



50  
YEARS

United Nations Development Programme



REPUBLIC OF IRAQ



**P-AM-047-17**

ARCHITECTURAL-AND-CIVIL-ENGINEERING-DESIGN-SERVICES-IN-FOUR-LOTS

LOT 01 : 3/3 AL GARMAH RIVER BRIDGE REHABILITATION

FINAL DESIGN REV 0

DRAWINGS



NUDHUM ALBENAA  
CONSULTANCY

APRIL, 2017



# LIST OF DRAWINGS

## AL-GARMAH RIVER BRIDGE

### STRUCTURAL

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### ANNEX

DORSCH DRAWINGS



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

KEY MAP



NOTES

A. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.  
B. ALL DIMENSIONS ARE IN METRIC UNLESS OTHERWISE STATED.  
C. BUILDER TO CHECK ALL DIMENSIONS AT SITE PRIOR TO CONSTRUCTION, ASSEMBLY OR FABRICATION OF ALL WORKS.  
D. ALL WORKS ARE ACCORDING TO SPECIFICATIONS OF GENERAL DIRECTORATE FOR ROADS AND BRIDGES OF IRAQ.

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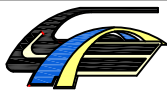
REV.	DATE	DESCRIPTION	BY

PROJECT NAME:

ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES

LOCATION: AL-ANBAR - IRAQ  
(AL-GRAMAH RIVER BRIDGE)

CLIENT:



GENERAL DIRECTORATE FOR ROADS  
AND BRIDGES

SERVICES NAME:

DESIGN BY:

SUPERVISOR:

DRAWING NAME:  
LIST OF DRAWINGS


DRAWING NO.

SCALE:  
@A3


DRAWN BY:

PROJECT NO:  
IQ-17-001

DATE:  
APRIL 2017



United Nations  
Development Programme

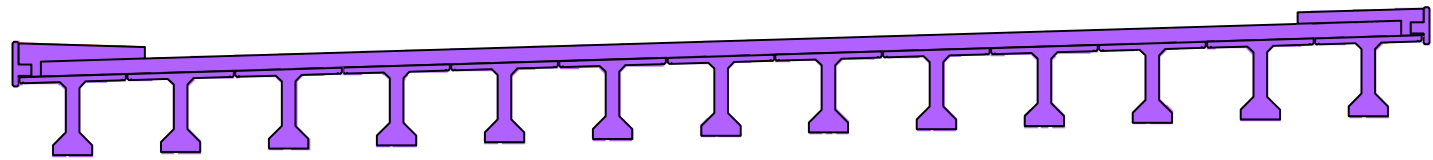


NUDHUM ALBENAA  
CONSULTANCY



# STRUCTURAL DESIGN





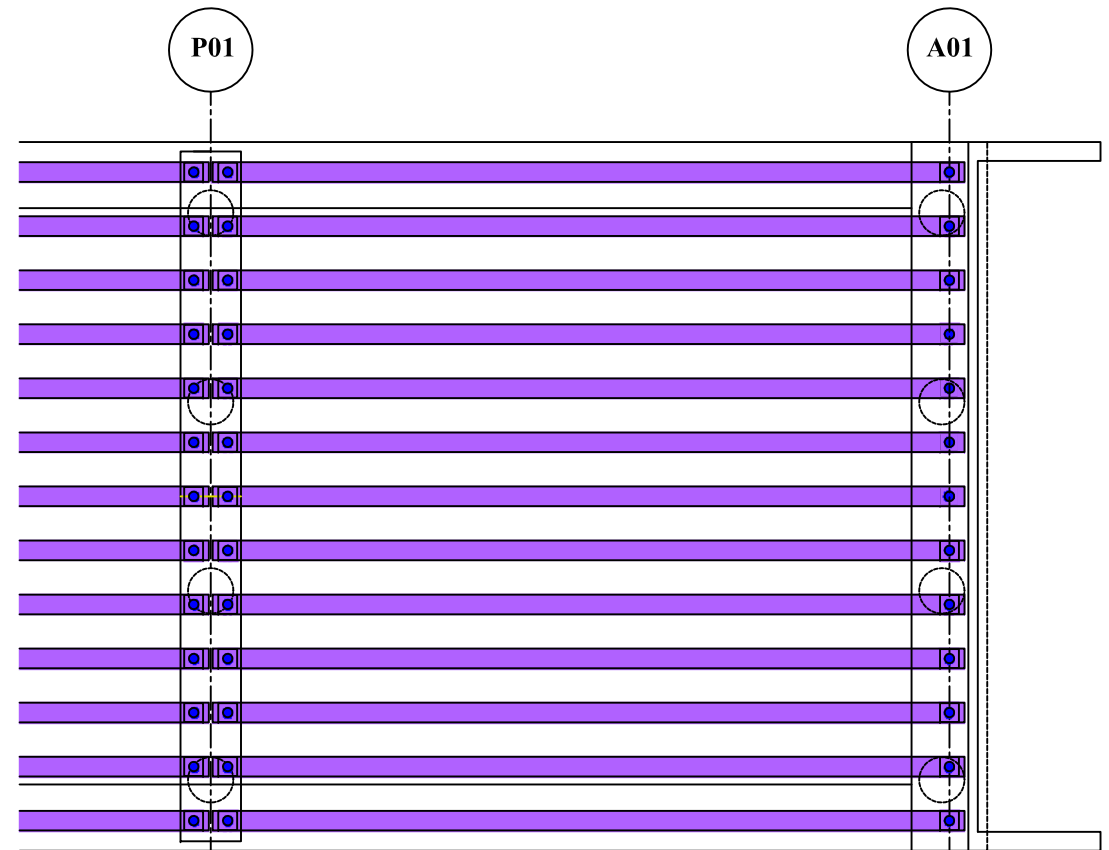
**Plan**  
Scale 1:200

SLAB	EVALUATION	REPAIR	DESIGN SHEETS
DECK SLAB	DESTROYED	REMOVED AND REPLACED	ST-136 & ST-138
SIDEWALK (LEFT SIDE)	DESTROYED	REMOVED AND REPLACED	ST-137
SIDEWALK (RIGHT SIDE)	DESTROYED	REMOVED AND REPLACED	ST-137
GIRDERS	DESTROYED	REMOVED AND REPLACED	ST-137

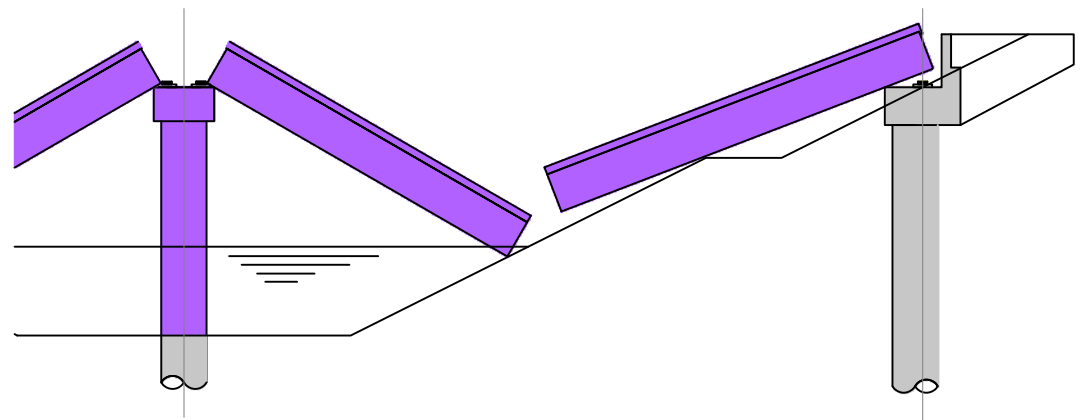


LEGEND

- PURPLE COLOR INDICATION REFERS TO ITEM MUST BE REMOVED AND REPLACED.
- RED COLOR INDICATION REFERS TO THAT REHABILITATION REQUIRED AT THE MARKED ITEM
- GRAY COLOR INDICATION REFERS TO THAT FAIR AND GOOD CONDITION AT THE MARKED ITEM.



**Plan**  
Scale 1:200



**Elevation**  
Scale 1:200

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

KEY MAP

NOTES

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NOTES

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REV.	DATE	DESCRIPTION	BY

PROJECT NAME:  
**GARMAH BRIDGE  
ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES**

LOCATION:  
**AL-ANBAR - IRAQ**

SERVICES NAME:  
**STRUCTURAL DESIGN**

STRUCTURAL ENG.:  
**DR. MUHANED SHALLAL**

ROAD ENG.:  
**MUHAMMED HIKMET**

DRAWING NAME: EXISTING CONDITION  
SPAN 1 (A01-P01)

DRAWING NO.  
**ST.100**

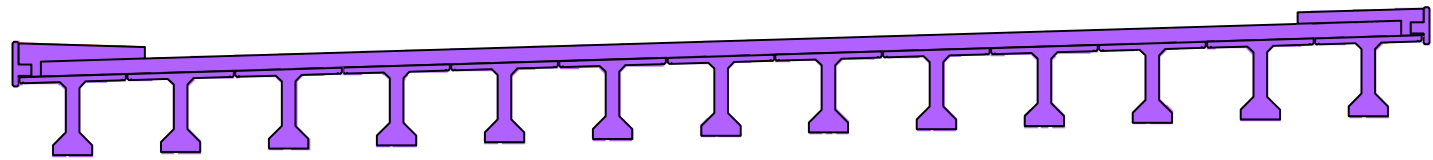
SCALE:  
**AS SHOWING**

DRAWN BY:  
**MUHANED SHALLAL**

PROJECT NO:  
**IQ-17-001**

DATE:  
**MARCH 2017**





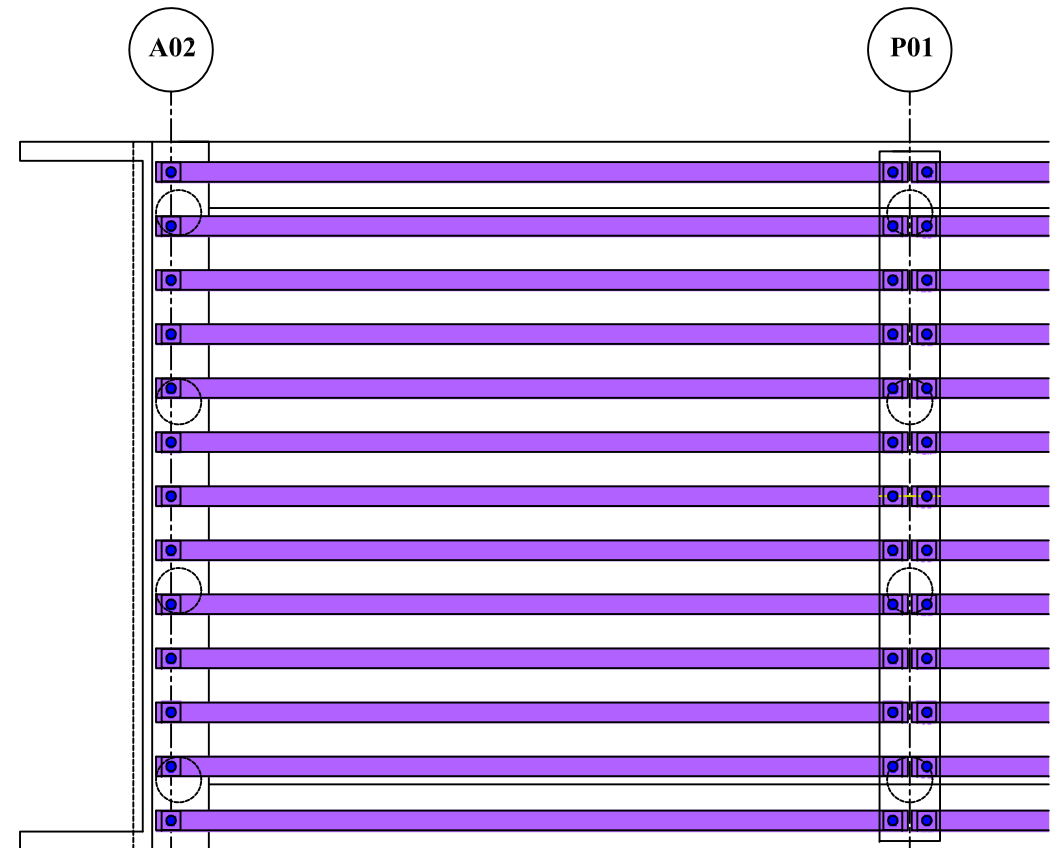
**Plan**  
Scale 1:200

SLAB	EVALUATION	REPAIR	DESIGN SHEETS
DECK SLAB	DESTROYED	REMOVED AND REPLACED	ST-136 & ST-138
SIDEWALK (LEFT SIDE)	DESTROYED	REMOVED AND REPLACED	ST-137
SIDEWALK (RIGHT SIDE)	DESTROYED	REMOVED AND REPLACED	ST-137
GIRDERS	DESTROYED	REMOVED AND REPLACED	ST-137

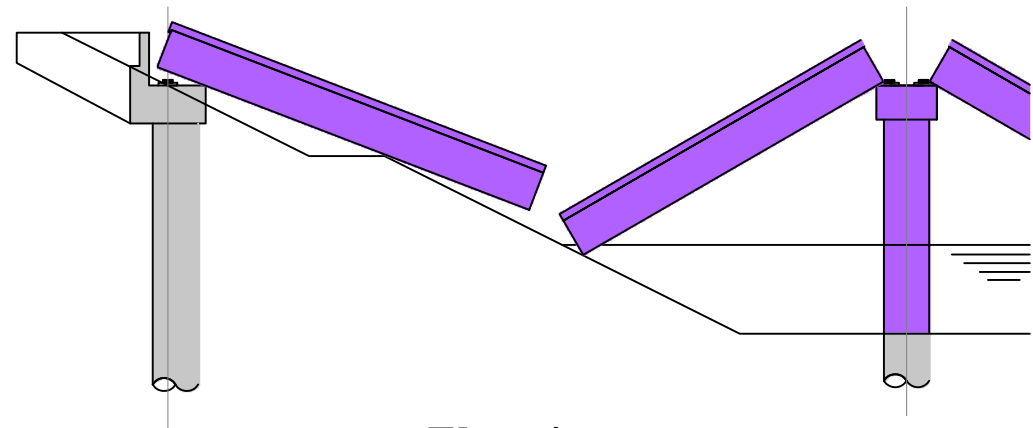


LEGEND

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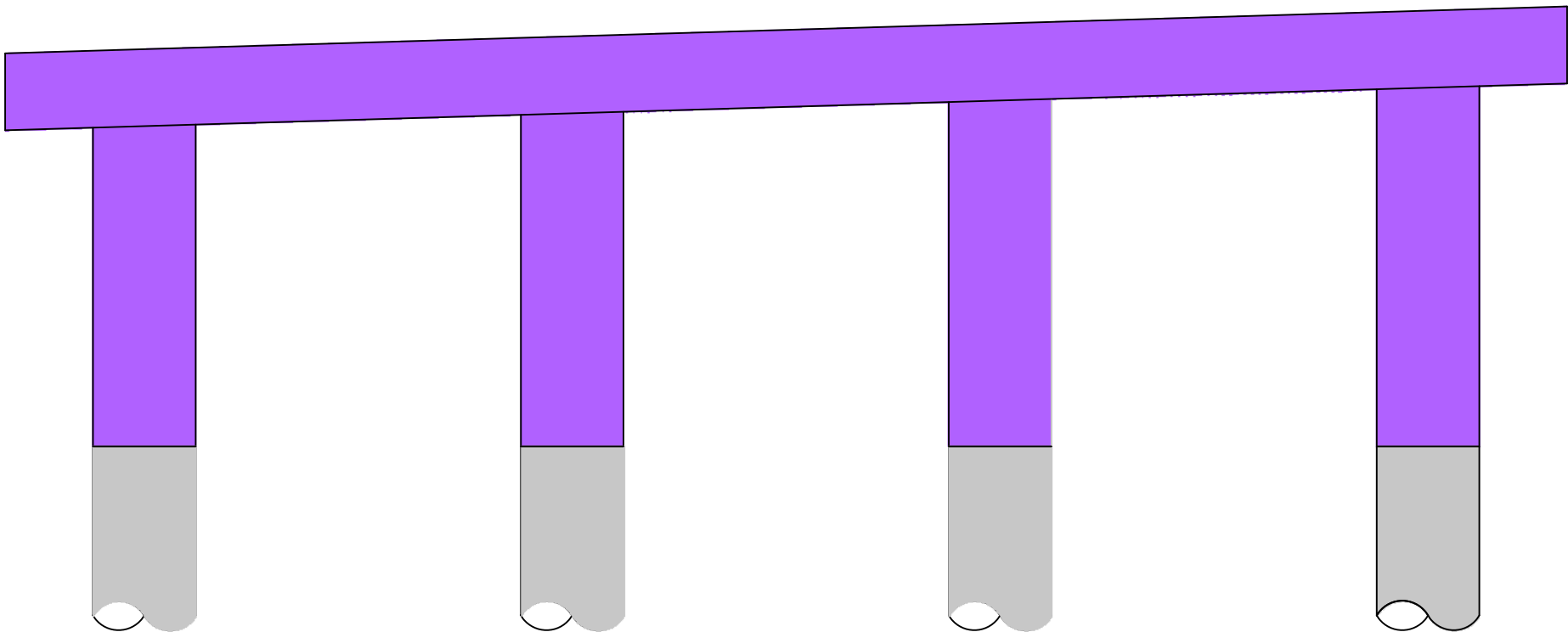
**Plan**  
Scale 1:200



**Elevation**  
Scale 1:200

REPUBLIC OF IRAQ MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY GENERAL DIRECTORATE FOR ROADS AND BRIDGES	
<b>KEY MAP</b>	
<b>NOTES</b>	
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NOTES: • THE CONTRACTOR SHALL ADOPT THE EXPRESSWAY No.1 SPECIFICATIONS DURING REHABILITATION EXECUTIVE PERIOD. • ROADS FEATURES ARE BASED ON EXPRESSWAY No.1 SPECIFICATIONS, IN ADDITION TO THE APPROVAL OF SUPERVISED ENGINEER.	
REV.	DATE
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REV.	DATE
DESCRIPTION	BY
PROJECT NAME: <b>GARMAH BRIDGE ARCHITECTURAL &amp; CIVIL ENGINEERING DESIGN SERVICES</b>	
LOCATION: <b>AL-ANBAR - IRAQ</b>	
SERVICES NAME: <b>STRUCTURAL DESIGN</b>	
STRUCTURAL ENG.: <b>DR. MUHANED SHALLAL</b>	
ROAD ENG.: <b>MUHAMMED HIKMET</b>	
DRAWING NAME: EXISTING CONDITION <b>SPAN 2 (P01-A02)</b>	
DRAWING NO. <b>ST.101</b>	
SCALE: <b>AS SHOWING</b>	
DRAWN BY: <b>MUHANED SHALLAL</b>	
PROJECT NO: <b>IQ-17-001</b>	
DATE: <b>MARCH 2017</b>	





PIER

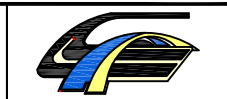

Scale 1:75



LEGEND

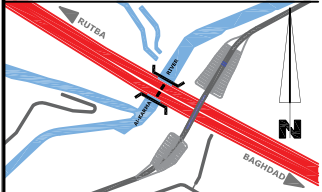
- PURPLE COLOR INDICATION REFERS TO ITEM MUST BE REMOVED AND REPLACED.
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- GRAY COLOR INDICATION REFERS TO THAT FAIR AND GOOD CONDITION AT THE MARKED ITEM.

MEMBER	EVALUATION	REPAIR	DESIGN SHEETS
LEFT COLUMN	DAMAGE	REMOVED AND REPLACED	ST-132
MIDDLE COLUMN	DAMAGE	REMOVED AND REPLACED	ST-132
RIGTH COLUMN	DAMAGE	REMOVED AND REPLACED	ST-132
CROSS BEAM	DAMAGE	REMOVED AND REPLACED	ST-132



REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

KEY MAP



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REV.	DATE	DESCRIPTION	BY

PROJECT NAME:  
GARMAH BRIDGE  
ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES

LOCATION:  
AL-ANBAR - IRAQ

SERVICES NAME:  
STRUCTURAL DESIGN

STRUCTURAL ENG.:  
DR. MUHANED SHALLAL

ROAD ENG.:  
MUHAMMED HIKMET

DRAWING NAME: EXISTING CONDITION  
PIER (P01)


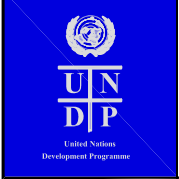
DRAWING NO.  
ST.102

SCALE:  
AS SHOWING

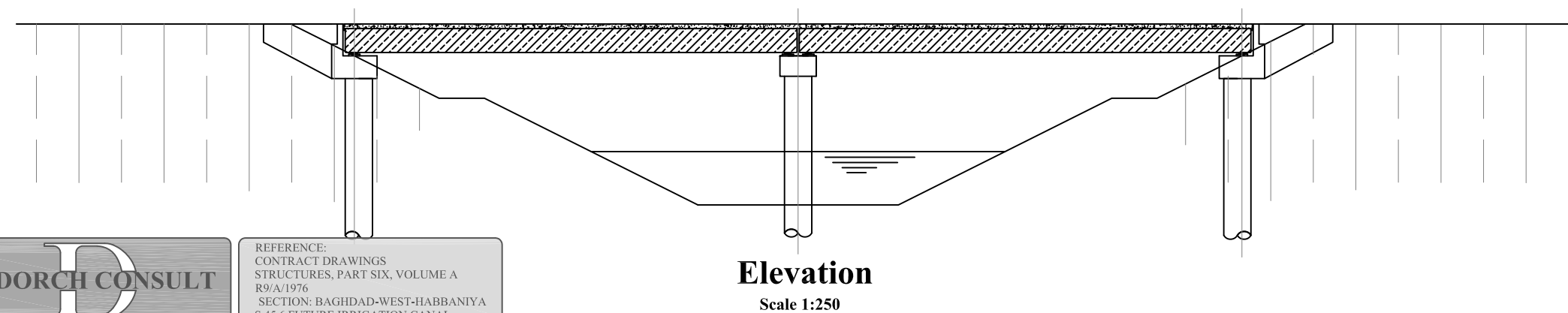
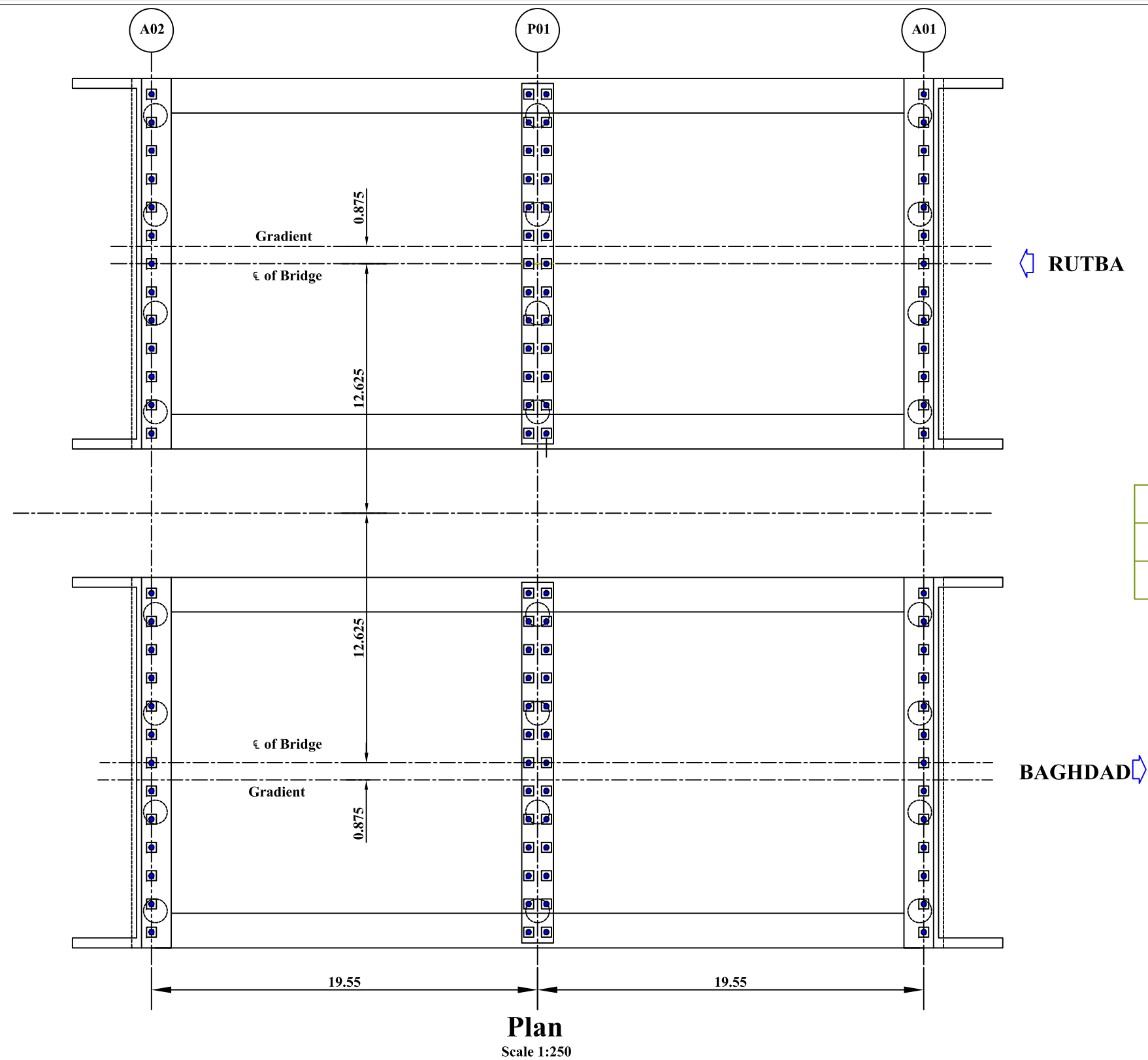
DRAWN BY:  
MUHANED SHALLAL

PROJECT NO:  
IQ-17-001



DATE:  
MARCH 2017





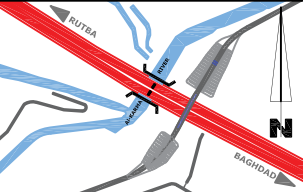


	Gradient Elevation	Joint	Bearing
Abutment A01	45.73	T 50	Φ 250/74
Pier P01	45.72	H. S.	Φ 250/74
Abutment A02	45.71	T 50	Φ 250/74



REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

KEY MAP



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REV.	DATE	DESCRIPTION	BY
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PROJECT NAME:  
GARMAH BRIDGE  
ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES

LOCATION:  
AL-ANBAR - IRAQ

SERVICES NAME:  
STRUCTURAL DESIGN

STRUCTURAL ENG.:  
DR. MUHANED SHALLAL

ROAD ENG.:  
MUHAMMED HIKMET

DRAWING NAME:  
GENERAL PLAN



DRAWING NO.  
ST.103

SCALE:  
AS SHOWING

DRAWN BY:  
MUHANED SHALLAL

PROJECT NO:  
IQ-17-001

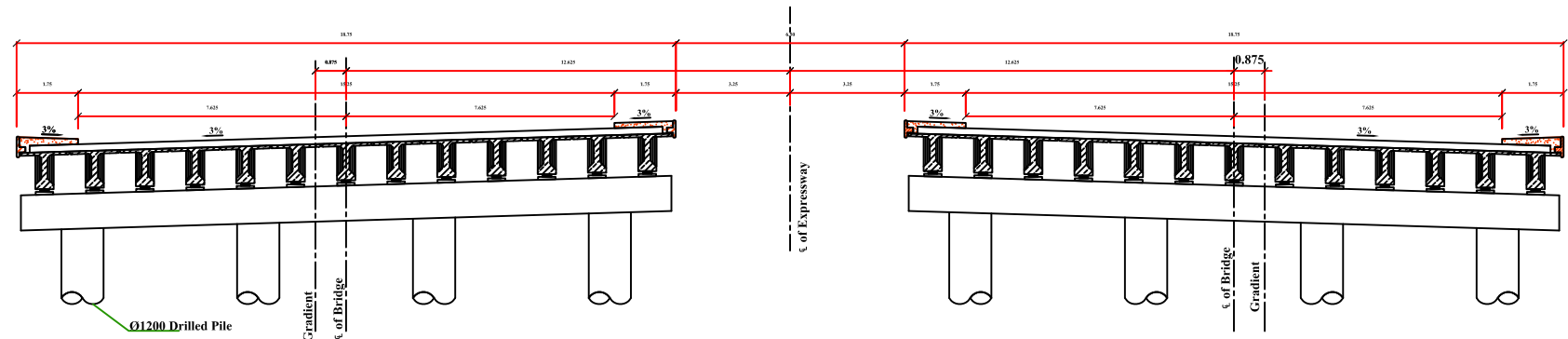
DATE:  
MARCH 2017



United Nations  
Development Programme

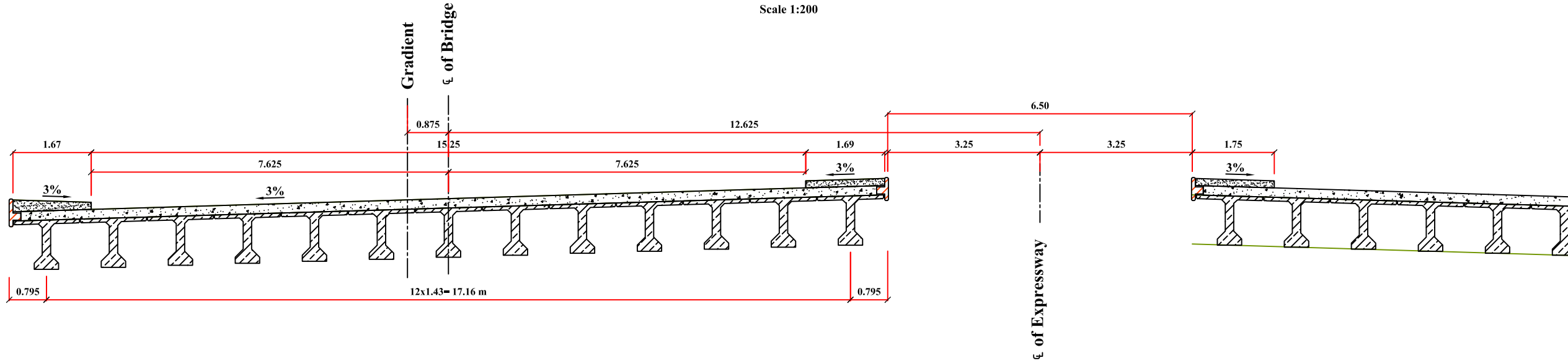
NUDHUM ALBENAI  
CONSULTANCY





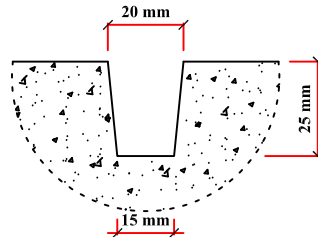
**Cross Section**

Scale 1:200



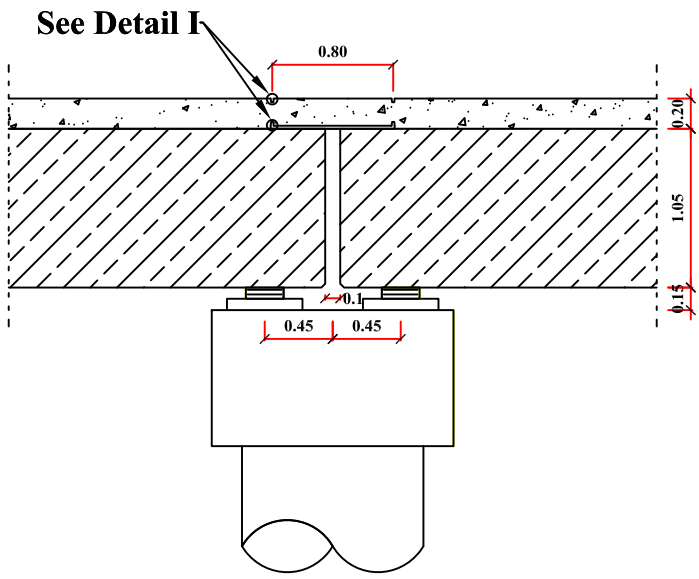
**Cross Section**

Scale 1:100



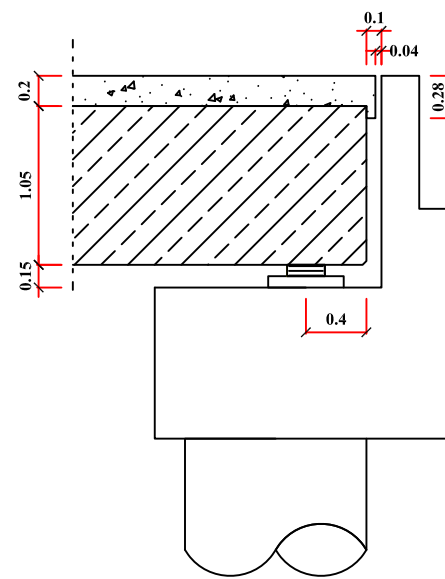
**Detail I**

Scale 1:2



**Pier Hinge Slab**

Scale 1:50



**Abutment Expansion Joint T50**

Scale 1:50

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITIES  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

**KEY MAP**

**NOTES**

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REV.	DATE	DESCRIPTION	BY
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**PROJECT NAME:**  
**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

**LOCATION:**  
**AL-ANBAR - IRAQ**

**SERVICES NAME:**  
**STRUCTURAL DESIGN**

**STRUCTURAL ENG.:**  
**DR. MUHANED SHALLAL**

**ROAD ENG.:**  
**MUHAMMED HIKMET**

**DRAWING NAME:**  
**SUPERSTRUCTURE**

**DRAWING NO.**  
**ST.104**

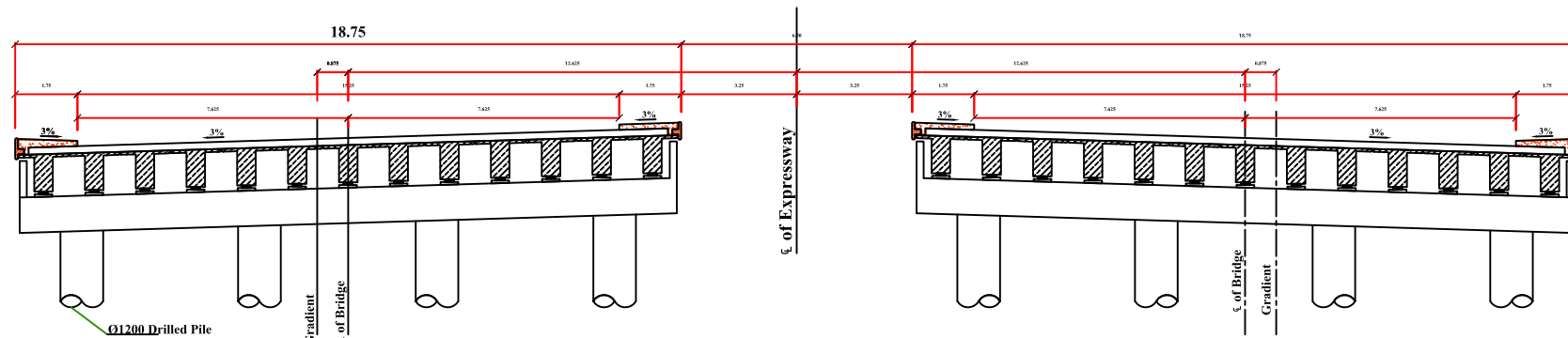
**SCALE:**  
**AS SHOWING**

**DRAWN BY:**  
**MUHANED SHALLAL**

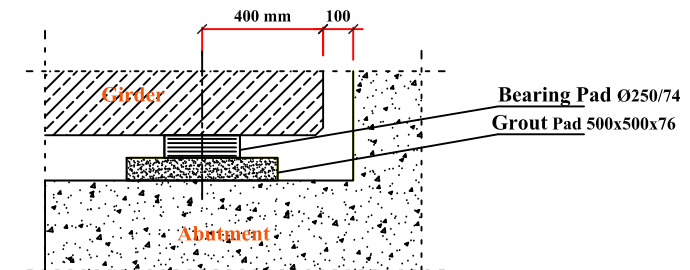
**PROJECT NO:**  
**IQ-17-001**

**DATE:**  
**MARCH 2017**

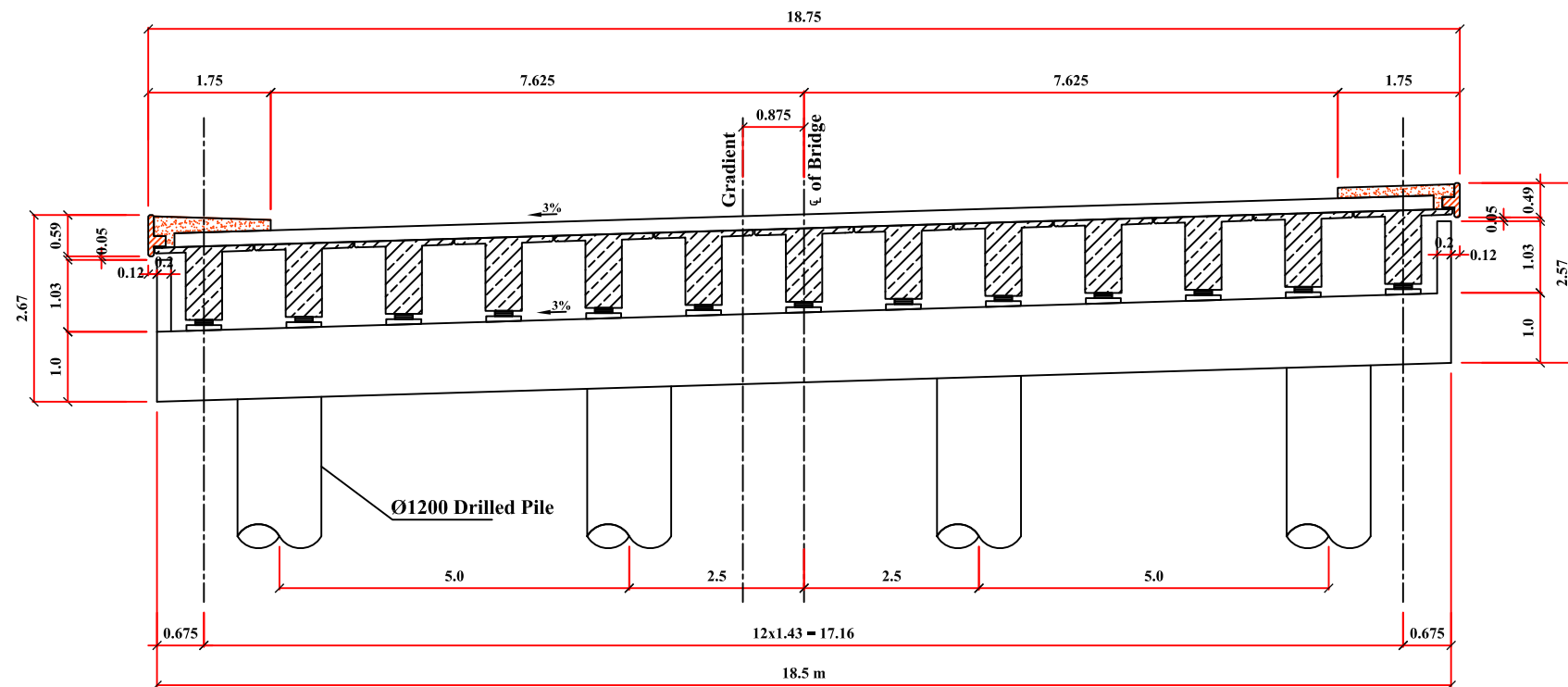




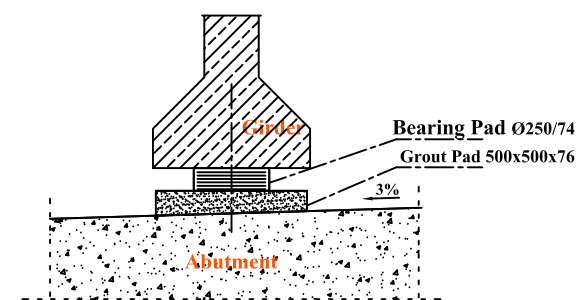
**Abutment Cross Section**  
Scale 1:200



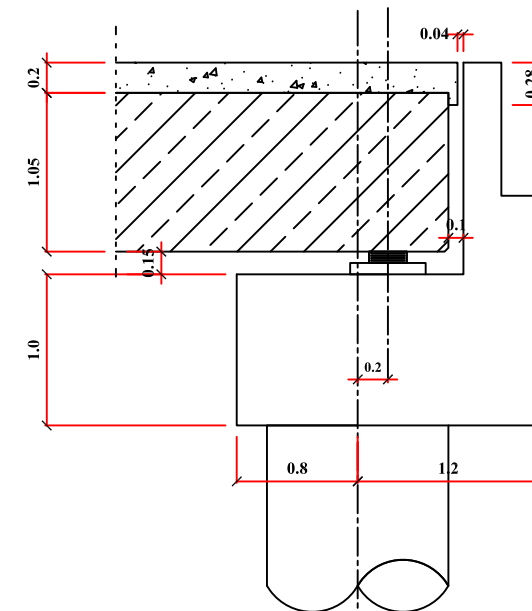
**Detail of Bearing at Abutment**  
Scale 1:25



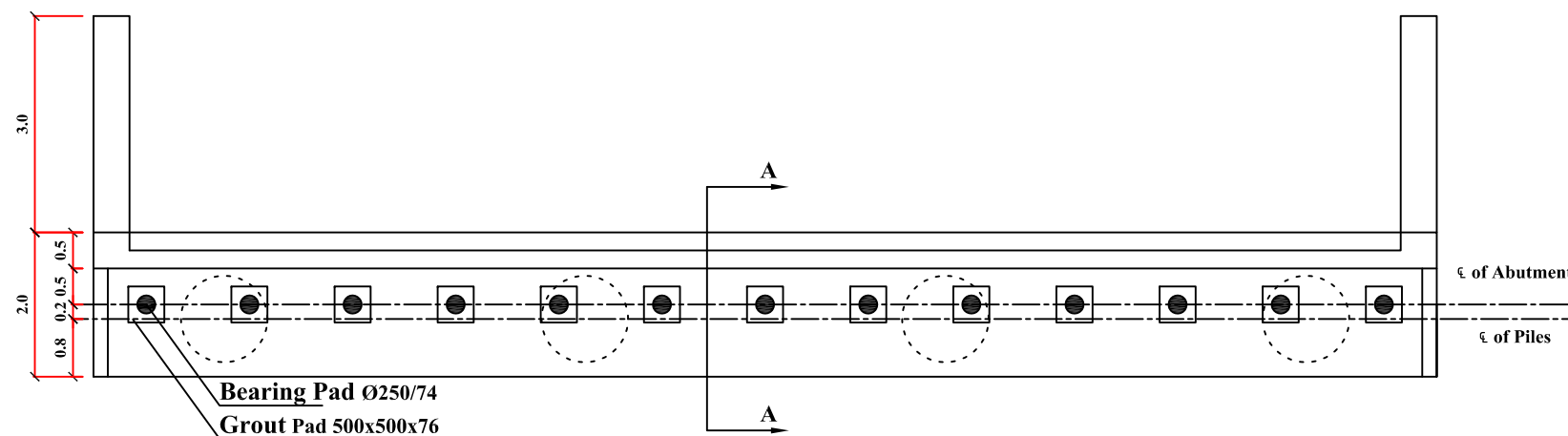
**Abutment Cross Section**  
Scale 1:100



**Detail of Bearing at Abutment**  
Scale 1:25



**Section A-A at Abutment**  
Scale 1:50



**Top View**  
Scale 1:100

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

**KEY MAP**

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REV.	DATE	DESCRIPTION	BY
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**PROJECT NAME:**  
**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

**LOCATION:**  
**AL-ANBAR - IRAQ**

**SERVICES NAME:**  
**STRUCTURAL DESIGN**

**STRUCTURAL ENG.:**  
**DR. MUHANED SHALLAL**

**ROAD ENG.:**  
**MUHAMMED HIKMET**

**DRAWING NAME:**  
**ABUTMENT**

**DRAWING NO.**  
**ST.105**

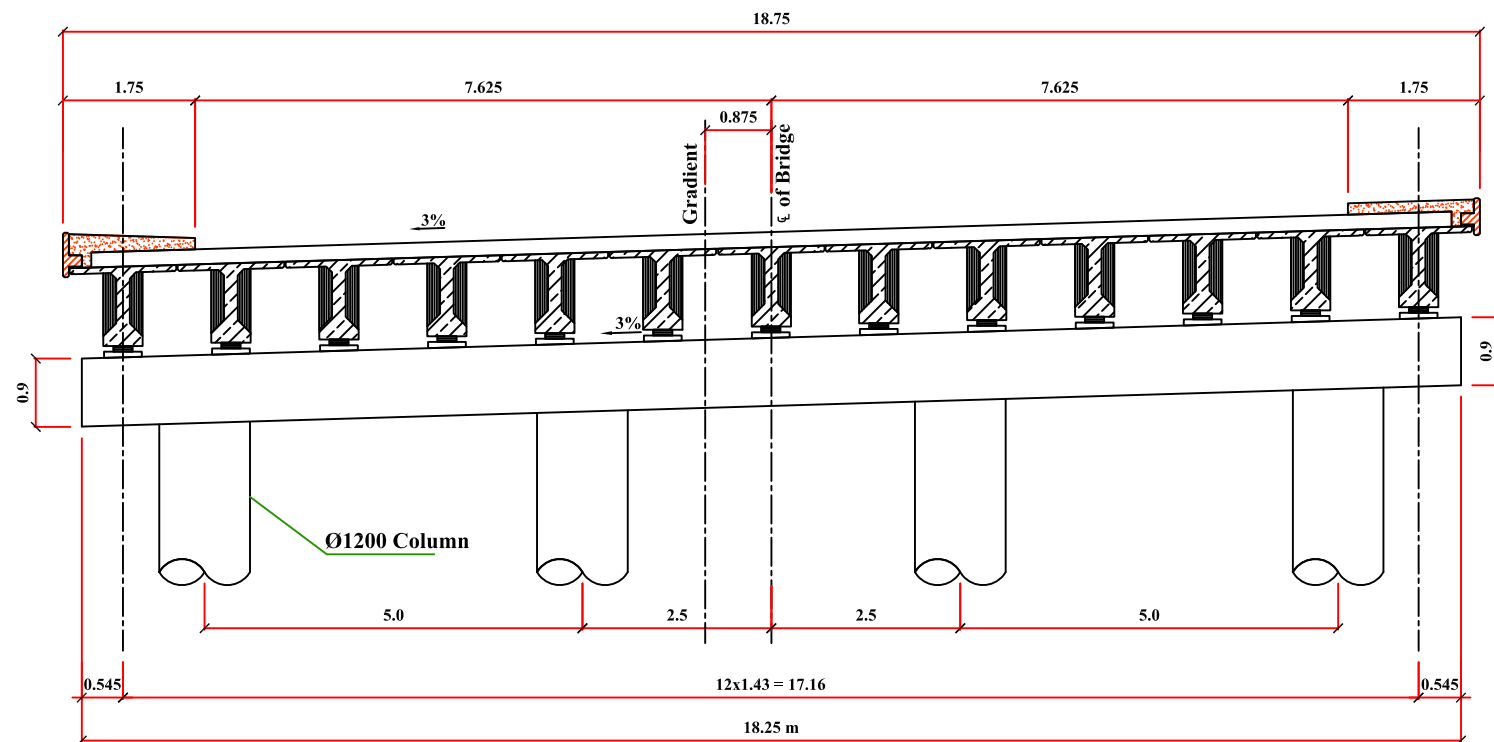
**SCALE:**  
**AS SHOWING**

**DRAWN BY:**  
**MUHANED SHALLAL**

**PROJECT NO.:**  
**IQ-17-001**

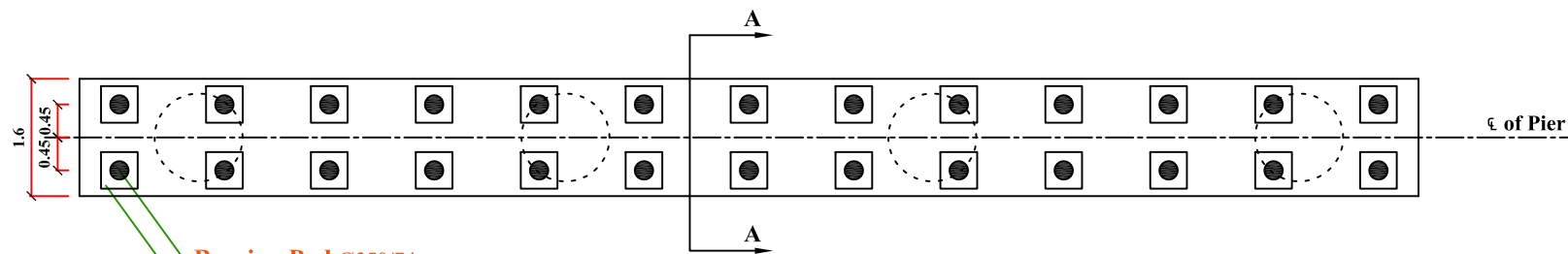
**DATE:**  
**MARCH 2017**





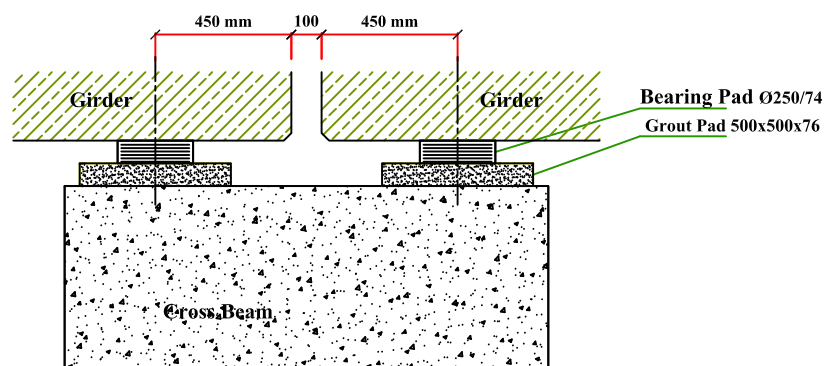
**Pier Cross Section**

Scale 1:100



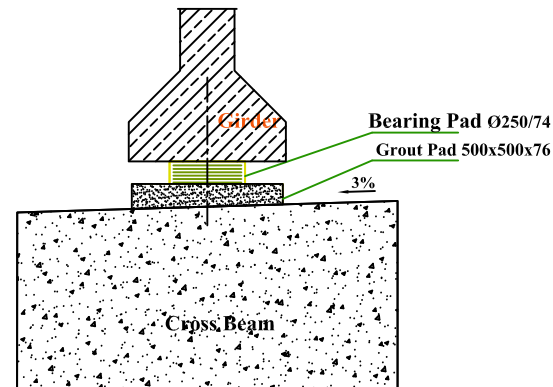
**Top View**

Scale 1:100



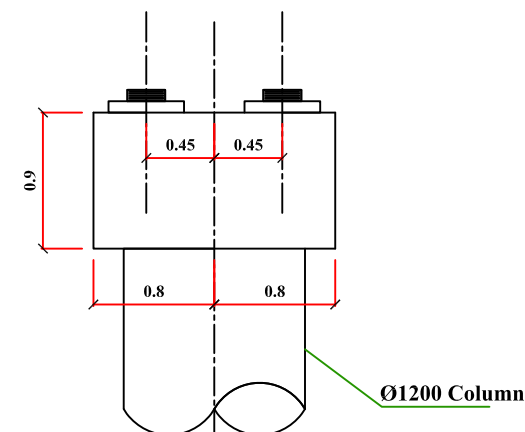
**Detail of Bearing at Pier**

Scale 1:25



**Detail of Bearing at Pier**

Scale 1:25



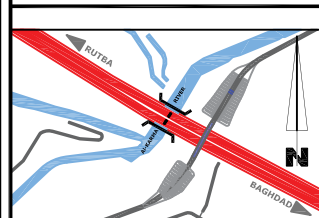
**Section A-A at Pier**

Scale 1:50



REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

#### KEY MAP



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PROJECT NAME:  
**GARMAH BRIDGE  
ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES**

LOCATION:  
**AL-ANBAR - IRAQ**

SERVICES NAME:  
**STRUCTURAL DESIGN**

STRUCTURAL ENG.:  
**DR. MUHANED SHALLAL**

ROAD ENG.:  
**MUHAMMED HIKMET**

DRAWING NAME:  
**PIER**

DRAWING NO.  
**ST.106**

SCALE:  
**AS SHOWING**

DRAWN BY:  
**MUHANED SHALLAL**

PROJECT NO.:  
**IQ-17-001**

DATE:  
**MARCH 2017**

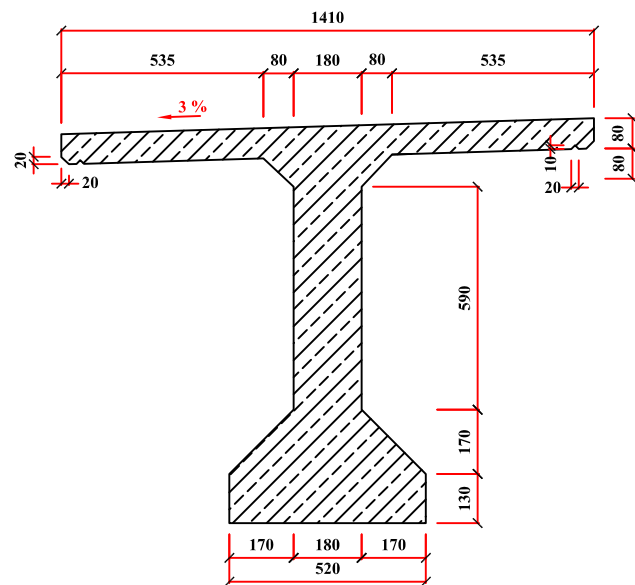


**DORCH CONSULT**

REFERENCE:  
CONTRACT DRAWINGS  
STRUCTURES, PART SIX, VOLUME A  
R9/A/1976  
SECTION: BAGHDAD-WEST-HABBANIYA  
S.45.6 FUTURE IRRIGATION CANAL

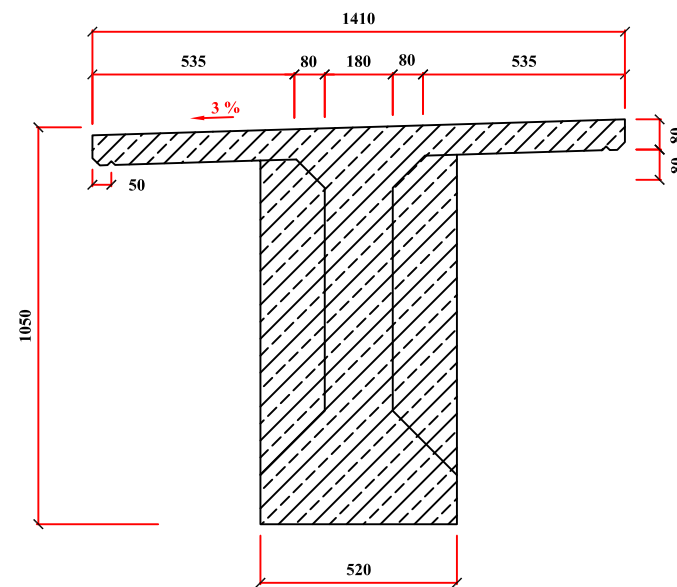






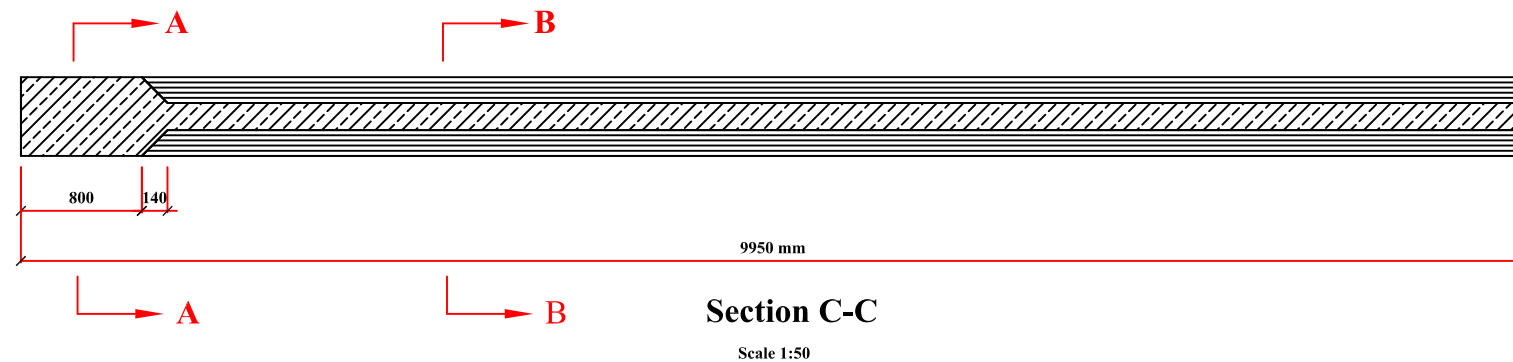
**Section B-B**

Scale 1:20



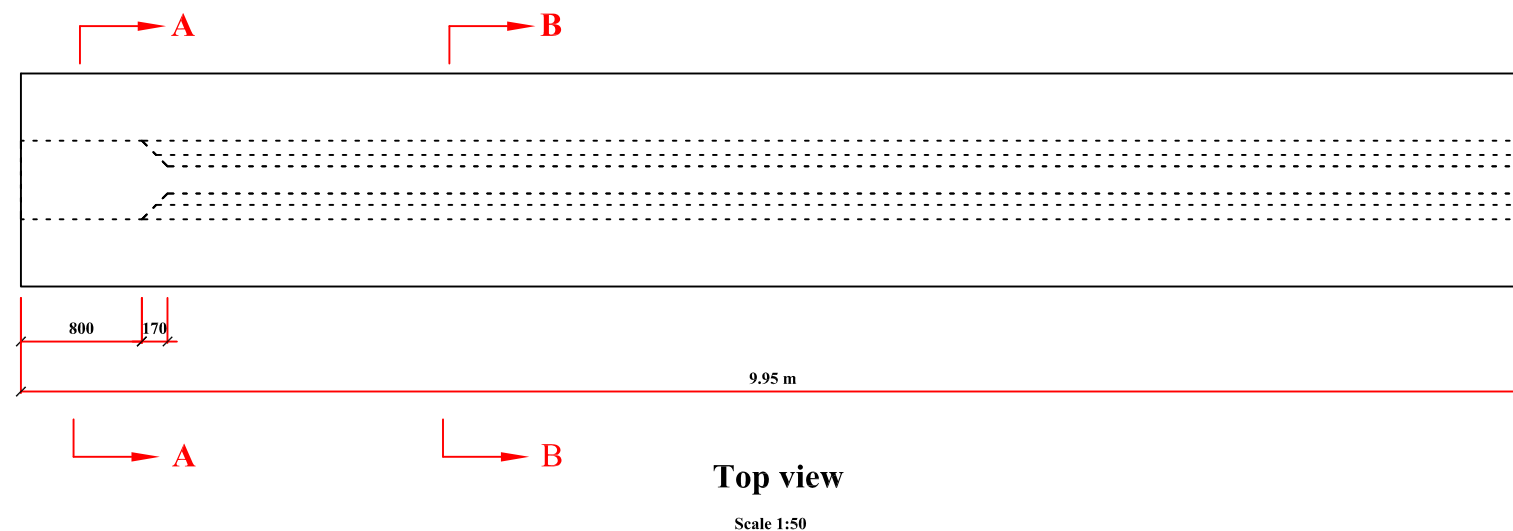
**Section A-A**

Scale 1:20



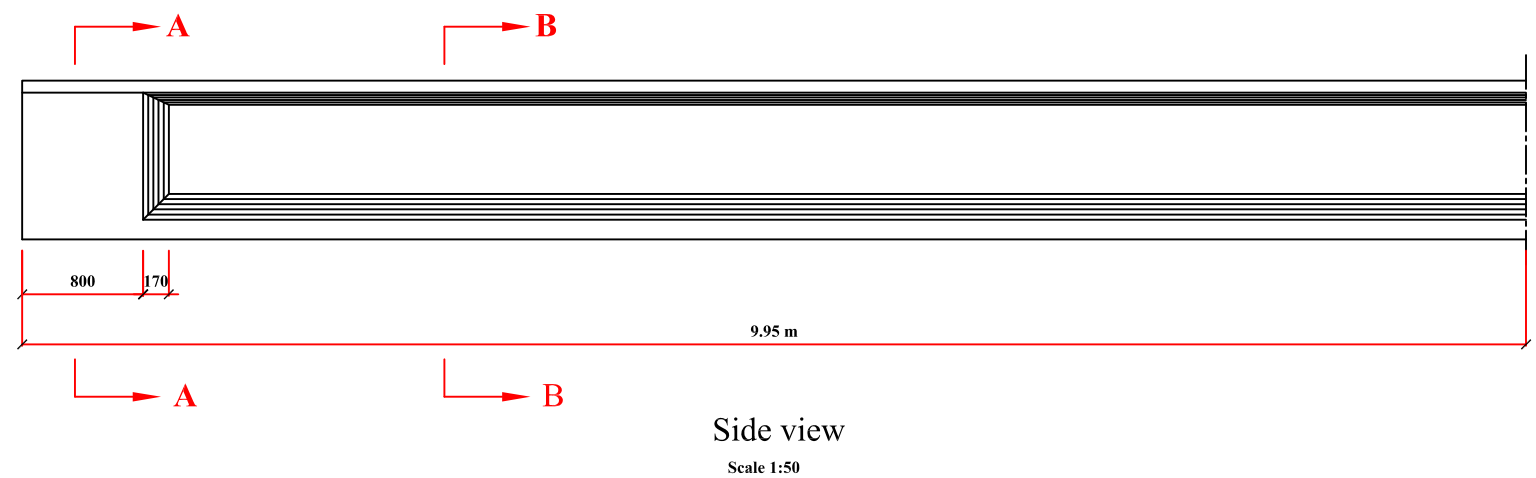
**Section C-C**

Scale 1:50



**Top view**


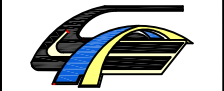
Scale 1:50



**Side view**

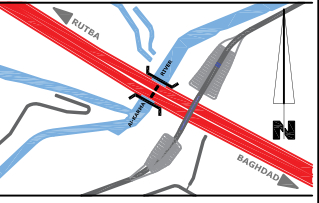
Scale 1:50

**Girder 19.9 m**

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

**KEY MAP**



**NOTES**

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REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

**PROJECT NAME:**  
**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

**LOCATION:**  
**AL-ANBAR - IRAQ**

**SERVICES NAME:**  
**STRUCTURAL DESIGN**

**STRUCTURAL ENG.:**  
**DR. MUHANED SHALLAL**

**ROAD ENG.:**  
**MUHAMMED HIKMET**

**DRAWING NAME:**  
**PRESTRESS GIRDER**

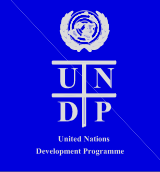

**DRAWING NO.**  
**ST.108**

**SCALE:**  
**AS SHOWING**

**DRAWN BY:**  
**MUHANED SHALLAL**

**PROJECT NO:**  
**IQ-17-001**

**DATE:**  
**MARCH 2017**



REFERENCE:  
CONTRACT DRAWINGS  
STRUCTURES, PART SIX, VOLUME A  
R9/A/1976  
SECTION: BAGHDAD-WEST-HABBANIYA  
S.45.6 FUTURE IRRIGATION CANAL

-AT ACCESS-OPENING-  
FOR DETAILS SEE DRG.NO.2.7.14,2.7.15  
FOR LOCATION SEE DRG. NO 2.7.01

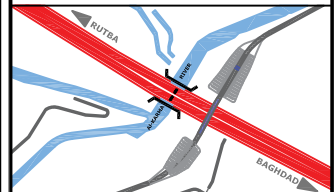
DORCH CONSULT

REFERENCE:  
CONTRACT DRAWINGS  
STRUCTURES, PART SIX, VOLUME A  
R9/A/1976  
SECTION: BAGHDAD-WEST-HABBANIYA  
S.45.6 FUTURE IRRIGATION CANAL



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
05			
04			
03			
02			
01			
00			

PROJECT NAME:

**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

LOCATION:  
AL-ANBAR - IRAQ

CLIENT:



GENERAL DIRECTORATE FOR ROADS  
AND BRIDGES

SERVICES NAME:  
CIVIL DESIGN

DESIGN BY:  
MUHANED SHALLAL

SUPERVISOR:

DRAWING NAME:  
GENERAL DETAILS

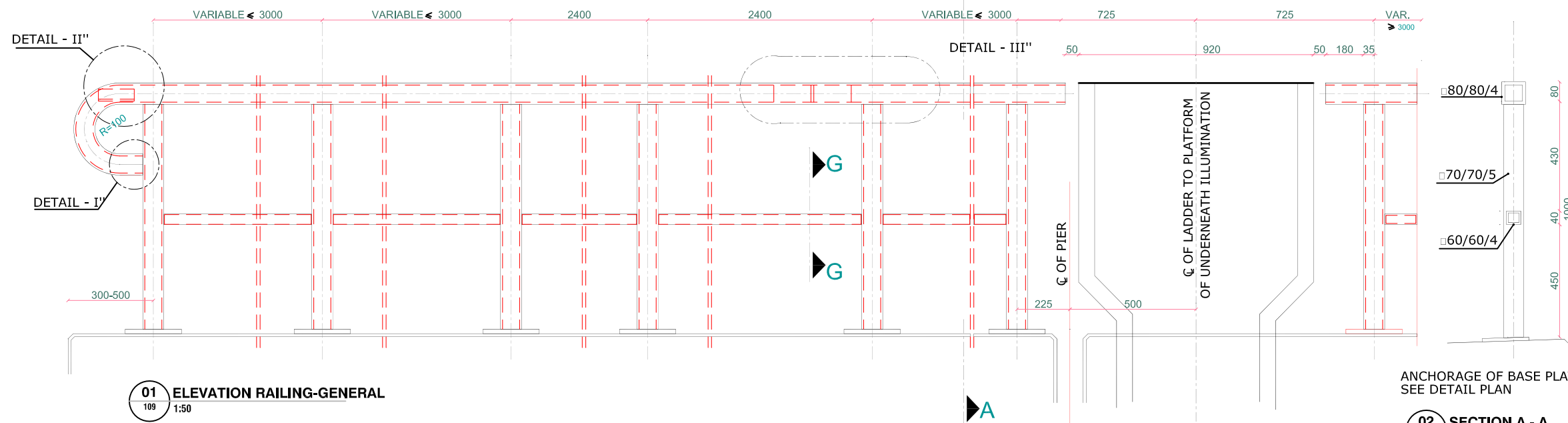
DRAWING NO.  
ST.109

SCALE:  
1:50

DRAWN BY:  
MUHANED SHALLAL

PROJECT NO:  
IQ-17-001

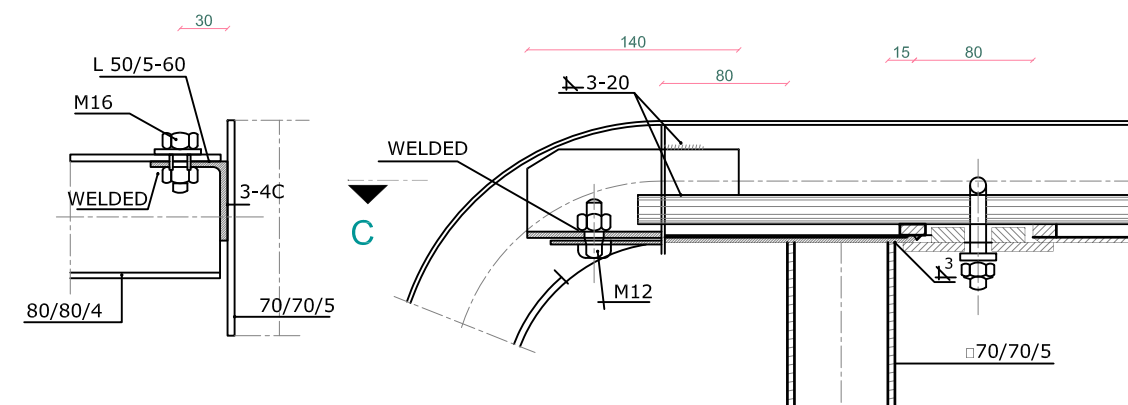
DATE:  
APRIL 2017



01 ELEVATION RAILING-GENERAL  
109 1:50

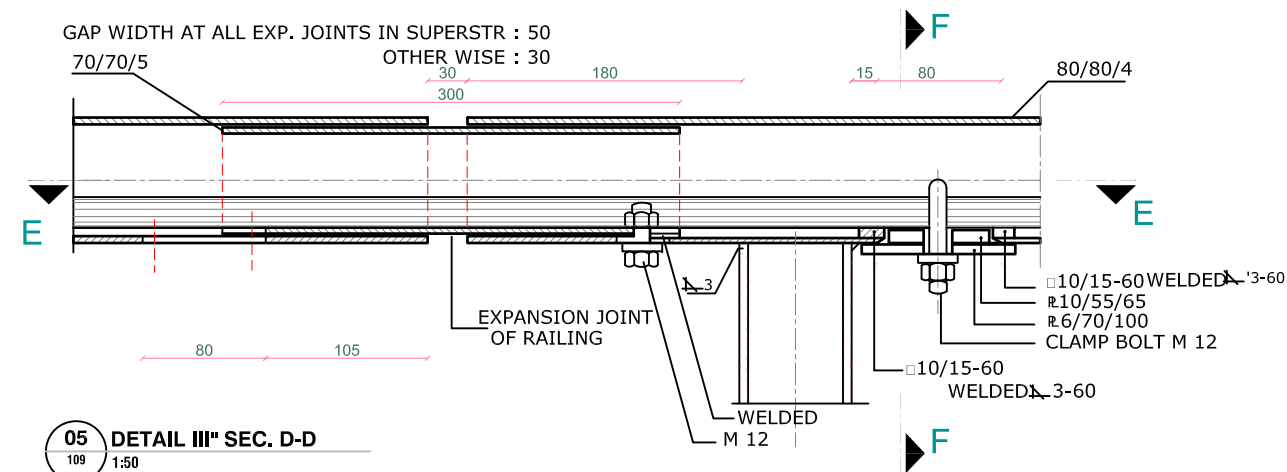
ANCHORAGE OF BASE PLATE  
SEE DETAIL PLAN

02 SECTION A - A  
109 1:50

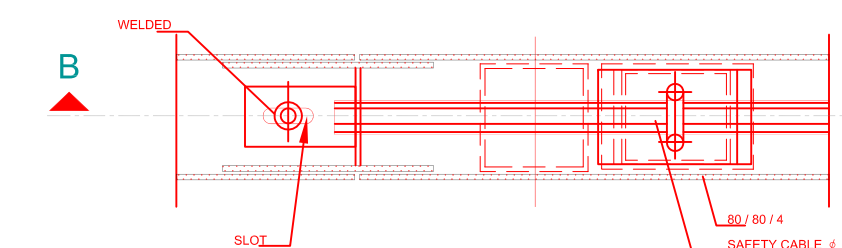


03 DETAIL I'  
109 1:50

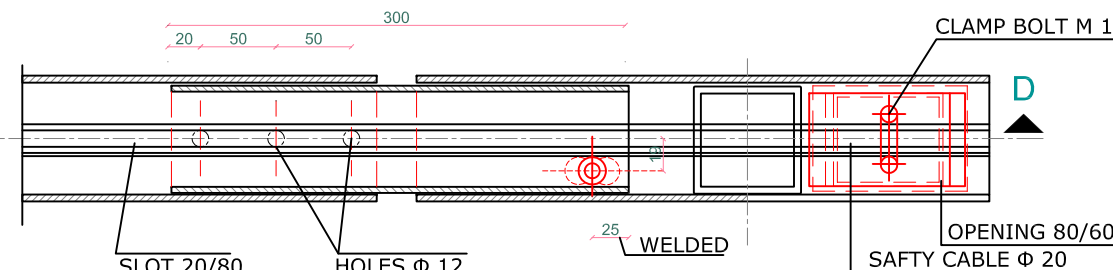
04 DETAIL II' SEC. B-B  
109 1:50



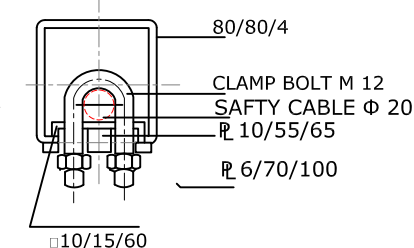
05 DETAIL III' SEC. D-D  
109 1:50



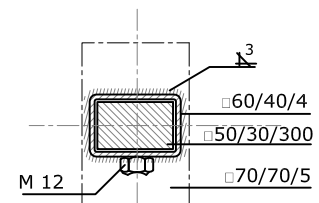
06 SECTION C - C  
109 1:50



07 SECTION E - E  
109 1:50

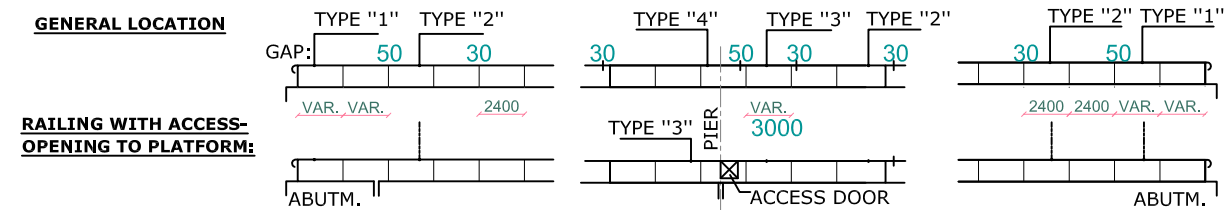


08 SECTION F - F  
109 1:50



09 SECTION G - G  
109 1:50

### LOCATION OF EXPANSION JOINT



### NOTES:

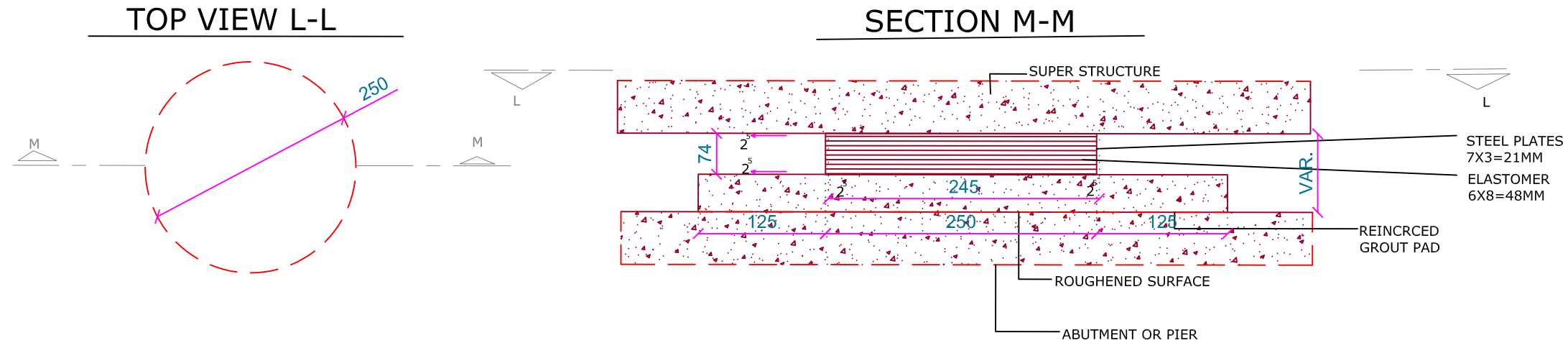
RAILING FRAME TYPES SHALL BE COMBINED SUCH THAT A RAILING EXPANSION JOINT WITH GAP WIDTH 50MM. IS PROVIDED IN ALL RAILING SECTIONS SPANNING SUPERSTRUCTURE EXPANSION JOINTS.

SLOT LOCATION AND HOLE SPACING  
AS SHOWN IN DETAIL III

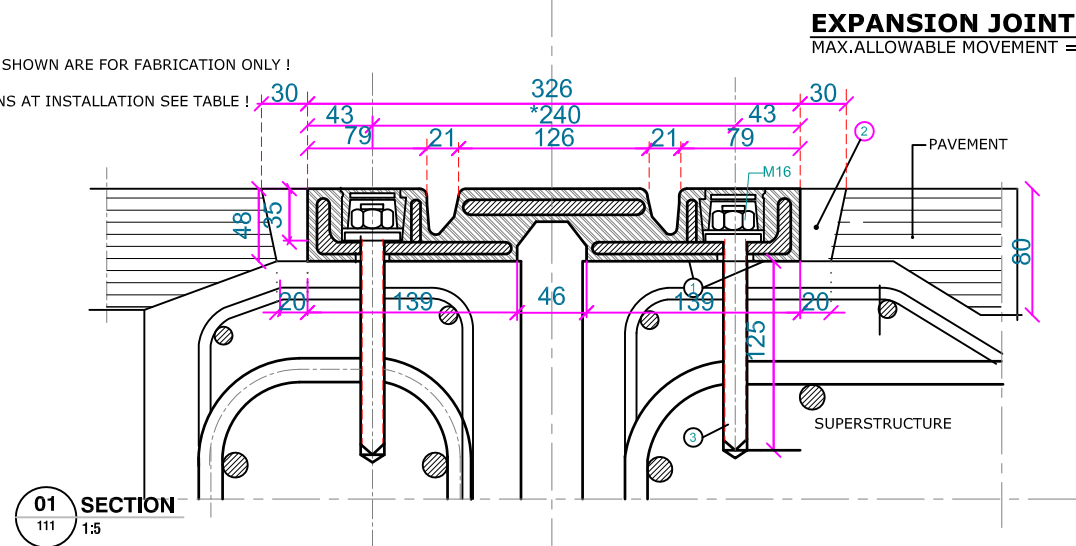




# TYPE Φ250/74

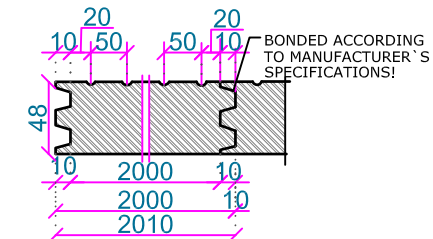
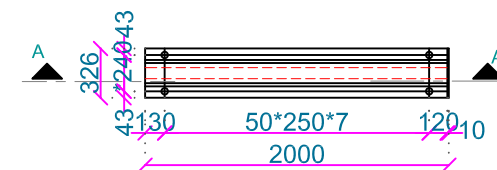


\* DIMENSIONS SHOWN ARE FOR FABRICATION ONLY !  
FOR DIMENSIONS AT INSTALLATION SEE TABLE !



## NOTES :

- 1.ALL DIEMENSIONS IN MM.
- 1.ALL MATERIALS SHALL STRICTLY WITH MANUFACTURER `S SPE-CIFICATIONS.



## LEGEND

- 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.)



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

**KEY MAP**

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05			
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02			
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**PROJECT NAME:**  
**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

**LOCATION:**  
AL-ANBAR - IRAQ

**CLIENT:**

**GENERAL DIRECTORATE FOR ROADS AND BRIDGES**

**SERVICES NAME:**  
CIVIL DESIGN

**DESIGN BY:**  
DR. MUHANED SHALLAL

**SUPERVISOR:**  
MUHAMMED HIKMET

**DRAWING NAME:**  
EXPANSION JOINT T50 AND ELASTOMERIC BERING

**DRAWING NO.**  
ST.111

**SCALE:**  
1:5

**DRAWN BY:**  
AMIRA MAGDY

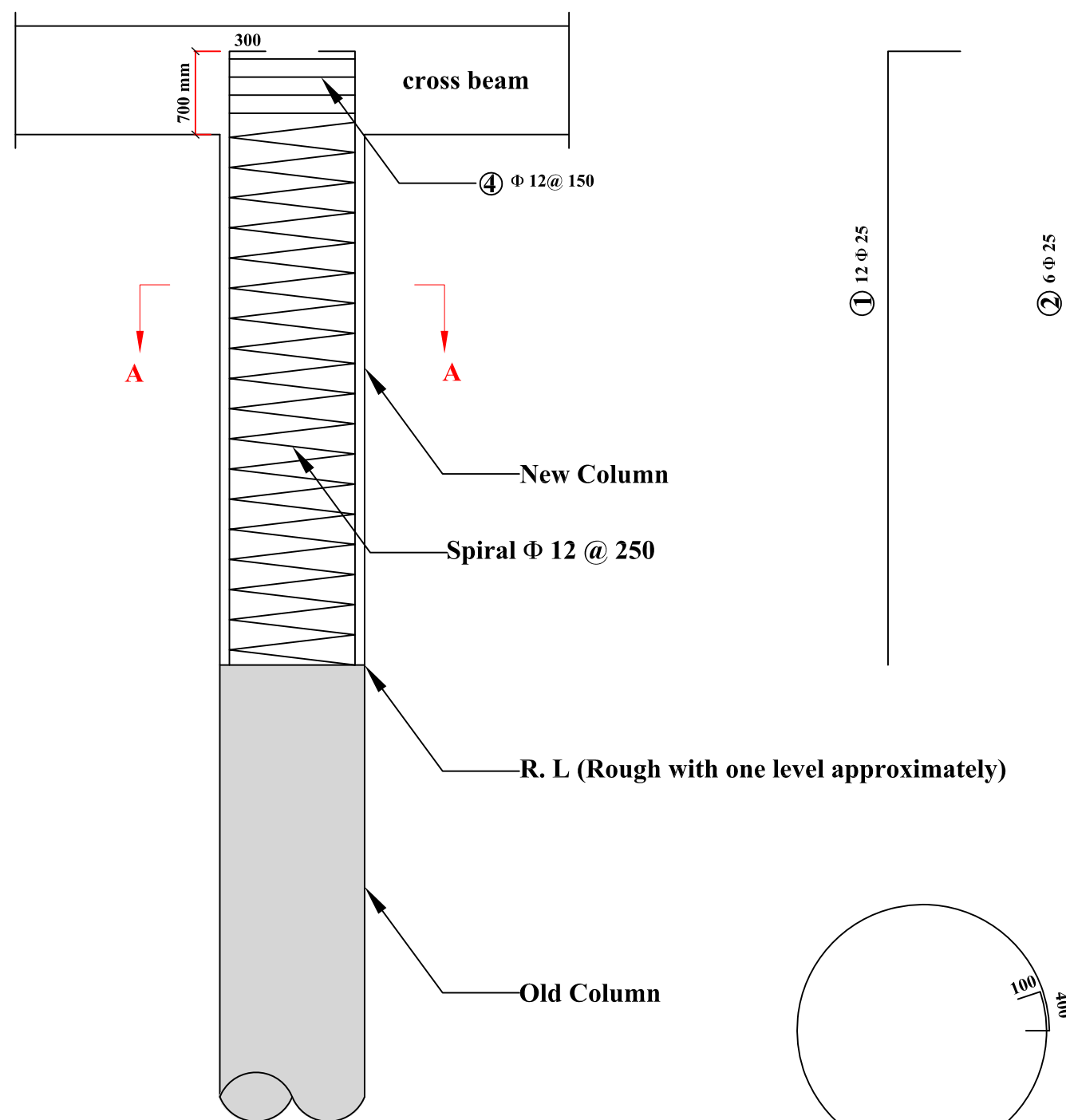
**PROJECT NO:**  
IQ-17-001

**DATE:**  
APRIL 2017

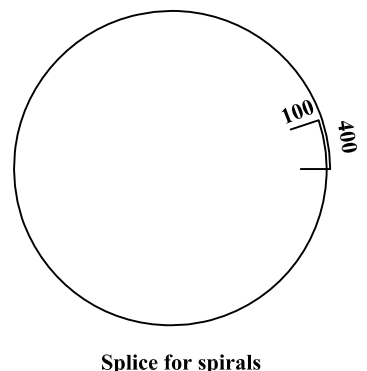
**UNITED NATIONS DEVELOPMENT PROGRAMME**

**NUDHUM ALBENAA CONSULTANCY**

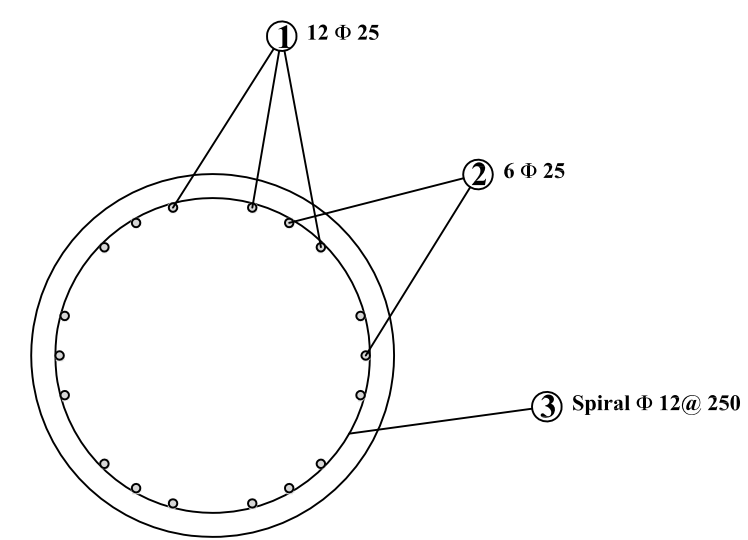




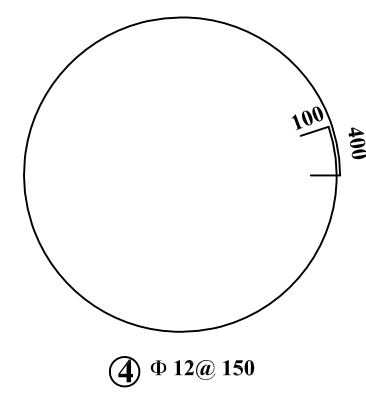
**Column**  
Scale 1:50



Splice for spirals



**Section A-A**  
Scale 1:25



**12 Φ 25**  
**6 Φ 25**

80 mm concrete cover

R. L. = Removing Level = remove 1.20 m concrete of old column from last exist spiral



REFERENCE:  
CONTRACT DRAWINGS  
STRUCTURES, PART SIX, VOLUME A  
R9/A/1976  
SECTION: BAGHDAD-WEST-HABBANIYA  
S.45.6 FUTURE IRRIGATION CANAL

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

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REV.	DATE	DESCRIPTION	BY
05			
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PROJECT NAME:  
**GARMAH BRIDGE  
ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES**

LOCATION:  
**AL-ANBAR - IRAQ**

SERVICES NAME:  
**STRUCTURAL DESIGN**

STRUCTURAL ENG.:  
**DR. MUHANED SHALLAL**

ROAD ENG.:  
**MUHAMMED HIKMET**

DRAWING NAME:  
**COLUMNS REINFORCEMENT**

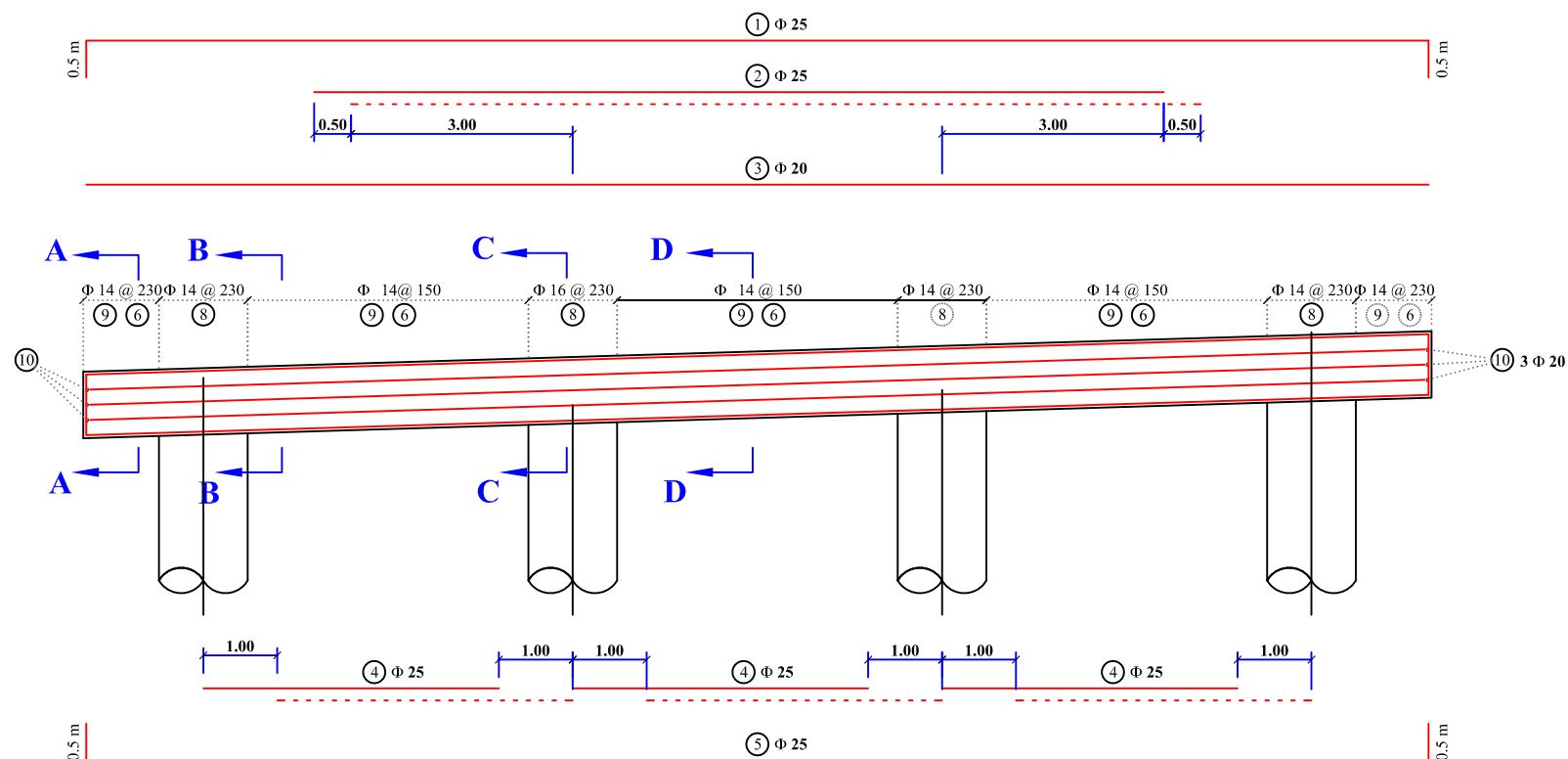
DRAWING NO.:  
**ST.112**

SCALE:  
**AS SHOWING**

DRAWN BY:  
**MUHANED SHALLAL**

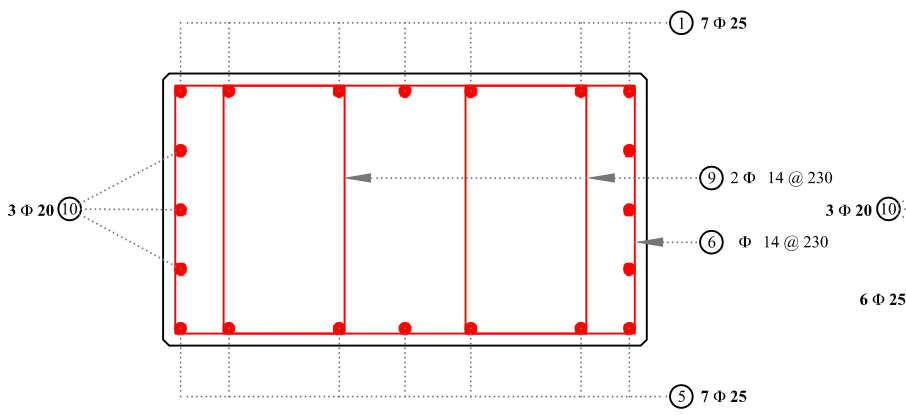
PROJECT NO.:  
**IQ-17-001**

DATE:  
**MARCH 2017**



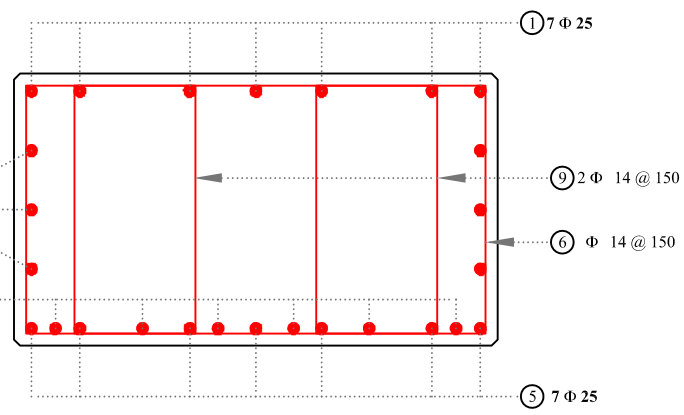
**Longitudinal Section**

Scale 1:100



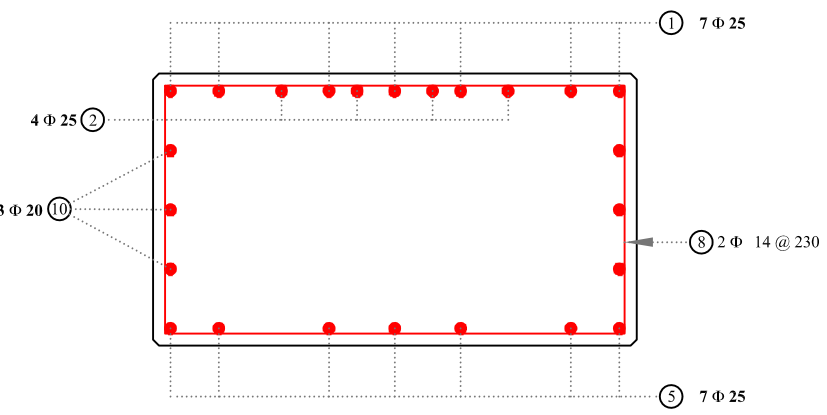
**Section A-A**

Scale 1:25



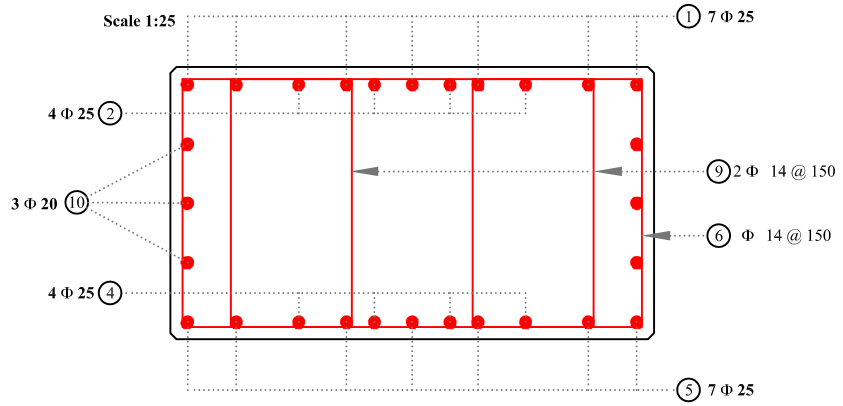
**Section B-B**

Scale 1:25

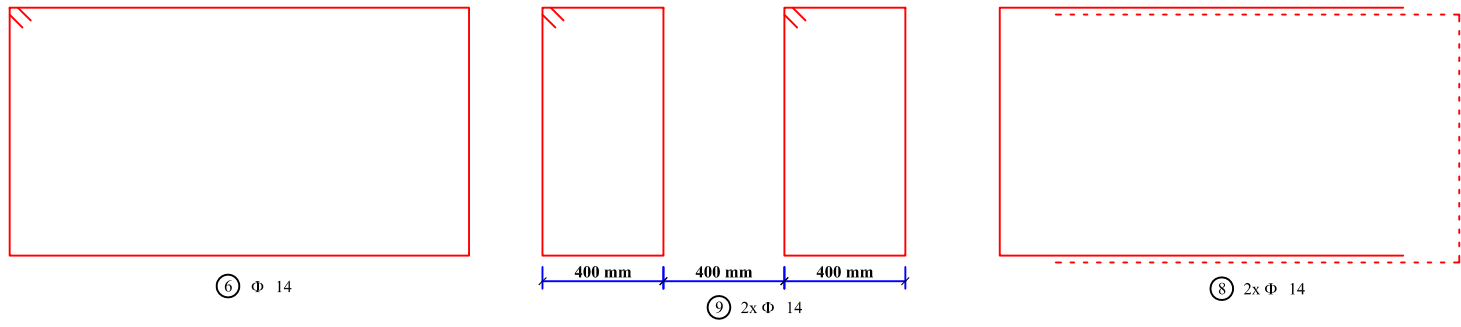


**Section C-C**

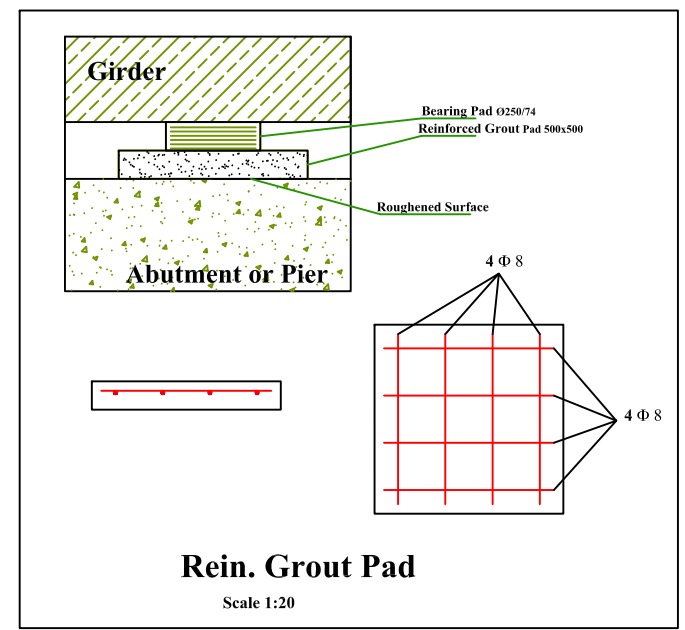
Scale 1:25



**Section D-D**



40 mm concrete cover



**Rein. Grout Pad**

Scale 1:20

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITIES  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITIES  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

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**PROJECT NAME:**  
**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

**LOCATION:**  
**AL-ANBAR - IRAQ**

**SERVICES NAME:**  
**STRUCTURAL DESIGN**

**STRUCTURAL ENG.:**  
**DR. MUHANED SHALLAL**

**ROAD ENG.:**  
**MUHAMMED HIKMET**

**DRAWING NAME:**  
**CROSS BEAM REIN.**

**DRAWING NO.**  
**ST.113**

**SCALE:**  
**AS SHOWING**

**DRAWN BY:**  
**MUHANED SHALLAL**

**PROJECT NO.:**  
**IQ-17-001**

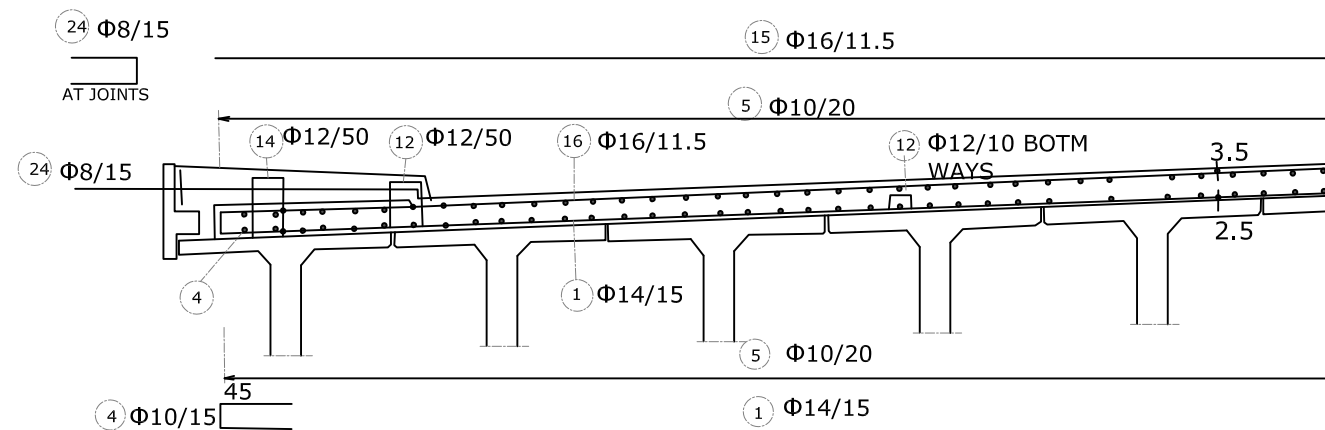
**DATE:**  
**MARCH 2017**

United Nations  
Development Programme

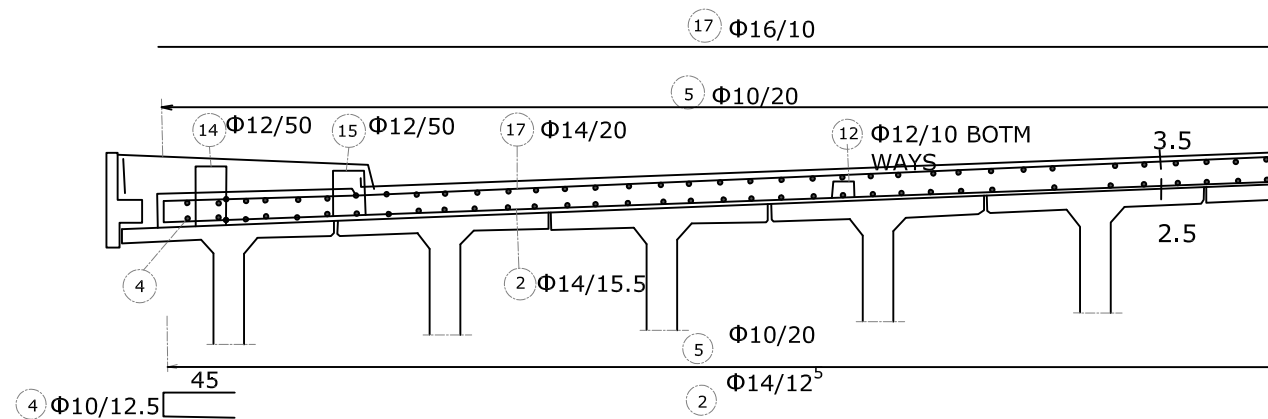
NUDHUM ALBENAI  
CONSULTANCY



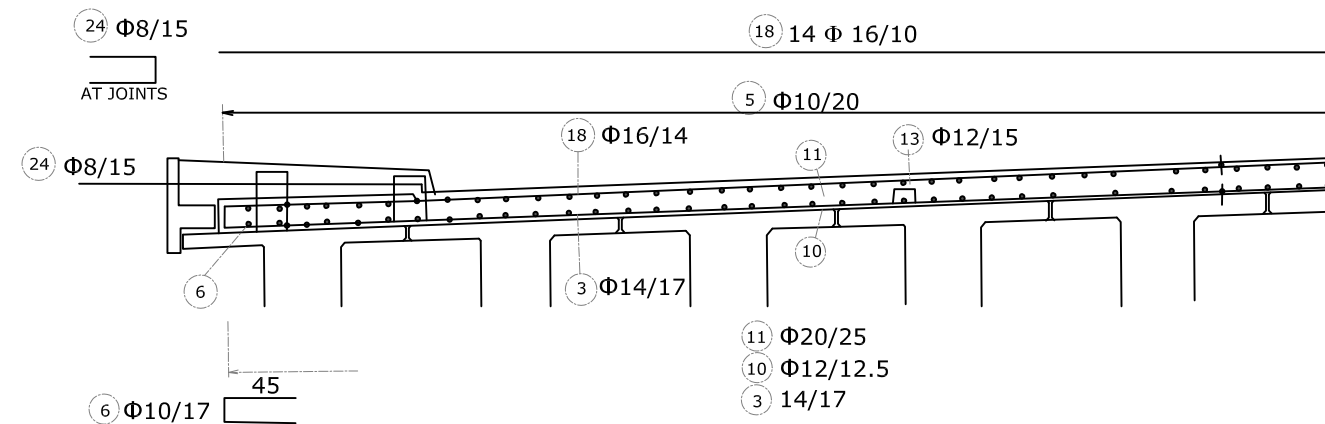
CROSS-SECTION ZONE A  
SCALE 1:50



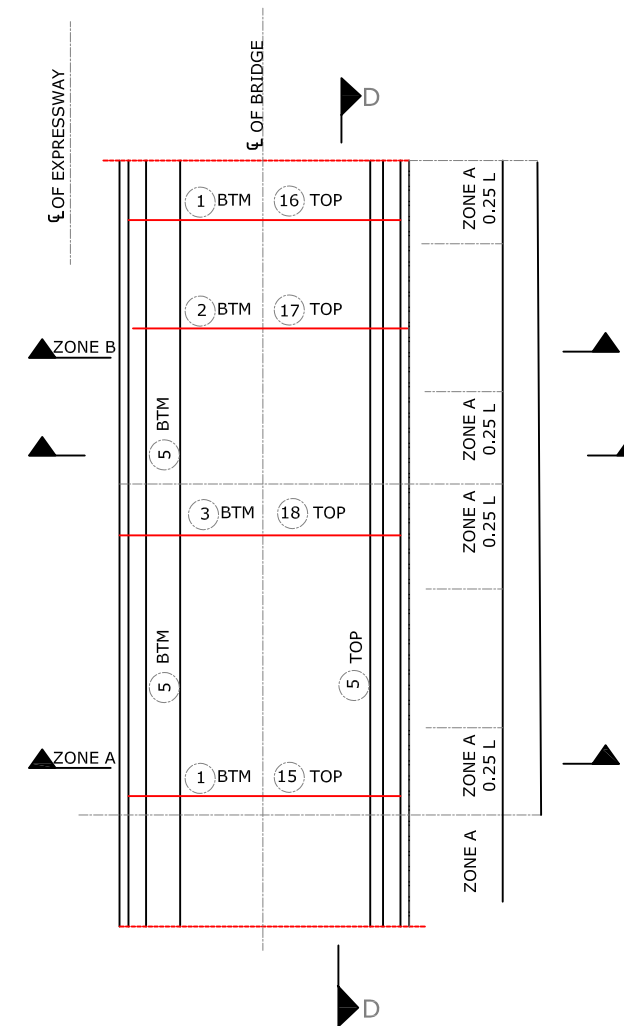
CROSS-SECTION ZONE B  
SCALE 1:50



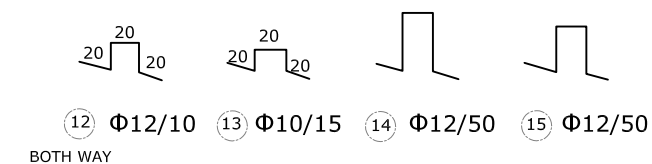
HINGE SLAB  
SCALE 1:50



PLAN DECK SLAP  
SCALE 1:500



STIRRUPS



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

KEY MAP

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PROJECT NAME:

**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

CLIENT:

**GENERAL DIRECTORATE FOR ROADS AND BRIDGES**

SERVICES NAME:

**STRUCTURAL DESIGN**

DESIGN BY:

DR. MUHANED SHALLAL

SUPERVISOR:

DRAWING NAME: REF.GIRDER, FASCIA ELEMENT REINFORCEMENT

DRAWING NO.

ST. 114

SCALE:

AS SHOWING

DRAWN BY:

PROJECT NO:

IQ-17-001

DATE:

APRIL 2017

UNITED NATIONS  
DEVELOPMENT PROGRAMME

NUDHUM ALBENAA  
CONSULTANCY

REPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND GENERAL MUNICIPALITY  
GENERAL DIRECTORATE FOR ROADS AND BRIDGES

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**GARMAH BRIDGE  
ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICES**

LOCATION:  
**AL-ANBAR - IRAQ**

SERVICES NAME:  
**STRUCTURAL DESIGN**

STRUCTURAL ENG.:  
**DR. MUHANED SHALLAL**

ROAD ENG.:  
**MUHAMMED HIKMET**

DRAWING NAME:  
**SIDEWALK AND FASCIA REIN.**

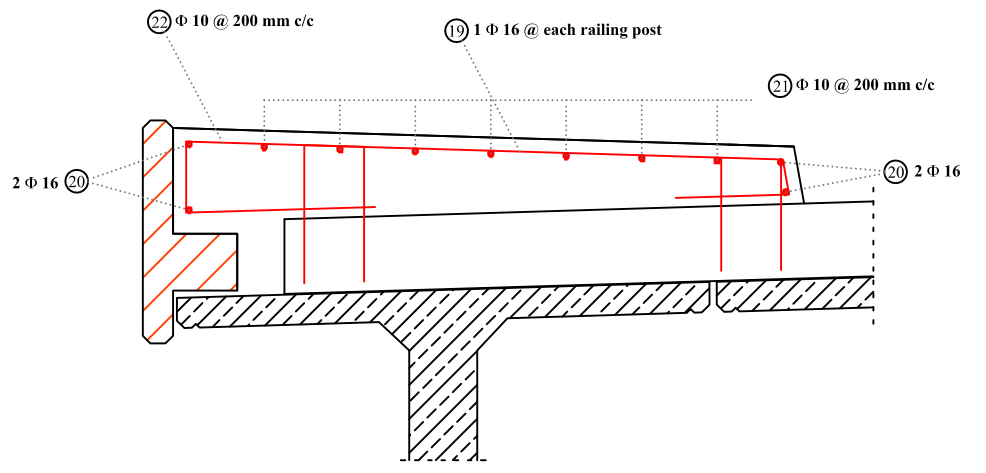
DRAWING NO.  
**ST.115**

SCALE:  
**AS SHOWING**

DRAWN BY:  
**MUHANED SHALLAL**

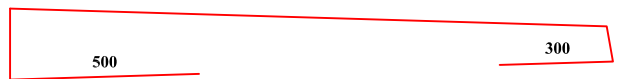
PROJECT NO.:  
**IQ-17-001**

DATE:  
**MARCH 2017**

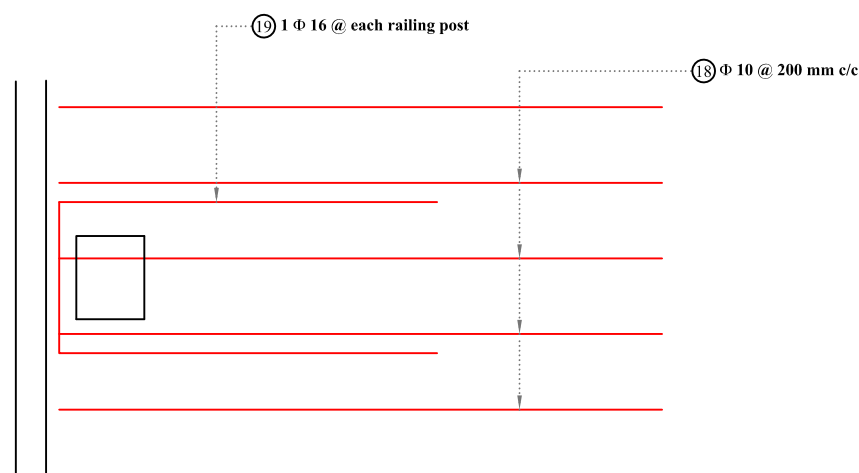


Section of Sidewalk (Left Side)

Scale 1:20

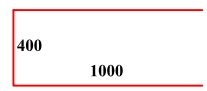


22 Φ 10 @ 200 mm c/c  
22 Φ 10 @ 100 mm c/c  
last 1.5 m before ends of deck slab (at abutment)



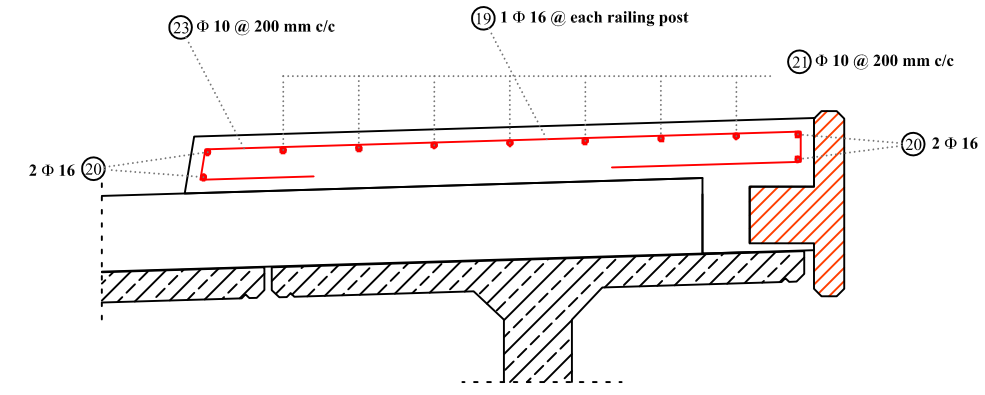
Reinforcement at Railing Post  
(Top View)

Scale 1:20



19 1 Φ 16 @ each railing post

- 35 mm concrete cover for top surface of deck slab and sidewalks
- 25 mm concrete cover for bottom surface of deck slab and sidewalks and external side of fascia element
- 15 mm concrete cover internal side of fascia element

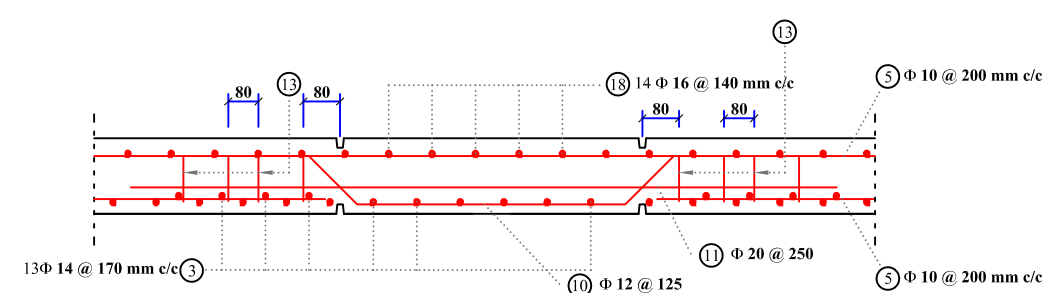


Section of Sidewalk (Right Side)

Scale 1:20

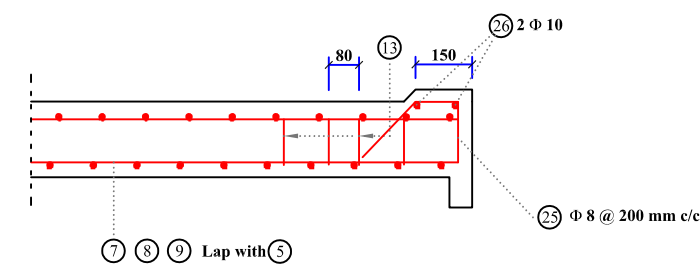


23 Φ 10 @ 200 mm c/c



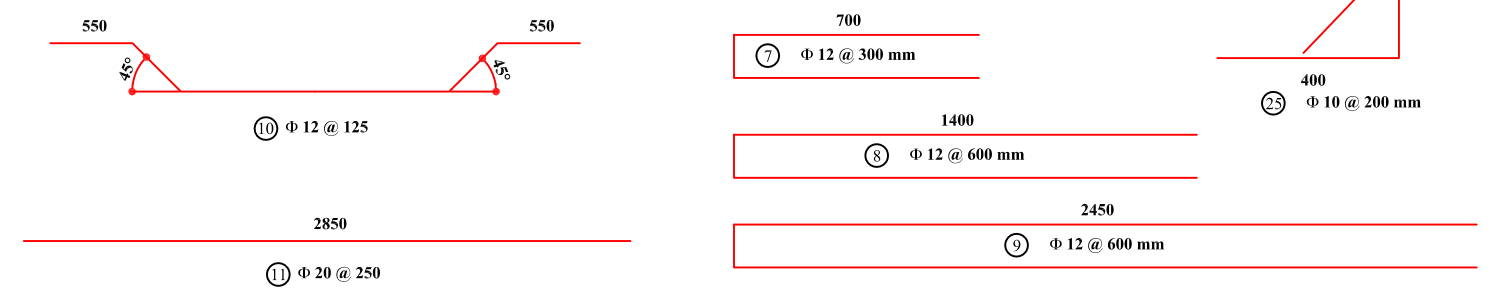
Section A-A Deck slab Rein. (Hinge lab)

Scale 1:20



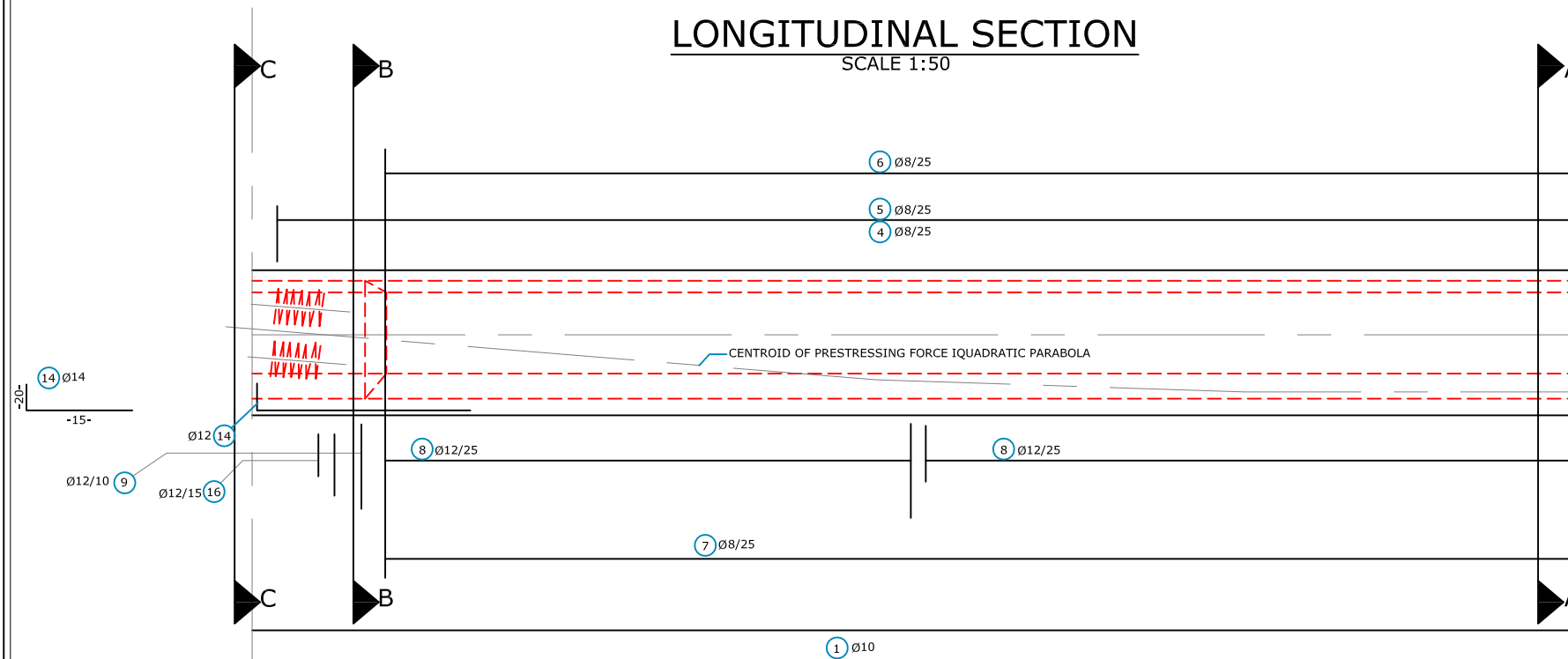
Long. section deck slab Rein.  
(Expansion Joint)

Scale 1:20

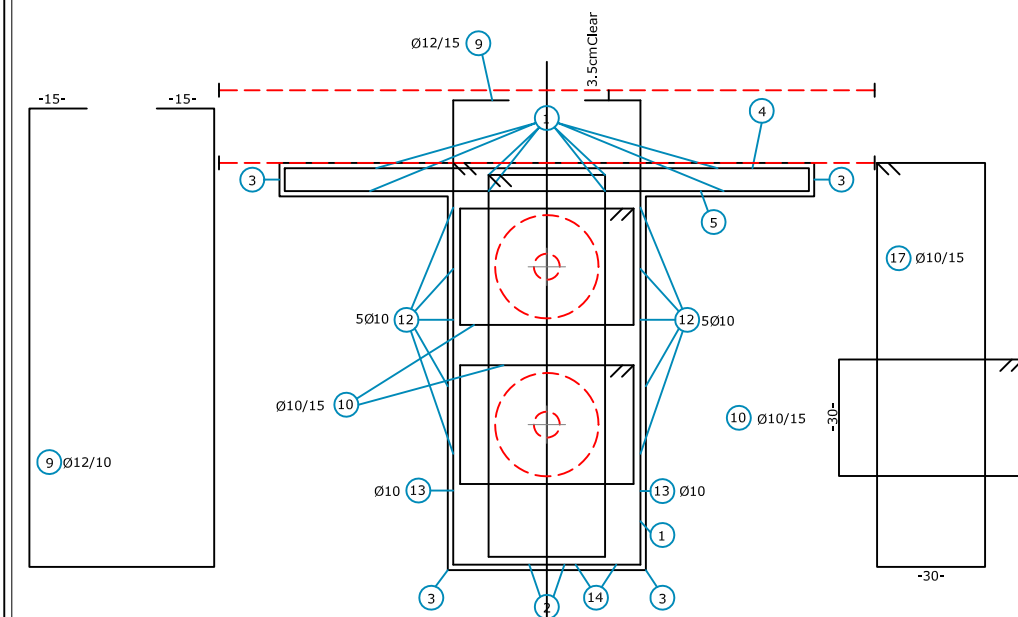




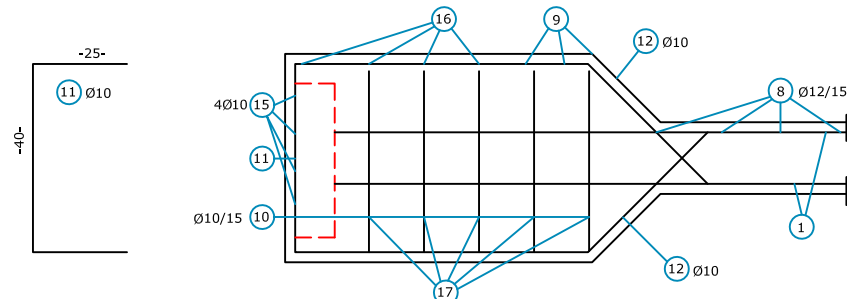
# PRESTRESSED GIRDER 20m LONGITUDINAL SECTION SCALE 1:50



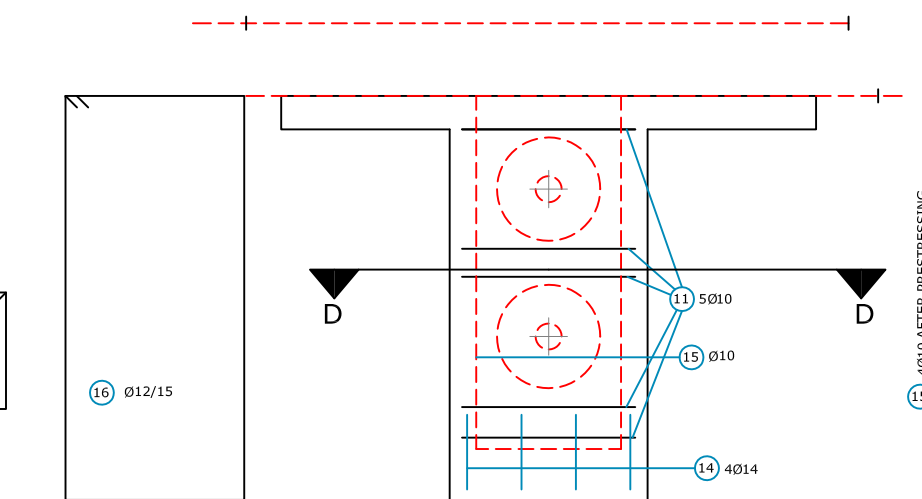
SECTION B-B  
SCALE 1:20



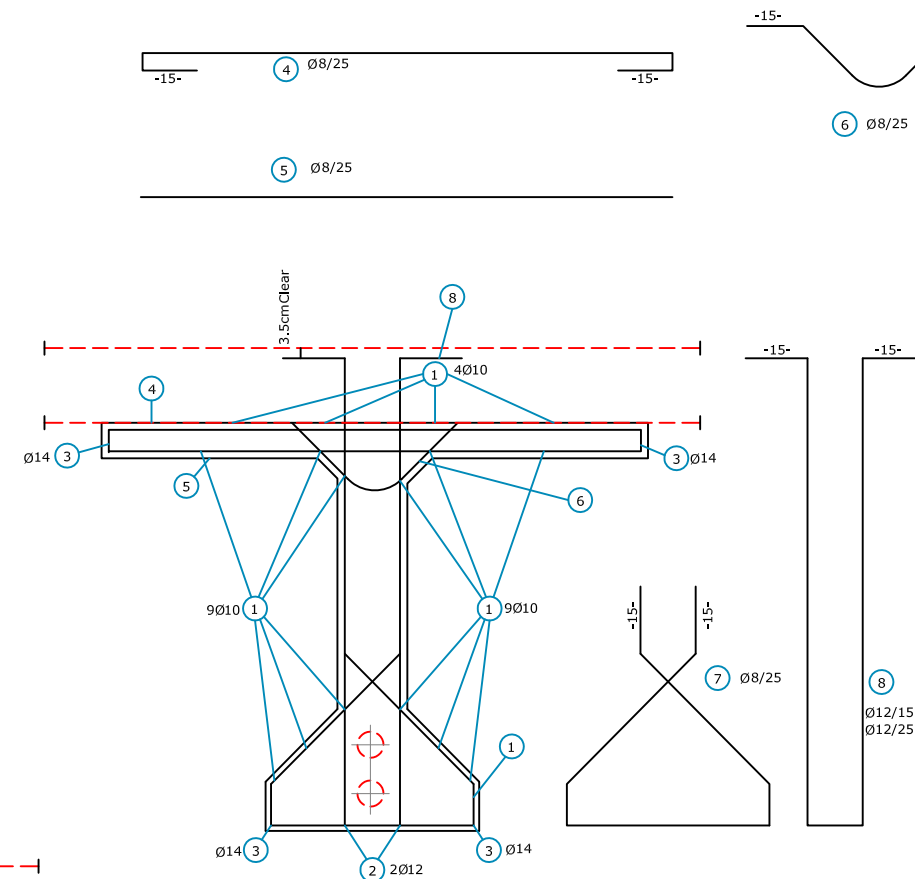
SECTION D-D  
SCALE 1:20



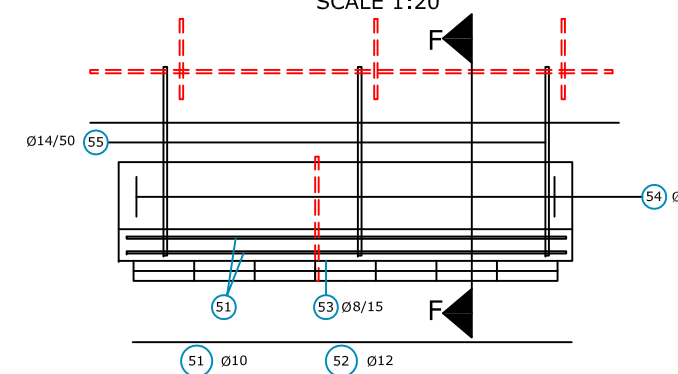
SECTION C-C  
SCALE 1:20



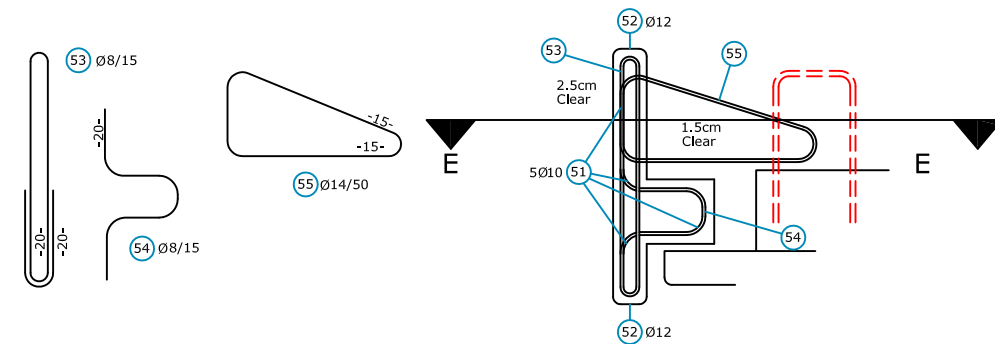
SECTION A-A  
SCALE 1:20




PREFABRICATED FASCIA ELEMENT  
SECTION E-E  
SCALE 1:20



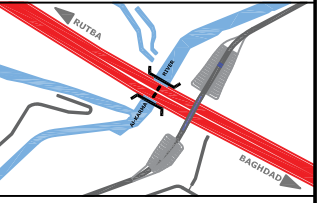
SECTION F-F  
SCALE 1:20





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

KEY MAP



**NOTES**

A. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.  
B. ALL DIMENSIONS ARE IN METRIC UNLESS OTHERWISE STATED.  
C. BUILDER TO CHECK ALL DIMENSIONS AT SITE PRIOR TO CONSTRUCTION, ASSEMBLY OR FABRICATION OF ALL WORKS.  
D. ALL WORKS ARE ACCORDING TO SPECIFICATIONS OF GENERAL DIRECTORATE FOR ROADS AND BRIDGES OF IRAQ.

**NOTES**

• THE CONTRACTOR SHALL ADOPT THE EXPRESSWAY No.1 SPECIFICATIONS DURING REHABILITATION EXECUTIVE PERIOD.  
• ROADS FEATURES ARE BASED ON EXPRESSWAY No.1 SPECIFICATIONS, IN ADDITION TO THE APPROVAL OF SUPERVISED ENGINEER.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

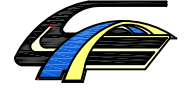
PROJECT NAME:

**GARMAH BRIDGE**  
**ARCHITECTURAL & CIVIL**  
**ENGINEERING DESIGN SERVICES**

LOCATION:

AL-ANBAR - IRAQ

CLIENT:



GENERAL DIRECTORATE FOR ROADS AND BRIDGES

SERVICES NAME:

**STRUCTURAL DESIGN**

DESIGN BY:

DR. MUHANED SHALLAL

SUPERVISOR:

DRAWING NAME:

ST. 116

DRAWING NO.

PREF.GIRDER, FASCIA ELEMENT REINFORCEMENT

SCALE:

AS SHOWING


DRAWN BY:

PROJECT NO:


IQ-17-001

DATE:

APRIL 2017



United Nations  
Development Programme



NUDHUM ALBENAA  
CONSULTANCY

REFERENCE:  
CONTRACT DRAWINGS  
STRUCTURES, PART SIX, VOLUME A  
R9/A/1976  
SECTION: BAGHDAD-WEST-HABBANIYA  
S.45.6 FUTURE IRRIGATION CANAL

DORCH CONSULT



# ROADS DESIGN



376800

376700

376600

START OF  
WORKING AREA  
ABUTMENT  
(AB01)END OF  
WORKING AREA  
ABUTMENT  
(AB02)

AB 01

STA: 0+060

BAGHDAD

AB 02

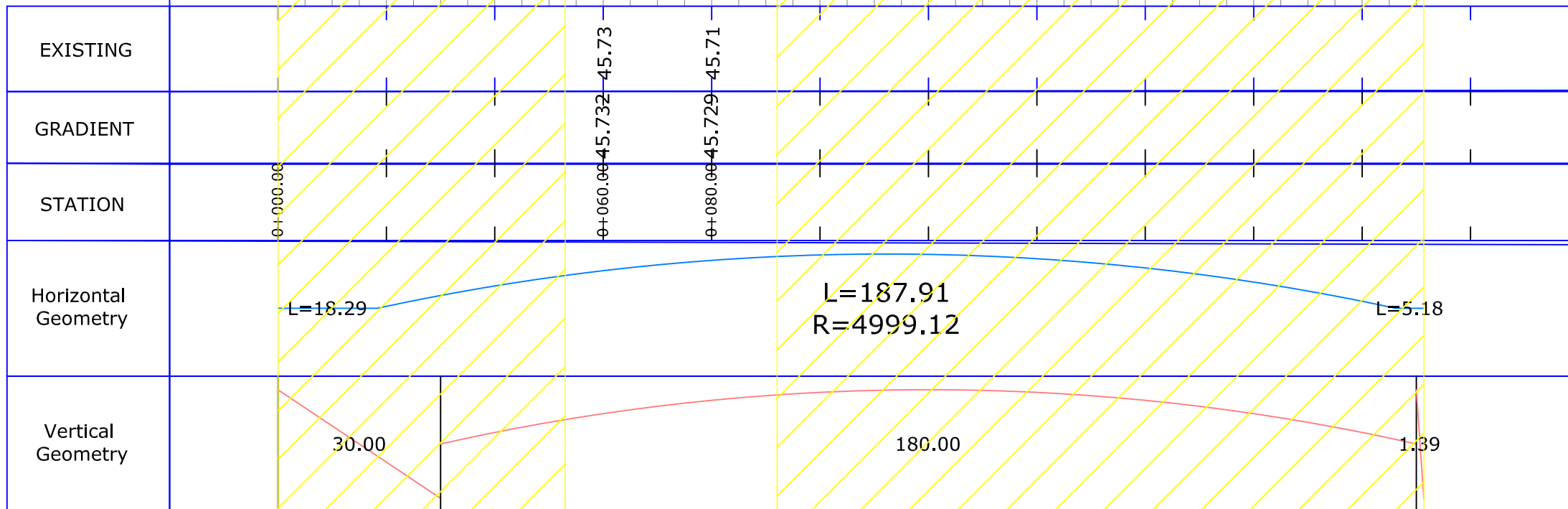
RUTBA

AB 02

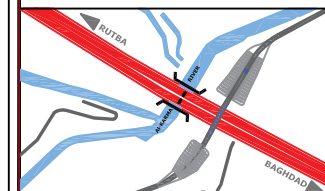
19.55m

19.55m

39.10m

01 PLAN  
PL-01 1:75001 PROFILE  
PR-01 1:1000BR-NORTHERN  
GRADIENT PROFILEREPUBLIC OF IRAQ  
MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITIES  
ROADS AND BRIDGES DIRECTORATE

KEY MAP



NOTES

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

ROADS SPECIFICATIONS

- THE CONTRACTOR SHALL ADOPT THE EXPRESSWAY No.1 SPECIFICATIONS DURING REHABILITATION EXECUTIVE PERIOD.  
- ROADS FEATURES ARE BASED ON EXPRESSWAY No.1 SPECIFICATIONS, IN ADDITION TO THE APPROVAL OF SUPERVISED ENGINEER.  
- THE CONTRACTOR SURVIVOR SHALL SURVEY THE SITE DURING DELIVERED AND COMPARE WITH THE DESIGN LEVELS USING THE AVAILABLE TECHNOLOGY.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			

PROJECT NAME:

ARCHITECTURAL & CIVIL  
ENGINEERING DESIGN SERVICESLOCATION: AL-ANBAR - IRAQ  
(AL-GARMAH RIVER BRIDGE)

CLIENT:

GENERAL DIRECTORATE FOR ROADS  
AND BRIDGES

SERVICES NAME:

CIVIL DESIGN

DESIGN BY:

MUHAMMED HIKMET

SUPERVISOR:

MUHAMMED HIKMET

DRAWING NAME:

PLAN &amp; PROFILE

DRAWING NO.

TR-201

SCALE:

@A3

DRAWN BY:

MUHAMMED HIKMET

PROJECT NO:

IQ-17-001

DATE:

APRIL 2017

UN  
DIPUnited Nations  
Development ProgrammeNUDHUM ALBENAA  
CONSULTANCY