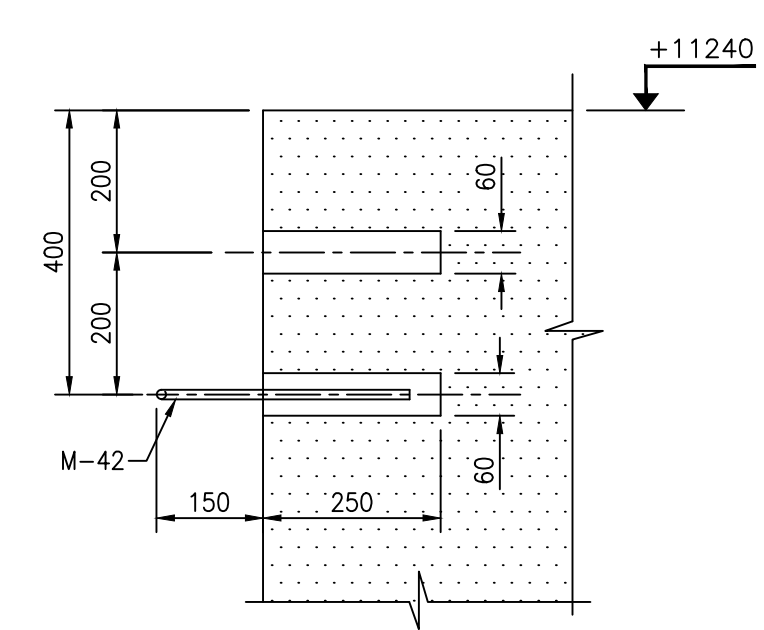
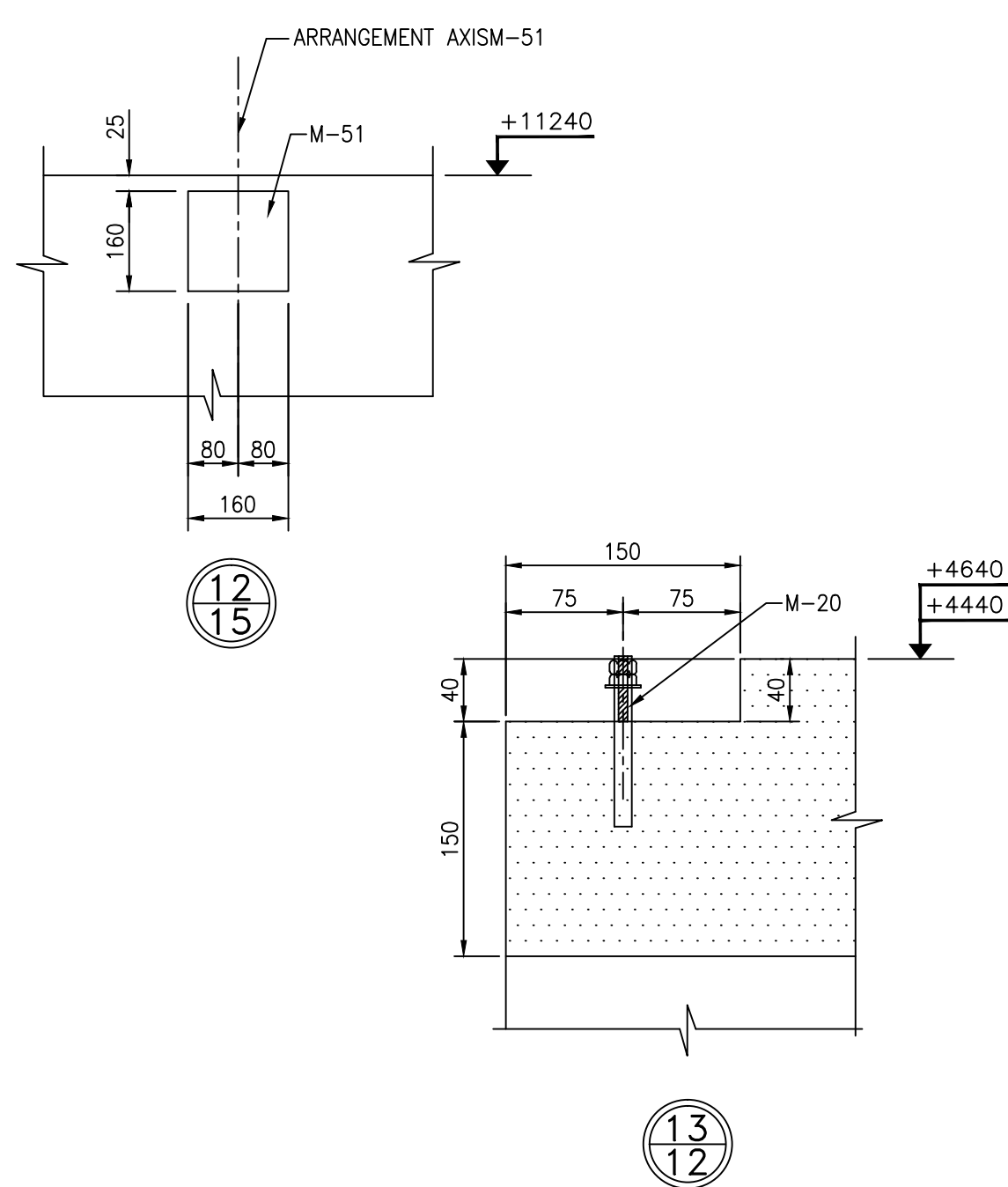
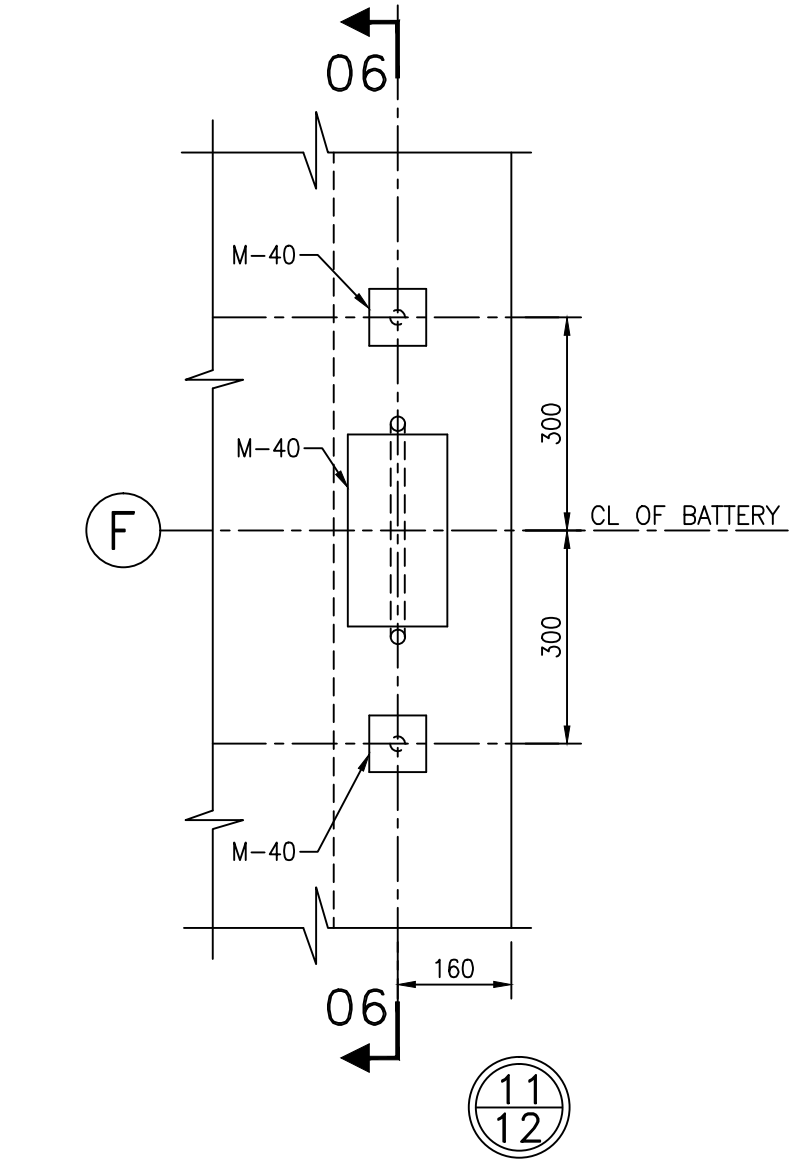
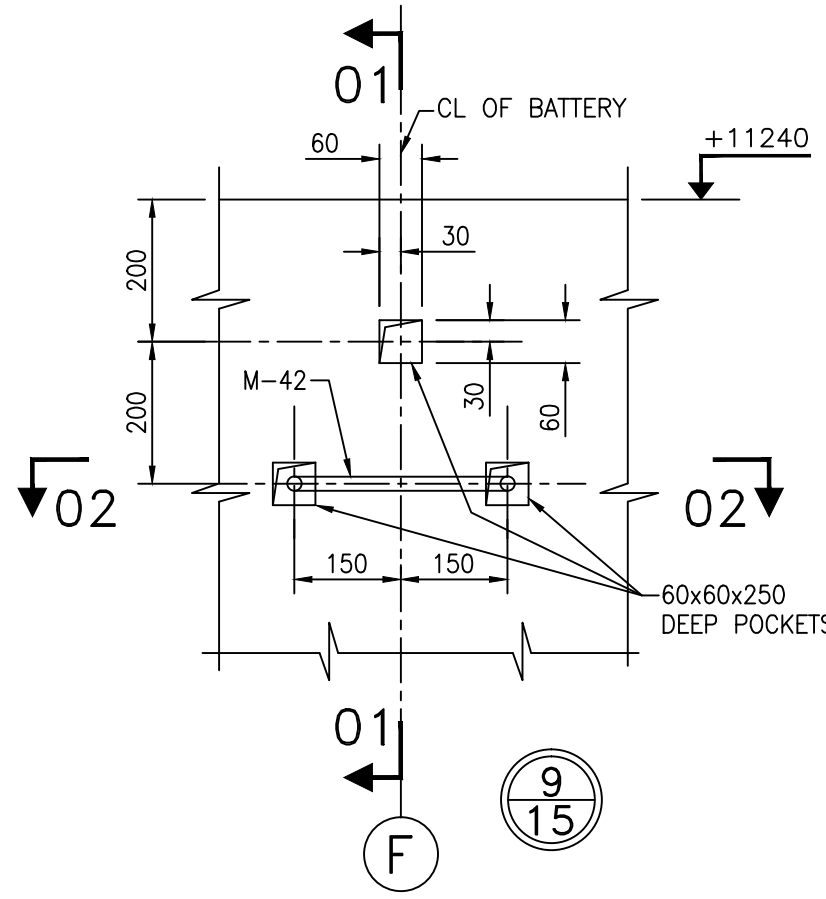


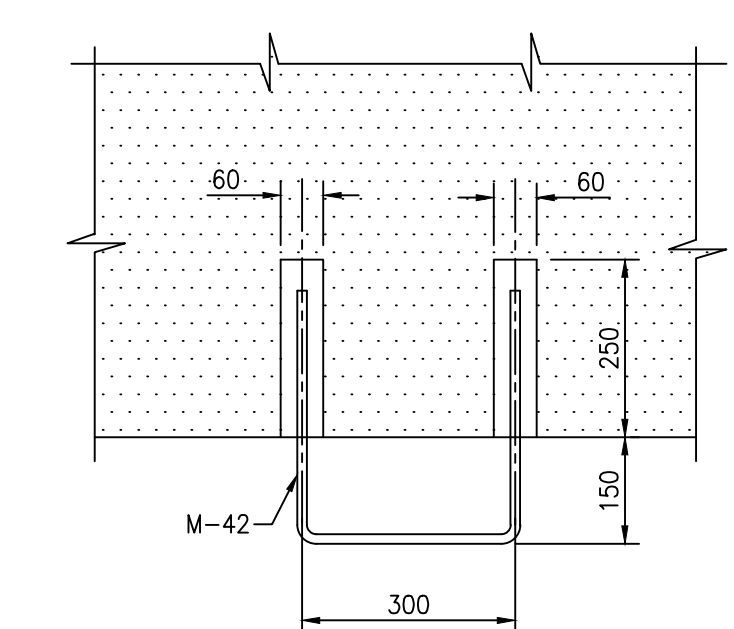
VIEW ALONG
SECTION 13-13



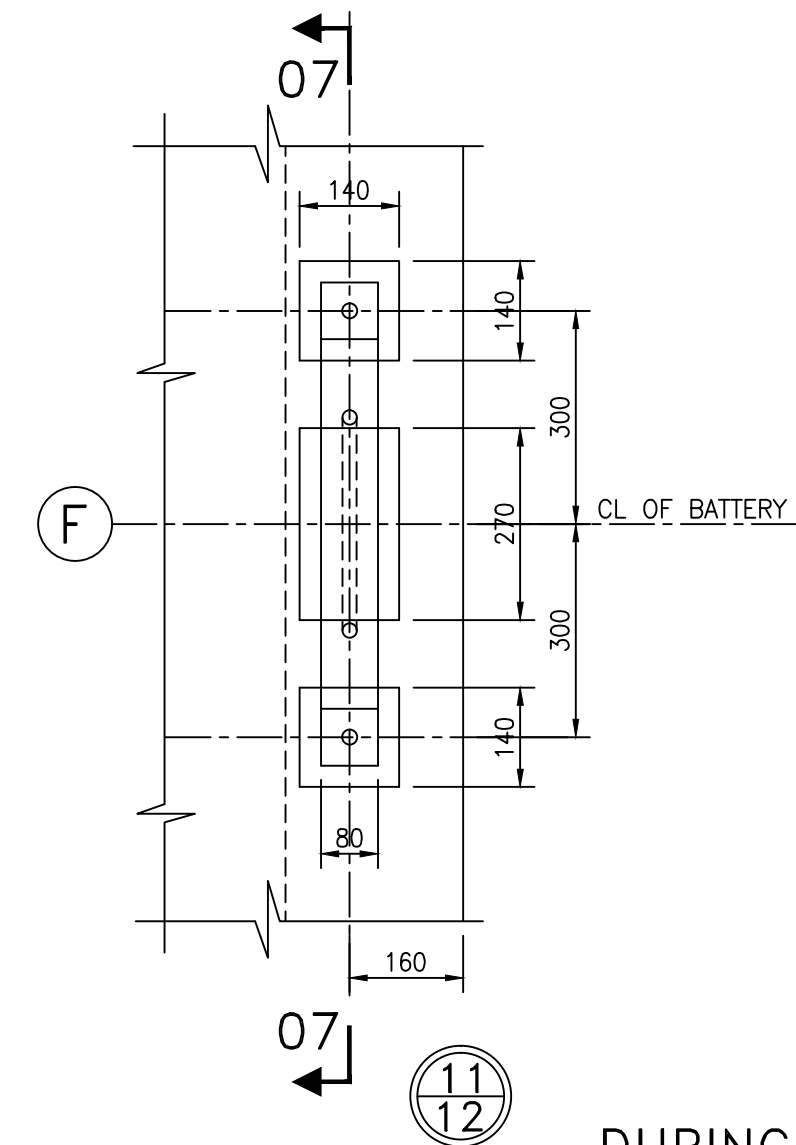
SECTION 01-01



SECTION 06-06



SECTION 02-02
CEMENT MORTAR, STRENGTH SO



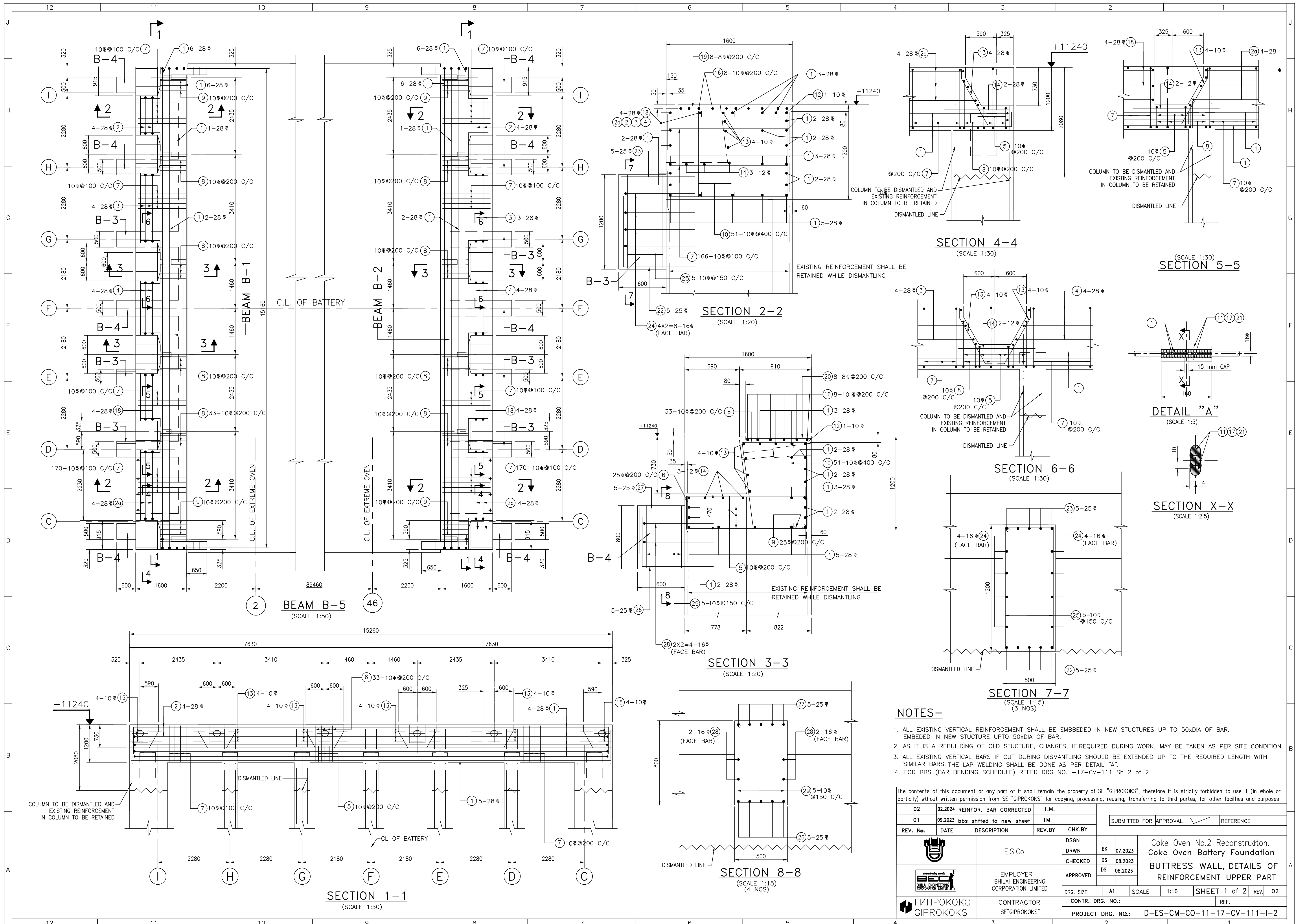
SECTION 07-07

DURING CONSTRUCTION


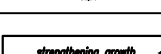

WORKS INDICATED IN CROSS SECTION 06-06 SHOULD BE DONE AFTER FINISHING CONSTRUCTION.
LONGITUDINAL BATTERY AXIS, ACCEPTED DURING BATTERY FOUNDATIONS AND BRICK WORK CONSTRUCTION SHOULD BE CUT BY GEODESIST ON CLAMP M-42 FOR FURTHER APPLICATION.

NOTES-
1. THIS SHEET TO BE CONSIDERED TOGETHER WITH SHEET K-16.

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01	03.2023	Letter TN0014-CS						SUBMITTED FOR APPROVAL	REFERENCE
REV. No.	DATE	DESCRIPTION	REV. BY	CHK. BY					
		E.S.Co		DSGN	BK	07.2023	Coke Oven No.2 Reconstruction. Coke Oven Battery Foundation BUTTRESS WALL, SECTIONS Battery Centre Line		
				DRWN	DS	08.2023			
				CHECKED	DS	08.2023			
		EMPLOYER Bhilai Engineering Corporation Limited		APPROVED			CONTR. DRG. NO.: PROJECT DRG. NO.: D-ES-CM-CO-11-17-CV-110-I-0		
		CONTRACTOR SE "GIPROKOKS"		DRG. SIZE	A1	SCALE	1:10	SHEET	1 of 1
								REV.	00
								REF.	Sh.K-15



- NOTES-**
- 1. ALL EXISTING VERTICAL REINFORCEMENT SHALL BE EMBEDDED IN NEW STUCTURES UP TO 50xDIA OF BAR. EMBEDD IN NEW STUCTURE UPTO 50xDIA OF BAR.
 - 2. AS IT IS A REBUILDING OF OLD STUCTURE, CHANGES, IF REQUIRED DURING WORK, MAY BE TAKEN AS PER SITE CONDITION.
 - 3. ALL EXISTING VERTICAL BARS IF CUT DURING DISMANTLING SHOULD BE EXTENDED UP TO THE REQUIRED LENGTH WITH SIMILAR BARS. THE LAP WELDING SHALL BE DONE AS PER DETAIL "A".
 - 4. FOR BBS (BAR BENDING SCHEDULE) REFER DRG NO. -17-CV-111 Sh 2 of 2.

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02	02.2024	REINFOR. BAR CORRECTED	T.M.						
01	09.2023	bbs shifted to new sheet	TM						
REV. No.	DATE	DESCRIPTION	REV. BY	CHK. BY	SUBMITTED FOR APPROVAL <input checked="" type="checkbox"/> REFERENCE				
		E.S.Co		DSGN			Coke Oven No.2 Reconstruction. Coke Oven Battery Foundation BUTTRESS WALL, DETAILS OF REINFORCEMENT UPPER PART		
				DRWN	BK	07.2023			
				CHECKED	DS	08.2023			
				APPROVED	DS	08.2023			
		EMPLOYER BHILAI ENGINEERING CORPORATION LIMITED							
				DRG. SIZE	A1	SCALE	1:10	SHEET 1 of 2	REV. 02
 ГИПРОКОКС GIPROKOKS		CONTRACTOR SE "GIPROKOKS"		CONTR. DRG. NO.:				REF.	
				PROJECT DRG. NO.:				D-ES-CM-CO-11-17-CV-111-I-2	

	12	11	10	9	8	7	6	5	4	3	2	1														
J													J													
H													H													
G													G													
F													F													
E													E													
D													D													
C													C													
B													B													
A													A													
	12	11	10	9	8	7	6	5	4	3	2	1														
SPECIFICATION OF REINFORCEMENT FOR EACH ELEMENT							TABLE FOR REINFORCEMENT BARS																			
							REQUIRED REINFORCEMENT																			
MEMBER	NO.	SHAPE	ø MM	LENGTH MM	NO.	LENGTH L (m)	ø MM	FOR EACH ELEMENT		TOTAL																
							ø MM	LENGTH L (m)	WEIGHT (kg)	WEIGHT (kg)																
											LENGTH L (m)	WEIGHT (kg)	WEIGHT (kg)													
BEAM B-1 (NO=1)	1		28	15770	19	299.63	8	104.0	41.08	41.08																
	2		28	1175	4	4.7		104.0	41.08	41.08																
	2a		28	2160	4	8.6	10	1536.3	952.5	952.5																
	3		28	2140	4	8.6	12	47.35	42.0	42.0																
	4		28	1650	4	6.6	25	205.5	772.0	772.0																
	5		10	4335	64	277.5	28	349.36	1690.9	1690.9																
								TOTAL	3498.5	3498.5																
	6		25	3460	33	114.2																				
	7		10	5175	170	879.7																				
	8		10	4160	33	137.3																				
	9		25	2615	33	86.3																				
	10		10	1300	51	66.3																				
	11		28	280	38	10.6																				
	12		10	15210	1	15.21																				
	13		10	1500	16	24.0																				
	14		12	15210	3	46.63																				
	15		10	1100	8	8.8																				
	16		10	15900	8	127.2																				
	17		12	120	6	0.72																				
	18		28	1450	4	5.8																				
	19		8	1590	44	70.0																				
	20		8	1030	33	34.0																				
	21		10	100	2	0.2																				
SPECIFICATION OF REINFORCEMENT FOR EACH ELEMENT													TABLE FOR REINFORCEMENT BARS													
													REQUIRED REINFORCEMENT													
MEMBER	NO.	SHAPE	ø MM	LENGTH MM	NO.	LENGTH L (m)							ø MM	FOR EACH ELEMENT		TOTAL										
													ø MM	LENGTH L (m)	WEIGHT (kg)	WEIGHT (kg)										
							LENGTH L (m)	WEIGHT (kg)	WEIGHT (kg)																	
BEAM B-2 (NO=1)	1		28	15770	19	299.63	8	104.0	41.08	41.08																
	2		28	1175	4	4.7		104.0	41.08	41.08																
	2a		28	2160	4	8.6	10	1536.3	952.5	952.5																
	3		28	2140	4	8.6	12	47.35	42.0	42.0																
	4		28	1650	4	6.6	25	205.5	772.0	772.0																
	5		10	4335	64	277.5	28	349.36	1690.9	1690.9																
								TOTAL	3498.5	3498.5																
	6		25	3460	33	114.2																				
	7		10	5175	170	879.7																				
	8		10	4160	33	137.3																				
	9		25	2615	33	86.3																				
	10		10	1300	51	66.3																				
	11		28	280	38	10.6																				
	12		10	15210	1	15.21																				
	13		10	1500	16	24.0																				
	14		12	15210	3	46.63																				
	15		10	1100	8	8.8																				
	16		10	15900	8	127.2																				
	17		12	120	6	0.72																				
	18		28	1450	4	5.8																				
	19		8	1590	44	70.0																				
	20		8	1030	33	34.0																				
	21		10	100	2	0.2																				
SPECIFICATION OF REINFORCEMENT FOR EACH ELEMENT													TABLE FOR REINFORCEMENT BARS													
													REQUIRED REINFORCEMENT													
MEMBER	NO.	SHAPE	ø MM	LENGTH MM	NO.	LENGTH L (m)							ø MM	ELEMENT		TOTAL										
													ø MM	LENGTH L (m)	WEIGHT (kg)	WEIGHT (kg)										
							LENGTH L (m)	WEIGHT (kg)	WEIGHT (kg)																	
BEAM B-3 (NOS=6)	22		25	2150	5x6	64.50	10	208.8	129.5																	
	23		25	2150	5x6	64.50	16	184.8	292.0																	
	24		16	1650	8x6	79.20	25	285.0	1097.25																	
	25		10	3440	5x6	103.20	TOTAL				1518.75															
	BEAM B-4 (NOS=8)	26		25	1950	5x8	78.00																			
		27		25	1950	5x8	78.00																			
28			16	1650	8x8	105.60																				
29		10	2640	5x8	105.60																					
												VOLUME OF CONCRETE AND WEIGHT OF STEEL FOR ELEMENT														
TYPE OF STRUCTURE	CONCRETE CLASS (M ³)			LEAN CONCRETE M ³	STEEL BARS (TON)																					
	-	-	M30 HEATRESTANT		ø																					
BEAM B-1 TO B-4	-	-	77.0	-	8.3545																					
NOTES-																										
1. THIS SHEET TO BE CONSIDERED TOGETHER WITH DRG. NO. -17-CV-111 , Sh 1 of 2.																										
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02	02.2024	REINFOR. BAR CORRECTED	T.M.																							
01	09.2023	bbs shfted to new sheet	TM			SUBMITTED FOR APPROVAL <input checked="" type="checkbox"/> REFERENCE																				
REV. No.	DATE	DESCRIPTION	REV.BY	CHK.BY																						
		E.S.Co	DSGN	BK	07.2023	Coke Oven No.2 Reconstruction. Coke Oven Battery Foundation																				
		EMPLOYER BHILAI ENGINEERING CORPORATION LIMITED	CHECKED	DS	08.2023	BUTTRESS WALL, SPECIFICATION OF REINFORCEMENT																				
		CONTRACTOR SE "GIPROKOKS"	APPROVED	DS	08.2023																					
DRG. SIZE		A2	SCALE	1:10	SHEET 2 of 2	REV.	02																			
CONTR. DRG. NO.:					REF.																					
PROJECT DRG. NO.:					D-ES-CM-CO-11-17-CV-111-I-2																					

1. Initial Statements

1.2 Absolute deviation equal to 1757.500 is assumed as conventional elevation 0.000

2.1 The base wind speed according to standard P5-E-CE-500 for Esfahan is 110 km/h and minimum design load is 0.77 kN/m². Steel Company, January 2023.




- the study area is a relatively medium risk zone and the basis of design seismic acceleration is 0.25g;
- the maximum bearing capacity of soil is equal to 2.5 kg/cm²

3.1 Structure of buttresses should be made of monolithic heat-resistant concrete.

3.3 Concreting of the structure shall be made with use of vibrators and with close control excluding the possibility of concrete disintegration, formation of cavities and other defects.

3.4 Inserted articles and anchor bolts shall be installed before the concreting according to the instructions on the shuttering drawing.
Foulad Consulting Eng. Co.in Feb. 2022:

..Contd. Sheet 2 of 3

					SUBMITTED FOR		APPROVAL	✓	REFERENCE				
							E.S.C.o. Esfahan Steel Company	DSGN		DSGN	DSG.DATE	Coke Oven NO.2 Reconstruction DESIGN CRITERIA BUTTRESS WALL RECONSTRUCTION	
								DRWN	BK	02-09-23			
							EMPLOYER BHILAI ENGINEERING CORPORATION LIMITED	CHECKED		DS	07-09-23		
								APPROVED		APPD.DATE			
							CONTRACTOR SE"GIPROKOKS"	DRG. SIZE		A4	SCALE: - NTS	SHEET- 1 of 3	REV. - 0
								CONTR. DRG. NO.:					
								PROJECT DRG. NO.-		D-ES-CM-CO-11-18-CV-113-I-0			
REV. No	DATE	DESCRIPTION	REV.BY	CHK.BY									

3

2

1

DESIGN CRITERION

3. Constructive Concept, Contd.

3.5 The quality of welded joint should be controlled. Joints shall be arranged alternately. Joints should be arranged in staggered pattern. In one section volume of joint should not exceed 50%.

3.6 Portion of buttresses not under dismantling shall be repaired as Note no. 2 of drawing no. B-ES-CM-CO-10.13.CV.006 (Sh 1)

3.7 All construction and erection work shall be done in accordance with the plant safety regulations.

3.8 For instruction on the instruction on the fabrication of Inserted articles Refer Drg. No. D-ES-CM-CO-11-18-CV-119-I-0.

4. Corrosion Protection

4.1 Steel structures are subject to anti-corrosion protection in accordance with general standards for painting and taking into account the aggression in condition of Coke Oven production.

4.2 The composition of the protective coating is adopted in accordance with the design criteria and as agreed with the client.

..Contd. Sheet 3 of 3

REV. No	DATE	DESCRIPTION	REV.BY	CHK.BY



E.S.C.o.
Esfahan Steel Company

EMPLOYER
BHILAI ENGINEERING
CORPORATION LIMITED

CONTRACTOR
SE"GIPROKOKS"

SUBMITTED FOR	APPROVAL	✓	REFERENCE	
DSGN	DSGN	DSG.DATE	Coke Oven NO.2 Reconstruction DESIGN CRITERIA BUTTRESS WALL RECONSTRUCTION	
DRWN	BK	02-09-23		
CHECKED	DS	07-09-23		
APPROVED		APPD.DATE		
DRG. SIZE	A4	SCALE: - NTS	SHEET- 2 of 3	REV. - 0
CONTR. DRG. NO.:				
PROJECT DRG. NO.- D-ES-CM-CO-11-18-CV-113-I-0				

3

2

1

3

2

1

DESIGN CRITERION

INSTRUCTIONS FOR EMBEDDED ARTICLES MANUFACTURING

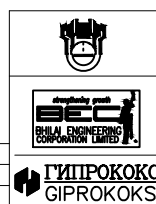
Bolts shall be manufactured with metric thread with nuts and washers. Threaded part of the bolt shall be protected from damages. The quality of welded connections of embeded articles Conforms to all normative requirements and shall be warranted by the Customer. The width of welded joints. except otherwise stated is the following

- a) at welding plates to each other – on the less thickness of welded elements
- b) at welding body of round section to plate – half of the diameter of welded body. but not less than 8mm (see unit "B" on the present drawing)
 - Outer surface of embedded articles shall be marked with indelible paint.
 - Instruction for embedded articles painting shall be as DIN 55928(Part 4).
 - Embedded articles shall be coated with primer loyer for protection against corrosion while storing.
- Covered electrodes for electric arc welding should conform to Iranian standard.

Materials

- rolled metal 5 to 20 mm thick – As per EN10029
- Rolled metal up to 20 mm thick – steel grade E-250A as per Indion standard IS:2062 (assortment IS:1730-1989)
- Equal, unequal angle bars, l-beams, channels as per European standard EN 17100.
- Steel pipes – Material as EN 10029
- Foundation bolts should conform to ESCo plant standard
- Nuts should conform to Iranian standard.
- Washers should conform to Iranian standard.
- Reinforcing rods:
- ☐– Periodical profile reinforcement bars grade Fe415 as per DIN 1045

REV. No	DATE	DESCRIPTION	REV.BY	CHK.BY



E.S.C.o.
Esfahan Steel Company

EMPLOYER
BHILAI ENGINEERING
CORPORATION LIMITED

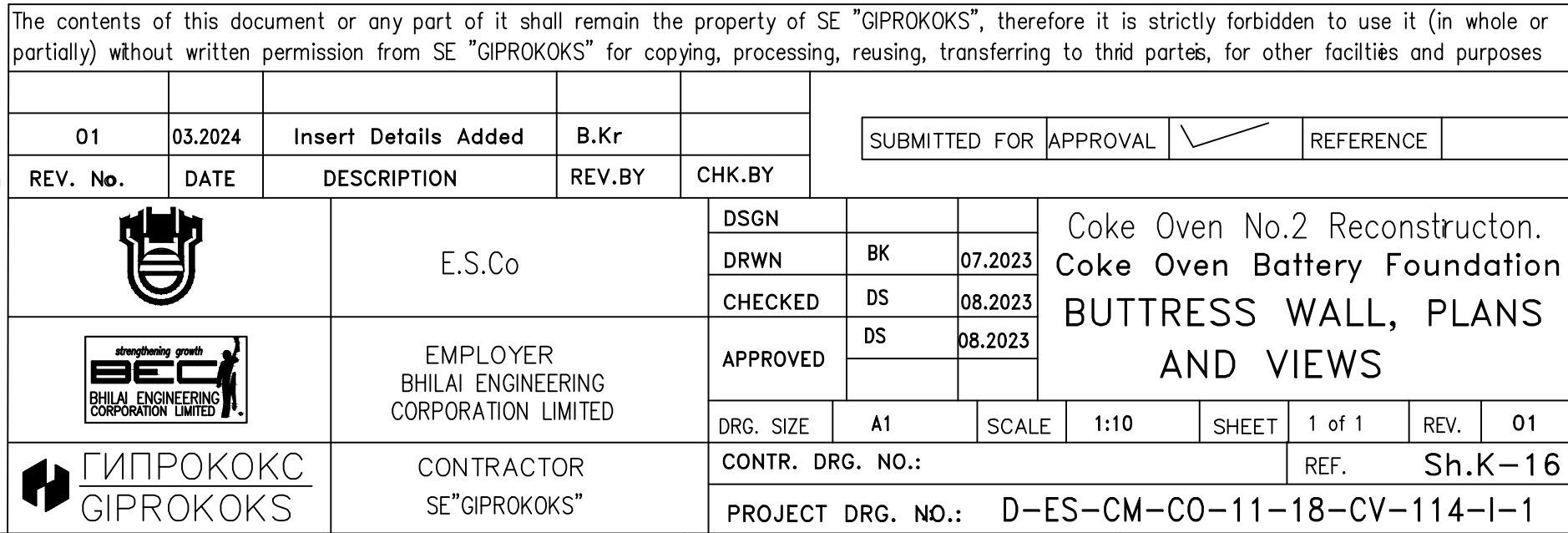
CONTRACTOR
SE"GIPROKOKS"

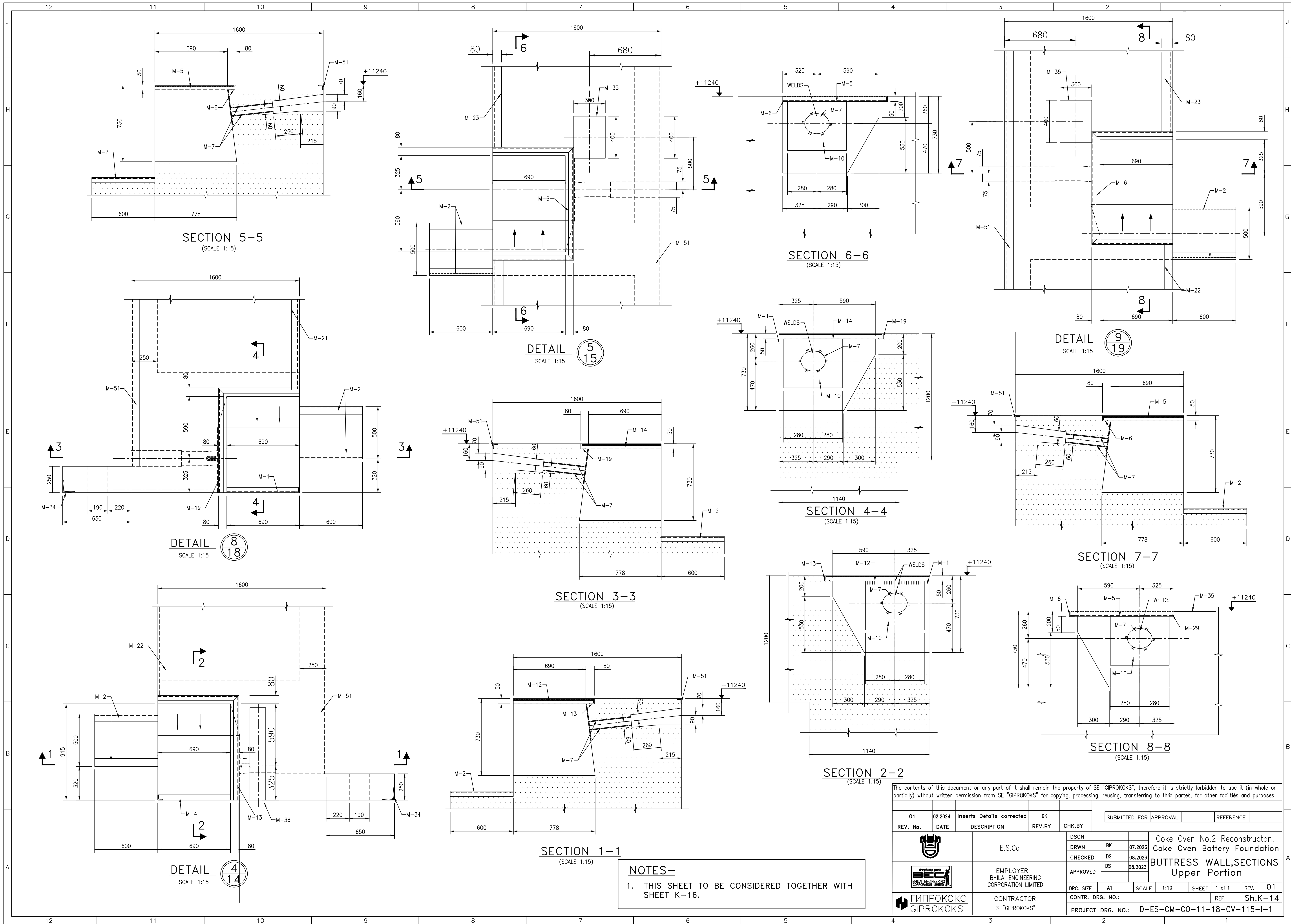
SUBMITTED FOR	APPROVAL	<input checked="" type="checkbox"/>	REFERENCE	
DSGN	DSGN	DSG.DATE	Coke Oven NO.2 Reconstruction DESIGN CRITERIA BUTTRESS WALL RECONSTRUCTION	
DRWN	BK	02-09-23		
CHECKED	DS	07-09-23		
APPROVED		APPD.DATE		
DRG. SIZE	A4	SCALE: - NTS	SHEET- 3 of 3	REV. - 0
CONTR. DRG. NO.:				
PROJECT DRG. NO.- D-ES-CM-CO-11-18-CV-113-I-0				

3

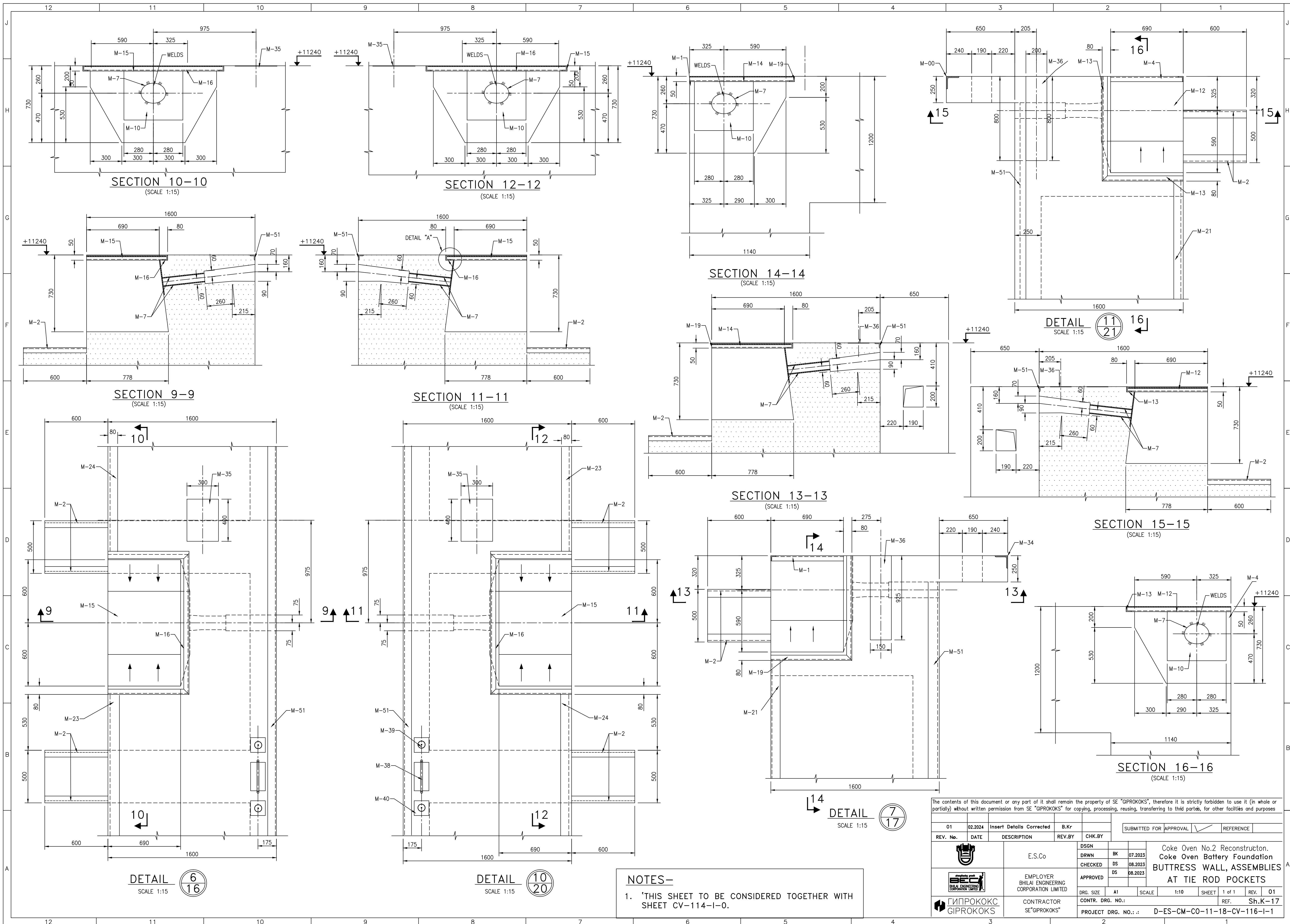
2




1





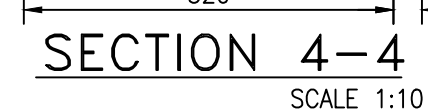
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01	02.2024	Inserts Details corrected	BK			SUBMITTED FOR APPROVAL			
REV. No.	DATE	DESCRIPTION	REV. BY	CHK. BY		REFERENCE			
		E.S.Co		DSGN	BK	07.2023	Coke Oven No.2 Reconstruction. Coke Oven Battery Foundation BUTTRESS WALL, SECTIONS Upper Portion		
				CHECKED	DS	08.2023			
				APPROVED	DS	08.2023			
ГІПРОКОКС GIPROKOKS		CONTRACTOR SE "GIPROKOKS"		DRG. SIZE	A1	SCALE	1:10	SHEET	1 of 1
				CONTR. DRG. NO.:			REF.	Sh.K-14	REV. 01
				PROJECT DRG. NO.:		D-ES-CM-C0-11-18-CV-115-I-1			






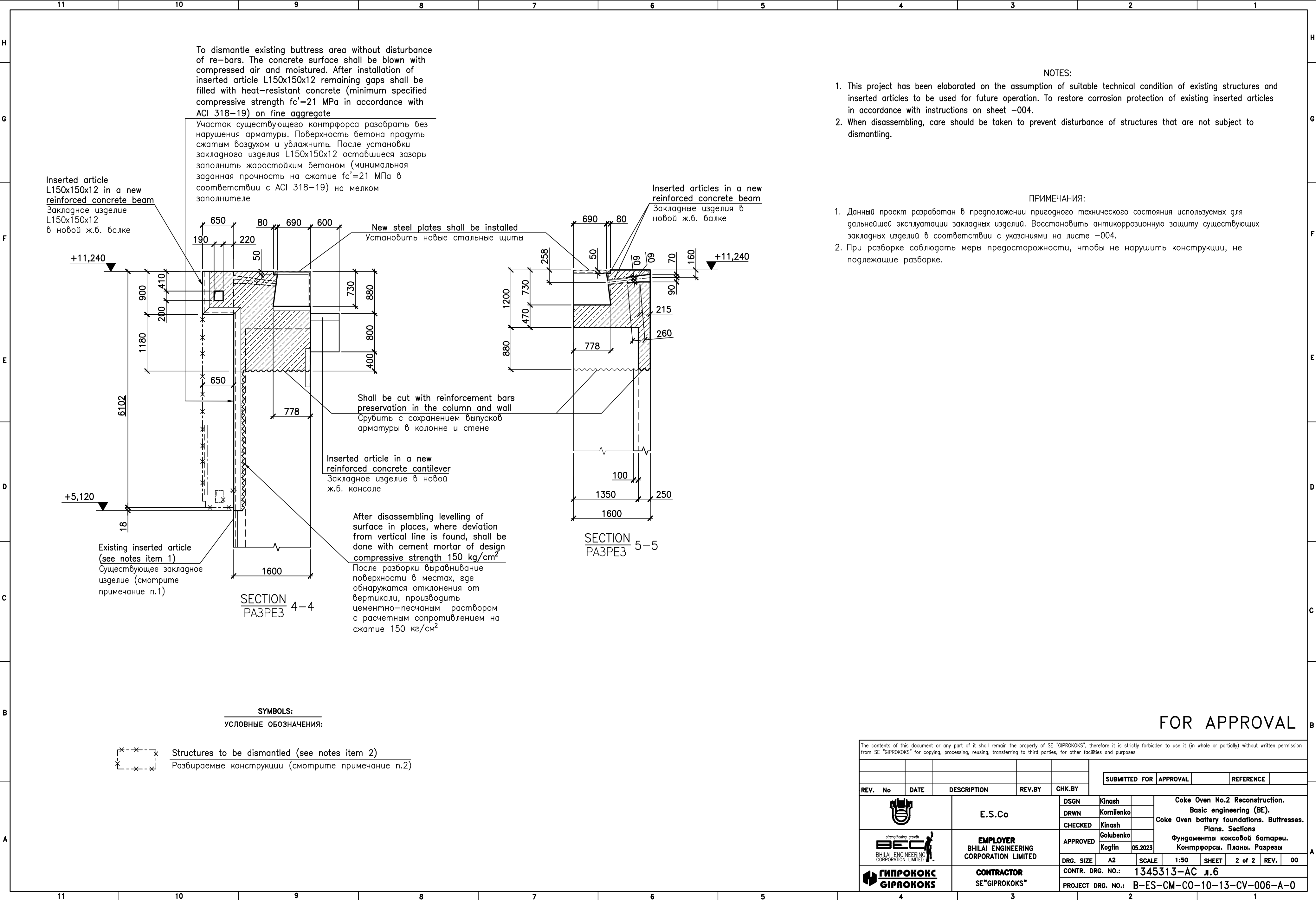
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01	02.2024	Insert Details Corrected	B.Kr						
REV. No.	DATE	DESCRIPTION	REV.BY	CHK.BY	SUBMITTED FOR APPROVAL <input checked="" type="checkbox"/>			REFERENCE	
		E.S.Co	DSGN			Coke Oven No.2 Reconstruction. Coke Oven Battery Foundation BUTTRESS WALL, ASSEMBLIES AT TIE ROD POCKETS			
			DRWN	BK	07.2023				
			CHECKED	DS	08.2023				
			APPROVED	DS	08.2023				
		EMPLOYER BILAI ENGINEERING CORPORATION LIMITED		DRG. SIZE	A1	SCALE	1:10	SHEET	1 of 1
CONTR. DRG. NO.:				REF. Sh.K-17					
PROJECT DRG. NO.:				D-ES-CM-CO-11-18-CV-116-I-1					
		CONTRACTOR SE "GIPROKOKS"							

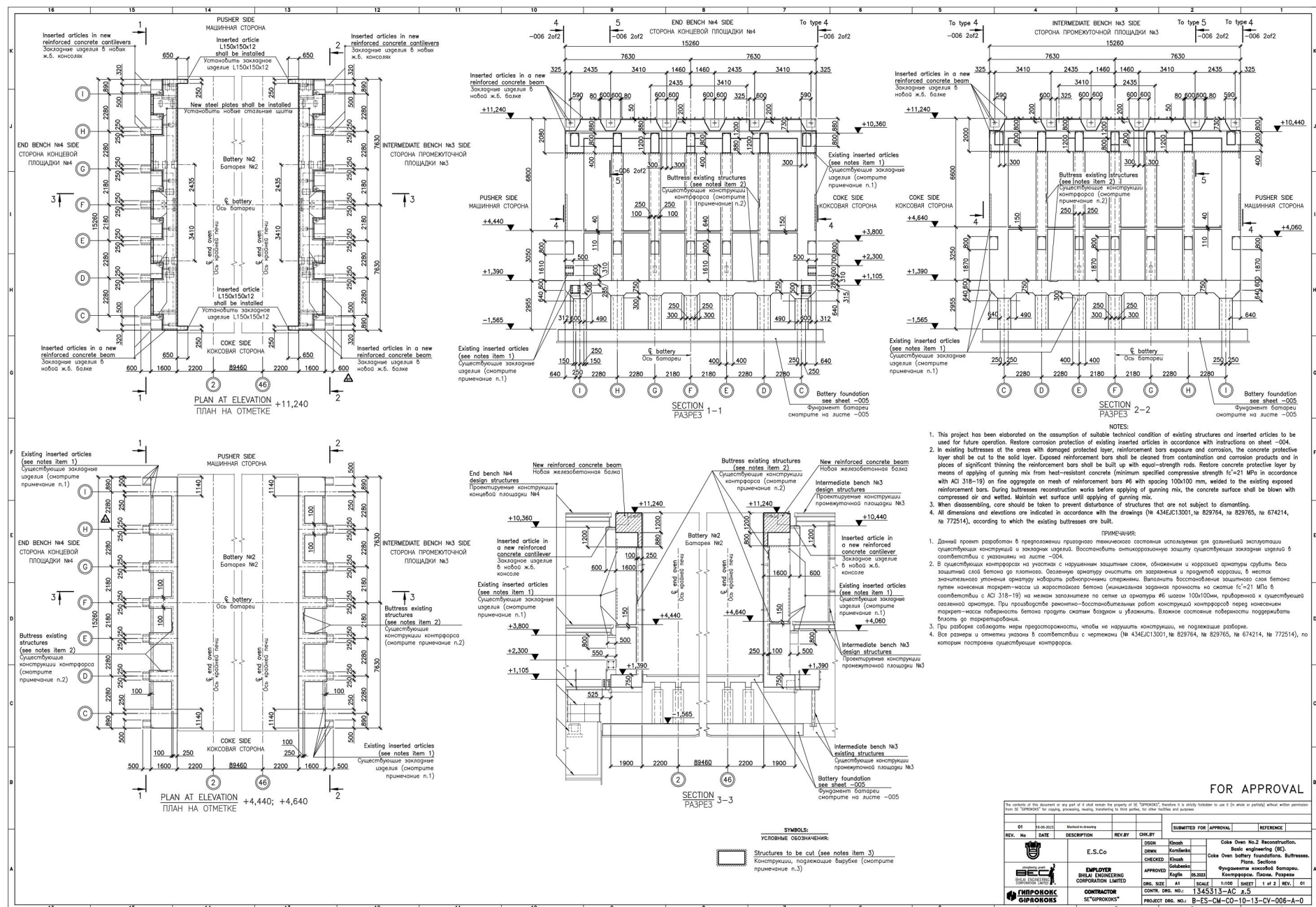


1. THIS SHEET TO BE CONSIDERED TOGETHER WITH SHEET K-16.
2. M-15 TO BE INSTALLED SO THAT INCLINED ANCHORS SHOULD BE AT THE TOP.



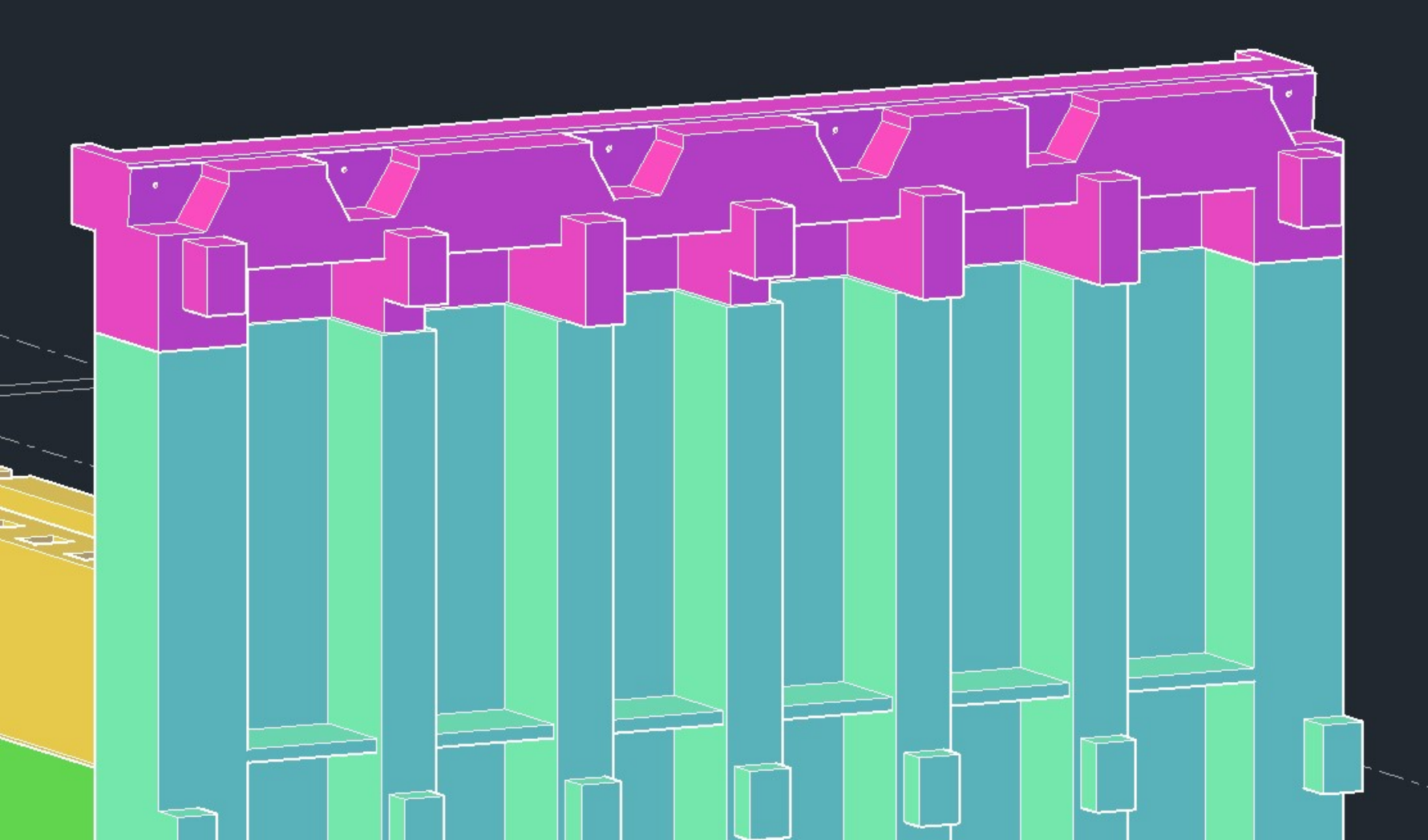
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01	03.2023	Letter TNO014-CS			SUBMITTED FOR		APPROVAL		REFERENCE	
REV. No.	DATE	DESCRIPTION	REV.BY	CHK.BY						
	E.S.Co		DSGN		Coke Oven No.2 Reconstruction. Coke Oven Battery Foundation BUTTRESS WALL, VIEWS Elevation					
			DRWN	BK						07.2023
			CHECKED	DS						08.2023
			APPROVED	DS						08.2023
	EMPLOYER BHILAI ENGINEERING CORPORATION LIMITED									
 ГИПРОКОКС GIPROKOKS	CONTRACTOR SE "GIPROKOKS"		DRG. SIZE	A1	SCALE	1:10	SHEET	1 of 1	REV. 00	
			CONTRACT. DRG. No.:				REF.		Sh.K-14	
			PROJECT DRG. №:		D-E-CS-CO-11-17-CV-117-I-0					





FOR APPROVAL

[illegible]



Position	Concrete Volume C35 (m³)	Rebar weight (ton)	Molding area (m²)	Steel article (ton)
buttress walls	100	10	300	4