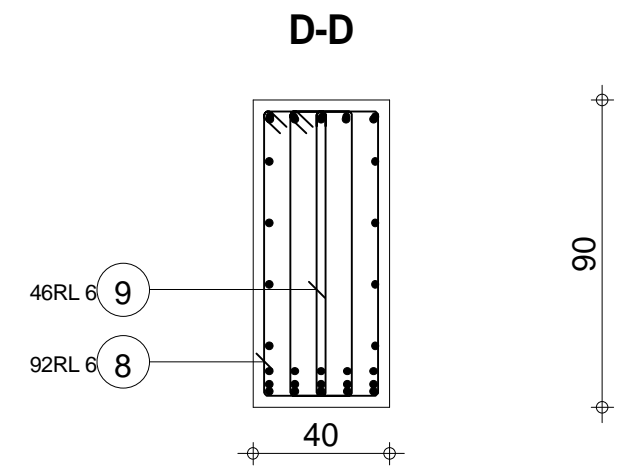
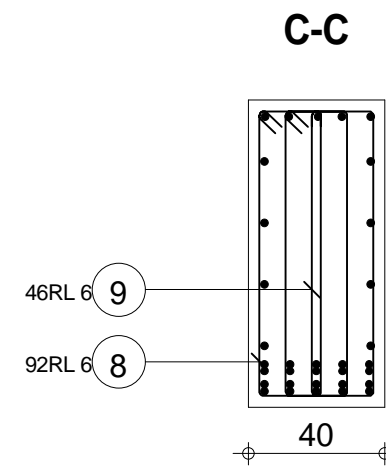
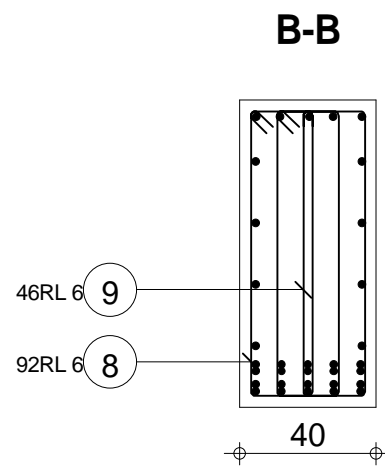
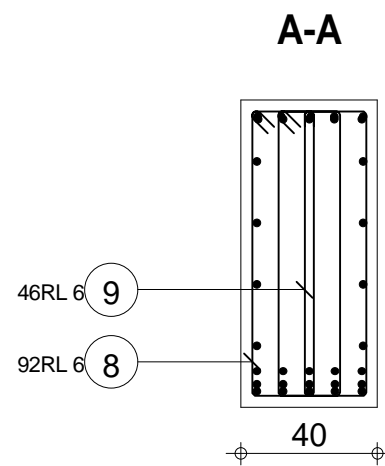
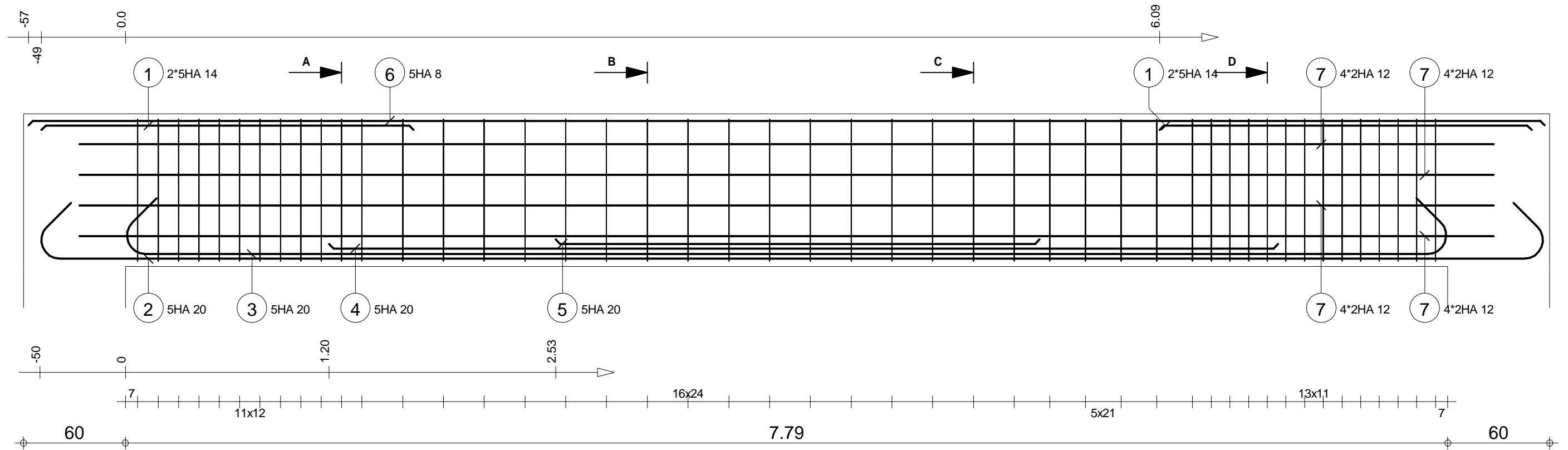
**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 22**  
**Section 40x90**

Nombre 1

Béton : BETON25 = 2.86 m3	Acier HA 400 = 215 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 46.3 kg	
Densité = 91.26 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 17.9 m2	Echelle pour la vue 4.55cm/m	Echelle pour la section 4.52cm/m
		Page 1/1





Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	2*5HA 14	l=2.19	00	④	5HA 20	l=5.59	00	⑦	4*2HA 12	l=8.33	00
②	5HA 20	l=9.54	00	⑤	5HA 20	l=2.85	00	⑧	92RL 6	l=2.32	31
③	5HA 20	l=8.46	00	⑥	5HA 8	l=8.93	00	⑨	46RL 6	l=1.80	

Tél.

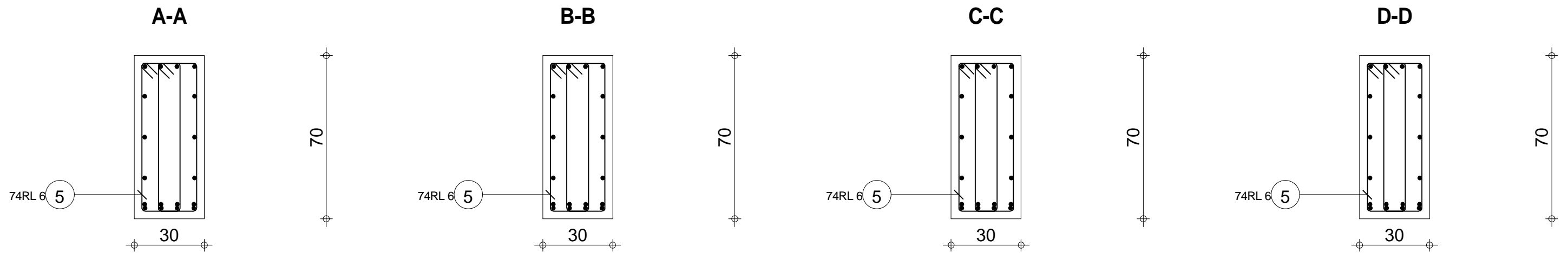
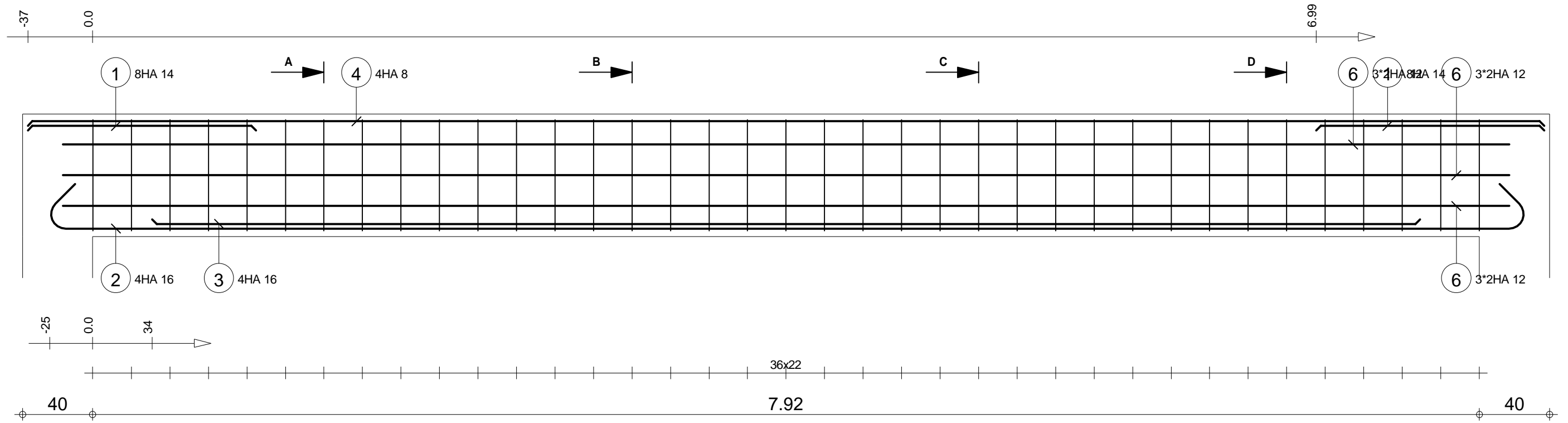
Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 23**  
**Section 40x90**

Nombre 1

Béton : BETON25 = 3.24 m3	Acier HA 400 = 429 kg	Acier RL 235 = 65.7 kg
Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Densité = 152.8 kg/ m3	Echelle pour la vue 4.04cm/m	Echelle pour la section 4.52cm/m
Surface du coffrage = 20 m2		Page 1/1



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 14	l=1.30	00	④	4HA 8	l=8.66	00
②	4HA 16	l=8.96	00	⑤	74RL 6	l=1.73	31
③	4HA 16	l=7.24	00	⑥	3*2HA 12	l=8.26	00

Tél.

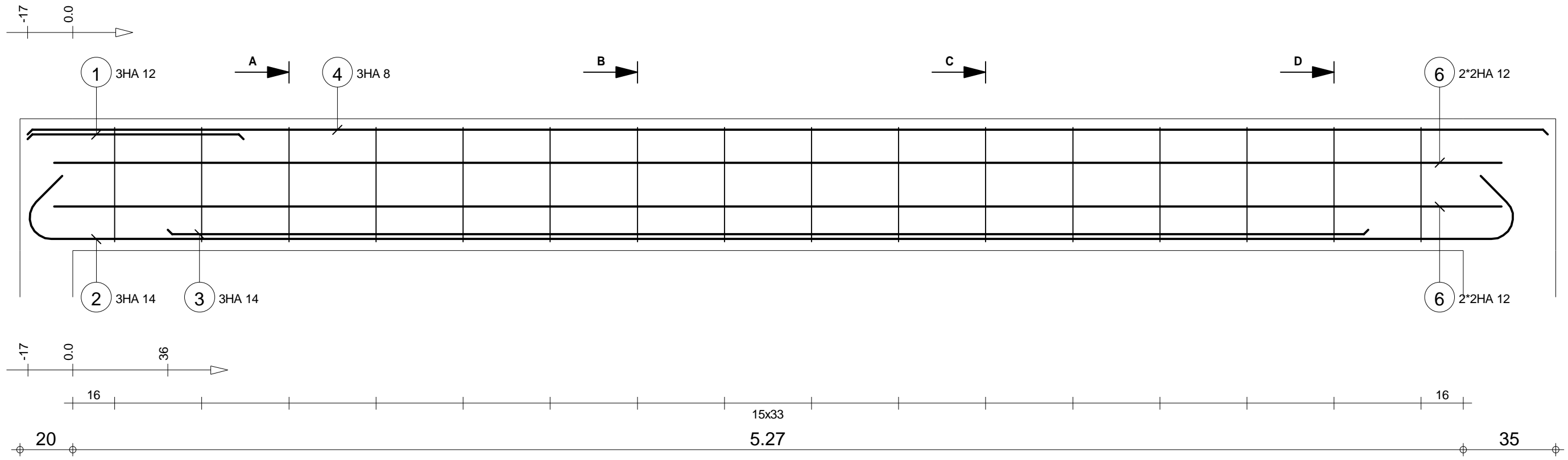
Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

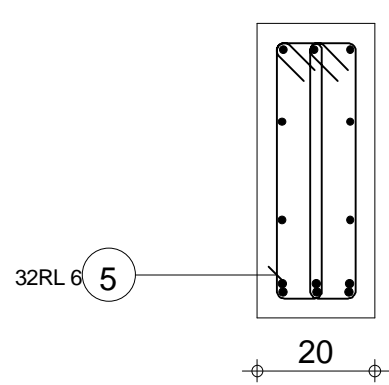
**POUTRE 24**  
**Section 30x70**

Nombre 1

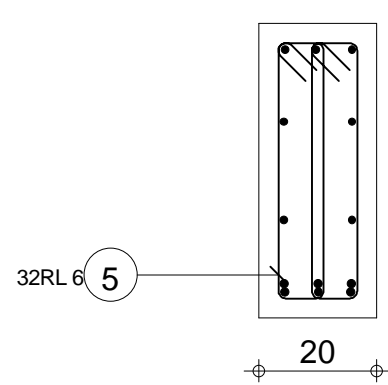
Béton : BETON25 = 1.83 m3	Acier HA 400 = 173 kg	
Enrobage inférieur 3 cm	Acier RL 235 = 28.5 kg	
Densité = 109.8 kg/m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
Surface du coffrage = 15 m2	Echelle pour la vue 4.16cm/m	Echelle pour la section 5.71cm/m
		Page 1/1



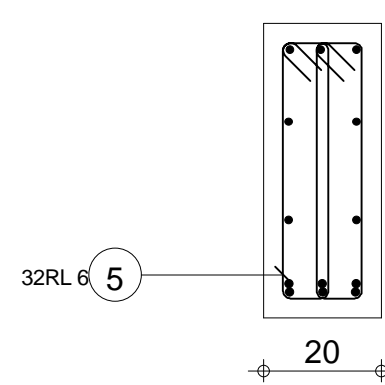
**A-A**



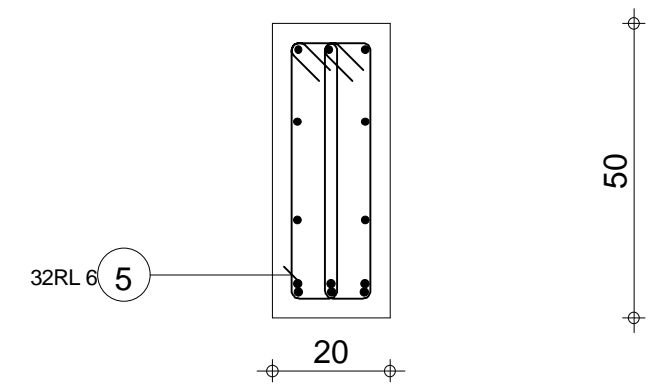
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=82	00	④	3HA 8	l=5.76	00
②	3HA 14	l=6.12	00	⑤	32RL 6	l=1.16	31
③	3HA 14	l=4.55	00	⑥	2*2HA 12	l=5.48	00

Tél.

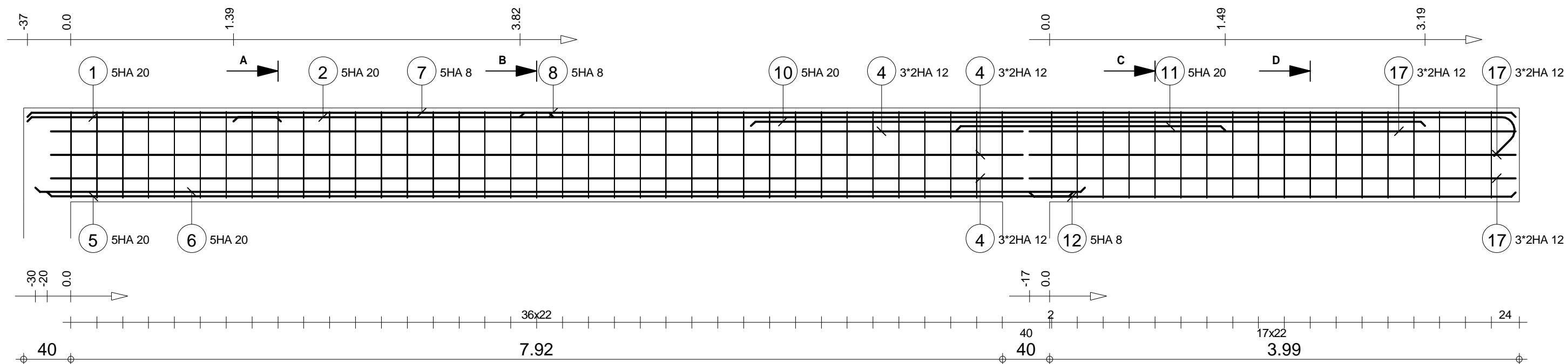
Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

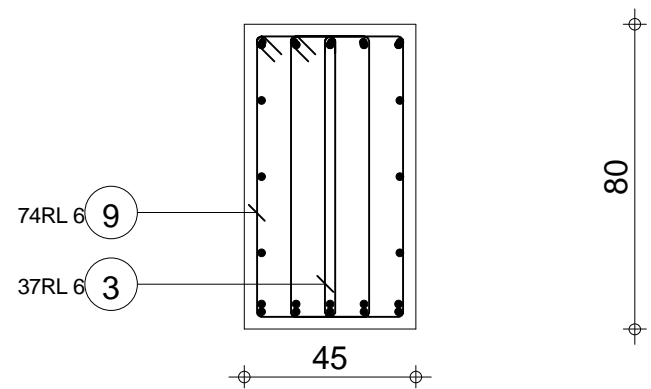
**POUTRE 25**  
**Section 20x50**

Nombre 1

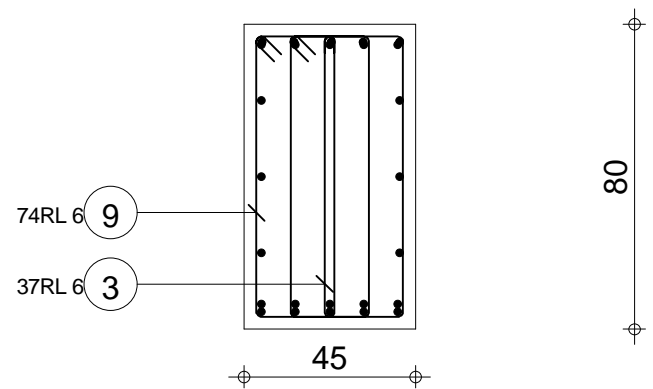
Béton : BETON25 = 0.582 m3	Acier HA 400 = 67.2 kg
Enrobage inférieur 3 cm	Acier RL 235 = 8.24 kg
Densité = 129.6 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 7.07 m2	Enrobage latéral 3 cm
Echelle pour la vue 6.15cm/m	Page 1/1
Echelle pour la section 7.8cm/m	



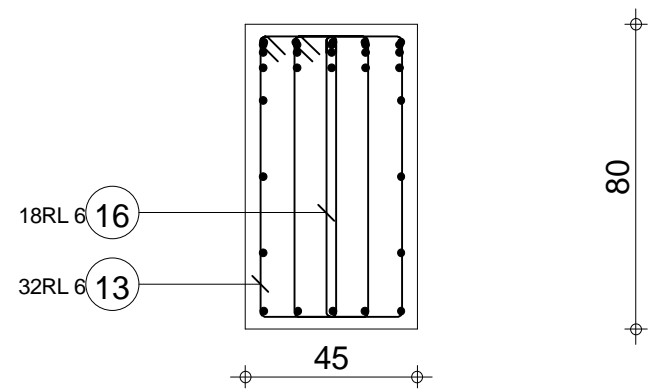
**A-A**



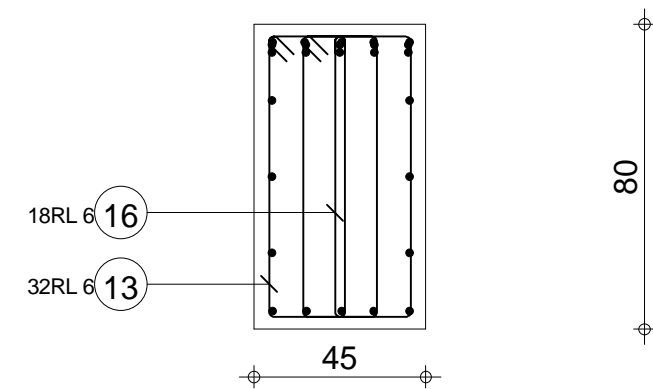
**B-B**



**C-C**



**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme					
1	5HA 20	l=2.16	00	2.15	4	3*2HA 12	l=8.26	00	8.26	7	5HA 8	l=4.47	00	4.47	10	5HA 20	l=5.73	00	5.73	13	32RL 6	l=2.17	31	
2	5HA 20	l=11.24	00	10.90	5	5HA 20	l=8.72	00	8.72	8	5HA 8	l=8.47	00	8.47	11	5HA 20	l=2.28	00	2.28	14	3RL 6	l=2.20	31	
3	37RL 6	l=1.60			6	5HA 20	l=8.92	00	8.92	9	74RL 6	l=2.20	31		12	5HA 8	l=4.13	00	4.13	15	1RL 6	l=2.18	31	

Tél.



Fax

Nombre 1

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 26**  
**Section 45x80**

Béton : BETON25 = 4.58 m3	Acier HA 400 = 581 kg
Enrobage inférieur 3 cm	Acier RL 235 = 72.9 kg
Densité = 142.8 kg/m3	Enrobage supérieur 3 cm
Surface du coffrage = 26.4 m2	Enrobage latéral 3 cm
Echelle pour la vue 2.89cm/m	Page 1/2
Echelle pour la section 5.05cm/m	

Pos.	Armature		Code	Forme
16	18RL 6	l=1.60		
17	3*2HA 12	l=4.13	00	

Tél.

Fax

**R+1****PROJET CERME\_PLANS GUIDES****POUTRE 26****Section 45x80****Nombre 1**

Béton : BETON25 = 4.58 m3

Enrobage inférieur 3 cm

Densité = 142.8 kg/ m3

Surface du coffrage = 26.4 m2

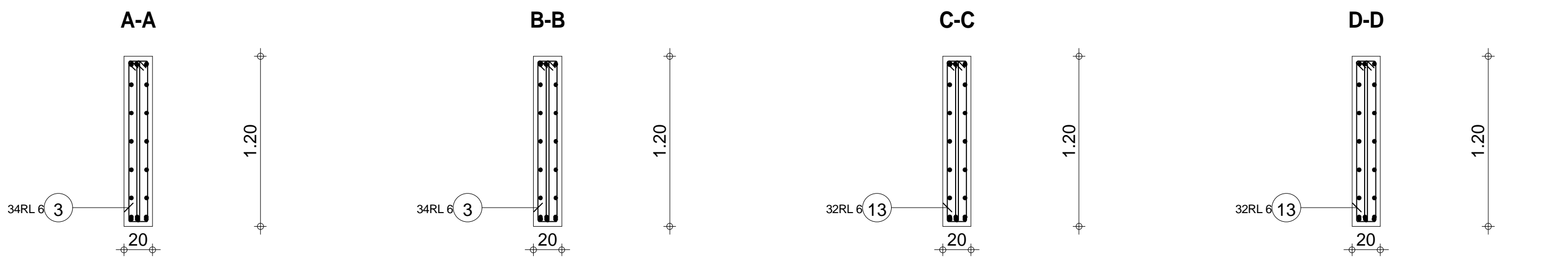
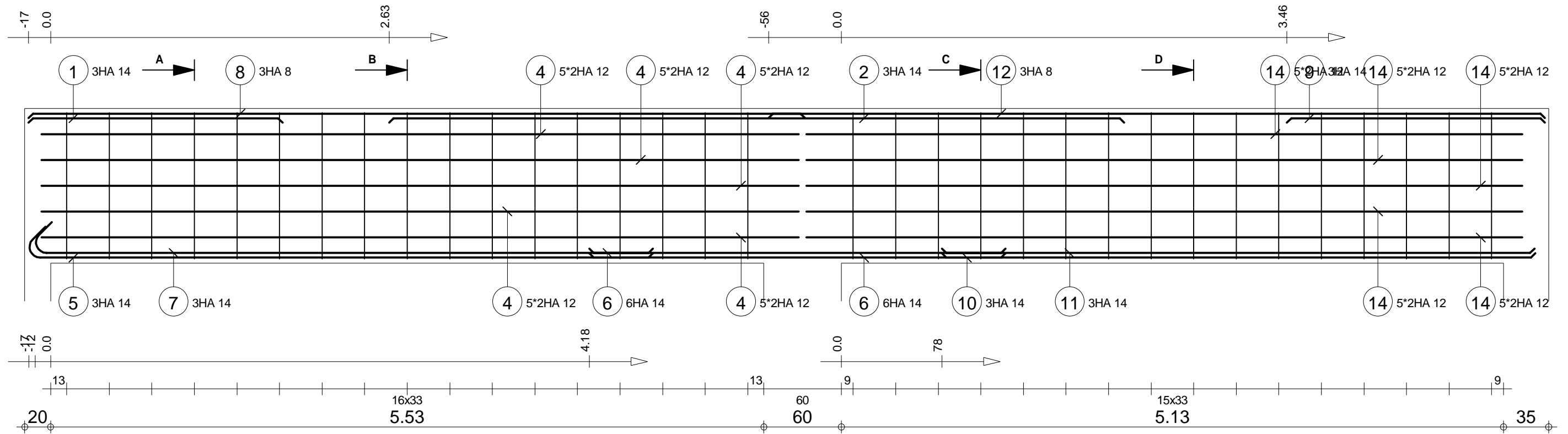
Acier HA 400 = 581 kg

Acier RL 235 = 72.9 kg

Enrobage supérieur 3 cm

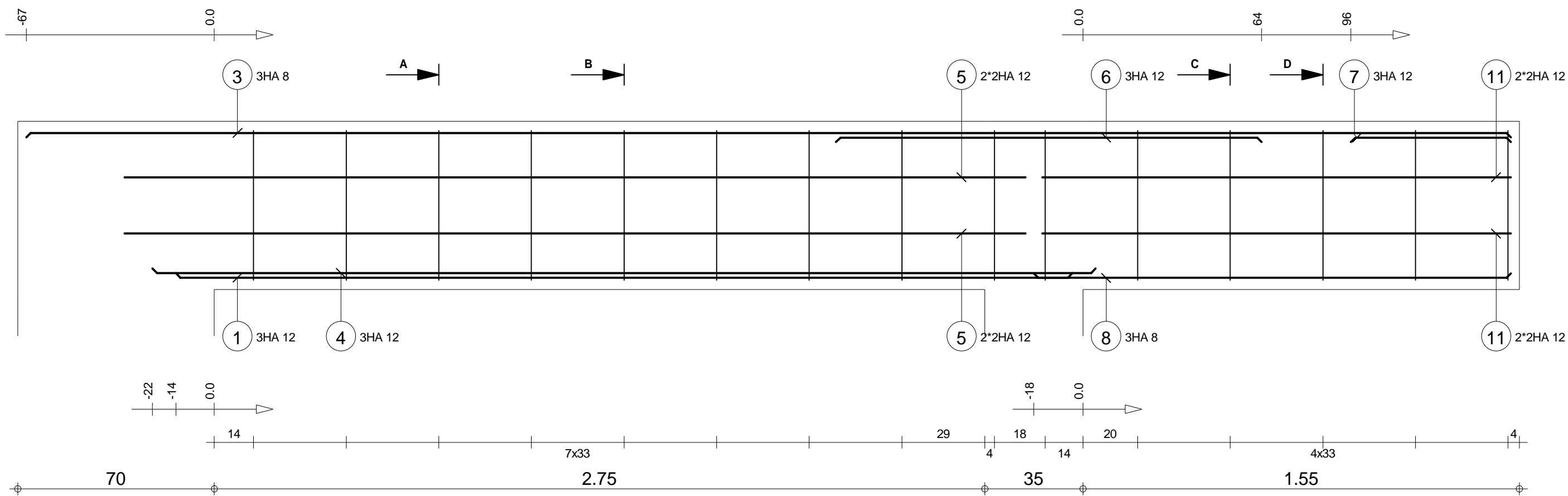
Enrobage latéral 3 cm

Page 2/2



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 14	l=1.97	00	④	5*2HA 12	l=5.87	00	⑦	3HA 14	l=5.04	00	⑩	3HA 14	l=4.60	00	⑬	32RL 6	l=2.56	31
②	3HA 14	l=5.70	00	⑤	3HA 14	l=5.09	00	⑧	3HA 8	l=6.02	00	⑪	3HA 14	l=4.59	00	⑭	5*2HA 12	l=5.55	00
③	34RL 6	l=2.56	31	⑥	6HA 14	l=3.23	00	⑨	3HA 14	l=2.00	00	⑫	3HA 8	l=6.02	00				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 27</b> <b>Section 20x120</b>	Nombre 1	Acier HA 400 = 244 kg Acier RL 235 = 37.5 kg	
			Béton : BETON25 = 2.84 m3 Enrobage inférieur 3 cm Enrobage supérieur 3 cm Enrobage latéral 3 cm	
			Densité = 99.3 kg/ m3 Surface du coffrage = 31 m2	
		Echelle pour la vue 3.1cm/m Echelle pour la section 3.46cm/m		Page 1/1

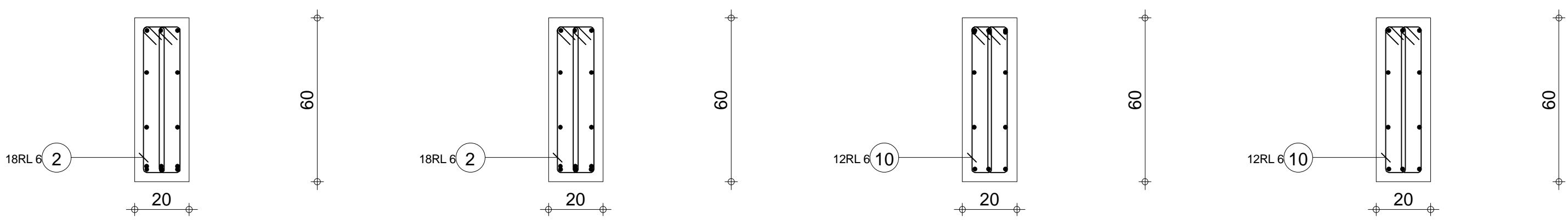


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 12	l=3.19	00	③	3HA 8	l=5.29	00	⑦	3HA 12	l=57	00	⑪	2*2HA 12	l=1.67	00
②	18RL 6	l=1.36	31	④	3HA 12	l=3.36	00	⑧	3HA 8	l=1.70	00				
③	3HA 8	l=5.29	00	⑤	2*2HA 12	l=3.21	00	⑩	12RL 6	l=1.35*	31				

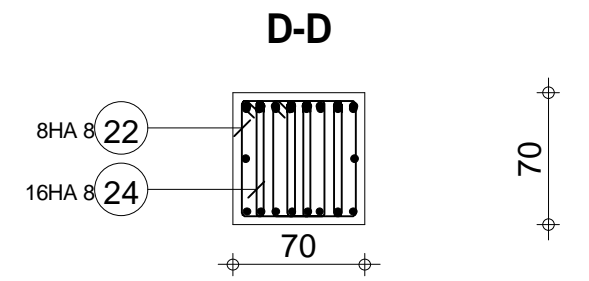
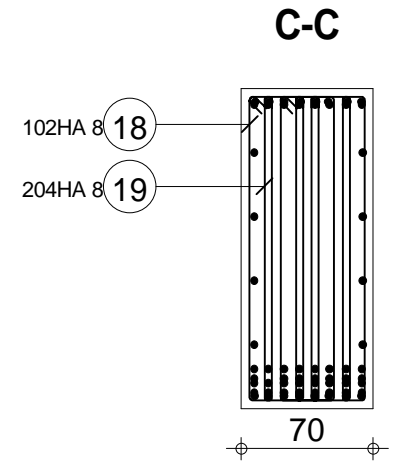
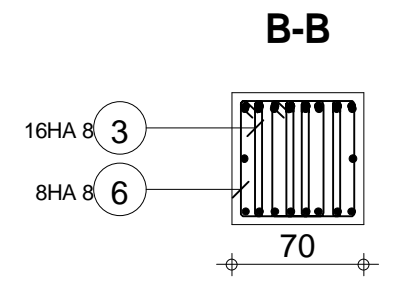
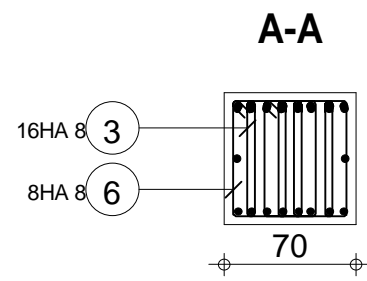
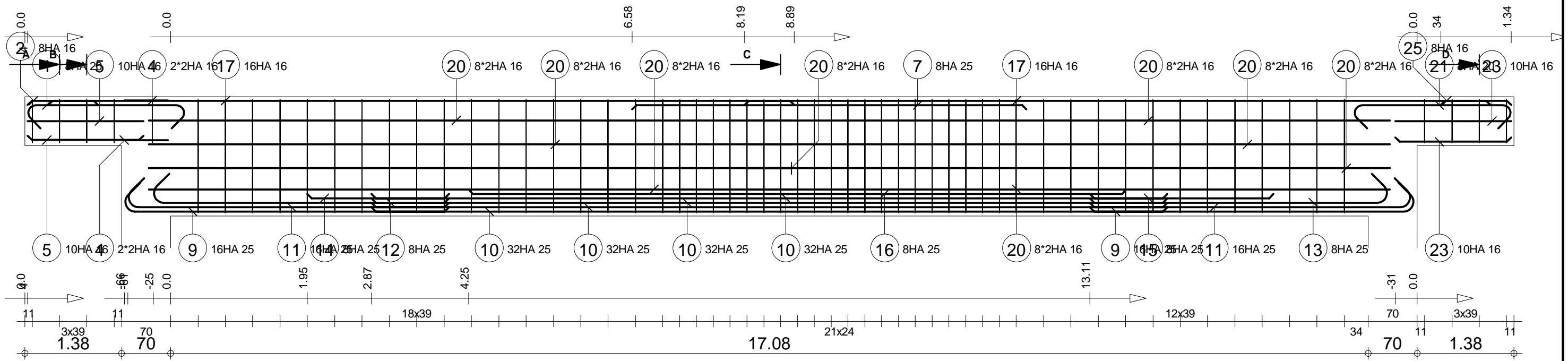
Tél. Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 29**  
**Section 20x60**

Nombre 1

Béton : BETON25 = 0.642 m3	Acier HA 400 = 48.6 kg
Enrobage inférieur 3 cm	Acier RL 235 = 9.03 kg
Densité = 89.72 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 7.52 m2	Enrobage latéral 3 cm
Echelle pour la vue 6.67cm/m	Echelle pour la section 6.58cm/m
Page 1/1	



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	8HA 20	l=2.92	00	④	2*2HA 16	l=62	00	⑦	8HA 25	l=5.62	00	⑩	32HA 25	l=11.35	00	⑬	8HA 25	l=4.67	00
②	8HA 16	l=1.00	00	⑤	10HA 16	l=1.65	00	⑧	2*1HA 8	l=1.78	21	⑪	16HA 25	l=5.00	00	⑭	8HA 25	l=2.02	00
③	16HA 8	l=1.41		⑥	8HA 8	l=2.29	31	⑨	16HA 25	l=5.05	00	⑫	8HA 25	l=4.64	00	⑮	8HA 25	l=2.62	00

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 30</b> <b>Section 70x170</b>	Tél. _____ Fax _____	Nombre 1	Acier HA 500 = 3610 kg
				Béton : BETON25 = 23.8 m3
				Acier HA 400 = 481 kg
				Enrobage inférieur 4 cm
Densité = 171.8 kg/ m3	Echelle pour la vue 1.75cm/m	Enrobage supérieur 4 cm	Enrobage latéral 4 cm	
Surface du coffrage = 83 m2	Echelle pour la section 2.5cm/m	Page 1/2		



Pos.	Armature		Code	Forme
16	8HA 25	l=9.38	00	
17	16HA 16	l=10.64	00	
18	102HA 8	l=4.30	31	
19	204HA 8	l=3.41		
20	8*2HA 16	l=9.16	00	
21	8HA 20	l=2.92	00	
22	8HA 8	l=2.29	31	
23	10HA 16	l=1.65	00	
24	16HA 8	l=1.41		
25	8HA 16	l=1.00	00	

Tél.

Fax

**R+1****PROJET CERME\_PLANS GUIDES****POUTRE 30****Section 70x170**

Nombre 1

Béton : BETON25 = 23.8 m3

Enrobage inférieur 4 cm

Densité = 171.8 kg/ m3

Surface du coffrage = 83 m2

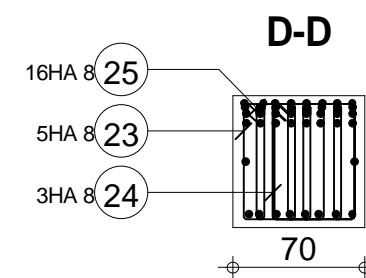
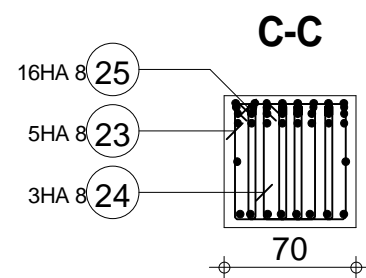
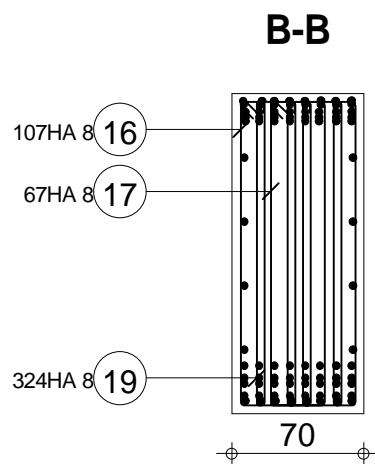
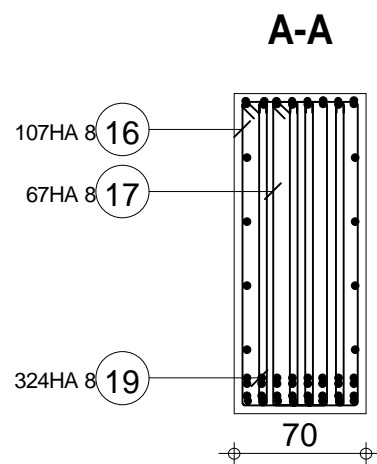
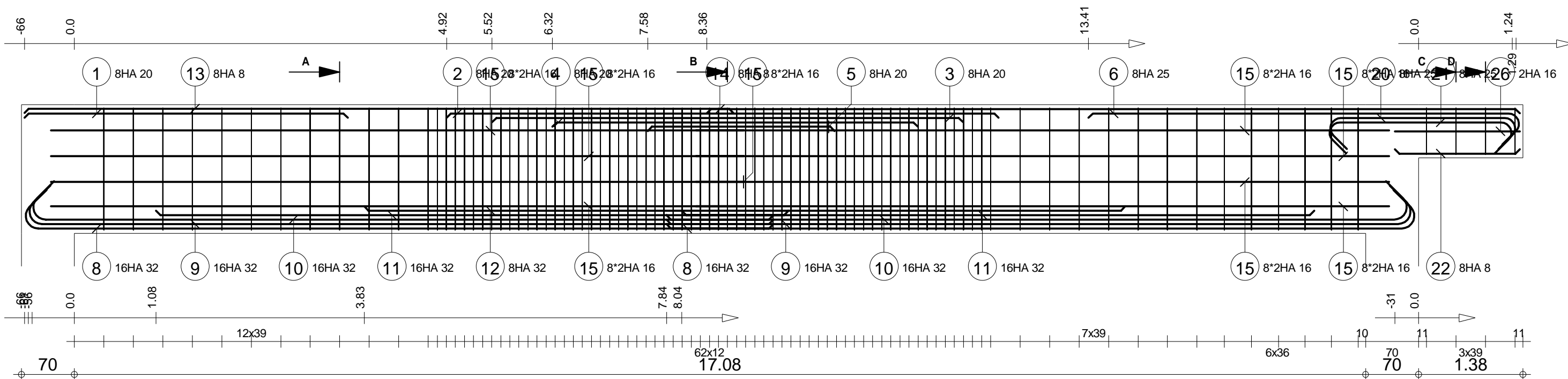
Acier HA 500 = 3610 kg

Acier HA 400 = 481 kg

Enrobage supérieur 4 cm

Enrobage latéral 4 cm

Page 2/2



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
1	8HA 20	l=4.28	00	4	8HA 20	l=4.83	00	7	24HA 8	l=3.41	00	10	16HA 32	l=10.34	00	13	8HA 8	l=9.38	00
2	8HA 20	l=7.30	00	5	8HA 20	l=2.47	00	8	16HA 32	l=10.44	00	11	16HA 32	l=8.37	00	14	8HA 8	l=10.76	00
3	8HA 20	l=6.23	00	6	8HA 25	l=6.13	00	9	16HA 32	l=10.39	00	12	8HA 32	l=10.07	00	15	8*2HA 16	l=9.16	00

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 31</b> <b>Section 70x170</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 22.7 m3	Acier HA 500 = 5690 kg
				Enrobage inférieur 4 cm	Acier HA 400 = 780 kg
				Densité = 285 kg/ m3	Enrobage supérieur 4 cm
		Surface du coffrage = 79.4 m2		Echelle pour la vue 1.87cm/m	Enrobage latéral 4 cm
				Echelle pour la section 2.5cm/m	Page 1/2

Pos.	Armature		Code	Forme
16	107HA 8	l=4.30*	31	
17	67HA 8	l=4.31	31	
19	324HA 8	l=3.41	21	
20	8HA 25	l=3.31	00	
21	8HA 25	l=3.28	00	
22	8HA 8	l=1.65	00	
23	5HA 8	l=2.26	31	
24	3HA 8	l=2.28	31	
25	16HA 8	l=1.41		
26	2HA 16	l=1.65	00	

Tél.

Fax

**R+1****PROJET CERME\_PLANS GUIDES****POUTRE 31****Section 70x170**

Nombre 1

Béton : BETON25 = 22.7 m3

Enrobage inférieur 4 cm

Densité = 285 kg/ m3

Surface du coffrage = 79.4 m2

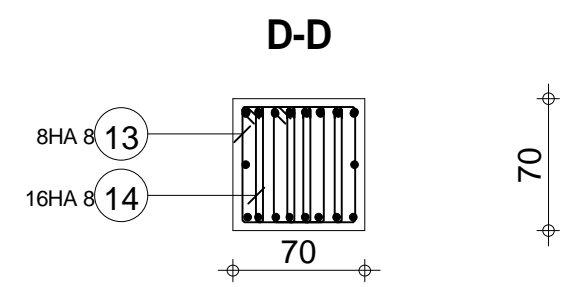
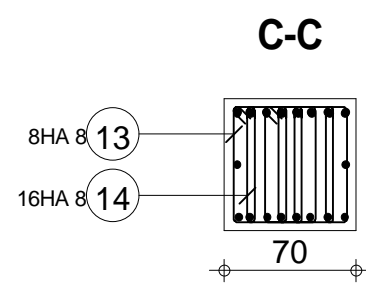
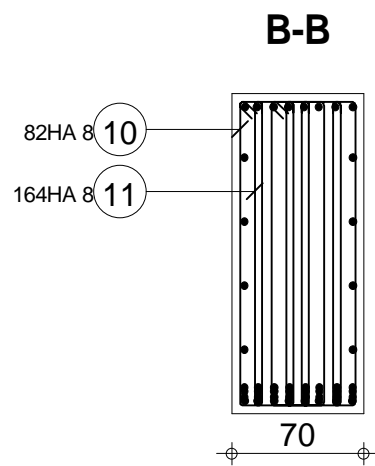
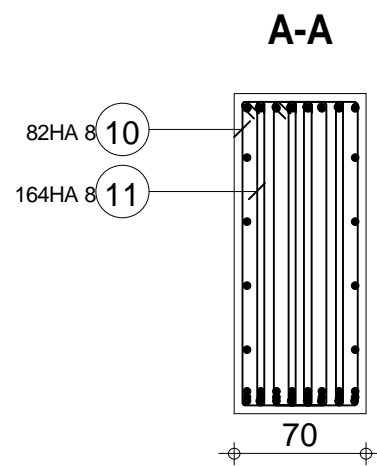
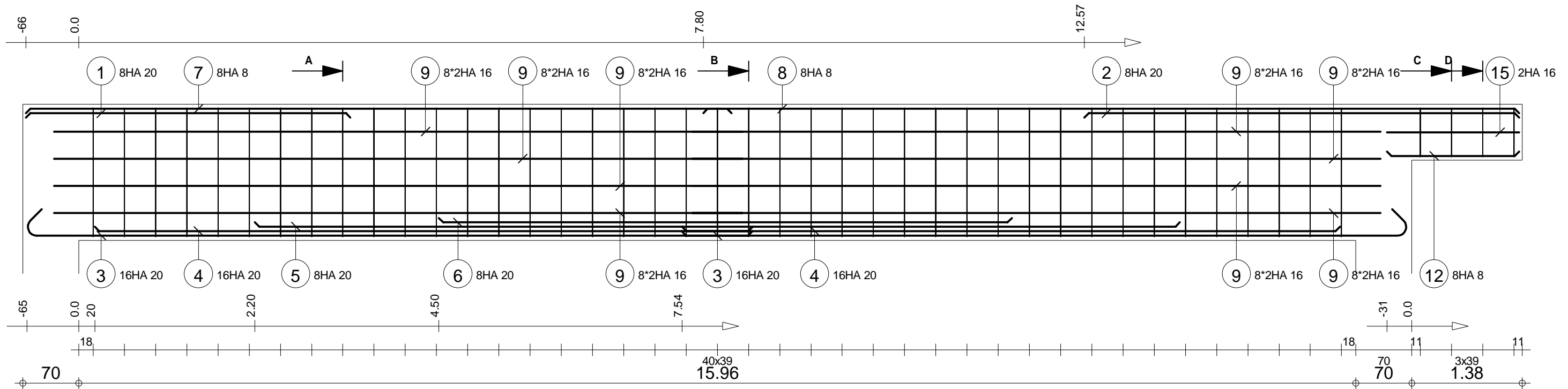
Acier HA 500 = 5690 kg

Acier HA 400 = 780 kg

Enrobage supérieur 4 cm

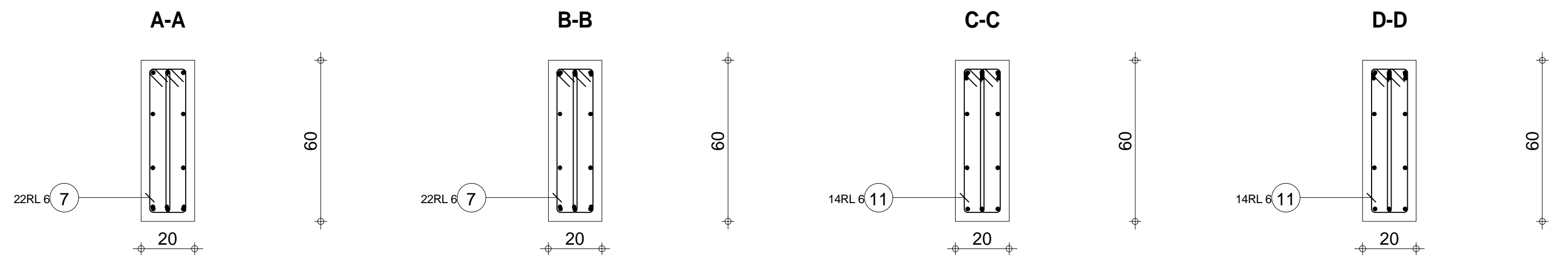
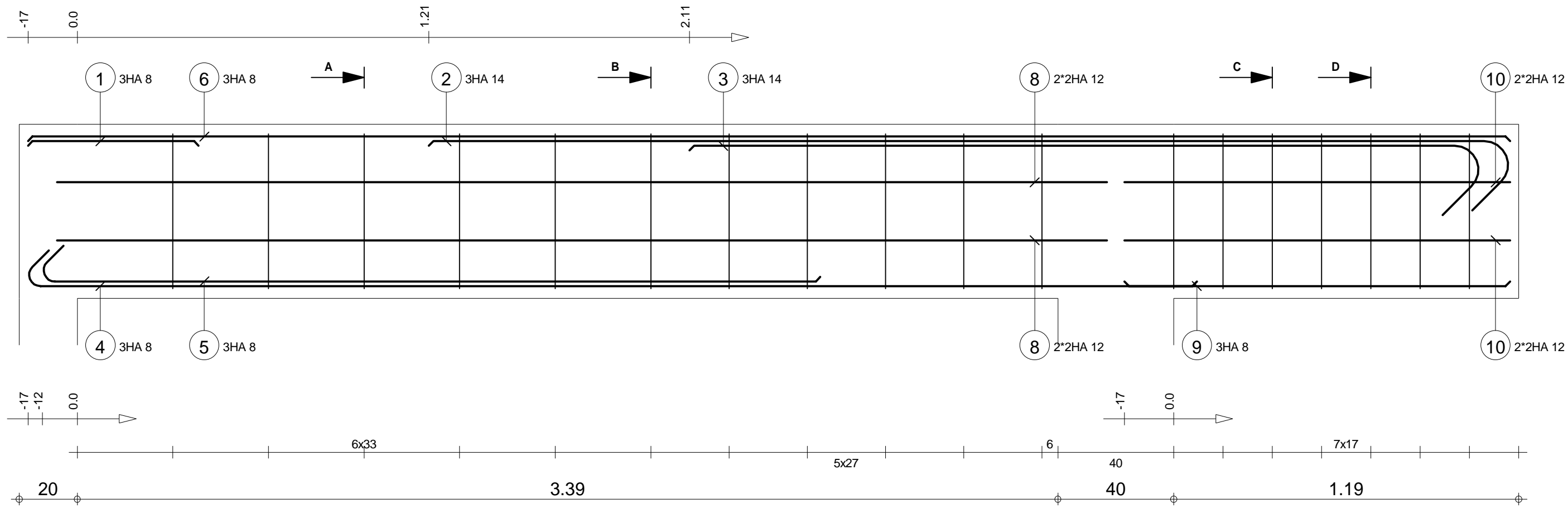
Enrobage latéral 4 cm

Page 2/2



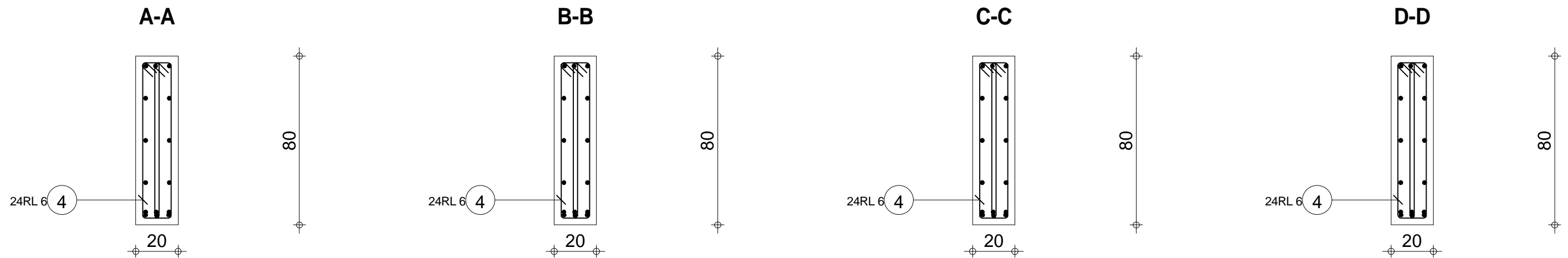
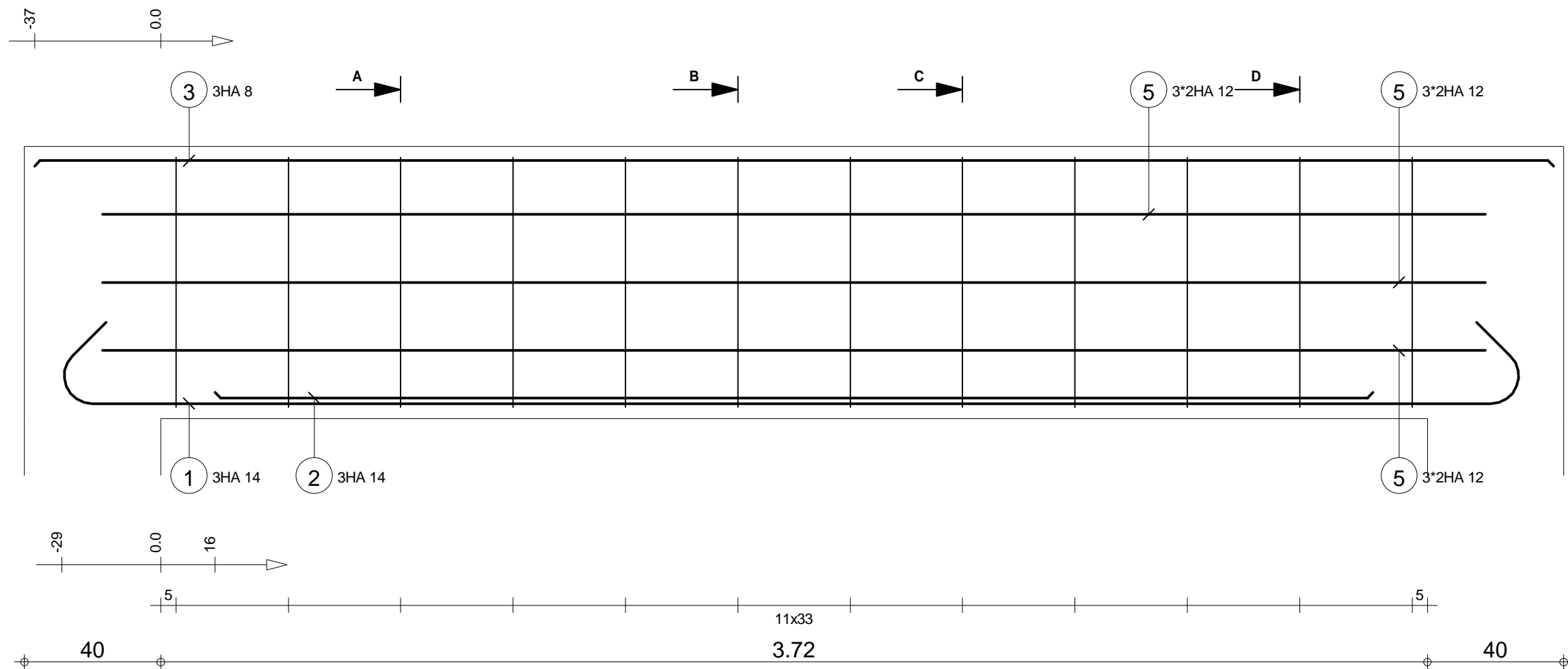
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme						
①	8HA 20	l=4.05	00	4.05	④	16HA 20	l=8.22	00	8.22	⑦	8HA 8	l=8.81	00	8.82	⑩	82HA 8	l=4.30	31		⑬	8HA 8	l=2.28	31		
②	8HA 20	l=5.43	00	5.43	⑤	8HA 20	l=11.56	00	11.56	⑧	8HA 8	l=10.20	00	10.20	⑪	164HA 8	l=3.41			⑭	16HA 8	l=1.41			
③	16HA 20	l=9.40	00	9.06	⑥	8HA 20	l=7.16	00	7.16	⑨	8*2HA 16	l=8.60	00	8.60	⑫	8HA 8	l=1.65	00	1.65		⑮	2HA 16	l=1.65	00	1.65

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 32</b> <b>Section 70x170</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 21.3 m3	Acier HA 500 = 1540 kg	
				Enrobage inférieur 4 cm	Acier HA 400 = 376 kg	
				Densité = 90.14 kg/ m3	Enrobage supérieur 4 cm	Enrobage latéral 4 cm
				Surface du coffrage = 74.8 m2	Echelle pour la vue 1.98cm/m	Echelle pour la section 2.5cm/m



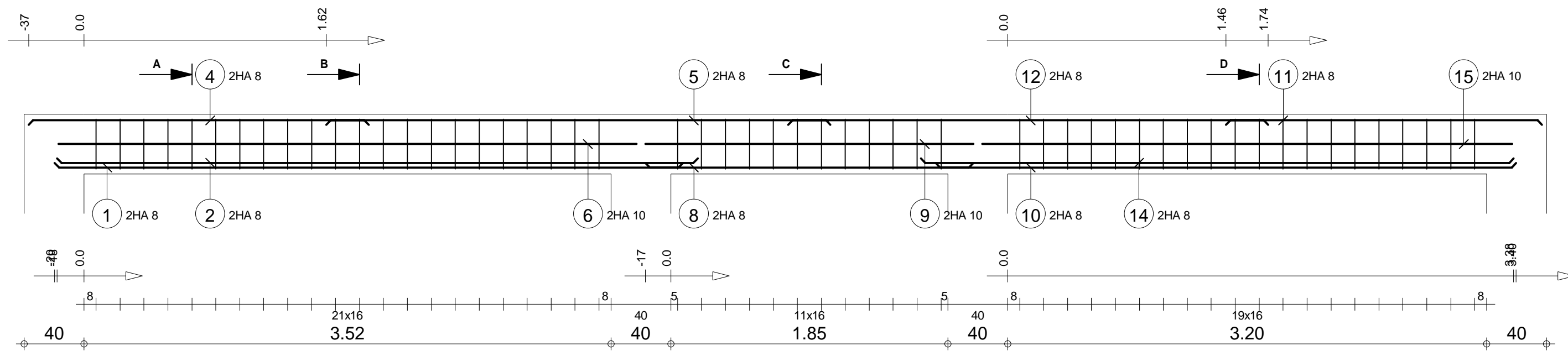
Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 8	l=59	00	④	3HA 8	l=4.16	00	⑦	22RL 6	l=1.36	31	⑩	2*2HA 12	l=1.33	00
②	3HA 14	l=3.98	00	⑤	3HA 8	l=2.81	00	⑧	2*2HA 12	l=3.63	00	⑪	14RL 6	l=1.36	31
③	3HA 14	l=2.97	00	⑥	3HA 8	l=5.12	00	⑨	3HA 8	l=1.33	00				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 33</b> <b>Section 20x60</b>	Tél. _____ Fax _____ Nombre 1	Béton : BETON25 = 0.621 m3	Acier HA 400 = 59.4 kg Acier RL 235 = 10.8 kg	
			Enrobage inférieur 3 cm	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
			Densité = 113 kg/ m3 Surface du coffrage = 7.37 m2	Echelle pour la vue 6.88cm/m Echelle pour la section 6.58cm/m	Page 1/1



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	3HA 14	l=4.77	00	④	24RL 6	l=1.76	31
②	3HA 14	l=3.40	00	⑤	3*2HA 12	l=4.06	00
③	3HA 8	l=4.46	00				

<b>R+1</b> <b>PROJET CERME_PLANS GUIDES</b>	<b>POUTRE 34</b> <b>Section 20x80</b>	Tél. _____ Fax _____	Nombre 1	Béton : BETON25 = 0.723 m3	Acier HA 400 = 56.5 kg	
				Enrobage inférieur 3 cm	Acier RL 235 = 9.38 kg	
				Densité = 91.15 kg/ m3	Enrobage supérieur 3 cm	Enrobage latéral 3 cm
				Surface du coffrage = 8.3 m2	Echelle pour la vue 6.6cm/m	Echelle pour la section 5.05cm/m
					Page 1/1	

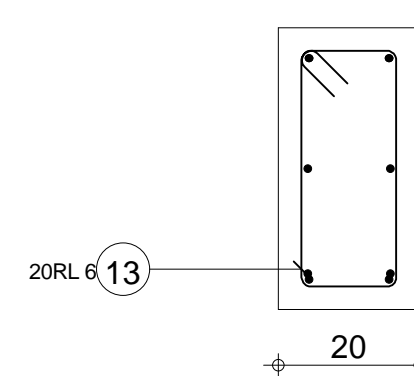
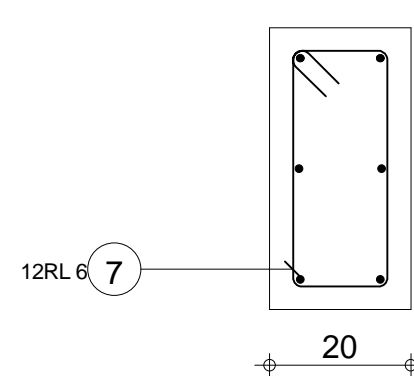
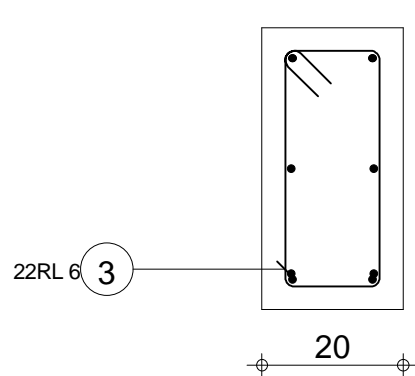
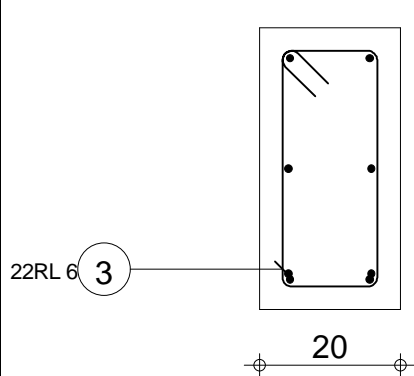


**A-A**

**B-B**

**C-C**

**D-D**



Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme	Pos.	Armature	Code	Forme
①	2HA 8	l=4.20	00	④	2HA 8	l=2.27	00	⑦	12RL 6	l=1.08	31	⑩	2HA 8	l=3.88	00	⑬	20RL 6	l=1.08	31
②	2HA 8	l=4.28	00	⑤	2HA 8	l=3.37	00	⑧	2HA 8	l=2.19	00	⑪	2HA 8	l=2.11	00	⑭	2HA 8	l=3.96	00
③	22RL 6	l=1.08	31	⑥	2HA 10	l=3.86	00	⑨	2HA 10	l=2.19	00	⑫	2HA 8	l=3.21	00	⑮	2HA 10	l=3.54	00

Tél. Fax

**R+1**  
**PROJET CERME\_PLANS GUIDES**

**POUTRE 35**  
**Section 20x40**

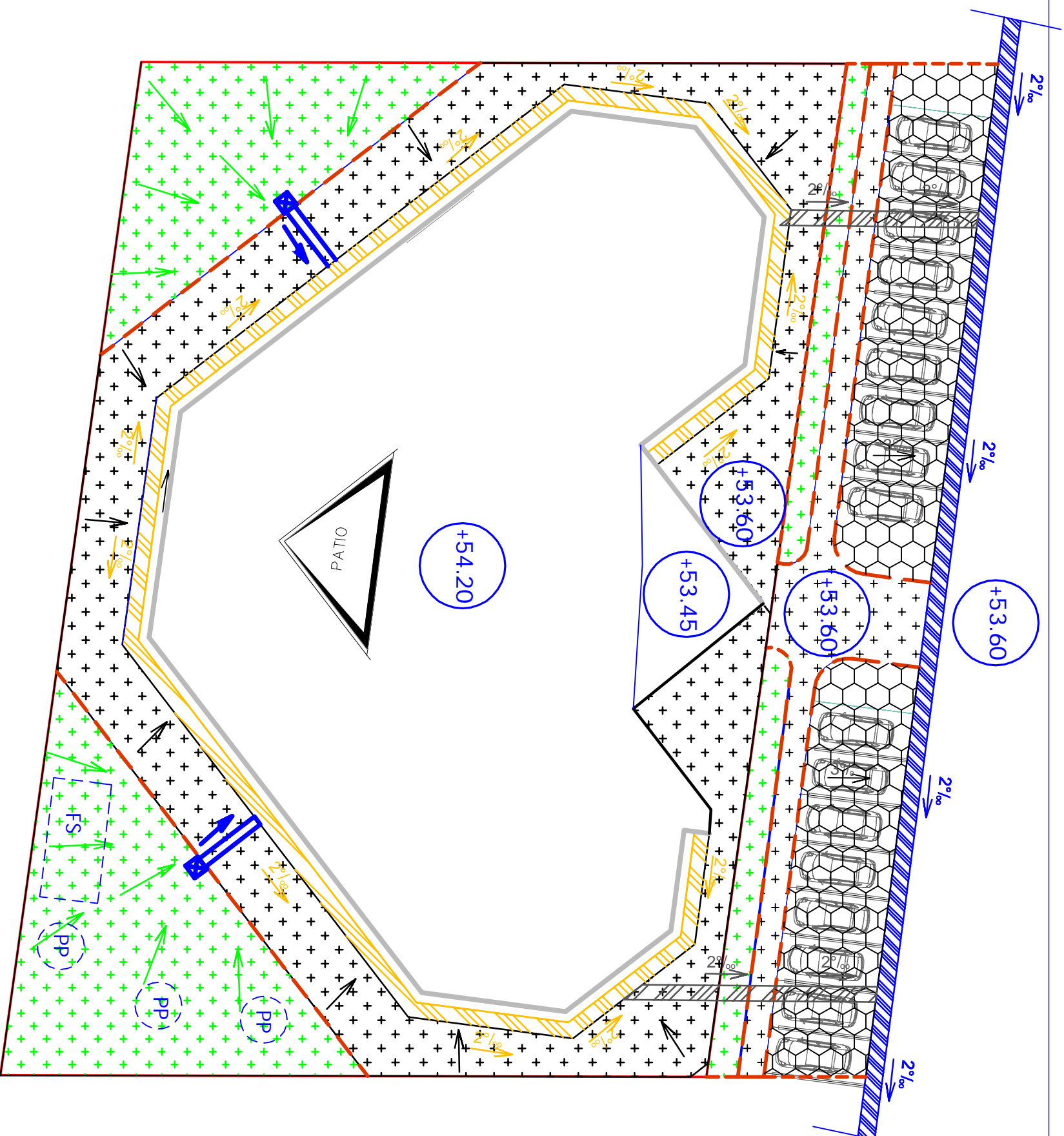
Nombre 1

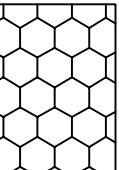
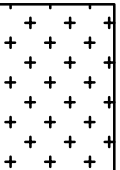
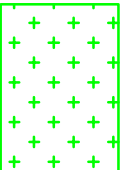
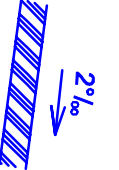





Béton : BETON25 = 0.814 m3	Acier HA 400 = 35.1 kg
Enrobage inférieur 3 cm	Acier RL 235 = 12.9 kg
Densité = 58.97 kg/ m3	Enrobage supérieur 3 cm
Surface du coffrage = 10 m2	Enrobage latéral 3 cm
Echelle pour la vue 3.58cm/m	Page 1/1
Echelle pour la section 9.34cm/m	

## 2.4. VRD ET ASSAINISSEMENT



# PORJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



-  Parking non couvert en pavés autobloquants de 11
-  Voie de circulation intérieure en dalle de béton revêtue en gravier lavé et avec des joints en gazon de 5cm de largeur
-  Espace vert ( gazon + fleurs et plantes conformément à l'architecture), pente = 2‰
-  Caniveau de 70x80 couvert avec des dalettes ajournée
-  Caniveau de 60x70 couvert avec des dalettes ajournée
-  Caniveau de 50x60 couvert avec des dalettes ajournée
-  Piège à sable avec avaloire
-  Contour des limites extérieures du RDC
-  Bordure haute

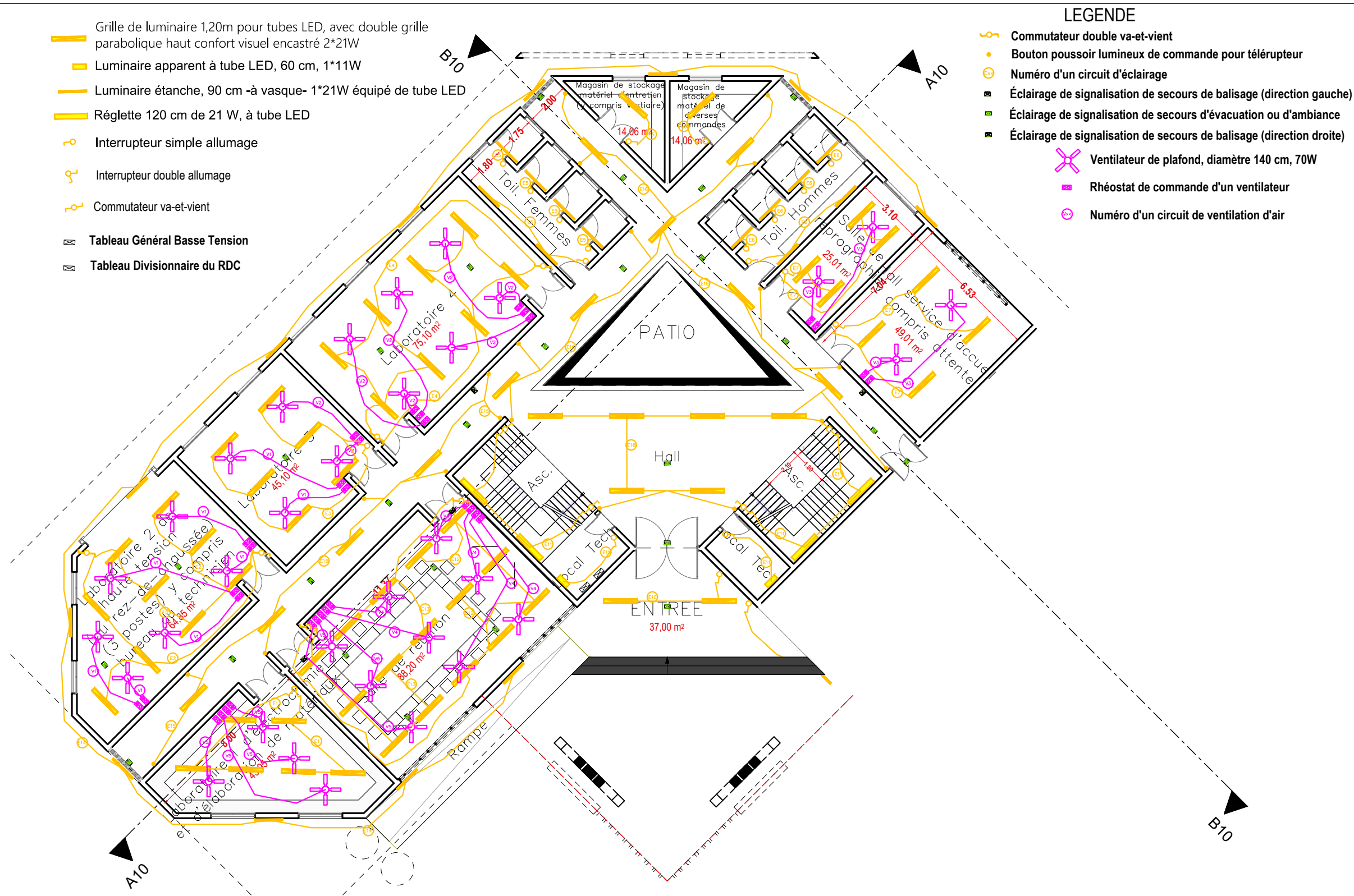
## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE		PHASE		NOM DU PLAN	VISA	DECEMBRE 2022
	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT		Avant Projet Détailié				
Travail - Liberté - Patrie							PLAN DE VRD		PLANCHE N°

# 3. LOTS TECHNIQUES

## 3.1. Éclairage et ventilation

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	NOM DU PLAN	VISA	DECEMBRE 2022
Travail - Liberté - Patrie	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	ECLAIRAGE ET VENTILATION DU RDC		PLANCHE N°
				Version FINALE			



## 3.2. Informatique et téléphone

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



## LEGENDE

- Prise RJ45 pour informatique
- Prise RJ45 pour téléphone
- Coffret informatique de brassage VDI




## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	NOM DU PLAN	VISA	DECEMBRE 2022
Travail - Liberté - Patrie	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	Version FINALE	INFORMATIQUE ET TELEPHONE DU RDC	PLANCHE N°

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



## LEGENDE

-  Prise RJ45 pour informatique
-  Prise RJ45 pour téléphone
-  Coffret informatique de brassage VDI

## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	NOM DU PLAN	VISA	DECEMBRE 2022
Travail - Liberté - Patrie	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détailé	Version FINALE	INFORMATIQUE ET TELEPHONE DU R+1	PLANCHE N°



## 3.3. Prises et climatisation

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

REPUBLICQUE TOGOLAISE	FINANCEMENT	MAITRE D'OUVRAGE	MAITRE D'OEUVRE	PHASE	NOM DU PLAN	VISA	DECEMBRE 2022
Travail - Liberté - Patrie	Banque Mondiale	Université de Lomé	Groupement SINGEXT CONSULTANCE / ETC BTP / DIC BTP / PYRAMID CONCEPT	Avant Projet Détaillé	PRISES ET CLIMATISATION DU RDC		PLANCHE N°
				Version FINALE			

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



LEGENDE

● Dismatic 20A

Tableau Divisionnaire du R+1

✦ Prise de courant 16A, 2P+T

✦ Prise de courant 20A, 2P+T

☑ Unité extérieure d'un climatiseur Split de puissance "xx" en CV

☑ Unité intérieure d'un climatiseur Split de puissance "xx" en CV

✦ Prise de courant 20A, 3P+N+T

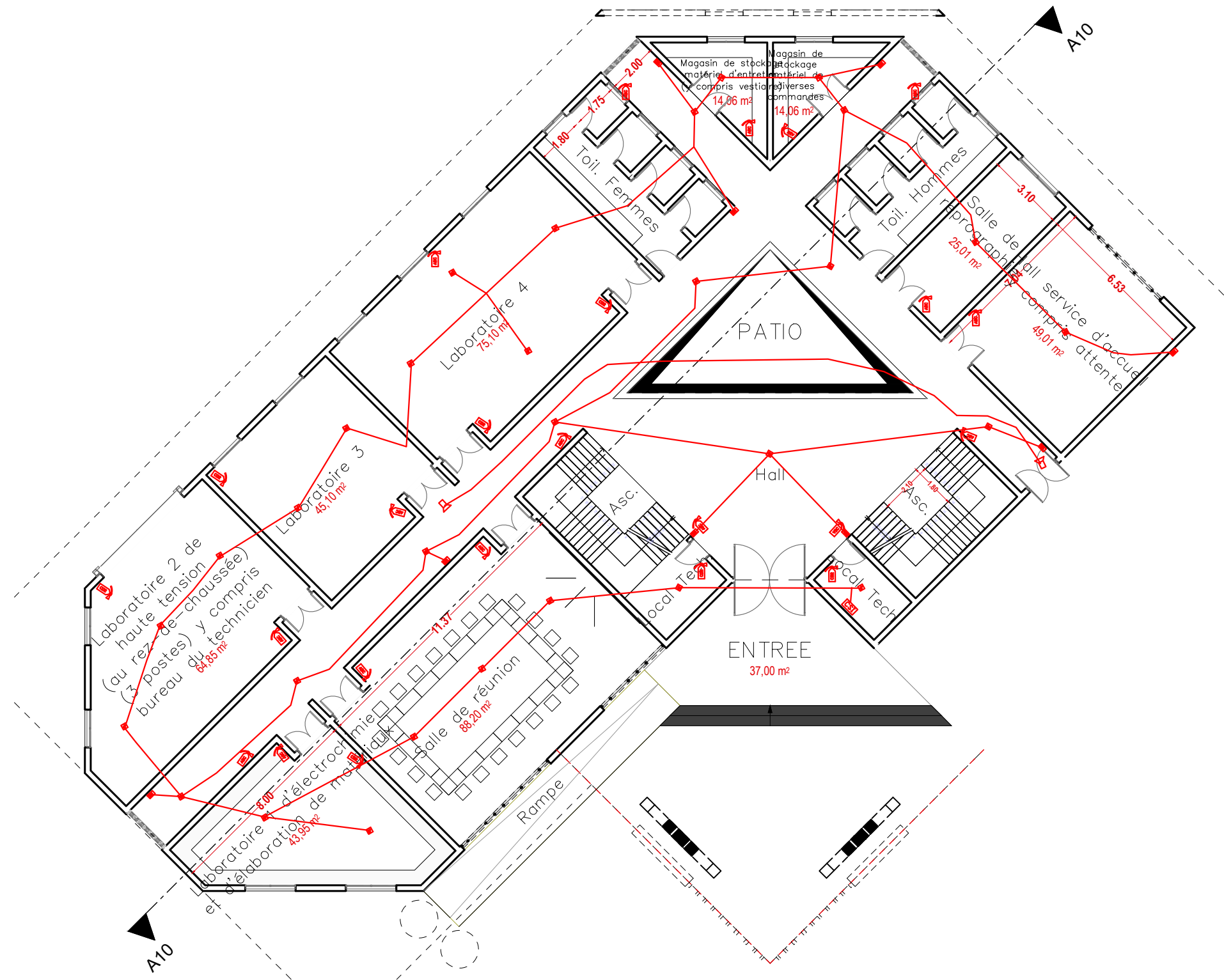
☑ Hotte aspirante de laboratoire







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				Version FINALE			

## 3.4. Sécurité et incendie

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME

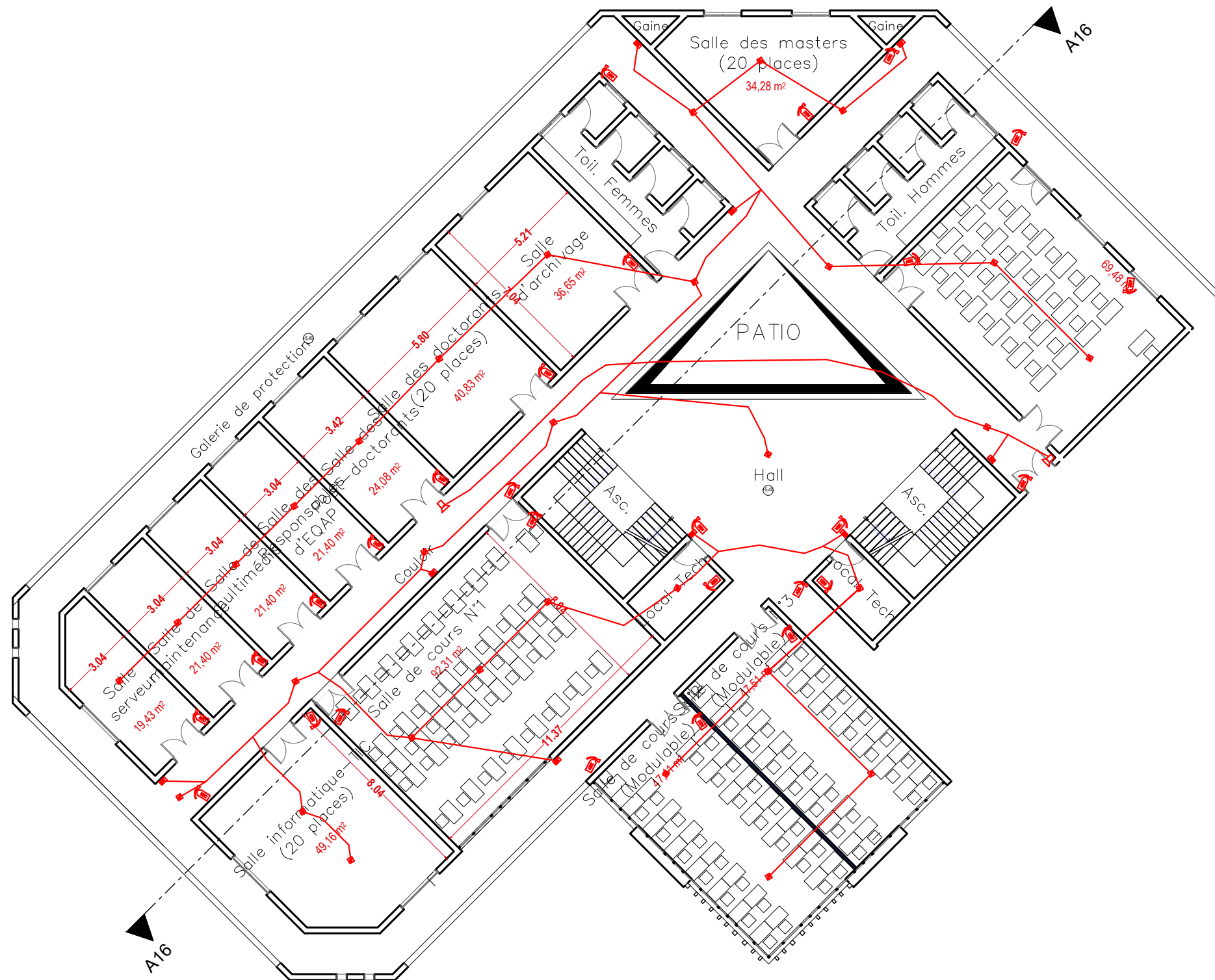








- LEGENDE**
-  Détecteur de fumée optique
  -  Déclencheur manuel
  -  Sirène avertisseur sonore
  -  Extincteur à poudre ABC, 5 kg
  -  Extincteur au CO2, 5 kg
  -  Centrale de sécurité incendie

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				Version FINALE			

# PROJET DE CONSTRUCTION DU BATIMENT PRINCIPAL ET DES PLATEFORMES TECHNIQUES DU CERME



- LEGENDE
-  Détecteur de fumée optique
  -  Déclencheur manuel
  -  Sinière avertisseur sonore
  -  Extincteur à poudre ABC, 5 kg
  -  Extincteur au CO2, 5 kg
  -  Centrale de sécurité incendie

## MISSION DE RÉALISATION DES ÉTUDES ARCHITECTURALES, TECHNIQUES ET LA SURVEILLANCE ET LE CONTRÔLE DES TRAVAUX

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