

ENCLOSURE NO 2 TO THE REQUEST FOR QUOTATION REGARDING THE ESTIMATION OF THE ORDER VALUE

TECHNICAL SPECIFICATION

ArcelorMittal Poland S.A. (hereinafter also AMP) carries out its business in various divisions in Poland, with a main focus on steel production in Kraków and Dąbrowa Górnicza and in other important production plants responsible for manufacturing of various steel products in Poland.

The subject of the order indicated in this specification applies to the project entitled "Development of the innovative Zn-Al-Mg based coating for the production of hot deep galvanized sheets" (project no.: POIR.01.02.00-00-0176/16) Measure 1.2. "Sectoral R&D programmes" of the Intelligent Development Operational Program 2014-2020 co-financed by the European Regional Development Fund.

In connection with the Company's obligation to apply the competition principle, this technical specification is the subject of the contract that allows potential Contractors to estimate the value of the contract.

This specification has been prepared with the most care to determine the full, unambiguous and comprehensive description of the subject of the contract so as to enable Contractors to determine all their obligations and risks and to account for the price and other elements of the initial valuation.

The valuation prepared on the basis of this specification will not constitute as an offer within the meaning of the Commercial Code.

This Technical Specification applies to turnkey implementation covering all necessary areas, such as i.e. design, manufacturing, delivery, development, assembly, testing and commissioning of the zinc pot no. 1. All purchases, services and delivery subject to this inquiry for the estimation of the contract value must be included and cooperate with the existing infrastructure and equipment in the Company and must meet the same technological standards. Therefore, the need to maintain the same technological conditions and the need to preserve the unification of equipment resulting from the expansion of existing infrastructure determined the provisions in this specification. The provisions used are justified in the need to ensure smooth implementation of the project. The indicated provisions do not require the Contractors to apply the indicated solutions and only inform about the minimum parameters and standards. The use of certain types of solutions is not obligatory but merely exemplary. Indications regarding expected technical parameters and indications regarding specific types and producer names are of a general nature, referring only to exemplary indications of equivalent products and are not the only accepted solution. On this basis, the Buyer allows equivalent solutions.



AMP expects a technical solution to meet the requirements of the installation. Contractors are expected to submit a basic offer considering the requirements of this Technical Specification.

The package must be complete in all respects and valuation shall include all the components/equipment required to achieve proper construction, operation and maintenance of the installation.

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DESCRIPTION OF THE SUBJECT

The aim of the project is to put in operation the zinc pot and to adjust it to operate with zinc alloy Zn-Al-Mg. To achieve the above, it is necessary to:

- a) remove zinc remnants from the pot,
- b) remove lining from the pot and install new lining,
- c) replace steel edges of the pot with new ones, installation and dismantling as per the drawing,
- d) dismantle and install inductors,
- e) regenerate inductors,
- f) design and erection on new electrical cabinets,
- g) dismantle power cabinets and install new ones,
- h) integrate control system with the existing control system and HMI,
- i) start up the pot for regular operation.

Scope of civil works described in this technical specification does not require to apply for Building Permit.

SCOPE OF WORKS

- a) Preparation of access to the pot in the parking position:
 - i. installation of a cover securing the opening over the pot,
 - ii. installation of a physical protection of the opening. A fork lift with a 2-ton zinc block will drive over the installed cover,
 - iii. putting up scaffolding in the cellar to access the opening resulting from the removal of inductors,
- b) Protection of auxiliary equipment against dust (zinc pot no 2, electrical cabinets, fans, compressor room),

- c) Removal of zinc remnants and its storage in a place within the plant's premises indicated by AMP. Supplier is responsible for reprocessing of wastes,
- d) Removal of lining and its storage in a place within the plant's premises indicated by AMP. Supplier is responsible for reprocessing of wastes,
- e) Removal of steel edges from the pot,
- f) Dismantling of inductors,
- g) Regeneration of inductors, exchange of bushings, lining, drying, preparation for assembly,
- h) Lining the inside of the pot with refractory, drying, preparation for operation,
- i) Installation of new pot edges,
- j) Installation of regenerated inductors, electrical connection,
- k) Dismantling of existing power cabinets, storage of remaining elements in a place within the plant's premises indicated by AMP,
- l) Transport of power cabinets and their positioning, connection to inductors. Cable laying,
- m) Integration of the control system with the existing HMI system – cable connection, controller program change, modification of HMI,
- n) Supervision over the start-up of the zinc bath. Switching inductors on.

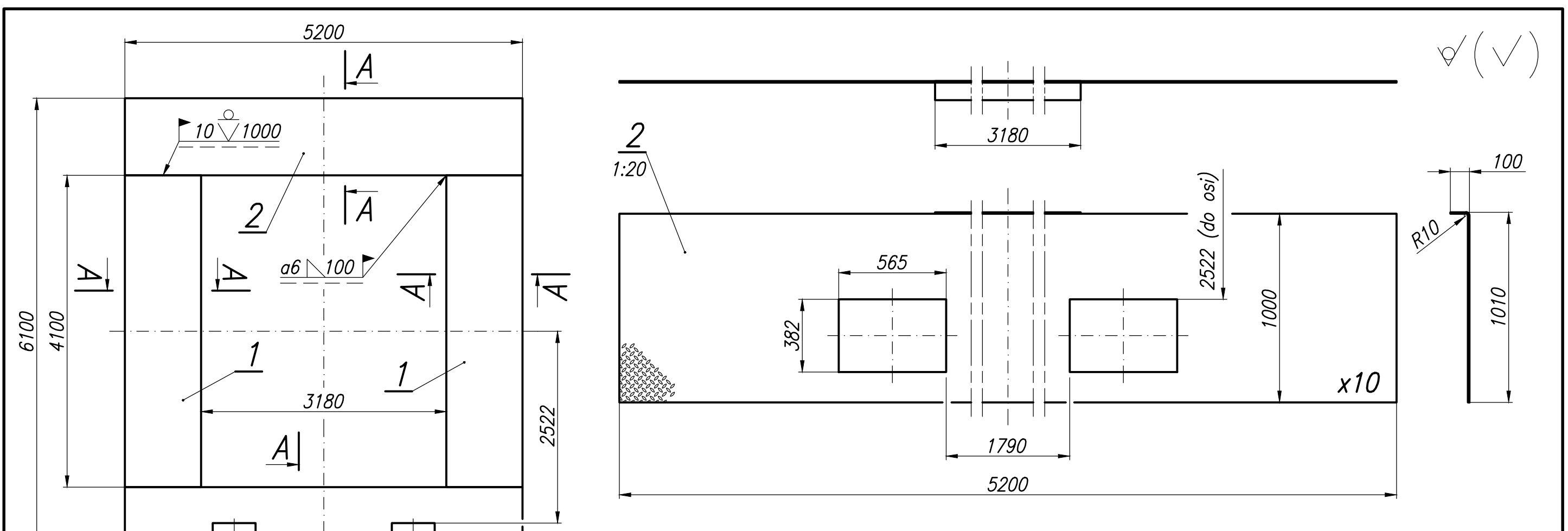
SCOPE OF MATERIALS SUPPLY

- a) The pot lining must satisfy the following parameters:
 - i. minimum Al₂O₃ content of 80% or higher, without SiO₂,
 - ii. resistance to liquid Zn-Al-Mg alloy,
- b) Inductors lining must satisfy the following parameters:
 - i. minimum Al₂O₃ content of 92% or higher, without SiO₂,
 - ii. the required parts must be specified by the supplier during the site visit and inspection of inductors,
- c) Inductors: power supply system adjusted to power consumption of regenerated inductors, electrical cabinets designed, prefabricated before delivery to ArcelorMittal Poland Świętochłowice,
- d) New pot edges – as per the drawing 050-009/301,
- e) Placing two covers over the parking positions of pot no. 1 ,
- f) Technical protection of the access opening to the pot.,
- g) Liquid zinc pumps – minimum flow 300kg/min, electrical supply - 2 pcs.



TECHNICAL DRAWINGS

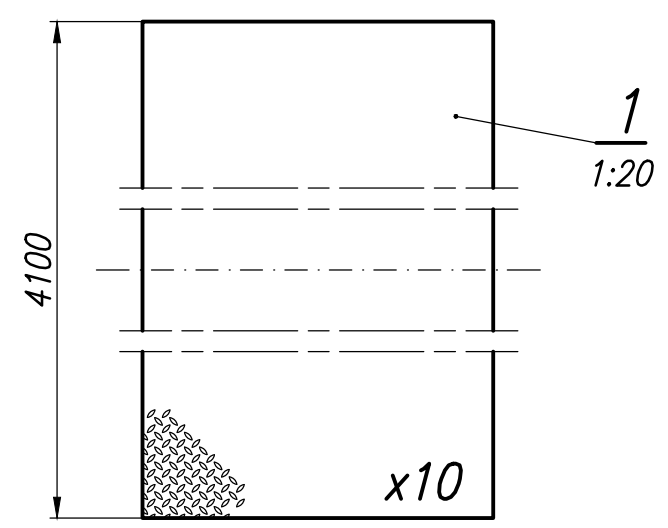
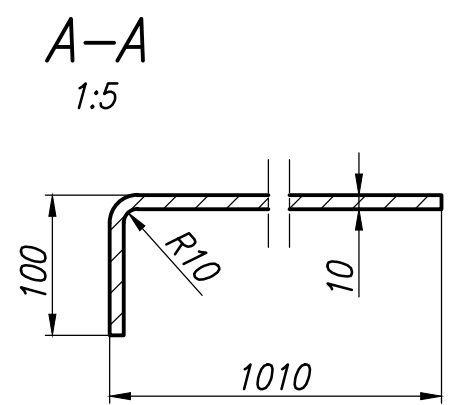
- a) Drawing no. 050-009/301
- b) Drawing no. 718799
- c) Drawing no. ET-01-2009 sheet 1/2
- d) Drawing no. ET-01-2009 sheet 2/2
- e) Drawing no. ET-07-2843
- f) Drawing no. ET-07-2844



UWAGA:

1. Dwa otwory 565x382 wykonać tylko w jednym elemencie (poz.2) .
2. Chropowatość krawędzi ciętych - ∇_{25} .
3. Ostre krawędzie stępić .

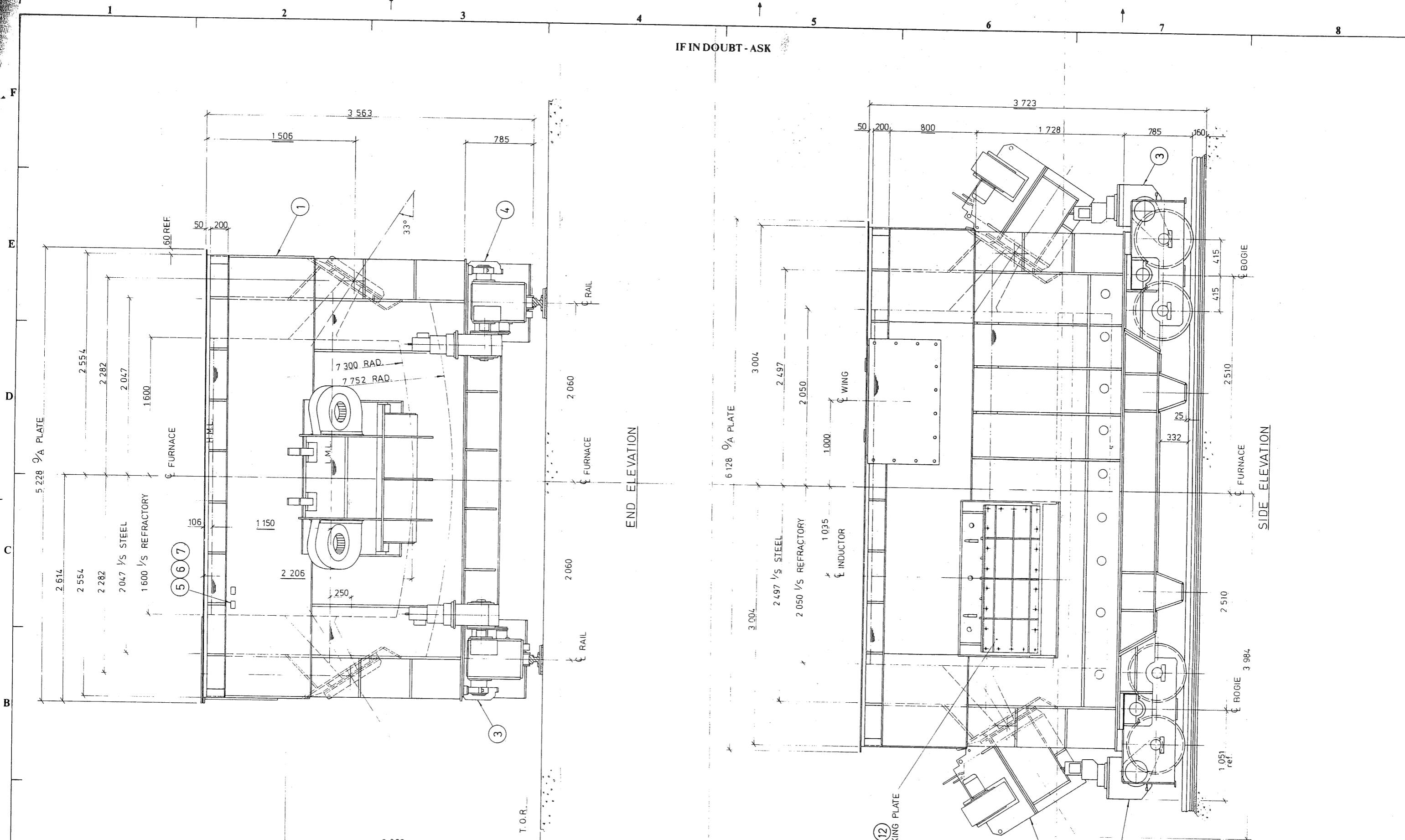
$\Sigma \approx 1672 \text{ kg}$



2	2	Blacha żeberkowa 10x1095-5200	PN-73/H-92127	S235JR	463,0	926,0
2	1	Blacha żeberkowa 10x1095-4100	PN-73/H-92127	S235JR	373,0	746,0
Szt.	Poz.	Wyszczególnienie	Nr Normy Rysunku	Materiał	Jednostkowa Masa - kg	Całkowita Masa - kg

Wydział Blach Ocynkowanych	Kreślił	Konstruował	Sprawdził	Zatwierdził	ArcelorMittal POLAND S.A. Oddział w Świętochłowicach WSPARCIE PRODUKCJI		
	Data	2017.06	2017.06	2017.06			2017.06
	Podpis						
	Nazwisko	G.Pyka	G.Pyka	K.Hilgner			K.Hilgner
Podziałka	Linia A1 - Wanna cynku				Nr rysunku 050-009/301		
1:50	Pokrycie wanny cynku				Nr zestawienia		
1:20					Pozycja		
1:5							

IF IN DOUBT - ASK



END ELEVATION

SIDE ELEVATION

NOTE: -
SIDE WALL INDUCTORS
NOT FITTED BLANKING
PLATES FITTED

REV.	REVISION	REVISED	DATE	CHECKED

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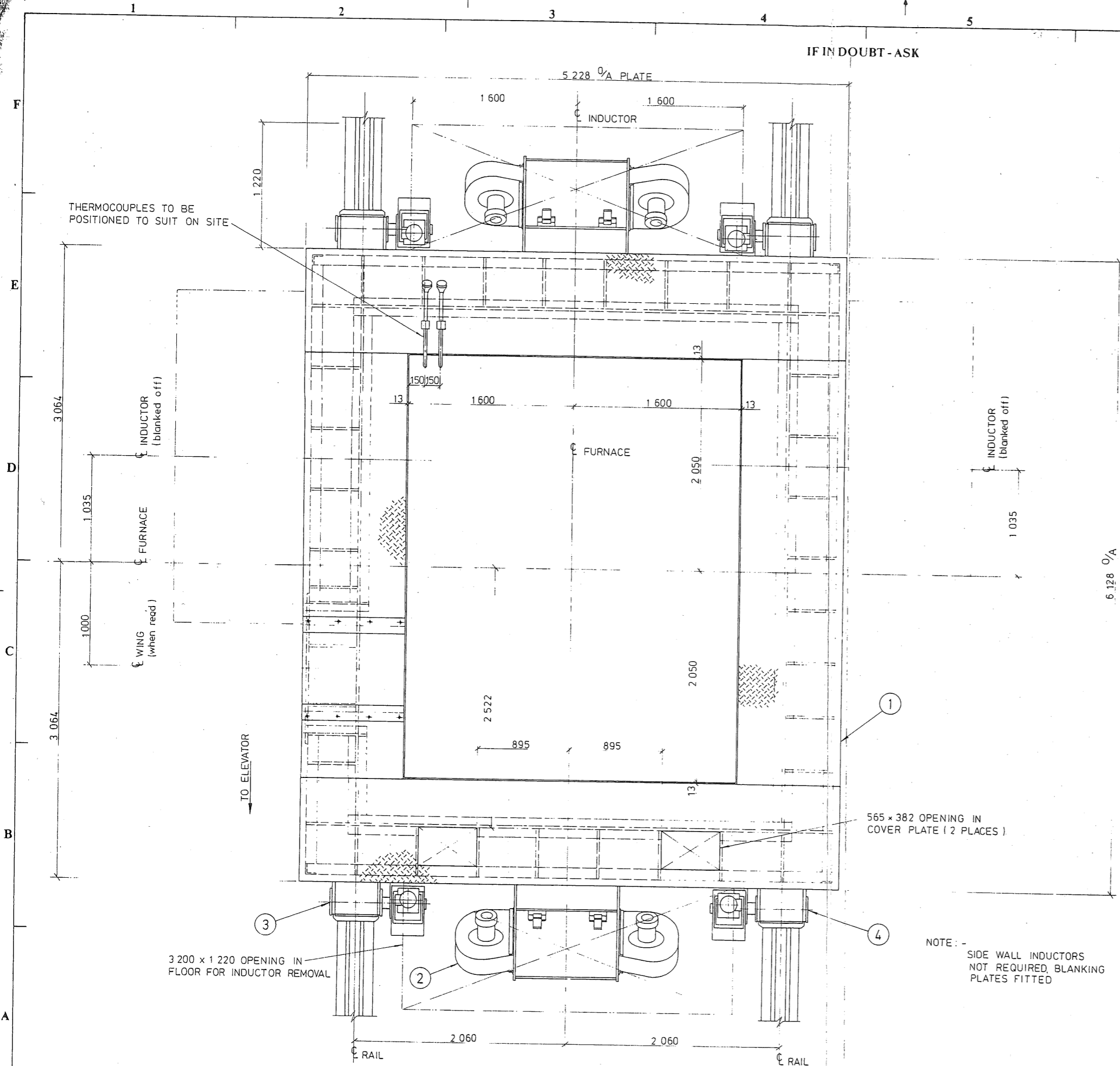
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DRAWN: M.Sp.
CHECKED: [Signature]
DATE: 5.2.97

SCALE: 1:20
PROJECTION: [Symbol]
TITLE: 4 TEG COATING FURNACE GENERAL ASSY (ELEVATIONS) (FURNACE N° 1)

DRAWING NUMBER: ET-01-2009
SHEET 1 OF 2
B.O.M. YES [] NO []

IF IN DOUBT - ASK

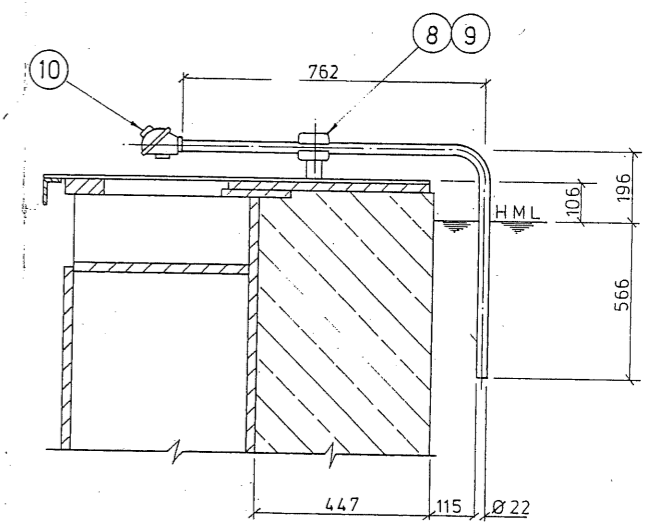


FURNACE ESTIMATED WEIGHT IN kg (ZINC AT 6 5878 g/cm³)

UPPER CASE STEEL BODY	40 629
REFRACTORY AT 2403 g/cm ³	59 518
METAL AT H.M.L high metal level	182 192
METAL AT L.M.L low metal level	79 475
INDUCTOR LINED AT 4 518 kg x 2	9 036
BOGIE UNIT AT 1815 kg x 4	7 260
TOTAL FOUNDATION LOAD AT H.M.L	298 635

NOMINAL BOGIE WHEEL LOADING 300 tonnes ÷ 8 = 37.5 tonnes

FURNACE SPEED (MAX.) IN EITHER DIRECTION = 1 metre/min



DETAIL THERMOCOUPLE ASS'Y
N.T.S.

NOTE: -
SIDE WALL INDUCTORS
NOT REQUIRED, BLANKING
PLATES FITTED

PLAN

LET.	REVISION	REVISED	DATE	CHECKED

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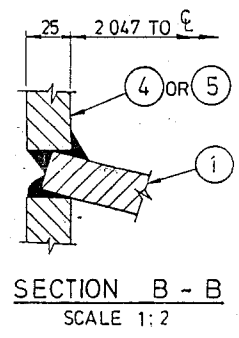
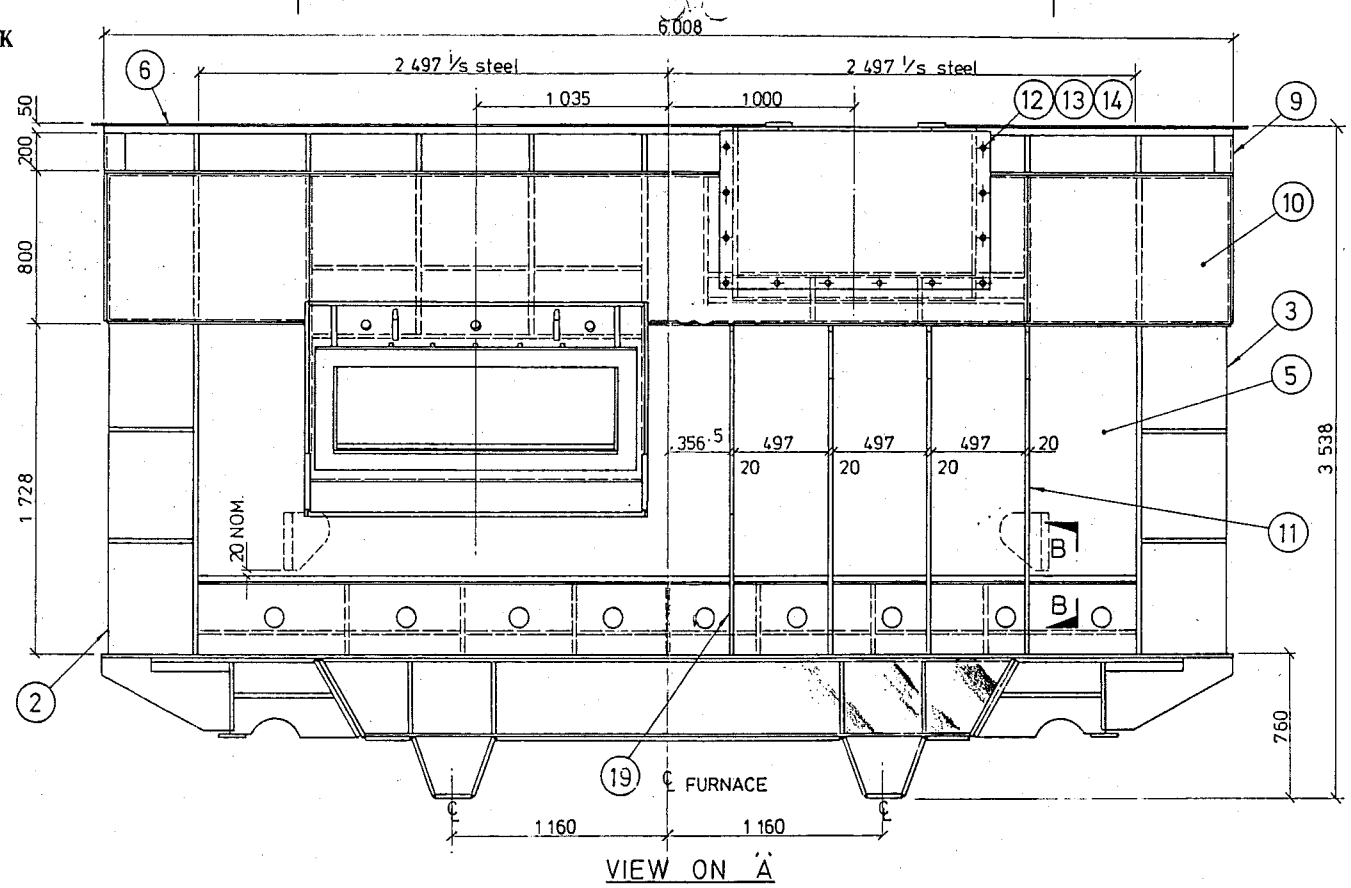
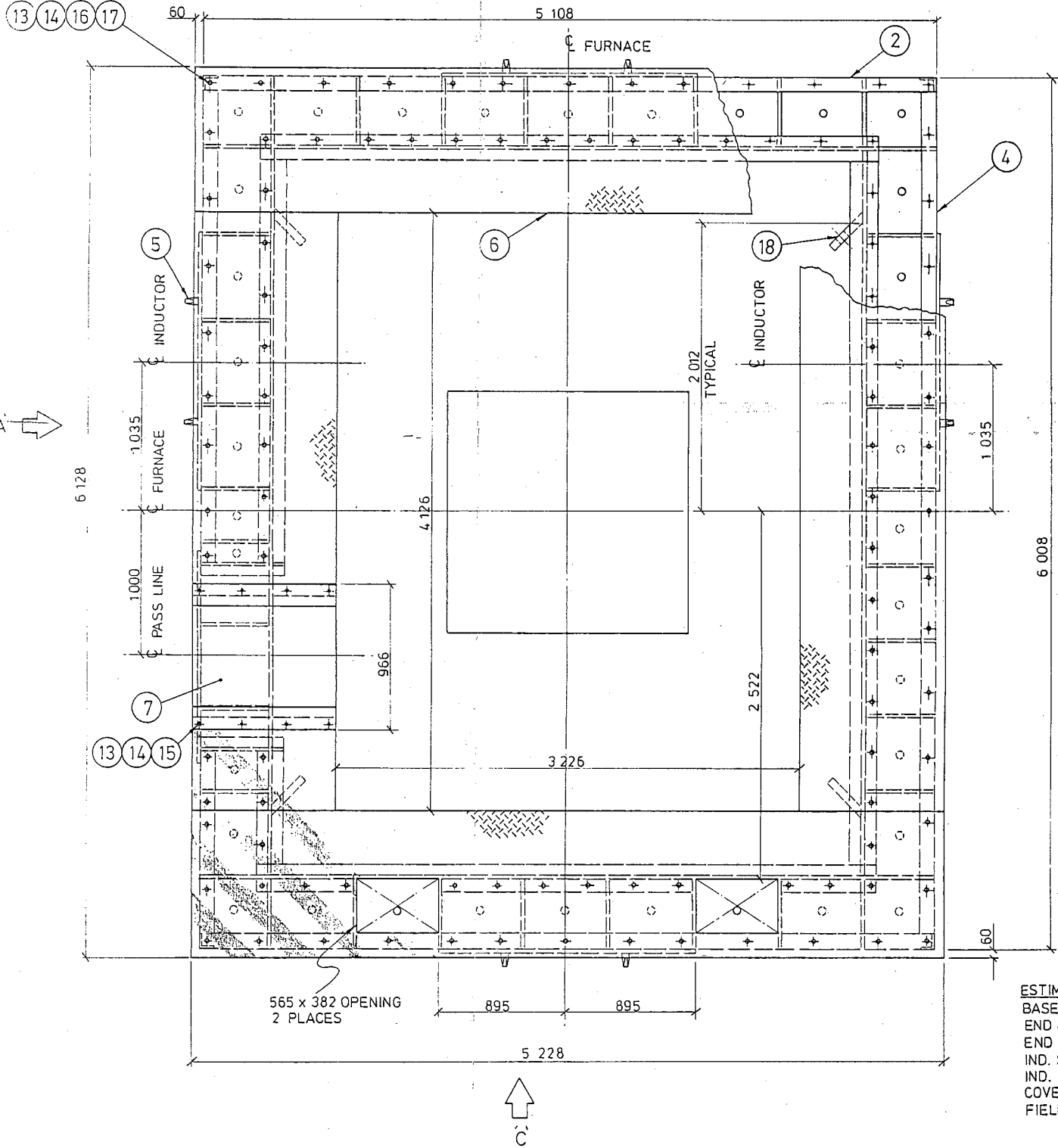
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PROJECTION: [Symbol]

TITLE:
4 TEG COATING FURNACE
GENERAL ASS'Y (PLAN)
(FURNACE N°1)

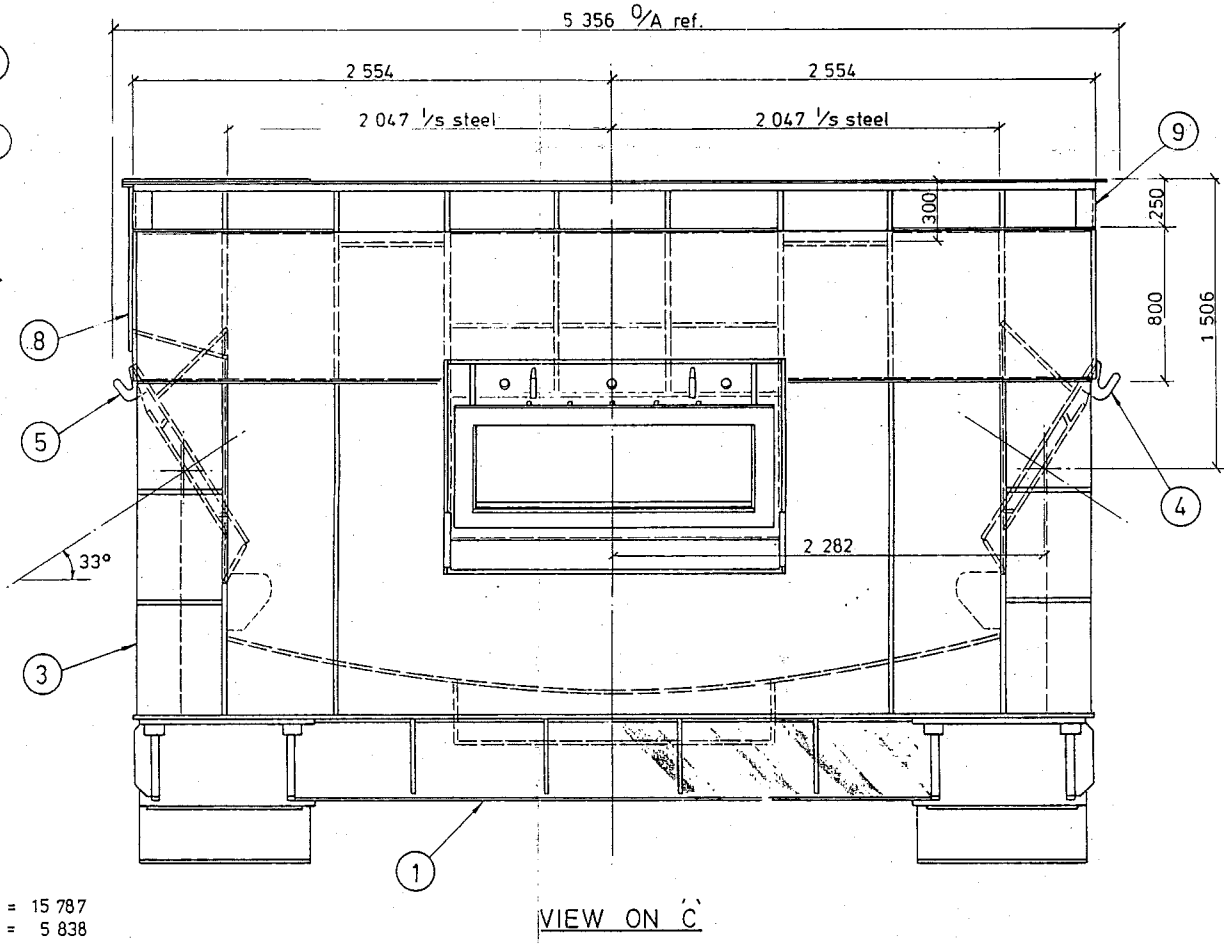
DRAWING NUMBER:
ET-01-2009
SHEET 2 OF 2
B.O.M. YES NO

IF IN DOUBT - ASK

NOTE: -
 i ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE STATED FILLET SIZE TO BE ONE HALF LARGEST PLATE THICKNESS BOTH SIDES.
 ii FURNACE BASE PLATE WELDMENT BEAM SECTIONS AND COVER PLATE SURROUND TO BE PAINTED WITH BLACK AND YELLOW STRIPES 150 WIDE AT 45° AS INDICATED.
 iii THIS DRAWING TO BE READ IN CONJUNCTION WITH
 a. COVER PLATE WELDMENT ET-07-2844
 b. CLAMPING ARRANGEMENT ET-07-2546
 c. BOGIE CRADLE ARRANGEMENT ET-01-1956



SECTION B - B
SCALE 1:2



VIEW ON C

ESTIMATED WEIGHT

BASE PLATE WELDMENT	= 15 787
END PLATE WELDMENT	= 5 838
END PLATE WELDMENT	= 5 838
IND. SIDE PLATE WELDMENT	= 4 224
IND. SIDE PLATE WELDMENT	= 4 452
COVER PLATE SURROUND	= 3 296
FIELD WELDMENT DETAILS	= 1 194
TOTAL	40 629 kg

MARK - A UPPER CASE WELDMENT

TOLERANCE TO ESK-3-0061,
DIMENSIONS IN mm,
UNLESS OTHERWISE STATED.

REVISION	REVISED	DATE	CHECKED

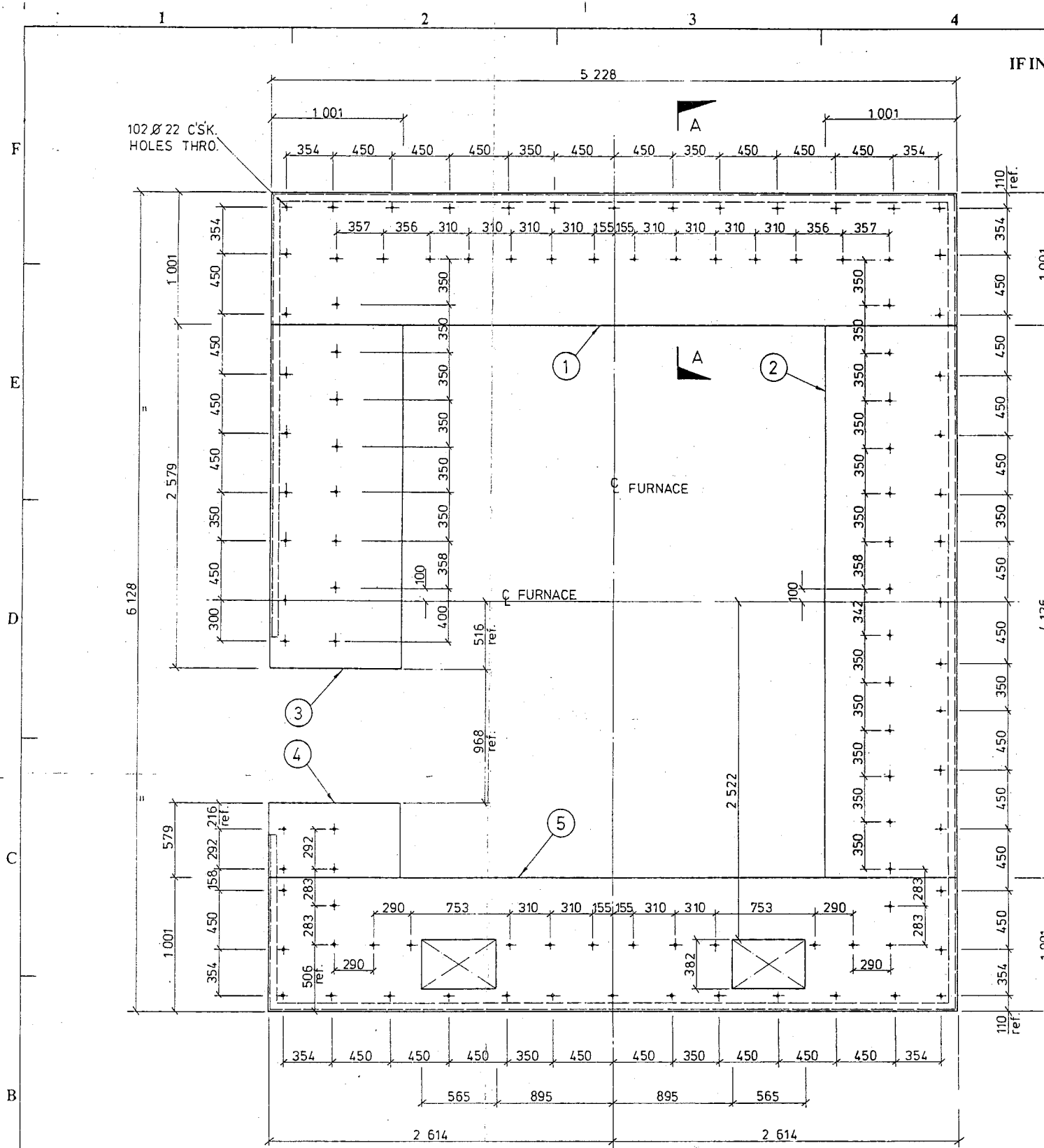
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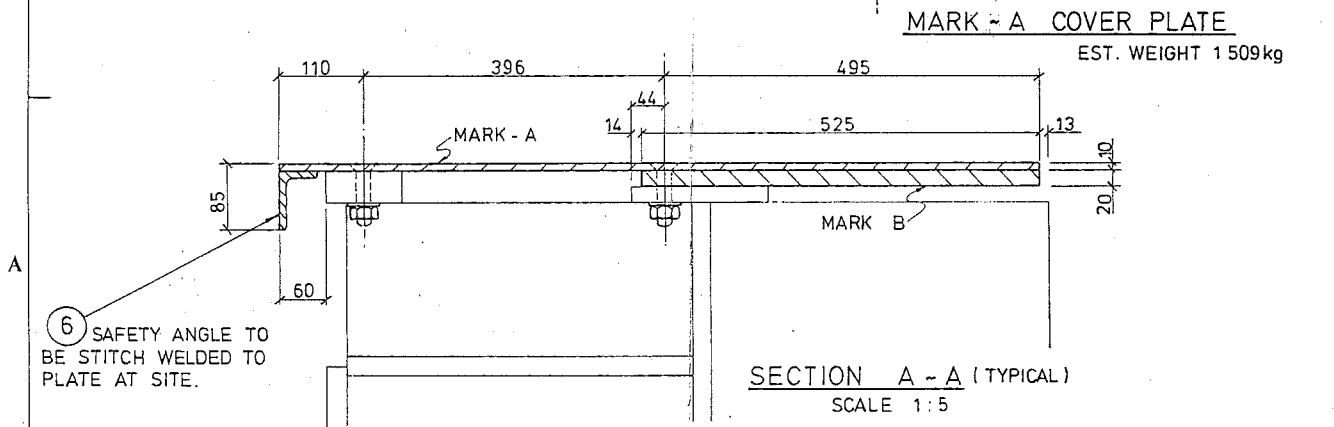
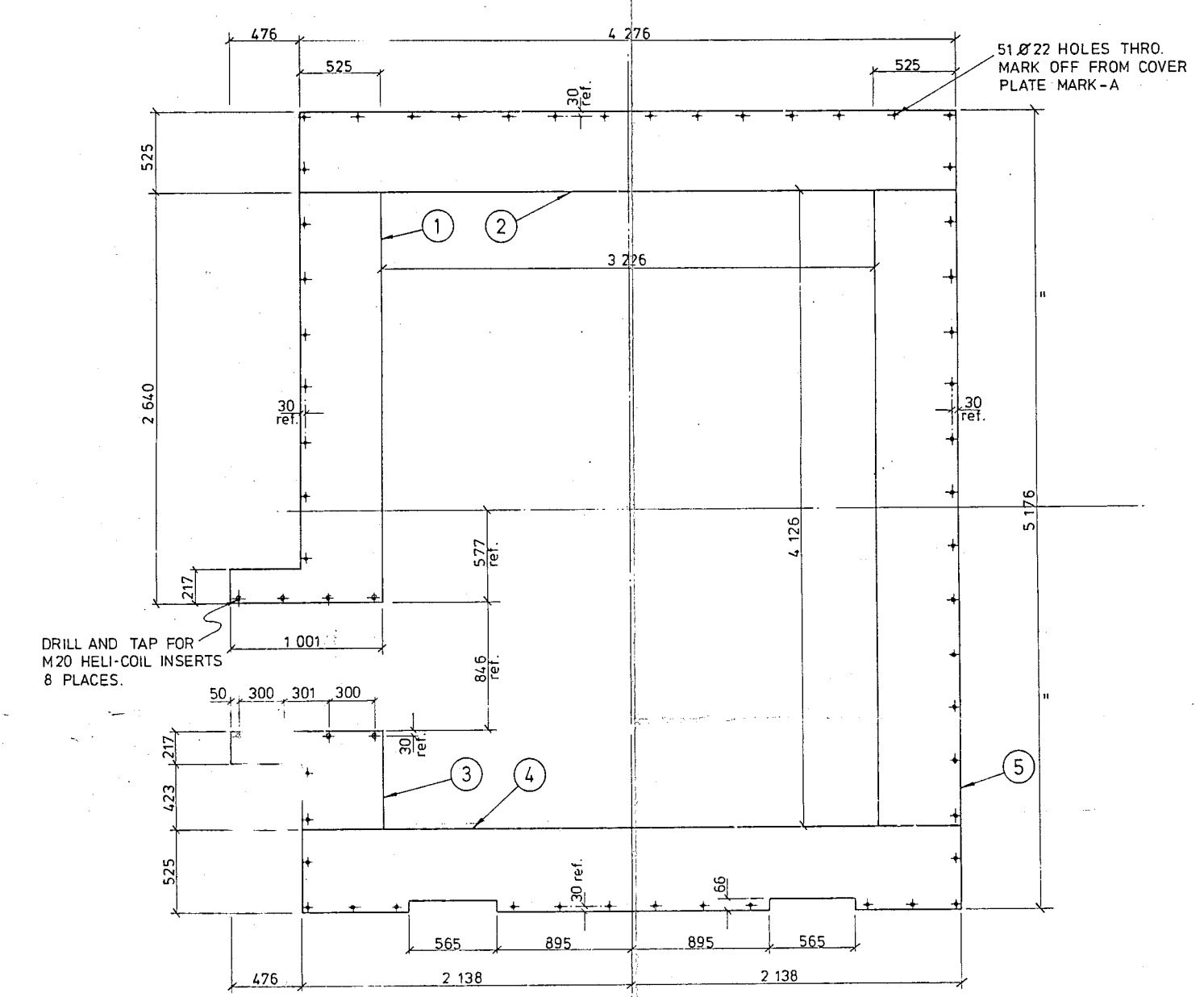
DRAWN:	M.Sp.	SCALE:	1:20
CHECKED:	WS	PROJECTION:	
DATE:	29.1.97		

TITLE:
UPPER CASE WELDMENT
 (FURNACE N°1)

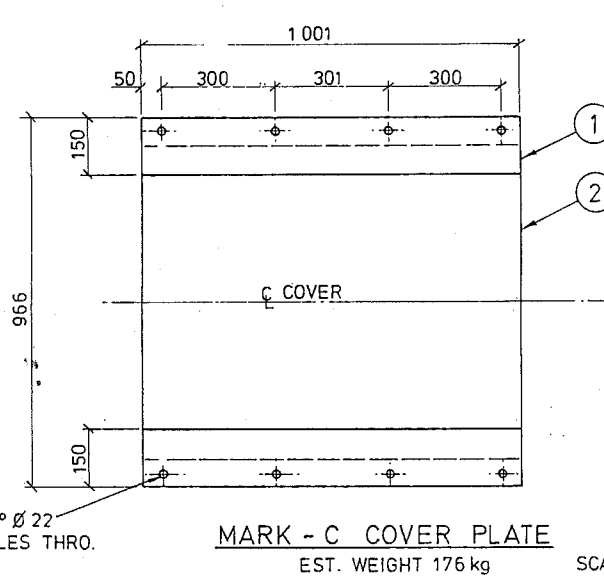
DRAWING NUMBER:	ET-07-2843
I.O.M. YES <input type="checkbox"/> NO <input type="checkbox"/>	



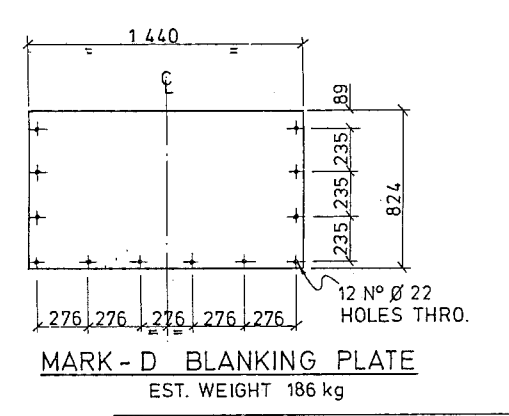
IF IN DOUBT - ASK



MARK - B COVER PLATE
EST. WEIGHT 1425 kg



MARK - C COVER PLATE
EST. WEIGHT 176 kg



MARK - D BLANKING PLATE
EST. WEIGHT 186 kg

TOLERANCE TO ESK-3-0061,
DIMENSIONS IN mm,
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DRAWN: M.Sp.
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DATE: 24.11.97

SCALE: 1:20
PROJECTION: *[Symbol]*
TITLE: COVER PLATE DETAILS

DRAWING NUMBER: ET-07-2844
H.O.M. YES NO