STRUCTURAL NOTES

GENERAL

1- THE DESIGN OF THE BRIDGE WORKS IS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS-4TH EDITION 2007.

2- THE CONSTRUCTION SPECIFICATION FOR THE BRIDGE WORKS SHALL BE IN ACCORDANCE WITH MPW&H - DIRECTORATE OF PLANNING AND DEVELOPMENT - SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION - 1991 GENERAL SPECIFICATION AND PARTICULAR SPECIFICATIONS OF THIS PROJECT.

3- FOR THE HORIZONTAL AND VERTICAL ALIGNMENT THE STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH CIVIL DRAWINGS.

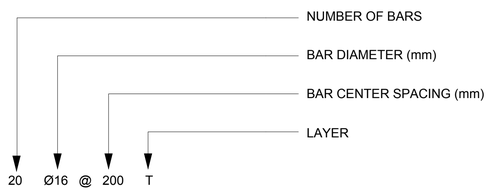
4- ALL STRUCTURAL DIMENSIONS ARE GIVEN IN MILLIMETERS (mm), ALL LEVELS IN METERS (m) ABOVE DATUM, ALL CHAINAGES IN KILOMETERS (km) + METERS (m).

ABBREVIATIONS AND SYMBOLS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS.	HORIZ.	HORIZONTAL
ASTM.	AMERICAN STANDARD FOR TESTING OF MATERIALS	INV.	INVERT
ABUT.	ABUTMENT	JT.	JOINT
APPR.	APPROACH	kg	KILOGRAM
APPROX.	APPROXIMATELY	km	KILOMETER
ALT.	ALTERNATING	kN.	KILONEWTON
B.	BOTTOM	LT.	LEFT
BL.	BASELINE	m.	METER
BRGS.	BEARINGS	MAX.	MAXIMUM
C/L OR ℄	CENTER LINE	MIN.	MINIMUM
C/C	CENTER TO CENTER	MISC.	MISCELLANEOUS
C/W	CARRIAGEWAY	mm.	MILLIMETER
CLR.	CLEARANCE/CLEAR	MPa.	MIGA PASCAL
COL.	COLUMN	NF.	NEAR FACE
CONC.	CONCRETE	NGL.	NATURAL GROUND LEVEL
CONST.	CONSTRUCTION	NO.	NUMBER
cu.	CUBIC	N.T.S.	NOT TO SCALE
cm.	CENTIMETER	OPP.	OPPOSITE
C.S.	CROSS SLOPE	PDL.	PROPOSED DESIGN LEVEL
DEG.	DEGREE	R.	RADIUS
DIA. OR Ø	DIAMETER	RC.	REINFORCED CONCRETE
DIAPH.	DIAPHRAGM	RDWY.	ROADWAY
DRG. OR DWG	DRAWING	REF.	REFERENCE
DIST.	DISTANCE	REINF.	REINFORCEMENT
DIM.	DIMENSION	SDWK.	SIDEWALK
EA.	EACH	SHLD.	SHOULDER
EF.	EACH FACE	STA.	STATION/STATIONING
ELE.	ELEVATION	STD.	STANDARD
EXP.	EXPANSION	SYMM.	SYMMETRICAL
FF.	FAR FACE	T.	TOP
FGL.	FINISHED GROUND LEVEL	THK.	THICK
FIX	FIXED	TYP.	TYPICAL
		VAR.	VARIES
		W.T	WATER TABLE

REINFORCEMENT DETAILS

REINFORCING STEEL CALLOUTS SHALL BE READ AS SHOWN BELOW :-



MATERIALS

REINFORCING STEEL

-ALL REINFORCEMENT BARS ARE TO BE DEFORMED ROUND STEEL BARS GRADE 60 CONFORMING TO JSS/441/1986 OR AASHTO M 31M (ASTM, A615M).

BAR SIZE mm	DEVELOPMENT LENGTH			LAP SPLICE LENGTH		
	COMP.	TENSION BARS		COMP.	TENSION BARS	
	NOT ENCLOSED	TOP BARS	OTHER BARS	NOT ENCLOSED	TOP BARS	OTHER BARS
12	270	340	300	360	440	390
16	360	460	330	480	600	430
20	460	660	470	600	860	610
25	570	1030	740	740	1340	960
32	730	1690	1210	950	2200	1570
36	820	2140	1530	1070	2780	1990
40	910	2420	1730	1190	3150	2250

REINFORCEMENT DEVELOPMENT AND LAP SPLICE LENGTHS

NOTES FOR TABLE:-

I) LENGTHS IN TABLE ARE BASED ON A CONCRETE COMPRESSIVE CYLIDER STRENGTH OF 210 Kg/cm^2 AND DEFORMED REINFORCING STEEL CONFORMING TO THE STRENGTH REQUIREMENTS OF ASTM-A615 GRADE 60. (FY = 410 MPa)

II) ALL TABLE VALUES ARE IN MILLIMETERS.

III) VALUES GIVEN IN TABLE ARE FOR BARS SPACED AT LEAST 15 cm CENTERS

IV) FOR OTHER CONDITIONS THE FOLLOWING MULTIPLIES SHALL BE USED:
- A. TENSION BARS SPACED LESS THAN 15cm CENTERS = 1.25 x TABLE VALUE
- B. 3-BAR BUNDLES IN TENSION OR COMPRESSION = 1.20 x TABLE VALUE
- C. 4-BAR BUNDLES IN TENSION OR COMPRESSION = 1.33 x TABLE VALUE
- D. LAPS FOR EACH BAR IN A BUNDLE SHALL BE STAGGERED.
- E. IF Fy IS LESS THAN 410 MPa MULTIPLY TABLE VALUES BY Fy / 410.
- F. IF Fc' IS GREATAR THAN 210 Kg/cm^2 MULTIPLY TABLE VALUES BY $\sqrt{210 / Fc'}$, EXCEPT MINIMUM LENGTH SHALL BE 30cm

V) TOP BARS ARE HORIZONTAL BARS, SUCH AS IN WALLS, BEAMS AND SLABS, SO PLACED THAT MORE THAN 30 cm OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

VI) NO SPLICING OF STEEL BARS IS PERMITTED UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

VII) LAP SPLICES SHALL NOT BE USED IN LOCATIONS OF MAXIMUM MOMENTS.

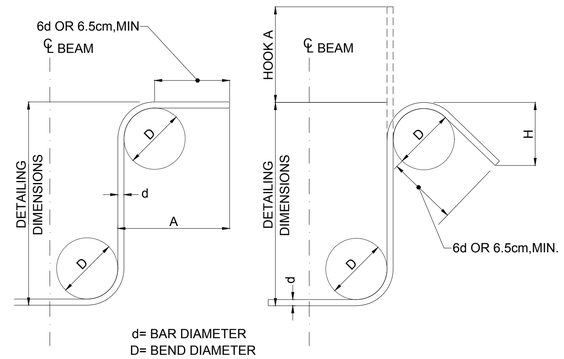
VIII) THE VALUES OF TENSION LAP SPLICES SHOWN IN TABLE ARE FOR CLASS "B" SPLICES. FOR OTHER SPLICE CONDITIONS THE FOLLOWING MULTIPLIERS SHALL BE USED :
- A. CLASS "A" SPLICE = 0.77 x TABL VALUE.
- B. CLASS "C" SPLICE = 1.31 x TABLE VALUE.
- C. CLASS "D" SPLICE = 1.54 x TABLE VALUE.

AND FOR SPLICE CLASS DESCRIPTION SEE AASHTO.

mm	STANDARD 180 HOOK			STANDARD 90 HOOK	
	HOOK A	J	D	A	D
8	130	64	48	128	48
10	140	80	60	160	60
12	150	96	72	192	74
14	165	112	84	224	84
16	180	128	96	256	96
20	230	160	120	320	120
25	280	250	150	400	150
30	410	300	240	510	240
32	440	320	256	544	256

fy= 410 MPa
d= BAR DIAMETER
D= BEND DIAMETER

REINFORCEMENT STANDARD HOOK DETAILS



NOTE : TIE BENDS ARE SIMILAR TO STIRRUP HOOK SHOWN

90° HOOK 135° HOOK

BAR SIZE mm	D	90° HOOK	135° HOOK	
		A	HOOK A	H
8	40	100	110	70
10	50	110	120	75
12	60	120	130	80
14	65	135	145	90
16	70	150	160	100
20	80	180	210	130

REINFORCEMENT STIRRUP AND TIE HOOK DIMENSIONS

NOTES :

Rev.	Date	Description	Checked

Client: Greater Amman Municipality

Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

Consultants: steer davies gleave; CONSOLIDATED CONSULTANTS GROUP

Drawing Title: GENERAL STRUCTURAL DRAWINGS
GENERAL NOTES
(1 OF 2)

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	N.T.S
Drawing No. :	ST-001	Rev.	00

STRUCTURAL NOTES

CONCRETE

THE CLASSES OF CONCRETE FOR THIS WORK ARE BASED ON 28 DAYS COMPRESSIVE CUBE STRENGTH AND ARE AS FOLLOWS:-

-COMPRESSIVE CUBE STRENGTH IS ASSUMED TO BE 1.25 TIMES THE COMPRESSIVE STRENGTH OF 150mm X 300mm CYLINDERS.

-CONCRETE CLASS IS AS SHOWN ON DRAWINGS INDICATED ON BILL OF QUANTITIES AND AS FOLLOWS:

- -PLAIN AND BLINDING CONCRETE SHALL BE CLASS (15) UNLESS OTHERWISE INDICATED.
- -REINFORCED CONCRETE FOR BRIDGE WORKS SHALL BE CLASS (40) INCLUDING APPROACH SLAB AND PARAPET ON BRIDGE.
- -REINFORCED CONCRETE FOR RETAINING WALLS AND WING WALLS SHALL BE CLASS (30) INCLUDING ATTACHED PARAPET.

EARTHWORKS

BACKFILLING MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

FOUNDATION

THE DESIGN IS BASED ON THE GEOTECHNICAL REPORT RECOMMENDATIONS OF USING SHALLOW FOUNDATION OF 170 kN/m2 NET BEARING PRESSURE.

METAL WORKS

STEEL SHALL BE ASTM A36, HOT DIPPED GALVANIZED EXCEPT AS OTHERWISE NOTED ON THE DRAWINGS AND SPECIFICATIONS.

DESIGN LOADINGS

1. DEAD LOADS :-

-REINFOREED CONCRETE OWN WEIGHT	25 kN/m^3
-PLAIN CONCRETE OWN WEIGHT (SIDEWALK)	23 kN/m^3
-WEARING SURFACE (50mm ASPHALTIC CONCRETE)	1.15 kN/m^2
-FUTURE WEARING SURFACE (50mm ASPHALTIC CONCRETE)	1.15 kN/m^2
-UTILITIES AND SERVICES	0.75 kN/m^2
-UNIT WEIGHT OF SOIL ABOVE W.T	19 kN/m^3
-UNIT WEIGHT OF SOIL BELOW W.T	11 kN/m^3

2. LIVE LOADS :-

-AASHTO LRFD (HL93) MULTIPLIED BY A FACTOR 1.5

-LIVE LOAD SURCHARGE NEAR RETAINING WALL SHALL BE EQUIVALENT TO BE 1m. OF SOIL.

3. THERMAL LOADS :-

-AMBIENT TEMPERATURE RANGE	55°C
-TEMPERATURE RISE	25°C
-TEMPERATURE FALL	30°C
-TEMPERATURE GRADIENT	30°C

4. WIND LOADS :-

-BASIC WIND SPEED	160 km/hr

CONCRETE CONSTRUCTION

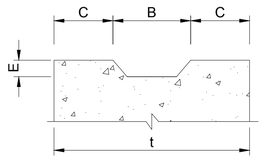
CHAMFERS

ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 20 MILLIMETERS UNLESS OTHERWISE NOTED ON THE DRAWINGS.

CONSTRUCTION AND EXPANSION JOINTS

ALL CONSTRUCTION AND EXPANSION JOINTS SHALL BE PLACED AS SHOWN ON THE DRAWINGS, AS PROVIDED IN THE SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, THE SHEAR KEY DIMENSIONS SHALL BE AS FOLLOWS:



B	C	D	E
$\frac{t}{3}$ +80	$\frac{t}{3}$ -40	40	80

IN MILLIMETERS

CONCRETE COVER

MINIMUM COVER TO ENDS AND SIDES OF REINFORCEMENT UNLESS OTHERWISE INDICATED ON DRAWINGS TO BE AS FOLLOWS:-

TO DECK REINFORCEMENT (EXTERNAL FACES)	50 mm
TO DECK REINFORCEMENT (INTERNAL FACES)	40 mm
TO FOUNDATION, PIERS AND WALLS	75 mm
TO EXPOSED FACES OF WALLS AND PIERS	50 mm
TO FACES IN DIRECT CONTACT WITH SOIL	75 mm

SURFACE FINISH

-THE CONCRETE SURFACES FINISH SHALL BE AS DESCRIBED IN THE SPECIFICATIONS.

WATERPROOFING AND PROTECTIVE COATING

-CONCRETE CAST BELOW GROUND LEVEL AND CONCRETE IN CONTACT WITH THE SOIL IS TO BE PROTECTED BY WATERPROOF MEMBRANE IN ACCORDANCE WITH THE SPECIFICATIONS EXTENDING 100mm ABOVE GROUND LEVEL.

NOTES :

Rev.	Date	Description	Checked

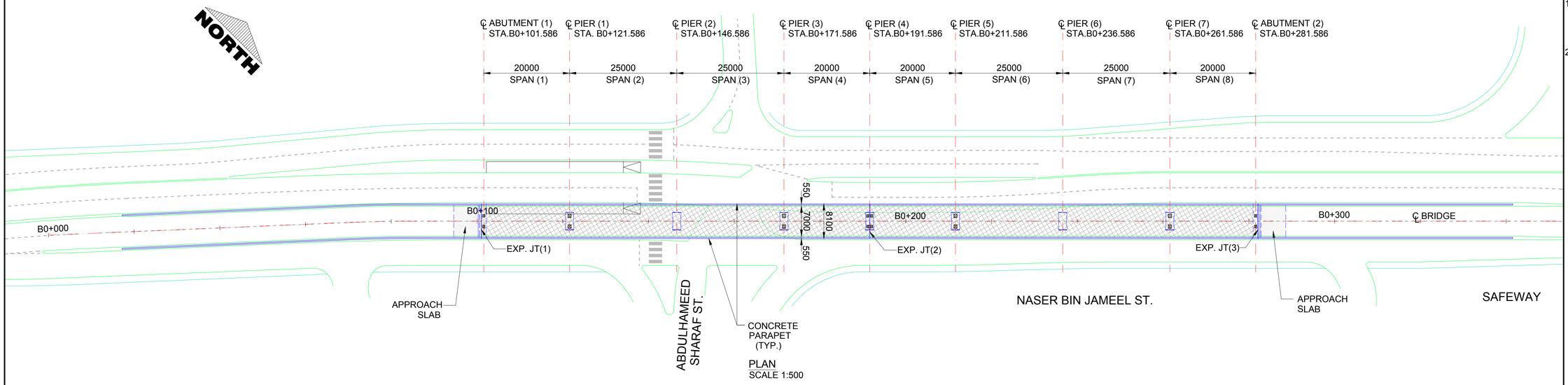
Client: Greater Amman Municipality

Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

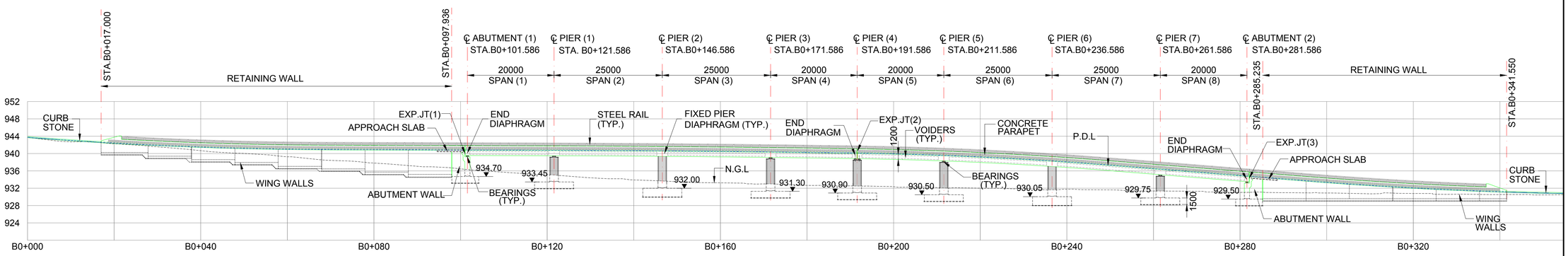
Consultants: steer davies gleave; Consolidated Consultants Group

Drawing Title: GENERAL STRUCTURAL DRAWINGS
GENERAL NOTES
(2 OF 2)

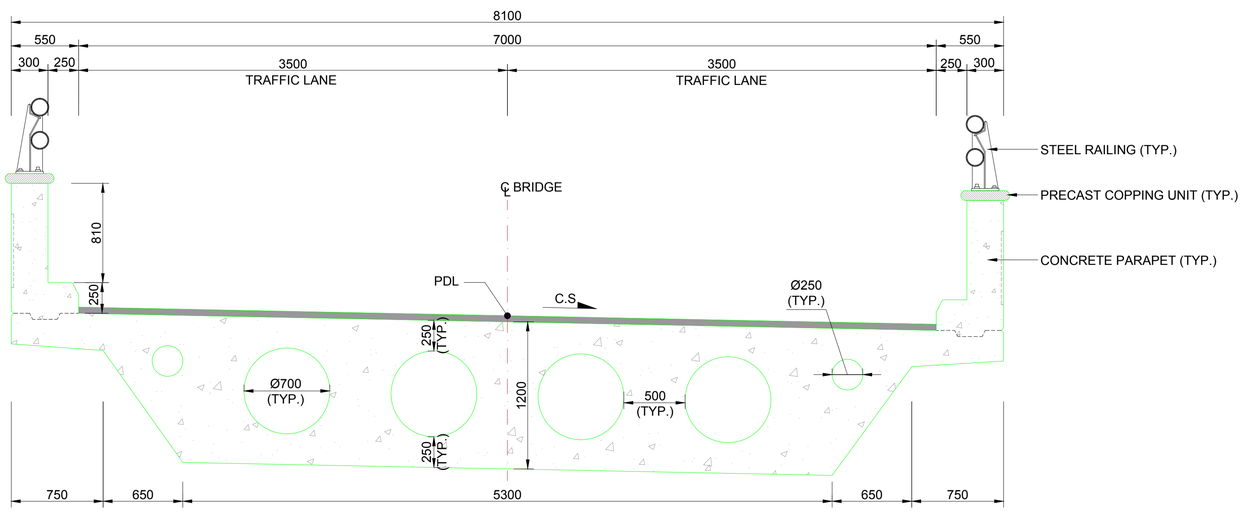
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	N.T.S
Drawing No. : ST-002		Rev. 00	



PLAN
SCALE 1:500



ELEVATION
SCALE 1:500



TYPICAL CROSS SECTION
SCALE 1:25

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS, STATIONS AND LEVELS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. THE CONTRACTOR SHALL PROVIDE SPECIAL FALSEWORK BETWEEN PIERS (2) AND (3) TO ALLOW FREE AND SAFE TRAFFIC FLOW UNDER BRIDGE DURING BRIDGE CASTING.

Rev.	Date	Description	Checked
0			

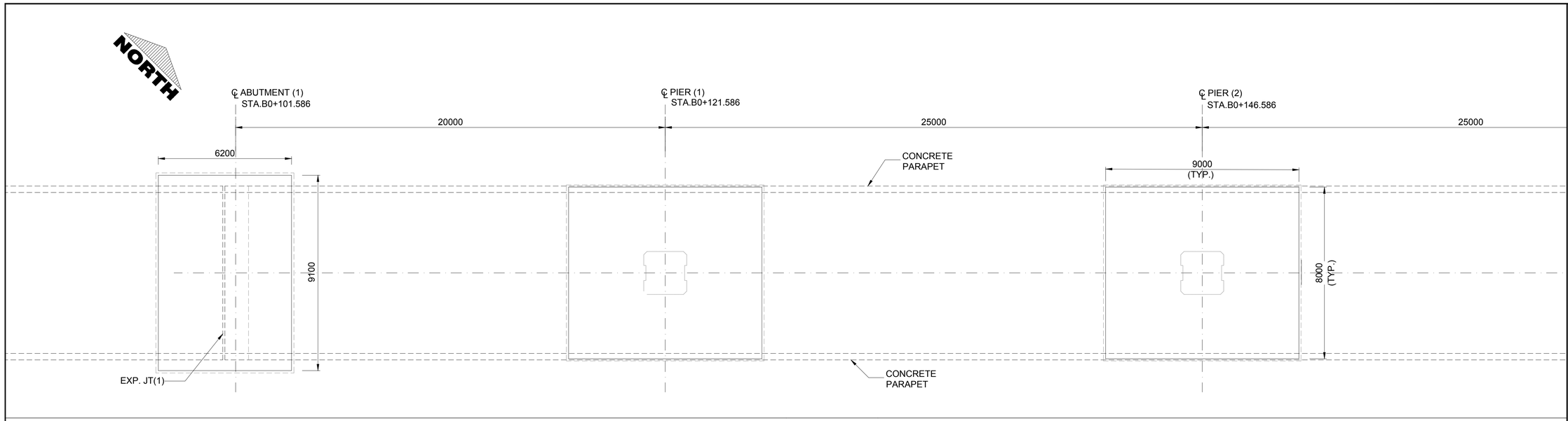
Client
Greater Amman Municipality

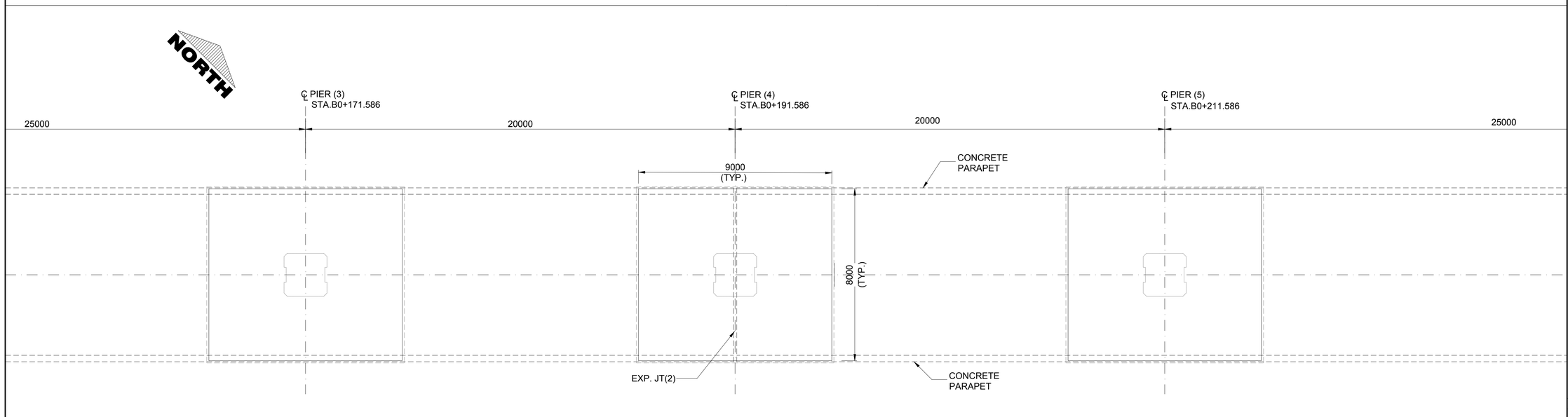
Project Name
BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

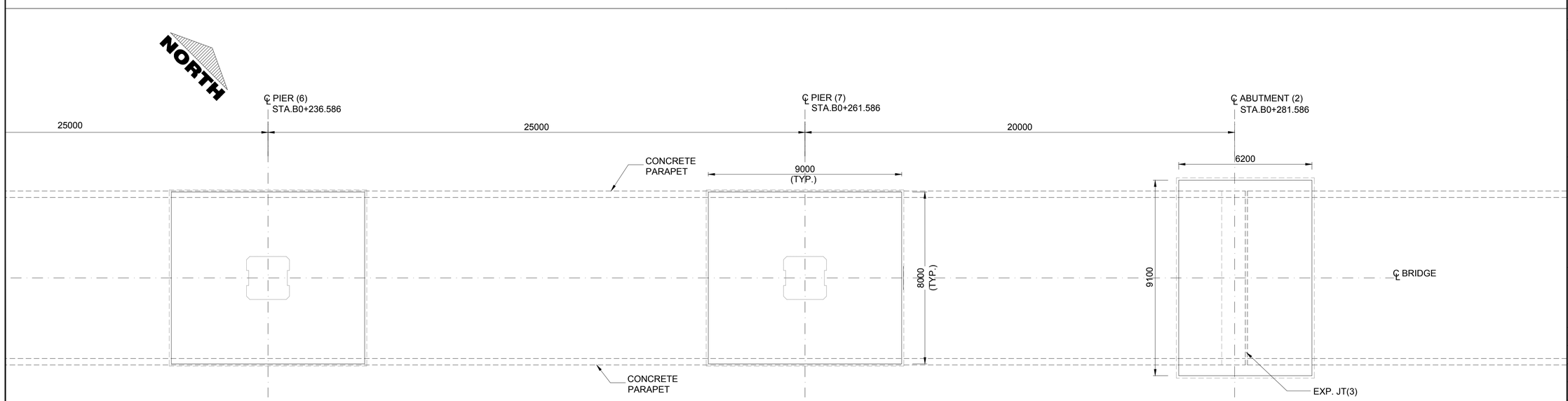
Consultants
steer davies gleave
CONSOLIDATED CONSULTANTS GROUP

Drawing Title
STRUCTURAL DRAWINGS
PLAN, ELEVATION AND SECTION

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. :	ST-003	Rev.	00







NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND STATIONS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. FOUNDATION IS DESIGNED WITH ALLOWABLE BEARING PRESSURE OF 170 KPA, PLACED ON SILTY CLAY LAYER. IF LIMESTONE LAYER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL REDUCE THE SIZE OF FOUNDATION TO SUIT THE ALLOWABLE BEARING PRESSURE.

Rev.	Date	Description	Checked
0			

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

CONSOLIDATED CONSULTANTS GROUP

Drawing Title

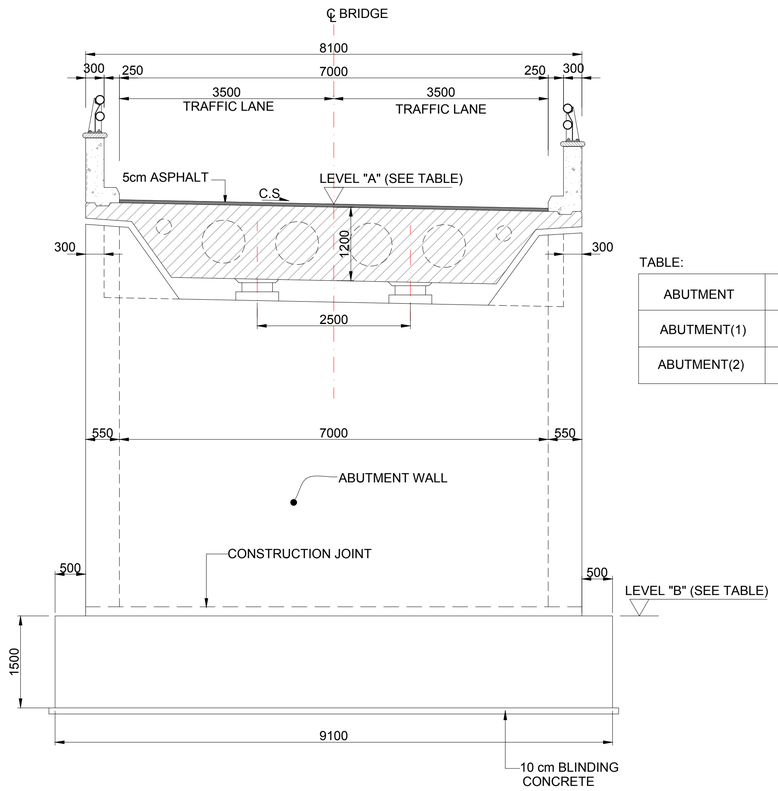
STRUCTURAL DRAWINGS

FOOTING PLAN

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:100
Drawing No. : ST-004		Rev. 00	

NOTES :

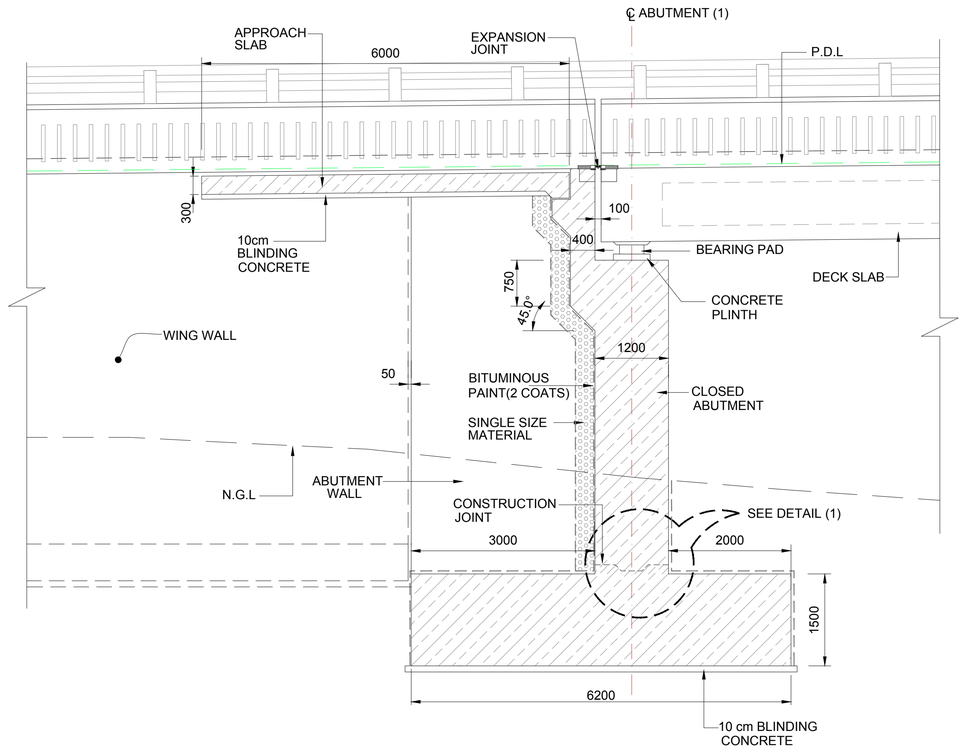
1. ALL DIMENSIONS ARE IN MILLIMETERS, AND LEVELS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. ABUTMENT (2) DETAILS ARE SIMILAR TO ABUTMENT (1) DETAILS.
3. EXACT TOP ABUTMENT SEAT ELEVATION SHALL BE BASED ON BEARINGS THICKNESS AND ACCORDING TO BRIDGE & ROAD DRAWINGS.



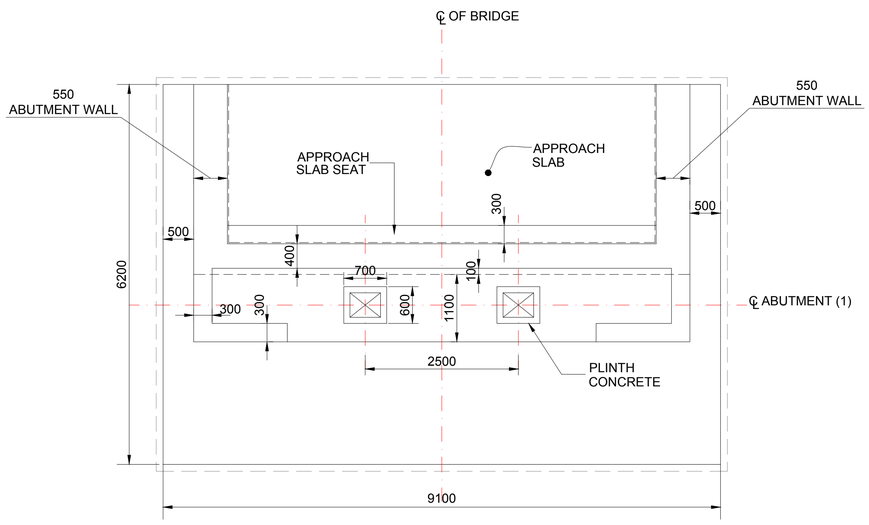
ABUTMENT (1) ELEVATION
SCALE 1:50

TABLE:

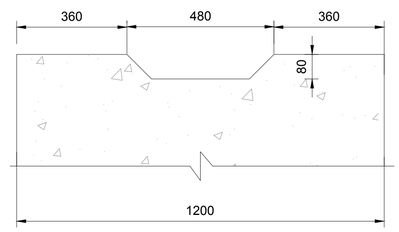
ABUTMENT	LEVEL"A"	LEVEL"B"
ABUTMENT(1)	940.800	934.700
ABUTMENT(2)	934.768	929.500



ABUTMENT (1) SECTION
SCALE 1:50



ABUTMENT (1) PLAN
SCALE 1:50



DETAIL (1)
SCALE 1:10

Rev.	Date	Description	Checked

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

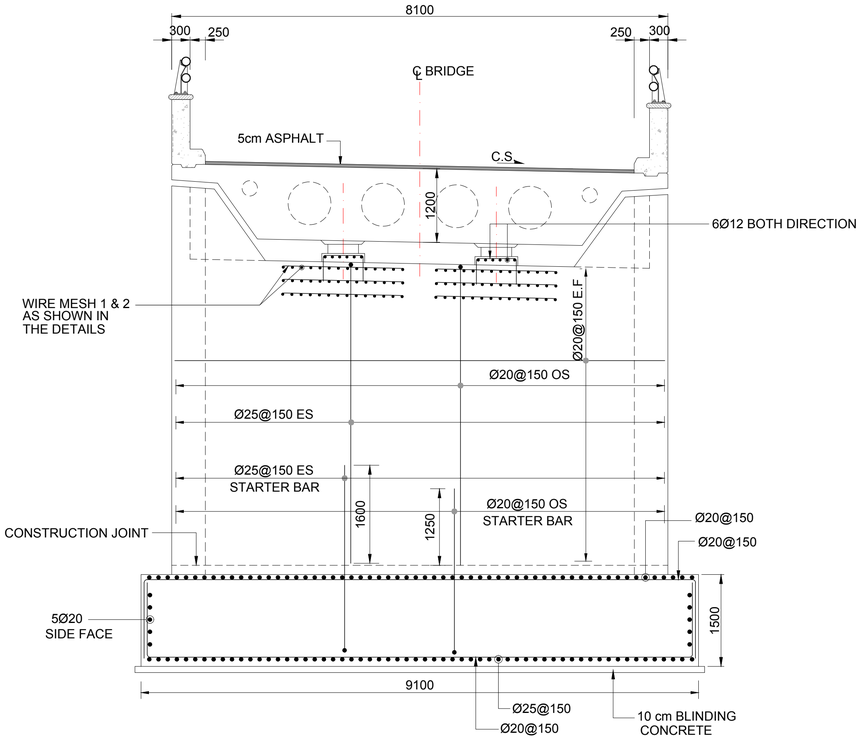
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

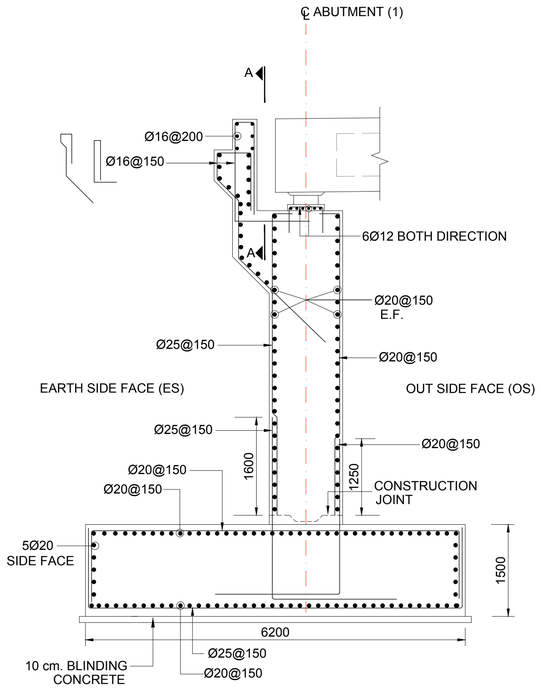
STRUCTURAL DRAWINGS

ABUTMENTS STRUCTURAL DETAILS

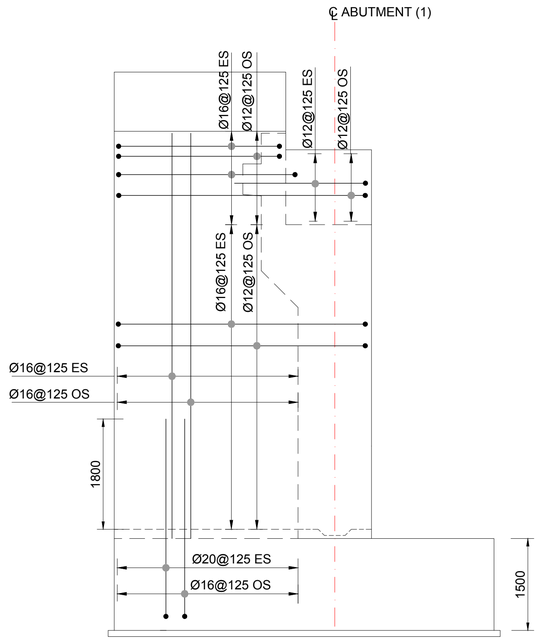
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. :	ST-005	Rev.	00



ABUTMENT (1) ELEVATION
SCALE 1:50



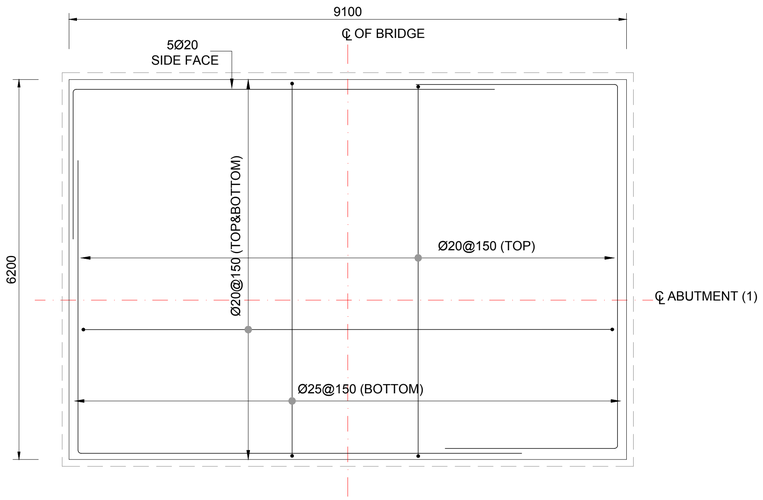
ABUTMENT (1) SECTION
SCALE 1:50



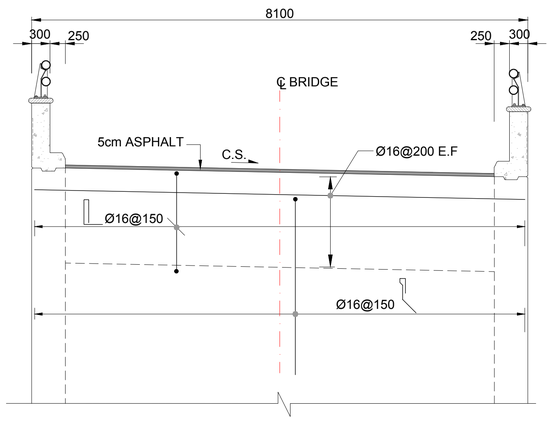
ABUTMENT (1) WING WALL ELEVATION
SCALE 1:50

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. THE REINFORCEMENT OF ABUTMENT (2) IS SIMILAR TO ABUTMENT (1).
4. BACKWALL HEIGHT TO SUIT BEARING THICKNESS ,FIXING DETAILS OF BEARING AND BRIDGE DECK DEPTH.
5. BLOCK OUT DIMENSIONS NOT SHOWN, ACTUAL DIMENSIONS TO BE PROPOSED BY THE CONTRACTOR BASED ON THE EXPANSION JOINT MANUFACTURERS RECOMMENDATIONS.

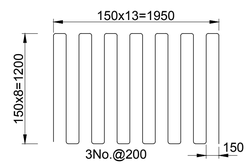


ABUTMENT (1) FOOTING PLAN
SCALE 1:50



ELEVATIONA-A
SCALE 1:50

WIRE MESH (1)
N.T.S



WIRE MESH (2)
N.T.S

Rev.	Date	Description	Checked
0			

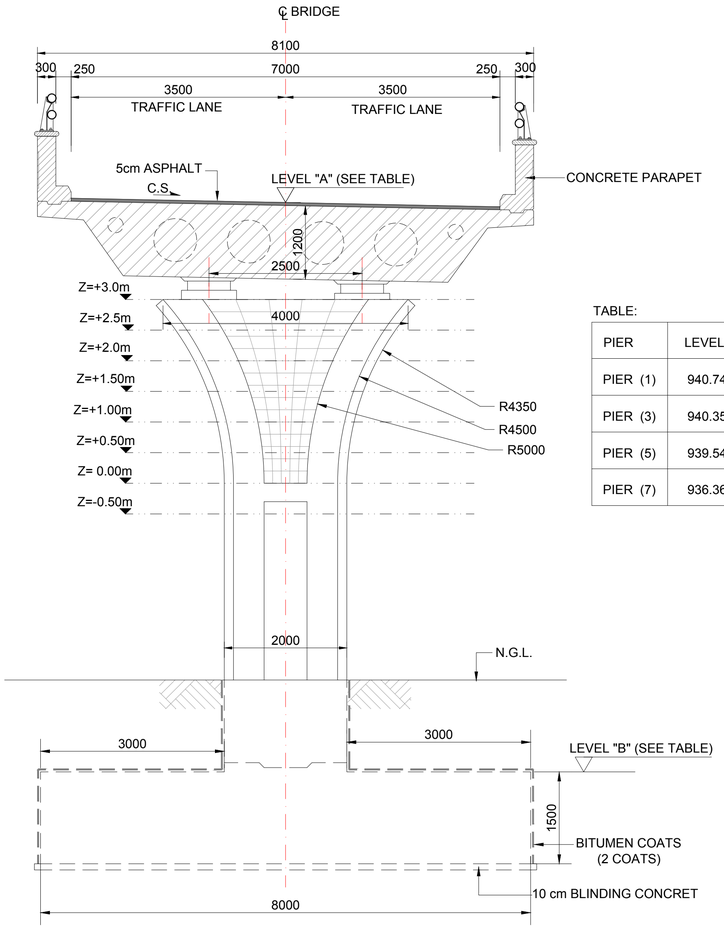
Client
Greater Amman Municipality

Project Name
BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants
steer davies gleave
CONSOLIDATED CONSULTANTS GROUP

Drawing Title
STRUCTURAL DRAWINGS
ABUTMENTS REINFORCEMENT DETAILS

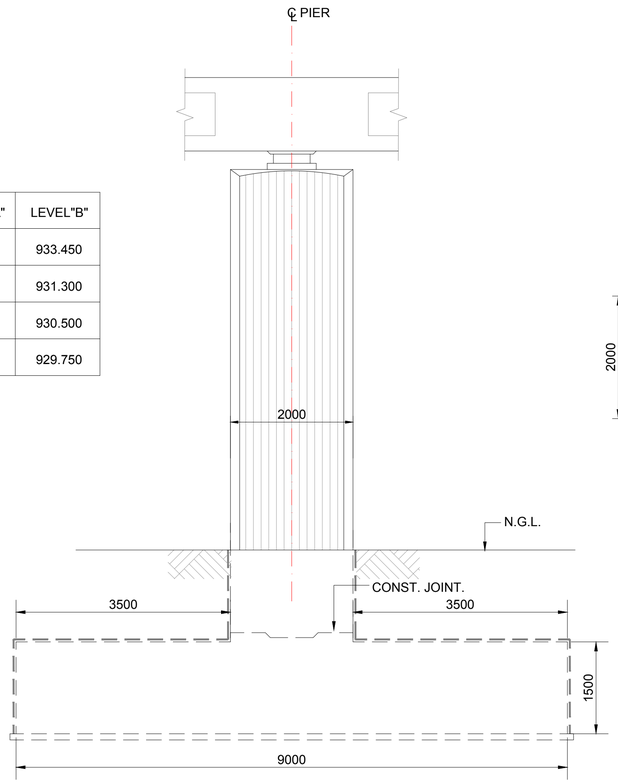
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. : ST-006		Rev.	00



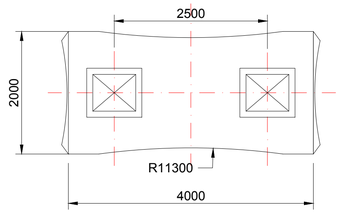
PIER FRONT ELEVATION

TABLE:

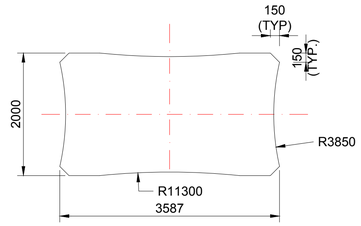
PIER	LEVEL"A"	LEVEL"B"
PIER (1)	940.740	933.450
PIER (3)	940.350	931.300
PIER (5)	939.547	930.500
PIER (7)	936.366	929.750



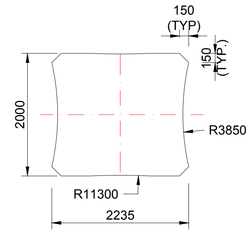
PIER SIDE ELEVATION



SECTION @ Z=+3.00m



SECTION @ Z=+2.50m



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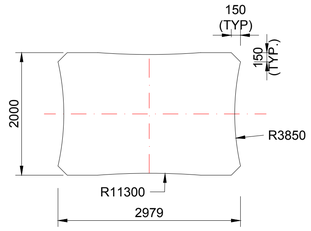
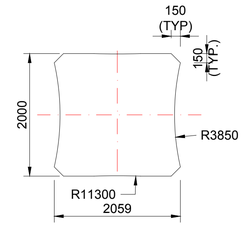
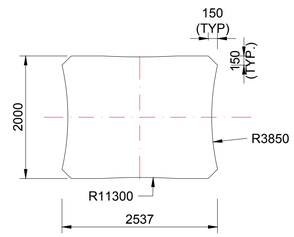


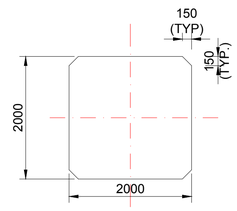
SECTION @ Z=+2.00m



SECTION @ Z=+0.50m



SECTION @ Z=+1.50m



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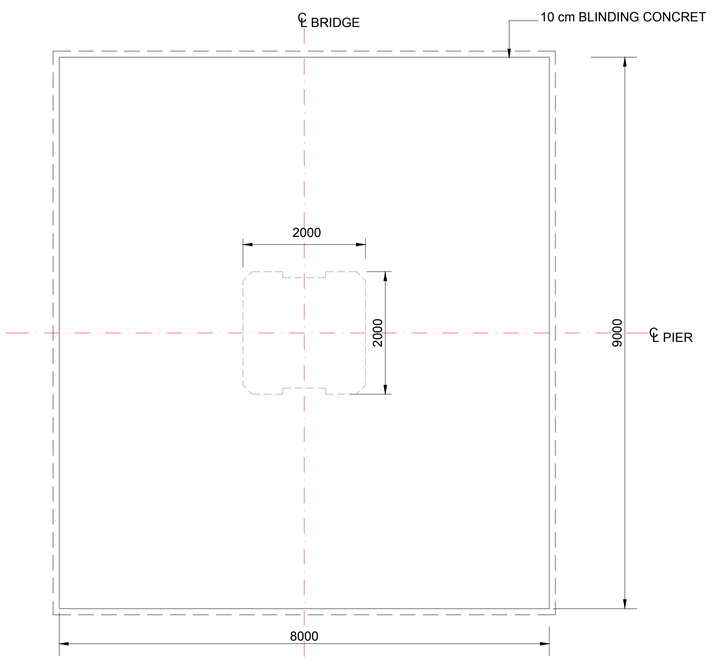
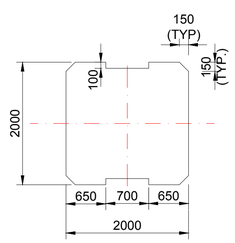


PIER FOOTING PLAN



SECTION @ Z= -0.50m

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. EXACT TOP PIER ELEVATION SHALL BE BASED ON BEARINGS THICKNESS AND ACCORDING TO BRIDGE & ROAD DRAWINGS.

Rev.	Date	Description	Checked

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

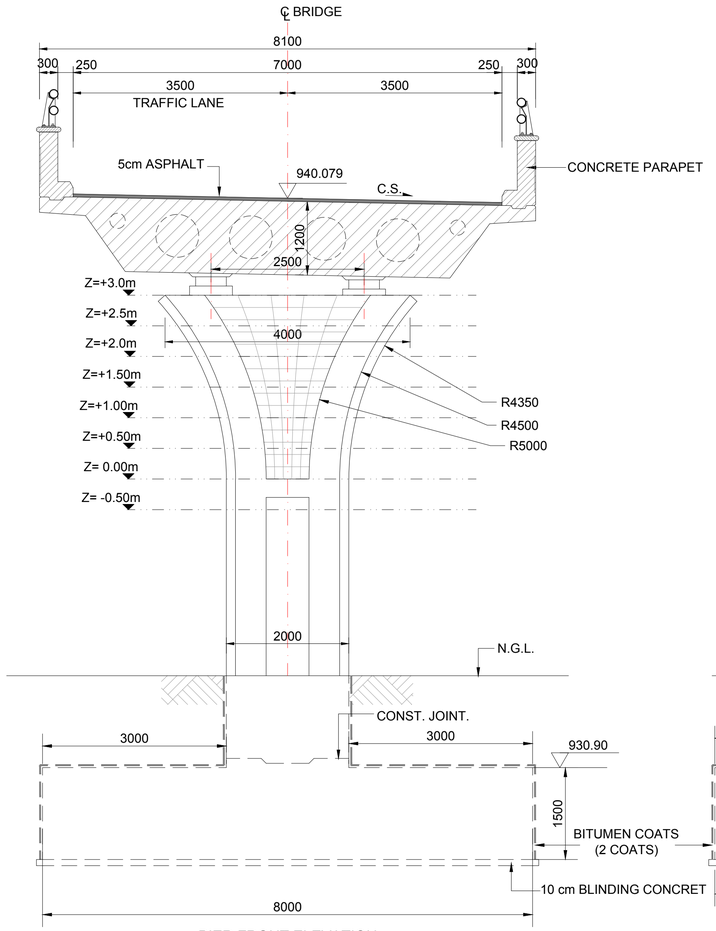
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

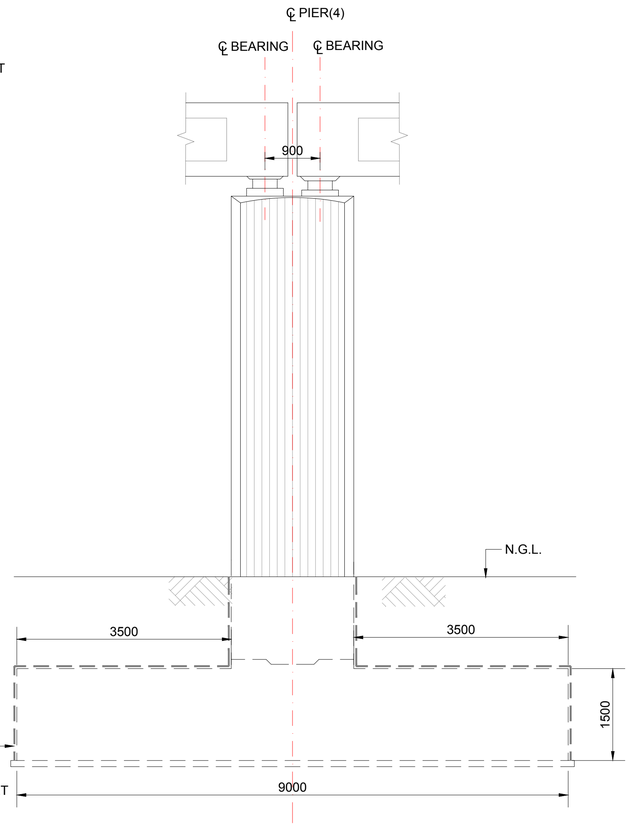
STRUCTURAL DRAWINGS

PIERS (1,3,5&7) STRUCTURAL DETAILS

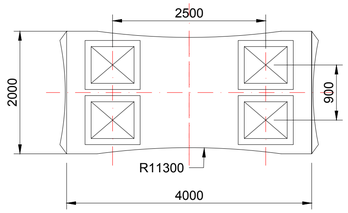
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:50
Drawing No. :	ST-007	Rev.	00



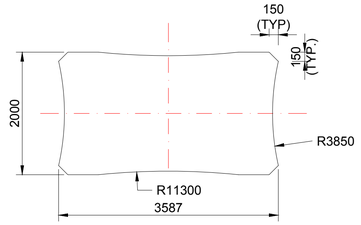
PIER FRONT ELEVATION



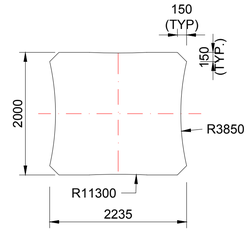
PIER SIDE ELEVATION



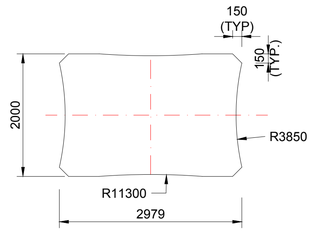
SECTION @ Z=+3.00m



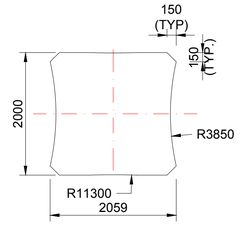
SECTION @ Z=+2.50m



SECTION @ Z=+1.00m



SECTION @ Z=+2.00m



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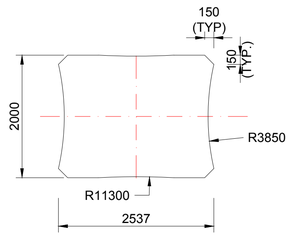

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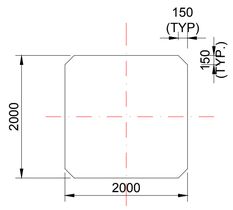

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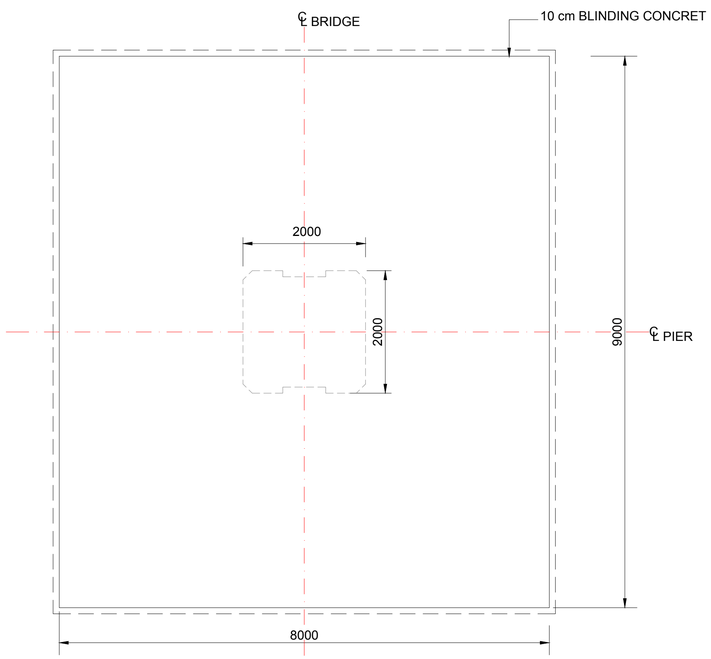
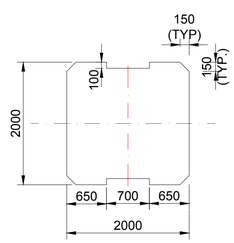


PIER FOOTING PLAN



SECTION @ Z= -0.50m

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. EXACT TOP PIER ELEVATION SHALL BE BASED ON BEARINGS THICKNESS AND ACCORDING TO BRIDGE & ROAD DRAWINGS.

Rev.	Date	Description	Checked
0			

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

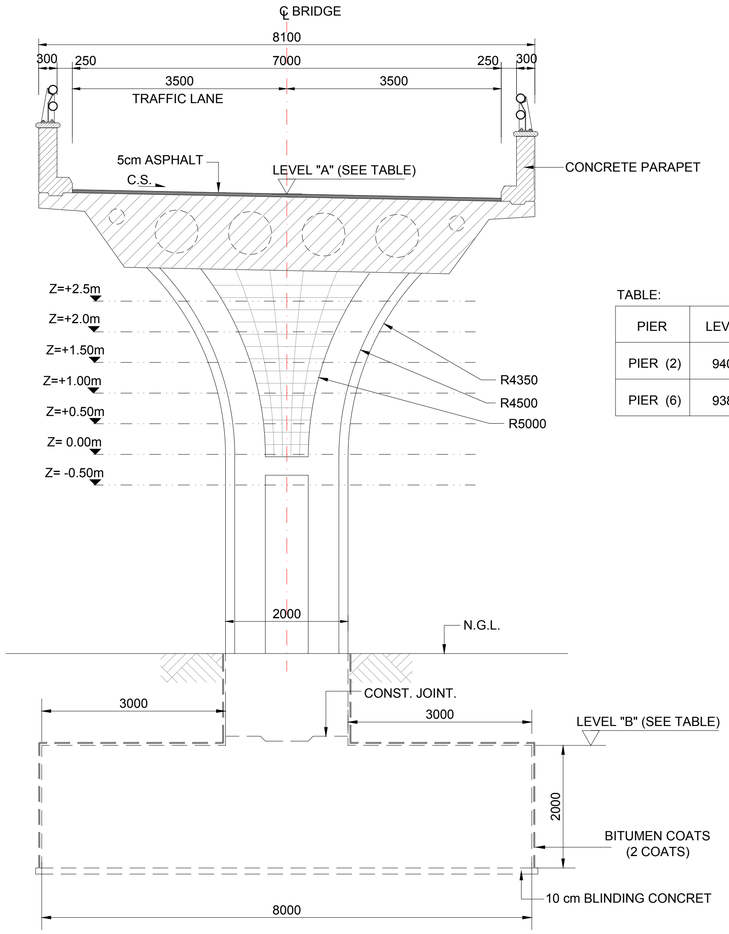
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

STRUCTURAL DRAWINGS

PIER (4) STRUCTURAL DETAILS

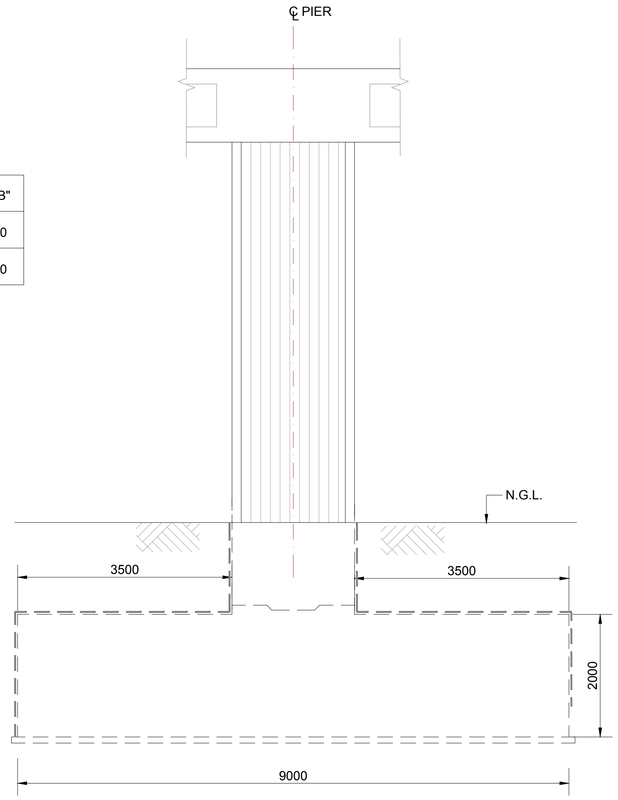
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:50
Drawing No. : ST-008		Rev.	00



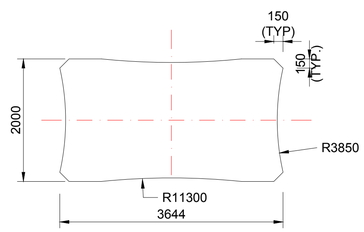
PIER FRONT ELEVATION

TABLE:

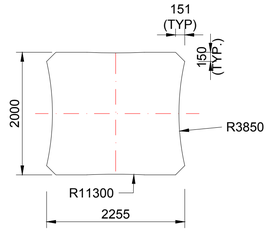
PIER	LEVEL"A"	LEVEL"B"
PIER (2)	940.602	932.000
PIER (6)	938.263	930.050



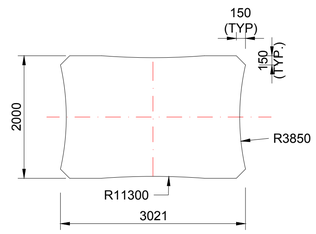
PIER SIDE ELEVATION



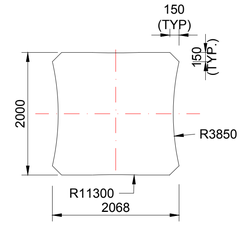
SECTION @ Z=+2.50m



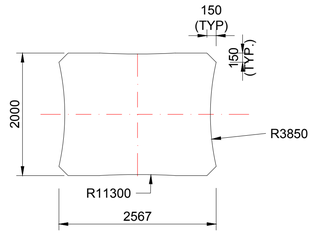
SECTION @ Z=+1.00m



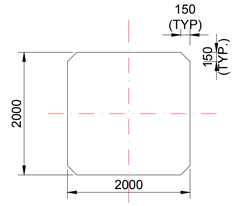
SECTION @ Z=+2.00m



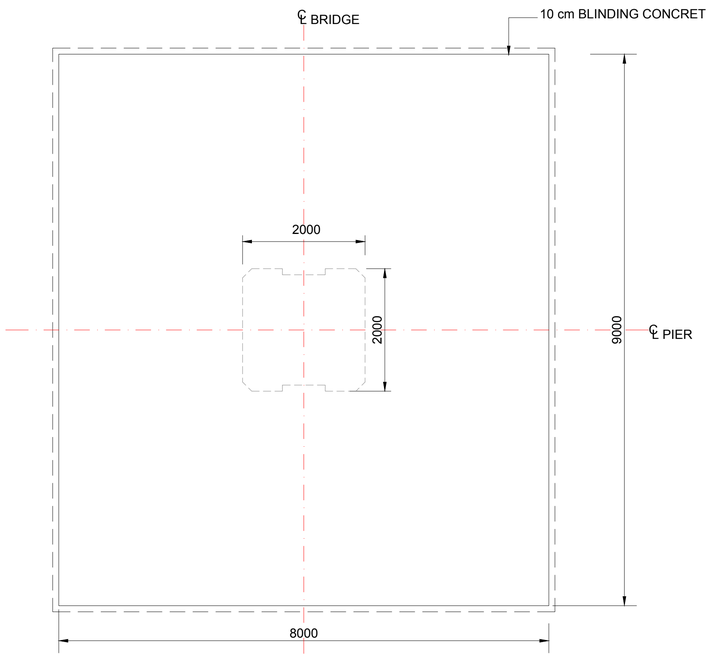
SECTION @ Z=+0.50m



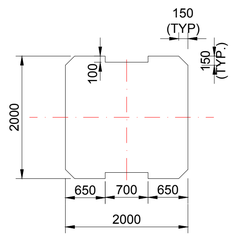
SECTION @ Z=+1.50m



SECTION @ Z= 0.00m



PIER FOOTING PLAN



SECTION @ Z= -0.50m

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ALL LEVELS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. EXACT TOP PIER ELEVATION SHALL BE BASED ON BEARINGS THICKNESS AND ACCORDING TO BRIDGE & ROAD DRAWINGS.

Rev.	Date	Description	Checked
0			

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

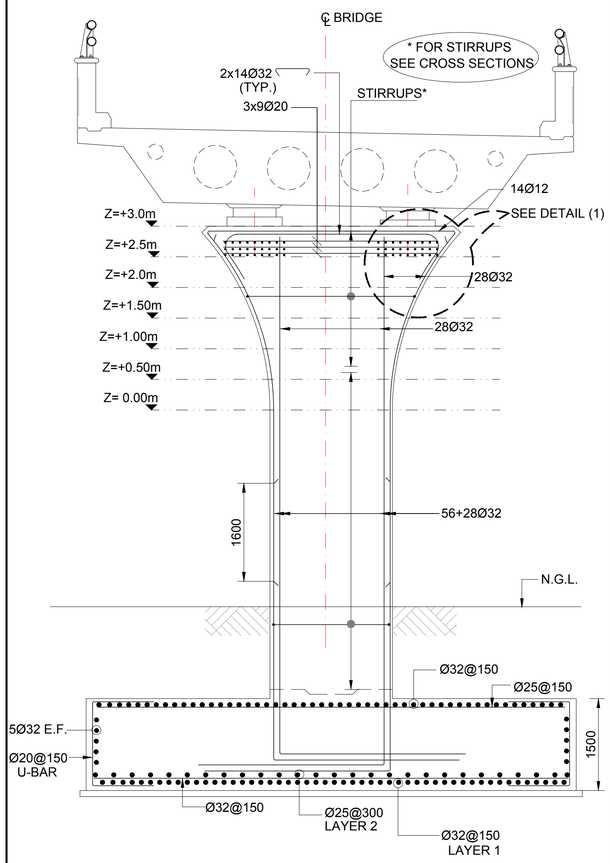
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

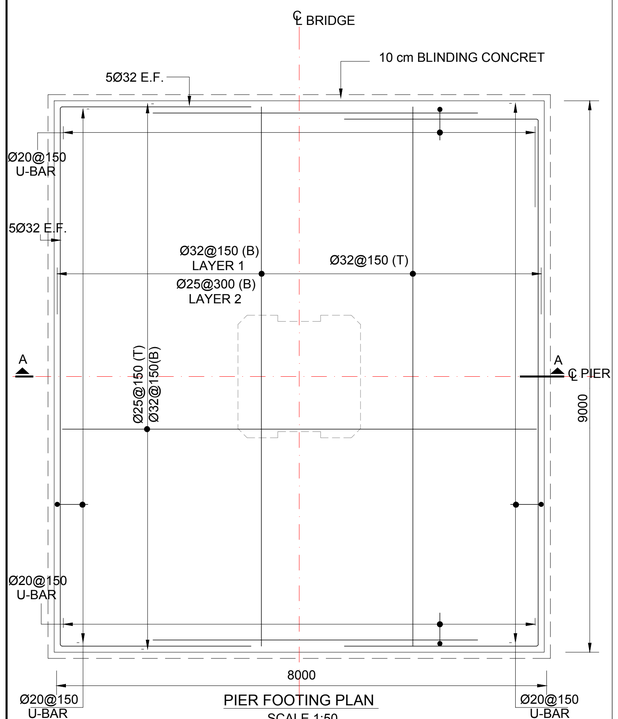
STRUCTURAL DRAWINGS

PIERS (2&6) STRUCTURAL DETAILS

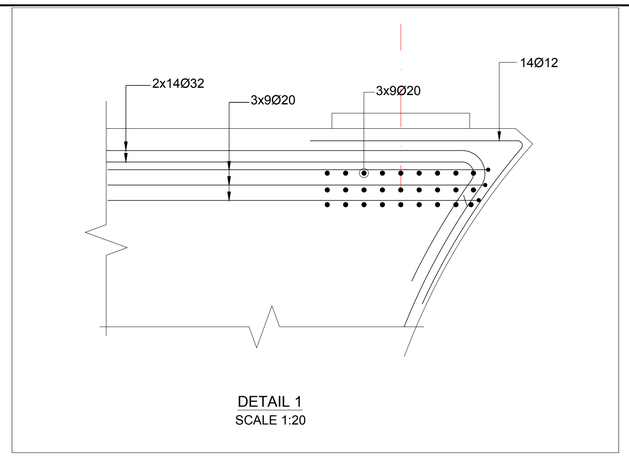
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:50
Drawing No. :	ST-009	Rev.	00



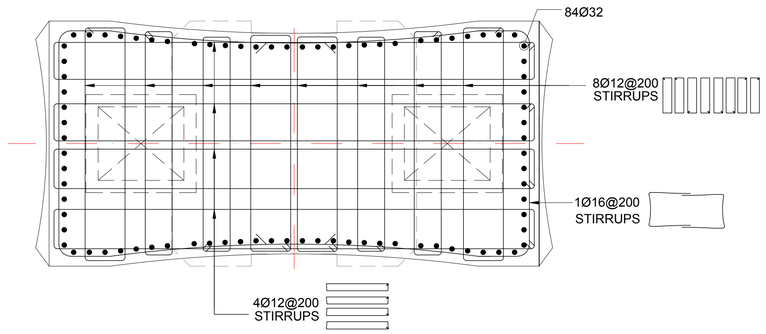
SECTION A-A
SCALE 1:50



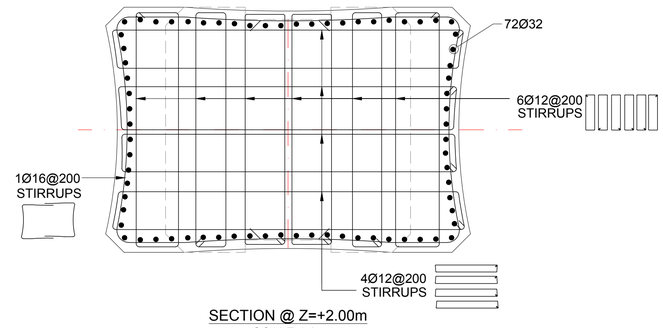
PIER FOOTING PLAN
SCALE 1:50



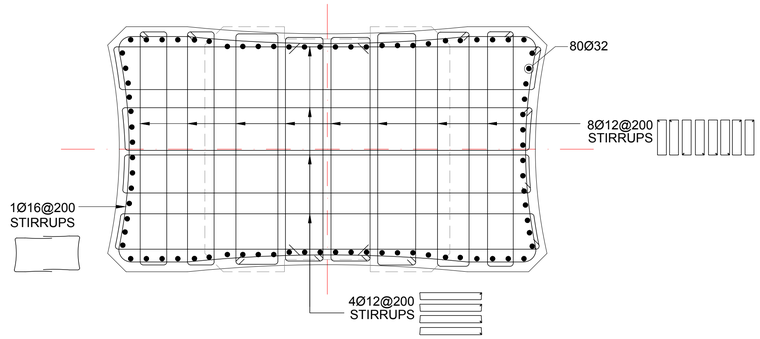
DETAIL 1
SCALE 1:20



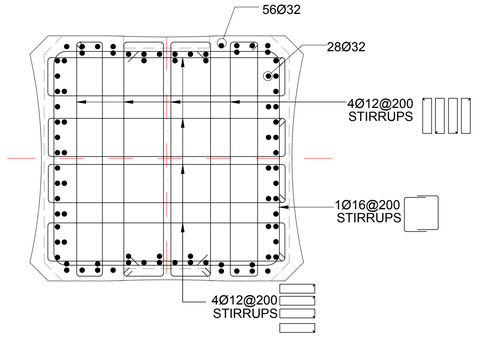
SECTION @ Z=+3.00m
SCALE 1:25



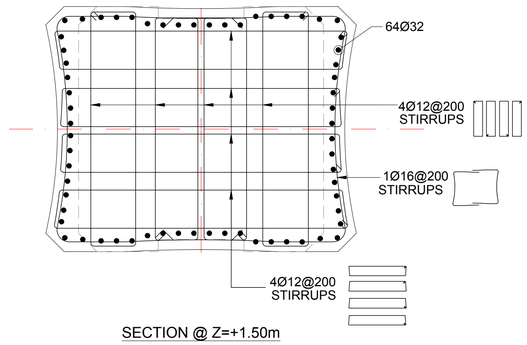
SECTION @ Z=+2.00m
SCALE 1:25



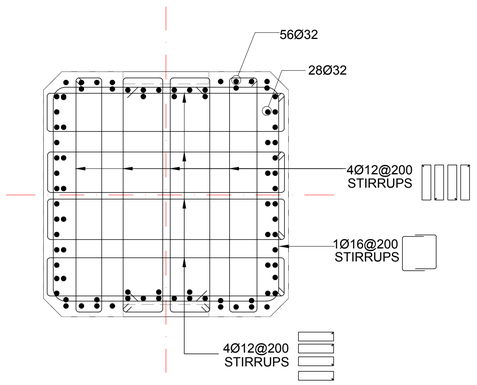
SECTION @ Z=+2.50m
SCALE 1:25



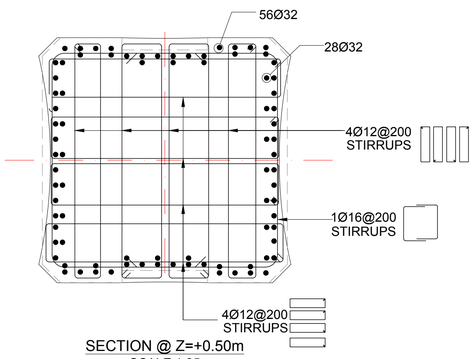
SECTION @ Z=+1.00m
SCALE 1:25



SECTION @ Z=+1.50m
SCALE 1:25



SECTION @ Z= 0.00m
SCALE 1:25



SECTION @ Z=+0.50m
SCALE 1:25

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. SECTIONS AT Z=1.5m TO Z=3.0m INDICATE STIRRUP ARRANGEMENT AND EXTERNAL LONGITUDINAL REINFORCEMENT ONLY.

Rev.	Date	Description	Checked
0			

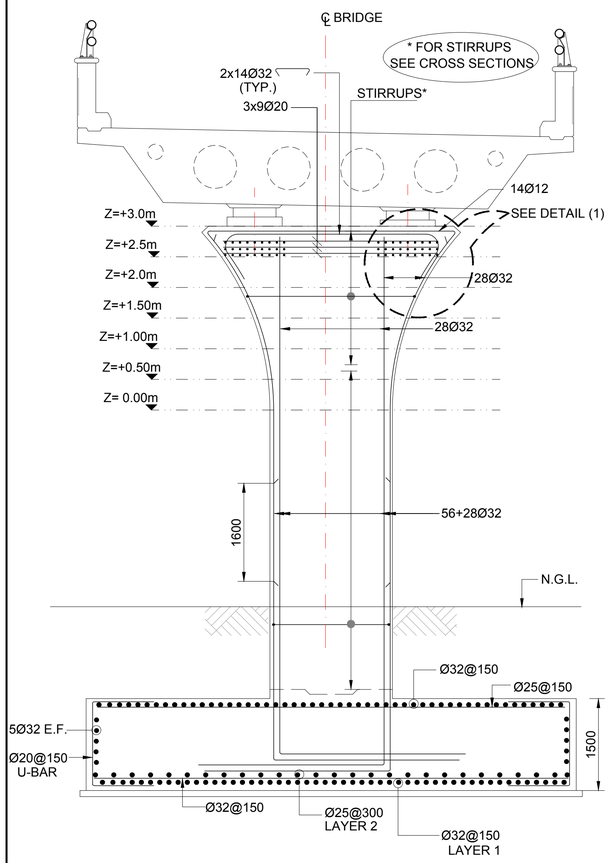
Client
Greater Amman Municipality

Project Name
BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

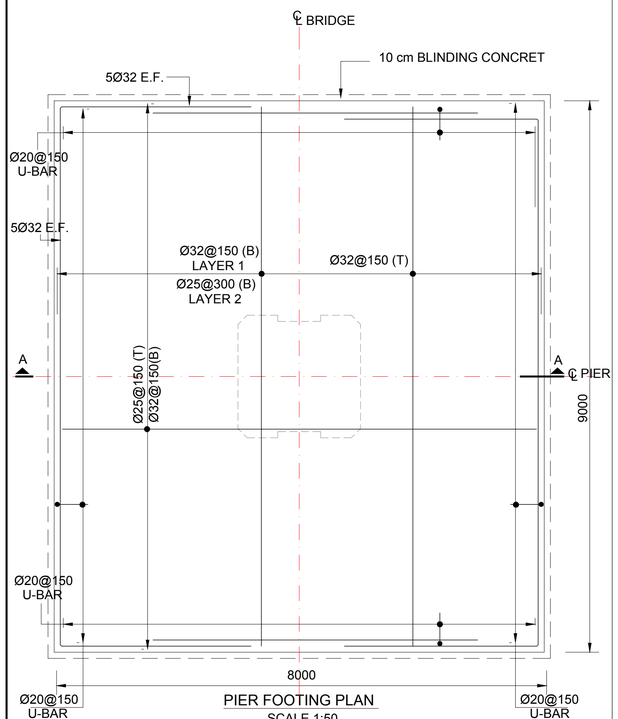
Consultants
steer davies gleave
CONSOLIDATED CONSULTANTS GROUP

Drawing Title
STRUCTURAL DRAWINGS
PIERS (1,3,5&7) REINFORCEMENT DETAILS

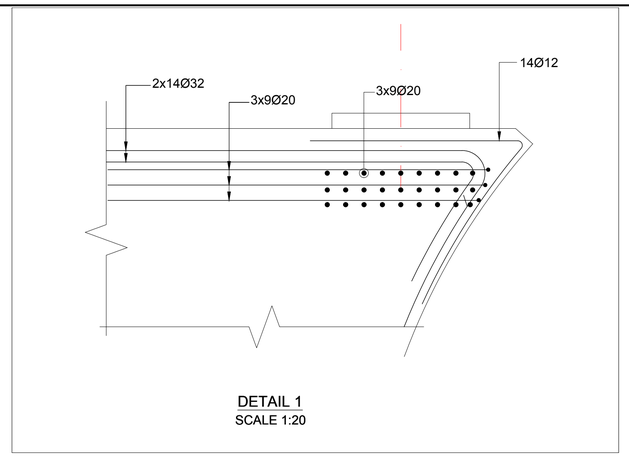
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. :	ST-010	Rev.	00



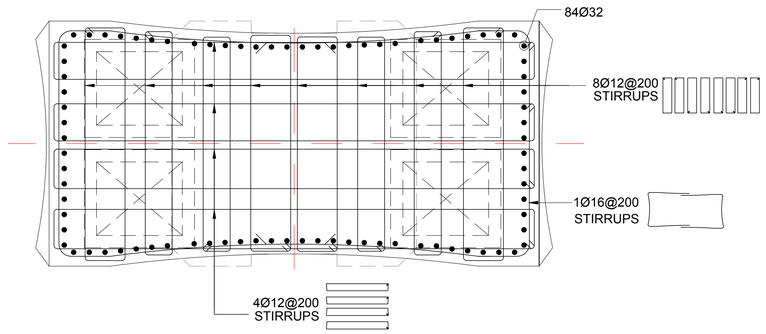
SECTION A-A
SCALE 1:50



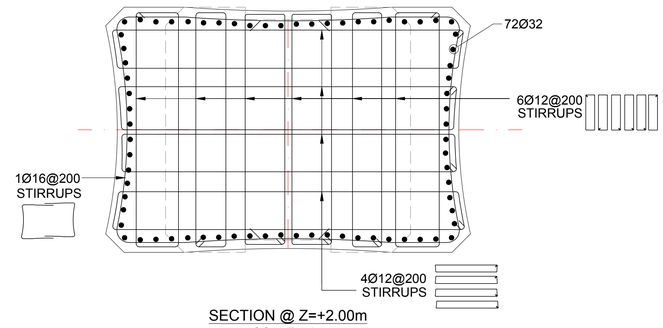
PIER FOOTING PLAN
SCALE 1:50



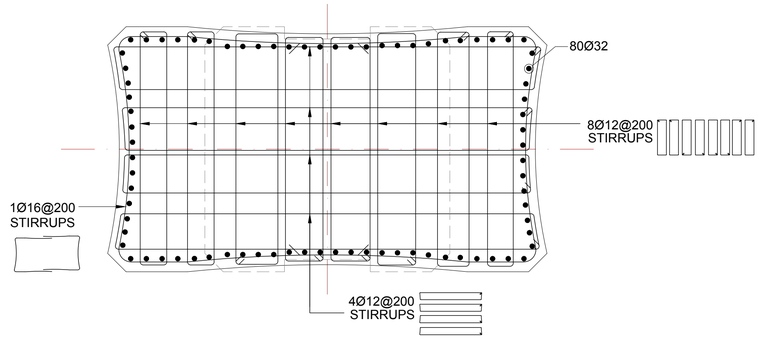
DETAIL 1
SCALE 1:20



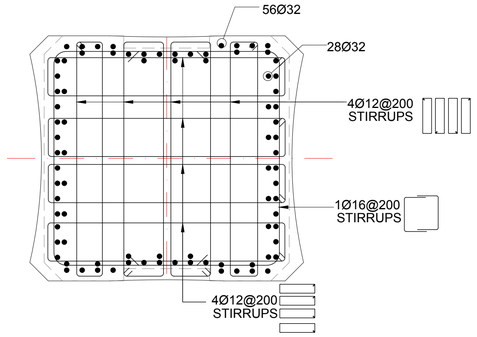
SECTION @ Z=+3.00m
SCALE 1:25



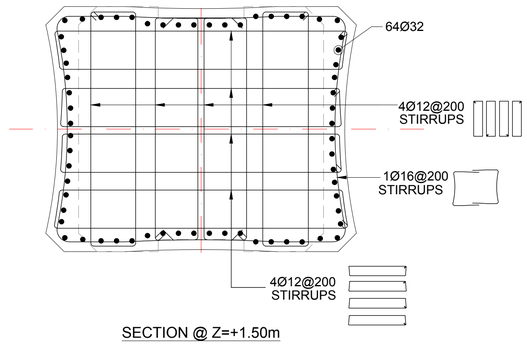
SECTION @ Z=+2.00m
SCALE 1:25



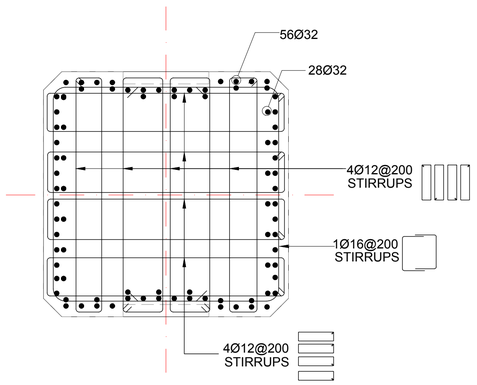
SECTION @ Z=+2.50m
SCALE 1:25



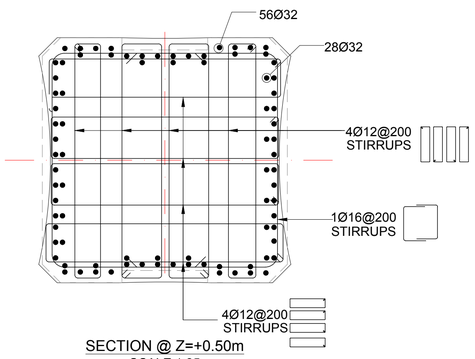
SECTION @ Z=+1.00m
SCALE 1:25



SECTION @ Z=+1.50m
SCALE 1:25



SECTION @ Z= 0.00m
SCALE 1:25



SECTION @ Z=+0.50m
SCALE 1:25

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. SECTIONS AT Z=1.5m TO Z=3.0m INDICATE STIRRUP ARRANGEMENT AND EXTERNAL LONGITUDINAL REINFORCEMENT ONLY.

Rev.	Date	Description	Checked
0			

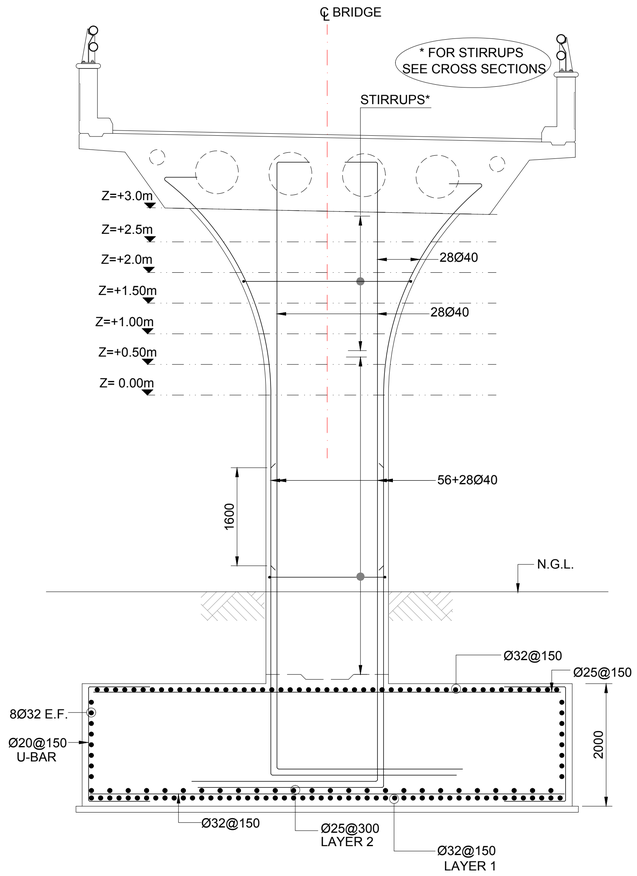
Client
Greater Amman Municipality

Project Name
BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

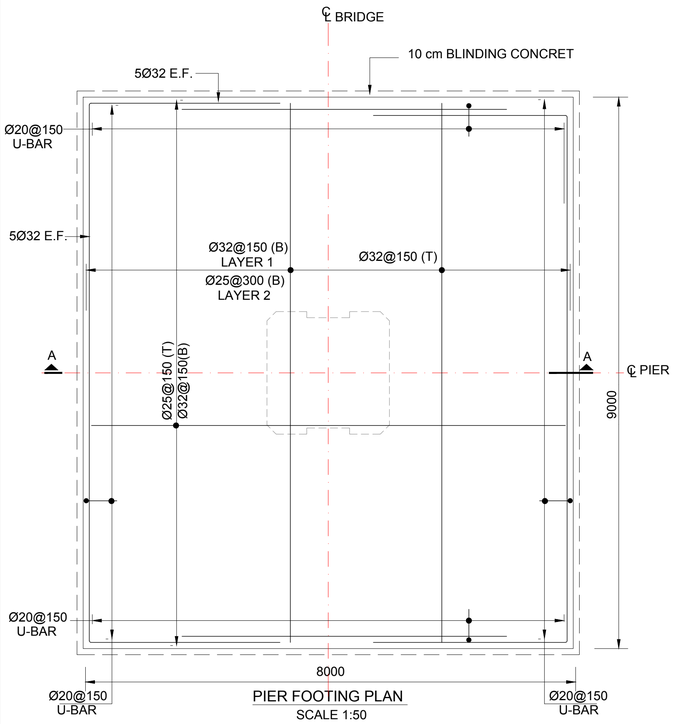
Consultants
steer davies gleave
CONSOLIDATED CONSULTANTS GROUP

Drawing Title
STRUCTURAL DRAWINGS
PIER (4) REINFORCEMENT DETAILS

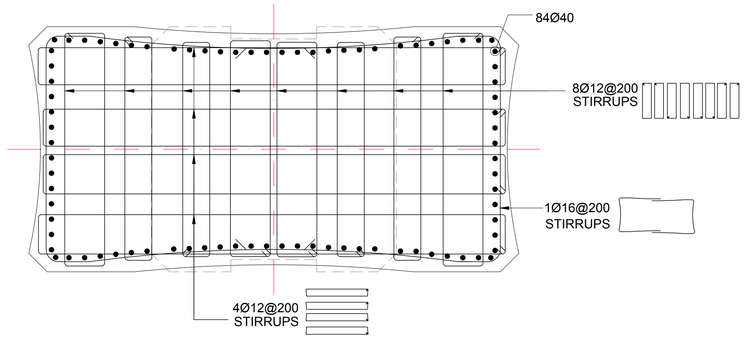
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. : ST-011			Rev. 00

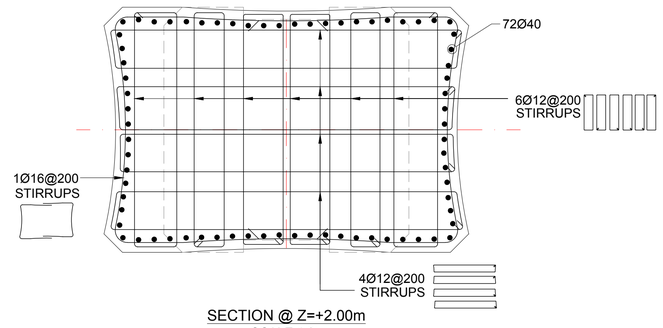


SECTION A-A
SCALE 1:50

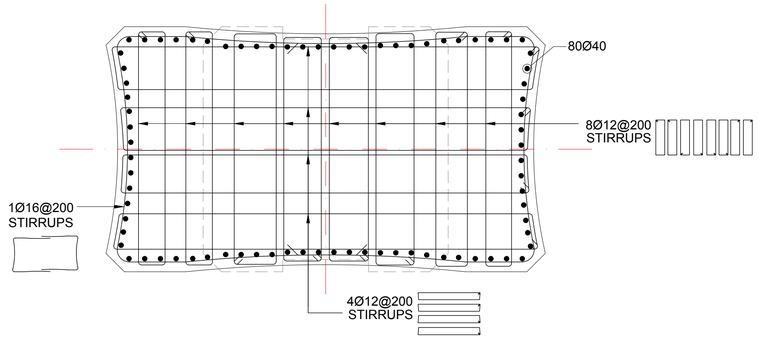


PIER FOOTING PLAN
SCALE 1:50

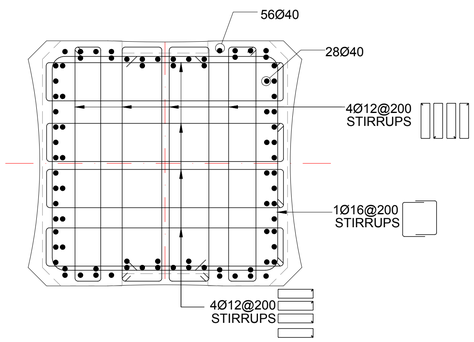




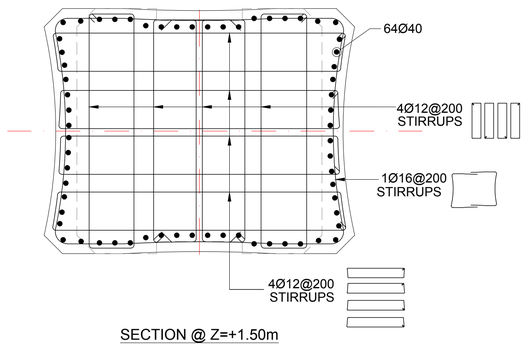
SECTION @ Z=+2.00m
SCALE 1:25



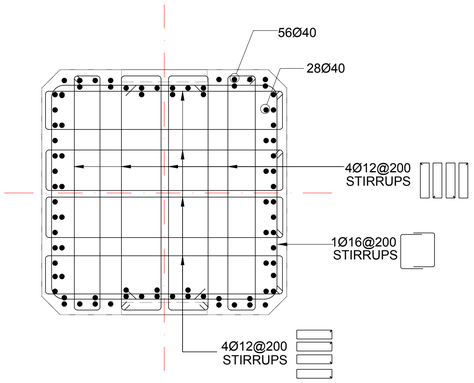
SECTION @ Z=+2.50m
SCALE 1:25



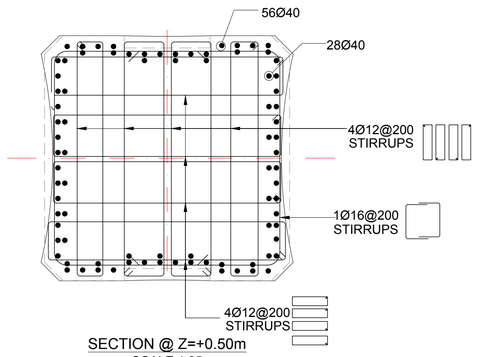
SECTION @ Z=+1.00m
SCALE 1:25



SECTION @ Z=+1.50m
SCALE 1:25



SECTION @ Z= 0.00m
SCALE 1:25



SECTION @ Z=+0.50m
SCALE 1:25

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. SECTIONS AT Z=1.5m TO Z=3.0m INDICATE STIRRUP ARRANGEMENT AND EXTERNAL LONGITUDINAL REINFORCEMENT ONLY.

Rev.	Date	Description	Checked

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

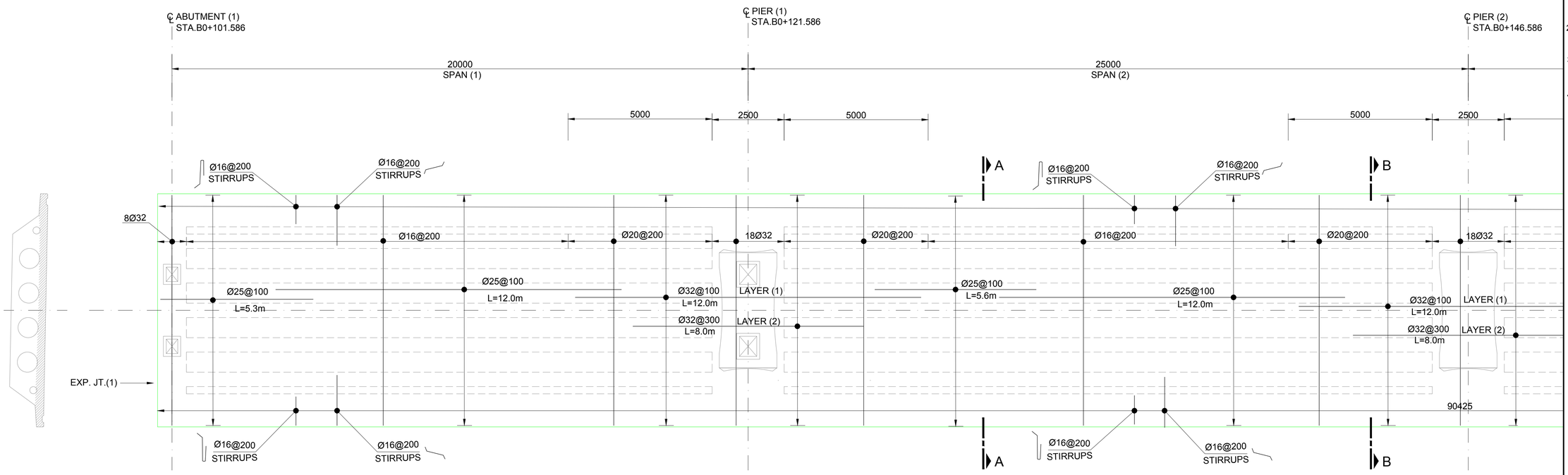
CONSOLIDATED CONSULTANTS GROUP

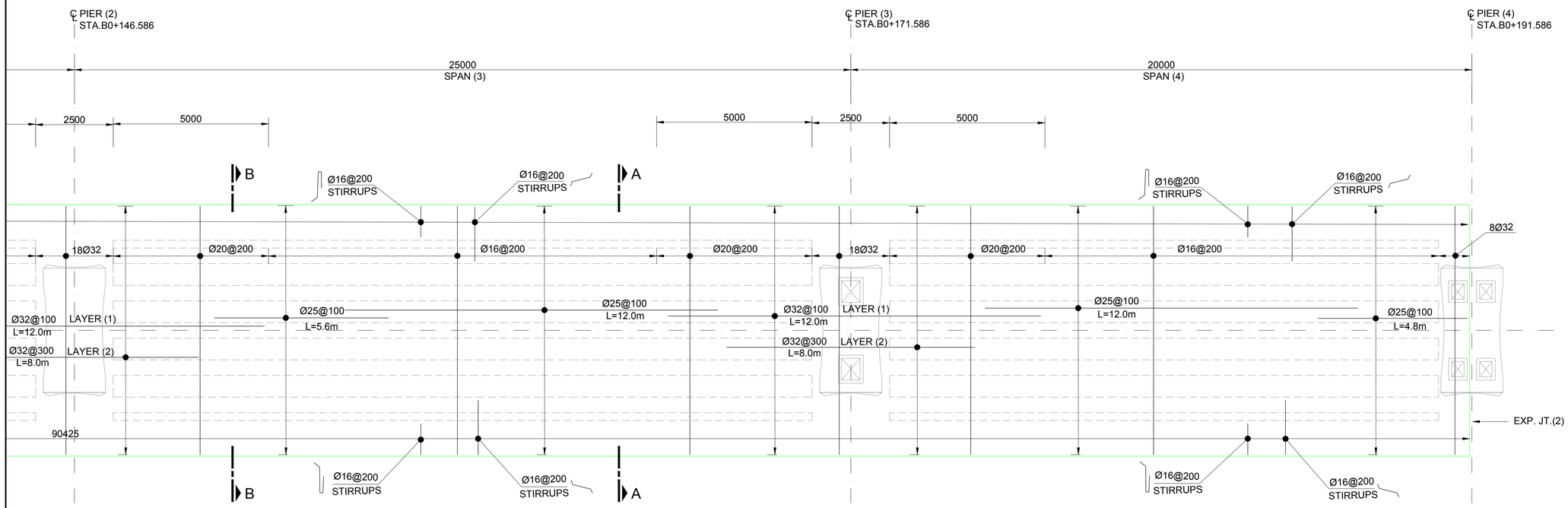
Drawing Title

STRUCTURAL DRAWINGS

PIERS (2&6) REINFORCEMENT DETAILS

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. :	ST-012	Rev.	00





NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND STATIONS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. REINFORCEMENT PLAN FOR SPANS (5,6,7 AND 8) ARE SIMILAR BUT MIRROR IMAGE TO SPANS (1,2,3 AND 4)
4. FOR SECTION (A - A) AND (B - B) REFER TO DWG No.(ST-15).

Rev.	Date	Description	Checked

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

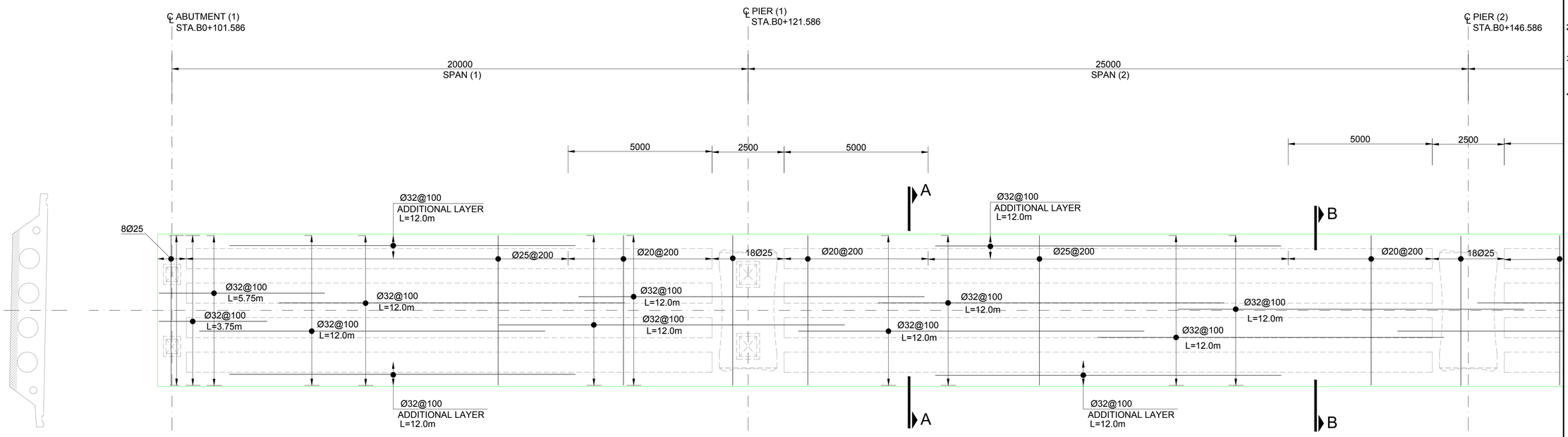
CONSOLIDATED CONSULTANTS GROUP

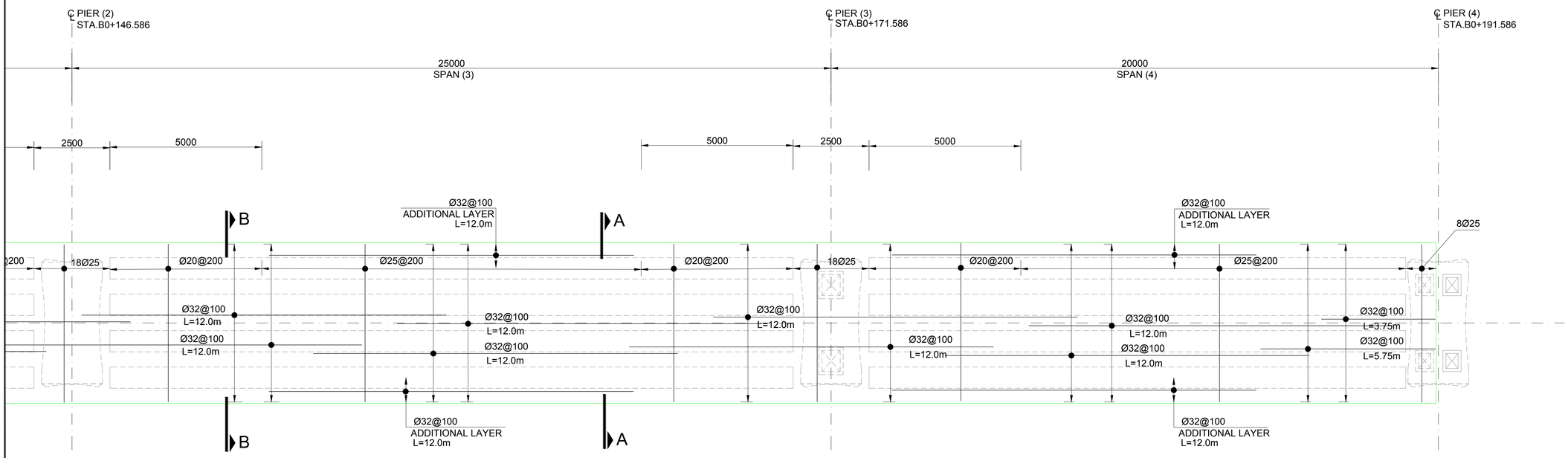
Drawing Title

STRUCTURAL DRAWINGS

TOP SLAB REINFORCEMENT PLAN

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:75
Drawing No. :	ST-013	Rev.	00





NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS AND STATIONS ARE IN METERS, UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. REINFORCEMENT PLAN FOR SPANS (5,6,7 AND 8) ARE SIMILAR BUT MIRROR IMAGE TO SPANS (1,2,3 AND 4)
4. FOR SECTION (A - A) AND (B -B) REFER TO DWG No.(ST-15).

Rev.	Date	Description	Checked
0			

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

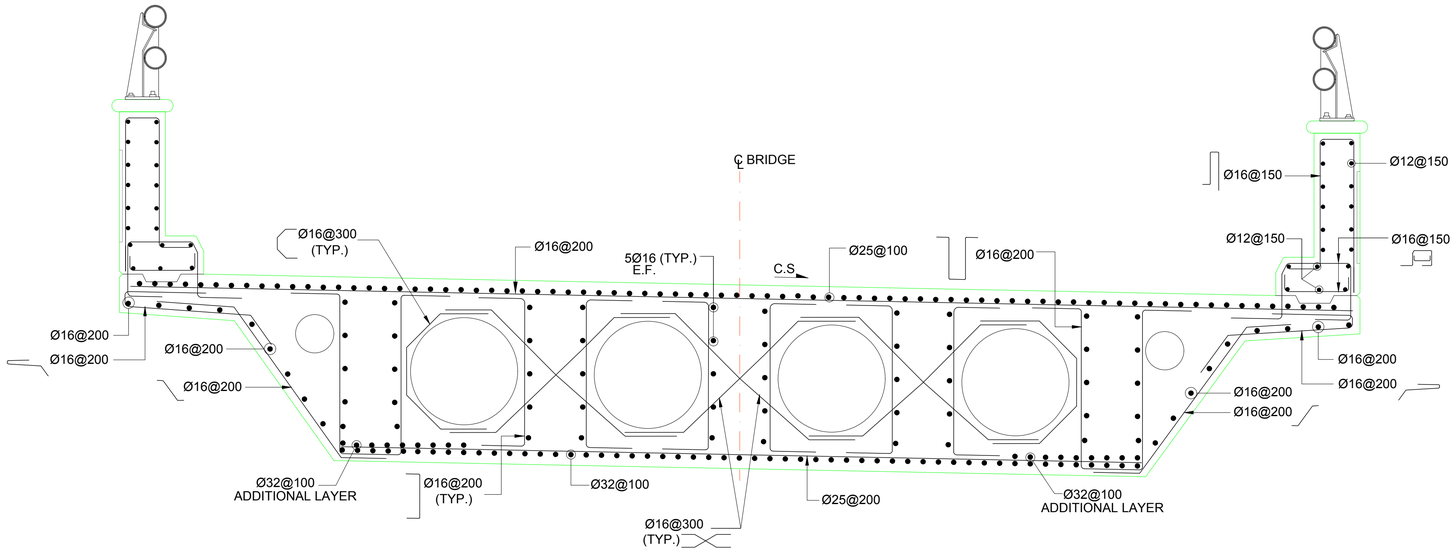
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

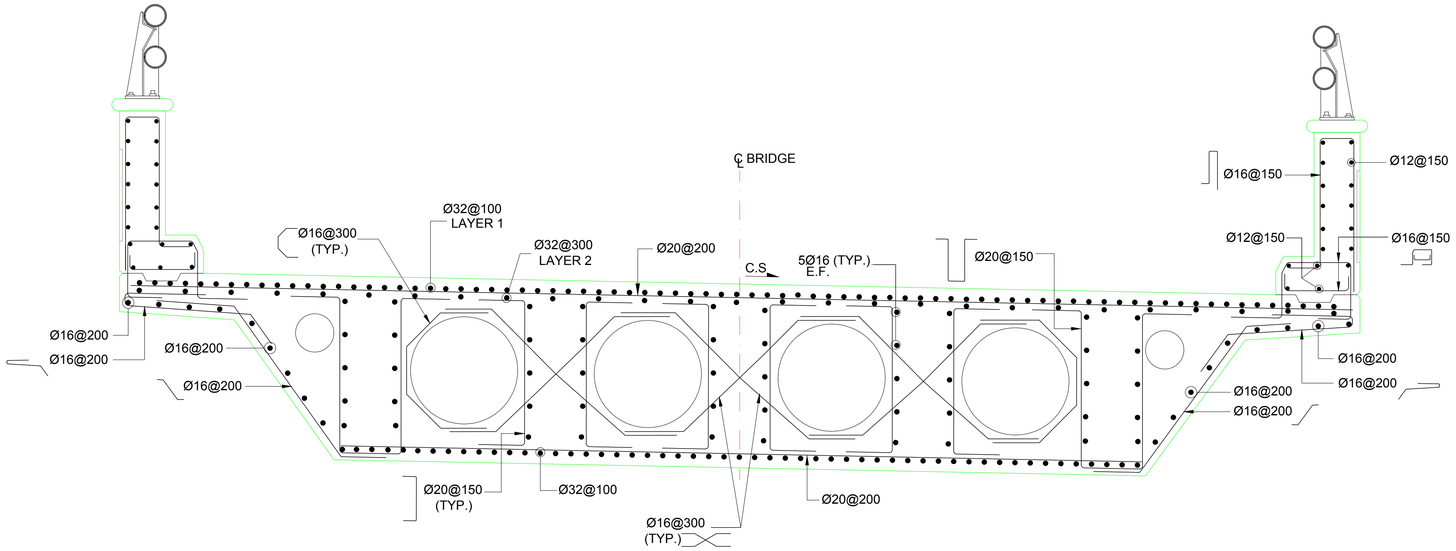
STRUCTURAL DRAWINGS

BOTTOM SLAB REINFORCEMENT PLAN

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:75
Drawing No. :	ST-014	Rev.	00



DECK SLAB CROSS SECTION REINFORCEMENT AT MID SPAN
SECTION A - A



DECK SLAB CROSS SECTION REINFORCEMENT NEAR PIER
SECTION B - B

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. FOR LOCATIONS OF SECTIONS (A-A) AND (B-B), REFER TO DRAWINGS No. (ST-13) AND (ST-14).

Rev.	Date	Description	Checked

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

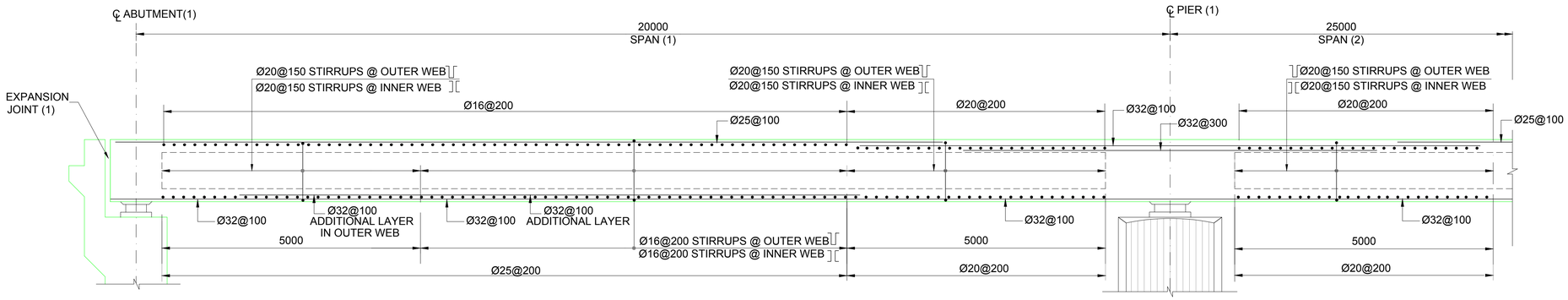
CONSOLIDATED CONSULTANTS GROUP

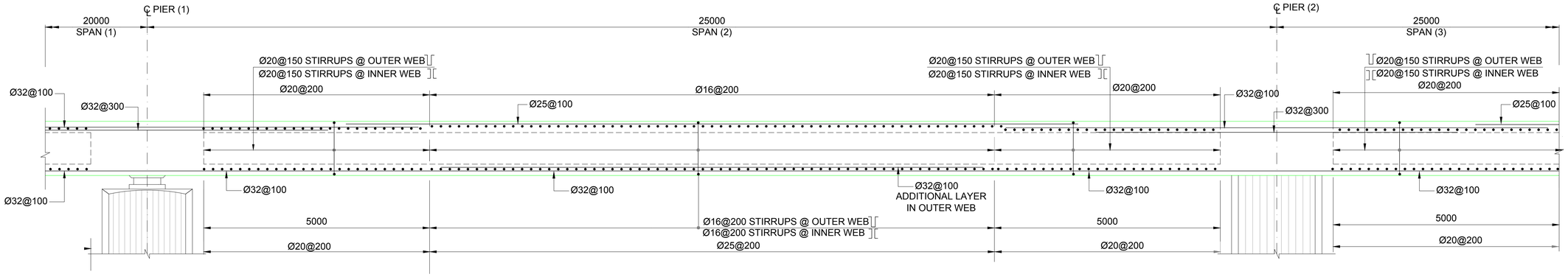
Drawing Title

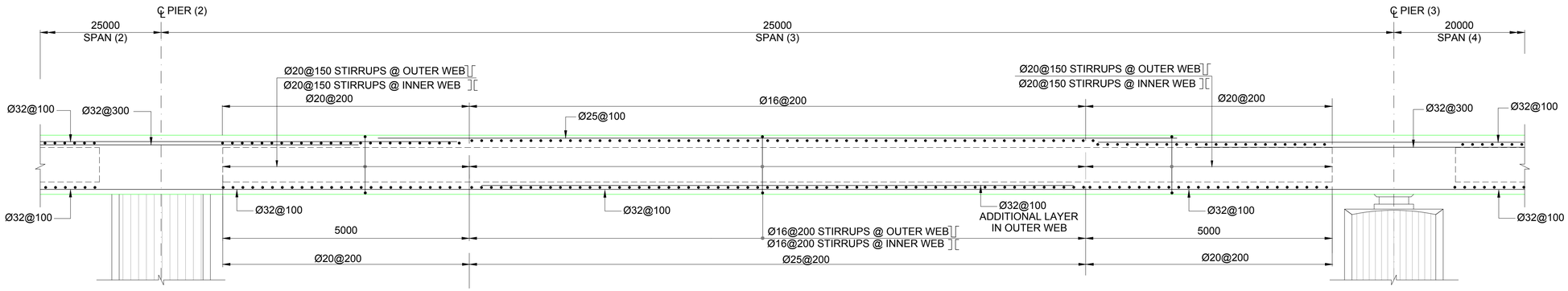
STRUCTURAL DRAWINGS

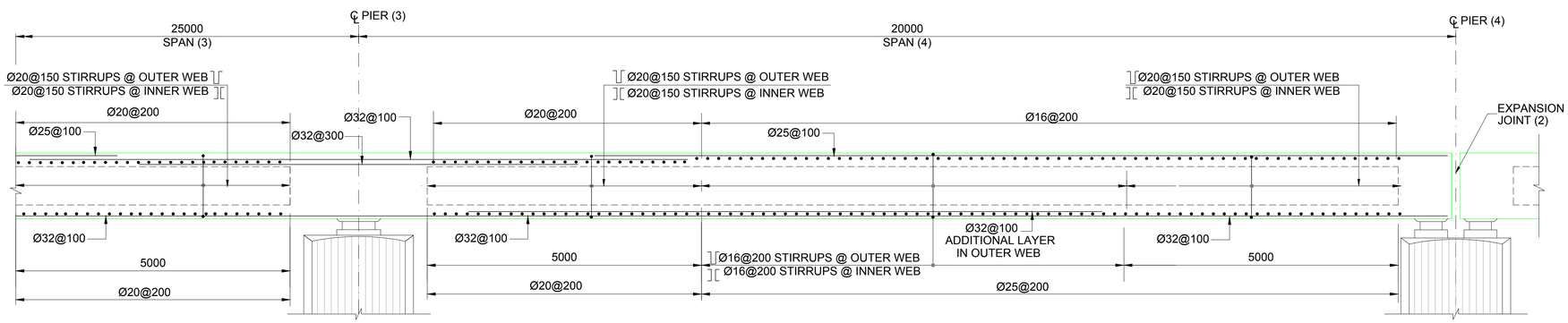
DECK SLAB CROSS SECTION REINFORCEMENT

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:20
Drawing No. :	ST-015	Rev.	00









NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. LONGITUDINAL SECTION REINFORCEMENT FOR SPANS (5,6,7 AND 8) ARE SIMILAR BUT MIRROR IMAGE TO SPANS (1,2,3 AND 4).

Rev.	Date	Description	Checked
0			

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

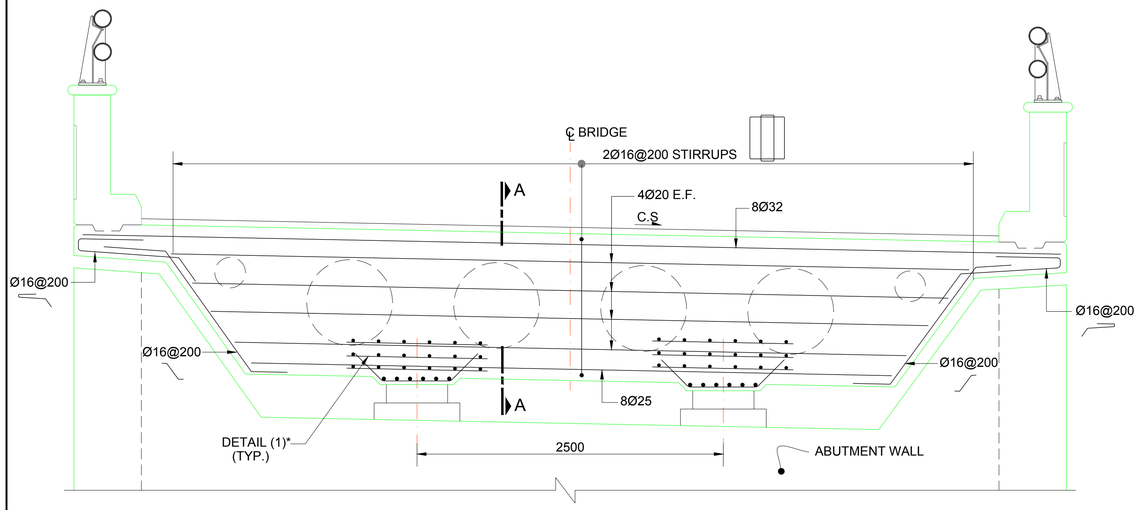
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

STRUCTURAL DRAWINGS

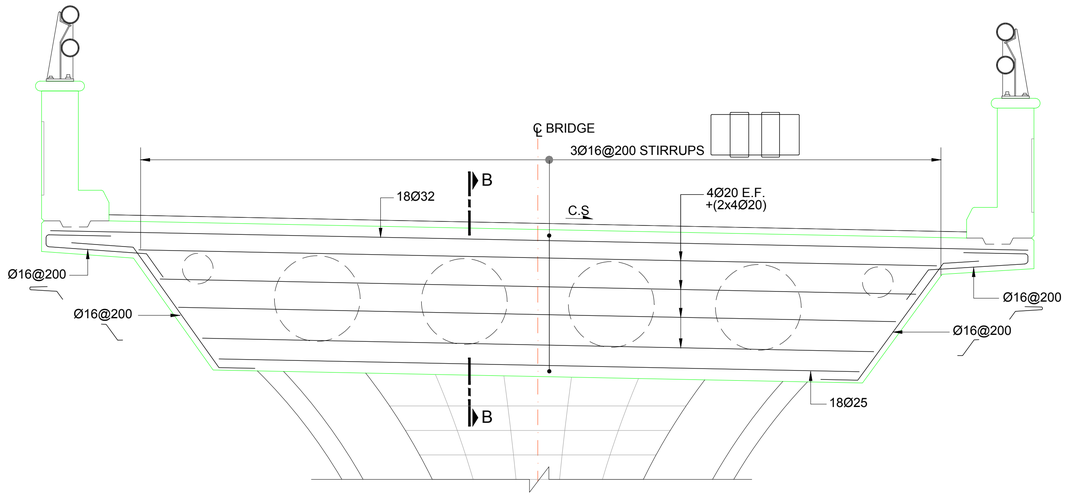
LONGITUDINAL SECTION REINFORCEMENT

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:50
Drawing No. :	ST-016	Rev.	00

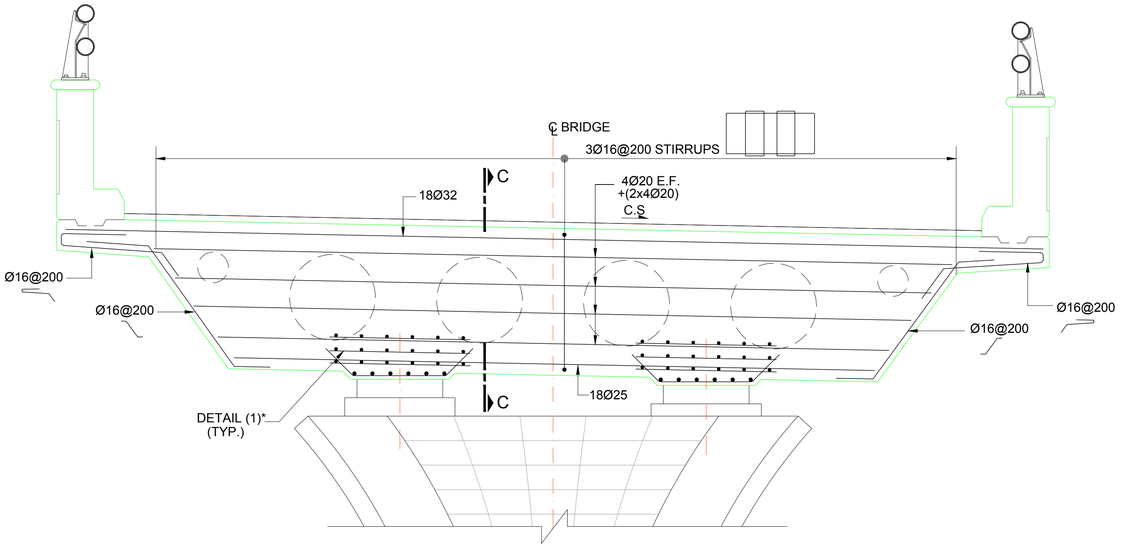


END DIAPHRAGM SECTIONAL ELEVATION @ ABUTMENTS

* SEE NOTE (4)

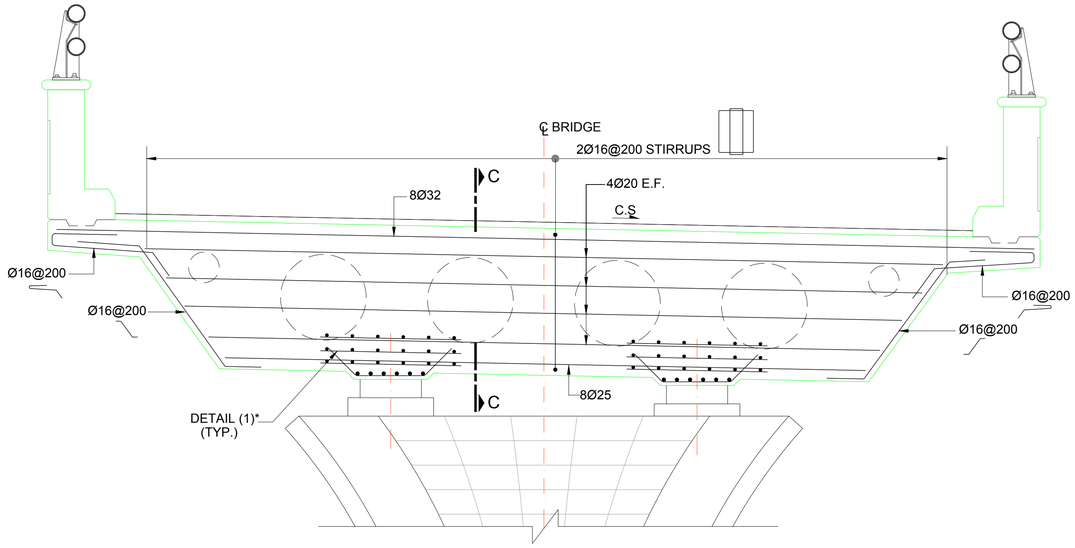


DIAPHRAGM SECTIONAL ELEVATION AT PIERS (2&6)



DIAPHRAGM SECTIONAL ELEVATION AT PIERS (1, 3, 5 &7)

* SEE NOTE (4)



DIAPHRAGM SECTIONAL ELEVATION AT PIER (4)

* SEE NOTE (4)

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. ONLY DIAPHRAGM REINFORCEMENT IS SHOWN IN THIS DRAWING.
4. FOR DETAIL (1) REFER TO DRAWING NO. (ST-18).
5. FOR SECTIONS(A-A), (B-B) AND (C-C) REFER TO DRAWING NO.(ST-18).

Rev.	Date	Description	Checked

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

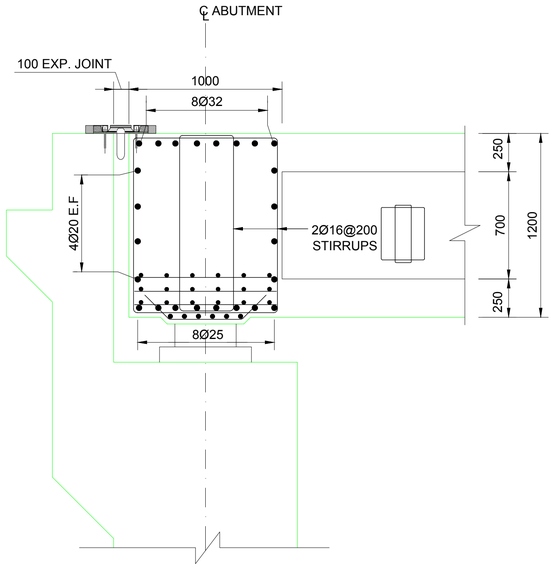
CONSOLIDATED CONSULTANTS GROUP

Drawing Title

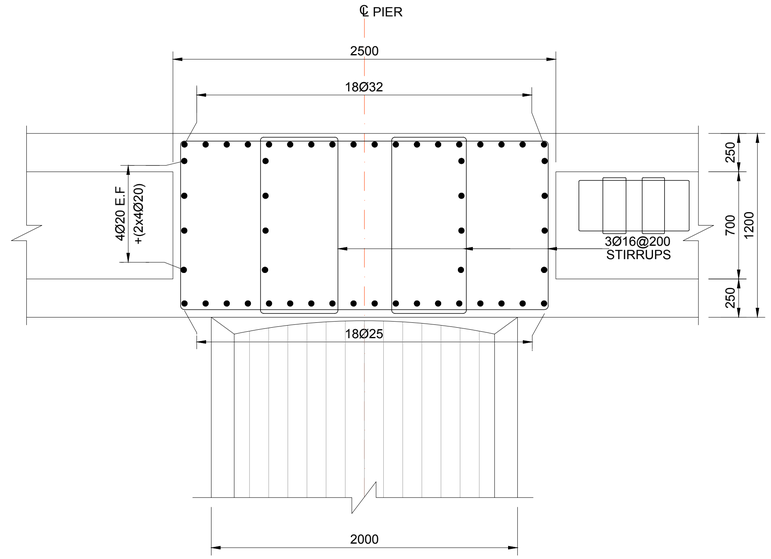
STRUCTURAL DRAWINGS

DIAPHRAGMS REINFORCEMENT DETAILS (1 OF 2)

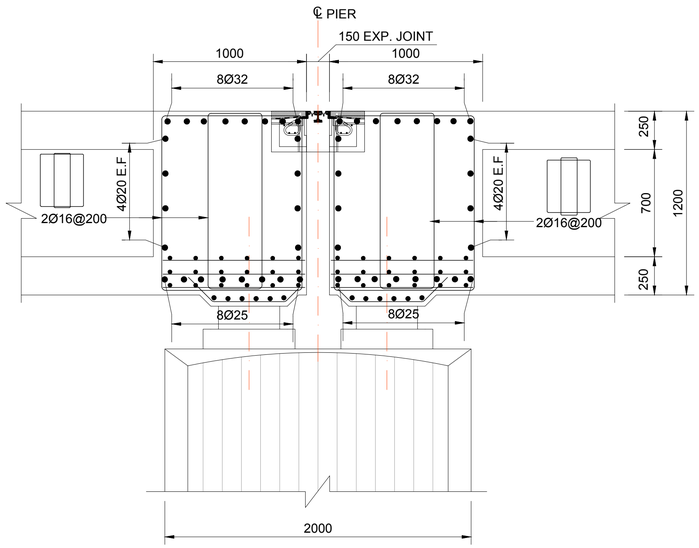
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:25
Drawing No. :	ST-017	Rev.	00



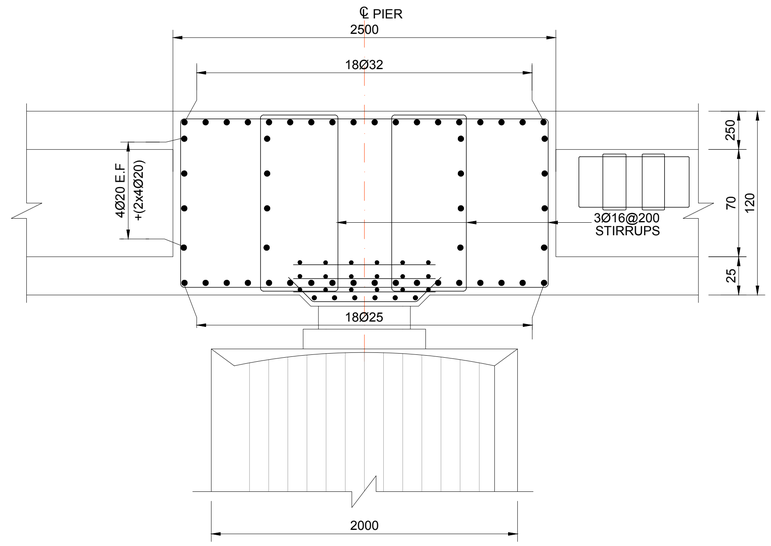
SECTION (A-A) AT ABUTMENTS (1&2)
SCALE 1:20



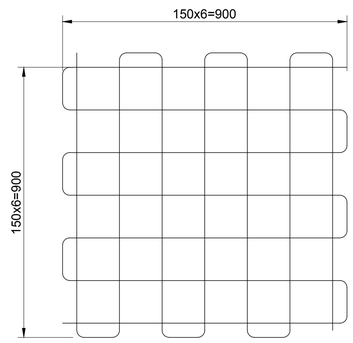
SECTION (B-B) AT PIERS (2&6)
SCALE 1:20



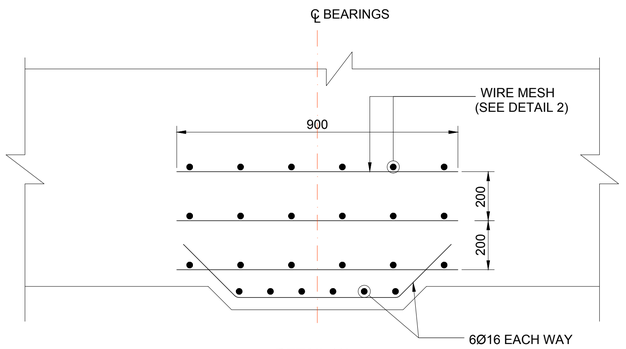
SECTION (C-C) AT PIER (4)
SCALE 1:20



SECTION (C-C) AT PIERS (1, 3, 5,&7)
SCALE 1:20



3No.@200
DETAIL (2)
N.T.S



DETAIL (1)
N.T.S

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. ONLY DIAPHRAGM REINFORCEMENT IS SHOWN IN THIS DRAWING.

Rev.	Date	Description	Checked

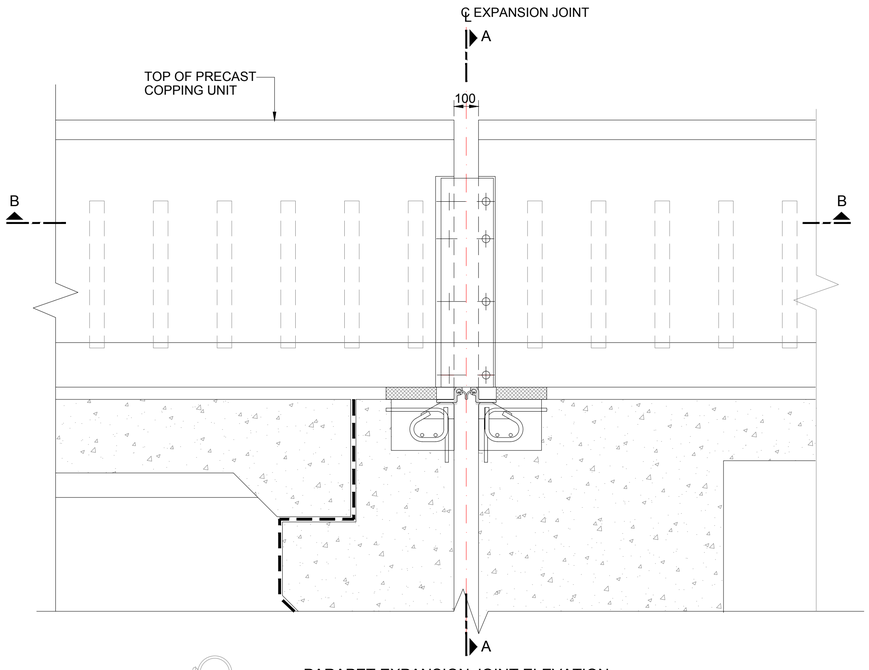
Client: Greater Amman Municipality

Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

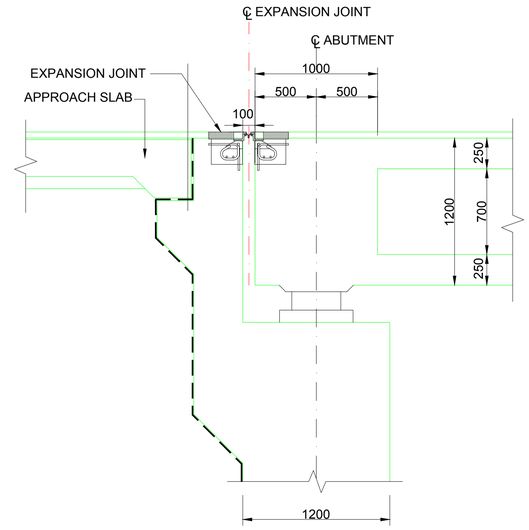
Consultants: steer davies gleave; CONSOLIDATED CONSULTANTS GROUP

Drawing Title: STRUCTURAL DRAWINGS
DIAPHRAGMS REINFORCEMENT DETAILS (2 OF 2)

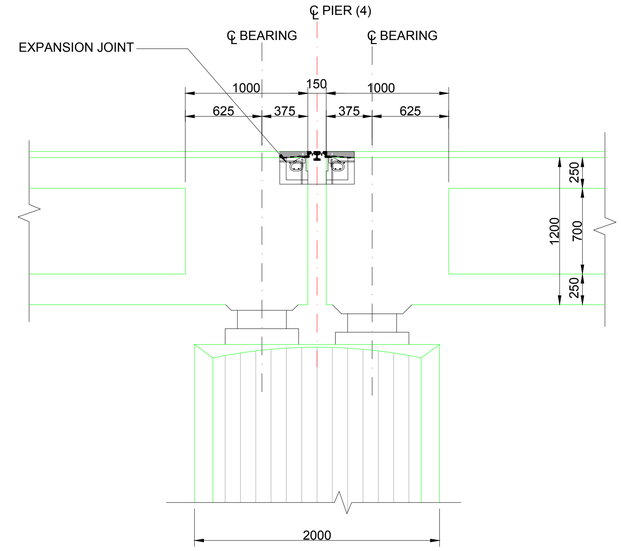
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. : ST-018		Rev.	00



PARAPET EXPANSION JOINT ELEVATION
SCALE 1:12.5



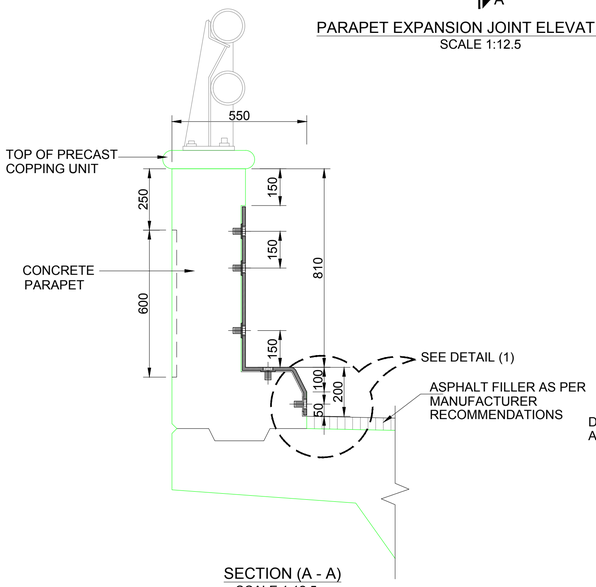
SECTION AT ABUTMENTS (1&2)
SCALE 1:25



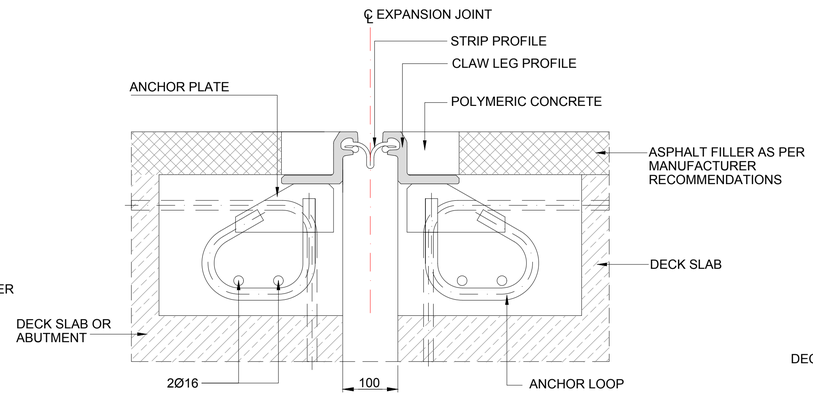
SECTION AT PIER (4)
SCALE 1:25

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. JOINT MOVEMENTS ARE BASED ON CASTING TEMPERATURE OF 30°C.THE CONTRACTOR SHALL ADJUST THE MOVEMENT RANGE DUE TO TEMPERA--TURE VARIATIONS AT CASTING.
3. THE CONTRACTOR SHALL SUBMIT COMPLETE DETAILS OF THE PROPOSED EXPANSION JOINT MEETING THE MOVE--MENT REQUIREMENTS.
4. EXPANSION JOINTS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDED PROCEDURES.
5. BLOCK OUT DIMENSIONS NOT SHOWN, ACTUAL DIMENSIONS TO BE PROPOSED BY THE CONTRACTOR BASED ON THE EXPANSION JOINT MANUFACTURERS RECOMMENDATIONS.
6. EXPANSION JOINT GAP SHALL EXTEND IN THE BRIDGE CONCRETE PARAPET. THE GAP CAN BE MODIFIED AS PER EXPANSION JOINT MANUFACTURERS RECOMMENDATIONS.
7. EXPANSION JOINT DETAILS SHOWN ARE ONLY INDICATIVE, THE CONTRACTOR SHOULD PROVIDE EXPANSION JOINT WHICH MEET THE MOVEMENT RANGE STATED IN THE DRAWINGS.

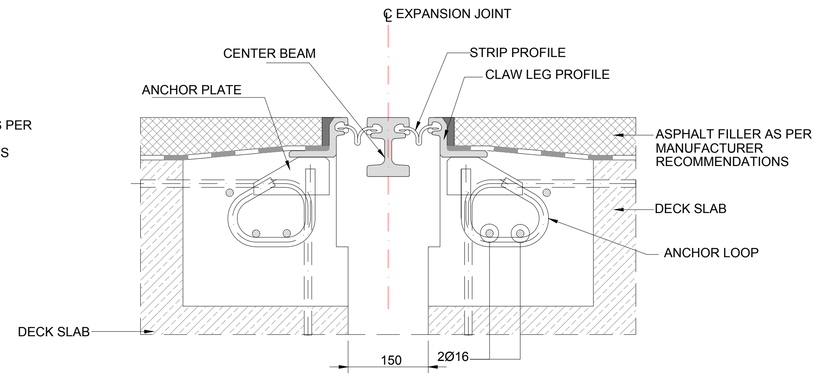


SECTION (A - A)
SCALE 1:12.5



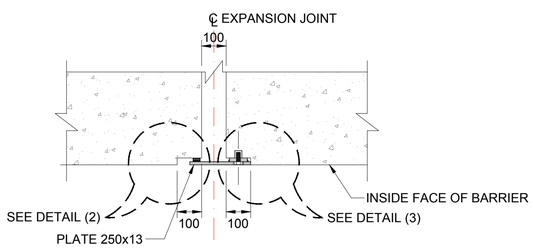
MIN. EXPANSION = 15mm
MIN. CONTRACTION = 45mm
TOTAL MOVEMENT = 60mm

MOVABLE EXPANSION JOINT DETAIL @ ABUTMENTS (1 AND 2)
N.T.S

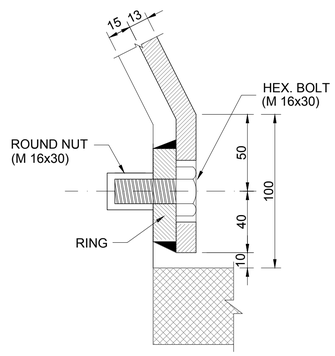


MIN. EXPANSION = 30mm
MIN. CONTRACTION = 90mm
TOTAL MOVEMENT = 120mm

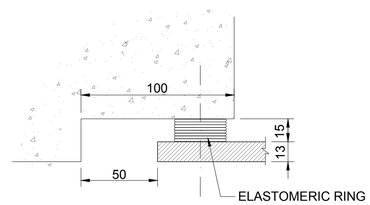
MOVABLE EXPANSION JOINT DETAIL @ PIER (4)
N.T.S



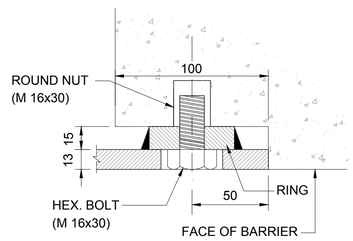
SECTION (B - B)
SCALE 1:12.5



DETAIL (1)
SCALE 1:2



DETAIL (2)
SCALE 1:2



DETAIL (3)
SCALE 1:2

BRIDGE BARRIER DETAILS AT EXPANSION JOINT

Rev.	Date	Description	Checked

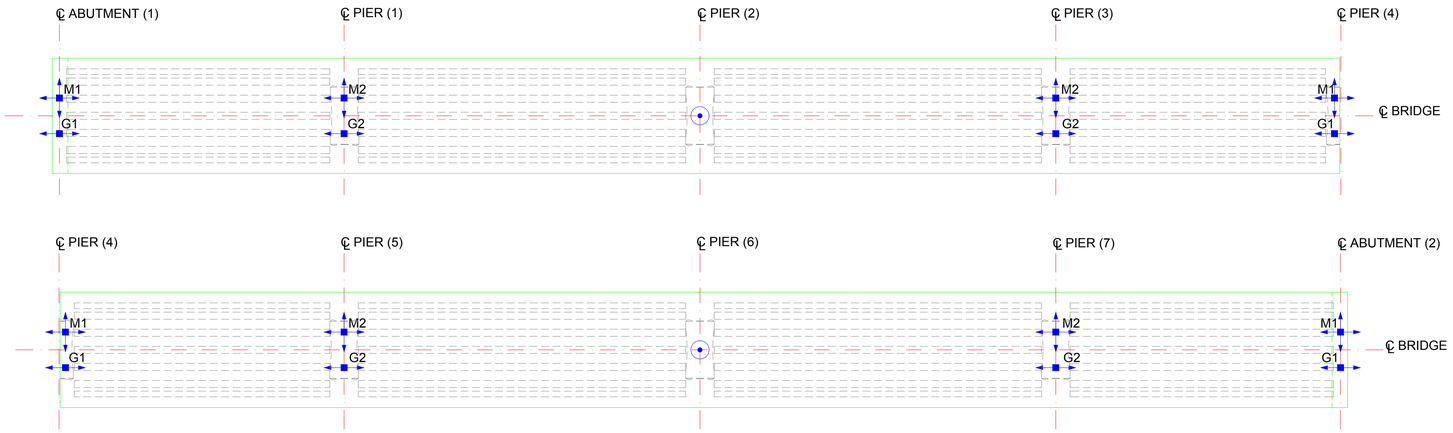
Client
Greater Amman Municipality

Project Name
BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

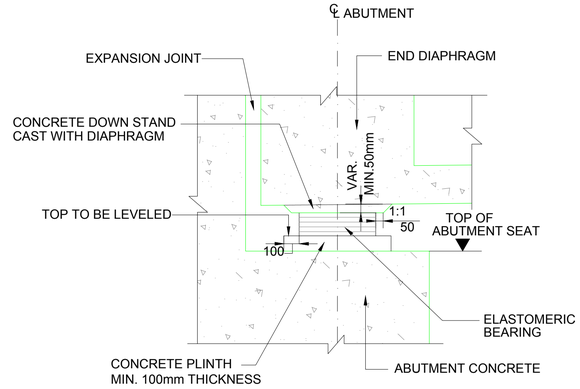
Consultants
steer davies gleave
CONSOLIDATED CONSULTANTS GROUP

Drawing Title
STRUCTURAL DRAWINGS
EXPANSION JOINT DETAILS

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. :	ST-019	Rev.	00



BEARING ARRANGEMENT PLAN



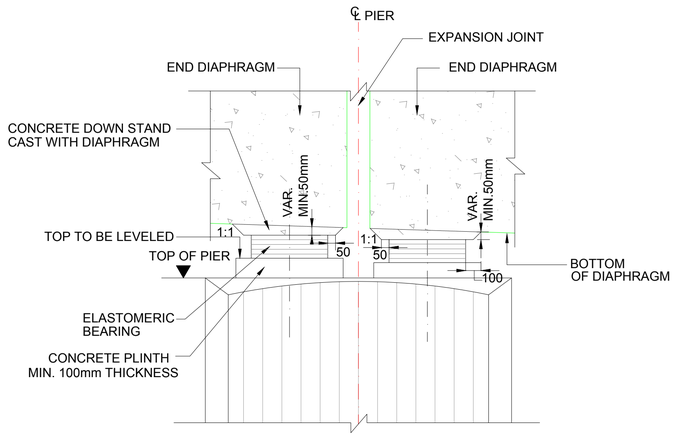
BEARING DETAILS AT ABUTMENT
(ILLUSTRATION ONLY)

LEGEND:

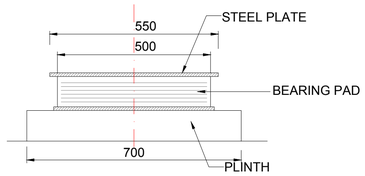
- G — MOVABLE IN LONGITUDINAL DIRECTION AND GUIDED IN TRANSVERSE DIRECTION
- M — MOVABLE IN LONGITUDINAL AND TRANSVERSE DIRECTIONS
- MONOLITHIC PIER

BEARING DATA

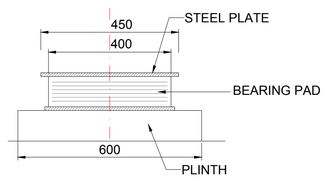
TYPE	SIZE	SERVICE VERTICAL LOAD (KN)			HORIZONTAL LOAD (KN)	ULTIMATE VERTICAL LOAD (KN)	LONGITUDINAL MOVEMENT (mm)		
		PERMANENT	MAXIMUM	MINIMUM			TEMP. RISE	TEMP. FALL	SHRINKAGE, ELASTIC SHORTENING AND CREEP
M1	400x500	800	1500	600	-	2500	13	16	42
M2	600x700	2500	3750	2250	-	5500	7	9	23
G1	400x500	800	1500	600	100	2500	13	16	42
G2	600x700	2500	3750	2250	600	5500	7	9	23



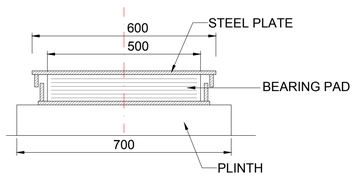
BEARING DETAILS AT PIER
(ILLUSTRATION ONLY)



BEARING PAD (M1) DETAIL (MOVABLE)
IN TRANSVERSE DIRECTION



BEARING PAD (M1) DETAIL (MOVABLE)
IN LONGITUDINAL DIRECTION



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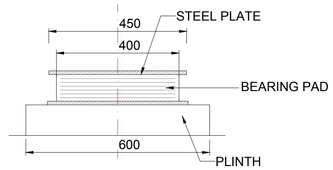
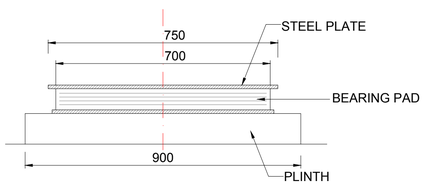
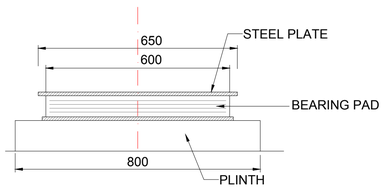
IN TRANSVERESE DIRECTION



BEARING PAD (G1) DETAIL (GUIDED)
IN LONGITUDINAL DIRECTION



BEARING PAD (M2) DETAIL (MOVABLE)
IN TRANSVERSE DIRECTION



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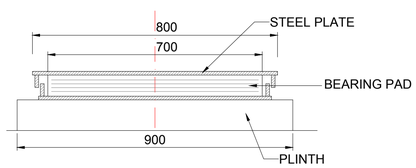
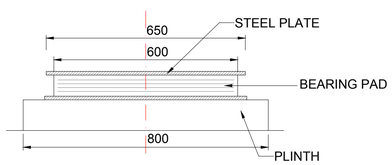
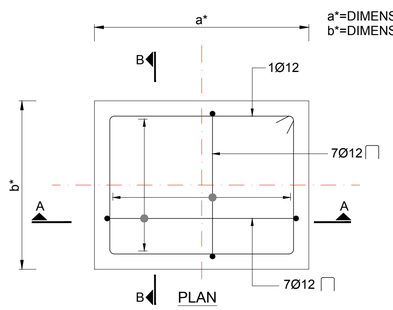


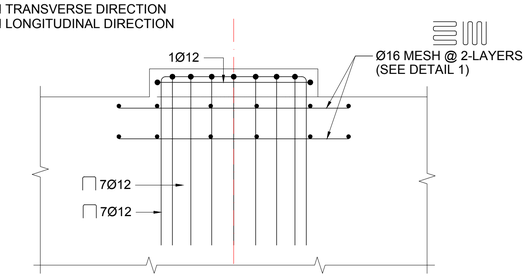
BEARING PAD (G2) DETAIL (GUIDED)
IN TRANSVERESE DIRECTION



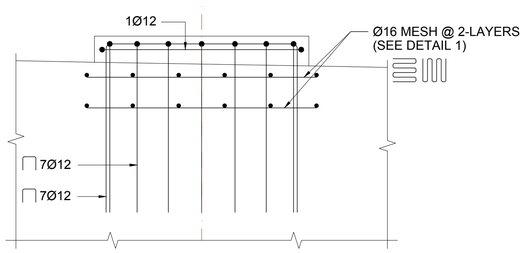
BEARING PAD (G2) DETAIL (GUIDED)
IN LONGITUDINAL DIRECTION



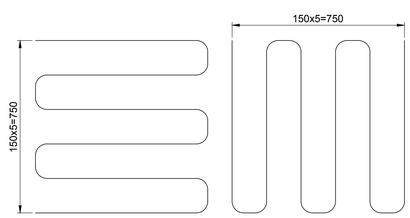
PLAN



SECTION B-B
BEARING PLINTH DETAILS



SECTION A-A



MESH DETAIL (1)

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ELASTOMERIC BEARINGS SHALL BE DESIGNED ACCORDING TO SECTION 14 AASHTO LRFD 2007.
3. MOVEMENT DUE TO SHRINKAGE, CREEP AND ELASTIC SHORTENING ARE BASED ON ASSUMED CONSTRUCTION SCHEDULE AS INDICATED IN NOTE (5) BELOW. CONTRACTOR SHALL VERIFY SHRINKAGE AND CREEP MOVEMENTS BASED ON HIS ACTUAL CONSTRUCTION SCHEDULE AND SHALL SUBMIT COMPLETE MOVEMENT CALCULATIONS TO THE ENGINEER. IF CONTRACTOR'S COMPUTED MOVEMENTS ARE GREATER THAN THOSE GIVEN ON DRAWINGS, THE CONTRACTOR SHALL PROVIDE BEARINGS CAPABLE OF ACCOMMODATING THE INCREASED MOVEMENT REQUIREMENT.
4. DIRECTION OF THE ARROW DENOTES DIRECTION OF MOVEMENT.
5. ASSUMED TEMPERATURE AT TIME OF SUPERSTRUCTURE POURING IS 30°C. THE CONTRACTOR SHALL ADJUST THE MOVEMENT DUE TO TEMPERATURE RISE AND FALL BASED ON ACTUAL TEMPERATURE AT TIME OF CASTING.
6. BEARINGS ARE TO BE PROVIDED WITH LOWER AND UPPER STEEL ANCHOR PLATES TO ALLOW FOR THE SIMPLE EXCHANGE OF BEARING WITH AMAXIMUM BRIDGE LIFTING OF 5mm.
7. BEARINGS DETAILS SHOWN ARE ONLY INDICATIVE, THE CONTRACTOR SHOULD PROVIDE BEARINGS WHICH MEET THE REQUIREMENTS STATED IN THE TABLE.

Rev.	Date	Description	Checked

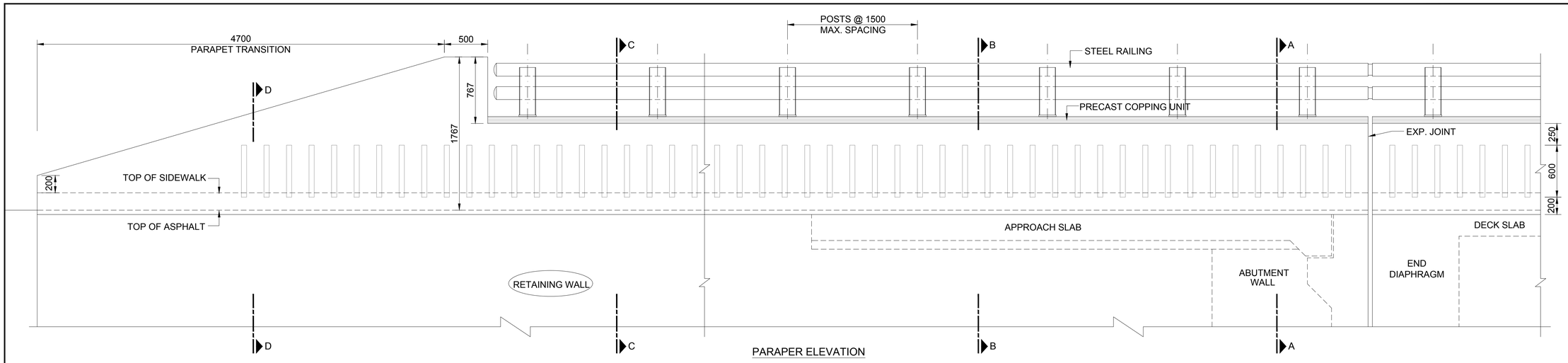
Client: Greater Amman Municipality

Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

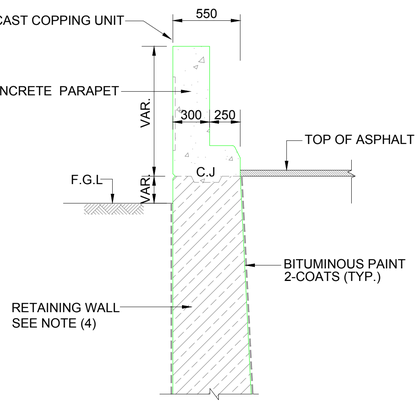
Consultants: steer davies gleave; Consolidated Consultants Group

Drawing Title: STRUCTURAL DRAWINGS — BEARINGS DETAILS

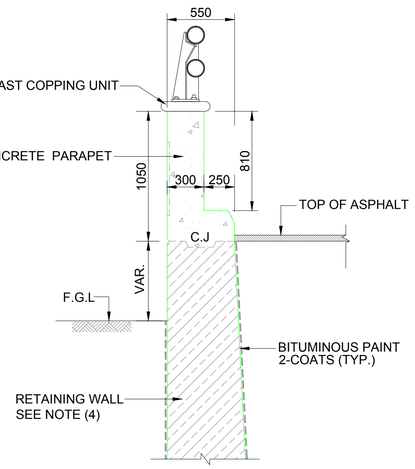
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	N.T.S
Drawing No. :	ST-020	Rev.	00



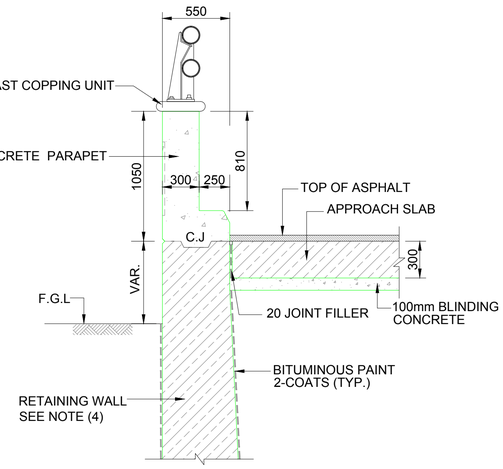
PARAPER ELEVATION



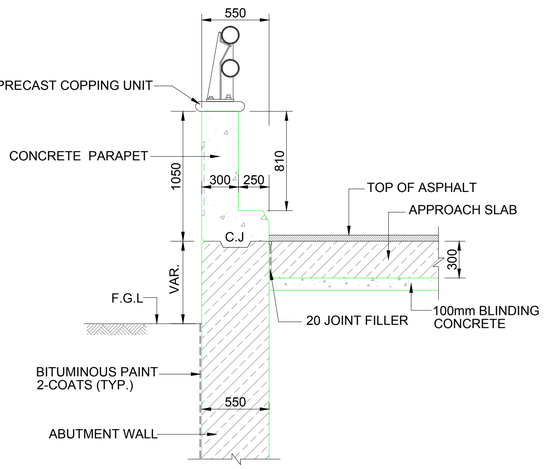
SECTION (D - D)



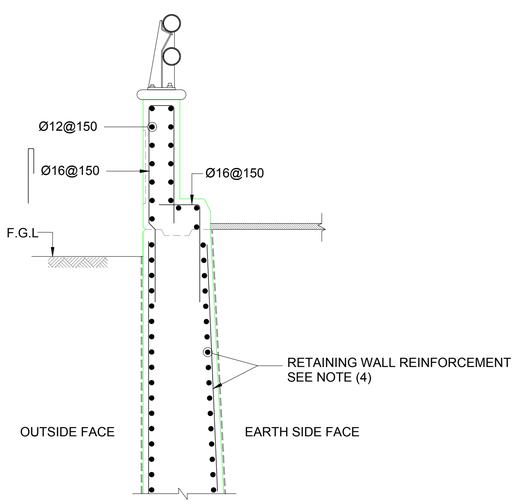
SECTION (C - C)



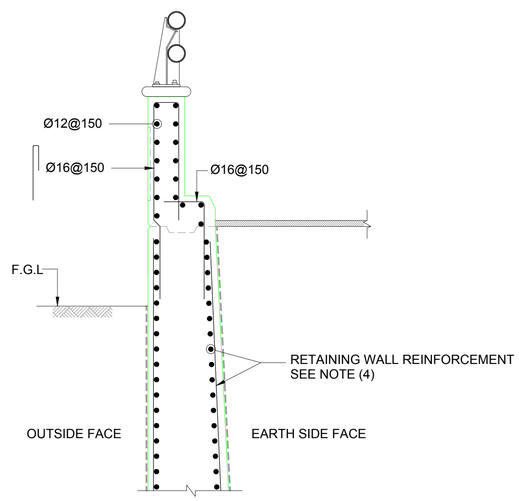
SECTION (B - B)



SECTION (A - A)



SECTION (D - D) REINFORCEMENT



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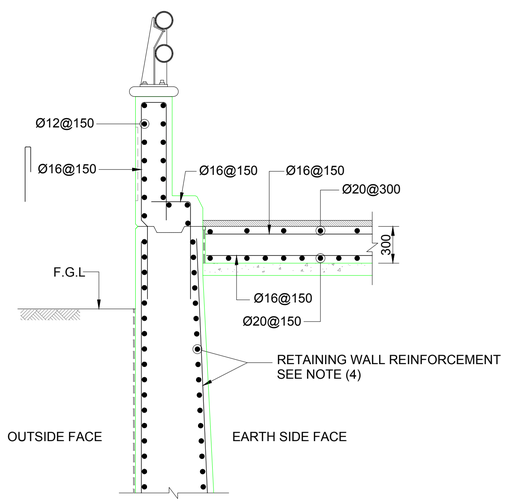
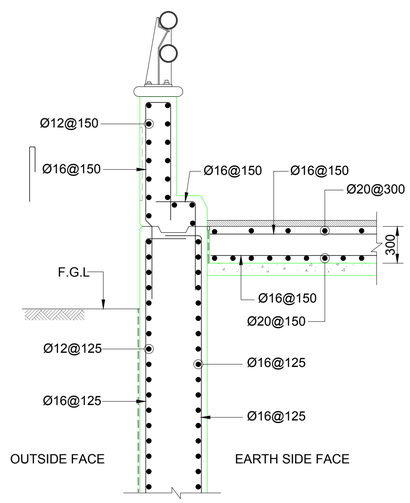


SECTION (B - B) REINFORCEMENT



SECTION (A - A) REINFORCEMENT

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. FOR HANDRAIL DETAILS REFER TO DRAWING No.(ST-22).
4. FOR RETAINING WALL GENERAL AND REINFORCEMENT DETAILS REFER TO DRAWINGS No.(ST-24) & (ST-25).

Rev.	Date	Description	Checked
0			

Client: Greater Amman Municipality

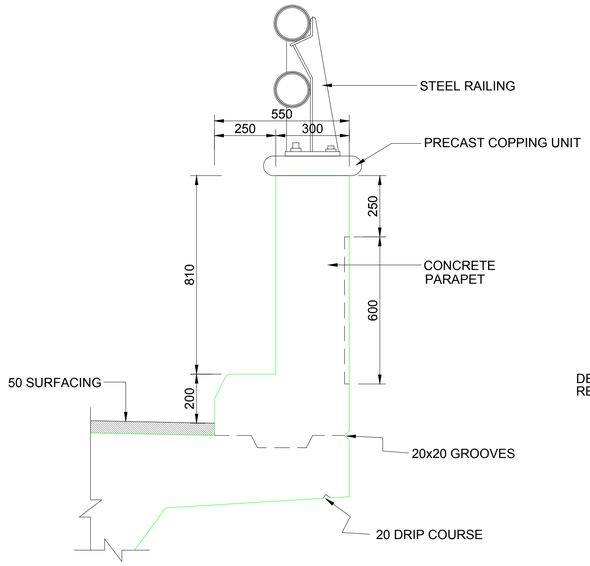
Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

Consultants: steer davies gleave; Consolidated Consultants Group

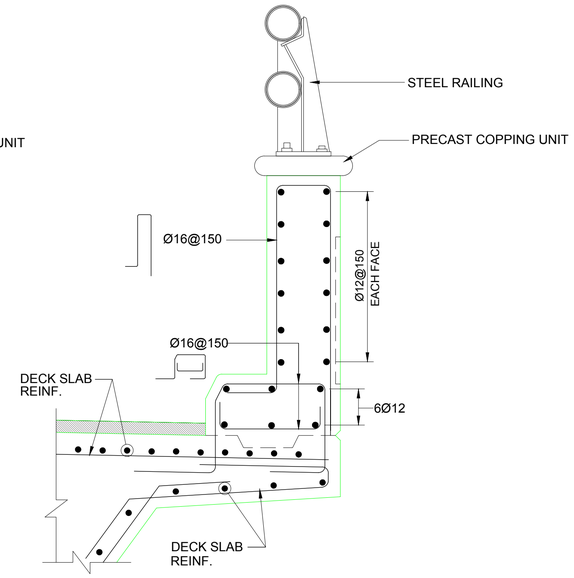
Drawing Title: GENERAL STRUCTURAL DRAWINGS

PARAPET AND RAILING DETAILS (1 OF 2)

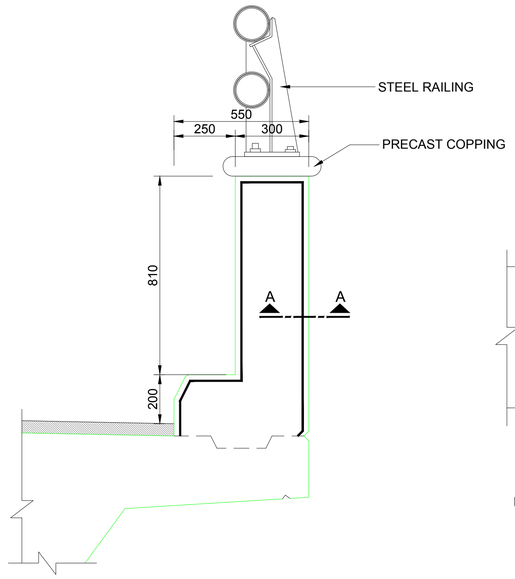
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	1:25
Drawing No. :	ST-021	Rev.	00



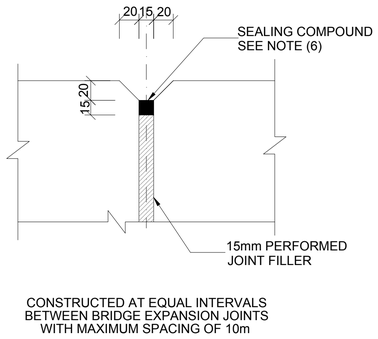
PARAPET DETAIL
SCALE 1:12.5



PARAPET REINFORCEMENT DETAIL
SCALE 1:12.5

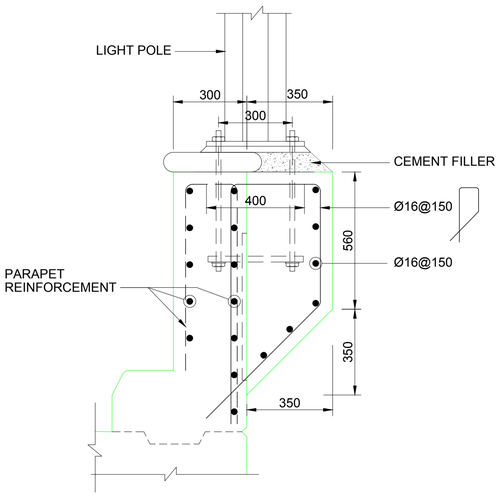


JOINT ELEVATION
SCALE 1:12.5

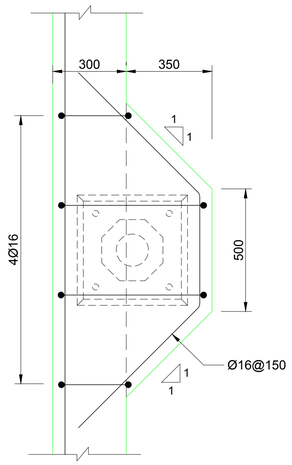


SECTION A - A
N.T.S

PARAPET JOINT DETAIL

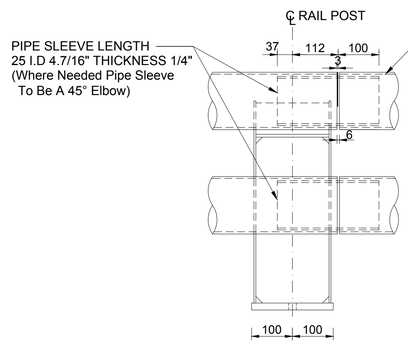


SECTIONAL ELEVATION
SCALE 1:12.5

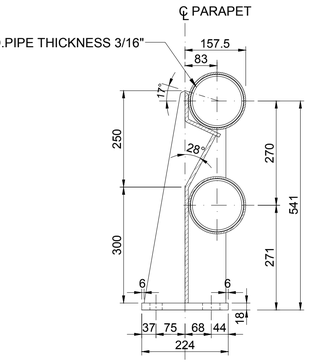


PLAN
SCALE 1:12.5

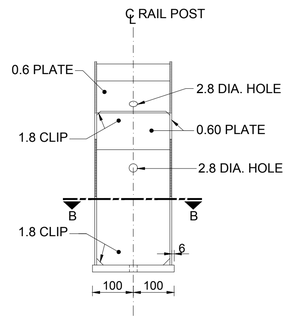
ADDITIONAL REINFORCEMENT AT LIGHT POLE LOCATION



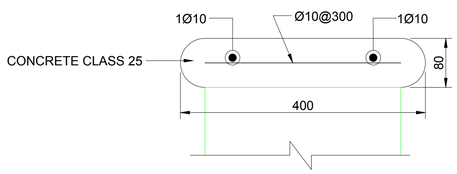
FRONT VIEW



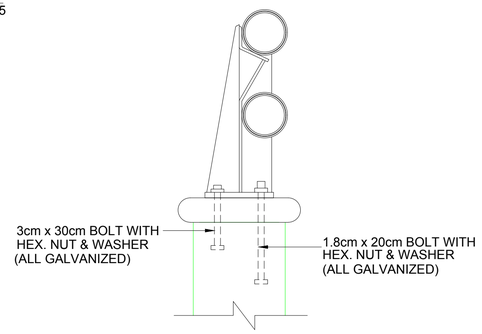
SIDE VIEW



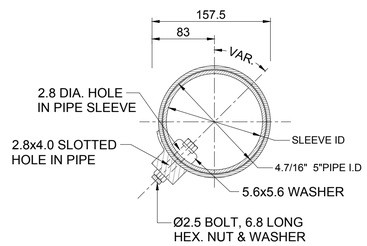
BACK VIEW



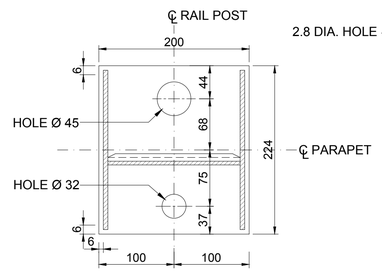
PRECAST COPPING UNIT
SCALE 1:5



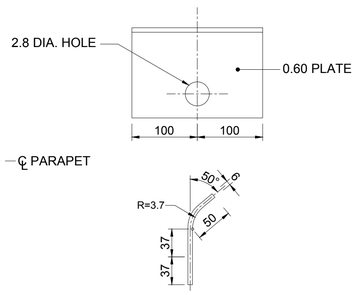
RAIL POST ANCHOR BOLT DETAIL



RAIL CONNECTION



SECTION A-A



RAIL FASTENING PLATE

STEEL RAIL DETAILS
N.T.S

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. GALVANIZE RAIL ASSEMBLY AFTER FABRICATION.
4. POST SHALL BE NORMAL TO RAILING.
5. RAIL TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVATURE.
6. SEALING COMPOUND SHALL BE A TWO COMPONENTS GREY NON-STAINING SEALING COMPOUND WITH POLYSULFIDE IQUID POLYMERS GUN GRADE WITH PRIMER.

Rev.	Date	Description	Checked
0			

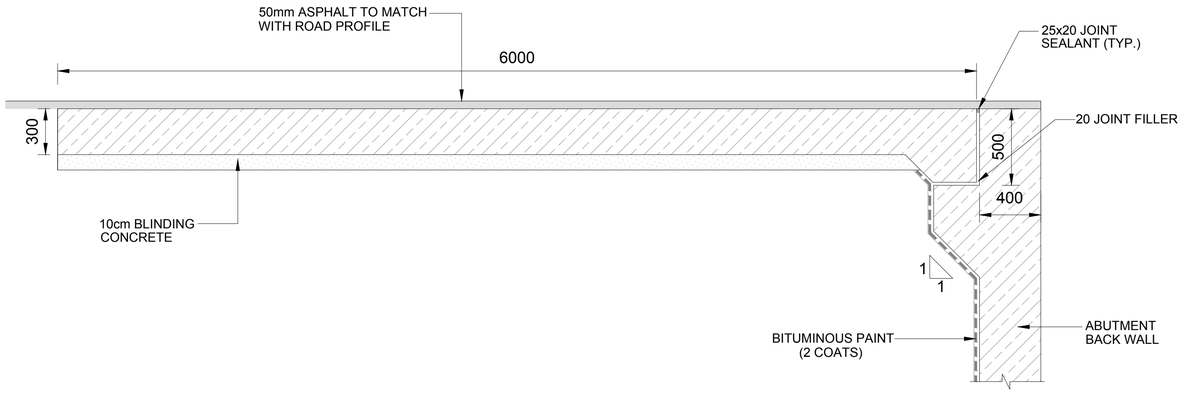
Client: Greater Amman Municipality

Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

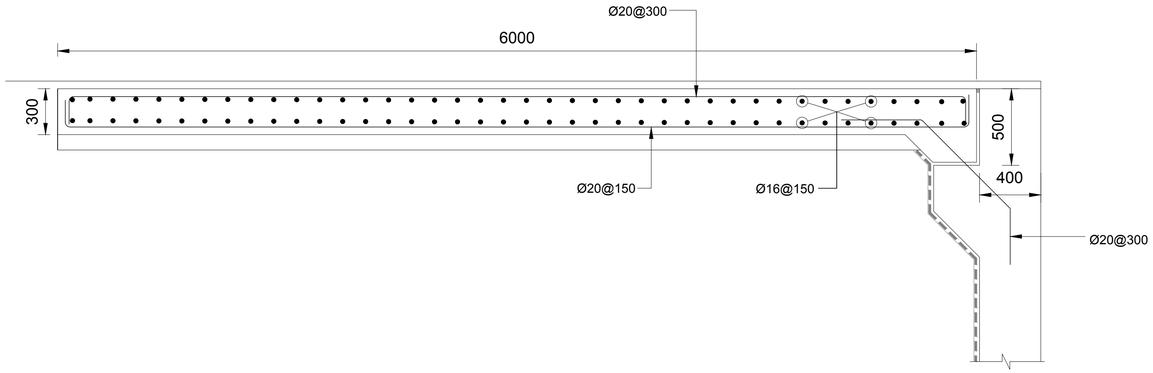
Consultants: steer davies gleave; CONSOLIDATED CONSULTANTS GROUP

Drawing Title: GENERAL STRUCTURAL DRAWINGS
PARAPET AND RAILING DETAILS (2 OF 2)

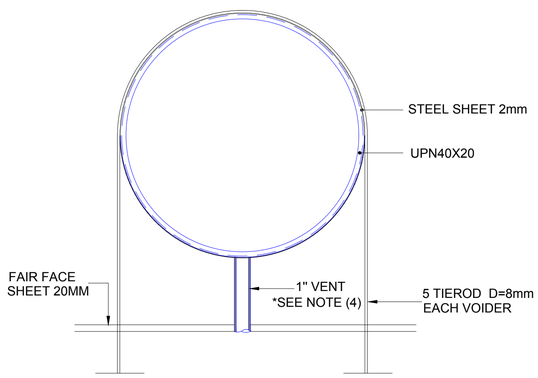
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. :	ST-022	Rev.	00



APPROACH SLAB TYPCAL SECTION
SCALE 1:25



APPROACH SLAB REINFORCEMENT
SCALE 1:25



CROSS SECTION IN VOIDER (D = 700mm)
N.T.S

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. ALL BARS REINFORCEMENT DIAMETER & SPACING ARE IN mm. UNLESS OTHERWISE INDICATED.
3. FOR PROFILE GRADE DATA AND CROSS SLOPE OF APPROACH SLAB SEE RELEVANT DRAWINGS.
4. ONE VENT SHALL BE PROVIDED NEAR THE LOWER END OF EACH VOID. VENT HOLES SHALL BE KEPT OPEN THROUGH THE BOTTOM FORMS DURING PLACING AND CURING OF CONCRETE. VOIDES SHALL BE PLACED PARALLEL TO CENTERLINE OF BEARING.
5. SLAB ON GRADE, CONCRETE CLASS 25, SHALL BE USED AROUND THE WING WALLS AND WHERE REQUIRED BY THE ENGINEER. DETAILS OF WHICH IS SIMILAR TO APPROACH SLAB, AND THE DIMENSIONS SHALL BE AS DIRECTED BY THE ENGINEER.

Rev.	Date	Description	Checked
0			

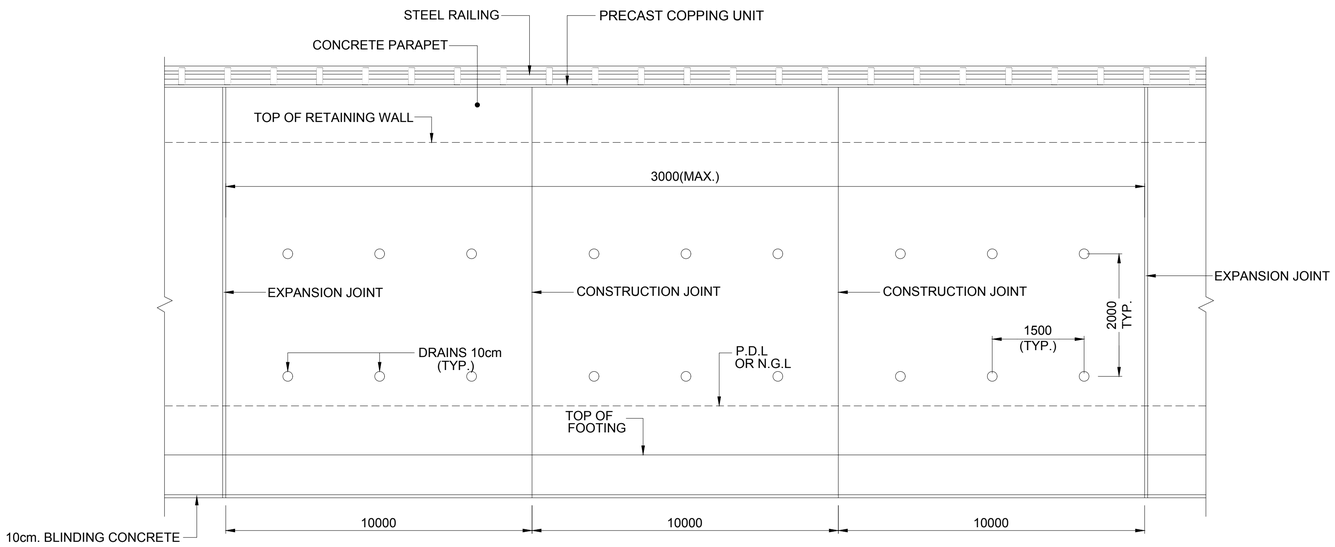
Client
Greater Amman Municipality

Project Name
BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

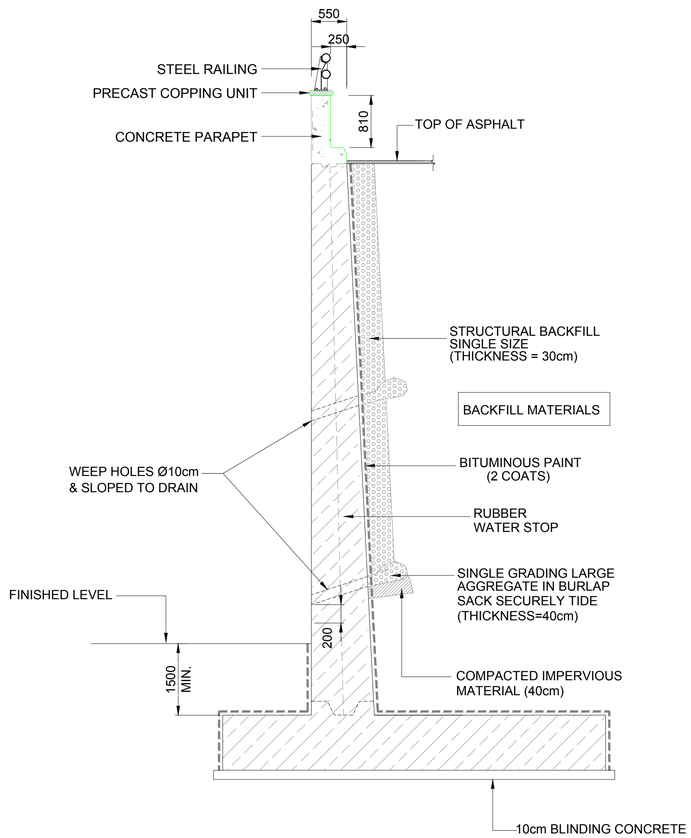
Consultants
steer davies gleave
CONSOLIDATED CONSULTANTS GROUP

Drawing Title
GENERAL STRUCTURAL DRAWINGS
MISCELLANEOUS DETAILS

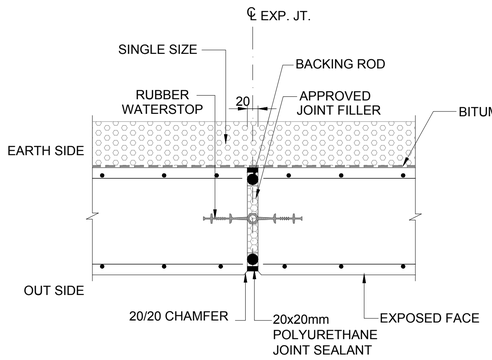
Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	AS SHOWN
Drawing No. : ST-023			Rev. 00



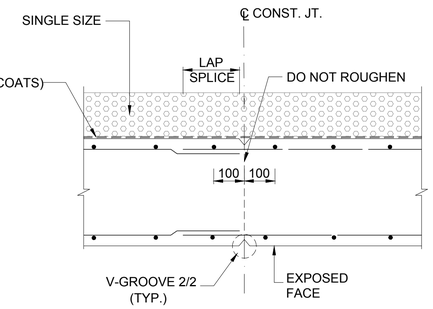
WING WALLS ELEVATION SHOWING VERTICAL JOINTS



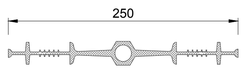
TYPICAL SECTION



EXPANSION JOINT (EXP.JT.)



CONSTRUCTION JOINT (CONST.JT.)



RUBBER WATER STOP

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. WEEP HOLES SHALL BE PROVIDED AT THE SPACING SHOWN. SUITABLE UNDER-DRAINS LOCATED BACK OF STEM AND CONNECTED TO AN OUT-LET PIPE MAY BE USED IN LIEU OF WEEP HOLES.
3. FOR STRUCTURAL NOTES SEE DRAWING No. (ST-01) & (ST-02).

Rev.	Date	Description	Checked
0			

Client

Greater Amman Municipality

Project Name

BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C
NASER BIN JAMEEL STREET

Consultants

steer davies gleave

CONSOLIDATED CONSULTANTS GROUP

Drawing Title

STRUCTURAL DRAWINGS
WING WALLS GENERAL DETAILS

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	N.T.S
Drawing No. :	ST-024	Rev.	00

DIMENSIONS						REINFORCEMENT																																		MAX. WALL HEIGHT	BEARING CAPACITY
H	B	C	E	D	t	BAR A1					BAR A2					BAR A3					BAR D1					D2			B1			F1			F2			L			
cm	cm	cm	cm	cm	cm	SIZE Ø mm	SP cm	a cm	b cm	LENG. cm	SIZE Ø mm	SP cm	a cm	b cm	LENG. cm	SIZE Ø mm	SP cm	a cm	b cm	LENG. cm	SIZE Ø mm	SP cm	a cm	b cm	LENG. cm	SIZE Ø mm	SP cm	LENG. cm	SIZE Ø mm	SP cm	LENG. cm	SIZE Ø mm	SP cm	LENG. cm	SIZE Ø mm	SP cm	LENG. cm	SIZE Ø mm	SP cm	cm	kN/m²
⩽100	110	30	30	50	55	-	-	-	-	-	-	-	-	-	-	12	10	90	30	120	12	10	90	30	120	12	10	160	12	10	160	12	10	125	12	20	125	12	20	100	60
150	130	40	40	50	55	-	-	-	-	-	-	-	-	-	-	12	10	90	30	120	12	10	90	30	120	12	10	160	12	10	160	12	10	125	12	20	125	12	20	150	60
200	150	50	50	50	55	-	-	-	-	-	-	-	-	-	-	12	10	90	30	120	12	10	90	30	120	12	10	160	12	10	160	12	10	125	12	20	125	12	20	200	60
250	175	75	50	50	55	-	-	-	-	-	12	30	120	40	160	12	20	170	40	210	12	10	100	30	130	12	10	210	12	10	210	12	10	150	12	20	150	12	20	250	60
300	180	80	50	50	55	-	-	-	-	-	12	30	140	40	180	12	20	200	40	240	12	10	115	30	145	12	10	255	12	10	255	12	10	160	12	20	160	12	20	300	60
350	225	125	50	50	55	-	-	-	-	-	16	30	160	40	200	16	20	230	40	270	16	10	115	30	145	16	10	305	16	10	305	16	10	200	16	20	200	12	20	350	70
400	260	160	50	50	55	16	30	120	80	200	16	30	180	40	220	16	30	270	40	310	16	10	120	30	150	16	10	355	16	10	355	16	10	240	16	20	240	12	20	400	85
450	285	175	60	50	55	16	30	120	100	220	16	30	200	40	240	16	30	290	40	330	16	10	120	40	160	16	10	400	16	10	400	16	10	270	16	20	270	16	20	450	100
500	310	200	60	50	55	20	30	130	100	230	20	30	220	40	260	20	30	320	40	360	16	10	130	50	180	16	10	445	16	10	445	20	10	300	20	20	300	16	20	500	125
550	360	240	65	55	55	20	30	140	100	240	20	30	230	40	270	20	30	340	40	380	16	10	140	50	190	16	10	490	16	10	490	20	10	350	20	20	350	16	20	550	138
600	380	250	70	60	60	20	30	160	120	280	20	30	240	40	280	20	30	360	40	400	16	10	160	50	210	16	10	535	16	10	535	20	10	370	20	20	370	16	20	600	152
650	430	270	100	60	60	20	30	170	120	290	20	30	250	40	290	20	30	380	40	420	16	10	170	50	220	16	10	585	16	10	585	20	10	420	20	20	420	16	20	650	165
700	475	297	100	60	60	20	30	180	150	330	20	30	280	40	320	20	30	410	40	450	16	10	180	50	230	16	10	635	16	10	635	20	10	465	20	20	465	16	20	700	180
750	510	350	100	60	60	20	30	180	150	330	20	30	300	40	340	20	30	430	40	470	20	10	190	50	240	20	10	685	20	10	685	20	10	500	20	20	500	16	20	750	200
800	560	395	100	65	65	25	30	190	150	340	25	30	310	40	350	25	30	450	40	490	20	10	200	50	250	20	10	735	25	10	735	20	10	550	25	20	550	16	20	800	210
850	585	365	150	70	70	25	30	225	185	410	25	30	330	40	370	25	30	470	40	510	25	10	210	60	270	25	10	785	25	10	785	25	10	575	25	20	575	16	20	850	210
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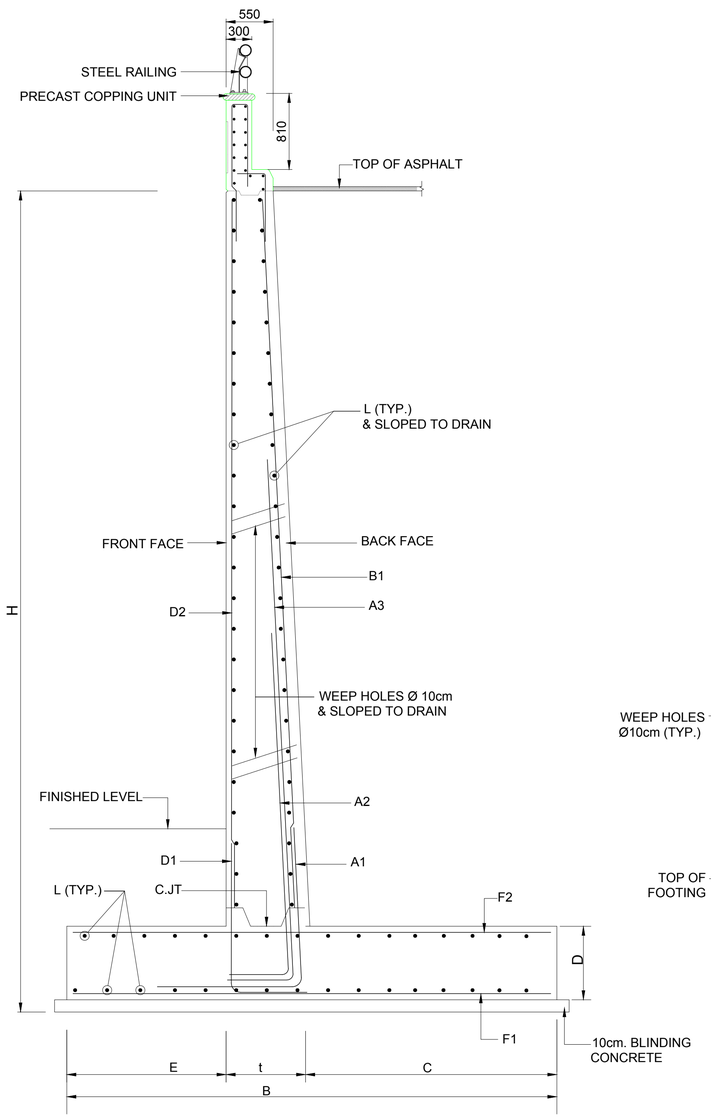
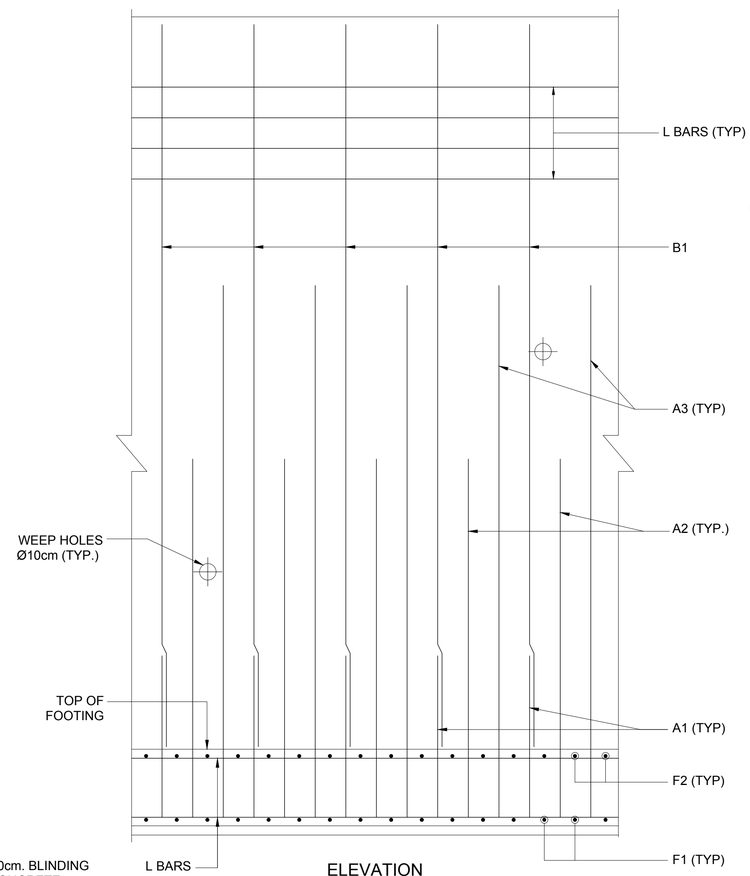
1000	760	505	175	80	80	32	30	240	220	460	32	30	390	50	440	32	30	550	50	600	25	10	220	60	280	25	10	935	25	10	935	25	10	750	32	20	750	16	20	1000	250

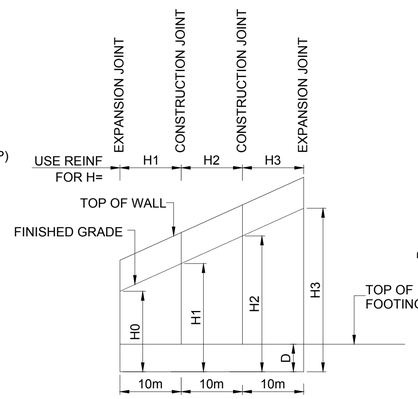
NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. FOR DETAILS OF JOINTS, SPACINGS AND BACKFILL DRAINS SEE DWG No.(GN-07).
3. EXPOSED SURFACES SHALL BE FAIR FACED, AND BURIED SURFACES SHALL BE PROTECTED BY BITUMINES PAINT 2 COATS.
4. THE REINFORCING SCHEDULES SHOWN ARE ONLY FOR THE CORRESPONDING WALL DIMENSIONS LISTED. LENGTH OF REINFORCING BARS SHOULD BE ADJUSTED TO MATCH THE RETAINING WALL HEIGHT.
5. FOR REINFORCEMENT HOOK DETAILS SEE DWG.(ST-01).
6. REINFORCED CONCRETE SHALL BE CLASS 30.
7. BLINDING CONCRETE SHALL BE CLASS 15 .
8. STEEL REINFORCEMENT SHALL CONFORM TO THE REQUIRE. OF ASTM A615 GRADE 60 .

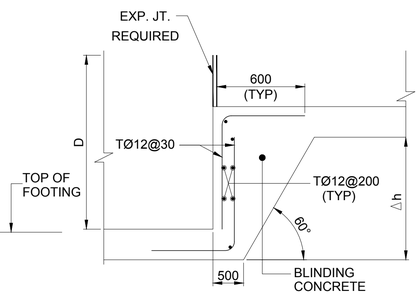




ELEVATION
BACK FACE

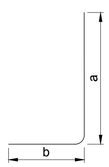


ELEVATION
(CASE OF REGULAR FOUNDATION)

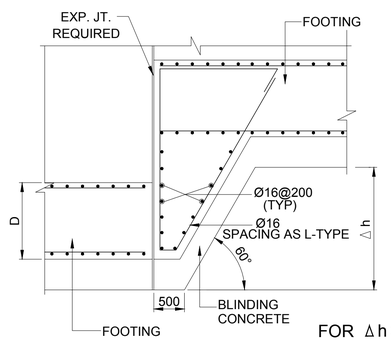


FOR Δh ⩽ D

FOOTING STEP ELEVATION
DETAIL A



BARS
A1,A2,A3,D1



FOR Δh > D

FOOTING STEP ELEVATION
DETAIL B

Rev.	Date	Description	Checked
0			

Client: Greater Amman Municipality

Project Name: BUS RAPID TRANSIT (BRT) SYSTEM IN AMMAN - PACKAGE 10 A & C NASER BIN JAMEEL STREET

Consultants: steer davies gleave; CONSOLIDATED CONSULTANTS GROUP

Drawing Title: STRUCTURAL DRAWINGS WING WALLS REINFORCEMENT

Designed By	W. FAKHOURI	Date	OCT 2018
Drawn By	E. HOSEH	Stage	–
Checked By	H.SALHI	Sheet Size	A1
Approved By	H.SALHI	Scale	N.T.S
Drawing No. :	ST-025	Rev.	00