



**REPUBLIC OF LEBANON  
MINISTRY OF PUBLIC WORKS  
AND TRANSPORT**

**COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION**

MAINTENANCE OF BRIDGE EXPANSION JOINTS

LOT 2

(ALEY, CHOUF, and SAIDA CAZAS)

TENDER DOCUMENTS

VOLUME 4  
TENDER DRAWINGS

REVISION 01  
JANUARY 2024



DAR AL HANDASAH NAZIH TALEB & PARTNERS Consulting Engineers

دار الهندسة نزيه طالب وشركاه للتصميم والاستشارات الفنية

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REHABILITATION & MAINTENANCE OF BRIDGE EXPANSION JOINTS LOT 2  
(ALEY, CHOUF, & SAIDA CAZAS)  
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DRAWING No.	DRAWING TITLE
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DWG BR-TD-03	TRAFFIC SAFETY & CONTROL DEVICES DETAILS-SHEET 1 OF 4
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QC	Ref: L2106D / 3812	
	Revision: 01	Date: January-2024
	<input type="checkbox"/> Draft	<input checked="" type="checkbox"/> Final
	Signature:	

KEY PLAN

NOTES


LEGEND

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2	STAGE : TENDER DOCUMENTS	
	DATE	January 2024
LIST OF DRAWINGS (SHEET 1/1)	SCALE	N.T.S.
	DRAWING No.	REV
DWG BR-GN-L2-001		01



MAINTENANCE OF BRIDGE EXPANSION JOINTS						
SCOPE OF WORK						
BRIDGES UNDER LOT 2						
Package	Caza	New Bridge Reference	Bridge Name		Fixed/ Optional	Group Assignment
LOT 2	ALEY	BR-II.1	Soufar Bridge	جسر صوفر	Fixed	Group II (Day Time)
		BR-II.2	Khaldeh Bridge	جسر خلدة	Fixed	Group I (Night Time)
	Chouf	BR-II.3	Wadi Al Zayneh Bridge	جسر وادي الزينة	Fixed	Group II (Day Time)
	Saida	BR-II.4	Al Zahrani Interchange	محول الزهراني	Optional	Group II (Day Time)
		BR-II.5	Al Aakbieh Bridge	جسر العاقبية مقابل جامعة فينيسيا	Optional	Group II (Day Time)

KEY PLAN

NOTES

LEGEND

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BRIDGES UNDER LOT 2 SCOPE OF WORKS

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

BRIDGE LOCATIONS PLAN

STAGE : TENDER DOCUMENTS

DATEJanuary 2024

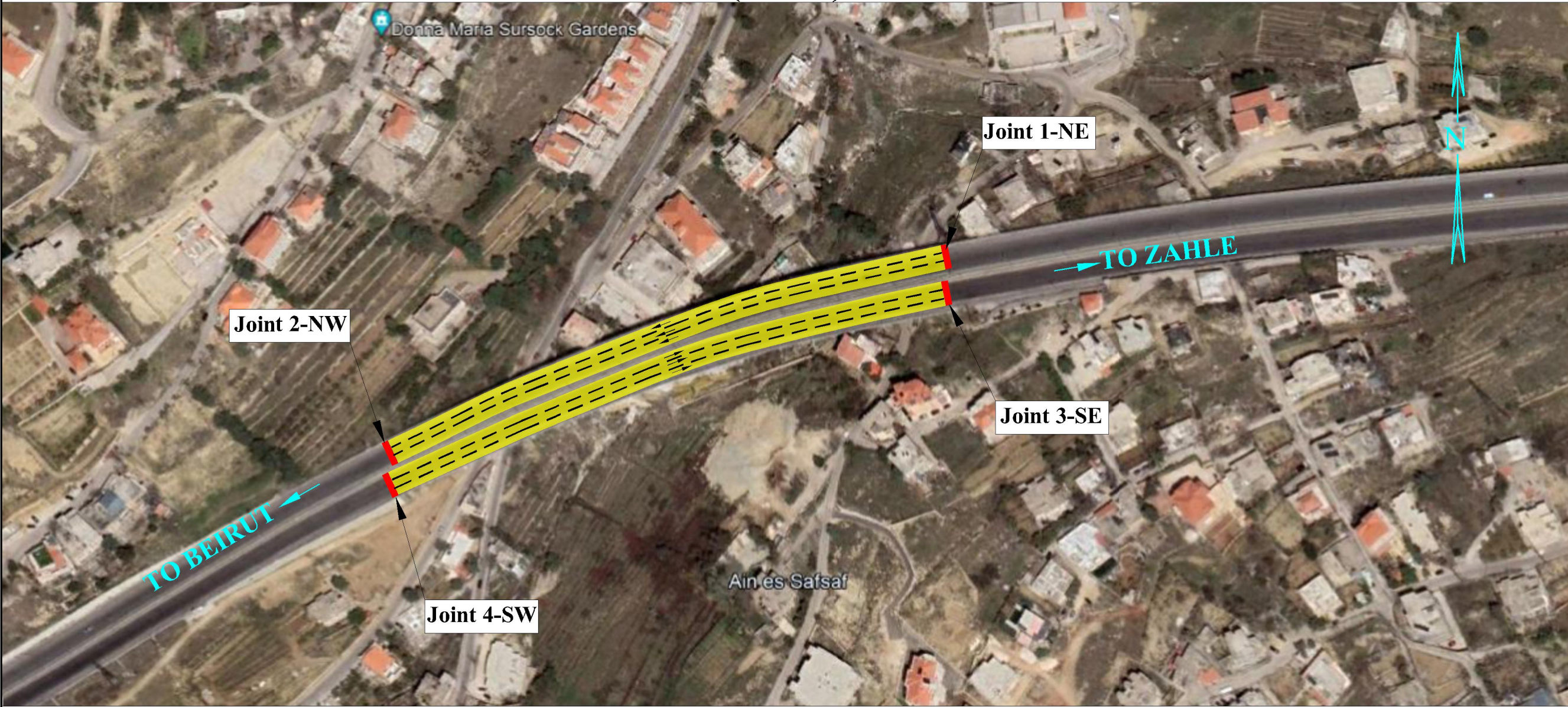
SCALEN.T.S.

DRAWING No. REV

DWG BR-GN-L2-002 01



SOUFAR BRIDGE  
(BR-II.1)



BRIDGE AERIAL VIEW  
N.T.S.

Caza Aley: Soufar Bridge									Existing Joints Characteristics					New Joints Characteristics			
Package	Caza	Bridge Reference	Bridge Name	Number of Carriage way	Type of existing Deck	Total Number of Joints / Carriageway	Distance Between joints (m)	Joint Reference	Type of existing joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)	Required Maintenance Works	Type of new joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)
LOT 2	Aley	BR-II.1	Soufar Bridge	2.00	Precast Girder Bridge	2.00	320.00	J1-NE	Steel finger Joint	19.00	62cm	16.00	1-Routine Maintenance for the existing joint & replacement for 3m fingers join by a new similar type. 2-Repair for the transition asphalt area. 3-Cleaning joint Gap and repair works for the waterproof system	Replacement of damaged elements joint by a similar type steel finger Type EJ 350	19.00	63.00	4.00
								J2-NW	Steel finger Joint	18.00	62cm	16.00	1-Routine Maintenance for the existing joint . 2-Repair for the transition asphalt area. 3-Cleaning joint Gap and repair waterproof system	-			
							320.00	J3-SE	Reinforced Elastomeric Joint	19.00	80.00	16.00	Removal of existing joint, supply and installation of new joint	Reinforced Elastomeric Joint type EJ 350	19.00	110.50	16.00
								J4-SW	Reinforced Elastomeric Joint	18.00	80.00	16.00	Removal of existing joint, supply and installation of new joint	Reinforced Elastomeric Joint type EJ 350	18.00	110.50	16.00

EXISTING & NEW EXPANSION JOINTS CHARACTERISTICS  
(TABLE BR-II-1)

NOTES

- 1-Prior to ordering and delivering the specified bridge expansior joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
- a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.
- b)Detailed execution drawings, technical specifications,design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.
- c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).
- d)Method statement for the joint rehabilitation works.

LEGEND

- BRIDGE DECK AREA
- BRIDGE EXPANSION JOINTS

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

STAGE : TENDER DOCUMENTS

DATE January 2024

SCALE N.T.S.

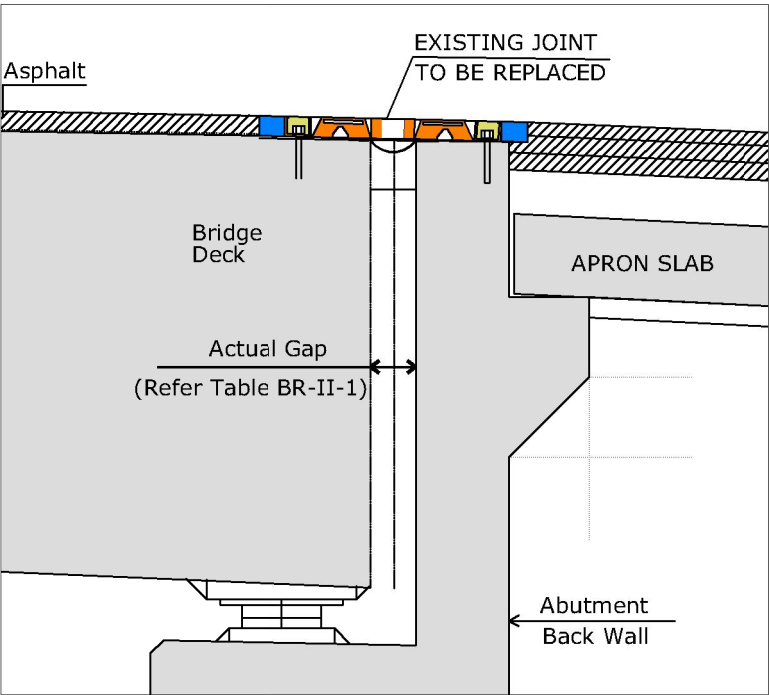
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DWG BR-II.1-01

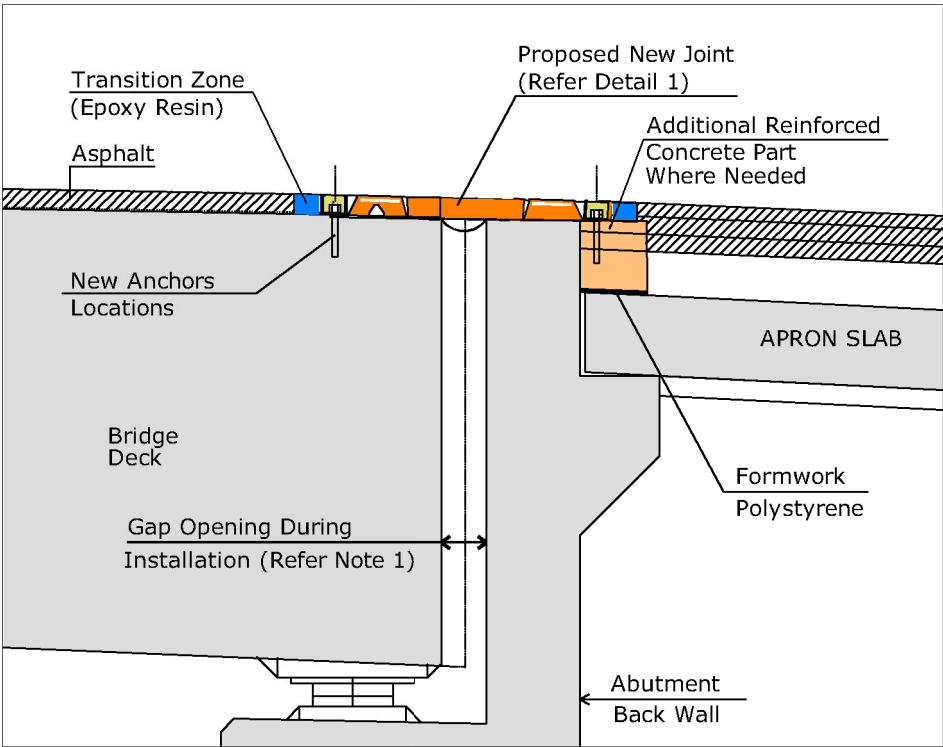
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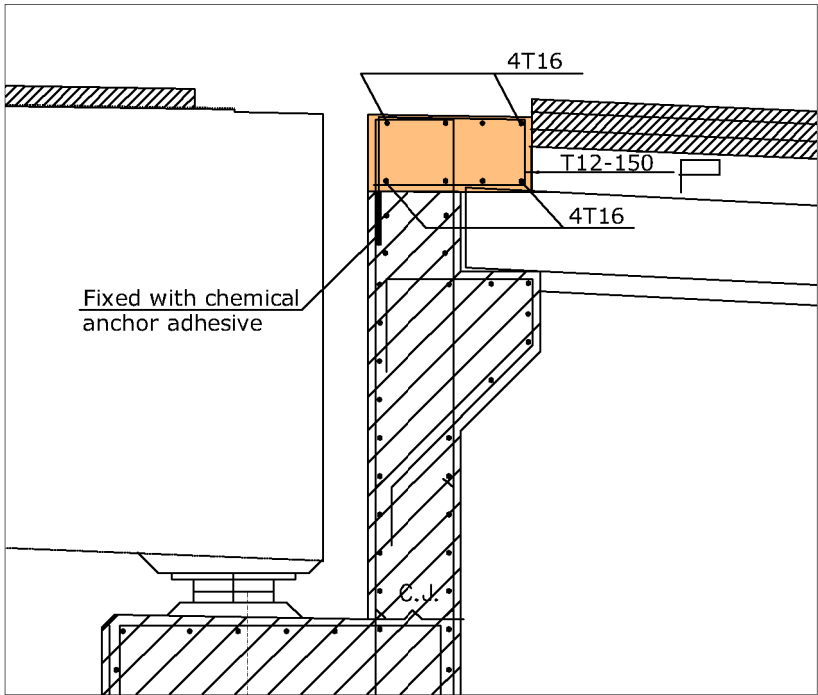
REINFORCED ELASTOMERIC JOINTS  
TYPICAL SECTION DETAILS



TYPICAL SECTION FOR THE EXISTING JOINT



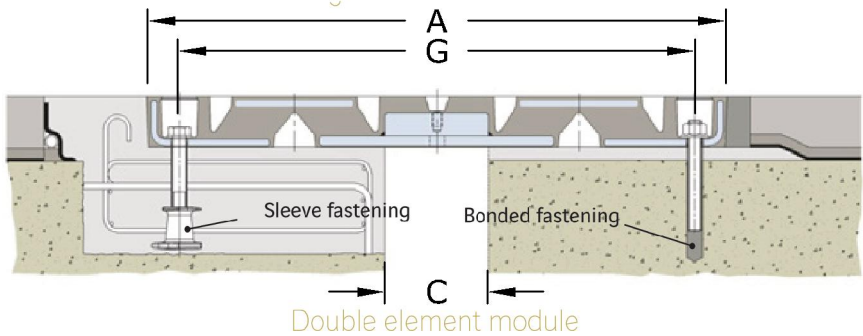
TYPICAL SECTION FOR THE PROPOSED NEW JOINT



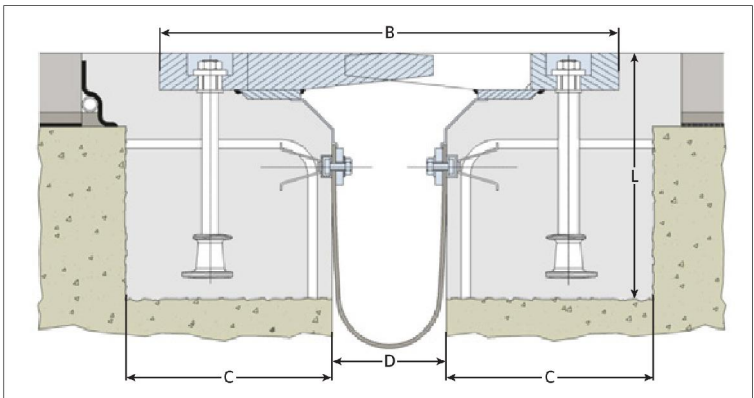
TYPICAL DETAILS FOR THE ADDITIONAL REINFORCEMENT (WHERE NEEDED)

- NOTES
- 1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
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- d)Method statement for the joint rehabilitation works.

TYPICAL DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS



DETAIL 1



FINGER DETAIL

SCHEDULE DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS

Location	Type	Actual Gap Width (mm)	Joint Movement Capacity	Dimensions (mm)*		
				A	G	C
Joint 3-SE	EJ 350	190	±175	1105	980	220
Joint 4-SW	EJ 350	180	±175	1105	980	220

\* REFER TO NOTE 1

NEW FINGER SCHEDULE DETAILS

Type	Joint Movement Capacity	B		D		Recesses	
		min.	max.	min.	max.	C	L
FJ350	±175	590	1000	50	400	210	350

\* REFER TO NOTE 1

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

CAZA ALEY  
SOUFAR BRIDGE  
(BR-II.1)  
SHEET 2 OF 3

STAGE : TENDER DOCUMENTS  
DATE January 2024  
SCALE N.T.S.  
DRAWING No. DWG BR-II.1-42  
REV 01



SOUFAR BRIDGE (BR-II.1)  
BRIDGE EXPANSION JOINTS  
(EXISTING SITE CONDITION-SITE PHOTOS)



NORTH CARRIAGEWAY-JOINT 1-NE



NORTH CARRIAGEWAY-JOINT 1-NE



NORTH CARRIAGEWAY-JOINT 2-NW



NORTH CARRIAGEWAY-JOINT 2-NW



SOUTH CARRIAGEWAY-JOINT 3-SE



SOUTH CARRIAGEWAY-JOINT 4-SW

KEY PLAN

NOTES

LEGEND

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

CAZA ALEY  
SOUFAR BRIDGE  
(BR-II.1)  
SHEET 3 OF 3

STAGE : TENDER DOCUMENTS

DATE January 2024

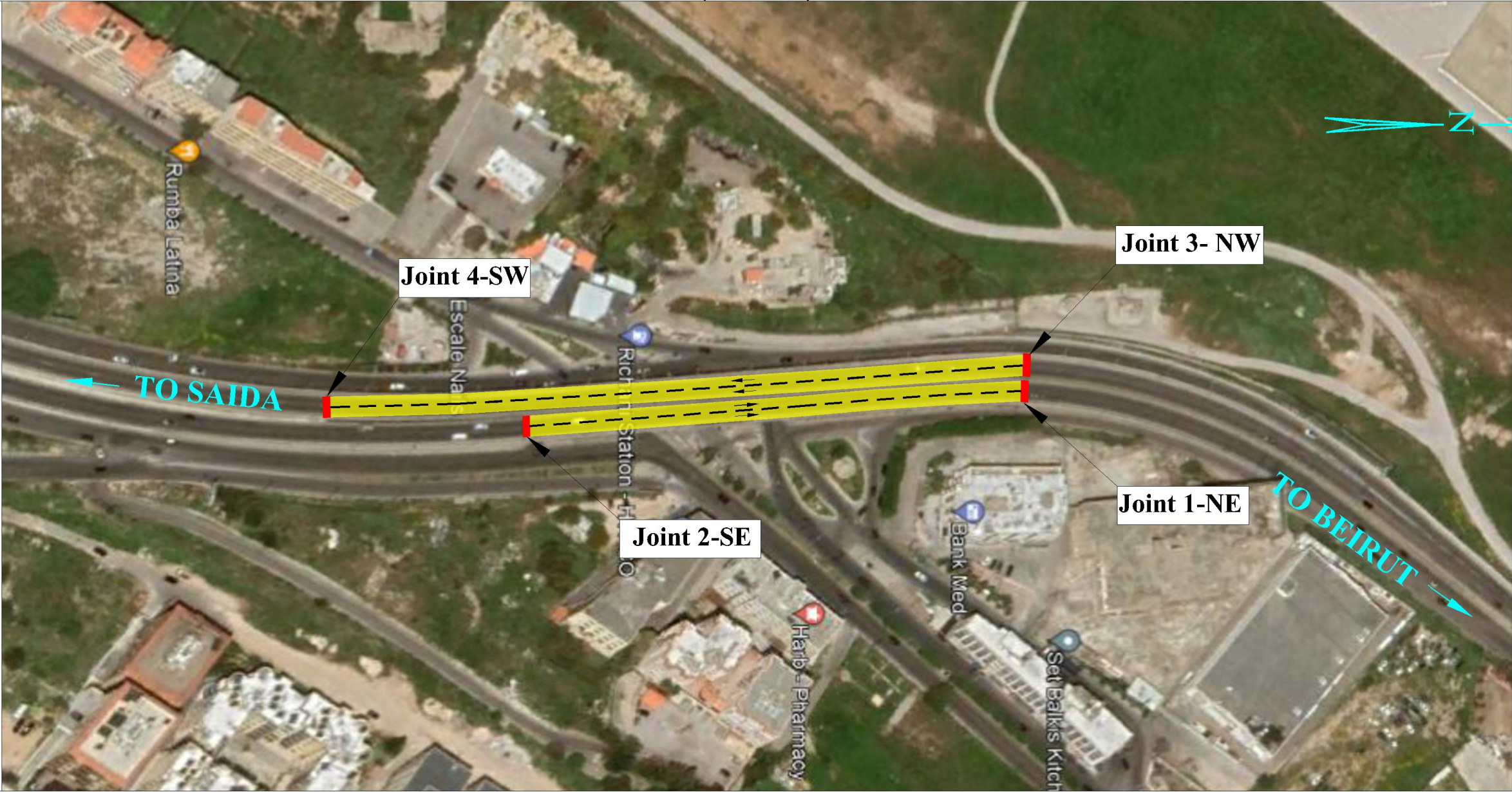
SCALE N.T.S.

DRAWING No. DWG BR-II.1-03

REV 01



KHALDEH BRIDGE  
(BR-II.2)



- NOTES
- 1-Prior to ordering and delivering the specified bridge expansior joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
- a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.
- b)Detailed execution drawings, technical specifications,design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.
- c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).
- d)Method statement for the joint rehabilitation works.

LEGEND

BRIDGE DECK AREA

BRIDGE EXPANSION JOINTS

BRIDGE AERIAL VIEW  
N.T.S.

Caza Aley: Khaldeh Bridge									Existing Join s Characteristics					New Joints Characteristics			
Package	Caza	Bridge Reference	Bridge Name	Number of Carriage way	Type of existing Deck	Total Number of Joints / Carriageway	Distance Between joints (m)	Joint Reference	Type of existing joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)	Required Maintenance Works	Type of new joint	Gap Width (cm)	Joint Width (cm)	Joint Length (m)
LOT 2	Aley	BR-II.2	Khaldeh Bridge	2.00	Precast Box Bridge/ Girder	2.00	200.00	J1-NE	Reinforced Elastomeric Joint	13.00	80cm	9.50	Removal of existing joint, supply and installation of new joint as specified	Reinforced Elastomeric Joint type EJ 220	13.00	80.00	9.50
								J2-SE	Reinforced Elastomeric Joint	13.00	80cm	9.50	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric Joint type EJ 220	13.00	80.00	9.50
							280.00	J3-NW	Reinforced Elastomeric Joint	10.00	50cm	9.50	1-Routine Maintenance for the existing joint 2-Repair for the transition asphalt area, and Bolts connection 3-Cleaning joint Gap and repair works for the waterproof system	-			
								J4-SW	Reinforced Elastomeric Joint	10.00	50cm	9.50	1-Routine Maintenance for the existing joint 2-Repair for the transition asphalt area, and Bolts connection 3-Cleaning joint Gap and repair works for the waterproof system	-			

EXISTING & NEW EXPANSION JOINTS CHARACTERISTICS  
(TABLE BR-II-2)

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

STAGE : TENDER DOCUMENTS

DATE January 2024

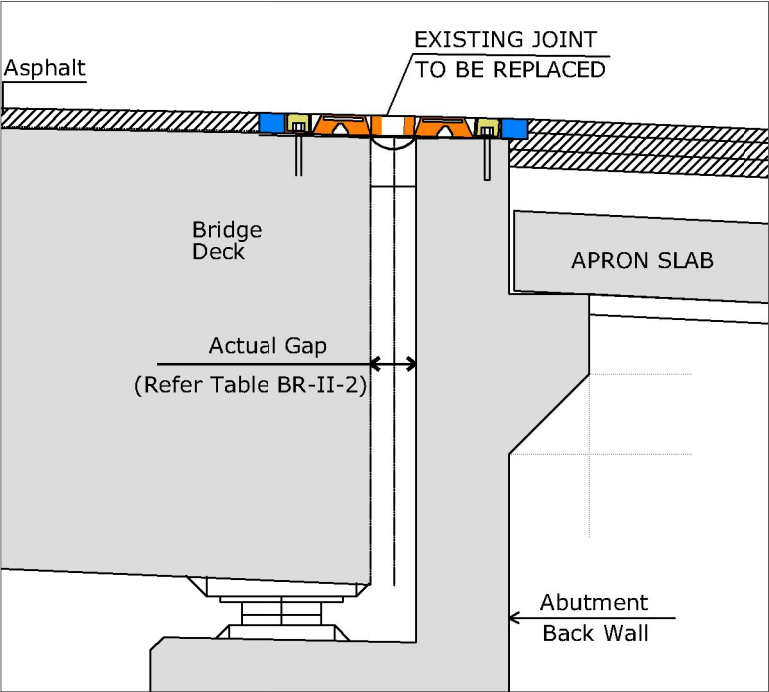
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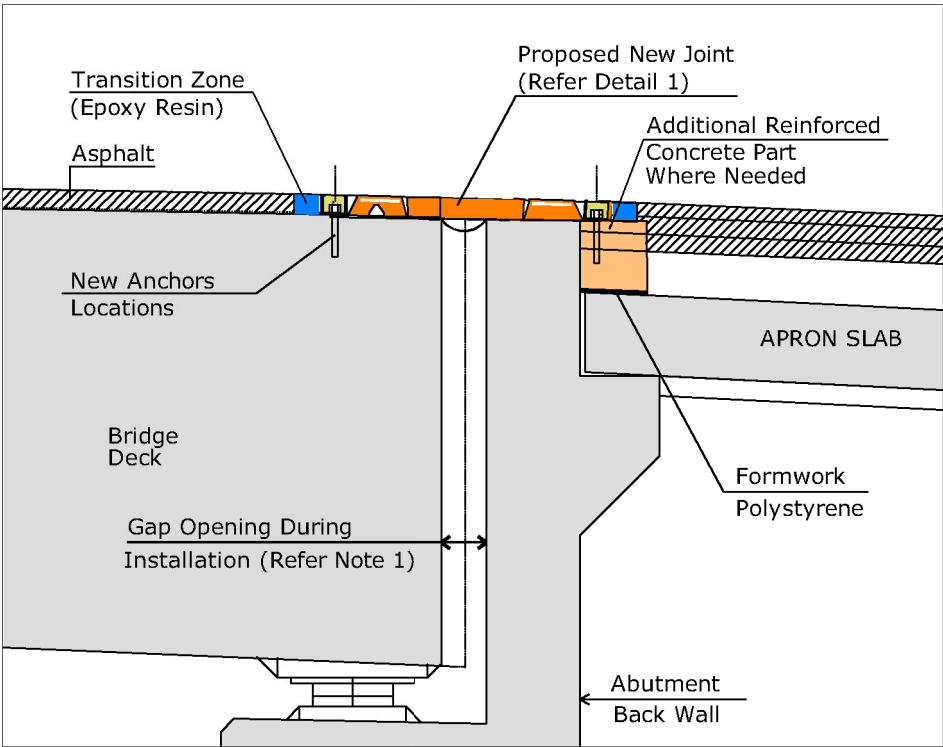
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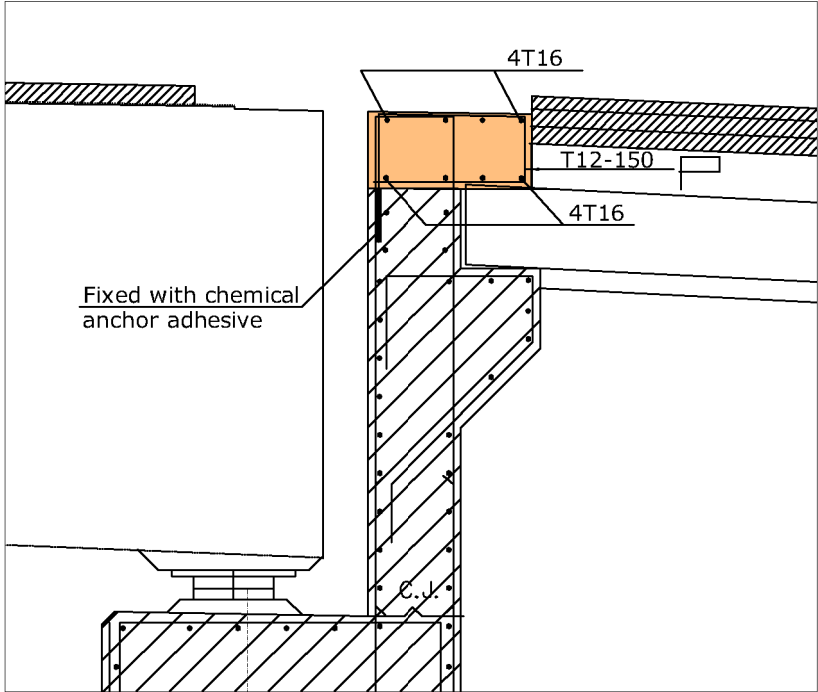
REINFORCED ELASTOMERIC JOINTS  
TYPICAL SECTION DETAILS



TYPICAL SECTION FOR THE EXISTING JOINT



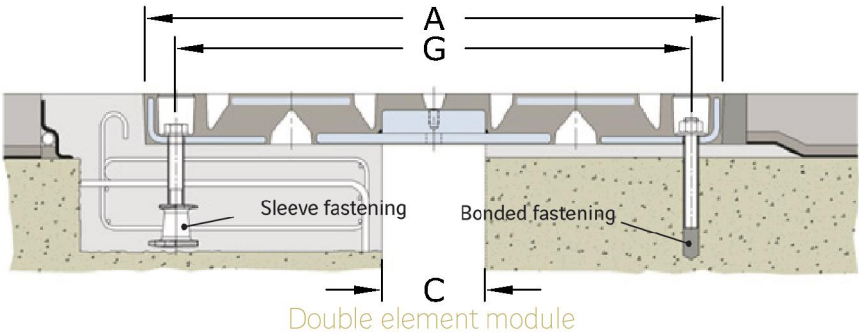
TYPICAL SECTION FOR THE PROPOSED NEW JOINT



TYPICAL DETAILS FOR THE ADDITIONAL REINFORCEMENT (WHERE NEEDED)

- NOTES
- 1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
- a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.
- b)Detailed execution drawings, technical specifications, design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.
- c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).
- d)Method statement for the joint rehabilitation works.

TYPICAL DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS



DETAIL 1

SCHEDULE DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS

Location	Type	Actual Gap Width (mm)	Joint Movement Capacity	Dimensions (mm)*		
				A	G	C
Joint 1-NE	EJ 220	150	± 110	800	700	120
Joint 2-SE	EJ 220	150	± 110	800	700	120

\* REFER TO NOTE 1

LEGEND

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

STAGE : TENDER DOCUMENTS

DATE January 2024

SCALE N.T.S.

CAZA ALEY KHALDEH BRIDGE (BR-II.2) SHEET 2 OF 3

DRAWING No. DWG BR-II.2-02

REV 01



KHALDEH BRIDGES (BR-II.2)  
BRIDGE EXPANSION JOINTS  
(EXISTING SITE CONDITION-SITE PHOTOS)



EAST CARRIAGEWAY-JONT 2-SE



EAST CARRIAGEWAY-JOINT 1-NE



WEST CARRIAGEWAY-JOINT 3-NW



WEST CARRIAGEWAY-JOINT 4-SW

KEY PLAN

NOTES

LEGEND

No.	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2		STAGE : TENDER DOCUMENTS	
CAZA ALEY KHALDEH BRIDGE (BR-II.2) SHEET 3 OF 3		DATE	January 2024
		SCALE	N.T.S.
		DRAWING No.	REV
		DWG BR-II.2-03	01



WADI AL ZAYNEH BRIDGE  
(BR-II.3)



BRIDGE AERIAL VIEW  
N.T.S.

Caza Chouf: Wadi Al Zayneh Bridge									Existing Joint Characteristics				New Joints Characteristics				
Package	Caza	Bridge Reference	Bridge Name	Number of Carriage way	Type of existing Deck	Total Number of Joints / Carriageway	Distance Between joints (m)	Joint Reference	Type of existing joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)	Required Maintenance Works	Type of new joint	Gap Width (cm)	Joint Width (cm)	Joint Length (m)
LOT 2	Chouf	BR-II.3	Wadi Al Zayneh Bridge	2.00	Precast Girder Bridge	2.00	200.00	J1-NW	Reinforced Elastomeric	10	40.00	15.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	15.00
								J2-SW	Reinforced Elastomeric	10	35.00	15.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	15.00
							200.00	J3-NE	Reinforced Elastomeric	10	40.00	16.50	1-Routine Maintenance for the existing joint 2-Repair for the transition asphalt area, and Bolts connection 3-Cleaning joint Gap and repair works for the waterproof system	-			
								J4-SE	Reinforced Elastomeric	10	35.00	16.50	1-Routine Maintenance for the existing joint 2-Repair for the transition asphalt area, and Bolts connection 3-Cleaning joint Gap and repair works for the waterproof system	-			

EXISTING & NEW EXPANSION JOINTS CHARACTERISTICS  
(TABLE BR-II-3)

NOTES

1-Prior to ordering and delivering the specified bridge expansior joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:

a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.

b)Detailed execution drawings, technical specifications,design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.

c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).

d)Method statement for the joint rehabilitation works.

LEGEND

BRIDGE DECK AREA

BRIDGE EXPANSION JOINTS

No.	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

CAZA CHOUF  
WADI AL ZAYNEH BRIDGE (BR-II.3)  
SHEET 1 OF 3

STAGE : TENDER DOCUMENTS

DATE January 2024

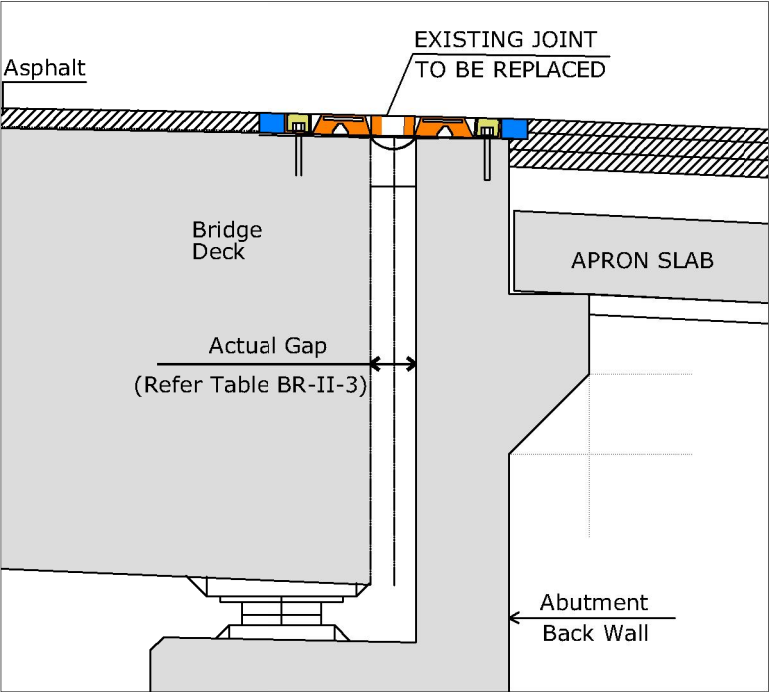
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DRAWING No. DWG BR-II.3-01

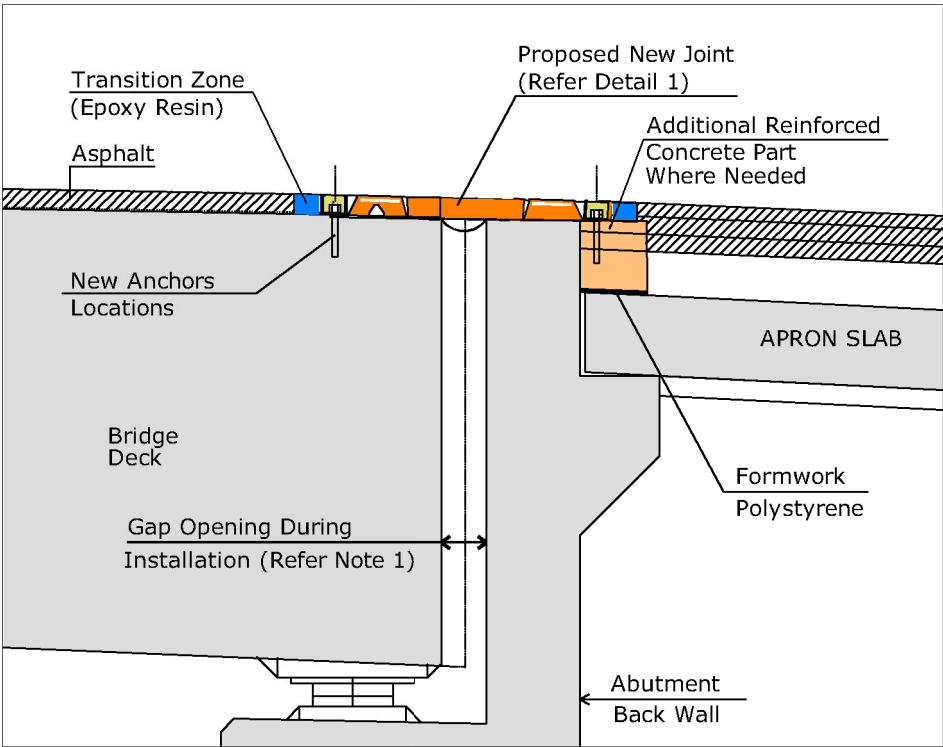
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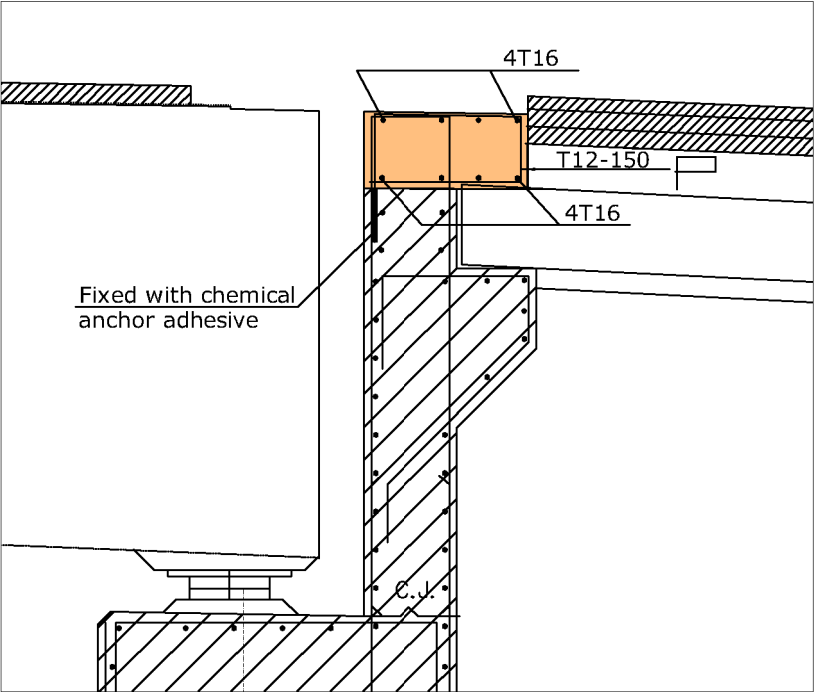
REINFORCED ELASTOMERIC JOINTS  
TYPICAL SECTION DETAILS



TYPICAL SECTION FOR THE EXISTING JOINT



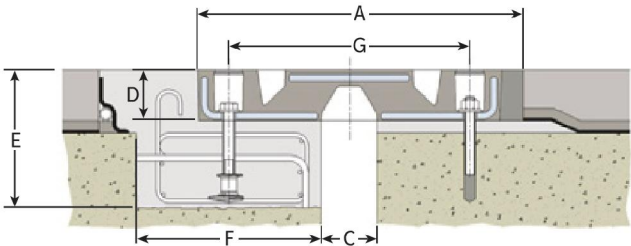
TYPICAL SECTION FOR THE PROPOSED NEW JOINT



TYPICAL DETAILS FOR THE ADDITIONAL REINFORCEMENT (WHERE NEEDED)

- NOTES
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- d)Method statement for the joint rehabilitation works.

TYPICAL DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS



Single element module

DETAIL 1

SCHEDULE DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS

Location	Type	Actual Gap Width (mm)	Joint Movement Capacity	Dimensions (mm)*		
				A	G	C
Joint 1-NW	EJ 180	80	± 90	500	400	100
Joint 2-SW	EJ 180	80	± 90	500	400	100

\* REFER TO NOTE 1

LEGEND						
No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER	

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

STAGE : TENDER DOCUMENTS

DATE January 2024

SCALE N.T.S.

CAZA CHOUF WADI AL ZAYNEH BRIDGE (BR-II.3) SHEET 2 OF 3

DRAWING No. DWG BR-II.3-02

REV 01



WADI AL ZAYNEH BRIDGE (BR-II.3)  
BRIDGE EXPANSION JOINTS  
(EXISTING SITE CONDITION-SITE PHOTOS)



WEST CARRIAGEWAY-JOINT 1-NW




WEST CARRIAGEWAY-JOINT 1-SW



EAST CARRIAGEWAY-JOINT 3-NE

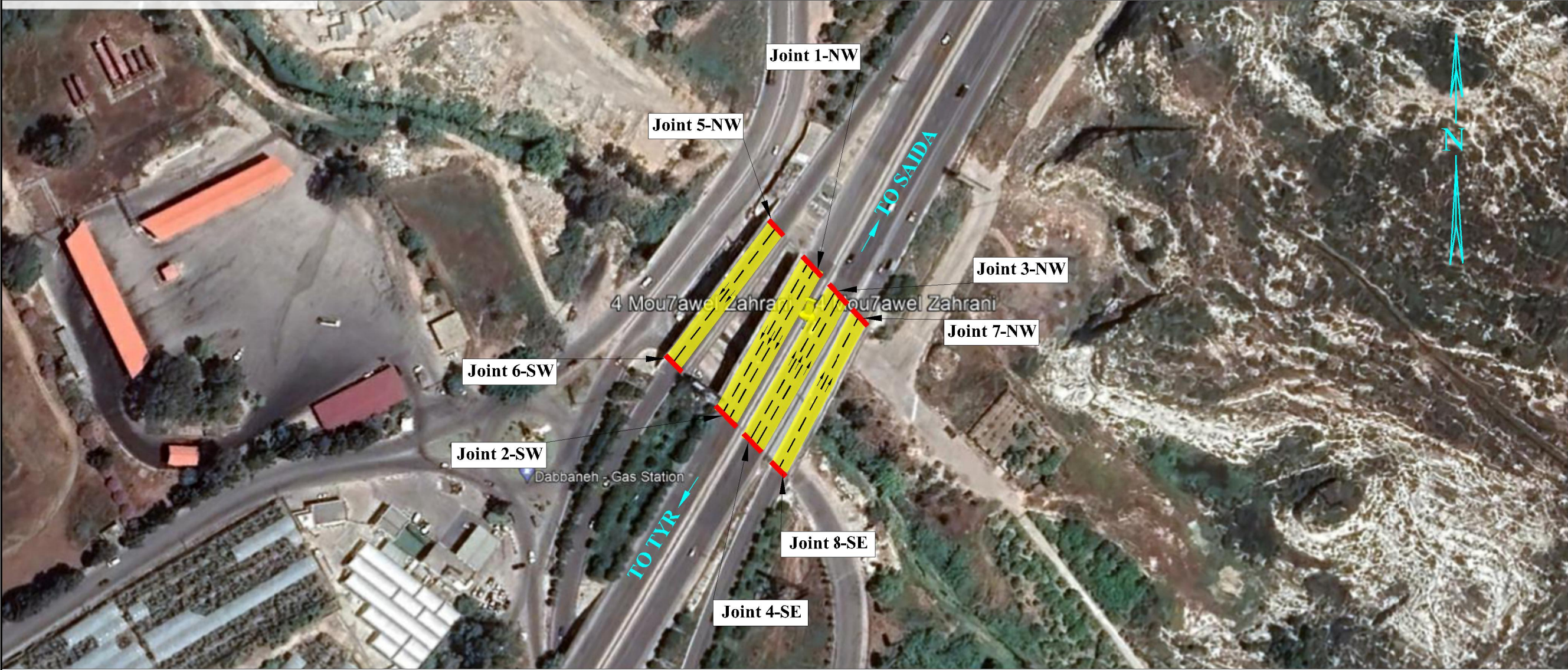


EAST CARRIAGEWAY-JOINT 4-SE

KEY PLAN					
NOTES					
LEGEND					
No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER
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AL ZAHRANI INTERCHANGE  
(BR-II.4)



BRIDGE AERIAL VIEW  
N.T.S.

- NOTES
- 1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:

a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.

b)Detailed execution drawings, technical specifications,design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.

c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).

d)Method statement for the joint rehabilitation works.

LEGEND

BRIDGE DECK AREA

BRIDGE EXPANSION JOINTS

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

CAZA SAIDA  
AL ZAHRANI INTERCHANGE  
(BR-II.4)  
SHEET 1 OF 4

STAGE : TENDER DOCUMENTS

DATE      January 2024

SCALE      N.T.S.

DRAWING NO.      REV

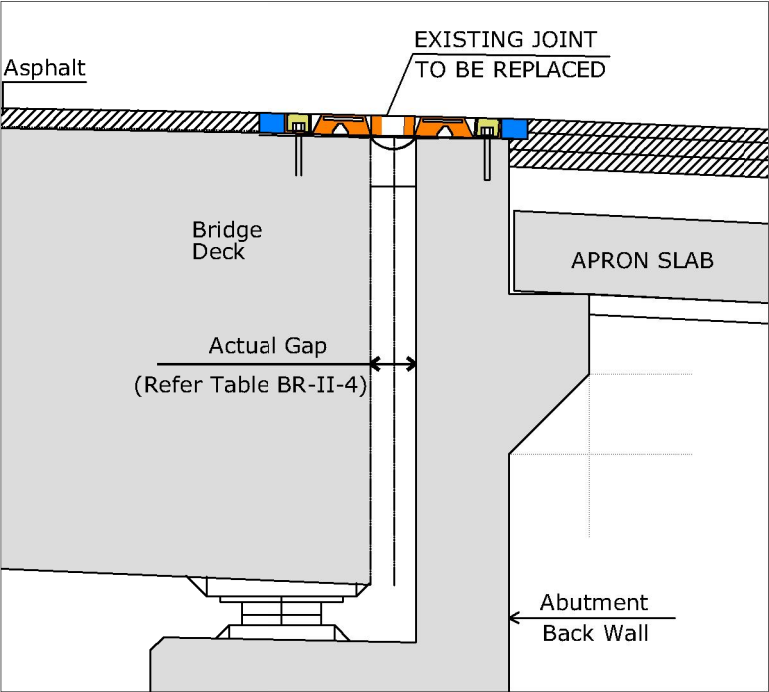
DWG BR-II.4-01      01

Caza Saida : Al Zahrani Interchange									Existing Joints Characteristics					New Joints Characteristics			
Package	Caza	Bridge Reference	Bridge Name	Number of Carriage way	Type of existing Deck	Total Number of Joints / Carriageway	Distance Between joints (m)	Joint Reference	Type of existing joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)	Required Maintenance Works	Type of new joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)
LOT 2	Saida	BR-II.4	Al Zahrani Interchan ge-Main Bridge	2.00	Precast Girder Bridge	2.00	70.00	J1-NW	Reinforced Elastomeric	10cm	28cm	16.00	Removal of exsiting joint, supply and installation of new joint as specified	Reinforced Elastomeric type EJ 180	10cm	50.00	16.00
								J2-SW	Reinforced Elastomeric	10cm	28cm	16.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	16.00
							70.00	J3-NE	Reinforced Elastomeric	10cm	28cm	16.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	16.00
								J4-SE	Reinforced Elastomeric	10cm	28cm	16.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	16.00
		BR-II.4	Al Zahrani Interchan ge-West Ramp	1.00	Precast Girder	2.00	70.00	J5-NW	Reinforced Elastomeric	10cm	28cm	11.50	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	11.50
								J6-SW	Reinforced Elastomeric	10cm	28cm	11.50	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 180	10cm	50.00	11.50
			Al Zahrani Interchan ge-East Ramp	1.00	Precast Girder	2.00	70.00	J7-NE	Reinforced Elastomeric	5cm	28cm	9.50	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 160	5cm	50.00	9.50
								J8-SE	Reinforced Elastomeric	5cm	28cm	9.50	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 160	5cm	50.00	9.50

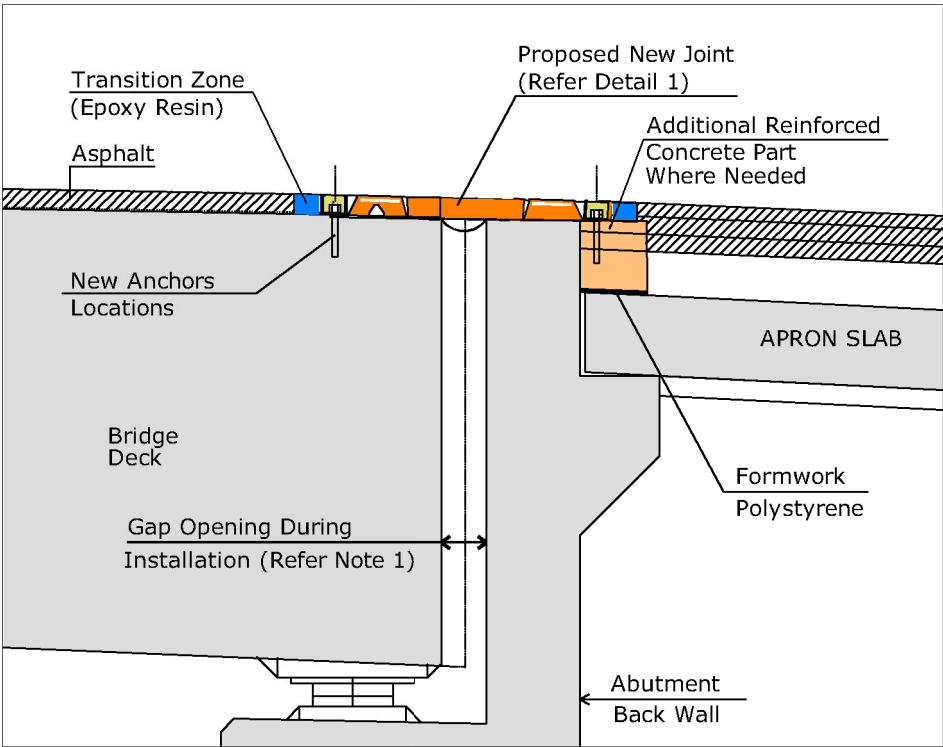
EXISTING & NEW EXPANSION JOINTS CHARACTERISTICS  
(TABLE BR-II-4)



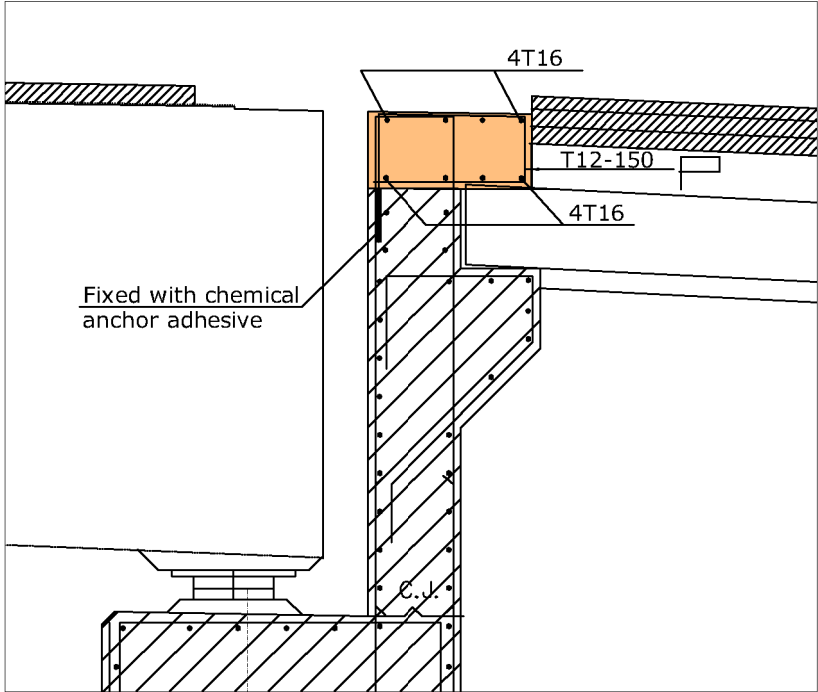
REINFORCED ELASTOMERIC JOINTS  
TYPICAL SECTION DETAILS



TYPICAL SECTION FOR THE EXISTING JOINT



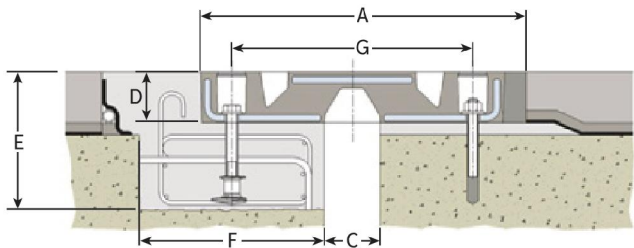
TYPICAL SECTION FOR THE PROPOSED NEW JOINT



TYPICAL DETAILS FOR THE ADDITIONAL REINFORCEMENT (WHERE NEEDED)

- NOTES
- 1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
    - a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.
    - b)Detailed execution drawings, technical specifications, design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.
    - c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).
    - d)Method statement for the joint rehabilitation works.

TYPICAL DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS



Single element module

DETAIL 1

SCHEDULE DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS

Location	Type	Actual Gap Width (mm)	Joint Movement Capacity	Dimensions (mm)*		
				A	G	C
Joint 1-NW	EJ 180	100	± 90	500	400	100
Joint 2-SW	EJ 180	100	± 90	500	400	100
Joint 3-NE	EJ 180	100	± 90	500	400	100
Joint 4-SE	EJ 180	100	± 90	500	400	100
Joint 5-NW	EJ 180	100	± 90	500	400	100
Joint 6-SW	EJ 180	100	± 90	500	400	100
Joint 7-NE	EJ 160	50	± 80	470	370	90
Joint 8-SE	EJ 160	50	± 80	470	370	90

\* REFER TO NOTE 1

LEGEND						
No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER	

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

STAGE : TENDER DOCUMENTS

DATE January 2024

SCALE N.T.S.

CAZA SAIDA AL ZAHRANI INTERCHANGE (BR-II.4) SHEET 2 OF 4


DRAWING No. DWG BR-II.4-02

REV 01



AL ZAHRANI INTERCHANGE (BR-II.4)  
BRIDGE EXPANSION JOINTS  
(EXISTING SITE CONDITION-SITE PHOTOS)



KEY PLAN					
NOTES					
LEGEND					
No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER
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AL ZAHRANI INTERCHANGE (BR-II.4)  
BRIDGE EXPANSION JOINTS  
(SOUTH RAMP TO BEIRUT SITE PHOTOS)  
(EXISTING SITE CONDITION-SITE PHOTOS)

KEY PLAN

NOTES

LEGEND



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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

CAZA SAIDA  
AL ZAHRANI INTERCHANGE  
(BR-II.4)  
SHEET 4 OF 4

STAGE : TENDER DOCUMENTS

DATE January 2024

SCALE N.T.S.

DRAWING No. DWG BR-II.4-04  
REV 01



AL AAKBIEH BRIDGE-FACING PHOENICIA UNIVERSITY  
(BR-II.5)



BRIDGE AERIAL VIEW  
N.T.S.

- NOTES
- 1-Prior to ordering and delivering the specified bridge expansior joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
- a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.
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- c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).
- d)Method statement for the joint rehabilitation works.

LEGEND

<div></div>	BRIDGE DECK AREA
<div></div>	BRIDGE EXPANSION JOINTS

Caza Saida : Al Aakbieh Bridge									Existing Joints Characteristics					New Joints Characteristics			
Package	Caza	Bridge Reference	Bridge Name	Number of Carriage way	Type of existing Deck	Total Number of Joints / Carriageway	Distance Between joints (m)	Joint Reference	Type of existing joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)	Required Maintenance Works	Type of new joint	Actual Gap Width (cm)	Joint Width (cm)	Joint Length (m)
LOT 2	Saida	BR-II.5	Al Aakbieh Bridge	2.00	Precast Girder Bridge	2.00	300.00	J1-NW	Reinforced Elastomeric	15cm	55cm	16.00	Removal of exsiting joint, supply and installation of new joint as specified	Reinforced Elastomeric type EJ 270	15cm	89.00	16.00
								J2-SW	Reinforced Elastomeric	15cm	55cm	16.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 270	15cm	89.00	16.00
							300.00	J3-NE	Reinforced Elastomeric	15cm	55cm	16.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 270	15cm	89.00	16.00
								J4-SE	Reinforced Elastomeric	15cm	55cm	16.00	Removal of exsiting joint, supply and installation of new joint	Reinforced Elastomeric type EJ 270	15cm	89.00	16.00

EXISTING & NEW EXPANSION JOINTS CHARACTERISTICS  
(TABLE BR-II-5)

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

CAZA SAIDA  
AL AAKBIEH BRIDGE  
FACING PHOENICIA UNIVERSITY (BR-II.5)  
SHEET 1 OF 3

STAGE : TENDER DOCUMENTS

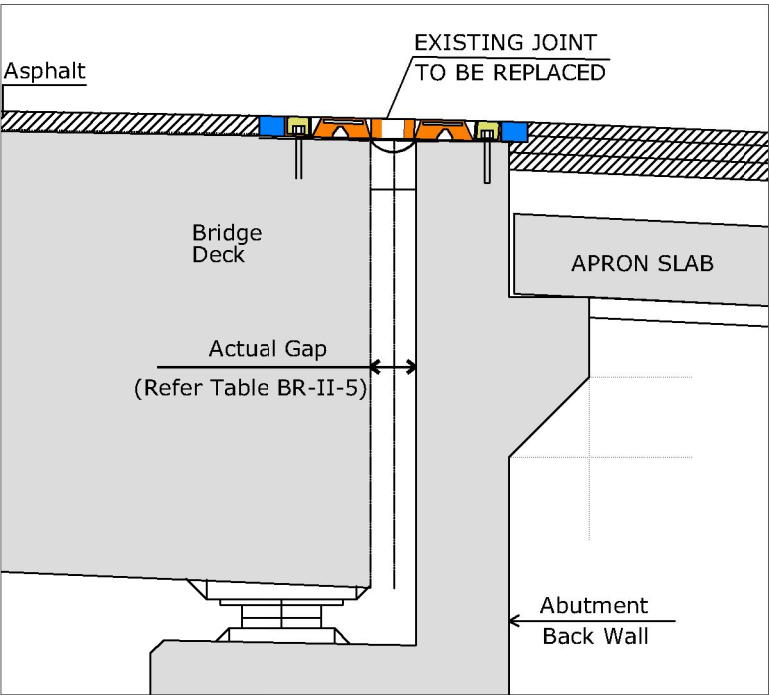
DATE January 2024

SCALE N.T.S.

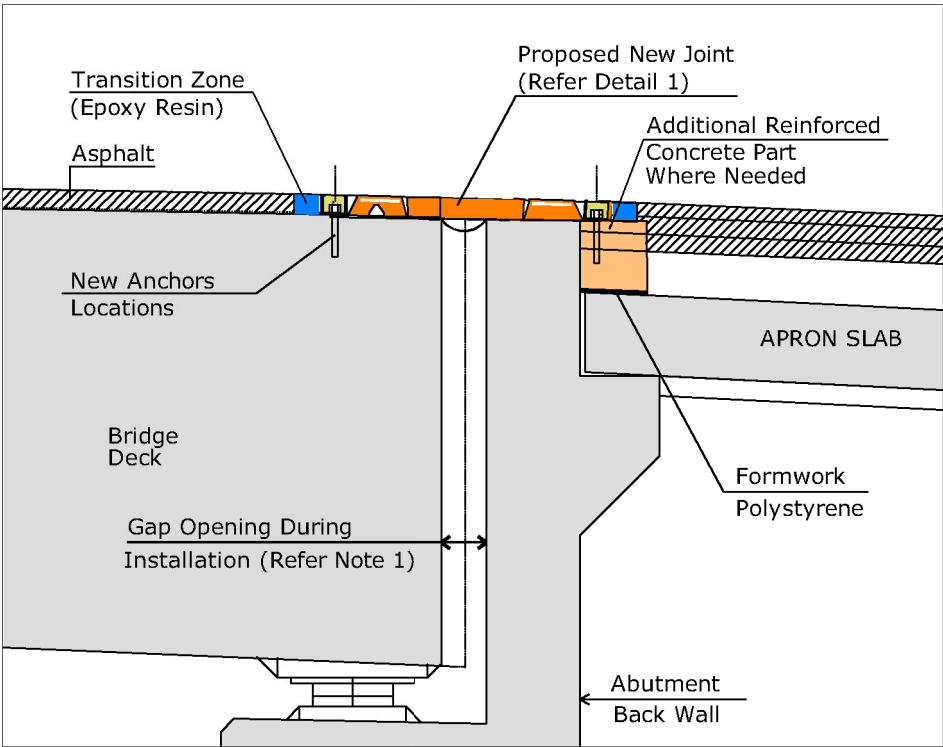
DRAWING No. REV DWG BR-II.5-01 01



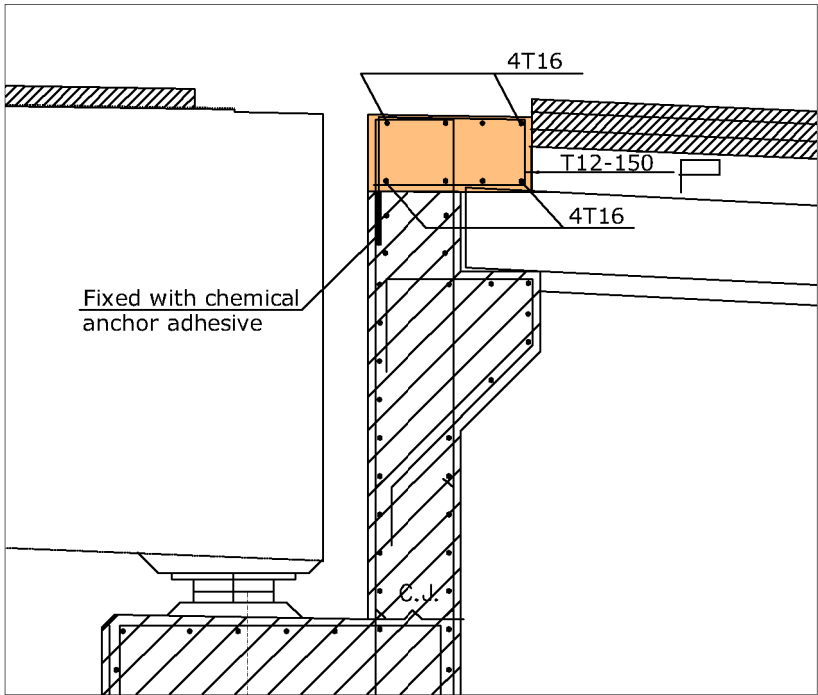
REINFORCED ELASTOMERIC JOINTS  
TYPICAL SECTION DETAILS



TYPICAL SECTION FOR THE EXISTING JOINT



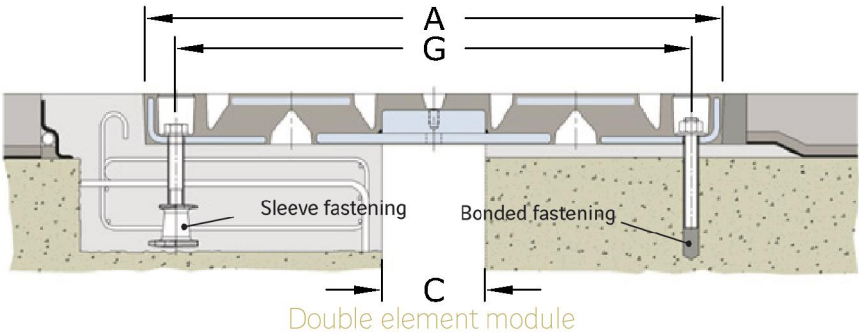
TYPICAL SECTION FOR THE PROPOSED NEW JOINT



TYPICAL DETAILS FOR THE ADDITIONAL REINFORCEMENT (WHERE NEEDED)

- NOTES
- 1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:
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TYPICAL DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS



DETAIL 1

SCHEDULE DETAILS FOR THE REINFORCED ELASTOMERIC JOINTS

Location	Type	Actual Gap Width (mm)	Joint Movement Capacity	Dimensions (mm)*		
				A	G	C
Joint 1-NW	EJ 270	150	± 135	890	790	150
Joint 2-SW	EJ 270	150	± 135	890	790	150
Joint 3-NE	EJ 270	150	± 135	890	790	150
Joint 4-SE	EJ 270	150	± 135	890	790	150

\* REFER TO NOTE 1

LEGEND

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

**REPUBLIC OF LEBANON**

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2

STAGE : TENDER DOCUMENTS

DATE January 2024

CAZA SAIDA AL AAKBIEH BRIDGE FACING PHOENICIA UNIVERSITY (BR-II.5) SHEET 2 OF 3

SCALE N.T.S.

DRAWING No. DWG BR-II.5-02 REV 01



AL AAKBIEH BRIDGE-FACING PHOENICIA UNIVERSITY (BR-II.5)  
BRIDGE EXPANSION JOINTS  
(EXISTING SITE CONDITION-SITE PHOTOS)



KEY PLAN

NOTES

LEGEND

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REHABILITATION & MAINTENANCE OF BRIDGES EXPANSION JOINTS LOT 2		STAGE : TENDER DOCUMENTS	
CAZA SAIDA AL AAKBIEH BRIDGE FACING PHOENICIA UNIVERSITY (BR-II.5) SHEET 3 OF 3		DATE	January 2024
		SCALE	N.T.S.
		DRAWING No.	REV
		DWG BR-II.5-03	01



# EXECUTION PROCEDURE FOR BRIDGE JOINTS REHABILITATION (SHHET 1 OF 2)

## Step 1. Traffic Management Implementation

- Install the temporary signing and channelizing devices according to the approved TMP plan and TTCP drawings.

## Step 2. Removal of Damaged/Defective Expansion Joints

- Dismantle the defective/damaged expansion joints and all related accessories by removing the grouting and undoing the nuts using a torque meter.
- Vertically cut the existing transition strips layer using a saw.
- Remove the transition strips by hand and, if required, use a hammer. Do not damage the structural concrete (refer to Photo 1).
- Thoroughly clean the concrete support and the joint gap by using heavy and energetic blowing across the full thickness (refer to Photo 2). Also, prevent small items from getting inside the gap.



Photo 1: Removing and restoring the concrete support.



Photo 2: Clean the concrete support and the joint gap.

## Step 3. Base Joint Preparation

- Check the condition of the concrete support and submit proposed remedial measures for approval if the concrete faces are not sound.
- Record and verify the dimensions of the existing concrete support, pavement thickness (R), new joint thickness (C), and gap width (G) (refer to Figure 1). Submit the necessary remedial measures for engineer approval if any factors hinder the proper functioning of the joints.

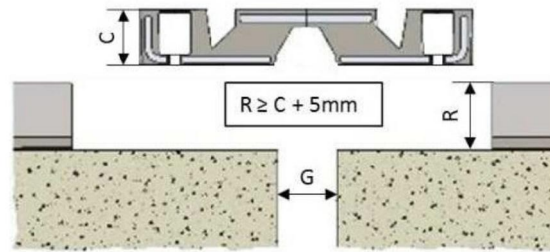


Figure 1

- Where necessary, demolish the weakened part of the concrete support and pour the required additional concrete elements to properly secure the joints. Utilize chemical anchors for fixing the additional reinforcement bars and pour high-performance concrete or micro-cement concrete, all as specified and subject to Engineer approval.

## Step 4. Drain Installation and Waterproofing Closing

- Install the drain as shown in Figure 2 and according to the manufacturer's recommendations to facilitate the evacuation of any water within the pavement thickness.
- Connect the drain to the outlet evacuation system.

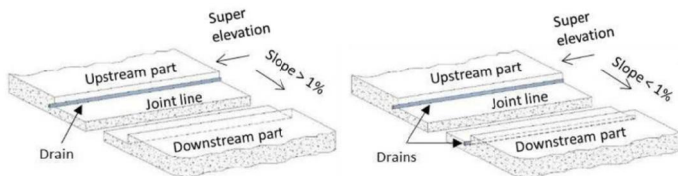


Figure 2 (Drain Installation)

## Step 5. Preparing The Bedding Support

- Install a formwork of G thickness in polystyrene (a plywood-polystyrene-plywood sandwich for thickness over 65 mm) or in wood (Figure 3). If plywood is used, it must be coated with a form oil before being installed.
- Carefully cut the formwork slightly higher than the level of the road surface.

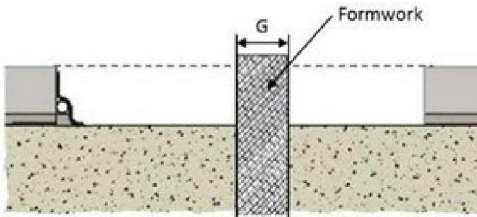


Figure 3: Formwork installation

- Adjust the bedding thickness by using a metallic or wooden jig (Figure 5) to position the elements between 0 and 2 mm below the road surface level (Figure 4).

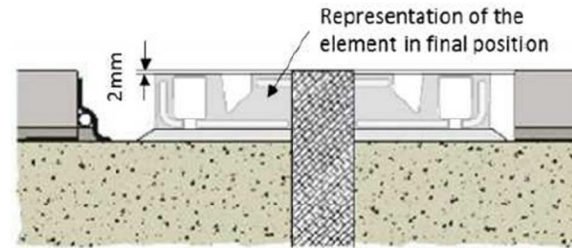


Figure 4

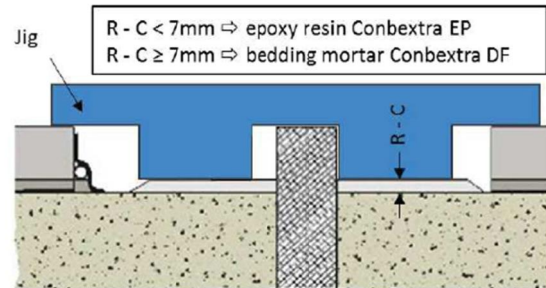


Figure 5: Setting the bedding thickness by using special Jig)

- Use as bedding support the following products depending on pavement thickness (R) and joint thickness (C) (Figure 5):
  - ✓ If  $(R - C) < 7\text{mm}$ : use epoxy resin (Conbextra EP or equivalent).
  - ✓ If  $(R - C) \geq 7\text{mm}$ : use bedding mortar (Conbextra Bedding Mortar or equivalent).



Photo 3 Setting the bedding thickness by the JIG



Photo 4 Levelling of the elements

### NOTES

1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:

a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.

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d)Method statement for the joint rehabilitation works.

### LEGEND

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

**REPUBLIC OF LEBANON**

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

STAGE : TENDER DOCUMENTS  
DATE : January 2024

EXECUTION PROCEDURE FOR  
BRIDGE JOINTS REHABILITATION  
SHEET 1 OF 2

SCALE : N.T.S.  
DRAWING No. : DWG BR-TD-01  
REV : 01



# EXECUTION PROCEDURE FOR BRIDGE JOINTS REHABILITATION (SHHET 2 OF 2)

## Step 6. Preparing sealing of the anchorages

- Install the joints elements to mark the location of the anchorages with paint or predrilling.
- Dismantle the joints elements.
- Wait the bedding support has reached minimum 35 MPa of mechanical resistance.
- Drill the holes to the required depth and diameter as per manufacturer's recommendation (Figure 6).

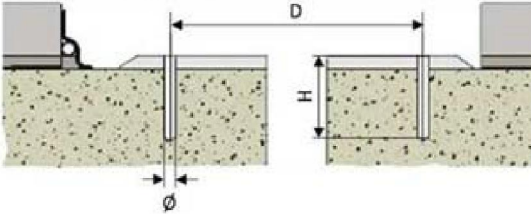


Figure 6: Anchorages sealing preparation

- Clean and dry the holes
- Fixing by approved chemical sealing as follow:
  - Insert the chemical bulbs inside the holes
  - Install the threaded rods to the bottom of the holes using a power drill (set on 750 rpm speed).
  - Wait until the chemical bulbs have hardened.

## Step 7. Preparing the elements support surface

- Clean the concrete faces
- Coat them with epoxy resin or equivalent over a height of 80mm at least (Photo 6).
- Set the adequate membrane progressively by applying its rough face against the 80mm coated (Photos 5 & 6; Figure 7).



Photo 5 Coating the concrete faces



Photo 6 Membrane installation

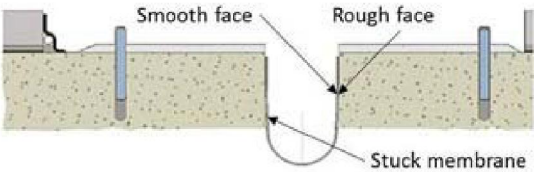


Figure 7

## Step 8. Installing and Fixation the joints elements

- Use the appropriate tools recommended by the manufacturer to set the joint line.
- Proceed with the joint installation: Position the elements based on the pavement's shape, starting from the top for pavements with a roof shape and from the bottom for pavements with superelevation.

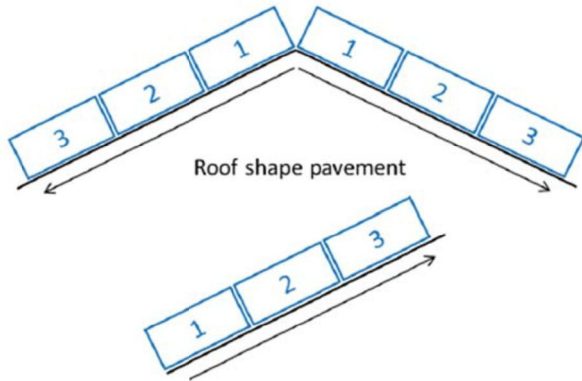


Figure 8: Installation order of the elements



Photo 7: Installation of joint elements

## Step 9. Tensioning the anchorages

- Apply tension according to the chosen fastener type, starting from the middle anchorages of each element and finishing at the ends.
- Fasten bolts using a torque wrench calibrated according to manufacturer recommendations.
- Check the tightening torque and correct it if necessary.

## Step 10. Protecting the anchorages

- Clean the area around the anchorages meticulously by blowing.
- To protect the anchors, pour approved epoxy resin into the anchorages recess.

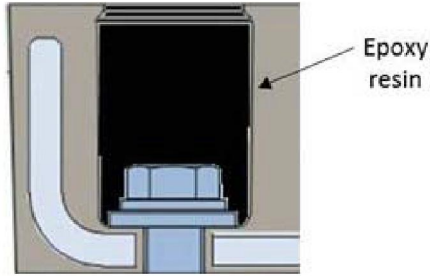


Figure 9: Anchorage heads protection

## Step 11. Transition zone

- Clean the transition zone between the joint elements and the road surface thoroughly to remove any non-adherent particles.
- Protect the upper face of the surrounding elements (joint and pavement) with masking tape or other material to prevent them from becoming dirty.
- Fill in the transition zone (refer to Photo 8 and Figure 10) with approved epoxy resin (Fresyssiflex Sb or equivalent).



Photo 8: Filling in the transition zone

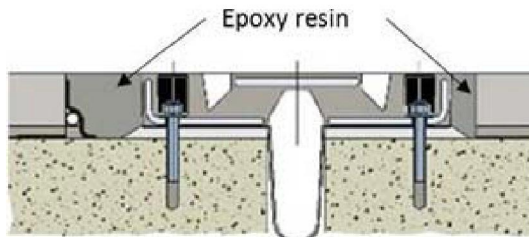


Figure 10 : Fill in the transition zone

### NOTES

1-Prior to ordering and delivering the specified bridge expansion joints, the contractor must submit a comprehensive document for the Engineer's approval. This submittal should include the following:

a)Site survey and measurements for the bridge expansion joints to be replaced, based on the contractor's own site survey. This should encompass mainly the actual gap width, joint lengths, and details of the existing joints.

b)Detailed execution drawings, technical specifications, design calculation notes, dimensions and seize of the proposed joints. This should include any necessary site modifications to accommodate the new joints.

c)Structural assessment for the joint concrete supports and the proposed design and method for strength improvement (where required).

d)Method statement for the joint rehabilitation works.

### LEGEND

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

**REPUBLIC OF LEBANON**

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**COUNCIL FOR DEVELOPMENT  
AND RECONSTRUCTION**

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دار الحناصه نازح تاليس وشركاه المهندسين

REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

STAGE : TENDER DOCUMENTS  
DATE January 2024

EXECUTION PROCEDURE FOR  
BRIDGE JOINTS REHABILITATION  
SHEET 2 OF 2

SCALE N.T.S.  
DRAWING No. DWG BR-TD-02  
REV 01



Typical Left Hand Half Lanes Closure on Highway From Each Direction  
Posted Speed=100Km/h, 3 or 2 lanes in each Direction  
Group I- Nighttime Works

KEY PLAN















- All dimensions are in meters unless otherwise indicated.
- Do not scale from the drawings.
- Connected plastic new jersey barriers filled (water & sand) in red colors with flashing Tape.
- This T.M.P. on highway is indicative. The contractor shall prepare the updated T.M.P. based on ground conditions and shall be approved by the consultant prior to commencement of works.
- Advanced warning area shall be increased in case of horizontal curves and/or working during night.

NOTES

LEGEND

- Plastic New Jersey Barriers Filled (Water And Sand)
- Solar Flash Light On Signs And Every 15m


Sign locations, Types and Dimensions:


	Advance Warning Area										Transition Area 360m			Termination Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Permanent Speed Limit														
	Warning Sign Dim:1x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Mandatory & Warning Sign D:0.85 or 1m	Regulatory Sign D:0.85 or 1m	Mandatory Sign D:0.85 or 1m	Warning Sign D:1.8x0.6m	Mandatory Sign D:0.85 or 1m	Warning Sign D:1.8x0.6m
100	0m	100m	200m	300m	400m	500m	600m	700m	800m	900m	1050m	1230m	1410m	100m From End of Works


All Signs shall be reflectorized by the application of retro-reflective materials.  
Advanced warning Area shall be increased a case of horizontal curves, and Crest/Sag points.  
All Dimensions are in Meter unless otherwise indicated.  
All used Speed Limits are in Km/h.  
Do not Scale from the Drawing.


Permanent Speed Limit	Minimum Longitudinal Safety Buffer Length
100	60m


Legend and Details:


 Solar Flash Light on each signs and every 15m on the Working Zone.

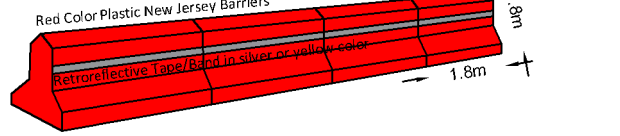
 Flagman

 Work Zone.

 Post/Signs

 Traffic Direction

 Connected Plastic New Jersey Barriers filled by Water in red Color with Flashing Tape.



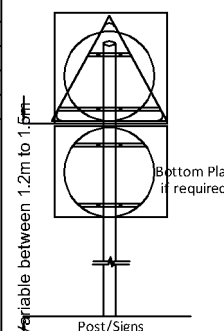
Red Color Plastic New Jersey Barriers

Retroreflective Tape/Band in silver or yellow color

0.8m

1.8m

1.5m



Variable between 1.2m to 1.5m

Bottom Plate if required

Post/Signs

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

TRAFFIC SAFETY & CONTROL DEVICES DETAILS  
SHEET 1 OF 4

STAGE : TENDER DOCUMENTS

DATE January 2024

SCALE N.T.S.

DRAWING No.  
DWG BR-TD-03

REV  
01



Typical Right Hand Half Lanes Closure on Highway From Each Direction  
Posted Speed=100Km/h, 3 or 2 lanes in each Direction  
Group I- Nighttime Works

KEY PLAN

- All dimensions are in meters unless otherwise indicated.
- Do not scale from the drawings.
- Connected plastic new jersey barriers filled (water & sand) in red colors with flashing Tape.
- This T.M.P. on highway is indicative. The contractor shall prepare the updated T.M.P. based on ground conditions and shall be approved by the consultant prior to commencement of works.
- Advanced warning area shall be increased in case of horizontal curves and/or working during night.

NOTES

LEGEND

- Plastic New Jersey Barriers Filled (Water And Sand)
- Solar Flash Light On Sings And Every 15m

Sign locations, Types and Dimensions:

	Advance Warning Area										Transition Area 360m			Termination Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Permanent Speed Limit														
	Warning Sign Dim:1x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Mandatory & Warning Sign D:0.85 or 1m	Regulatory Sign D:0.85 or 1m	Mandatory Sign D:0.85 or 1m	Warning Sign D:1.8x0.6m	Mandatory Sign D:0.85 or 1m	Warning Sign D:1.8x0.6m
100	0m	100m	200m	300m	400m	500m	600m	700m	800m	900m	1050m	1230m	1410m	100m From End of Works

All Signs shall be reflectorized by the application of retro-reflective materials.  
Advanced warning Area shall be increased a case of horizontal curves, and Crest/Sag points.  
All Dimensions are in Meter unless otherwise indicated.  
All used Speed Limits are in Km/h.  
Do not Scale from the Drawing.

Permanent Speed Limit	Minimum Longitudinal Safety Buffer Length
100	60m

Legend and Details:

	Solar Flash Light on each sings and every 15m on the Working Zone.
	Flagman
	Work Zone.
	Post/Signs
	Traffic Direction
	Connected Plastic New Jersey Barriers filled by Water in red Color with Flashing Tape.

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

TRAFFIC SAFETY & CONTROL DEVICES DETAILS  
SHEET 2 OF 4

STAGE : TENDER DOCUMENTS  
DATE : January 2024  
SCALE : N.T.S.  
DRAWING No. : DWG BR-TD-04  
REV : 01



Typical Left Hand Half Lanes Closure on Highway From Each Direction  
Posted Speed=100Km/h, 3 or 2 lanes in each Direction  
Group II- Daytime Works

KEY PLAN

- All dimensions are in meters unless otherwise indicated.
- Do not scale from the drawings.
- Connected plastic new jersey barriers filled (water & sand) in red colors with flashing Tape.
- This T.M.P. on highway is indicative. The contractor shall prepare the updated T.M.P. based on ground conditions and shall be approved by the consultant prior to commencement of works.
- Advanced warning area shall be increased in case of horizontal curves and/or working during night.

NOTES

LEGEND

- Plastic New Jersey Barriers Filled (Water And Sand)
- Solar Flash Light On Signs And Every 15m

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

STAGE : TENDER DOCUMENTS

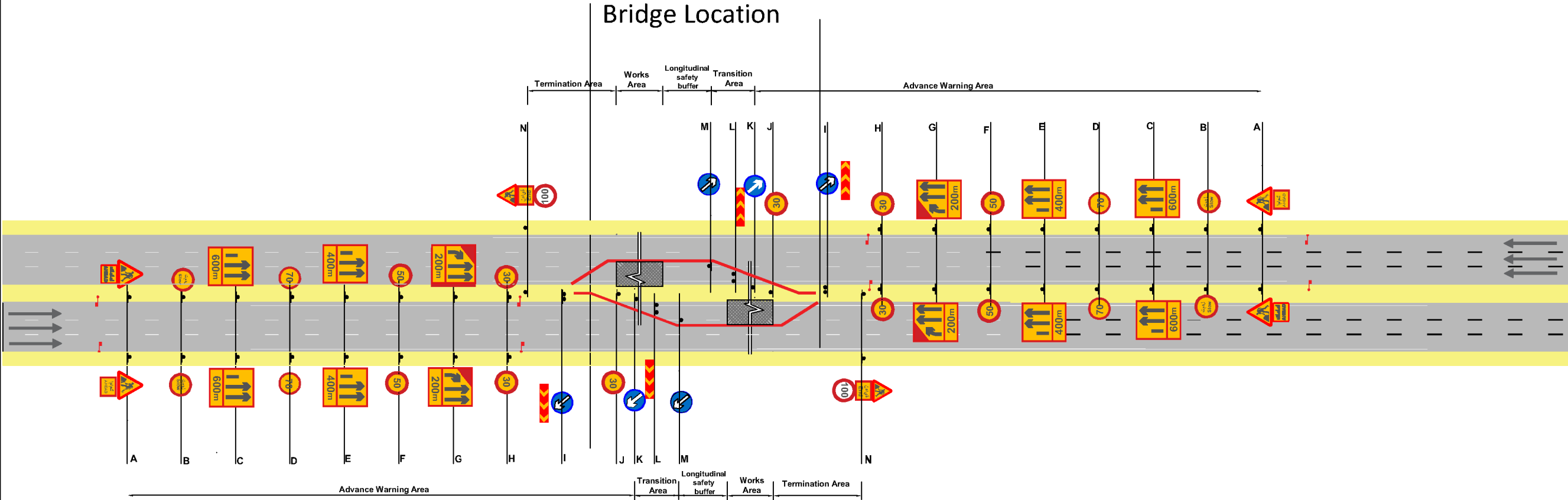
DATE January 2024

TRAFFIC SAFETY & CONTROL DEVICES DETAILS  
SHEET 3 OF 4

SCALE N.T.S.

DRAWING No. DWG BR-TD-05  
REV 01

Bridge Location



Sign locations, Types and Dimensions:

Permanent Speed Limit	Advance Warning Area										Transition Area 360m			Termination Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
100	Warning Sign Dim:1x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Mandatory &Warning Sign	Regulatory Sign D:0.85 or 1m	Mandatory Sign D:0.85 or 1m	Warning Sign Dim:1.8x0.6m	Mandatory Sign D:0.85 or 1m	Warning Sign
	0m	100m	200m	300m	400m	500m	600m	700m	800m	900m	1050m	1230m	1410m	100m From End of Works

All Signs shall be reflectorized by the application of retro-reflective materials.  
Advanced warning Area shall be increased a case of horizontal curves, and Crest/Sag points.  
All Dimensions are in Meter unless otherwise indicated.  
All used Speed Limits are in Km/h.  
Do not Scale from the Drawing.

Legend and Details:

Solar Flash Light.	
Flagman	
Work Zone.	
Post/Signs	
Traffic Direction	
Connected Plastic New Jersey Barriers filled by Water in red Color with Flashing Tape.	
Red Color Plastic New Jersey Barriers	
Retroreflective Tape/Band in silver or yellow color	
Variable between 1.2m to 1.5m	
Bottom Plate if required	
Post/Signs	



Typical Right Hand Half Lanes Closure on Highway From Each Direction  
Posted Speed=100Km/h, 3 or 2 lanes in each Direction

Group II- Daytime Works

KEY PLAN















- All dimensions are in meters unless otherwise indicated.
- Do not scale from the drawings.
- Connected plastic new jersey barriers filled (water & sand) in red colors with flashing Tape.
- This T.M.P. on highway is indicative. The contractor shall prepare the updated T.M.P. based on ground conditions and shall be approved by the consultant prior to commencement of works.
- Advanced warning area shall be increased in case of horizontal curves and/or working during night.

NOTES

LEGEND

- Plastic New Jersey Barriers Filled (Water And Sand)
- Solar Flash Light On Sings And Every 15m







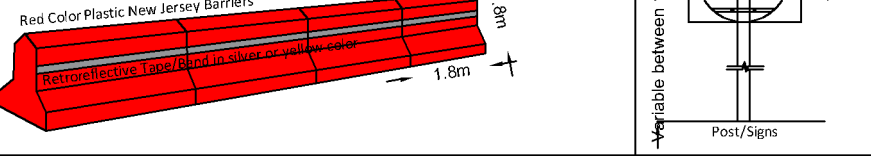
Sign locations, Types and Dimensions:

	Advance Warning Area										Transition Area 360m			Termination Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Permanent Speed Limit														
	Warning Sign Dim:1x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Warning Sign Dim:1.2x1m	Regulatory Sign D:0.85 or 1m	Mandatory &Warning Sign	Regulatory Sign D:0.85 or 1m	Mandatory Sign D:0.85 or 1m	Warning Sign Dim:1.8x0.6m	Mandatory Sign D:0.85 or 1m	Warning Sign Dim:1.8x0.6m
100	0m	100m	200m	300m	400m	500m	600m	700m	800m	900m	1050m	1230m	1410m	100m From End of Works

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All Dimensions are in Meter unless otherwise indicated.  
All used Speed Limits are in Km/h.  
Do not Scale from the Drawing.

Permanent Speed Limit	Minimum Longitudinal Safety Buffer Length
100	60m

Legend and Details:

	Solar Flash Light.
	Flagman
	Work Zone.
	Post/Signs
	Traffic Direction
	Connected Plastic New Jersey Barriers filled by Water in red Color with Flashing Tape.
	

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REHABILITATION & MAINTENANCE  
OF BRIDGES EXPANSION JOINTS  
LOT 2

TRAFFIC SAFETY & CONTROL DEVICES DETAILS  
SHEET 4 OF 4

STAGE : TENDER DOCUMENTS  
DATE : January 2024  
SCALE : N.T.S.  
DRAWING No. : DWG BR-TD-06  
REV : 01