Annex C -

General documents from fives fcb

C1) General note for civil and steel design

C2) Drawings annotated sent for tender

C3) ENS_DL11_03_EN_PDMS_IMPORT_RULES_rev02

C4) iExtranet User Guide for contacts – EN

C5) User's Manual for IEnet online software

C6) FCB Design procedure for steel structure

Annex C1 –

General note for civil and steel design

ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE D'ECH-CHELIFF

REV	NBER OF △	DATE	DRAWN	CHECKED	SIGNED	MODIFICATIONS
G						
F						
E						
D						
C						
B						
A		28/11/2012	AN	AN	AN	FIRST ISSUE

LAYOUT MARK	BUILDING: ALL BUILDINGS
GROUP / ITEM: 01	EQUIPMENT:
SCALE	DRAWING TITLE: GENERAL NOTE FOR CIVIL AND STEEL DESIGN

fives fcb

MATIERE:	MASS:	FORMAT: A4	

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REFERENCENG		IND
DRAWING NUMBER	CHL1C0201A01	A

General note for civil and steel design
Annex C1 **C H L 1 C 0 2 0 1 A 0 1 A**

SUMMARY

A) Applicable norms and unit used

_ Refer to general note from main contract:
Extrait Cahier 05 - Spécifications des Constructions

Normes, Règlements Et Recommandations

Toutes les études, calculs et travaux de réalisation seront conduits conformément aux normes en vigueur en Algérie (voir Recueil des normes et documents techniques règlementaires de la construction édité par le CTC Centre –Alger).

Liste of codes and standards available upon request to Fives fcb

C 2-4.7 Règlement Neige et Vent R.N.V. 1999.pdf
RPA99 VERSION 2003 Carte zonage sismique d'Algerie.pdf
RPA99 VERSION 2003.pdf
Règles de calcul des apports calorifiques des batiments_DTR C 3-4.pdf
Règles de conception et de calcul des maçonneries_DTR C 2.45.pdf
Règles de conception et de calcul des structures en acier_DTR BC 2.44 - CCM 97.pdf
Règles de conception et de calcul des structures en béton armé_C.B.A.93.pdf
Réglementation thermique des bâtiments d'habitation_DTR C 3-2.pdf

_ The latest editions of Codes and Standards are to be considered (unless otherwise noted).

The main units used in the documents are :

	Units	**Symbol**
_ Length	meter	m
	millimeter	mm
_ Surface	square meter	m²
	square millimeter	mm²
_ Force	Newton	N
	Kilo Newton	KN
_ Stress	Mega Pascal	Mpa = N/mm²
_ Temperature	degre Celsius	℃
_ Angle	decimal degree (with 5 decimals)	

_ All documents have to be done with metric system

_ All calculation notes have to be in **French**
_ All execution drawings have to be in English and **French**
_ All workshop and assembly drawings for steel structure have to be in **English**

B) General hypothesis

B.1) Dead loads

It is the total of:
_ Equipments dead loads
_ Own weight of the structure
_ Loads resulting from permanent backfilling

B.2) Live loads

_ Refer to general note from main contract:
Extrait Cahier 05 - Spécifications des Constructions

Surcharge D'exploitation

• Planchers des ateliers :	500Kg/m² sauf stockage briques sur plancher de chauffe (1000 kg/m²) ;
• Planchers des bureaux et locaux :	400 Kg/m²
• Passerelles piétonnières :	250 Kg/m²
• Escaliers :	250 Kg/m2
• Planchers en caillebotis ou tôle larmée :	250 kg/m²
• Toitures en terrasse accessible :	200 kg/m²
• Toitures terrasse dites « non accessible » :	150 Kg/m2
• Toitures de silos (non compris dépression) :	300 kg/m2
• Salle électrique – zone stockage armoire :	800kg/m²
• Dallages industriels :	1 t/m² ou 12 t/essieu

Efforts dynamiques : Les structures soumises à des vibrations produites par les équipements (ventilateurs, broyeurs, moteurs, etc..) seront conçues pour éviter les phénomènes de résonance, la fréquence propre calculée devra être en dehors d'une plage comprise entre 50% de part et d'autre de la fréquence d'exploitation.

Parallèlement à la surcharge répartie des planchers des ateliers, ceux-ci devront pouvoir supporter des charges poinçonnantes ponctuelles de 1 000 kg appliquées à une surface de 10 x 10 cm.

Déformations : les déplacements horizontaux, sous l'effet du cumul le plus défavorable des sollicitations appliquées, ne devront pas être à l'origine de troubles dans l'exploitation des bâtiments ni de désordres dans les structures.

_ Other live loads: as per the actual load conditions stated on the load drawings

B.3) Climatic conditions

Extrait Cahier 05 - Spécifications des Constructions

Données Climatiques

- **Neige** : Surcharge extrême maximale 90 Kg/m² ;
- **Vent** : 34 m/s, pression dynamique de base normale 72 kg/m², coefficient de site K=1(site normal)
- **Température** : Maximum + 50°C, Minimum : -5°C
- **Pluviométrie** : 400 mm en moyenne annuelle, 400 l/ha/s en précipitation instantanée, 40mm/h (durée une heure)
- **Poussière** : 50 Kg/m² de projection horizontale
- **Séisme** : Application des Règles Parasismiques Algériennes RPA 99-version 2003 – Zone III.

Dust loads shall be considered as follows:

_ Addition of the dust load to the live load on the **roofs**
_ Addition of the dust load to the live load for the floors and platforms of **enclosed** buildings
_ **No additionnal dust load for the floors and platforms of open buildings (only live load)**

Extrait Cahier 01 - Données de base et informations

✓ **Vent**

Les directions dominantes des vents sont pratiquement les mêmes durant la journée/ l'année et sont de direction **Ouest-Est et Sud Ouest-Nord Est**.

✓ **Données sismiques**

Le règlement parasismique Algérien, (R.P.A. 99, version 2003), élaboré après le séisme de Boumerdes survenu en Mai 2003 divise le territoire Algérien en quatre zones sismiques principales:

- Zone III : Zone d'intensité forte
- Zone II A & II B : Zone d'intensité moyenne
- Zone I : Zone d'intensité faible
- Zone 0 : Zone non sismique

La wilaya de Chlef est classée en zone III (Forte séismicité)

Altitude de l'emplacement de l'usine :
+ 100 m environ au dessus du niveau de la mer.

✓ **Pluviométrie**

Les moyennes mensuelles des précipitations en mm (Source : ONM - Dar El Beida) sont données dans le tableau suivant:

Mensuelles des précipitations

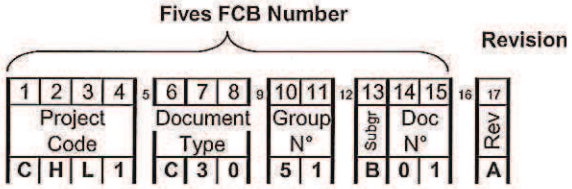
Mois	J	F	M	A	M	J	JT	A	S	O	N	D	Année
Précip. mm	55	45	39	32	37	09	01	01	20	35	60	66	400

La pluviométrie annuelle moyenne est de l'ordre de 400 mm.

C) Documents reference system / Numbering

The document numbering system applicable for the project contains 17 digits as detailed below
It is applicable for every document issued by the design offices in charge of the design of steel structure and civil works

The numbering system contains 2 parts: Fives FCB Doc Number & Revision



Digits 5, 9,12 and 16 are "space"
Digits 17 can be one letter (A to Z) or one number (0 to 9). See § C.6)

C.1) Project Code and Document Creator digits

These digits are fixed for the project

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	H	L	1													

C.2) Document Type digits

C.2.a) Digits for the civil works documents (C)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
C	H	L	1		C										
					C	0	1								
					C	0	2								
					C	0	8								
					C	0	9								
					C	1	0								
					C	2	0								
					C	3	0								
					C	3	0								
					C	3	5								
					C	3	5								
					C	4	0								
					C	4	0								
					C	4	1								

Documents for civil works
- Soil investigation, Topographical survey
- General note for design
- Document from Civil fcb site
- Document from Civil Contractor
- Design calculation note
- Excavation drawings
- Formwork drawings
- Deep foundation drawings
- Dwgs with formwork and reinforcement
- Deep foundation dwgs w. formw. & reinf.
- Reinforcement drawings
- Post-tensioning cables
- Reinforcement summary

C.2.b) Digits for the steel structure documents (S - SS)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
C	H	L	1		S										
					S	0	2								
					S	1	0								
					S	2	0								
					S	2	5								
					S	2	5								
					S	3	0								
					S	3	5								
					S	4	0								
					S	4	5								
					S	5	0								
					S	6	0								

Documents for steel structure
- General note for design
- Design calculation note
- Dwgs: general arrangement and details
- Load and anchorage drawing
- Embedded plates and "inserts" booklet
- Grating flooring drawings
- Checkered plate drawing
- Roofing & cladding drawings
- Drawings for steel deck plates
- Assembly Drawings
- Worskshop Drawings

C.3) Groups Numbering & Building Code

10	11	
0	0	Lay out
0	1	Document applicable to all groups
0	4	Quarry
0	5	Roads & networks drawings
1	0	Primary crusher
1	1	Secondary crusher
1	2	Correctives preparation (crushing & transport)
1	8	Premix storage and transport
1	9	Additives & Correctives unloading & transport
2	0	Additives & Correctives storage
2	3	Raw Mill feed bins
2	6	Raw grinding
3	0	Homogenizing silo
3	6	Preheater tower
3	9	Kiln
4	0	Clinker cooler building
4	2	Clinker cooler dedusting
4	8	Main dedusting
5	1	Clinker transport and storage
5	3	Gypsum and additives preparation
5	4	Cement mill feed building
5	7	Cement grinding
6	1	Cement silos & discharge
6	4	Packing & truck loading
6	6	Cement Train Loading
6	7	Coal storage and feeding
7	0	Coal grinding
7	1	AFR preparation
7	4	Water facilities and network
7	7	Compressed air facilities
8	0	Fuel storage and network
8	1	Natural gas
8	2	SNCR storage and network
8	3	Laboratory & Control Room
8	4	Administration Building
8	5	Maintenance Worshop
8	6	Weighbridges
8	7	Storage Warehouses
8	9	Electrical Tunnel
9	x	Electrical substations from 90 to 99

C.4) Subgroup digits

from A to Z

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
												X				

examples :

Subgroups for the steel structure of preheater tower

10	11	13			
3	6	A			Floor of level 1
3	6	B			Floor of level 2

C.5) Document number

from 00 to 99

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
													X	X		

C.6) Revision digit

One digit for document under approval from 0 to 9
One digit for document certified from A to Z

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
																X

examples :

Formwork drawing n°1 of cement silo #1 rev A (good for execution)

C	H	L	1	C	3	0	6	1	C	0	1	A

Steel structure GA drawing n°2 of cooler building r ev 0 (1st issue)

C	H	L	1	S	2	0	4	0	A	0	2	0

Any modification (including dimensions) related to revisions A to Z, 0 to 9 have to be clearly located on the drawings with **clouds.**
Any revision without cloud on modification will be systematically rejected.

Nota 1:
Any document uncorrectly named will be systematically rejected

Nota 2:
All drawings submitted as electronic files shall be named : FCBDoc NumbeRevision.file extension with the exact number and type of digits.

Examples: **CHL1 C40 23 A04 2.dwg** Reinforcement drawing for raw meal feed bins
CHL1 S10 61 D01 A.pdf Calculation note for steel structure of cement silo #2 roof

It is necessary to respect free space between digit groups to avoid rejection of the drawing

D) Documents to be delivered by FCB to the design office

D.1) General Documents

For performing the design, the design office shall receive the following documents and information:

- General note for civil and steel design (this present document) — CHL1 C02 01 A01
- Soil report
- Topographical survey
- Lay out drawings
- Civil work Standard drawings — CHL1 C02 01 A02
- Steel structure Standard drawings — CHL1 S20 01 A01
- Particular conditions / restrictions for civil works if any such as:
  - Maximum lifting capacity
  - Maximum casting volume

  → To be provided by Fives fcb
- Particular conditions / restrictions for steel structures such as:
  - Maximum dimensions & weight of elements for transport
  - Maximum dimensions & weight of elements for erection

  → Length 11,80 m / Width 2,30 m / Height 2,25 m / Weight 20 tons*
  * special cases to be discussed with FCB upon request

D.2) Guide drawings

Nota: The numbering system of the drawings is the same as precised above, but with different code for type of documents

- Preliminary drawings may be transmitted at the early stage of the design, for the design office to execute a predimensionning of the structure and to prepare the foundations outlines and excavation drawings
- They give the loads of the main equipments and estimations for the minor ones

D.2.a) General Arrangement drawings (G10)

Example: CHL1 **G10** 36 001 A - general arrangement drawing n°1 of the preheater tower

_ The general arrangement drawings shall show the structure and the mechanical parts
_ It shows all plan views and the necessary elevations / sections required for understanding
_ It mentions clearly the type of construction (concrete / steel structure, etc...)
_ It shows the distance between axis, the accesses, the levels, the allowed positions of bracings, etc...

D.2.b) Architectural drawings (G12)

Example: CHL1 **G12** 61 002 A -architectural drawing n°2 of the cement silos

_ The architectural drawings show the elevation views of the building and specify the type and dimensions of sidings, openings, ventilations, natural lighting, accesses, doors, etc...

D.2.c) Loads and anchorages drawings (G22)

Example: CHL1 **G22** 26 005 A - load drawing n°5 of the raw mill buildi ng

_ The loads drawings give all loads and moments applied on the structure (Dead, Live, Variable, from Equipment)
_ The plan and elevations views show the application points of all the loads, in particular :
X,Y,Z direction system used for the drawing.
Location and level of all supports
Loads distribution, location of the center of gravity
_ A table will give the values of the corresponding loads on the application points, as per following example:

	Dead Load			Live load (causes)			Temparature load			Accidental load (causes)			Wind +X			Wind -X			Wind +Y			Wind -Y		
All forces in kN	FX	FY	FZ	FX	FY	FZ	FX	FY	FZ	FX	FY	FZ	FX	FY	FZ	FX	FY	FZ	FX	FY	FZ	FX	FY	FZ
All moments in kN.m	MX	MY	MZ	MX	MY	MZ	MX	MY	MZ	MX	MY	MZ	MX	MY	MZ	MX	MY	MZ	MX	MY	MZ	MX	MY	MZ
point A.1																								
(type of link)																								
point A.2																								
(type of link)																								
point A.3																								
(type of link)																								
point A.4																								
(type of link)																								

Notes:
_ Exceptional live loads might come from operational sequences, erection, maintenance, etc...
_ Wind loads are given with basic wind, extreme wind pressure and coefficient of site shall be considered by the design office in charge of the structural design
_ The following informations are also required from the equipment supplier:
loads distribution & center of gravity
dynamic coeficient & operation frequency
_ Some particular major equipment (s) - such as mill, electrofilters, clinker cooler - shall be detailed in specific loads drawings. In that case the general loads drawings shall mention clearly:
The point of application of the loads with mention of the equipment & drawing number
The list of specific loads drawings to be read in relation with the general loads drawings

The G22 drawings give also the anchorages detailed as follows:
_ The location, level, details & dimensions of the anchor pockets (fcb's standards to follow when possible).
For fcb standard anchors, refer to the document "standard of steel structure" CHL1 S20 01 A01
_ The location of the FCB's standard inserts (S01, S02, S03, S04, angles, etc...) supplied by the civil works contractor
For fcb standard inserts, refer to the document "standard of steel structure" CHL1 S20 01 A01
_ The location, level details & dimensions of the non standard inserts (not supplied by civil works) with the relevant drawing number.
_ The dimensions of all openings required for equipments, piping, cables, etc...
Such dimensions of openings shall allow for necessary tolerances and gaps.
Notes: When possible, the anchorage details may be added on the loads drawing.

D.2.d) Access and gangway drawings (G31)

Example: CHL1 **G31** 57 011 A - gangway drawing n°11 of the cement mil l building
_ These drawings give all details for the access and gangways with the loads, openings, fixation details...

E) Characteristics of materials used for reinforced concrete (RC)

_ The design office shall design according to the material available, as specified in the chapters E) and F).

E.1) Concrete

Extrait Cahier 05 - Spécifications des Constructions

Catégorie de béton Généralement utilisé :

- Béton maigre et de remplissage ; (classe TA)
- Béton pour Fondations et structures mineures ayant peu ou pas d'armatures ; (classe TB)
- Béton pour Structures et fondations spéciales ; (classe TC)
- Béton précontraint (silos), colonnes fortement sollicitées, etc. (classe TD)
- Mortier (coulis de ciment), calage des équipements ou des structures métalliques ;

La composition des bétons sera déterminée à partir d'essais de convenance faits avec les agrégats et ciments disponibles.

Les classes de bétons sont définies comme suit :

Classe	Contrainte de compression à 28 jours sur cylindres 16x32ht (MPa)
TA (C16/20)	16
TB (C20/25)	20
TC (C25/30)	25
TD (C30/37)	30
TE	-

La classe TE utilisée pour les bétons de propreté et de remplissage est déterminée par son dosage de ciment égal à 200 kg / m³ de béton.

Les scellements et les ancrages seront réalisés en béton classe TC avec agrégats de granulométrie adaptée. Pas de matériaux ou additifs spéciaux.

Les dallages seront réalisés en béton classe TC taloché. Les caniveaux seront également réalisés en béton de classe TC avec couverture en béton de même classe.

E.2) Reinforcement

_ High tensible deformed bars: FY=500N/mm2
_ Plain round mild steel bars: FY=240N/mm2

Diameter of rebar available (in mm)

Diameter (mm)	Area (cm²)	Weight (kg/m)
6	0,283	0,222
8	0,502	0,395
10	0,785	0,617
12	1,131	0,888
14	1,539	1,208
16	2,010	1,578
20	3,142	2,466
25	4,909	3,853
32	8,042	6,313
40	12,566	9,865

To be confirmed by Fives fcb

E.3) Piles

The type and diameter of piles available are :

To be provided by Fives fcb

F) Characteristics of material used in steel structures (SS)

F.1) Profiles and sheets

_ Structural steel is designed with bolted connections, welding on site shall be avoided
_ Profiles, sheets, bolts available for design are those indicated in Ienet - on line software for part lists edited by Fives FCB.
_ Unless a particular agreement has been obtained from Fives FCB, the profiles and sheets are limited to those contained in IEnet

_ The grade **Q235 (1)** is mainly used for the profiles and sheets. *(1) to be confirmed by Fives fcb*
The design can be performed with grade **Q345 (1)** only upon request from Fives FCB, or with previous agreement between the designer and Fives FCB. *(1) to be confirmed by Fives fcb*
As an example large steel profiles of columns and beams for following structures can be optimized using steel quality **Q345 (1)** *(1) to be confirmed by Fives fcb*

- Preheater main floors
- Silo roofs
- Raw mill building top structure
- Columns for crane runway support

For these specific items, a comparative estimate between the two steel qualities will be required by Fives FCB during the predimensioning phase.

F.2) Bolts

_ One bolt = 1 screw + 1nut + 1 washer
_ All bolts used in connections shall be galvanized
_ The designer has to consider only HM 8-8 bolts i.e : No prestressed bolts
_ Drill diameter = bolt diameter + 2 mm
_ Std Bolts hexagonal heads: Thread ISO 898-1 series or equivalent

F.3) Expansion bolts

The expansion bolts are limited to or equivalent to :

HST M10*90	(type HILTI)	for maximum fastenable thickness of 20 mm
HST M12*120	(type HILTI)	for maximum fastenable thickness of 25 mm
HST M16*140	(type HILTI)	for maximum fastenable thickness of 25 mm
HST M20*170	(type HILTI)	for maximum fastenable thickness of 30 mm

In case of specific application, other type of expansion bolts can be used, with previous agreement from Fives FCB's.

F.4) Anchor bolts

_ Anchor bolts are of **Q235 (1)** grade *(1) to be confirmed by Fives fcb*
_ As described in the standard for steel structure, the anchor bolts are limited to those:
B16, B20, B24, B30, B36, B42, B48 see document CHL1 S20 01 A01

F.5) Other materials

_ **Gratings and checkered plates** *(1) to be confirmed by Fives fcb*
Unless especcially specified, the floorings are foreseen with grating, and not checkered plates.
Gratings shall be hot dip galvanised, mesh dimension 30*50 mm, bearing bar thickness 30x3 mm **(1)**
For the steel structure design, the clear distance between supports is maximum equal to 1,000 m (one meter)
Checkered plates thickness shall be minimum 7 mm, as available on Ienet list
Fastenings for steel gratings and checkered plates shall be shown on the drawings.

_ **Steel deck for composite floor** *(1) to be confirmed by Fives fcb*
The steel deck available on site is the MF75 distributed by METFORM **(1)** - see technical datasheet in annex
For the steel structure design, the clear distance between supports is maximum equal to 2,200 m in a two-spans system

_ **Roofing/cladding**
Prepainted steel sheet 0,75mm for roofing and 0,63mm for cladding - or equivalent
For the steel structure design, see the technical datasheet in annex for analogy **(1)** *(1) to be confirmed by Fives fcb*

G) Particular rules applicable to design

G.1) Definition of concrete buildings arrangement

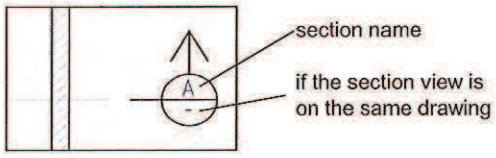
Refer to civil works standards document, where are described: CHL1 C02 01 A02
- _ typical design of manholes, roads, pits, networks
- _ general information on drawings
- _ details for waterproofing, slipform, masonry, etc

T beams in industrial buildings
_ T beams will not be used in the industrial buildings in order to maintain the possibility of slab cutting.

Industrial slabs
_ Industrial ground & elevated slabs: min. thickness of 150 mm
_ Industrial slabs will be designed in such a way to allow for casting beams and then slabs.
_ Industrial slabs will be designed in such a way to allow for next floor slab propping over it. If in a particular case a separate beams/slab casting cannot be supported on the lower floor, it will be mentionned on the relevant beams/slab formwork drawing.

G.2) Standardization in design

IT IS COMPULSORY TO FOLLOW IT STRICTLY

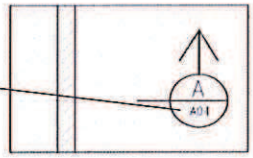


1/ _ View, section and elevation

1.a/ The view A and the reference of the view are in the same drawing

1.b/ The reference of the view and the view are not in the same drawings

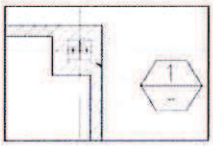
Ex: on drawing A08 we have a reference of the view A which is detailed in drawing A04
In dwg A08, XXX=A04 & in dwg A04, XXX= A08



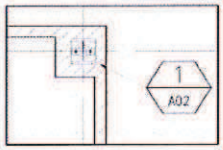
2/ _ Details

The principle is the same

2.a/ Details shown on the concerned drawing :



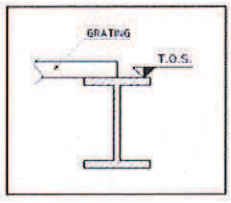
2.b/ Detail shown in another drawing
Ex: A02 is the reference of the drawing on which we find the detail or from which the detail comes

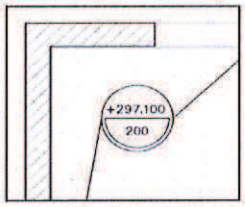


3/ _ Levels are always given:

For concrete levels, "rough floor level" i.e.
Top of concrete slab before grouting, tiling… **TOC**

For steel levels, "finished floor level" i.e. **FFL**
Top of grating or **TOG**
Top of checkered plate or **TOCP**
Top of steel structure can be indicated for information (TOS)





Representation of concrete floor with level and thickness

4/ _ Grouting thickness over RFL is indicated on drawing

5/ _ When practicle, the finished floor level is indicated on drawing (FFL) i.e:top of screed, tiling, grating, checkered plate…

6/ _ Unless otherwise stated, grouts are foreseen with simple concrete grout, to be mentioned on drawings.
Any special grout imposed by an equipment supplier has to be clearly shown and mentioned.

7/ _ Use as far as possible round numbers for coordinates and levels (100 mm)

8/ _ Draw buildings as per lay out orientation. If not possible, mention clearly the orientation.

9/ _ As a principle, the ground floor level of all buildings shall be 200 mm above finished ground level.

10/ _ Platforms shall be provided with stairs: inclination 40 degrees, length to be limited to match a maximum stair height of 3m.
_ The minimum clearance height for undisturbed passage on all stairways shall be H/W = 2,2/1,1 m. H being measured perpandicular to the plight.Secondary walkways and stairs with H/W = 2,2/0,8m.
_ Use steps of height 200 mm, steps 250 mm deep and 800/1100 mm wide .

11/ _ All platforms shall be designed to the following rules:
- _ Less than 10% inclination: no special requirement
- _ 10% to 20% inclination: no special requirement for grating
  anti glide device on checkered plates (e.g. welded on iron bars)
- _ 20% to 25% inclination: as for 10 to 20% with horizontal platform every 10 to 15 m.
- _ More than 25% inclination: steps

12/ Connection of the steel structure onto the concrete
_ Steel structure standards for inserts, stairs, handrails are issued by FCB.
Refer to steel structure standards document CHL1 S20 01 A01
This document shall be followed by all design offices and contractors.
_ Steel structure building anchorages over RC floors will be made on RC blocks with J-bolts and anchorage pockets
_ Expansion bolts are preferable to inserts or anchor box but the design office must consider the location of the reinforcement bars to avoid interference.
_ Secondary steel structure will be fixed directly with expansion bolts on RC floors (no plinth)
_ Secondary steel structure will be fixed on inserts if it is on soffit or top face of beams.
_ Secondary steel structure will be fixed directly with expansion bolts on RC plinths over roof floors

G.3) Drawings format

_ Use only standard formats A0, A1, A2, A3, A4 and standard scales 1/100, 1/50, 1/20 and multiples
_ All drawings shall be made in AutoCAD 2004
_ The title block of the project shall be used for all documents.
Refer to civil works standards document CHL1 C02 01 A02
_ Only 4 lines can be used

1	Plain lines	————————
2	Dotted lines	- - - - - - - - - - - - - - - - - - (hidden lines)
3	Mixed lines (long & short line)	—·—·—·—·—·—·—·— (axis)
4	Double mixed lines	—··—··—··—··—··—··— (over the plan)

_ Color code **TO FOLLOW COMPULSORILY**. A plotstyle file fcb.ctb is sent to the design office.

1	Red	=	0,70	mm
2	Yellow	=	0,18	mm
3	Green	=	0,13	mm
4	Cyan	=	0,50	mm
5	Blue	=	1,00	mm
6	Magenta	=	0,25	mm
7	White	=	0,35	mm
8	Grey	=	0,00	mm (construction lines - non apparent on print)
9 to 256		=	0,25	mm

_ Dimensions are always associated, they are never forced

G.4) Documents transmission system

_ Unless a particular agreement from fcb, a soft copy of all documents will be transmitted to FCB through the specific FTP Site opened by FCB for the project.
_ Transmission of documents will be made as per the procedure detailed by FCB in the contract
_ When uploading documents on the FTP Site, an email shall be sent to the address: **corinne.pottier@fivesgroup.com**

To be confirmed by Fives fcb

G.5) Design progress gestion system

_ Design office will issue weekly to FCB a progress report, which shall contain:
- _ time schedule annotated with real progress
- _ list of documents sent for approval
- _ projected list of documents to be issued in the following two weeks
- _ reminder of pending minor and major issues
- _ update of the estimated main quantities (monthly)

H) Documents to be issued by the design offices

The design office will prepare and send to fcb the following documents:

H.1) General and detailed calculation note

The General calculation note of a structure will be based on the soil report (for the Civil works part), the general arrangement drawings, the architectural drawings & the loads drawings.
The general calculation note will have a summary and will mention:
_ The reference standards, loads conditions, reference documents.
_ The main dimensions of all building elements
_ The procurement list for steel structure, reinforcement, prestressing. (as an annex)
_ The concrete, formwork and masonry quantity. (as an annex)

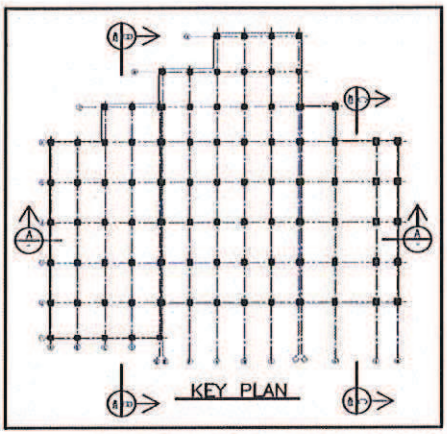
The General calculation notes shall be structured as follow :
_ Summary
_ Method of construction of the building
_ Hypothesis for calculation
_ Loads applicable on sketches
_ Results of the calculation
_ Dynamic analysis for structures receiving vibrating equipment
_ All calculation sheets.
_ Annexes
A detailed calculation note will be included for each part of a structure:
_ for the civil works: foundations, floor1, floor2, floor3, equipments foundations, ground slab, masonries, etc...
_ for steel structure: columns, beams, monorails, crane runway beams, main connections...

The calculation note shall be sufficient to obtain the approval of the Client or/and his Engineer, and the approval of the local Authority which is for the **CHL1** project the **CTC Chlef (Centre Technique de la Construction de Chlef).**

The general calculation note for steel structure will include the load and anchor drawings of the steel structure. applied on the civil structure.
These drawings will show clearly the arrangement of anchor bolts, base plates, shims & grout

Nota - procurement list
On the basis of the output of the General calculation note, the design office will issue a procurement list for the rebars and/or the steel structure and materials This procurement list will allow FCB to purchase the corresponding profiles and sheets.

H.2) Civil Works (CW) design



BAR1 C02 01 A02_BO01-FFCB-RC05-000000-0102_B

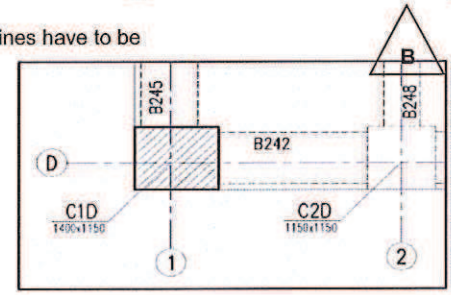
Nota:

_ Execution drawings for civil works will not show any equipment or steel structure unless it is necessary for understanding (embedded parts, anchorages,etc...)

_ Execution drawings for civil works shall contain a key plan oriented as per layout, or an isometric view, allowing an easy understanding of the location of the structures described see the example besides: key plan with indication of the drawings where the sections are shown

H.2.a) Execution drawings for Civil works - Formwork

_ Refer to § G.2) Standardization in design
_ Refer to civil works standards document
_ Format A0 and scale 1/50 shall be preferred
_ Formwork drawings are representing the outer face of the structure form. The types of lines have to be chosen accordingly,
For example, on a plan view of a RC floor:
  _ elements seen and above the fllor are represented with plain lines
  _ beams and columns below the floor are represented with dotted lines
  _ axis are shown in mixed lines

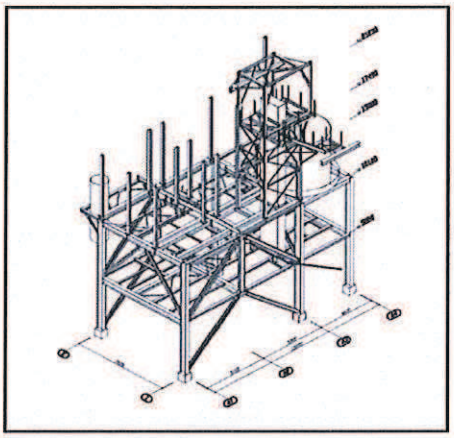


_ Formwork drawings shall mention at least 3 characteristic coordinates points and axis
_ Formwork drawings shall mention:
  _ the main axis of the building, the absolute levels
  _ all dimensions with closed cotation lines. No measurement should be scaled.
  _ the list of inserts to be embedded in the relevant element (ie: floor + columns below) when same inserts are visible on several drawings, they shall be listed only on the plan view drawing.
  _ the grade(s) of the concrete to be used
_ Formwork drawings include masonry drawings. On masonry drawings shall add "schedule of finishings"
_ Formwork drawings include deep foundations drawings. Drawings for piles can be issued with both formwork and reinforcement (C35 drawings - see numbering)

H.2.b) Execution drawings for Civil works - Reinforcement

_ Format A0 shall be preferred
_ Each reinforcement drawings shall mention which formwork drawing it concerns.
_ All bars shall be represented and marked on plan view, section and elevation. with corresponding Mark number, quantity, grade, diameter and spacing
_ All bars **except rebar for construction (chairs, ...)** shall be listed in the bending schedule on the drawing (not on separate folios) with corresponding Mark number, grade, diameter, quantity, length, radius, shape & total length.
Rebars for construction are in Civil Works Contractor 's scope of supply and design.
_ Each reinforcement drawings shall include a summary table (quantitative) of the reinforcement used in the drawing. The table shall indicate for each grade: the unit weight, length & weight per diameter and the total weight.

H.3) Steel Structure (SS) design



Nota

_ Execution drawings for steel structure will not show any equipment or civil work unless it is necessary for understanding (embedded parts, anchorages, RC slab on decking, etc...)

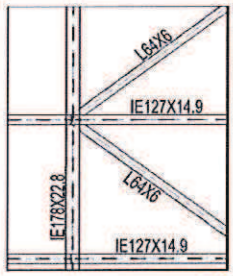
_ Execution drawings for steel structure shall contain a key plan or an isometric view, allowing an easy understanding of the location of the structures described
see the example besides: 3D view with location of the part of structure in the drawing

H.3.a) Load and anchoring drawings

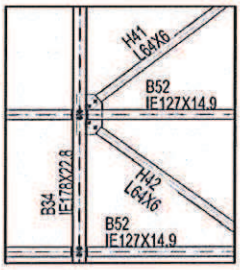
_ Load and anchoring drawing shall permit the design of the civil works
_ These drawings shall follow the same rules as the load drawings issued by FCB
Refer to § D.2.c) of the present document
In particular, the loads shall be clearly indicated as shown in the table defined in § D.2.c)

H.3.b) General arrangement and details drawings for the structures

_ Format A0 and scale 1/50 shall be preferred
_ GA drawings will show the axis, dimensions, levels and the main views.
The first drawing will show a lay out of the structure with the position of all sections and details which are detailed in the following drawings.



_They shall specify the type of profiles used (revision number before approval) and shall be completed with mark numbers (after approval, when issuing for execution) in order to be used for manufacturing and erection.
see example besides on the extract



_ They shall include the main details necessary for the fabrication & for the connections.
When it is not faisable to include all these details in the General arrangement drawings, specific detailed drawings must be issued. Mark numbers will then refer to this independant drawing number.

H.3.c) Workshop and assembly drawings

_ **Assembly drawings**: they show the indivisible pieces sent to the site for the erection of the structures, these pieces are made by the assembling of unit elements issued from the fabrication
All pieces shall be marked on the drawings and shall be detailed in the IEnet software (as hereunder stated).
_ Assembly drawings corresponding to a structure or part of structure shall be issued as a unique booklet **S50** with one document number. Example : **CHL1 S50 36 B01 A.zip**
In practical terms, the assembly drawings are issued in a zip file, which contains:
- _ the standard title block A4 in dwg file, with document number
- _ a folder with all individual assembly drawing concerned (files .dwg or .dxf or equivalent)
- _ standards for welding
- _ a summary for revision tracking

_ **Workshop drawings**: they show the unit elements to be fabricated with all necessary details.
All elements shall be marked on the drawings and shall be detailed in the Ienet software (as hereunder stated).
_ Workshop drawings corresponding to a structure or part of structure shall be issued as a unique booklet **S60** with one document number. Example : **CHL1 S60 51 E01 B.zip**
In practical terms, the workshop drawings are issued in a zip file, which contains:
- _ the standard title block A4 in dwg file, with document number
- _ a folder with all individual workshop drawing concerned (files .dwg or .dxf or equivalent)
- _ a summary for revision tracking

Nota 1 - marks and sub-marks system

_ Each indivisible piece of steel structure sent to the site shall be named by its mark number.
Identical elements may have the same mark number only if it refers to the same drawing.
_ Each individual sub-element of a mark number shall be named by its submark number.
Identical elements may have the same submark number only if it refers to the same mark.
_ All Marks & Submarks shall be entered in IEnet

Nota 2 - IEnet: On-line software for material list

_ FCB has developped a on-line software called **IEnet** which is accessible to each designer with a code and a user name.
_ The list of the elements available is given in Ienet, and has to be followed compulsorily.
_ The design office has an access restricted to the groups and subgroups included in his scope of design.
_ FCB has prepared all data concerning: the materials, the group names, the sub groups names, the items, the available materials. Then the designer has only to enter in his dedicated items, to create his drawing numbers and titles and to fill in the concerned material lists with marks and submarks.
_ The material lists for steel structure shall be associated with the corresponding assembly drawing number (S50)
_ Each group/subgroup is associated with an item. The file giving the association between the group/subgroup and the item for manufacturing is given by FCB at the beginning of the design.
Example: the group/subgroup 36B is linked with the item 323 BH01 S01. The design office in charge of this item will find this item after having entered in Ienet with his code and password.
_ In any case, refer to the IEnet user's manual, available directly from the web page.
_ Every mark must have his own price code which are defined as follows:

1-main structure - price code: MAIN
2-gangways and platforms - price code: GANGW
3-handrails - price code: HANDR
4-stairways - price code: STAIR
5-ladders - price code: LADDE

_ The price code of main structure, handrail and ladders are explicit but the price code of ganway and stair have to be used as follow:

1-price code GANGW applies to all platforms for which the width is less than 1500mm or for which the area is less than 6m²
2-price code STAIR applies for stairs stringers only. Whenever stairs are supported by columns or / and beams with eventual bracings, these elements are considered as MAIN. The handrails put on the stringers are obviously considered as HANDR

Nota 3 - inserts / embedded devices

_ Inserts are shown on separate GA drawings (S25 - see numbering), to allow their supply in due time for the civil works.
_ Dedicated assembly and workshop drawings have to be issued, allowing their manufacturing before the main steel structure.
_ All Marks & Submarks shall be uploaded in IEnet

H.3.d) Execution drawings for roofing, cladding

_ Format A0 and scale 1/50 shall be preferred
_ The arrangement drawings, in order to be used by the supplier and by the erector, will show the axis, dimensions and levels, the types of the metal sheets; they shall specify the details of the accessories, the type of fixation and connections. They shall be completed with mark numbers.
_ All Marks (sheets, accessories, fixations)& Submarks shall be uploaded on IEnet

H.3.e) Execution drawings for checkered plates or metal deck

_ Format A0 and scale 1/50 shall be preferred
_ The arrangement drawings, in order to be used for manufacturing and erection, will show the axis, dimensions and levels & specify the type of sheets, fixing devices, connection details and accessories. They shall be completed with mark numbers.
_ All Marks (sheets, accessories, fixations)& Submarks shall be uploaded on IEnet

I) Annexes

_ Technical datasheet of the steel deck METFORM MF75
_ Technical datasheet of the cladding and rrofing sheets for analogy

Tabela de cargas e vão máximos - *MF-75*

	Altura total da laje (mm)	Espessura Steel Deck (mm)	Vãos Máximos sem Escoramento Simples (mm)	Duplos (mm)	Triplos (mm)	Balanço (mm)	Peso Próprio (kN/m²)	M. Inércia Laje Mista (10⁴cm⁴/m)	Vãos Máximos Carga sobreposta 2.000	2.100	2.200	2.300	2.400	2.500	2.600	2.700
Lajes de Forro	130	0,80	2.350	3.200	3.900	1.150	2,27	10,66	11,97	10,56	9,42	8,43	7,56	6,79	6,11	5,51
		0,95	3.000	3.650	3.750	1.350	2,28	11,34	14,19	12,69	11,38	10,25	9,25	8,35	7,58	6,88
		1,25	3.650	4.300	4.400	1.650	2,32	12,74	18,83	16,94	15,31	13,88	12,62	11,50	10,51	9,63
Lajes de Piso	140	0,80	2.200	3.100	3.200	1.150	2,50	13,17	13,16	11,71	10,45	9,35	8,39	7,54	6,78	6,11
		0,95	2.850	3.500	3.600	1.350	2,52	13,99	15,74	14,07	12,63	11,37	10,26	9,28	8,41	7,64
		1,25	3.500	4.150	4.250	1.600	2,55	15,68	20,00	18,79	16,98	15,39	14,00	12,76	11,67	10,69
	150	0,80	2.000	3.000	3.100	1.100	2,74	16,06	14,46	12,86	11,48	10,28	9,22	8,28	7,45	6,72
		0,95	2.650	3.400	3.500	1.300	2,75	17,04	17,28	15,45	13,97	12,49	11,27	10,20	9,24	8,39
		1,25	3.400	4.000	4.100	1.550	2,79	19,05	20,00	20,00	18,65	16,91	15,38	14,02	12,82	11,75
	160	0,80	1.850	2.900	3.000	1.100	2,97	19,35	15,75	14,02	12,51	11,20	10,04	9,03	8,12	7,32
		0,95	2.500	3.300	3.400	1.250	2,99	20,51	18,83	16,84	15,11	13,61	12,28	11,11	10,07	9,15
		1,25	3.250	3.900	4.000	1.500	3,02	22,90	20,00	20,00	20,00	18,42	16,76	15,28	13,97	12,80
	170	0,80	1.700	2.800	2.900	1.050	3,21	23,07	17,04	15,17	13,54	12,12	10,87	9,77	8,80	7,93
		0,95	2.350	3.200	3.300	1.250	3,23	24,44	20,00	18,22	16,36	14,72	13,29	12,03	10,91	9,90
		1,25	3.150	3.800	3.900	1.450	3,26	27,24	20,00	20,00	20,00	19,94	18,14	16,54	15,12	13,86
	180	0,80	1550	2.750	2.850	1.050	3,44	27,25	18,34	16,32	14,57	13,04	11,70	10,52	9,47	8,53
		0,95	2.200	3.100	3.200	1.200	3,46	28,84	20,00	19,61	17,60	15,84	14,30	12,94	11,74	10,66
		1,25	3.050	3.700	3.800	1.450	3,50	32,10	20,00	20,00	20,00	20,00	19,51	17,80	16,28	14,92
	190	0,80	1.450	2.650	2.750	1.000	3,68	31,92	19,63	17,47	15,60	13,96	12,53	11,26	10,14	9,14
		0,95	2.100	3.050	3.150	1.200	3,70	33,75	20,00	20,00	18,84	16,96	15,32	13,85	12,57	11,41
		1,25	3.000	3.600	3.700	1.400	3,73	37,52	20,00	20,00	20,00	20,00	20,00	19,06	17,43	15,97
	200	0,80	1.400	2.600	2.650	1.000	3,91	37,10	20,00	18,82	16,83	14,88	13,35	12,00	10,81	9,74
		0,95	1.950	2.950	3.050	1.150	3,93	39,19	20,00	20,00	20,00	18,08	16,33	14,78	13,40	12,17
		1,25	2.900	3.500	3.650	1.400	3,97	43,51	20,00	20,00	20,00	20,00	20,00	20,00	18,58	17,03

sem Escoramento máxima (kN/m²) 2.800	2.900	3.000	3.150	3.300	3.500	3.750	4.000
4,96	4,47	4,03	3,45	2,94	2,37	1,77	1,29
6,25	5,69	5,18	4,51	3,92	3,26	2,56	2,00
8,84	8,13	7,48	6,63	5,88	5,03	4,15	3,42
5,51	4,97	4,48	3,83	3,27	2,63	1,98	1,44
6,94	6,32	5,76	5,01	4,36	3,62	2,85	2,23
9,81	9,02	8,31	7,36	6,53	5,59	4,61	3,81
6,06	5,46	4,93	4,22	3,60	2,90	2,18	1,59
7,63	6,95	6,33	5,51	4,80	3,98	3,14	2,45
10,78	9,91	9,13	8,09	7,18	6,15	5,07	4,19
6,60	5,95	5,37	4,60	3,93	3,17	2,38	1,73
8,32	7,57	6,90	6,01	5,23	4,35	3,43	2,68
11,75	10,81	9,95	8,82	7,83	6,71	5,54	4,58
7,15	6,45	5,82	4,98	4,26	3,42	2,58	1,88
9,01	8,20	7,47	6,51	5,67	4,71	3,72	2,91
12,72	11,70	10,78	9,55	8,49	7,27	6,00	4,96
7,69	6,94	6,26	5,37	4,59	3,70	2,78	2,03
9,69	8,83	8,04	7,00	6,10	5,07	4,01	3,14
13,70	12,60	11,60	10,28	9,14	7,83	6,47	5,35
8,24	7,44	6,71	5,75	4,91	3,96	2,98	2,18
10,38	9,45	8,62	7,50	6,54	5,44	4,30	3,36
14,67	13,49	12,43	11,02	9,79	8,39	6,93	5,73
8,79	7,93	7,16	6,13	5,24	4,23	3,19	2,33
11,07	10,08	9,19	8,00	6,97	5,86	4,59	3,56
15,64	14,38	13,25	11,75	10,44	8,94	7,39	6,12

Observações

Norma utilizada: A tabela de cargas foi elaborada seguindo as prescrições do Anexo C da norma NBR-14323.

Peso próprio: O peso próprio da laje foi determinado considerando-se concreto de densidade normal (2.400 Kg/m³). Entretanto, para se computar as cargas sobrepostas à laje, o valor do peso próprio não precisa ser considerado.

Armaduras adicionais: Deverá ser especificada uma armadura nas duas direções, a fim de evitar possíveis fissuras devido à retração, ou a variações de temperatura do concreto. Além da armadura de retração, deverão ser previstas armaduras localizadas (acima de vigas principais, no contorno de pilares, etc) para evitar possíveis fissuras devido a tendência de continuidade da laje sobre os apoios.

Escoramento: Caso o vão utilizado seja superior ao vão máximo sem escoramento indicado na tabela de cargas, a laje deverá ser escorada durante a concretagem.

Largura de apoio: Os valores recomendados para as larguras de apoio são: Steel Deck MF-75: 75mm (apoios externos) e 150mm (apoios internos); Steel Deck MF-50: 50mm (apoios externos) e 100mm (apoios internos); caso não seja possível a utilização das larguras de apoio consideradas acima o Departamento Técnico da METFORM deverá ser consultado.

Lajes de piso: Para lajes de piso, recomenda-se que a altura total de concreto seja maior ou igual a 140 mm.

Cargas pontuais ou lineares: A tabela de cargas foi elaborada para cargas uniformemente distribuídas na superfície da laje. Caso existam cargas lineares ou pontuais aplicadas diretamente na laje, o Departamento Técnico da Metform deverá ser consultado.

Situações de incêndio: Os valores indicados na tabela de cargas correspondem aos carregamentos que podem ser aplicados em temperatura ambiente, ou em situações de incêndio com tempos de atuação de até 30 minutos. Para situações de incêndio com tempos de atuação superiores a 30 minutos a norma NBR - 14323 deverá ser consultada, para que as armaduras adicionais sejam consideradas na resistência nominal das lajes.

Manual Técnico: A METFORM dispõe de um manual técnico de dimensionamento e utilização do Steel Deck MF-50/MF-75. Neste manual encontram-se informações detalhadas das lajes sobre: cargas concentradas, armaduras adicionais, verificações em situação de incêndio e instruções sobre manuseio e montagem dos materiais na obra.

Consumo de concreto - tipo de armadura para retração

Altura total da laje (mm)	Consumo de Concreto (m³/m²)	Tipo de armadura para retração, em tela soldada Denominação	Composição	Peso (kg/m²)
130	0,0925	Q - 75	ø3,8 x ø3,8 - 150x150	1,21
140	0,1025	Q - 75	ø3,8 x ø3,8 - 150x150	1,21
150	0,1125	Q - 75	ø3,8 x ø3,8 - 150x150	1,21
160	0,1225	Q - 92	ø4,2 x ø4,2 - 150x150	1,48
170	0,1325	Q - 113	ø3,8 x ø3,8 - 100x100	1,80
180	0,1425	Q - 113	ø3,8 x ø3,8 - 100x100	1,80
190	0,1525	Q - 138	ø4,2 x ø4,2 - 100x100	2,20
200	0,1625	Q - 138	ø4,2 x ø4,2 - 100x100	2,20

Exemplos de utilização de tabela

Por exemplo, suponha que seja necessário projetar uma laje de piso, apoiada em vigas de aço e submetidas a vãos múltiplos de 2.800 mm. As cargas de serviço a atuarem nesta laje serão: **1,0 kN/ m2** de revestimento e **4,0 kN/m2** de sobrecarga.

Será feita a verificação para uma laje com 140 mm de altura total de concreto (75 mm do Steel Deck e 65 mm de cobrimento) e com o **Steel Deck MF-75** de espessura 0,80 mm. Para esta laje, não há necessidade de utilização de escoramento. Isto porque o vão de 2.800 mm é inferior aos vãos máximos sem escoramento (duplos ou triplos) relacionados na tabela de cargas.

Após a cura do concreto, a carga sobreposta total a atuar na laje mista será **Wd = 1,0 + 4,0 = 5,0 kN/m²**. De acordo com a tabela de cargas, para uma laje de altura de 140 mm e um vão de 2.800 mm, a resistência da laje mista é:

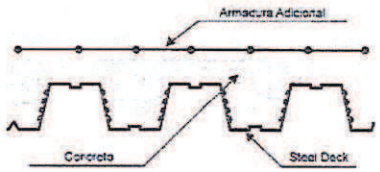
Wn = 5,51 kN/m² Wn > Wd

A laje adotada resiste às cargas aplicadas.

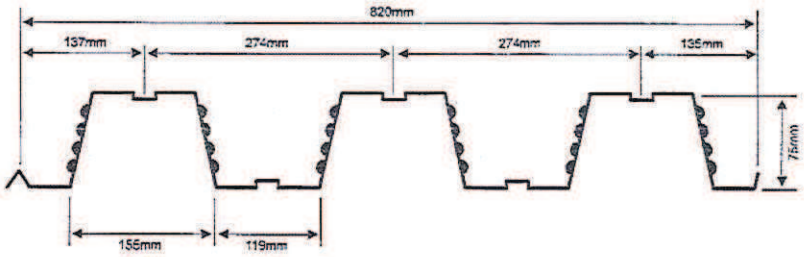
Materiais utilizados

Basicamente são três os materiais utilizados na confecção de lajes mistas com Steel Deck:

- O Steel Deck de aço galvanizado, ASTM A 653 Grau 40 (ZAR- 280) tensão de escoamento fy = 280 MPa;
- O concreto de resistência mínima à compressão fck = 20MPa;
- Uma armadura em tela soldada, para controle de fissuração, tendo uma área mínima de 0,1% da área de concreto acima do topo do Steel Deck.



Dimensões



Propriedades físicas - para largura de 1.000mm

Esp. Final (mm)	Esp. projeto (mm)	Altura total (mm)	Peso (kg/m²)	Reações máximas do apoio Externo kN	Interno kN	Módulo de Resistência (mm³)	Inércia para Deformação (mm⁴)	Área de aço (mm²)	Centro de Gravidade (mm)
0,80	0,76	74,98	9,37	8,75	21,01	22.710	1.017.138	1.112	37,49
0,95	0,91	75,13	11,12	8,90	29,70	28.788	1.254.749	1.332	37,57
1,25	1,21	75,43	14,63	14,82	49,53	40.599	1.666.741	1.771	37,72

GAMME TRAPEZA

Plaque nervurée en acier galvanisé ou galvanisé prélaqué pour bardage simple et double peau

RÉFÉRENCE NORMATIVE

Régles professionnelles pour la fabrication et la mise en œuvre des bardages métalliques : Janvier 1981 - 2ème édition

CARACTERISTIQUES DU MATÉRIAU DE BASE		NORMES
Nuance d'acier	S 320 GD	NF EN 10 326
Type de protection	Galvanisé	NF EN 10 326 P 34.310
	Galvanisé-Prélaqué	NF EN 10 169-1 XP P34.301

Epaisseur (mm)	0,63	0,75
Masse (kg/m²)	5,66	6,74

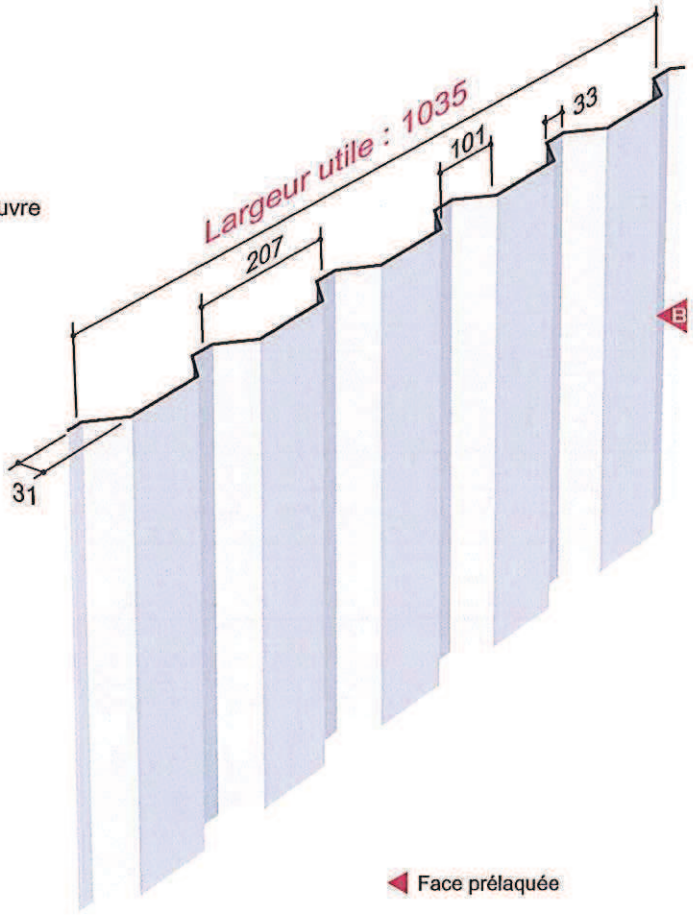


Tableau d'utilisation

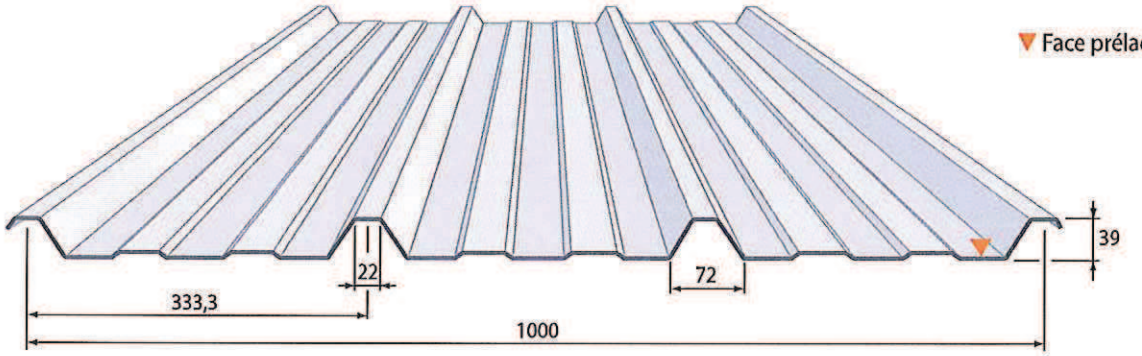
Charges normales admissibles en daN/m² en fonction des portées d'utilisation (travées égales)

HACIERBA 5.207.32 B PV VERITAS DLC L 7 86 715	2 APPUIS EPAISSEUR (mm)		PORTEE (m)	3 APPUIS EPAISSEUR (mm)	
	0,75	0,63		0,63	0,75
Pression	160	160	1,80	160	160
Dépression	160	153		160	160
Pression	160	117	2,00	160	160
Dépression	134	123		160	160
Pression	116	87	2,20	134	160
Dépression	103	91		141	160
Pression	86	66	2,40	113	160
Dépression	82	69		116	145
Pression	65	51	2,60	96	138
Dépression	67	53		95	118
Pression	50		2,80	83	114
Dépression	55			80	98
Pression			3,00	72	96
Dépression				68	82
Pression			3,20	63	81
Dépression				58	70
Pression			3,40	54	69
Dépression				50	60
Pression			3,60		60
Dépression					52

Plaque nervurée de couverture de type trapézoïdale.

GAMME TRAPEZA

▼ Face prélaquée



I - IDENTIFICATION

CARACTERISTIQUE DU MATÉRIAU DE BASE		NORMES
Nuance d'acier : S 320 GD	Tolérances normales	NF EN 10326
Type de protection	Galvanisé	NF EN 10326 P 34310
	Galvanisé-Prélaqué	NF EN 10169-1 XP P34301

NF P 34-205-1 / Réf. DTU 40.35

LONGUEUR DE PROFILAGE (mm)	
Mini	1800
Maxi	12800

II - CARACTERISTIQUES EXPERIMENTALES - Selon PV VERITAS N° DLC / L 7 84 295

						EPAISSEUR (en mm)			
			MASSE SURFACIQUE (kg/m²)		m	0,63	0,75	0,88	1,00
ACTION DES CHARGES DESCENDANTES			Moments d'inertie (cm⁴/ml)	Travée simple	I2	17,06	16,47	19,32	21,96
				Deux travées égales	I3	10,96	14,06	16,49	18,74
				Continuité	Im	14,01	15,26	17,91	20,35
			Moments de flexion (m.daN/ml)	en travée : Système élastique	Md2T	113,78	139,24	163,38	185,66
				en travée : Système élasto-plastique	Md3T	140,00	189,85	222,75	253,13
				Sur appui	Md3A	135,65	148,02	173,68	197,36
				Sous charge concentrée	Mc	96,66	134,03	157,27	178,71
			Réaction d'appui (daN/ml)		Rd	525,37	612,54	718,71	816,72
ACTION DES CHARGES ASCENDANTES	Fixation en sommet de nervure	Fixation complète	Moments de flexion (m.daN/ml)	en travée : Système élastique	Ma2T	100,71	164,68	193,23	219,58
				en travée : Système élasto-plastique	Ma3T	116,64	182,21	213,80	242,95
				Sur appui	Ma3A	83,39	137,86	161,75	183,81
			Efforts d'arrachement sur appui (daN/ml)		Sa	467,44	602,11	706,47	802,81
		Fixation réduite	Moments de flexion (m.daN/ml)	en travée : Système élastique	Ma2Tr	100,71	164,68	193,23	219,58
				en travée : Système élasto-plastique	Ma3Tr	78,69	195,33	229,19	260,44
				Sur appui	Ma3Ar	56,52	87,69	102,89	116,92
			Efforts d'arrachement sur appui (daN/ml)		Sar	311,13	455,31	534,23	607,08

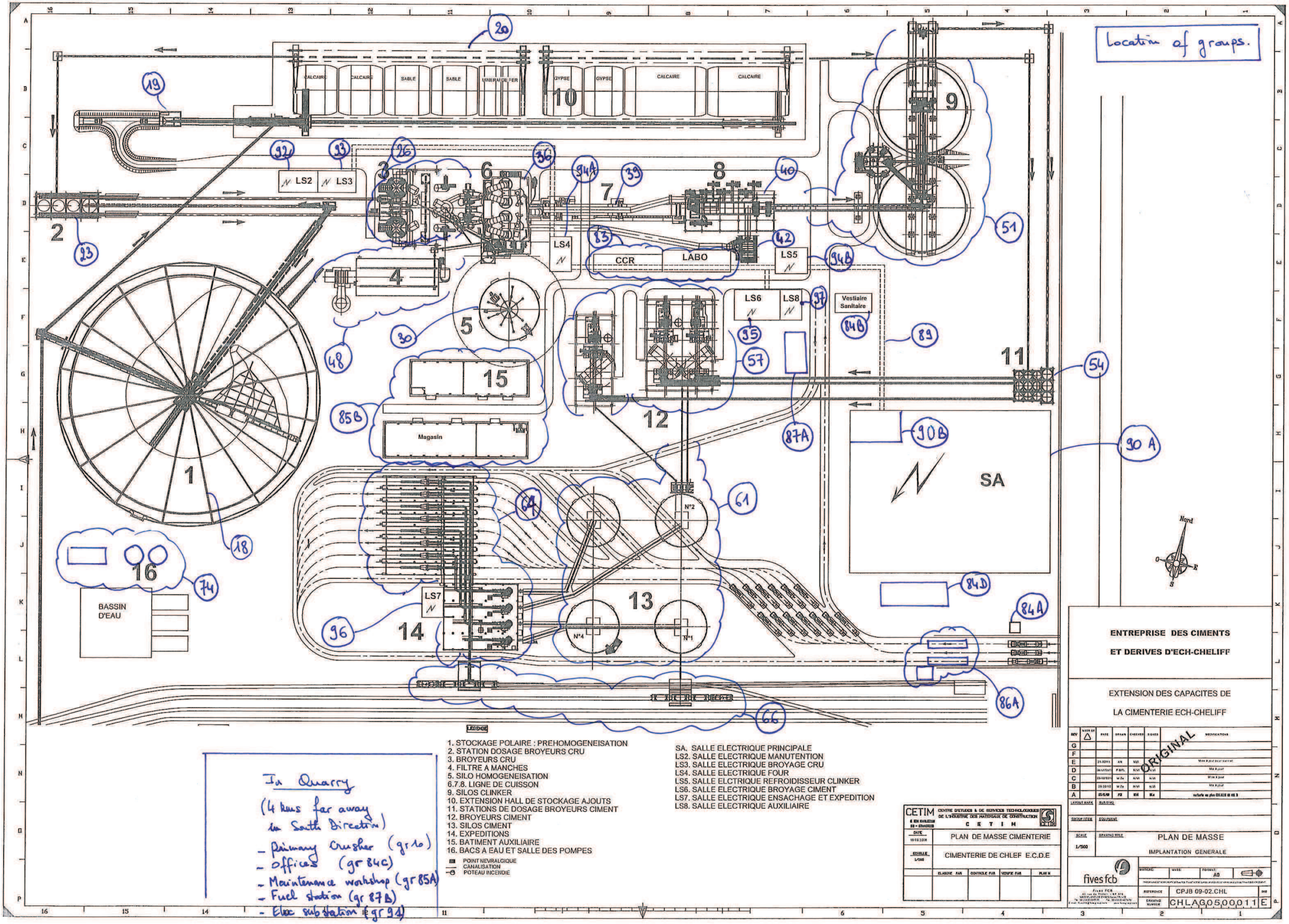
III - PORTEES UTILES SOUS L'ACTION DES CHARGES CLIMATIQUES (pour travées égales)

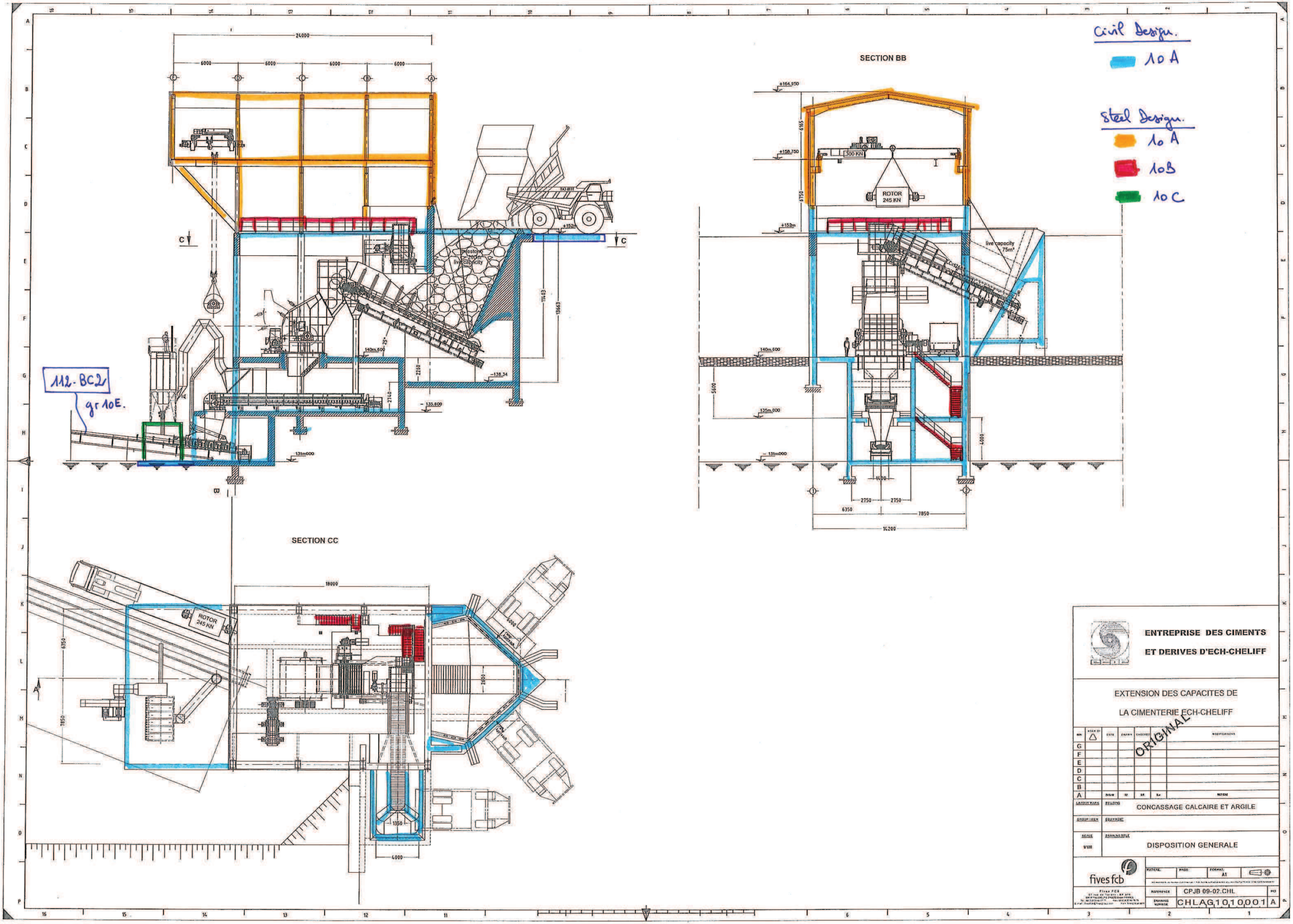
HACIERCO 3.333.39 T	CHARGES D'EXPLOITATION NON PONDEREES EN daN/m²		2 APPUIS				3 APPUIS				4 APPUIS			
			0,63	0,75	0,88	1,00	0,63	0,75	0,88	1,00	0,63	0,75	0,88	1,00
CHARGES DESCENDANTES	45		1,95	2,35	2,75	3,05	2,20	2,95	3,40	3,80	2,20	2,95	3,40	3,80
	55		1,95	2,35	2,75	3,05	2,20	2,95	3,40	3,80	2,20	2,95	3,40	3,80
	65		1,95	2,35	2,75	3,00	2,20	2,95	3,40	3,80	2,20	2,95	3,40	3,60
	75		1,95	2,35	2,75	2,85	2,20	2,95	3,40	3,70	2,20	2,95	3,35	3,45
	90		1,95	2,35	2,60	2,70	2,20	2,95	3,35	3,50	2,20	2,95	3,15	3,30
	100		1,95	2,35	2,50	2,60	2,20	2,95	3,25	3,40	2,20	2,90	3,05	3,20
	125		1,95	2,25	2,35	2,45	2,20	2,75	2,95	3,15	2,20	2,70	2,85	2,95
	150		1,95	2,10	2,20	2,30	2,20	2,50	2,70	2,90	2,20	2,55	2,70	2,80
	175		1,85	2,00	2,10	2,20	1,95	2,25	2,50	2,65	2,05	2,35	2,55	2,65
	200		1,70	1,90	2,05	2,10	1,70	1,95	2,30	2,50	1,85	2,15	2,40	2,55
	225		1,50	1,75	1,95	2,05	1,50	1,75	2,05	2,35	1,65	1,95	2,25	2,40
	250		1,35	1,60	1,85	1,95	1,35	1,60	1,85	2,10	1,50	1,75	2,05	2,30
CHARGES ASCENDANTES	Fixation complète en sommet de nervure	75	1,95	2,35	2,75	3,05	2,20	2,95	3,40	3,80	2,20	2,95	3,40	3,80
		100	1,95	2,35	2,75	3,05	2,20	2,95	3,40	3,65	2,20	2,95	3,40	3,70
		125	1,95	2,35	2,75	3,05	2,15	2,80	3,00	3,25	2,20	2,85	3,10	3,30
		150	1,90	2,35	2,65	2,85	1,95	2,50	2,75	2,95	2,05	2,60	2,80	3,00
		200	1,60	2,05	2,30	2,45	1,60	2,05	2,35	2,50	1,75	2,25	2,40	2,60
	Fixation réduite en sommet de nervure	50					2,20	2,95	3,40	3,80	2,20	2,95	3,40	3,80
		75					2,20	2,90	3,15	3,40	2,20	2,95	3,40	3,70
		100					2,00	2,50	2,70	2,90	2,10	2,70	2,95	3,15
		125					1,75	2,20	2,40	2,60	1,85	2,40	2,60	2,80
		150					1,45	2,00	2,20	2,35	1,55	2,20	2,35	2,55
		200					1,05	1,55	1,85	2,00	1,15	1,70	2,00	2,20

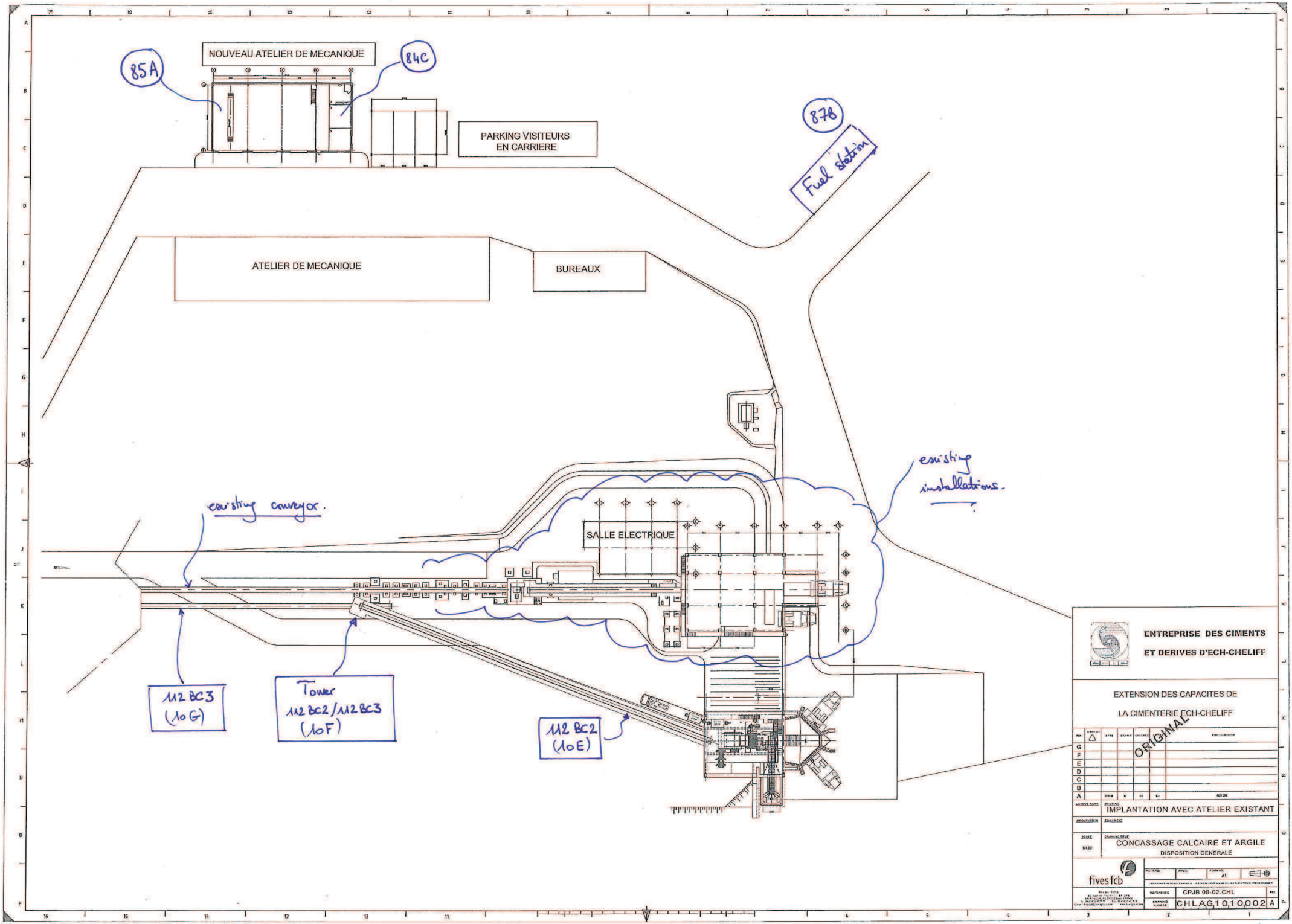
Pour fixation en plage, nous consulter.

Annex C2 –

Drawings annotated sent for tender


Location of groups.
CALCAIRE
CALCAIRE
SABLE
SABLE
MINERAI DE FER
GYPSE
GYPSE
CALCAIRE
CALCAIRE
LS2
LS3
LS4
LS5
LS6
LS8
LS7
CCR
LABO
Vestiaire Sanitaire
Magasin
BASSIN D'EAU
SA
N°1
N°2
N°4
Nord
1. STOCKAGE POLAIRE : PREHOMOGENEISATION
2. STATION DOSAGE BROYEURS CRU
3. BROYEURS CRU
4. FILTRE A MANCHES
5. SILO HOMOGENEISATION
6.7.8. LIGNE DE CUISSON
9. SILOS CLINKER
10. EXTENSION HALL DE STOCKAGE AJOUTS
11. STATIONS DE DOSAGE BROYEURS CIMENT
12. BROYEURS CIMENT
13. SILOS CIMENT
14. EXPEDITIONS
15. BATIMENT AUXILIAIRE
16. BACS A EAU ET SALLE DES POMPES
POINT NEVRALGIQUE
CANALISATION
POTEAU INCENDIE
SA. SALLE ELECTRIQUE PRINCIPALE
LS2. SALLE ELECTRIQUE MANUTENTION
LS3. SALLE ELECTRIQUE BROYAGE CRU
LS4. SALLE ELECTRIQUE FOUR
LS5. SALLE ELCTRIQUE REFROIDISSEUR CLINKER
LS6. SALLE ELECTRIQUE BROYAGE CIMENT
LS7. SALLE ELECTRIQUE ENSACHAGE ET EXPEDITION
LS8. SALLE ELECTRIQUE AUXILIAIRE
In Quarry
(4 kms far away in South Direction)
- Primary Crusher (gr 10)
- Offices (gr 84C)
- Maintenance workshop (gr 85A)
- Fuel station (gr 87B)
- Elec substation (gr 94)
CETIM
PLAN DE MASSE CIMENTERIE
CIMENTERIE DE CHLEF E.C.D.E
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF
ORIGINAL
PLAN DE MASSE
IMPLANTATION GENERALE
fives fcb
A0
CPJB 09-02.CHL
CHLAG05000011 E


Civil Design.
10 A
Steel Design.
10 A
10B
10 C
SECTION BB
ROTOR 245 KN
300 KN
live capacity 75m³
SECTION CC
112-BC2
gr 10E.
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF
ORIGINAL
CONCASSAGE CALCAIRE ET ARGILE
DISPOSITION GENERALE
fives fcb
CPJB 09-02.CHL
CHLAG10100001 A


85A
NOUVEAU ATELIER DE MECANIQUE
84C
PARKING VISITEURS
EN CARRIERE
878
Fuel station
ATELIER DE MECANIQUE
BUREAUX
existing installations.
existing conveyor.
SALLE ELECTRIQUE
112 BC3
(10G)
Tower
112 BC2/112 BC3
(10F)
112 BC2
(10E)
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF
ORIGINAL
IMPLANTATION AVEC ATELIER EXISTANT
CONCASSAGE CALCAIRE ET ARGILE
DISPOSITION GENERALE
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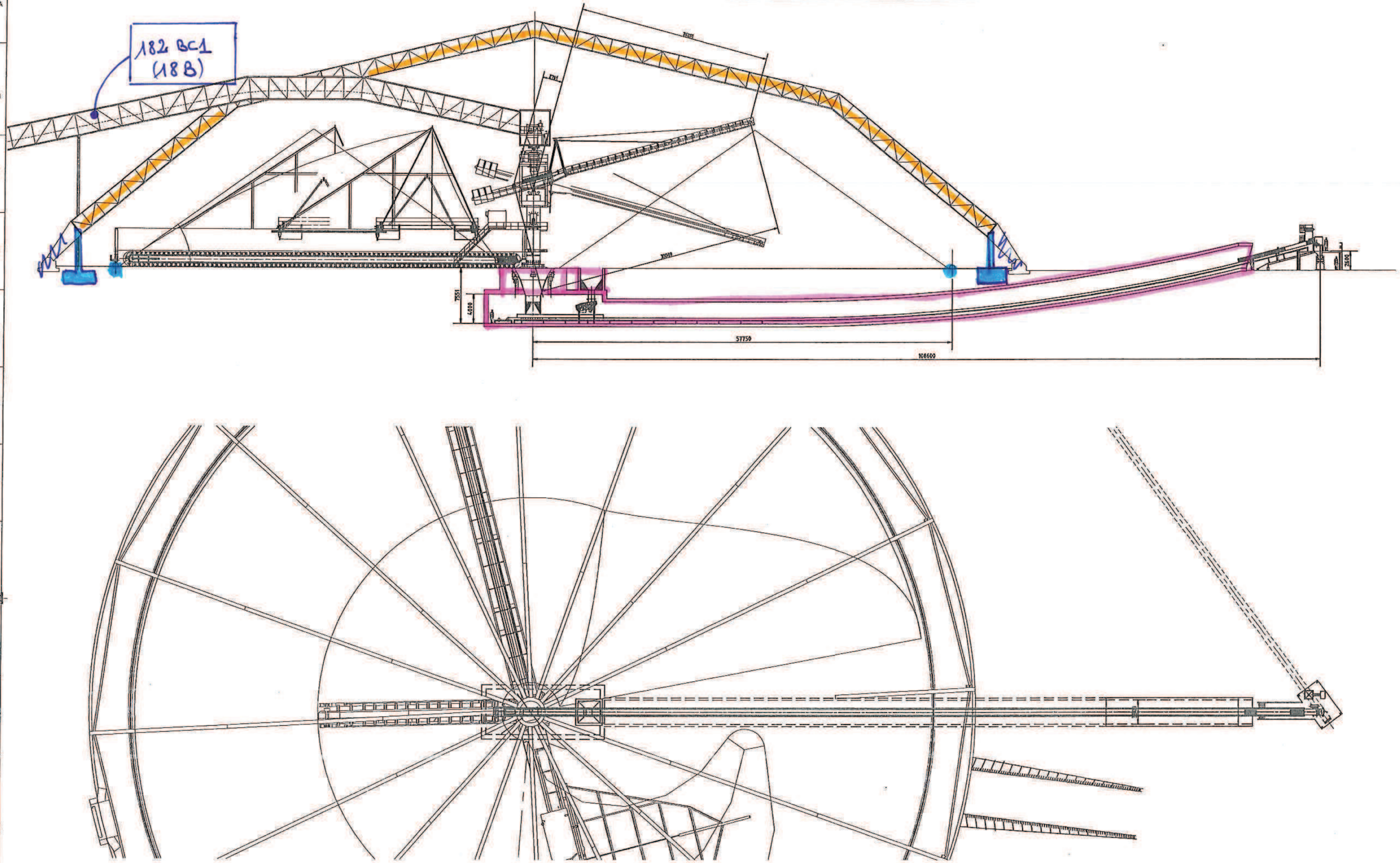
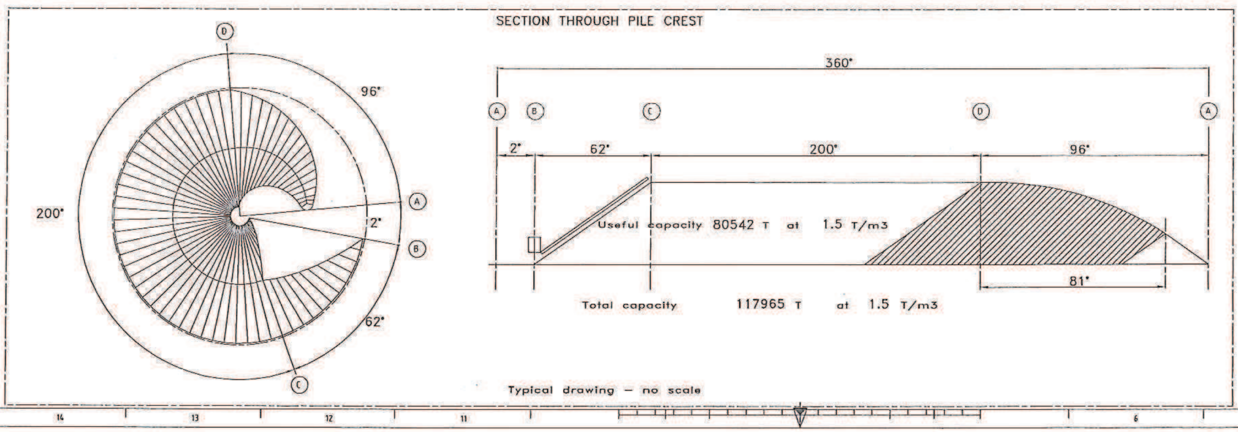
CPJB 09-02.CHL
CHLAG10,10,002
A





ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF

ORIGINAL

STOCKAGE POLAIRE

PREHOMOGENEISATION
CALCAIRE ARGILE

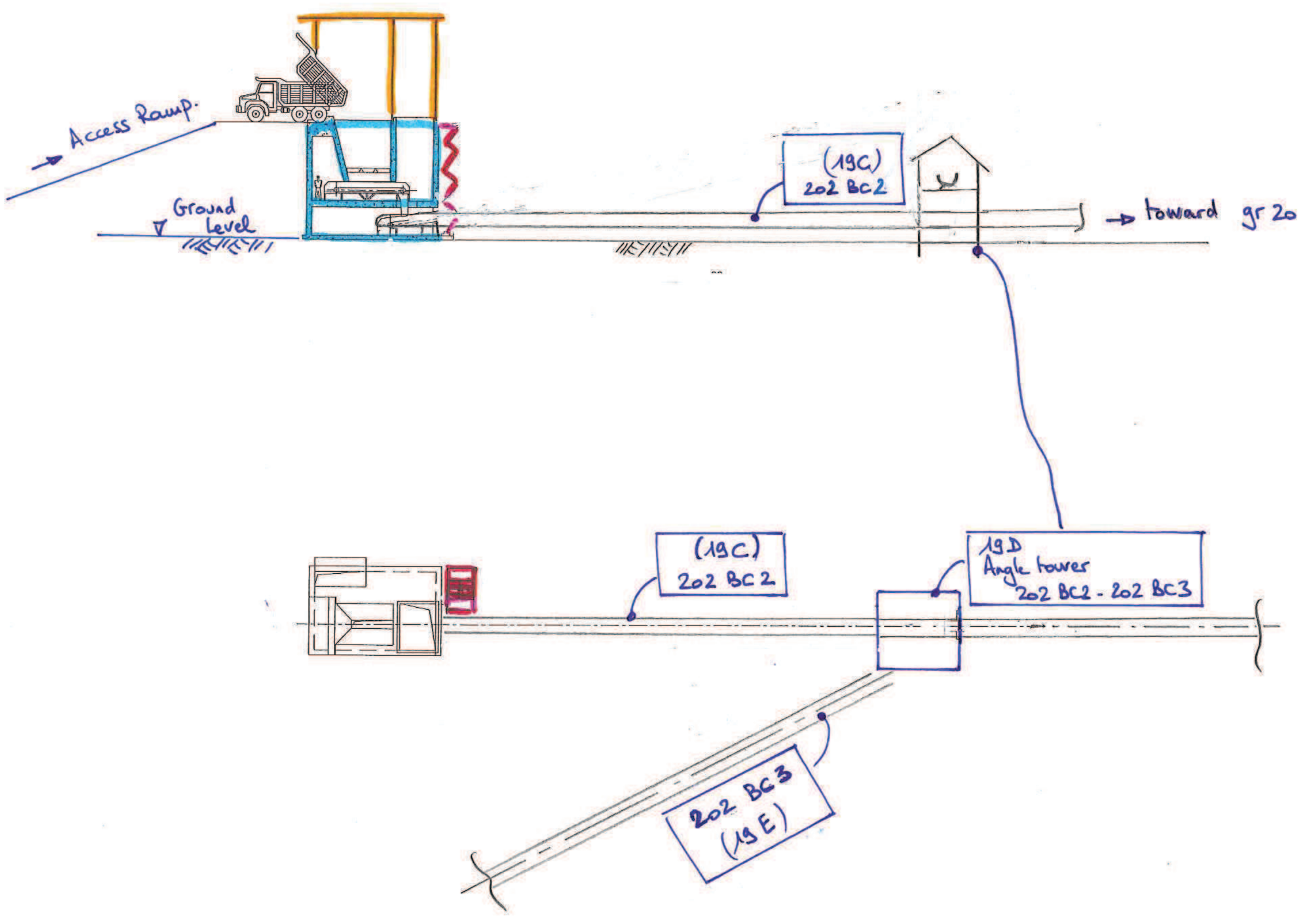
fives fcb

REFERENCE: CPJB 09-02.CHL
DRAWING NUMBER: CHLAG1018002 B

Nota : According to lay-out (CHLA 605 00 0M E), there is an access ramp to feed the hopper for additive.
The tunnel is removed from original design.
Outlet conveyor 202 BC3 is set directly on ground level.

Civil Design.
- 19 A (blue)

Steel Design
- 19 A (orange)
- 19 B. (red)



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV		DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
E						
D						
C		26/01/11	PB	CDe	NVI	mise à jour
B		20/11/09	PB	N.VI	N.VI	mis à jour
A		18/03/09	VF	NVI	NVI	FIRST ISSUE

LAYOUT MARK | BUILDING: TREMIE DECHARGEMENT DES ADDITIFS

GROUP / ITEM: 19 | EQUIPMENT

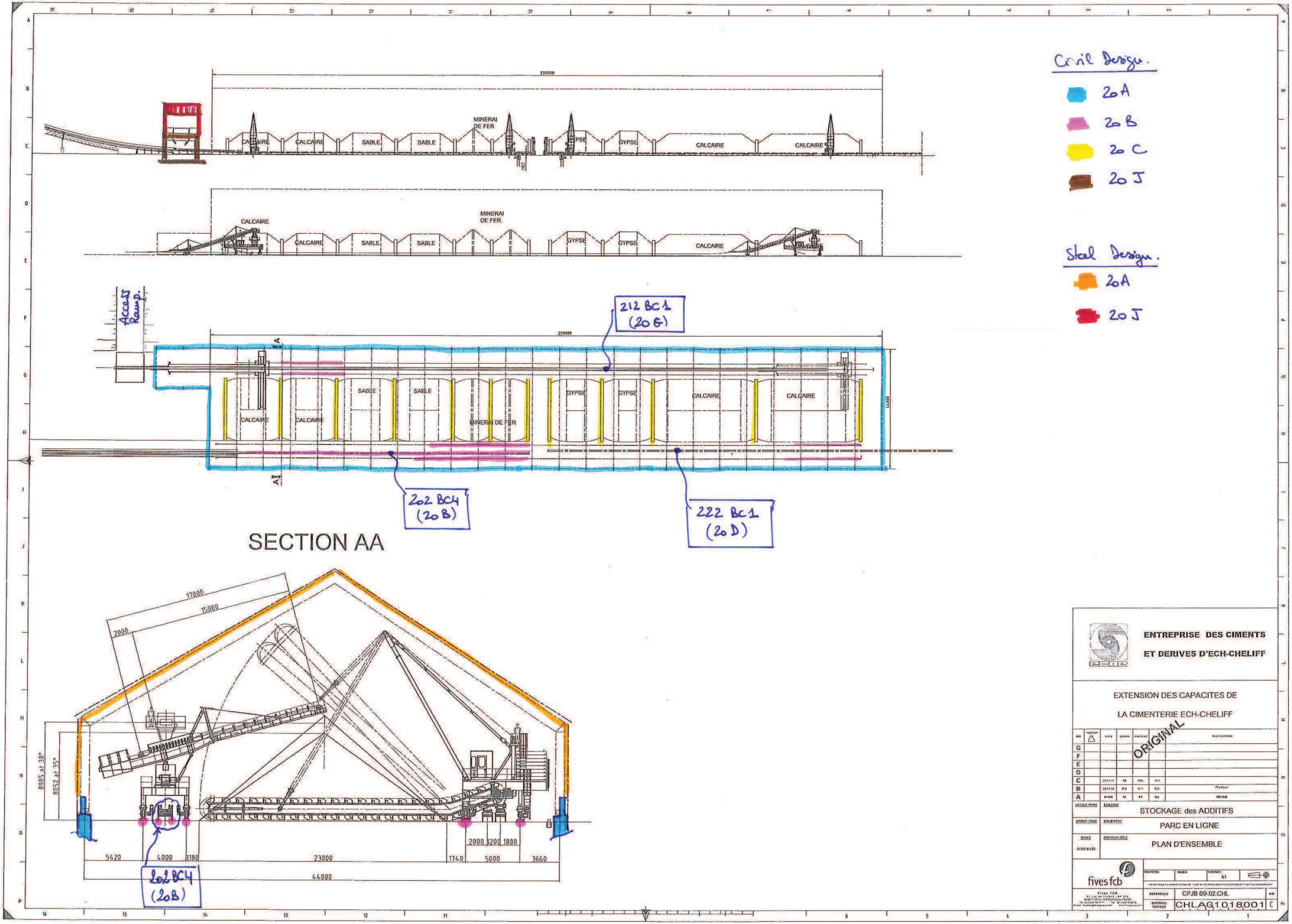
SCALE: 1/200 | DRAWING TITLE: PLAN D'ENSEMBLE

fives fcb

MATIERE: | MASS: | FORMAT: A1

REFERENCE: CPJB 0902

DRAWING NUMBER: CHLAG1019001 | IND: C



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

STOCKAGE des ADDITIFS

PARC EN LIGNE

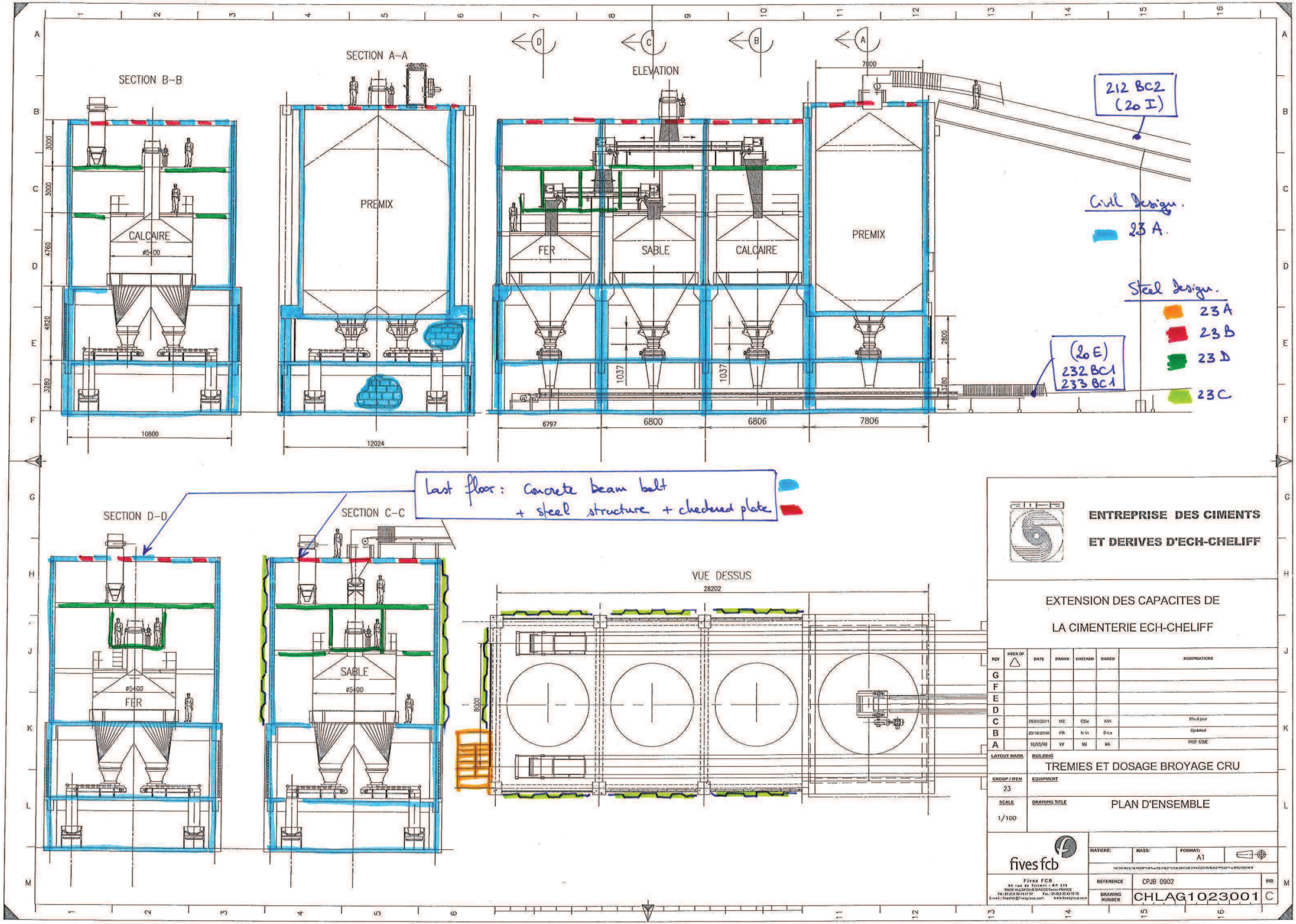
PLAN D'ENSEMBLE

fives fcb

Format: A1

Reference: CPJB 09-02.CHL

Drawing number: CHLAG1018001 C



ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

REV	NBER OF △	DATE	DRAWN	CHECKED	SIGNED	MODIFICATIONS
G						
F						
E						
D						
C		26/01/2011	MZ	CDv	NVt	M/s à jour
B		25/10/2010	PB	N Vt	D Lo	Updated
A		10/03/09	VP	MI	MA	FAST 65ME

LAYOUT MARK: BUILDING: TREMIES ET DOSAGE BROYAGE CRU

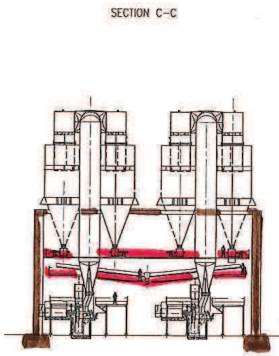
GROUP / ITEM: 23 — EQUIPMENT:

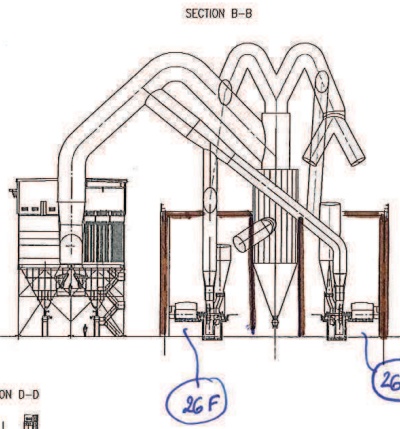
SCALE: 1/100 — DRAWING TITLE: PLAN D'ENSEMBLE

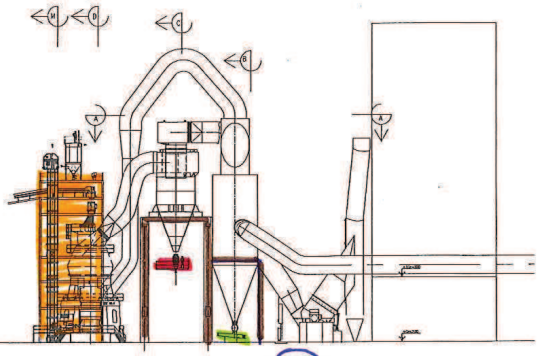
fives fcb

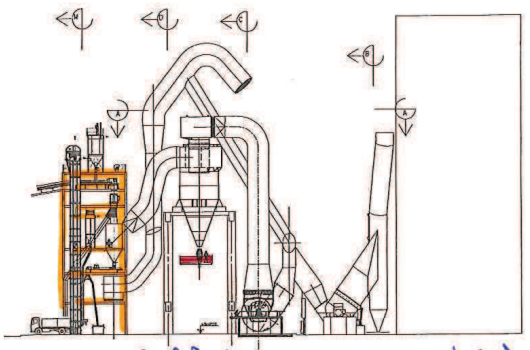
Fives FCB
65 rue de Turbigo - BP 378
59058 VILLENEUVE D'ASCQ Cedex FRANCE
Tél : 33 (0)3 20 63 77 77 Fax : 33 (0)3 20 43 75 75
E-mail : fivesfcb@fivesgroup.com www.fivesgroup.com

MATIERE:	MASS:	FORMAT: A1	
REFERENCE	CPJB 0902		IND
DRAWING NUMBER	CHLAG1023001		C



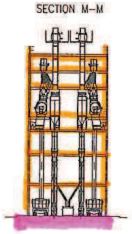


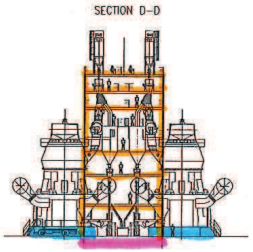


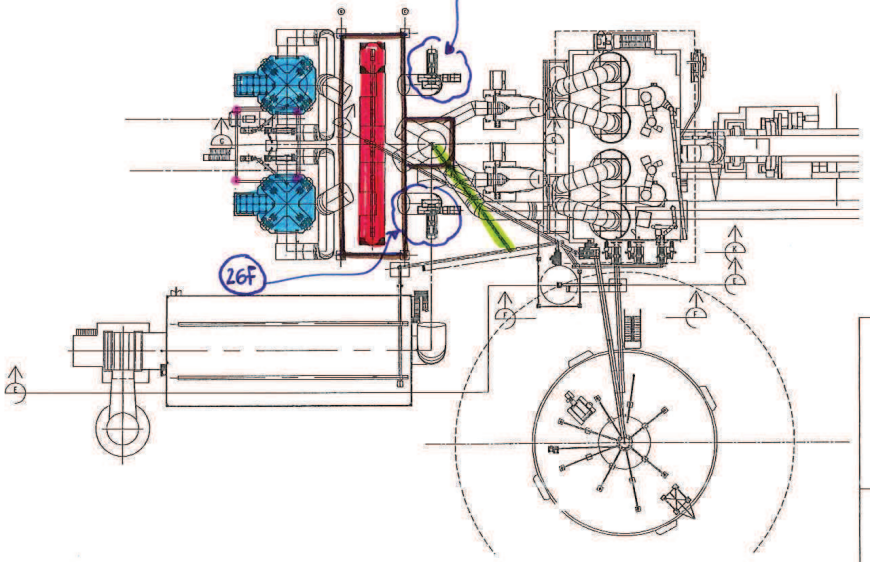


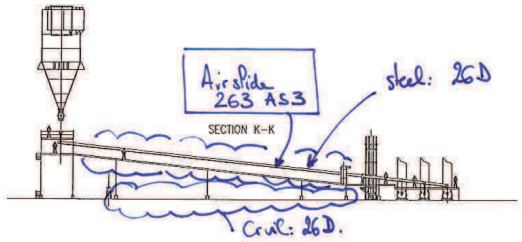
Civil Design:
- 26A
- 26B
- 26C
- 26G

Steel Design.
- 26B
- 26C
- 26G

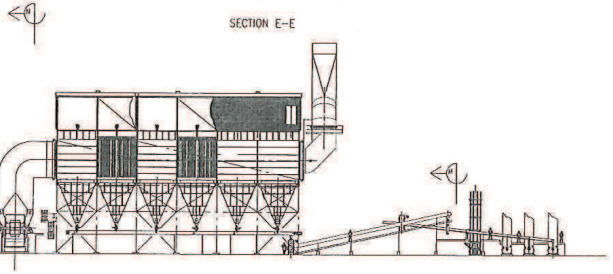


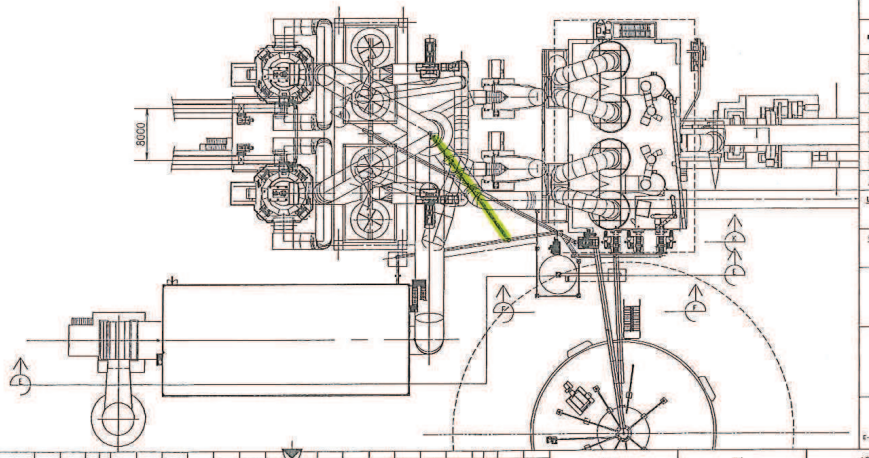


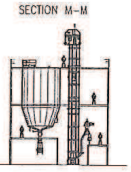


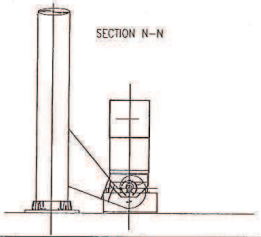


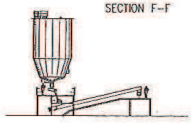
GROUP 26











ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF

IN PROGRESS

REV	NBER OF △	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
E						
D		10.01/2011	M.Ze	C.De	N.Vi	Updated
C		29/03/2010	M.Ze	N.Vi	N.Vi	UPDATED
B		27/11/09	P.B	N.Vi	N.Vi	Mis à jour
A		31/03/09	Y.P	N.V	Ble	FIRST ISSUE

LAYOUT MARK: BUILDING — BROYAGE CRU ET DEPOUSSIERAGE

GROUP / ITEM: EQUIPMENT

SCALE: 1/300

DRAWING TITLE: IMPLANTATION GENERALE

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Fives FCB
50 rue de Tilsitt - BP 376
59666 VILLENEUVE D'ASCQ Cedex FRANCE
Tél : 33 (0)3 20 43 77 77 Fax : 33 (0)3 20 43 78 78
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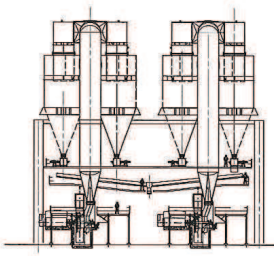
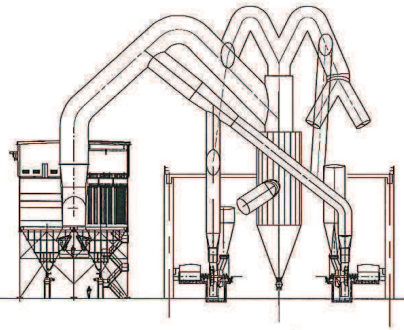
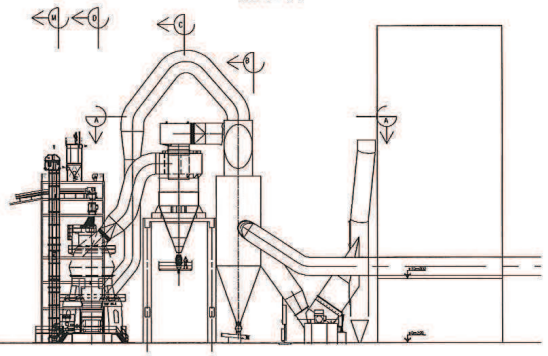
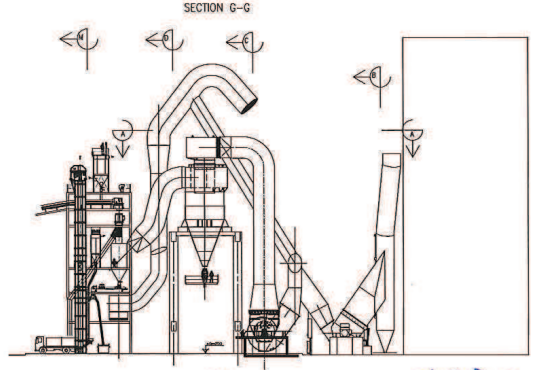
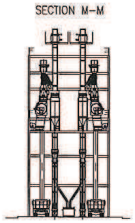
MATIERE:	MASS:	FORMAT: A1	
REFERENCE	CPJB 09-02.CHL		IND
DRAWING NUMBER	CHLAG1026001		D

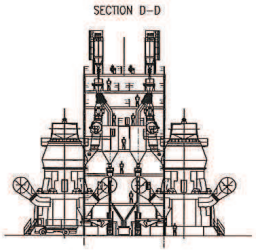


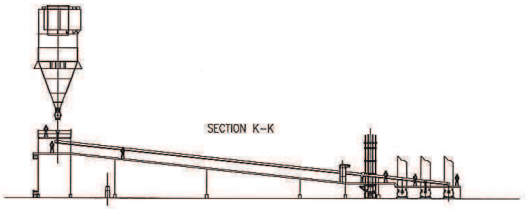


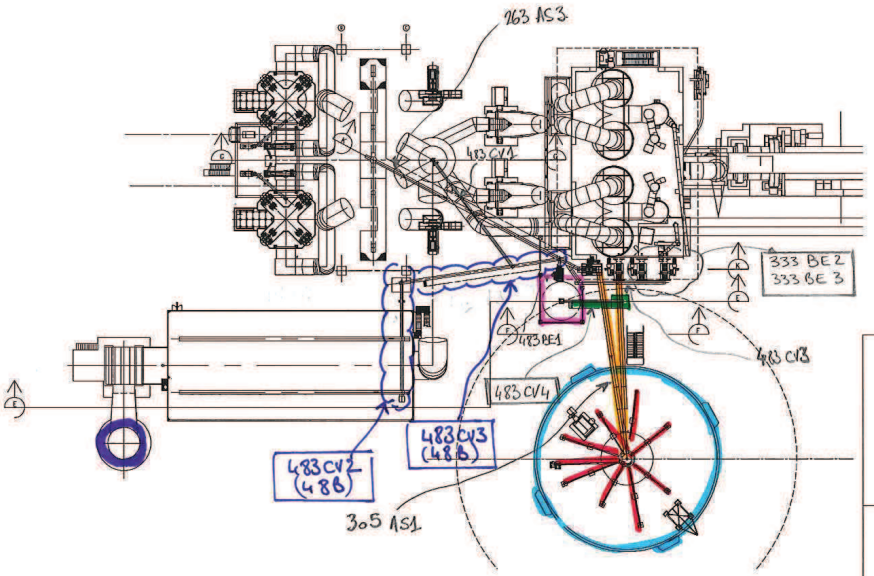


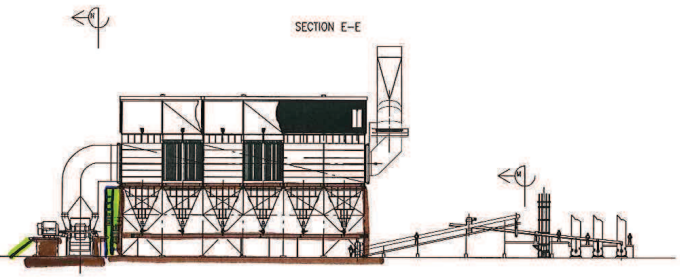


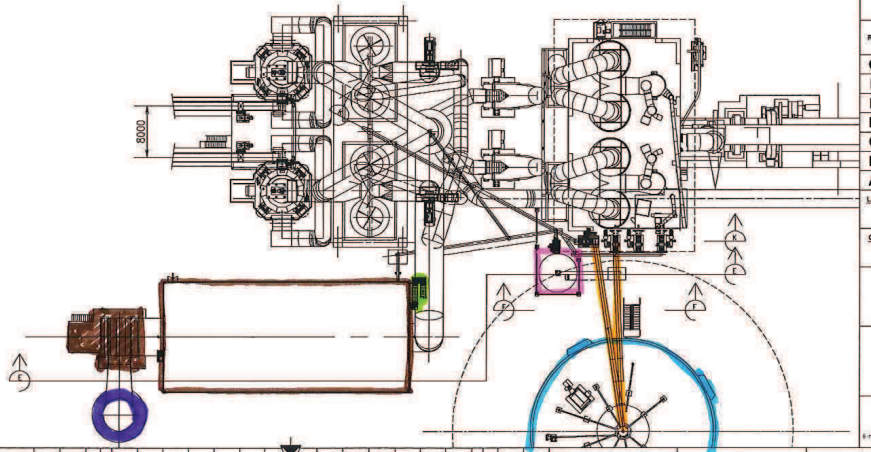


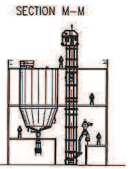


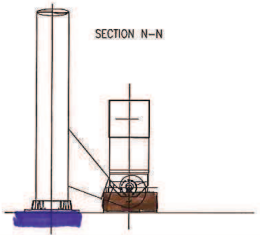


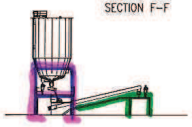












Civil Design.
- 30 A
- 30 E
- 48 A
- 48 C

Steel Design.
- 30 A.
- 30 C
- 30 E
- 48 A

GROUP 30 / 48

ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

IN PROGRESS

REV	NBER OF △	DATE	DRAWN	CHECKED	APP.	MODIFICATIONS
G						
F						
E						
D		10/01/2011	M.Ze	C.De	N.Vi	Updated
C		29/03/2010	M.Ze	N.Vi	N.Vi	UPDATED
B		27/11/09	P.B	N.Vi	N.Vi	Mis à jour
A		31/03/08	Y.P	N.Vi	D.Le	FIRST ISSUE

LAYOUT MARK — BUILDING: BROYAGE CRU ET DEPOUSSIERAGE

GROUP / ITEM — EQUIPMENT:

SCALE: 1/300

DRAWING TITLE: IMPLANTATION GENERALE

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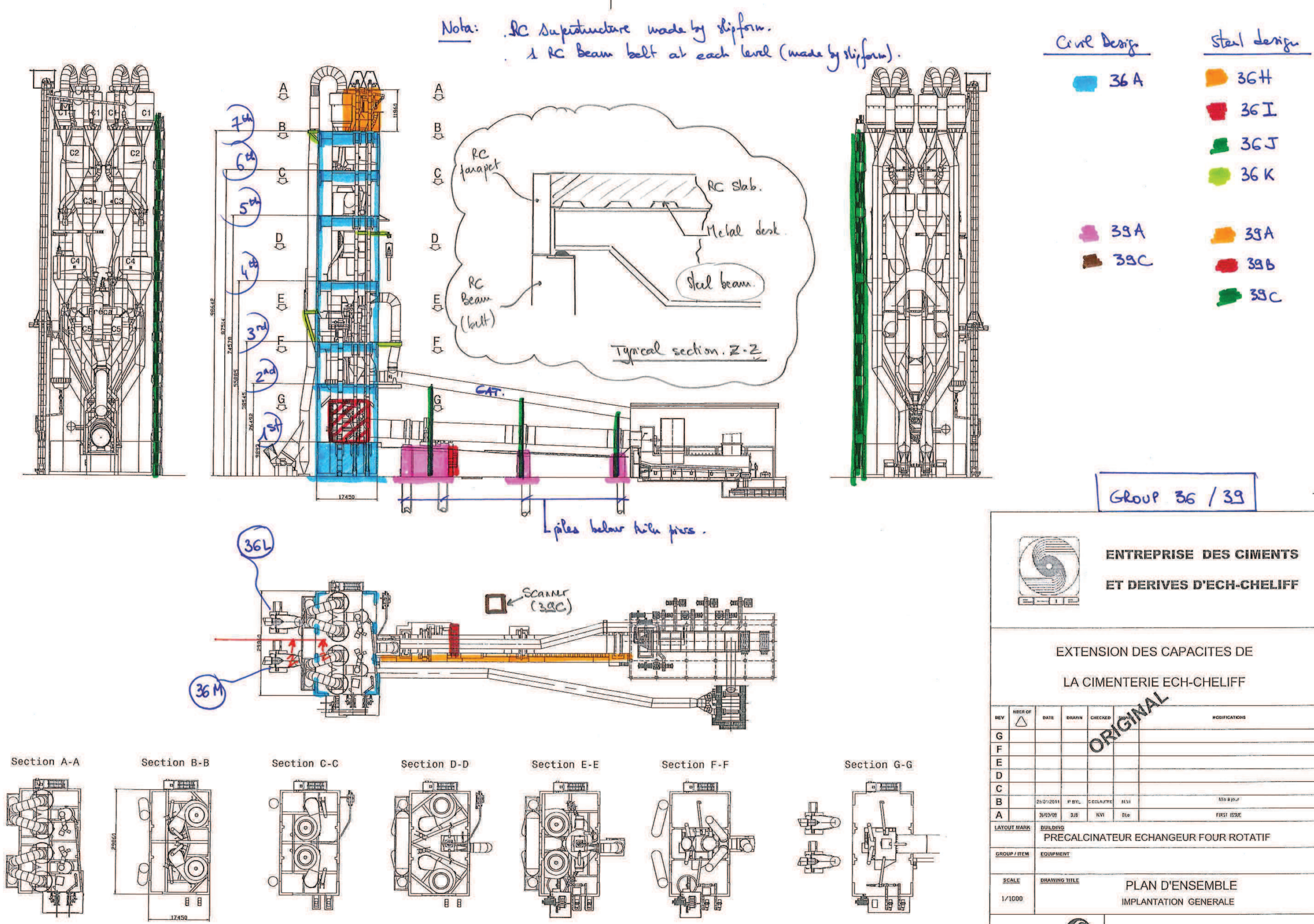
Fives FCB
55 rue de Tilloloi - BP 376
59041 VILLENEUVE D'ASCQ Cedex FRANCE
Tél : 33 (0)3 20 43 77 77 Fax : 33 (0)3 20 43 75 75
E-mail : fivesfcb@fivesgroup.com www.fivesgroup.com

MATIERE: | MASS: | FORMAT: A1

REFERENCE: CPJB 09-02.CHL | IND

DRAWING NUMBER: CHLAG1026001 | D



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
E						
D						
C						
B		25/01/2011	P.BYL	C.CLAUTRE	N.VI	Mis à jour
A		31/03/08	DJB	NVI	Dle	FIRST ISSUE

LAYOUT MARK — BUILDING: PRECALCINATEUR ECHANGEUR FOUR ROTATIF

GROUP / ITEM — EQUIPMENT:

SCALE: 1/1000 — DRAWING TITLE: PLAN D'ENSEMBLE IMPLANTATION GENERALE

MATIERE: — MASS: — FORMAT: A1

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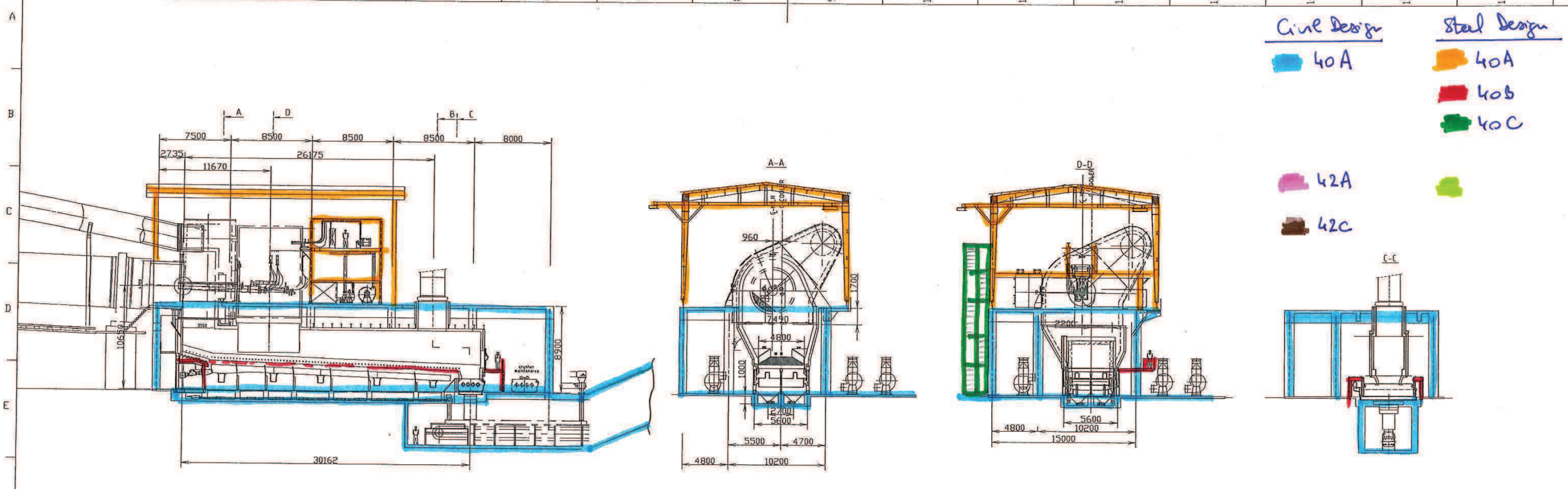
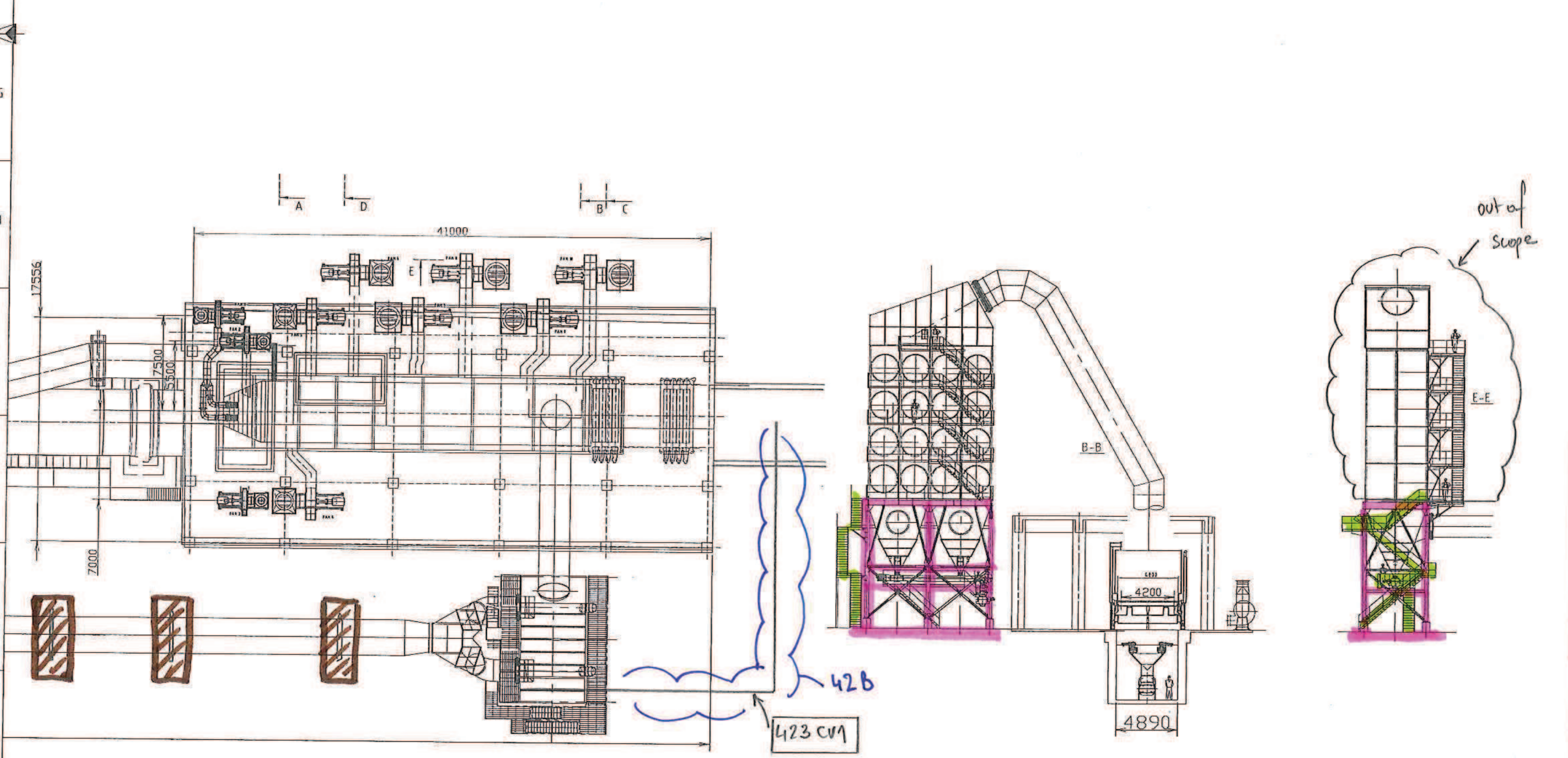
50 rue de Tirlon - BP 376
59658 VILLENEUVE D'ASCQ Cedex FRANCE

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG1036001 — IND: B





ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF	DATE	DRAWN	CHECKED	SIGN	MODIFICATIONS
G						
F						
E						
D						
C						
B		24/01/2011	P. BVL	C. DELAUNE		
A		31/03/10	V.P.	N.VI	D.Lo	FIRST ISSUE

LAYOUT MARK — BUILDING: REFROIDISSEUR A CLINKER

GROUP / ITEM — EQUIPMENT

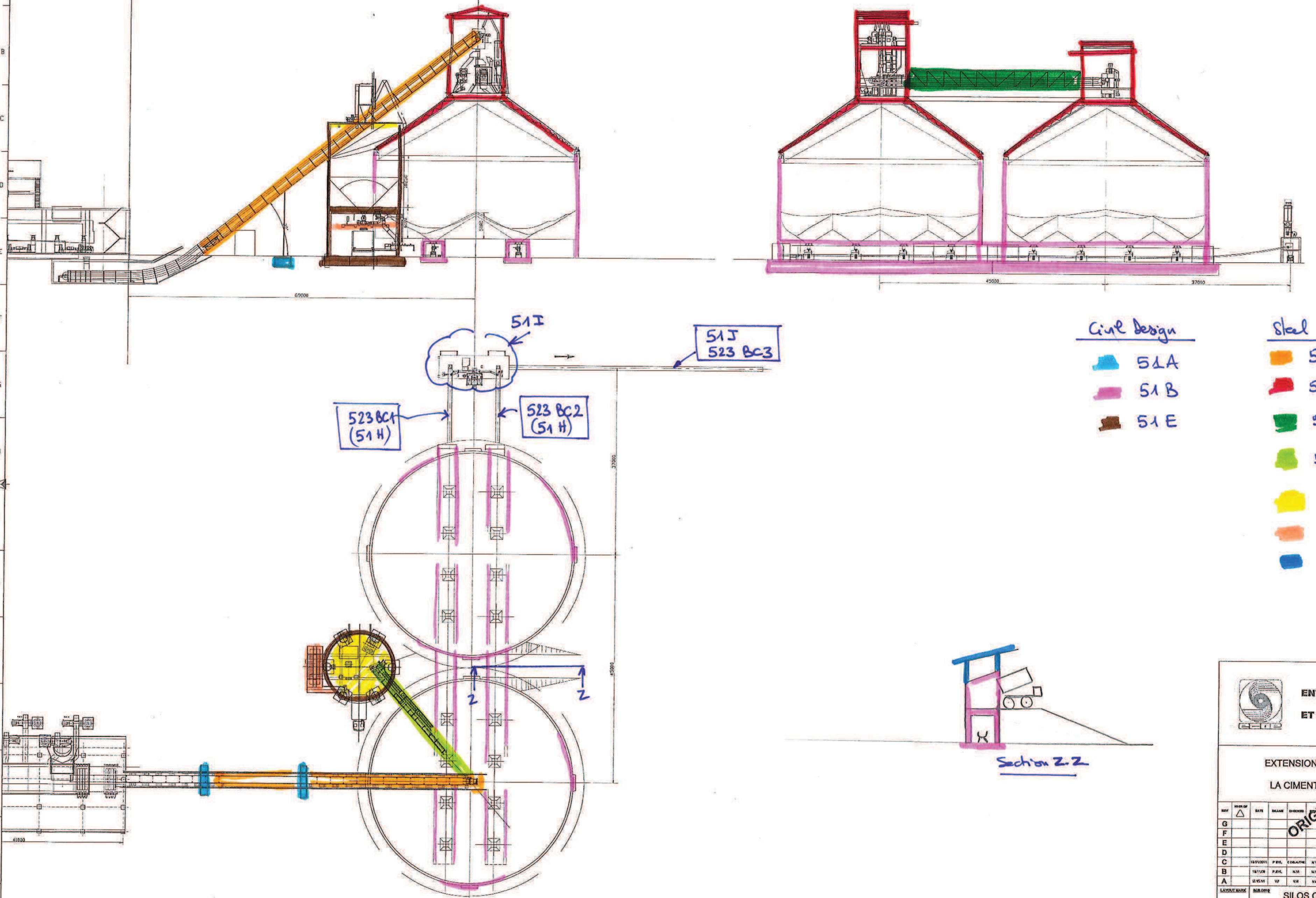
SCALE: 1/500 — DRAWING TITLE: PLAN D'ENSEMBLE — IMPLANTATION GENERALE

fives fcb

MATIERE: | MASS: | FORMAT: A1

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG1040001 — IND: B



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV		DATE				MODIFICATIONS
G						
F						
E						
D						
C		19/01/2011	P BYL	C DELAUTRE	N M	MIS A JOUR
B		[illegible]	P BYL	N M	N M	MIS A JOUR
A		[illegible]	VF	N M	N M	FIRST ISSUE

BUILDING: SILOS CLINKER ET TRANSPORT

SCALE: 1/250

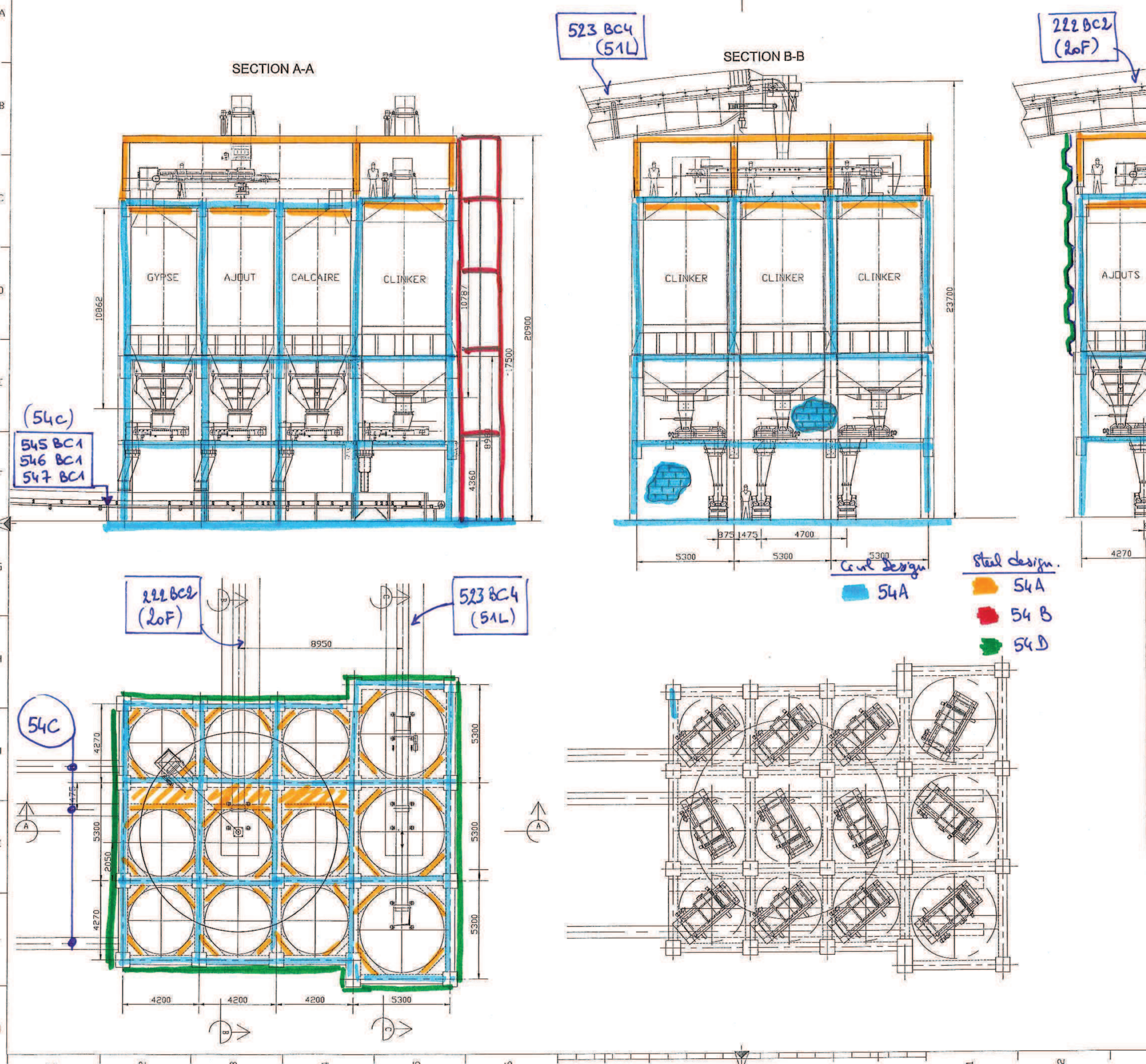
DRAWING TITLE: PLAN ENSEMBLE

fives fcb

FORMAT: A1

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG1051001 C



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED	APPROVED	MODIFICATIONS
G						
F						
E						
D						
C						
B		12/10/2011	P. SYL	C. DELAUTRE	VINOEVIOGE	UP DATED
A		25/04/2009	T.VERDUN	V.SFAR	B.LOLESSARD	FIRST ISSUE

LAYOUT MARK — BUILDING: TREMIES ET DOSAGE CIMENT

GROUP / ITEM: 57 — EQUIPMENT:

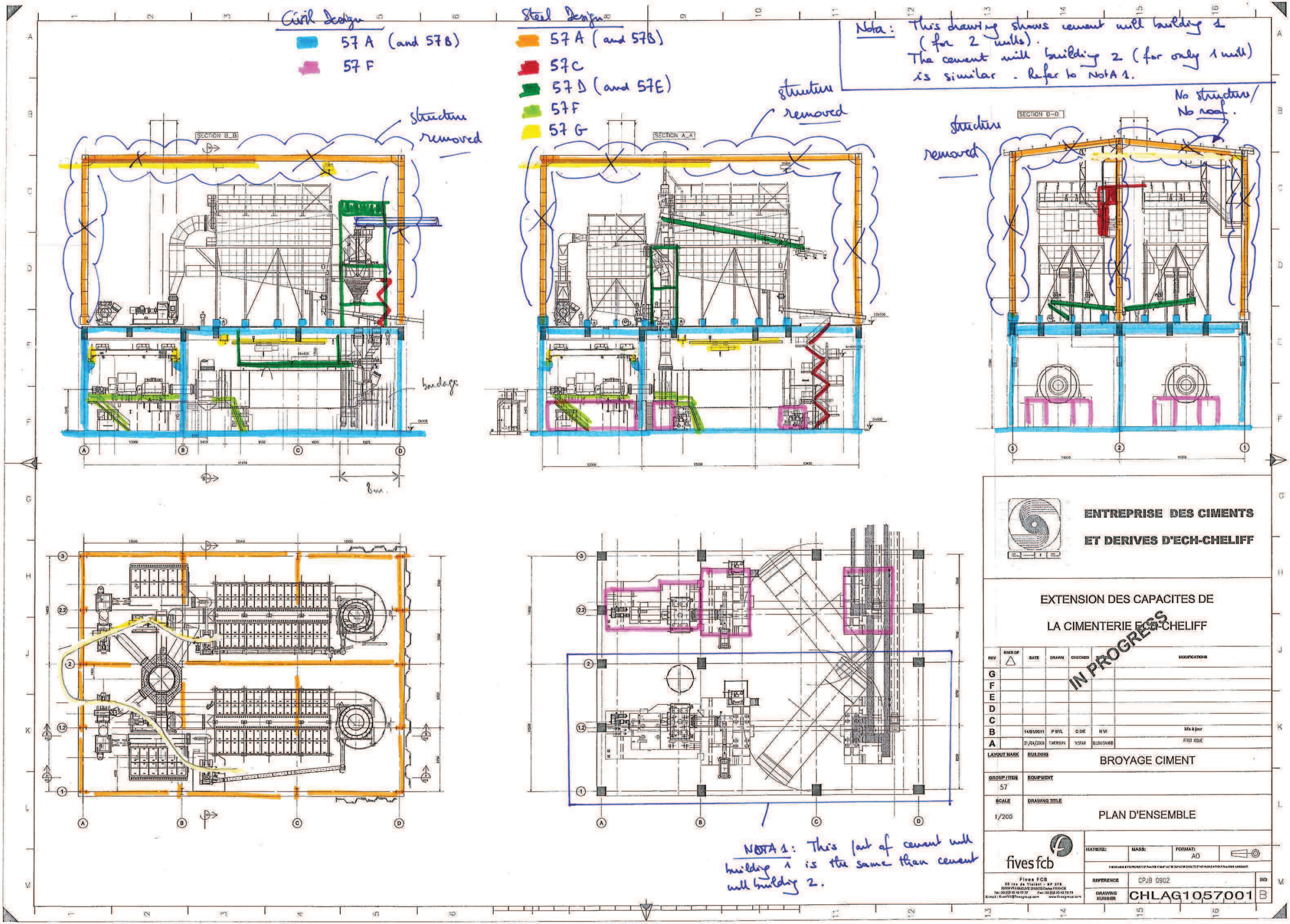
SCALE: 1/100 — DRAWING TITLE: PLAN D'ENSEMBLE

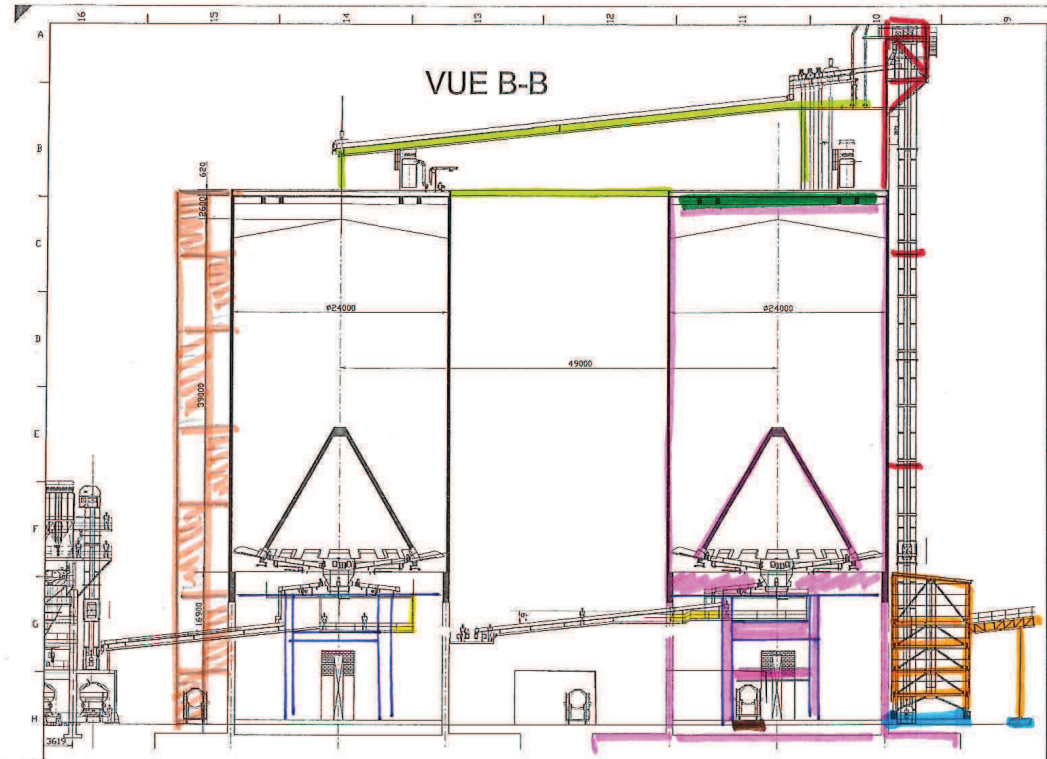
fives fcb

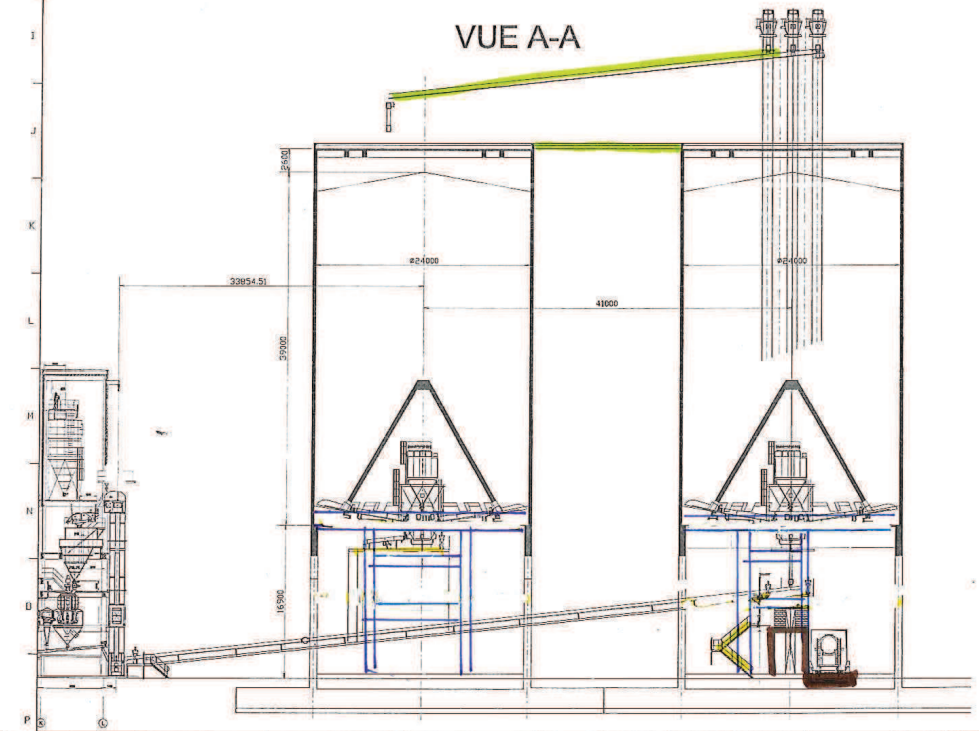
MATIERE: — MASS: — FORMAT: A1

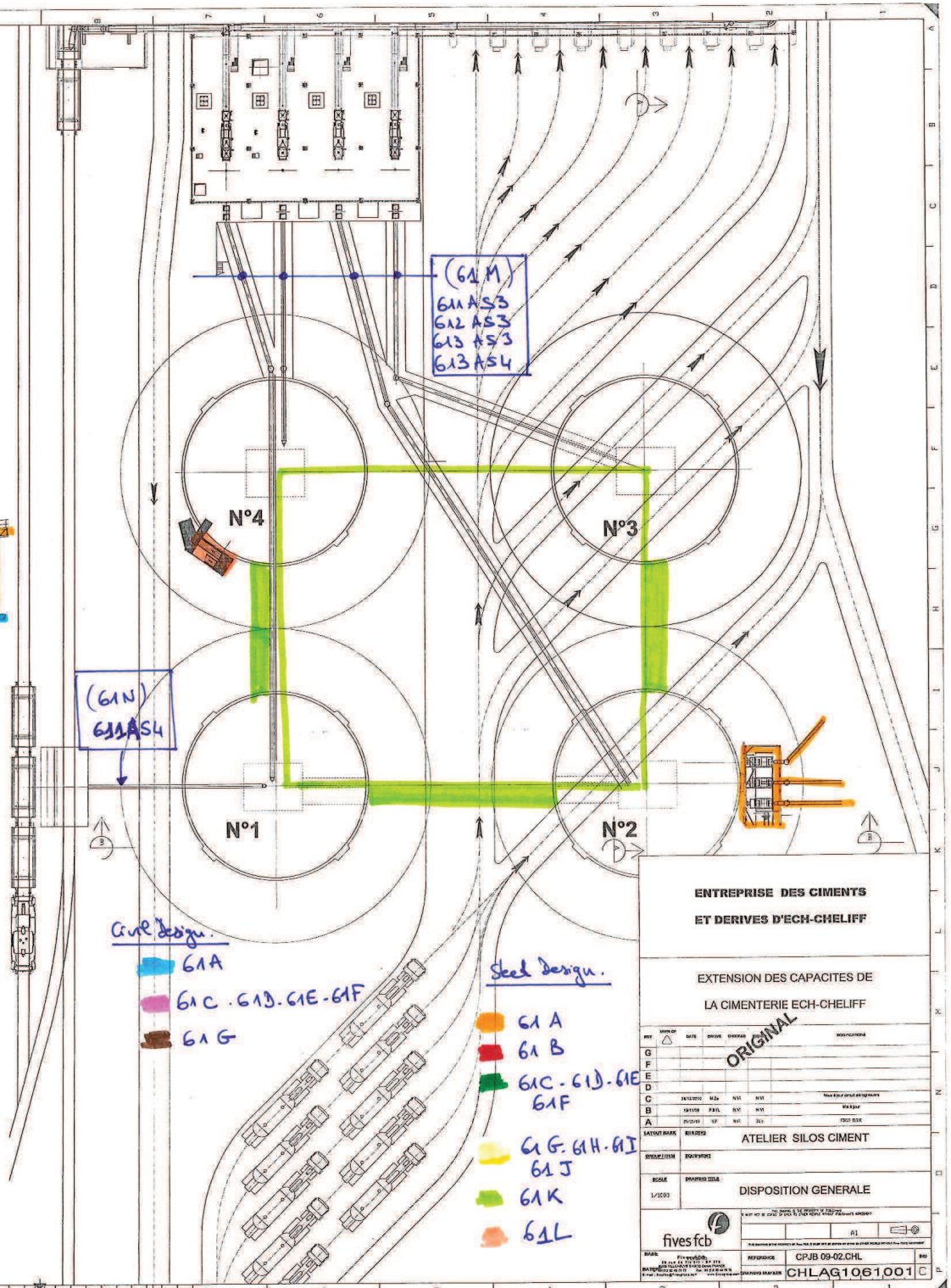
REFERENCE: CPJB 0902

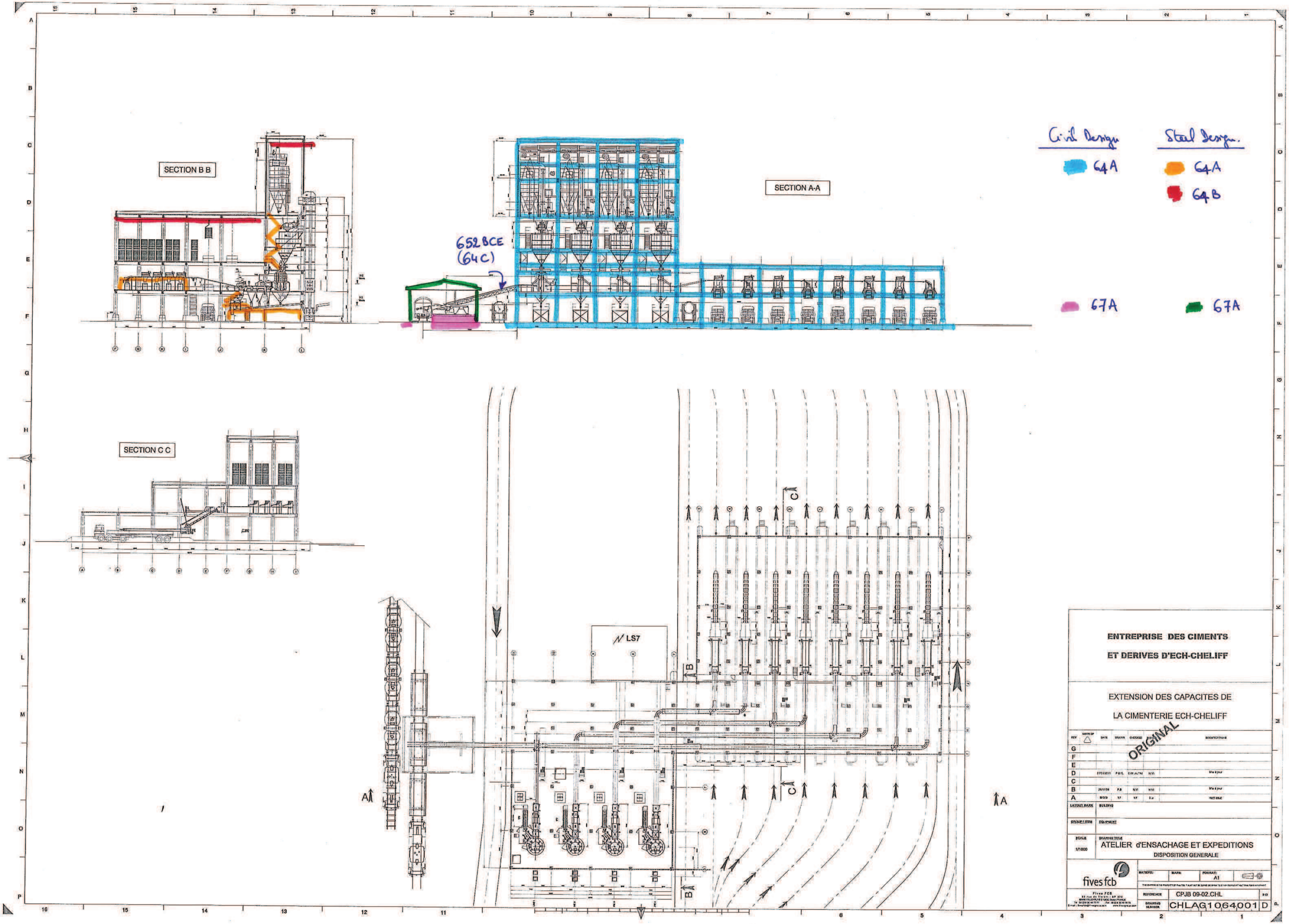
DRAWING NUMBER: CHLAG1054001 B


Civil Design
57 A (and 57B)
57 F
Steel Design
57 A (and 57B)
57C
57 D (and 57E)
57F
57 G
Nota: This drawing shows cement mill building 1 (for 2 mills).
The cement mill building 2 (for only 1 mill) is similar. Refer to NotA 1.
structure removed
No structure/ No roof.
SECTION B_B
SECTION A_A
SECTION D_D
bardage
8m.
NOTA 1: This part of cement mill building 1 is the same than cement mill building 2.
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE D'ECH-CHELIFF
IN PROGRESS
BROYAGE CIMENT
PLAN D'ENSEMBLE
57
1/200
fives fcb
CPJB 0902
A0
CHLAG1057001
B

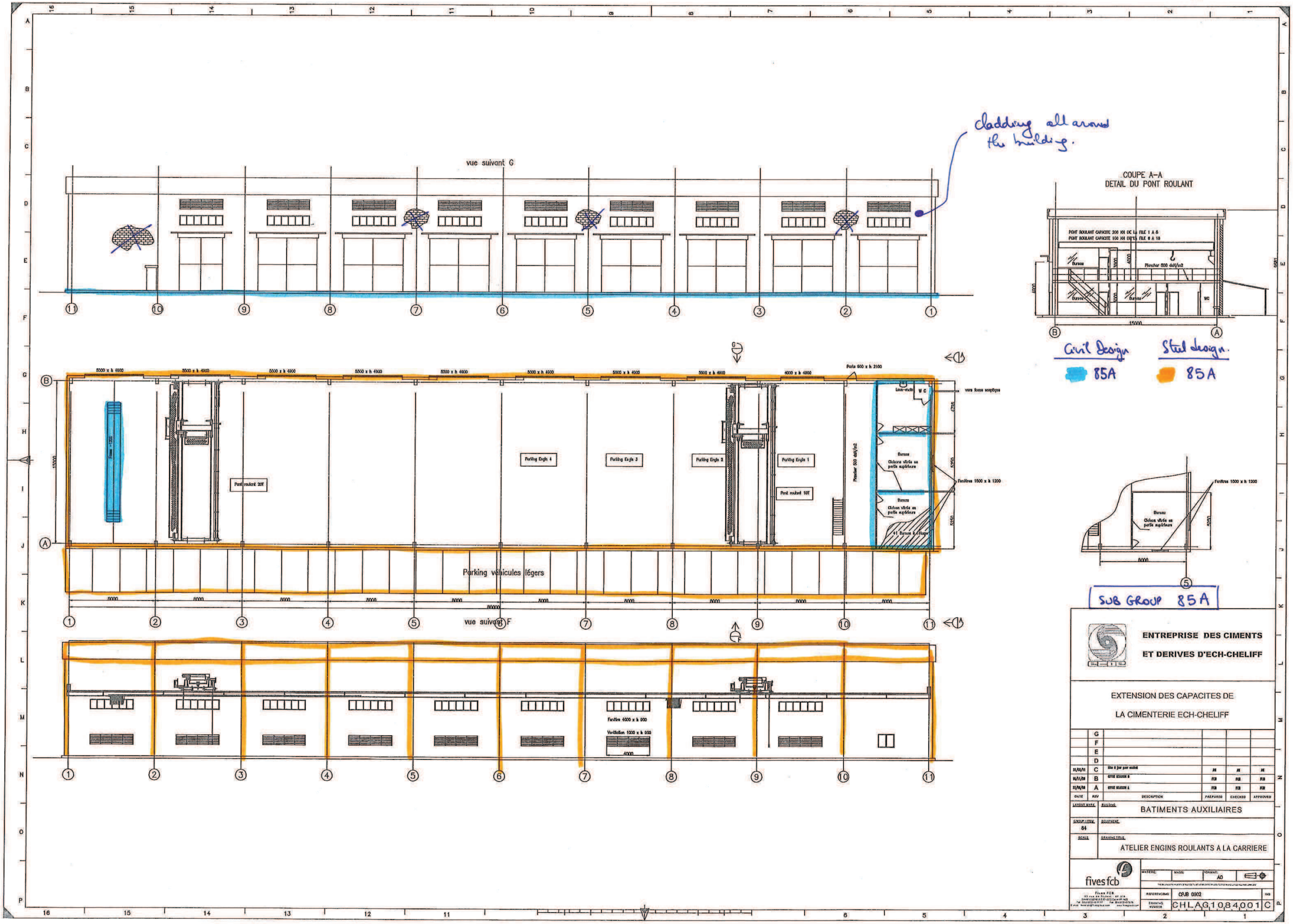

VUE B-B
Ø24000
49000
39000
16900


VUE A-A
Ø24000
33954.51
41000
39000
16900

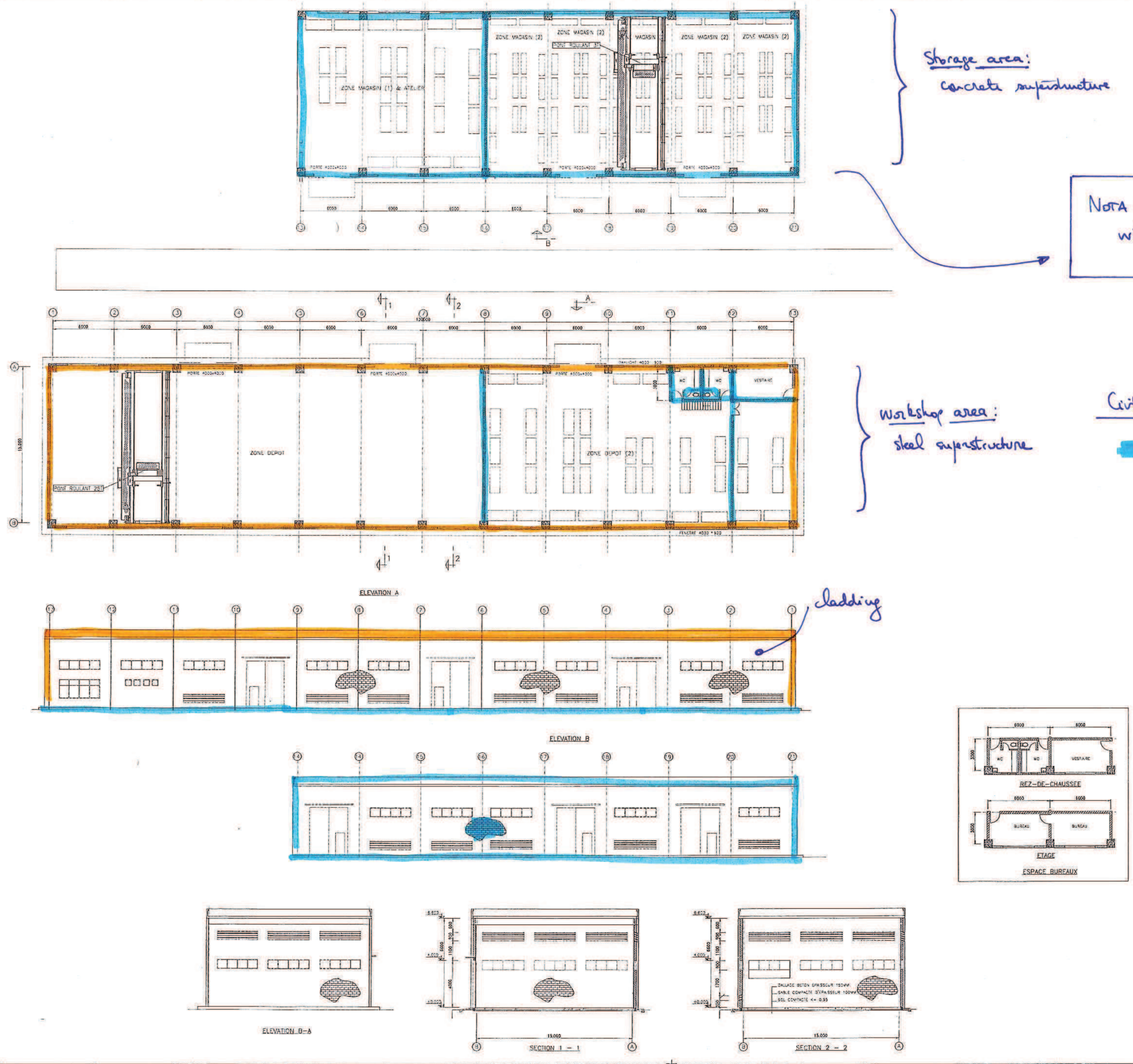

(61M)
611AS3
612AS3
613AS3
613AS4
N°4
N°3
N°1
N°2
(61N)
611AS4
Civil Design.
61A
61C . 61D. 61E-61F
61G
Steel Design.
61A
61B
61C-61D-61E
61F
61G. 61H-61I
61J
61K
61L
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF
ORIGINAL
ATELIER SILOS CIMENT
DISPOSITION GENERALE
fivesfcb
CPJB 09-02.CHL
CHLAG1061001
C



Civil Design
64A
67A
Steel Design.
64A
64B
67A
SECTION B B
SECTION A-A
652BCE
(64C)
SECTION C C
LS7
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF
ORIGINAL
ATELIER d'ENSACHAGE ET EXPEDITIONS
DISPOSITION GENERALE
1/1000
A1
fives fcb
CPJB 09-02.CHL
CHLAG1064001 D



vue suivant G
cladding all around the building.
COUPE A-A
DETAIL DU PONT ROULANT
PONT ROULANT CAPACITE 200 KN DE LA FILE 1 A 6
PONT ROULANT CAPACITE 100 KN DE LA FILE 6 A 10
Plancher 500 daN/m2
Bureau
WC
15000
Civil Design
85A
Steel design.
85A
Porte 900 x h 2100
vers fosse sceptique
Fenêtres 1500 x h 1200
Parking Engin 4
Parking Engin 3
Parking Engin 2
Parking Engin 1
Pont roulant 20T
Pont roulant 10T
Parking véhicules légers
vue suivant F
Fenêtre 4000 x h 900
Ventilation 1000 x h 900
SUB GROUP 85A
ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF
EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF
BATIMENTS AUXILIAIRES
ATELIER ENGINS ROULANTS A LA CARRIERE
fives fcb
CFUB 0002
CHLAG1084001 C



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

DATE	REV	DESCRIPTION	PREPARED	CHECKED	APPROVED
	G				
	F				
	E				
	D				
	C				
	B		FCB	FCB	FCB
	A		FCB	FCB	FCB

LAYOUT MARK / BUILDING: BATIMENTS AUXILIAIRES

GROUP / ITEM: 84

SCALE: 1/125

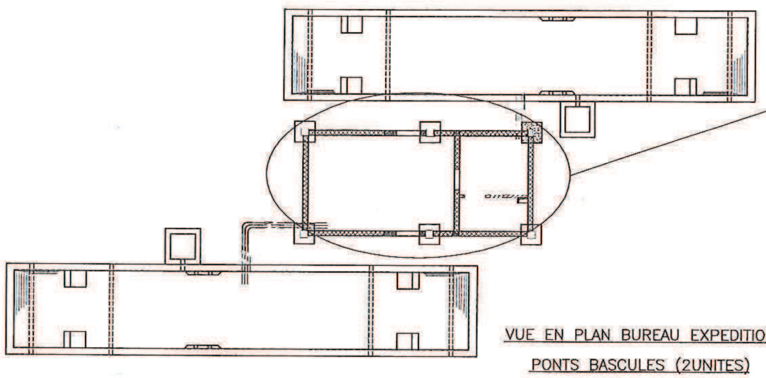
DRAWING TITLE: MAGASIN CENTRAL ET ATELIER D'ENTRETIEN GENERAL

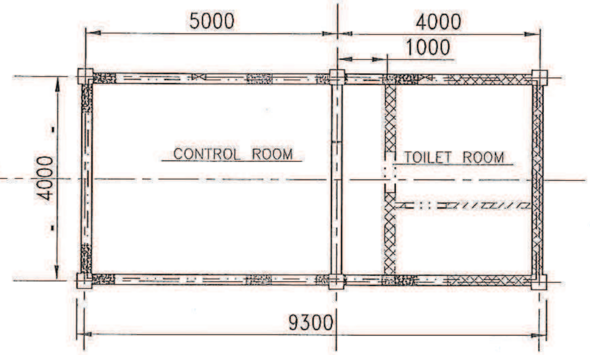
fives fcb

FORMAT: A0

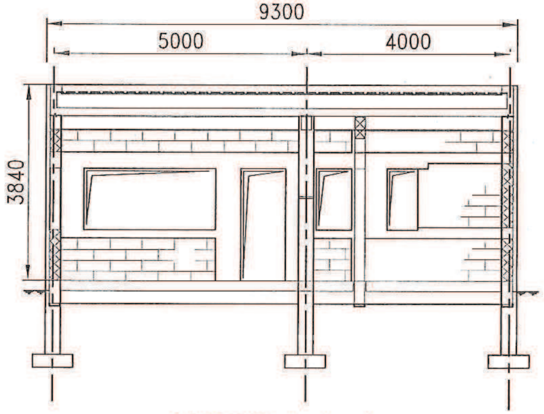
REFERENCE: CPJB 0902

DRAWING NUMBER: CHLAG1084005 C





VUE EN PLAN



SECTION 1-1

SUB GROUP 86 A

ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

DATE	REV	DESCRIPTION	PREPARED	CHECKED	APPROVED
	G				
	F				
	E				
	D				
	C				
	B				
22/06/09	A	OFFRE REVISION A	FCB	FCB	FCB

LAYOUT MARK — BUILDING: BATIMENTS AUXILIAIRES

GROUP / ITEM: 84 — EQUIPMENT:

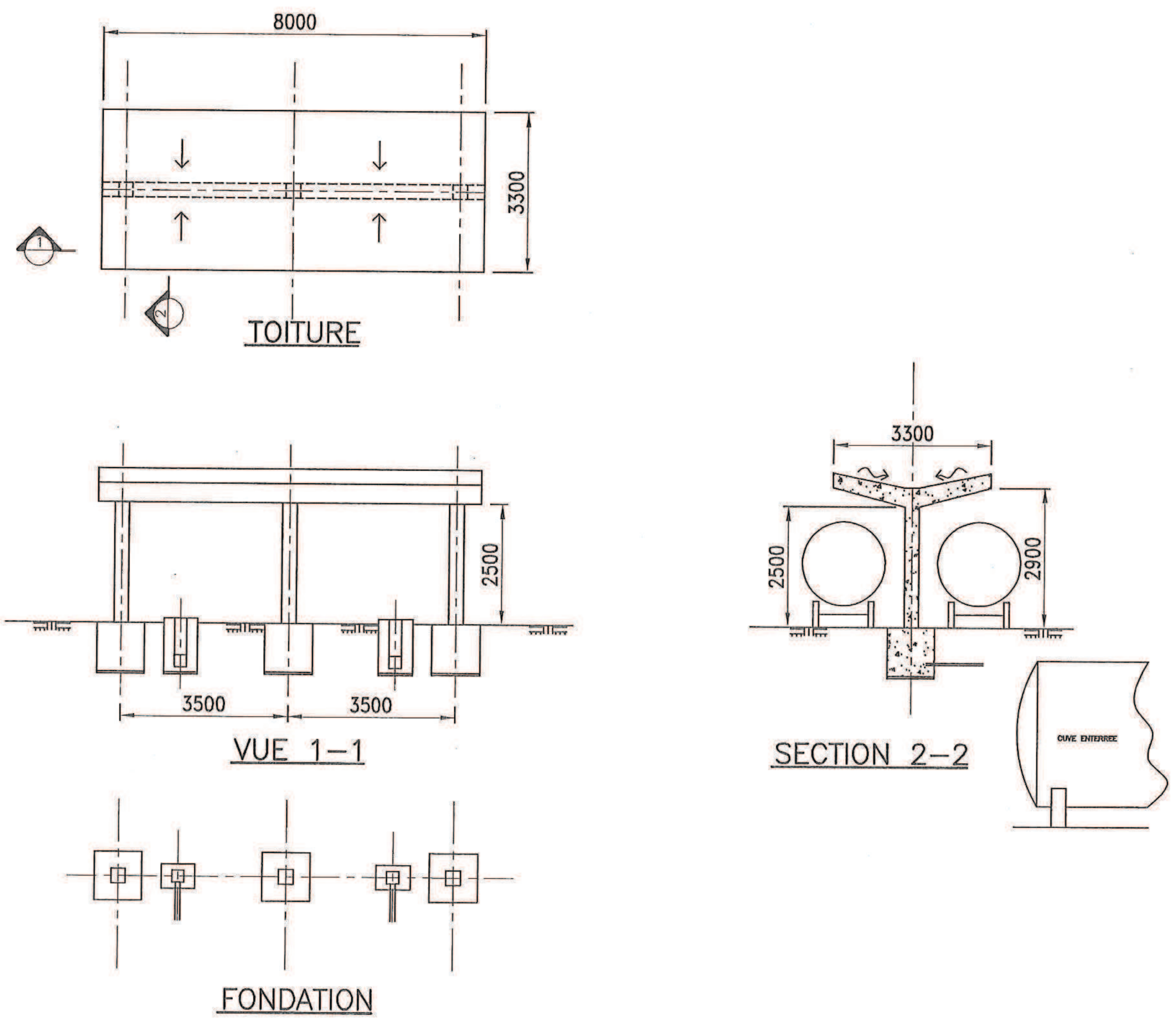
SCALE — DRAWING TITLE: BUREAU EXPEDITION ET PONTS BASCULES

fives fcb

MATIERE: — MASS: — FORMAT: A1

REFERENCE: CPJB 0902

DRAWING NUMBER: CHLAG1084006 — IND: A



SUB GROUP 878

ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

DATE	REV	DESCRIPTION	PREPARED	CHECKED	APPROVED
	G				
	F				
	E				
	D				
	C				
	B				
22/03/09	A	OFFRE REVISION A	FCB	FCB	FCB

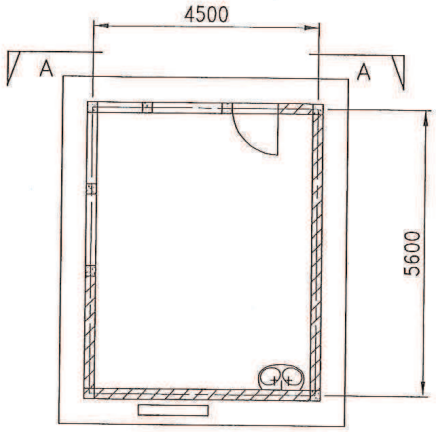
LAYOUT MARK	BUILDING	BATIMENTS AUXILIAIRES
GROUP / ITEM: 84	EQUIPMENT	
SCALE	DRAWING TITLE	POSTE LIVRAISON CARBURANT USINE & CARRIERE

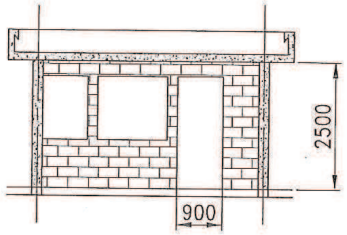
fives fcb

Fives FCB

MATIERE:	MASS:	FORMAT: A1

REFERENCE	CPJB 0902	IND
DRAWING NUMBER	CHLAG1084007	A

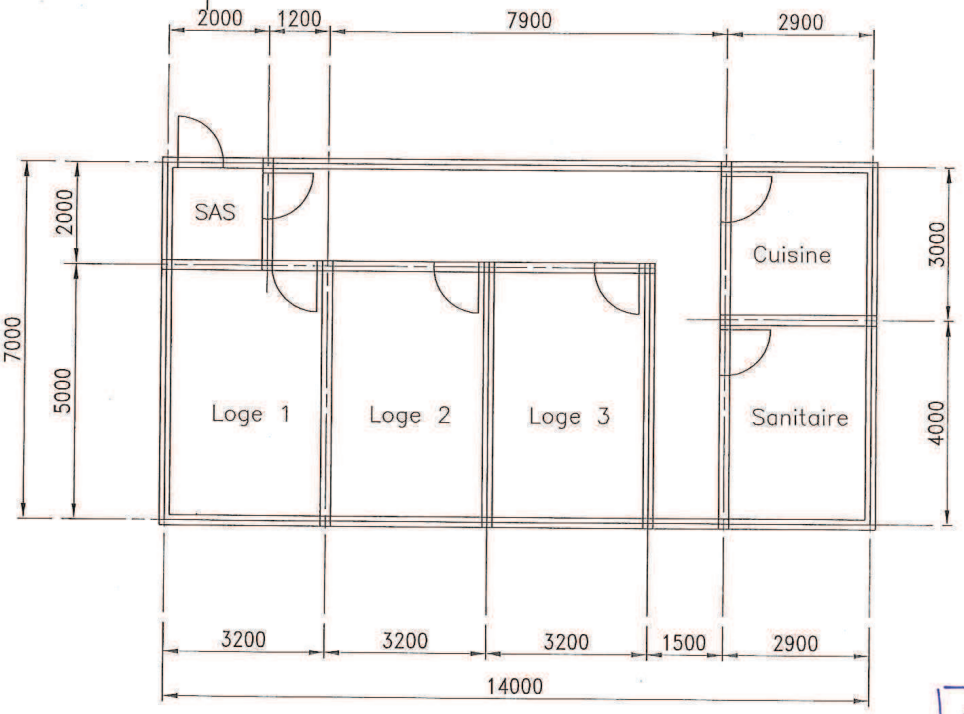




VUE A–A

POSTE DE GARDE

SUB GROUP 84A



LOGES GARDIENS

SUB GROUP 84B

ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

ORIGINAL

	REV	DESCRIPTION			
	G				
	F				
	E				
	D				
	C				
	B				
22/06/09	A	OFFRE REVISION A	FCB	FCB	FCB
DATE	REV	DESCRIPTION	PREPARED	CHECKED	APPROVED

LAYOUT MARK

BUILDING: BATIMENTS AUXILIAIRES

GROUP / ITEM: 84

EQUIPMENT:

SCALE:

DRAWING TITLE: POSTE GARDE ET LOGES GARDIENS

fives fcb

Fives FCB

MATIERE: | MASS: | FORMAT: A1

REFERENCE: CPJB 0902 | IND

DRAWING NUMBER: CHLAG1084008 | A

Annex C3 –

ENS_DL11_03_EN_PDMS_IMPORT_RULES_rev02

ENS /DL 11/03
S.Ostyn

Destinataire(s) : **Fives FCB**

Copie(s) :

IMPORT RULES IN AVEVA PDMS 3D DESIGN SOFTWARE

Rev	Date	Issued / Fait	Checked	Approved	Description / Observation
01	05/10/11	S.OSTYN	B.DENNEULIN	P.CRETON	First edition
02	13/06/13	S.OSTYN	S.OSTYN	B.DENNEULIN	Up to date

Fives FCB
50, rue de Ticléni - B.P. 376 - 59666 Villeneuve d'Ascq Cedex - FRANCE
Tél : +33 (0)3 20 43 77 77 - Fax : +33 (0)3 20 43 75 75 - E-mail : fivesfcb@fivesgroup.com
S.A. au Capital de 8 038 000 € - 410 109 698 R.C.S. Lille - SIRET 410 109 698 00036 - TVA n° FR 21 410 109 698 - APE 742C
www.fivesgroup.com

TABLE OF CONTENTS :

1 INTRODUCTION

1.1 Generality

To conduct his engineering studies in the area of the cement plant, fives fcb acquired the AVEVA PDMS 3D design software.

PDMS uses comprehensive functions for all aspects of 3D plant design and can integrate all the requirements:

- Mechanicals
- Civil and Structural Engineering
- Electricity Automation and Instrumentation

fives fcb requests his suppliers to provide 3D objects from their CAD environment using compatible gateways.

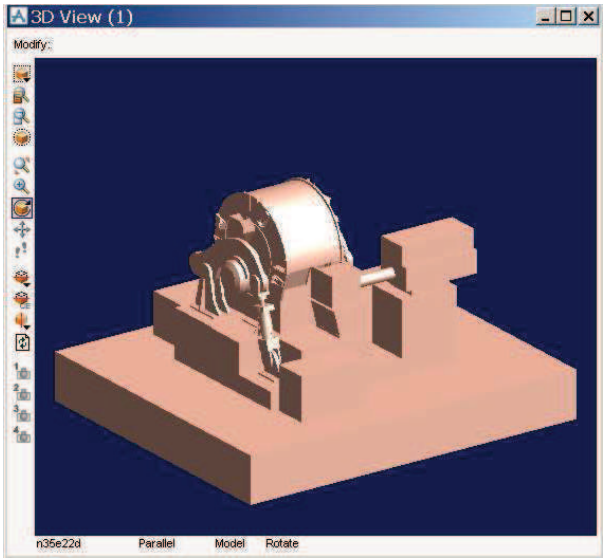
The objective of these 3D objects are to make easier integration and collaboration among fives fcb and its suppliers in the implementation process of cement plant in addition of the drawings and of the technical specifications.

1.2 Conformity of information

- The supplier must ensure that there is no loss of information between its export file and source original file.

- The supplier shall number its export file in accordance with chapters 2.2 or/and 3.2.

- The supplier must accompany his transmission with a 3D print screen or better a free way to visualize the object (3D PDF or other).



2 THE STEEL STRUCTURE & CIVIL WORKS ELEMENTS

2.1 Generality

PDMS can integrate the steel structure elements from the following software:

- Advance Steel
- SteelCAD
- StruCad
- Tekla / Xsteel
- Bocad

The imposed format is **SDNF**, release **3.0**

For the Civil works you can also use the STEP format (STandard for the Exchange of Product model data). or SDNF 3.0

2.2 Documents reference system / Numbering

It is applicable for every file issued by the design offices in charge of the 3D design

All the drawing reference, which have been draw from 3D

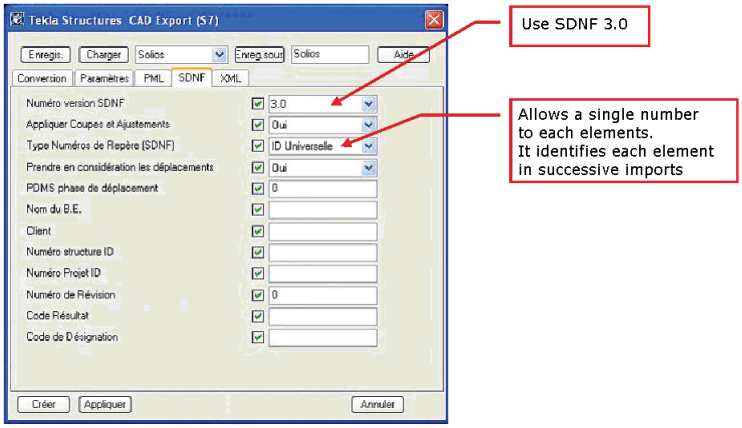
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Project Code					Doc. Type				Group N°			Subgr	Doc N°						Subgr	Doc N°			Rev			
T	E	R	1	_	S	2	0	_	4	0	_	A	0	1	_	**T**	**O**	_	A	0	5	_	A	_	**3**	**D**

Example: TER1_S20_40_A01_TO_A05_A_3D
For 3D view of steel structure (S20 Type) for cooler building (group N° 40) and corresponding to execution drawings A01 to A05 (revision A).

2.3 Conformity of information

There are important elements to obtain a workable export file:

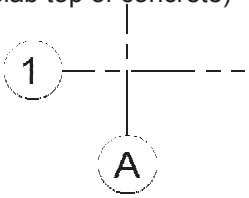
- The option "Universal ID" must be selected (Below is a given example in Tekla)

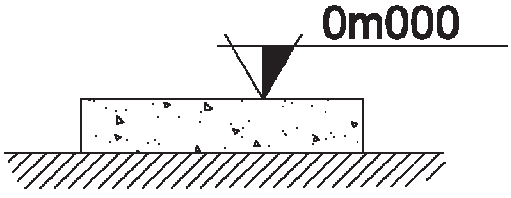


- The export must be done at least by sub-group, following our civil division cutting. Example:
  36A - Level1of preheater tower
  36B – Gangway inside preheater tower
  36C – Staircase of preheater tower

- The designation of the profiles in the supplier software catalogue must be in conformance to the syntax specified in the attached Excel file (extract from ienet software).
  Example:-do not reproduce-L100x100x10 use and / or L100x10 instead of L100 * 100 * 10.

- The objects will be drawn with reference to the file A1 and the level zero of the building (ground slab top of concrete)





3 THE MECHANICAL ELEMENTS

3.1 Generality

PDMS allows the integration of Equipments in the STEP format (STandard for the Exchange of Product model data).
The exchange format is a standard for various CAO platforms. The solid geometry is then recovered as a block, which is not editable.

The imposed format is the STEP AP203

3.2 Documents reference system / Numbering

It is applicable for every file issued by the design offices in charge of the 3D design

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Project Code					Doc. Type				Equ.			Doc N°				Rev					N° ITEM						
T	E	R	1	_	M	1	0	_	B	C	_	0	0	1	_	A	_	**3**	**D**	_	3	0	2	B	C	0	1

3.3 Size and file organization

- These files must represent the outer casing of the equipment without internal parts and details like bolts or others, in order to get the file lighter. However, the simplified representation must not affect the understanding of the equipment and all the interface (Flange, Access,..)

- However, at the start of the project, we need a fast validation of the equipment and in this case we can accept heavy files.
  Then the supplier and fives fcb define together what it is possible to remove or how can we subdivide the model. (For example, a bucket elevator can be subdivide in three model, the head, the foot and all the casings)

3.4 Generality

These files must:

- Be at 1:1 scale

- Be in millimetres

- Be accompanied with an dwg autocad 2004 or an older version where the parameters below can be seen:

.The overall size
.Materials inlet and outlet details
.Dedusting flanges details
.In general, all flanges and connection to external equipment and / or pipe
.Electrical and / or sensor connection (if needed)
.Maintenance areas and access (inspection door, parts to be handled for maintenance, access for inspection, etc ...)

Annex C4 –

iExtranet User Guide for contacts - EN

oodrive
The Cloud Storage Company

iExtranet 4.13

Instruction Manual

Société Oodrive
www.oodrive.com

TABLE OF CONTENTS

INTRODUCTION

1.1 What is iExtranet?

iExtranet is a secure web-based platform for the exchanging of large files and collaborative working between staff within a company and their external contacts.

iExtranet makes it possible to:

- **Share online and e-mail any type of file**, whatever the size or format
- **Collaborate efficiently and on a daily basis** with internal colleagues and external parties
- **Strengthen security and enjoy a high level of traceability** on all file transfers

1.2 System requirements

Compatible operating systems

- Windows XP, SP1, SP2, SP3, Vista, 7
- Mac OS 9 / Mac OS X
- Sun JRE 1.4 or later (when using the quick document transfer wizard)

Compatible Internet browsers

- Internet Explorer 6 or above
- Firefox 1.5 or above
- Safari 3 or above

Compatible connection types

The service is compatible with all types of existing connection: PSTN, ISDN, ADSL, cable or satellite. A broadband Internet connection is strongly recommended (512 kbits/s or more) to maximise the use of the service's capacity.

Compatible transfer protocols

- HTTP/HTTPS
- FTP/FTPS
- Webdav
- REST
- WebServices

Using the service with a proxy

If problems arise that could be due to using the service with a proxy server, please contact the administrator or call our technical department.

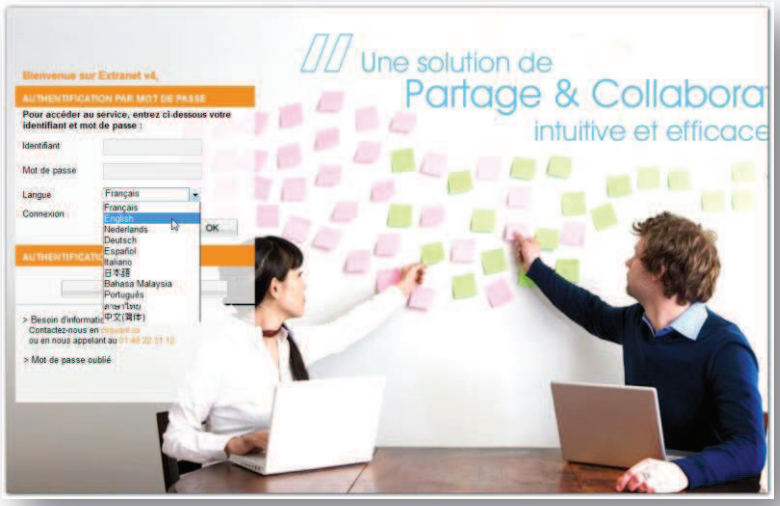
2 OVERVIEW OF THE iEXTRANET PLATFORM

2.1 Homepage

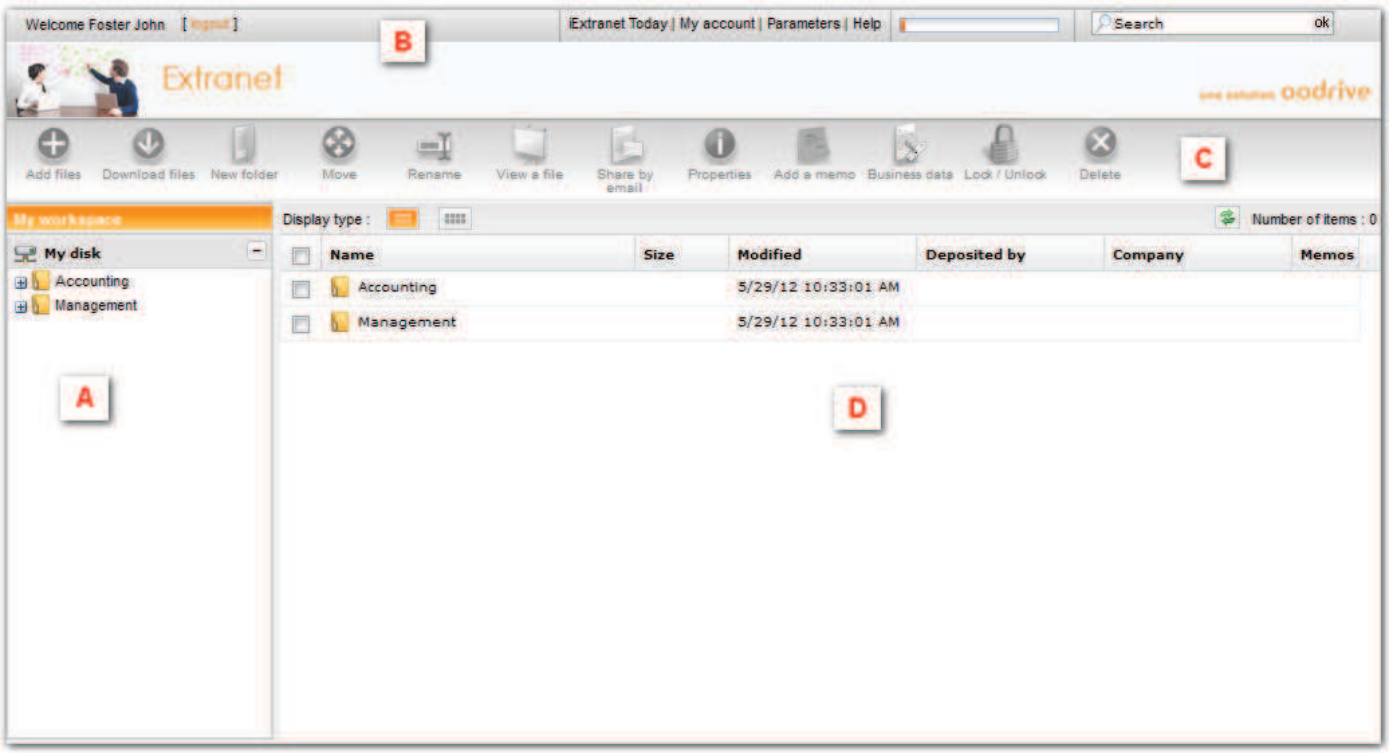
Every user or account manager logs on via the homepage by entering their user ID and password.
In the event of the user forgetting their user ID or password, they should contact the account manager.

The connection can be chosen in encrypted mode (https) or in fast mode (http) by selecting or deselecting the relevant checkbox provided.
Encrypted mode guarantees data integrity and confidentiality for data sent by the user and received from the server.

Depending on the options, it is possible to select on this page the language in which to display iExtranet.

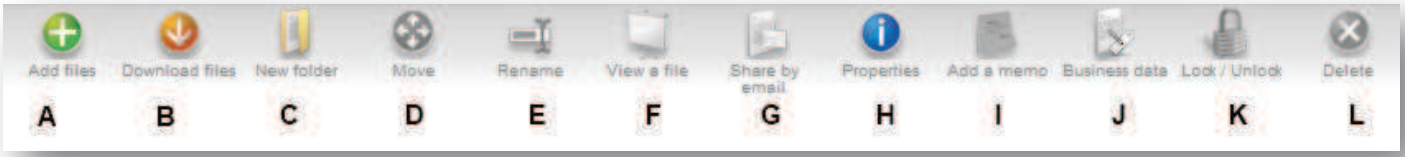


2.2 User interface



A: Folders
B: Options bar
C: Actions bar
D: Folder contents

Taskbar



A: Add files to the tree structure

B: Download files onto a computer

C: Create a new folder

D: Move an item

E: Rename an item

F: View a file

G: Share an item by email

H: Properties

I: Add a Memo

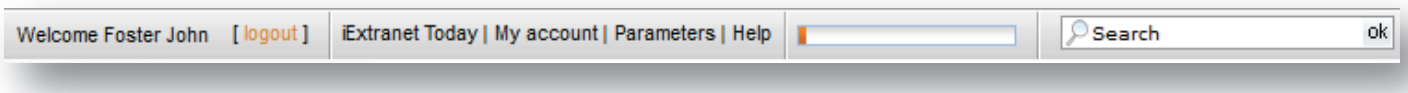
J: Business data

K: Lock/Unlock files

L: Delete files folders

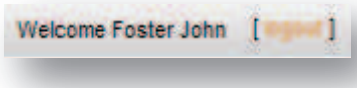
Toolbar

This bar consists of various buttons enabling you to customise your iExtranet account.



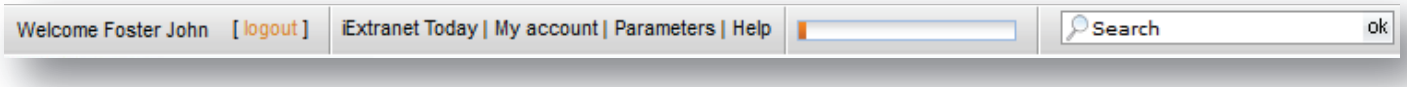
Logout button

The **Logout** button enables you to terminate your iExtranet session.



My account button

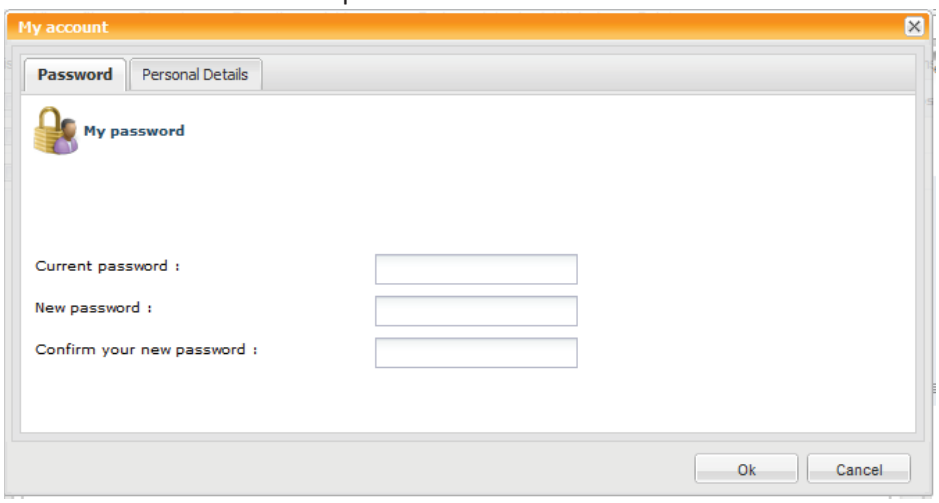
This is located in the right-hand section of the toolbar.



The **My account** button provides you with access two tabs.

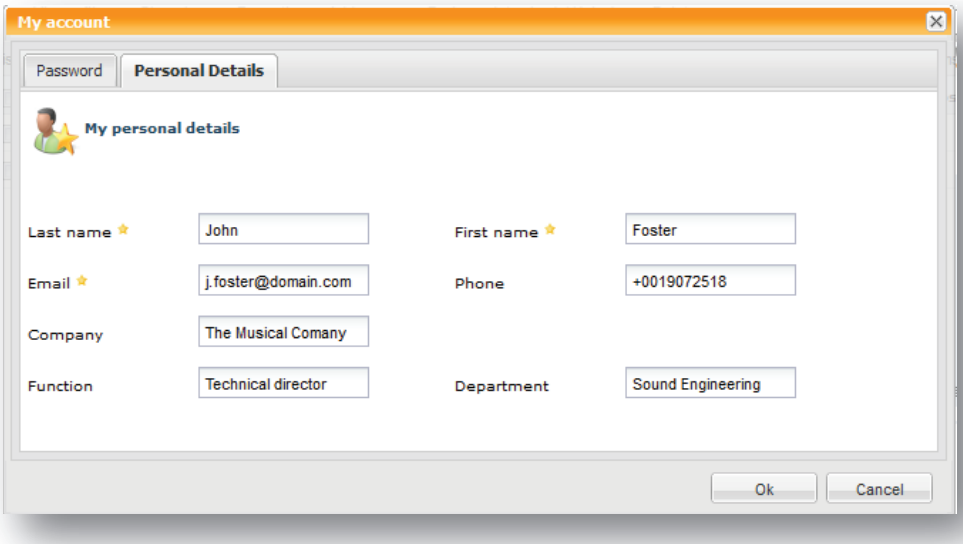
Password management

The **Password** tab enables you to enter a new password.
Enter the old password and then enter the new password.



Personal Details

The **Personal Details** tab enables you to enter/edit your personal details.

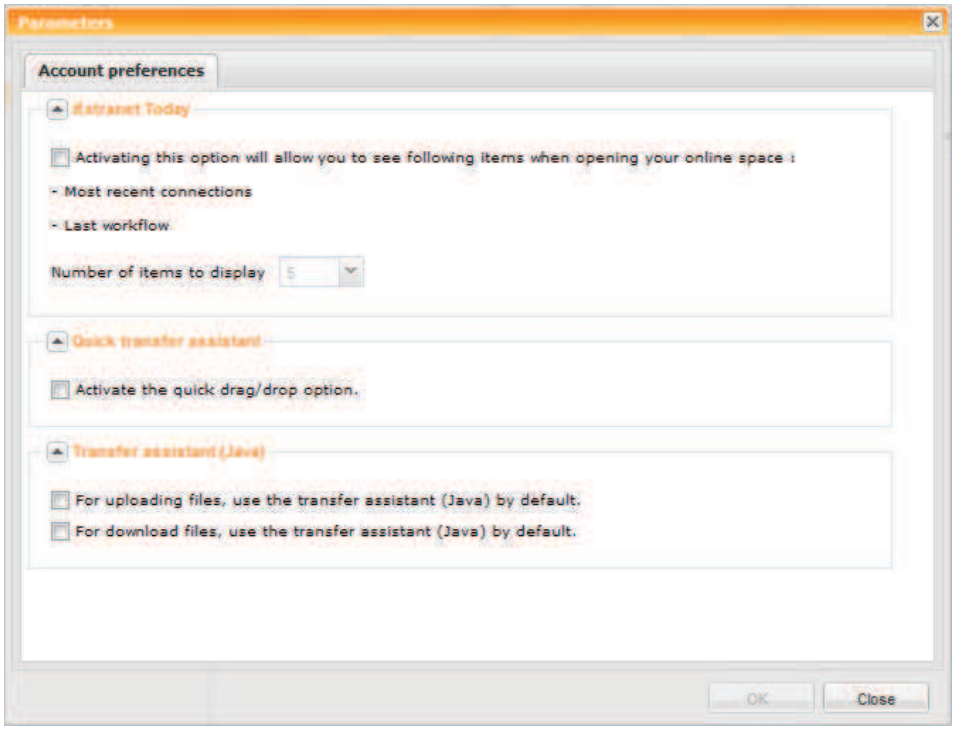


Parameters button

The **parameters** button provides access to the following settings
On the **My account settings** tab, you can activate:

- The **iExtranet Today** module *(only for Account Management)*
- The **Quick document transfer wizard**

- The **File transfer wizard** (Java)

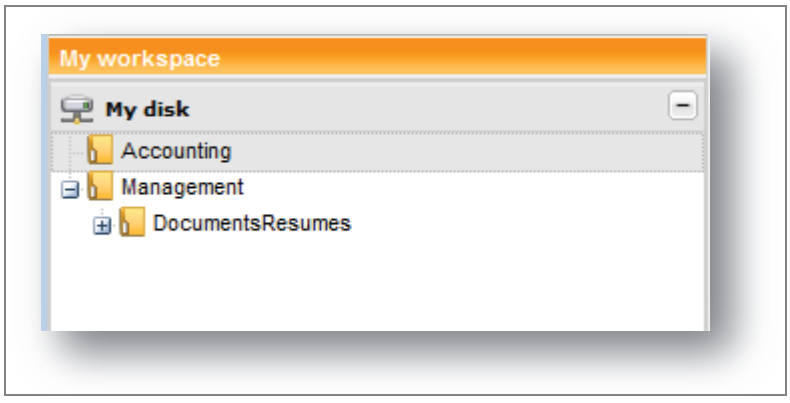


3 MAIN FEATURES

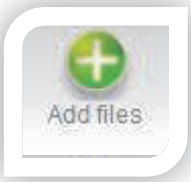
3.1 Managing files and folders

Adding files and folders

1. Use the tree structure on the left to select the folder to which files are to be added.

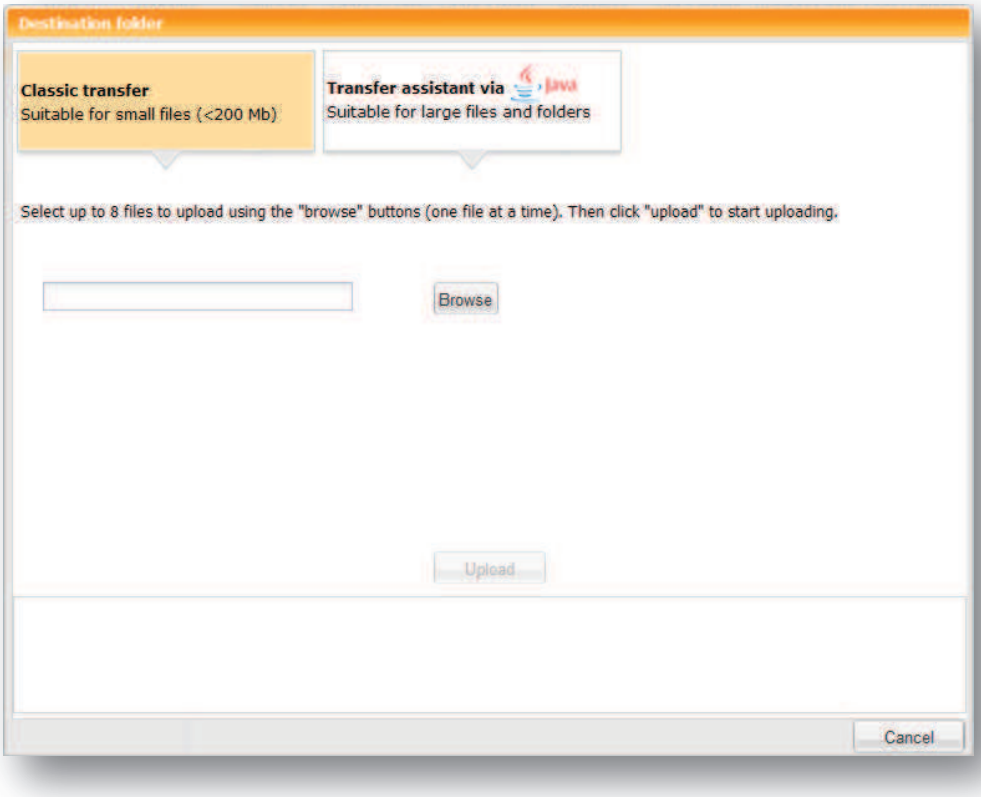


2. Then click the 'Add files' icon.



A window opens: select one of the three transfer (import) modes.

Classic transfer



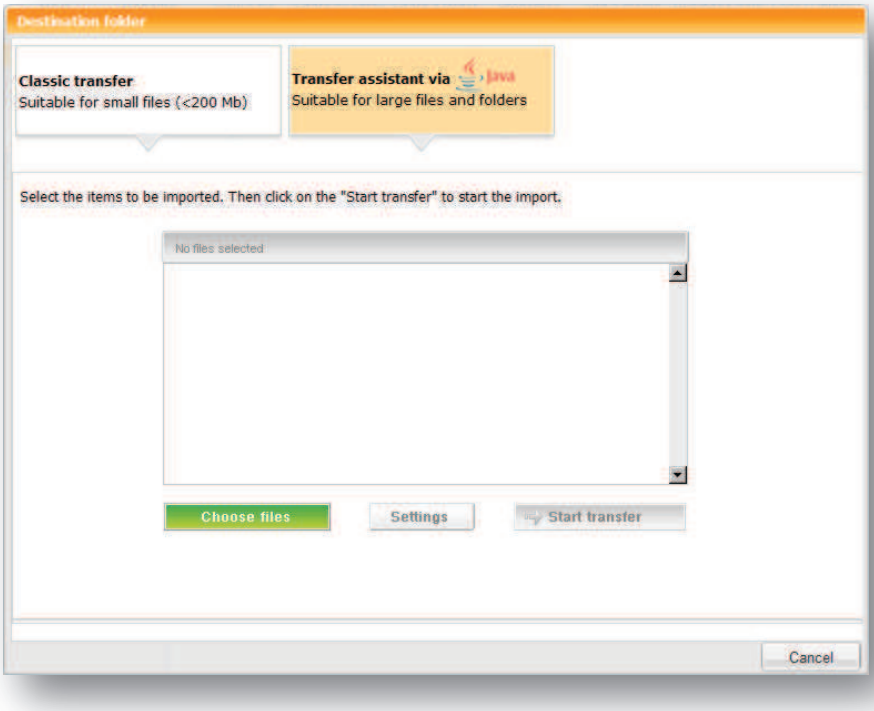
3. Click one of the **Browse** buttons.
4. Select the file to be imported.
5. Click the **Open** button.
6. If several files need to be imported at the same time (up to 8), repeat actions 3, 4 and 5.
7. Click **Validate**.

→ The selected file(s) is/are transferred to your iExtranet and is/are displayed in the folder previously selected, once the transfer is complete. A progress bar shows transfer progress.

Java transfer wizard

- **Adding files**

Using this document transfer wizard, you can import several items at the same time.
Folders, files or both can be added at the same time. This system is ideal for importing an entire tree structure or large files.

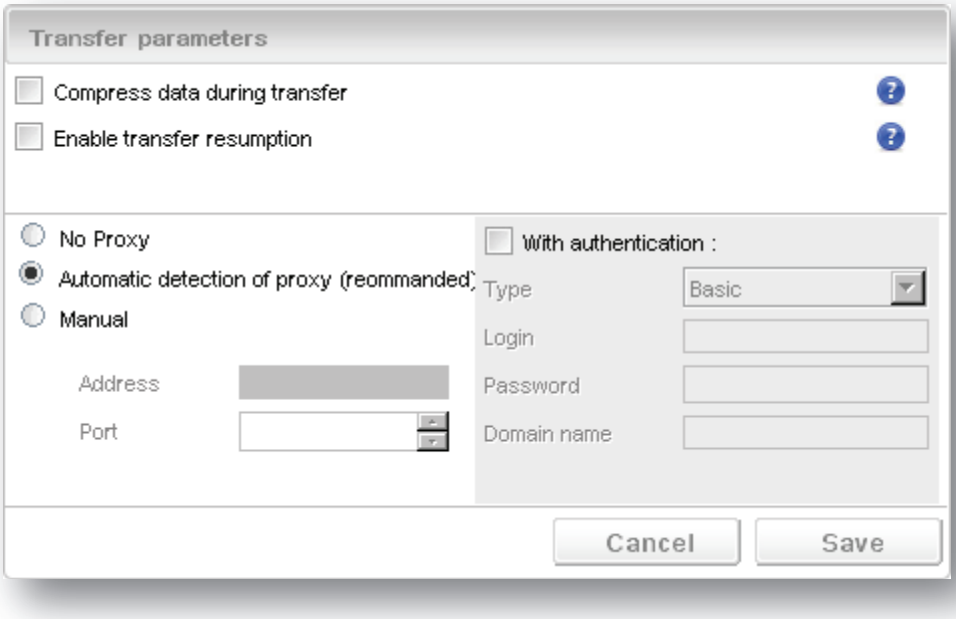


Click on the **'Select files'** button to select the data to add to your space.

When the selection is complete, click the **Start transfer** button to begin the transfer. A progress bar is displayed during the transfer.

- **Options**

Java transfer wizard options: the **Settings** button provides access to the different settings for this transfer wizard.



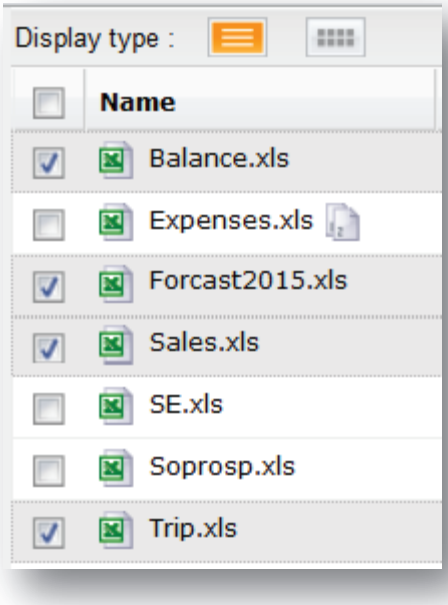
- The **Compress files during transfer** option reduces the time taken to transfer documents via the interface.
- The **Activate transfer resumption** option makes it possible to continue with a data transfer that has been previously stopped or interrupted, e.g. due to the loss of an Internet connection. This option is ideal for transferring large files.
- Sending in batches allows you to split the files before sending them. This option is useful in specific cases.

- The following options allow you to set up a connection via proxy.

Downloading files and folders

With iExtranet, you can download several items all at once (in a single compressed file) from the iExtranet platform to your local hard drive.

To download files or folders:
In the contents area on the right-hand side, select the folder or files to be downloaded.



Note: A number of consecutive files can be selected by pressing and holding down the ***Shift*** key. A number of separate files can be selected by using the ***Ctrl*** *key in the same way.*

Click the Download files icon.

A window opens and asks for the name and location to which the compressed file should be downloaded. Select the required location and click the Save button.

The Download in progress window shows download progress.

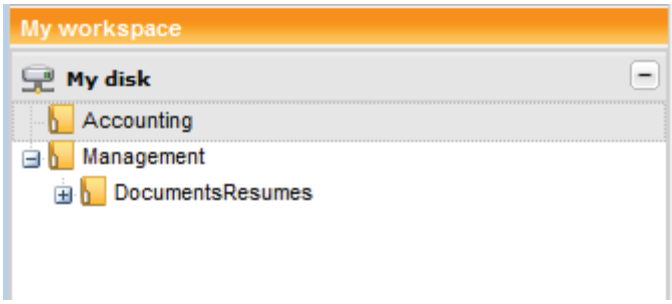
Note: It is not possible to download empty folders.

Creating a new folder

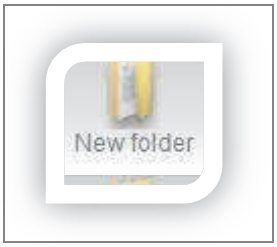
It is possible to create as many folders as required to structure the data held on the file-sharing platform.

The procedure is as follows:

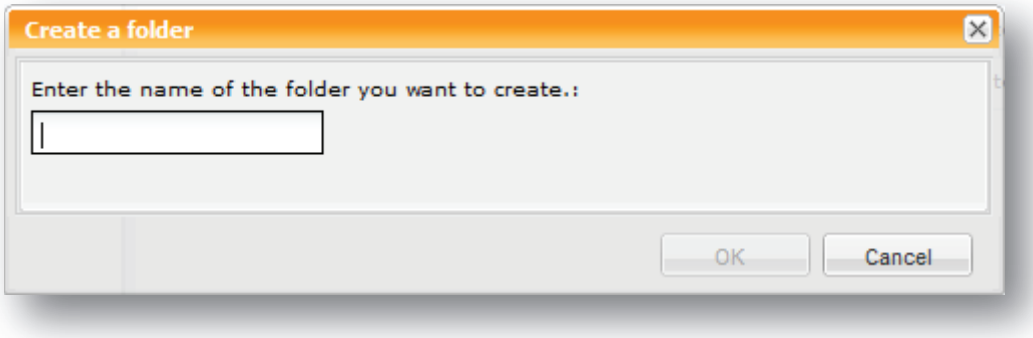
1. On the left-hand side, select the parent location where the new folder should be created.



2. Click the **New folder** icon.



1. Enter the name of the new folder and click ok.

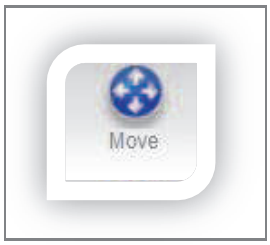


Your folder will be created at the root of the parent floder.

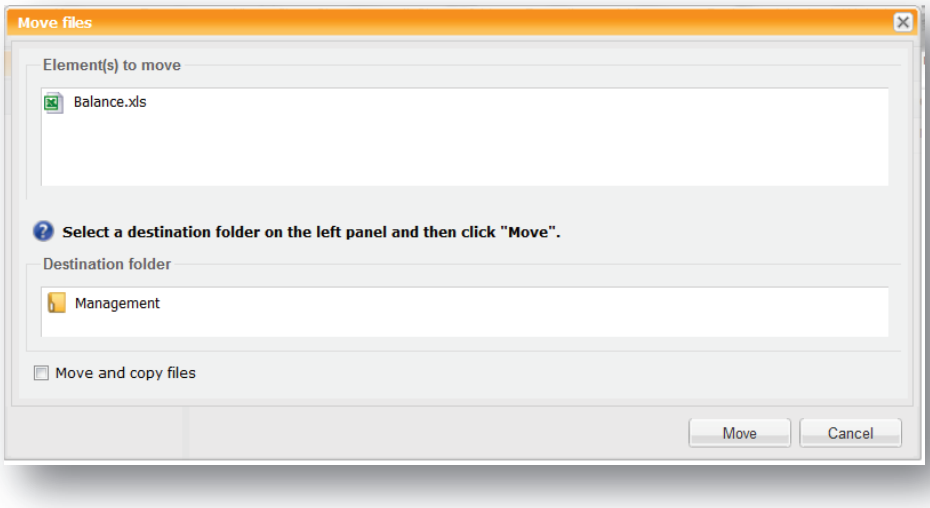
Moving a file or folder

1. In the contents area on the right-hand side, select the items that need to be moved.

2. Click the **Move** icon.



3. The **Move files** window is displayed.
   In the tree structure on the left, select the directory to which the file or folder should be moved.



Note: It is possible to move the file or folder and create a copy at the same time, by selecting the **Move and copy files** checkbox

4. Click **Move**.

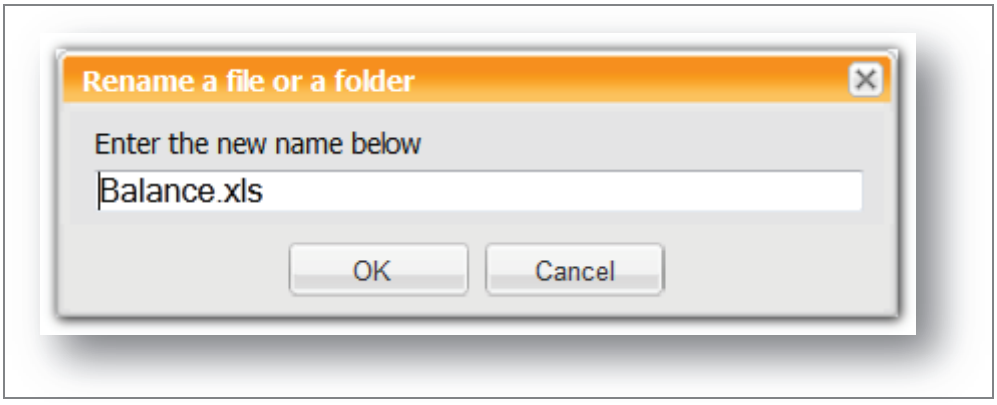
→ The selected item is now moved into the selected destination directory.

Renaming a file or folder

1. In the contents area on the right-hand side, select the file or folder to be renamed.

2. Click the **Rename** icon.

3. Enter the new name for this item.



Note: Filenames may not contain the following characters : \ / : * ? " < > |.

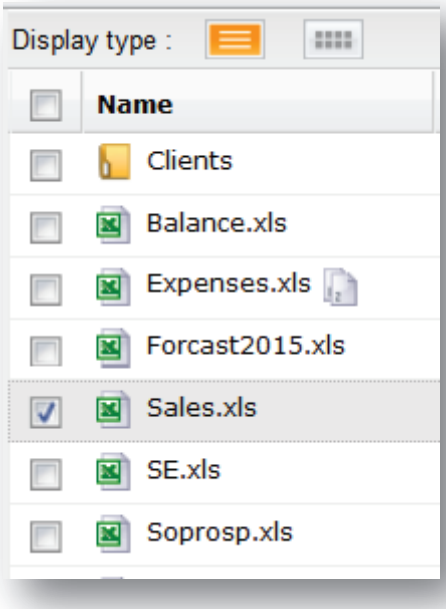
4. Click **Validate** to save the changes.

Note: Be careful with file extensions! Ensure that no changes are made to the file extension as this could make the file impossible to use.

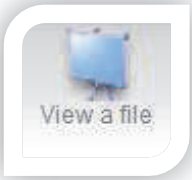
Viewing a file

Using this feature, you can view various formats of multimedia files.
To view a multimedia file online:

1. In the contents area on the right-hand side, select the file or folder to be viewed.



2. Click the **View a file** icon.



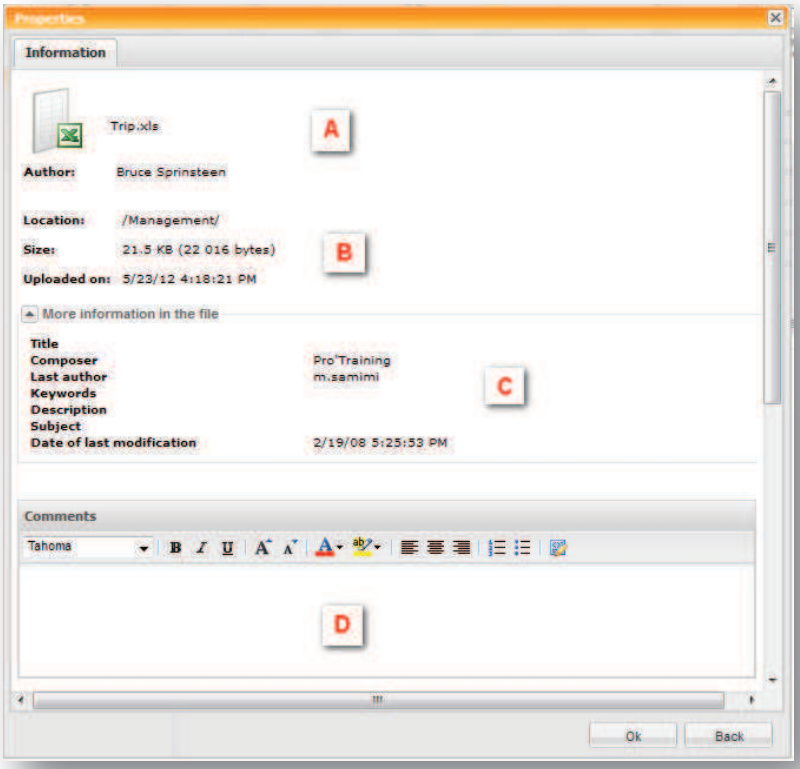
3. The file opens automatically in a new window.
   To view files online with extensions other than those mentioned above, please refer to how to download a file.

File and folder properties

Each item on the iExtranet sharing platform has a set of properties. These can be accessed, as detailed below.

Select the folder whose properties you want to view.
1. Click the **Properties** button:

2. The following window subsequently opens:



Description of items in the window:
A: Document name
B: Document author/Location of folder in the tree structure
C: More information
D: Comments Field in rich text format

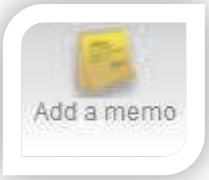
Writing a memo

The iExtranet platform incorporates a memo management tool. This makes it possible to write a note and link it to a file. This memo can be consulted by contacts with access, when they view the file.
It is also very easy to send this memo to various contacts, whether or not they appear in the address book.

To add a memo to a file, proceed as follows:

1. In the contents area on the right-hand side, select the file to which a memo is to be attached.

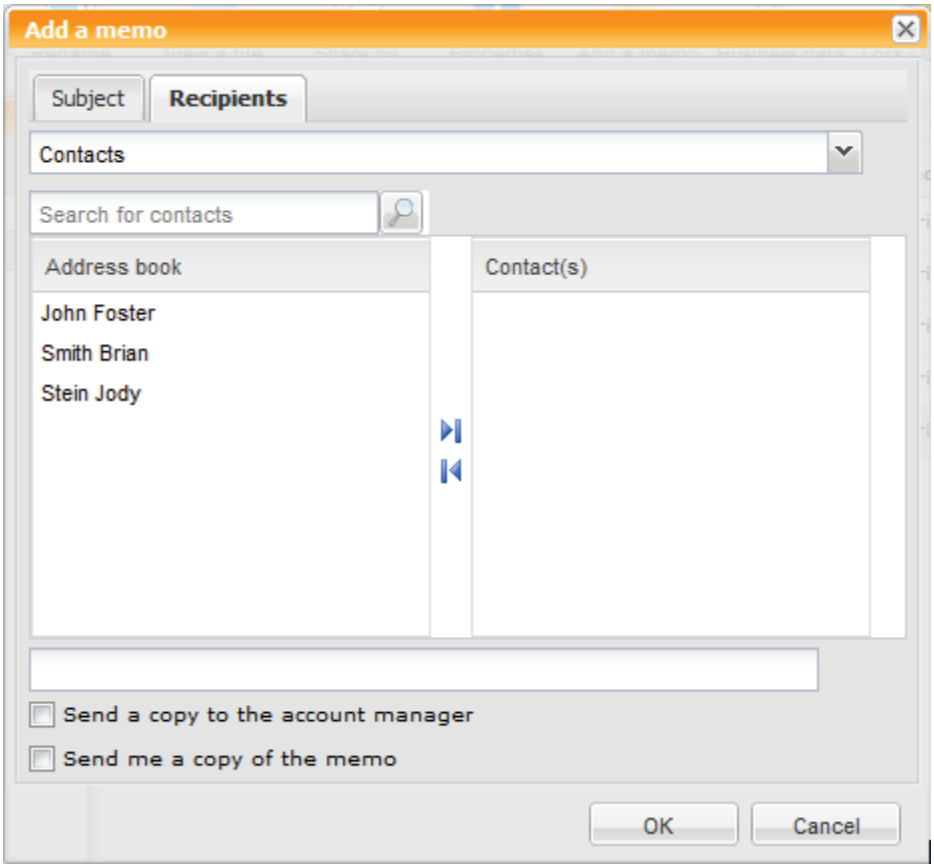
2. Click the **Add memo** button



3. Edit the memo: in the "Subject" tab

4. Enter the subject of the memo

5. Enter the memo text.



6. Recipients

This memo can be sent by email as well as attached to a document.
Click the **Recipients** tab

7. Select a contact in the **Address book** column.

8. Then click the icon to add it to the **Selected contact(s)** column

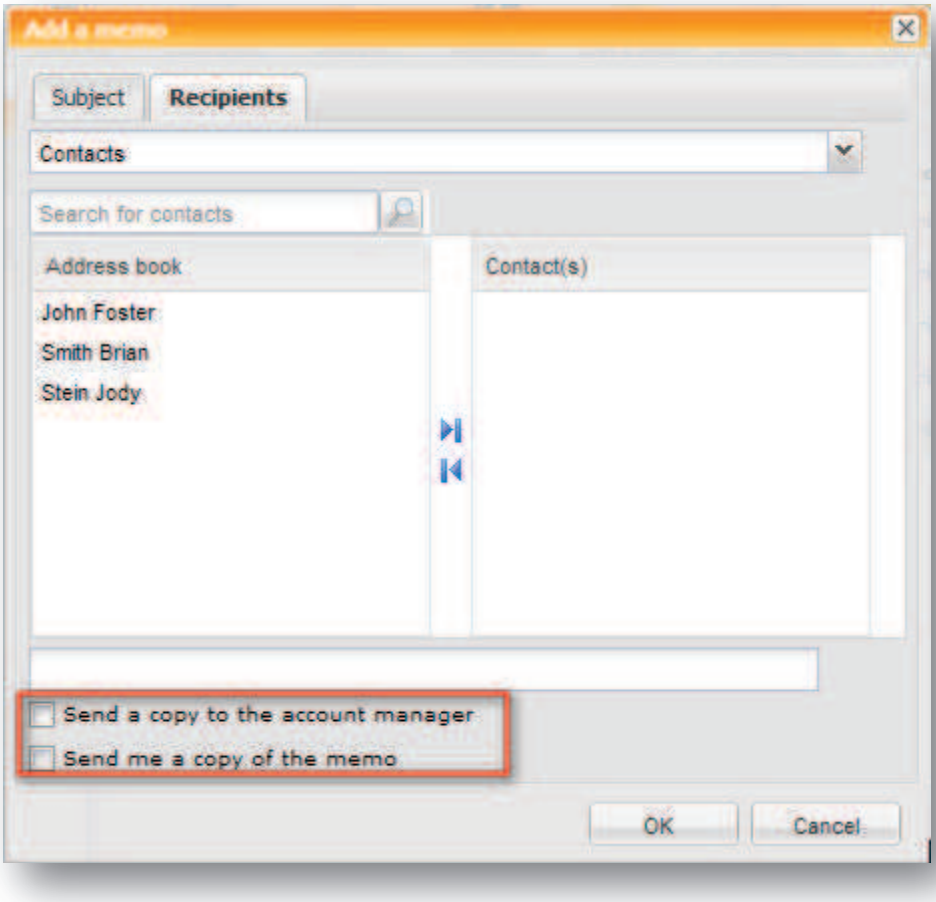
Use the icon to delete a contact that has been selected.

The **Search for contacts** field makes it easy to find contacts in the address book. Enter the first few letters of the name or surname of the person required.

You can also enter one or more email addresses (separated by commas) in the text box beneath the two columns.

9. **Copying a memo**

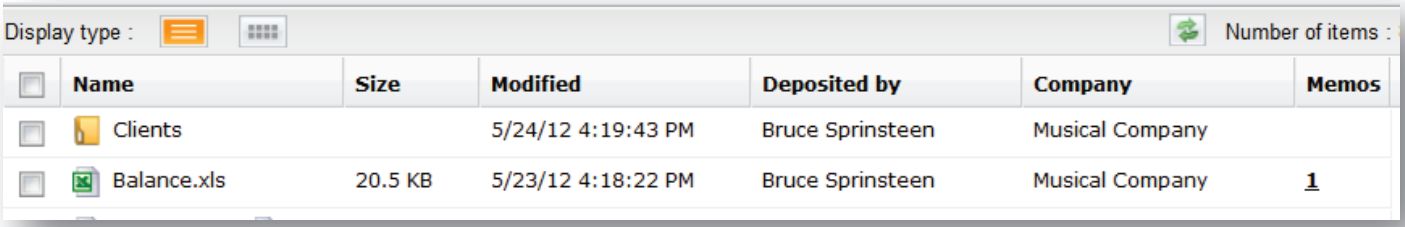
Select the **Send me a copy of the memo** checkbox to receive a copy of this memo by email.



10. Click **Validate** to create the memo.

→ The memo can be seen and accessed in the last column (Memo) on the right of the file (identified here (below) by the number **1**)

All users authorised to access this file can read this memo and reply to it.



Locking and unlocking a file

The iExtranet platform incorporates a tool to enable files to be locked.

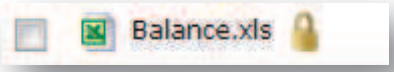
This makes it possible to temporarily block access to a file, for example when it needs to be edited or renamed.

This can be achieved by:

1. Select the file to be locked

2. Click the **Lock/Unlock** button

3. The file is now locked: a padlock is displayed to the right of the file.



To unlock a file, proceed as before.

Note: Only the person who has locked a file, or the platform manager can unlock the file.

Deleting a file or folder

Caution:
Deleting any folder automatically deletes any files/folders contained within it.

1. In the contents area on the right-hand side, select the file or folder to be deleted.

2. Click the **Delete** icon.

3. Confirm deletion by clicking **Yes**.

→ The selected items are deleted.

Note: If the recycle bin has been activated, these items will be placed there and only the platform manager will be able to restore them, if required.

3.2 Sharing documents

Sharing a file or folder by email

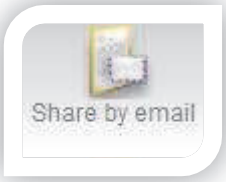
With iExtranet, you can share documents by sending a link to those items in an email. Contacts can then retrieve or view these files and folders directly from their own PC.

Note: Only those contacts provided with sharing rights by the platform manager have access to this feature.

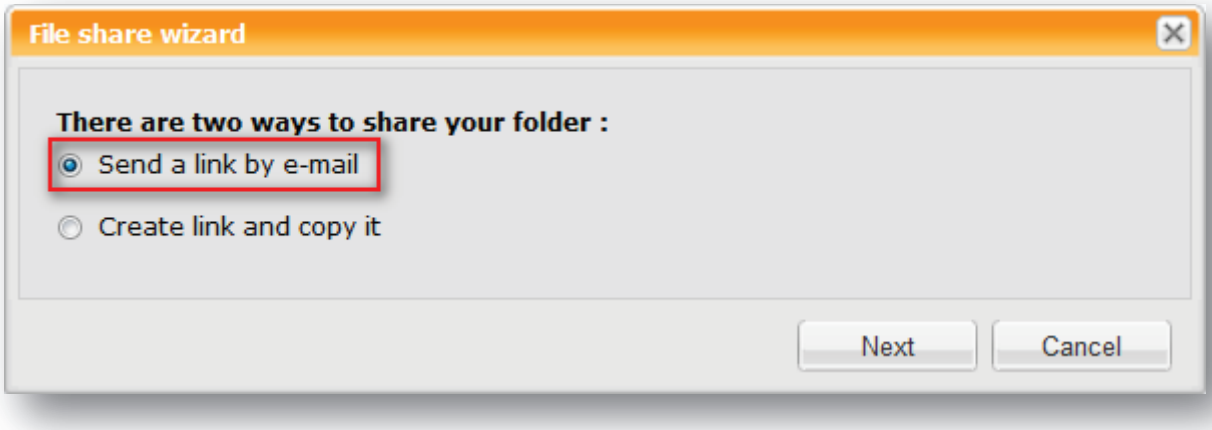
To send a link to a file or folder, proceed as follows:

1. In the contents area on the right-hand side, select one or more files or folders.

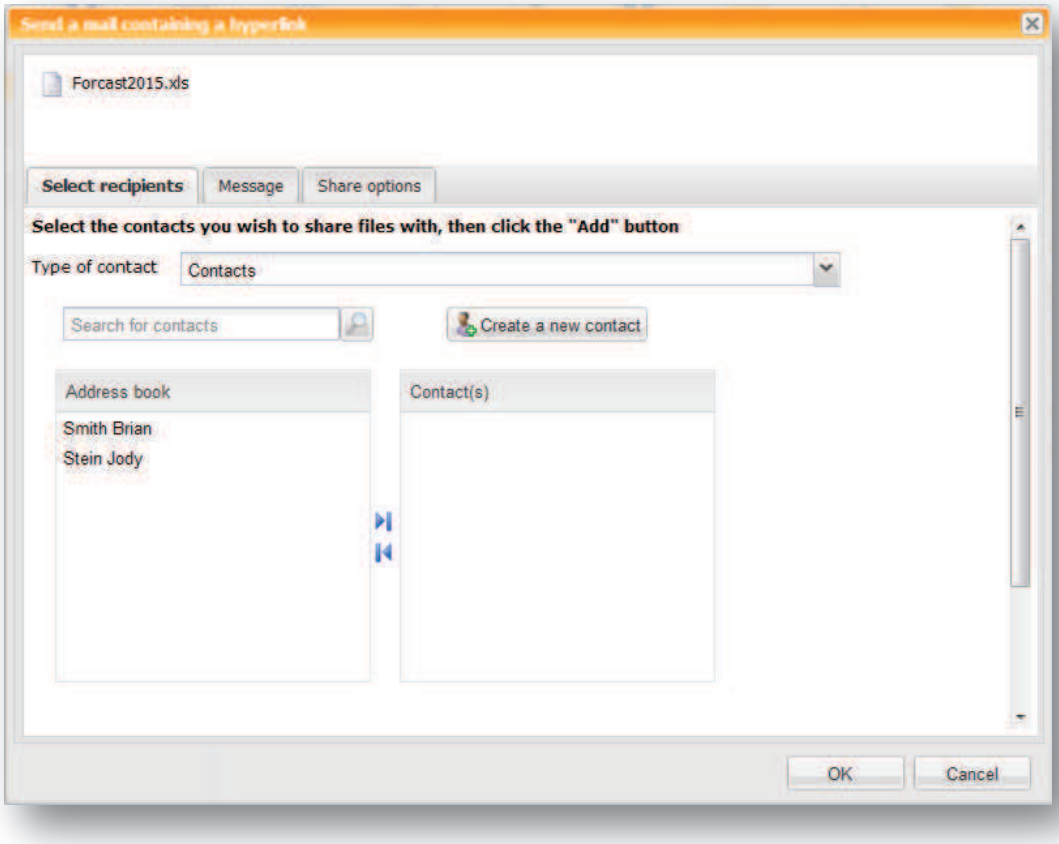
2. Click the **Share by email** icon.



3. Select **Send a link by email** and then click **Next**.



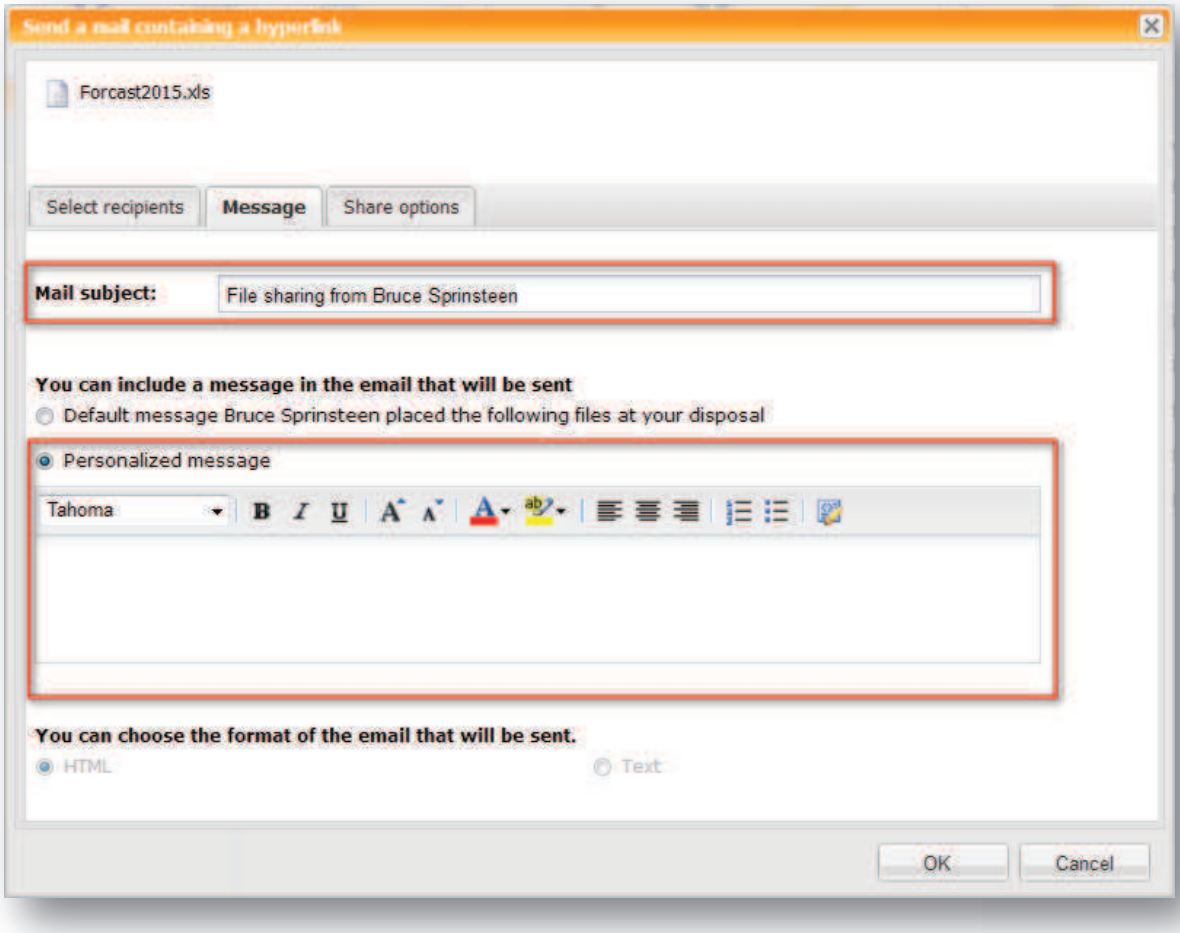
4. Select the contacts with whom you wish to share the files and click .



Note: If one of the contacts designated to share the file does not exist in the address book, their email address can be entered in the relevant field (email addresses separated by a comma). Alternatively they can be entered into the address book by clicking **Create a new contact.**

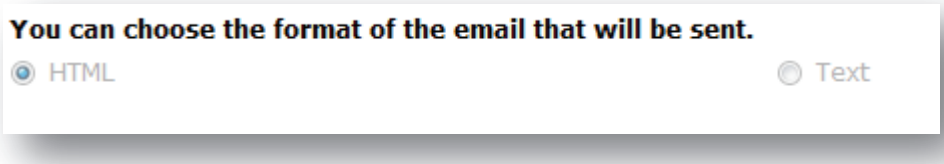
5. A default email is sent to the selected contacts once sharing has been set up.

However, it can be personalised. To do this, click the **Message** tab to access the title and body of the message.

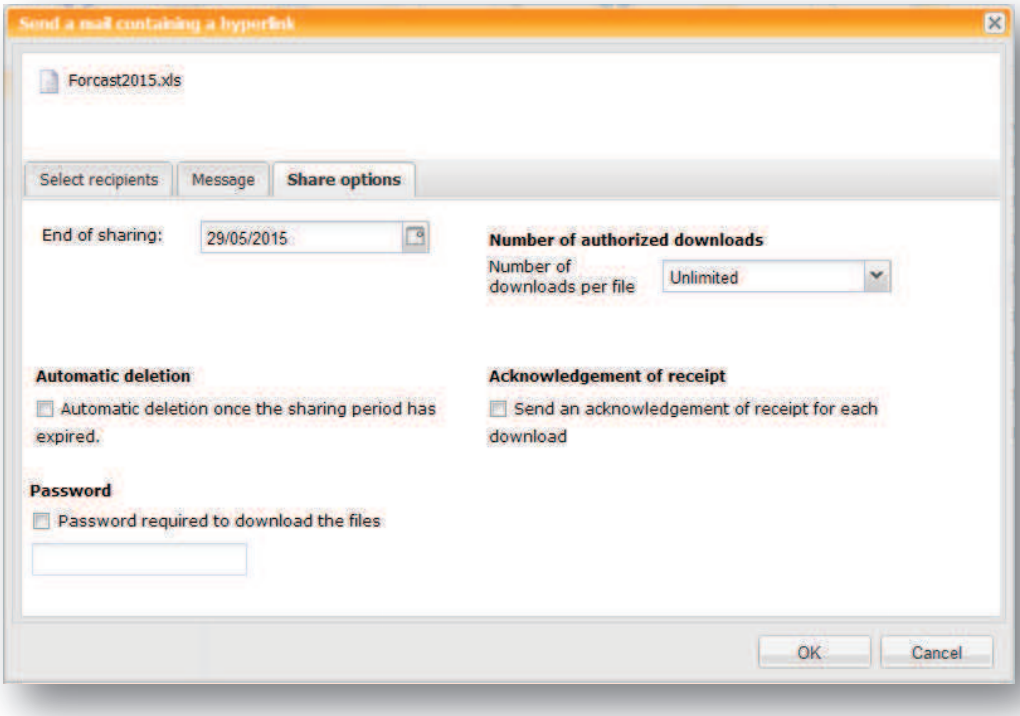


6. If required, a subject can be entered as well as a personalised message.

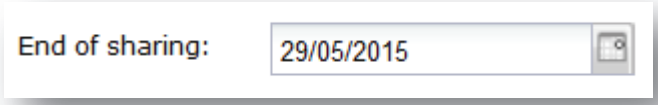
7. There are various format options for sending an email. The default format is HTML. If contacts are unable to receive email in this format, choose the **Text** format.



8. Sharing options can be changed. To do this, click the **Sharing options** tab.



This window is used to set the period during which the selected files or folders are to be made accessible.



9. If files have been selected, there is also the option to select the number of times each contact can download these files.

10. Click the **Validate** button.

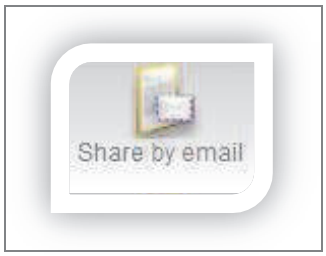
→ An email containing a link to these files/folders is automatically sent to the contacts selected to share them with.

Creating a sharing link

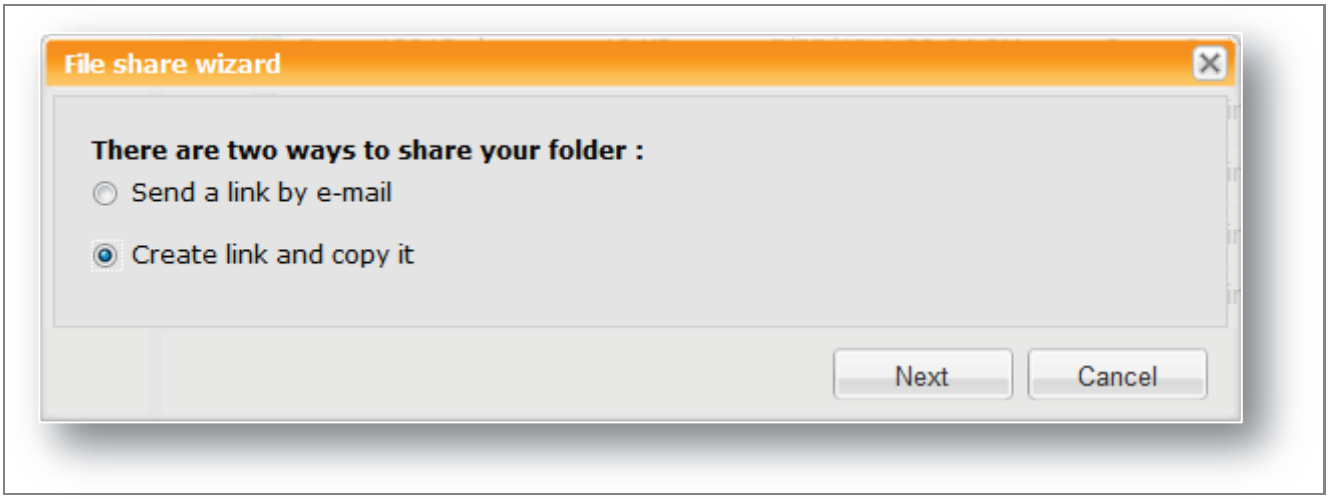
It is possible to create a link to items to be shared and to include this link in an email, for example. To do this:

1. In the contents area on the right-hand side, select one or more files/folders to be shared.

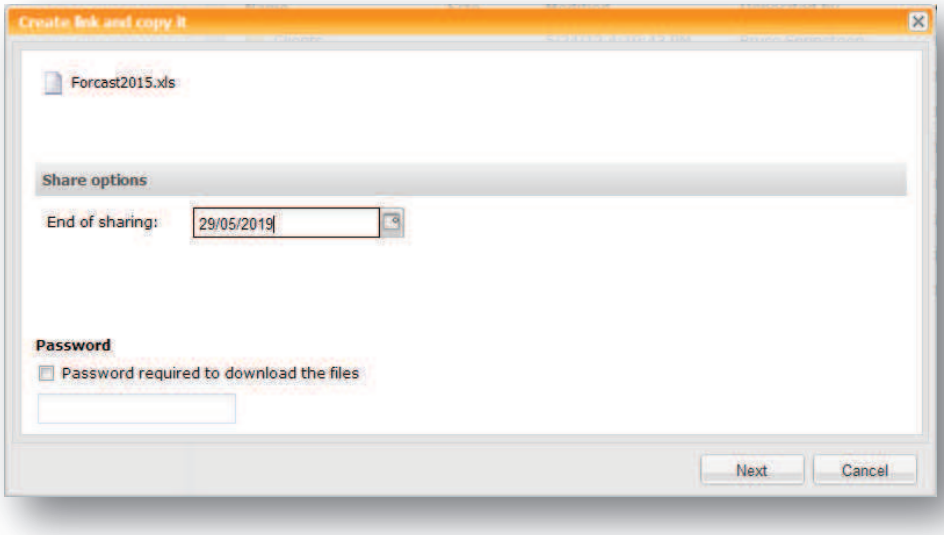
2. Click the **Share by email** icon.



3. Select **Create link and copy it** and then click **Next**.

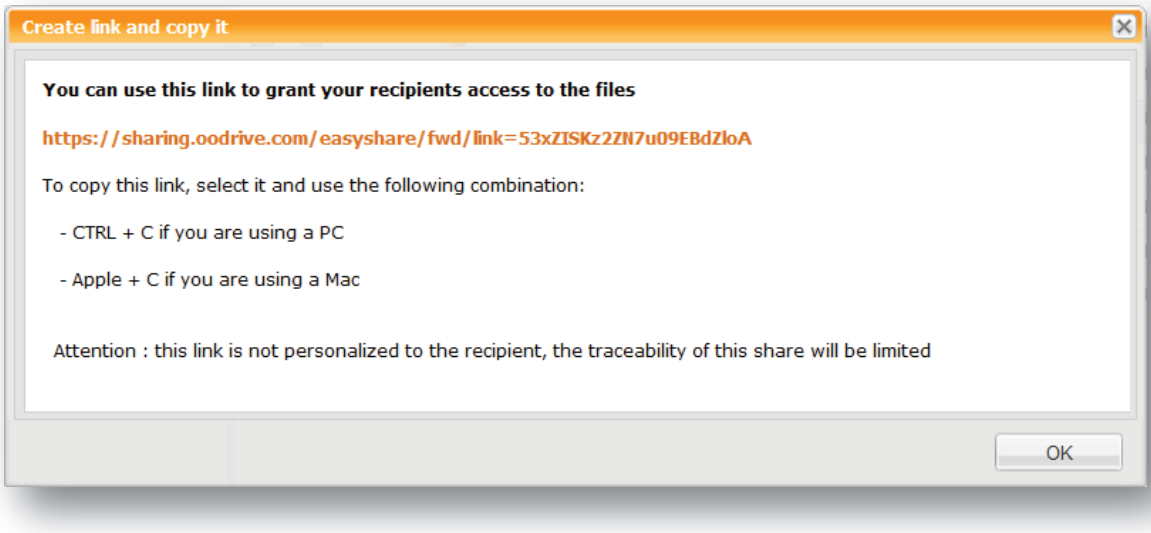


4. In the **Create link and copy it** window, you can amend the end date for sharing by clicking the button to access the calendar. It is also possible to add a password required for downloading, by clicking the **Password required to download the files** option.



5. Click **Next**.

In the **Create link and copy it** window, you can now recover the link that has just been created.



Annex C5 –

User's Manual for IEnet online software

Nomenclatures
Designer's Manual

Revision	By	Date
1	Bénédicte Guillon	04 February 2005
2	Bénédicte Guillon	19 October 2005
3	Bénédicte Guillon	27 October 2005
4	Bénédicte Guillon	10 September 2007
5	Bénédicte Guillon	7 December 2007
6	R Marcoin	6 février 2008
7	S Defrance	13 January 2012

SUMMARY

1 Application Description

The FCB Company Nomenclatures application makes it possible to monitor different project / job stages from design to building site.

At each stage, the intervening parties input information concerning the progress of their activity and can edit printouts.

Users connect to the database via Internet and are in this way linked to a shared database.

Different types of users have been distinguished, and each user is only able to input data in his own, proper field of activity:

- designers
- manufacturers
- carriers
- erectors
- building site
- FCB (administrators)

This manual is intended for designers.

In this application, the designer's role is

- to consult the Reporting to know which items are to be designed by him (§ 10 - § 10.3.9)
- to create the drawings numbers Drawing related to these items (§ 5) and to update the revision of these drawings.
- to insert the list of marks and submarks for the different drawings, to check them and to calculate weight Mark list (§6)
- to validate the mark list (give Designer Agreement) Give Designer Agreement when all the elements of the drawing have been filled in and can be approved by FCB (§ 7).

A designer only has access to the data of his own items, groups and subgroups.

In a first phase, inputs are made in a « Mark list » table that is specific to the designer and is only visible to the designer (and to FCB).

The data is only copied into the shared tables when the designer decides to validate his data (by giving designer agreement)

2 Application Launch

The application is an Internet application. You use your Web browser to work : Internet Explorer for example.

You access it by using the URL : http://nomenc.fcb-ciment.com. You are strongly advised to put it in your favorites links.

The first page allows you to choose the project you want to work with.

After this choice, you are directed to one of the projects.

Only authorized users can uses the application. FCB has given to you a user name (login) to allow you to sign on. If not, contact FCB to ask a user name.

If you work for different projects, FCB will give you a user name for each of these projects (it can be the same).

The user must enter his name and password when launching the application:

Users are created by FCB, which communicates the name to each user for database access.

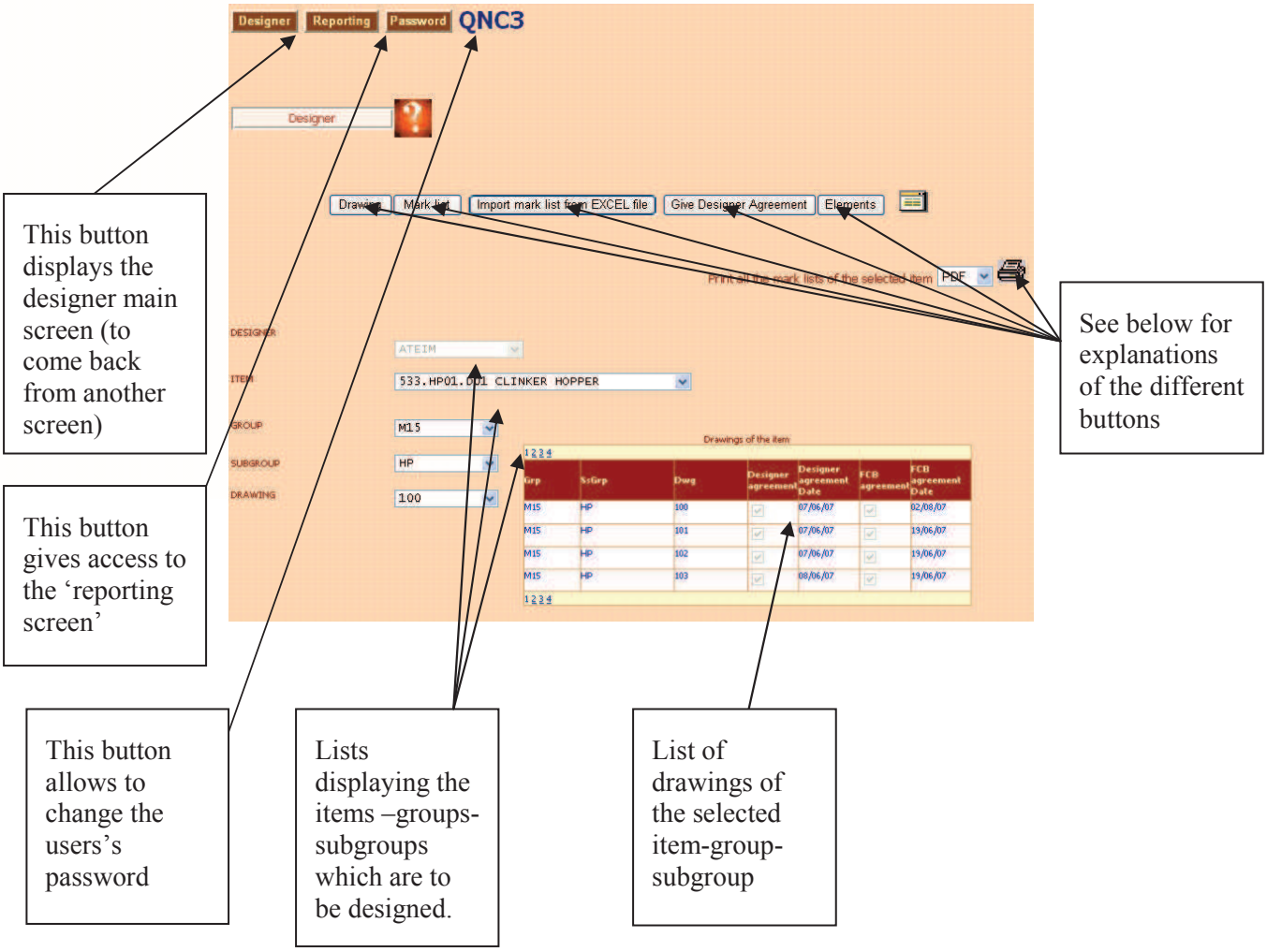
When used for the first time, the password space is empty. It is strongly recommended to modify it (see the password modification procedure below).

Type your user name (login),

your password,

then click on Connect.

3 Home page



The 'Designer' drop-down list is already filled in when the current user is a designer. It is not possible for him to make a different selection.

On the other hand, if the current user is an administrator, this list is unlocked.

The ITEM drop-down list only shows the items assigned to the selected designer.

The GROUP drop-down list only shows the groups of the selected item and designer.

The SUBGROUP drop-down list only shows the subgroups of the selected item, group and designer.

The DRAWING drop-down list only shows the drawings of the selected item, group and subgroup..

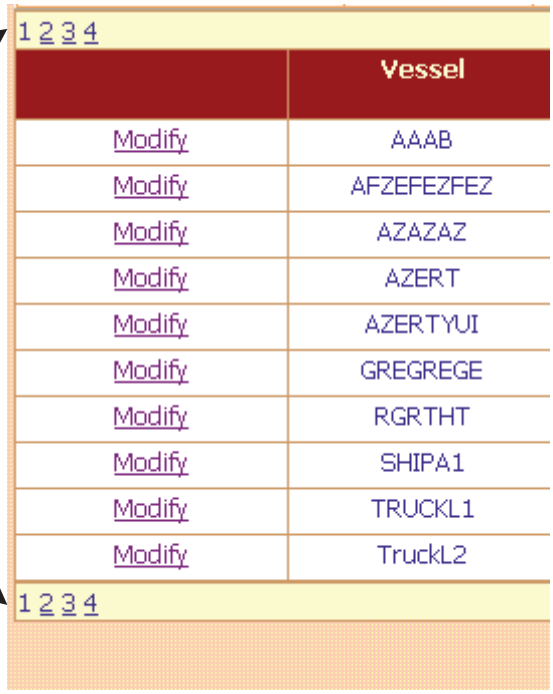
The drawings list displays the list of the drawings of the selected item and indicates for each drawing whether the drawing agreement and the manufacturer agreement have been given (and their dates).

4 General Remarks:

- It is strongly unadvised to use the "Precedent" and "Next" buttons of your navigator. On all pages, under the menu bar, you always see the name of the actual page and the link to come back to the previous page like this one : DESIGNER : Home > Drawings
- To quit the application, just close your Internet Explorer.
- If you don't use the application during several minutes, you might be disconnected and obtain an error message. In this case, just click again on the link : http://nomenc.fcb-ciment.com and login again.

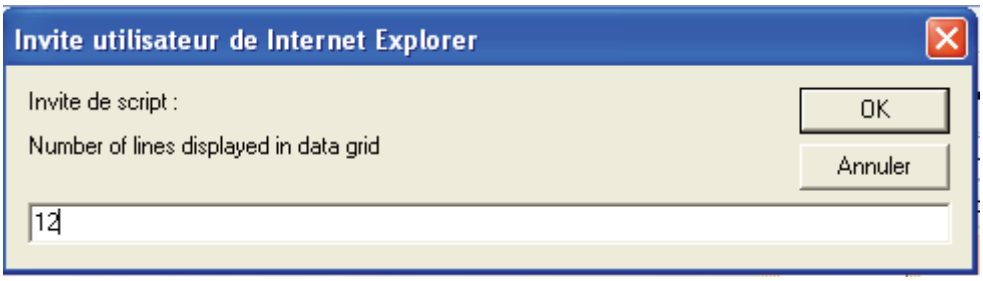
4.1 Pages including a table

On the pages which display tables, you navigate between pages of the table by using the links situated on top and bottom of the tables



- You can modify the number of lines displayed in the tables by using the  button. You will be asked the number of lines you want to display :

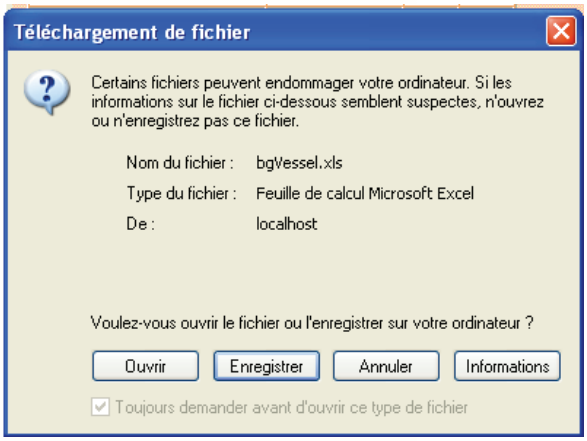
The given value will then be your default value for all the tables



4.2 To create an EXCEL file

You can create an Excel file with the data contained in the tables by using the EXCEL button :  or 

You will then be asked if you want open the file or save it on your disk (in this case, you'll give the path for the file to create, then click Save.



4.3 To insert data in a table

To insert data in a table, click first on Add new line.

A blank line is inserted on the bottom of the table where you can insert your data.

When the line has been completed, type Update to validate the data.

To discard your changes, click the Cancel link.

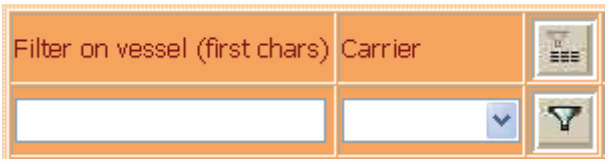
4.4 To modify the data in the table

If you have to modify data on a line, click first Modify on the left of the line, then modify the data, then click on the Update link. To discard your changes, click the Cancel link.

If you forget to click Update, the data will not be changed.

4.5 To filter the data displayed in the table

On the top of the screen, you have a zone in which you can give the criteria to allow you to filter the data to limit the number of displayed lines, or to view a specific data :



In this example , you can filter on the carrier (to see only the data concerned by a specific carrier, or on the name of the vessel (for example, type BA to see of the vessels whose name begins by the BA letters).

The  button applies the filter as per defined criteria. If several criteria are chosen, only those records that meet all of the criteria are displayed (AND between criteria).

The  button resets all criteria at 0 and redisplays all records.

5 Drawings

The button 

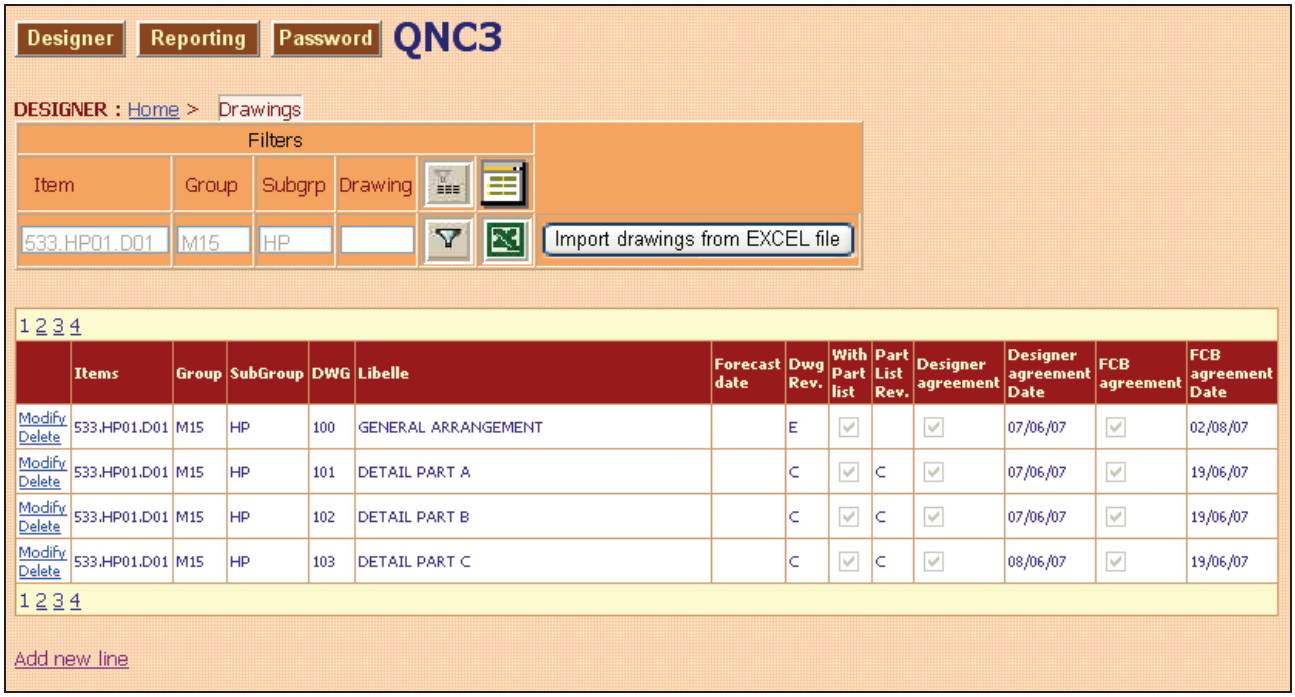
opens the Drawings page.

It can only be used after having selected an item – group – subgroup.

This page is intended for the designer to create the number, and name of the drawings on which he will work.

The designer may insert new drawings, modify them and delete drawings only if the drawing contains no mark.

The 'Manufacture agreement' columns are only consultable (they are set by FCB).



See General remarks (§ 4) to know how to add, modify data in the table.

You can only add drawings for the selected item of the home page.

It is in this page that you have to update the revisions of drawings.

You only type the number , the name and the forecast date of the drawing.

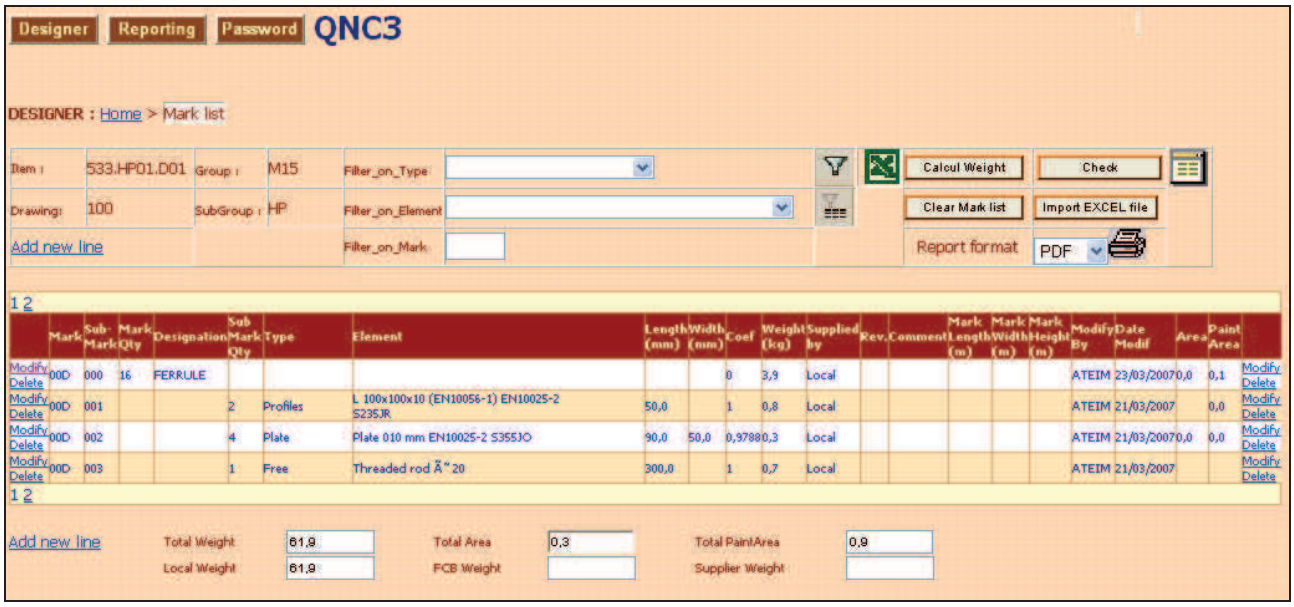
You can import a list of drawings from an EXCEL File with the 

button. This EXCEL file must contain only drawings for the selected item and its columns must be have exactly the same headers and the exact order as the EXCEL file created from the IENET with the EXCEl export button  . You are advised to prepare a model for your EXCEL list from IENET with  button, then add the new drawings in this file, then import it..

6 Mark list

On the home page, you choose an item, group, subgroup and drawing, then you click on Mark list to open the page in which you input the data (mark, submark, quantity, …) in the Mark list of the chosen drawing.

The mark list can be updated only if the FCB agreement has not yet been given. Elsewhere, you have to contact FCB to ask them to remove the agreement before updating the list.



The current item - group – subgroup - drawing are indicated at the top of the screen as well.

Add new line concerns automatically this drawing. In order to work in a different item, close the screen and choose another item from the home page.

To create a new line, use the Add new line hyperlink (at the bottom of the screen).

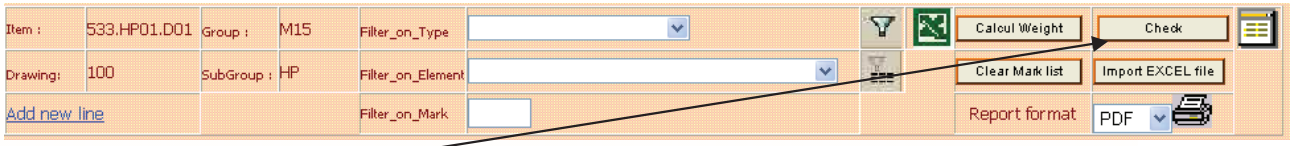
Input takes place in two phases:

- input of data concerning the 'Mark':
  - mark number : the length of mark number is 4 digits (example : S123)
  - submark number : 000 to specify it is a mark and not a submark
  - mark quantity
  - mark designation
  - supplied by (local is the manufacturer, FCB is for the specific piece)
  - revision (the revision is the same of the revision of drawing)
  - comment
  - mark length
  - mark width
  - mark height
  - price code
    - click Update to validate the line
- input of data concerning the Submark of the Mark

- mark number
- submark number
- submark quantity
- type of element
  - The list shows types of element
  - When the type is selected in the list ‘type’, the ‘Elements’ list is refreshed with the elements of the chosen type. The type ‘Free’ allows the designer to use an element which is not in the lists.
- Element
  - The list only shows elements of the specified type that can be used by all of the manufacturers or specifically designated as being usable by the manufacturer of the current group or subgroup.
  - The element must be obligatorily chosen in this list and unchanged, with the exception of « Free » type elements, for which it is possible to specify the element.
- Length, width, coefficient
  - The values which are to be indicated are different according to the type
  - The coefficient is used to calculate the weight and the area by multiplying it by the other dimensions
  - The weight is calculated by the program according to the values given for the length, width and coefficient and the unitary weight of the element. An exception is done for the plates : it’s possible to manually enter the weight of the submark by typing ‘0’ as coefficient. In this case, the weight and area are not calculated and the designer may type himself the weight and area.
- Weight
- Supplied by
- Revision
- Comment
  - click 

to validate the line

6.1 Check

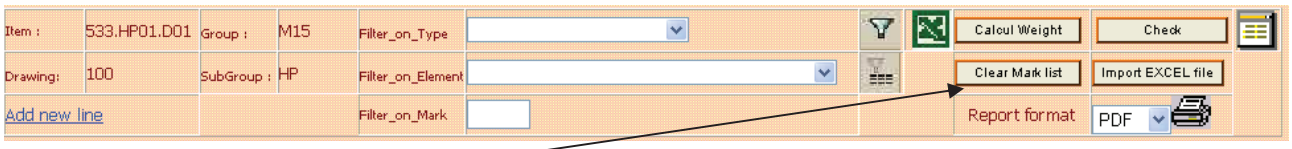


Check : opens a page that indicates detected errors and provides a description of the error. If this form is empty, then no error was detected. Otherwise, the cause of the error is indicated.

These checking are made each time a new line is inserted or modified directly in this screen.

But it is possible to import an Excel file (see below) containing the marks-submarks of a drawing. In this case, all the lines are not checked, so it may be some incoherent data, which will be rejected by the 'Update Mark' button (see below). To view what data are incorrect, use the Check function.

6.2 Clear mark list

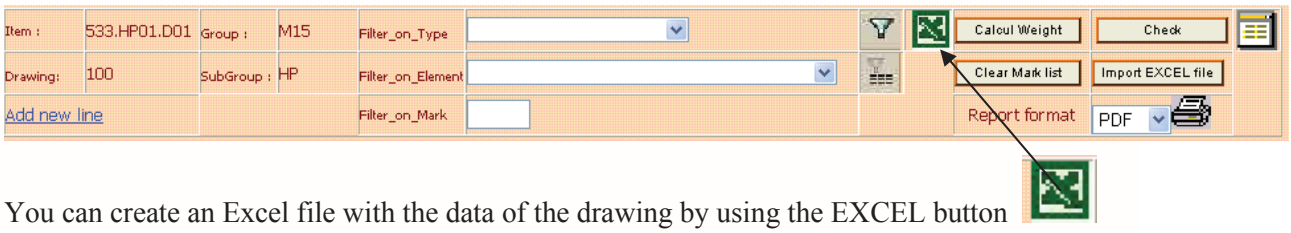


Clear mark list clears all the marks-submarks of the drawing.

This function may be used to reinitialize all a drawing.

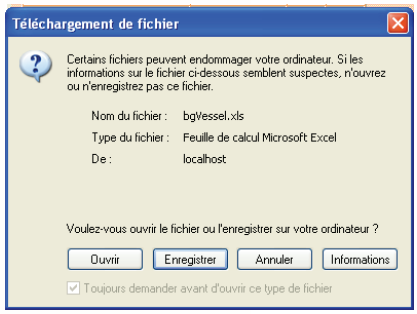
For example, if you have prepared an EXCEL file with all the lines of the drawing, you first Clear mark list, before importing the new data from your EXCEL file.

6.3 *Create an EXCEL file in order to duplicate a mark list*



You can create an Excel file with the data of the drawing by using the EXCEL button

You will then be asked if you want open the file or save it on your disk (in this case, you'll give the path for the file to create, then click Save.



If you plan to modify the EXCEL file in order to duplicate a mark list or to complete an existent mark list, it is imperative that the data of the EXCEL file contain the same columns as the original EXCEL file.

The data must respect the conditions of consistency as described above. Only data of the drawing selected in the home page Designer can be imported.

If you plan to use this function to copy a drawing onto another,

- First create an EXCEL file with the data of the template :
  - In the sample below : Interprogetti, 362.BH01.S01, S20,26 C01

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
1	Item	Group	SubGroup	Drawing	Mark	Sub Mark	Mark Qty	Designation	Sub Mark Qty	Type	Element	Length	Width	Coef	Material	Standard	Weight	Supplied by	Ex - Works Delivery Date	Rev.	Comment	Mark Length (m)	Mark Width (m)	Mark Height (m)	Price Code	Modify By	DateModif	Area	Paint Area	Designer
2	362.BH01.S01	S20	26	C01	1	0	1	exemple	0			0	0	0			0,08	Local	01/01/1900			0	0	0		guillon	08/10/2005	2	0	INTERPROGETTI
3	362.BH01.S01	S20	26	C01	1	1	0		1	Bolts	Bolt HM10x	2000	0	0	A325		0,08	Local	01/01/1900			0	0	0		guillon	08/10/2005	2	0	INTERPROGETTI
4	362.BH01.S01	S20	26	C01	1	2	0		2	Gratings	Grat.50x30	30000	10	1	A36		0	Local	01/01/1900			0	0	0		guillon	08/10/2005	0	0	INTERPROGETTI

- Replace the content of the columns item-group-subgroup-drawing-designer by the values of the destination :
  - The columns have to be exactly the same number and position as the template file
  - The columns designer, item, group, subgroup have to contain always the same data and must be coherent : the item must be affected to the designer
  - In the sample below : Interprogetti, 362.BH01.S01, S20,26 D03

Item	Group	SubGroup	Drawing	Mark	Sub Mark	Mark Qty	Designation	Sub Mark Qty	Type	Element	Length	Width	Coef	Material	Standard	Weight	Supplied by	Ex - Works Delivery Date	Rev.	Comment	Mark Length (m)	Mark Width (m)	Mark Height (m)	Price Code	Modify By	DateModif	Area	Paint Area	Designer
362.BH01.S02	S20	26	D03	1	0	1	exemple	0			0	0	0			0,08	Local	01/01/1900			0	0	0		guillon	08/10/2005	2	0	INTERPROGETTI
362.BH01.S02	S20	26	D03	1	1	0		1	Bolts	Bolt HM10x	2000	0	0	A325		0,08	Local	01/01/1900			0	0	0		guillon	08/10/2005	2	0	INTERPROGETTI
362.BH01.S02	S20	26	D03	1	2	0		2	Gratings	Grat.50x30	30000	10	1	A36		0	Local	01/01/1900			0	0	0		guillon	08/10/2005	0	0	INTERPROGETTI

- Save the file
- Import the file (§6.4)

6.4 *Import EXCEL file*

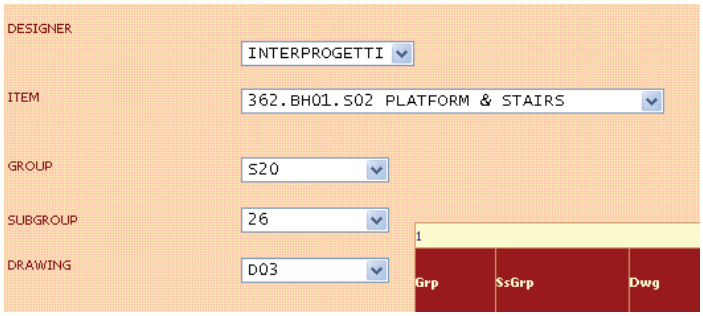
Import EXCEL file imports all data from an Excel file.

.

To do this, it is imperative that the data of the EXCEL file results from a table containing the same columns as the table presented. The data must respect the conditions of consistency as described above. Only data of the drawing selected in the home page Designer can be imported.

The recommended method for creating a table containing the correct columns is to begin by creating an EXCEL file from a previous drawing, to use this model to create new lines, to save the new EXCEL file and then import it (see § 6.3)

In the home page, select the item, group, subgroup drawing specified by the data inside the EXCEL Files. The file may only be imported by the designer in charge of the item



Import EXCEL file opens the page:

Select the EXCEL file to import using Parcourir...,

then click on Import Excel File.

If errors are detected, messages are displayed.

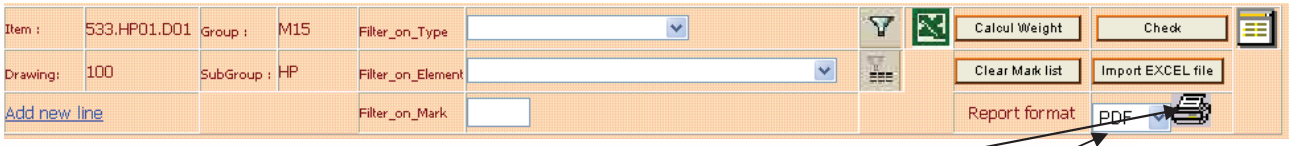
If some of the imported lines already exist in the table, they will be ignored.

The importation function is only allowed to add lines, not to modify then.

If you want modify lines, first delete the old ones (or clear the entire table with Clear Steel Table).

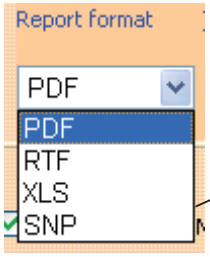
It is advised to Check the imported lines.

6.5 Print the mark list



To print the Mark list, use the  button .

The print outs may be given under different formats. You select the wanted one in the list :

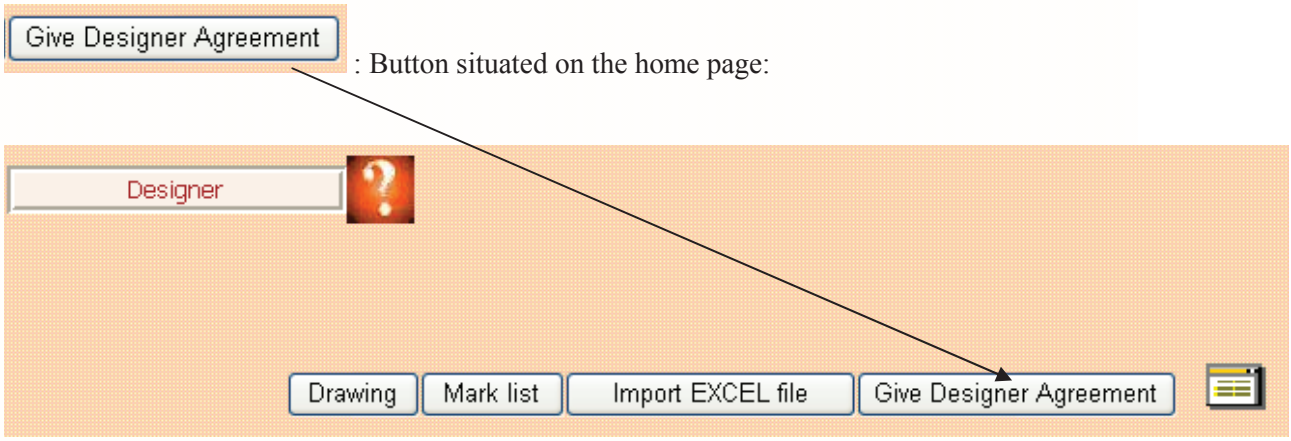


(See description of the formats in the reporting section).

The mark list which is printed from this page is the mark list of the designer (contains the data even if they have not yet been validated (given the designer agreement). It may only be seen by the designers (or administrators).

They then may be different of the inventory you can produce from the reporting. This one only contains the validated data (which may be seen by all the users of the system)

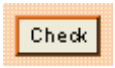
7 Designer Agreement



: Button situated on the home page:

The inputs made by a designer in the Mark list are only visible to the manufacturers or the carriers after he has given his agreement on the drawing (in a previous version, this function was named 'Update Marks').

The designer gives his agreement for a single drawing at a time, which makes it possible for him to only validate his data once he has really ended his work on a given drawing.

This designer agreement can only be given if there is no error at checking. Otherwise, an error message is displayed, and the designer must return to the input of the Mark list to make necessary corrections. To consult the errors, use the 

button (see §6.1)

By giving his agreement, the designer indicates that all the data for the drawing are input and he estimates the manufacturing may begin.

The manufacturer agreement may not be given before the designer agreement.

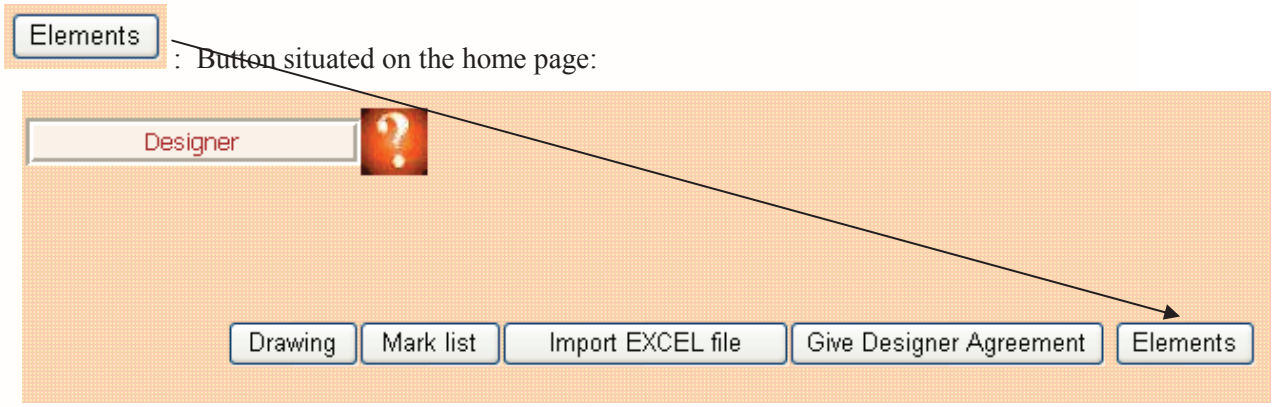
(The FCB administrator is also allowed to give the designer agreement).

When the designer agreement has been given, the FCB administrator will then verify the drawing and give the manufacturer agreement to allow the manufacturer to begin manufacturing.

When the manufacturer agreement has been given, the designer is not allowed to modify the marks of the drawing.

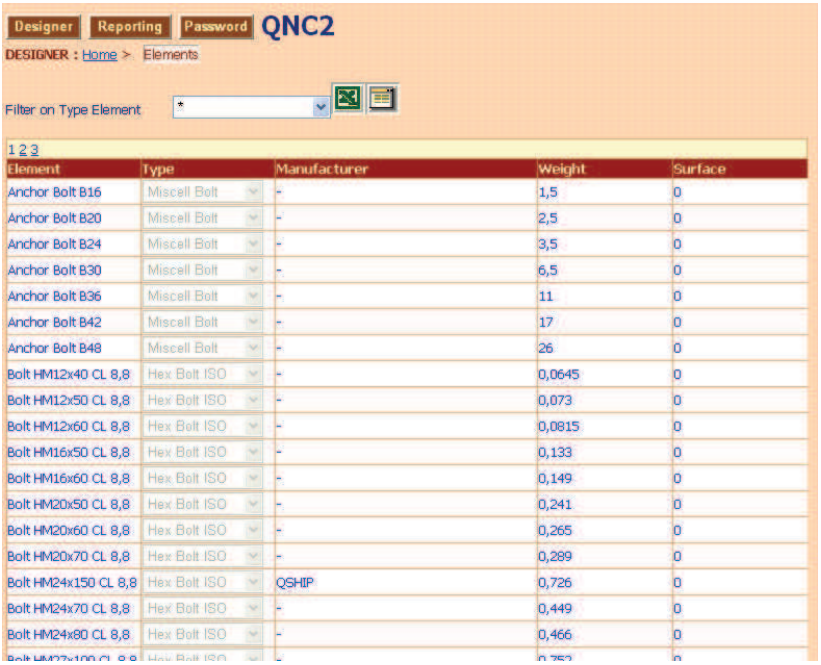
If it is necessary to change something in a drawing, contact FCB to ask them to remove the agreement.

8 Elements

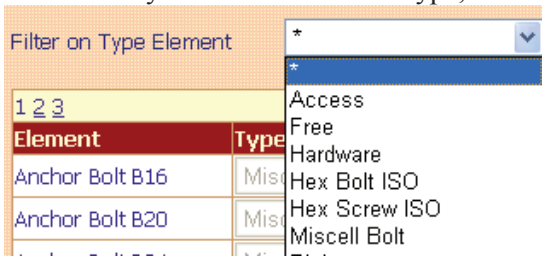


: Button situated on the home page:

This button displays the list of elements available for the chosen item (according to the manufacturer of the item) :



To view only on the element of a type, select the type in the list

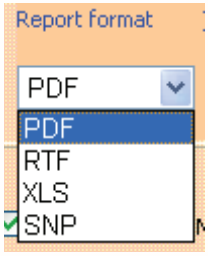


To create an EXCEL file with the list, click on the button  .

9 Print all the mark list of an item

The button  situated on the designer home page is intended to print all the mark list of the selected item.

The print outs may be given under different formats. You select the wanted one in the list :

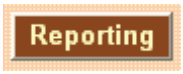


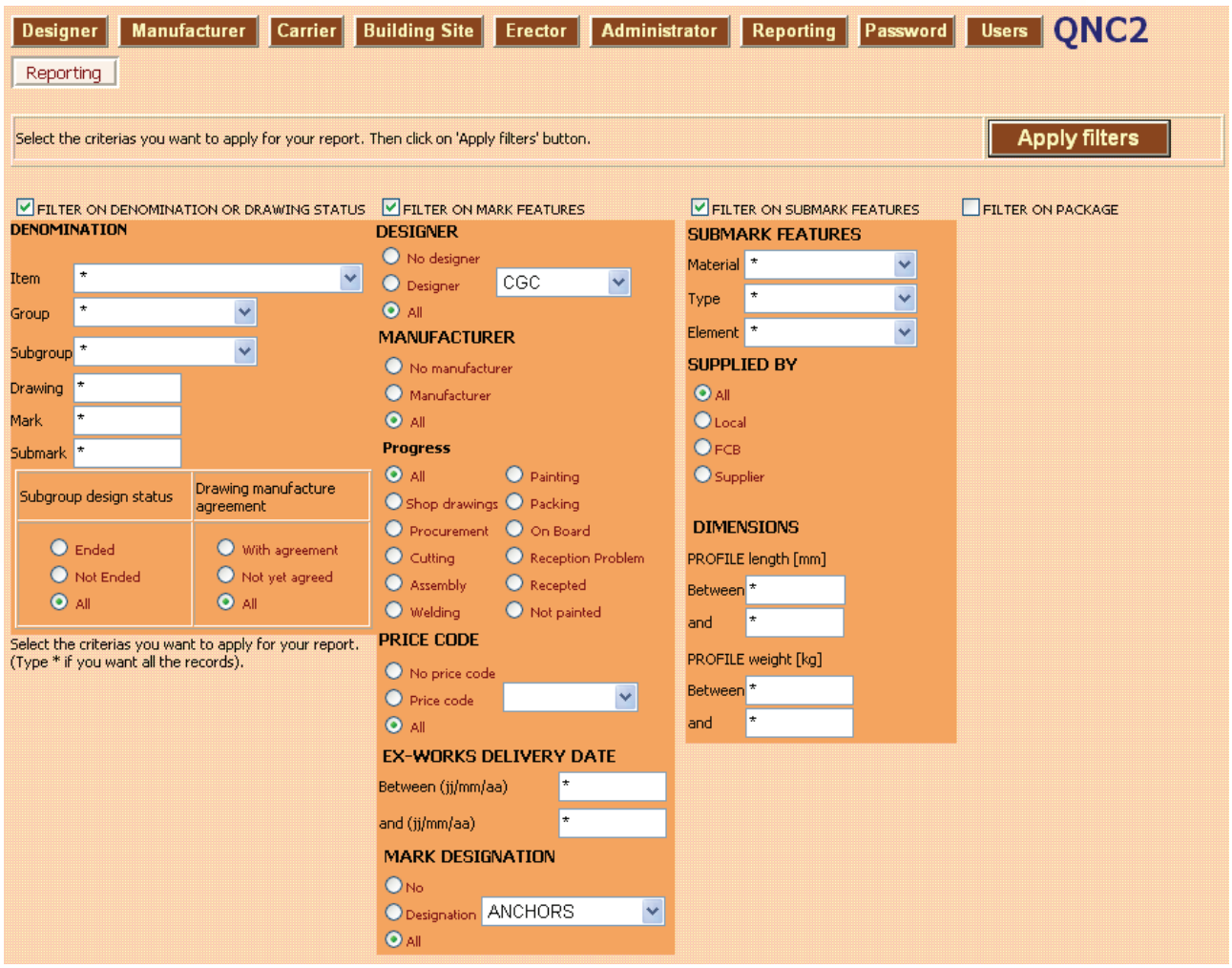
(See description of the formats in the reporting section).

The mark list which is printed from this page is the mark list of the designer (contains the data even if they have not yet been validated (given the designer agreement). It may only be seen by the designers (or administrators).

They then may be different of the inventory you can produce from the reporting. This one only contains the validated data (which may be seen by all the users of the system)

10Reporting

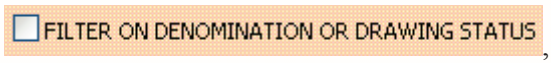
You access to this screen by using the button  on the main screen.



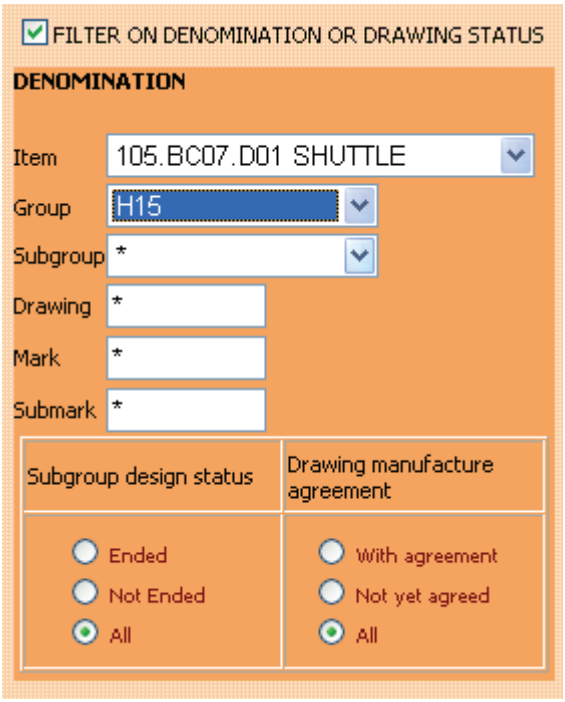
Reporting is performed in two phases:

- data filtering
- print outs

10.1 Data Filtering

By checking the different options like 

, you will be displayed choices to indicate what data interest you in the reporting .



For example, if you want only data for the 105.BC07.D01 item, you select it in the list.

In the different input zones, the generic character * is used to indicate that no filter is wanted on this criteria (select all the records, whatever the value of this field may be).

After filter criteria input, press 

to validate this selection

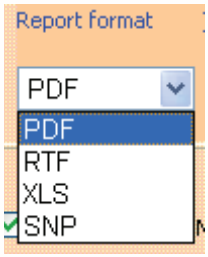
The list of available listings is then displayed in the top of screen.

Attention: in order for the new filter criteria to be taken into consideration, the Apply filters button:


must be used after each change in criteria (and only if you have changed criterias, it is not useful to click it again if you print different reports with the same criterias).

10.2 Print outs format

The print outs may be given under different formats. You select the wanted one in the list :



PDF : file format for Acrobat Reader (free download on http://www.adobe.com)

RTF : text format (you can read it with Wordpad or Microsoft Word)

XLS : EXCEL format

SNP : Microsoft Access Viewer (you need Microsoft Access or Snapshot viewer). Snapshot viewer can be downloaded from. Snapshot Viewer download.

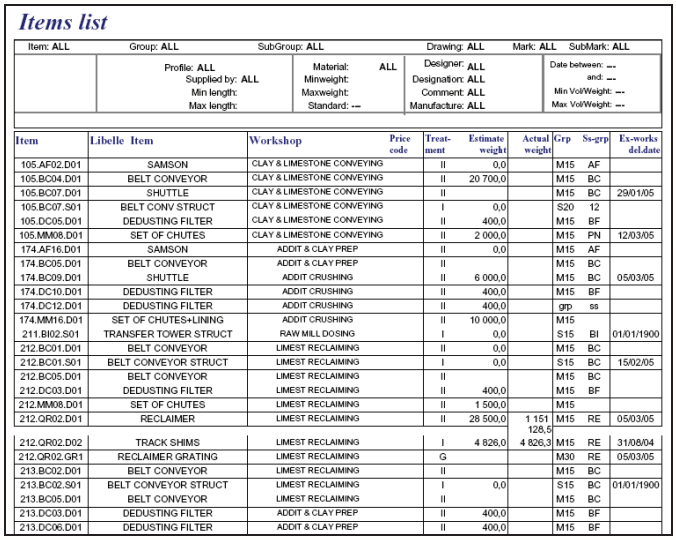
RTF and XLS are intended if you want treat the data (calculations, modifications, …), not for printing, the presentation will not be good enough to print them.

PDF and SNP are intended to view data and print them. Best results will be obtained with SNP.

10.3 Available print outs

The available print outs are :

10.3.1 Items List



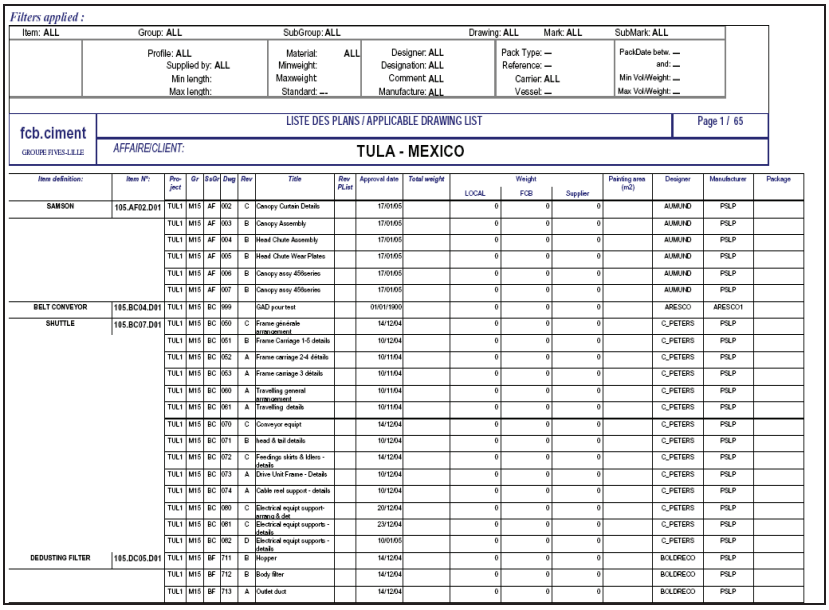
Items list

Item: ALL | Group: ALL | SubGroup: ALL | Drawing: ALL | Mark: ALL | SubMark: ALL

Profile: ALL | Supplied by: ALL | Min length: | Max length: | Material: ALL | Minweight: | Maxweight: | Standard: --- | Designer: ALL | Designation: ALL | Comment: ALL | Manufacture: ALL | Date between: --- and: --- | Min Vol/Weight: --- | Max Vol/Weight: ---

Item	Libelle Item	Workshop	Price code	Treat-ment	Estimate weight	Actual weight	Grp	Ss-grp	Ex-works del.date
105.AF02.D01	SAMSON	CLAY & LIMESTONE CONVEYING		II	0,0		M15	AF	
105.BC04.D01	BELT CONVEYOR	CLAY & LIMESTONE CONVEYING		II	20 700,0		M15	BC	
105.BC07.D01	SHUTTLE	CLAY & LIMESTONE CONVEYING		II			M15	BC	29/01/05
105.BC07.S01	BELT CONV STRUCT	CLAY & LIMESTONE CONVEYING		I	0,0		S20	12	
105.DC05.D01	DEDUSTING FILTER	CLAY & LIMESTONE CONVEYING		II	400,0		M15	BF	
105.MM08.D01	SET OF CHUTES	CLAY & LIMESTONE CONVEYING		II	2 000,0		M15	PN	12/03/05
174.AF16.D01	SAMSON	ADDIT & CLAY PREP		II	0,0		M15	AF	
174.BC05.D01	BELT CONVEYOR	ADDIT & CLAY PREP		II			M15	BC	
174.BC09.D01	SHUTTLE	ADDIT CRUSHING		II	6 000,0		M15	BC	05/03/05
174.DC10.D01	DEDUSTING FILTER	ADDIT CRUSHING		II	400,0		M15	BF	
174.DC12.D01	DEDUSTING FILTER	ADDIT CRUSHING		II	400,0		grp	ss	
174.MM16.D01	SET OF CHUTES+LINING	ADDIT CRUSHING		II	10 000,0		M15		
211.BI02.S01	TRANSFER TOWER STRUCT	RAW MILL DOSING		I	0,0		S15	BI	01/01/1900
212.BC01.D01	BELT CONVEYOR	LIMEST RECLAIMING		II	0,0		M15	BC	
212.BC01.S01	BELT CONVEYOR STRUCT	LIMEST RECLAIMING		I	0,0		S15	BC	15/02/05
212.BC05.D01	BELT CONVEYOR	LIMEST RECLAIMING		II			M15	BC	
212.DC03.D01	DEDUSTING FILTER	LIMEST RECLAIMING		II	400,0		M15	BF	
212.MM08.D01	SET OF CHUTES	LIMEST RECLAIMING		II	1 500,0		M15		
212.QR02.D01	RECLAIMER	LIMEST RECLAIMING		II	28 500,0	1 151 126,5	M15	RE	05/03/05
212.QR02.D02	TRACK SHIMS	LIMEST RECLAIMING		I	4 826,0	4 826,3	M15	RE	31/08/04
212.QR02.GR1	RECLAIMER GRATING	LIMEST RECLAIMING		G			M30	RE	05/03/05
213.BC02.D01	BELT CONVEYOR	LIMEST RECLAIMING		II			M15	BC	
213.BC02.S01	BELT CONVEYOR STRUCT	LIMEST RECLAIMING		I	0,0		S15	BC	01/01/1900
213.BC05.D01	BELT CONVEYOR	LIMEST RECLAIMING		II			M15	BC	
213.DC03.D01	DEDUSTING FILTER	ADDIT & CLAY PREP		II	400,0		M15	BF	
213.DC06.D01	DEDUSTING FILTER	ADDIT & CLAY PREP		II	400,0		M15	BF	

10.3.2 Drawing List



Filters applied :

Item: ALL | Group: ALL | SubGroup: ALL | Drawing: ALL | Mark: ALL | SubMark: ALL

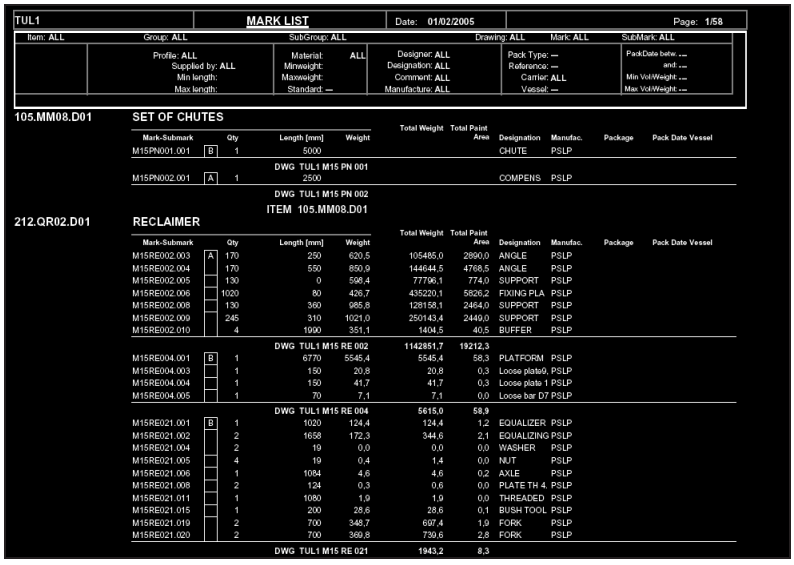
Profile: ALL | Supplied by: ALL | Min length: | Max length: | Material: ALL | Minweight: | Maxweight: | Standard: --- | Designer: ALL | Designation: ALL | Comment: ALL | Manufacture: ALL | Pack Type: --- | Reference: --- | Carrier: ALL | Vessel: --- | PackDate betw. --- and: --- | Min Vol/Weight: --- | Max Vol/Weight: ---

fcb.ciment GROUPE HVES-LILLE | LISTE DES PLANS / APPLICABLE DRAWING LIST | Page 1 / 65

AFFAIRE/CLIENT: **TULA - MEXICO**

Item definition:	Item N°:	Project	Gr	SsGr	Dwg	Rev	Title	Rev PList	Approval date	Total weight	Weight LOCAL	Weight FCB	Weight Supplier	Painting area (m2)	Designer	Manufacturer	Package
SAMSON	105.AF02.D01	TUL1	M15	AF	002	C	Canopy Curtain Details		17/01/05		0	0	0		AUMUND	PSLP	
		TUL1	M15	AF	003	B	Canopy Assembly		17/01/05		0	0	0		AUMUND	PSLP	
		TUL1	M15	AF	004	B	Head Chute Assembly		17/01/05		0	0	0		AUMUND	PSLP	
		TUL1	M15	AF	005	B	Head Chute Wear Plates		17/01/05		0	0	0		AUMUND	PSLP	
		TUL1	M15	AF	006	B	Canopy assy 450series		17/01/05		0	0	0		AUMUND	PSLP	
		TUL1	M15	AF	007	B	Canopy assy 450series		17/01/05		0	0	0		AUMUND	PSLP	
BELT CONVEYOR	105.BC04.D01	TUL1	M15	BC	999		GAO pour test		01/01/1900		0	0	0		ARESCO	ARESCO1	
SHUTTLE	105.BC07.D01	TUL1	M15	BC	050	C	Frame generale arrangement		14/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	051	B	Frame Carriage 1-5 details		10/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	052	A	Frame carriage 2-4 details		10/11/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	053	A	Frame carriage 3 details		10/11/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	060	A	Travelling general arrangement		10/11/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	061	A	Travelling details		10/11/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	070	C	Conveyor equipt		14/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	071	B	head & tail details		10/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	072	C	Feedings skirts & Idlers - details		14/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	073	A	Drive Unit Frame - Details		10/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	074	A	Cable reel support - details		10/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	080	C	Electrical equipt support-arrang & det		20/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	081	C	Electrical equipt supports - details		23/12/04		0	0	0		C_PETERS	PSLP	
		TUL1	M15	BC	082	D	Electrical equipt supports - details		10/01/05		0	0	0		C_PETERS	PSLP	
DEDUSTING FILTER	105.DC05.D01	TUL1	M15	BF	711	B	Hopper		14/12/04		0	0	0		BOLDRECO	PSLP	
		TUL1	M15	BF	712	B	Body filter		14/12/04		0	0	0		BOLDRECO	PSLP	
		TUL1	M15	BF	713	A	Outlet duct		14/12/04		0	0	0		BOLDRECO	PSLP	

10.3.3 Mark List



TUL1 | **MARK LIST** | Date: 01/02/2005 | Page: 1/58

Item: ALL | Group: ALL | SubGroup: ALL | Drawing: ALL | Mark: ALL | SubMark: ALL

Profile: ALL | Supplied by: ALL | Min length: | Max length: | Material: ALL | Minweight: | Maxweight: | Standard: --- | Designer: ALL | Designation: ALL | Comment: ALL | Manufacture: ALL | Pack Type: --- | Reference: --- | Carrier: ALL | Vessel: --- | PackDate betw. --- and: --- | Min Vol/Weight: --- | Max Vol/Weight: ---

105.MM08.D01 SET OF CHUTES

Mark-Submark		Qty	Length [mm]	Weight	Total Weight	Total Paint Area	Designation	Manufac.	Package	Pack Date Vessel
M15PN001.001	B	1	5000				CHUTE	PSLP		
			DWG TUL1 M15 PN 001							
M15PN002.001	A	1	2500				COMPENS	PSLP		
			DWG TUL1 M15 PN 002							
			ITEM 105.MM08.D01							

212.QR02.D01 RECLAIMER

Mark-Submark		Qty	Length [mm]	Weight	Total Weight	Total Paint Area	Designation	Manufac.	Package	Pack Date Vessel
M15RE002.003	A	170	250	620,5	105485,0	2890,0	ANGLE	PSLP		
M15RE002.004		170	550	850,9	144644,5	4768,5	ANGLE	PSLP		
M15RE002.005		130	0	598,4	77796,1	774,0	SUPPORT	PSLP		
M15RE002.006		1020	80	426,7	435220,1	5826,2	FIXING PLA	PSLP		
M15RE002.008		130	360	985,8	128158,1	2464,0	SUPPORT	PSLP		
M15RE002.009		245	310	1021,0	250143,4	2449,0	SUPPORT	PSLP		
M15RE002.010		4	1990	351,1	1404,5	40,5	BUFFER	PSLP		
			DWG TUL1 M15 RE 002		1142851,7	19212,3				
M15RE004.001	B	1	6770	5545,4	5545,4	58,3	PLATFORM	PSLP		
M15RE004.003		1	150	20,8	20,8	0,3	Loose plate9	PSLP		
M15RE004.004		1	150	41,7	41,7	0,3	Loose plate 1	PSLP		
M15RE004.005		1	70	7,1	7,1	0,0	Loose bar D7	PSLP		
			DWG TUL1 M15 RE 004		5615,0	58,9				
M15RE021.001	B	1	1020	124,4	124,4	1,2	EQUALIZER	PSLP		
M15RE021.002		2	1658	172,3	344,6	2,1	EQUALIZING	PSLP		
M15RE021.004		2	19	0,0	0,0	0,0	WASHER	PSLP		
M15RE021.005		4	19	0,4	1,4	0,0	NUT	PSLP		
M15RE021.006		1	1084	4,6	4,6	0,2	AXLE	PSLP		
M15RE021.008		2	124	0,3	0,6	0,0	PLATE TH 4	PSLP		
M15RE021.011		1	1080	1,9	1,9	0,0	THREADED	PSLP		
M15RE021.015		1	200	28,6	28,6	0,1	BUSH TOOL	PSLP		
M15RE021.019		2	700	348,7	697,4	1,9	FORK	PSLP		
M15RE021.020		2	700	369,8	739,6	2,8	FORK	PSLP		
			DWG TUL1 M15 RE 021		1943,2	8,3				

10.3.4 Inventory of equipment

Filters applied :

Item: 216.WF03.CU1	Group: ALL	SubGroup: ALL		Drawing: ALL	Mark: ALL	SubMark: ALL
	Profile: ALL Supplied by: ALL Min length: Max length:	Material: ALL Minweight: Maxweight: Standard: ---	Designer: ALL Designation: ALL Comment: ALL Manufacture: ALL	Pack Type: --- Reference: --- Carrier: ALL Vessel: ---	PackDate betw. --- and: --- Min Vol/Weight: --- Max Vol/Weight: ---	

fcb.ciment
GROUPE FIVES-LILLE

NOMENCLATURE / INVENTORY OF EQUIPMENT — Page 1 / 4

AFFAIRE/CLIENT: **TULA - MEXICO**

Workshop: RAW MILL DOSING — *Item:* **216.WF03.CU1**

Equipment WEIGHTFEEDER CHUTE

Drawing title: JOINTLY BONNET BOTTOM PART — *Drawing FCBN°:* TUL1 M15WF 015

Quantity		Designation:	Comment	Rev:	Mark	Quality	Standard	Supplied by	Weight		
Mark	Submark								LOCAL	FCB	Supplier
1		BOTTOM PART		A	005				41	0	0
	2	PL 9,5 - 1525 * 70 * 1			005 001	A36	ASTM	LOCAL	8	0	0
	2	PL 9,5 - 860 * 60 * 1			005 002	A36	ASTM	LOCAL	4	0	0
	2	PL 3,03 - 1424 * 156 * 1			005 003	A36	ASTM	LOCAL	5	0	0
	2	PL 3,03 - 1010 * 137 * 0,9			005 004	A36	ASTM	LOCAL	3	0	0
	8	Nut H 3/8" -			005 005	A325	UNC Thread	LOCAL	0	0	0
	8	Nut H 1/2" -			005 006	A325	UNC Thread	LOCAL	0	0	0

Drawing title: JOINTLY BONNET LEFT DOOR — *Drawing FCBN°:* TUL1 M15WF 016

Quantity		Designation:	Comment	Rev:	Mark	Quality	Standard	Supplied by	Weight		
Mark	Submark								LOCAL	FCB	Supplier
2		LEFT DOOR		A	007				2	0	0
	1	PL 3,03 - 400 * 288 * 0,6			007 001	A36	ASTM	LOCAL	2	0	0
	1	Round D 15,9 - 274 * 1			007 002	A36	ASTM	LOCAL	0	0	0

10.3.5 List of elements

TUL1 — **LIST OF ELEMENTS** — Date: 03/02/200 — Page: 1/3

Item: 216.WF03.CU1	Group: ALL	SubGroup: ALL		Drawing: ALL	Mark: ALL	SubMark: ALL
	Profile: ALL Supplied by: ALL Min length: Max length:	Material: ALL Minweight: Maxweight: Standard: ---	Designer: ALL Designation: ALL Comment: ALL Manufacture: ALL	Pack Type: --- Reference: --- Carrier: ALL Vessel: ---	PackDate betw. --- and: --- Min Vol/Weight: --- Max Vol/Weight: ---	

Bolt : Hex Bolt UNC

Profile	Tot Qty	Material	Paint	Length [mm]	Width [mm]	Coefft	Weight [kg]	Total Weight	Total Area	Paint Area	Comment
Bolt 1/2"- 31,8											
216.WF03.CU1 M15WF020060.001	8	A325	V				0,06	0,5	0,0	0,0	
								0,5	0,0	0,0	
Bolt 1/2"- 44,5											
216.WF03.CU1 M15WF030201.002	10	A325	V				0,07	0,7	0,0	0,0	
								0,7	0,0	0,0	
Bolt 3/8"- 38,1											
216.WF03.CU1 M15WF030201.001	20	A325	V				0,03	0,6	0,0	0,0	
								0,6	0,0	0,0	
TOTAL Hex Bolt UNC								1,8	0,0	0,0	

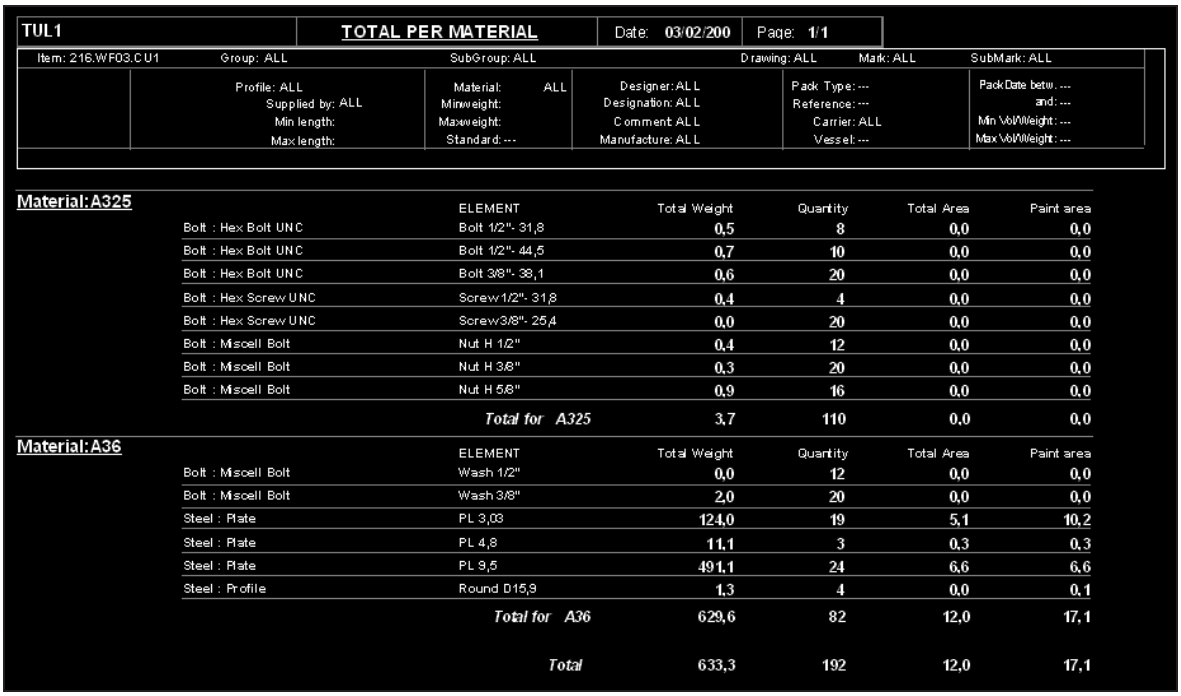
Bolt : Hex Screw UNC

Profile	Tot Qty	Material	Paint	Length [mm]	Width [mm]	Coefft	Weight [kg]	Total Weight	Total Area	Paint Area	Comment
Screw 1/2"- 31,8											
216.WF03.CU1 M15WF020 [A].050.001	4	A325	V				0,10	0,4	0,0	0,0	
								0,4	0,0	0,0	
Screw 3/8"- 25,4											
216.WF03.CU1 M15WF020070.001	20	A325	V				0,00	0,0	0,0	0,0	
								0,0	0,0	0,0	
TOTAL Hex Screw UNC								0,4	0,0	0,0	

Bolt : Miscell. Bolt

Profile	Tot Qty	Material	Paint	Length [mm]	Width [mm]	Coefft	Weight [kg]	Total Weight	Total Area	Paint Area	Comment
Nut H 1/2"											
216.WF03.CU1 M15WF015 [A].005.006	8	A325	V				0,03	0,2	0,0	0,0	
216.WF03.CU1 M15WF019 [A].004.010	4	A325	V				0,03	0,1	0,0	0,0	
								0,4	0,0	0,0	
Nut H 3/8"											
216.WF03.CU1 M15WF015 [A].005.005	8	A325	V				0,01	0,1	0,0	0,0	
216.WF03.CU1 M15WF019 [A].004.009	12	A325	V				0,01	0,2	0,0	0,0	
								0,3	0,0	0,0	
Nut H 5/8"											
216.WF03.CU1 M15WF019 [A].004.008	16	A325	V				0,05	0,9	0,0	0,0	
								0,9	0,0	0,0	

10.3.6 Total per material



TUL1 — TOTAL PER MATERIAL — Date: 03/02/200 — Page: 1/1

Item: 216.WF03.CU1 — Group: ALL — SubGroup: ALL — Drawing: ALL — Mark: ALL — SubMark: ALL

Profile: ALL; Supplied by: ALL; Min length: ; Max length: — Material: ALL; Minweight: ; Maxweight: ; Standard: --- — Designer: ALL; Designation: ALL; Comment: ALL; Manufacture: ALL — Pack Type: ---; Reference: ---; Carrier: ALL; Vessel: --- — Pack Date betw. ---; and: ---; Min VolWeight: ---; Max VolWeight: ---

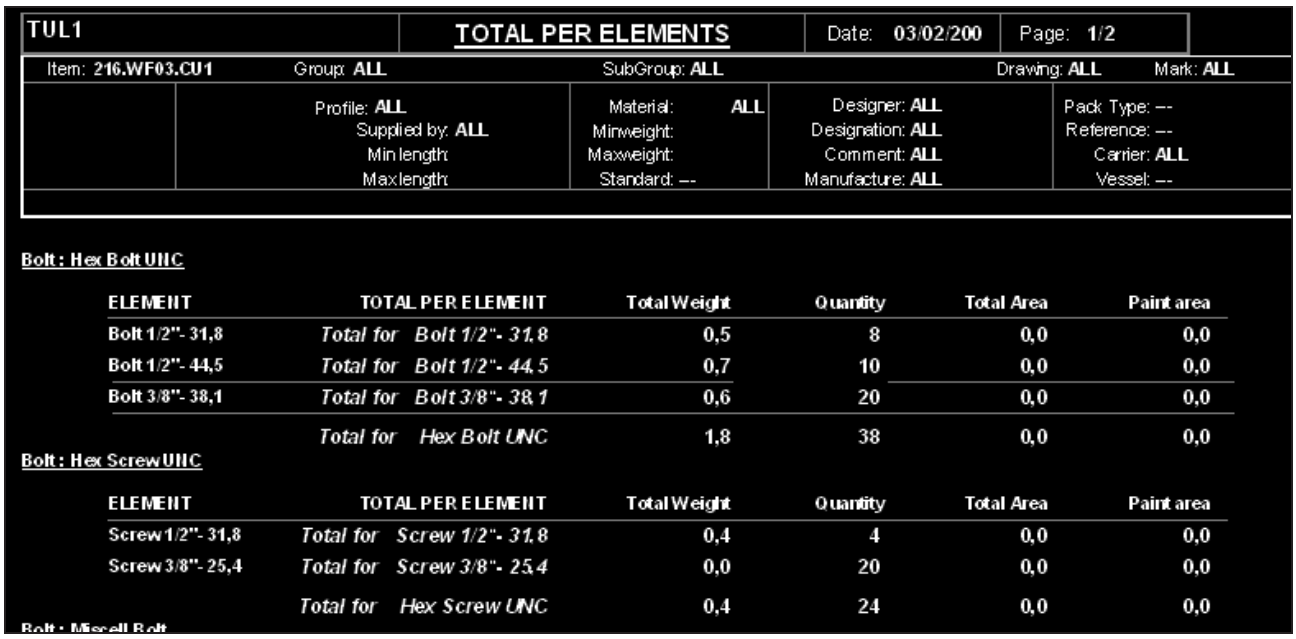
Material: A325

	ELEMENT	Total Weight	Quantity	Total Area	Paint area
Bolt : Hex Bolt UNC	Bolt 1/2"- 31,8	0,5	8	0,0	0,0
Bolt : Hex Bolt UNC	Bolt 1/2"- 44,5	0,7	10	0,0	0,0
Bolt : Hex Bolt UNC	Bolt 3/8"- 38,1	0,6	20	0,0	0,0
Bolt : Hex Screw UNC	Screw 1/2"- 31,8	0,4	4	0,0	0,0
Bolt : Hex Screw UNC	Screw 3/8"- 25,4	0,0	20	0,0	0,0
Bolt : Miscell Bolt	Nut H 1/2"	0,4	12	0,0	0,0
Bolt : Miscell Bolt	Nut H 3/8"	0,3	20	0,0	0,0
Bolt : Miscell Bolt	Nut H 5/8"	0,9	16	0,0	0,0
	Total for A325	3,7	110	0,0	0,0

Material: A36

	ELEMENT	Total Weight	Quantity	Total Area	Paint area
Bolt : Miscell Bolt	Wash 1/2"	0,0	12	0,0	0,0
Bolt : Miscell Bolt	Wash 3/8"	2,0	20	0,0	0,0
Steel : Plate	PL 3,03	124,0	19	5,1	10,2
Steel : Plate	PL 4,8	11,1	3	0,3	0,3
Steel : Plate	PL 9,5	491,1	24	6,6	6,6
Steel : Profile	Round D15,9	1,3	4	0,0	0,1
	Total for A36	629,6	82	12,0	17,1
	Total	633,3	192	12,0	17,1

10.3.7 Total per element



TUL1 — TOTAL PER ELEMENTS — Date: 03/02/200 — Page: 1/2

Item: 216.WF03.CU1 — Group: ALL — SubGroup: ALL — Drawing: ALL — Mark: ALL

Profile: ALL; Supplied by: ALL; Min length: ; Max length: — Material: ALL; Minweight: ; Maxweight: ; Standard: -- — Designer: ALL; Designation: ALL; Comment: ALL; Manufacture: ALL — Pack Type: --; Reference: --; Carrier: ALL; Vessel: --

Bolt : Hex Bolt UNC

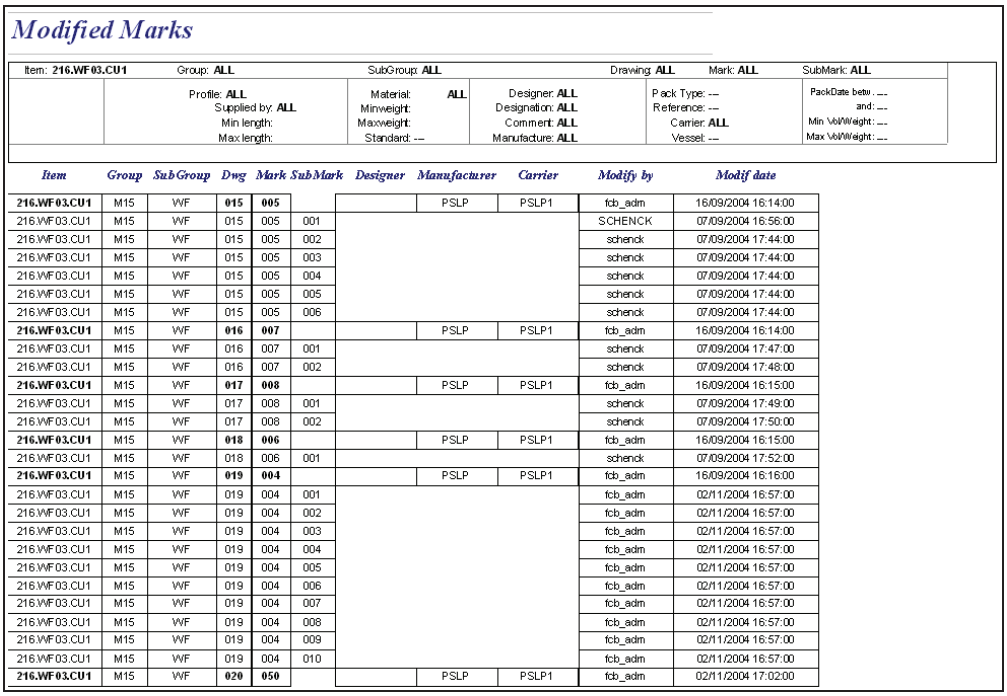
ELEMENT	TOTAL PER ELEMENT	Total Weight	Quantity	Total Area	Paint area
Bolt 1/2"- 31,8	*Total for Bolt 1/2"- 31,8*	0,5	8	0,0	0,0
Bolt 1/2"- 44,5	*Total for Bolt 1/2"- 44,5*	0,7	10	0,0	0,0
Bolt 3/8"- 38,1	*Total for Bolt 3/8"- 38,1*	0,6	20	0,0	0,0
	Total for Hex Bolt UNC	1,8	38	0,0	0,0

Bolt : Hex Screw UNC

ELEMENT	TOTAL PER ELEMENT	Total Weight	Quantity	Total Area	Paint area
Screw 1/2"- 31,8	*Total for Screw 1/2"- 31,8*	0,4	4	0,0	0,0
Screw 3/8"- 25,4	*Total for Screw 3/8"- 25,4*	0,0	20	0,0	0,0
	Total for Hex Screw UNC	0,4	24	0,0	0,0

Bolt : Miscell Bolt

10.3.8 Modified marks between two dates



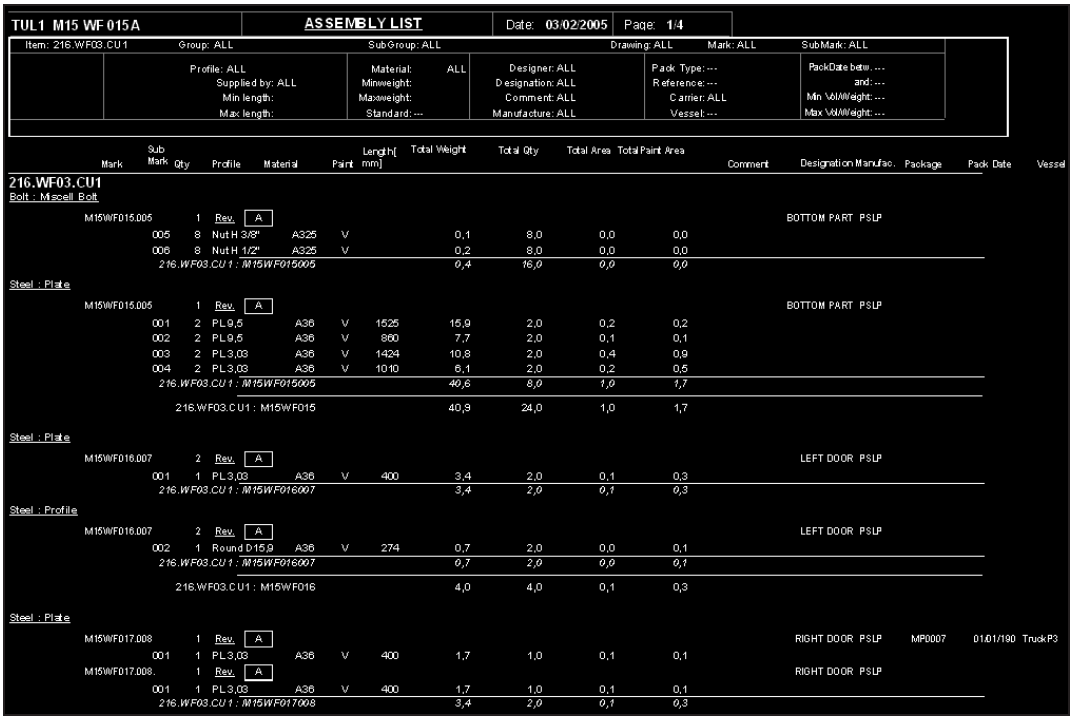
Modified Marks

Item: **216.WF03.CU1** Group: **ALL** SubGroup: **ALL** Drawing: **ALL** Mark: **ALL** SubMark: **ALL**

Profile: **ALL** Supplied by: **ALL** Min length: Max length: | Material: **ALL** Minweight: Maxweight: Standard: --- | Designer: **ALL** Designation: **ALL** Comment: **ALL** Manufacture: **ALL** | Pack Type: --- Reference: --- Carrier: **ALL** Vessel: --- | PackDate betw. ... and: ... Min \Vol/Weight: ... Max \Vol/Weight: ...

Item	Group	SubGroup	Dwg	Mark	SubMark	Designer	Manufacturer	Carrier	Modify by	Modif date
216.WF03.CU1	M15	WF	**015**	**005**			PSLP	PSLP1	fcb_adm	16/09/2004 16:14:00
216.WF03.CU1	M15	WF	015	005	001				SCHENCK	07/09/2004 16:56:00
216.WF03.CU1	M15	WF	015	005	002				schenck	07/09/2004 17:44:00
216.WF03.CU1	M15	WF	015	005	003				schenck	07/09/2004 17:44:00
216.WF03.CU1	M15	WF	015	005	004				schenck	07/09/2004 17:44:00
216.WF03.CU1	M15	WF	015	005	005				schenck	07/09/2004 17:44:00
216.WF03.CU1	M15	WF	015	005	006				schenck	07/09/2004 17:44:00
216.WF03.CU1	M15	WF	**016**	**007**			PSLP	PSLP1	fcb_adm	16/09/2004 16:14:00
216.WF03.CU1	M15	WF	016	007	001				schenck	07/09/2004 17:47:00
216.WF03.CU1	M15	WF	016	007	002				schenck	07/09/2004 17:48:00
216.WF03.CU1	M15	WF	**017**	**008**			PSLP	PSLP1	fcb_adm	16/09/2004 16:15:00
216.WF03.CU1	M15	WF	017	008	001				schenck	07/09/2004 17:49:00
216.WF03.CU1	M15	WF	017	008	002				schenck	07/09/2004 17:50:00
216.WF03.CU1	M15	WF	**018**	**006**			PSLP	PSLP1	fcb_adm	16/09/2004 16:15:00
216.WF03.CU1	M15	WF	018	006	001				schenck	07/09/2004 17:52:00
216.WF03.CU1	M15	WF	**019**	**004**			PSLP	PSLP1	fcb_adm	16/09/2004 16:16:00
216.WF03.CU1	M15	WF	019	004	001				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	002				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	003				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	004				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	005				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	006				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	007				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	008				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	009				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	019	004	010				fcb_adm	02/11/2004 16:57:00
216.WF03.CU1	M15	WF	**020**	**050**			PSLP	PSLP1	fcb_adm	02/11/2004 17:02:00

10.3.9 Assembly List



TUL1 M15 WF 015A — **ASSEMBLY LIST** — Date: 03/02/2005 — Page: 1/4

Item: 216.WF03.CU1 Group: ALL SubGroup: ALL Drawing: ALL Mark: ALL SubMark: ALL

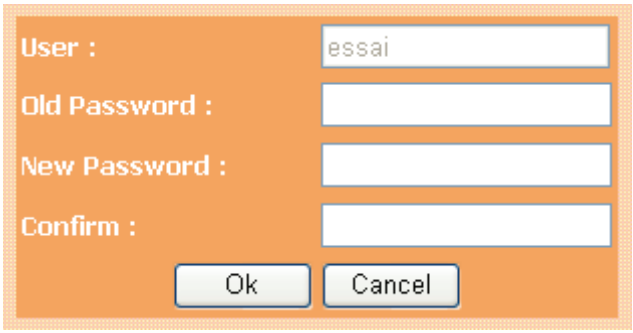
Profile: ALL Supplied by: ALL Min length: Max length: | Material: ALL Minweight: Maxweight: Standard: --- | Designer: ALL Designation: ALL Comment: ALL Manufacture: ALL | Pack Type: --- Reference: --- Carrier: ALL Vessel: --- | PackDate betw. --- and: --- Min \Vol/Weight: --- Max \Vol/Weight: ---

Mark	Sub Mark	Qty	Profile	Material	Paint	Length[mm]	Total Weight	Total Qty	Total Area	Total Paint Area	Comment	Designation Manufac.	Package	Pack Date	Vessel
216.WF03.CU1															
Bolt : Miscell Bolt															
M15WF015.005		1	Rev. A									BOTTOM PART PSLP			
	005	8	Nut H 3/8"	A325	V		0,1	8,0	0,0	0,0					
	006	8	Nut H 1/2"	A325	V		0,2	8,0	0,0	0,0					
216.WF03.CU1 : M15WF015005							*0,4*	*16,0*	*0,0*	*0,0*					
Steel : Plate															
M15WF015.005		1	Rev. A									BOTTOM PART PSLP			
	001	2	PL9,5	A36	V	1525	15,9	2,0	0,2	0,2					
	002	2	PL9,5	A36	V	860	7,7	2,0	0,1	0,1					
	003	2	PL3,03	A36	V	1424	10,8	2,0	0,4	0,9					
	004	2	PL3,03	A36	V	1010	6,1	2,0	0,2	0,5					
216.WF03.CU1 : M15WF015005							*40,6*	*8,0*	*1,0*	*1,7*					
216.WF03.CU1 : M15WF015							40,9	24,0	1,0	1,7					
Steel : Plate															
M15WF016.007		2	Rev. A									LEFT DOOR PSLP			
	001	1	PL3,03	A36	V	400	3,4	2,0	0,1	0,3					
216.WF03.CU1 : M15WF016007							*3,4*	*2,0*	*0,1*	*0,3*					
Steel : Profile															
M15WF016.007		2	Rev. A									LEFT DOOR PSLP			
	002	1	Round D15,9	A36	V	274	0,7	2,0	0,0	0,1					
216.WF03.CU1 : M15WF016007							*0,7*	*2,0*	*0,0*	*0,1*					
216.WF03.CU1 : M15WF016							4,0	4,0	0,1	0,3					
Steel : Plate															
M15WF017.008		1	Rev. A									RIGHT DOOR PSLP	MP0007	01.01/190	TruckP3
	001	1	PL3,03	A36	V	400	1,7	1,0	0,1	0,1					
M15WF017.008.		1	Rev. A									RIGHT DOOR PSLP			
	001	1	PL3,03	A36	V	400	1,7	1,0	0,1	0,1					
216.WF03.CU1 : M15WF017008							*3,4*	*2,0*	*0,1*	*0,3*					

11Password

You access to this screen by using the button 

on the main screen.



Each user can modify his own password.

If a user forgets his password, the base administrator at FCB must be contacted so that he can cancel the password.

Your password is specific for each project you work with.

Annex C6 –

FCB Design procedure for steel structures

FCB DESIGN PROCEDURE for STEEL STRUCTURES

Phase	Description	Responsible
Phase I	Design Input	FCB
Phase II	3D Modelling	DESIGNER
Phase III	Model Checking (Technological)	FCB
Phase IV	Preliminary Design for BoQ	DESIGNER
Phase V	BoQ Check (Budgetary)	FCB
Phase VI	Detailed Design	DESIGNER
Phase VII	Confirmation for EXECUTION	FCB
Phase VIII	Workshop Detailing	DESIGNER
Phase IX	EXECUTION	FCB

G10 : general arrangement drawing / G22- G31 : Loading tables and location
S10 : Calculation note document / S20 : General arrangement drawings

PHASE I: Design Input by FCB

To DO: Submission of G10 & G22 & G31:

- Includes levels, platform outlines, major equipment locations, prohibited zones for structural elements (bracing, wall, columns, etc.)
- Supply loading based on detailed calculation or assumptions for equipment, floor live loads, etc.

DOCUMENT to be PROVIDED:

- G10 indicating major equipment, platform levels and layouts,
- G22, G31 floor loading, major equipment loading and area prohibited for structural elements (bracing).

Purpose: *To initiate DESIGNER's 3D modelling phase*

PHASE II: 3D modelling by DESIGNER

To DO: 3D MODELLING acc. To Phase I data:

- Generate 3D geometrical Model satisfying Technological Requirements

DOCUMENT to be PROVIDED:

- S20 A00.dwg: 3D dxf + 2D views of 3D model as one file, Structural system with elements non-dimensional (element sections only based on experience)
- 3d model as *.sndf file to import PDMS model

Purpose: *FCB Mechanical/Technological check and confirmation on structural system (column, beam locations especially for bracing according to technological point of view)*

PHASE III: Model Check by FCB (technological)

To DO: Model Check:

- Check structural system and major element locations only for technological aspects

DOCUMENT to be PROVIDED:

- Annotated S20 A00

Purpose: *To initiate DESIGNER's Preliminary BoQ study*

PHASE IV: Preliminary Design for BoQ by DESIGNER

To DO: Preliminary Design:

- Perform Preliminary Member Design for each element to determine steel profiles quantity (using SAP2000 mathematical model)
- Perform BoQ study to determine the tonnage percentage for connection details considering constructional purpose and code requirements

DOCUMENT to be PROVIDED:

- Steel profile list taken from SAP2000 (includes profile types and total length of each profile)
- Estimated additional percentage for connection and/or secondary plates to be added to total tonnage of profiles (with 75% accuracy)

Purpose: *FCB to compare the quantities with his budgetary quantities. This allows FCB to take precaution for undesired results.*

PHASE V: BoQ Check by FCB (budgetary)

To DO: BoQ Check:

- Check steel tonnage with budget quantities and previous projects's quantities.

DOCUMENT to be PROVIDED:

- Confirmation on BoQ
- Finalized G10 & G22 & G31 without hold for any equipment and layout.

Purpose: *To initiate DESIGNER's Detail Design*

PHASE VI: Detailed Design by DESIGNER

To DO: Detailed Design

- Update 3D Geometric Model (TEKLA) for confirmed Steel Profile and Perform Detail Design to produce General Arrangement Drawing, Calculation Report

DOCUMENT to be PROVIDED:

- S20: including all plan and section views in FCB drawing format described Project General Notes. All profiles and dimensioning without element marking
- S10: including all necessary member and connection design for each type of members
- Updated SDNF File to import final model to PDMS model

Purpose: *FCB to check and give approval for WORKSHOP Detail*

PHASE VII: FCB confirmation for WORKSHOP

To DO: Check:

- Check GA & calculation for to start WORKSHOP detailing.

DOCUMENT to be PROVIDED:

- Confirmation on S20& S10

Purpose: *To start S50 &S60 drawings.*

PHASE VIIII: WORKSHOP Detailing by DESIGNER

To DO: WORKSHOP Drawings

- Prepare Assembly & Part Drawings in accordance with FCB standard and Project standard

DOCUMENT to be PROVIDED:

- S50: Assembly Drawings
- S60: Part Drawings
- ienet list: to be uploaded

Purpose: *FCB to execution*

Annex D –

Documents from the main contract

D1) Cahier05_Données de base et description des ouvrages

D2) Cahier 05 _ partie02 - étude de sol usine existante

D3) Plans d'avant projet

Annex D1 –

Cahier05_Données de base et description des ouvrages

5.1. GENIE CIVIL ET VRD

5.1.1 DONNEES DE BASE ET CONDITIONS GENERALES

Préambule

Le présent cahier a pour objet de préciser les données de base retenues pour la conception de la construction de l'extension (Ligne N°3) de la cime nterie de Chlef.

Normes, Règlements Et Recommandations

Toutes les études, calculs et travaux de réalisation seront conduits conformément aux normes en vigueur en Algérie (voir Recueil des normes et documents techniques règlementaires de la construction édité par le CTC Centre –Alger).

Approbation des plans et documents

Le fournisseur a la possibilité de préparer, organiser et commencer la réalisation d'un ouvrage sur des plans en cours d'approbation sous son entière responsabilité.

Données Climatiques

- **Neige :** Surcharge extrême maximale 90 Kg/m^2 ;
- **Vent :** 34 m/s, pression dynamique de base normale 72 kg/m^2, coefficient de site K=1(site normal)
- **Température :** Maximum + 50℃, Minimum : -5℃
- **Pluviométrie :** 400 mm en moyenne annuelle, 400 l/ha/s en précipitation instantanée, 40mm/h (durée une heure)
- **Poussière :** 50 Kg/m^2 de projection horizontale
- **Séisme :** Application des Règles Parasismiques Algériennes RPA 99-version 2003 – Zone III.

Surcharge D'exploitation

- Planchers des ateliers : 500Kg/m^2 sauf stockage briques sur plancher de chauffe (1000 kg/m^2) ;
- Planchers des bureaux et locaux : 400 Kg/m^2
- Passerelles piétonnières : 250 Kg/m^2
- Escaliers : 250 Kg/m2
- Planchers en caillebotis ou tôle larmée : 250 kg/m²
- Toitures en terrasse accessible : 200 kg/m²
- Toitures terrasse dites « non accessible » : 150 Kg/m2
- Toitures de silos (non compris dépression) : 300 kg/m2
- Salle électrique – zone stockage armoire : 800kg/m²
- Dallages industriels : 1 t/m² ou 12 t/essieu

Efforts dynamiques : Les structures soumises à des vibrations produites par les équipements (ventilateurs, broyeurs, moteurs, etc..) seront conçues pour éviter les phénomènes de résonance, la fréquence propre calculée devra être en dehors d'une plage comprise entre 50% de part et d'autre de la fréquence d'exploitation.

Parallèlement à la surcharge répartie des planchers des ateliers, ceux-ci devront pouvoir supporter des charges poinçonnantes ponctuelles de 1 000 kg appliquées à une surface de 10 x 10 cm.

Déformations : les déplacements horizontaux, sous l'effet du cumul le plus défavorable des sollicitations appliquées, ne devront pas être à l'origine de troubles dans l'exploitation des bâtiments ni de désordres dans les structures.

PRINCIPES GENERAUX DE CONSTRUCTION

Généralités :

La description des travaux de construction des bâtiments et d'aménagement du terrain comporte les bâtiments et constructions pour lesquels le fournisseur établira l'étude du projet, réalisera les travaux et assurera la direction.
Lorsque les liaisons nécessaires à l'accès pour l'entretien des diverses installations ne sont pas indiquées, il est entendu qu'aucune de celles-ci ne peut être omise.

Lors de l'étude détaillée, le Maître d'Ouvrage est en droit de réclamer un plan montrant chacun des accès.

Les eaux de ruissellement sont évacuées au réseau général sauf celles des carrières.

Tous les planchers sont accessibles du sol au moyen de volées d'escaliers inclinées à 40° maximum et de 0,80 m de largeur au minimum.
Les escaliers sont munis de part et d'autre d'une main courante située entre 0,90 m et 1 m du limon. La hauteur entre paliers successifs ne peut excéder 3 m. La hauteur des contremarches ne peut excéder 0,20 m dans les parties industrielles et 0,18 m dans les parties bureaux.
Dans les parties industrielles, les escaliers sont généralement construits en charpente métallique, les marches et paliers sont construits en caillebotis métalliques cerclés sur leur pourtour et insérés entre les limons. La finition des marches et garde-corps est la même que celle de la charpente métallique.
Dans les parties d'escalier en béton situées dans les bâtiments industriels, le nez des marches est renforcé pour résister aux chocs au moyen d'une cornière métallique.

Les couvertures des caniveaux intérieurs des ateliers sont en éléments amovibles en tôle striée convenablement raidie pour supporter la circulation d'engins à l'intérieur des bâtiments.

Toutes les installations situées sous le niveau du sol doivent être munies d'un puisard pour recevoir une pompe d'exhaure. Ce puisard est recouvert d'une grille avec cadre.

En général, le niveau des bâtiments et installations est à + 0 ,20 m au dessus du niveau le plus élevé du terrain environnant.

Dispositions particulières relatives à la conception des silos.

Les niveaux inférieurs de la dalle de fond doivent être fixés de manière à éviter la réalisation de fosses pour les départs des installations d'alimentation des silos (air lift ou élévateur à godets).

Les jupes de stockage des silos d'homogénéisation, clinker et de ciment doivent être en béton précontraint par câble, réalisés par coffrage glissant.

Terrassements particuliers

Les terrassements particuliers pour les ateliers se feront selon les plans et prescriptions du fournisseur.

Le remblayage supplémentaire éventuel se fera en couches d'une épaisseur maximale de 0,40 m. La compaction sera au minimum 95% du Proctor modifié.

Les remblais et le nivellement sont exécutés de façon à assurer le ruissellement et le drainage du terrain pendant toute la durée des remblais.

Galerie Technique : Le fournisseur devra intégrer une galerie technique le long de la ligne de production, destinée à recevoir les câbles électriques, l'air comprimé, et autres si nécessaire.
Cette galerie reliera toutes les stations électriques. Les salles de compresseurs seront reliées à la galerie au moyen de caniveau.

Structures existantes

Le Fournisseur a considéré que les structures existantes seront aptes à supporter les nouvelles installations. Si tel n'était pas le cas, le montant des études complémentaires nécessaires et leurs délais seraient revus d'un commun accord.

D'autre part, Le Fournisseur a considéré que les fondations existantes n'interféraient pas avec les fondations des nouveaux ouvrages ou n'obligeaient pas à agrandir les nouvelles fondations. Dans le cas contraire le prix et le planning serait revus en conséquence.

5.1.2 LISTE DES OUVRAGES

Ligne Process

- Bâtiment de concassage mixte (Calcaire et argile)
- Transport premix
- Hall de stockage des ajouts
- Stockage polaire pré homogénéisation
- Trémie de chargement des ajouts
- Bâtiment des trémies du broyeur « CRU »
- Transport pour alimentation du broyage
- Bâtiment du broyeur « CRU » et dépoussiérage
- Silo d'homogénéisation
- Bâtiment de dosage
- Cheminée
- Bâtiment de chauffe
- Massifs du four
- Refroidisseur
- Transport clinker, stockage et reprise
- Bâtiment de la trémie des incuits
- Silos clinker
- Transport clinker vers trémies avant dosage
- Bâtiment des trémies de broyage « ciment »
- Bâtiment de broyage « ciment »
- Transport ciment
- Silos ciment
- Bâtiment d'ensachage et d'expédition « sacs et vrac » camions
- Quai de chargement wagon « vrac »
- Quai de chargement wagon « sacs »

Bâtiments auxiliaires techniques

- Ateliers engins roulants à la carrière
- Parking couvert pour véhicules légers à la carrière calcaire (attenant à l'atelier engins roulants à la carrière)
- Dépôts d'huiles, graisses, boulets et réfractaires
- Magasin central et atelier d'entretien général
- Bureau d'expédition et ponts bascules camions
- Entrée de l'usine (poste de garde)
- Station de détente gaz secondaire
- Poste de livraison carburant carrière
- Sanitaires dans différents ateliers (voir descriptifs détaillés)
- Poste d'alimentation principal 220KV
- Poste électrique principal P0
- Postes électriques secondaires
- Galerie technique
- Station de traitement eau
- Salles des compresseurs

Bâtiments auxiliaires sociaux

- Bureaux à la carrière (inclus dans atelier engins roulants à la carrière)
- Bâtiment vestiaires et sanitaire
- Bâtiment laboratoire
- Bâtiment bureaux et salle de contrôle
- Loges de gardiens

VRD

- Routes, trottoirs et parkings
- Réseaux eaux usées et eaux vannes
- Eaux industrielle et potable
- Réseau incendie
- Réseau eaux pluviales
- Eclairage public
- Réseau électrique

5.1.3 LISTE DES PLANS D'AVANT PROJET

Les plans d'avant projet suivants sont annexés au présent cahier :

- Plan de masse de l'usine
- Les plans d'avant projet des ouvrages

5.1.4 DESCRIPTIF DES OUVRAGES

5.1.4.1 LIGNE PROCESS

BATIMENT DE CONCASSAGE MIXTE (CALCAIRE ET ARGILE)

- Structure en béton armé semi enterrée y compris les deux trémies de réception pour déchargement calcaire et argile par camion.
- Superstructure ouverte en charpente métallique avec couverture en tôle pré peinte.
- Poutres métalliques pour pont roulant, avec échelle à crinoline d'accès pour entretien.
- Escalier métallique entre chaque plancher, passerelle métallique pour maintenance.
- Fondation et passerelle pour le transporteur de reprise.
- Salle de contrôle intégrée dans le bâtiment et réalisée avec mur en parpaing rejointoyé 2 faces, 1 châssis vitré fixe, toiture béton non étanchée, non isolée, non accessible.
- Bâtiment pour analyseur.

TRANSPORT PREMIX

- Blochets en béton armé préfabriqué pour fondation du transporteur en partie courante rampante sur plateforme
- Fondation et passerelle pour le transporteur en partie aérienne
- Le nouveau transporteur sera positionné à côté du transporteur existant. Une seule passerelle de 800 mm sera rajoutée le long du nouveau transporteur.
- Pour le franchissement de l'autoroute, le nouveau transporteur sera supporté par la passerelle existante.

HALL DE STOCKAGE DES AJOUTS

- Blochets en béton armé préfabriqués pour fondation du transporteur d'alimentation
- Longrines en béton armé pour la voie du jeteur
- Longrines en béton armé pour la voie du gratteur
- Fondations de la structure métallique du bâtiment
- Soubassement périphérique en béton armé, sous bardage
- Murs en béton armé pour séparation des matériaux stockés
- Blochets en béton armé préfabriqué pour fondation des transporteurs de reprise
- Ossature métallique pour le bâtiment
- Ouverture en faîtage pour ventilation
- Bacs métalliques pré peints pour bardage avec bande translucide horizontale pour éclairage naturel et bacs métalliques pré peints pour couverture
- 2 ouvertures 5 x 5 pour accès engins et portes d'accès personnel
- Fondations et passerelles pour les transporteurs de reprise vers le bâtiment des trémies du broyeur « cru ».

STOCKAGE POLAIRE PRE-HOMOGENEISATION

- Fondations de la structure métallique du bâtiment circulaire
- Soubassement périphérique en béton armé, sous bardage
- Longrines en béton armé pour la voie du gratteur
- Ossature métallique et aluminium pour le bâtiment,
- 2 ouvertures 4 x 4 pour accès engins et personnel
- Bacs métalliques pré peints pour le bardage et pour la couverture
- Ouverture en faîtage pour ventilation
- Galerie enterrée en béton armé sous stockage pour transporteur de reprise
- Trémie métallique posée sur l'entrée de la galerie pour chargement d'urgence par camion

- Fondation et passerelle pour le transporteur de reprise vers trémies.

TREMIE DE CHARGEMENT DES AJOUTS

- Structure béton entièrement enterrée y compris trémie de déchargement.
- Radier béton
- Plancher intermédiaire en béton armé
- Escalier métallique intérieur à la structure béton
- Superstructure métallique couverte en bac acier pré-laqué
- Tunnel en béton armé

BATIMENT DES TREMIES DU BROYEUR « CRU »

- Structure ouverte en béton armé sur trois niveaux
- Voiles béton armé et/ou maçonnerie jusqu'au niveau d'extraction matière inclus puis bardage.
- Le second niveau supporte les trémies métalliques de calcaire, de sable et de minerai de fer.
- Le dernier niveau est constitué d'une ceinture en béton armé et d'un plancher en tôle larmée supportée par une structure métallique. Il supportera les équipements d'alimentation des trémies
- La trémie prémix est intégrée au bâtiment et est en béton armé.
- Dallage
- Passerelles métalliques pour accès aux équipements
- Escalier métallique ouvert pour accès à chaque niveau

TRANSPORTEUR POUR ALIMENTATION DU BROYAGE

- Fondations et passerelle métallique pour le transporteur d'alimentation du broyage cru.

BATIMENT DU BROYEUR « CRU »ET DEPOUSSIERAGE

- Fondation pour broyeur vertical
- Dallage y compris pose des buses PVC enterrées pour câbles électriques.
- Structure métallique ouverte pour la tour supportant l'élévateur de recirculation
- Escalier général métallique ouvert.
- Structure métallique couverte avec bardage pour le local de lubrification uniquement.
- Les moteurs des broyeurs seront protégés du rayonnement solaire.
- Plate-forme et passerelle métallique pour support et accès aux équipements
- Fondation et structure béton ouverte pour bâtiment supportant les cyclones et le filtre commun de dépoussiérage principal. La partie sous les cyclones sera bardée au niveau d'extraction.
- Massifs de fondation pour ventilateurs
- Massifs de fondation et supports métalliques de gaine
- Passerelle métallique et fondation pour l'aéroglissière entre filtre et l'élévateur d'alimentation du silo
- Massif de fondation pour l'élévateur
- Fondation et supportage de la gaine de dépoussiérage depuis le refroidisseur vers le filtre commun.

SILO D'HOMOGENEISATION (1 X 30 000T)

- Fondation en béton armé
- Jupe inférieure en béton armé
- Jupe supérieure en béton précontraint
- Dalle de fond soutenue par des poteaux bétons
- Forme intérieure en béton pour extraction
- Dalle béton en toiture coulée sur bacs métalliques perdus fixés sur poutraison métallique
- Etanchéité multicouche avec protection lourde
- Passerelle en toiture pour accès de et vers l'échangeur
- Passerelle pour circulation et accès aux équipements d'extraction

- Passerelle pour l'aéroglissière entre silo et l'élévateur d'alimentation de l'échangeur

BATIMENT DE DOSAGE

Inclus dans la tour échangeur.

CHEMINEE

- Fondation de la cheminée métallique commune avec les fondations de la tour échangeur.

BATIMENT DE CHAUFFE (TOUR ECHANGEUR)

- Fondation en béton armé
- superstructure de la tour en béton armé :
    - voiles jusqu'au premier plancher sur les 4 côtés de la tour,
    - 4 poteaux en forme de cornière et poteaux intermédiaires jusqu'au sommet de la tour avec poutres béton armé pour assurer la stabilité, l'ensemble étant réalisé en coffrage glissant
- Structure métallique pour planchers avec dalle béton coulée sur bacs métalliques
- Passerelles métalliques entre niveaux 1 et 2 pour accès aux équipements
- Cage d'escalier ouverte pour accès à chaque niveau
- Fondation et support pour ascenseur de type ALIMAK
- Fondation pour élévateurs
- Massif de fondation pour le ventilateur

MASSIFS DU FOUR

- 3 piliers pour support du four et de sa commande
- Superstructure en béton armé en forme de caisson
- Passerelle métallique le long du four
- Aménagement du massif de commande pour installation du groupe diesel de secours
- Fondations pour la gaine d'air tertiaire.
- Accès à la passerelle du four par l'escalier de la tour échangeur ou par l'escalier du bâtiment refroidisseur et par escalier du groupe de commande (pilier no. 3).
- Escalier accès au pilier no. 1

REFROIDISSEUR

- Structure en béton armé pour support du plancher de chauffe au 1er niveau. Certaines parois extérieures pourront être en béton armé pour une meilleure stabilité de l'ouvrage.
- Le refroidisseur est posé sur le radier qui fait office de dallage.
- Tunnel d'extraction en béton armé pour la reprise clinker après le concasseur du refroidisseur.
- Ventilateurs posés sur le dallage.
- Structure métallique couverte au dessus du plancher de chauffe, mais non bardée. Cette superstructure est utilisée également pour la maintenance du brûleur (compris monorail).
- Escalier métallique ouvert pour accès au plancher de chauffe.

TRANSPORT CLINKER, STOCKAGE ET REPRISE

- Fondation du transporteur d'alimentation des silos de stockage clinker
- Structure métallique ouverte pour support du transporteur y compris deux passerelles de 800mm.

BATIMENT DE TREMIE DES INCUITS

Silo en béton armé non précontraint comprenant :

- Fondation
- Jupe en béton armé
- Dalle de fond de silo
- Plancher métallique sous dalle de fond recouvert de tôle larmée pour support équipements

- Dalle béton en toiture coulée sur bacs métalliques perdus fixés sur poutraison métallique
- Superstructure métallique pour équipement posée sur toiture
- Etanchéité multicouche avec protection lourde
- Escalier métallique pour accès au plancher sous la dalle de fond et à la toiture

SILOS CLINKER (2 X 30 000 T)

- Fondation
- Jupe en béton précontraint
- Charpente métallique pour toiture conique
- Tôle métallique pré peinte pour couverture du silo
- Cabanon métallique sur chaque silo pour recevoir les équipements d'alimentation posé sur leur toiture conique. Le cabanon est bardé et couvert avec du bac métallique pré peint.
- Structure métallique ouverte pour supporter le transporteur d'alimentation entre les 2 silos clinker.
- Deux tunnels (hors sol) pour extraction et transporteur de reprise (ces 2 tunnels sont communs aux 2 silos).

TRANSPORT CLINKER VERS TREMIES AVANT DOSAGE

- Fondation et passerelle métallique pour support du transporteur à bande

BATIMENT DES TREMIES DE BROYAGE CIMENT

- Structure ouverte en béton armé sur trois niveaux supportant les douze trémies métalliques.
- Dallage
- Voiles béton armé et/ou maçonnerie jusqu'au niveau d'extraction matière inclus puis bardage.
- Le dernier niveau est constitué d'une ceinture en béton armé et d'un plancher en tôle larmée supportée par une structure métallique. Il supportera les équipements d'alimentation des trémies
- Passerelles métalliques pour accès aux équipements
- Escalier métallique ouvert pour accès à chaque niveau
- Fondation des transporteurs d'alimentation des broyeurs
- Passerelle métallique pour transporteurs

BATIMENT DE BROYAGE « CIMENT »- 2 BATIMENTS

- Structure ouverte en béton sur deux niveaux pour le bâtiment
- Massif support broyeur et groupe de commande.
- Fondation pour divers équipements au sol
- Dallage y compris pose des buses PVC enterrées pour câbles électriques.
- Escalier métallique ouvert
- Plate-forme et passerelle métallique pour support et accès aux équipements
- Superstructure métallique non couverte mais bardée au niveau du broyeur pour supporter le monorail servant à l'entretien du séparateur.
- Massif de fondation pour le ventilateur et la cheminée métallique.

TRANSPORT CIMENT

- Passerelle métallique et fondation pour aéroglissières vers les silos ciments
- Fondation pour élévateur
- Guides de maintien de l'élévateur fixés sur silo ciment.
- Passerelle métallique en tête de l'élévateur
- Passerelle métallique pour aéroglissières en toiture de silo

SILOS CIMENT (4 X 20 000T)

- Fondation
- Jupe inférieure en béton armé

- Dalle de fond de silo avec forme de pente supportée par poteaux béton
- Structure intérieure support d'équipement en béton armé
- Chambre conique intérieure
- Jupe supérieure en béton précontraint
- Dalle de béton en toiture de silo coulée sur bacs métalliques fixés sur poutraison métallique
- Etanchéité multicouche avec protection lourde
- Un escalier métallique commun aux 4 silos pour accès en toiture
- Passerelles pour aéroglissières d'alimentation des silos
- Fondations et structures des passerelles pour circulation et accès aux équipements d'extraction et de chargement en vrac camions
- Fondations pour 3 ponts- bascules pour chargement vrac camions sous extraction des silos
- Passerelle métallique et fondation pour aéroglissières vers ensachage

BATIMENT D'ENSACHAGE ET D'EXPEDITION «SACS ET VRAC » CAMIONS

- Fondations
- Dallage
- Superstructure en béton pour l'ensemble du bâtiment
- Maçonnerie en parpaing creux ou voile béton armé
- Etanchéité multicouche sur toiture en terrasse
- Escalier métallique pour le bâtiment d'ensachage
- Passerelles métalliques pour vis sous ensacheuses
- Monorail pour maintenance des élévateurs
- Monorail pour manutention des sacs vides
- Une salle de contrôle, une salle électrique et locaux annexes intégrés au bâtiment.
- Le sol sous chargement des sacs sera traité par le lot voiries

QUAI DE CHARGEMENT « VRAC »

- Fondations et structures des passerelles pour transport des sacs vers station de chargement
- Structure en béton armé pour la station de chargement
- Escalier métallique et passerelle d'accès

QUAI DE CHARGEMENT « SACS »

- Fondations et structures métalliques des passerelles pour transport des sacs vers station de chargement
- Structure en béton pour le quai et la station de chargement

5.1.4.2 BATIMENTS AUXILIAIRES TECHNIQUES

ATELIER ENGINS ROULANTS A LA CARRIERE

- Charpente métallique en superstructure, bacs métalliques galvanisés pour l'atelier et structure porteuse en béton armé pour bureaux ;
- Dallage ;
- Fosse pour entretien de véhicule, (prévoir un revêtement en faïence) ;
- Parking couvert pour 4 engins ;
- Maçonnerie en parpaing creux sur une hauteur de deux mètres, rejointoiement 2 faces
- Etanchéité sur toiture inaccessible et non isolée
- Poutres métalliques pour pont roulant – 10t et 20t;
- Portes coulissantes métalliques pour passage engins ;
- Surface estimée : 1200 m^2
- Locaux annexes comprenant trois bureaux et un local toilette - vestiaire
  - Maçonnerie en parpaing, enduit

- Dalle béton en plafond
- Menuiserie intérieure en aluminium, PVC ou bois
- Peinture intérieure
- Climatiseur pour bureaux

- Le local sanitaire est équipé d'une fosse sceptique.

PARKING COUVERT CARRIERE CALCAIRE – VEHICULES LEGERS

Couverture métallique en porte-à-faux le long du bâtiment atelier engins roulants à la carrière

DEPOTS HUILES, GRAISSES, BOULETS ET REFRACTAIRES,

- Structure porteuse en béton armé
- Fondation en béton armé ;
- Dallage en béton armé ;
- Toiture béton non accessible, étanché, non isolé ;
- Monorail : 3 t ;
- Murs extérieurs en parpaing creux 20 cm rejointoyé 2 faces
- Cloisonnement intérieur : murs béton armé ou parpaing creux de 10 cm rejointoyés 2 faces, menuiserie intérieur en bois ;
- Surface indicative : 600 m^2 ;

ATELIER D'ENTRETIEN GENERAL ET MAGASIN CENTRAL DE PIECES DE RECHANGE.

- Charpente métallique en superstructure, bacs métalliques galvanisés pour l'atelier, et structure porteuse en béton armé pour magasin central et bureaux.
- Fondation en béton armé ;
- Dallage en béton armé ;
- Structure porteuse en béton armé ;
- Toiture béton non accessible, étanché, non isolé ;
- Pont roulant : 25 t et 3 t ;
- Murs extérieurs en parpaing creux 20 cm rejointoyé 2 faces sur une hauteur de deux mètres pour l'atelier, toute la hauteur pour le magasin et bureaux ;
- Cloisonnement intérieur : murs béton armé ou parpaing creux de 10 cm rejointoyés 2 faces, menuiserie intérieur en bois ;
- Surface indicative : 1800 m^2 ;
- Locaux annexes comprenant deux bureaux (à l'étage), un local toilette et un vestiaire au RDC ;
    - Maçonnerie en parpaing, enduit ;
    - Menuiserie intérieure en aluminium, en bois ou PVC ;
    - Peinture intérieure ;
    - Climatiseur pour bureaux ;
    - Sanitaire comprenant 2 lavabos, 2 sanitaires, 1 douche ;

BUREAU D'EXPEDITION ET PONTS BASCULES CAMIONS ENTRE L'ACCES DE L'USINE ET LES QUAIS DE CHARGEMENT

Construction en béton armé voir plan G10 84 006 A

POSTE DE GARDE A L'ENTREE DE L'USINE

- Dimension : 4 m x 5 m = 20 m2
- Structure porteuse en béton armé et parpaing (rejointoyé à l'extérieur et enduit à l'intérieur) - parpaing extérieur de 15cm.
- Revêtement sol en carrelage ;

- Toiture béton non accessible, isolée et étanchée ;
- Porte et fenêtre métallique ou en aluminium (2 coulissante avec grille de protection) ;
- Peinture sur mur et plafond. Faïence mural dans sanitaire sur hauteur 1,5 m ;
- Toiture étanchée, isolée et non accessible ;
- Cloison séparation en parpaing creux de 10 cm ;
- Equipement sanitaire :
    - ➢ Un lavabo ;
    - ➢ Un sanitaire ;
    - ➢ Un chauffe eau 50 L.

PONTS BASCULES

(2 unités situées au poste d'entrée – 3 unités au vrac ciment, sous silo)

- Fosse en béton armé recevant un tablier métallique

STATION DE DETENTE GAZ 70/7 BARS ;

- Dallage Béton 180 m² environ
- Clôture grillagé avec portail.

POSTE DE LIVRAISON CARBURANT CARRIERE

- Cuve enterrée posée sur berceau en béton armé
- Dimension de l'abri : 8m long x 3,3m x ~ 3 m (hauteur)
- Auvent de protection en béton armé
- Chaussée de type route en béton armé

POSTE D'ALIMENTATION PRINCIPAL 220KV ABRITE

- Surface estimative de 44m x 60m = 2640 m2 hauteur 20 m.
- Structure porteuse en béton armé de type poteaux poutres
- Maçonnerie extérieure en parpaing de 15 cm rejointoyé 2 faces
- Cloisonnement intérieur en parpaing de 15 cm rejointoyé 2 faces
- Toiture en béton armé, étanchée, isolée et accessible
- Dallage au sol avec passage camion
- Caniveau électrique pour cheminement des câbles
- Loges transformateurs accolées au bâtiment

POSTE ELECTRIQUE PRINCIPAL « P0 »

- Structure porteuse en béton armé. Hauteur libre sous poutre de 3,5m.
- Sous-sol enterré de hauteur 2.2m pour câbles
- Etanchéité multicouche avec isolation sur toiture terrasse.
- Maçonnerie extérieure en parpaing creux 15 cm, maçonnerie intérieur en parpaing creux de 10 cm, rejointoiement extérieur, enduit intérieur.
- Peinture intérieure sur mur et plafond.
- Isolation du mur
- Portes métalliques avec serrure anti panique.
- Loge transformateur : fosse sous transformateur. Maçonnerie intérieure rejointoyée, sans peinture.
- Le poste principal sera accolé au poste principal P0.

POSTES ELECTRIQUES SECONDAIRES

- Structure porteuse en béton armé. Hauteur libre sous poutre de 3,5m.
- Sous-sol enterré de hauteur 2.2m pour câbles

- Etanchéité multicouche avec isolation sur toiture terrasse.
- Maçonnerie extérieure en parpaing creux 15 cm, maçonnerie intérieur en parpaing creux de 10 cm, rejointoiement extérieur, enduit intérieur.
- Peinture intérieure sur mur et plafond.
- Isolation du mur
- Portes métalliques avec serrure anti panique.
- Loge transformateur : fosse sous transformateur. Maçonnerie intérieure rejointoyée, sans peinture.

GALERIE TECHNIQUE, avec un drainage extérieur et enduit bitumineux ;

- Réseau électrique principal par galerie béton enterrée de section intérieure 2,2m x 2,20m ht. Sortie de secours tous les 100m maximum.
- Réseau secondaire enterré sous buses PVC enrobées de béton de masse (entre la galerie enterrée et les bâtiments et les sous-stations).

STATION DE TRAITEMENT D'EAU

- Structure porteuse en béton armé.
- Murs extérieurs en parpaing creux de 15cm rejointoyé à l'extérieur et enduit à l'intérieur.
- Toiture terrasse non isolée, non étanchée.
- Porte métallique pour accès et monorail.
- Dallage béton armé compris caniveaux.

5.1.4.3 BATIMENTS AUXILIAIRES SOCIAUX

BUREAUX A LA CARRIERE (inclus dans le bâtiment atelier engins roulants à la carrière)

BATIMENT VESTIAIRES ET SANITAIRES

- Fondation et structure porteuse en béton armé ;
- Murs en parpaing creux 15 cm rejointoyé extérieur et revêtement enduit intérieur ;
- Carrelage au sol et faïence intérieure murale (hauteur 1,5 m) ;
- Peinture murale et au plafond ;
- Cloisonnement et portes de distribution intérieures ;
- Fenêtre ;
- Toiture étanchée, isolée et non accessible ;
- Distribution électrique ;
- Equipements sanitaires minimum (suivre la norme pour 200 personnes)
- Casiers vestiaires : 300 pcs

BATIMENT LABORATOIRE

Le laboratoire sera construit dans un bâtiment séparé. Le bâtiment sera construit de la façon suivante :

- Structure porteuse en béton armé
- Dallage béton
- Maçonnerie extérieure en parpaing creux 15 cm, enduit et peinture intérieur et extérieur
- Cloisonnement intérieur en parpaing creux de 10 cm, enduit deux faces ;
- Peinture sur murs extérieurs, intérieurs et plafond ;
- Carrelage au sol et faïence mural dans sanitaire ;
- Etanchéité sur toiture accessible et isolée
- Une douche de décontamination

La surface du laboratoire estimative est de 320m²

BATIMENT BUREAUX ET SALLE DE COMMANDE

- Le bâtiment de bureaux et salle de commande comprendra:
  - Dix bureaux d'environ 15 m^2 ;
  - Une salle de réunion d'environ 70 m^2 ;
  - Une petite salle de réunion 40 m^2 ;
  - Un bureau ouvert d'environ 70 m^2 ;
  - Deux douches et un chauffe eau ;
  - Climatisation ;
  - Isolation thermique ;
  - Deux + un lavabo ;
  - Deux + un WC;
  - Surface totale indicative minimum (bureau et annexes seulement) environ 500 m2 (dont 100m² de salle de contrôle);

Le bâtiment sera construit de la façon suivante :

- Structure porteuse en béton armé
- Dallage béton
- Maçonnerie extérieure en parpaing creux 15 cm, enduit et peinture intérieur et extérieur
- Cloisonnement intérieur en parpaing creux de 10 cm, enduit deux faces ;
- Peinture sur murs extérieurs, intérieurs et plafond ;
- Carrelage au sol et faïence mural dans sanitaire ;
- Etanchéité sur toiture accessible et isolée

LOGES DE GARDIENS :

- dimension : 14 m x7 m soit 100 m^2 environ comprenant :
  - une salle sanitaire / douche
  - une cuisine ;
  - 3 salles ;
- Dallage béton armé
- Mur en parpaing creux de 20 cm enduit 2 faces ;
- Peinture en façade ;
- Cloisonnement intérieur en parpaing creux 10 cm, enduit 2 faces ;
- Peinture sur murs intérieurs et plafond ;
- Carrelage au sol et faïence murale dans salle sanitaire ;
- Toiture en béton armé isolée, étanchée et non accessible ;
- Châssis vitrés coulissant ;
- Equipements sanitaire :
  - Deux lavabos ;
  - Deux WC ;
  - Un évier ;
  - Deux douches ;
  - Deux siphons de sol;
  - Un chauffe eau ;
  - Climatisation.

5.1.4.4 V.R.D

ROUTES, TROTTOIRS ET PARKINGS

- Concernent les routes, trottoirs et parkings, rampes et plateformes situés à l'intérieur de l'usine.
- Epaisseur chaussée selon trafic avec revêtement en béton
- Largeur 6m ou 4m selon trafic
- Bordure partielle

RESEAU « EAUX USEES ET EAUX VANNES »

- Réseau enterré dans l'usine dimensionné pour 300 personnes permettant l'évacuation des eaux usées et vannes des bâtiments suivants :
  - Magasin central et atelier d'entretien général
  - Poste de garde à l'entrée usine
  - Bâtiment vestiaires et sanitaires
  - Bâtiment laboratoire et salle de commande
  - Loges de gardiens
- Le nouveau réseau sera raccordé au réseau d'eaux usées et eaux vannes existant supposé être localisé sous la route existante située à l'est de la future usine (branchement à proximité du poste d'entrée usine).

RESEAUX EAUX INDUSTRIELLES ET EAU POTABLE

- Installation et réservoirs des réseaux d'eau (nombre et volumes) à prévoir pour assumer une autonomie de la nouvelle ligne et ce, selon les normes en vigueurs.
- Les réservoirs seront en béton armé, étanchéité par membrane PVC
- Réseau d'eaux industrielle et potable installé en enterré.

RESEAU D'EAU ANTI INCENDIE

- Tranchée pour pose des conduites
- Fondation pour bornes incendie

RESEAU « EAUX PLUVIALES »

- Réseau par tranchées ouvertes bétonnées pour évacuation des eaux pluviales vers le réseau existant (inclus conduites béton enterrées sous les traversées de route) qui est supposé être localisé sous la route existante située à l'est de la future usine (branchement à proximité du poste d'entrée usine).

ECLAIRAGE PUBLIC

- Réseau d'éclairage public enterré compris grillage avertisseur
- Massif béton support de candélabre

RESEAU ELECTRIQUE

- Tubes PVC de diamètre 150mm enrobés de gros béton.
- Chambre de tirages tous les 50m avec couvercle béton. Le dessus de la chambre de tirage sera 40cm au dessus du niveau du terrain naturel.
- Réseau du circuit de terre compris protection.
- Le réseau électrique busé sera implanté entre le tunnel électrique et les bâtiments, et si besoin, sous le dallage des bâtiments.

Annex D2 –

Cahier 05 _ partie02 - étude de sol usine existante

DAMES & MOORE IBERIA, S. A.

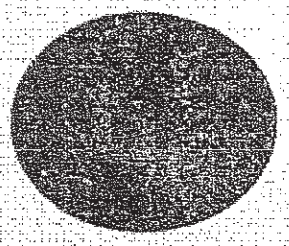
REPORT

SOILS AND FOUNDATION STUDY

FUTURE CEMENT PLANT

FOR S.N.M.C.

EL ASNAM, ALGERIA



EARTH SCIENCES

D R A F T

REPORT
SOILS AND FOUNDATION STUDY
FUTURE CEMENT PLANT
FOR S.N.M.C.
EL ASNAM, ALGERIA

6561-001-40

REPORT
SOILS AND FOUNDATION STUDY
FUTURE CEMENT PLANT
FOR S.N.M.C.
EL ASNAM, ALGERIA

INTRODUCTION

This report presents the results of our "Report, Soils and Foundation Study, Future Cement Plant, for S.N.M.C. in El Asnam, Algeria".

The S.N.M.C. property is located some 10 kilometers west of El Asnam in the central part of the Algerian coastal zone approximately equidistant between Oran and Algiers. The site consists of an area of some 40 hectares limited on the north by the Chelif river, on the east by the Sonatrach property, on the west by orange groves and on the south by the railroad and highway from Oran to Algiers which provides direct access to the site. The location of the site in relation to nearby towns and the important access roads is presented on Plate 1, Location Map.

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6. Estimation of the time-rate in which the settlement will occur.

7. Types of piles, length and working load, in case it is decided to support the kiln on this type of foundation.

8. Chemical effect of the subsurface materials on concrete with recommended cements to be used.

9. Other recommendations for treatment of construction problems that could be encountered in the construction of foundations.

In our letter report "Etudes des Travaux, Etude des Sols et Fondations pour S.N.M.C., El Asnam, Algerie", dated February 13, 1974, a summary of the general characteristics of the terrain was presented as well as recommendations for site stripping and most suitable distribution of structures from the point of view of soils. In the same manner, our basic conclusions and recommendations for the design foundation were presented in Spanish and French in our "Avance del Informe, Estudio de Suelos y Cimentaciones, Futura Fábrica de Cemento, para S.N.M.C., El Asnam, Argelia", dated March 25, 1973.

All the data obtained during the study including

borings and laboratory tests are presented in the present English language report. The basic conclusions presented herein have not varied from those in the previous reports.

SITE CONDITIONS

SUPERFICIAL ASPECTS

The S.N.M.C. property covers approximately 40 hectares of which some 20 will be occupied by the proposed structures. The site slopes slightly, on the order of one percent, toward the Chelif river. With the exception of two rows of olive threes which cross the site in the east-west direction, the area is used exclusively for raising grain.

Access to the site by means of unpaved roads is available from the national highway Algiers-Oran. Although all types of vehicles may traverse the entire site easily during dry periods difficulties could exist during rainy periods due to the plasticity of the superficial soils.

The site has no network of natural nor artificial drainage. Although part of the rainfall run off is toward the Chelif river probably an important portion infiltrates the spongy, fissured ground surface.

SUBSURFACE CHARACTERISTICS

The subsurface conditions at the site were investigated

by drilling 10 borings with depths varying between 15.40 and 30.40 meters. The locations of the borings are presented on Plate 2, General Site Plan.

The depth of the topsoil covering the site varies in general between 20 and 30 centimeters, increasing uniformly from south to north, that is from the national highway towards the Chelif river. Beneath the topsoil, to an average depth on the order of 0.50 meters, the soils appear very desiccated and fissured although the content of organic material is negligible.

Subsurface conditions are relatively uniform in all areas investigated. Underneath the topsoil exists a layer consisting of alternating thin layers of silty sand, clayey silt and silty clay, all grey in color. The clay and the silt are generally very stiff to hard while the sand appears moderately dense. The color changes to dark brown in the lower part of the layer and the clay content increases until it clearly predominates in some borings. The total thickness of the layer gradually increases proceeding from the highway towards the Chelif river, or from south to north. In borings S-1, S-7, S-8 and S-9, drilled in the southern portion of the site the total thickness is less than two meters. In Borings S-2, S-5 and S-6, drilled in the central portion, the thickness varies between two to three and one half meters. Finally in Borings S-3, S-4 and S-10 drilled in the northern area, the

thickness reaches approximately five meters.

Underneath the initial layer, a layer consisting basically of silty clay, brown, yellowish brown and reddish brown in color, exists to the total depth investigated, 30.40 meters. Numerous pockets of gravel appear irregularly distributed within this predominantly clayey formation throughout the site. Some of these gravel pockets reach 10 meters in thickness. In Boring 7, drilled in the southern area of the site, the total thickness of the gravel is greater than that of the clay. In the points investigated the clays are generally hard and the gravels dense, with the exception of a few borings where there is a slight decrease in the strength of the clay from hard to very stiff at 15 meters depth.

During performance of the field explorations the water level measured in Borings S-1, S-2, and S-5 fluctuated between 14 and 15 meters depth. It is very probable that the water level in the remainder of the borings exists at similar depths. The slight decrease in the strength of the clay observed in some borings at 15 meters depth probably coincides with the zones of fluctuation of the water table.

DESIGN CONSIDERATIONS

S.N.M.C. plans to construct a complete cement fabrication line with an initial capacity of one million tons per

year. The plant will include storage of raw materials, pre-blending bays, a raw mill, preblending, blending and feeding silos, a preheater, a kiln, a cement mill, cement silos, packing and loading installations and other auxiliary structures.

The loads transmitted to the subsoil by these types of structures are in general very high. The loads of the silos depend basically on their height and the dimension of the foundation. In addition, El Asnam is in a zone of high seismicity which, considering this condition as well as the supporting capacity of the subsoil, will limit the height of the silos. In our preliminary report dated March 25, 1974, a maximum net load of 30 tons per square meter was recommended for nomal working loads with the possibility of increasing the load to 45 tons per square meters for the most unfavorable load combination including wind and seismic forces. Similar considerations may be adopted with respect to the pre-heater. The mills will have a net load of on the order of 15 tons per square meter.

The kiln consists of a long metallic cylinder with a refractory material lining and with supports every 30 to 35 meters. Under normal operating conditions, the loads per support will vary between 600 and 1300 tons. During cooling, it is understood that it is normal to consider that the loads can be concentrated on two supports, in which case

the loads will be increased by some 50 per cent.

In the stock and preblending bays the loads per column will be on the order of 100 tons. These bays will contain triangular-section piles of raw materials with maximum loads in the center of the pile which could be on the order of 10 tons per square meter.

Apart from the above structures, there will be other auxiliary structures such as offices, work shops, some warehouses, and small sheds which will impose notably inferior loads on the subsoil.

The general plant layout is presented on Plate 2, General Site Plan. It is understood that the final layout will not vary essentially with respect to that indicated on the General Site Plan. The plant is located in the southern portion of the site where more favorable foundation conditions exist as indicated in the letter report dated February 13. Equally, the fabrication line is to be oriented in the east-west direction where the variation in thickness of the superficial grey layer is reduced.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

The subsurface conditions at the site are adequate, considering the loads to be carried, for support of the plant installations on shallow spread foundations. The more heavy structures and those structures sensitive differential settlements must be supported on the deeper formation, a silty clay with pockets of gravel, brown and yellowish to reddish brown in color. The consolidation tests performed for this study indicate that this formation is very preconsolidated; therefore, the settlements will be reduced and, for the most part, elastic.

Only lighter structures and those less sensitive to differential settlements can be founded on the superficial layer consisting of alternating layers of grey silty sand, clayey silt and silty clay. The consolidation tests performed indicate that this layer has been preconsolidated in an irregular manner. Therefore, its compressibility could vary considerably within the limits of the site.

The detailed conclusions and recommendations for the different pl ant installations are presented in the following paragraphs.

SITE PREPARATION

It is understood that the site grading will be carried out in a manner so as to conform as nearly as possible to the actual ground surface. In this manner the amount of earth movement is reduced considerably, compared to a horizontal grade with the additional advantage of using natural drainage conditions.

For site grading the existing trees must be removed and the topsoil excavated at least in the zone planned for the construction of the plant. It is estimated that the general thickness of the topsoil will vary between 20 and 30 centimeters with a tendency to increase towards the Chelif River. Thicknesses of greater than 40 centimeters, have not been observed. This material must be excluded from any fill materials and wasted.

After excavation of the topsoil the resulting surface should be recompacted using four or five passes of static roller provided the construction operations do not coincide with rainy periods. A proposed specification for the execution of fill was prepared by SERELAND in March, 1974. Therefore we do not believe it necessary to reiterate this subject again in this report, but merely recommend, taking into account the reduced thickness, 30 centimeters, of the fill that the fill be constructed of an essentially granular material. In

this manner a surface will be obtained which would be suitable for the support of all types of machines, including heavy vehicles, with a minimum risk that soft areas will be produced which would be difficult and costly to repair.

KILN FOUNDATION

The kiln, in normal operating conditions will transmit loads varying from a minimum of 600 to a maximum of 1300 tons on different supports. During the cooling process these loads may increase to as much as 1,000 and 2,000 tons respectively.

Settlement analyses have been performed for the case of shallow spread foundations assuming that the supporting materials are essentially clays for foundation depths of four to six meters with respect to the actual ground surface. The settlements have been estimated for both the heavier supports (Support A) and lighter supports (Support B) under two loading conditions, for hypothesis I, the operating load and Hypothesis 2 operating loads plus additional loads of two to three kilograms per square centimeter due to the cooling of the kiln. The calculated settlements have not been rounded off in the usual form required due to the limitations of the science of soil mechanics, in order that the reduction in settlement due to increasing depth of the foundation, i.e., to the reduction of the net unit load, can be clearly appreciated. The results obtained are presented in the following Table I.

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TABLE I

SUPPORT/HYPOTHESIS	LOAD PER SUPPORT (Tn)	NET BEARING PRESSURE (Kg/cm^2)	FOUNDATION DEPTH (m.)	SETTLEMENT (cms.)
Support A/ Hypothesis II	2.000	3,00	4	3,00
Support A/ Hypothesis II	2.000	2,00	4	2,50
Support A/ Hypothesis II	2.000	3,00	6	2,50
Support A/ Hypothesis II	2.000	2,00	6	2,00
Support A/ Hypothesis I	1.300	2,00	4	2,00
Support A/ Hypothesis I	1.300	1,30	4	1,75
Support A/ Hypothesis I	1.300	2,00	6	1,75
Support A/ Hypothesis I	1.300	1,30	6	1,50
Support B/ Hypothesis II	1.000	3,00	4	2,50
Support B/ Hypothesis II	1.000	2,00	4	2,00
Support B/ Hypothesis II	1.000	3,00	6	2,00
Support B/ Hypothesis II	1.000	2,00	6	1,50
Support B/ Hypothesis I	600	1,50	4	1,50
Support B/ Hypothesis I	600	1,00	4	1,25
Support B/ Hypothesis I	600	1,50	6	1,25
Support B/ Hypothesis I	600	1,00	6	1,00

* It is estimated that the actual settlements will be between 70 and 130 per cent of those indicated in this report.

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Since the kiln will have a length of on the order of 100 meters it must be assumed that supports will be located in areas where the supporting materials consist basically of silty clay. In other areas the clayey gravel will predominate. In this case the settlement of the foundations supported on gravel could be less than those indicated in Table I, by on the order of 50 per cent. Even taking into consideration the above mentioned data as well as the irregularities of the thin gravel layers it is estimated that the differential settlement between adjacent supports will be on the order of one centimeter if the foundation depths and loads are properly combined.

During the meeting held in the offices of S.N.M.C. on February 19, Mr. Homami of S.N.M.C. proposed an intermediate foundation system between shallow and deep foundations. Basically, it will consist of transmitting the loads to a mat supporting on a series of rectangular concrete piers, four to five meters in depth below the bottom of the mat. The ditches for installation of the piers could be excavated with a backhoe. From the point of view of settlements, this solution is approximately equivalent to a conventional foundation supported a meter and a half above the bottom of the piers. The core wall foundation would be especially desirable, in the event that it is decided to increase the depths of the foundations in order to reduce the differential settlements. For depths on the order of four to six meters, the conventional

spread foundation is recommended. If the piers are supported at a depth of 10 meters, with respect to final grade, it is estimated that the differential settlement between adjacent supports will not exceed one centimeter. The total settlement will be on the order of one and one half centimeters. As in the case of the spread foundations, the indicated differential settlements for the piers could be reduced with a proper combination of foundation depths and loads for the more heavily loaded supports.

It is not known if the differential settlements indicated will cause irregularities in the operation of the kiln. In reality the equipment suppliers must estimate this effect taking into account the experience and the behavioral characteristics of their installations. It is only possible to indicate that the general experience regarding settlements in preconsolidated clays demonstrates that the actual settlements in practice usually are less than those estimated based on the consolidation tests. In addition the settlements occur very rapidly during the application of the loads. In addition, in some studies Dames & Moore has performed, kilns have been designed for differential settlements between adjacent columns of up to two centimeters.

If after analysing in detail the differential settlements acceptable for adequate operation of the kiln

it is concluded that the indicated settlements are excessive, or that the difficulties in making the excavations for the indicated depths are not acceptable, the kiln may be supported on pile foundations. In principle it is believed that the most adequate type of piling for this project would be excavated cast-in-place concrete piles.

The supporting capacities of the cast-in-place pile may be calculated assuming a frictional resistance (side friction) between the pile and the surrounding soil of 10 tons per square meter. Taking into account the existing experience regarding the behavior of piles in pre-consolidated clay formations, it is recommended that the point resistance be ignored in the pile design, since this resistance is not developped until several centimeters of settlement have occurred. With these assumptions a safety factor of 1.75 can be adopted in order to calculate th allowable load of the pile. It is recommended that no point increase in friction or resistance be considered for useful lengths (total length below the lower level of the pile cap) greater than a length equal to 15 to 20 times the pile diameter.

Using the previous data the useable length and load capacity for piles of 0.6, 0.8, and 1.0 meters in diameter have been calculated. The results obtained are presented in Table II:

TABLE II

DIAMETER (M)	USEABLE LENGTH (M)	ALLOWABLE LOAD (TN)
0,60	12	100
0,80	14	175
1,00	16	275

The pile loads presented may be increased by 30 per cent for the most unfavorable hypothesis of loading conditions including wind and seismic forces. The minimum separation between piles should not be less than three diameters.

With the previous conditions and provided that the pile installations will be properly inspected, it is estimated that maximum settlements per support will not exceed one centimeter and that the maximum differential settlements between adjacent supports will be on the order of one-half centimeter.

SILOS AND PREHEATER FOUNDATIONS

From the point of view stability allowable net bearing capacities of 4.5 kilograms per square centimeter may be adopted for the foundations bearing on the brown, yellowish-brown and reddish brown silty clay layer. However, in order to reduce settlements it is recommended that the net bearing capacity not exceed 3.0 kilograms per

square centimeter for the normal working loads. For the most unfavorable hypothesis of load calculations, including wind and seismic effects, the subsurface materials may support a net load up to 4.5 kilograms per square centimeter.

The foundations must be founded at a minimum depth of three meters with respect to final grade. In all cases the mats must penetrate the brown formations a minimum depth of one meter which will necessitate lowering the foundations in the northern portion of the site. In these conditions, it is estimated that the settlements of the pre-heater and blending silos will not exceed four centimeters. In the feeding and cement silos which will be placed in groups of eight or ten silos, the settlements could be as high as seven centimeters. It is believed that the difference in settlements between points diametrically opposite will not exceed some two centimeters.

Although no stability problems are anticipated for the various foundations capacities recommended, it would be convenient to fill the silos in three equal increments. Each of these should be maintained until the settlement has stabilized before placing an additional increment. It is estimated that settlements will occur very rapidly, practically upon application of the loads.

MILL FOUNDATIONS

The raw mill as well as as the cement mill supports can be founded upon independent foundations or upon mats. In the first case the loads per support and foundation, can be as much as 500 tons while ; the net pressure of the mat foundation will not exceed 1.6 kilograms per square centimeter.

If it is decided to support the mill upon independent foundations, it is recommended that a minimum depth of foundation of three meters be used with respect to the final grade, taking into account in all cases that the foundations must penetrate the brown clay formation by least one meter. A net allowable bearing capacity of 2.5 kilograms per square centimeter may be used. In these conditions, it is estimated that the maximum settlement will not exceed two centimeters.

If the loads vary notably from one column to another, it is recommended that these structures be supported upon mats in order to avoid differential settlements between columns that could reach values similar to the total settlement. By using a mat the settlement will be uniform and will not exceed two centimeters assuming the mat is constructed sufficiently rigid.

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OTHER STRUCTURES

Other structures will exist, in addition to the heavy structures that will be constructed for the plant such as the stock and preblending bays, warehouses, offices, workshops, etc. that will have considerably lighter loads.

The more important of these structures are the stock and preblending bays that will transmit loads of on the order of 100 tons per column. In the interior of these bays raw material will be stored in piles of triangular section with a maximum load in the center of some 10 tons per square meter. It is understood that the distance from the edge of the pile to the building columns will be greater than four meters. It is recommended that the columns be supported on the more competent brown clay formation. The foundations must penetrate this formation for a minimum of one half meter and, in all cases, the depth of the foundation with respect to the plant grade must not be less than 1.5 meters. With these conditions the foundations may be designed for a net bearing capacity of 2.0 kilograms per square centimeter. It is estimated that settlements will not exceed two centimeters. If a distance of four meters or more is maintained between the pile and the columns, the additional settlements on the columns due to the action of the pile load will be negligible.

Those structures which are not very sensitive to settlement and with column loads less than 100 tons can be founded directly on the initial soil layer, which is predominantly grey in color. With a minimum foundation depth of one meter with respect to the finish grade, an allowable bearing pressure of 1.0 kilograms per square centimeter may be adopted for the design. It is estimated that settlements will not exceed five centimeters.

OTHER RECOMMENDATIONS

The excavations required for construction may in some cases extend as deep as six meters. Nevertheless, with the characteristics of the existing sub-soil, it is believed that essentially vertical excavation slopes may be planned. The excavation must be performed in a manner such that the machinery is not working on the bottom of the excavation at least when the soil cover above the foundation level is less than one meter. If the excavations are performed during rainy periods, it is recommended that a layer of lean concrete some 10 to 15 centimeters in thickness be placed on the excavation bottom in order to avoid the formation of soft areas. In addition, it will be convenient during rainy periods to excavate with side slopes of approximately 1:1 instead of vertical, especially for the deeper excavations.

It is understood that some foundations will transmit

horizontal forces. For these foundations, it is recommended that the concrete be poured directly against the sides of the excavation. An adhesion equal to 10 tons per square meter between the concrete and the supporting clay may be assumed in the sliding analysis for mats and spread foundations. A passive pressure coefficient of $K_p=2$, may be used for the calculation of resisting pressure. It is recommended that the pressure in the upper meter of soil be ignored in these analyses.

The design of the foundation mats and slabs may be performed using a modulus of subgrade reaction of between three and four kilograms per cubic centimeter for the brown clay formations. This modulus refers to a plate one foot square placed at the final floor level of the plant.

In order to obtain data useful for the design of the future proposed plant line, it is recommended that the unit settlements be carefully measured during construction and operation, especially for the heavier structures and those sensitive to differential settlements. The reference points for these settlement observations should be located on the foundations or, in case that this is difficult, on the exterior sides of the building. Care should be taken to install these points when the initial load being transmitted to the subsoil is small in order to obtain the

maximum information possible. As a minimum, it is recommended that settlement readings be taken immediately after placing the reference point, after completion of construction of the structures and when the service loads are acting. Intermediate readings should be taken at each recommended step load for the silos. All readings must be referred to a fixed point sufficiently distant from the zone of influence of the plant.

CHEMICAL EFFECTS OF SOIL ON CONCRETE

In order to determine the aggresivity of the soils, chemical analyses of the soluble salts were performed on three soil samples taken at 1,50 to 4,00 meters depth in Borings S-3, S-5 and S-9. The results obtained are presented in the Appendix. The sulphate content in one of the samples is appreciable and could affect the concrete based on criteria of the "Concrete Manual Bureau of Reclamation, United States, Department of Interior". Nevertheless, considering that the possibility of water ciruclation adjacent to the foundations is practically non-existent, it is believed that normal cement may be utilized.

* * * * * *

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The following plates are attached and with the Appendix complete this report:

Plate 1 - Location Map

Plate 2 - General Site Plan

Respectfully submitted,

DAMES & MOORE IBERIA, S.A.

Pascual Fariña

Evaristo del Monte

André Aboussouan

PF/EdM/AA/mcv

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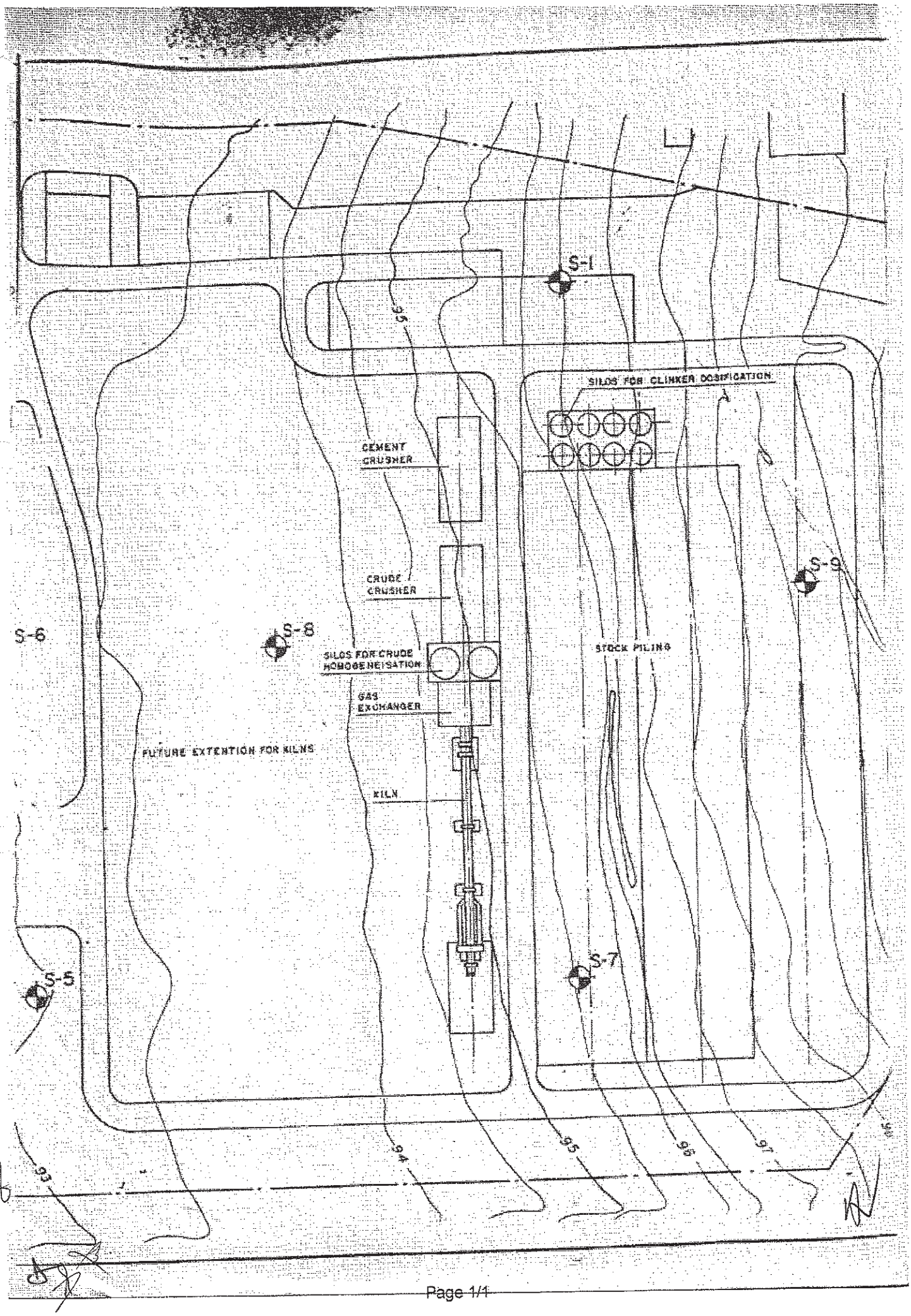
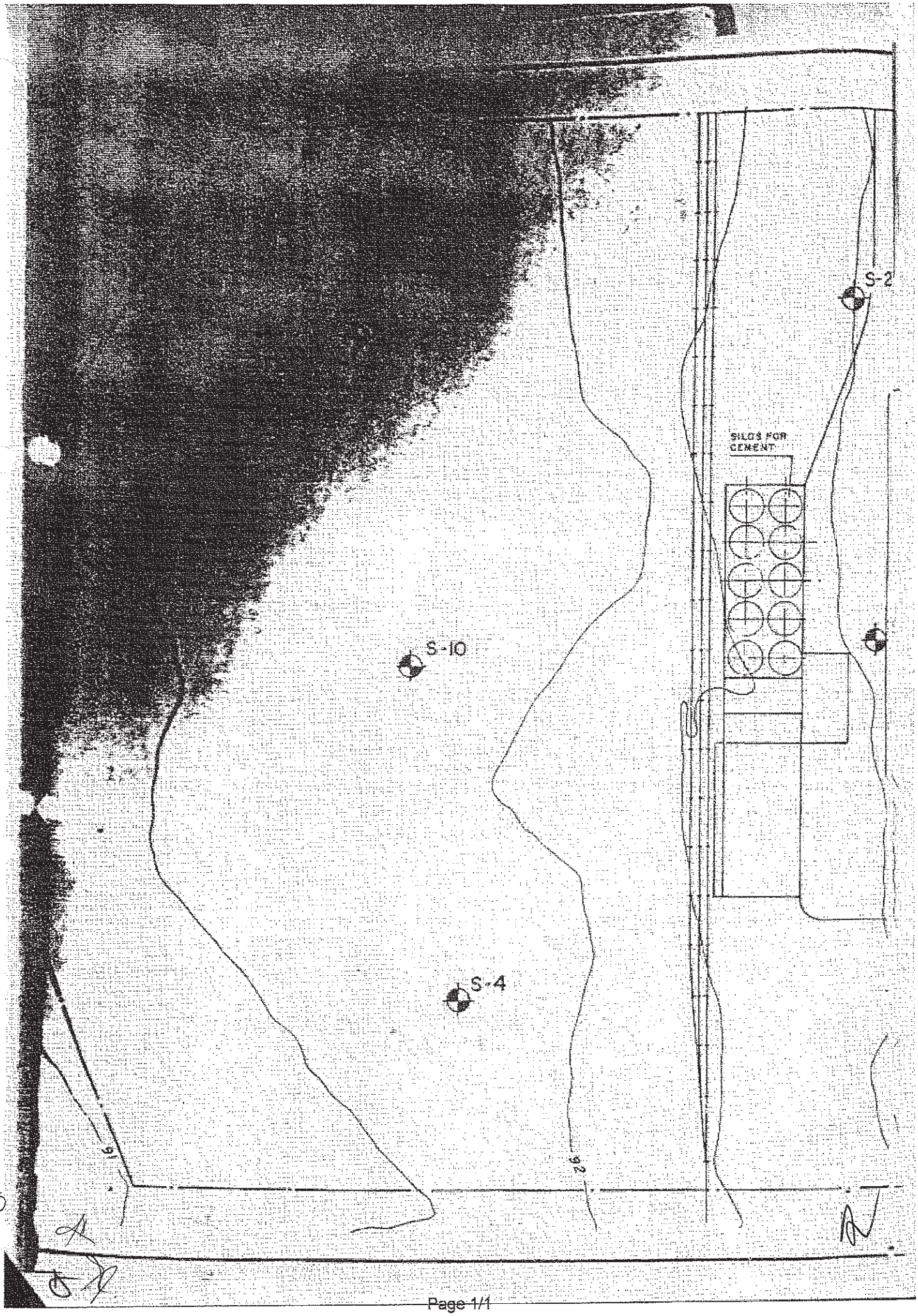
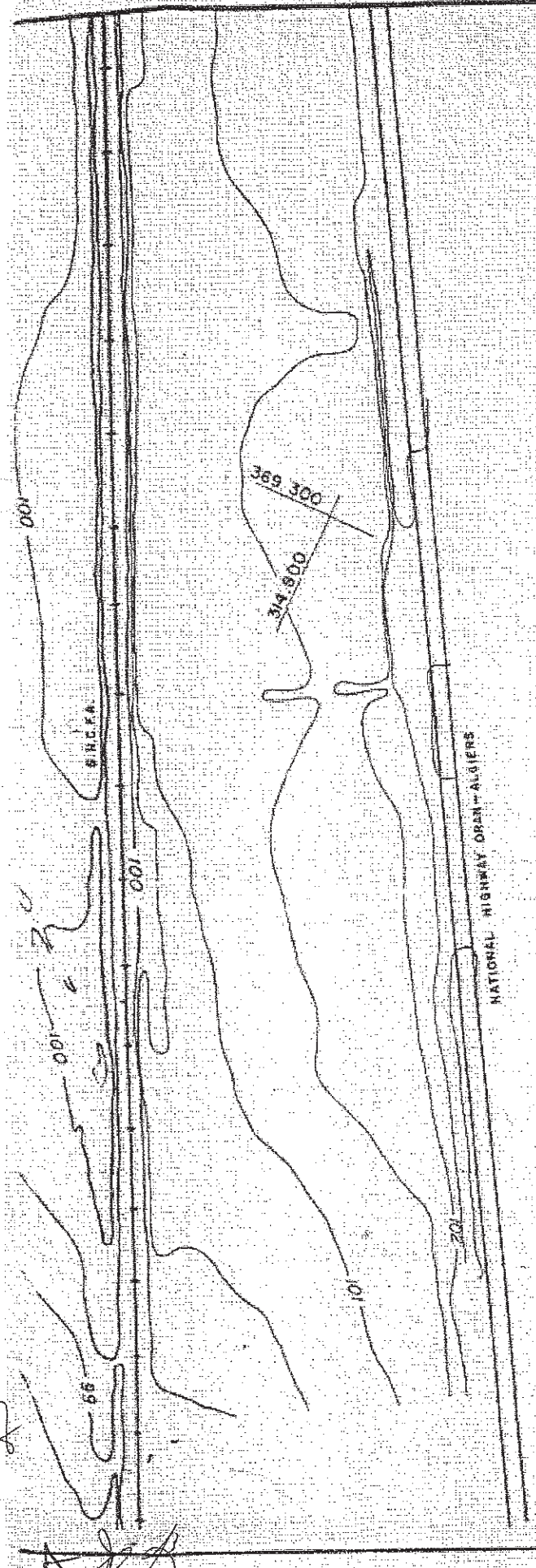
DAMES & MOORE IBERIA, S.A.

PLATE I


S-1
SILOS FOR CLINKER DOSIFICATION
CEMENT CRUSHER
CRUDE CRUSHER
S-6
S-8
SILOS FOR CRUDE HOMOGENEISATION
GAS EXCHANGER
FUTURE EXTENTION FOR KILNS
KILN
STOCK PILING
S-9
S-7
S-5
93
94
95
96
97
98


S-2
SILOS FOR CEMENT
S-10
S-4
16
26
N



KEY

S-1 BORINGS DRILLED UNDER DAMES & MOORE SUPERVISION

PRESENT INSTALLATIONS

NOTE

GENERAL LAYOUT OF STRUCTURES IS ORIENTATIVE ONLY

REFERENCES

1- SERELAND S.A.- PLAN N°N.603-E02-012-I-III 74 "PLAN TOPOGRAPHIQUE ENSEMBLE TERRAIN DE L'USINE SNMC"

2- SERELAND S.A.- PLAN N°N.603 003 001 II III 74 "PLAN DE MASSE, AVANT PROJET, SOLUTION-I"

GENERAL SITE PLAN

SCALE 1:2.000

DAMES & MOORE IBERIA, S.A.

APPENDIX
FIELD EXPLORATIONS AND LABORATORY TESTS

FIELD EXPLORATIONS

The field explorations consisted of 10 mechanical borings drilled to depths varying between 15,40 and 30,40 meters. The drilling was performed by the wire-line rotary system that permitted the extraction of the continuous undisturbed samples, particularly in cohesive soils. The drilling was performed by COMEX EQUIPEMENT, The locations of the borings are indicated on Plate 2, General Site Plan.

The field work was performed under the close supervision of Mr. Aboussouan, an engineering geologist of Dames & Moore Iberia, S.A. who described and classified the soils encountered and directed the extraction of undisturbed samples. Selected undisturbed samples were sent to our office in Madrid where they were reexamined and clasified again by the engineer in charge of the study. This engineer also examined the remaining samples and cores while on site visits during the field explorations. The data obtained from the borings such as the depth of samples, the number of blows for the standard penetration test, description and classification of the soils are presented on Plates A1A through A1J, Log of Boring. The Key to the log of borings is presented

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on Plate A2. A simplified description of the Unified Soil Classification System is presented on Plate A3.

LABORATORY TESTS

Selected samples were subjected to various tests as described in the following paragraphs.

The tests for identification of the soils included Atterberg Limits, natural moisture content and dry density. These tests are very useful for obtaining an indication of the behaviour of the soils as well as for the interpretation of other tests and correlation with test results obtained in different borings.

The results of the identification tests are tabulated on the left part of the Log of Boring adjacent to the sample tests. The extreme right column of the left part of the Log of Boring is a tabulation entitled "Other Tests". The symbols represented in this column are types of tests performed on samples but not tabulated on the actual Log of Boring. The significance of each symbol is described on the Key to Log of Boring, Plate A2.

Consolidation tests were performed on eight undisturbed samples in order to evaluate the compressibility characteristics of the soils. The results are expressed in volumetric change in percent and effective pressures in

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kilograms per square centimeter for the six samples tested in Dames & Moore Iberia, S.A., laboratories and in void ratio and effective pressures for samples tested in the laboratories of SOCOTEC in Algiers. The test results are presented on Plates A4A, A4B and A4C, Consolidation Test Data.

In order to evaluate the strength characteristics of the soils, three rapid, unconsolidated, undrained triaxial tests were performed in the Dames & Moore Iberia laboratory in Madrid. The samples selected for these tests are of similar characteristics or were extracted from different borings. The results obtained by Dames & Moore are presented on Plates A5A and A5B, Triaxial Shear Tests and Shear Tests respectively. In addition three unconsolidated, undrained direct shear tests were performed in the SOCOTEC laboratories in Algiers. Two unconfined compression tests were also performed by this same laboratory. The results obtained are presented on Plate A5B, Shear Tests.

Finally, the soluble salts content has been determined for three soil samples. The results are presented in the following table:

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TABLE

CHEMICAL ANALYSIS (SOIL SAMPLES)

	BORING S-3 SAMPLE 2 DEPTH 4.07 M.	BORING S-5 SAMPLE 1 DEPTH 1.50 M.	BORING S-9 SAMPLE 3 DEPTH 4.00 M.
pH	7.5	7.5	7.5-8.0
Sulphates ($SO_4^=$)	108*mg/l	No content	No content
Chlorides (Cl^-)	Traces	Traces	Traces
Disolved Solids	Traces	Traces	Traces

The following plates are attached and complete this Appendix:

Plate A1A - Log of Boring - Boring S-1
Plate A1B - Log of Boring - Boring S-2
Plate A1C - Log of Boring - Boring S-3
Plate A1D - Log of Boring - Boring S-4
Plate A1E - Log of Boring - Boring S-5
Plate A1F - Log of Boring - Boring S-6
Plate A1G - Log of Boring - Boring S-7
Plate A1H - Log of Boring - Boring S-8
Plate A1I - Log of Boring - Boring S-9
Plate A1J - Log of Boring - Boring S-10

* Expressed in percent of the dry weight of the soil.

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Plate A2 - Key to Log of Boring

Plate A3 - Unified Soil Classification System

Plate A4A - Consolidation Test Data

Plate A4B - Consolidation Test Data

Plate A4C - Consolidation Test Data

Plate A5A - Triaxial Shear Tests

Plate A5B - Shear Tests

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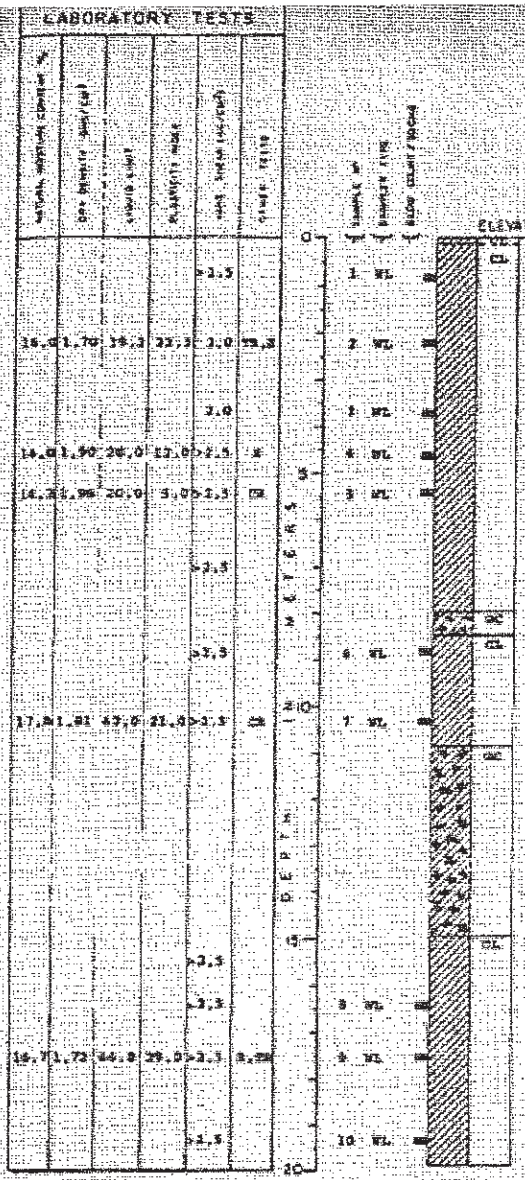
BORING S-1



ELEVATION +96.39 m. DESCRIPTION DATE 20-I-74 / 22-I-74

TOPSOIL

CL SILTY CLAY-LIGHT BROWN, WITH CALCAREOUS NODULES (HARD)

GRADING VERY STIFF

GRADING HARD

LAYER OF SILTY SAND (80 CMS.)

GC CLAYEY GRAVEL-REDDISH BROWN,WITH SOME SAND (DENSE)

CL SILTY CLAY-REDDISH BROWN,WITH CALCAREOUS NODULES (HARD)

GC CLAYEY GRAVEL-REDDISH BROWN,WITH SOME SAND (DENSE)

LAYER OF MEDIUM-COARSE SAND WATER LEVEL ▼ 26-I-74

CL SILTY CLAY-REDDISH BROWN, WITH SOME COBBLES AND CALCAREOUS NODULES (HARD)

NOTES: 1. DURING INVESTIGATION WATER LEVEL MEASURED IN BORINGS S-1, S-2, S-3, VARIED BETWEEN 14 AND 15 METERS DEPTH. WE ESTIMATE THAT WATER LEVEL IN SURROUNDING BORINGS SHOULD ASTRAY WITHIN A SIMILAR DEPTH RANGE.

2. OCCASIONAL BOULDERS WERE ENCOUNTERED IN ALL BORINGS. THE MAXIMUM SIZE IN THE DIRECTION DRILLED (VERTICAL) DID NOT EXCEED 20 CMS.

LOG OF BORING

DAMES & MOORE IBERIA, S.A.

PLATE Nº

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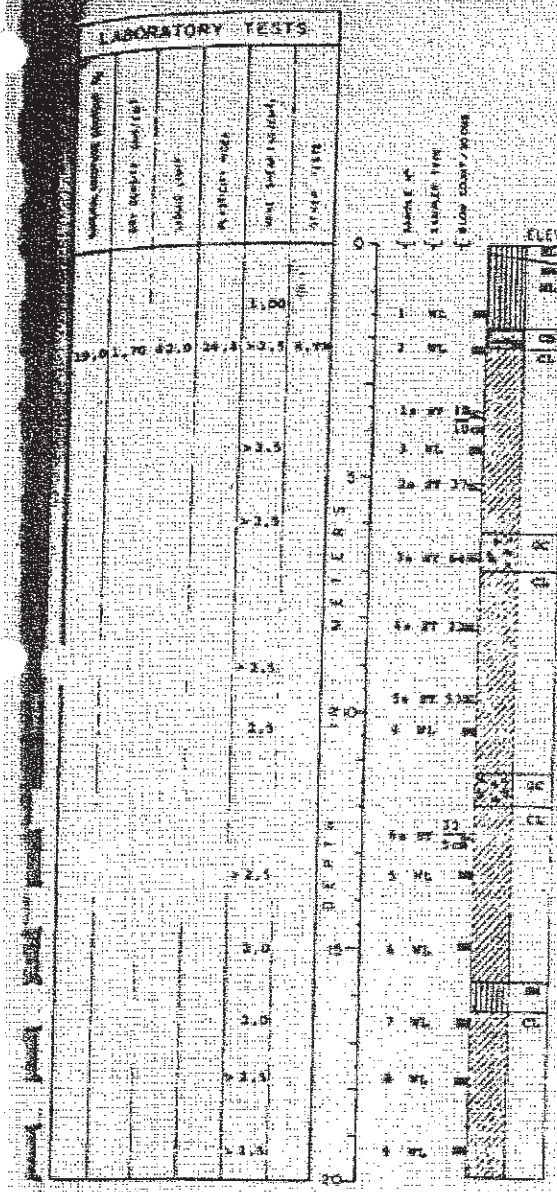
BORING S-2.



LOG OF BORING

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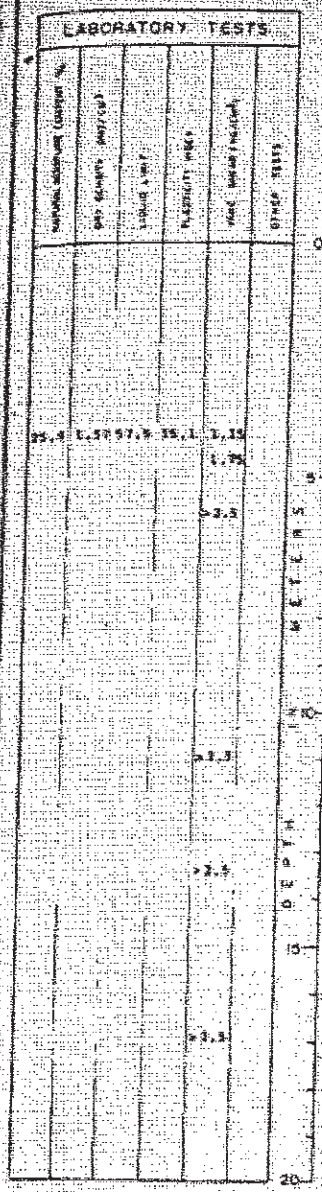
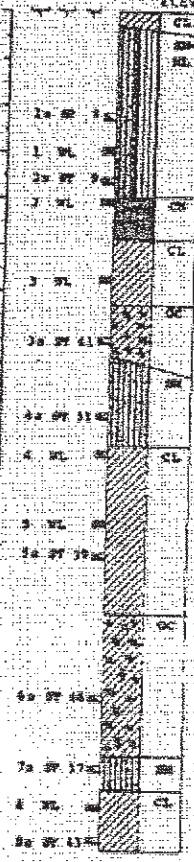
DAMES & MOORE IBERIA, S.A.

PLATE A-18

BORING S-3





ELEVATION 491,55 m. DESCRIPTION

DATE 28-1-74

TOPSOIL

SILTY FINE SAND-GRAY, WITH LENSES OF CLAYEY SILT-GRAY AND SILTY CLAY-GREENISH-BROWN (MEDIUM DENSE AND STIFF)

SILTY CLAY-GREENISH BROWN, WITH SOME SAND (VERY STIFF)

SILTY CLAY-REDDISH BROWN, WITH CALCAREOUS NODULES (HARD)

CLAYEY GRAVEL-REDDISH BROWN, WITH CALCAREOUS NODULES (DENSE)

SILTY SAND-REDDISH BROWN, WITH CEMENTED NODULES AND SOME GRAVEL (DENSE)
GRADING MORE GRAVEL (30 CMS.)

SILTY CLAY-REDDISH BROWN, WITH CALCAREOUS NODULES (HARD)
LAYER OF CLAYEY GRAVEL (30 CMS.)
LAYER OF CLAYEY GRAVEL (50 CMS.)

CLAYEY GRAVEL-REDDISH BROWN, WITH SOME SAND (DENSE)
LENSES OF SILTY CLAY-REDDISH BROWN
SILTY CLAY LENSES GRADING OUT

FINE-MEDIUM SAND-YELLOWISH BROWN, WITH SOME SILT AND SOME GRAVEL (DENSE)

SILTY CLAY-REDDISH BROWN, WITH CALCAREOUS NODULES (HARD)

LOG OF BORING

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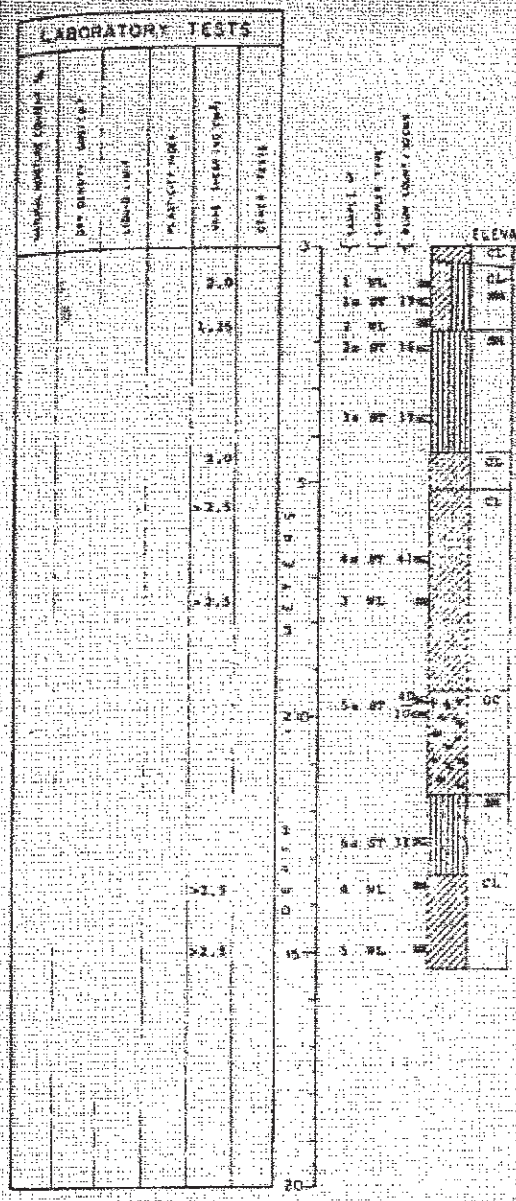
DAMES & MOORE IBERIA, S.A.

PLATE A1C

BORING S-4



LOG OF BORING

DAMES & MOORE IBERIA, S.A.

PLATE A10

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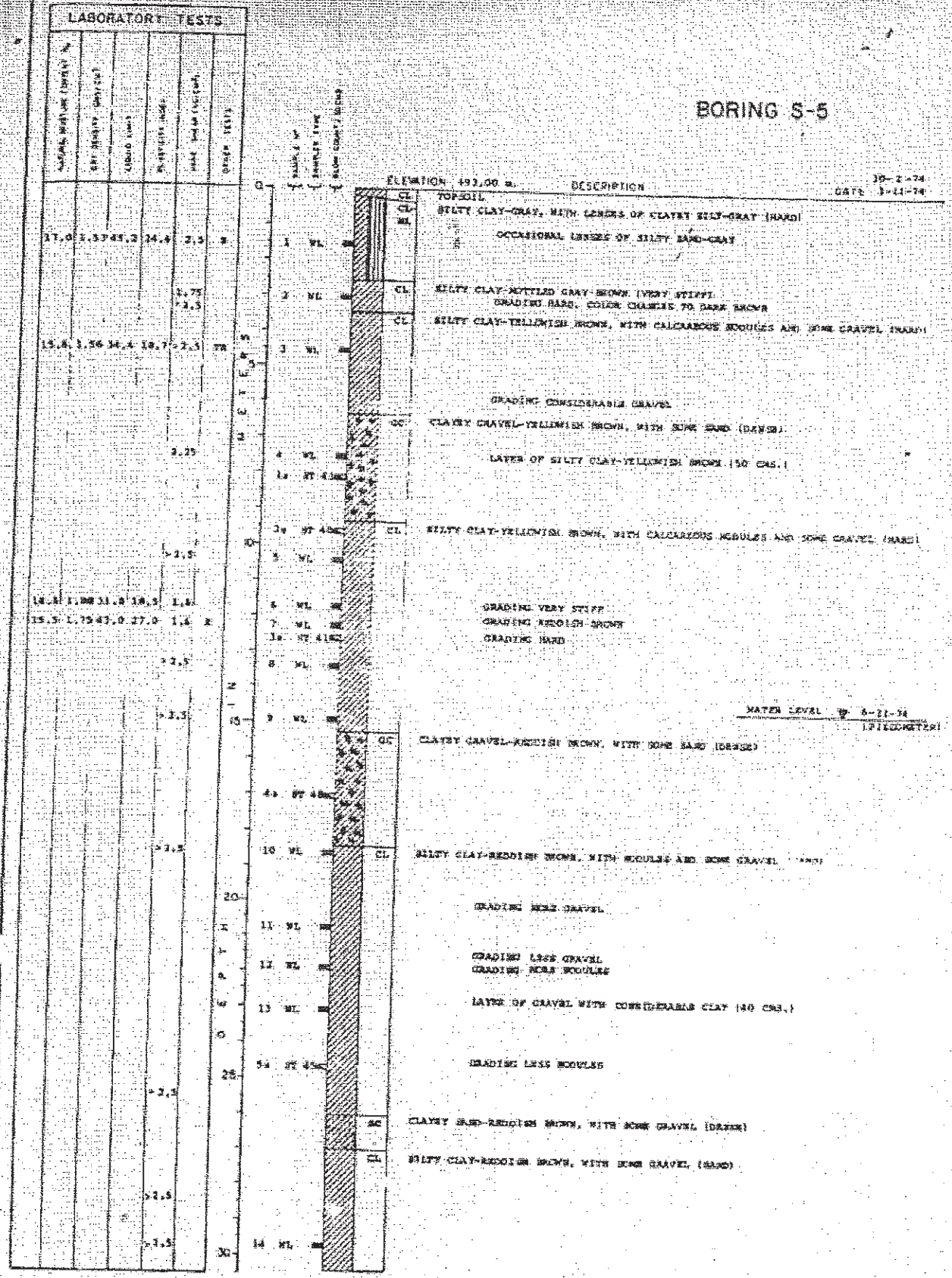
BORING S-5



LOG OF BORING

DAMES & MOORE IBERIA, S.A.

PLATE A16

Nº 35/47

BORING S-6

ELEVATION +51,07 m. — DESCRIPTION — DATE 25-I-74 / 26-I-74

LABORATORY TESTS

Natural moisture content %	Dry density	Liquid limit	Plastic limit	Shear strength	Other tests
22.5	1.58	47.0	23.0	1.25	CS
				1.75	
				>2.5	
				>1.5	
				>2.5	
				1.8	
				>2.5	

Samples: 1 WL; 2 WL; 2a ST 33cm; 3 WL; 3a ST 40cm; 3a ST 31cm; 4a ST 41cm; 4 WL; 5a ST 30cm; 5 WL; 5a ST 28cm; 6 WL; 7a ST 50cm

DEPTH – METERS: 0, 5, 10, 15, 20

Symbol	Description
OL	TOPSOIL
SM / ML	SILTY FINE SAND-GRAY, WITH LENSES OF CLAYEY SILT-DARK BROWN (MEDIUM DENSE AND VERY STIFF)
CH	SILTY CLAY-DARK BROWN, WITH SOME SAND (VERY STIFF)
CL	SILTY CLAY-REDDISH BROWN, WITH CALCAREOUS NODULES AND SOME GRAVEL (HARD)
	GRADING MORE GRAVEL
GC	GRAVEL-YELLOWISH BROWN, WITH SOME SAND AND CLAY (DENSE)
	OCCASIONAL LENSES OF FINE-MEDIUM SAND
CL	SILTY CLAY-REDDISH BROWN, WITH CALCAREOUS NODULES AND SOME GRAVEL (HARD)
	GRADING SOME SAND
	GRADING BROWN
	GRADING MORE SAND
	GRADING REDDISH BROWN
	GRADING MORE GRAVEL

LOG OF BORING

DAMES & MOORE IBERIA, S.A.

PLATE A-F

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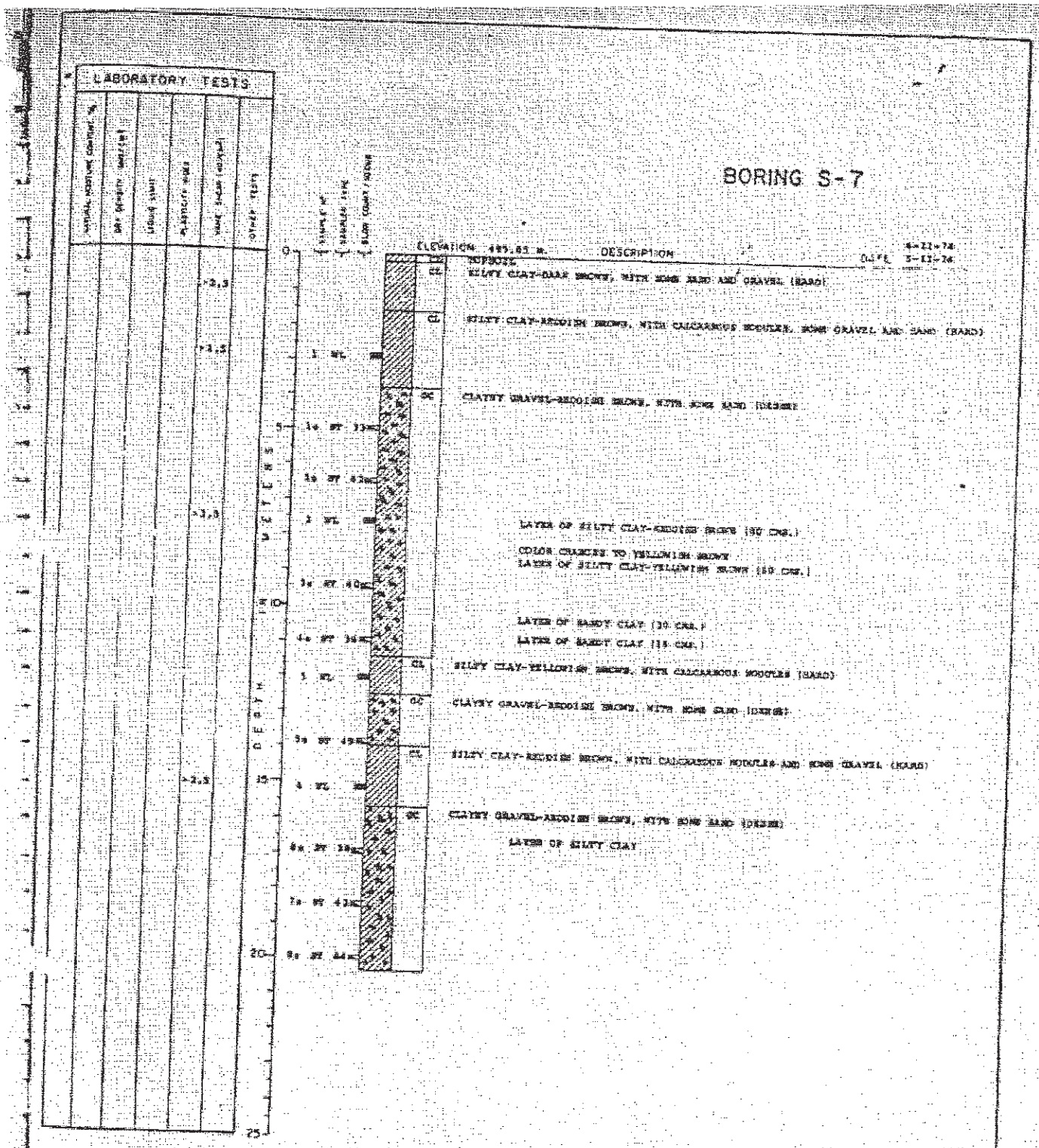
BORING S-7



LOG OF BORING

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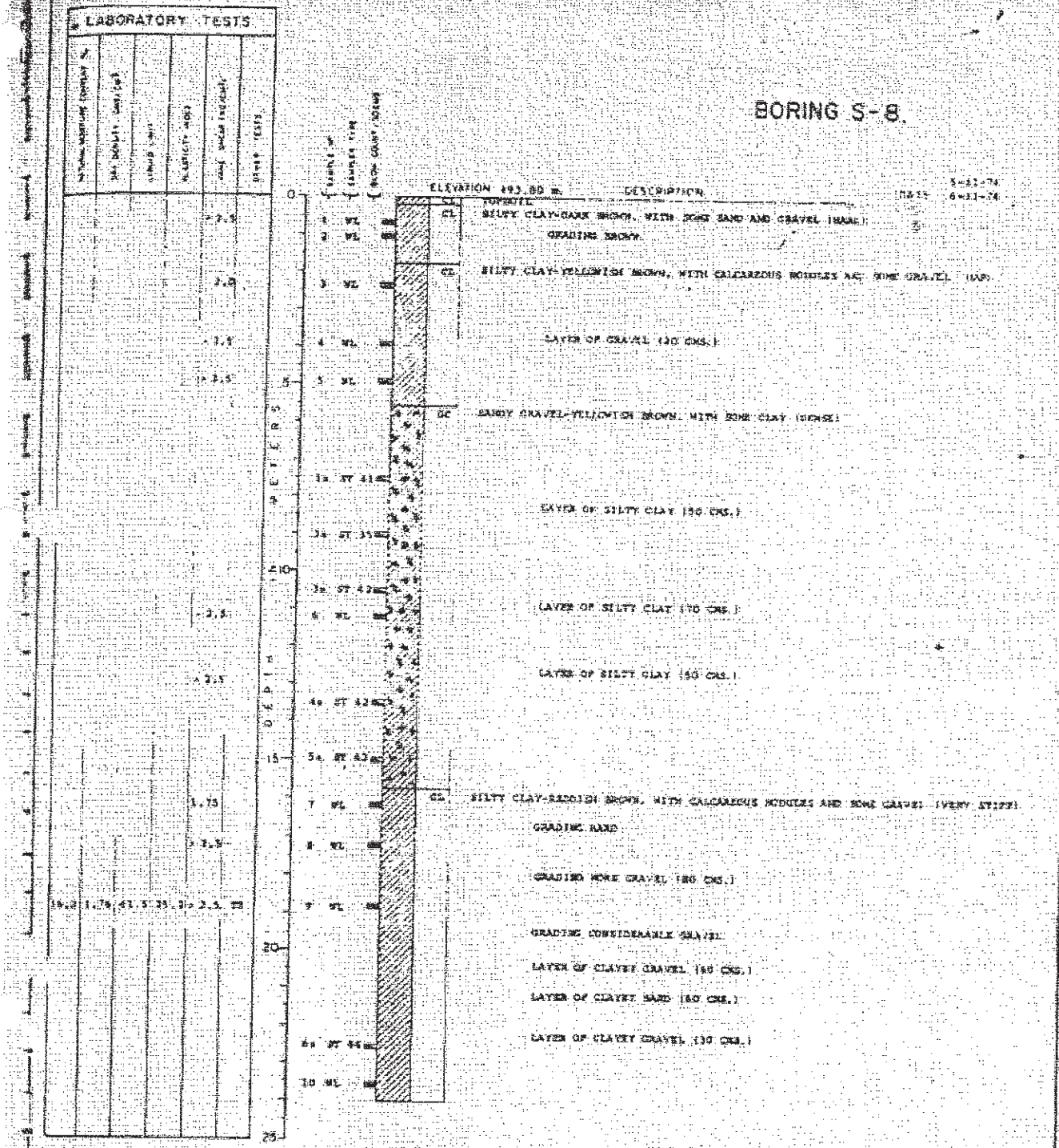
DAMES & MOORE IBERIA, S.A.

BORING S-8



LOG OF BORING

DAMES & MOORE IBERIA, S.A.

PLATE A14

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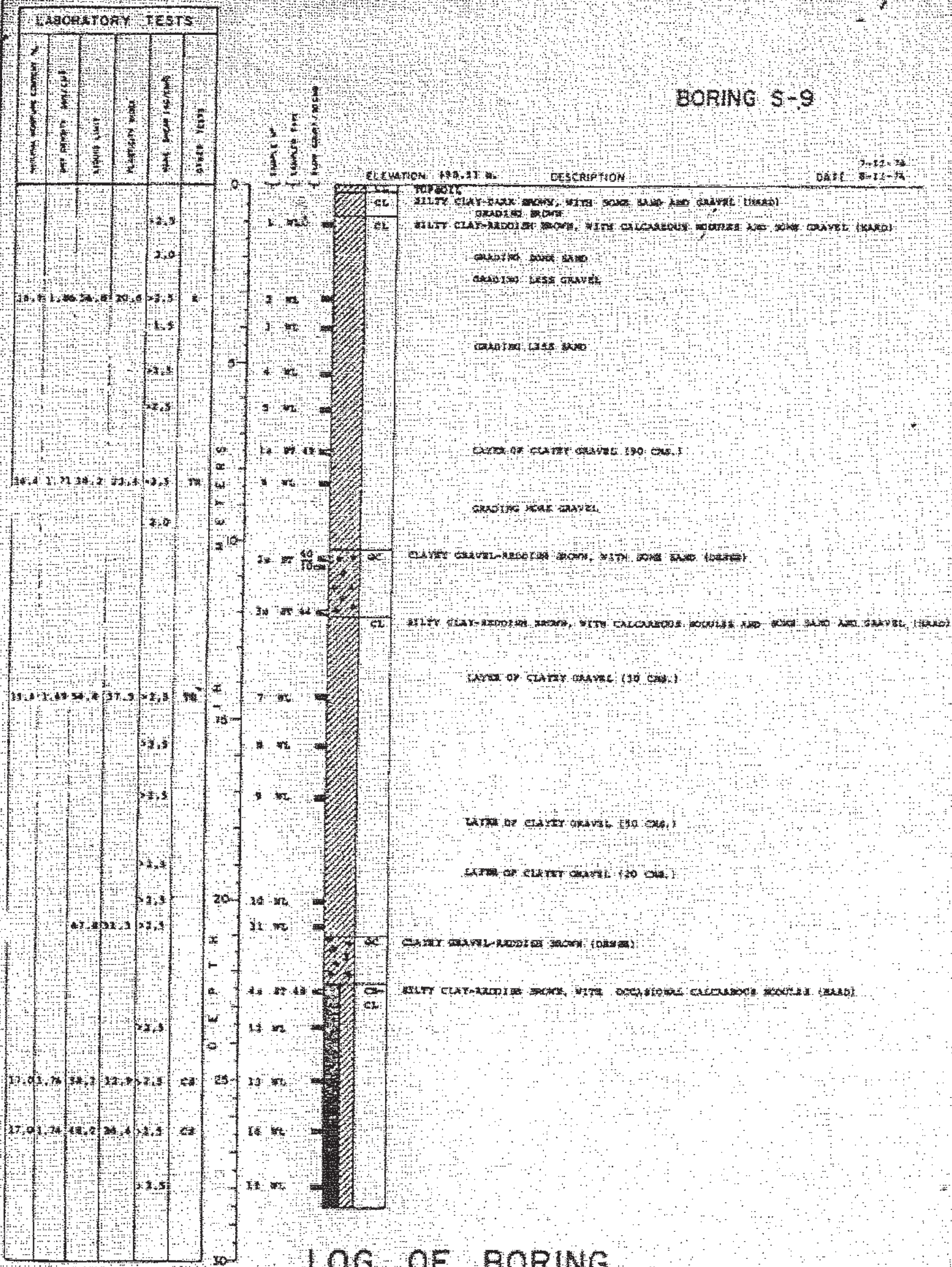
BORING S-9



LOG OF BORING

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DAMES & MOORE IBERIA, S.A.

PLATE A11

BORING S-10

DATE 9-13-74 / 10-11-74

ELEVATION 891.75 m.

LABORATORY TESTS

NATURAL MOISTURE CONTENT %	DRY DENSITY (GM/CM³)	LIQUID LIMIT	PLASTICITY INDEX	UNCONF. COMP. STR. (KG/CM²)	OTHER TESTS	DEPTH (METERS)	SAMPLE Nº / SAMPLER TYPE
						0	
				> 2.1			1 WL
25.7	1.42	31.0	27.0	1.75	M		2 WL
							3 WL
							1a ST
				1.25			4 WL
				3.00		5	5 WL
				2.35			
				> 3.5			6 WL
							2a ST REFUSAL
							3a ST
						10	
				2.50			7 WL
				1.50		15	8 WL
				> 3.5			9 WL
				3.4			10 WL
				3.25			4a ST
						20	

DESCRIPTION

- TOPSOIL
- SILTY CLAY-GRAY, WITH LENSES OF CLAYEY SILT-GRAY (HARD) (CL-ML)
  - WITH LENSES OF SILTY SAND
  - GRADING VERY STIFF
- SILTY FINE SAND-GRAY (MEDIUM DENSE) (SM)
- SILTY CLAY-GREENISH GRAY, WITH SOME SAND (VERY STIFF) (CL)
  - GRADING DARK BROWN
- SILTY CLAY-REDDISH BROWN, WITH SOME SAND AND GRAVEL (HARD) (CL)
  - GRADING YELLOWISH BROWN
  - GRADING MORE SAND
  - LAYER OF SILTY-CLAYEY SAND (40 CMS.)
- SANDY GRAVEL-YELLOWISH BROWN, WITH SOME CLAY (DENSE) (GC)
  - LAYER OF CLAYEY SAND (30 CMS.)
- SILTY CLAY-REDDISH BROWN, WITH CONSIDERABLE SAND (HARD) (CL)
  - LAYER OF CLAYEY SAND (20 CMS.)
  - LAYER OF GRAVEL (20 CMS.)
  - GRADING LESS SAND
  - LAYER OF CLAYEY GRAVEL (30 CMS.)
  - GRADING VERY STIFF
  - LAYER OF CLAYEY GRAVEL (30 CMS.)
  - GRADING SAND
  - LAYER OF CLAYEY GRAVEL (30 CMS.)

LOG OF BORING

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DAMES & MOORE IBERIA, S.A.

PLATE A2

INDICATES DEPTH OF UNDISTURBED SAMPLES

INDICATES DEPTH OF DISTURBED SAMPLE

INDICATES DEPTH OF STANDARD PENETRATION TESTS (ST)

DIAMETERS OF SAMPLERS

SAMPLER TYPE	WL	ST
OUTSIDE DIAMETER IN MILLIMETERS	95,3	50,8
INSIDE DIAMETER IN MILLIMETERS	85,0	

UNDISTURBED SAMPLES "WL" HAVE BEEN RECOVERED USING WIRE LINE METHOD OF CONTINUOUS SAMPLING, IN PARTICULAR IN COHESIVE SOILS.

STANDARD PENETRATION TEST WAS CONDUCTED WITH A DRIVING WEIGHT OF 65 KG. AND HEIGHT OF FALL OF 0,75 M.

SYMBOLS USED IN COLUMN "OTHER TESTS" INDICATE FOLLOWING TESTS:

E - CONSOLIDATION TEST

TR - UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

CR - UNCONSOLIDATED-UNDRAINED DIRECT SHEAR TEST

CS - UNCONFINED COMPRESSION TEST

A - CHEMICAL ANALYSIS OF DISSOLVED SALTS PERFORMED ON SOIL SAMPLES

KEY TO LOG OF BORING

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DAMES & MOORE IBERIA, S.A.

PLATE A2

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

SOIL CLASSIFICATION CHART

UNIFIED SOIL CLASSIFICATION SYSTEM

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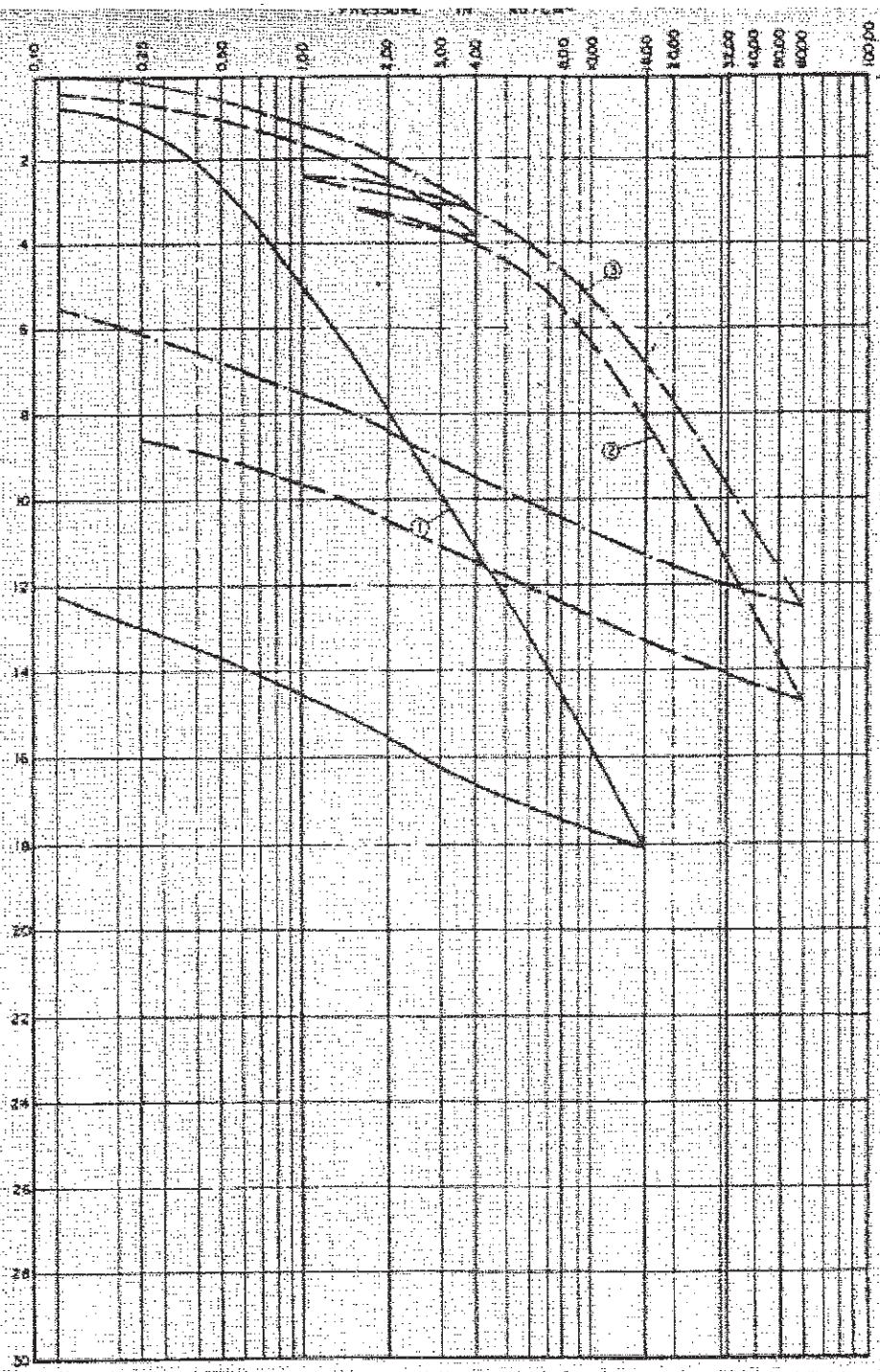
DAMES & MOORE IBERIA, S.A.

PLATE A-3

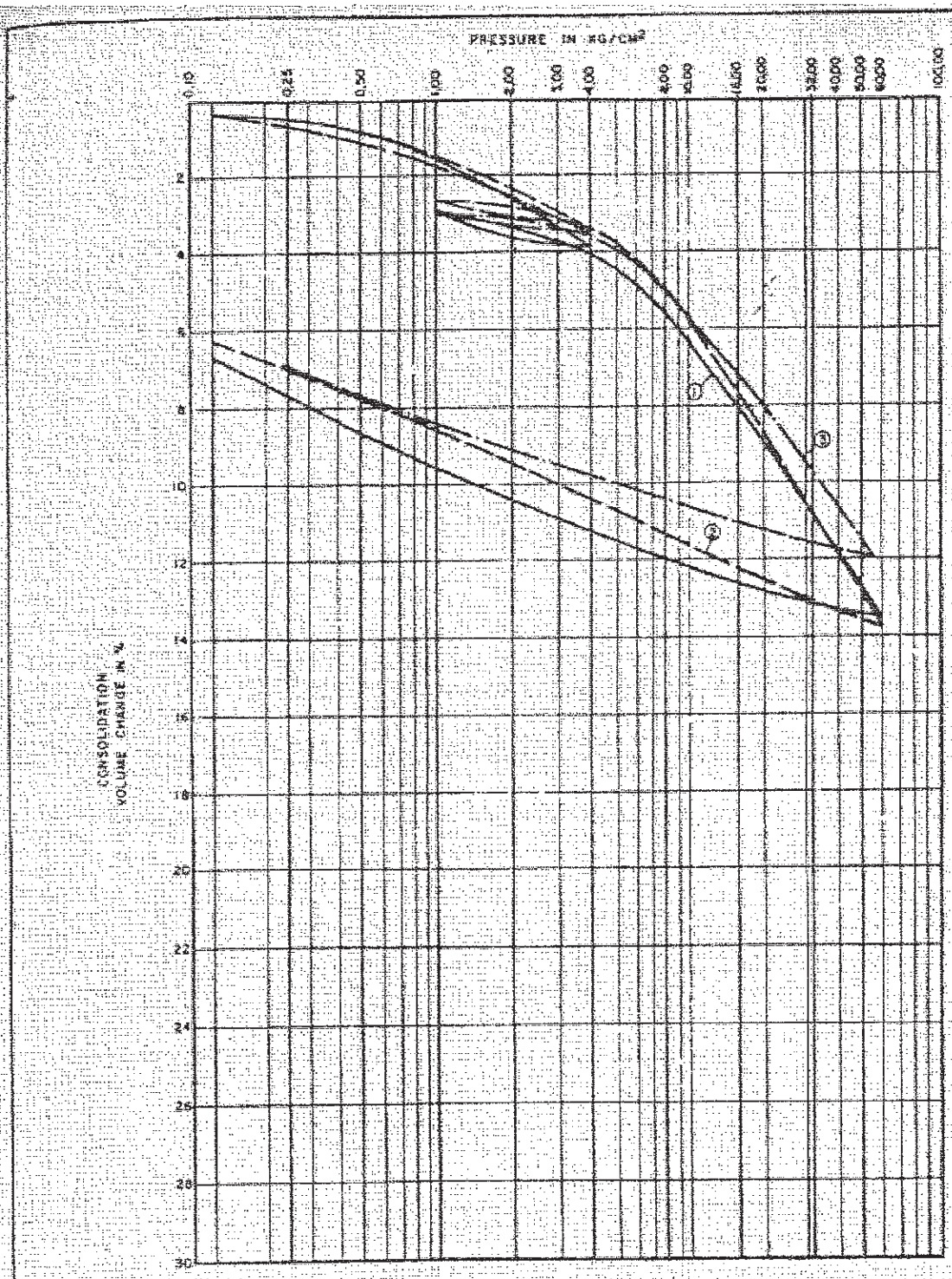


BORING Nº	SAMPLE Nº	DEPTH IN METERS	CURVE Nº	SOIL DESCRIPTION	NATURAL MOISTURE CONTENT IN % OF DRY WEIGHT	DRY DENSITY IN T/M³
S-3	1	1,50	①	SILTY CLAY - GRAY, WITH SOME SAND (HARD)	17	1,58
S-2	2	2,10	②	SILTY CLAY - REDDISH BROWN, WITH CALCAREOUS NODULES (HARD)	19	1,70
S-1	2	2,20	③	SILTY CLAY - REDDISH BROWN, WITH CALCAREOUS NODULES (VERY STIFF TO HARD)	18	1,70

CONSOLIDATION TEST DATA

DAMES & MOORE IBERIA, S.A.

PLATE



BORING Nº	SAMPLE Nº	DEPTH IN METERS	CURVE	SOIL DESCRIPTION	NATURAL MOISTURE CONTENT IN % OF DRY WEIGHT	DRY DENSITY IN Tn/m³
S-3	2	3,15	①	SILTY CLAY - REDDISH BROWN, WITH CALCAREOUS NODULES, SOME SAND AND GRAVEL (HARD)	17,0	1,86
S-5	7	12,25	②	SILTY CLAY - REDDISH BROWN, WITH CALCAREOUS NODULES AND SOME GRAVEL (VERY STIFF)	15,9	1,75
S-1	9	17,50	③	SILTY CLAY - REDDISH BROWN, WITH SOME ROUNDED GRAVEL AND CALCAREOUS NODULES (HARD)	16,7	1,72

CONSOLIDATION TEST DATA

DAMES & MOORE IBERIA, S.A.

PLATE A4/8

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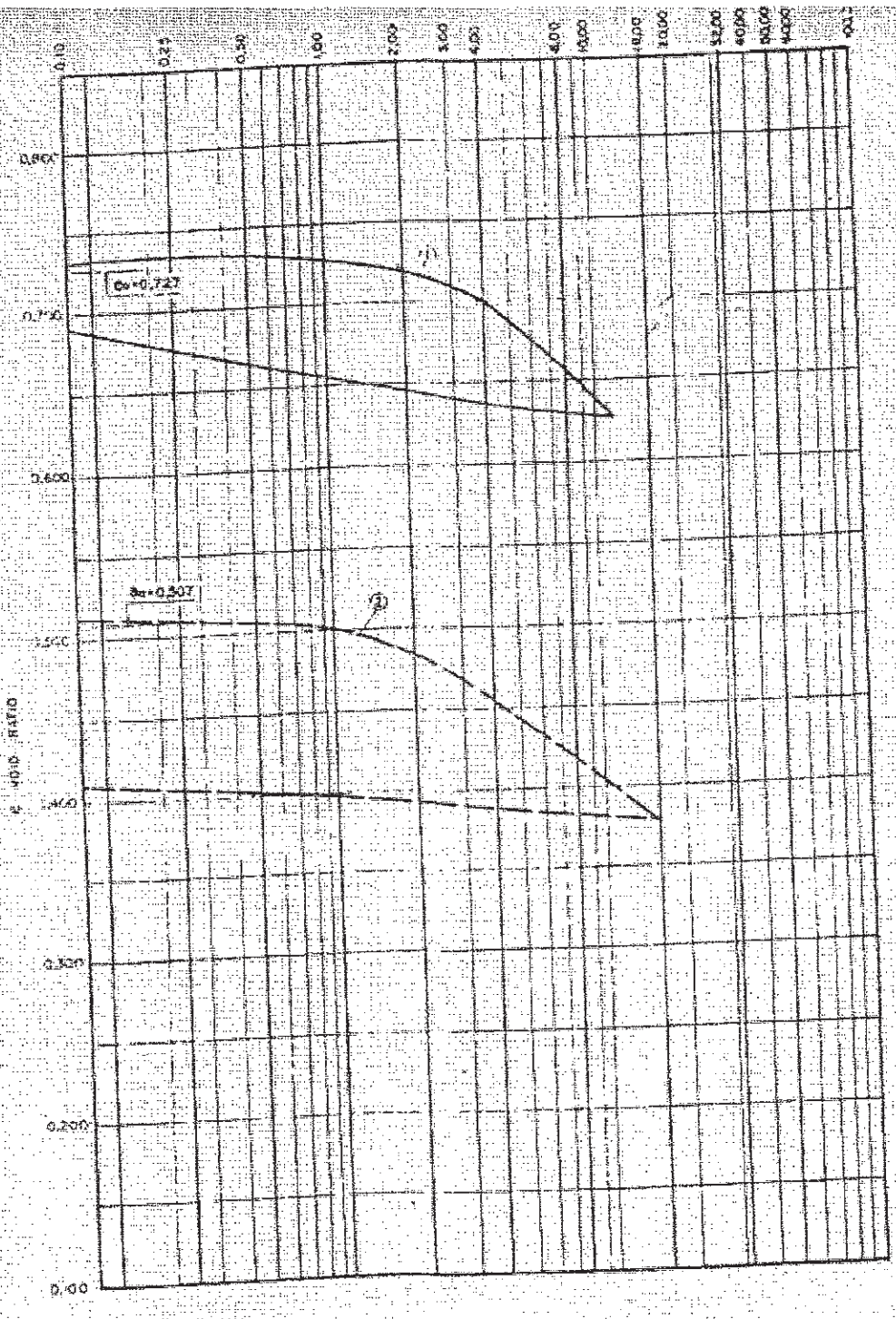


1.0		1.85	1	SILTY CLAY-GREY, WITH SOME SAND (VERY STIFF)	25,1 / 1.46
3.1	4	4.30	2	SILTY CLAY-REDDISH BROWN, WITH CALCAREOUS NODULES (HARD)	18,0 / 1.90

CONSOLIDATION TEST DATA

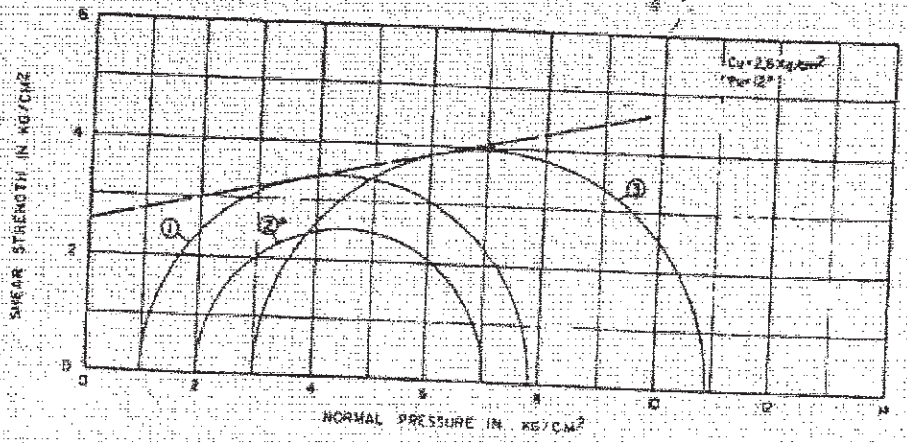
Nº 45147

DAMES & MOORE IBERIA, S

PLATE 34

PLATE A34

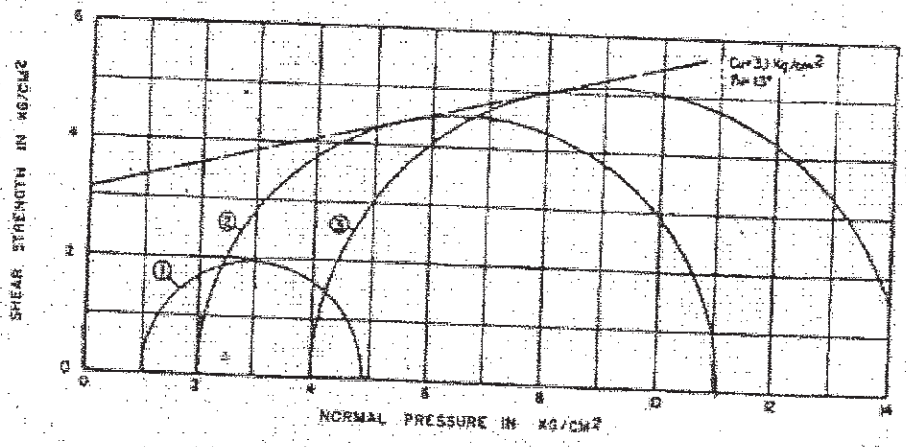
BORING Nº	SAMPLE Nº	DEPTH IN METERS	SAMPLE TESTED	TYPE OF TEST * *
S-1	2	2,20	①	TR
S-2	3	2,10	②*	TR
S-3	3	4,30	③	TR



NOTES:

* THE SAMPLE TESTED SHOWED INDICATIONS OF VERTICAL GROOVES PRODUCED BY GRAVEL WHILE EXTRACTING THE SAMPLE
* * FOR DESCRIPTION OF TEST PERFORMED SEE PLATE A2. KEY TO LOG OF BORING

BORING Nº	SAMPLE Nº	DEPTH IN METERS	SAMPLE TESTED	TYPE OF TEST * *
S-9	6	9,40	①	TR
S-9	7	14,40	②	TR
S-9	7	14,40	③	TR



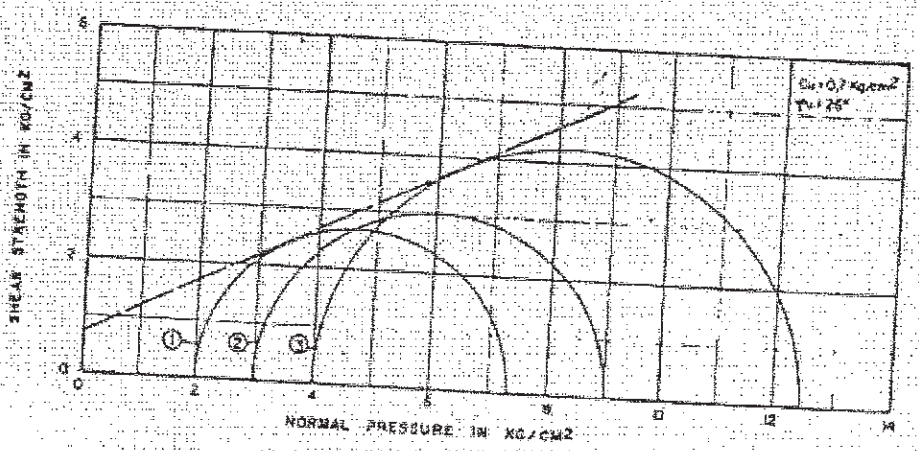
TRIAXIAL SHEAR TESTS

Nº 46/47

DAMES & MOORE IBERIA, S.A.

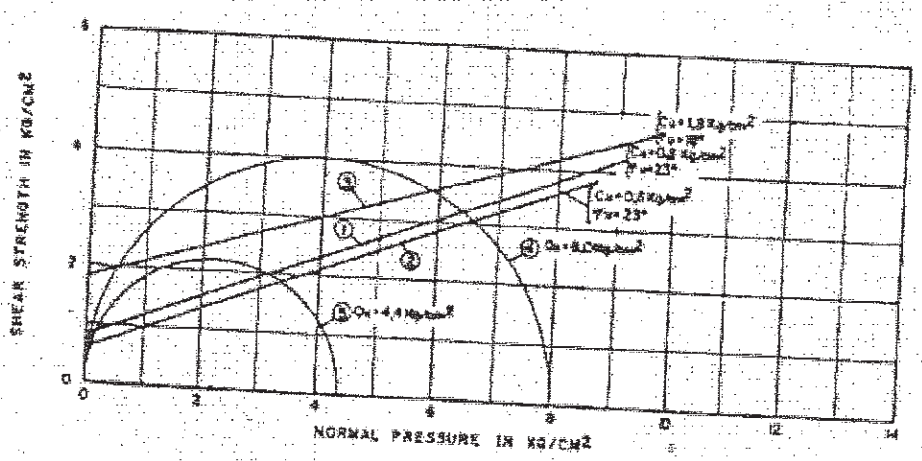
PLATE A3a

BORING Nº	SAMPLE Nº	DEPTH IN METERS	SAMPLE TESTED	TYPE OF TEST **
S-1	3	1,75	①	TR
S-2	3	11,75	②	TR
S-1	5	17,50	③	TR



** FOR DESCRIPTION OF TEST PERFORMED SEE PLATE A2, KEY TO LOG OF BORING

BORING Nº	SAMPLE Nº	DEPTH IN METERS	SAMPLE TESTED	TYPE OF TEST **
S-6	1	1,20	①	CU
S-1	3	5,40	②	CU
S-1	7	10,30	③	CU
S-3	13	25,00	④	CU
S-3	14	26,35	⑤	CU



SHEAR TESTS

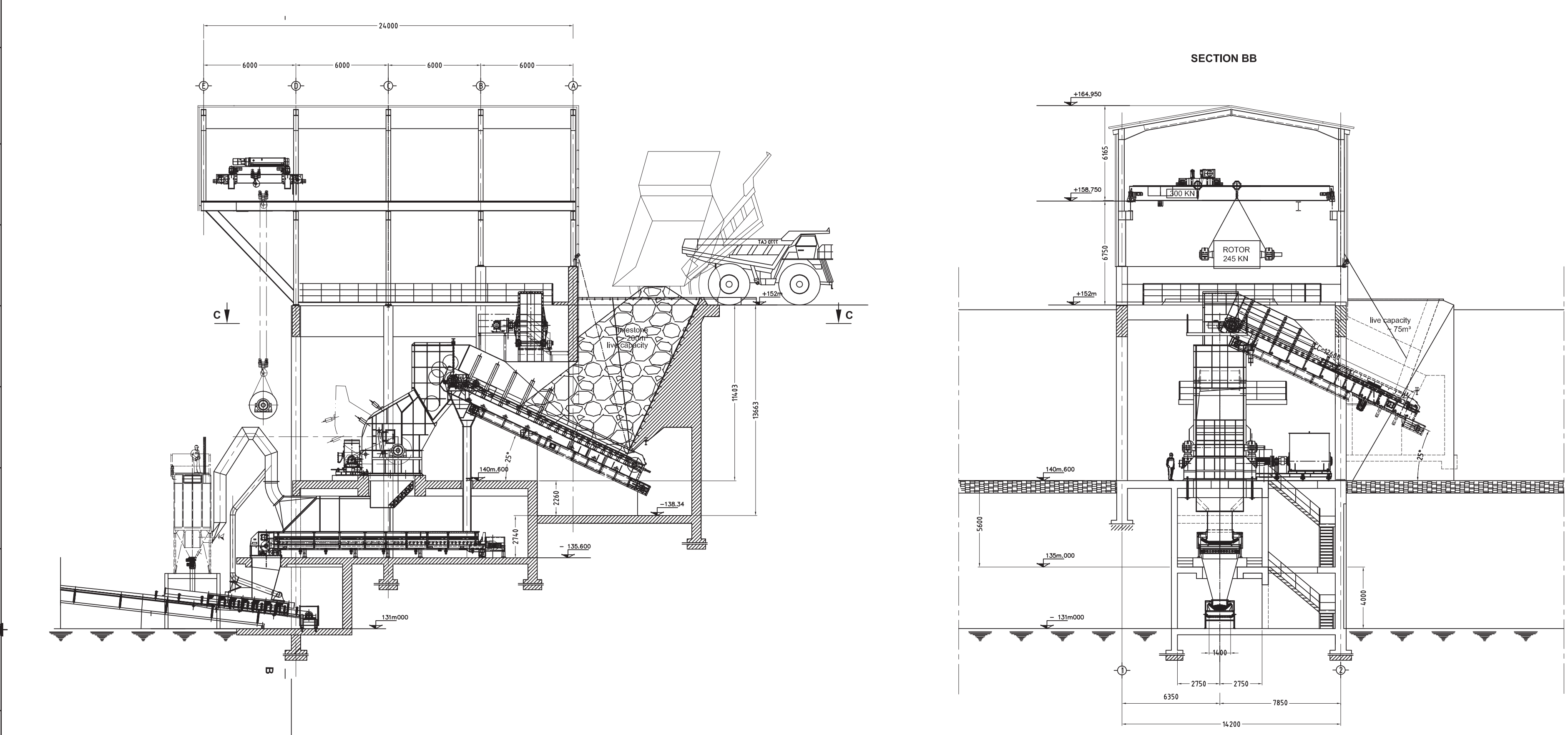
E47/47

DAMES & MOORE IBERIA, S.A.

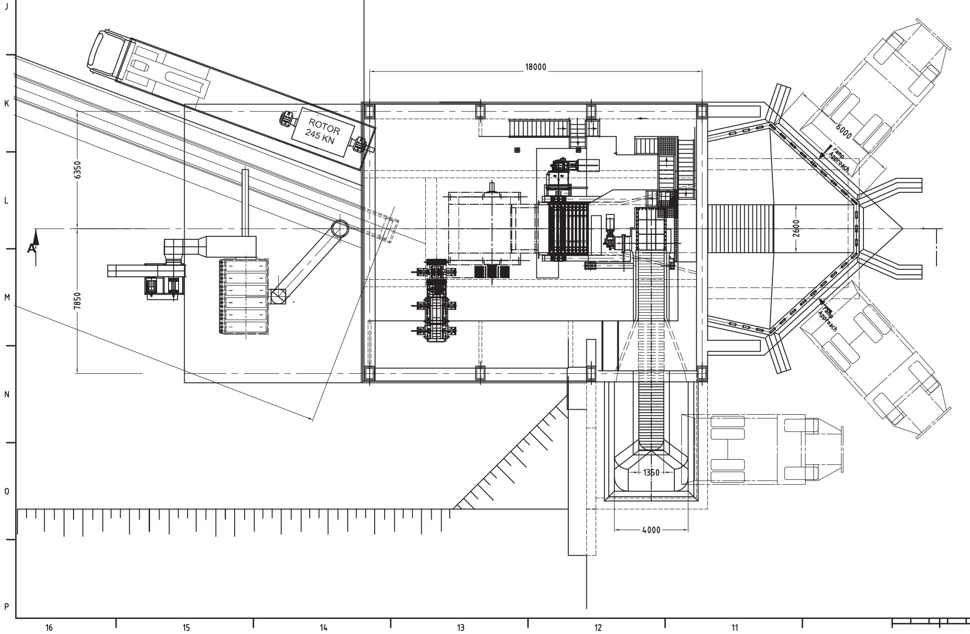
PLATE A58

Annex D3 –

Plans d'avant projet



SECTION CC



ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
E						
D						
C						
B						
A		29/05/09	YP	KR	DLe	FIRST ISSUE

LAYOUT MARK — BUILDING: CONCASSAGE CALCAIRE ET ARGILE

GROUP / ITEM — EQUIPMENT:

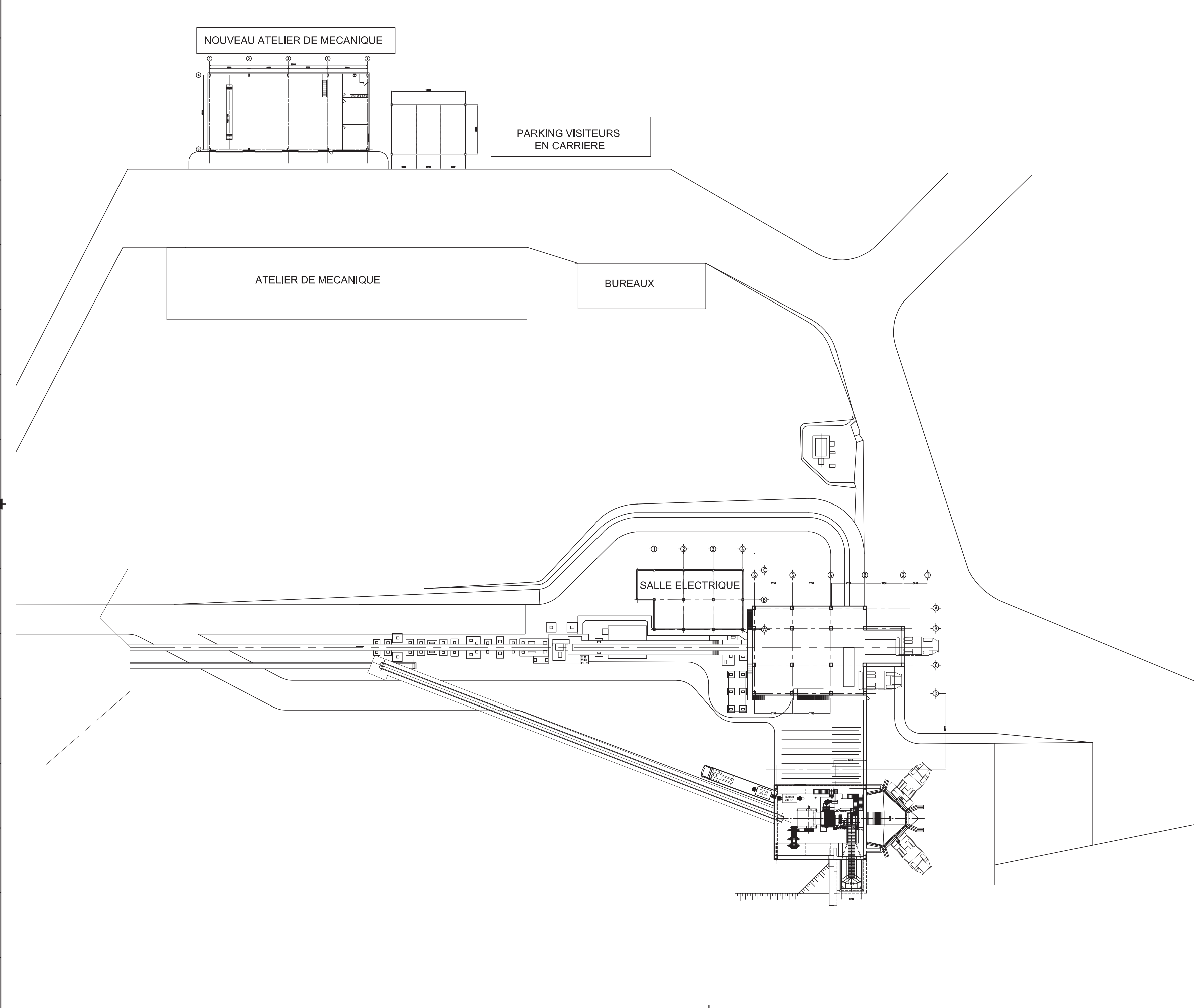
SCALE: 1/100 — DRAWING TITLE: DISPOSITION GENERALE

fives fcb

MATERIEL: MASS: FORMAT: A1

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG10100001 — IND: A



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	N|BER OF	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
E						
D						
C						
B						
A		29/05/09	VP	KR	DLa	FIRST ISSUE

LAYOUT MARK — BUILDING: IMPLANTATION AVEC ATELIER EXISTANT

GROUP / ITEM — EQUIPMENT:

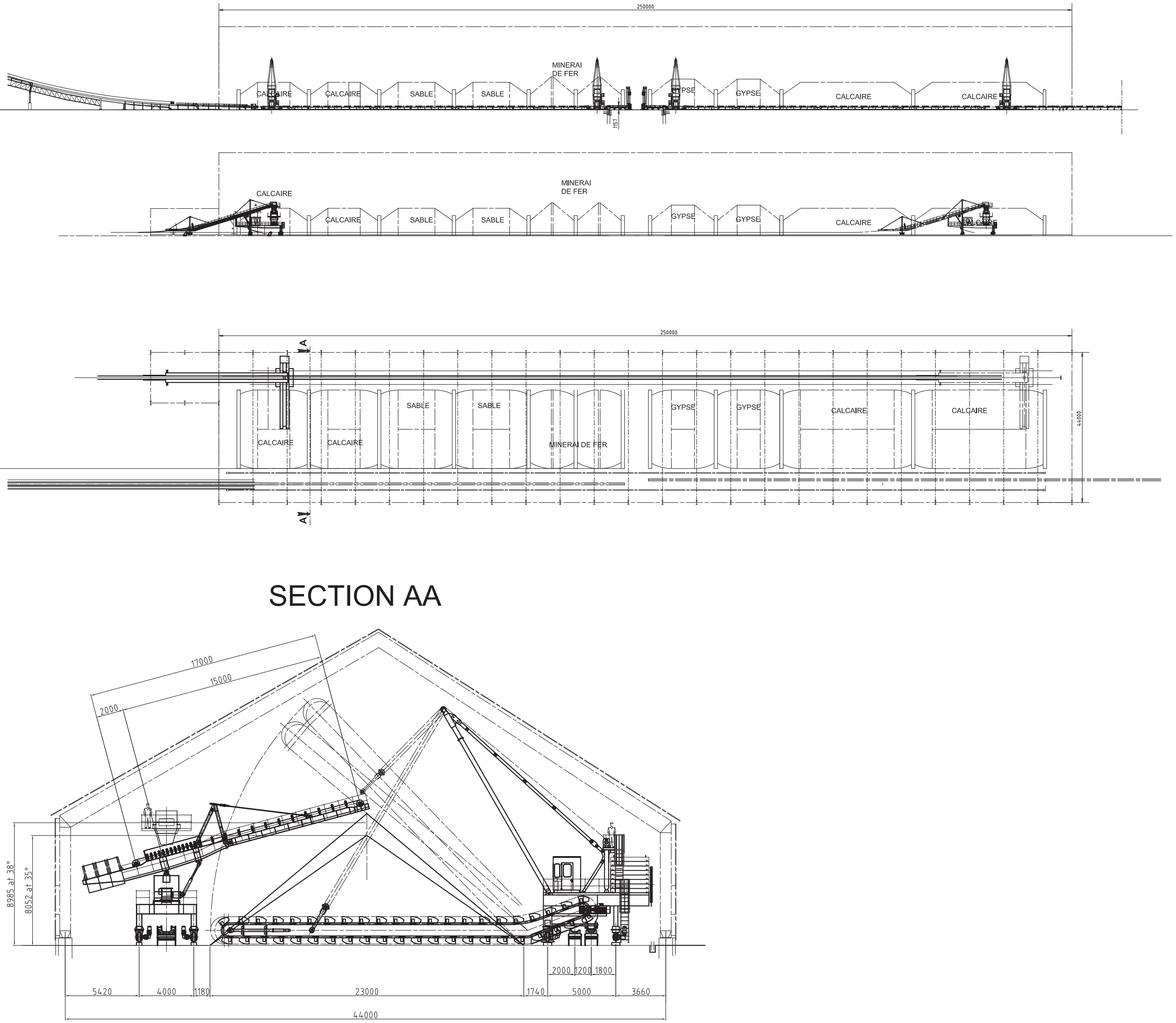
SCALE: 1/400 — DRAWING TITLE: CONCASSAGE CALCAIRE ET ARGILE
DISPOSITION GENERALE

fives fcb

MATIERE: — MASS: — FORMAT: A1

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG10,10,002 — IND: A



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED	SIGNED	MODIFICATIONS
G						
F						
E						
D						
C		28/01/11	PB	CDe	NVI	
B		25/11/09	P.B	N.Vi	N.Vi	Mis à Jour
A		29/05/09	V.P	N.Vi	D.Lo	FIRST ISSUE

LAYOUT MARK	BUILDING: STOCKAGE des ADDITIFS
GROUP / ITEM	EQUIPMENT: PARC EN LIGNE
SCALE: 1/100 1/400	DRAWING TITLE: PLAN D'ENSEMBLE

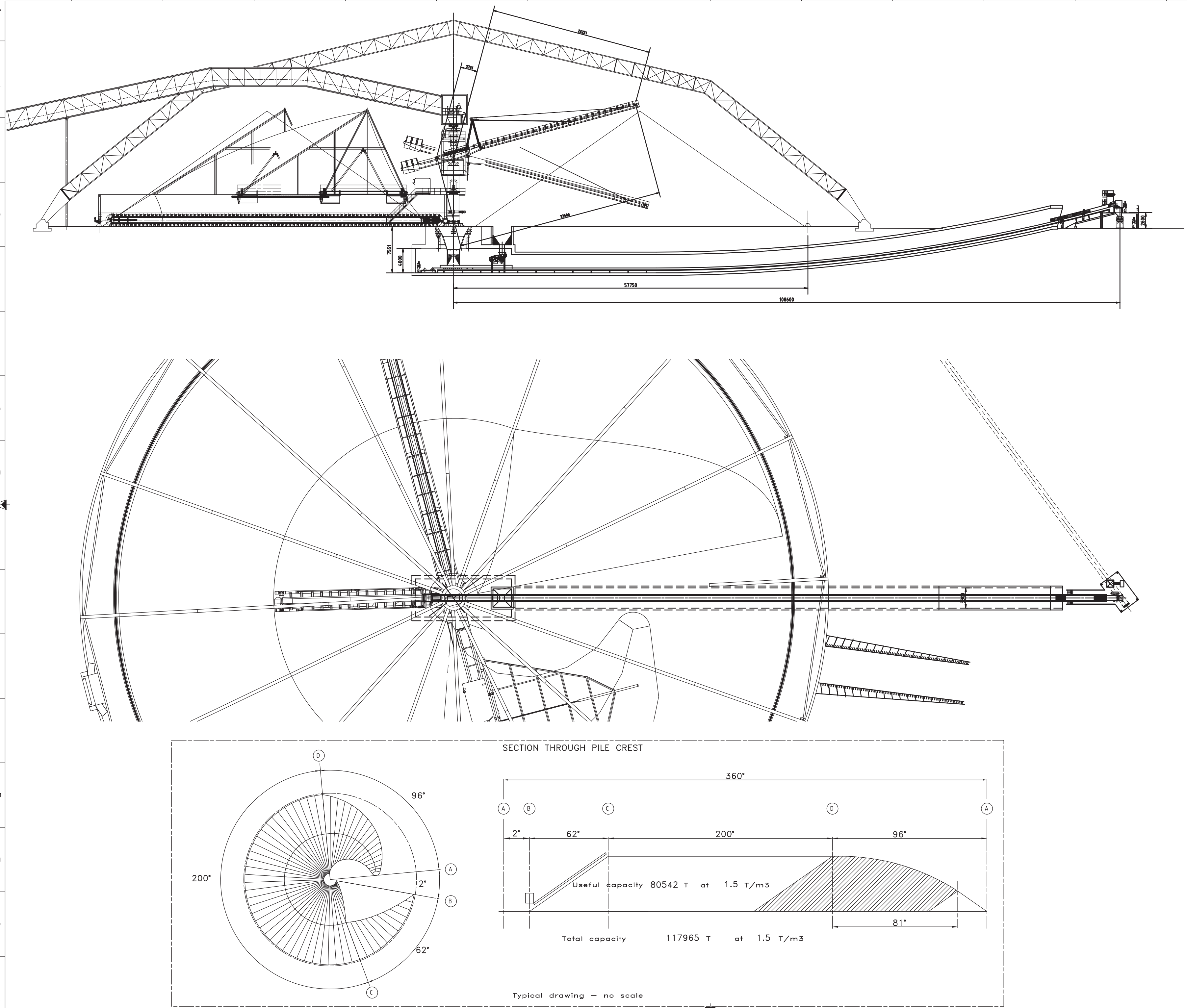
fives fcb

MATIERE: | MASS: | FORMAT: A1

Fives FCB
50 rue de Ticléni - BP 376
59666 VILLENEUVE D'ASCQ Cedex FRANCE
Tél : 33 (0)3 20 43 77 77 Fax : 33 (0)3 20 43 75 75
E-mail : fivesfcb@fivesgroup.com www.fivesgroup.com

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG1018001 | IND: C



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
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E						
D						
C						
B		28/01/2011	M.Ze	C.De	N.Vi	Updated
A		29/05/09	Y.P	B.R	D.Le	FIRST ISSUE

LAYOUT MARK — BUILDING: STOCKAGE POLAIRE

GROUP / ITEM — EQUIPMENT

SCALE: 1/100 — DRAWING TITLE: PREHOMOGENEISATION CALCAIRE ARGILE

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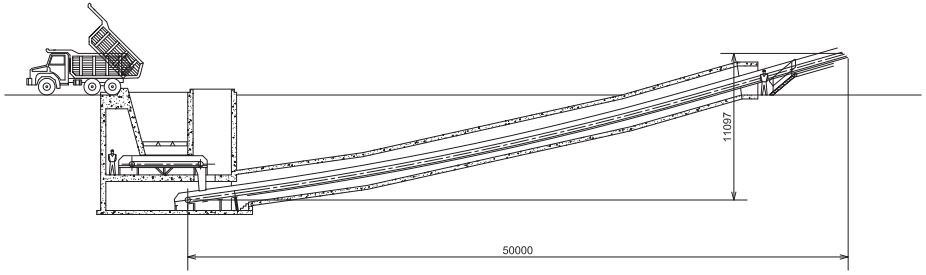
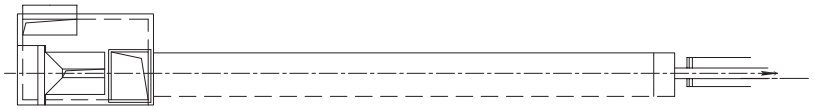
MATIERE: MASS: FORMAT: A1

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG1018002 — IND: B





ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED	APP'D	MODIFICATIONS
G						
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D						
C		28/01/11	PB	CDe	NVI	mise à jour
B		26/11/09	PJB	NVI	NVI	mis à jour
A		10/03/09	VP	NVI	NVI	FIRST ISSUE

LAYOUT MARK	BUILDING: TREMIE DECHARGEMENT DES ADDITIFS
GROUP / ITEM: 19	EQUIPMENT:
SCALE: 1/200	DRAWING TITLE: PLAN D'ENSEMBLE

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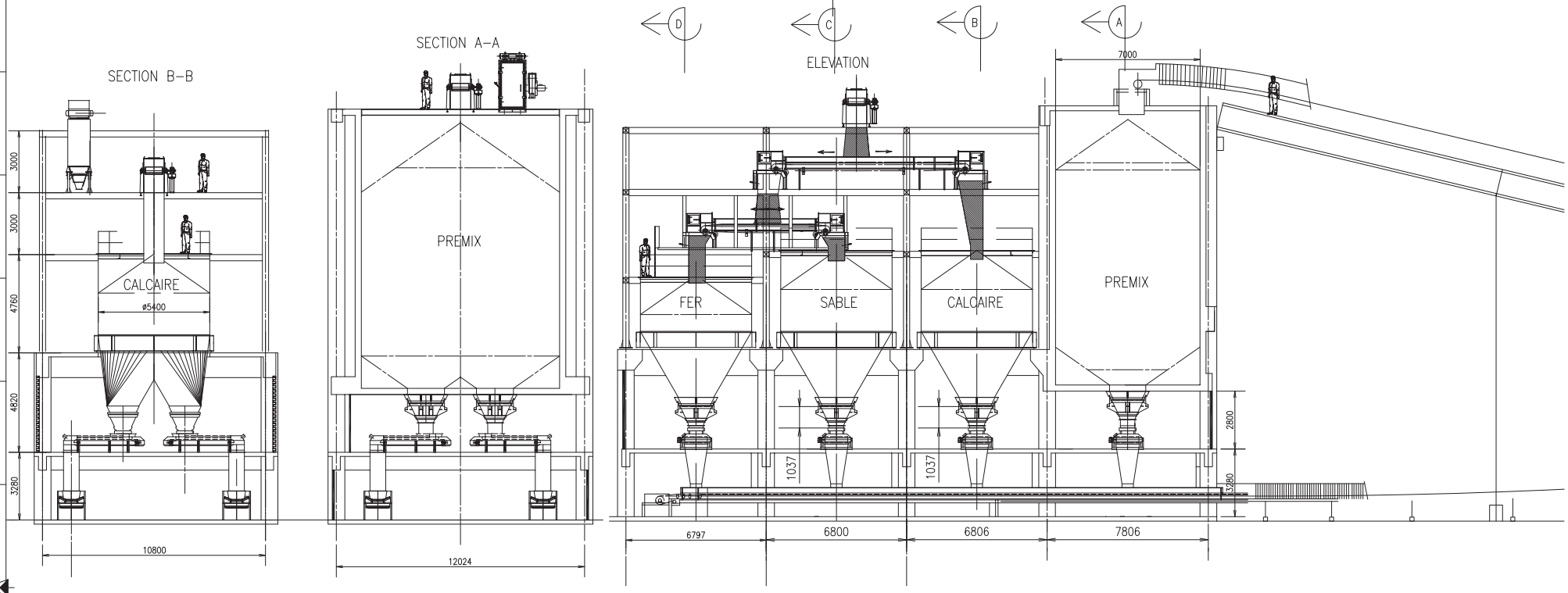
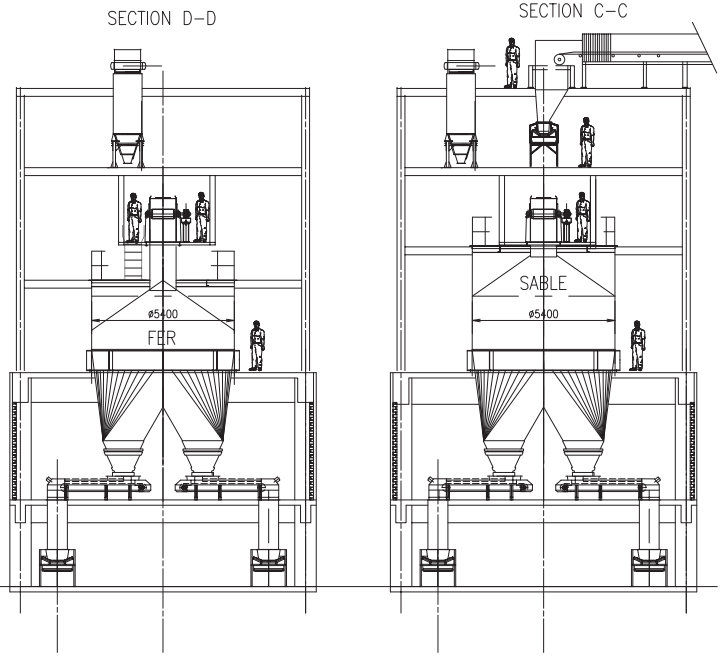
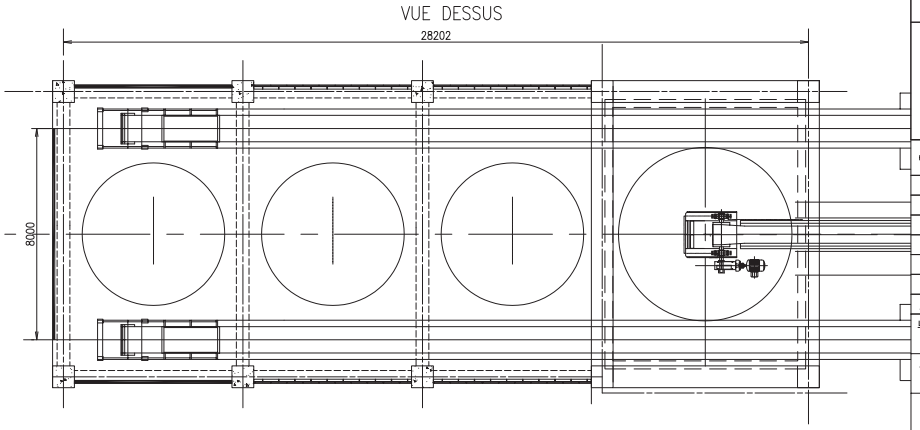
MATIERE:	MASS:	FORMAT: A1

Fives FCB
50 rue de Ticleni - BP 370
59492 VILLENEUVE D'ASCQ Cedex FRANCE
Tél: 33 (0)3 20 43 77 77 Fax: 33 (0)3 20 43 75 75
E-mail: fivesfcb@fivesgroup.com www.fivesgroup.com

REFERENCE	CPJB 0902	IND
DRAWING NUMBER	CHLAG1019001	C







ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

REV	NBER OF △	DATE	DRAWN	CHECKED	SIGNED	MODIFICATIONS
G						
F						
E						
D						
C		28/01/2011	MZ	CDe	NVI	Mis à jour
B		25/10/2010	PB	N VI	D Lo	Updated
A		10/03/09	V.P	NVI	NVI	FIRST ISSUE

LAYOUT MARK

BUILDING: TREMIES ET DOSAGE BROYAGE CRU

GROUP / ITEM: 23

EQUIPMENT

SCALE: 1/100

DRAWING TITLE: PLAN D'ENSEMBLE

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MATIERE: | MASS: | FORMAT: A1

Fives FCB
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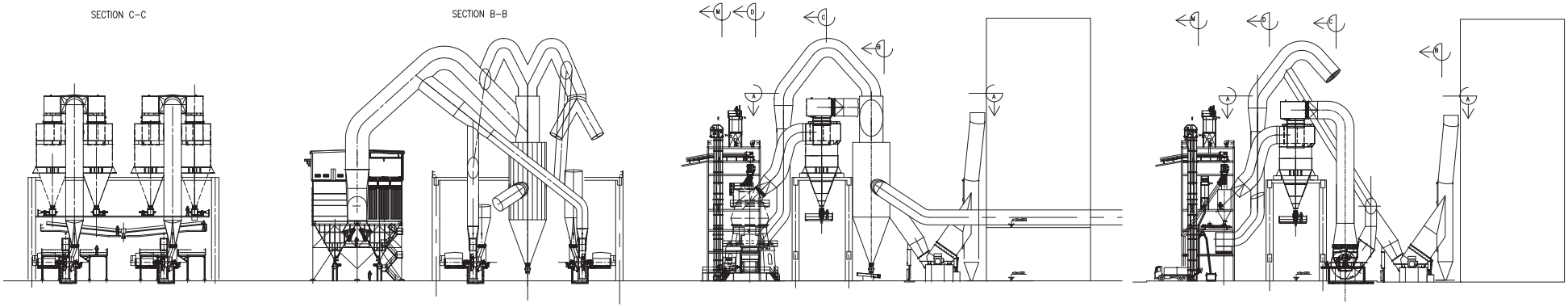
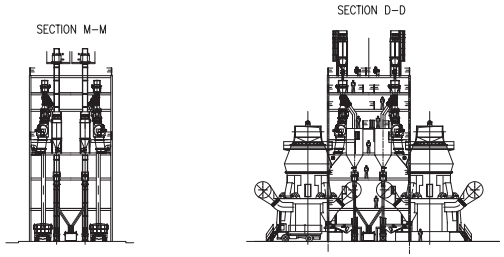
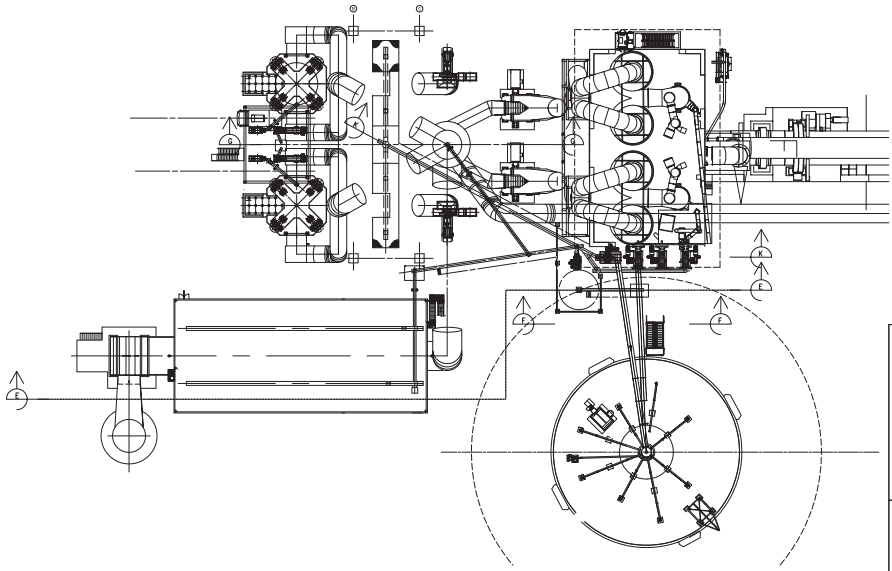
E-mail: fivesfcb@fivesgroup.com www.fivesgroup.com

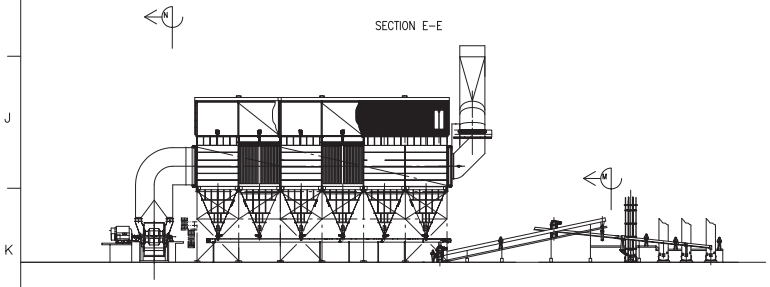
REFERENCE: CPJB 0902

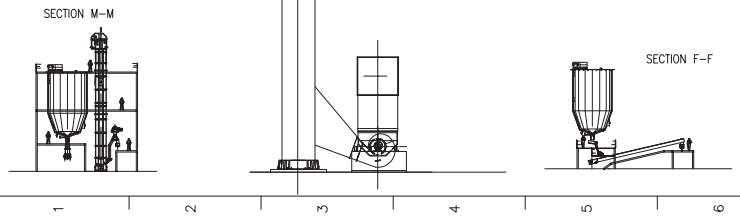
DRAWING NUMBER: CHLAG1023001 | IND: C

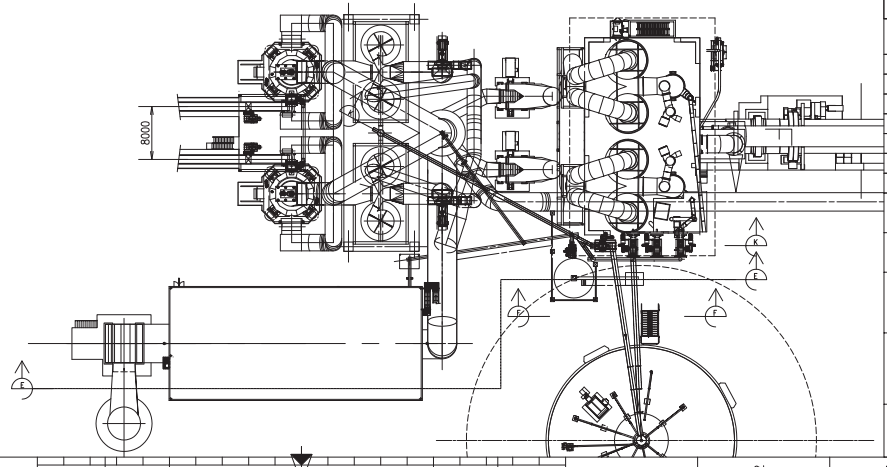












ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

IN PROGRESS

REV	NBER OF △	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
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E						
D		10/01/2011	M.Ze	C.De	N.VI	Updated
C		29/03/2010	M.Ze	N.VI	N.VI	UPDATED
B		27/11/09	P.B	N.VI	N.VI	Mis à jour
A		31/03/08	V.P	N.VI	D.Lo	FIRST ISSUE

LAYOUT MARK

BUILDING: BROYAGE CRU ET DEPOUSSIERAGE

GROUP / ITEM

EQUIPMENT

SCALE: 1/300

DRAWING TITLE: IMPLANTATION GENERALE

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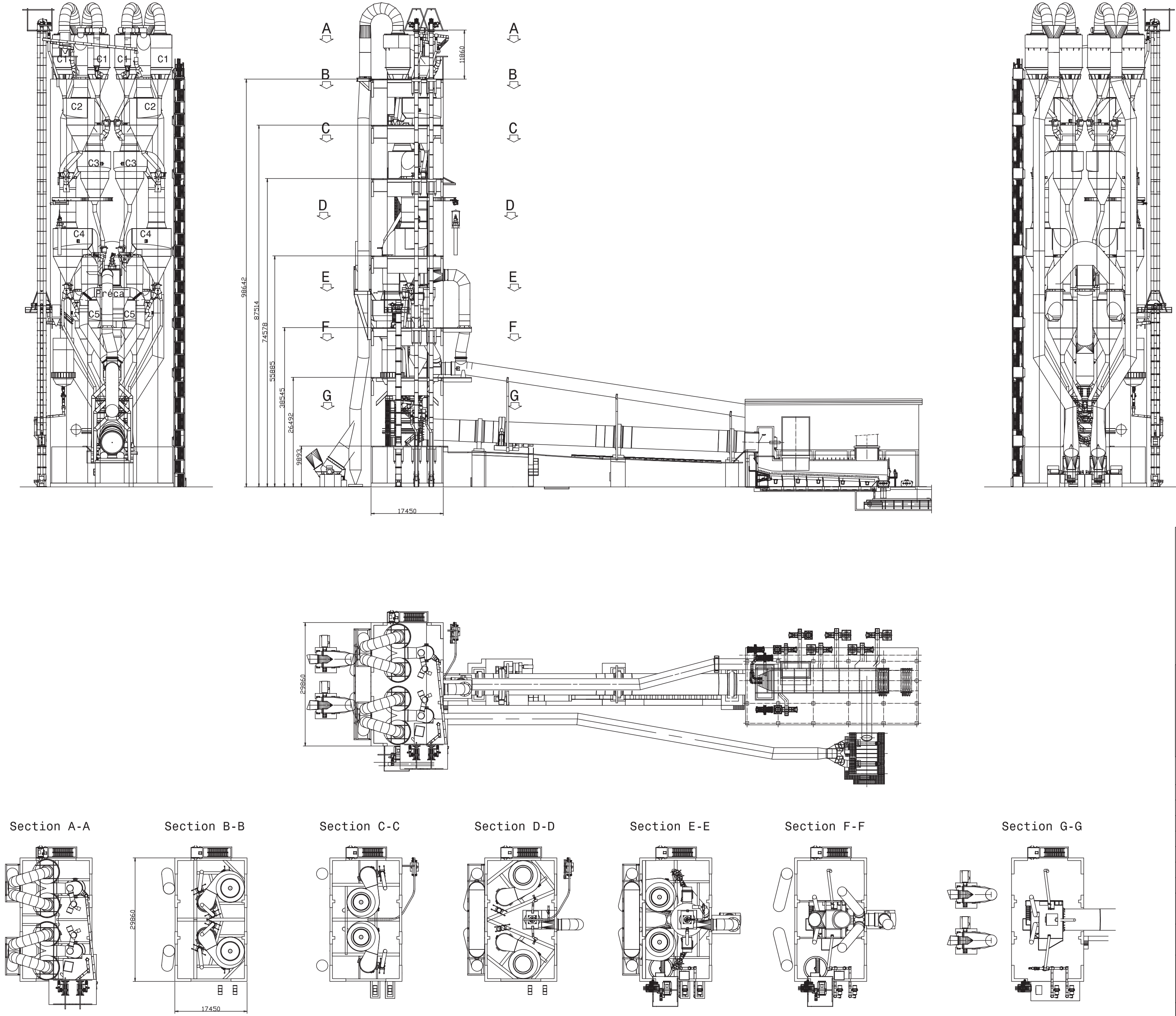

ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
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C						
B		25/01/2011	P BYL	C DELAUTRE	N.VI	Mis à Jour
A		31/03/08	DJB	N.VI	D.Lo	FIRST ISSUE

LAYOUT MARK — BUILDING: PRECALCINATEUR ECHANGEUR FOUR ROTATIF

GROUP / ITEM — EQUIPMENT:

SCALE: 1/1000 — DRAWING TITLE: PLAN D'ENSEMBLE IMPLANTATION GENERALE

MATIERE: — MASS: — FORMAT: A1

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Fives FCB
50 rue de Ticléni - BP 376
59666 VILLENEUVE D'ASCQ Cedex FRANCE
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E-mail : fivesfcb@fivesgroup.com www.fivesgroup.com

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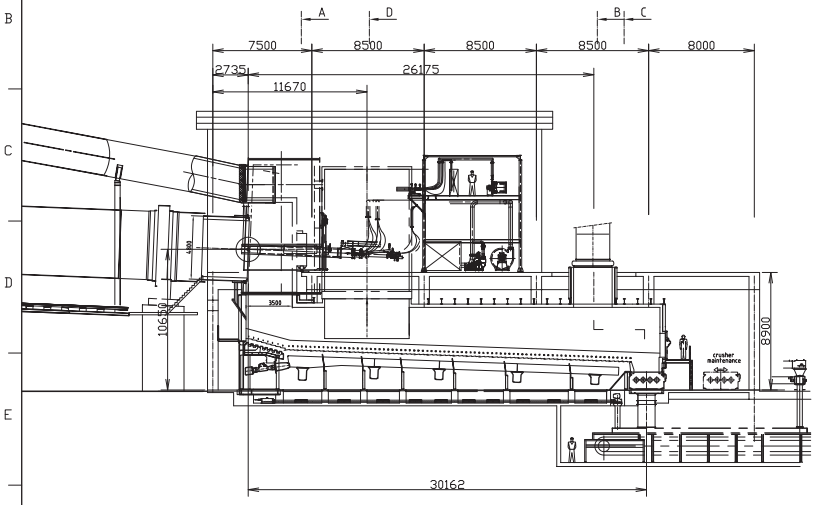

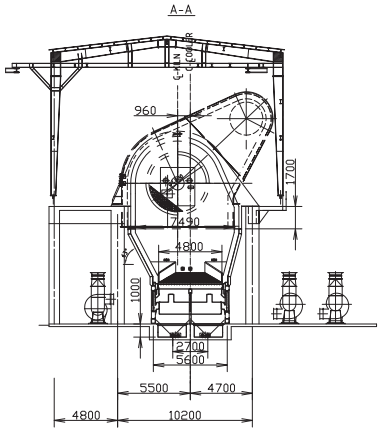

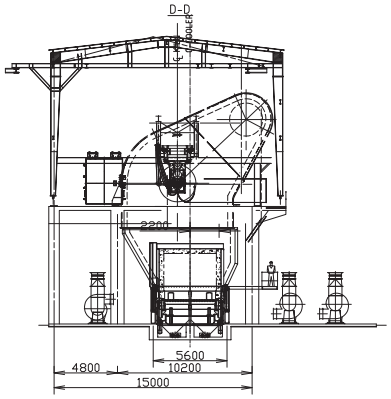

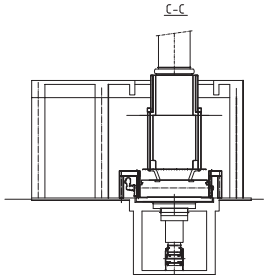

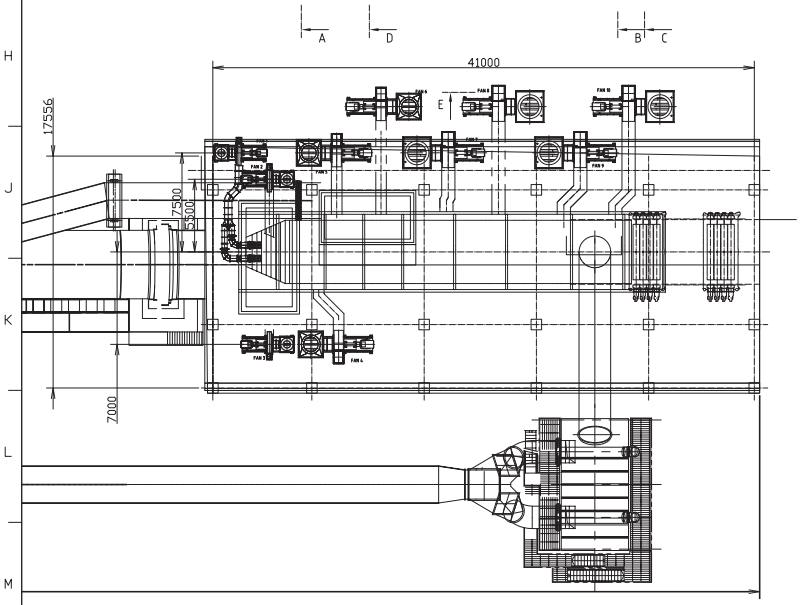

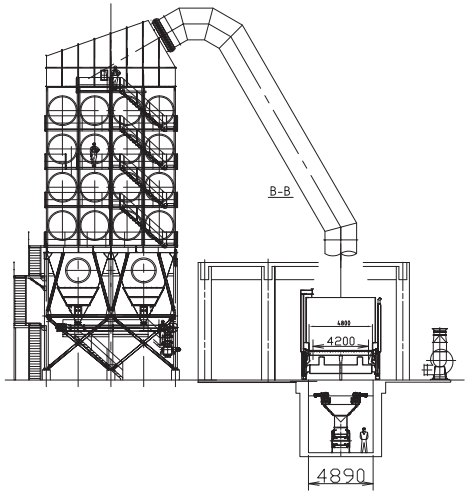

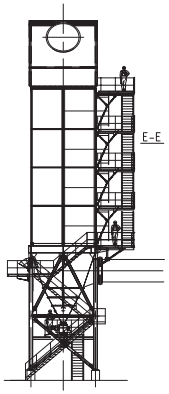

ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
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E						
D						
C						
B		24/01/2011	P. BYL	C. DELAUTRE		
A		30/09/08	V.P	N.VI	DLo	FIRST ISSUE

LAYOUT MARK

BUILDING: REFROIDISSEUR A CLINKER

GROUP / ITEM

EQUIPMENT

SCALE: 1/500

DRAWING TITLE: PLAN D'ENSEMBLE

IMPLANTATION GENERALE

fives fcb

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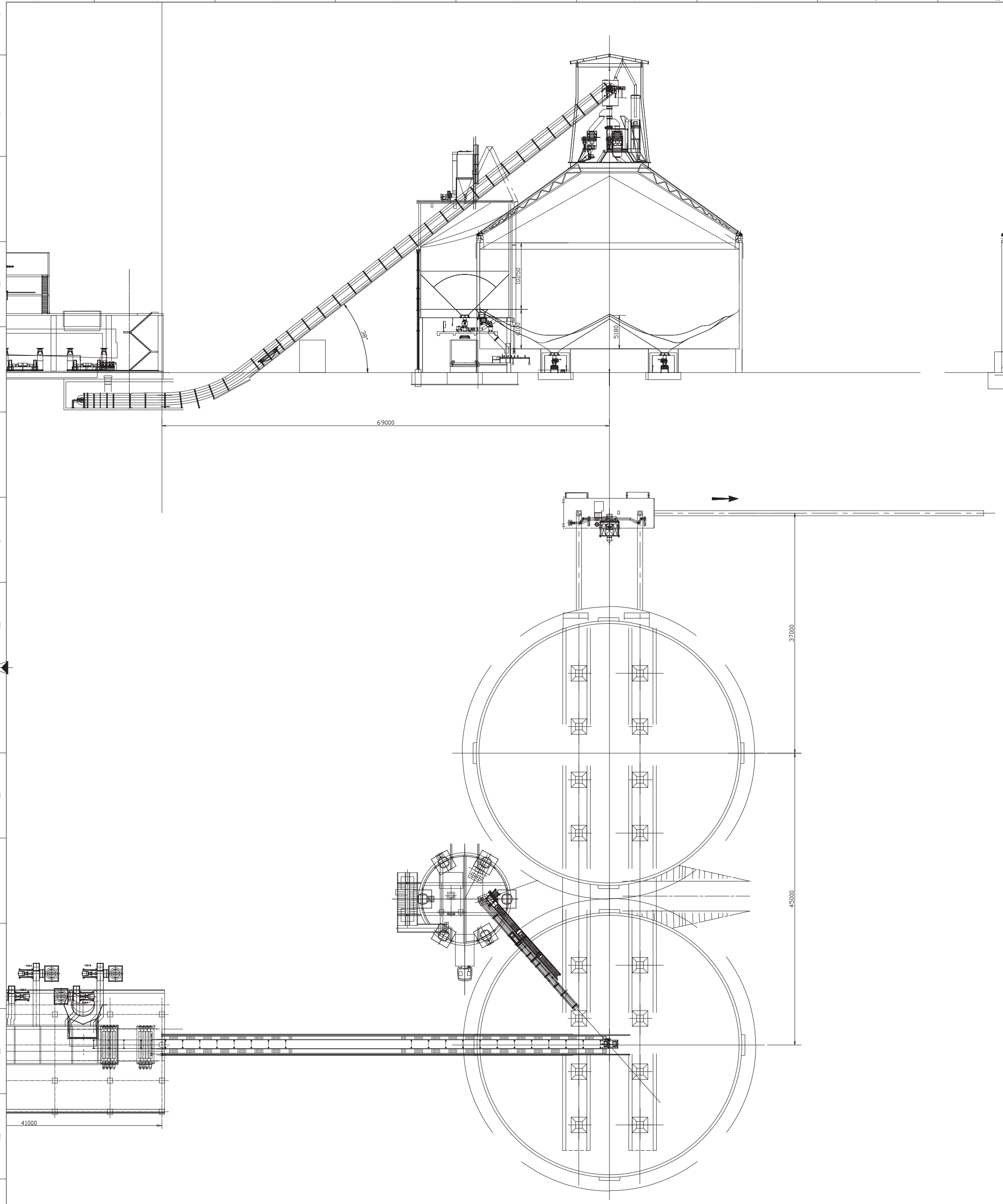
MATIERE: | MASS: | FORMAT: A1

REFERENCE: CPJB 09-02.CHL

DRAWING NUMBER: CHLAG1040001 | IND: B



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED		MODIFICATIONS
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F						
E						
D						
C		19/01/2011	P BYL	C DELAUTRE	N VI	MIS A JOUR
B		18/11/09	P.BYL	N.VI	N.VI	MIS A JOUR
A		12/05/09	V.P	N.VI	N.VI	FIRST ISSUE

LAYOUT MARK	BUILDING: SILOS CLINKER ET TRANSPORT
GROUP / ITEM	EQUIPMENT
SCALE: 1/250	DRAWING TITLE: PLAN ENSEMBLE

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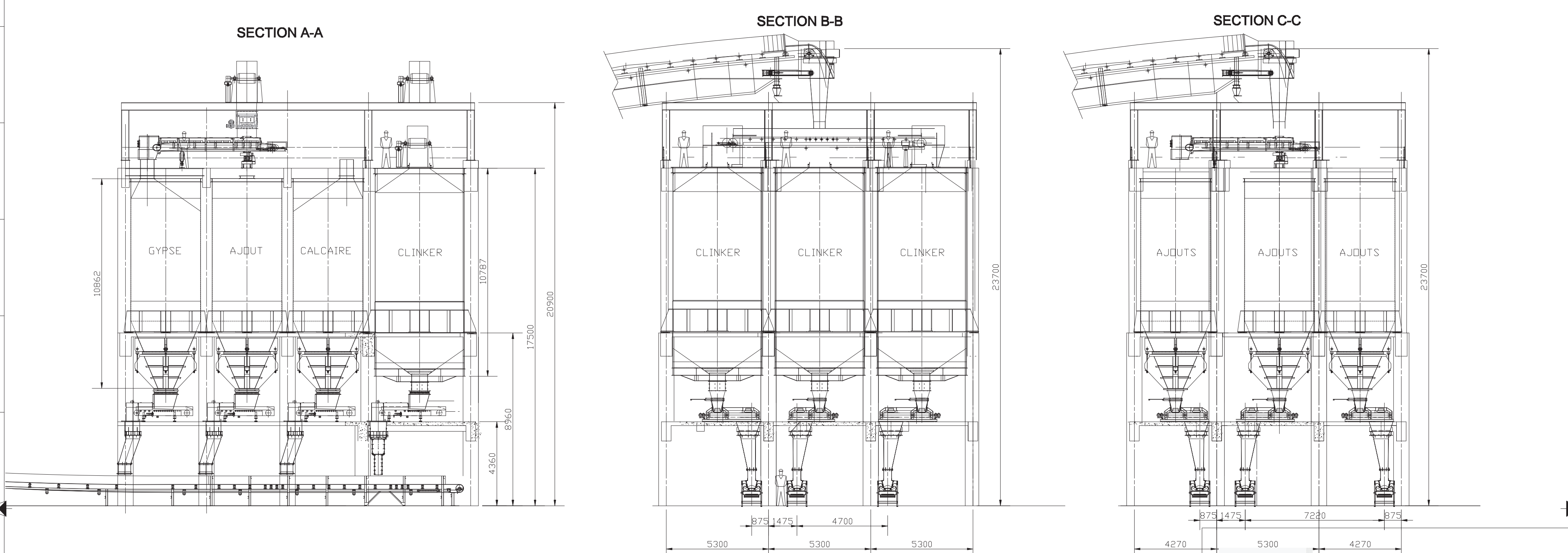
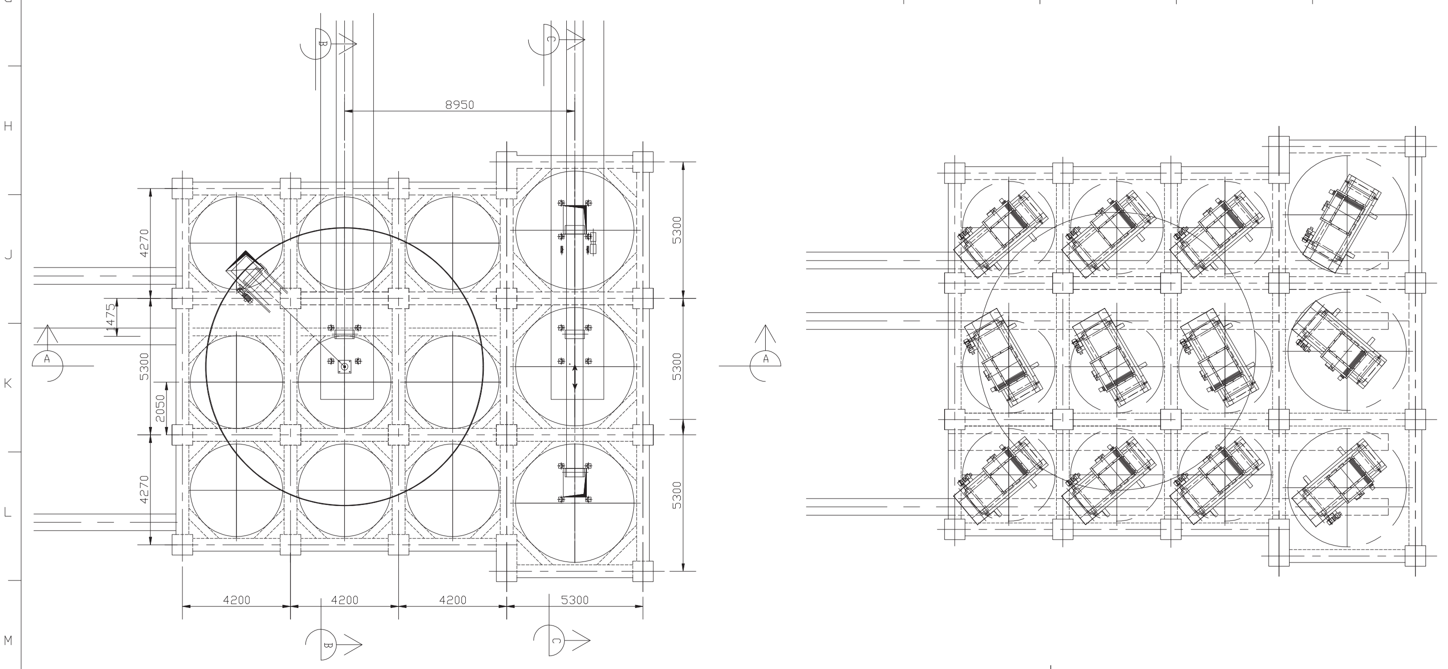
MATIERE:	MASS:	FORMAT: A1

Fives FCB
50 rue de Tiolé - BP 376
59666 VILLENEUVE D'ASCQ Cedex FRANCE
Tél : 33 (0)3 20 43 77 77 Fax : 33 (0)3 20 43 75 75
E-mail : fivesfcb@fivesgroup.com www.fivesgroup.com

REFERENCE	CPJB 09-02.CHL	IND
DRAWING NUMBER	CHLAG1051001	C





ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
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C						
B		12/01/2011	P. BYL	C. DELAUTREN	VINDEVOGEL	UP DATED
A		21/04/2009	T. WERQUIN	V. SFAR	D. LOUSNARD	FIRST ISSUE

LAYOUT MARK — BUILDING: TREMIES ET DOSAGE CIMENT

GROUP / ITEM: 57 — EQUIPMENT:

SCALE: 1/100 — DRAWING TITLE: PLAN D'ENSEMBLE

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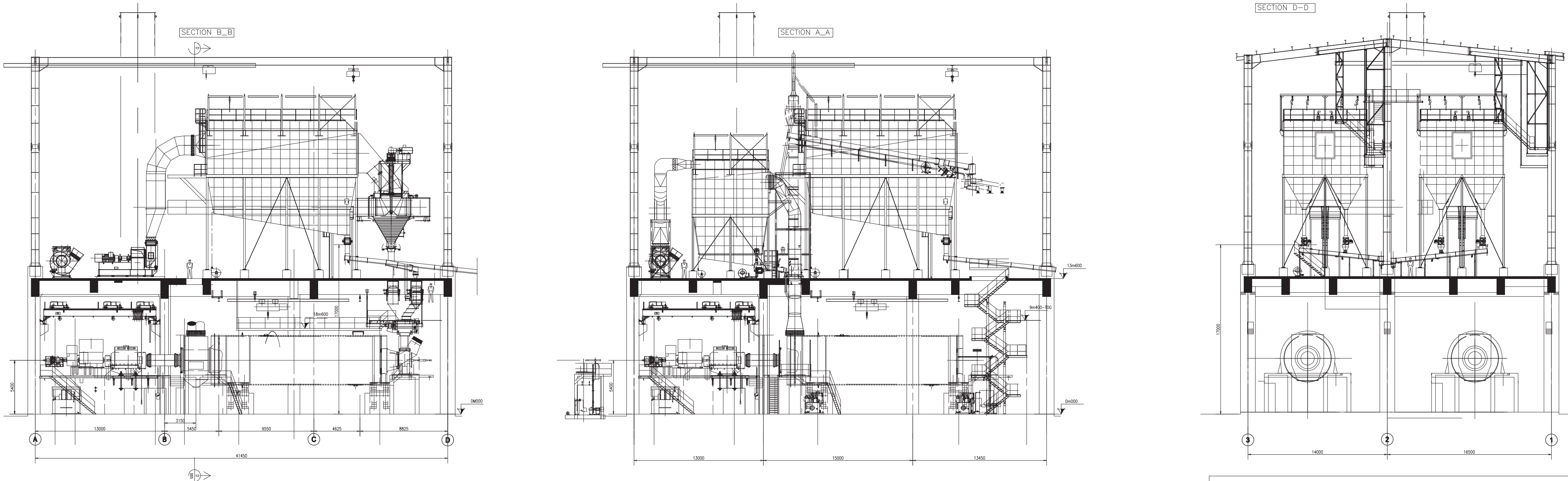
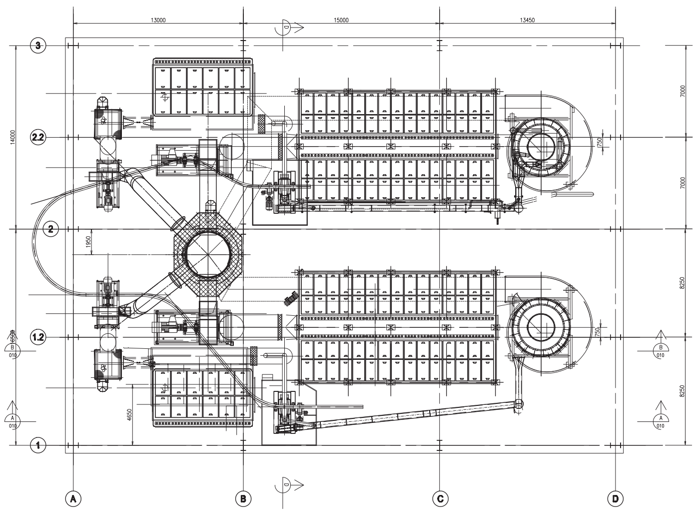
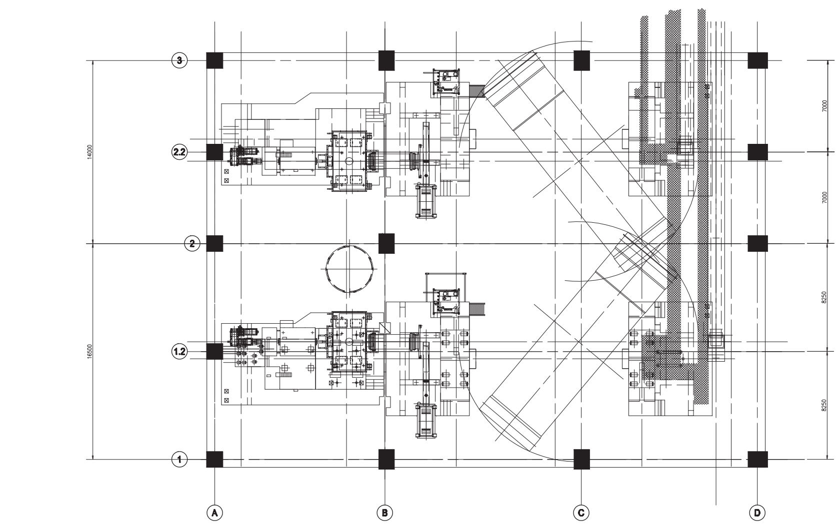
MATIERE: — MASS: — FORMAT: A1

REFERENCE: CPJB 0902

DRAWING NUMBER: CHLAG1054001 — IND: B







ENTREPRISE DES CIMENTS

ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE

LA CIMENTERIE ECS-CHELIFF

IN PROGRESS

REV	NBER OF	DATE	DRAWN	CHECKED		MODIFICATIONS
G						
F						
E						
D						
C						
B		14/01/2011	P BYL	C DE	N VI	Mis à jour
A		21/04/2009	T.MERQUIN	V.SFAR	D.LOUISNARD	FIRST ISSUE

LAYOUT MARK — BUILDING: BROYAGE CIMENT

GROUP / ITEM: 57 — EQUIPMENT

SCALE: 1/200 — DRAWING TITLE: PLAN D'ENSEMBLE

MATIERE: — MASS: — FORMAT: A0

fives fcb

Fives FCB
50 rue de Ticléni - BP 376
59666 VILLENEUVE D'ASCQ Cedex FRANCE
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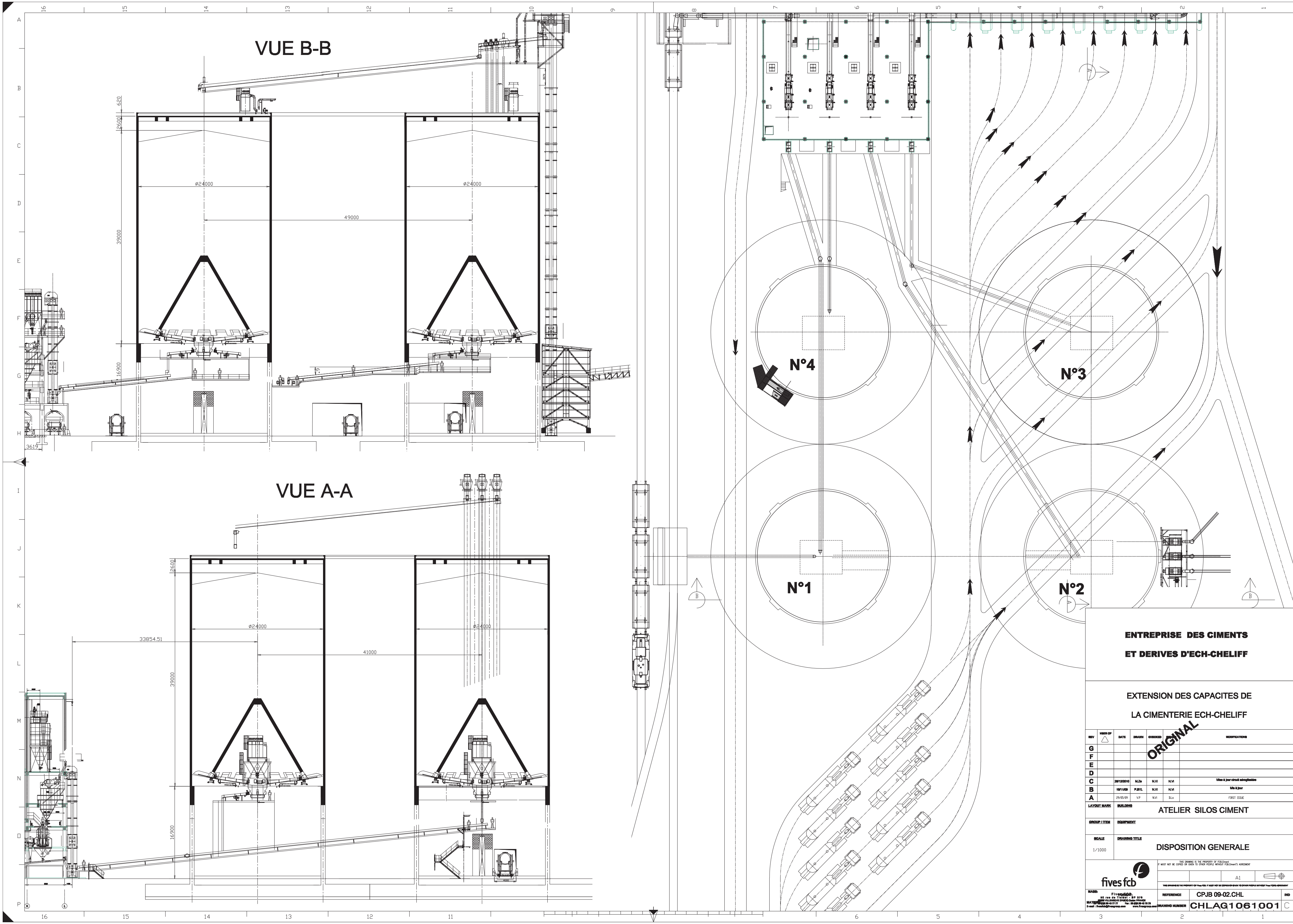
E-mail : fivesfcb@fivesgroup.com www.fivesgroup.com

REFERENCE: CPJB 0902

DRAWING NUMBER: CHLAG1057001 — IND: B



ENTREPRISE DES CIMENTS ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED	[illegible]	MODIFICATIONS
G						
F						
E						
D						
C		26/12/2010	M.Ze	N.Vi	N.Vi	Mise à jour circuit aéroglissière
B		19/11/09	P.BYL	N.Vi	N.Vi	Mis à jour
A		29/05/09	V.P	N.Vi	D.Lo	FIRST ISSUE

LAYOUT MARK	BUILDING: ATELIER SILOS CIMENT
GROUP / ITEM	EQUIPMENT
SCALE: 1/1000	DRAWING TITLE: DISPOSITION GENERALE

fives fcb

A1

MASS:
MATERIAL:
FORMAT:

Fives FCB
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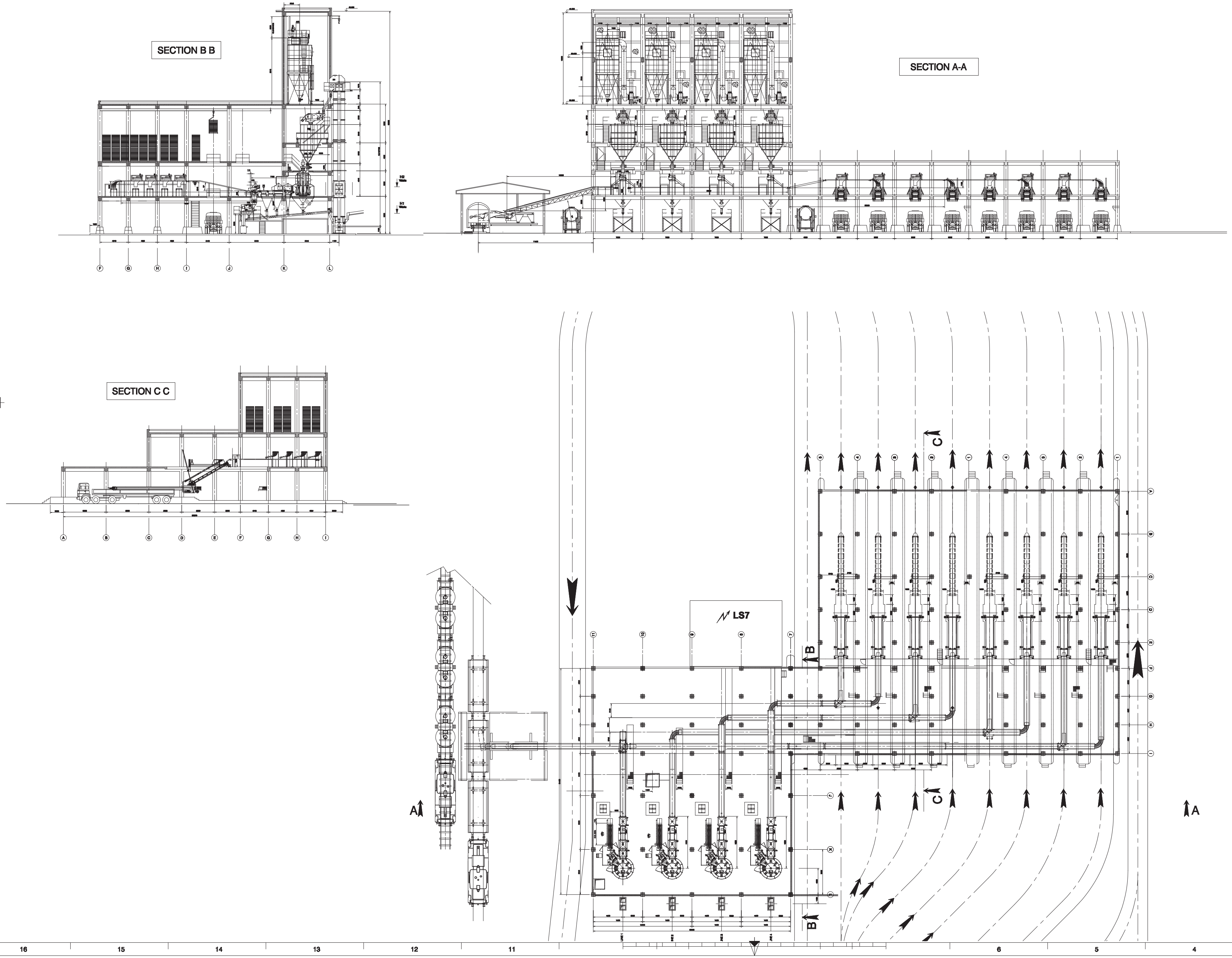
REFERENCE	CPJB 09-02.CHL	IND
DRAWING NUMBER	CHLAG1061001	C



ENTREPRISE DES CIMENTS
ET DERIVES D'ECH-CHELIFF

EXTENSION DES CAPACITES DE
LA CIMENTERIE ECH-CHELIFF

ORIGINAL

REV	NBER OF △	DATE	DRAWN	CHECKED	[illegible]	MODIFICATIONS
G						
F						
E						
D		21/01/2011	P BYL	C DELAUTRE	N.VI	Mis à jour
C						
B		26/11/09	P.B	N.VI	N.VI	Mis à jour
A		20/03/09	V.P	N.VI	D.Lo	FIRST ISSUE

LAYOUT MARK — BUILDING

GROUP / ITEM — EQUIPMENT

SCALE 1/1000

DRAWING TITLE
ATELIER d'ENSACHAGE ET EXPEDITIONS
DISPOSITION GENERALE

fives fcb

MATIERE: | MASS: | FORMAT: A1

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REFERENCE: CPJB 09-02.CHL
DRAWING NUMBER: CHLAG1064001 IND D

Annex E -

General conditions of purchasing

GENERAL CONDITIONS OF PURCHASING

APPLICABLE TO MANUFACTURERS,

SUPPLIERS AND CONTRACTORS

RESPONSIBLE FOR SUPPLIES AND ASSEMBLIES

THIS DOCUMENT ON THE GENERAL CONDITIONS OF PURCHASING (G.C.P) SETS OUT TO DEFINE THE CONDITIONS TO APPLY TO ALL ORDERS PLACED BY fives FCB WHATEVER THEIR NATURE AND OBJECT

01er décembre 2007

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SIRET 410 109 698 00036 – TVA FR 21 410 109 698 – APE 295 C.

CONTENTS

1 - GENERAL PROVISIONS

1.1 - DEFINITION OF THE ORDER

These General Conditions of Purchasing are applicable to orders referring to them.
The term "order" used in these General Conditions includes also any other designation, such as "agreement" or "contract".
The following are considered to be contractual documents, the purchase order and its annexes, particular conditions of purchase, particular technical specifications, general technical specifications, General Conditions of Purchase and all other documents applicable or referred to the order.
If the prevailing order of the contractual documents is not defined in the order, the purchase order shall prevail, and then each document shall prevail over the next in the above order.

1.2 - ACCEPTANCE OF THE ORDER BY THE SUPPLIER

The **Supplier** must acknowledge the order within a period of 15 days as from its issue.
To this end, he shall return to the indicated address, the acknowledgement enclosed with the order, duly stamped, dated and signed.
By signing the acknowledgement of the order or the deed forming the agreement, the **Supplier** is deemed to have accepted all the conditions therein and to have received from **fives FCB** all the necessary indications and information for the execution of the order.
It will be the same if **fives FCB** has not received the acknowledgement within the time indicated.
By this way and unless otherwise specified, the **Supplier**'s general sales conditions as well as offers will have no contractual value.

1.3 - MODIFICATION TO THE ORDER

Any modification to the order from **fives FCB** or from the **Supplier**, which has not been covered by an addendum to the order, will not be taken in account by **fives FCB**.

2 - DEFINITION OF THE SUPPLY

All the contractual documents define the subject of the supply and/or services, their scope, their conditions of execution and delivery, the time schedule and the prices.

2.1 - SCOPE OF THE SUPPLY

The definition of the supply, which is given by the order is not restrictive. It is the duty of the **Supplier** to deliver a complete supply fulfilling the contractual requirements and characteristics and the purpose for which it is intended. The supply of the documents specified in the order or which are simply necessary for its proper achievement (drawings, diagrams, certificates, instructions for assembly, lubrication, maintenance, operation, delivery notes, packing lists, etc.), as well as the provision of the associated services (parts inventory, packing marking, protection for the equipment, etc.) are as contractual as the supply itself.
Any delay or non-execution, fully or in part of the supply and/or of these services shall have the same effects as a delay or non-execution fully or in part of the order itself.
The documents are drawn up in French and, if requested in the order in one or more other foreign languages. In this case, the translation costs are at the **Supplier's** expenses.
Documents which are handed over confidentially by the **Supplier**, with a prohibition on communicating them to third parties, may however be used by **fives FCB** for spare parts manufacturing or to carry out repairs, strengthening, transformations or modifications which might be necessary in order to meet a request from a fcb-ciment's Client or for compliance with any applicable law.

2.2 - LUMP SUM PRICE

In order to proceed to the services he is in charge of, the **Supplier** is responsible for obtaining the necessary and sufficient labour in quality and quantity, especially for managerial staff and specialists, in order to ensure execution of his works according to the state of the art, under the conditions stipulated in the order.
Equally, the **Supplier** shall provide, in quality and quantity all equipment and tools, as well as the necessary and sufficient energy and consumable materials for the proper execution of the works entrusted to him within the schedule with the sole exception of equipment, tools and consumable materials whose supply by **fives FCB** or its Client is clearly specified in the order.
The price stated in the order is understood to cover any corresponding costs and expenses.

2.3 - TECHNICAL ASSISTANCE

Even if the order does not provide for the technical assistance of the **Supplier,** the latter undertakes to appoint, at the request of **fives FCB**, the specialist(s) likely to assist **fives FCB** in assembling, testing or commissioning its equipment either at the workshops indicated by **fives FCB** or on the installation site under price conditions to be agreed.
fives FCB will inform the **Supplier**, a week in advance about the qualification and number of people requested. The specialists have to go on the site with their necessary tools.

3 - EXECUTION OF THE ORDER

3.1 - CONFORMITY OF EXECUTION

The **Supplier** undertakes to execute the order and associated services which are entrusted to him, in accordance with the state of the art, the regulations in force at the date of delivery or intervention, and the prescriptions stated in all the documents of a contractual nature such that its supply comply with the following:

- the standards and legislation in force in the country of the installation, particularly the decrees and rules applicable with regard to hygiene and safety including appliances, machines, machine parts, equipment, products and substances,
- the regulations in force with regard to hygiene and safety and the instructions applicable in relevant buildings, workshops or on work sites.
- the purpose of the equipment in this installation.
- the climatic conditions.
- all special and/or general requirements imposed on the equipment for its execution, assembly and industrial operation.

The **Supplier** shall under his personal responsibility and within the context of his speciality, experience and expertise, ensure that the specifications, prescriptions and the standards applicable to his supply, whether they come from **fives FCB** or from its Client, will allow the achievement of the required result and performance levels, according to the technical data which he knows through acceptance of the order.
The **Supplier** has to remedy any error or omission which his speciality and his expertise enable him to note and has to inform **fives FCB** in due time. Failing to do so, he will support all the consequences.

3.2 - WEIGHTS OF THE SUPPLIES

The **Supplier** undertakes to respect the weights of his supplies which are mentioned on the order.
Should the delivered weights be different from the stated weights **fives FCB** reserves the right :

- either to reduce the price of these supplies according to the missing weight,
- or to demand the additional parts, in order to make up for the missing weight,
- or to deduct from the price of the supply the additional transport or assembly costs which would arise from a weight surplus.

3.3 - DRAWINGS AND TECHNICAL EXECUTION DOCUMENTS

fives FCB retains ownership of the drawings, diagrams, software and technical specifications entrusted to the **Supplier** by **fives FCB** or specially drawn up by the **Supplier** to execute the order from **fives FCB**.
Under no circumstances may they be communicated or copied, and no equipment may be executed with these documents without prior written agreement from **fives FCB**.

3.4 - APPROVAL OF DRAWINGS AND TECHNICAL DOCUMENTS

Approval by **fives FCB,** its Client or any body authorised by **fives FCB** of the drawings and/or all technical documents drawn up by the **Supplier**, does not in any case release the **Supplier** from his responsibilities.

3.5 - MODELS AND TOOLS

The models and tools entrusted to the **Supplier** by **fives FCB** or executed by the **Supplier** on behalf of **fives FCB** are the exclusive property of **fives FCB**.

No equipment may be executed with these models and tools without the prior written agreement from **fives FCB**.

Except a demand to return the models and the tools to **fives FCB**, they shall be stored by the **Supplier**, under his responsibility and at his own expense and they will not be destroyed without the prior written agreement from **fives FCB**.

They shall be returned in good conditions on a simple request.

3.6 - PATENTS, BRANDS AND MODELS

The **Supplier** covers **fives FCB** against any claim of ownership of patents, brands, expertise or models relating to his supplies. In the event of direct action against **fives FCB**, the **Supplier** shall save harmless and indemnify **fives FCB** free from all costs or conviction.

3.7 –SUPPLIER EMPLOYEES

The **Supplier** undertakes that the number and qualification of his employees, are those which are necessary to meet the proper execution of the order.

fives FCB may return to the **Supplier**, without advance notice any member of the **Supplier**'s employees whose activity or actions are not compatible with law and order or safety of the people and properties.

In this case, all the costs relating to this return or to the replacement of the involved person would be at the **Supplier's** costs.

All the services are subject to the establishment of prevention plan in accordance with decree 92 158 dated February 22nd 1992 and as well with provisions of document Prevention of safety 93/01 or any other equivalent applicable legislation.

These documents, which are handed over on a simple request to the purchasing department, shall be submitted at any time to the representative of **fives FCB** on the work place.

The **Supplier**'s employees working in foreign countries shall comply with the legislation, standards and regulations in force in the country where the services are provided and especially with those concerning hygiene and safety including **fives FCB**'s Client regulation.

The implementations of these instructions do not release the **Supplier** from his legal and contractual obligations.

3.8 – INSPECTION

fives FCB shall always be able to have the execution of the order controlled by its agents, those of its Clients or those nominated by **fives FCB** or its Client, either in the factories of the **Supplier** or in those of his subcontractors or on any work site where the supply is manufactured, assembled, stored, worked out or installed.
The **Supplier** undertakes to reply to any questionnaire necessary to prepare and schedule the work of these agents.

He undertakes to make their inspection easy, whatever the state of progress (study, procurement, manufacturing, acceptance, packaging, shipment or assembly). Taking into account the legislation in force, the **Supplier** shall inform agents of the possible risks, the rules of procedure and the security instructions and ensuring their safety in the exercise of their mission.

This inspection shall not under any circumstances release the **Supplier** from his responsibilities, and is intended in particular to check :

- the state of progress of the works,
- the quality of the materials,
- the proper execution,
- the conformity to the drawings, specifications, standards and all the requirements of the order,
- the drafting of all documents which are of a contractual nature or which are simply necessary for a proper and complete execution of the order.

In any case inspection operations shall not be invoked by the **Supplier** as a cause of delay in delivery.

3.9 - SPARE PARTS

The **Supplier** shall send on the date indicated on schedule or if no date has been stipulated, within a period of one month following the date of the order, the definitive list of the spare parts:

- considered to be necessary to overcome any eventuality at the commissioning and/or for the correct delivery,
- recommended by the **Supplier** to be available in the Client stores in order to ensure normal maintenance on the supplied equipment, for two years of operation.

The **Supplier** undertakes to supply the spare parts corresponding to the equipment ordered, for a period of at least ten years as from the date of the order.

If, for any reason whatsoever, including the partial or complete suspension of activity, the **Supplier** has no longer the possibility of supplying spare parts, he undertakes to give the designations, drawings, specifications, models or tools to **fives FCB**, so that the latter can have them fabricated.

3.10 – SUBCONTRACTING

The **Supplier** is not authorised to assign all or part of his rights and obligations relating to the order entrusted to him without the written agreement of **fives FCB**.

If this requirement is not met, **fives FCB** may automatically cancel the order and may claim damages from the **Supplier**.
In the case that the **Supplier** subcontracts, with the agreement of fives FCB, all or part of the equipment or services which he has undertaken to supply, he would remain fully responsible for his obligations towards **fives FCB**. The **Supplier** undertakes to send to **fives FCB**, upon request, copies of sub-orders which he has passed on to third parties.

4 - CHECKS AND TESTS

4.1 – INSPECTION

As the works progress, the **Supplier** shall carry out all the check required by the order as well as all the checks necessary. He shall not present for inspection by **fives FCB** or its Client, or ship equipment which has not been controlled beforehand and declared conform to the order by his own quality control department.

He shall submit a certificate of compliance stating that the control has been made and that the equipment is fully in conformity with the order, with the exception of the deviations which could have been accepted by **fives FCB** and which should be mentioned on the certificate.

If the **Supplier** fails to submit this certificate, **fives FCB** reserves the right to reject the equipment and to suspend its relevant obligations.
Before undertaking a control stipulated in the order, the **Supplier** shall ask for the presence of the inspector from **fives FCB**, at least 15 (fifteen) days before the date of the control, **fives FCB** is free to attend or not the check. If an inspector has been appointed, the **Supplier** shall also inform **fives FCB** with regard to the date and the place of the checks.

The **Supplier** shall put at the inspectors disposal free of charge the necessary means to carry out the measurements and tests. The apparatus shall be adjusted, calibrated, stamped and marked according to the standards in force. The expenses relating to the tests and checks are at the **Supplier's** costs, excepted the expenses of the agents of **fives FCB**, its Client or any body authorised by them.

However if the equipment is not accepted for any reason attributed to the **Supplier**, the above mentioned inspection costs will be borne by the **Supplier**.

The checks and tests, which certify the conformity of the equipment are defined in the order. Should no details be given the checks and tests shall be carried out in accordance with the practice generally followed for the type of equipment involved.

Any further check, analysis or test which should be performed in addition to the tests made for the proper and complete acceptance of the equipment, shall be at the **Supplier's** costs.

During these checks, the **Supplier** shall submit the technical report defined in article 4.2 below to the examination by **fives FCB's representative** and/or its Client.

4.2 - TECHNICAL CONTROL REPORT

Technical control report shall be supplied for any equipment ordered.

The technical report is made up of the control certificate signed by the **Supplier** certifying his own check (article 4.1), attached with all the documents stipulated in the order if any.

In any case, this technical report drawn up in as many copies as, and in the form and language required in the order, shall be sent to **fives FCB** at the latest with the packing inventory (article 5.3), if the equipment is shipped directly to the Client or to another **fives FCB**'s **Supplier**.

4.3 – ACCEPTANCE AFTER CONTROL

Any equipment subject to control shall not be shipped by the **Supplier** without the prior agreement of **fives FCB** or the inspectors appointed by **fives FCB**.

4.3.1 – ACCEPTED SUPPLIES

As long as the checks do not reveal any non-conformity and whether or not they are carried out in the presence of an agent of **fives FCB** or its Client or of any other appointed inspector, they allow the shipment to go ahead, though they do not under any circumstances release the **Supplier** from his commitments with regard to warranty and his responsibilities.

4.3.2 – NON-COMPLYING SUPPLIES

If during a check, whether during the manufacturing or following completion of the equipment, and whether or not in the presence of **fives FCB** or its Client, it is noted that the equipment does not conform with the order or that it has defects, the **Supplier** shall bring it into conformity, eliminate the defects and carry out further checks, provided that these repairs and checks have obtained the prior approval of **fives FCB**. In this case, **fives FCB** reserves the right to require a modification of the commercial conditions and of the warranties.
Except written agreement of **fives FCB**, additional operations to repair non-conforming equipment shall not delay the contractual schedule.

4.3.3 – REJECTED SUPPLIES

If the non-conformity or the defects on an equipment are such that it cannot be brought into conformity or repaired without damaging its appearance, its quality, its performance, its lifetime, or its acceptance by **fives FCB's** Client, the equipment may be rejected.

If the **Supplier** is not able to replace it with a conforming equipment within an acceptable period, **fives FCB** reserves the right to cancel all or part of the order in accordance with article 14 below.

5 - LABELLING, PACKAGING, MARKING, SHIPMENT AND STORAGE

5.1 – LABELLING

Each part shall wear a label indicating the order number from **fives FCB**, the item number, the assembly drawing number or any designation indicated on the order or appropriate to identify this part. If the conditions of labelling are not respected, the costs for identifying the equipment shall be borne by the **Supplier**.

5.2 - PACKAGING AND MARKING

Unless otherwise stipulated, the **Supplier** is responsible for the design and execution of the packaging and for the marking, which are carried out according to the type of equipment, the method of transport and the place of delivery.
The packaging and the marking shall be in the necessary and sufficient conditions so that the equipment reaches its delivery place without damage which might occur due to handling by rail, road, sea or air transport, to natural elements or to storage in bad weather. If this result is not achieved, the consequential repairs or replacement shall be at the **Supplier's** costs.

As for the equipment itself, packaging and marking may be subject to inspection by **fives FCB,** Client or any mentioned inspector.

In any case, these interventions shall not release the **Supplier** from his responsibilities.

The equipment shall be wedged on the wagons or lorries in accordance with the state of the art.

5.3 – SHIPMENTS

Unless otherwise stipulated, shipments are made carriage paid and at the own risk of the **Supplier**, whatever the time of transfer of title.

When the equipment has left, the **Supplier** shall inform **fives FCB** by sending a shipping or collecting notice.

- Direct shipments

In every case where shipment is made from the **Supplier** workshops (or from his subcontractors) directly to the work site or to **fives FCB**'s Client, the **Supplier** shall draw up the packing of his equipment in the condition in which it is shipped on **fives FCB** "packing inventories" printed forms.
These packing inventories shall be sent by the **Supplier** to **fives FCB**. After checking, they will form the "final packing". A copy of the packing inventory shall be put inside each parcel before shipment.
On receipt of the "final packing", the shipment department of **fives FCB** will provide the **Supplier** with all the instructions relating to packing marking, the documents to be produced, and the method and address of shipment. The **Supplier** will have to conform strictly to the instructions received, even if he knows the address for shipment of his equipment, the **Supplier** shall wait for all the proper instructions from **fives FCB**.

- Shipments to a fives FCB's supplier or warehouse

The packing is drawn up on the printed forms of the **Supplier**. The latter shall check that the order gives him every indication concerning the address of delivery and shall ask for them on time.
The **Supplier** shall strictly follow the instructions to fill in the shipping documents.
All the costs incurred by shipment to a wrong address or by incomplete documents shall be borne by the **Supplier**.

5.4 – STORAGE

Should an event prevent **fives FCB** or its Client from shipping or receiving the equipment subject of the order, **fives FCB** reserves the right to postpone the shipment date or to space out deliveries. In this case, the **Supplier** shall provide storage and proper preservation for the equipment at his expense and risk for a minimum two-month time, and an additional control may be requested by **fives FCB** prior to shipment.

6 - DELIVERY SCHEDULE

6.1 – TIME SCHEDULE

The **Supplier** undertakes to comply strictly with the time schedule defined in the order, regarding the delivery of equipment or the services, and the supply of any document.

If delays to the time schedule occur, article 6.3 and 6.4 below shall be applied.

Any modification of the time schedule shall be covered by an addendum to the order.

6.2 - PROGRESS REPORT

The **Supplier** shall send to **fives FCB** at the end of each month, or timely as defined in the order, a progress report including in particular:

- the situation regarding the studies,
- the situation regarding procurements,
- a progress report on manufacturing and assembling,
- the outstanding operations and their duration.

Should these documents not be received, **fives FCB** would be entitled to suspend the payment due before delivery.

If the progress report or the schedule show that delays occur, the **Supplier** shall take all measures to avoid any delay.

6.3 - PENALTIES FOR DELAY

Total or partial non-execution of the order within the contractual time schedule involves the application of the penalties defined in the order, without need of any notice from **fives FCB**.

Unless otherwise stipulated in the order, the basis of these penalties is the total price of the order, increased by the total of its addendum and the escalation value if any, any week of delay started being considered as complete.

Payment of the penalties is made by deduction from the amounts due to the **Supplier**. However, it does not release the **Supplier** from his obligations to finish the equipment or the works, nor from his other contractual obligations.

6.4 - DELAY LEADING TO CANCELLATION

In case of delay of more than three months, whether or not resulting from a case of force majeure, **fives FCB** may cancel all or parts of the order under the conditions of article 14 below.

7 - PRICES AND PAYMENTS

7.1 – PRICES

The prices, terms of payment and escalation are set out in the order.
The payments are made on the dates stated in the order, even in case of early delivery.
Unless otherwise stipulated in the particular conditions to the order, the prices include the following:

- costs of calculations and studies to execute the order,
- the supply of all drawings and documents specified in the order,
- the supply of a detailed time schedule,
- the supply of equipment in accordance with the order,
- attending meetings with other suppliers of equipment having connection with those of the **Supplier**,
- the manufacture of possible models if necessary,
- the supply of any additional equipment which might be necessary in order to obtain a complete achievement and operation in conformity with the order,
- the costs of control, check and tests,
- any contingency resulting from export order.

7.2 – ESCALATION OF PRICE

Unless otherwise stipulated, the prices are fixed and firm and not subject to escalation. The **Supplier** is not allowed to make any claim arising from a change in economic conditions.

Escalation if any, shall be not applicable out of the contractual schedule.

7.3 – BALANCE OF PAYMENTS

It is expressly agreed that **fives FCB** is entitled to deduct the amounts claimed to the **Supplier**, penalties, debts and indemnities, compensations etc from the amounts due to the **Supplier** by **fives FCB**.

7.4 - SENDING INVOICES

Unless otherwise stipulated, the invoices shall be sent to **fives FCB** . In case of order for export and as represented by French law, the parties shall wave irrevocably any penalties for delayed payment to avoid any disadvantage regarding foreign competitors. In case of order for French market the applicable rate is fixed at 1,5 (one and half) the legal rate of interest.

7.5 - BANK GUARANTEES-BONDS

The bank guarantees, bonds shall be sent by the **Supplier** or his bank in accordance with the order.
In case of counter guarantees of the bonds given by **fives FCB** to his Client, the **Supplier** shall send to **fives FCB** a copy of the counter guarantees transmitted to the bank of **fives FCB**.
In all cases, the costs resulting from the bonds, guarantees, counter guarantees shall be borne by the **Supplier**.

8 – RESPONSIBILITIES

The **Supplier** is alone and personally responsible for any accident or damage, both for injury, material and consequential damage, occurring during the fulfilment of his obligations or caused by them, his employees or his subcontractors, without **fives FCB** and/or its Clients being searched for or troubled.

The **Supplier** shall insure against such liability.

The **Supplier**'s liability extends, furthermore to damages resulting from an interruption of operation or a delay in commissioning as a result of an accident.

9 - INSURANCE POLICIES

The **Supplier** undertakes to take out, with a well-known solvent insurance company, an insurance policy necessary to cover his activity especially third-party liability. This policy shall be maintained valid throughout the period of the works which are entrusted to him and for the period of contractual warranty. The **Supplier** shall obtain from his insurance company an abandonment of the right of recourse against **fives FCB** and/or its Client. The insurance policy shall be transmitted to **fives FCB** upon request of **fives FCB**.

However, under no circumstances does the absence or insufficiency of such an insurance policy release the **Supplier** from his liability. Should **fives FCB** and/or its Client take out a site comprehensive insurance policy, the latter might be extended in favour of the **Supplier** under conditions to be agreed.

10 - TRANSFER OF TITLE

The transfer of title of the products to be delivered takes place in accordance with article 1583 of the civil code. Unless otherwise agreed, if necessary, the transfer of title of the materials necessary to manufacture the product takes place, at the latest, during the payment of the down payment by fives FCB. Except a written express convention between fives FCB and the **Supplier**, neither clause of reserve of property, nor any no general sales condition of is applicable to this order. A protocol of transfer of title of the materials necessary to manufacture the product is drawn up in the form of report, with the diligence of the **Supplier**, in two original copies, dated and signed by the **Supplier** and fives FCB.
This document defines in a very precise way the parts of the materials and/or supply whose property is transferred to **fives FCB** from the date of the signature. The batches whose property is transferred are then individualised in the workshops of the **Supplier** and his subcontractors like in his accountancy. The **Supplier** commits himself affixing on the parts, marks or punches allowing to identify them as property of **fives FCB**.
The anticipated transfer of title does not release the **Supplier** from its obligations, in particular as regards of guarantee, of protection or maintenance.

11 - ACCEPTANCE

Acceptance is given at the request of the **Supplier** when the following conditions are met:

- when the supply has been acknowledged as apparently conforming to the drawings and technical specifications,
- after a minimum period of satisfactory industrial operation of three months,
- when **fives FCB** is in possession of the final documents specified in the order,
- when **fives FCB** has obtained the acceptance from its own Client.

fives FCB may permit acceptance to be given with reservations. In this case, the signing of the acceptance report involves the commitment of the **Supplier** to execute or complete the missing or incomplete works and to rectify the defects or faults within the time limit prescribed to him by **fives FCB**.
After this time limit has elapsed, **fives FCB** is entitled, without formal notification to the **Supplier**, to have these services provided by any company of its choice, at the expense and risk and on behalf of the **Supplier**. The cost of these services is deducted from the amounts owed by **fives FCB** to the **Supplier**.
Should the tests not be satisfactory, acceptance is delayed. The **Supplier** shall then make the necessary adjustments and modifications within the time limit prescribed to him by **fives FCB**. After this time limit has elapsed, further acceptance tests will be carried out. The date of acceptance is the start of the period of contractual warranty.

12 – WARRANTY

12.1 - DEFINITION OF WARRANTY

The **Supplier** covers his equipment and services against faults in design, sizing, material, manufacture and assembly, as well as their conformity to the use for which they are intended.

12.2 - PERIOD OF WARRANTY

Unless otherwise stipulated, the contractual period of warranty is one year as from acceptance of the installation by **fives FCB**'s Client. However, it shall be extended as long as reservations issued at the time of acceptance have not been cleared by the **Supplier**.

12.3 - EFFECTS OF THE WARRANTY

The **Supplier** undertakes to remedy without delay any defect in material or execution, any error in design, sizing or assembly, any defect in operation, any failure to meet the performance requirements and in a general manner, any defect which makes his equipment unsuitable for the use for which it is intended or reducing this use. To this end, he shall undertake, at his expense the repairs, modifications or adjustments which are required.

Replacement parts and equipment shall be delivered to **fives FCB** or to the sites stated by **fives FCB** with all costs being borne

by the **Supplier** (including the costs of packaging, transport, customs clearance, dismantling and re-assembly).

All costs arising from the return of defective parts shall also be borne by the **Supplier**.

Any equipment replaced by way of this article shall be guaranteed under the same conditions as the original equipment.
If, during the period of contractual warranty, the entire installation is not working for a cause which can be attributed to the **Supplier**, such as the repair or replacement of a part of the equipment, adjustments, etc., the period of contractual warranty of the entire supply shall be extended by the period of stoppage.

12.4 - REPAIRS BY fives FCB

Minor repairs which do not require the intervention of the **Supplier**, or those whose the time left would not allow this intervention and which are to be carried out under the warranty, may be carried out in workshops or on site, by **fives FCB**, its Client or by a third-party company authorised by them, at the cost of the **Supplier**. Equally, should the **Supplier** refuse or delay in fulfilling his warranty obligations or not act with care, **fives FCB**, its Client or a third-party company authorised by them, may, subject to giving formal notification which remains without effect after a period of 7 days has elapsed, proceed themselves with the repairs or modifications requested, at the expense of the **Supplier**.

12.5 - USE OF SPARE PARTS

If, during the period of warranty the employees of the **Supplier**, **fives FCB** or the Client have to replace defective parts by taking parts from the spare parts storage, the **Supplier** shall replace the missing parts free of charge under the conditions of article 12.3 here above.

12.6 – LATENT DEFECTS

On expiry of the contractual period of warranty, the **Supplier** remains bound by the guarantee against latent defects.

13 – DEFAULT

In the event of default by the **Supplier** and after a period of 7 days after a formal notification has remained without effect, **fives FCB** reserves the possibility of executing the works and services which remain to be carried out instead and in place of the **Supplier**, without prejudice to all other indemnities which could be claimed by **fives FCB**. The responsibility of the **Supplier** remains engaged.

14 – CANCELLATION

In the cases specified in the order and subject to these General Conditions of Purchase and generally, in the event of any breach whatsoever of the obligations for which the **Supplier** is responsible, **fives FCB** may cancel part or all of the order.

The same shall apply in the event of a company transfer, demerger, partial business transfer or merger, should **fives FCB** not accept the substitution of the company in the rights of that of the **Supplier**.

In the case of a total cancellation of the order, **fives FCB** shall make available to the **Supplier** the equipment already supplied, and the latter shall have to refund **fives FCB**, within a period of thirty calendar days after notification of this cancellation, all amounts received concerning the order, increased by penalties for delay and all other indemnities.

In the event of a partial cancellation, **fives FCB** shall retain the equipment already delivered, take delivery of or have the equipment executed or in the process of execution delivered to him. He will pay the **Supplier** the total amount agreed after deduction of the penalties for late fulfilment and all other indemnities.

15 – SUSPENSION

fives FCB reserves the right to demand, at any time, a stoppage of all or part of the works, without having to pay the **Supplier** the costs which might arise from this suspension if it lasts for a period of less than 6 (six) months.

16 - FORCE MAJEURE

A case of force majeure is understood to refer to an event which is unavoidable, unforeseeable, which is beyond the control of the **Supplier** and which renders it impossible and not simply more difficult or more costly the execution of the order.

The force majeure has the effect of suspending execution of the order throughout the time when this execution is really impossible and, in particular of suspending application of the penalties for delay. Whatever the circumstances, this article shall only apply if the case of force majeure invoked by the **Supplier** has been accepted as such by **fives FCB**'s Client.

Force majeure shall be recognised only if the **Supplier** has not been in position to have the order executed by a third party appointed by him and agreed by **fives FCB** or nominated by **fives FCB**. The **Supplier** shall immediately inform **fives FCB** by fax or email and then confirm by letter the dates of the start and end of the circumstance which he considers as constituting a case of force majeure specifying the nature of the event. **fives FCB** reserves the right to undertake, through any authority of its choice, a check on the facts claimed by the **Supplier**.

In any case, the **Supplier** shall do everything in his power to minimise the effects of the force majeure.

17 - SETTLEMENT OF DISPUTES

It is expressly agreed that all disputes which might arise from the order and which could not be settled amicably shall be under the exclusive jurisdiction of the courts of Paris, even in cases of proceedings against the guarantor which take the form of giving third-party notice and plurality of defendants, and without the place provided for delivery or the place of payment being able to be considered as an exception to this clause conferring jurisdiction.

French law alone shall be applicable, excluding all rules concerning conflict of laws which might refer to the application to another law or any International Convention carrying uniform law.

By express agreement, arbitration or legal decisions given within the context of the main contract between **fives FCB** and its Client shall have, for the **Supplier**, the authority of a final court decision, provided that he was formally notified to participate in the proceedings which resulted in these arbitration or legal decisions.

No dispute may be invoked by the **Supplier** in order to modify or delay the normal fulfilment of his obligations.

Annex F –

Insurance policy of the design office