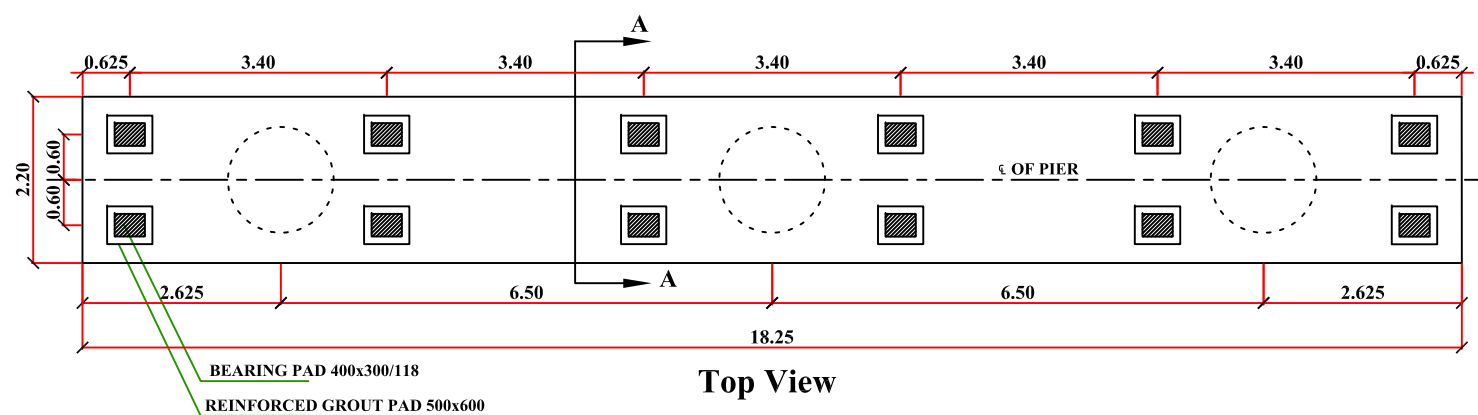


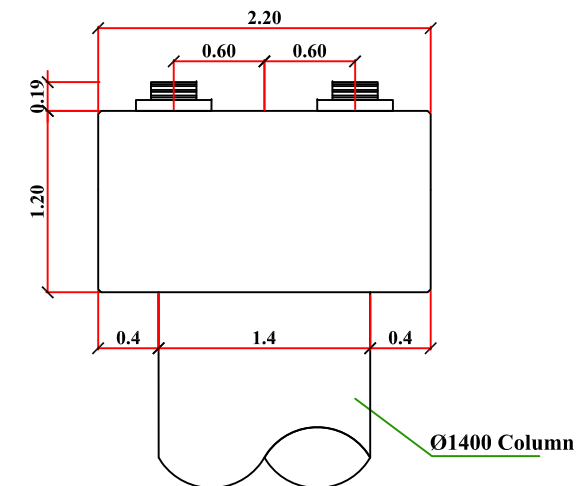
ELEVATION

Scale 1:100



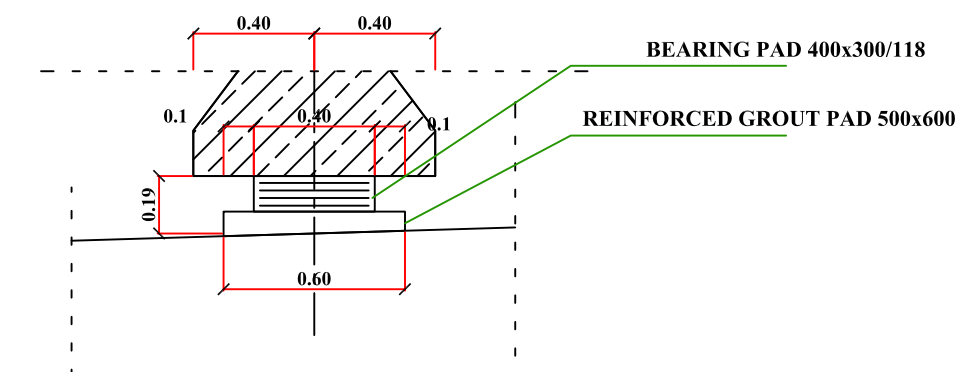
Top View

Scale 1:100



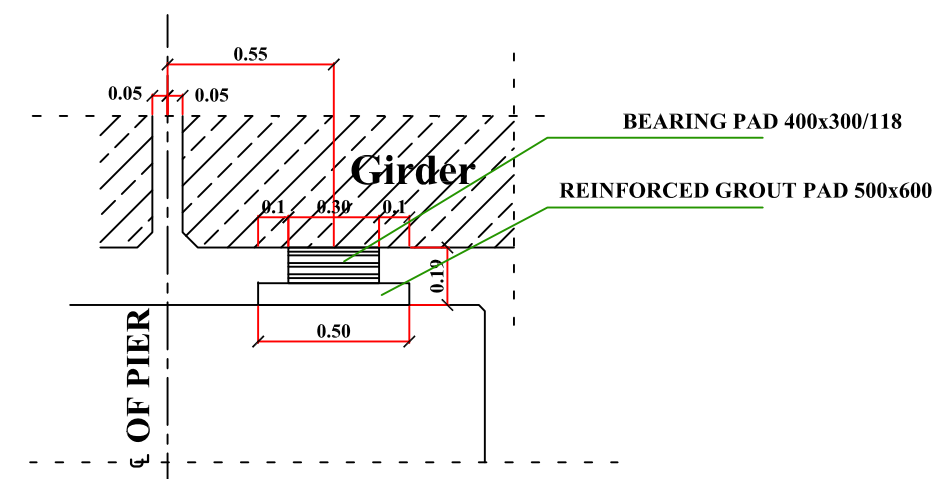
Section A-A at Pier

Scale 1:50



DETAIL OF BEARING

Scale 1:25




REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



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:

**PALESTINAN 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:

PIER

DRAWING NO.

ST.128

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

PROJECT NO:


IQ-17-001

DATE:

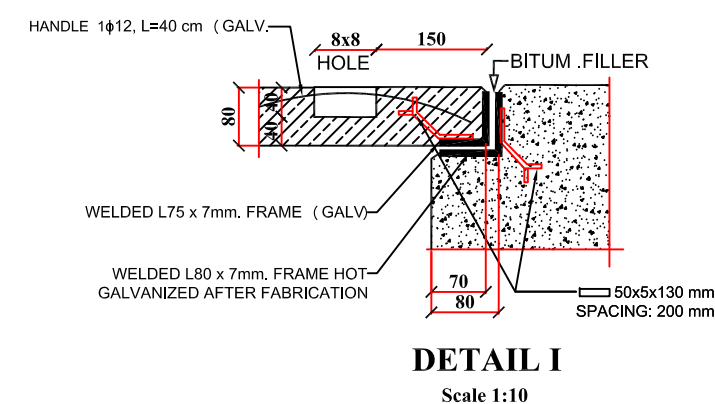
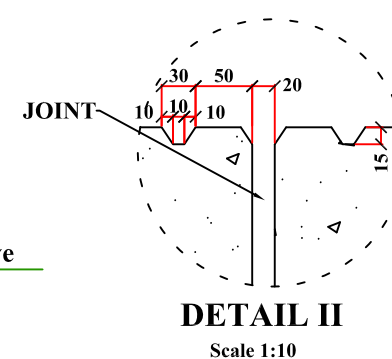
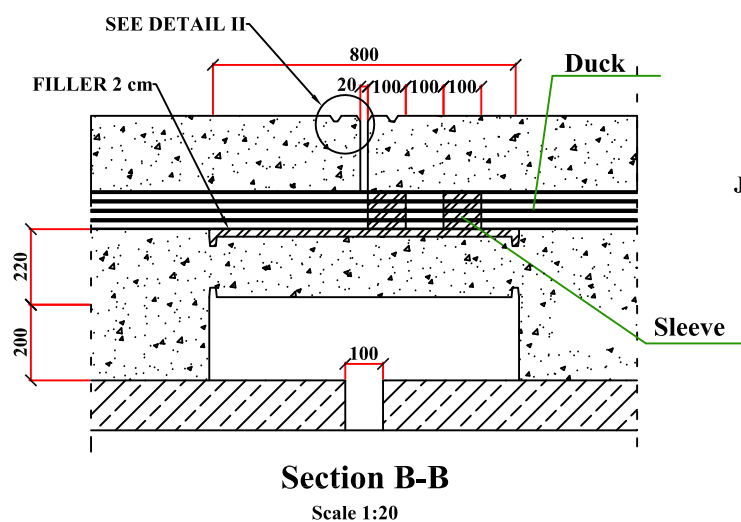
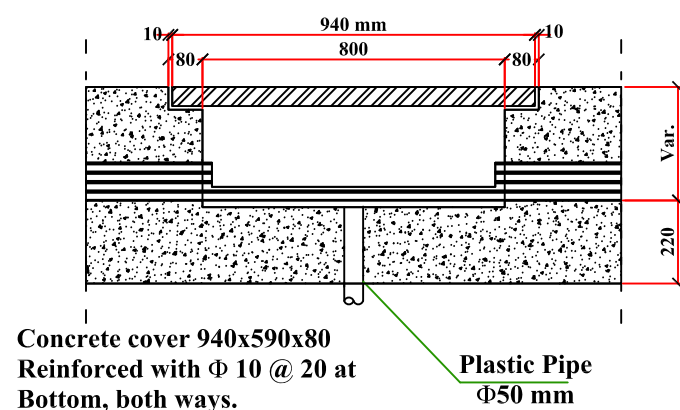
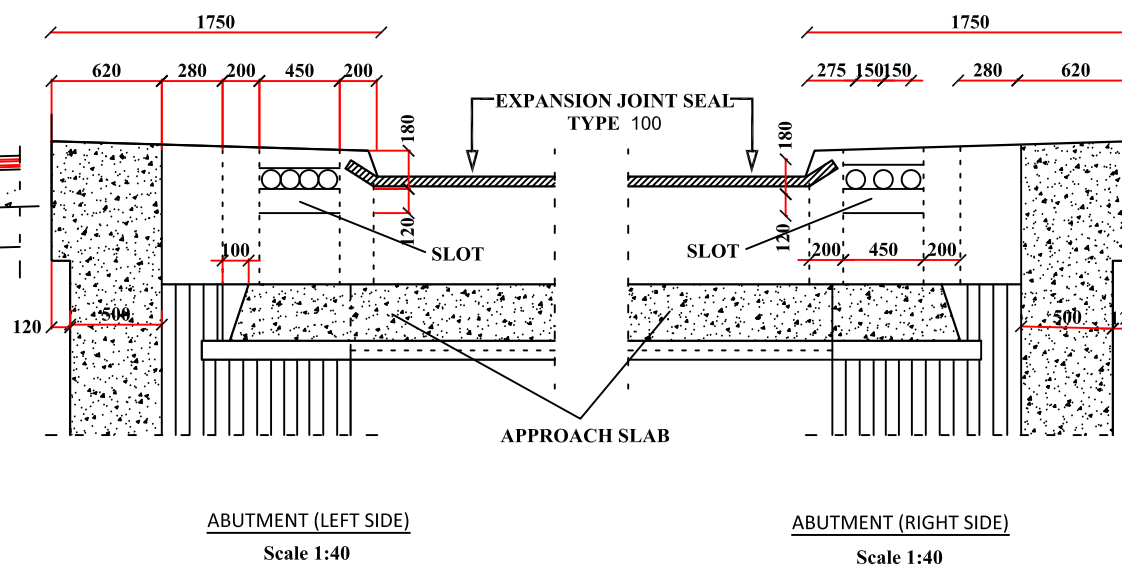
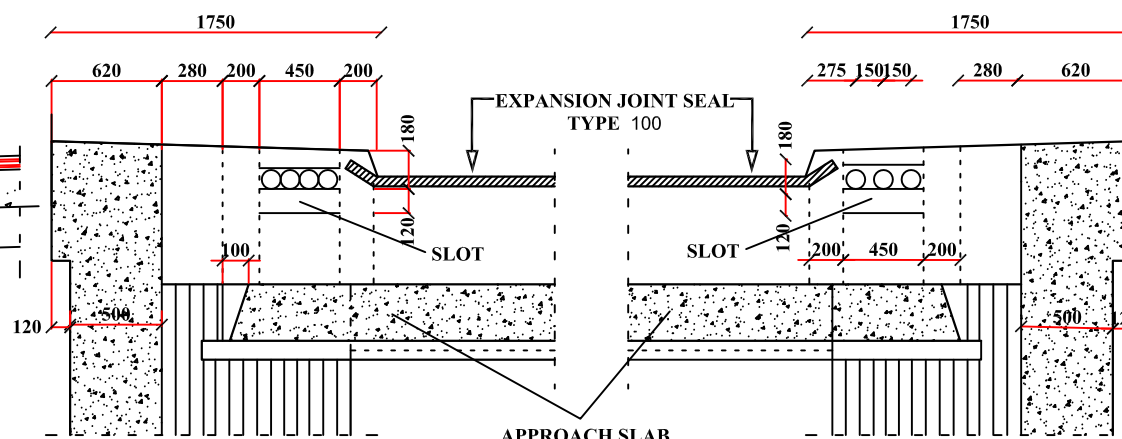
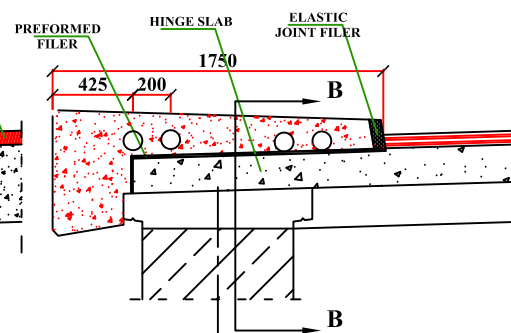
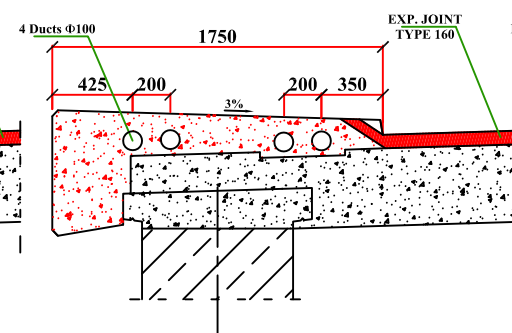
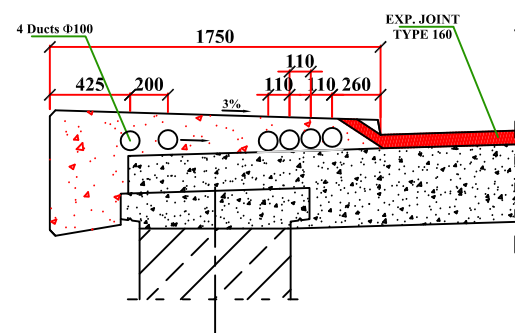
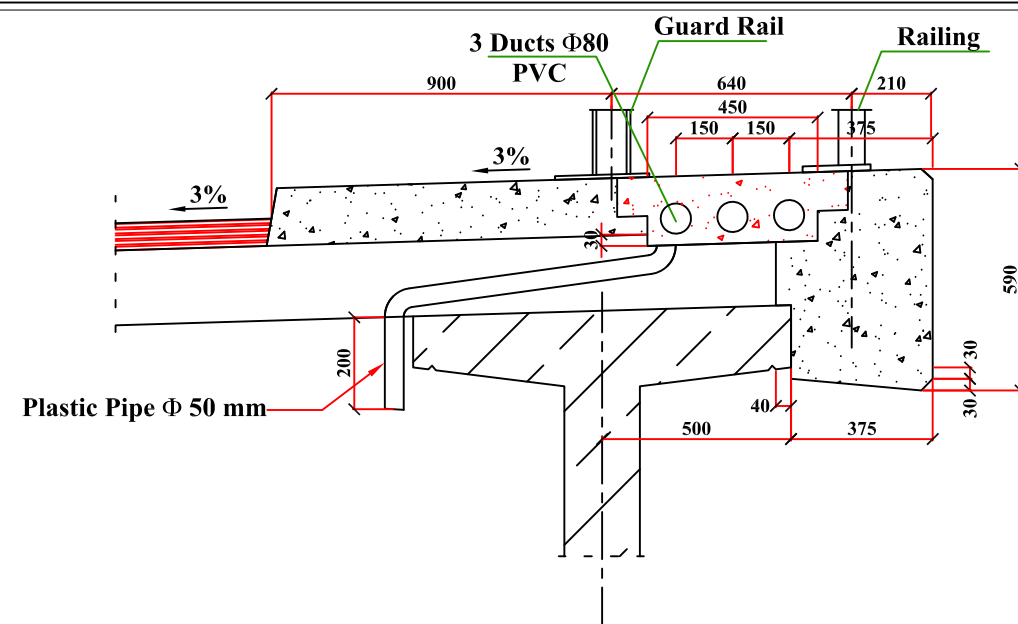
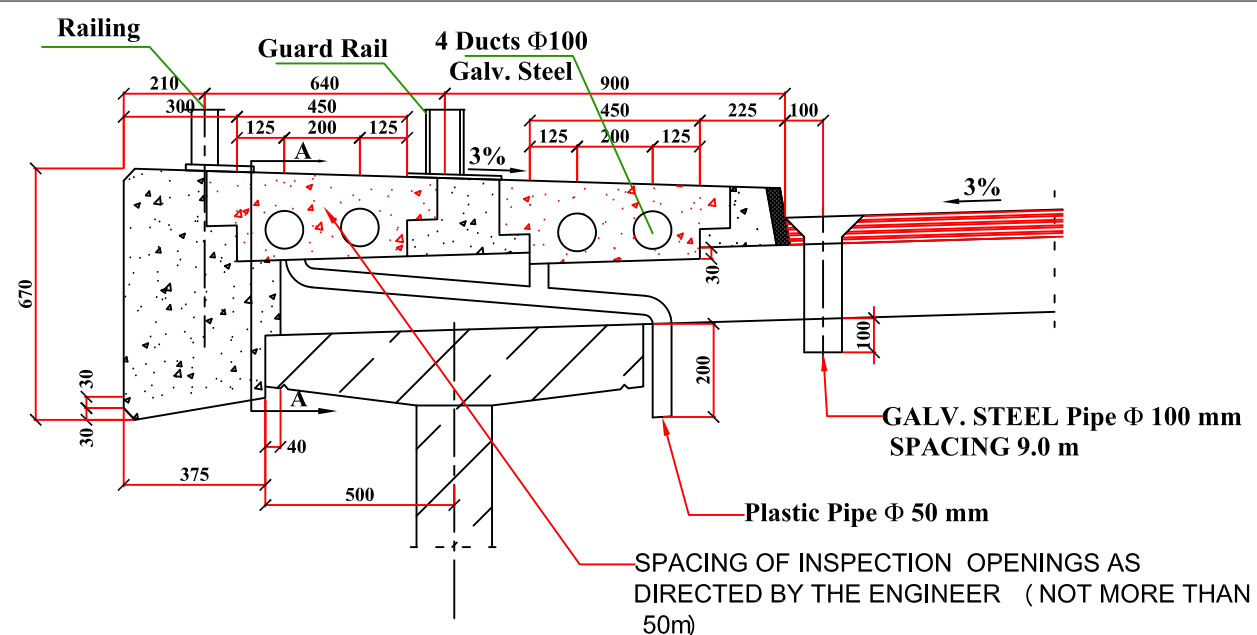
MARCH 2017



United Nations
Development Programme

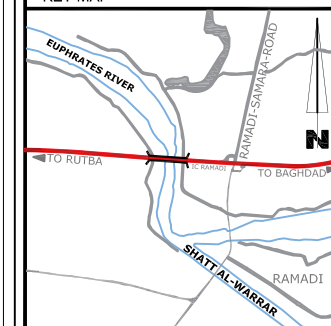


**NUDHUM ALBENAA
CONSULTANCY**



REPUBLIC OF IRAQ
MINISTRY OF CONSTRUCTION AND HOUSING AND PUBLIC MUNICIPALITY
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 SUPERVISE ENGINEER

05			
04			
03			
02			
01			
00			
MSA*	Q.A. 300	ENIGMA 3000/3000/3000	ENIG

PROJECT NAME:

**PALESTINAN 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

SIDEWALK

DRAWING NO. **ST 129**

SCALE: **AS SHOWING**

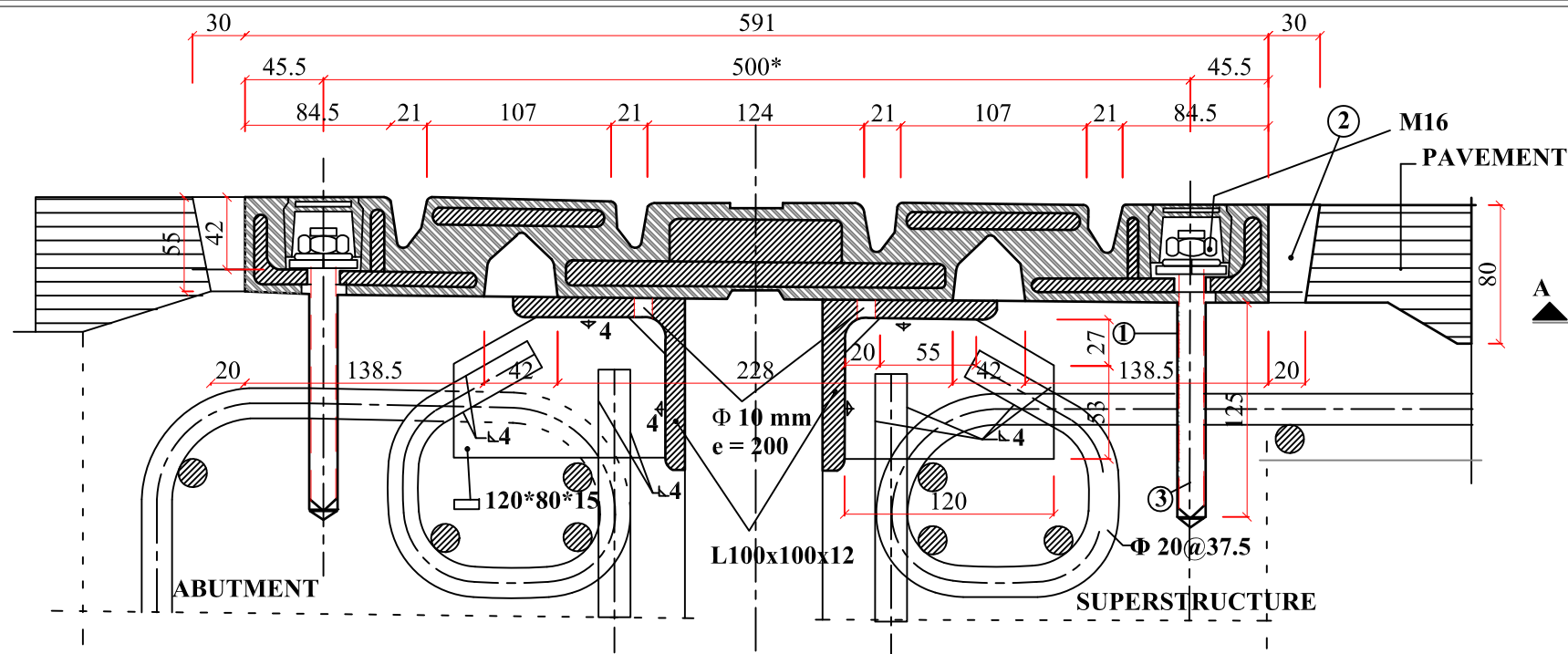
DRAWN BY

MUHANED SHALLAL

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

DATE: MARCH 2017





CROSS SECTION
Scale 1:4

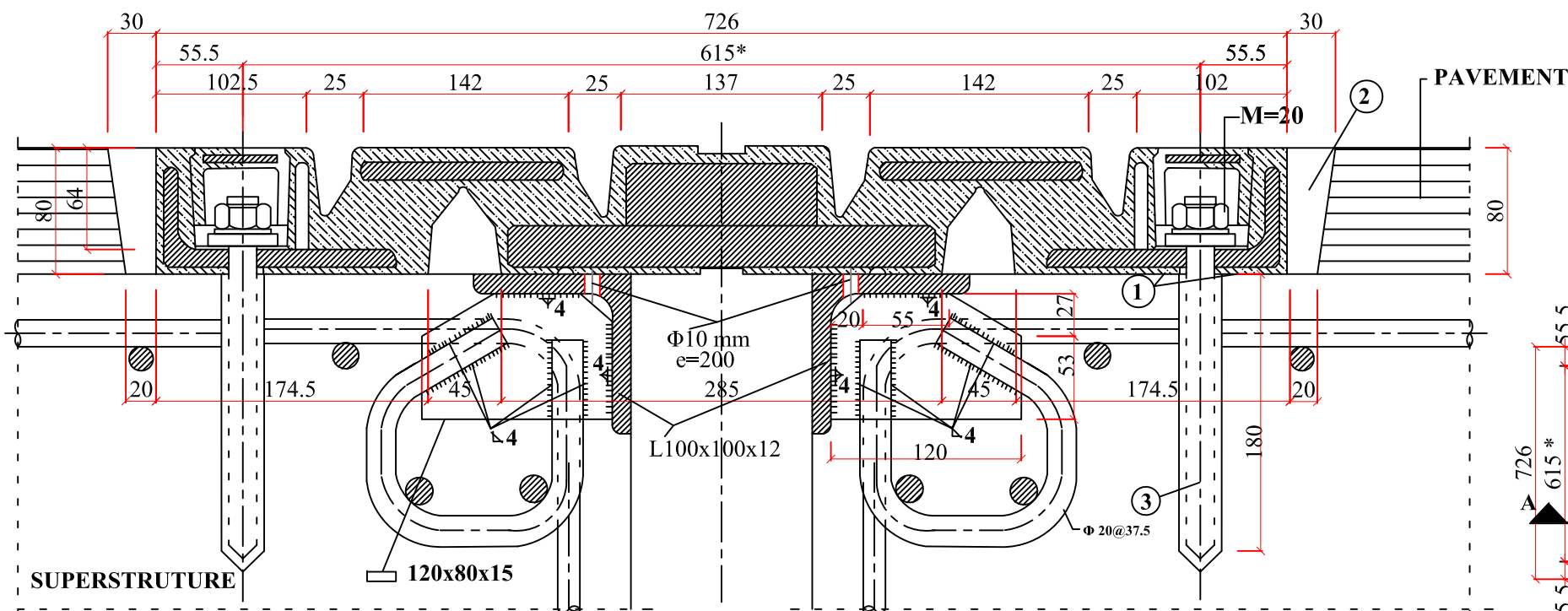
EXPANSION JOINT SEAL TYPE 100

MAX.ALLOWABLE MOVEMENT = ±50MM.

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.

NEOPRENE
STEEL



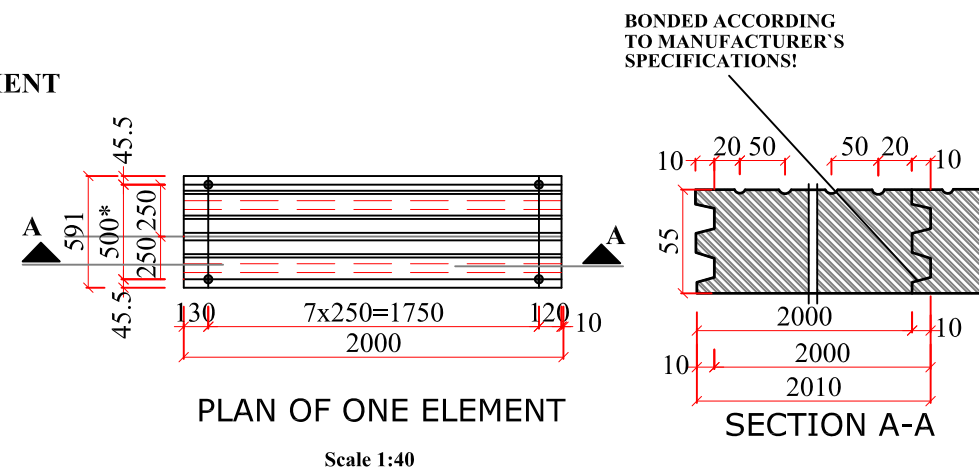
CROSS SECTION
Scale 1:4

EXPANSION JOINT SEAL TYPE 160

MAX.ALLOWABLE MOVEMENT = ± 80MM.

NOTES

- 1 ALL DIMENSIONS IN MM.
- 2 ALL MATERIALS SHALL STRICTLY COMPLY WITH MANUFACTURER'S SPECIFICATIONS.
- 3 * DIMENSION SHOWN ARE FOR FABRICATION ONLY! FOR DIMENSIONS AT INSTALLATION SEE TABLE

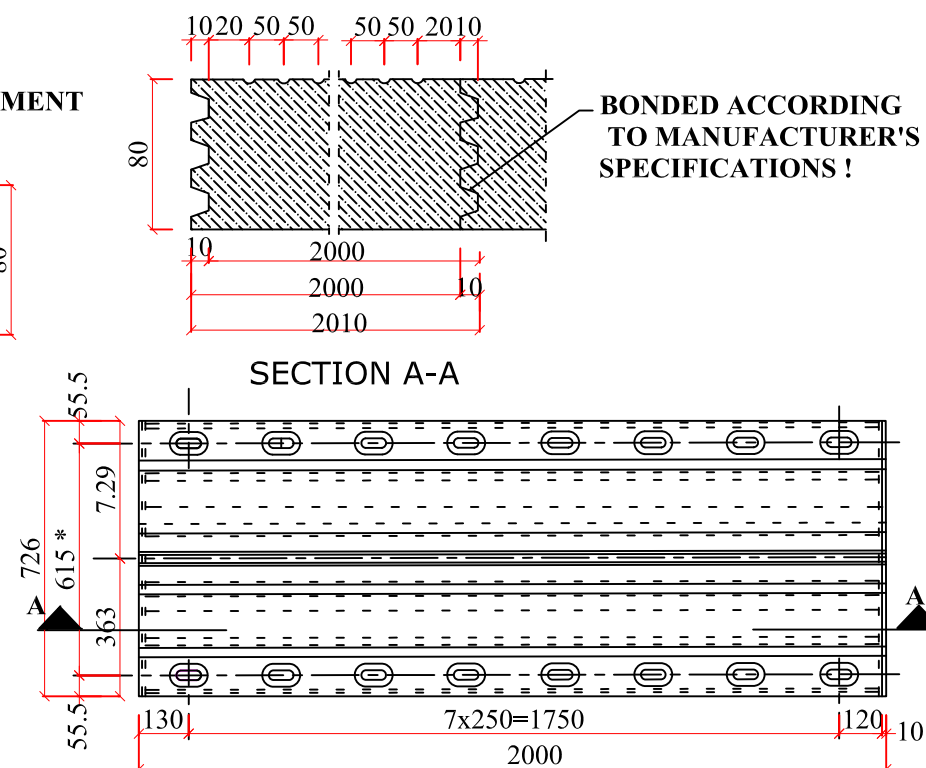


PLAN OF ONE ELEMENT

Scale 1:40

REQUIRED SPACING OF ANCHOR BOLTS AT INSTALLATION

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



SECTION A-A

PLAN OF ONE ELEMENT

Scale 1:20



REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI

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 ENGINEERS.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

PROJECT NAME:
PALESTINAN 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:
EXPANSION JOINTS

DRAWING NO.
ST.130

SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

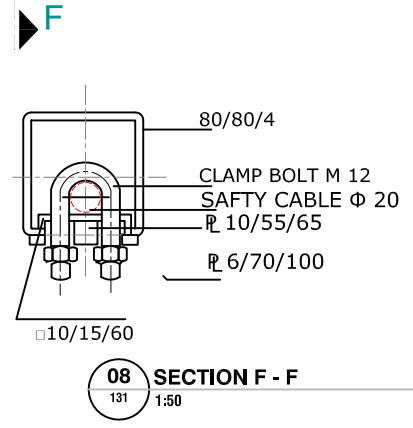
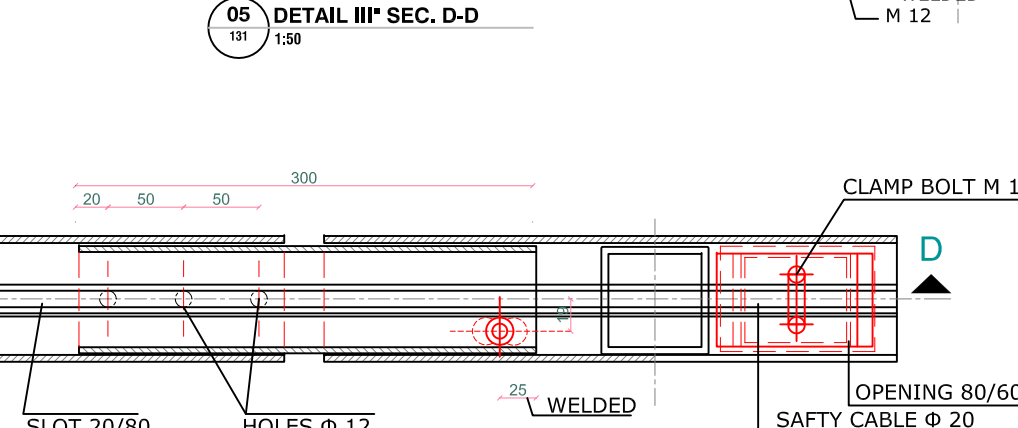
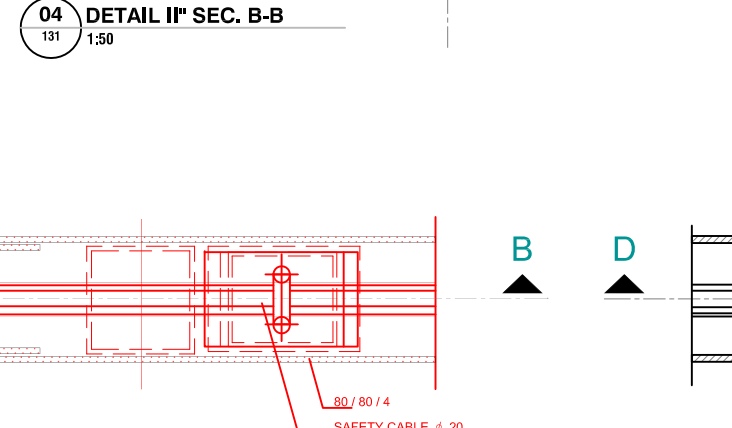
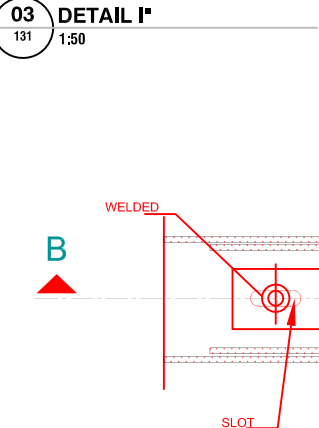
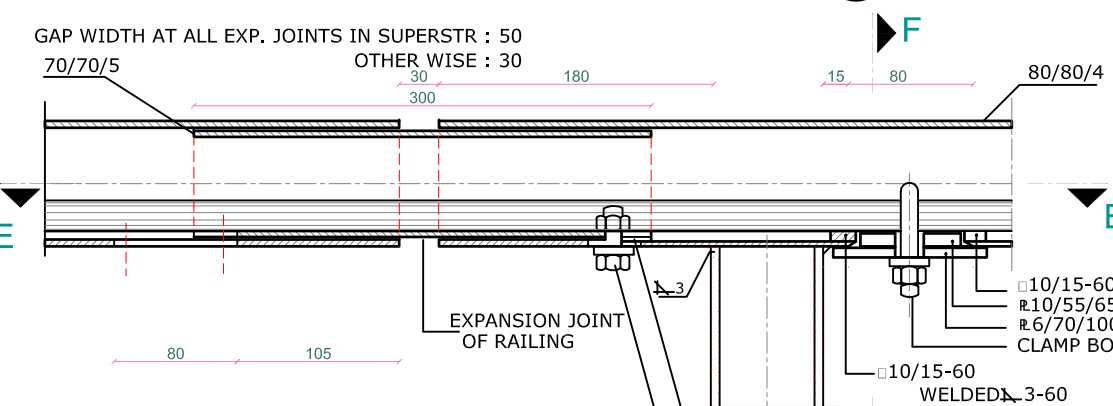
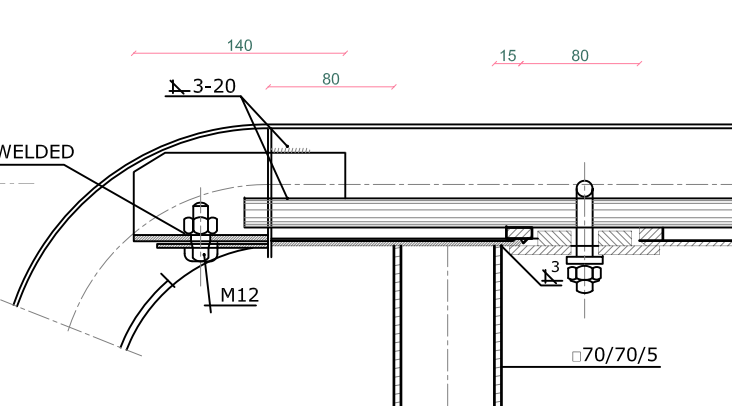
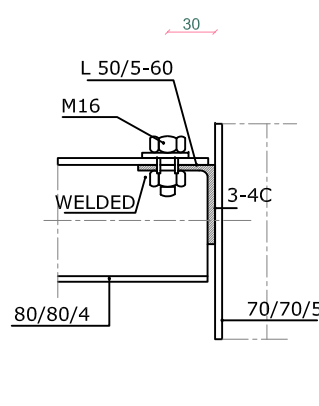
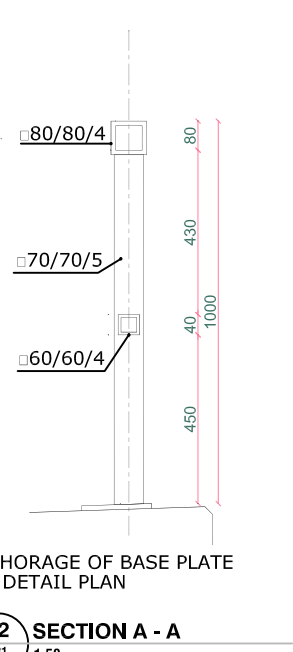
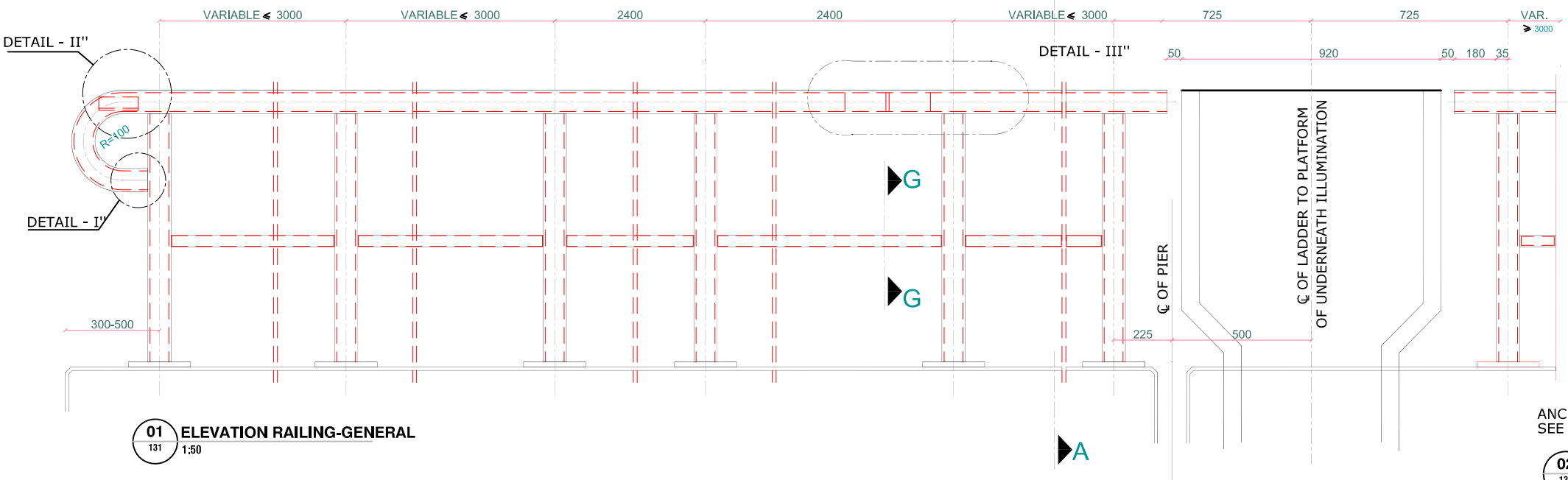
DATE:
MARCH 2017

United Nations
Development Programme

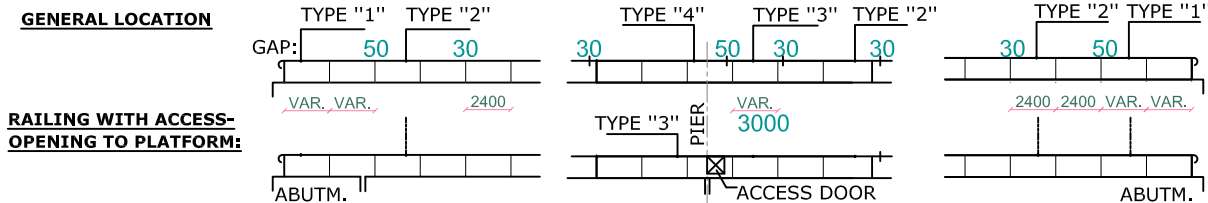
NUDHUM ALBENAA
CONSULTANCY



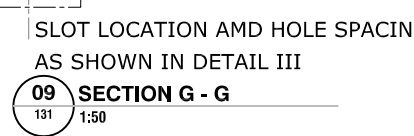
REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



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.



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

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:
**PALESTINAN 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:
RAILING

DRAWING NO.
ST.131

SCALE:
1:50

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

DATE:
APRIL 2017

UNITED NATIONS
DEVELOPMENT PROGRAMME

NUDHUM ALBENAA
CONSULTANCY

REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



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			

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

PROJECT NAME:

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

LOCATION:
AL-ANBAR - IRAQ



GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:
CIVIL DESIGN

DESIGN BY:
MUHANED SHALLAL

SUPERVISOR:

DRAWING NAME:
ANCHORAGE RAILING POST
AND GUARD RAIL POST

DRAWING NO.
ST. 132

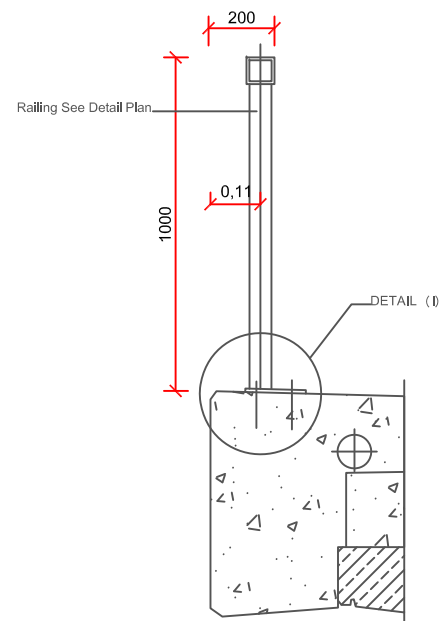
SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

DATE:
APRIL 2017

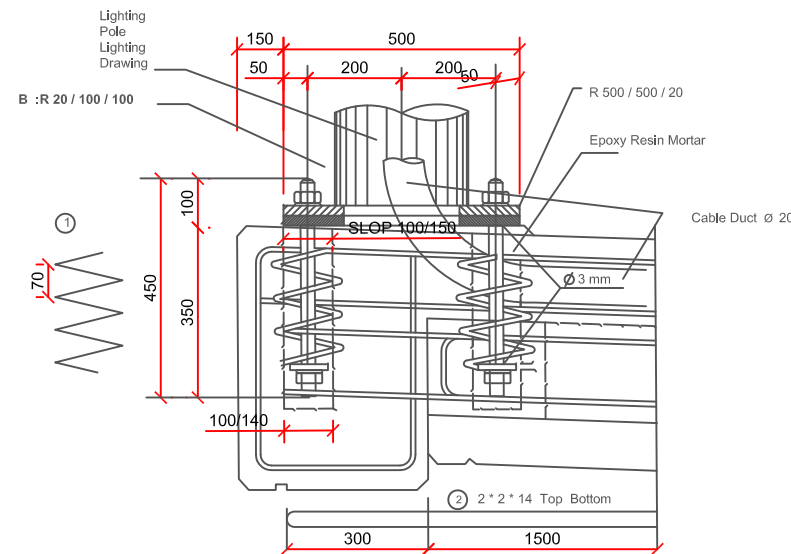
UNITED NATIONS
DEVELOPMENT PROGRAMME



ANCHORAGE RAILING POSTS

CROSS SECTION

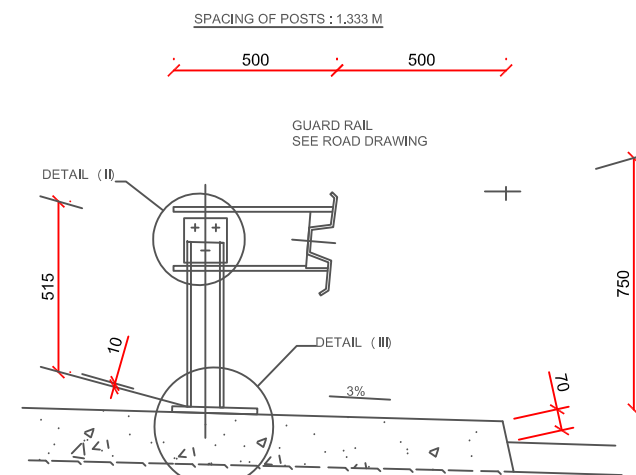
SCALE 1 : 10



ANCHORAGE LIGHTING POLE

NOT TO SCALE

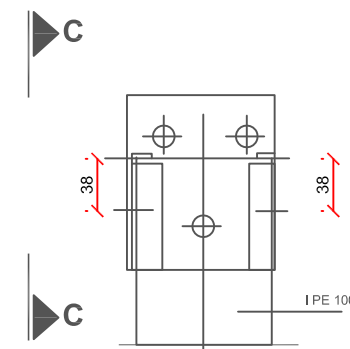
POSITION OF LIGHTING POLES SEE DRG'S OF STREET LIGHTING
MAX. HEIGHT OF LIGHTING POLE : 16.00 M



ANCHORAGE GUARD RAIL POSTS

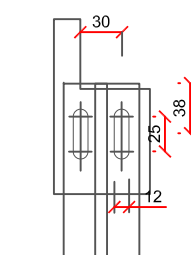
CROSS SECTION

SCALE 1 : 10



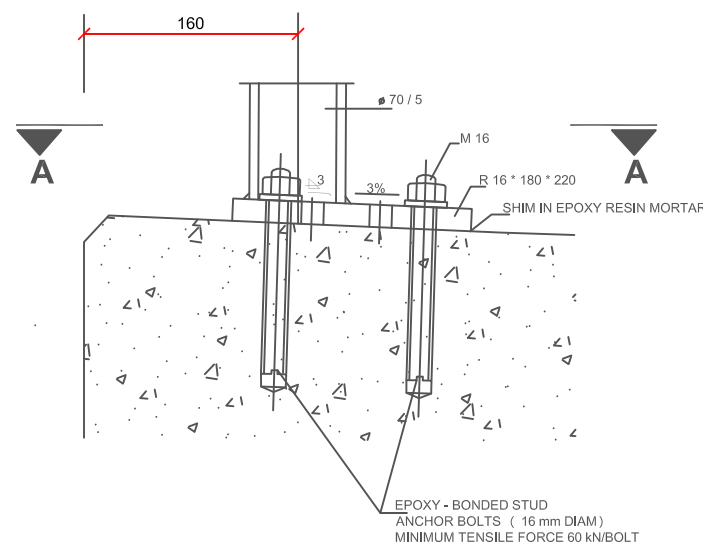
ELEVATION C - C

SCALE 1 : 2.5



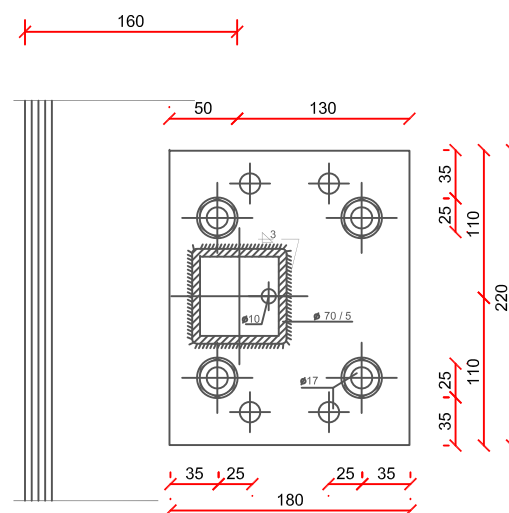
DETAIL "II"

SCALE 1 : 2.5



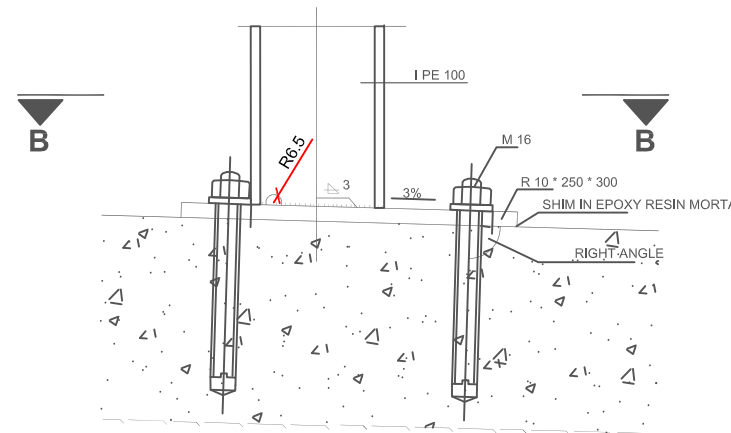
DETAIL (I)

SCALE 1 : 2.5



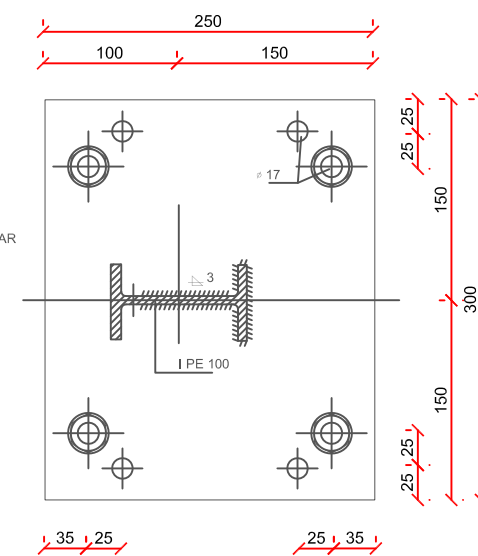
SECTION A-A

SCALE 1 : 2.5



DETAIL (III)

SCALE 1 : 2.5

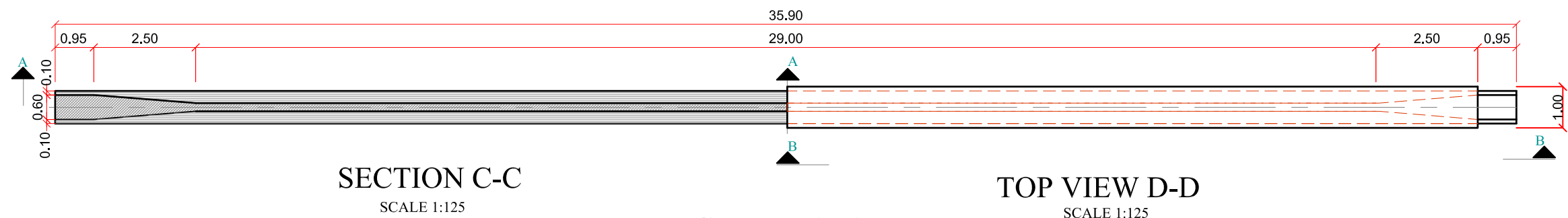
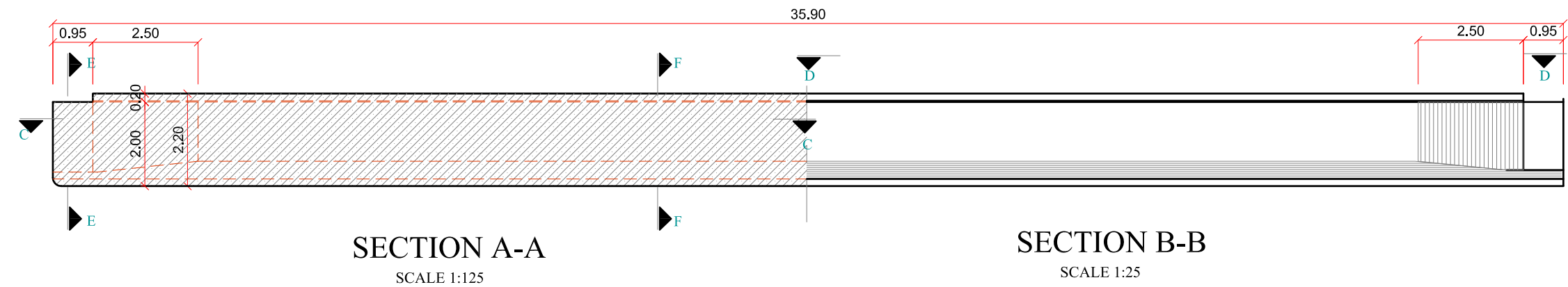


SECTION B - B

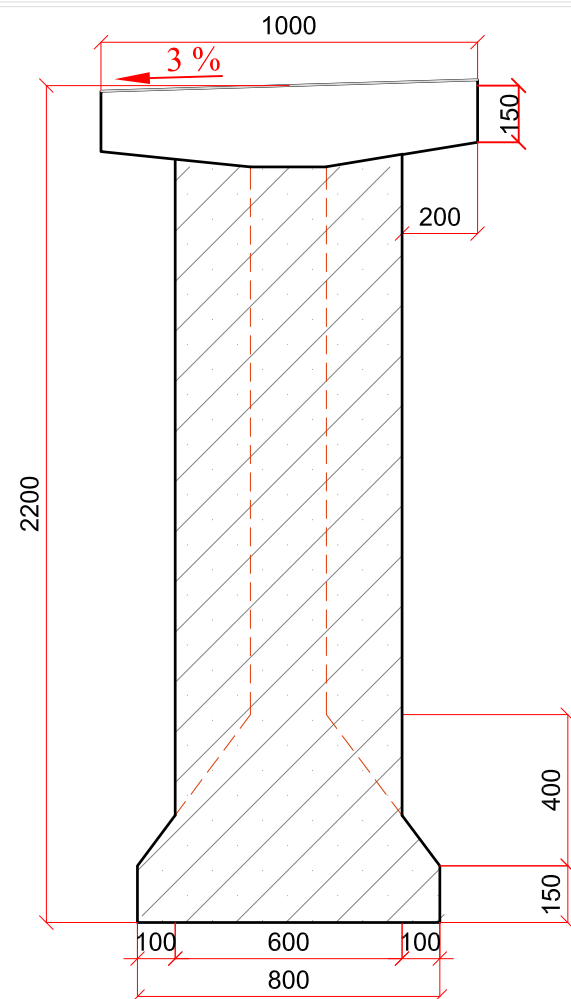
SCALE 1 : 2.5

DORCH CONSULT

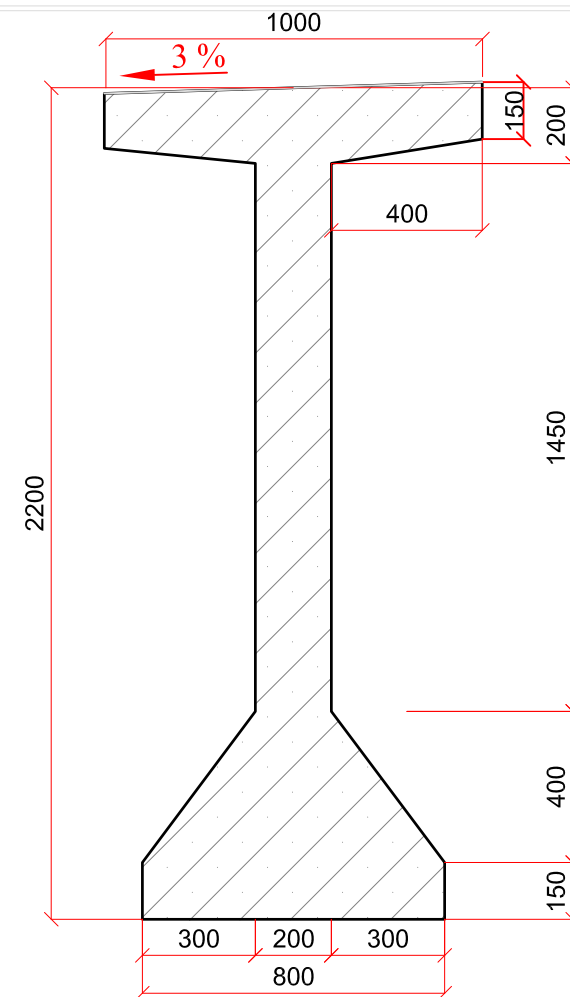
REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



GIRDER 35.9 m



REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



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.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

PROJECT NAME:

**PALESTINAN 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:
PREFABRICATED GIRDER

DRAWING NO.
ST. 133

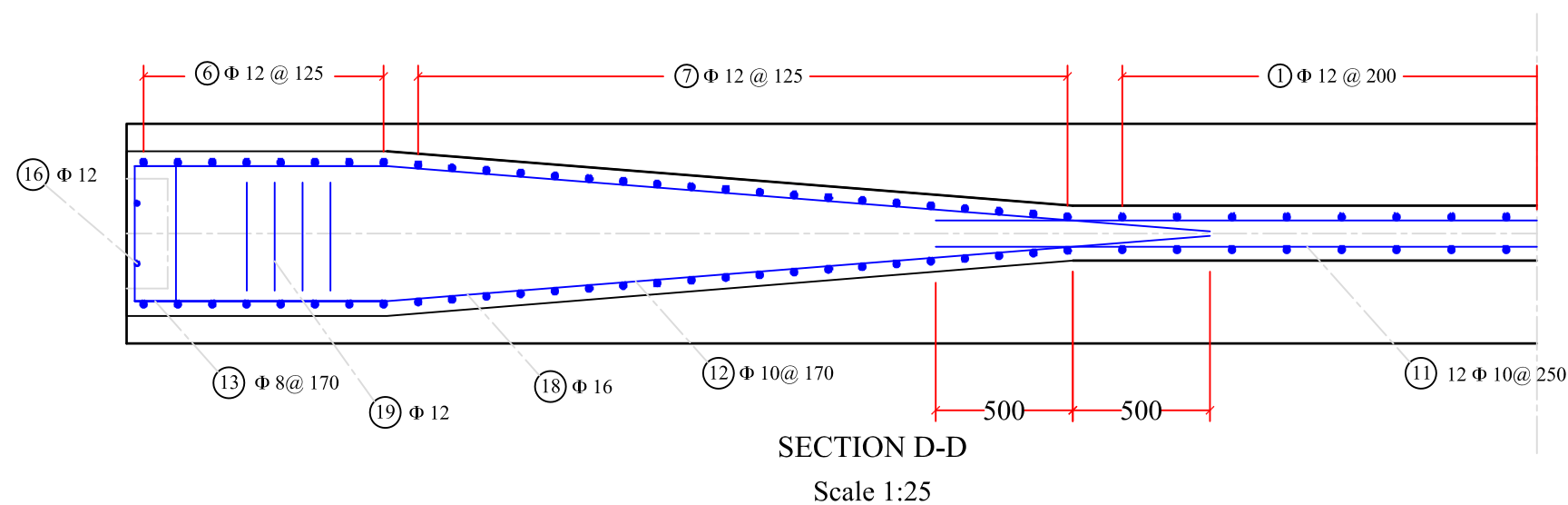
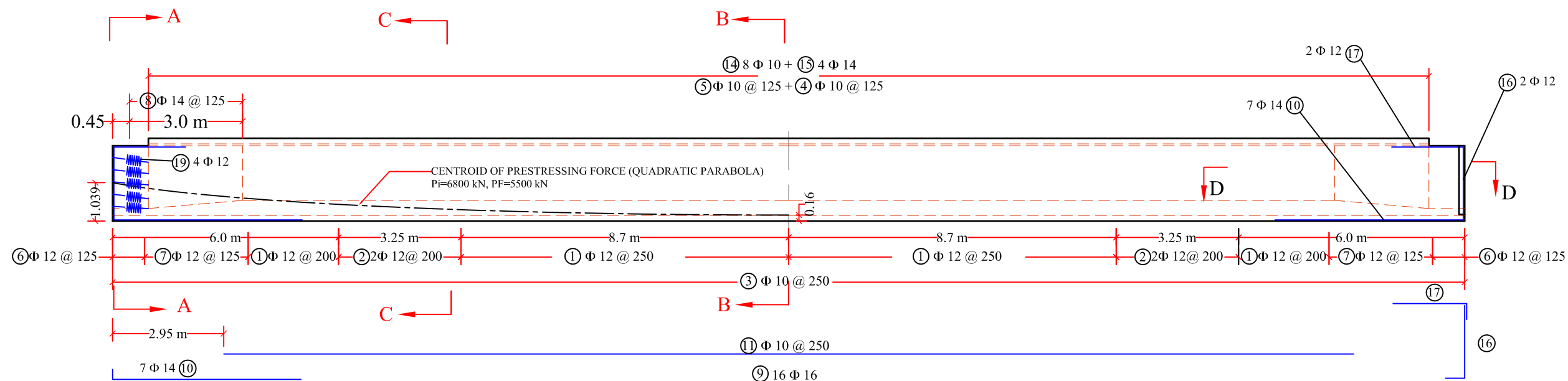
SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

DATE:
MARCH 2017







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.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

PROJECT NAME:
**PALESTINAN 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:
GIRDER REINFORCEMENT

DRAWING NO.
ST. 134

SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

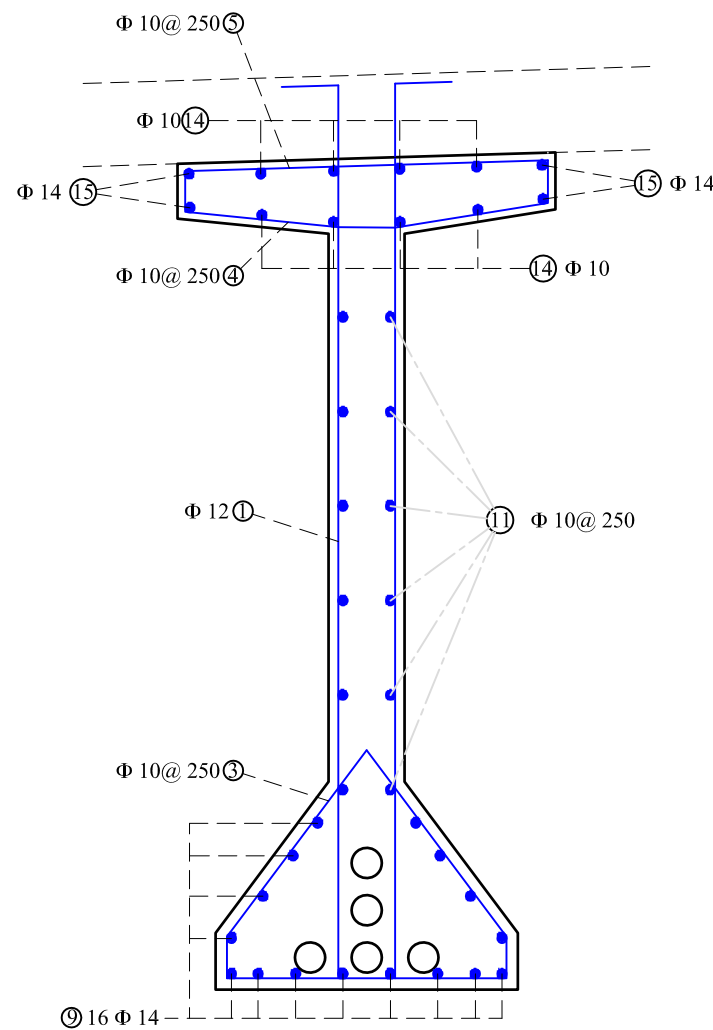
DATE:
MARCH 2017



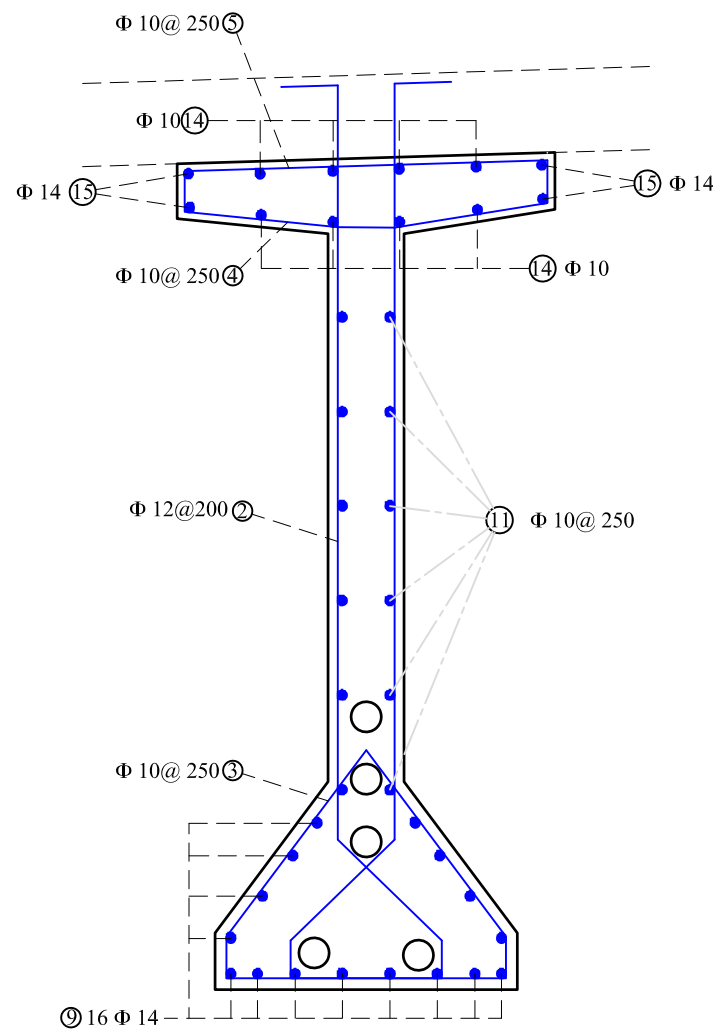
United Nations
Development Programme



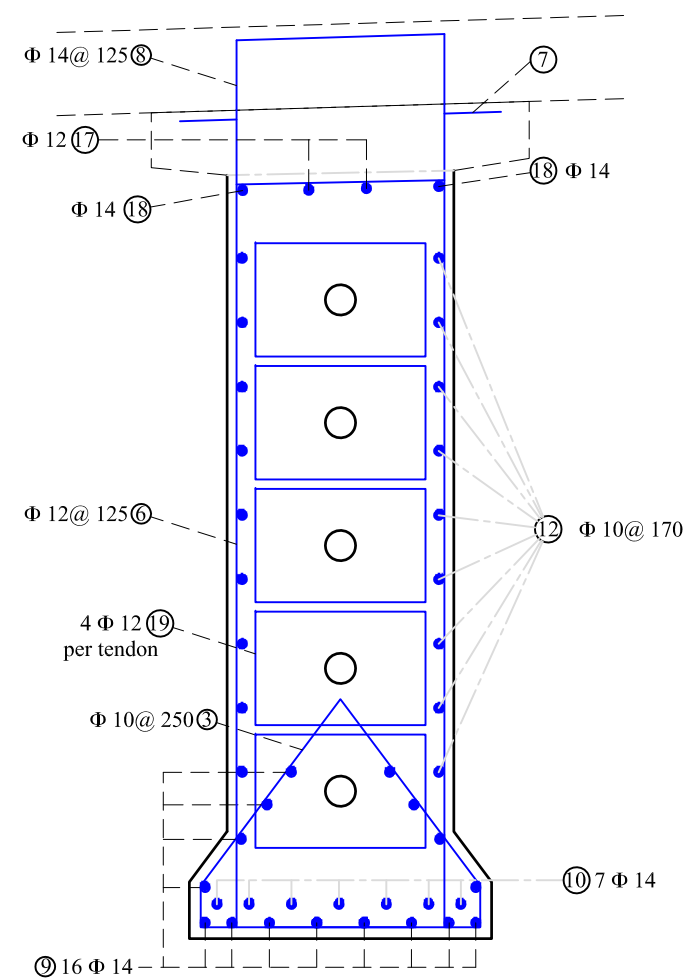
NUDHUM ALBENAA
CONSULTANCY



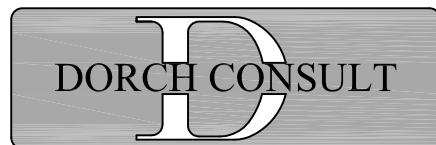
SECTION B-B
Scale 1:20



SECTION C-C
Scale 1:20



SECTION A-A
Scale 1:20



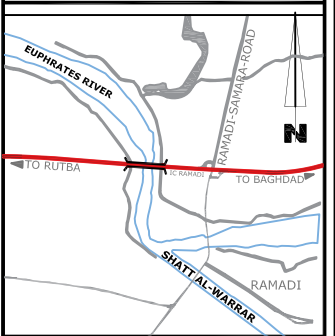
REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI

- NOTES :
- SHRINKAGE EFFECTS THE GIRDERS SHALL BE STRESSED IN TWO STAGES AS FOLLOWS:
1 ST STAGE : 30 % OF TOTAL PRESTRESSING AFTER CONCRETE HAS ATTAINED A CUBE STRENGTH OF 32 MPa.
2 ND STAGE : 100 % OF TOTAL PRESTRESSING 3MONTHS AFTER CONCRETING WHEN NORMAL CEMENT (CLASS 350F 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 GIRDERS .



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

KEY MAP



NOTES

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

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

PROJECT NAME:

**PALESTINAN 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:
PERSTRESS CABLE DETAILS

DRAWING NO.
ST. 135

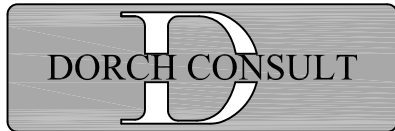
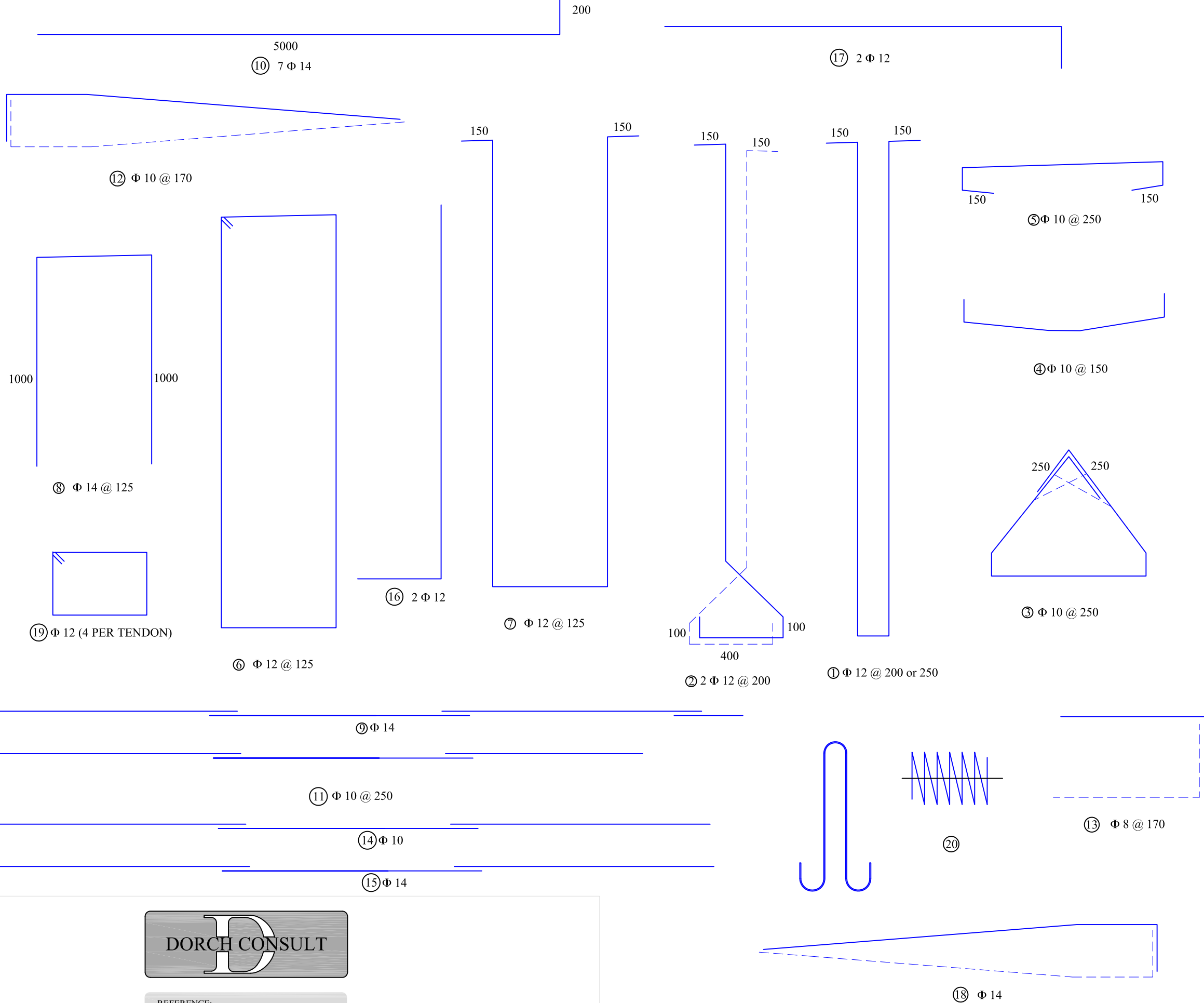
SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

DATE:
MARCH 2017





REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI

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.

REV.	DATE	DESCRIPTION	BY
05			
04			
03			
02			
01			
00			

PROJECT NAME:

**PALESTINAN 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:

GIRDER REINFORCEMENT DETAIL

DRAWING NO.

ST. 136

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

PROJECT NO:

IQ-17-001

DATE:

MARCH 2017

United Nations
Development Programme

NUDHUM ALBENAA
CONSULTANCY

REPAIR COLUMN AT PIER No. 1 AND No. 2

- 1.Remove the weak concrete cover.
- 2.Adding secondary steel connectors into the existing column by making holes 15 or 16 mm and 250 mm depth.
- 3.Clean the holes by compressed air.
- 4.Filling the holes with an appropriate epoxy material according to ASTM C881 specification or BS EN12004 specification (as Kemapoxy 165 or other material, the material shell be subjected to the approval of the supervision engineer) then inserting the connectors into the holes.
- 5.Adding vertical steel connectors to fasten the vertical steel bars of the jacket following the same procedure in step 2, 3 and 4.

• Adding major steel connectors into the existing column by making holes 30 mm and 250 mm depth.

• Clean the holes by compressed air.

• Filling the holes with an appropriate epoxy material according to ASTM C881 specification or BS EN12004 specification (as Kemapoxy 165 or other material, the material shell be subjected to the approval of the supervision engineer) then inserting the steel into the holes.
- 6.Installing the new stirrups of the jacket according to the designed dimensions and diameters.
- 7.Clean concrete surface (Do not use water to clean).
- 8.Paint the surface of old concrete appropriate resin epoxy material according to ASTM C882 78 (83) Type II Grade II Class C specification (as Kemapoxy 104 or other material, the material shell be subjected to the approval of the supervision engineer)
- 9.Coating the existing column with an appropriate epoxy material that would guarantee the bond between the old and new concrete.
10. Pouring the concrete of the jacket before the epoxy material dries. The concrete used should be of low shrinkage with cement content 400 kg/m3 and consists additional materials addicrete BVS according to ASTM C494 type G Specification or using addicrete BVF according to ASTM C494 type F Specification, the addicrete content not less than 6 kg/m3.

REPAIR COLUMN AT PIER No. 7

- There are two steps for repair the column
- I:- Using prepacked Aggregate Concrete in the damage zone.
- II:- Using concrete jacket for the column according to design drawing.
- I:- Prepacked Aggregate Concrete in the damage zone.
1. Removing the defective concrete entirely without damaging the reinforcement or stirrups.

2. Filling the space with grains of aggregate of one size 20 mm that it fills the space completely.

3. The cementitious mortars (expanding for grout as ADDIGROUT) are injected in the spaces between the aggregates from the lower point to upper one with air being outlet.

4. After ensuring that the injected mortar fills all the spaces, the framework is removed, then start next step (use concrete jacket for the column).
- II:- Concrete jacket for the column
1. Remove the weak concrete cover.

2. Adding secondary steel connectors into the existing column by making holes 15 or 16 mm and 250 mm depth.

3. Clean the holes by compressed air.

4. Filling the holes with an appropriate epoxy material according to ASTM C881 specification or BS EN12004 specification (as Kemapoxy 165 or other material, the material shell be subjected to the approval of the supervision engineer) then inserting the connectors into the holes.

5. Adding vertical steel connectors to fasten the vertical steel bars of the jacket following the same procedure in step 2, 3 and 4.

• Adding major steel connectors (bar No. 1) into the existing column by making holes 30 mm and 250 mm depth (below in the pile and above in the cross beam).

• Clean the holes by compressed air.


• Filling the holes with an appropriate epoxy material according to ASTM C881 specification or BS EN12004 specification (as Kemapoxy 165 or other material, the material shell be subjected to the approval of the supervision engineer) then inserting the steel into the holes.

6. Installing the new stirrups (bar No. 2) of the jacket according to the designed dimensions and diameters.

7. Clean concrete surface (Do not use water to clean).

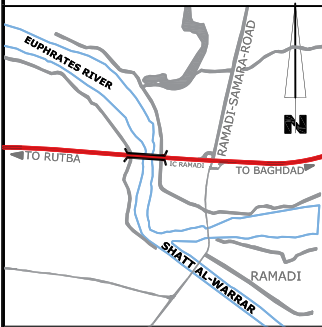
8. Paint the surface of old concrete appropriate resin epoxy material according to ASTM C882 78 (83) Type II Grade II Class C specification (as Kemapoxy 104 or other material, the material shell be subjected to the approval of the supervision engineer)

9. Coating the existing column with an appropriate epoxy material that would guarantee the bond between the old and new concrete.

10. Pouring the concrete of the jacket before the epoxy material dries. The concrete used should be of low shrinkage with cement content 400 kg/m3 and consists additional materials addicrete BVS according to ASTM C494 type G Specification or using addicrete BVF according to ASTM C494 type F Specification, the addicrete content not less than 6 kg/m3.
- 

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.

05			
04			
03			
02			
01			
00			
REV.	DATE	DESCRIPTION	BY


PROJECT NAME:

PALESTINAN 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:

COLUMNS REPAIR

DRAWING NO.

ST.137

SCALE:

AS SHOWING

DRAWN BY:


MUHANED SHALLAL

PROJECT NO:


IQ-17-001

DATE:

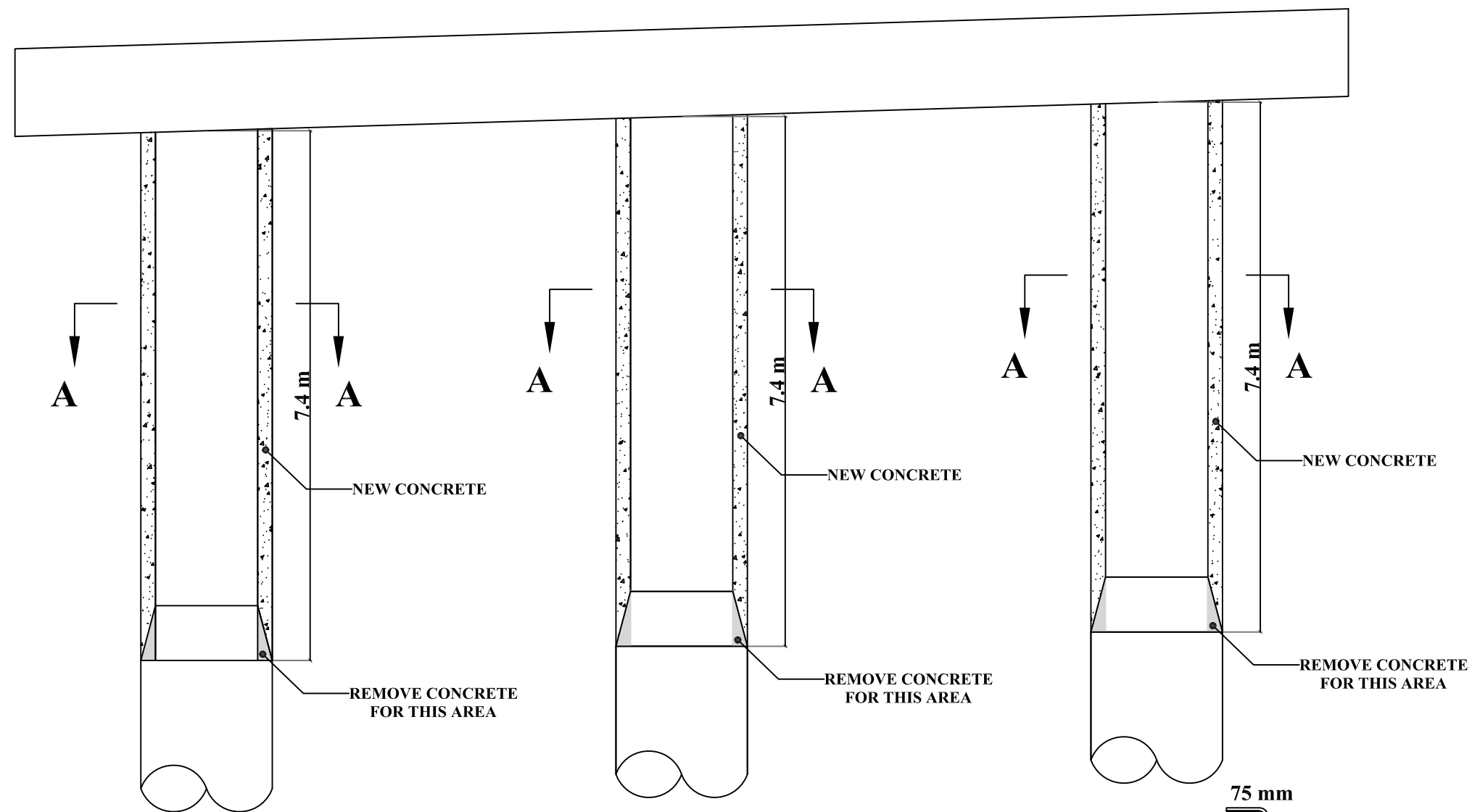
MARCH 2017



United Nations
Development Programme

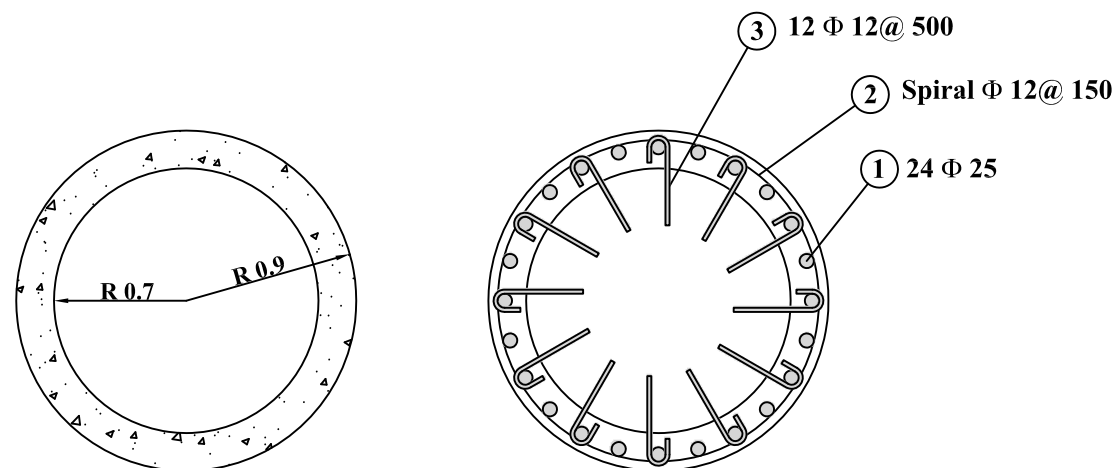


NUDHUM ALBENAA
CONSULTANCY



ELEVATION

Scale 1:75



Section A-A

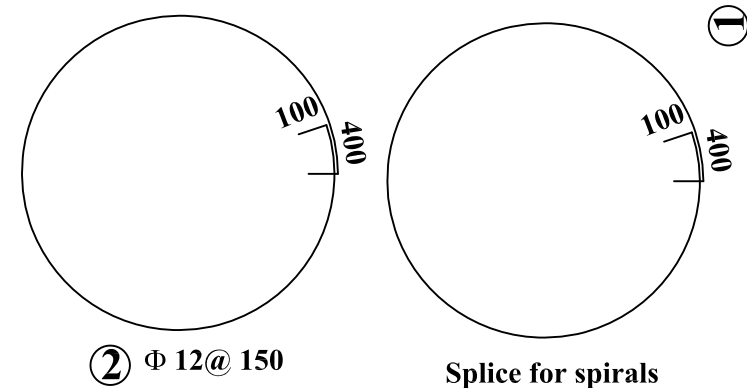
Scale 1:40

Section A-A

Scale 1:40

**PIER No. 1
NORTHERN AND SOUTHERN
BRIDGES**

③ 12 Φ 12@ 500
250 mm embedded in old column



② Φ 12@ 150

Splice for spirals

① 24 Φ 25

7.4 m + 0.25 embedded in cross
beam + 0.25 embedded in pile.

Minimum concrete strength is 35 MPa.

50 mm concrete cover



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:

**PALESTINAN 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:

PIER REINFORCEMENT 1

DRAWING NO.

ST.138

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

PROJECT NO:

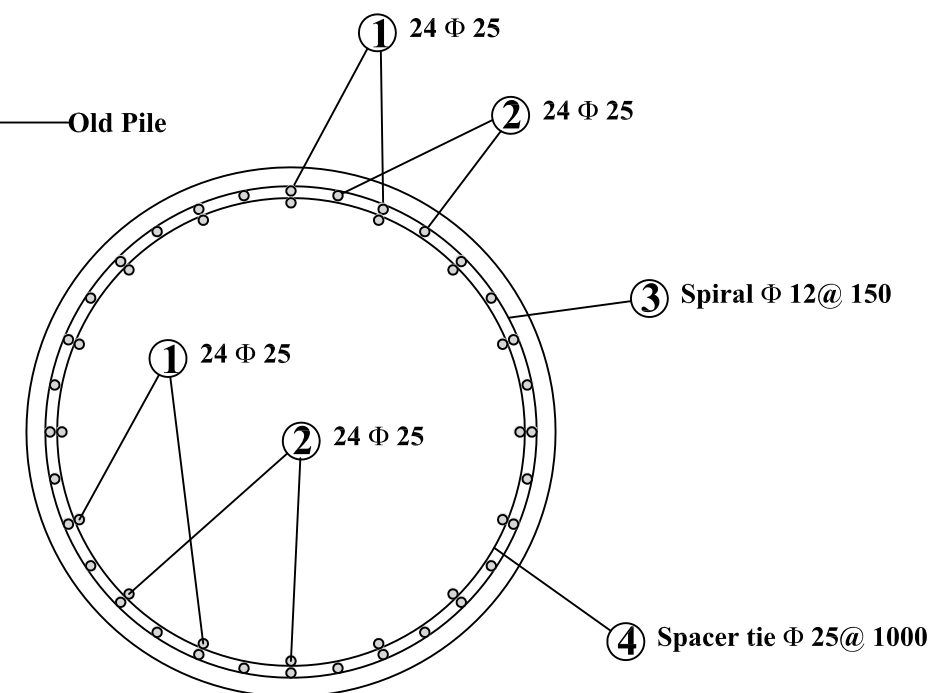
IQ-17-001

DATE:

MARCH 2017



PIER No. 13
FOR NORTHERN AND SOUTHERN



R. L. = Removing Level = remove all columns parts to level -6.65 m under cross beam

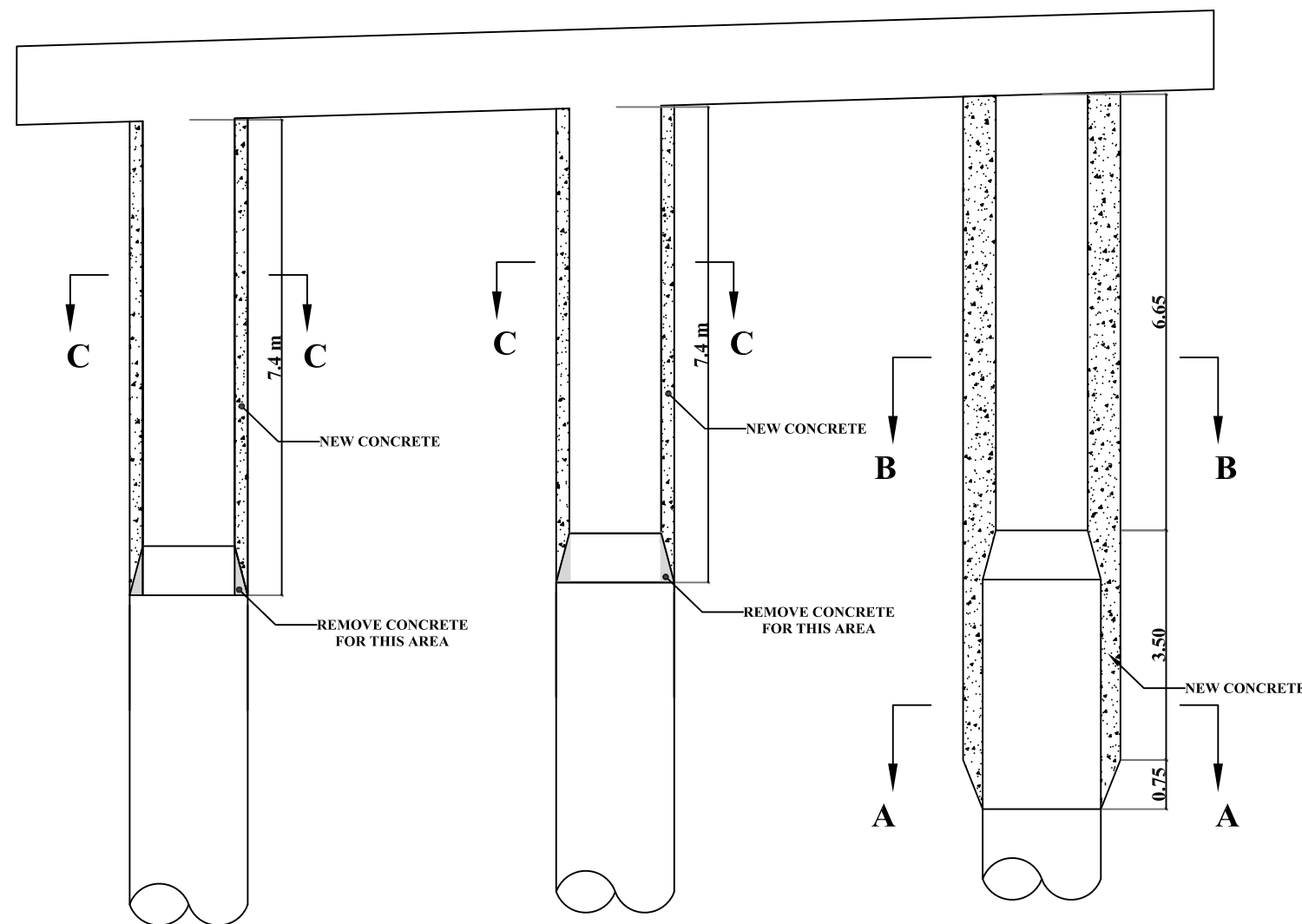


Splice Arrangement And Minimum Lap Lengths For Main Reinforcement

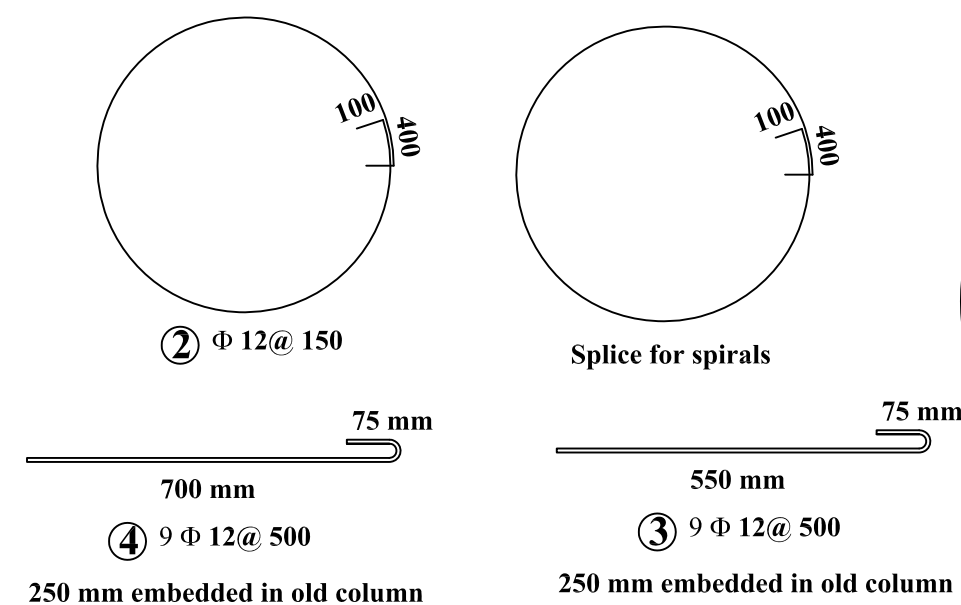
NOTES

- 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.

DATE: MARCH 2017



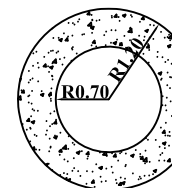
ELEVATION
Scale 1:80



Minimum concrete strength is 35 MPa.
100 mm concrete cover



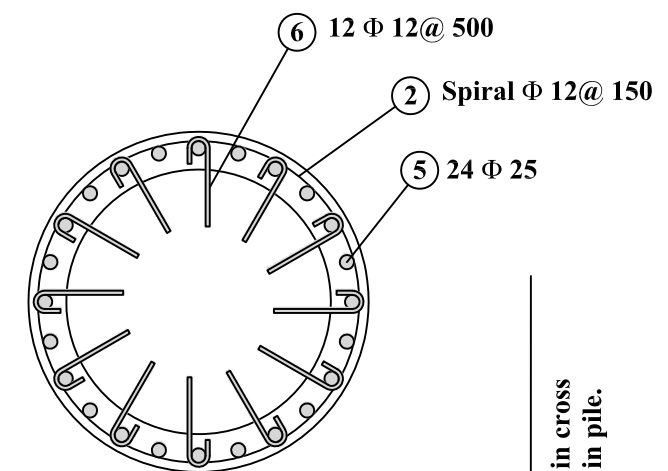
Section C-C
Scale 1:40



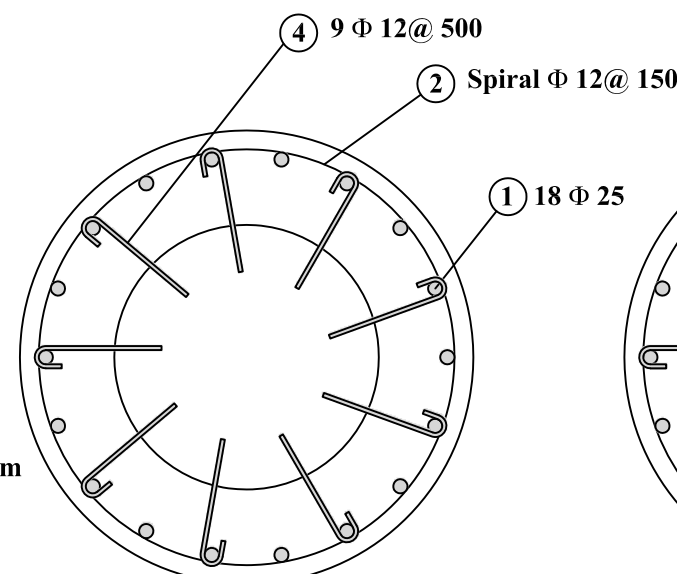
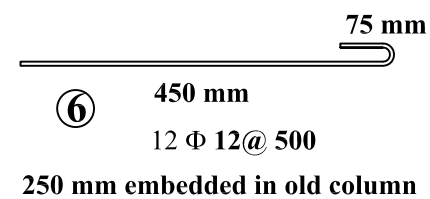
Section B-B
Scale 1:80



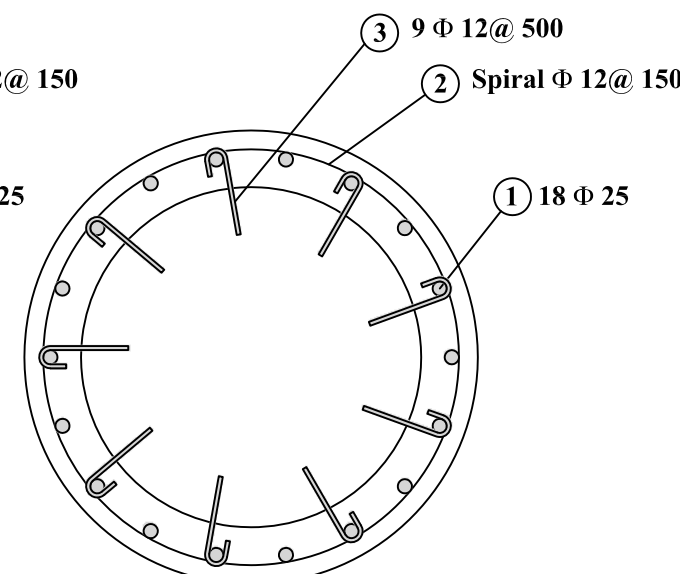
Section A-A
Scale 1:80



Section C-C
Scale 1:40




Section B-B
Scale 1:40




Section A-A
Scale 1:40

7.4 m + 0.25 embedded in cross
beam + 0.25 embedded in pile.



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

KEY MAP



N

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:
**PALESTINAN 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:
REPAIRING PIER No.2


DRAWING NO.
ST.140

SCALE:
AS SHOWING


DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

DATE:
MARCH 2017

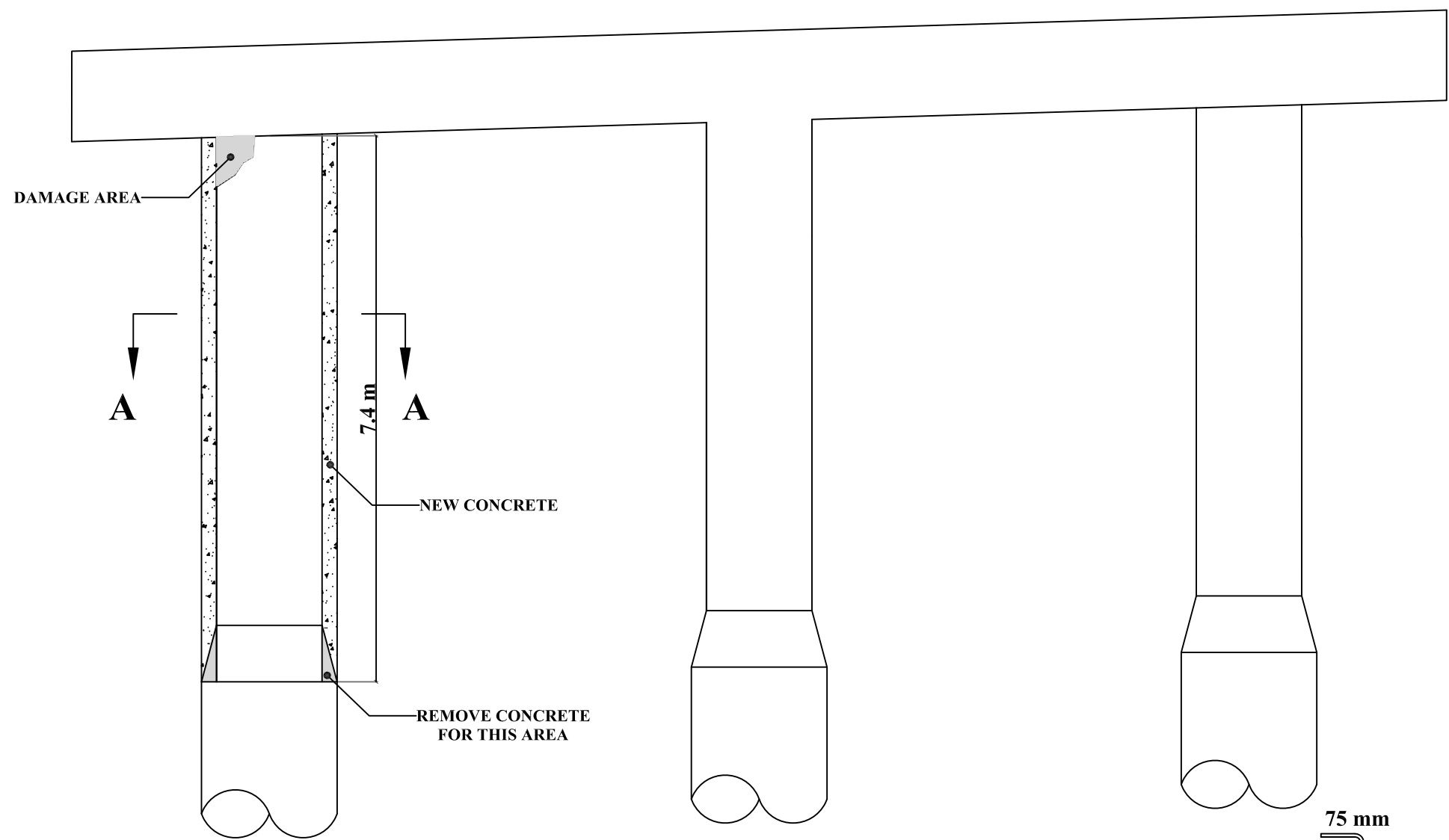


United Nations
Development Programme



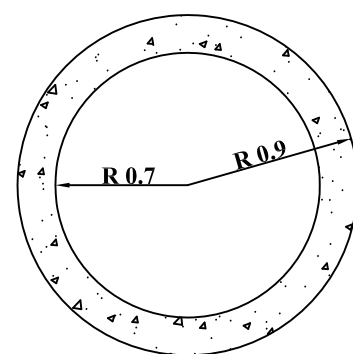
NUDHUM ALBENAA
CONSULTANCY

PIER No. 2 FOR SOUTHERN BRIDGES



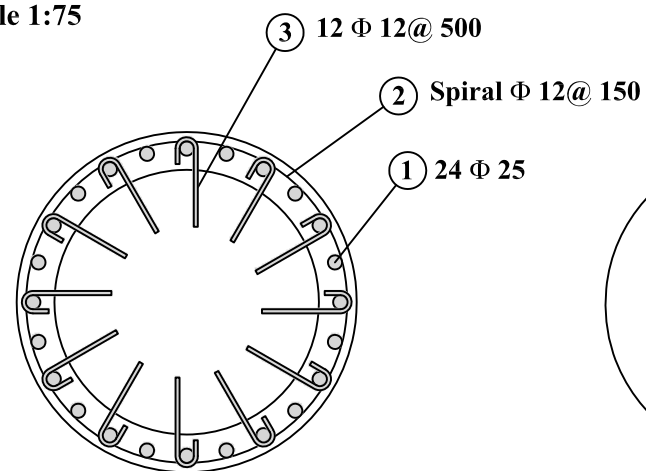
ELEVATION

Scale 1:75



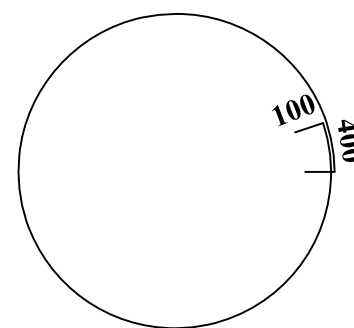
Section A-A

Scale 1:40

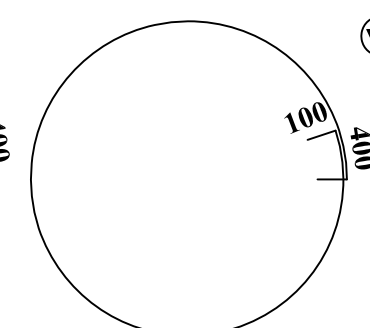


Section A-A

Scale 1:40



② Φ 12@ 150



Splice for spirals

③ 12 Φ 12@ 500
250 mm embedded in old column

① 24 Φ 25

7.4 m + 0.25 embedded in cross
beam + 0.25 embedded in pile.

Minimum concrete strength is 35 MPa.

50 mm concrete cover

PIER No. 7 FOR NORTHERN BRIDGES



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:

PALESTINAN 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:

REPAIRING PIER No.7

DRAWING NO.

ST.141

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

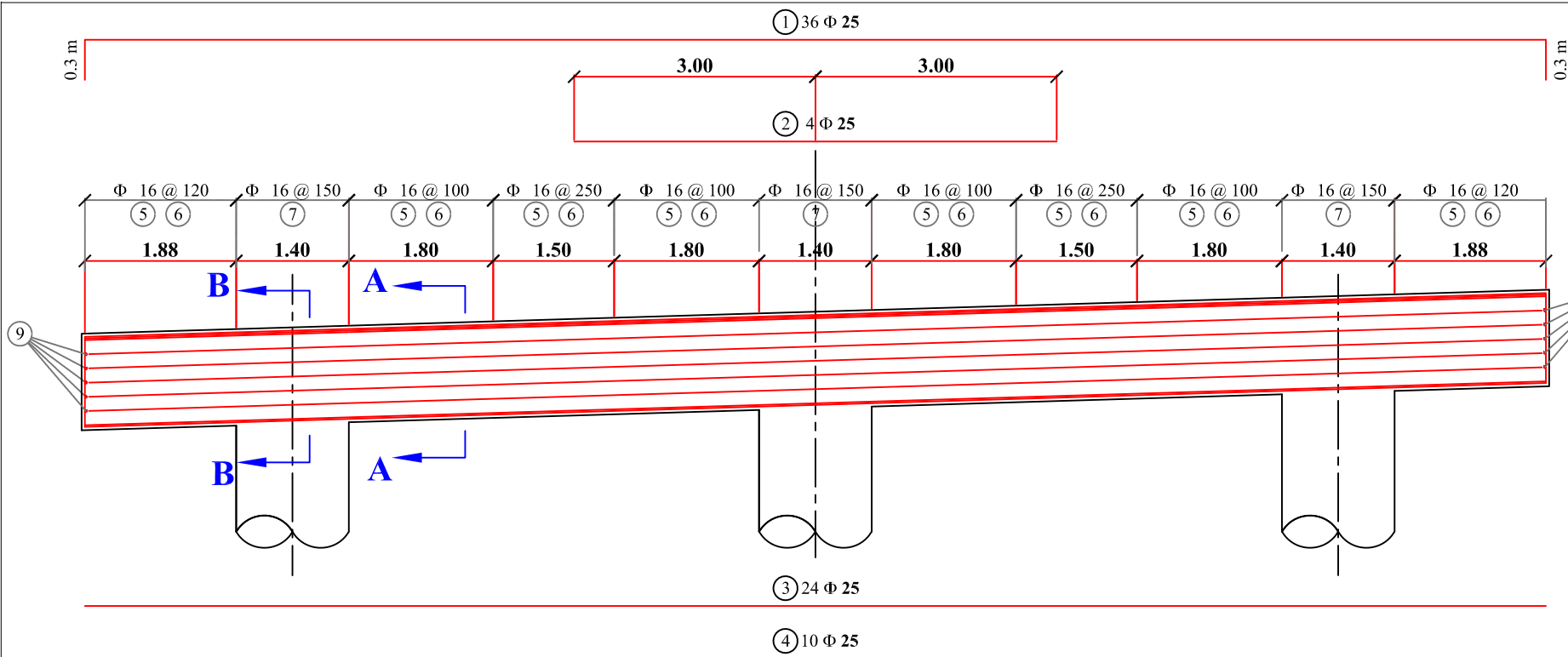
PROJECT NO:

IQ-17-001

DATE:

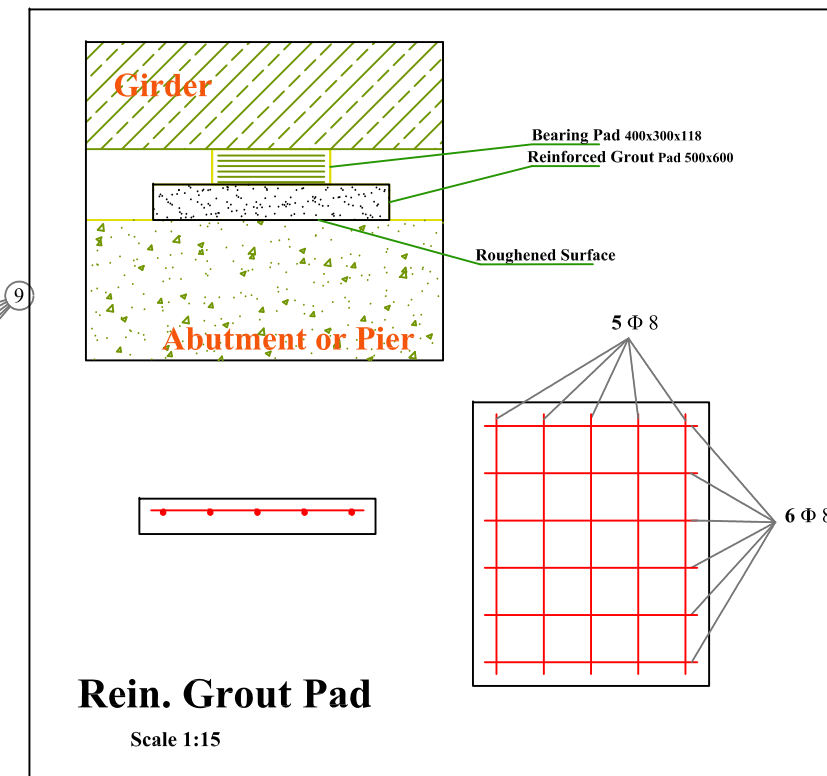
MARCH 2017





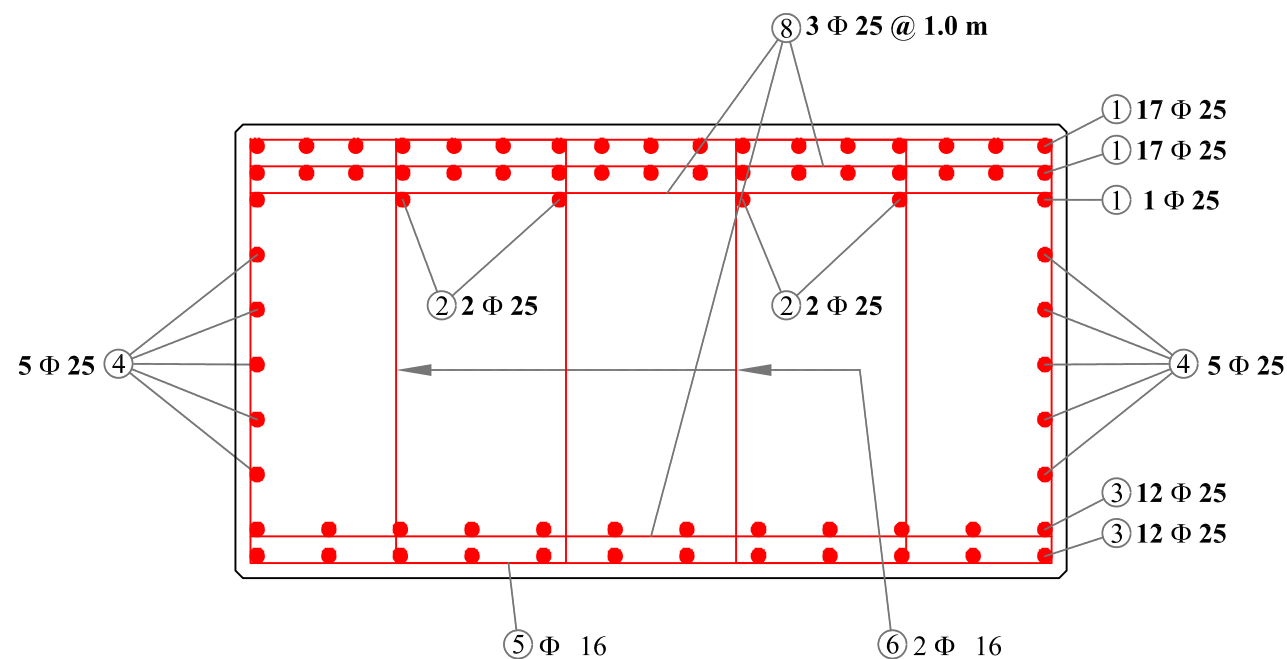
Longitudinal Section

Scale 1:80



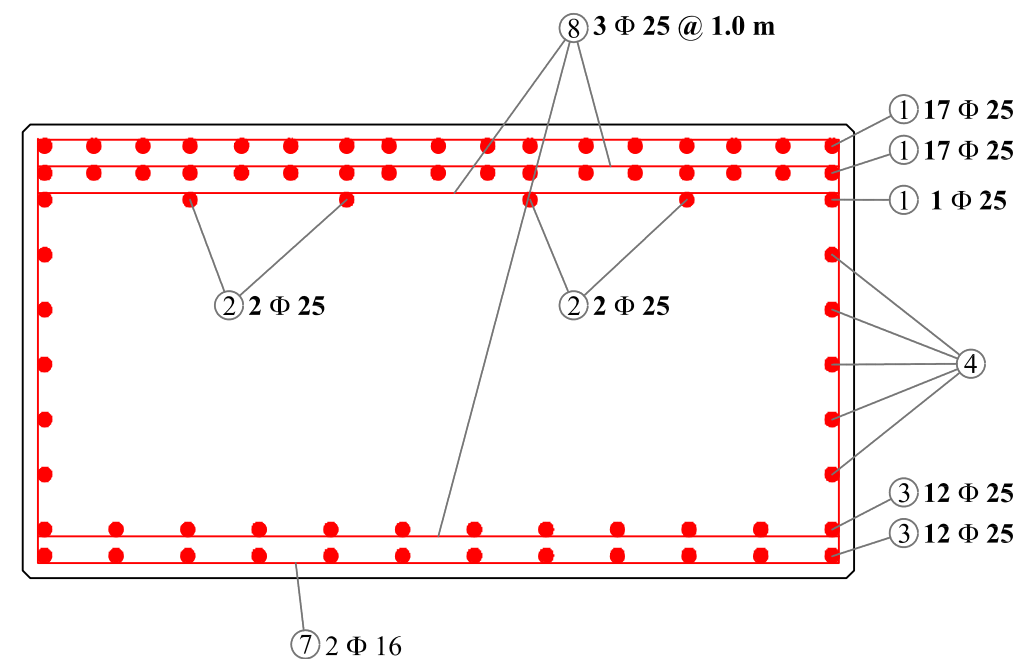
Rein. Grout Pad

Scale 1:15



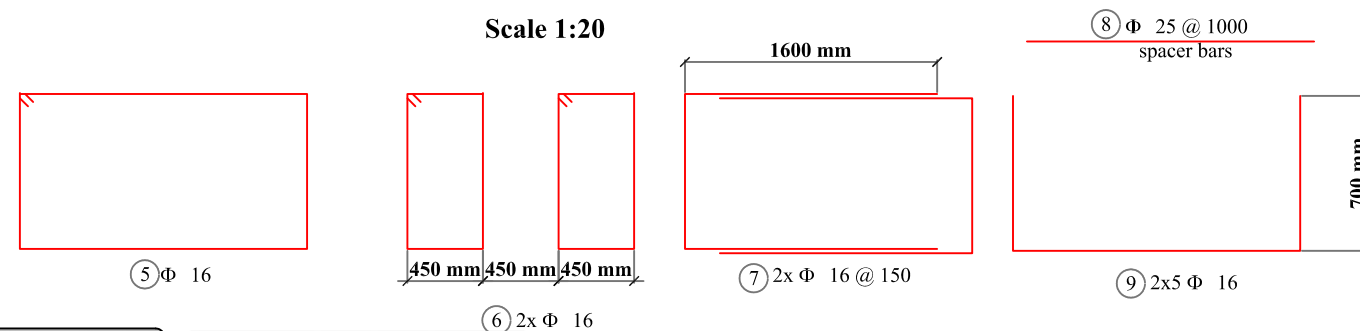
Section A-A

Scale 1:20



Section B-B

Scale 1:20



**Minimum concrete strength is 32 MPa.
40 mm concrete cover**

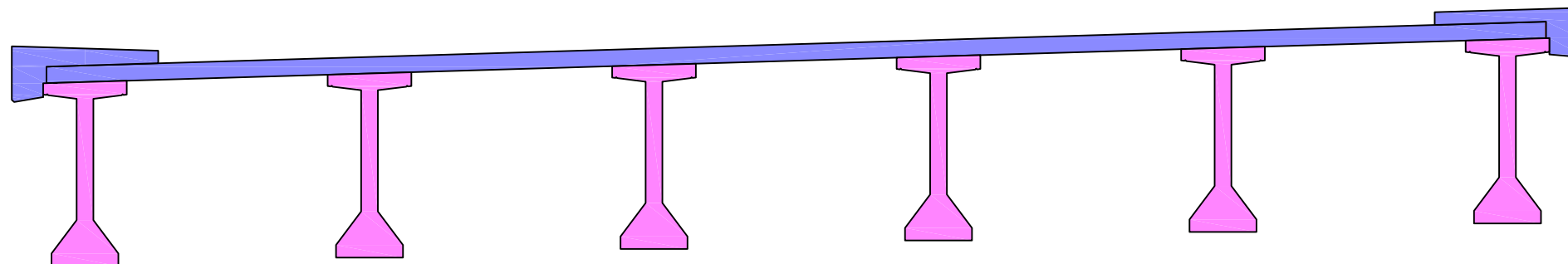
**CROSS BEAM OF PIER No. 13
FOR NORTHERN AND SOUTHERN BRIDGES
AND PIER No. 6 FOR NORTHERN BRIDGES**

REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI

DORCH CONSULT

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			
PROJECT NAME: PALESTINAN BRIDGE ARCHITECTURAL & CIVIL ENGINEERING DESIGN SERVICES			
LOCATION: AL-ANBAR - IRAQ			
CLIENT: 			
SERVICES NAME: CIVIL DESIGN			
DESIGN BY: MUHANED SHALLAL			
SUPERVISOR:			
DRAWING NAME: CROSS BEAM REIN.			
DRAWING NO. ST.142			
SCALE: AS SHOWING			
DRAWN BY: MUHANED SHALLAL			
PROJECT NO: IQ-17-001			
DATE: MARCH 2017			

NEW DECK SLAB WITH OLD GIRDER

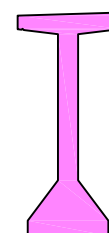


LOCATION

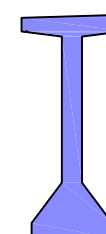
SPAN	SUPPORT	BRIDGES
S2	P01, P02	NORTHERN AND SOUTHERN

CROSS SECTION

Scale 1:75

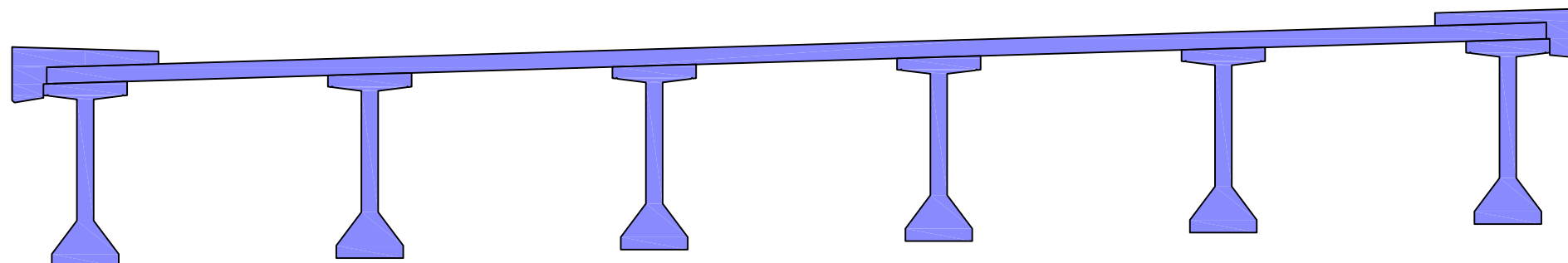


OLD GIRDER



NEW GIRDER

NEW DECK SLAB WITH NEW GIRDER

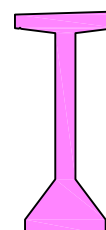


LOCATION

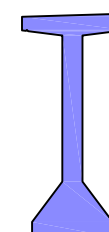
SPAN	SUPPORT	BRIDGES
S1	A01, P01	NORTHERN AND SOUTHERN
S5	P04, P05	SOUTHERN
S6	P05, P06	NORTHERN
S13	P12, P13	NORTHERN AND SOUTHERN
S14	P13, A02	NORTHERN AND SOUTHERN

CROSS SECTION

Scale 1:75



OLD GIRDER

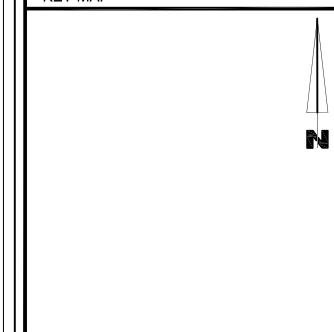


NEW GIRDER



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:

**PALESTINAN 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:

DECK SLAB

DRAWING NO.

ST.143

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

PROJECT NO:

IQ-17-001

DATE:

MARCH 2017





LOCATION

SPAN	SUPPORT	BRIDGES
S7	P06, P07	SOUTHERN

CROSS SECTION

Scale 1:75

OLD GIRDER

NEW GIRDER



LOCATION

SPAN	SUPPORT	BRIDGES
S7	P06, P07	NORTHERN

CROSS SECTION

Scale 1:75

OLD GIRDER

NEW GIRDER



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:

PALESTINAN 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:
DECK SLAB

DRAWING NO.
ST.144

SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

PROJECT NO:
IQ-17-001

DATE:
MARCH 2017



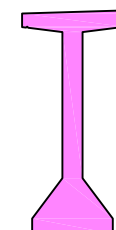


LOCATION

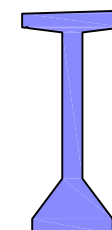
SPAN	SUPPORT	BRIDGES
S3	P02, P03	SOUTHERN

CROSS SECTION

Scale 1:75



OLD GIRDER



NEW GIRDER



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:

**PALESTINAN 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:

DECK SLAB

DRAWING NO.

ST.145

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

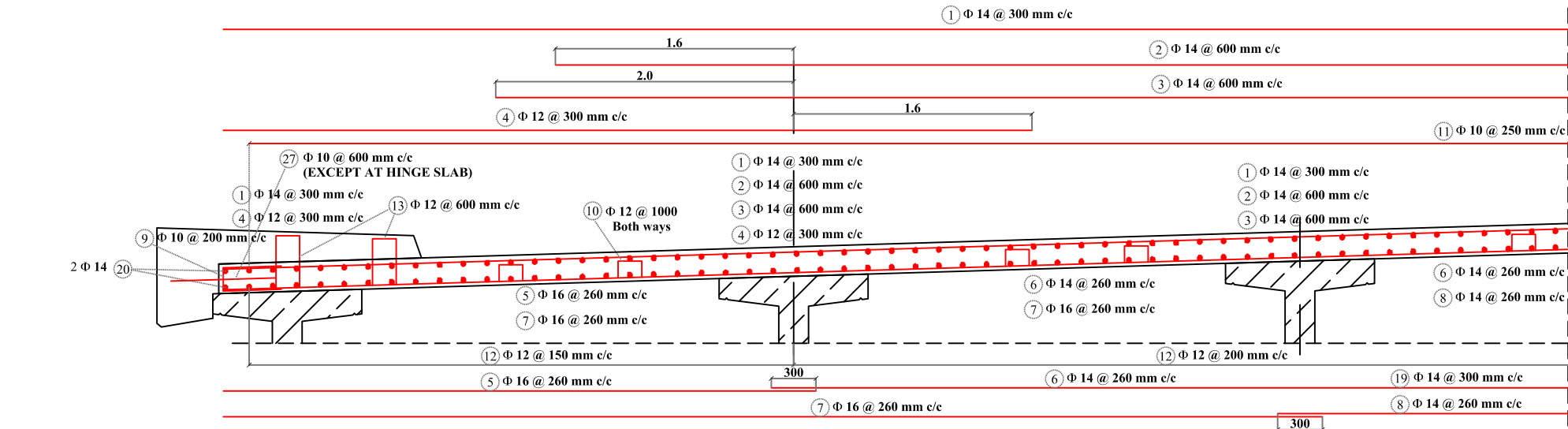
PROJECT NO:

IQ-17-001

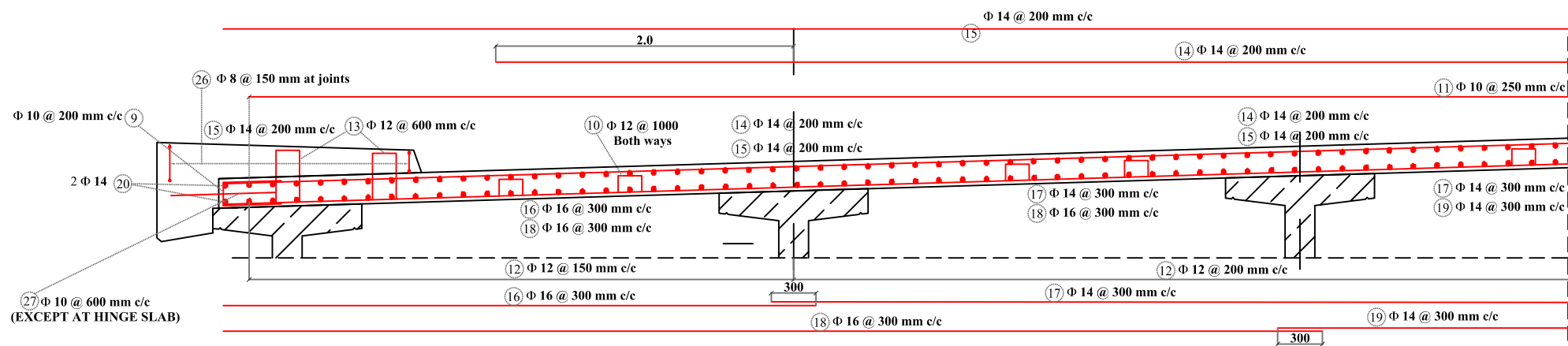
DATE:

MARCH 2017

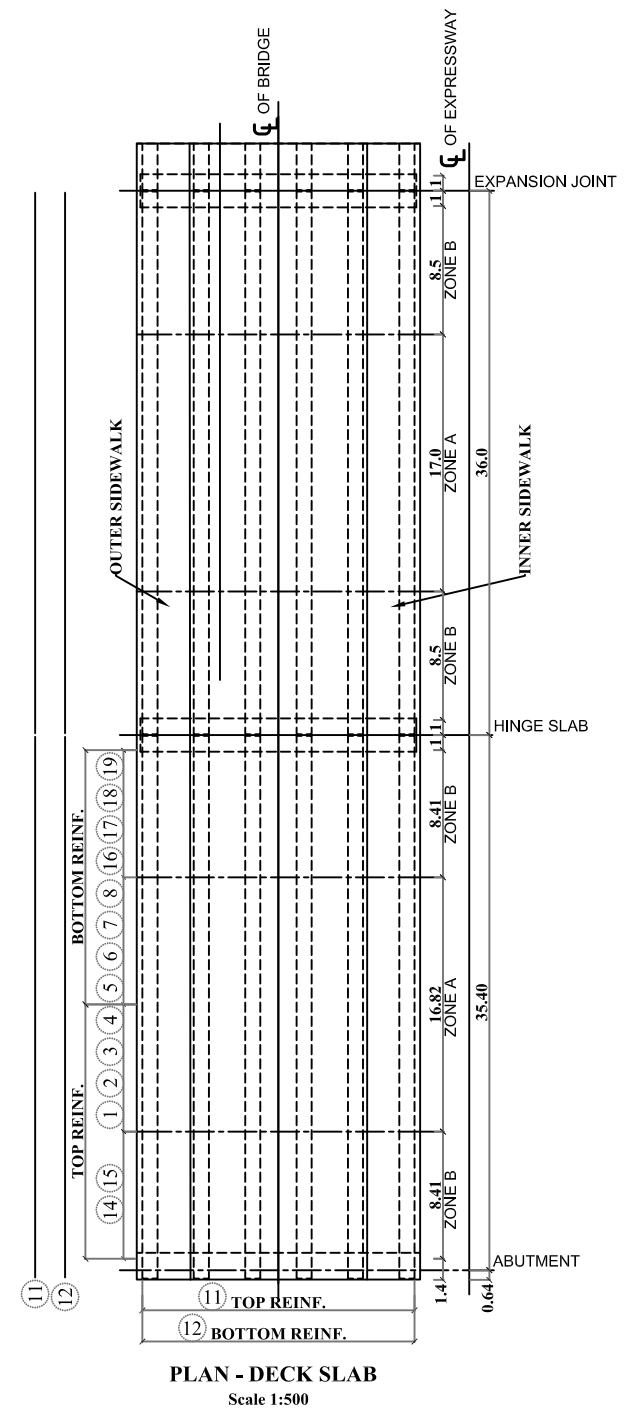
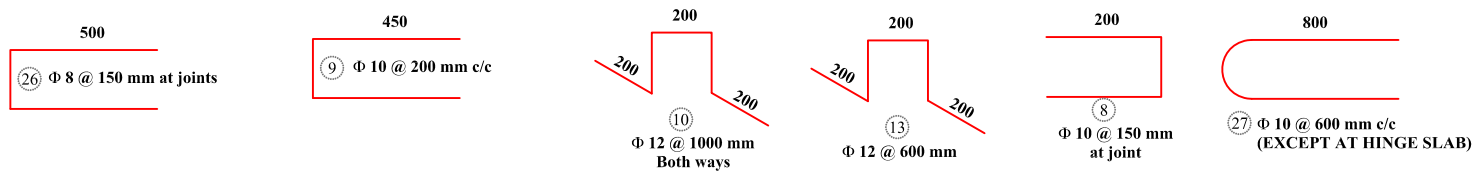




DECK SLAB REIN. (ZONE A)
Scale 1:40



DECK SLAB REIN. (ZONE B)
Scale 1:40



PLAN - DECK SLAB
Scale 1:500



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:

PALESTINAN 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:

DECK SLAB REINFORCEMENT

DRAWING NO.

ST.146

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

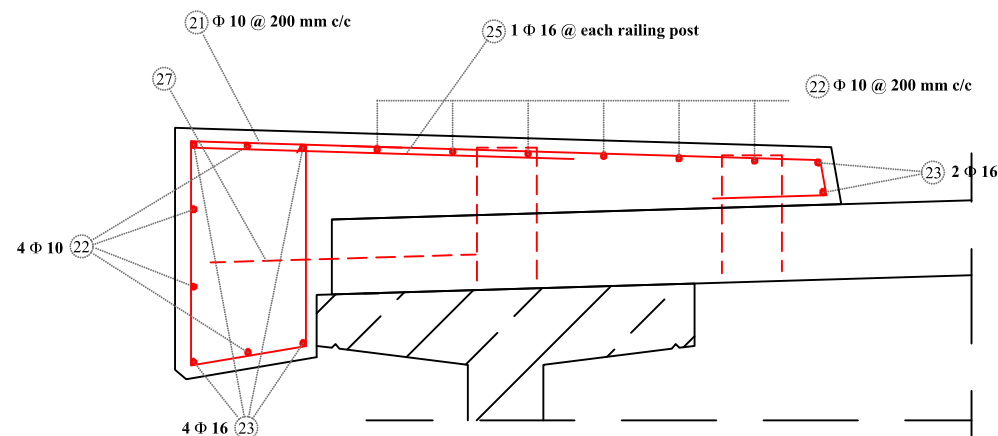
PROJECT NO:

IQ-17-001

DATE:

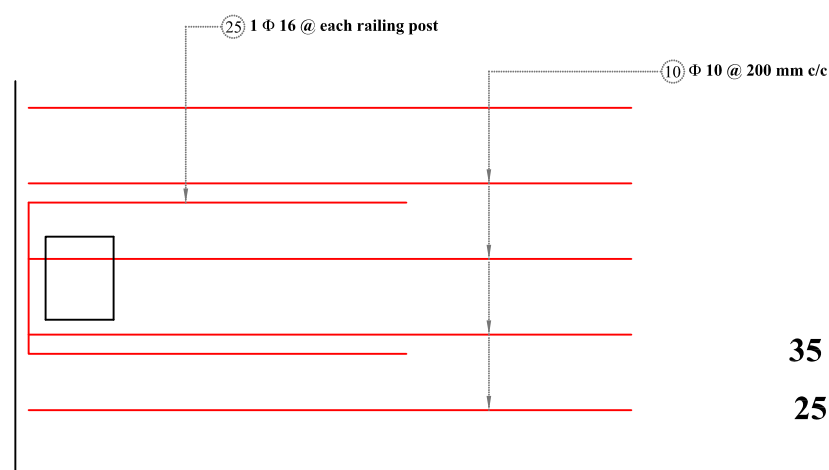
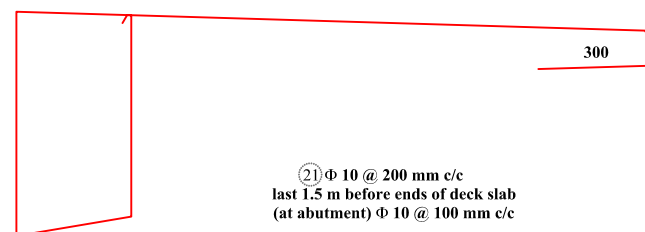
MARCH 2017





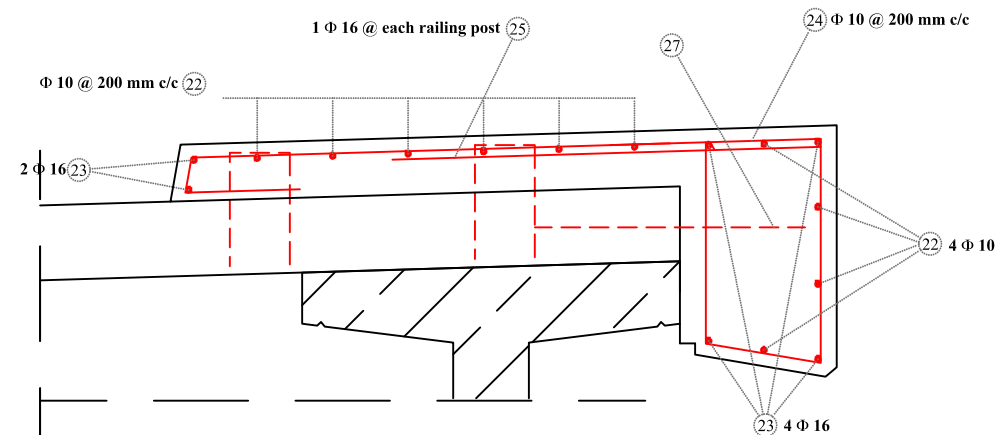
Section of Sidewalk (Left Side)

Scale 1:20



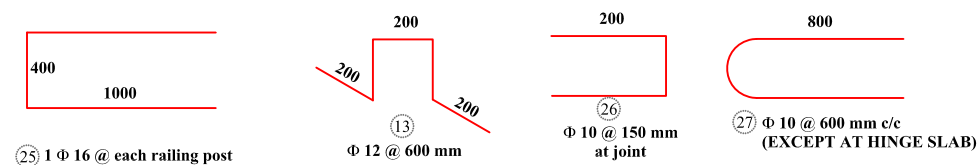
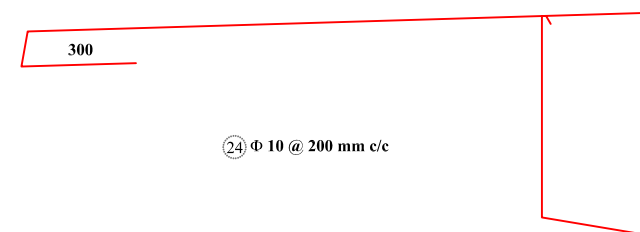
Reinforcement at Railing Post (Top View)

Scale 1:20



Section of Sidewalk (Right Side)

Scale 1:20



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



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:

**PALESTINAN 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:

SIDEWALK REINFORCEMENT

DRAWING NO.

ST.147

SCALE:

AS SHOWING

DRAWN BY:

MUHANED SHALLAL

PROJECT NO:

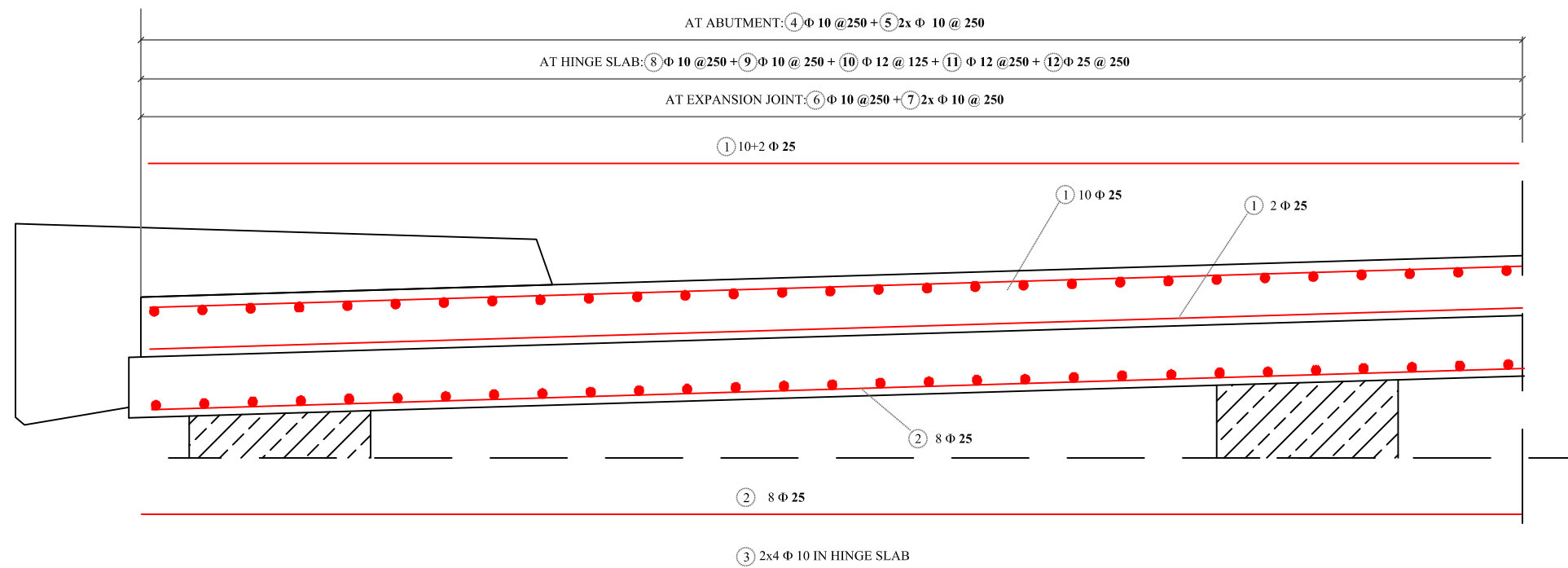
IQ-17-001

DATE:

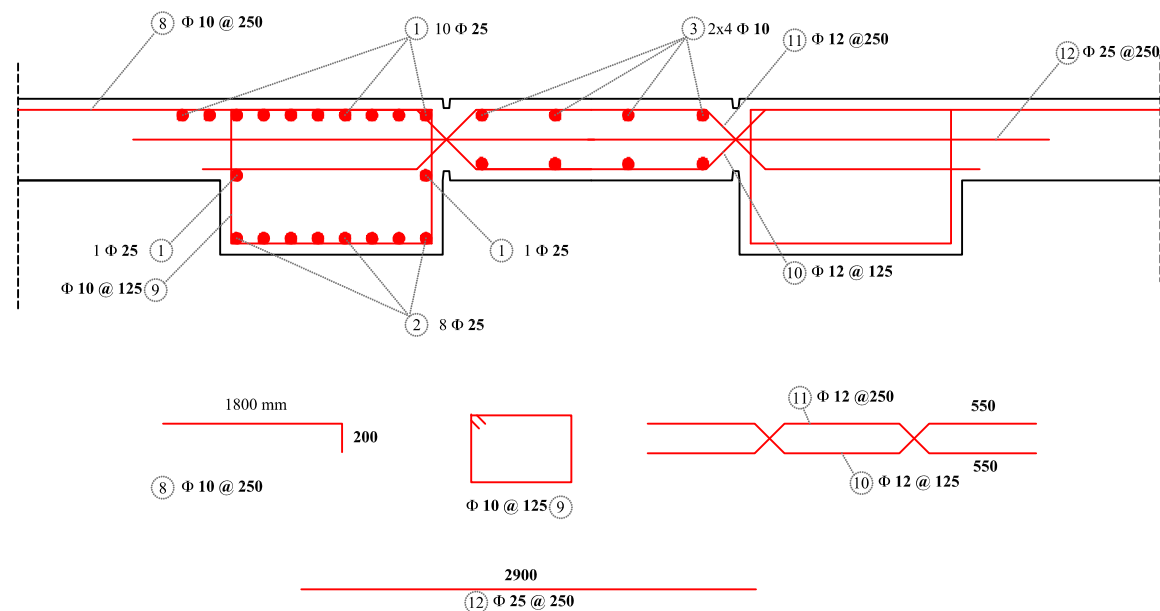
MARCH 2017



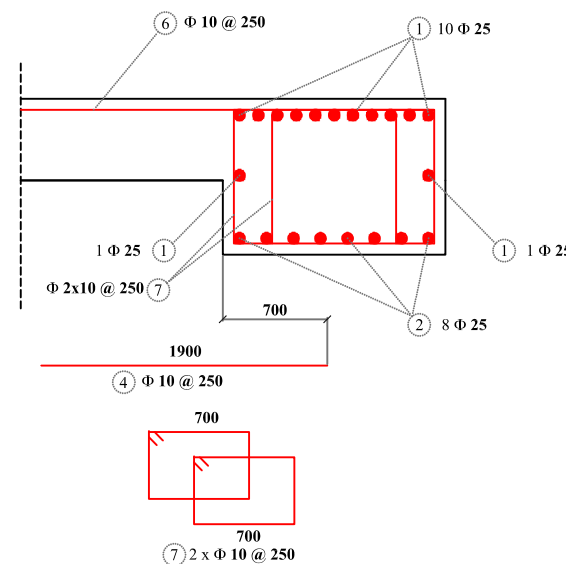
REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



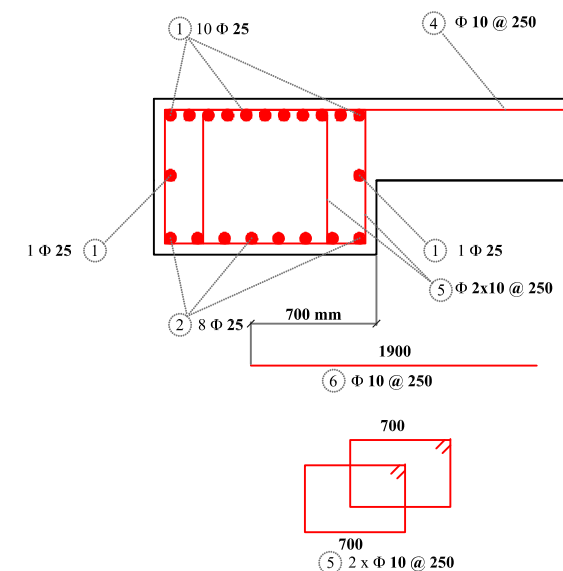
CROSS SECTION AT END OF BEAM



AT HINGE SLAB



AT ABUTMENT



AT EXPANSION JOINT

REFERENCE:
CONTRACT DRAWINGS
STRUCTURES, PART SIX, VOLUME A
R9/B, SECTION: HABBANIYA-HIT
S89.2 EUPHRATES BRIDGE RAMADI



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:

**PALESTINAN 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:
JOINTS REINFORCEMENT

DRAWING NO.
ST.148

SCALE:
AS SHOWING

DRAWN BY:
MUHANED SHALLAL

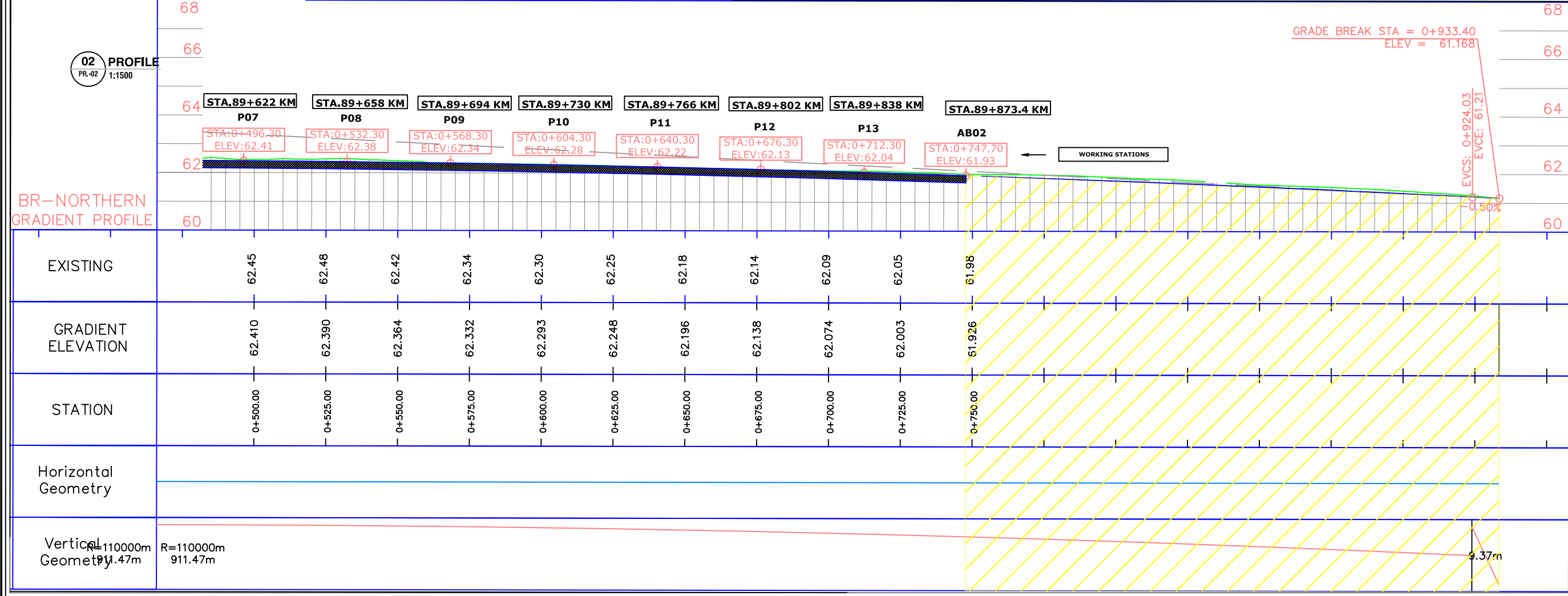
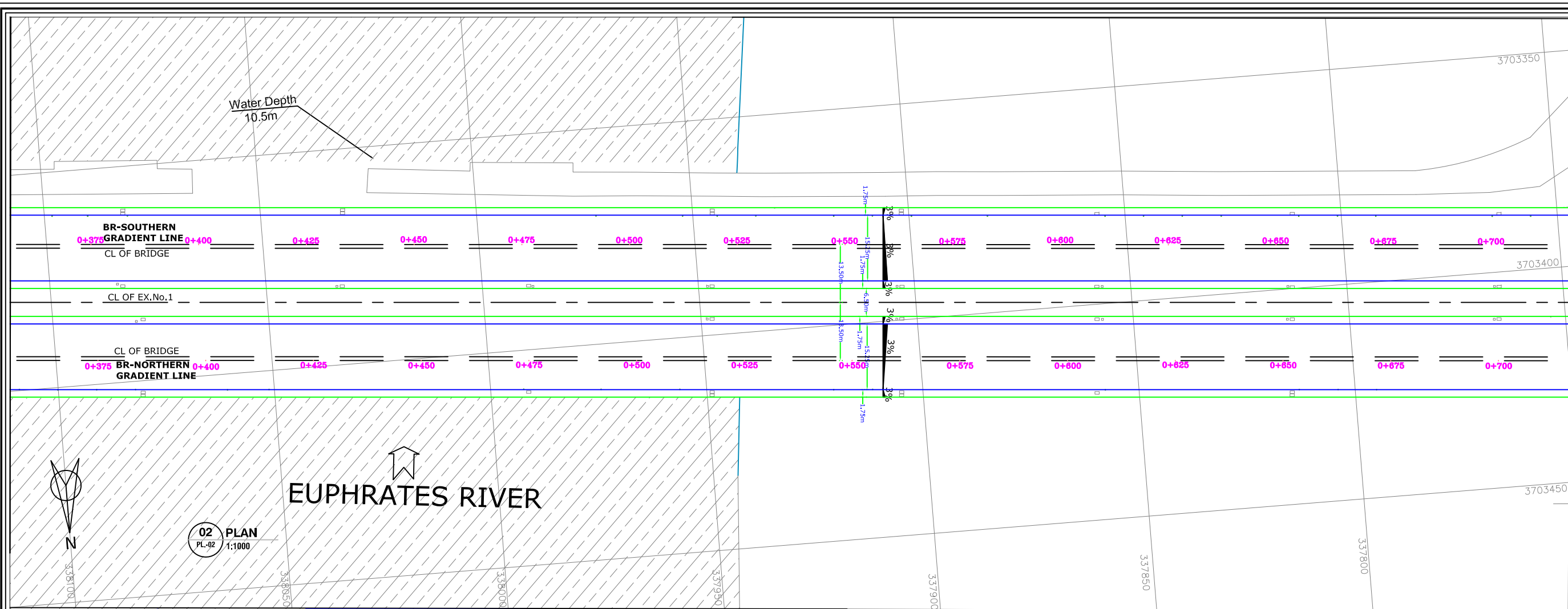
PROJECT NO:
IQ-17-001

DATE:
MARCH 2017





ROADS DESIGN



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.

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 SUPERVISOR ENGINEER.
THE CONTRACTOR SURVYOR 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			
00			

PROJECT NAME:

**ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES**

LOCATION: AL-ANBAR - IRAQ
(PALESTINE BRIDGE)

CLIENT:

GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

CIVIL DESIGN

DESIGN BY:

MUHAMMED HIKMET

SUPERVISOR:

MUHAMMED HIKMET

DRAWING NAME:

PLAN & PROFILE

DRAWING NO.

TR-202

SCALE:

@A3

DRAWN BY:

MUHAMMED HIKMET

PROJECT NO:

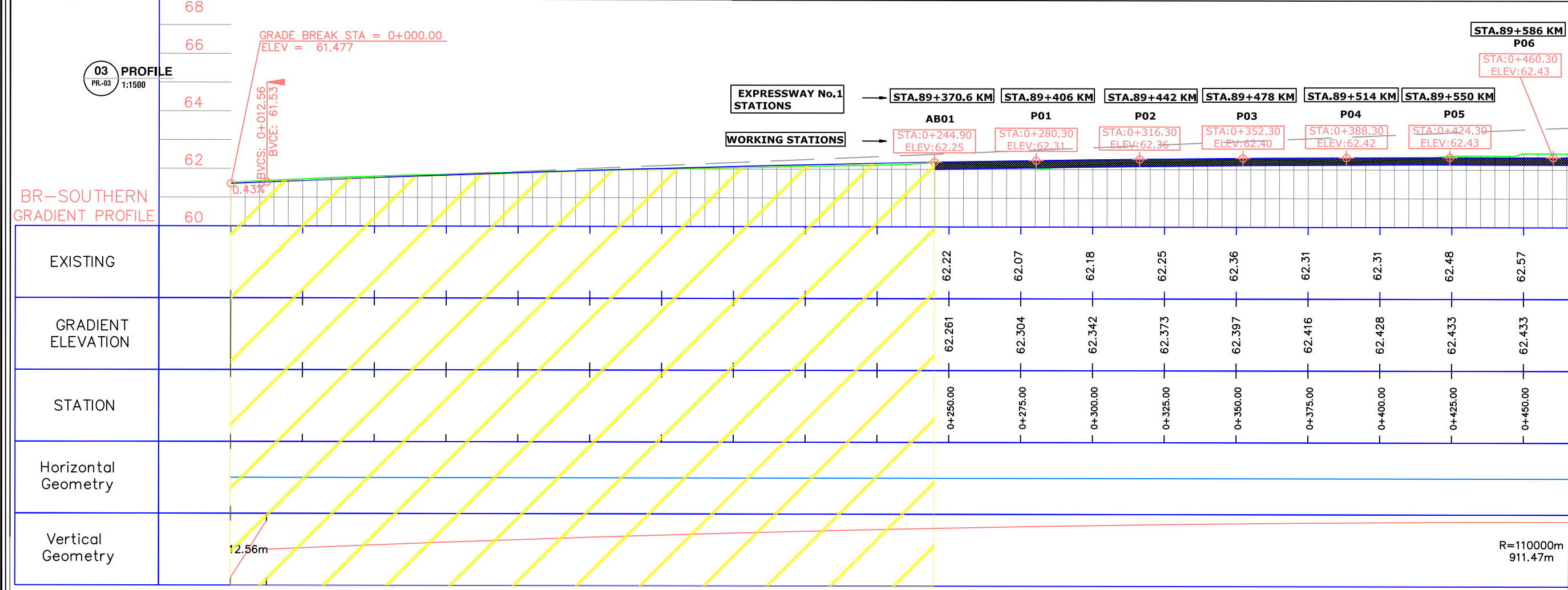
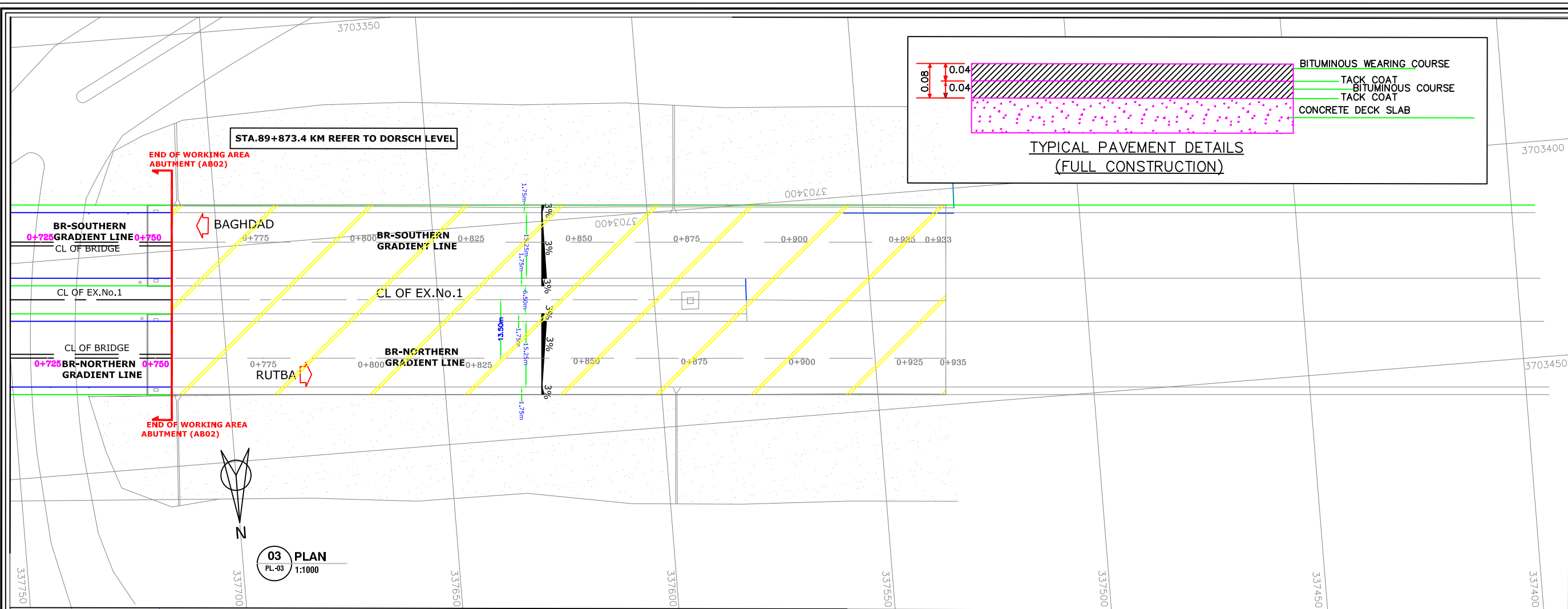
IQ-17-001

DATE:

APRIL 2017

United Nations
Development Programme

NUDHUM ALBENAA
CONSULTANCY



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.

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 SUPERVISOR ENGINEER.
THE CONTRACTOR SURVYOR SHALL SURVEY THE SITE DURING DELIVERED AND COMPARE WITH THE DESIGN LEVELS USING THE AVAILABLE TECHNOLOGY.

PROJECT NAME:

**ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES**

LOCATION: AL-ANBAR - IRAQ
(PALESTINE BRIDGE)

CLIENT:

GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

CIVIL DESIGN

DESIGN BY:

MUHAMMED HIKMET

SUPERVISOR:

MUHAMMED HIKMET

DRAWING NAME:

PLAN & PROFILE

DRAWING NO.

TR-203

SCALE:

@A3

DRAWN BY:

MUHAMMED HIKMET

PROJECT NO:

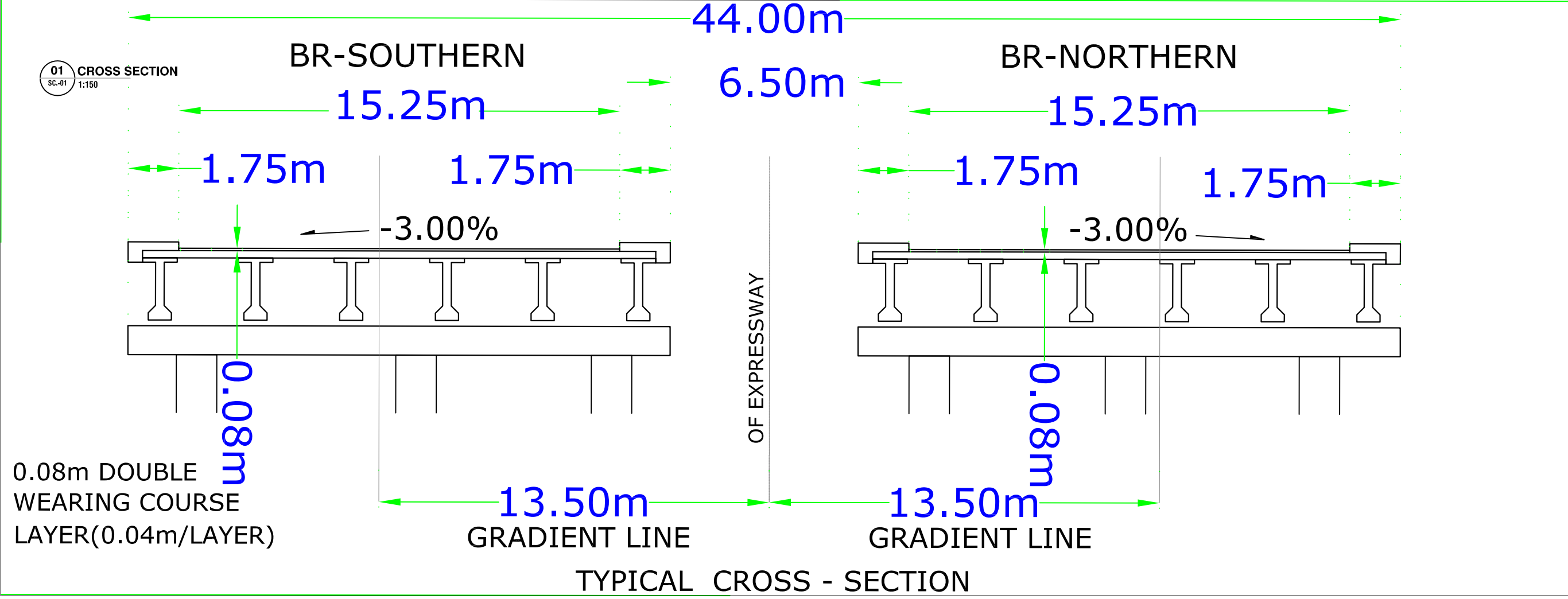
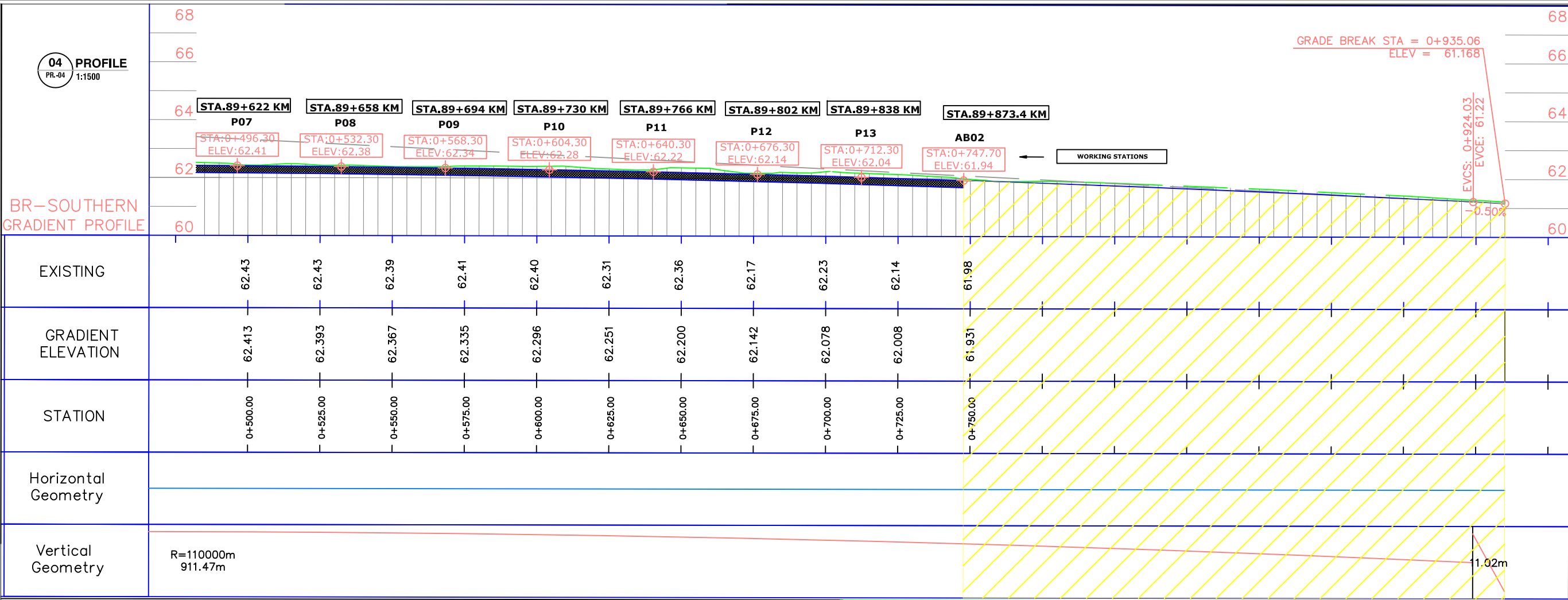
IQ-17-001

DATE:

APRIL 2017

United Nations
Development Programme

**NUDHUM ALBENAA
CONSULTANCY**



KEY MAP

TO RUTBA

TO BAGHDAD

RAMADI-SAMARRA-ROAD

SHATT AL-WARRAR

RAMADI

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.

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 SUPERVISOR ENGINEER.
THE CONTRACTOR SURVYOR 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			
00			

PROJECT NAME:

**ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES**

LOCATION: AL-ANBAR - IRAQ
(PALESTINE BRIDGE)

CLIENT:

**GENERAL DIRECTORATE FOR ROADS
AND BRIDGES**

SERVICES NAME:

CIVIL DESIGN

DESIGN BY:

MUHAMMED HIKMET

SUPERVISOR:

MUHAMMED HIKMET

DRAWING NAME:

PROFILE

DRAWING NO.

TR-204

SCALE:

@A3

DRAWN BY:

MUHAMMED HIKMET

PROJECT NO:

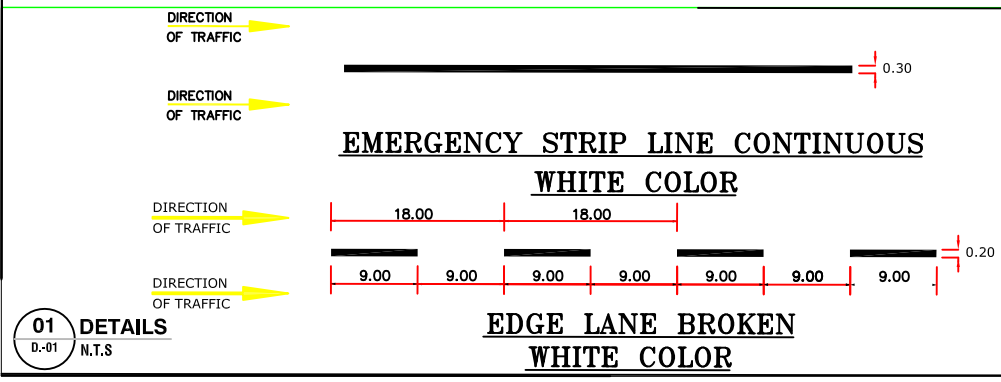
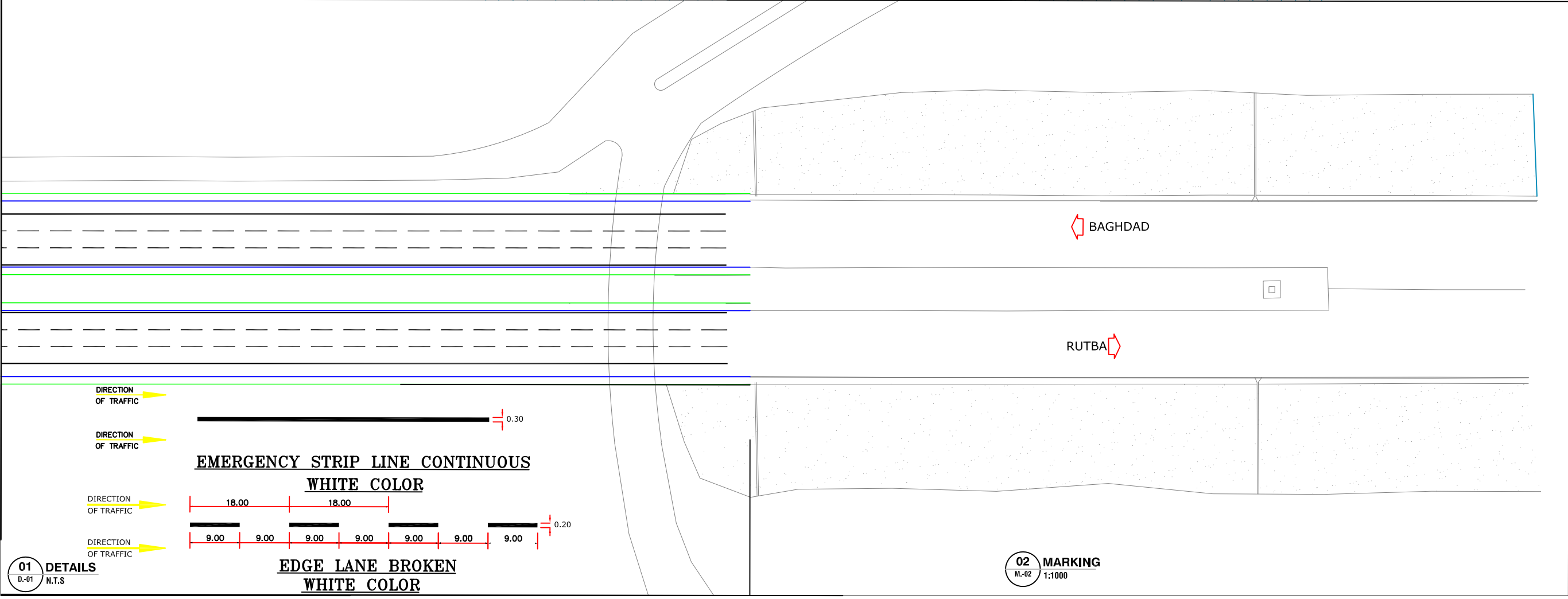
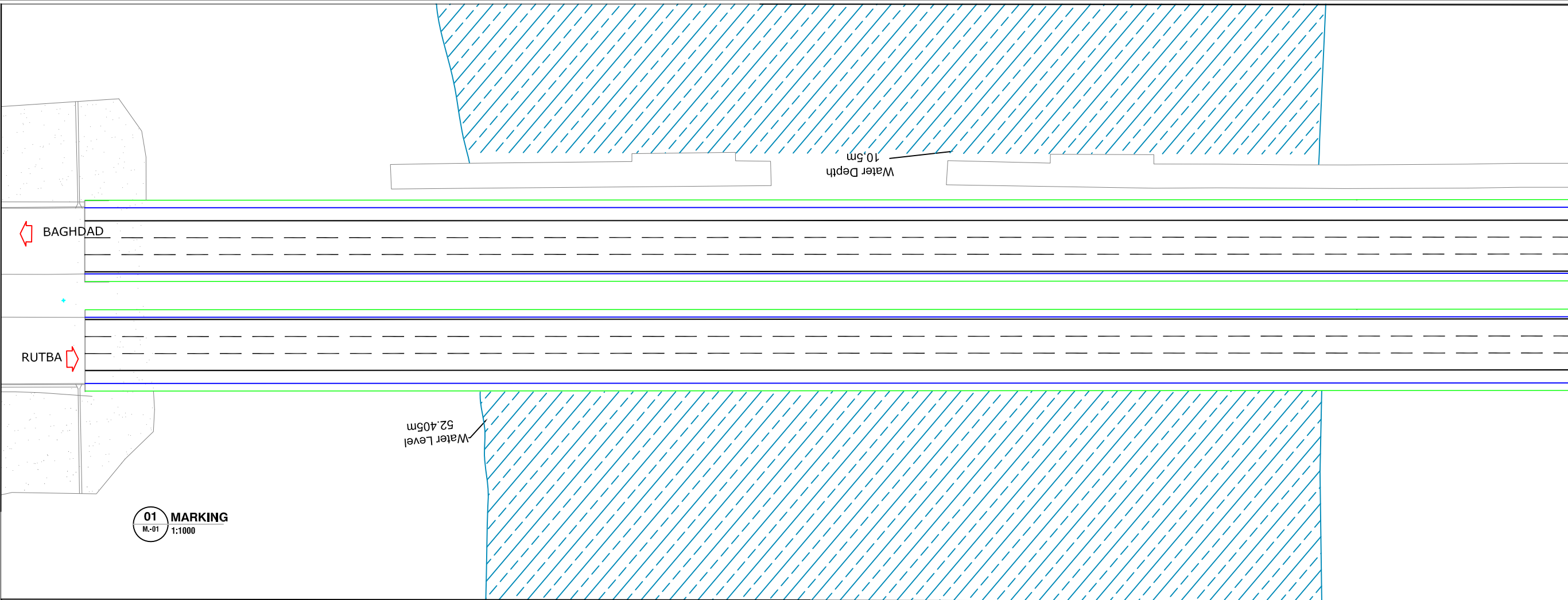
IQ-17-001

DATE:

APRIL 2017

**UNITED NATIONS
DEVELOPMENT PROGRAMME**

**NUDHUM ALBENAA
CONSULTANCY**



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.

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 SUPERVISOR ENGINEER.
- THE CONTRACTOR SURVYOR 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			
00			

PROJECT NAME:

ARCHITECTURAL & CIVIL
ENGINEERING DESIGN SERVICES

LOCATION: AL-ANBAR - IRAQ
(PALESTINE BRIDGE)

CLIENT:

GENERAL DIRECTORATE FOR ROADS
AND BRIDGES

SERVICES NAME:

CIVIL DESIGN

DESIGN BY:

MUHAMMED HIKMET

SUPERVISOR:

MUHAMMED HIKMET

DRAWING NAME:

PAVEMENT MARKING & DETAILS

DRAWING NO.

TR-205

SCALE:

@A3

DRAWN BY:

MUHAMMED HIKMET

PROJECT NO:

IQ-17-001

DATE:

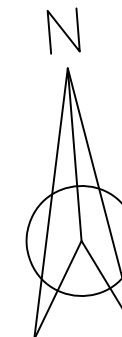
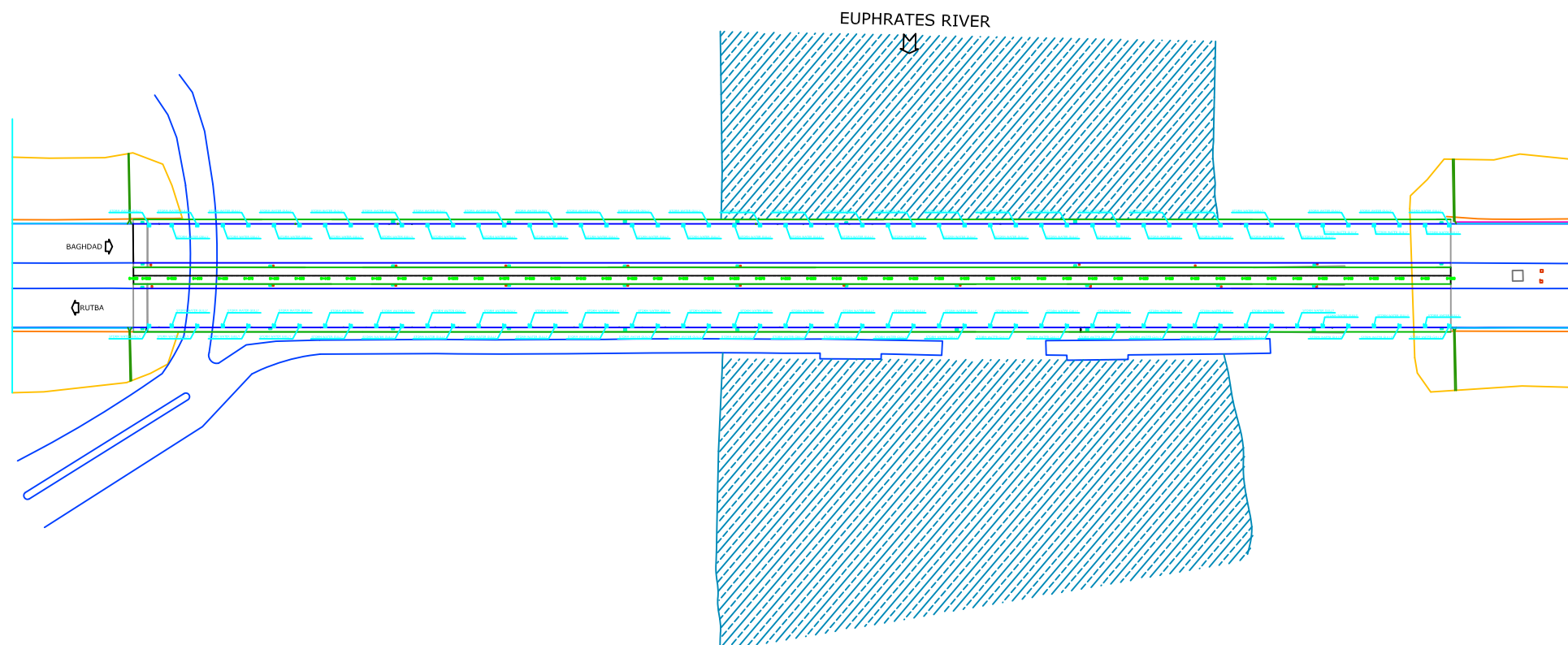
APRIL 2017

UNITED NATIONS
DEVELOPMENT PROGRAMME

NUDHUM ALBENAA
CONSULTANCY

An aerial photograph of a multi-lane highway bridge, likely in a Middle Eastern or North African setting, given the presence of palm trees and Arabic text on the overhead signs. The bridge has multiple lanes in both directions, with various vehicles including cars, trucks, and buses. The image is overlaid with a semi-transparent blue filter. The text "STORM WATER DESIGN" is centered in a bold, white, sans-serif font.

STORM WATER DESIGN



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.

05			
04			
03			
02			
01			
00			
REV.	DATE	DESCRIPTION	BY

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:
LOCATION OF STORM WATER GULLIES

DRAWING NO. SD-301

SCALE: @A3

DRAWN BY:	
-----------	--

PROJECT NO: IQ-17-001

DATE: MAY 2017