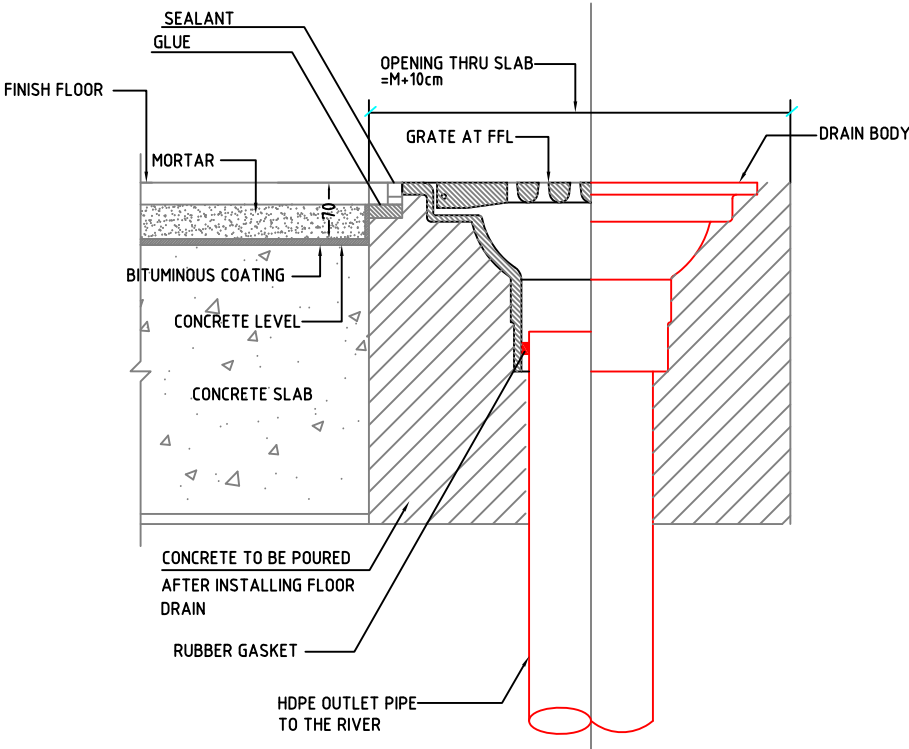


NOTES:

- Specifications Pipe Connections of Storm Drainage Should Follow the Specifications, Details and Construction Procedures of Sewarage Works



STORM WATER GULLTY (N.T.S.)



REPUBLIC OF IRAQ
MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITIES /
ROADS AND BRIDGES DIRECTORATE

KEY MAP



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- D. ALL WORKS ARE ACCORDING TO SPECIFICATIONS OF GENERAL DIRECTORATE FOR ROADS AND BRIDGES OF IRAQ.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
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PROJECT NAME:
ARCHITECTURAL & CIVIL
ENGINEERING DESIGN
SERVICES

LOCATION:
AL-ANBAR - IRAQ

CLIENT:

GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:
CIVIL DESIGN

DESIGN BY:
IBRAHIM ABD ELHALIM

SUPERVISOR:
SAFA'A AL-MU'MAAR

DRAWING NAME:
TYPICAL DETAILS

DRAWING NO.
SD-302

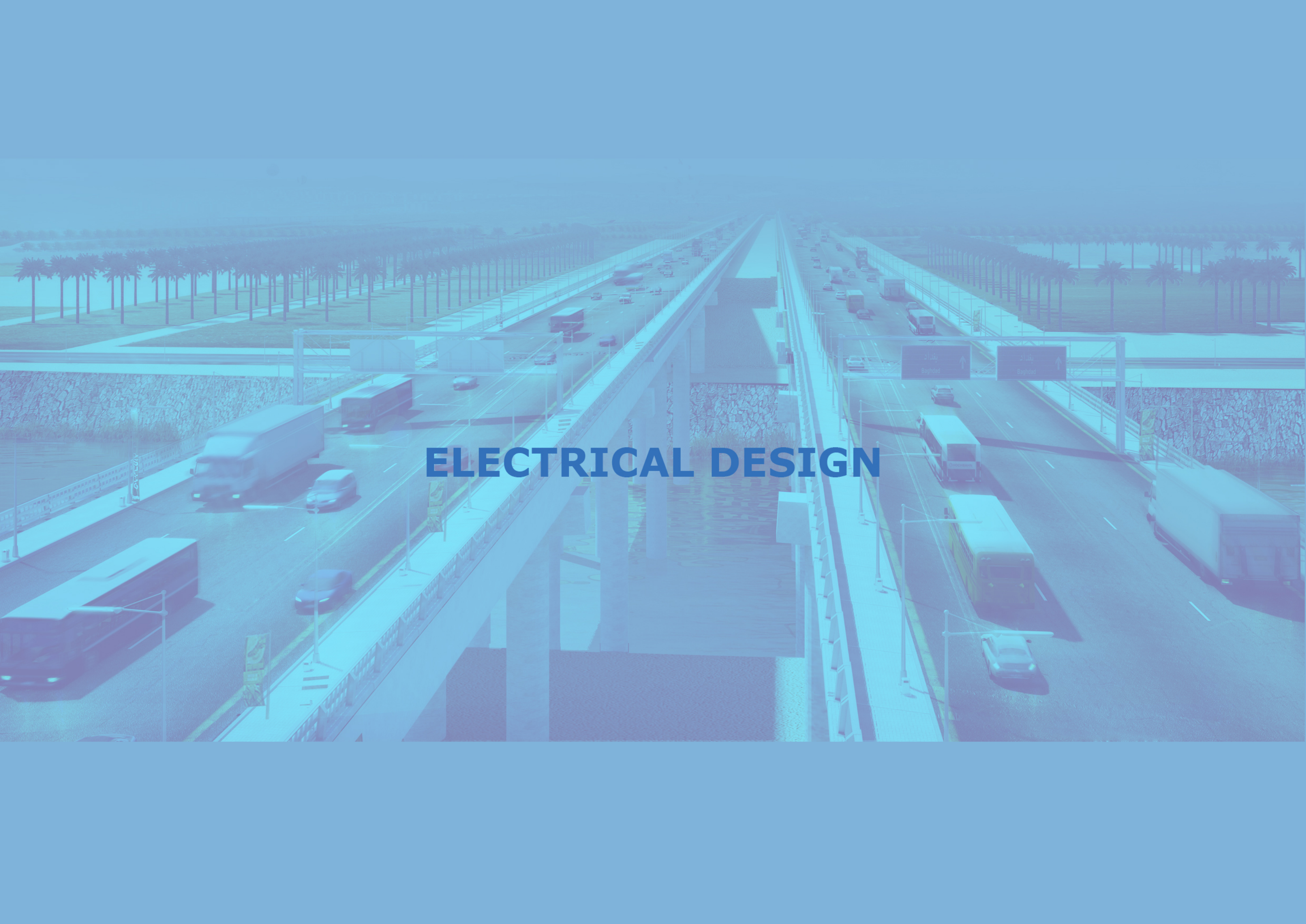
SCALE:
@A3

DRAWN BY:

PROJECT NO:
IQ-17-001

DATE:
MAY 2017





ELECTRICAL DESIGN

TYPE	DESCRIPTION	CATALOGUE VIEW
P1	DESCRIPTION: STREET LIGHTING LUMINAIRE MOUNTED ON 14M POLE AND SINGLE ARM OF 1M, 136 LED, 290W, NEUTRAL WHITE (4000 K), IP 66 , IK 08 ,CRI 75, OPERATING TEMPERATURE UP TO +55 C, INPUT VOLTAGE OF 220-240 V/ 60 HZ. CONSTRUCTION : THE POLE BODY IS TO BE CIRCULAR SECTION ,TAPERED ,FORMED SHEET STEEL , COATED IN GRAY COLOR AND LOCKING THROUGH STAINLESS STEEL PARTS , THE OPTICAL COMPARTMENT IS MADE OF HIGH PRESSURE DIE-CAST ALUMINUM , NON -KORROSIVE. MANUFACTURER : SIMILAR TO PHILLIPS BRP373 OR APPROVED EQUAL.	

SYMBOLS	DESCRIPTION
MISCELLANEOUS SCHEMATIC SYMBOLS	
	FUSE
	11 kV MOTORIZED SF6 SWITCH DISCONNECTOR.
	MOULDED CASE SWITCH
	EARTHING SWITCH
	11KV, ELECTRICAL OPERATED, MOTORIZED, SF6 CIRCUIT BREAKER, FIXED TYPE
	MOULDED CASE CIRCUIT BREAKER
	MOTORIZED MOULDED CASE CIRCUIT BREAKER
	CURRENT TRANSFORMER
	AMMETER
	VOLTMETER
	KILOWATT HOUR METER
	POWER TRANSFORMER
DISTRIBUTION, LIGHTING & POWER PANELBOARD	
	OUTDOOR UNIT SUBSTATION AND RING MAIN UNIT (X = SUBSTATION REFERENCE)
	FEEDER PILLAR X: FEEDER PILLAR NUMBER.
BRANCH CIRCUITS IN CONDUITS/WIREWAYS	
	CONDUIT EMBEDDED IN SLAB OR WALL (CO = CONDUIT ONLY)
	CONCRETE ENCASEMENT DUCT BANK FOR ROAD CROSSING
OUTDOOR LIGHTING	
	POLE MOUNTED WITH SINGLE ARM (X : TYPE, Y : CIRCUIT No.)
	POLE MOUNTED WITH DOUBLE ARMS (X : TYPE, Y : CIRCUIT No.)

STREET LIGHTING LEVEL REQUIRED :

ROAD RIGHT OF WAY (m)	AVERAGE LUMINANCE (Cd/M2)
M5 CIE ROAD LIGHTING CLASSIFICATION	1

- GENERALLY A MINIMUM UNIFORMITY RATIO OF 0.4 (MIN / AVERAGE) IS TO BE ACHIEVED.

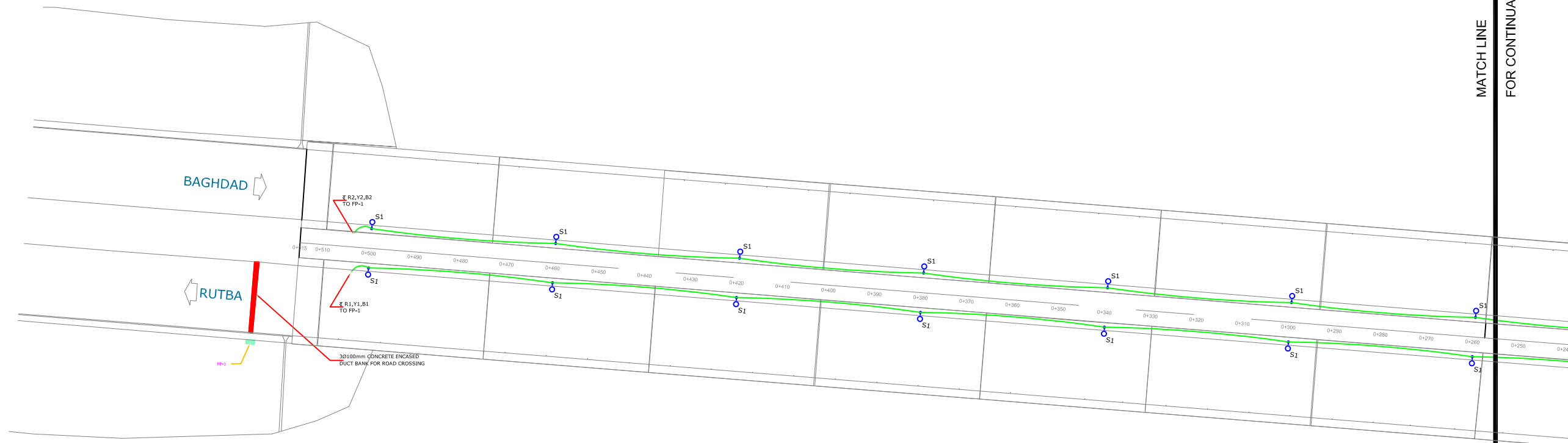
ABBREVIATIONS :

Ǝ	CIRCUIT NO.
FP	FEEDER PILLAR
W.P	WEATHER PROOF
EF	EXHAUST FAN
SS	SUBSTATION
LP	LIGHTING PANEL
IP	IRRIGATION PUMP
SEC	SAUDI ELECTRICITY COMPANY
LV	LOW VOLTAGE
MV	MV VOLTAGE
DP	DISTRIBUTION PILLAR
STA	STEEL TAPE ARMOUR
TR	TRANSFORMER
AT	CIRCUIT BREAKER TRIP RATING (AMPERE)
AF	CIRCUIT BREAKER FRAME RATING (AMPERE)
MCB	MINIATURE CIRCUIT BREAKER
MCCB	MOULDED CASE CIRCUIT BREAKER
E.L.V	EXTRA LOW VOLTAGE
F.F.L	FINISHED FLOOR LEVEL
FCU	FAN COIL UNIT
N.I.C	NOT IN CONTRACT
TCL	TOTAL CONNECTED LOAD
N.T.S.	NOT TO SCALE
V.D	VOLTAGE DROP
MDC	MAIN DATA CROSS CONNECT
HCC	HORIZONTAL CROSS CONNECT
TDL	TOTAL DEMAND LOAD
KWH	KILOWATTHOUR METER
MCPR	MOTOR CIRCUIT PROTECTOR
S.C	SHORT CIRCUIT
RMU	RING MAIN UNIT
BUA	BUILT UP AREA
DIST.	DISTANCE
L	CABLE LENGTH
C.L	CONNECTED LOAD
D.L	DEMAND LOAD
C.F	COINCIDENT FACTOR
S.O	SOCKET OUTLET
C.P	CONNECTING PILLAR
SG	SWITCH GEAR

- NOTES:
- 1- CONTRACTOR SHALL INVESTIGATE FOR THE LOCATION OF THE EXISTING LOW VOLTAGE SOURCE SUPPLYING THE STREET DISMANTLED STREET LIGHTING POLES.
 - 2- CONTRACTOR SCOPE OF WORKS INCLUDE CONNECTING THE NEW FEEDER PILLAR TO THE EXISTING LOW VOLTAGE SOURCE, AFTER ENSURING THE FUNCTIONALITY OF THE LV SOURCE.
 - 3- IN CASE THAT THE EXISTING LV SOURCE IS NOT FUNCTIONAL, CONTRACTOR IS TO INSTALL MULTI OUTDOOR UNIT SUBSTATION AND CONNECT IT TO THE NEAREST AVAILABLE PH LOOP IN COORDINATION WITH THE RELEVANT AUTHORITIES TO CATER FOR THE NEW STREET LIGHTING POLES.

 REPUBLIC OF IRAQ MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITIES / ROADS AND BRIDGES DIRECTORATE			
KEY MAP			
			
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REV.	DATE	DESCRIPTION	BY
PROJECT NAME:			
ARCHITECTURAL & CIVIL ENGINEERING DESIGN SERVICES			
LOCATION:			
AL-ANBAR - IRAQ			
CLIENT:			
			
GENERAL DIRECTORATE FOR ROADS AND BRIDGES			
SERVICES NAME:			
ELECTRICAL DESIGN			
DESIGN BY:			
SHERIF HELMY			
SUPERVISOR:			
SAFA'A AL-MU'MAAR			
DRAWING NAME:			
GENERAL SHEET			
DRAWING NO.			
E-400			
SCALE:			
1:1000 @A1			
DRAWN BY:			
PROJECT NO:			
IQ-17-001			
DATE:			
MARCH 2017			
 United Nations Development Programme		 NUDHUM ALBENAA CONSULTANCY	

1



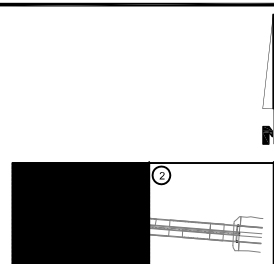
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REPUBLIC OF IRAQ
MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITIES
ROADS AND BRIDGES DIRECTORATE

KEY MAP



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PROJECT NAME:

**ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

CLIENT:



GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

ELECTRICAL DESIGN

DESIGN BY:

SHERIF HELMY

SUPERVISOR:

SAFA'A AL-MU'MAAR

DRAWING NAME:
STREET LIGHTING LAYOUT
PART PLAN (1/2)

DRAWING NO.

E401

SCALE:

1:1000@A3

DRAWN BY:

PROJECT NO:

IQ-17-001

DATE:

MARCH 2017



United Nations
Development Programme

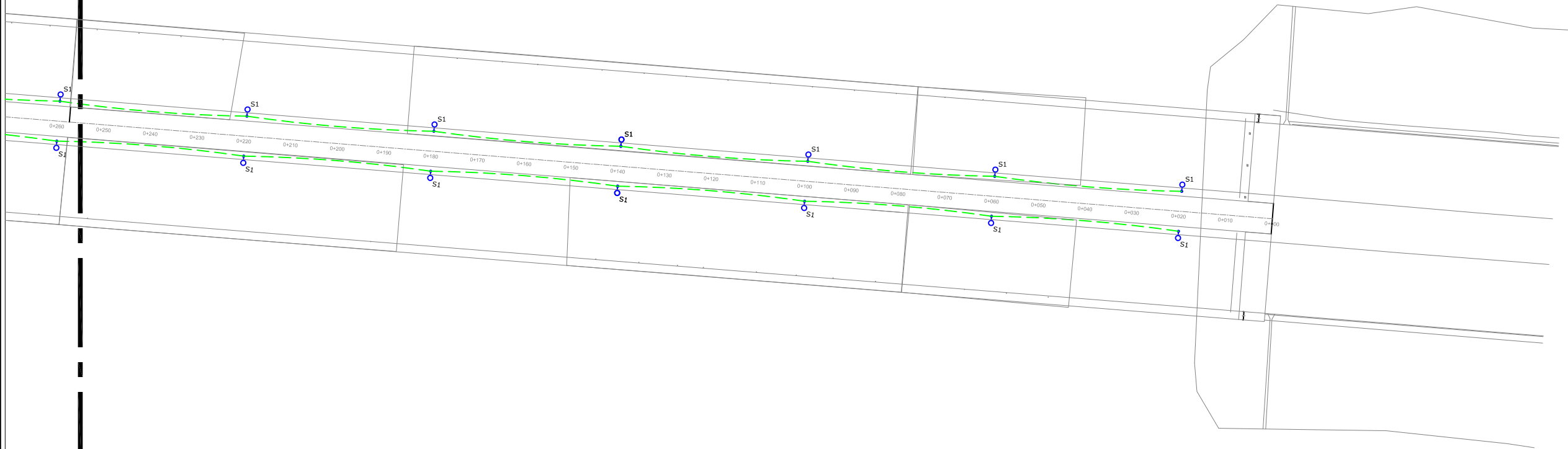


NUDHUM ALBENAA
CONSULTANCY

2

FOR CONTINUATION REFER TO DWG. E01.2

MATCH LINE



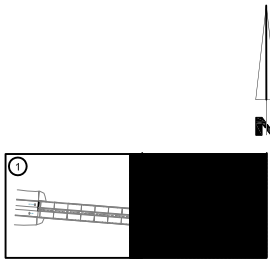
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PROJECT NAME:

**ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

CLIENT:



GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

ELECTRICAL DESIGN

DESIGN BY:

SHERIF HELMY

SUPERVISOR:

SAFA'A AL-MU'MAAR

DRAWING NAME:
STREET LIGHTING LAYOUT
PART PLAN (2/2)

DRAWING NO.

E402

SCALE:

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DRAWN BY:

PROJECT NO:

IQ-17-001

DATE:

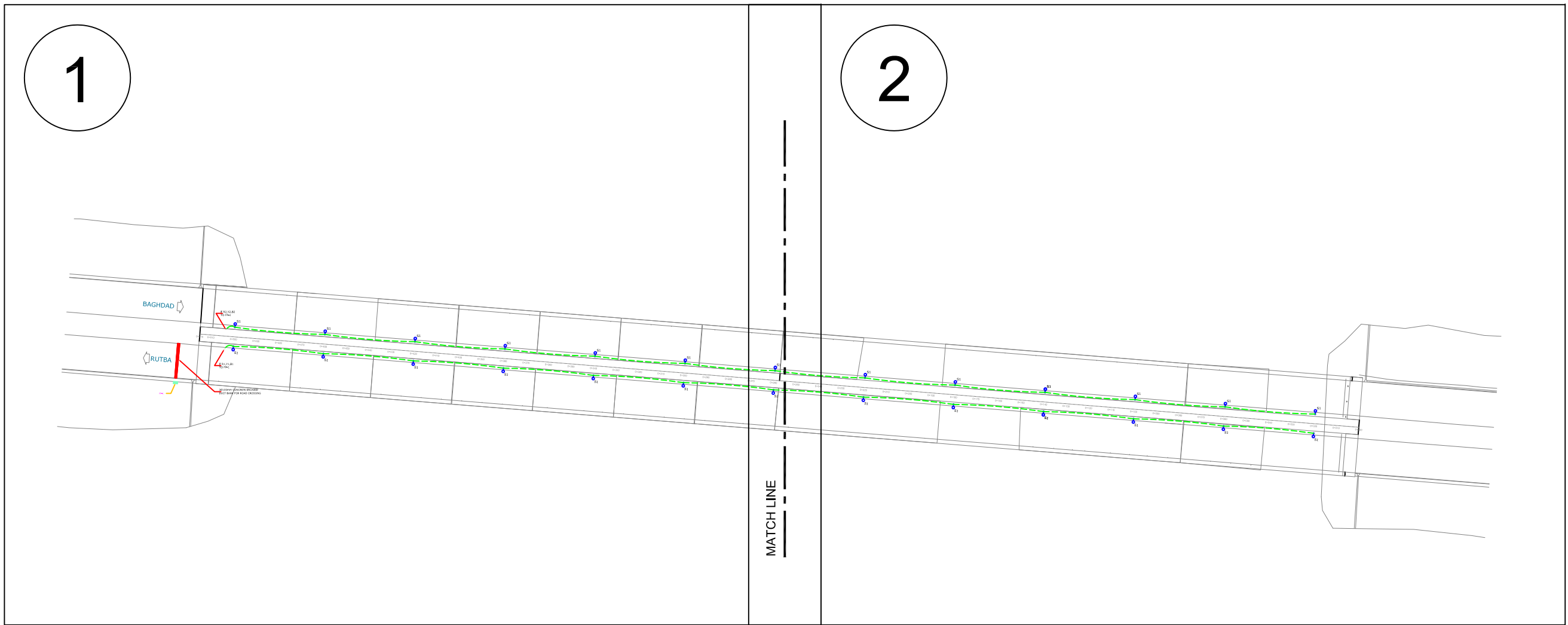
MARCH 2017



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Development Programme

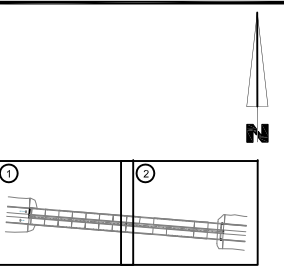


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CONSULTANCY



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MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITIES
ROADS AND BRIDGES DIRECTORATE

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PROJECT NAME:

**ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

CLIENT:



GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

ELECTRICAL DESIGN

DESIGN BY:

SHERIF HELMY

SUPERVISOR:

SAFA'A AL-MU'MAAR

DRAWING NAME:

STREET LIGHTING LAYOUT

DRAWING NO.

E403

SCALE:

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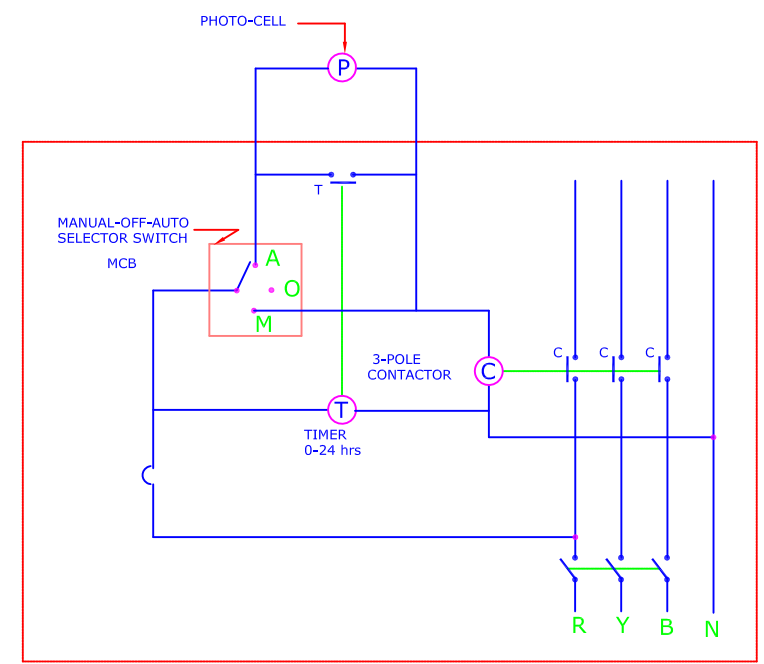
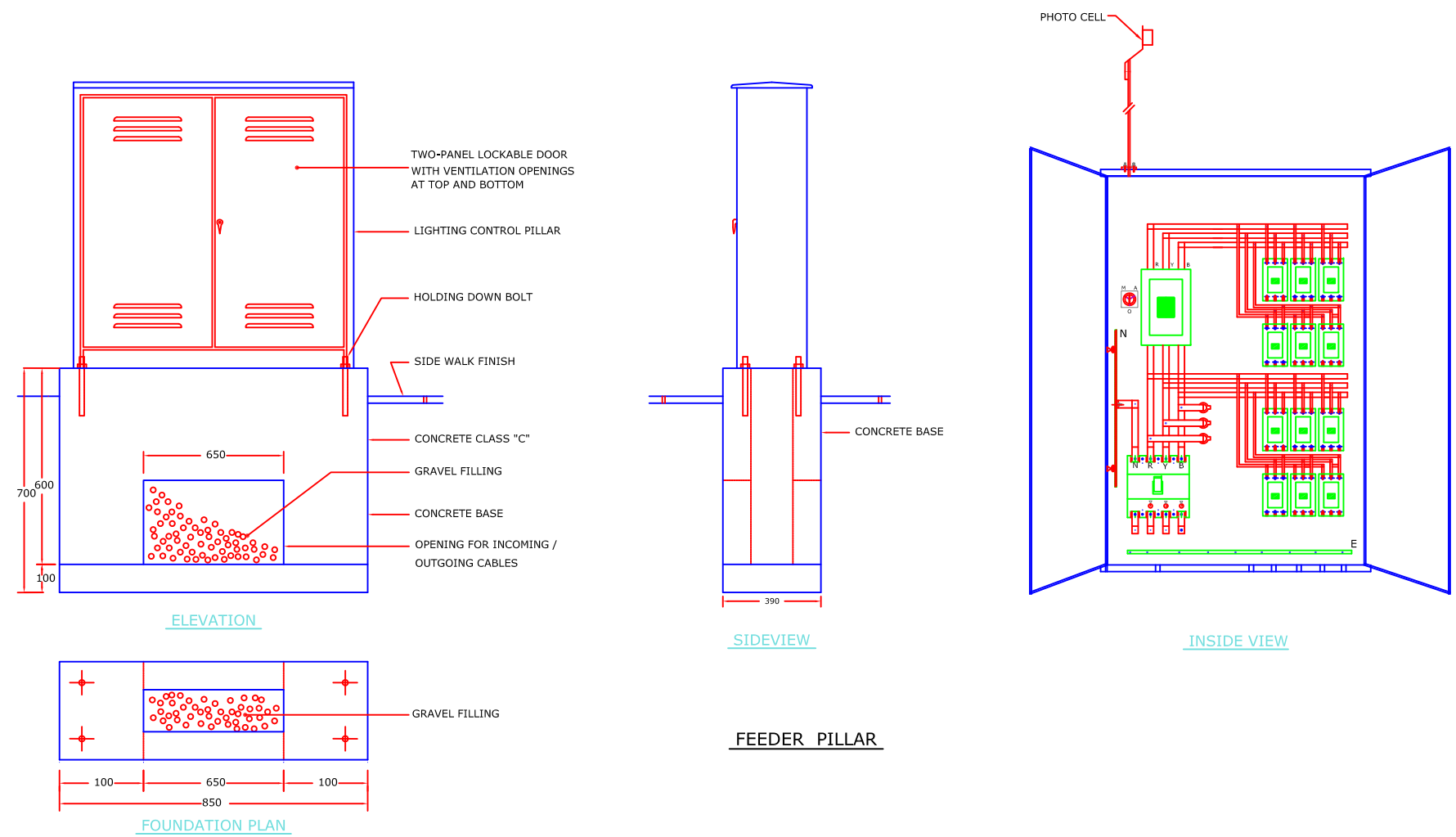
PROJECT NO:

IQ-17-001

DATE:

MARCH 2017





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MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITIES /
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ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

CLIENT:

GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

ELECTRICAL DESIGN

DESIGN BY:

SHERIF HELMY

SUPERVISOR:

SAFA'A AL-MU'MAAR

DRAWING NAME:

DETAILS

DRAWING NO.

E-405

SCALE:

NTS

DRAWN BY:

PROJECT NO:

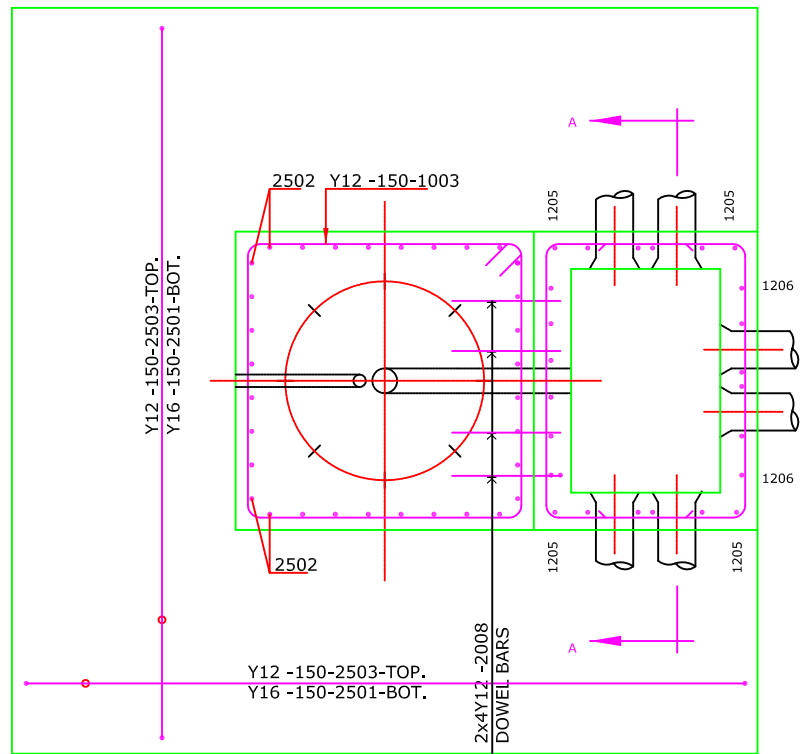
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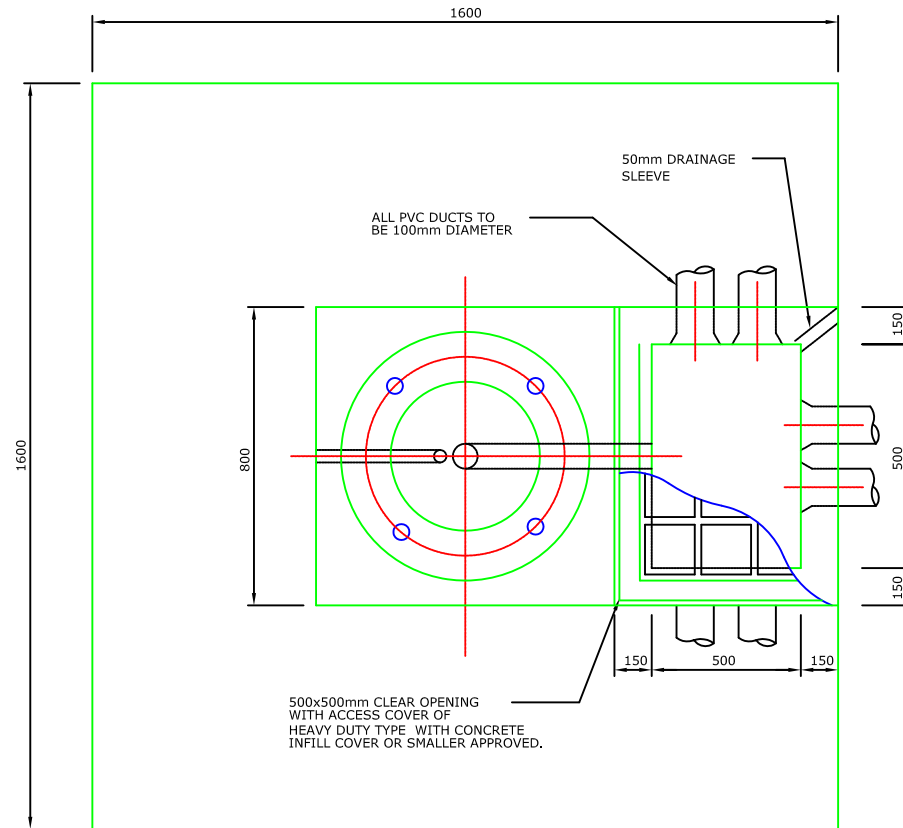
MARCH 2017

United Nations
Development Programme

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CONSULTANCY



PLAN



PLAN

BAR BENDING SCHEDULE

LOCATION	BAR MK	TYPE & DIA	NUMB-ER	LENGTH OF EACH	SHAPE & DIM.
COLUMN BASE DETAIL					
1.6Mx1.6M BASE WITH DRAWPIT	2501	Y16	2x12	2150	350
	2502	Y16	24	1650	300
	2503	Y12	2x12	2550	350
	1003	Y12	7	3000	700
	1204	Y20	2x6	2900	1100
	1205	Y12	6	2000	650
	1206	Y12	6	2000	650
	1207	Y12	2x4	1700	500
	2008	Y12	2x4	850	200



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PROJECT NAME:

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ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

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GENERAL DIRECTORATE FOR ROADS
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SERVICES NAME:

ELECTRICAL DESIGN

DESIGN BY:

SHERIF HELMY

SUPERVISOR:

SAFA'A AL-MU'MAAR

DRAWING NAME:

DETAILS

DRAWING NO.

E-406

SCALE:

NTS

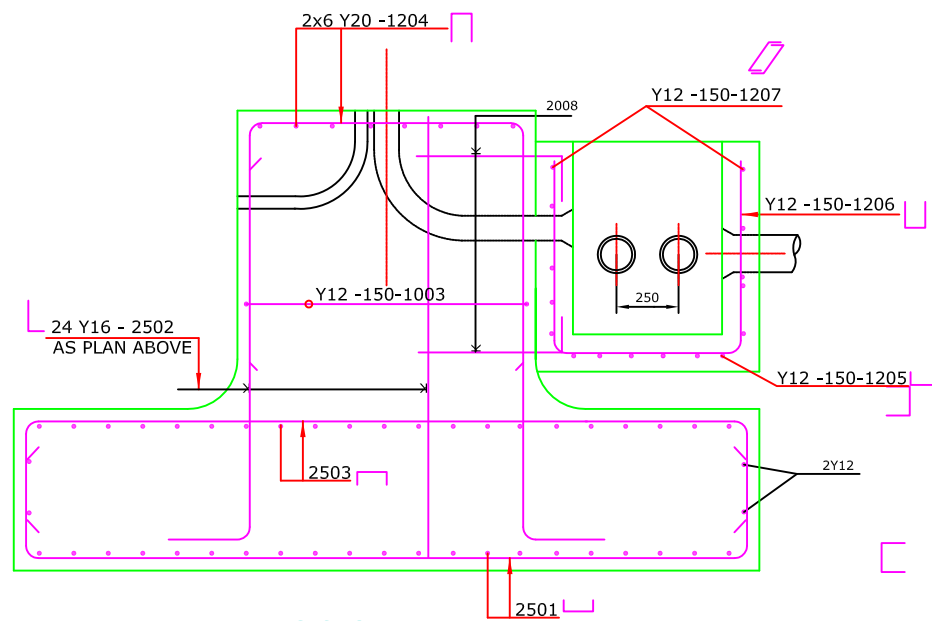
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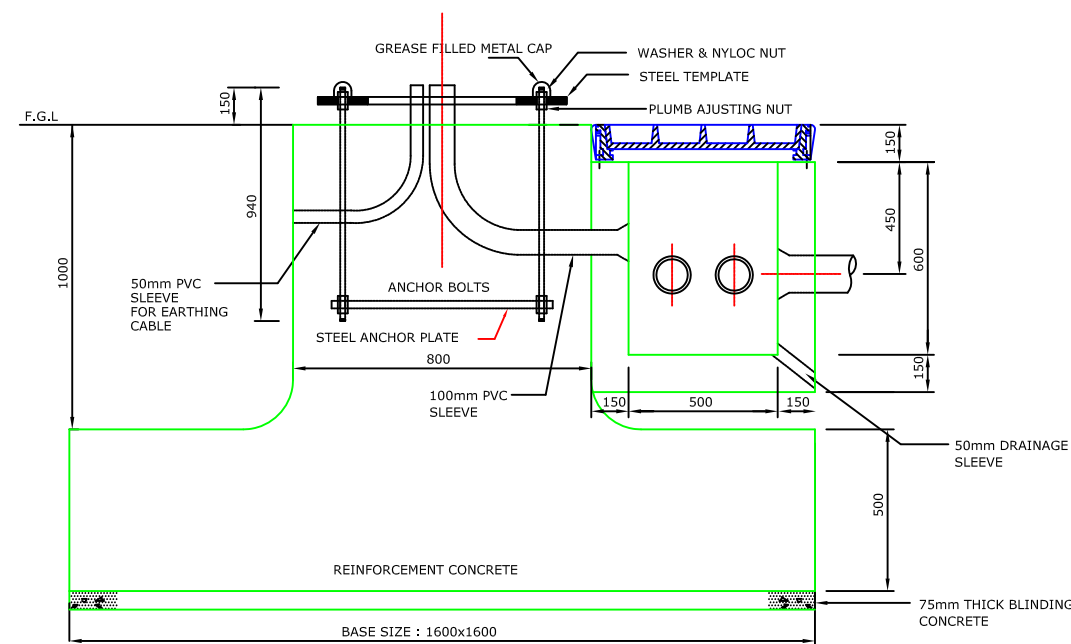
IQ-17-001

DATE:

MARCH 2017

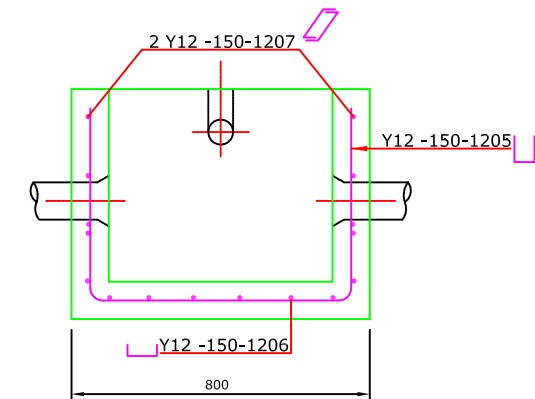


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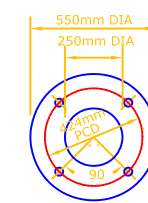


SECTION

14m COLUMN BASE WITH INTEGRAL CABLE DRAWPIT
N.T.S.



**SECTION A-A
DRAWPIT**



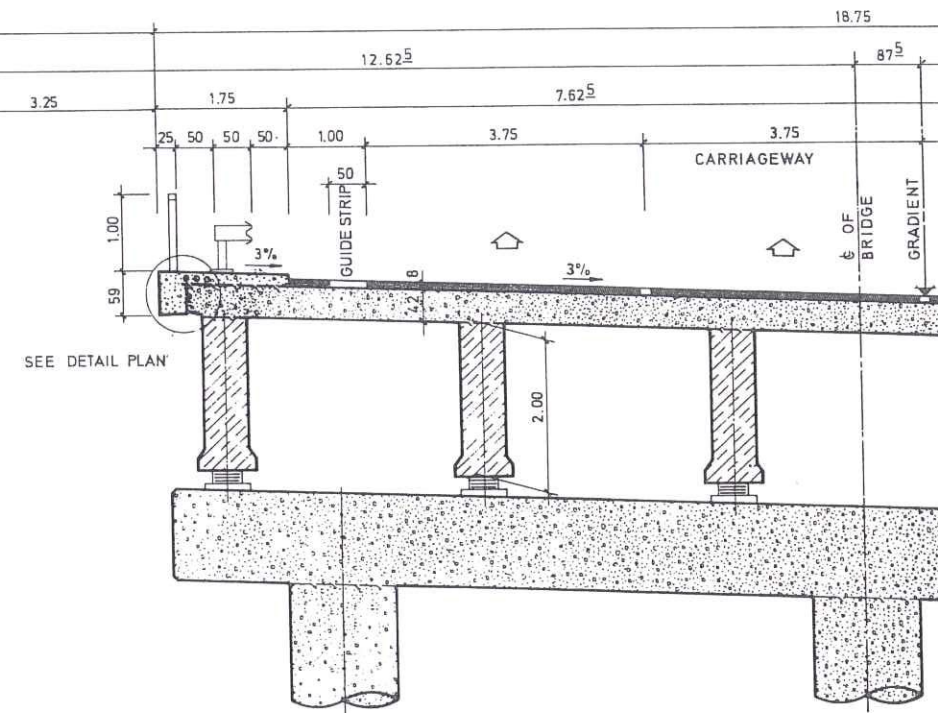
10mm THICK TEMPLATE/ANCHOR PLATE

FOR 5 m & 8 m COLUMN

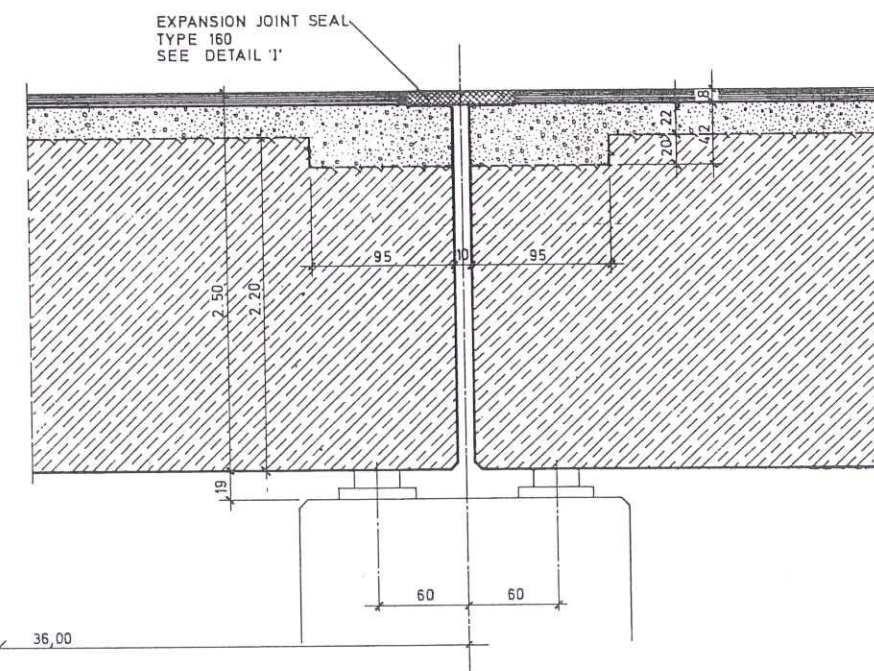


ANNEX

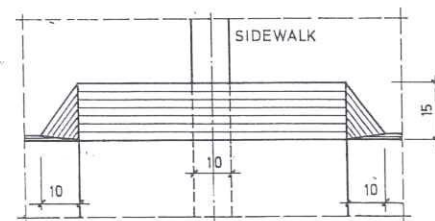
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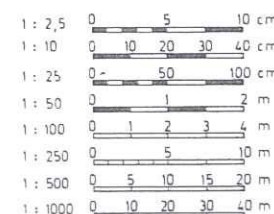
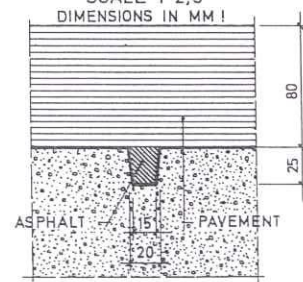
SCALE 1 25



SCALE 1:10



SCALE 1:2,5



REPUBLIC OF IRAQ
MINISTRY OF WORKS AND HOUSING
 DIRECTORATE GENERAL OF ROADS AND BRIDGES

IRAQ EXPRESSWAY No ONE



DORSCH CONSULT

CONSULTING ENGINEERS · MUNICH · W. GERMANY

in association with

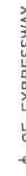
AL-KHAZEN · CONSULTING ENGINEERS · BAGHDAD · IRAQ

CONTRACT SECTION THARTHAR CANAL BRIDGE		R/9A/1976 BAGHD. WEST-HABBANIYA SUPERSTRUCTURE	
DATE	DESIGNED	DRAWN	SCALE
Dec 76	<i>Mo</i>	<i>te</i>	C KET
DRG. No			29.003

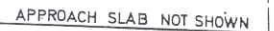
S.54.1

REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES		CONTRACT R/9A/1976 SECTION BAGHD.WEST-HABBANIYA				
IRAQ EXPRESSWAY No ONE		THARTHAR	PREFABRICATED			
		CANAL BRIDGE	CONCRETE GIRDER			
 CONSULTING ENGINEERS · MUNICH· W. GERMANY in association with AL-KHAZEN · CONSULTING ENGINEERS · BAGHDAD-IRAQ		DATE Dec.75	DESIGNED <i>Elab</i>	DRAWN <i>te</i>	SCALE C 1:25	DRG. No 2.9.004

SCALE 1:50



SCALE 1:50



SCALE 1:50

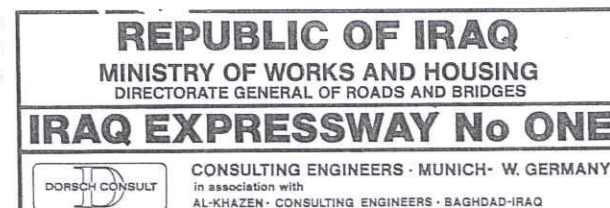


SCALE 1:50



LONG. SECTION

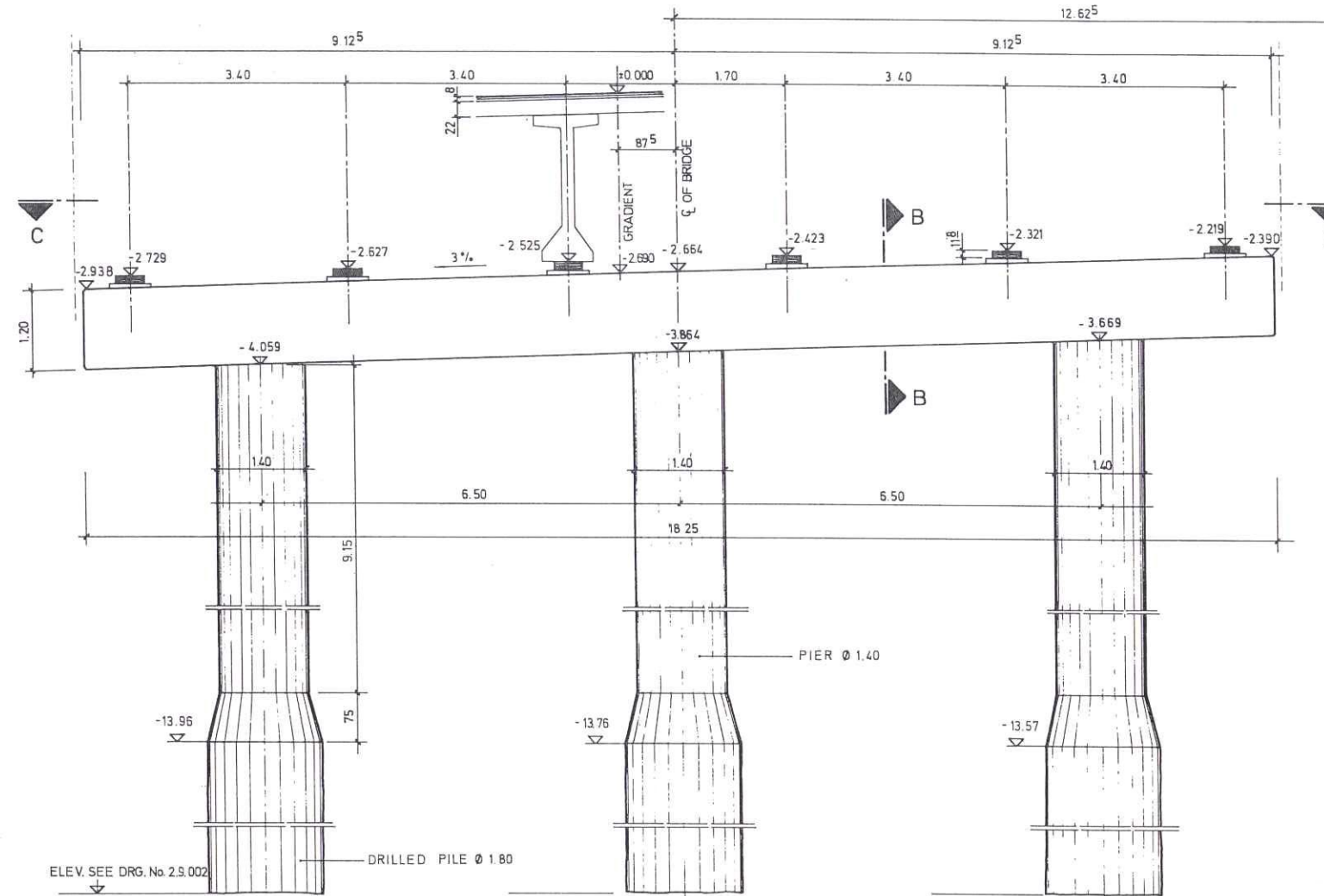
CROSS - SECTION



CONTRACT SECTION		R / 9A / 1976 BAGHD. WEST-HABBANIYA ABUTMENT		
T HARTHAR CANAL BRIDGE				
DATE	DESIGNED	DRAWN		SCALE
Dec 76	<i>ELI</i>	<i>te</i>	C EET	
				DRG. No
				29 005

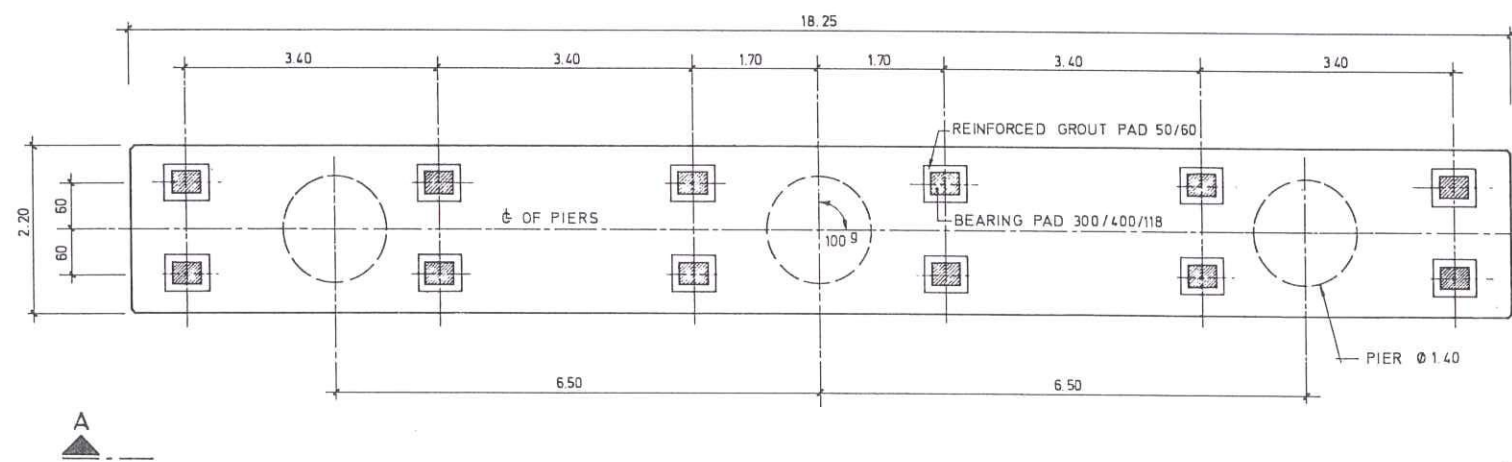
ELEVATION A-A

SCALE 1:50



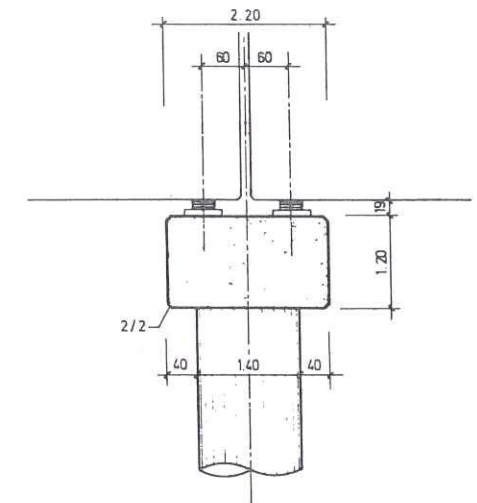
TOP VIEW C-C

SCALE 1:50



SECTION B-B

SCALE 1:50

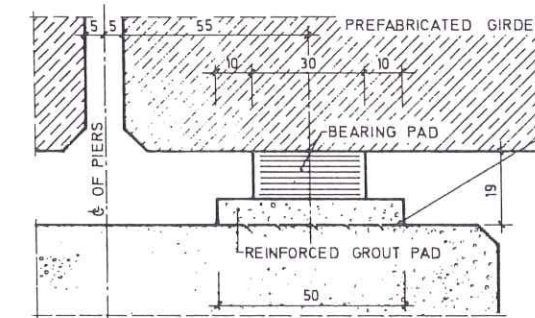


NOTE :
ELEVATIONS GIVEN REFER
TO GRADIENT 0.000 !
FOR GRADIENT ELEVATION
SEE PLAN No. 2.9.002
* PROFIL AND FOUNDATIONS *

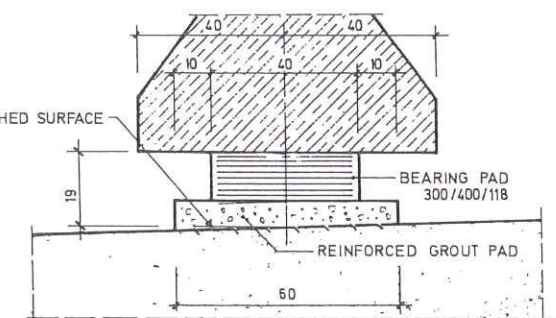
DETAIL OF BEARING

SCALE 1:10

LONGITUDINAL SECTION



CROSS-SECTION

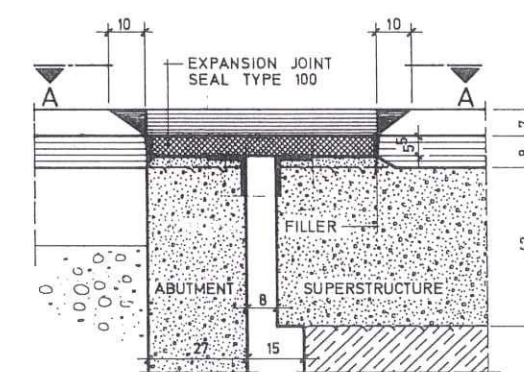


DETAIL 'I'

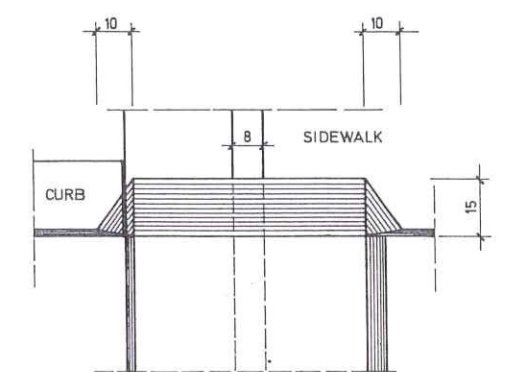
(REFERS TO DRG. No. 2.9.005)

SCALE 1:10

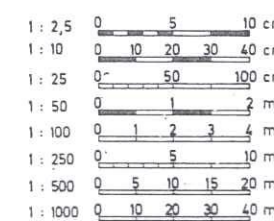
LONGITUDINAL SECTION



TOP VIEW A-A

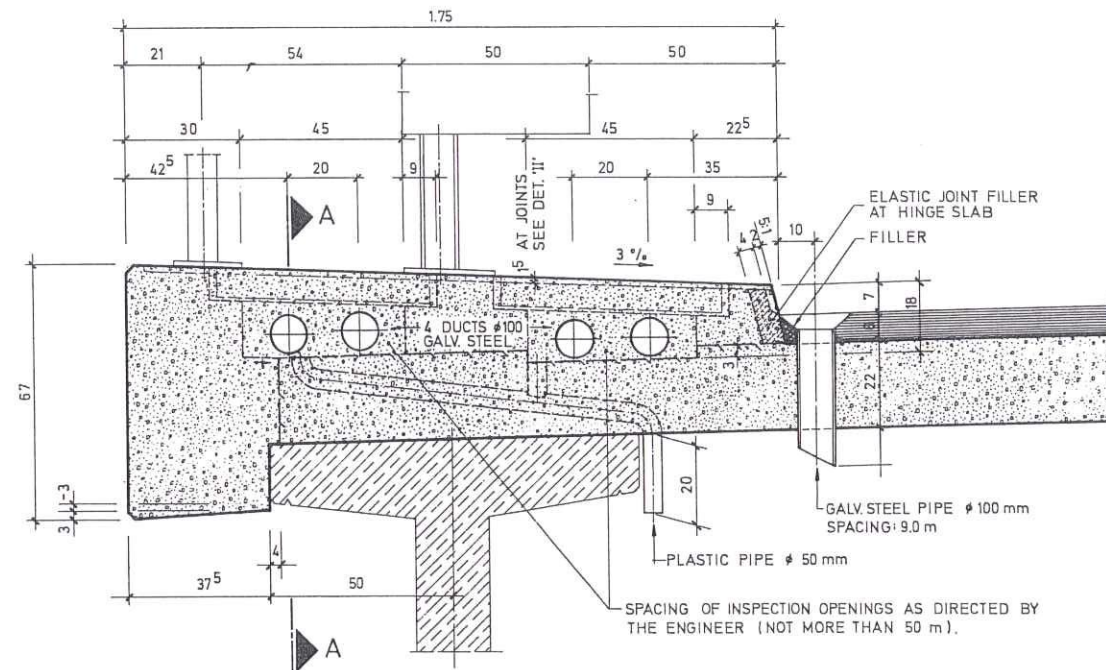


S.54.1



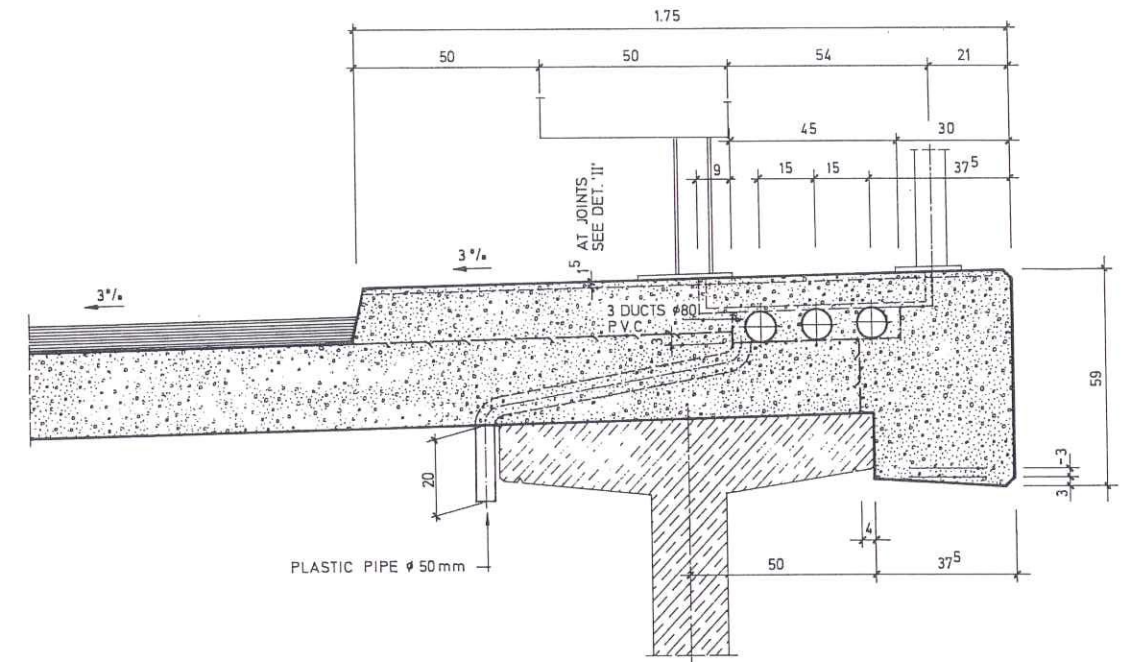
REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES		CONTRACT SECTION THARTHAR CANAL BRIDGE		R/9A/1976 BAGHD. WEST-HABBANIYA PIER	
IRAQ EXPRESSWAY No ONE		DATE	DESIGNED	DRAWN	SCALE
CONSULTING ENGINEERS - MUNICH - W. GERMANY in association with AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD-IRAQ		Dec.75	ke	ke	C. EET
DRG. No. 2.9.006					

SECTION SIDEWALK (LEFT SIDE)
SCALE 1:10



LEFT BRIDGE IN DIRECTION OF STATIONING

SECTION SIDEWALK (RIGHT SIDE)
SCALE 1:10

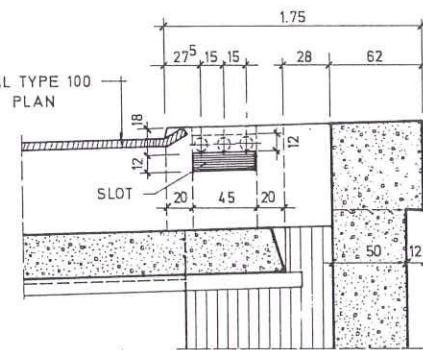
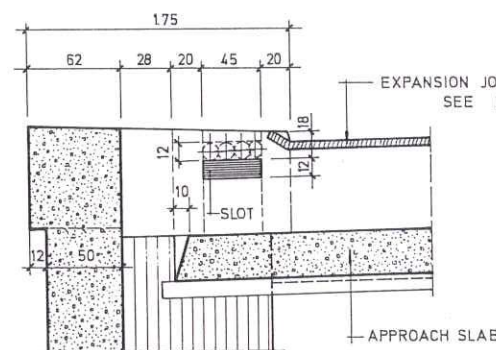


DETAIL SECTIONS
SCALE 1:25

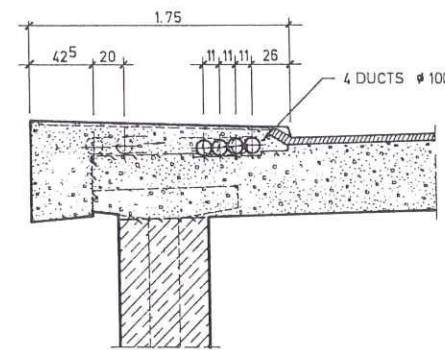
ABUTMENT (LEFT SIDE)

ABUTMENT (RIGHT SIDE)

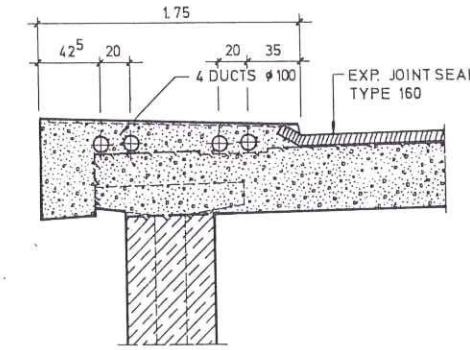
FOR FURTHER DETAILS AND SECTIONS SEE
DETAILPLAN DRG. No. 2.9.008



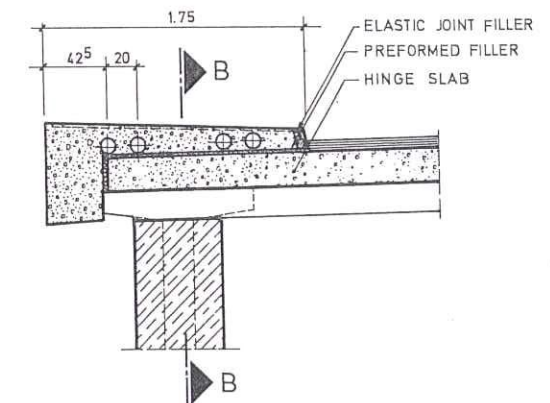
EXPANSION JOINT (ABUTM.)



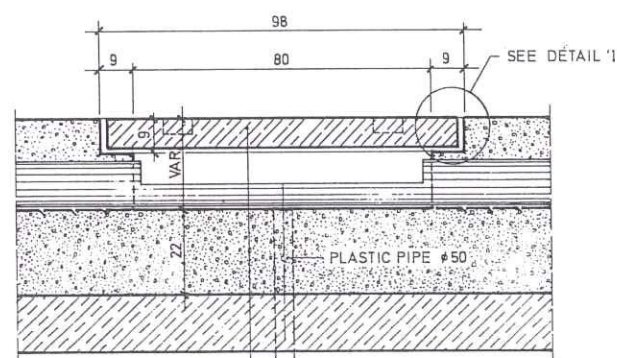
EXPANSION JOINT (PIER)



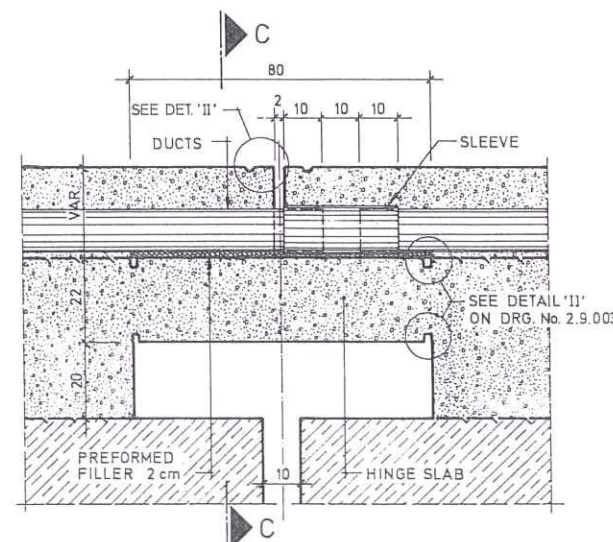
HINGE SLAB (SECTION C-C)



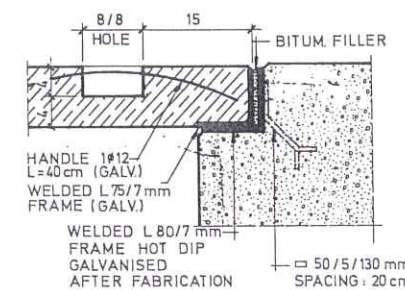
SECTION A-A
SCALE 1:10



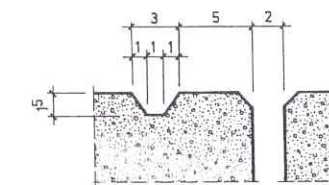
SECTION B-B
SCALE 1:10



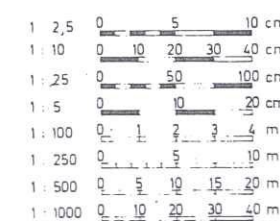
DETAIL 'I'
SCALE 1:5



DETAIL 'II'
SCALE 1:25



S.54.1



REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES				CONTRACT SECTION THARTHAR CANAL BRIDGE		R/9A/1976 BAGHD. WEST-HABBANIYA SIDEWALK	
IRAQ EXPRESSWAY No ONE				DATE	DESIGNED	DRAWN	SCALE
CONSULTING ENGINEERS - MUNICH - W. GERMANY in association with AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD-IRAQ				Dec.76	Be	ce	C 1:25
DRG. No. 2.9.007							

[illegible]

25

12.5 10 15

BITUM FILLER

PREFABRICATED CONCRETE COVER 100/60/10
REINWITH ø10/20 TOP AND BOTTOM, BOTHWAYS
HOLE 8/8/4 cm

50/5/150 MM

50/5/200 MM
SPACING 200 MM

HANDLE ø12
L=40cm (GALV.)

WELDED L 100 /10 MM FRAME
WELDED L 110 /10 MM FRAME
HOT-DIP GALVANIZED
AFTER FABRICATION

Diagram illustrating the cross-section of a wing wall and approach slab for a bridge with two ways. The diagram shows the wing wall, approach slab, and the prefabricated concrete cover. Dimensions are provided in feet and inches.

Labels and Dimensions:

- DISTANCE GUARD RAIL**: Located at the top of the wing wall.
- PREFABRICATED CONCRETE COVER**: Located on top of the wing wall.
- RAILING POST**: Located on the right side of the wing wall.
- SLOTT**: Located within the wing wall structure.
- WING WALL**: The main vertical structure on the right.
- APPROACH SLAB**: The horizontal structure extending from the wing wall.

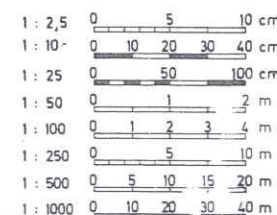
Dimensions (in feet and inches):

- Top horizontal dimensions: 10, 60, 10, 10, 17, 62.
- Left vertical dimensions: 18, 12.
- Bottom horizontal dimensions: 20, 45, 20, 28.
- Internal vertical dimensions: 10, 10, 17, 62.
- Internal horizontal dimensions: 18, 12.
- Internal vertical dimensions: 3 1/4.

Technical drawing of a bridge deck cross-section. The drawing shows a concrete structure with a curb on the left side. A duct is embedded in the concrete, and a lean concrete layer is shown at the bottom. The drawing includes labels for 'CONCRETE', 'CURB', 'DUCTS', and 'LEAN CONCRETE'. A dimension of $3 \frac{1}{2}$ is indicated for the curb height. A vertical dimension of 5 is shown for the curb thickness. The drawing also shows a cross-section of the bridge deck with a curved top surface and a vertical reinforcement bar.

Technical drawing showing a cross-section of a bridge approach slab and gutter system. The drawing includes the following labels and features:

- END OF RAILING**: Points to the vertical post of the railing at the end of the bridge deck.
- GUARD RAIL**: Points to the horizontal rail section.
- CONCRETE GUTTERS**: Points to the sloped gutter structure on the bridge deck.
- SEE ROAD DRAWINGS**: Text indicating that further details are in the road drawings.
- DRG. No. S/N 0**: Drawing number.
- 1.7.7 - 1**: Drawing revision or sheet number.
- 3 1/8"**: Dimension indicating the width of the approach slab.
- DUCTS**: Points to three circular ducts located within the approach slab.
- APPROACH SLAB**: Points to the concrete slab at the base of the bridge structure.

[illegible]

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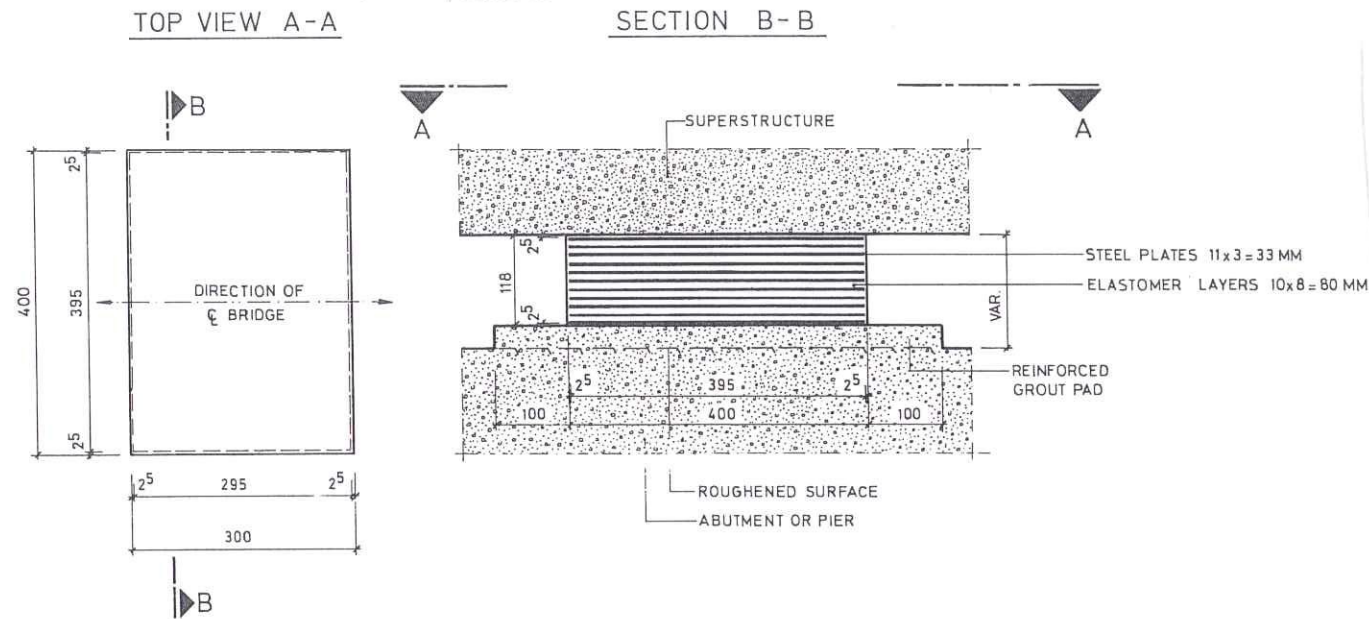
CONTRACT SECTION	R / 9A / 1976 BAGHD. WEST-HABBANIYA
THARTHAR	TYPICAL DETAILS AT
CANAL BRIDGE	APPROACH EMBANKMENT

DATE	DESIGNED	DRAWN		SCALE	DRG. No
Dec. 76	<i>h.s.</i>	<i>Ke</i>	C <i>set</i>		29.008

S.54.1

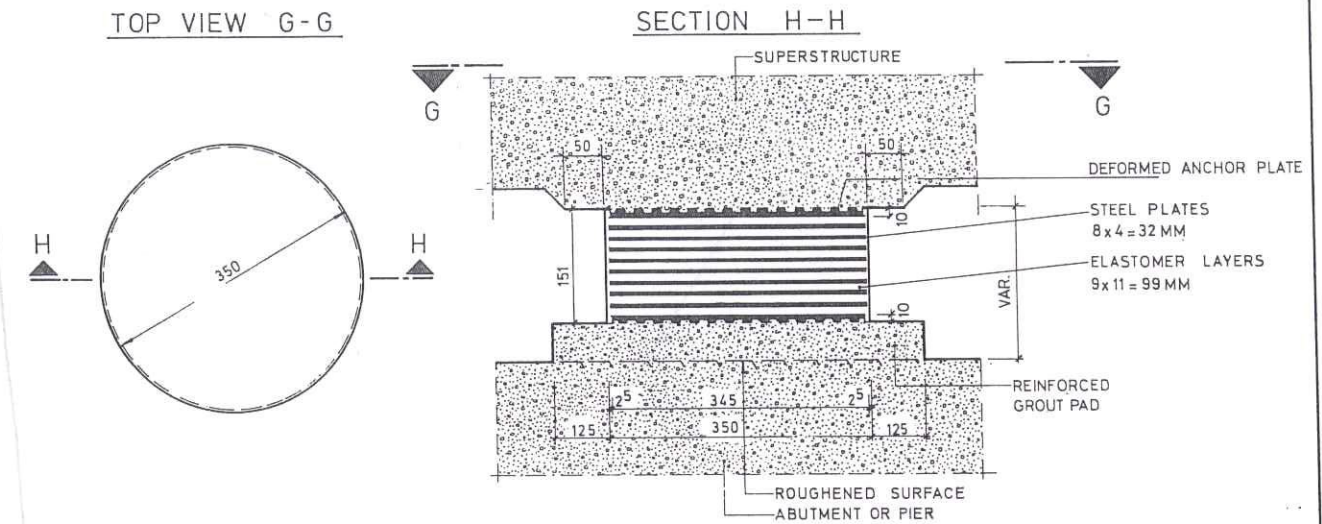
TYPE 400x300/118

SCALE 1:5



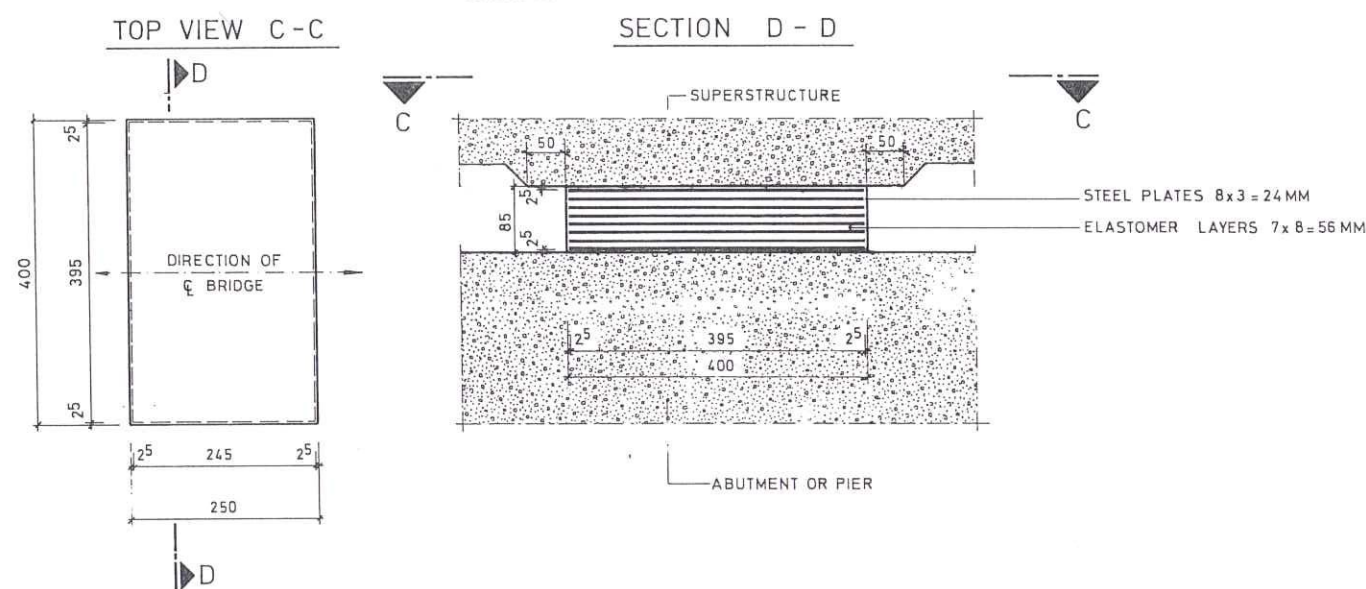
TYPE Ø 350/151

SCALE 1:5



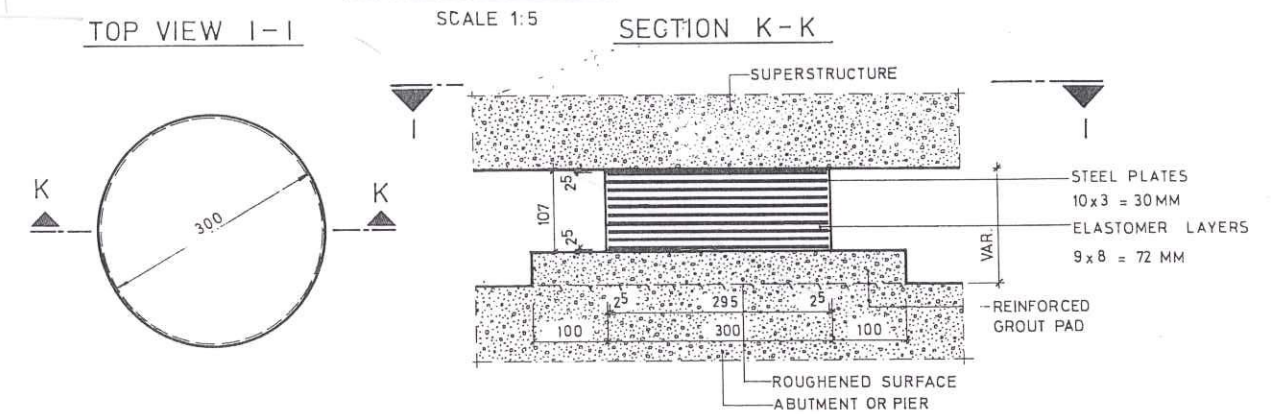
TYPE 400x250/85

SCALE 1:5



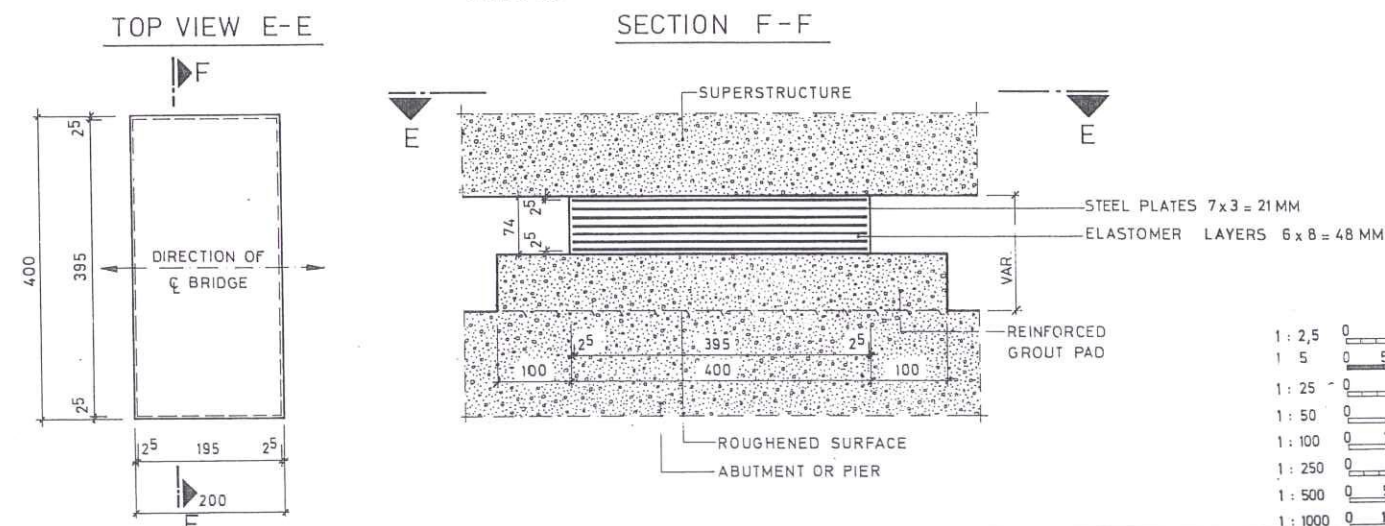
TYPE Ø 300/107

SCALE 1:5



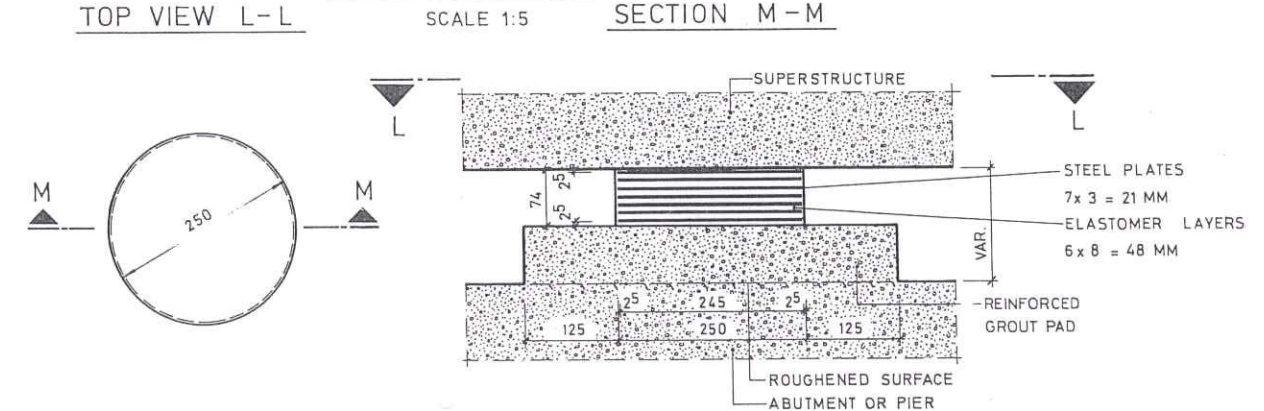
TYPE 400x200/74

SCALE 1:5

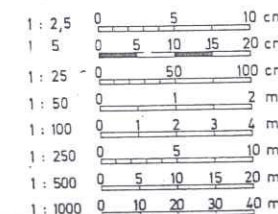


TYPE Ø 250/74

SCALE 1:5



ALL DIMENSIONS IN MM !



REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES		CONTRACT R/9A/1976 SECTION BAGHD. WEST-HABBANIYA THARTHAR ELASTOMERIC REINFORCED CANAL BRIDGE BEARINGS	
IRAQ EXPRESSWAY No ONE		DATE	DESIGNED
CONSULTING ENGINEERS - MUNICH - W. GERMANY in association with AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD - IRAQ		DRAWN	C. KER
DORSCH CONSULT		SCALE	DRG. No
		Dec. 76	29.009

S.54.1

MAX. ALLOWABLE MOVEMENT = ± 25 MM

PLAN OF ONE ELEMENT

SCALE 1:20

Technical drawing of a composite wall cross-section. The drawing shows two panels of composite material, each 2000 units wide, separated by a 10-unit gap. The total width is 2010 units. The height is 877 units. The top edge has a profile with dimensions 10, 20, 50, 50, 20, and 10. A note indicates: "BONDED ACCORDING TO MANUFACTURER'S SPECIFICATIONS!". The bottom edge has dimensions 10, 2000, 10, 2000, and 2010.

- ① = SEALANT AS PROVIDED BY EXP. JOINT SEAL MANUFACTURER AND APPROVED BY ENGINEER'S REPRESENTATIVE.
- ② = BITUMINOUS FILLER AS APPROVED BY ENGINEER'S REPRESENTATIVE.
- ③ = EPOXY - BONDED STUD ANCHOR BOLTS (16 MM DIAM.)

 OR = STEEL

SCALE 1:10

1. ALL DIMENSIONS IN MM.
2. ALL MATERIALS SHALL STRICTLY COMPLY WITH MANUFACTURER'S SPECIFICATIONS.

SCALE 1:20

BONDED ACCORDING TO MANUFACTURER'S SPECIFICATIONS!

53

10 20 50 50 20

10 2000 2000 10 2010

EXP. JOINT SEAL		TYPE 50	TYPE 70	TYPE 100
TYPE OF BRIDGE	SEAL	50	70	100
UP	T = 10 °C	233	/	486
	T = 20 °C	230	/	480
	T = 30 °C	227	/	474
OP	T = 10 °C	238	/	
	T = 20 °C	235	/	
	T = 30 °C	232	/	
OF (ALT.)	T = 10 °C	/	/	484
	T = 20 °C	/	/	480
	T = 30 °C	/	/	476

MAX. ALLOWABLE MOVEMENT = ± 50 MM

PLAN OF ONE ELEMENT

SCALE 1:20

Technical drawing of a composite floor system showing a cross-section of a concrete slab with a steel reinforcement mesh. The drawing includes dimensions for the slab thickness (55), the mesh depth (10), and the total width (2010). A note indicates the mesh is bonded according to manufacturer's specifications.

SCALE 1:10

1 : 2	0	4	8	cm		
1 : 10	0	10	20	30	40	cm
1 : 20	0	40	80	cm		
1 : 50	0	1	2	m		
1 : 100	0	1	2	3	4	m
1 : 250	0	5	10	m		
1 : 500	0	5	10	15	20	m
1 : 1000	0	10	20	30	40	m

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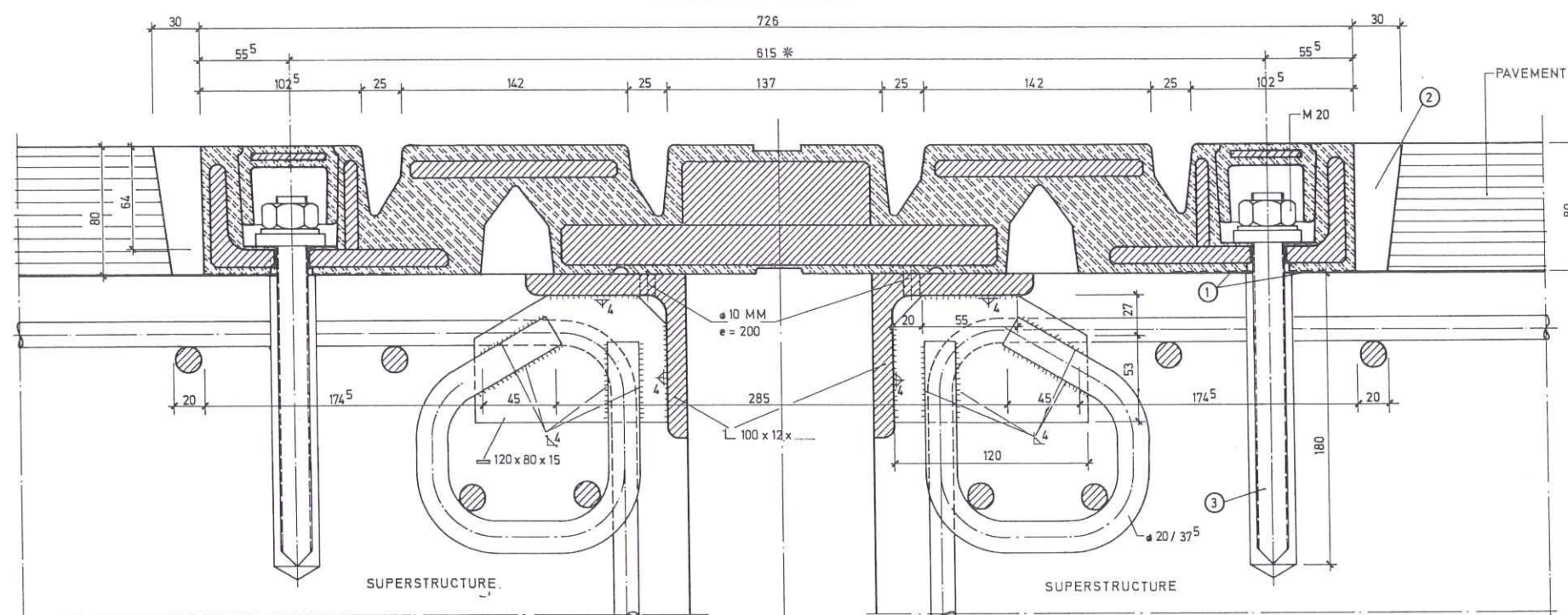
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CONTRACT SECTION	R/9A/1976 BAGHD. WEST - HABBANIYA			
THARTHAR CANAL BRIDGE	EXPANSION JOINT SEALS TYPES 50/70/100			
DATE	DESIGNED	DRAWN	SCALE	DRG. No
Dec. 76	Li	Ka	C KET	2.9.010

S.54.1

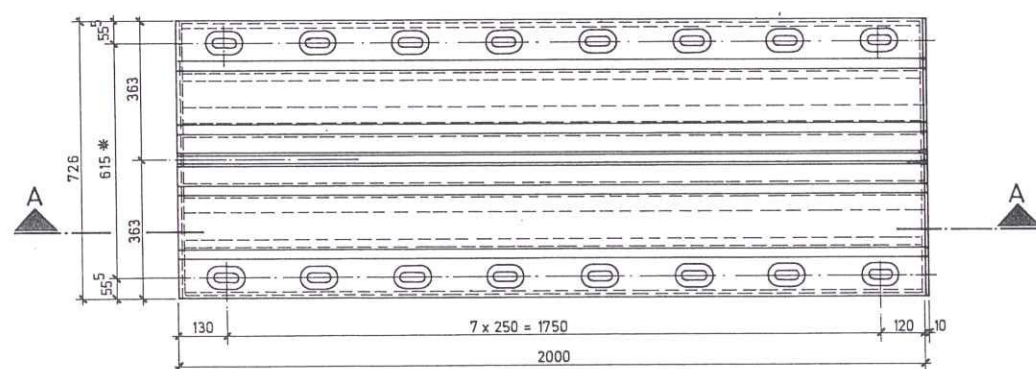
MAX. ALLOWABLE MOVEMENT = ± 80 MM

CROSS SECTION SCALE 1:2

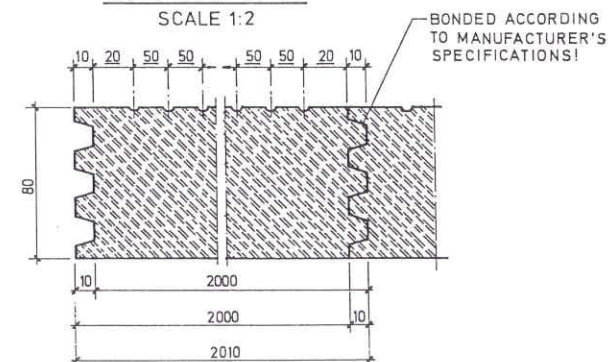


* DIMENSIONS SHOWN ARE FOR FABRICATION ONLY!
FOR DIMENSIONS AT INSTALLATION SEE TABLE!

SCALE 1:10



SCALE 1:2



LEGEND:

- ① = SEALANT AS PROVIDED BY EXPANSION JOINT SEAL MANUFACTURER AND APPROVED BY ENGINEER'S REPRESENTATIVE.
- ② = BITUMINOUS FILLER AS APPROVED BY ENGINEER'S REPRESENTATIVE.
- ③ = EPOXY-BONDED STUD ANCHOR BOLTS (20MM DIAM.)

 = NEOPRENE = STEEL

NOTES:

1. ALL DIMENSIONS IN MM.
2. ALL MATERIALS SHALL STRICTLY COMPLY WITH MANUFACTURER'S SPECIFICATIONS.

REQUIRED SPACING OF ANCHOR BOLTS AT INSTALLATION

EXP. JOINT		TYPE 100	TYPE 160	REMARKS
TYPE OF BRIDGE				
THARTAR CANAL BRIDGE	T = 10°C	503	603	T = AVG. TEMPERATURE OF SUPERSTRUCTURE AT INSTALLATION!
	T = 20°C	500	590	
	T = 30°C	497	580	

S.54.1

1 : 2 0 4 8 cr
1 : 10 0 10 20 30 40 cr
1 : 25 0 50 100 cr
1 : 50 0 1 2 m
1 : 100 0 1 2 3 4 m
1 : 250 0 5 10 m
1 : 500 0 5 10 15 20 m
1 : 1000 0 10 20 30 40 m

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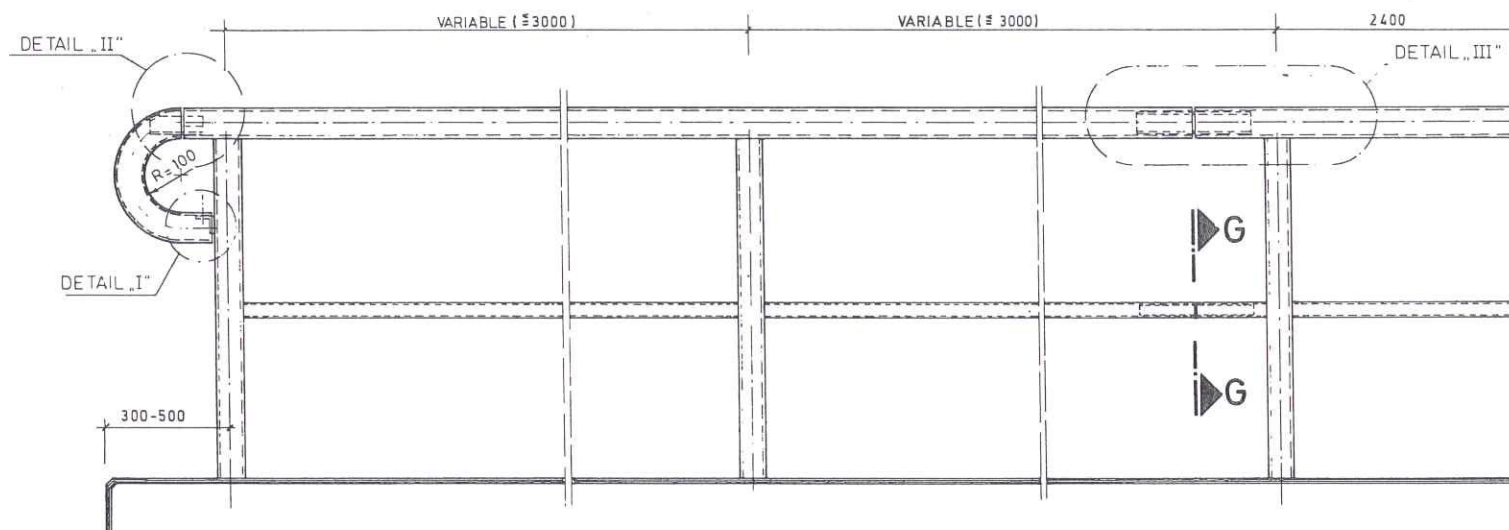
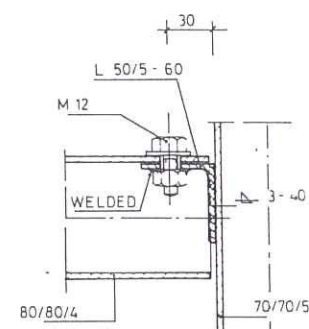
**CONTRACT
SECTION**

R/9A/1976
BAGHD.WEST-HABBANIYA

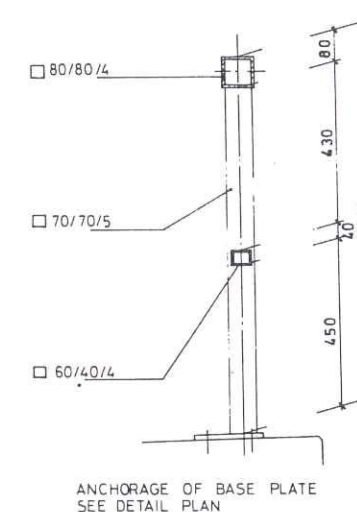
THARTHAR EXPANSION JOINT SEAL
CANAL BRIDGE TYPE 160

Y	DATE	DESIGNED	DRAWN	SCALE	DRG. No
	Dec. 76	Li	Le	C per	2.9.011

SCALE 1 10



SCALE 1-10



Technical drawing showing a cross-section of a mechanical assembly. The drawing includes dimensions: 140, 80, 15, 80, 3-20, M 12, 4, and 70/70/5. The assembly consists of a horizontal beam with a bracket attached to its side. The bracket is secured with a bolt and nut. The drawing also shows a curved surface on the left and a vertical support structure below the beam.

AT ALL EXP. JOINTS IN SUPERSTR.: 50
OTHERWISE: 30

70/70.5

180

15

80

80/80/4

EXPANSION JOINT

WELDED M 12

10/15 - 60 WELDED 3-60
R 10/55/65
R 6/70/100
CLAMP BOLT M 12

80

105

E

E

F

Technical drawing of a safety cable assembly. The drawing shows a U-shaped bracket with two threaded rods passing through it. The bracket is labeled "80/80/4". The threaded rods are labeled "CLAMP BOLT M 12". A safety cable is shown passing through the bracket, labeled "SAFETY CABLE Ø 20". The safety cable is secured by a nut, labeled "R 10/55/65". The safety cable is also labeled "R 6/70/100". The threaded rods are labeled "Ø 10/15 - 60".

WELDED

B

SLOT

80/80/4

SAFETY CABLE Ø 20

Technical drawing of a cable bracket (Fig. 10) showing a side view. The drawing includes the following dimensions and labels:

- Overall length: 300
- Segment lengths: 20, 50, 50
- Slot dimensions: SLOT 20/80
- Hole dimensions: HOLES $\phi 12$
- Welded section: WELDED
- Opening dimensions: OPENING 80/60
- Safety cable: SAFETY CABLE $\phi 20$
- Clamp bolt: CLAMP BOLT M 12
- Reference markers: D (on both ends)

SLOT LOCATION AND HOLE SPACING
AS SHOWN IN DETAIL III

RAILING FRAME TYPES SHALL BE COMBINED SUCH THAT A RAILING EXPANSION JOINT WITH GAP WIDTH 50MM IS PROVIDED IN ALL RAILING SECTIONS SPANNING SUPERSTRUCTURE EXPANSION JOINTS.

ALL DIMENSIONS IN MM

$1 : 2,5$ 0 5 10 cm
 $1 : 10$ 0 10 20 30 40 cm
 $1 : 25$ 0 50 100 cm
 $1 : 50$ 0 1 2 m
 $1 : 100$ 0 1 2 3 4 m
 $1 : 250$ 0 5 10 m
 $1 : 500$ 0 5 10 15 20 m
 $1 : 1000$ 0 10 20 30 40 m

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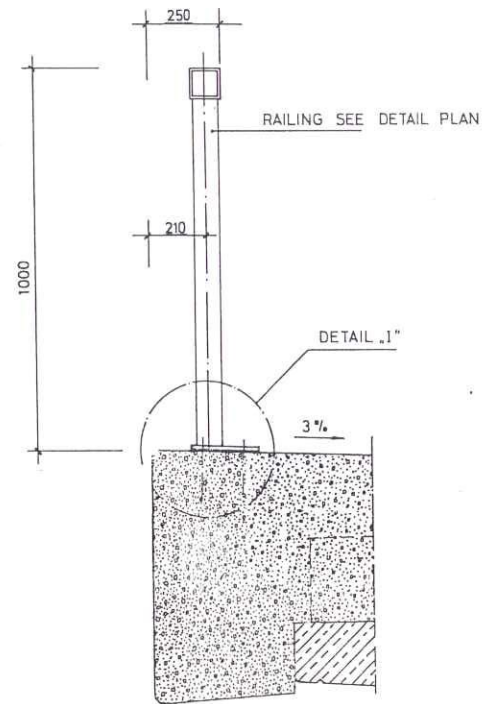
CONTRACT SECTION		R/9A/1976 BAGHD.WEST-HABBANIYA	
T HARTHAR CANAL BRIDGE		RAILING	
DATE Dec. 76	DESIGNED <i>Anders</i>	DRAWN <i>te</i>	SCALE C 1:25
			DRG. 23.01

S.54.1

ANCHORAGE RAILING POST

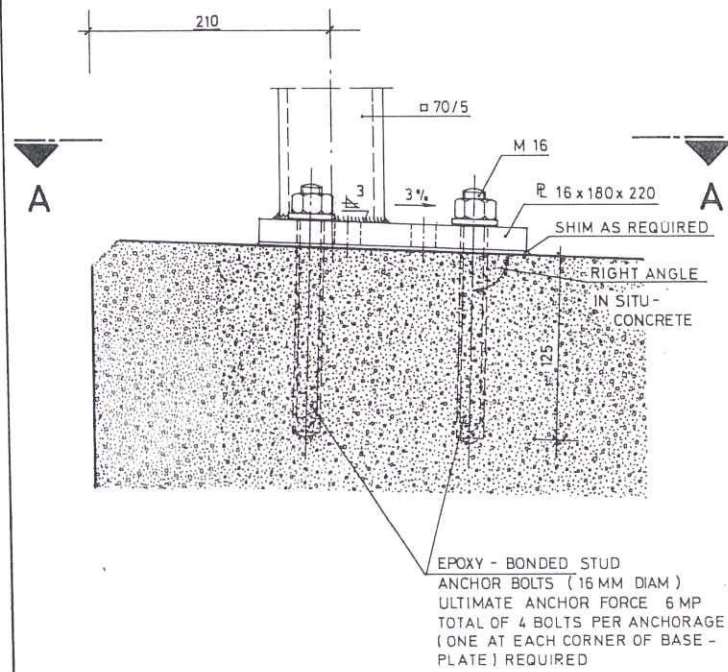
CROSS - SECTION

SCALE 1:10



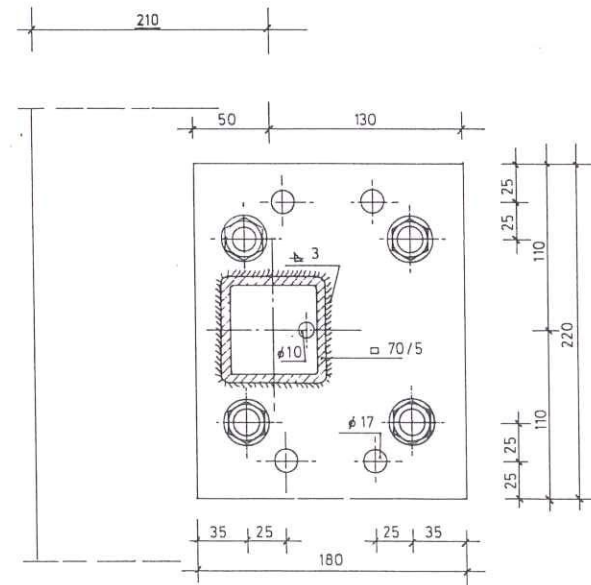
DETAIL „I“

SCALE 1: 2,5



SECTION A - A

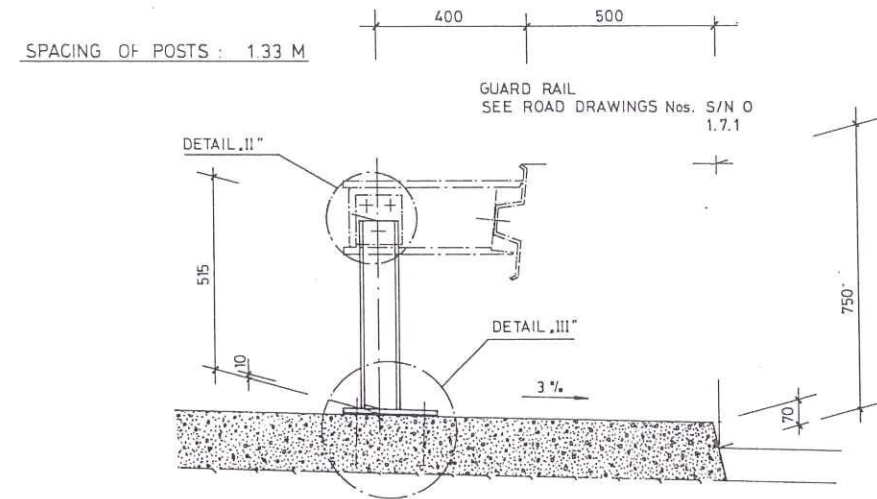
SCALE 1: 2,5



ANCHORAGE GUARD RAIL POST

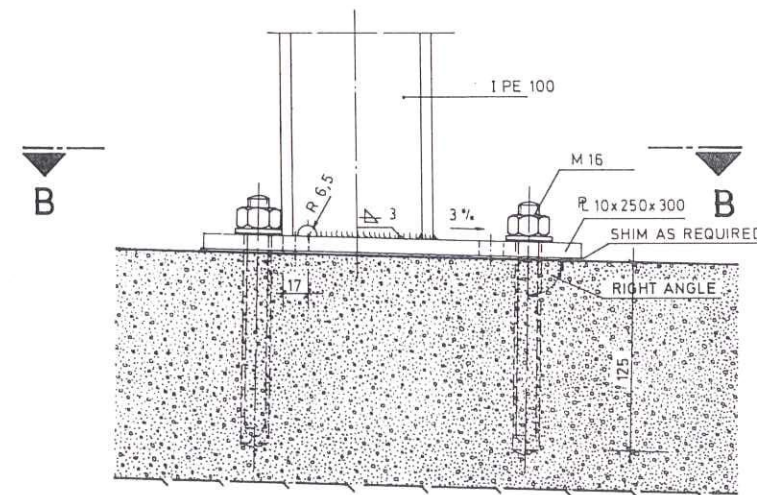
CROSS SECTION

SCALE 1:10



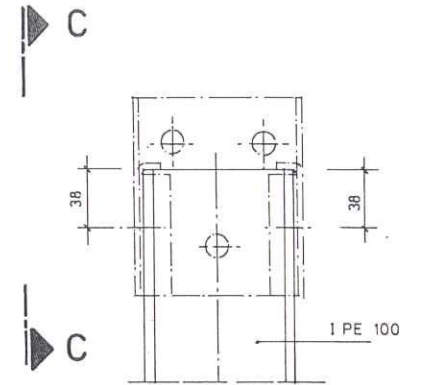
DETAIL „III”

SCALE 1: 2,5



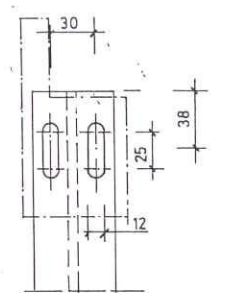
DETAIL „II“

SCALE 1 : 2,5



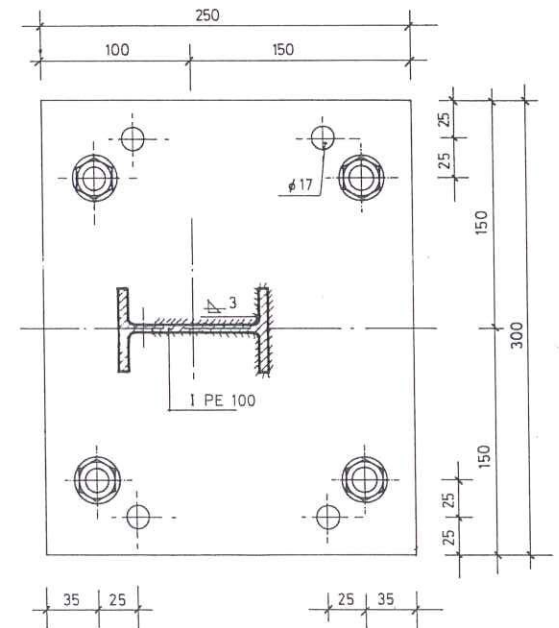
ELEVATION C - C

SCALE 1: 2,5



SECTION B-B

SCALE 1:2,5



S.54.1

1 : 2,5 0 5 10 cm
1 : 10 0 10 20 30 40 cm
1 : 25 0 50 100 cm
1 : 50 0 1 2 m
1 : 100 0 1 2 3 4 m
1 : 250 0 5 10 m
1 : 500 0 5 10 15 20 m
1 : 1000 0 10 20 30 40 m

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IRAQ EXPRESSWAY No ONE



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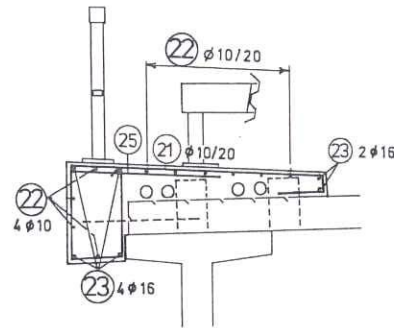
AL-KHAZEN · CONSULTING ENGINEERS · BAGHDAD · IRAQ

CONTRACT SECTION		R/9A/1976 BAGHD.WEST-HABBANIYA			
THARTHAR CANAL BRIDGE		ANCHORAGE RAILING POST AND GUARD RAIL POST			
DATE	DESIGNED	DRAWN		SCALE	DRG. No
Dec.76	Li	Fe	C CER		2.9.013

CROSS SECTION ZONE A

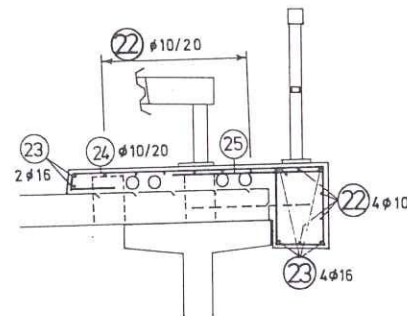
SCALE 1:25

CROSS SECTION OUTER SIDEWALK



21 $\phi 10/20$: LAST 1.5m BEFORE ENDS OF DECKSLAB
(AT ABUTM.) $\phi 10/10$

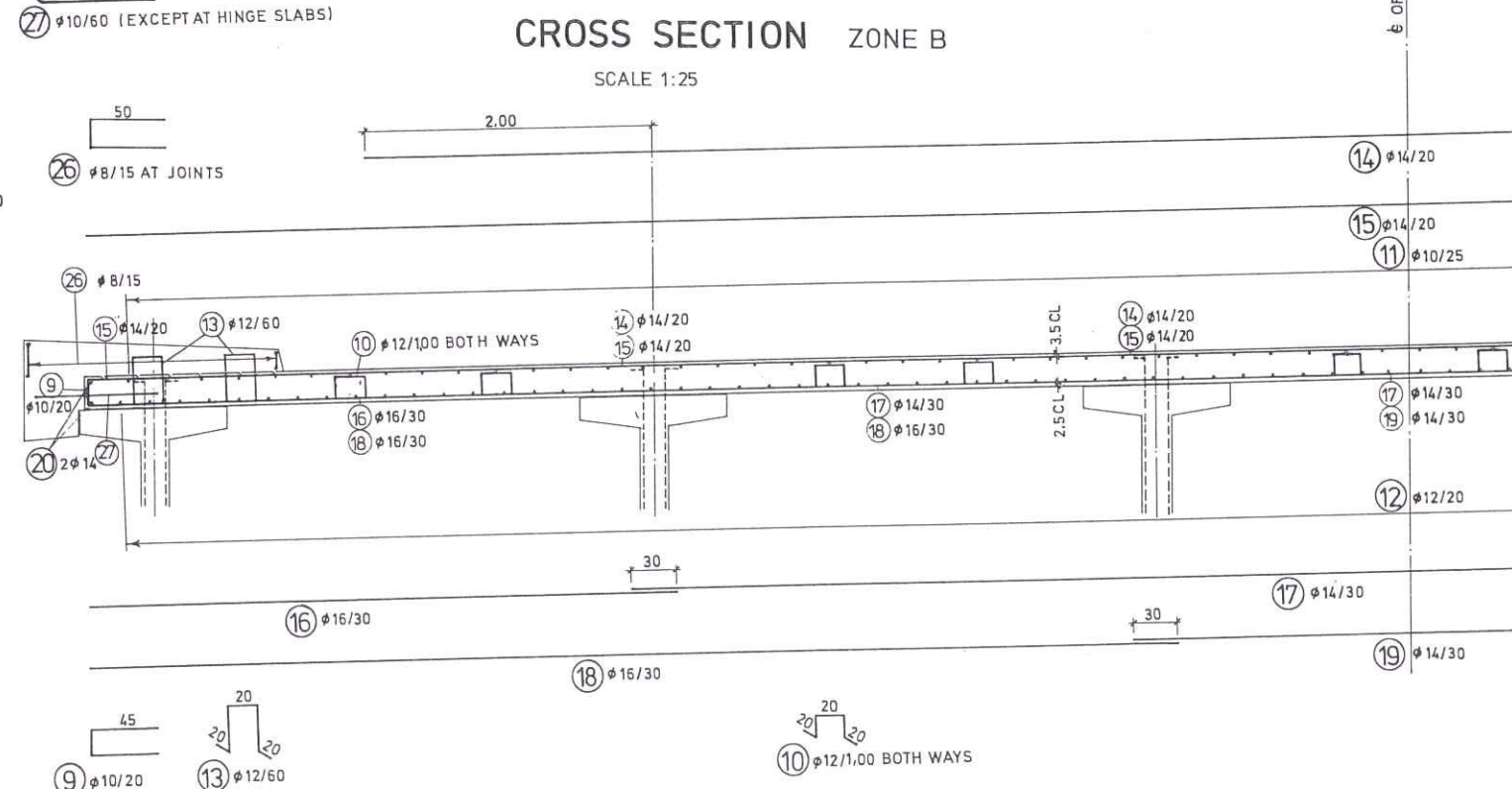
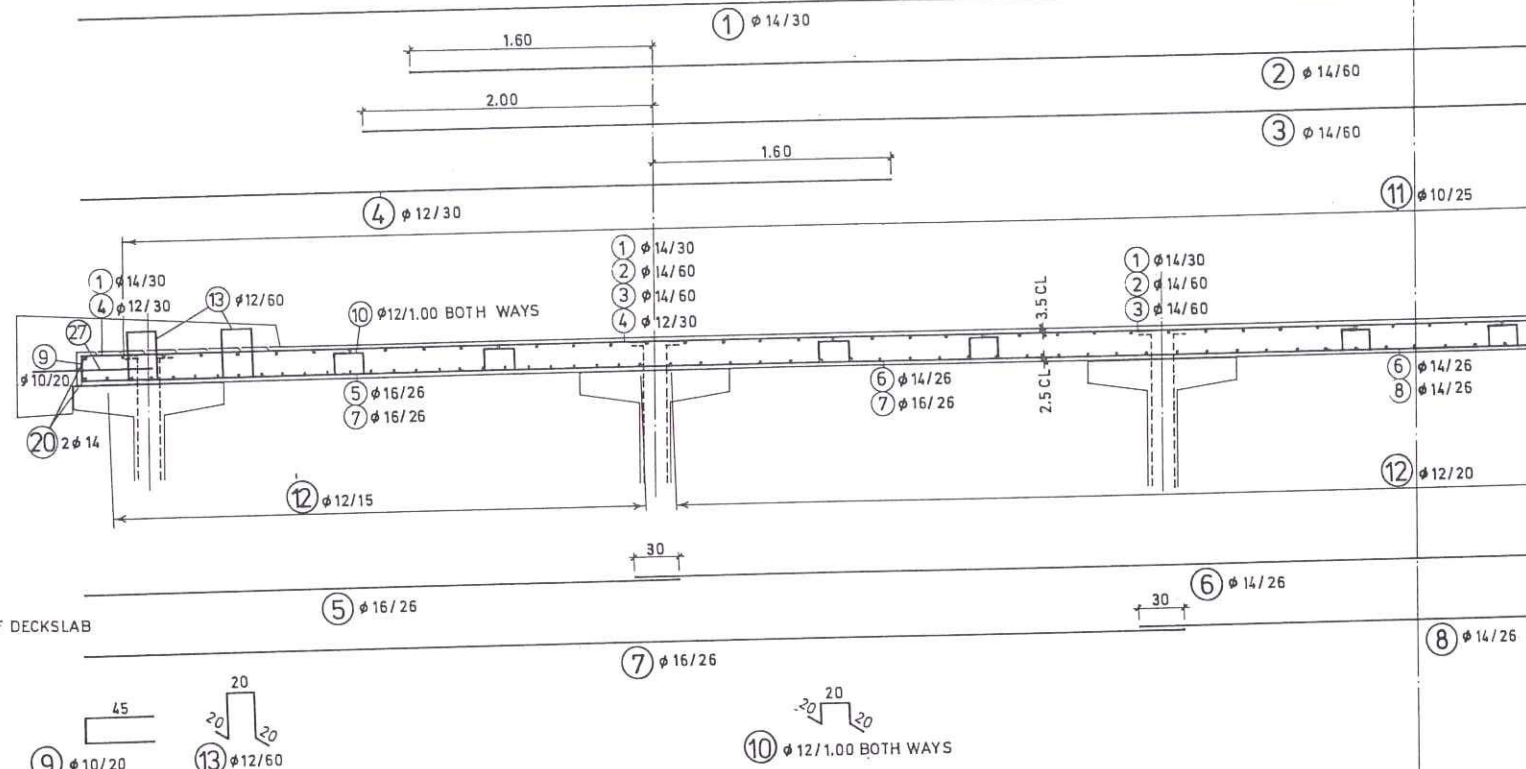
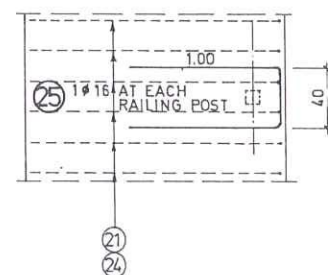
CROSS SECTION INNER SIDEWALK



24 $\phi 10/20$

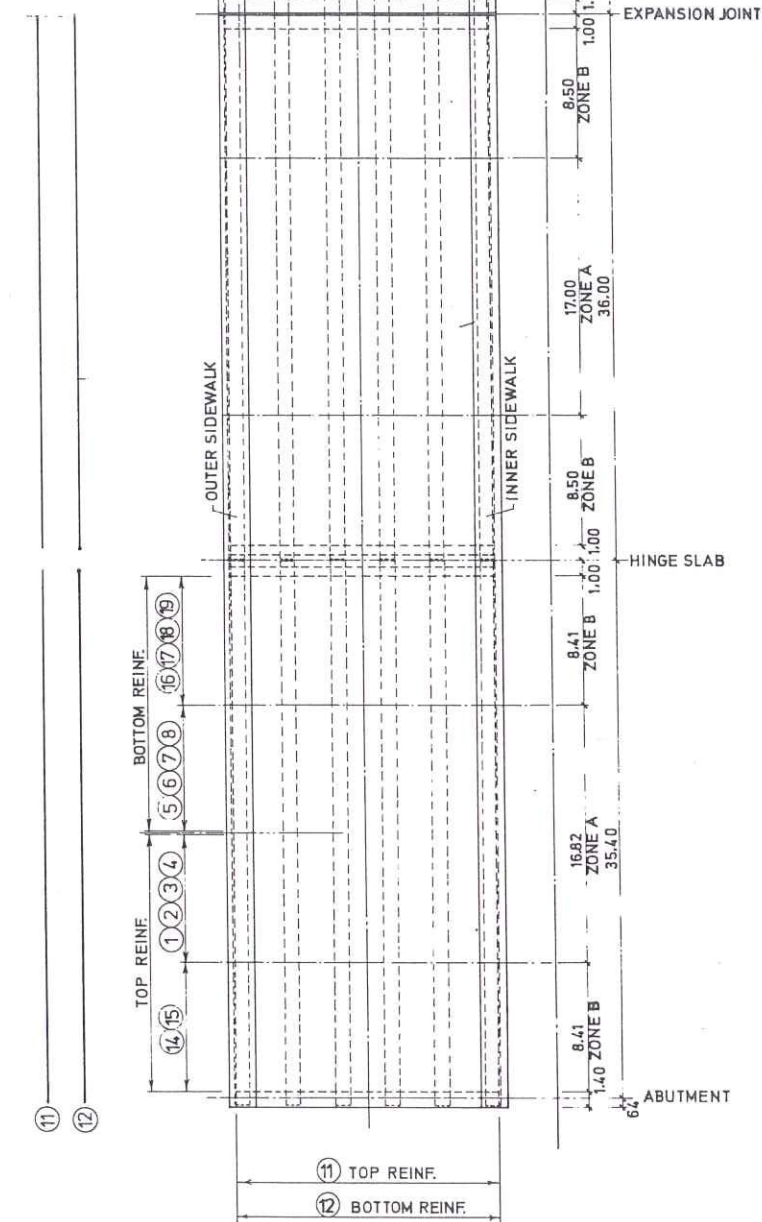
REINF. AT RAILING POST

SCALE 1:25



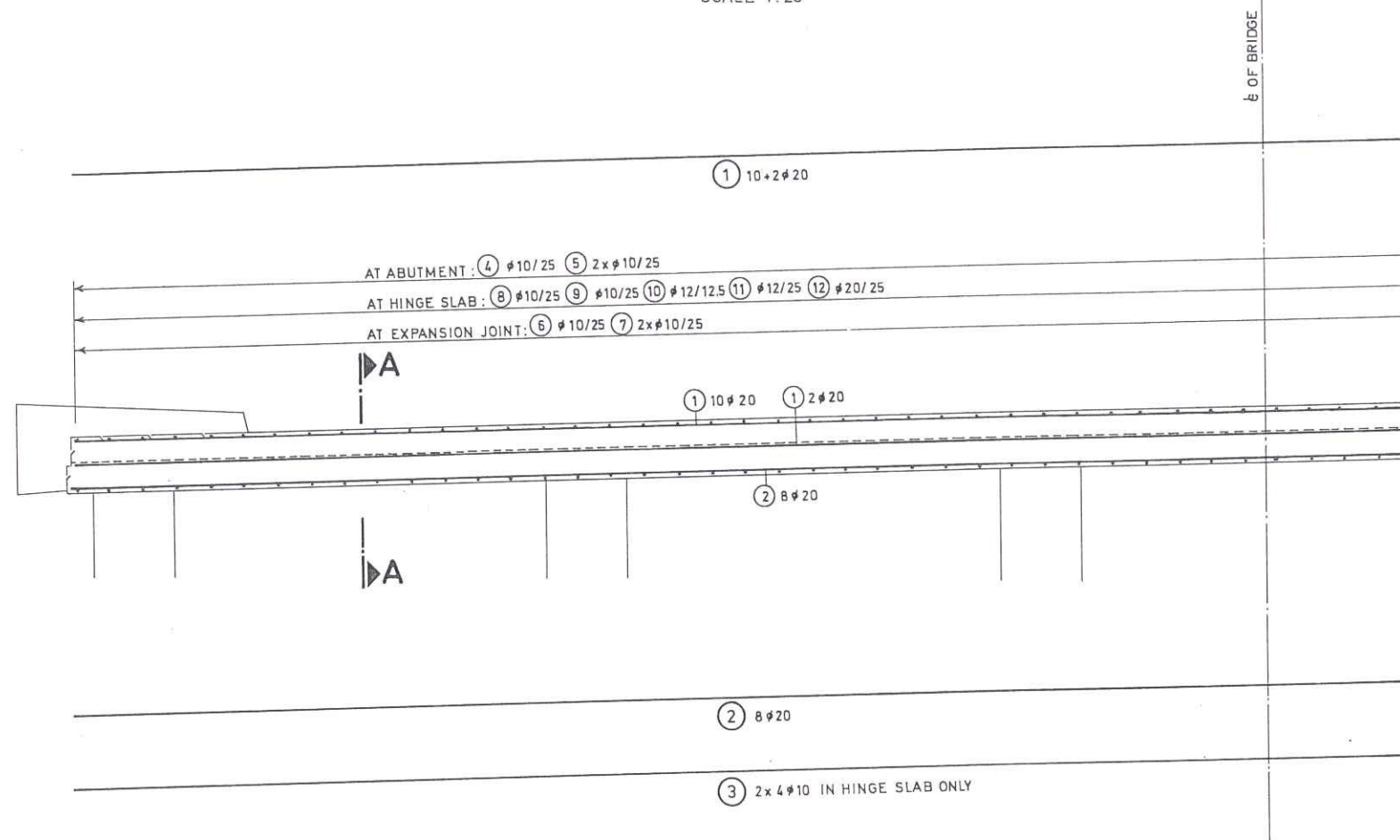
PLAN - DECK SLAB

SCALE 1:250



CROSS SECTION AT END OF BEAM AT ABUTMENT; HINGE SLAB; EXPANSION JOINT

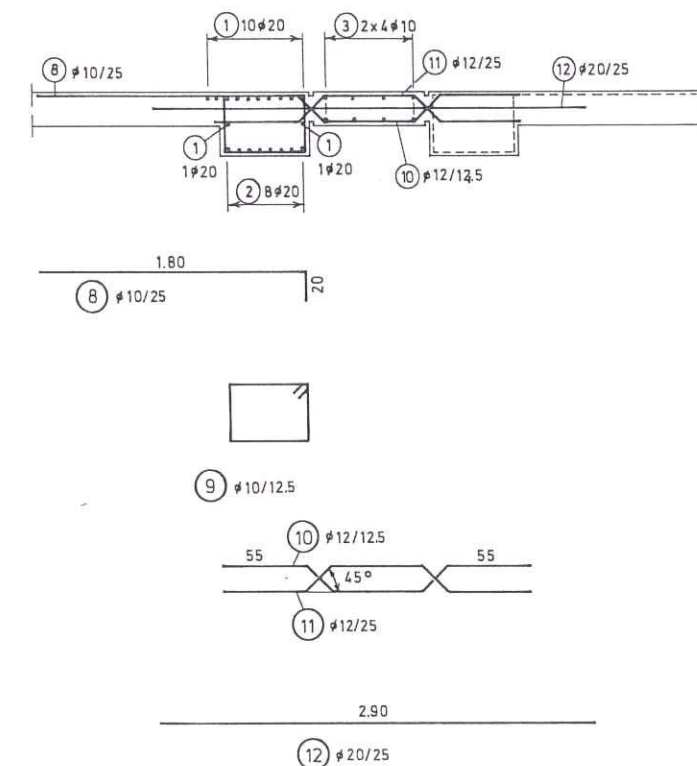
SCALE 1:25



LONG. SECTION A-A

SCALE 1:25

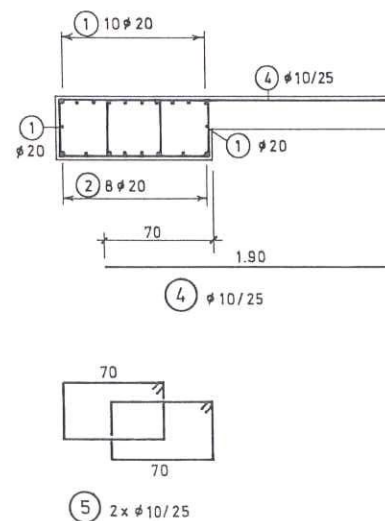
AT HINGE SLAB



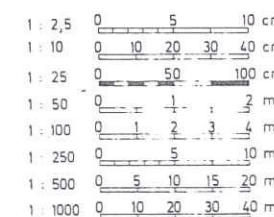
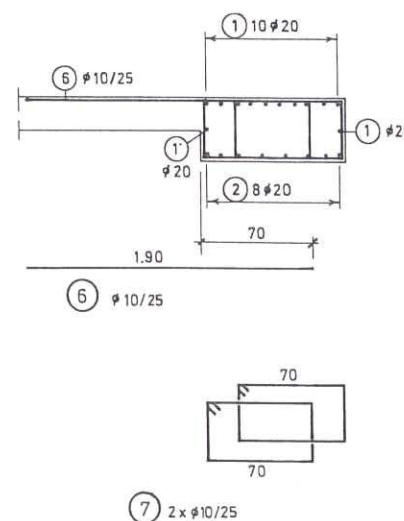
LONG. SECTIONS A-A

SCALE 1:25

AT ABUTMENT



AT EXPANSION JOINT



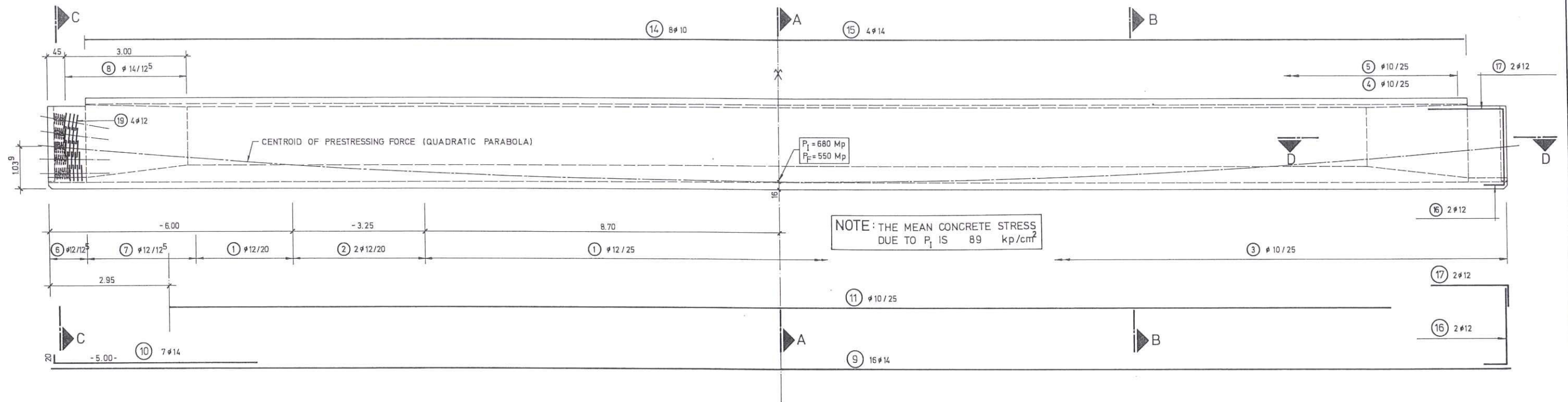
REPUBLIC OF IRAQ
MINISTRY OF WORKS AND HOUSING
DIRECTORATE GENERAL OF ROADS AND BRIDGES
IRAQ EXPRESSWAY No ONE
CONSULTING ENGINEERS - MUNICH - W. GERMANY
in association with
AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD-IRAQ

CONTRACT SECTION
THARTHAR CANAL BRIDGE
R/9A / 1976
BAGHD.WEST HABBANIYA
SUPERSTRUCTURE REINFORCEMENT PART 2
DATE 75
DESIGNED
DRAWN
SCALE
DRG. No 2.9.021

S.54.1

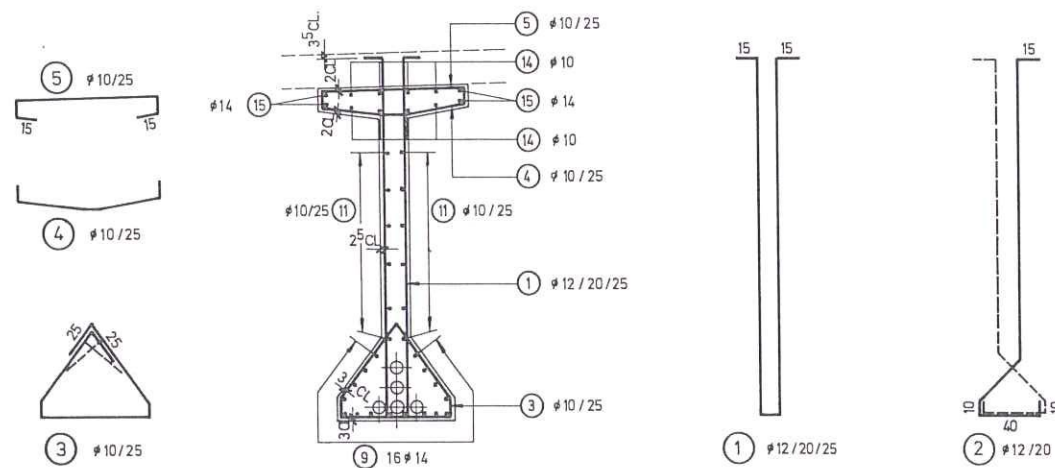
LONGITUDINAL SECTION

SCALE 1:50



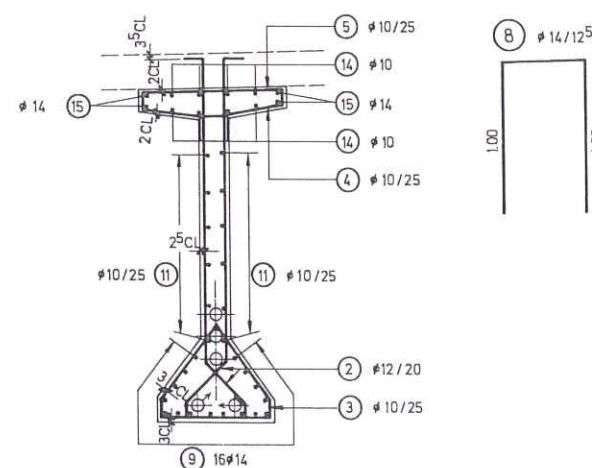
SECTION A-A

SCALE 1:25



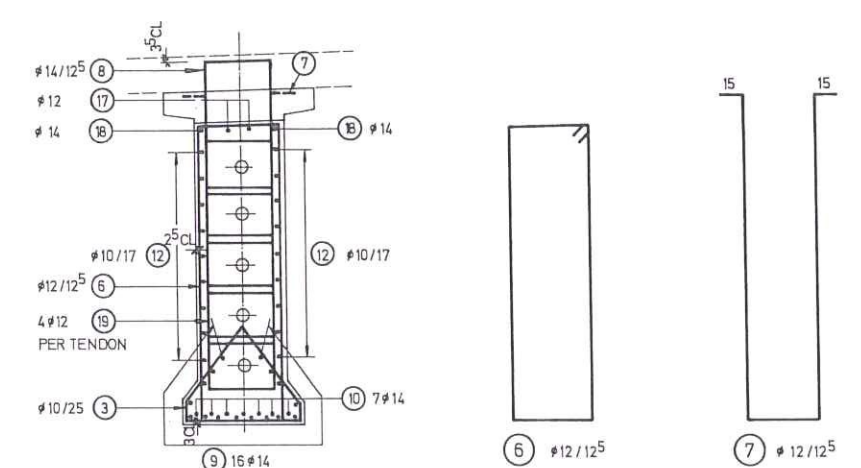
SECTION B-B

SCALE 1:25



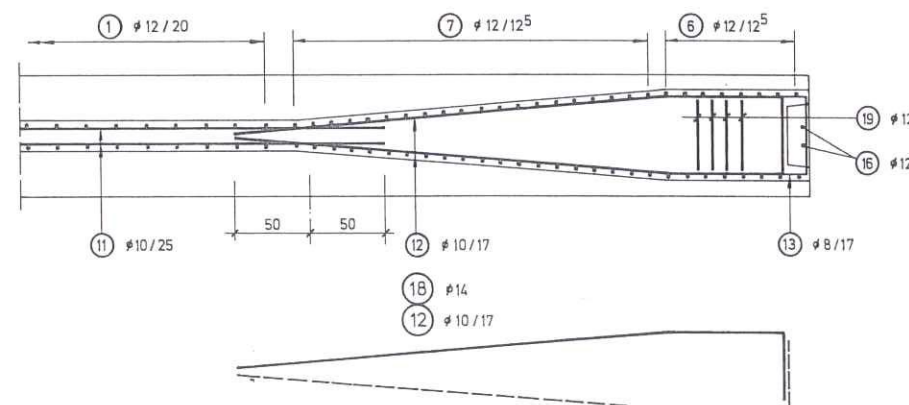
SECTION C-C

SCALE 1:25



SECTION D-D

SCALE 1:25



NOTES:

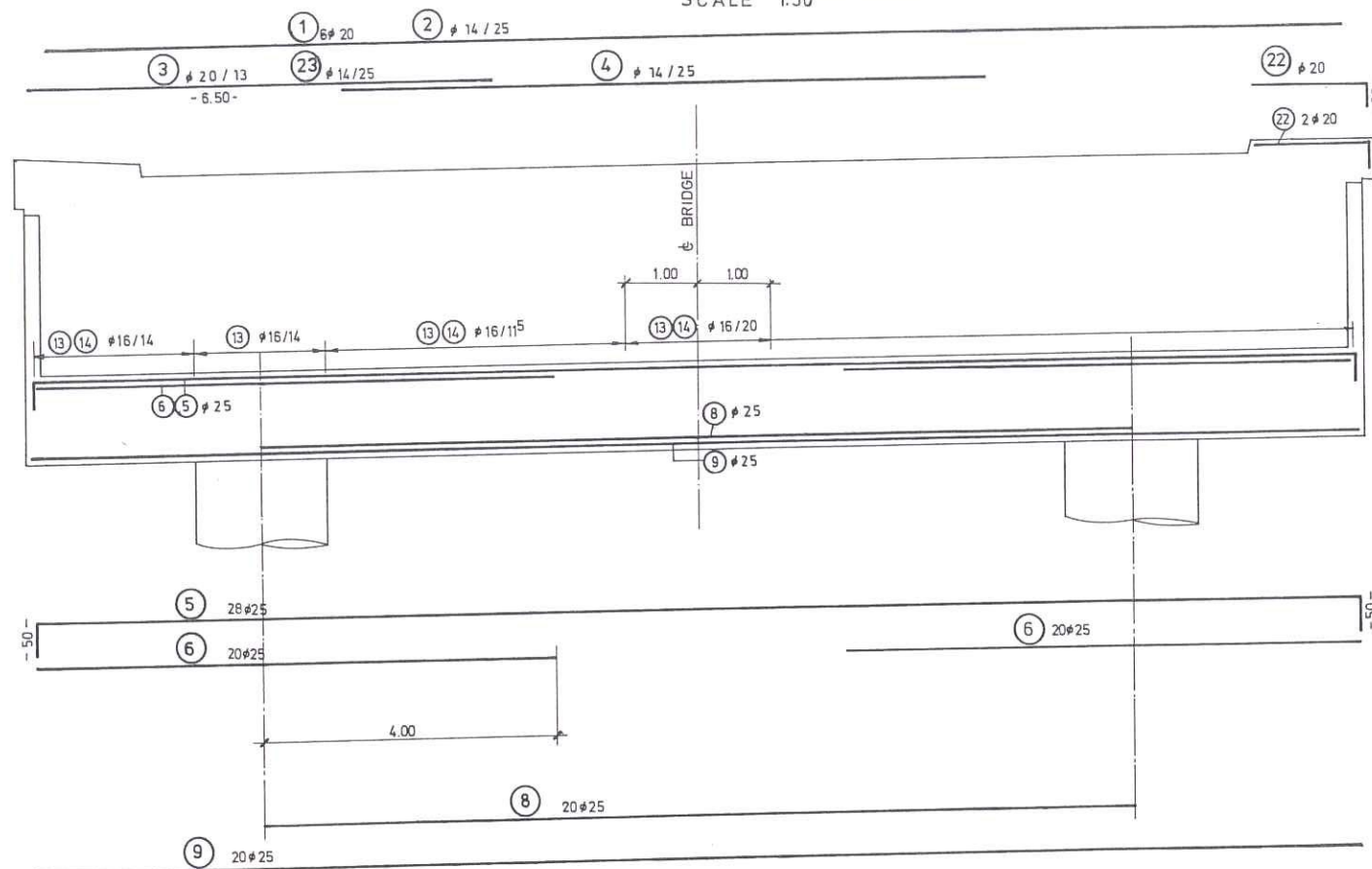
- IN ORDER TO REDUCE LOSSES OF PRESTRESS DUE TO CREEP AND SHRINKAGE EFFECTS THE GIRDERS SHALL BE STRESSED IN TWO STAGES AS FOLLOWS:
1ST STAGE: 30% OF TOTAL PRESTRESSING AFTER CONCRETE HAS ATTAINED A CUBE STRENGTH OF 320 Kp/sqcm .
2ND STAGE: 100% OF TOTAL PRESTRESSING 3 MONTHS AFTER CONCRETING WHEN NORMAL CEMENT (CLASS 350 L ACC. TO DIN 1164) IS USED, OR 2 MONTHS AFTER CONCRETING WHEN HIGH EARLY STRENGTH CEMENT (CLASS 350F ACC. TO DIN 1164) IS USED.
- THE DECK SLAB SHALL BE PLACED NOT LATER THAN 6 MONTHS AFTER CONCRETING OF THE GIRDERS.

S.54.1

REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES		CONTRACT SECTION THARTHAR CANAL BRIDGE		R/9A/1976 BAGHD.WEST-HABBANIYA PREFABRICATED GIRDER REINFORCEMENT	
IRAQ EXPRESSWAY No ONE		DATE	DESIGNED	DRAWN	SCALE
CONSULTING ENGINEERS - MUNICH - W. GERMANY In association with AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD-IRAQ		Dec. 76	Dec. 76	Dec. 76	Dec. 76
DRG. No 2.9.022					

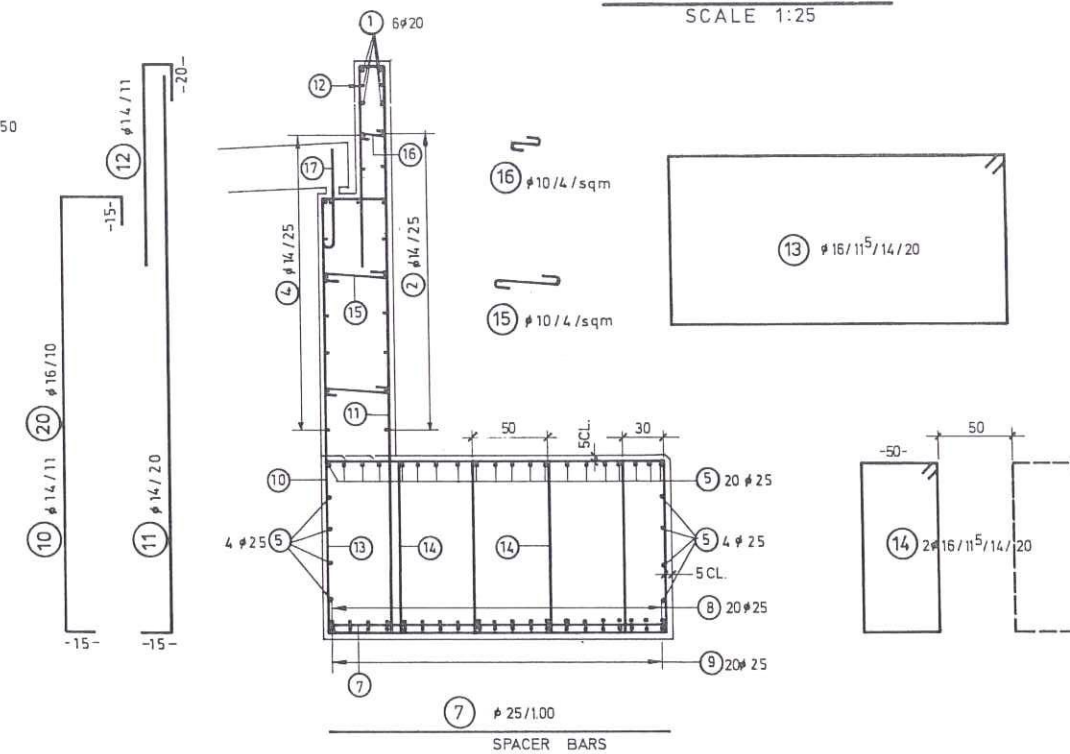
LONGITUDINAL SECTION A-A

SCALE 1:50



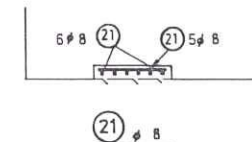
SECTION B-B

SCALE 1:25



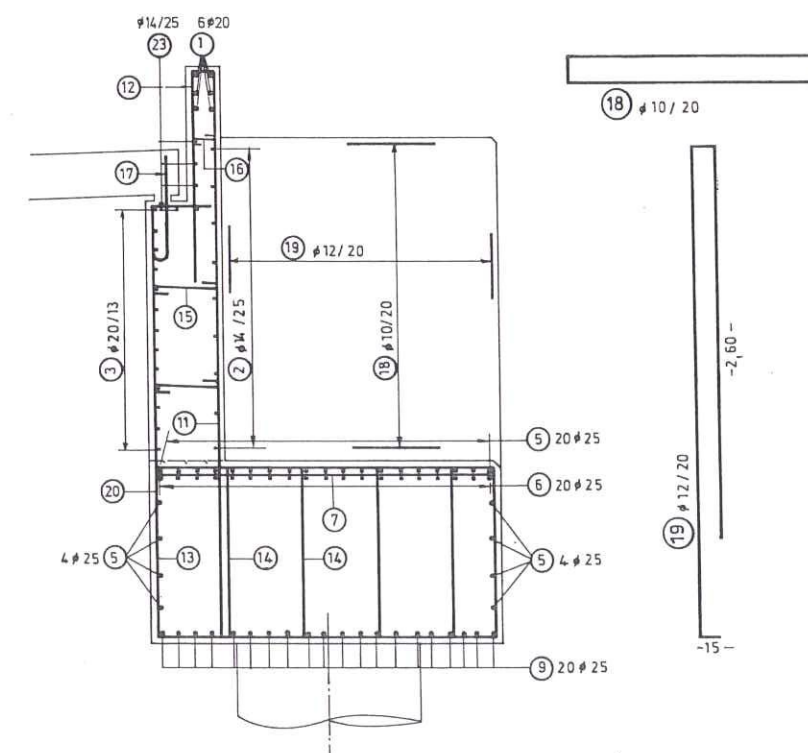
REINF. GROUT PAD

SCALE 1:25



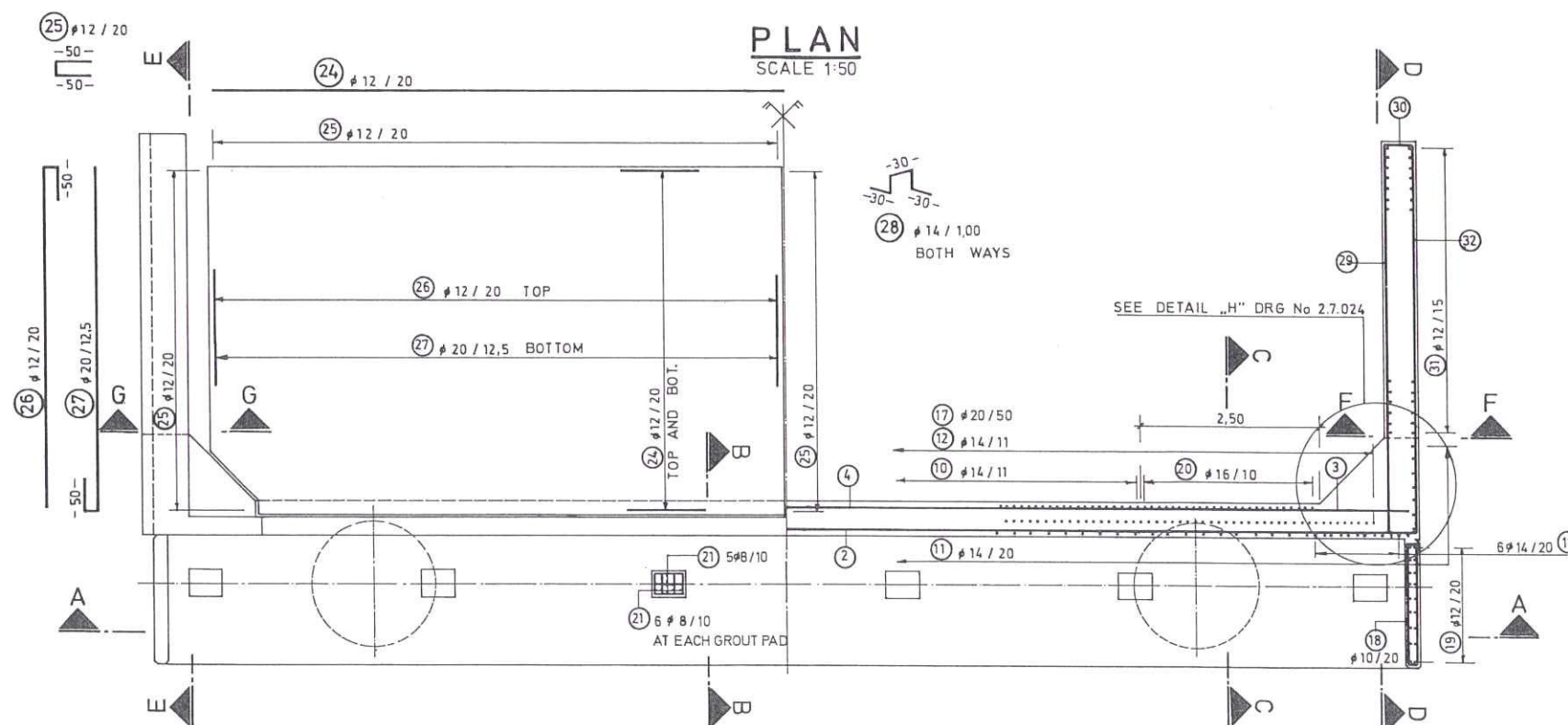
SECTION C-C

SCALE 1:25

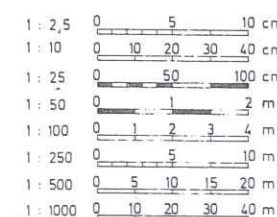


PLAN

SCALE 1:50



NOTE: THIS PLAN TO BE READ WITH DRG. NR. 2.9.024



REPUBLIC OF IRAQ
MINISTRY OF WORKS AND HOUSING
DIRECTORATE GENERAL OF ROADS AND BRIDGES

IRAQ EXPRESSWAY No ONE

CONSULTING ENGINEERS - MUNICH - W. GERMANY
 in association with
 AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD-IRAQ

CONTRACT SECTION
 THARTHAR
 CANAL BRIDGE

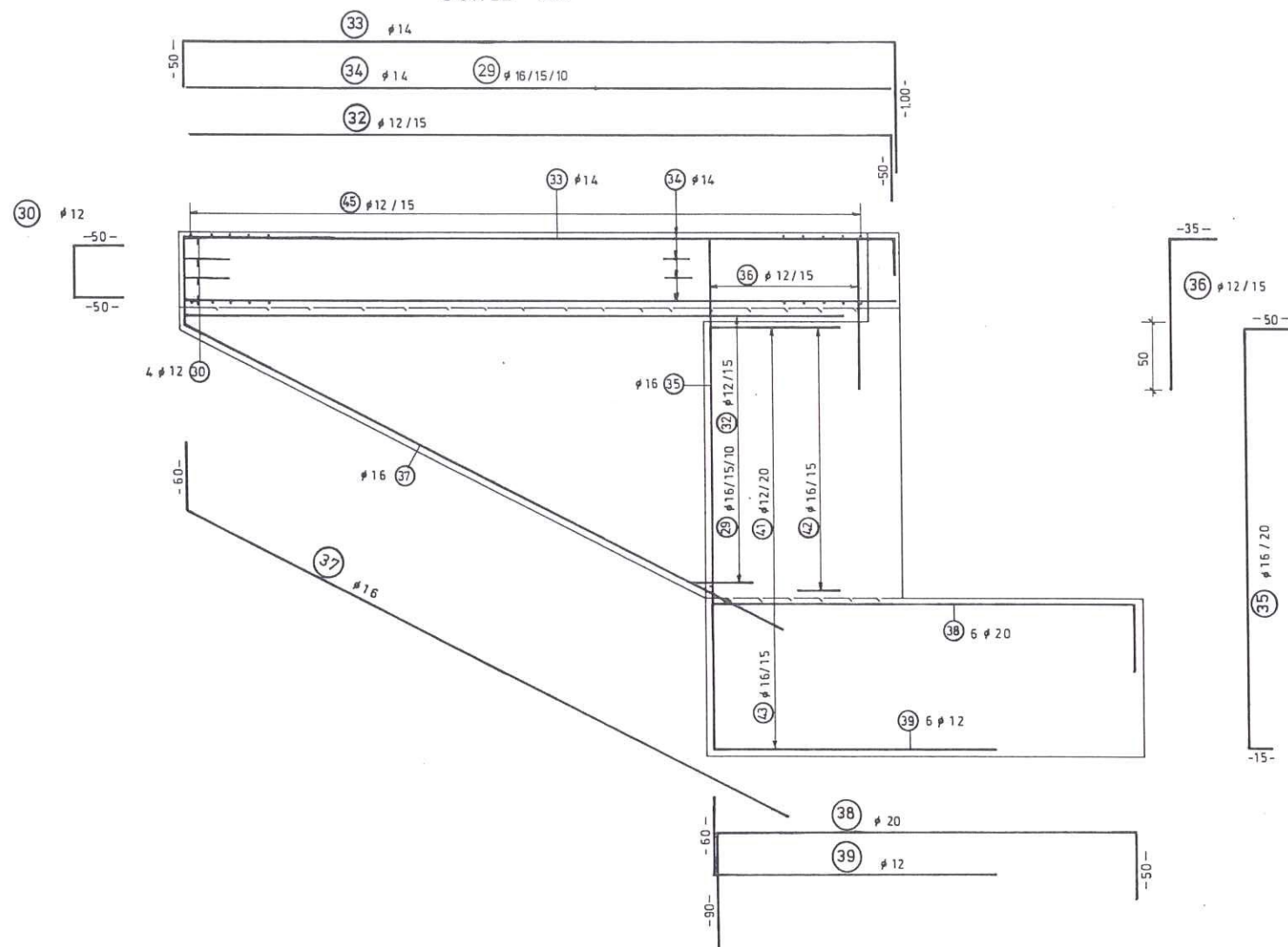
R/9A/1976
 BAGHD. WEST-HABBANYA
ABUTMENT
 REINFORCEMENT

DATE: Dec 76
 DESIGNED: [Signature]
 DRAWN: [Signature]
 SCALE: C
 DRG. No: 2.9.023

S.54.1

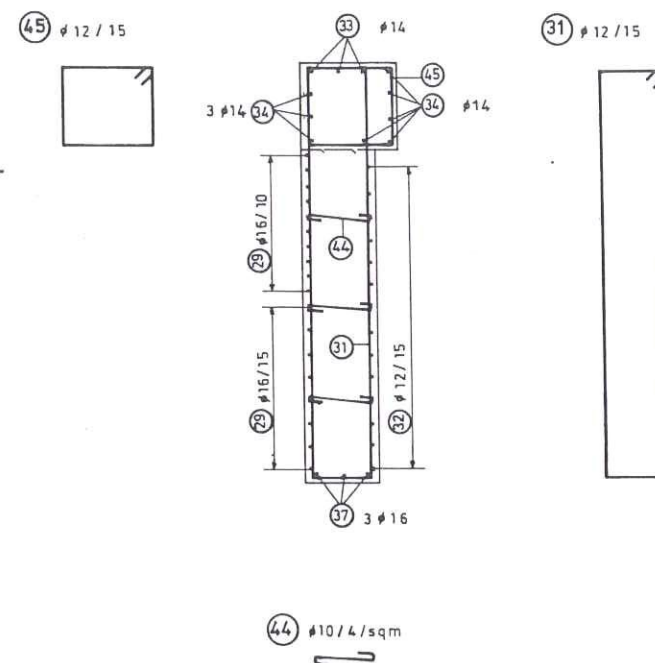
SECTION D-D

SCALE 1:25



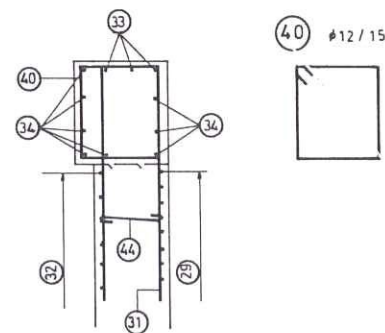
SECTION F-F

SCALE 1:25



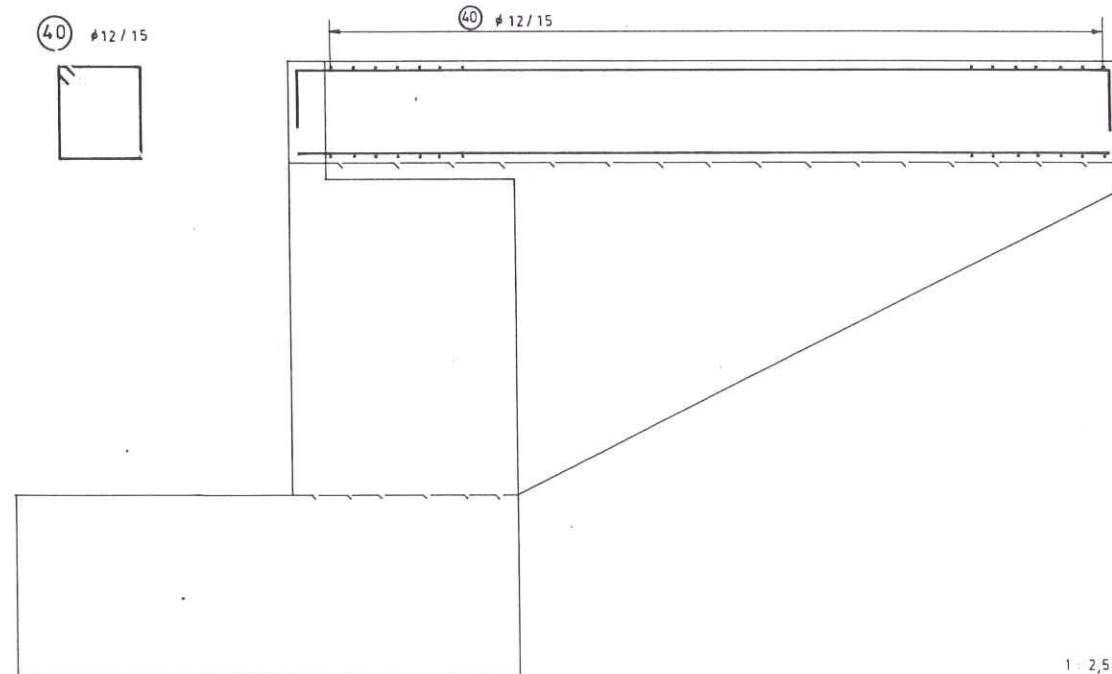
SECTION G-G

SCALE 1:25



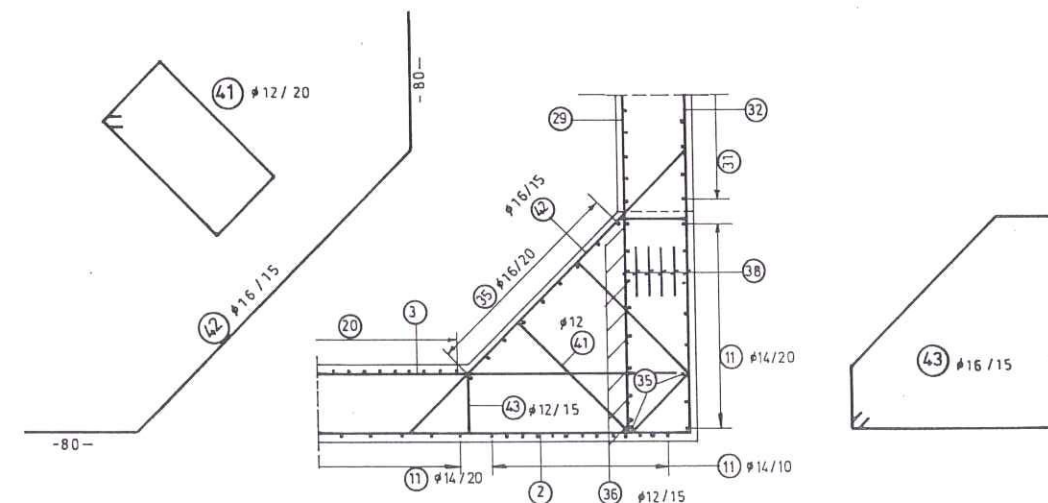
SECTION E-E

SCALE 1:25



DETAIL „H“

SCALE 1:25



NOTE: THIS PLAN TO BE READ WITH DRG. NO. 2.9.023

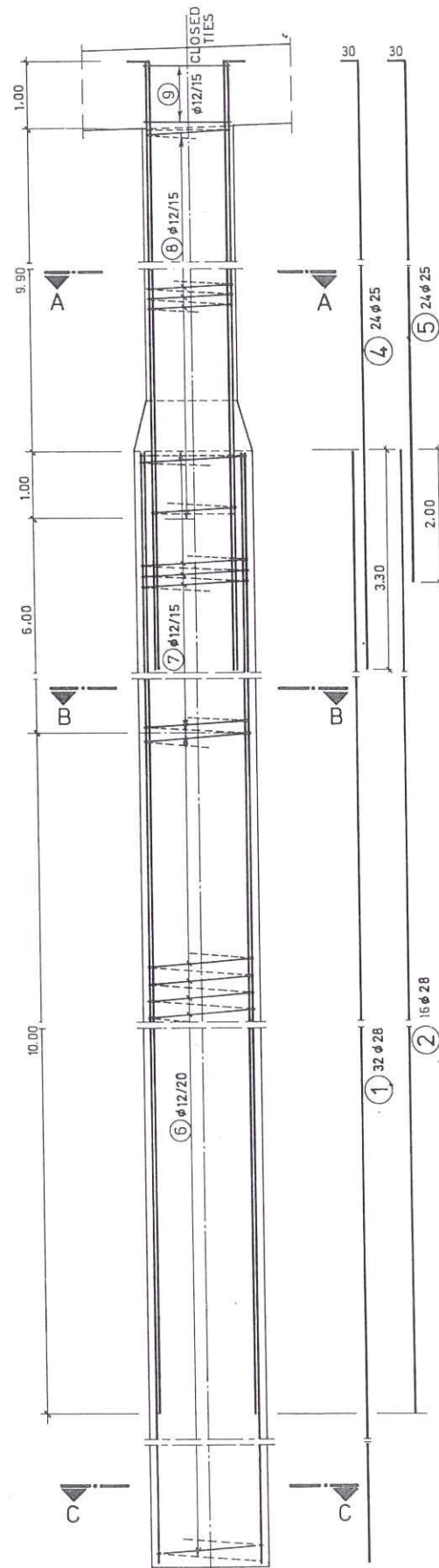
S.54.1

1:2.5	0	5	10	cm
1:10	0	10	20	cm
1:25	0	50	100	cm
1:50	0	1	2	m
1:100	0	1	2	m
1:250	0	5	10	m
1:500	0	5	10	m
1:1000	0	10	20	m

REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES IRAQ EXPRESSWAY No ONE				CONTRACT SECTION THARTHAR CANAL BRIDGE		R/9A/1976 BAGHD. WEST-HABBANIYA ABUTMENT REINFORCEMENT	
DORSCHE CONSULT CONSULTING ENGINEERS · MUNICH · W. GERMANY in association with AL-KHAZEN · CONSULTING ENGINEERS · BAGHDAD-IRAQ				DATE	DESIGNED	DRAWN	SCALE
				Dec. 76	Blas	Chygher	C. KET
				DRG. No		2.9.024	

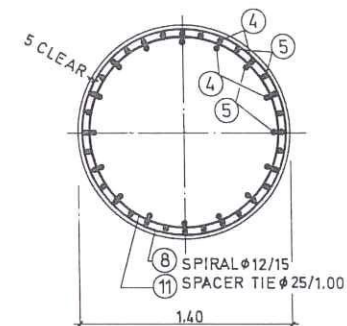
PILE AND COLUMN AT PIER

SCALE 1:50



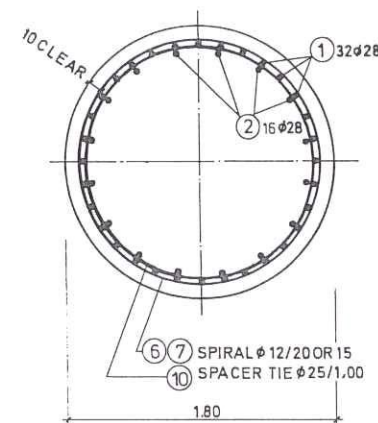
SECTION A-A

SCALE 1:25



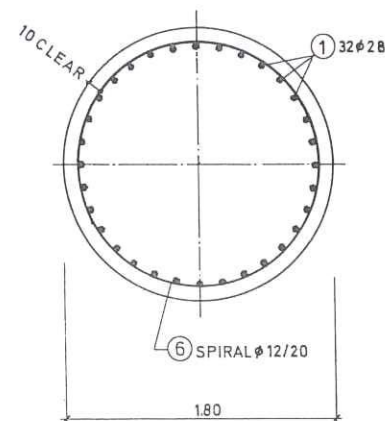
SECTION B-B

SCALE 1:25



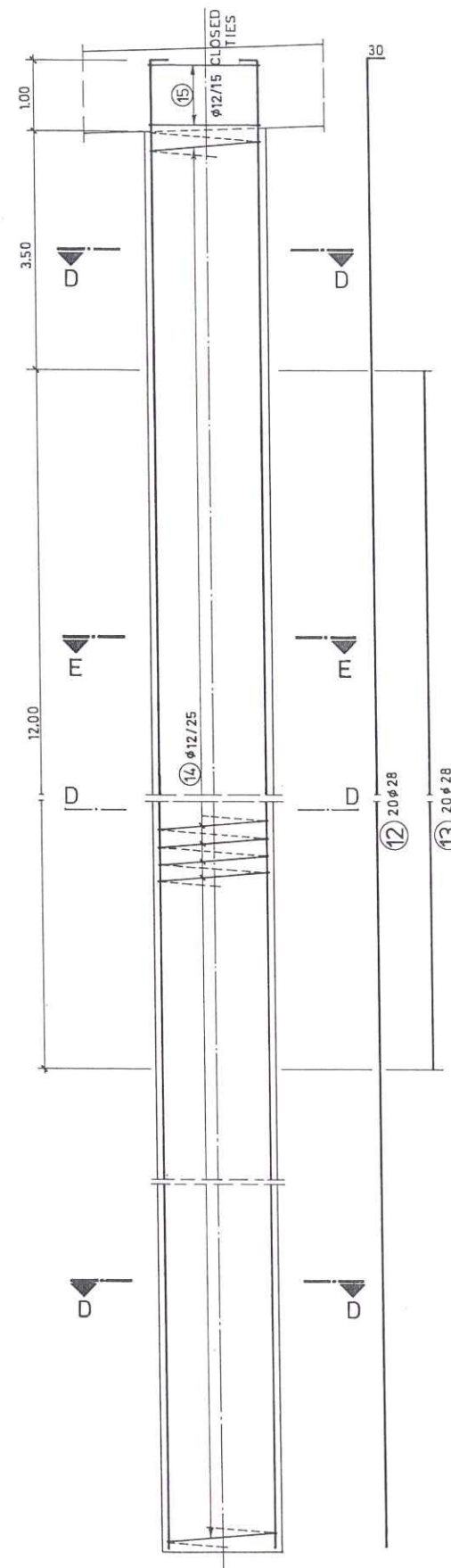
SECTION C-C

SCALE 1:25



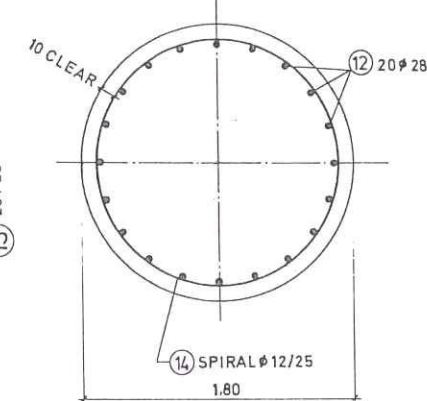
PILE AT ABUTMENT

SCALE 1:50



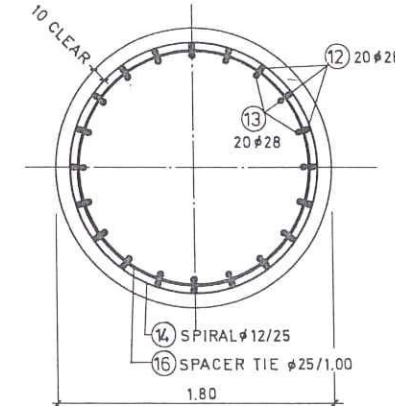
SECTION D-D

SCALE 1:25



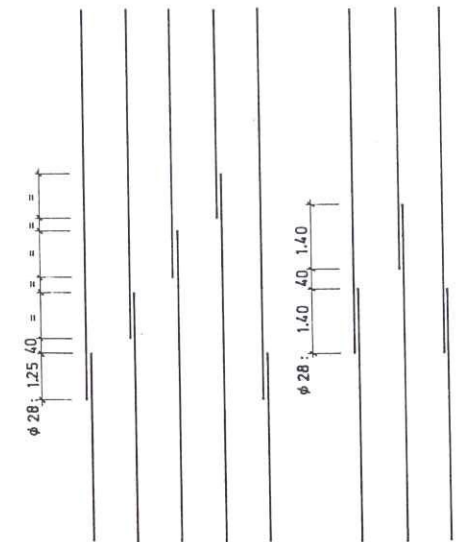
SECTION E-E

SCALE 1:25



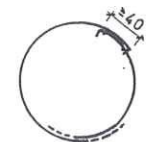
SPLICE ARRANGEMENT AND MIN. LAP LENGTHS FOR MAIN REINF

0-25% REINF. SPLICED AT ONE LEVEL
25-50% REINF. SPLICED AT ONE LEVEL

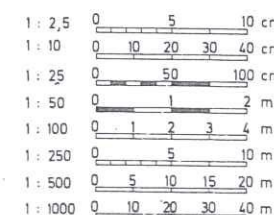


- NOT MORE THAN 50% OF THE REINF. IN A SECTION SHALL BE SPLICED AT ONE LEVEL
- SPLICES AT ONE LEVEL SHALL BE EVENLY DISTRIBUTED WITHIN THE SECTION
- IN LIEU OF LAP SPLICES SHOWN FULL BUTT OR LAP WELDED SPLICES OR OTHER FULL POSITIVE CONNECTIONS MAY BE USED HOWEVER ONLY UPON APPROVAL OF THE ENGINEER

SPLICE FOR SPIRALS



IN LIEU OF SPIRALS, CLOSED TIES WITH SAME SPACING AND STAGGERED SPLICES AS SHOWN MAY BE USED



REPUBLIC OF IRAQ
MINISTRY OF WORKS AND HOUSING
DIRECTORATE GENERAL OF ROADS AND BRIDGES

IRAQ EXPRESSWAY No ONE

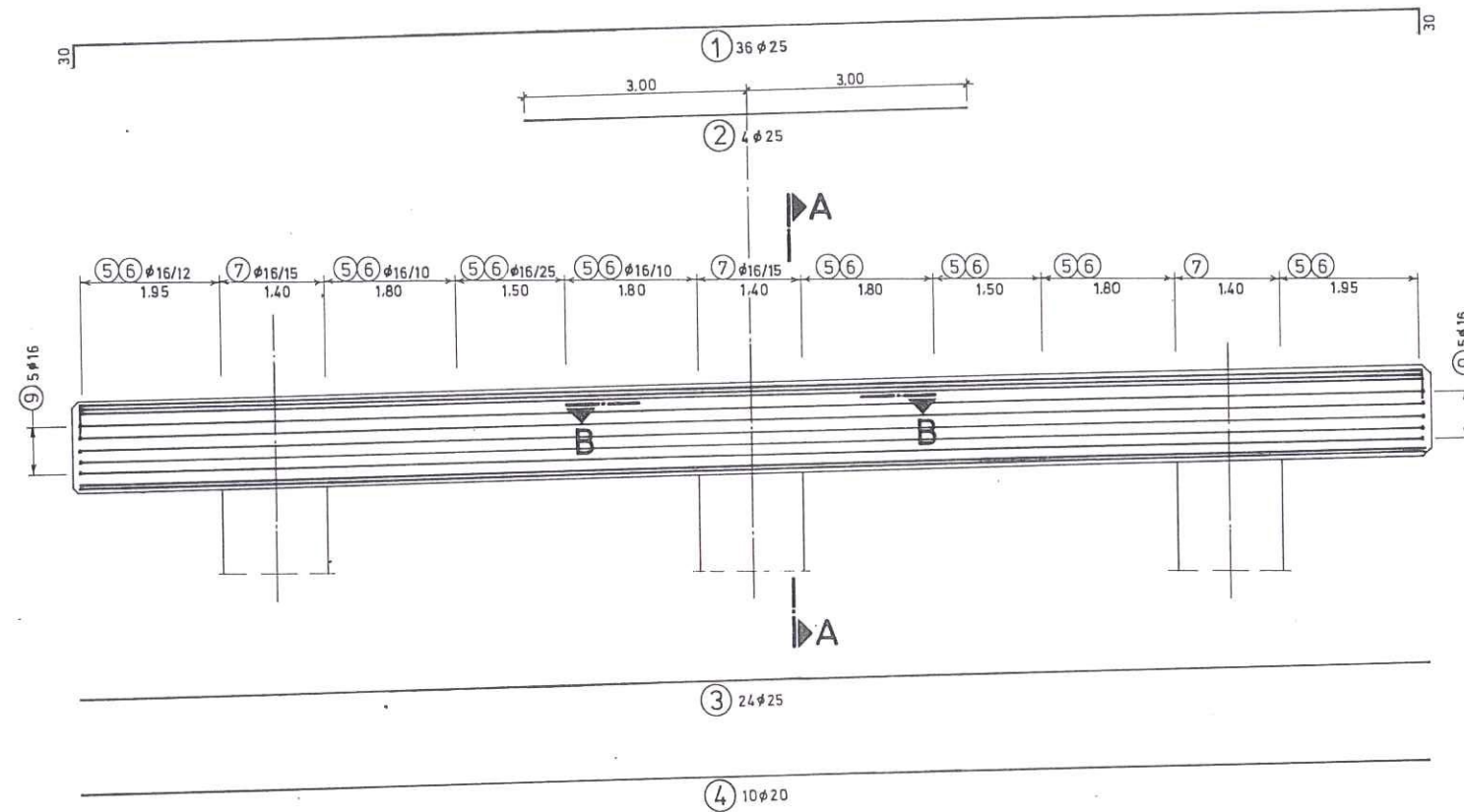
CONSULTING ENGINEERS - MUNICH - W. GERMANY
in association with
AL-KHAZEN - CONSULTING ENGINEERS - BAGHDAD - IRAQ

CONTRACT	SECTION	DATE	DESIGNED	DRAWN	SCALE	DRG. No
R/9A/1976	BAGHD. WEST-HABBANIYA	Dec. 76	THARTAR	THARTAR	C. 1/2	2.9.025
THARTAR	CANAL BRIDGE					
PILES	REINFORCEMENT					

S.54.1

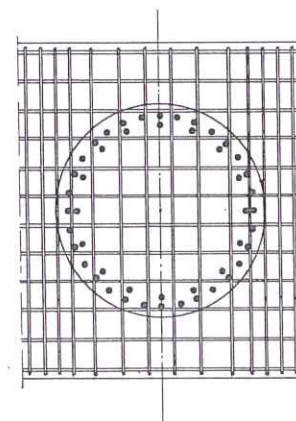
LONG. SECTION

SCALE 1:50

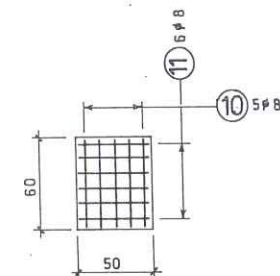


SECTION B-B

SCALE 1:25

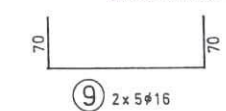
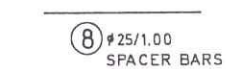
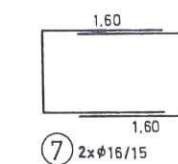
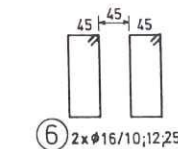
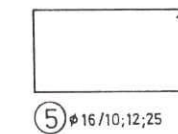
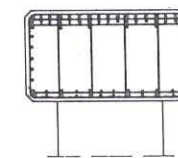


AT EACH GROUT PAD



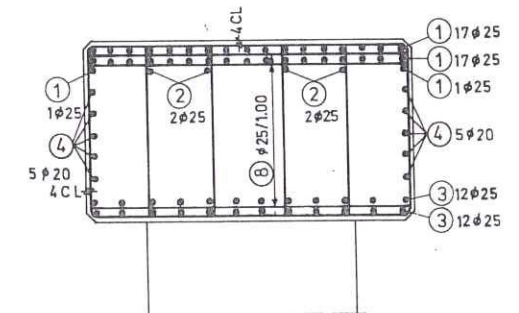
SECTION A-A

SCALE 1:50

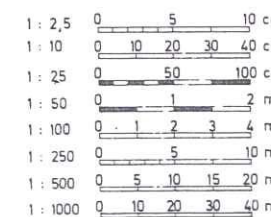


SECTION A-A

SCALE 1:25



S.54.1



REPUBLIC OF IRAQ MINISTRY OF WORKS AND HOUSING DIRECTORATE GENERAL OF ROADS AND BRIDGES		CONTRACT SECTION THARTHAR CANAL BRIDGE		R/9A / 1976 BAGHD. WEST-HABBANIYA TRANSVERSE BEAM REINFORCEMENT	
IRAQ EXPRESSWAY No ONE		DATE	DESIGNED	DRAWN	SCALE
CONSULTING ENGINEERS · MUNICH · W. GERMANY in association with AL-KHAZEN · CONSULTING ENGINEERS · BAGHDAD-IRAQ		Dec. 76	12.0	10	C. KET
DRG. No 2.9.025					



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