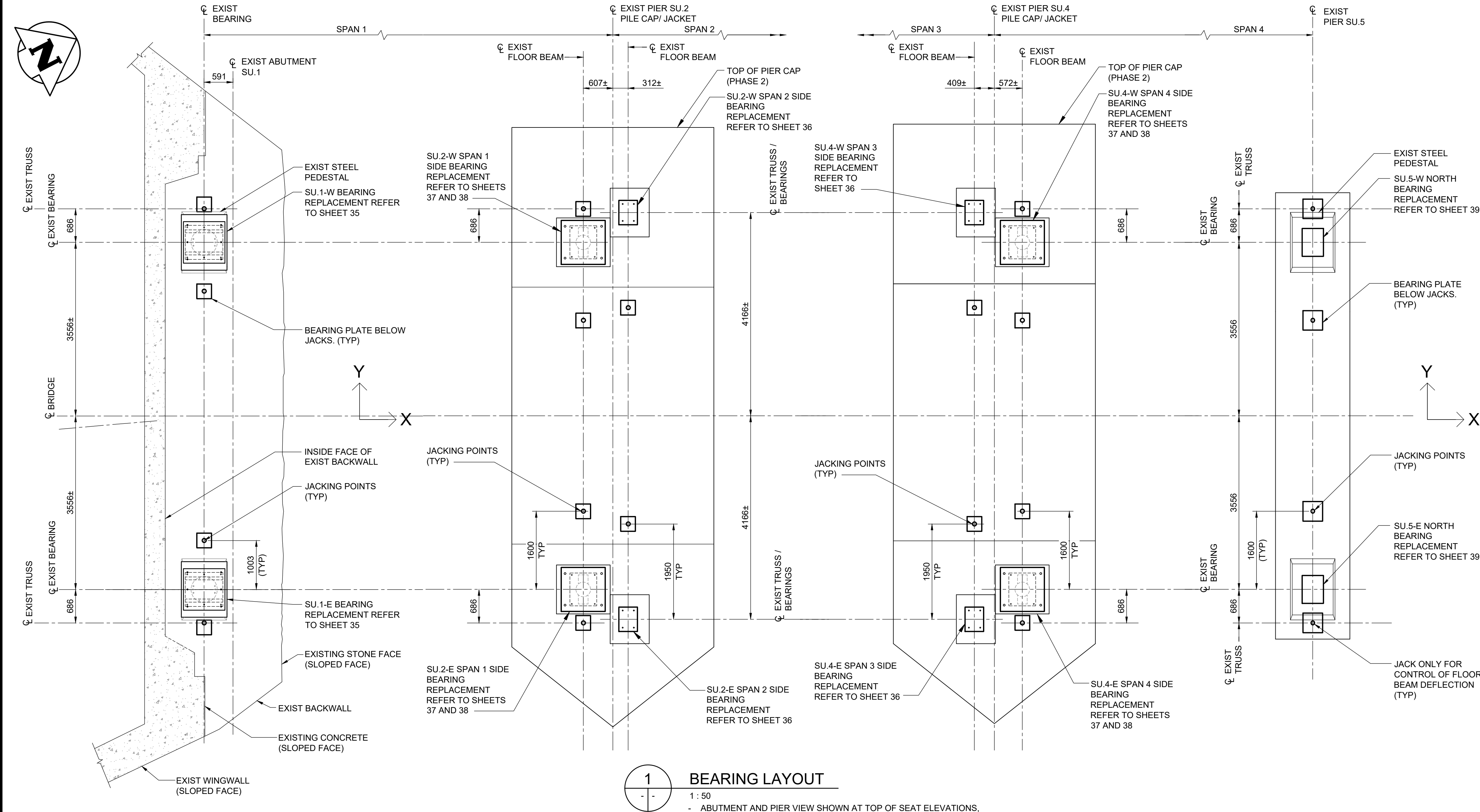




1
- -
BEARING LAYOUT
1: 50
- ABUTMENT AND PIER VIEW SHOWN AT TOP OF SEAT ELEVATIONS,
SLOPED LOWER CONCRETE NOT SHOWN FOR CLARITY
- PIER SU.3 NOT SHOWN

JACKING AND INSTALLATION NOTES:

1. THE BRIDGE SHALL BE CLOSED TO TRAFFIC THROUGH JACKING AND WHILE THE BRIDGE IS SUPPORTED ON TEMPORARY BLOCKING. TEMPORARY BLOCKING SHALL BE DESIGNED BY THE CONTRACTOR AND BE CAPABLE OF SUPPORTING THERMAL MOVEMENTS AND PROVIDE LATERAL STABILITY TO THE STRUCTURE.
2. THE MAXIMUM PERMITTED BRIDGE CLOSURE FOR JACKING AND BEARING REPLACEMENT AT ABUTMENT SU.1 AND PIER SU.5 IS A TOTAL OF ONE WEEK. BEARINGS AT PIERS SU.1 AND SU.5 ARE TO BE PLACED WITHIN 14 DAYS OF CASTING PHASE 1 CONCRETE JACKET POUR. NO VEHICULAR TRAFFIC IS PERMITTED ON THE STRUCTURE DURING JACKING AND WHILE IN THE BLOCKED STATE.
3. BEARING REPLACEMENTS AT PIER SU.2 AND SU.4 ARE TO OCCUR DURING THE PIER CAP CONSTRUCTION WHILE THE BRIDGE IS CLOSED.
4. THE CONTRACTOR SHALL ACCOUNT FOR LATERAL LOADS IN THEIR JACKING PROCEDURE AND TEMPORARY SUPPORT PLAN OF THE TRUSS.
5. DESIGN BEARING DRAWINGS DEPICTS A PROPOSED TEMPORARY WORK CONCEPT AT PIER SU.2 AND SU.4 TO FACILITATE JACKING AT THE POINTS INDICATED ON THE PLANS. THE CONTRACTOR IS TO CONFIRM THE JACKING PLAN ACCOMMODATES CONSTRUCTION MEANS AND METHODS. MODIFICATIONS TO THE PROPOSED TEMPORARY WORK CONCEPT MAY BE PROPOSED BY THE CONTRACTOR TO THE CONTRACT ADMINISTRATOR FOR APPROVAL.
6. THE CONTRACTOR SHALL SUPPLY AND USE A SYNCHRONIZED JACKING SYSTEM AND CONSIST OF EITHER A PROGRAMMABLE LOGIC CONTROLLER (PLC) CONTROLLED SYSTEM OR A VOLUMETRIC CONTROLLED SYSTEM. THE SYSTEM SHALL BE CAPABLE OF ADJUSTING PRESSURES AND HYDRAULIC VOLUMES IN ORDER TO ACHIEVE A UNIFORM LIFT AND / OR LOWERING TO A TOLERANCE OF LESS THAN OR EQUAL TO 1.5mm FROM THE LEADING TO LAGGING CYLINDERS.
7. ALL JACKS SHALL BE RAISED IN ONE SYNCHRONIZED OPERATION, WHILE MAINTAINING THE MAXIMUM ALLOWABLE DIFFERENCE BETWEEN ANY TWO JACKING POINTS OF 1.5mm.
8. JACKS SHALL BE CAPABLE OF SUPPORTING THE MAXIMUM FACTORED DEAD LOAD PER JACK LISTED ON THESE PLANS.
9. MAXIMUM BEARING STRESS ON SUBSTRUCTURE TOP UNDER JACKING LOCATIONS SHALL BE LIMITED TO 5MPa. BEARING PLATES TO BE SIZED APPROPRIATELY BY THE CONTRACTOR.
10. PERFORM JACKING SETUP AT SU.5 SHALL BE COMPLETED PRIOR TO BRIDGE JACKING. MINIMUM EDGE DISTANCE BETWEEN BEARING PLATE AND EXISTING PIER EDGE IS 250mm.
11. MAXIMUM VERTICAL JACKING HEIGHT IS 10mm.
12. INSTALL NEW BEARINGS CENTERED UNDER EXISTING BEARING STIFFENERS
13. THE CONTRACTOR SHALL PERFORM ALL WORKS REQUIRED TO INSTALL THE BEARINGS SHOWN ON SHEETS 31 TO 38. WORK WILL ALSO INCLUDE FIELD WELDING POT / SPHERICAL ASSEMBLY TO MASONRY / SEAT PLATES AND INSTALLATION OF MASONRY / SEAT PLATES TO STRUCTURE. SUPPLY OF STRUCTURE ATTACHMENT BOLTS BY CONTRACTOR.

BEARING SUPPLY NOTES:

1. POT BEARING ASSEMBLIES AS ABUTMENT SU.1 DEPICTED ON THESE PLANS WILL BE SUPPLIED BY THE CITY OF WINNIPEG AND HAVE BEEN PROCURED UNDER SEPARATE CONTRACT WITH MARCON METAFAB. SHOP DRAWINGS ARE AVAILABLE UPON AWARD OF CONTRACT.
2. SPHERICAL BEARINGS AT PIER SU.2, SU.4 AND POT BEARINGS AT SU.5 ARE TO BE SUPPLIED BY THE CONTRACTOR.
3. BEARINGS SHOWN IN THESE PLANS ARE FOR ILLUSTRATION PURPOSES ONLY.
4. DESIGN AND FABRICATION OF THESE BEARINGS SHALL MEET THE REQUIREMENTS OF THE CSA S6-25 CANADIAN HIGHWAY BRIDGE DESIGN CODE.
5. SUPPLIER TO DESIGN THE BEARINGS FOR THE LOADS, MOVEMENTS, AND ROTATIONS AS NOTED IN THE BEARING DATA TABLE. THE SUPPLIER SHALL CONFIRM THE SEAT PLATE AND MASONRY PLATE DIMENSIONS WITH THE CONTRACT ADMINISTRATOR. ALLOWANCES HAVE BEEN MADE ON DRAWINGS.
6. ALL GUIDES, RESTRAINTS, BOLTED CONNECTIONS AND ANCHOR RODS SHALL BE DESIGNED FOR VERTICAL AND HORIZONTAL LOADS IN ACCORDANCE WITH THE PROVISIONS OF THE CSA S6-25 BRIDGE CODE.
7. THE FINAL BEARING DESIGN FRICTION FORCES SHALL BE PROVIDED TO THE CONTACT ADMINISTRATOR FOR VERIFICATION OF THE MASONRY PLATE AND SEAT PLATE CONNECTIONS TO THE EXISTING BRIDGE.
8. DESIGN THE BEARINGS FOR AN OPERATING TEMPERATURE RANGE OF -40 DEGREES CELSIUS TO +40 DEGREES CELSIUS.
9. MASONRY, SEAT PLATES AND STEEL SHIMS SHALL BE CSA G40.21 GRADE 350W. ALL OTHER STEEL FOR THE BEARINGS SHALL BE CSA G40.21 GRADE 300W. ALL STEEL OTHER THAN THE STAINLESS STEEL SLIDING PLATE, SHALL BE HOT DIP GALVANIZED TO A SMOOTH FINISH TO CSA G164.
10. STAINLESS STEEL MATING SURFACES SHALL CONFORM TO ASTM A240 TYPE 304 AND SHALL HAVE A MINIMUM THICKNESS OF 3mm. THE ROUGHNESS OF THE CONTACT SURFACE (AS MEASURED BY CSA B95) SHALL BE NOT GREATER THAN 0.20 MICROMETRES ARITHMETIC AVERAGE FOR PLANE SURFACES.
11. WELDING OF STAINLESS STEEL PLATES SHALL BE CONTINUOUS WITH STAINLESS STEEL WELDING RODS.
12. PTFE SHALL BE MADE FROM VIRGIN RESIN SATISFYING THE REQUIREMENTS OF ASTM D4894.
13. BEARING FIXING BOLTS SHALL BE ASTM F3125 GRADE A325. GALVANIZED BOLTS SHALL BE USED WHEN FIXING GALVANIZED PLATES.
14. BEARING DESIGN SHALL ALLOW REMOVAL/REPLACEMENT OF BEARINGS BY JACKING THE BRIDGE TO A MAXIMUM OF 10mm.
15. PROVIDE PROTECTION TO BEARINGS AND ITS COMPONENTS DURING SHIPPING, HANDLING, AND INSTALLATION.
16. BEARINGS SHALL BE LABELED / IDENTIFIED FOR LOCATION AND ORIENTATION AS AN AIDE FOR INSTALLATION.

BEARING LOADS AND MOVEMENTS TABLE

FOR SU.1, SU.2, SU.4 AND SU.5

LOCATION	BEARING TYPE	SLS DESIGN LOADS						ULS DESIGN LOADS						TOTAL LONGITUDINAL MOVEMENT DESIGN RANGE ⁽⁴⁾ (mm)
		VERTICAL ⁽¹⁾ (kN)		LONGITUDINAL ⁽²⁾ (kN)	TRANSVERSE ⁽³⁾ (kN)	LIVE LOAD ROTATIONS (RADIAN)		VERTICAL ⁽¹⁾ (kN)		LONGITUDINAL ⁽²⁾ (kN)	TRANSVERSE ⁽³⁾ (kN)	LIVE LOAD ROTATIONS (RADIAN)		
		DEAD	TOTAL	TOTAL	TOTAL	RX	RY	DEAD	TOTAL	TOTAL	TOTAL	RX	RY	
SOUTH ABUTMENT SU.1	UNIDIRECTIONAL	1778	2416	-	242	0.00065	0.00239	2094	3298	-	330	0.001105	0.004063	+55/-55
	UNIDIRECTIONAL	1778	2416	-	242	0.00065	0.00239	2094	3298	-	330	0.001105	0.004063	+55/-55
PIER SU.2 SPAN 1 SIDE	FIXED	1776	2413	182	241	0.000661	0.002456	2091	3295	298	330	0.001124	0.004175	-
	FIXED	1776	2413	182	241	0.000661	0.002456	2091	3295	298	330	0.001124	0.004175	-
PIER SU.4 SPAN 4 SIDE	FIXED	1776	2413	182	241	0.000661	0.002456	2091	3295	298	330	0.001124	0.004175	-
	FIXED	1776	2413	182	241	0.000661	0.002456	2091	3295	298	330	0.001124	0.004175	-
PIER SU.5	UNIDIRECTIONAL	1778	2416	-	242	0.00065	0.00239	2094	3298	-	330	0.001105	0.004063	+55/-55
	UNIDIRECTIONAL	1778	2416	-	242	0.00065	0.00239	2094	3298	-	330	0.001105	0.004063	+55/-55

DESIGN NOTES:

1. VERTICAL LOADS PROVIDED INCLUDE A 25% ADDITIONAL DEAD LOAD ALLOWANCE FOR FUTURE BRIDGE REHABILITATION. ACTUAL DEAD LOADS IN THE SHORT TERM WILL BE LESS.
2. LONGITUDINAL LOADS AT EXPANSION BEARINGS SHALL BE DETERMINED BY THE BEARING SUPPLIER AS A FUNCTION OF BEARING FRICTION. BEARING FRICTION SHALL NOT BE MORE THAN 5% WITHIN THE DESIGN TEMPERATURE RANGE.
3. UNIDIRECTIONAL GUIDED AND FIXED BEARINGS SHALL BE DESIGNED TO RESIST THE LARGER OF THE GIVEN LOADS OR 10% THE FINAL VERTICAL LOAD CAPACITY OF THE BEARINGS IN THE LATERAL DIRECTION.
4. LONGITUDINAL MOVEMENT DESIGN RANGE INCLUDES A 25mm EXTRA ALLOWANCE IN THE DIRECTION OF EXPANSION AND CONTRACTION.
5. DESIGN BEARINGS WITH MAXIMUM ECCENTRICITY OF +/-55mm.
6. CONTRACTOR TO MEASURE EXISTING BRIDGE FLANGE SLOPE OVER BEARING AND PROVIDE ADEQUATE ROTATION ALLOWANCE WITHIN THE SPHERICAL BEARING TO ACCOMMODATE IN ADDITION TO THE NOTED LIVE LOAD ROTATIONS WITHIN THE TABLE.



VERTICAL DATUM:			
HORIZONTAL DATUM:			
0	ISSUED FOR TENDER	26.07.15	TN
NO.	REVISIONS	DATE	BY
		26.07.15	



DESIGNED BY	TN	REVIEWED BY	BN
DRAWN BY	BM	APPROVED BY	MJB
SCALE:	AS NOTED	ACCEPTED BY	DATE
		CAM WARD, P.ENG.	26.07.15



CONSULTANT DRAWING NO.
704-INF.MBI03029-01-DWG-S3033



THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

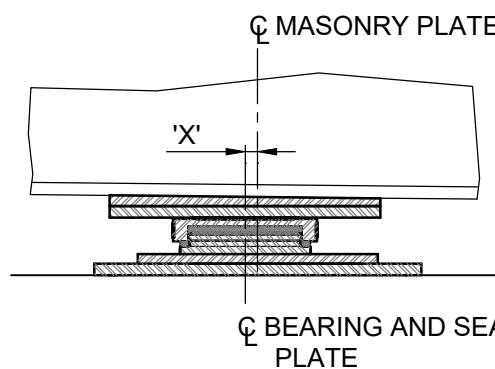
LOUISE BRIDGE SUBSTRUCTURE REHABILITATION
AND RIVERBANK STABILIZATION WORKS

BEARING PLAN AND JACKING PROCEDURE

CITY DRAWING NUMBER
B107-26-033

SHEET 33 OF 39

33



2
- -
TYPICAL BEARING
1: 15

BEARING SETTING TABLE

TEMPERATURE (°C)	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40
X' DISPLACEMENT SU.1 and SU.5 (mm)	-30	-26	-23	-19	-15	-11	-8	-4	0	4	8	11	15	19	23	26	30

JACKING LOADS

CASE		
LOCATION		
ABUTMENT SU.1	OUTSIDE JACK POSITION	770 kN
	INSIDE JACK POSITION	610 kN
PIER SU.2 SPAN 1 SIDE		663 kN
PIER SU.4 SPAN 4 SIDE		663 kN
PIER SU.5		1387 kN