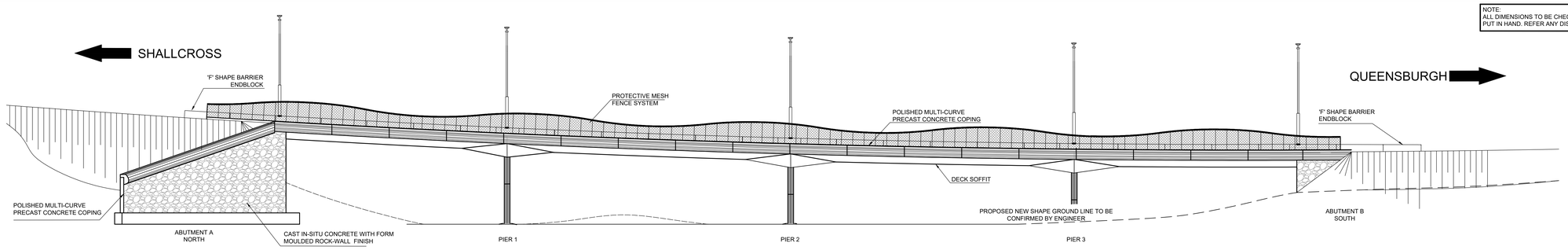
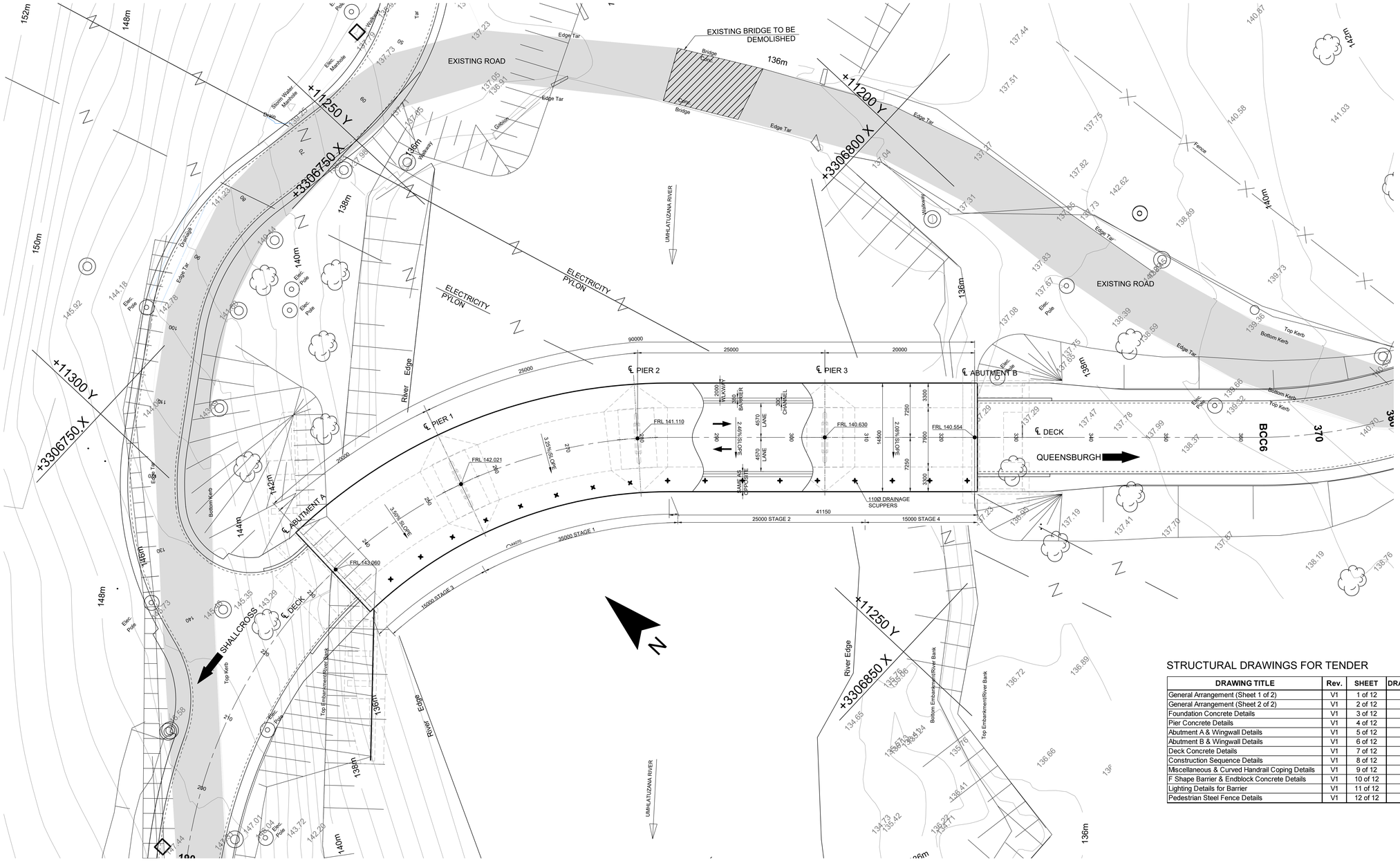
NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



ELEVATION OF BRIDGE
SCALE 1:150



PLAN
1:200

STRUCTURAL DRAWINGS FOR TENDER

DRAWING TITLE	Rev.	SHEET	DRAWING NO.
General Arrangement (Sheet 1 of 2)	V1	1 of 12	49217
General Arrangement (Sheet 2 of 2)	V1	2 of 12	49217
Foundation Concrete Details	V1	3 of 12	49217
Pier Concrete Details	V1	4 of 12	49217
Abutment A & Wingwall Details	V1	5 of 12	49217
Abutment B & Wingwall Details	V1	6 of 12	49217
Deck Concrete Details	V1	7 of 12	49217
Construction Sequence Details	V1	8 of 12	49217
Miscellaneous & Curved Handrail Coping Details	V1	9 of 12	49217
F Shape Barrier & Endblock Concrete Details	V1	10 of 12	49217
Lighting Details for Barrier	V1	11 of 12	49217
Pedestrian Steel Fence Details	V1	12 of 12	49217

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY
PROCUREMENT AND INFRASTRUCTURE CLUSTER
ENGINEERING UNIT
ROADS PROVISION DEPARTMENT
STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW
0 10 20 30 40 50 60 70
70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new constuction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No.
1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

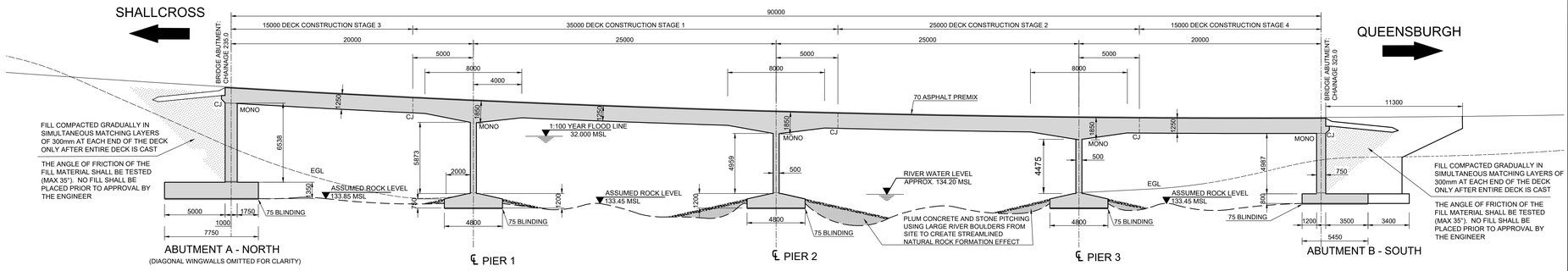
Drawing Title
GENERAL ARRANGEMENT (SHEET 1 OF 2)

SCALES AS SHOWN | Date: 01/06/2023
Designed: J.HARRIPERSHAD | Checked: P. G. FENTON
Drawn: L. REID, L. SULLAPHEN | Surveyed: -
Manager: Structures P.G. Fenton
Deputy Head : Roads Provision

HEAD : ENGINEERING

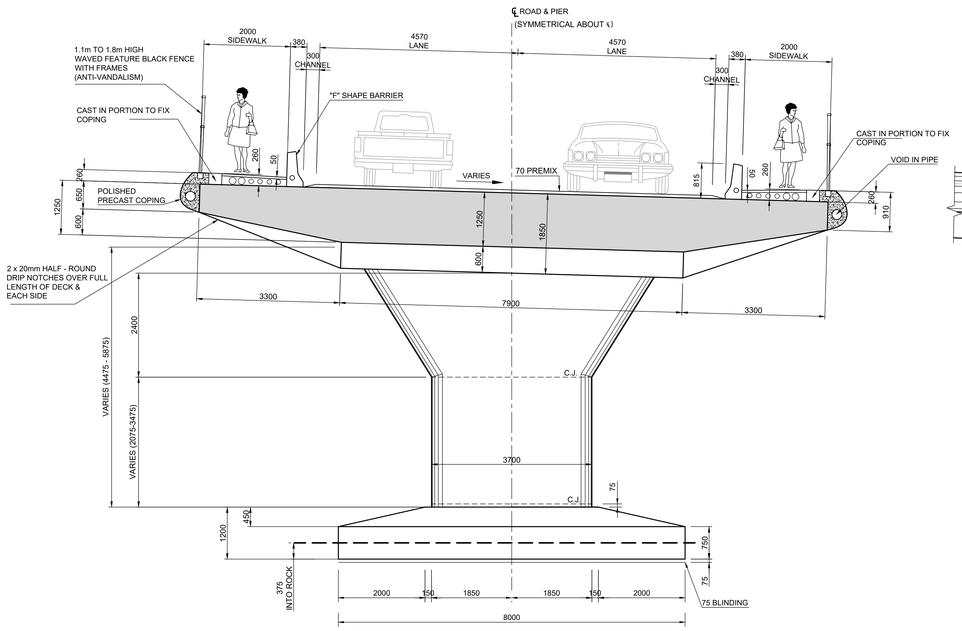
Drawing No. 49217 | Sheet 01 of 12 | Rev. V1

NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



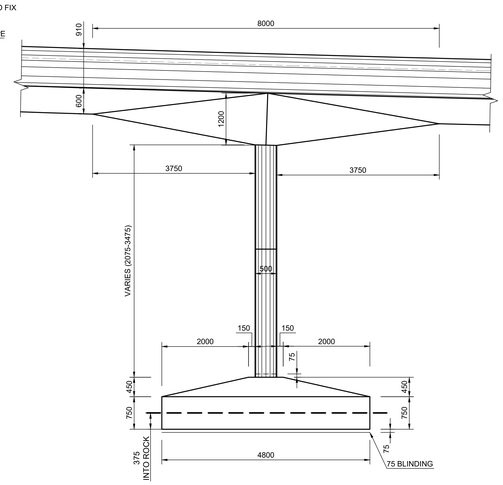
SECTION ALONG ℄ OF BRIDGE

SCALE 1:150



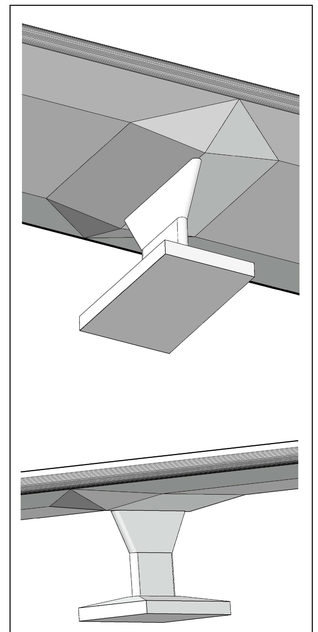
TYPICAL CROSS SECTION OF DECK NEAR PIERS

SCALE 1:50



TYPICAL SIDE ELEVATION ON PIERS AND DECK

SCALE 1:50



3D PERSPECTIVES ON PIER FROM BELOW BASE

BRIDGE DESIGN NOTES AND DATE

1. GENERAL BRIDGE NOTES

DESCRIPTION: BLUNDELL ROAD BRIDGE OVER THE UMHLATUZANA RIVER

THE BRIDGE HAS A 4 SPAN, CAST-INSITU REINFORCED CONCRETE, SOLID SLAB DECK. THE BRIDGE HAS AN INTEGRAL DECK CAST MONOLITHICALLY WITH PIERS AND ABUTMENTS.

THE INTERMEDIATE SUPPORTS ARE WALL PIERS THAT SPLAY WIDER IN THEIR TOP HALF. SUPPORTED ON SPREAD/PAD FOUNDATIONS. THERE IS A VERTICAL SPLIT IN THE SINGLE WALL PIER SUPPORTING THE PORTION OF THE DECK THAT IS CURVED IN PLAN.

THE END SUPPORTS ARE FULL HEIGHT REINFORCED CONCRETE INTEGRAL ABUTMENT WALLS SPLIT INTO INDEPENDENT ADJACENT PANELS.

DESIGN METHOD - LIMIT STATE
DESIGN CODE - TMH7 PART 3
PARAPET DESIGN - AS PER SANRAL "F" SHAPE BARRIER
COMPUTER PROGRAMS USED - BENTLEY RM BRIDGE, PROKON & HAND CALCULATIONS

2. DESIGN LOADINGS

IN ACCORDANCE WITH TMH7 PARTS 1 & 2 1981 (AS AMENDED)
LIVE LOAD - NA, NB36 & NC (TBC)
DEAD LOAD - BASED ON CONCRETE DENSITY OF 2500 kg/m³
EARTH PRESSURE - BASED ON ON Ka & Kp OF 0.3 MIN & 1.80 MAX RESPECTIVELY. DESIGN BASED ON K° OF 0.6 (#)
(#) THE UK HIGHWAYS AGENCY ADVICE NOTE (BA42/96) "THE DESIGN OF INTEGRAL BRIDGES" HAS BEEN USED FOR CERTAIN ASPECTS RELATED TO THE INTEGRAL BEHAVIOUR OF THE BRIDGE PARTICULARLY AT THE ABUITMENTS. CHECK WAS DONE USING BSI. 2011. PD 6694-1:2011
INTERNAL ANGLE OF FRICTION - 35 DEGREES (TO BE TESTED)
INSITU FILL MATERIAL DENSITY - 20kN/m³
ASPHALT DENSITY - 23kN/m³

3. DESIGN PARAMETERS

a) YOUNG'S MODULAS FOR:
CONCRETE 40/19 - 31GPa
REINFORCING STEEL - 200GPa
b) COEFFICIENT OF THERMAL EXPANSION - 12×10^{-7} / °C
c) CONCRETE SHRINKAGE FACTOR 165×10^{-6}

4. MATERIAL STRENGTHS & STRESSES

CONCRETE:	CLASS:
BLINDING	- C12/15-20
MASS CONCRETE	- C12/15-50
FOUNDATIONS	- C32/40-20
ABUTMENTS & PIERS	- C32/40-20 (WATERTIGHT)
WINGWALLS	- C32/40-20
DECK	- C32/40-20
APPROACH SLAB	- C32/40-20
"F" SHAPE BARRIER	- C32/40-20
BARRIER ENDBLOCK	- C32/40-20
PLUM CONCRETE	- C25/30-20 & C12/15-50

REINFORCEMENT:
MILD STEEL - 250 MPa
HIGH-YIELD-STRESS STEEL - 450 MPa

THE SUBSTRUCTURE CONCRETE SHALL INCORPORATE A CRYSTALLINE PERMEABILITY REDUCING ADDITIVE, SUCH AS PENETRON, OR AN ALTERNATIVE TECHNOLOGY WITH PROVEN EFFECTIVENESS AGAINST HYDROSTATIC PRESSURE, APPROVED BY THE ENGINEER. THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL HAVE DEMONSTRABLE BENEFITS PROVING SELF-HEALING CAPABILITY, IMPROVED CHEMICAL RESISTANCE TO SULPHURIC ACID EXPOSURE, IMPROVED COMPRESSIVE STRENGTH, AND CERTIFIED APPROVAL FOR USE ON STRUCTURES HOLDING POTABLE WATER. THE DOSAGE OF THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL BE RECOMMENDED BY THE PRODUCT MANUFACTURER BUT SHALL NOT BE LESS THAN THE FOLLOWING:

WATER-CEMENT RATIO	MINIMUM DOSAGE OF INTEGRAL PERMEABILITY REDUCING TECHNOLOGY (% WEIGHT OF CEMENT)
LESS THAN 0,40	0,8 %
0,40 – 0,49	1,0 %
0,50 – 0,54	1,5 %
0,55 – 0,59	2,0 %
0,60 OR GREATER	3,0 %

5. SUBSTRUCTURE

PIERS & ABUTMENTS - FOUNDING MATERIAL - MEDIUM TO HARD NATAL GROUP SANDSTONE.
PAD OR SPREAD FOOTINGS ON ROCK, MASS CONCRETE MAYBE REQUIRED, DOWELS INTO ROCK SHALL BE CONFIRMED ON SITE
DESIGN WORKING LOAD ???
(GEOTECHNICAL ENGINEERING SPECIALIST TO INSPECT SITE AND BASES BEFORE ANY BLINDING OR CONCRETE POURED AND BEARING CAPACITY CONFIRMED).

6. CONCRETE FINISHES TO FORMED & UNFORMED SURFACES

FOUNDATIONS	F1 (HIDDEN) & F3/F2 (EXPOSED)
ABUTMENTS BURIED & HIDDEN SURFACES	F1
ABUTMENTS (EXPOSED)	F3 & ROCK FINISH ON WINGWALLS
PIERS	F3
DECK TOP SLAB	UNFORMED
DECK SIDES & SOFFIT	F3
PARAPETS & BARRIERS	F3
HANDRAIL COPING	F3 (POLISHED)

CHAMFERS TO ALL EXPOSED SHARP CORNERS (INCLUDES FOUNDATIONS) - 25 x 25mm

7. CONCRETE COVER

CAST AGAINST EARTH & PILES	- 75mm
FOUNDATIONS / PILECAPS (SHUTTERED)	- 50mm
EXPOSED SURFACES (ELSEWHERE)	- 40mm

8. CONSTRUCTION
a) THE ABUTMENTS SHALL ONLY BE BACKFILLED AFTER THE ENTIRE DECK HAS BEEN CAST
b) EACH DECK SPAN SHALL BE PROPPED IN THE CENTER AFTER BEING CAST, PROPS ONLY TO BE REMOVED AFTER LAST STAGE CAST AND GAINED REQUIRED STRENGTH

BRIDGE MONITORING

THE BRIDGE WILL BE MONITORED TO GAIN A BETTER UNDERSTANDING OF INTEGRAL BRIDGE BEHAVIOR IN SOUTH AFRICA AND HELP IN WRITING FUTURE DESIGN AND CONSTRUCTION GUIDELINES FOR THESE TYPES OF BRIDGES.

A NUMBER OF SENSORS AND MONITORING DEVICES WILL BE ATTACHED, INSTALLED AND EMBEDDED TO THE BRIDGE DURING CONSTRUCTION BY A SPECIALIST NOMINATED SUBCONTRACTOR.

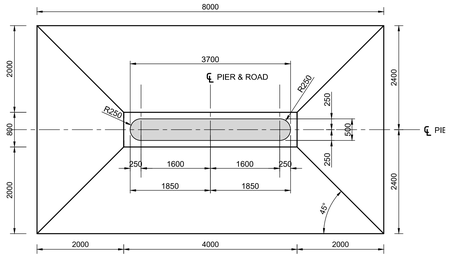
THE CONTRACTOR SHALL MAKE PROVISIONS IN HIS / HER PROGRAMME AND ASSIST THE SPECIALIST SUBCONTRACTOR DURING THE INSTALLATION OF THE MONITORING DEVICES.

DETAILED INSTRUMENTATION LAYOUT DRAWINGS SHALL BE PROVIDED AT CONSTRUCTION STAGE.

POUR SEQUENCE AND NIGHT POURS

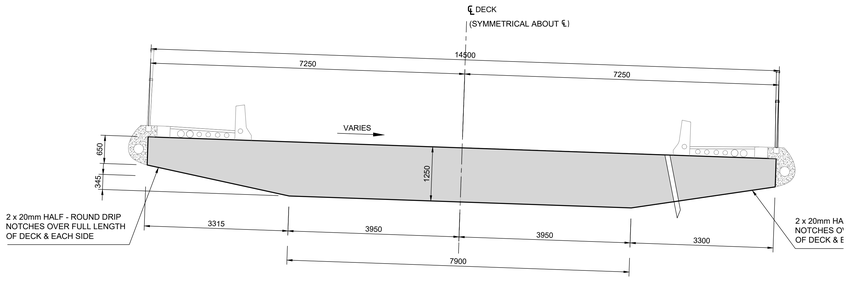
THE DECK SHALL BE POURED/CAST IN 4 CONSTRUCTION STAGES OR CONCRETE POURS DURING THE NIGHT AT LOW TEMPERATURES WHEN THE FORMWORK & TEMPERATURE IS RELATIVELY COOL. THE FINAL 2 STAGES THAT CONNECT THE DECK TO ABUTMENTS SHALL ONLY BE CAST AT A SPECIFIC TEMPERATURE (AMBIENT TEMPERATURE MEASURED AT THE SITE LOCATION) SPECIFIED BY THE ENGINEER. THIS WILL PREVENT ANY UNWANTED THERMAL STRESS LOCKED INTO THE BRIDGE SYSTEM.

THE ABUTMENTS SHALL ALSO BE POURED DURING THE NIGHT OR EARLY MORNINGS (SUBJECT TO RELATIVELY LOW VOLUME CONCRETE POURS) AT LOW TEMPERATURES WHEN THE FORMWORK IS RELATIVELY COOL. DETAILED HOURS OF NIGHT POUR SHALL BE CONFIRMED WITH THE ENGINEER DURING CONSTRUCTION AS THIS DEPENDS ON SEASONAL TEMPERATURES AT THAT SPECIFIC TIME OF THE SEASON AND EXACT LOCATION ETC. THE CONTRACTOR SHALL ENSURE ALL PROVISIONS FOR THE NIGHT POURS OR EARLY MORNINGS ARE IN ORDER.



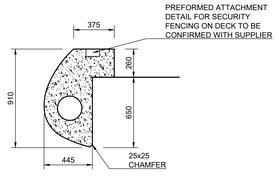
TYPICAL CROSS-SECTION OF PIER FOOTING

SCALE 1:50



TYICAL CROSS SECTION OF DECK

SCALE 1:50



POLISHED PRECAST MULTI-RADIUS COPING DETAIL TO DECK AND WINGWALLS - OVERALL DIMENSIONS

SCALE 1 : 5

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT

STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

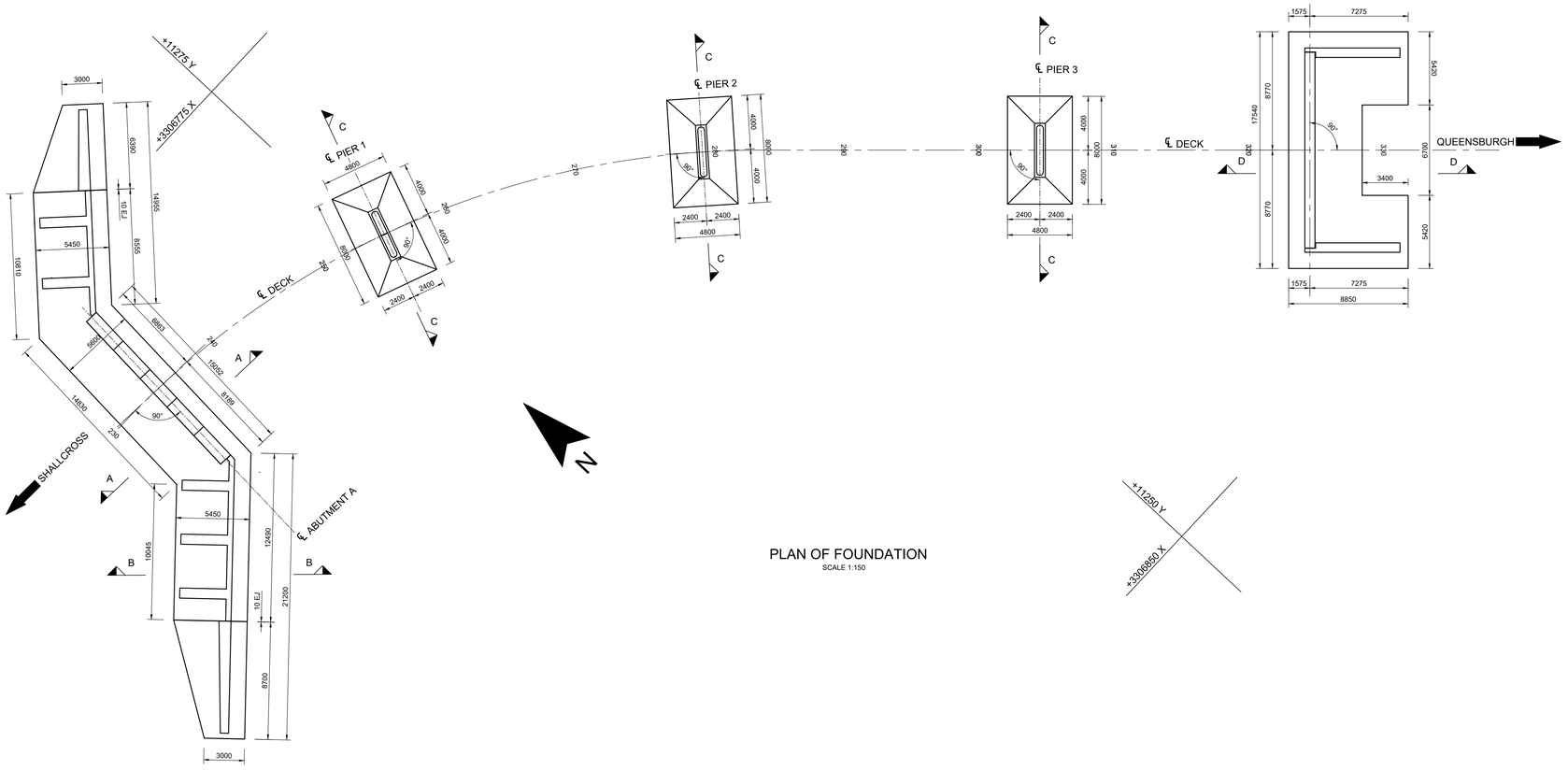
Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
GENERAL ARRANGEMENT (SHEET 2 OF 2)

SCALES AS SHOWN | Date: 01/06/2023
Designed: J.HARRIPERSHAD | Checked: P. G. FENTON
Drawn: L.J. REID | Surveyed: -
Manager: Structures P.G. Fenton
Deputy Head : Roads Provision
HEAD : ENGINEERING

Drawing No. 49217 | Sheet 02 of 12 | Rev. V1

NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



PLAN OF FOUNDATION
SCALE 1:150

NOTES

1. MATERIAL STRENGTHS & STRESSES

CONCRETE:	CLASS:
BLINDING	- C12/15-20
MASS CONCRETE	- C12/15-50
FOUNDATIONS	- C32/40-20
PLUM CONCRETE	- C25/30-20 & C12/15-50

2. CONCRETE FINISHES TO FORMED & UNFORMED SURFACES

ELEMENT:	FINISH:
FOUNDATIONS	F1 (HIDDEN) F3/F2 (EXPOSED)

CHAMFERS TO ALL EXPOSED SHARP CORNERS (INCLUDES FOUNDATIONS) - 25 x 25mm

3. CONCRETE COVER

CAST AGAINST EARTH & PILES	- 75mm
FOUNDATIONS / PILECAPS (SHUTTERED)	- 50mm
EXPOSED SURFACES (ELSEWHERE)	- 40mm

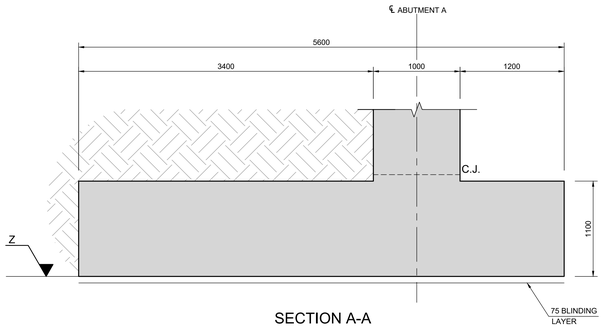
4. FOUNDING

PIERS & ABUTMENTS - FOUNDING MATERIAL - MEDIUM TO HARD NATAL GROUP SANDSTONE.

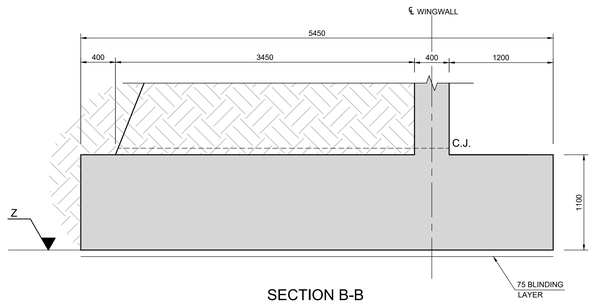
PAD OR SPREAD FOOTINGS ON ROCK, MASS CONCRETE MAY BE REQUIRED.

DOWELS INTO ROCK SHALL BE CONFIRMED ON SITE.

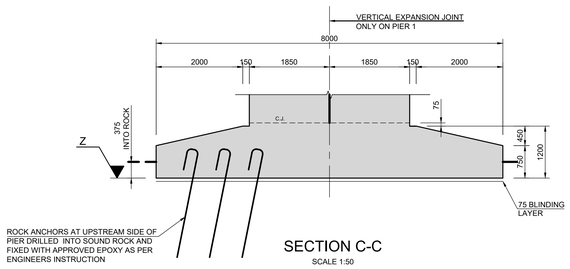
GEOTECHNICAL ENGINEERING SPECIALIST TO INSPECT SITE AND BASES BEFORE ANY BLINDING OR CONCRETE POURED AND BEARING CAPACITY CONFIRMED.



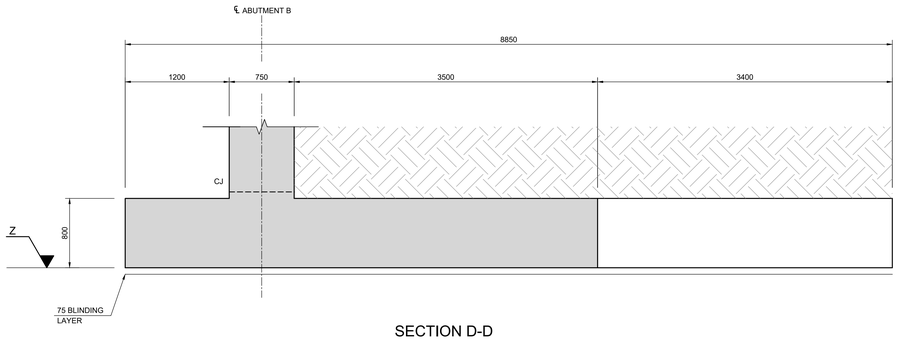
SECTION A-A
SCALE 1:25



SECTION B-B
SCALE 1:25



SECTION C-C
SCALE 1:50



SECTION D-D
SCALE 1:25

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT
STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
FOUNDATION CONCRETE DETAILS

SCALES AS SHOWN | Date: 01/06/2023

Designed: J.HARRIPERSHAD | Checked: P. G. FENTON

Drawn: L.REID | Surveyed: -

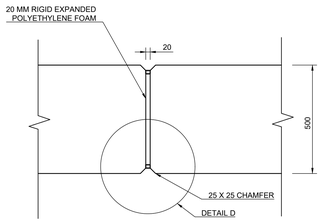
Manager: Structures
P.G. Fenton

Deputy Head : Roads Provision

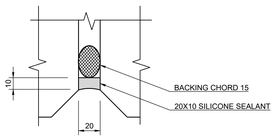
HEAD : ENGINEERING

Drawing No. 49217 | Sheet 03 of 12 | Rev. V1

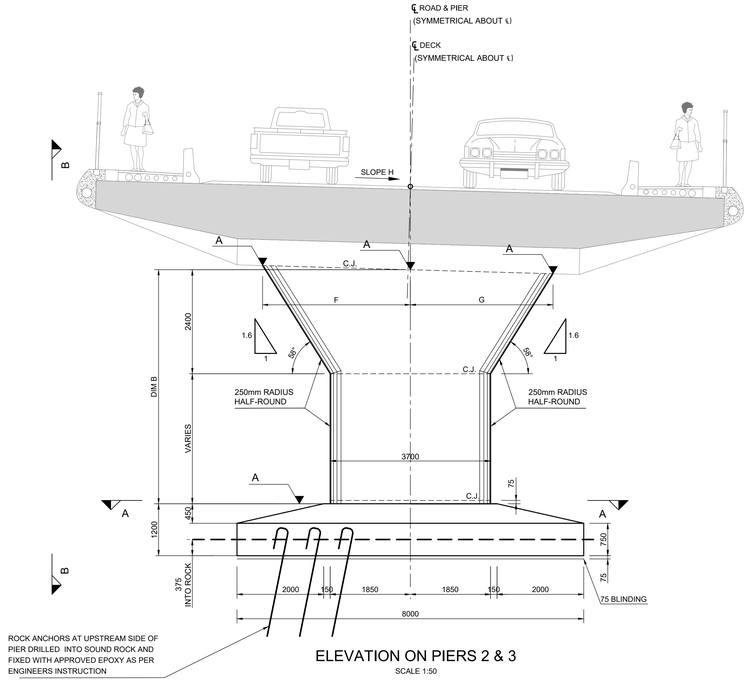
NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



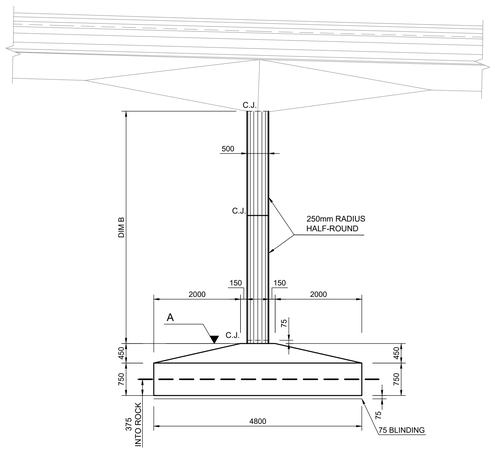
SECTION C-C
SCALE 1:10



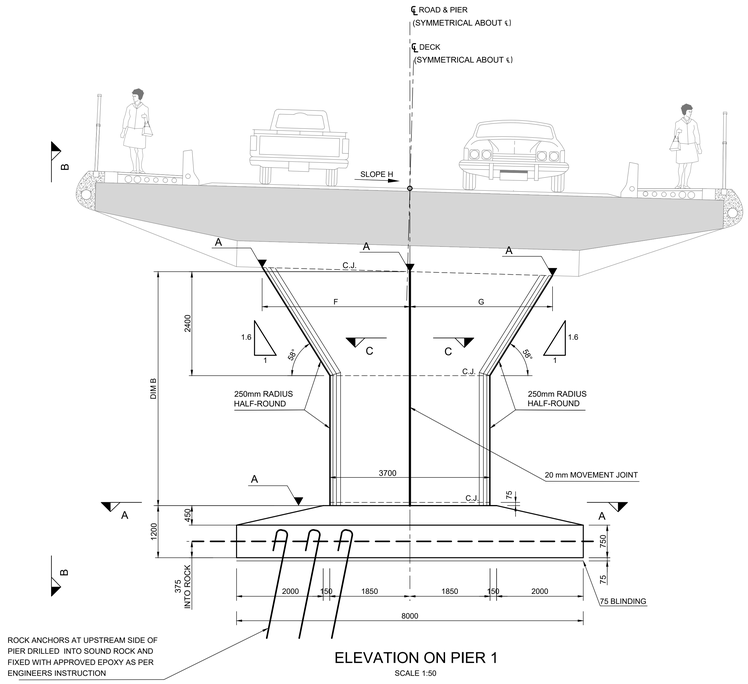
DETAIL D
SCALE 1:2



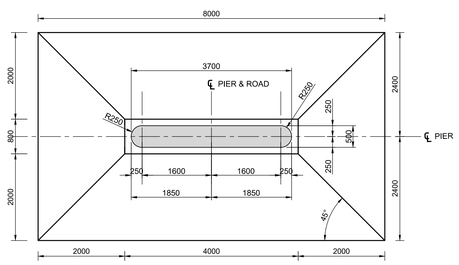
ELEVATION ON PIERS 2 & 3
SCALE 1:50



TYPICAL SIDE ELEVATION ON PIERS (B-B)
SCALE 1:50



ELEVATION ON PIER 1
SCALE 1:50



PLAN ON PIER BASES (A-A)
SCALE 1:50

CONCRETE NOTES

1. MATERIALS

CONCRETE:	CLASS:
FOUNDATIONS	- C32/40-20
ABUTMENTS & PIERS	- C32/40-20 (WATERTIGHT)
DECK	- C32/40-20

THE SUBSTRUCTURE CONCRETE SHALL INCORPORATE A CRYSTALLINE PERMEABILITY REDUCING ADDITIVE, SUCH AS PENETRON, OR AN ALTERNATIVE TECHNOLOGY WITH PROVEN EFFECTIVENESS AGAINST HYDROSTATIC PRESSURE,APPROVED BY THE ENGINEER. THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL HAVE DEMONSTRABLE BENEFITS PROVING SELF-HEALING CAPABILITY, IMPROVED CHEMICAL RESISTANCE TO SULPHURIC ACID EXPOSURE, IMPROVED COMPRESSIVE STRENGTH, AND CERTIFIED APPROVAL FOR USE ON STRUCTURES HOLDING POTABLE WATER. THE DOSAGE OF THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL BE RECOMMENDED BY THE PRODUCT MANUFACTURER BUT SHALL NOT BE LESS THAN THE FOLLOWING:

WATER-CEMENT RATIO	MINIMUM DOSAGE OF INTEGRAL PERMEABILITY REDUCING TECHNOLOGY (% WEIGHT OF CEMENT)
LESS THAN 0,40	0,8 %
0,40 – 0,49	1,0 %
0,50 – 0,54	1,5 %
0,55 – 0,59	2,0 %
0,60 OR GREATER	3,0 %

2. CONCRETE FINISHES TO FORMED & UNFORMED SURFACES

PIERS F3

CHAMFERS TO ALL EXPOSED SHARP CORNERS - 25 x 25mm
(INCLUDES FOUNDATIONS)

3. CONCRETE COVER

EXPOSED SURFACES - 40mm

4. CURING

FORMWORK TO REMAIN IN PLACE FOR MINIMUM OF 7 DAYS. CURING COMPOUND TO BE APPLIED IMMEDIATELY AS SHUTTERS ARE REMOVED.

BRIDGE MONITORING

THE BRIDGE WILL BE MONITORED TO GAIN A BETTER UNDERSTANDING OF INTEGRAL BRIDGE BEHAVIOR IN SOUTH AFRICA AND HELP IN WRITING FUTURE DESIGN AND CONSTRUCTION GUIDELINES FOR THESE TYPES OF BRIDGES.

A NUMBER OF SENSORS AND MONITORING DEVICES WILL BE ATTACHED, INSTALLED AND EMBEDDED TO THE BRIDGE DURING CONSTRUCTION BY A SPECIALIST NOMINATED SUBCONTRACTOR.

THE CONTRACTOR SHALL MAKE PROVISIONS IN HIS / HER PROGRAMME AND ASSIST THE SPECIALIST SUBCONTRACTOR DURING THE INSTALLATION OF THE MONITORING DEVICES.

DETAILED INSTRUMENTATION LAYOUT DRAWINGS SHALL BE PROVIDED AT CONSTRUCTION STAGE.

BACKFILL AND PROPPING

NO BACKFILL , ADDITIONAL HORIZONTAL LOADS, AND HORIZONTAL PROPPING SHALL BE APPLIED TO THE PIER DURING STREAM/ RIVER DIVERSIONS OR WHATEVER REASON WITHOUT APPROVAL BY THE CLIENTS ENGINEER, CONTRACTORS TEMPORARY WORKS ENGINEER AND APPROVAL OF METHOD STATEMENT

BACKFILL SHALL ONLY BE CONSIDERED IF BALANCED ON BOTH SIDES OF THE PIER AND COMPACTED GRADUALLY IN LAYERS OF 300mm EACH SIDE

IT IS DEEMED THAT THE ABOVE COSTS SHALL BE INCLUDED IN THE PRICING SCHEDULED RATES - NO ADDITIONAL PAYMENT SHALL BE CONSIDERED

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT
STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW
0 10 20 30 40 50 60 70
70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

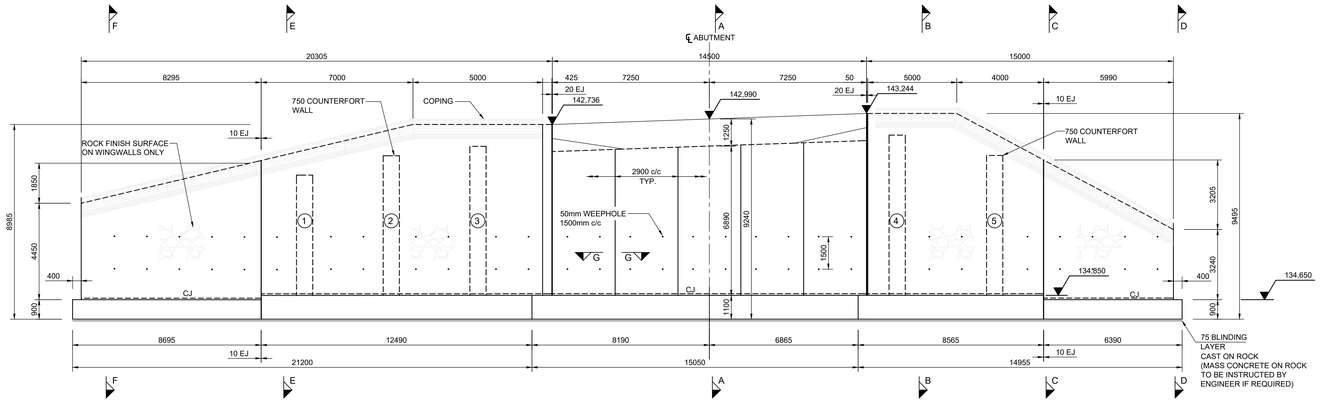
Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
PIER CONCRETE DETAILS

SCALES AS SHOWN | Date: 01/06/2023
Designed: J.J HARRIPERSHAD | Checked: P. G. FENTON
Drawn: L.SULLAPHEN | Surveyed: -
Manager: Structures P.G. Fenton
Deputy Head : Roads Provision
HEAD : ENGINEERING

Drawing No. 49217 | Sheet 04 of 12 | Rev. V1

NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.

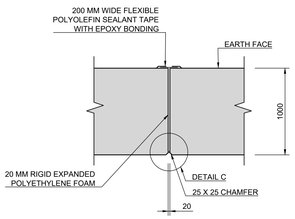


ABUTMENT A : FRONT ELEVATION

SCALE 1:100

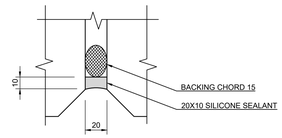
NOTE:
DRAWN PERPENDICULAR TO ABUTMENT AND WINGWALL FACE.
LEVELS TO BE CONFIRMED ON SITE.

NOTE:
(GEOTECHNICAL ENGINEERING SPECIALIST TO INSPECT SITE AND BASES BEFORE ANY BLINDING OR CONCRETE POURED AND BEARING CAPACITY CONFIRMED).



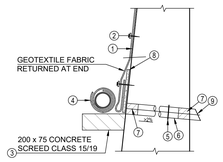
SECTION G-G

SCALE 1:25



DETAIL C

SCALE 1:2



TYPICAL DRAINAGE DETAIL BEHIND ABUTMENT & WALLS

SCALE 1:10

LEGEND

1. - 300mm WIDE FILTER ELEMENTS SECURED TO BACK FACE OF STRUCTURE AT 45° SLOPE.
2. - CONCRETE NAILS WITH 25 x 25mm HOOP IRON WASHERS TO SECURE FILTER ELEMENTS TO STRUCTURE AT ± 1 000mm CENTRES.
3. - CONCRETE SCREED TO GRADE AND LEVEL OF DRAINAGE PIPES PRIOR TO PLACING OF DRAINAGE PIPES.
4. - 65mm dia PERFORATED DRAINAGE PIPES WRAPPED IN GEOTEXTILE. THE GEOTEXTILE SHALL HAVE AN OVERLAP OF NOT LESS THAN 150mm AND BE TIED AT CENTRES NOT GREATER THAN 200mm.
5. - 3,15mm dia STAINLESS STEEL WIRE BARRIER.
6. - 50mm dia uPVC WEEPHOLES AT CENTRES SHOWN. THE CONTRACTOR SHALL ENSURE THAT THE WEEPHOLES ARE CLEAR AND APPROVED BY THE ENGINEER BEFORE THE FILTER ELEMENTS ARE INSTALLED.
7. - TEMPORARY POLYSTYRENE PLUG TO PREVENT INGRESS OF GROUT DURING PLACING OF THE CONCRETE.
8. - 200mm WIDE FILTER ELEMENT SECURED TO BACK FACE OF STRUCTURE AT SAME GRADE AS WEEPHOLES
9. - EXTENSION OF WEEPHOLES TO EMBANKMENT

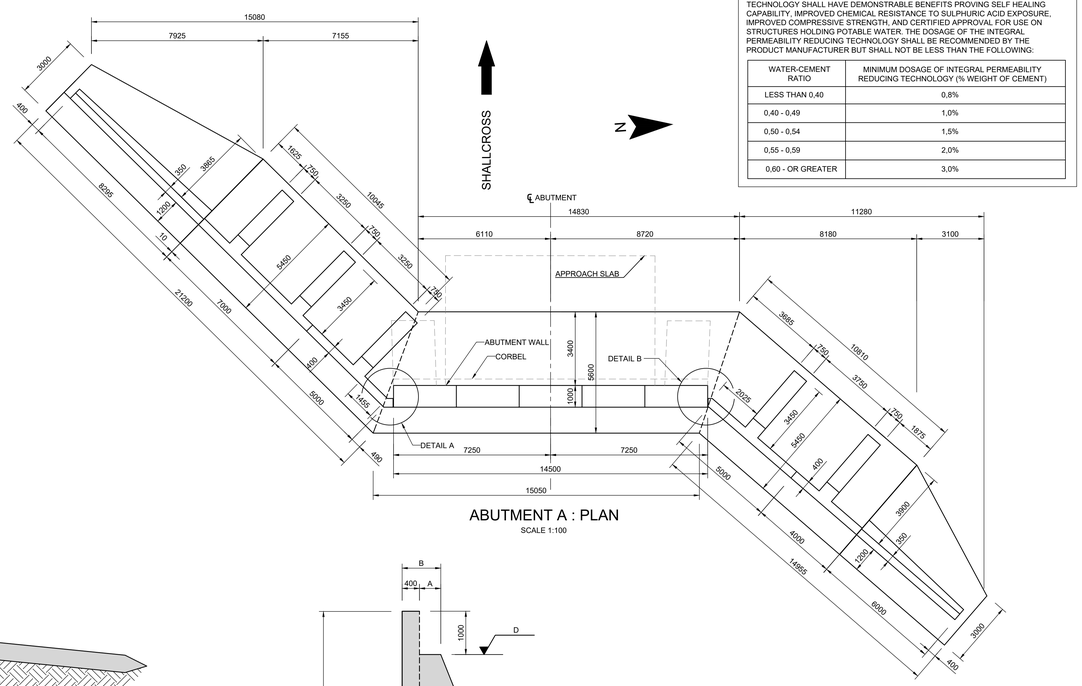
ROCK FINISH (WINGWALLS ONLY)

ROCK FINISH DETAIL (WINGWALLS ONLY)

WATERTIGHT CONCRETE

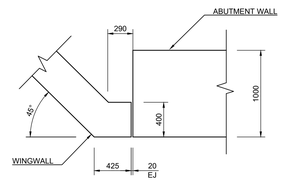
THE SUBSTRUCTURE CONCRETE SHALL INCOPORATE A CRYSTALLINE PERMEABILITY REDUCING ADDITIVE, SUCH AS PENETRON OR AN ALTERNATIVE TECHNOLOGY WITH PROVEN EFFECTIVENESS AGAINST HYDROSTATIC PRESSURE, APPROVED BY THE ENGINEER. THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL HAVE DEMONSTRABLE BENEFITS PROVING SELF HEALING CAPABILITY, IMPROVED CHEMICAL RESISTANCE TO SULPHURIC ACID EXPOSURE, IMPROVED COMPRESSIVE STRENGTH, AND CERTIFIED APPROVAL FOR USE ON STRUCTURES HOLDING POTABLE WATER. THE DOSAGE OF THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL BE RECOMMENDED BY THE PRODUCT MANUFACTURER BUT SHALL NOT BE LESS THAN THE FOLLOWING:

WATER-CEMENT RATIO	MINIMUM DOSAGE OF INTEGRAL PERMEABILITY REDUCING TECHNOLOGY (% WEIGHT OF CEMENT)
LESS THAN 0,40	0,8%
0,40 - 0,49	1,0%
0,50 - 0,54	1,5%
0,55 - 0,59	2,0%
0,60 - OR GREATER	3,0%



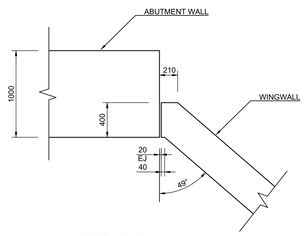
ABUTMENT A : PLAN

SCALE 1:100



DETAIL A

SCALE 1:25



DETAIL B

SCALE 1:25

CONCRETE NOTES

1. MATERIAL STRENGTHS & STRESSES

CONCRETE:	CLASS:
BLINDING	- C12/15-20
MASS CONCRETE	- C12/15-50
FOUNDATIONS	- C32/40-20
ABUTMENT	- C32/40-20 (WATERTIGHT CONCRETE)
WINGWALLS	- C32/40-20

3. CONCRETE FINISHES

FOUNDATIONS	F1 (HIDDEN) & F3/F2 (EXPOSED)
ABUTMENTS BURIED & HIDDEN SURFACES	F1
ABUTMENTS (EXPOSED)	F3 & ROCK FINISH ON WINGWALLS
WINGWALL COPING	F3 (POLISHED)

4. CHAMFERS

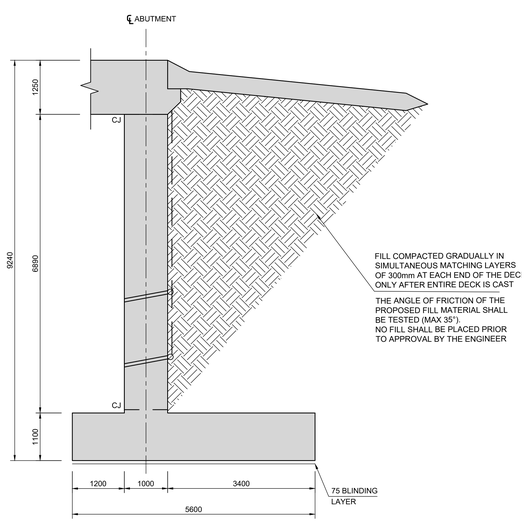
ALL SHARP EDGES TO BE CHAMFERED 25mm X 25mm

5. CONCRETE COVER

CAST AGAINST EARTH & PILES	- 75mm
FOUNDATIONS / PILECAPS (SHUTTERED)	- 50mm
EXPOSED SURFACES (ELSEWHERE)	- 40mm

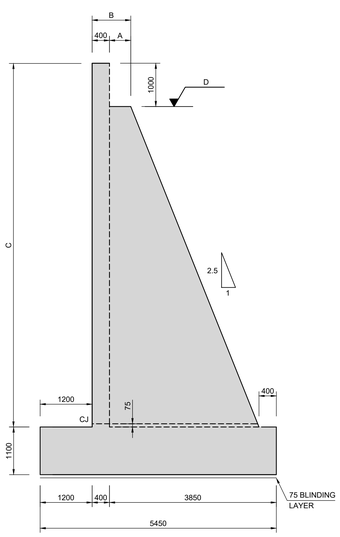
6. CONSTRUCTION

THE ABUTMENTS SHALL ONLY BE BACKFILLED AFTER THE ENTIRE DECK HAS BEEN CAST AND SHALL BE UNDERTAKEN SIMULTANEOUSLY ON BOTH ENDS OF THE BRIDGE SO THAT THE FILL MATERIAL LOAD AGAINST THE TWO ABUTMENTS SHALL BE BALANCED. THE FILL SHALL BE COMPACTED GRADUALLY IN MATCHING LAYERS OF 300mm EACH SIDE



SECTION A-A

SCALE 1:50

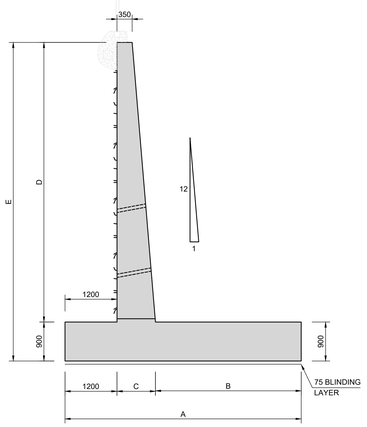


SECTION B-B

SCALE 1:50
NOTE: REFER TO TABLE 1 FOR DIMENSIONS

TABLE 1

COUNTERFORT WALL 1			
DIM 'A'	DIM 'B'	DIM 'C'	LEVEL 'D'
1230	1630	6550	140.402
COUNTERFORT WALL 2			
DIM 'A'	DIM 'B'	DIM 'C'	LEVEL 'D'
875	1275	7445	141.296
COUNTERFORT WALL 3			
DIM 'A'	DIM 'B'	DIM 'C'	LEVEL 'D'
695	1095	7885	141.727
COUNTERFORT WALL 4			
DIM 'A'	DIM 'B'	DIM 'C'	LEVEL 'D'
495	895	8395	142.210
COUNTERFORT WALL 5			
DIM 'A'	DIM 'B'	DIM 'C'	LEVEL 'D'
865	1265	7455	141.307



SECTION C-C/D-D/E-E/F-F

SCALE 1:50
NOTE: REFER TO TABLE 2 FOR DIMENSIONS

TABLE 2

SECTION C-C				
DIM 'A'	DIM 'B'	DIM 'C'	DIM 'D'	DIM 'E'
5155	3355	890	6450	7350
SECTION D-D				
DIM 'A'	DIM 'B'	DIM 'C'	DIM 'D'	DIM 'E'
2670	1140	620	3240	4140
SECTION E-E				
DIM 'A'	DIM 'B'	DIM 'C'	DIM 'D'	DIM 'E'
5445	3360	885	6425	7325
SECTION F-F				
DIM 'A'	DIM 'B'	DIM 'C'	DIM 'D'	DIM 'E'
3225	1305	720	4450	5350

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT

STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc, to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
ABUTMENT A & WINGWALL DETAILS

SCALES AS SHOWN | Date: 01/06/2023

Designed: J.HARRIPERSHAD | Checked: P. G. FENTON

Drawn: N.MNENGELA | Surveyed: -

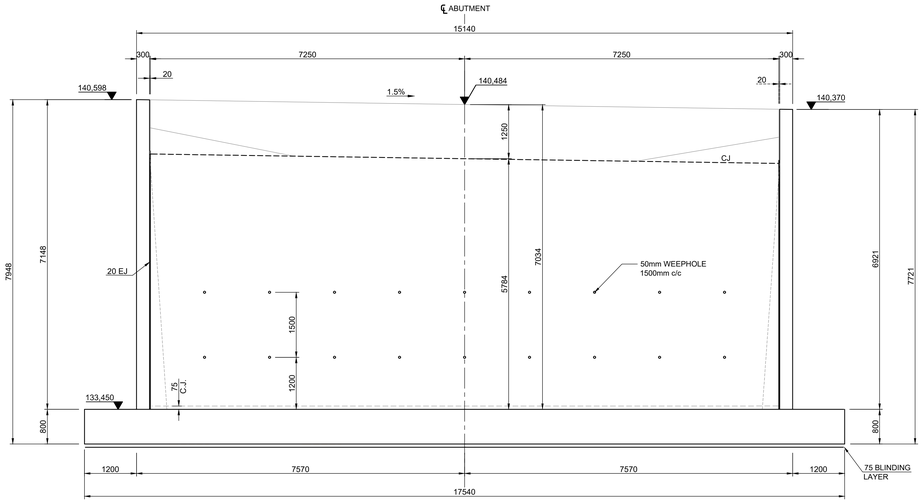
Manager: Structures P.G. Fenton

Deputy Head : Roads Provision

HEAD : ENGINEERING

Drawing No. 49217 | Sheet 05 of 12 | Rev. V1

NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.

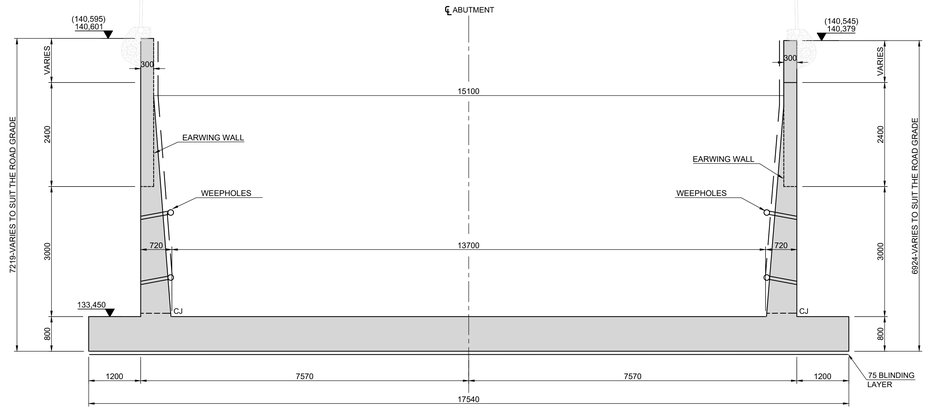


FRONT ELEVATION OF ABUTMENT B

SCALE 1:50

NOTE: LEVELS ARE TAKEN AT THE CENTRE LINE OF ABUTMENT

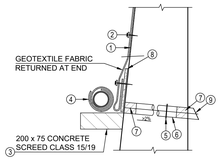
(GEOTECHNICAL ENGINEERING SPECIALIST TO INSPECT SITE AND BASES BEFORE ANY BLINDING OR CONCRETE POURED AND BEARING CAPACITY . CONFIRMED).



SECTION A-A

SCALE 1:50

NOTE: APPROACH SLAB OMITTED FOR CLARIFICATION PURPOSES



TYPICAL DRAINAGE DETAIL BEHIND ABUTMENT & WALLS

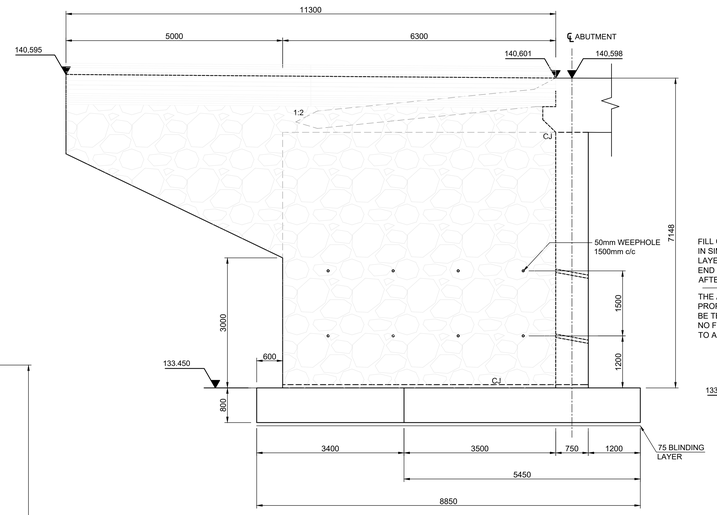
SCALE 1:10

LEGEND

1. - 300mm WIDE FILTER ELEMENTS SECURED TO BACK FACE OF STRUCTURE AT 45° SLOPE.
2. - CONCRETE NAILS WITH 25 x 25mm HOOP IRON WASHERS TO SECURE FILTER ELEMENTS TO STRUCTURE AT ± 1 000mm CENTRES.
3. - CONCRETE SCREED TO GRADE AND LEVEL OF DRAINAGE PIPES PRIOR TO PLACING OF DRAINAGE PIPES.
4. - 65mm dia PERFORATED DRAINAGE PIPES WRAPPED IN GEOTEXTILE. THE GEOTEXTILE SHALL HAVE AN OVERLAP OF NOT LESS THAN 150mm AND BE TIED AT CENTRES NOT GREATER THAN 200mm.
5. - 3,15mm dia STAINLESS STEEL WIRE BARRIER.
6. - 50mm dia uPVC WEEPHOLES AT CENTRES SHOWN. THE CONTRACTOR SHALL ENSURE THAT THE WEEPHOLES ARE CLEAR AND APPROVED BY THE ENGINEER BEFORE THE FILTER ELEMENTS ARE INSTALLED.
7. - TEMPORARY POLYSTYRENE PLUG TO PREVENT INGRESS OF GROUT DURING PLACING OF THE CONCRETE.
8. - 200mm WIDE FILTER ELEMENT SECURED TO BACK FACE OF STRUCTURE AT SAME GRADE AS WEEPHOLES
9. - EXTENSION OF WEEPHOLES TO EMBANKMENT

ROCK FINISH (WINGWALLS ONLY)

ROCK FINISH DETAIL (WINGWALLS ONLY)

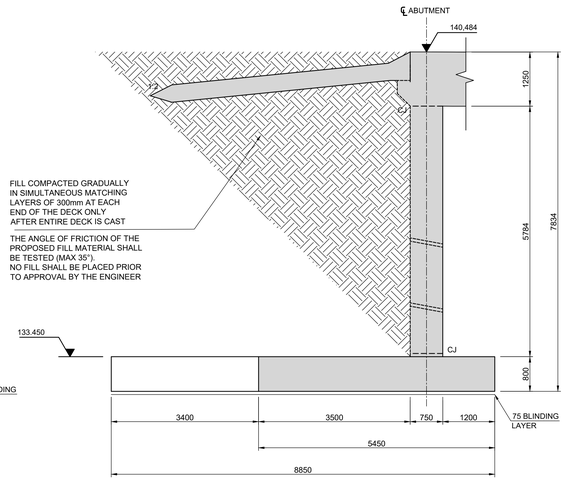


ELEVATION B-B

SCALE 1:50

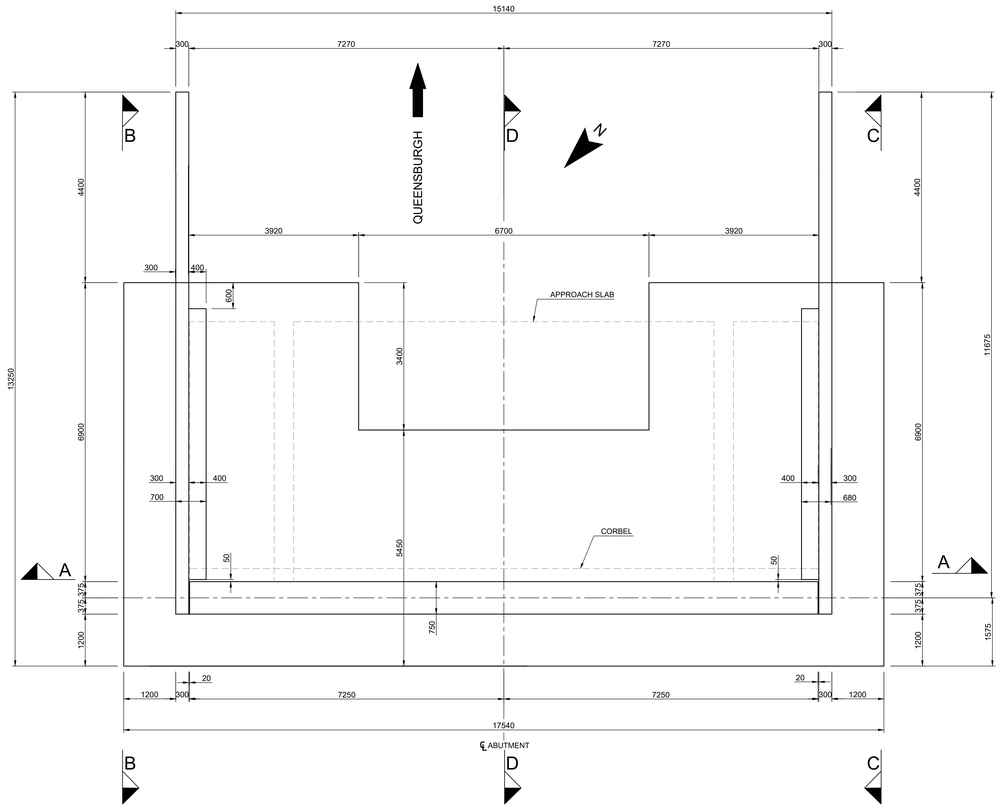
FILL COMPACTED GRADUALLY IN SIMULTANEOUS MATCHING LAYERS OF 300mm AT EACH END OF THE DECK ONLY AFTER ENTIRE DECK IS CAST

THE ANGLE OF FRICTION OF THE PROPOSED FILL MATERIAL SHALL BE TESTED (MAX 35°). NO FILL SHALL BE PLACED PRIOR TO APPROVAL BY THE ENGINEER



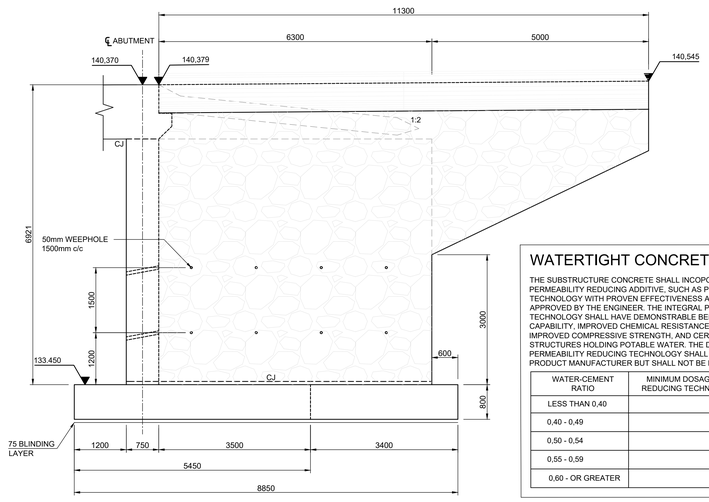
SECTION D-D

SCALE 1:50



PLAN OF ABUTMENT B

SCALE 1:50



ELEVATION C-C

SCALE 1:50

WATERTIGHT CONCRETE

THE SUBSTRUCTURE CONCRETE SHALL INCOPORATE A CRYSTALLINE PERMEABILITY REDUCING ADDITIVE, SUCH AS PENETRON OR AN ALTERNATIVE TECHNOLOGY WITH PROVEN EFFECTIVENESS AGAINST HYDROSTATIC PRESSURE, APPROVED BY THE ENGINEER. THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL HAVE DEMONSTRABLE BENEFITS PROVING SELF HEALING CAPABILITY, IMPROVED CHEMICAL RESISTANCE TO SULPHURIC ACID EXPOSURE, IMPROVED COMPRESSIVE STRENGTH, AND CERTIFIED APPROVAL FOR USE ON STRUCTURES HOLDING POTABLE WATER. THE DOSAGE OF THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL BE RECOMMENDED BY THE PRODUCT MANUFACTURER BUT SHALL NOT BE LESS THAN THE FOLLOWING:

WATER-CEMENT RATIO	MINIMUM DOSAGE OF INTEGRAL PERMEABILITY REDUCING TECHNOLOGY (% WEIGHT OF CEMENT)
LESS THAN 0,40	0,8%
0,40 - 0,49	1,0%
0,50 - 0,54	1,5%
0,55 - 0,59	2,0%
0,60 - OR GREATER	3,0%

CONCRETE NOTES

1. MATERIAL STRENGTHS & STRESSES

CONCRETE:	CLASS:
BLINDING	- C12/15-20
MASS CONCRETE	- C12/15-50
FOUNDATIONS	- C32/40-20
ABUTMENT	- C32/40-20 (WATERTIGHT)
WINGWALLS	- C32/40-20

3. CONCRETE FINISHES

FOUNDATIONS	F1 (HIDDEN) & F3/F2 (EXPOSED)
ABUTMENTS BURIED & HIDDEN SURFACES	F1
ABUTMENTS (EXPOSED)	F3 & ROCK FINISH ON WINGWALLS

4. CHAMFERS

ALL SHARP EDGES TO BE CHAMFERED 25mm X 25mm

5. CONCRETE COVER

CAST AGAINST EARTH & PILES	- 75mm
FOUNDATIONS / PILECAPS (SHUTTERED)	- 50mm
EXPOSED SURFACES (ELSEWHERE)	- 40mm

6. CONSTRUCTION

THE ABUTMENTS SHALL ONLY BE BACKFILLED AFTER THE ENTIRE DECK HAS BEEN CAST AND SHALL BE UNDERTAKEN SIMULTANEOUSLY ON BOTH ENDS OF THE BRIDGE SO THAT THE FILL MATERIAL LOAD AGAINST THE TWO ABUTMENTS SHALL BE BALANCED. THE FILL SHALL BE COMPACTED GRADUALLY IN MATCHING LAYERS OF 300mm EACH SIDE

THE ABUTMENTS SHALL BE POURED DURING THE NIGHT OR EARLY MORNINGS (SUBJECT TO RELATIVELY LOW VOLUME CONCRETE POURS) AT LOW TEMPERATURES WHEN THE FORMWORK IS RELATIVELY COOL. DETAILED HOURS OF NIGHT POUR SHALL BE CONFIRMED WITH THE ENGINEER DURING CONSTRUCTION AS THIS DEPENDS ON SEASONAL TEMPERATURES AT THAT SPECIFIC TIME OF THE SEASON AND EXACT LOCATION ETC. THE CONTRACTOR SHALL ENSURE ALL PROVISIONS FOR THE NIGHT POURS OR EARLY MORNINGS ARE IN ORDER.

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT

STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed.

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title

FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title

ABUTMENT B & WINGWALL DETAILS

SCALES AS SHOWN | Date: 01/06/2023

Designed: J.HARRIPERSHAD | Checked: P. G. FENTON

Drawn: N.MNENGELA | Surveyed: -

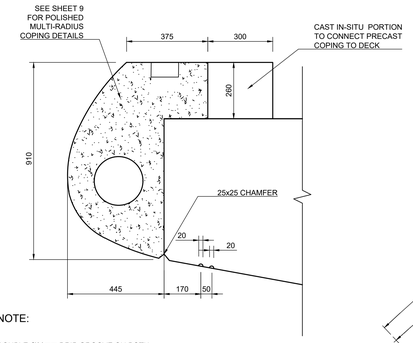
Manager: Structures P.G. Fenton

Deputy Head : Roads Provision

HEAD : ENGINEERING

Drawing No. 49217 | Sheet 06 of 12 | Rev. V1

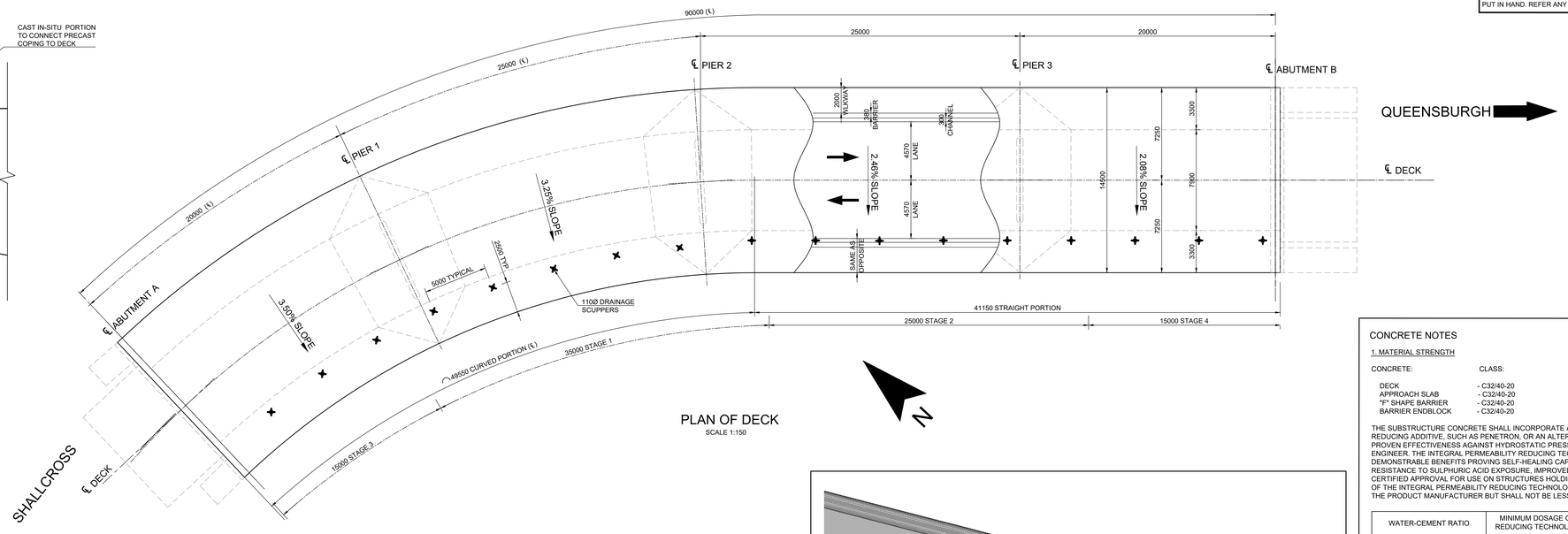
NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



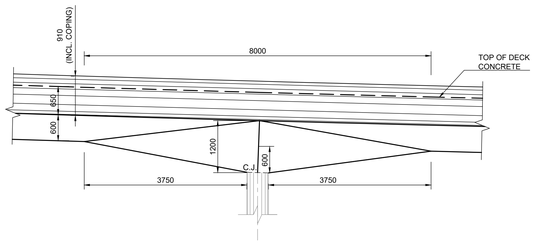
NOTE:

DOUBLE Ø20mm DRIP GROOVE ON BOTH CANTILEVERS FOR FULL LENGTH OF BRIDGE.

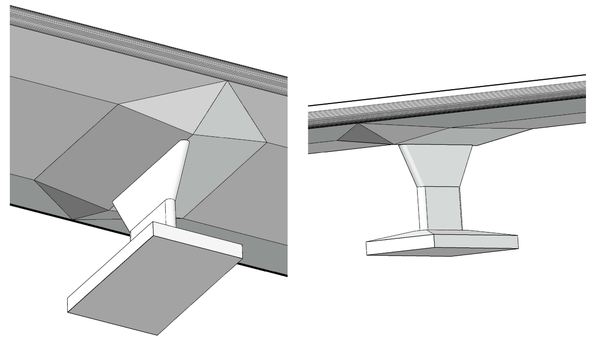
DETAIL 3
DOUBLE DRIP GROOVE DETAIL
SCALE 1 : 10



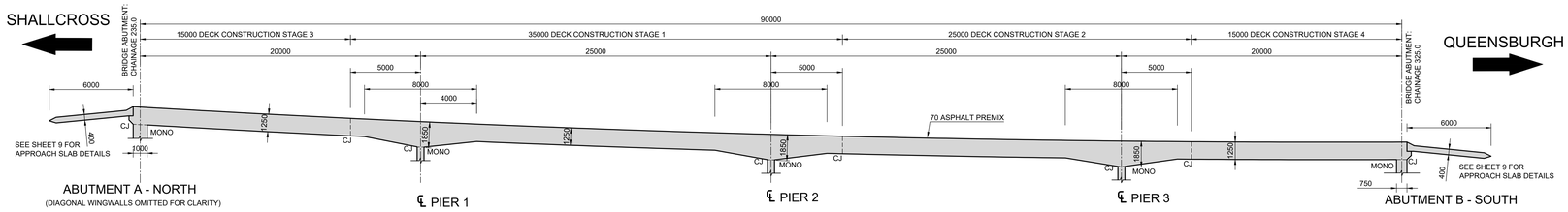
PLAN OF DECK
SCALE 1:150



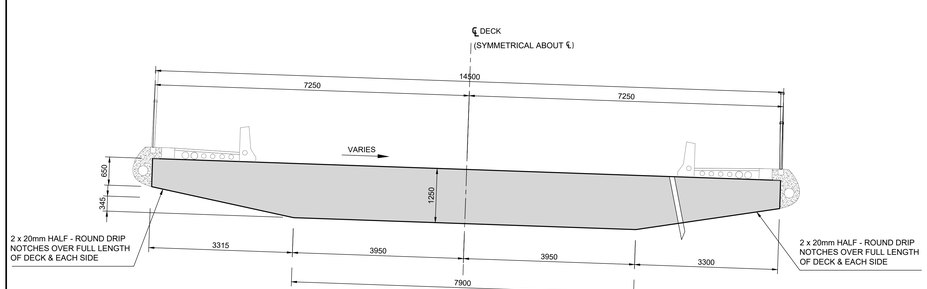
TYPICAL SIDE ELEVATION ON DECK AT PIERS
SCALE 1:50



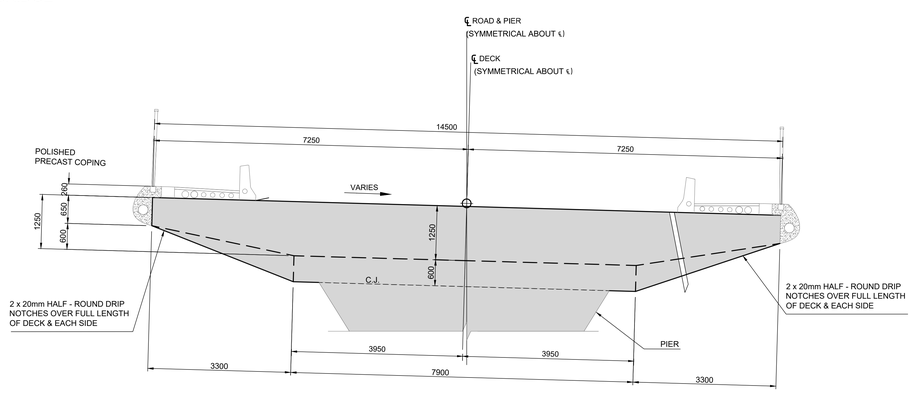
3D PERSPECTIVES ON PIER FROM BELOW BASE



SECTION ALONG ℄ OF BRIDGE
SCALE 1:150



TYICAL CROSS SECTION OF DECK
SCALE 1:50



TYPICAL CROSS SECTION OF DECK AT PIERS
SCALE 1:50

CONCRETE NOTES

1. MATERIAL STRENGTH

CONCRETE:	CLASS:
DECK	- C32/40-20
APPROACH SLAB	- C32/40-20
"F" SHAPE BARRIER	- C32/40-20
BARRIER ENDBLOCK	- C32/40-20

THE SUBSTRUCTURE CONCRETE SHALL INCORPORATE A CRYSTALLINE PERMEABILITY REDUCING ADDITIVE, SUCH AS PENETRON, OR AN ALTERNATIVE TECHNOLOGY WITH PROVEN EFFECTIVENESS AGAINST HYDROSTATIC PRESSURE,APPROVED BY THE ENGINEER. THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL HAVE DEMONSTRABLE BENEFITS PROVING SELF-HEALING CAPABILITY, IMPROVED CHEMICAL RESISTANCE TO SULPHURIC ACID EXPOSURE, IMPROVED COMPRESSIVE STRENGTH, AND CERTIFIED APPROVAL FOR USE ON STRUCTURES HOLDING POTABLE WATER. THE DOSAGE OF THE INTEGRAL PERMEABILITY REDUCING TECHNOLOGY SHALL BE RECOMMENDED BY THE PRODUCT MANUFACTURER BUT SHALL NOT BE LESS THAN THE FOLLOWING:

WATER-CEMENT RATIO	MINIMUM DOSAGE OF INTEGRAL PERMEABILITY REDUCING TECHNOLOGY (% WEIGHT OF CEMENT)
LESS THAN 0,40	0,8 %
0,40 – 0,49	1,0 %
0,50 – 0,54	1,5 %
0,55 – 0,59	2,0 %
0,60 OR GREATER	3,0 %

2. CONCRETE FINISHES TO FORMED & UNFORMED SURFACES

DECK TOP SLAB	UNFORMED
DECK SIDES & SOFFIT	F3
PARAPETS & BARRIERS	F3
HANDRAIL COPING	F3 (POLISHED)

CHAMFERS TO ALL EXPOSED SHARP CORNERS - 25 x 25mm

3. CONCRETE COVER

EXPOSED SURFACES - 40mm

4. CURING

DECK SIDES & SOFFIT: FORMWORK SHALL BE RETAINED IN PLACE FOR 14 DAYS AND AFTER FORMWORK IS REMOVED AN APPROVED CURING COMPOUND SHALL IMMEDIATELY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS

DECK TOP SURFACE: AN APPROVED CURING COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE DECK SHALL BE COVERED WITH CLEAN, NON-MARKING SAND OR ABSORBENT MATS MADE FROM A MOISTURE-RETAINING MATERIAL, AND THE COVERING KEPT CONSTANTLY WET FOR 14 DAYS

BRIDGE MONITORING

THE BRIDGE WILL BE MONITORED TO GAIN A BETTER UNDERSTANDING OF INTEGRAL BRIDGE BEHAVIOR IN SOUTH AFRICA AND HELP IN WRITING FUTURE DESIGN AND CONSTRUCTION GUIDELINES FOR THESE TYPES OF BRIDGES.

A NUMBER OF SENSORS AND MONITORING DEVICES WILL BE ATTACHED, INSTALLED AND EMBEDDED TO THE BRIDGE DURING CONSTRUCTION BY A SPECIALIST NOMINATED SUBCONTRACTOR.

THE CONTRACTOR SHALL MAKE PROVISIONS IN HIS / HER PROGRAMME AND ASSIST THE SPECIALIST SUBCONTRACTOR DURING THE INSTALLATION OF THE MONITORING DEVICES.

DETAILED INSTRUMENTATION LAYOUT DRAWINGS SHALL BE PROVIDED AT CONSTRUCTION STAGE.

POUR SEQUENCE AND NIGHT POURS

THE DECK SHALL BE POURED/CAST IN 4 CONSTRUCTION STAGES, OR CONCRETE POURS, DURING THE NIGHT AT LOW TEMPERATURES WHEN THE FORMWORK & TEMPERATURE IS RELATIVELY COOL. THE FINAL 2 STAGES THAT CONNECT THE DECK TO ABUTMENTS SHALL ONLY BE CAST AT A SPECIFIC TEMPERATURE (AMBIENT TEMPERATURE MEASURED AT THE SITE LOCATION) SPECIFIED BY THE ENGINEER. THIS WILL PREVENT ANY UNWANTED THERMAL STRESS LOCKED INTO THE BRIDGE SYSTEM.

DETAILED HOURS OF NIGHT POUR SHALL BE CONFIRMED WITH THE ENGINEER DURING CONSTRUCTION AS THIS DEPENDS ON SEASONAL TEMPERATURES AT THAT SPECIFIC TIME OF THE SEASON AND EXACT LOCATION ETC. THE CONTRACTOR SHALL ENSURE ALL PROVISIONS FOR THE NIGHT POURS OR EARLY MORNINGS ARE IN ORDER.

EXTENDED PROPPING OF DECK

EACH STAGE AFTER BEING CAST SHALL REMAIN PROPPED IN THE CENTER OF THE SPAN.

FULL DECK WIDTH SHALL BE SUPPORTED AT CENTER OF SPANS WITH SUPPORTS/ PROPS PROVIDING APPROXIMATELY 5m CONTINUOUS/ UNIFORMLY SUPPORTED LENGTH.

ONLY AFTER STAGE 4 HAS BEEN CAST AND GAINED REQUIRED STRENGTH SHALL ALL THE PROPS FROM THE REMAINING SPANS BE REMOVED INCLUDING FALSEWORK FROM STAGE 4

THE FALSEWORK SHALL FORM PART OR SERVE AS THE PROP AS ALL FALSEWORK CANNOT BE REMOVED AND THEN PROPS INSTALLED (IRRESPECTIVE OF CONCRETE STRENGTH)

CONTRACTOR SHALL DIVERT WATER ACCORDINGLY AROUND STAGING AND PROPS

CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR DESIGN, MAINTENANCE AND SAFE GUARDING THE PROPS FROM THEFT AND ENSURE ADEQUATE DESIGN FOR FLOODING & NATURAL IMPACTS

IF, FOR WHATEVER REASON, THE PROPS ARE REMOVED PREMATURELY THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE CORRECTION WORKS REQUIRED AT HIS/ HER OWN COST

IT IS DEEMED THAT THE ABOVE COSTS SHALL BE INCLUDED IN THE FALSEWORK/ FORMWORK RATES - NO ADDITIONAL PAYMENT SHALL BE CONSIDERED

THE REMAINING STAGING/ FALSEWORK AROUND THE PROPS SHALL ONLY BE REMOVED AFTER A MINIMUM OF 21 DAYS, IRRESPECTIVE IF THE STRENGTH REQUIRED IS REACHED EARLIER

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT

STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No.
1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
DECK CONCRETE DETAILS

SCALES AS SHOWN | Date: 01/06/2023

Designed: J.HARRIPERSHAD | Checked: P. G. FENTON

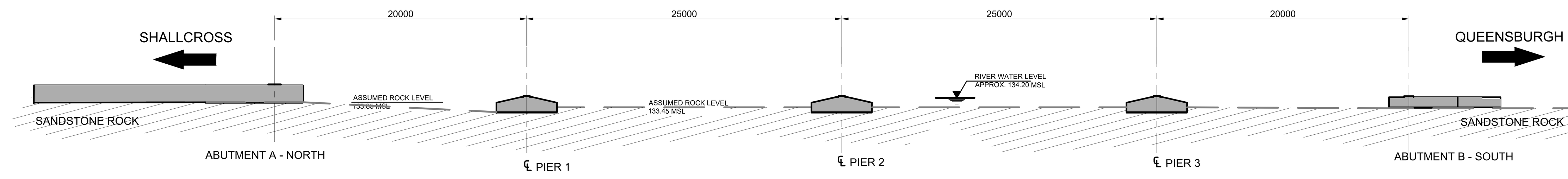
Drawn: L.J. REID | Surveyed: -

Manager: Structures
P.G. Fenton

Deputy Head : Roads Provision

HEAD : ENGINEERING

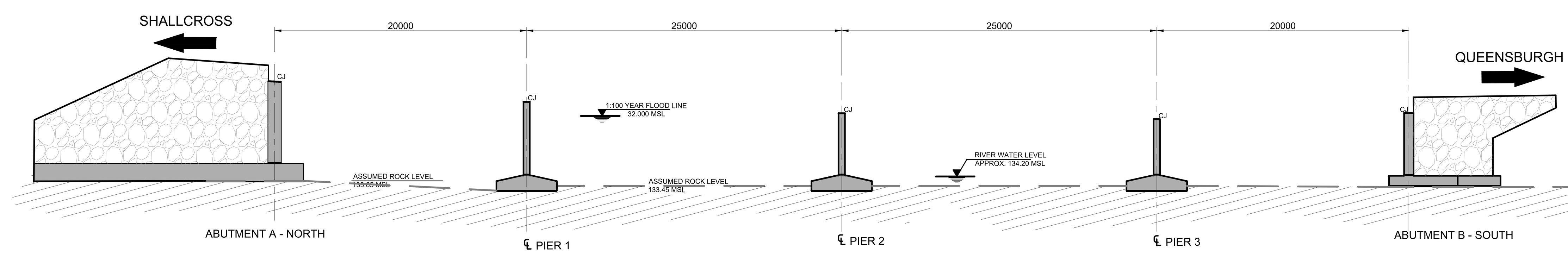
Drawing No. 49217 | Sheet 07 of 12 | Rev. V1



FOUNDATION CONSTRUCTION
SCALE 1:250

FOUNDATION CONSTRUCTION

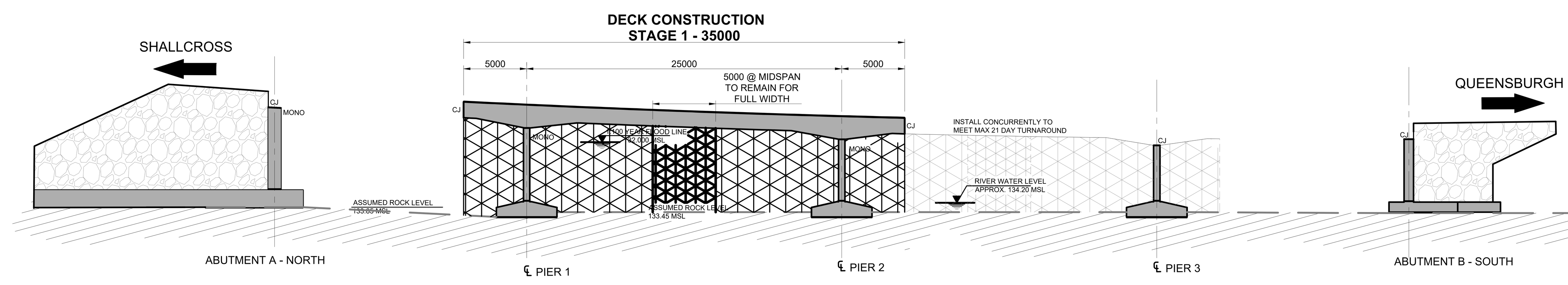
- "LOCK" BASE INTO ROCK, ROCK SHALL BE CAREFULLY BROKEN TO INSTALL BASE#
- # GEOTECH ENGINEER TO INSPECT SITE & ROCK & PROVIDE RECOMMENDATIONS
- ROCK ANCHORS/ DOWELS TO BE CONFIRMED BY ENGINEER
- CAST BLINDING (75mm) OR MASS CONCRETE
- CAST BASE FOR PIERS, ABUTMENTS AND WINGWALLS
- NOTE - SPECIAL MIX CONCRETE TO BE USED



PIERS, ABUTMENT & WINGWALL CONSTRUCTION
SCALE 1:250

SUB-STRUCTURE CONSTRUCTION

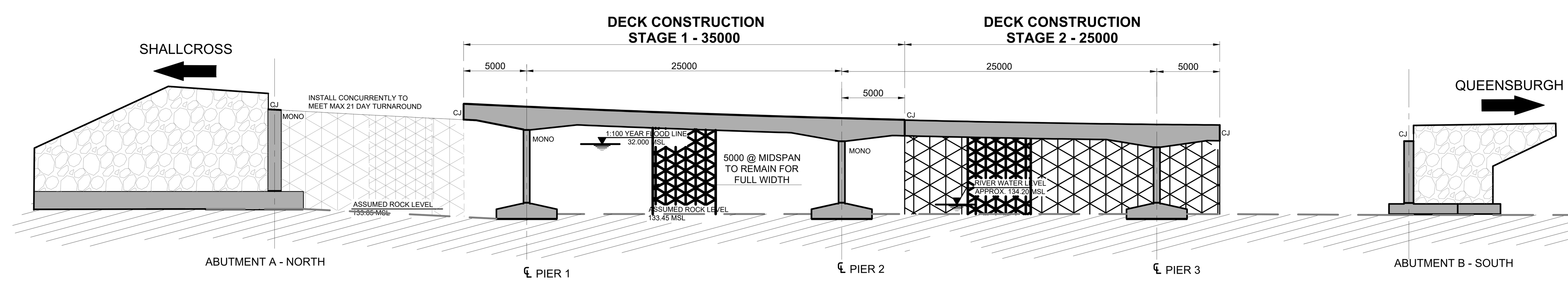
- CAST SUBSTRUCTURE (PIERS, ABUTMENTS AND WINGWALLS) WITH SPECIAL MIX CONCRTE (LOW SHRINK WITH DURABILITY ADDITIVE MIX)
- A MINIMUM OF 7 DAYS THE FORMWORK SHALL BE IN PLACE AROUND THE PIER AND ABUTMENT, ONLY AFTER 7 DAYS SHALL IT BE STRIPPED
- NOTE-ROCK FINNISH ON WINGWALLS
- ABUTMENT AND PIERS TO BE POURED AT COOLER TEMPERATURES / NIGHT POUR



STAGE 1
SCALE 1:250

STAGE 1

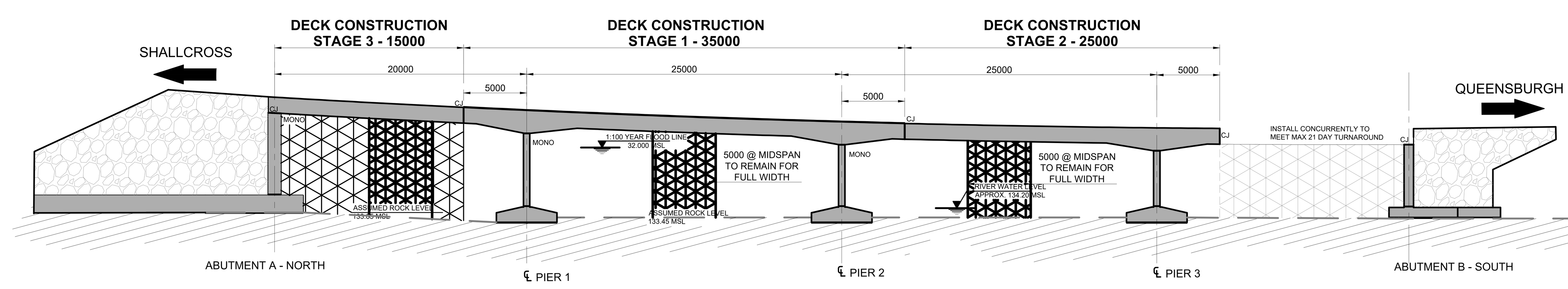
- ERECT TEMPORARY DECK STAGING FOR STAGE 1 AND STAGE 2*
- NOTE 5m CENTER PROPS TO REMAIN UNTIL FULL DECK CAST AND CONNECTED TO ABUTMENTS
- CONSTRUCT/ POUR STAGE 1
- ***THERE SHALL BE A MAXIMUM 21 DAY TURNAROUND BETWEEN DECK STAGE CONCRETE POURS, IN ORDER TO ACHIEVE THIS, 2 SETS OF FORMWORK & FALSEWORK IS NEEDED, I.E. STAGE 2 TO BE INSTALLED CONCURRENTLY**
- ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY SCABBLED TO THE SATISFACTION OF THE ENGINEER AND KEPT MOIST MIN. 24 HOURS PRIOR TO NEXT CASTING



STAGE 2
SCALE 1:250

STAGE 2

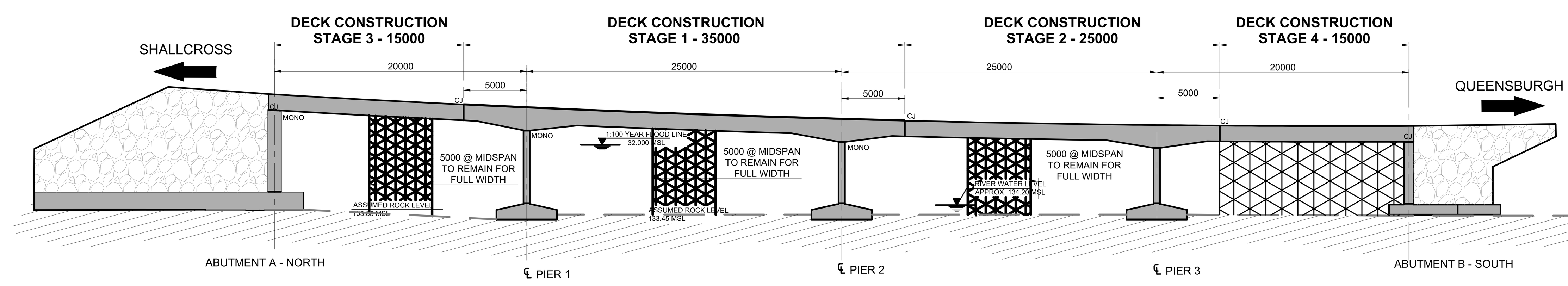
- ERECT TEMPORARY DECK STAGING FOR STAGE 2 & STAGE 3*
- NOTE 5m CENTER PROPS TO REMAIN UNTIL FULL DECK CAST AND CONNECTED TO ABUTMENTS FOR STAGE 1 AND STAGE 2
- CONSTRUCT/POUR STAGE 2
- ***THERE SHALL BE A MAXIMUM 21 DAY TURNAROUND BETWEEN DECK STAGE CONCRETE POURS, IN ORDER TO ACHIEVE THIS, 2 SETS OF FORMWORK & FALSEWORK IS NEEDED, I.E. STAGE 3 TO BE INSTALLED CONCURRENTLY**
- ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY SCABBLED TO THE SATISFACTION OF THE ENGINEER AND KEPT MOIST MIN. 24 HOURS PRIOR TO NEXT CASTING
- **AFTER STAGE 2 CAST - CONTRACTOR SHALL CONSTRUCT BARRIERS ON STAGE 1**



STAGE 3
SCALE 1:250

STAGE 3

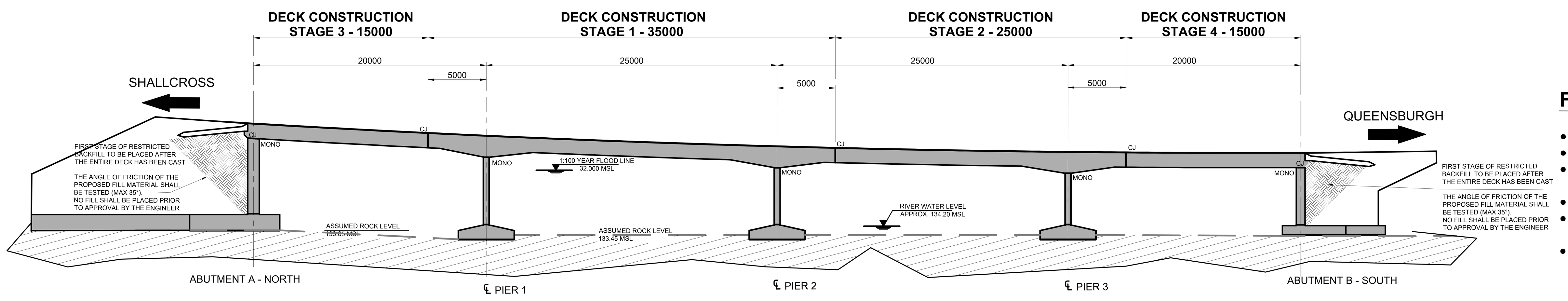
- ERECT TEMPORARY DECK STAGING FOR STAGE 3 & STAGE 4*
- NOTE 5m CENTER PROPS TO REMAIN UNTIL FULL DECK CAST AND CONNECTED TO ABUTMENTS FOR STAGE 1, STAGE 2 & STAGE 3
- CONSTRUCT/ POUR STAGE 3
- ***THERE SHALL BE A MAXIMUM 21 DAY TURNAROUND BETWEEN DECK STAGE CONCRETE POURS, IN ORDER TO ACHIEVE THIS, 2 SETS OF FORMWORK & FALSEWORK IS NEEDED, I.E. STAGE 4 TO BE INSTALLED CONCURRENTLY**
- ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY SCABBLED TO THE SATISFACTION OF THE ENGINEER AND KEPT MOIST MIN. 24 HOURS PRIOR TO NEXT CASTING
- AFTER STAGE 3 CAST - CONTRACTOR SHALL CONSTRUCT BARRIERS ON STAGE 2



STAGE 4
SCALE 1:250

STAGE 4

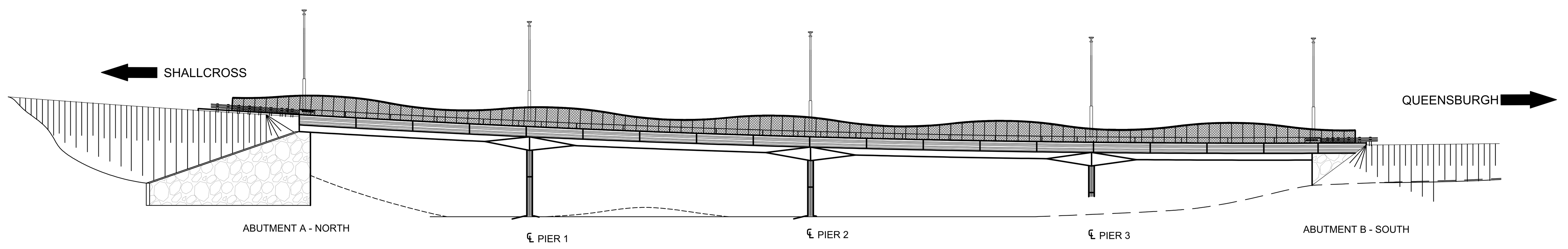
- TEMPORARY DECK STAGING FOR STAGE 4 ALREADY ERECTED
- NOTE 5m CENTER PROPS TO REMAIN UNTIL FULL DECK CAST AND CONNECTED TO ABUTMENTS FOR STAGE 1, STAGE 2 & STAGE 3
- CONSTRUCT/POUR STAGE 4
- ***THERE SHALL BE A MAXIMUM 21 DAY TURNAROUND BETWEEN DECK STAGE CONCRETE POURS**
- ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY SCABBLED TO THE SATISFACTION OF THE ENGINEER AND KEPT MOIST MIN. 24 HOURS PRIOR TO NEXT CASTING
- AFTER STAGE 4 CAST - CONTRACTOR SHALL CONSTRUCT BARRIERS AND INSTALL PRECAST EDGE COPINGS ON FULL DECK



PROPS REMOVED & APPROACH SLAB/ FILL OF BRIDGE

FINAL STAGE

- ALL STAGING AND PROPS REMOVED AFTER WAITING A **MINIMUM OF 14 DAYS** AND FULL STRENGTH GAINED
- STAGING TO BE RELEASED AS PER TEMPORARY WORKS ENGINEER SEQUENCE & IN BALANCED ORDER
- BACKFILL AND COMPACT SPECIAL FILL MATERIAL IN A BALANCED SEQUENCE BEHIND EACH ABUTMENT SIMULTANEOUSLY, LAYERS ON EACH SIDE OF ABUTMENT SHALL NEVER EXCEED 300mm AT ANY TIME.
- CONSTRUCT APPROACH SLABS
- COMPLETE CONSTRUCTION OF BRIDGE TO INCLUDE BARRIERS, INSTALL PRECAST CURVED EDGE COPINGS, FENCE/CAGE SIDEWALK, SIDEWALKS & INSTALLATION OF SERVICES, LIGHTING AND SURFACING.
- GROUTED STONE PITCHING AND RIVER AND BANKS TO BE SHAPED & GRASSED.



SIDE ELEVATION OF BRIDGE - COMPLETED

NOTE:

- DECK TO BE CAST DURING NIGHT AT LOW TEMPERATURES
- CONTRACTOR RESPONSIBLE FOR RIVER DEVIATIONS FOR DECK CONSTRUCTION, METHOD STATEMENT SHALL BE SUBMITTED
- CONTRACTOR & TEMPORARY WORKS ENGINEER TO ENSURE PROPS AT MIDSPAN DOES NOT CREATE HIGH NEGATIVE MOMENTS AT MIDSPAN, WHICH EXCEEDS THE STEEL REINFORCEMENT PROVIDED IN THE DECK AT THE SPECIFIC POINT
- ***CONTRACTOR SHALL PLAN ALL WORKS WITH SPECIALIST TO ENSURE ALL MONITORING SENSORS ARE INSTALLED IN DECK AND ABUTMENT WITHIN THE WORKS.***

CONSTRUCTION STAGE NOTES:

1. **CONSTRUCTION SEQUENCE SHALL FOLLOW THE CONSTRUCTION STAGE 1 TO CONSTRUCTION STAGE 4 SEQUENCE AS INDICATED**
2. **THERE SHALL BE A MAXIMUM 21 DAY TURNAROUND BETWEEN DECK STAGE CONCRETE POURS**
3. **IN ORDER TO ACHIEVE THIS IT IS EXPECTED THAT 2 SETS OF FALSEWORK & FORMWORK ETC WILL BE REQUIRED TO BE INSTALLED CONCURRENTLY**
4. **ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY SCABBLED TO THE SATISFACTION OF THE ENGINEER AND KEPT MOIST MIN. 24 HOURS PRIOR TO NEXT CASTING**

ISSUED FOR TENDER

eTHEKWINI MUNICIPALITY
PROCUREMENT AND INFRASTRUCTURE CLUSTER
ENGINEERING UNIT
ROADS PROVISION DEPARTMENT
STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW
0 10 20 30 40 50 60 70
70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01-06-2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Engineer

Date

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE: Only underground services affected by new constucttion work are shown. Care must be taken during excavations for road foundations, trenches etc, to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title: FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title: CONSTRUCTION SEQUENCE DETAILS

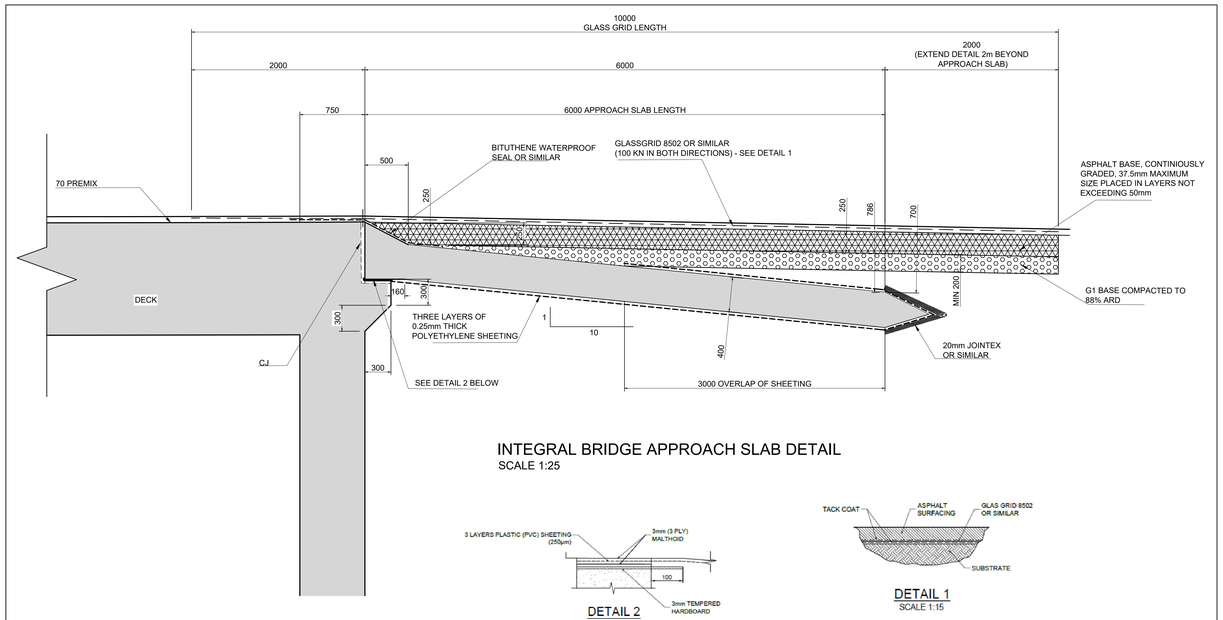
SCALES	AS SHOWN	Date:	01-06-2023
Designed:	J.HARRIPERSHAD	Checked:	P. G. FENTON
Drawn:	J.HARRIPERSHAD	Surveyed:	-

Manager: Structures P. G. FENTON

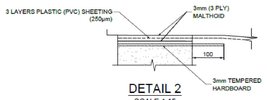
Deputy Head : Roads Provision

HEAD : ENGINEERING

Drawing No.	Sheet	of	Rev.
49217	8	12	V1

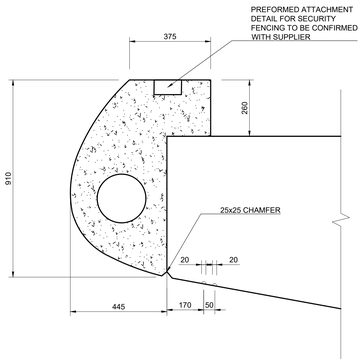


INTEGRAL BRIDGE APPROACH SLAB DETAIL
SCALE 1:25



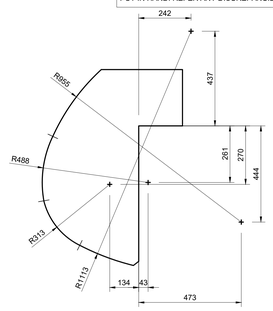
DETAIL 2
SCALE 1:15

DETAIL 1
SCALE 1:15

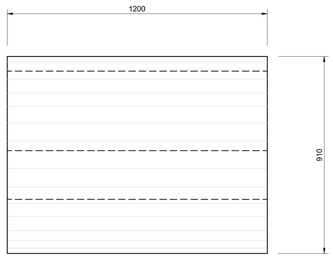


POLISHED PRECAST
MULTI-RADIUS COPING DETAIL
- OVERALL DIMENSIONS
SCALE 1 : 10

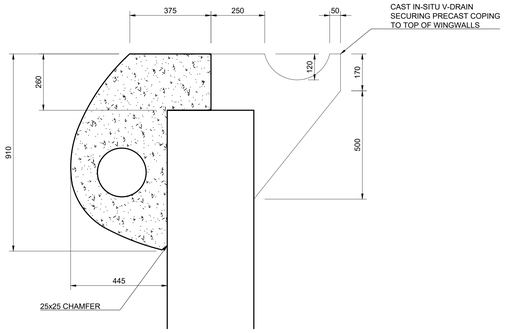
NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



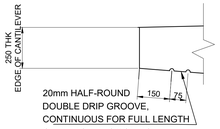
COPING DETAIL
- CURVED FACE DIMENSIONS
SCALE 1 : 10

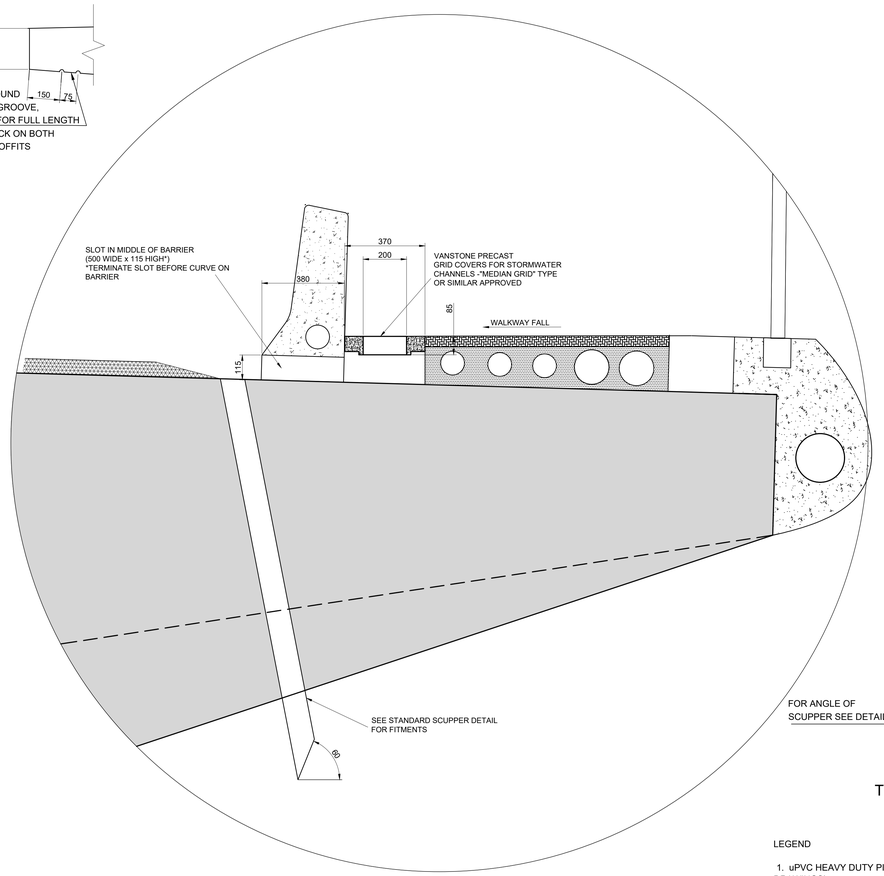


ELEVATION : POLISHED PRECAST
MULTI-RADIUS COPING 1200 PANEL
SCALE 1 : 10

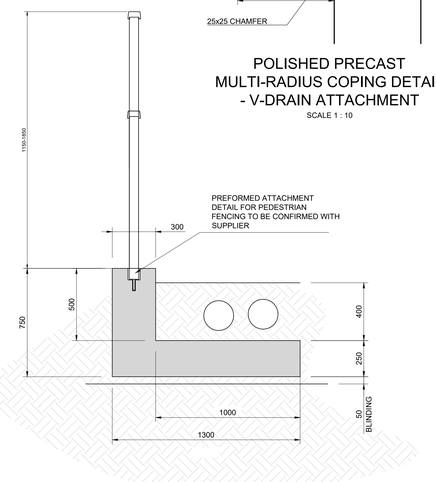


POLISHED PRECAST
MULTI-RADIUS COPING DETAIL
- V-DRAIN ATTACHMENT
SCALE 1 : 10

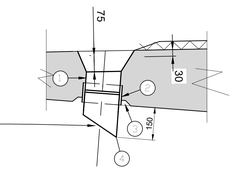




DECK DRAINAGE DETAIL
SCALE 1:10



HANDRAIL FENCE BEYOND DECK ON BASE
SCALE 1 : 15



TYPICAL DRAINAGE SCUPPERS
PART SECTION
SCALE 1 : 10

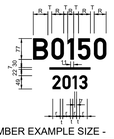
LEGEND

1. uPVC HEAVY DUTY PIPE (DIAMETER AND SPACING ON CONSTRUCTION DRAWINGS).

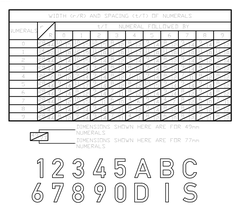
2. uPVC SINGLE SOCKET OR 45° ELBOW AS INDICATED.

3. DRIP RECESS AT OUTLET FORMED USING 22mm THICK MULTI-PLY SHUTTER BOARD.

4. uPVC PIPE EXTENSION GLUED TO SOCKET WITH SOLVENT CEMENT TO A WATERTIGHT CONNECTION AFTER REMOVAL OF DECK SHUTTERS.



BRIDGE NUMBER EXAMPLE SIZE -
TO BE RECESSED INTO CONCRETE HANDRAIL ENDBLOCK x 2NO.
SCALE 1:5



NOTES

1. GENERAL
   1.1 LETTERS AND NUMERALS SHALL BE TYPE 'B' LETTERS TO DIN 1451 PART 2.
   1.2 THE DATE ON THE BRIDGE NUMBERS SHALL BE THE YEAR IN WHICH THE BRIDGE WAS COMPLETED.

2. CONSTRUCTION
   2.1. THE BRIDGE NUMBER SHALL BE POSITIONED AS SHOWN ON CONSTRUCTION DRAWINGS AND CONFIRMED BY THE ENGINEER (x2NO. 2nd HANDRAIL PANEL ENDBLOCK UPON ENTERING BRIDGE
   2.2. THE NUMBER SHALL BE CAST INTO THE CONCRETE

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT
STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01-06-2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
MISCELLANEOUS & CURVED HANDRAIL COPING DETAILS

SCALES AS SHOWN | Date: 01-06-2023

Designed: J.HARRIPERSHAD | Checked: P. G. FENTON

Drawn: J.HARRIPERSHAD | Surveyed: -

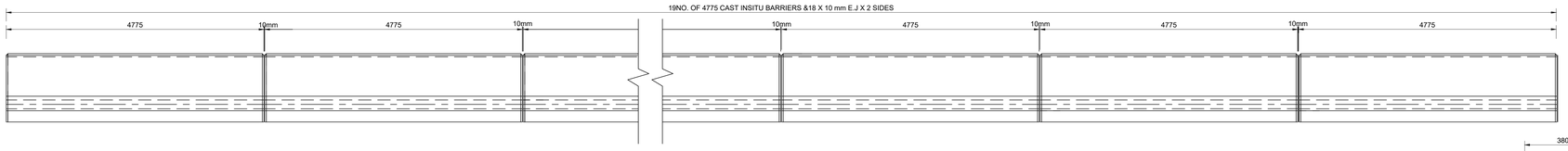
Manager: Structures P.G. Fenton

Deputy Head : Roads Provision

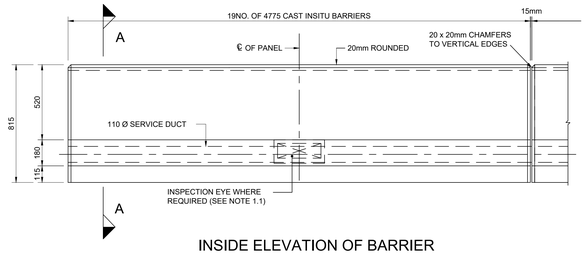
HEAD : ENGINEERING

Drawing No. 49217 | Sheet 09 of 12 | Rev. V1

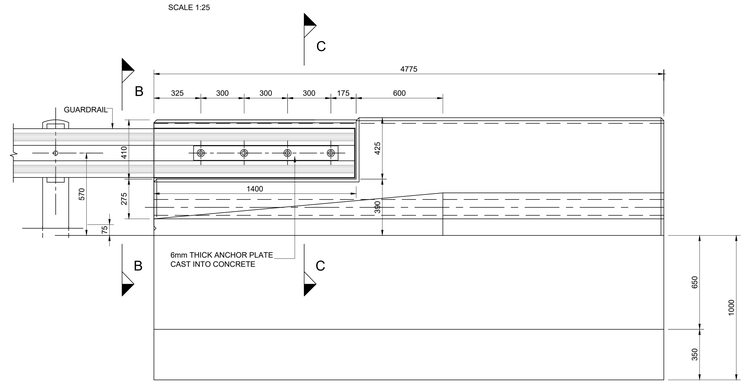
NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



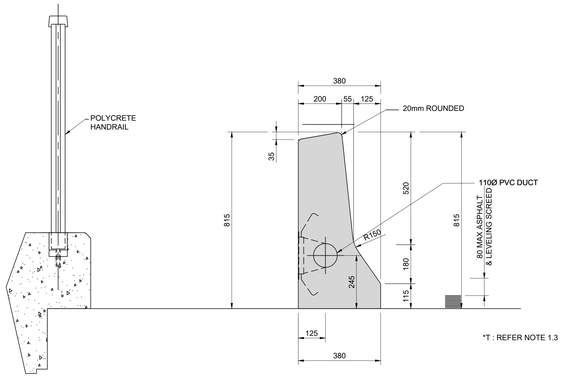
INSIDE ELEVATION OF BARRIER ON DECK
SCALE 1:25



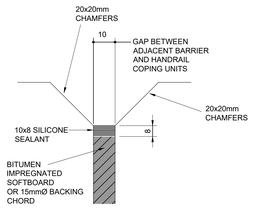
INSIDE ELEVATION OF BARRIER
SCALE 1:15



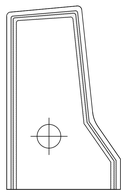
INSIDE ELEVATION OF END BLOCK ON BASE OFF DECK
SCALE 1:15



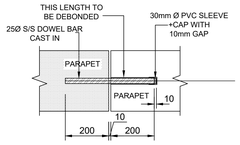
SECTION A-A
SCALE 1:10



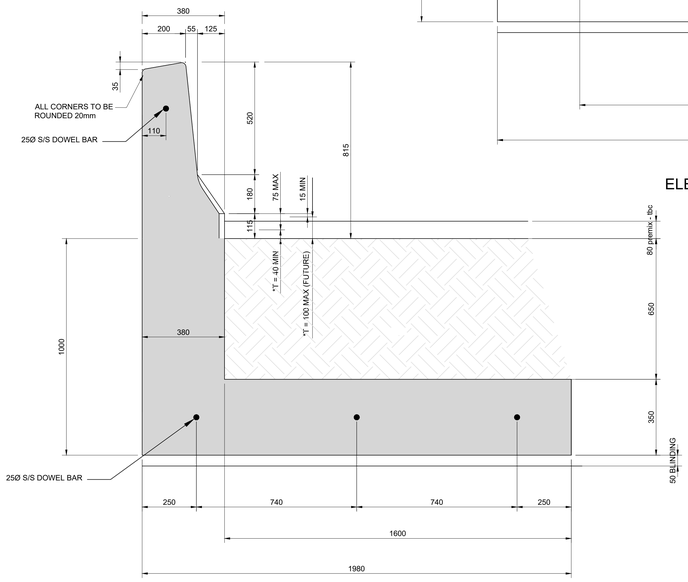
TYPICAL JOINT DETAIL
SCALE 1:1



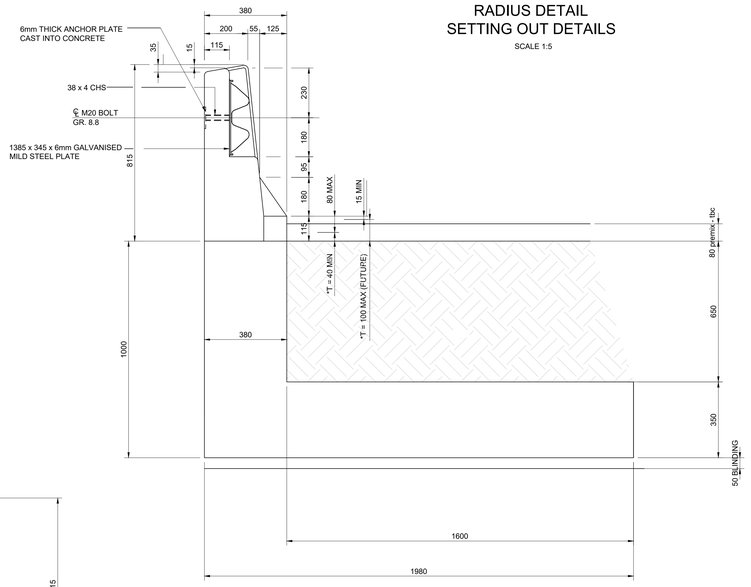
JOINT DETAILS
SCALE 1:10



DOWEL DETAILS BETWEEN BARRIERS
SCALE 1:10

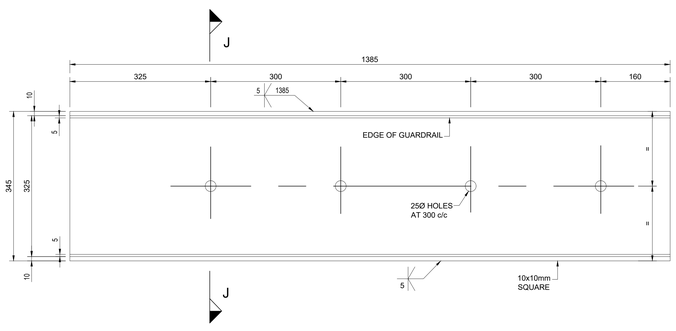


SECTION C-C
SCALE 1:10

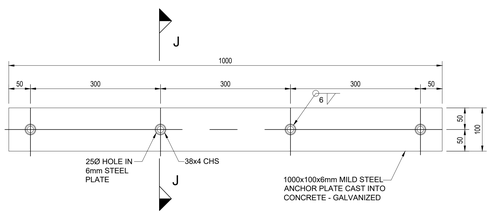


RADIUS DETAIL
SETTING OUT DETAILS
SCALE 1:5

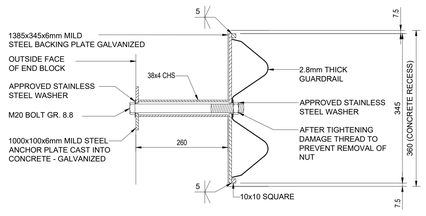
ELEVATION B-B
SCALE 1:10



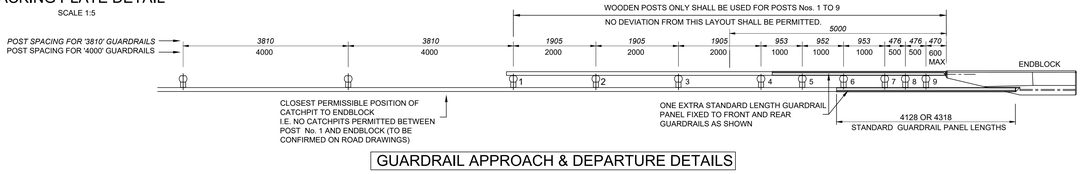
BACKING PLATE DETAIL
SCALE 1:5



ANCHOR PLATE DETAIL
SCALE 1:5



SECTION J - J
SCALE 1:5



GUARDRAIL APPROACH & DEPARTURE DETAILS

PLAN OF GUARDRAILS TO BARRIER END BLOCK (x 4NO)
1 : 50

NOTES

1. GENERAL

1.1 INSPECTION EYES SHALL BE PROVIDED AT DISTANCES NOT EXCEEDING 50m.

1.2 THE RECESSES FOR EXPANSION JOINT CONSTRUCTION AND THE EXPANSION JOINT COVER PLATES ARE SUBJECT TO THE DETAILS OF THE EXPANSION JOINT SYSTEM FINALLY APPROVED. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS OF THE RECESSES WITH THE ENGINEER PRIOR TO THE CASTING OF THE BARRIER.

1.3 *T = 60mm MIN (20mm LEVELLING COURSE + 40mm ASPHALT)

2. MATERIAL AND FINISHES

THE MATERIAL AND WORK SHALL COMPLY WITH THE RELEVANT CLAUSES OF eTHEKWINI MUNICIPALITY STANDARD SPECIFICATIONS, THE PROJECT SPECIFICATIONS AND SHALL INCLUDE THE FOLLOWING:

2.2 SERVICE DUCTS : 110 Ø uPVC NORMAL DUTY (SDR 51) PIPES TO SANS 791:2004

2.1 CONCRETE CLASS (MPa/mm) : 40/19)

2.4. SURFACE FINISHES : (EXPOSED FACES)
- CLASS 3(a)
- CLASS 3(a)

2.5 ALL EXPOSED VERTICAL SHARP CORNERS SHALL BE CHAMFERED 20 x 20mm AND ROUNDED 20mm HORIZONTALLY EXCEPT WHERE OTHERWISE INDICATED ON DETAIL DRAWING.

2.6 THE DRAW WIRE PROVIDED IN THE SERVICE DUCTS SHALL BE IN ONE CONTINUOUS LENGTH, EXTENDING NOT LESS THAN 3m BEYOND THE END FACE OF THE ABUTMENT END BLOCKS. THE DRAW WIRE SHALL BE NON CORRODABLE NYLON ROPE OR PVC COATED STEEL WIRE OF NOT LESS THAN 5000N TENSILE STRENGTH.

2.7 CURING
PARAPETS ARE TO BE CURED BY ANY METHOD AS AGREED WITH BY THE ENGINEER.

3. TOLERANCES

3.1 TOLERANCES APPLICABLE TO ERECTION OF UNITS:

3.1.1 DIMENSION FROM SETTING OUT LINE TO FRONT FACES : 10mm OUTWARDS, 0mm INWARDS

3.1.2 STEPS IN CONCRETE FRONT FACES AT ABUTTING UNITS : 3mm

3.1.3 DEVIATION FROM LINE AND LEVEL MEASURED OVER 5m : 5mm

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY
PROCUREMENT AND INFRASTRUCTURE CLUSTER
ENGINEERING UNIT
ROADS PROVISION DEPARTMENT
STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW
0 10 20 30 40 50 60 70
70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc, to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No.
1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

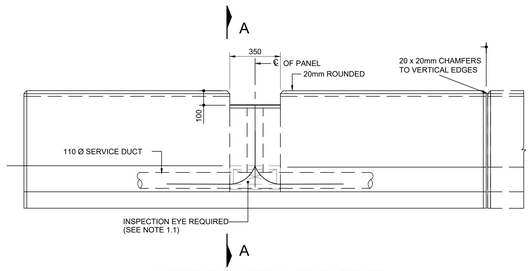
Drawing Title
'F SHAPED' BARRIER & END BLOCK CONCRETE DETAILS

SCALES	AS SHOWN	Date:	01/06/2023
Designed: J. HARRIPERSHAD		Checked: P. G. FENTON	
Drawn: J. HARRIPERSHAD L. SULLAPHEN		Surveyed:	
Manager: Structures			
Deputy Head : Roads Provision			

HEAD : ENGINEERING

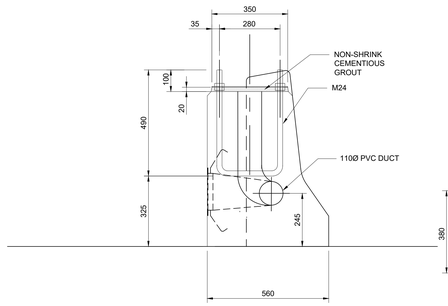
Drawing No.	Sheet	of	Rev.
49217	10	12	V1

NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



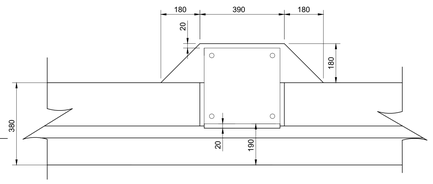
INSIDE ELEVATION OF BARRIER

SCALE 1:15



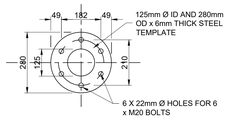
SECTION A-A

SCALE 1:10



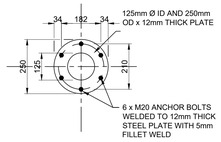
PART PLAN

SCALE 1:10



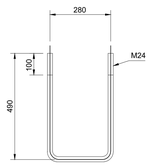
SECTION C-C

SCALE 1:10



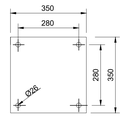
SECTION D-D

SCALE 1:10



H.D.G. "U" BOLT - 2/BOLT CAGE

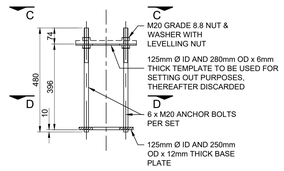
SCALE 1:10



JIG PLATE - 3mm M.STEEL

SCALE 1:10

NOTE
EACH "U" BOLT TO BE SUPPLIED WITH (3x) NUTS + (2x) WASHERS PER THREAD
- ALL H.D. GALVANIZED



HOLDING DOWN BOLT SET

SCALE 1:10

NOTES

1. GENERAL

1.1 INSPECTION EYES SHALL BE PROVIDED AT DISTANCES NOT EXCEEDING 50m.

1.2 THE RECESSES FOR EXPANSION JOINT CONSTRUCTION AND THE EXPANSION JOINT COVER PLATES ARE SUBJECT TO THE DETAILS OF THE EXPANSION JOINT SYSTEM FINALLY APPROVED. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS OF THE RECESSES WITH THE ENGINEER PRIOR TO THE CASTING OF THE BARRIER.

2. MATERIAL AND FINISHES

2.1 THE MATERIAL AND WORK SHALL COMPLY WITH THE RELEVANT CLAUSES OF THE CITY OF DURBAN STANDARD ENGINEERING SPECIFICATIONS, THE PROJECT SPECIFICATIONS AND SHALL INCLUDE THE FOLLOWING:

2.2 SERVICE DUCTS : 110 Ø uPVC NORMAL DUTY (SDR 51) PIPES TO SANS 791:2004

2.3 CONCRETE CLASS (MPa/mm) : 40/19

2.4 REINFORCEMENT: HIGH-YIELD STRESS STEEL 450MPa (GALVINIZED)

2.5 SURFACE FINISHES : (EXPOSED FACES)
- CLASS 3a - STEEL SHUTTER FINISH
- CLASS 3a - STEEL TROWEL FINISH

2.6 ALL EXPOSED VERTICAL SHARP CORNERS SHALL BE CHAMFERED 20 x 20mm AND ROUNDED 20mm HORIZONTALLY EXCEPT WHERE OTHERWISE INDICATED ON DETAIL DRAWING.

2.7 THE DRAW WIRE PROVIDED IN THE SERVICE DUCTS SHALL BE IN ONE CONTINUOUS LENGTH, EXTENDING NOT LESS THAN 3m BEYOND THE END FACE OF THE ABUTMENT END BLOCKS. THE DRAW WIRE SHALL BE NON CORRODABLE NYLON ROPE OR PVC COATED STEEL WIRE OF NOT LESS THAN 5000N TENSILE STRENGTH.

NOTES
1. ENTIRE BOLT GROUP ASSEMBLY TO BE HOT-DIP GALVANISED.
2. BOLTS TO BE GRADE 8.8.
3. LIGHT MASTS TO BE A MAXIMUM OF 10m ABOVE THE DECK LEVEL.

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT

STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new constuction work are shown. Care must be taken during excavations for road foundations, trenches etc, to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
LIGHTING DETAILS FOR BARRIER

SCALES AS SHOWN | Date: 01/06/2023

Designed: J. HARRIPERSHAD | Checked: P. G. FENTON

Drawn: J. HARRIPERSHAD | Surveyed:

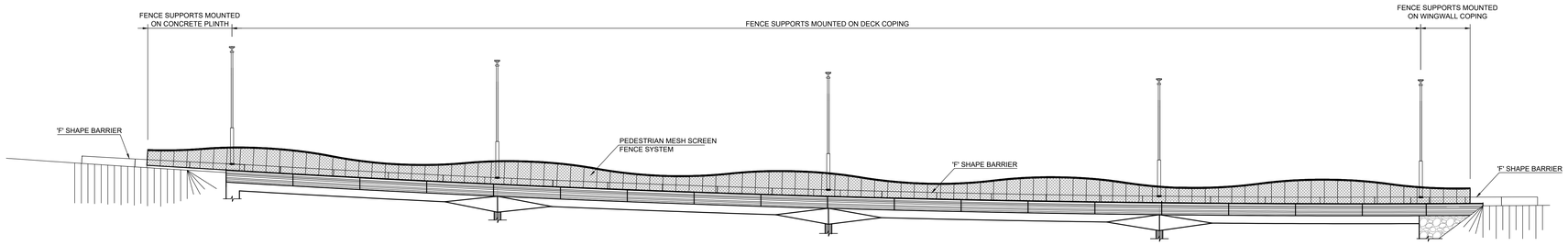
Manager: Structures

Deputy Head : Roads Provision

HEAD : ENGINEERING

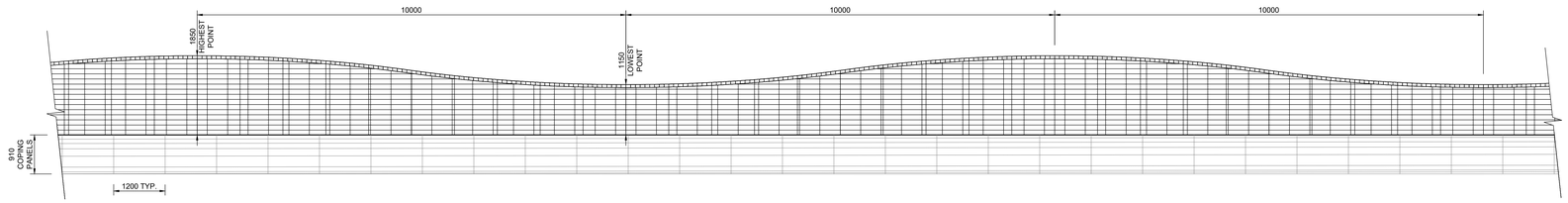
Drawing No. 49217 | Sheet 11 of 12 | Rev. V1

NOTE:
ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



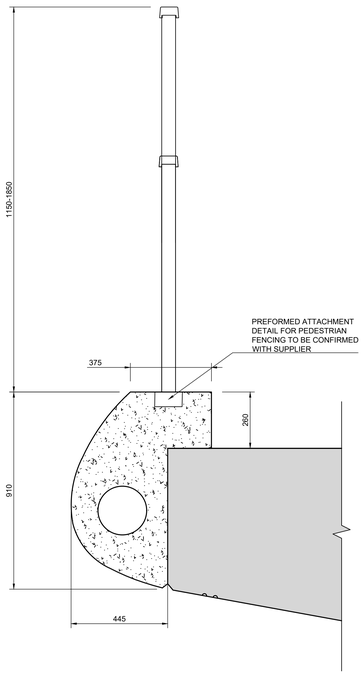
ELEVATION OF PEDESTRIAN SCREEN FENCING ON BRIDGE

SCALE 1:150



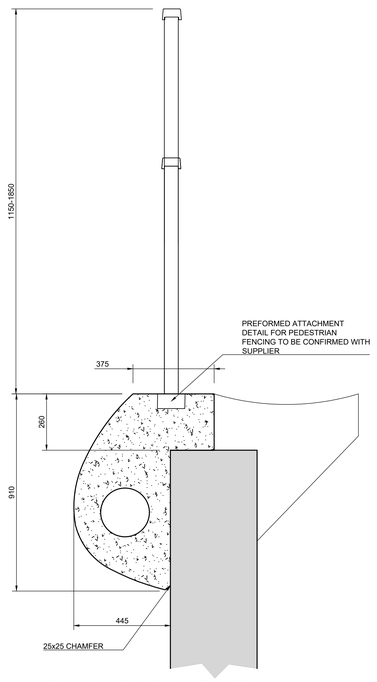
TYPICAL ELEVATION OF PEDESTRIAN SCREEN FENCING

SCALE 1:50



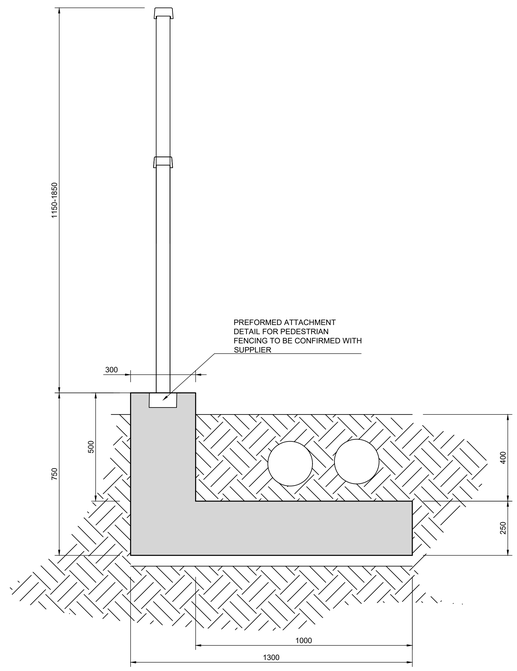
FENCE SUPPORTS MOUNTED ON DECK COPING

SCALE 1 : 10



FENCE SUPPORTS MOUNTED ON WINGWALL COPING

SCALE 1 : 10



FENCE SUPPORTS MOUNTED ON CONCRETE PLINTH

SCALE 1 : 10

MESH SCREEN FENCE AND STRUCTURAL STEEL SUPPORTS

THE CONTRACTOR SHALL PROVIDE A DESIGN FOR A STRUCTURAL STEEL AND WIRE MESH PROTECTION SCREEN.

THE DESIGN, FABRICATION AND INSTALLATION OF ALL WORK SHALL COMPLY WITH SANS 10162-1 AND THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS PART C13.9 AND C13.10.

SHOP DETAILS SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE FABRICATION OF ANY ITEMS.

THE WIRE USED IN THE MESH SCREEN SYSTEM IS TO HAVE A MINIMUM DIAMETER OF 3.96MM (HORIZONTAL AND VERTICAL WIRES). THE MESH PANELS SHALL BE MANUFACTURED FROM HIGH TENSILE GALFAN CLASS A COATED WIRE IN ACCORDANCE WITH THE STANDARDS IN SANS 10244-2:2004 WITH THE MINIMUM TENSILE STRENGTH OF 400MPa. CENTRE-TO-CENTRE WIRE APERTURE SPACING SHALL BE A MAXIMUM OF 76.2MM X 50MM WITH A TOLERANCE IN CONSTRUCTION OF ±2MM. THE TOTAL WIRE DIAMETER (INCLUDING THE PVC COATING SYSTEM) SHALL BE NOT LESS THAN 4.4MM, AND NOT MORE THAN 4.6MM. THE UV RESISTANCE OF THE PVC COATING SYSTEM SHALL COMPLY WITH THE STANDARDS OF TESTING AS DESCRIBED IN ASTM G 53 AND ASTM G 154. THE PVC COATING SHALL COMPLY WITH EN 10245-1. A SAMPLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

THE STEEL DETAILS OF A PROVEN ATTACHMENT SYSTEM FOR FIXING THE MESH TO THE SUPPORTS SHALL BE PROVIDED BY THE CONTRACTOR. THE DETAIL SHALL BE TAMPER-PROOF AND ABLE TO DISTRIBUTE A 0.5KN/M LOAD APPLIED TO THE MESH SURFACE TO THE FRAME SUPPORT POINTS. THE CORROSION PROTECTION SYSTEM FOR THE FIXING WILL BE EQUIVALENT TO THE MESH.

THE FENCING SUPPLIER SHALL BE AN ISO ACCREDITED SUPPLIER AND SHALL MEET THE STANDARDS OF ISO 9001:2000.

ISSUED FOR TENDER
DETAILS SUBJECT TO CHANGE

eTHEKWINI MUNICIPALITY

PROCUREMENT AND INFRASTRUCTURE CLUSTER

ENGINEERING UNIT

ROADS PROVISION DEPARTMENT

STRUCTURES BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

Revision	Date	Description
V1	01/06/2023	FOR TENDER PURPOSES

NOTE: No construction work to commence until land and servitude acquisitions have been completed

Acquisitions completed:

Date Engineer

UNDERGROUND SERVICES CHECKED

SERVICE	DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATER MAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R. CABLES		
E.S.C. CABLES		
OIL PIPE LINE		

NOTE:
Only underground services affected by new construction work are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work proceeds.

Contract No. 1R- 23757

Project Title
FLOOD DAMAGE REMEDIATION - SHALLCROSS/BLUNDELL ROAD AND BRIDGE CONSTRUCTION, WARD 63

Drawing Title
PEDESTRIAN STEEL FENCE DETAILS

SCALES AS SHOWN | Date: 01/06/2023

Designed: J.HARRIPERSHAD | Checked: P. G. FENTON

Drawn: L.SULLAPHEN | Surveyed: -

Manager: Structures P.G. Fenton

Deputy Head : Roads Provision

HEAD : ENGINEERING

Drawing No.	Sheet	of	Rev.
49217	12	12	V1