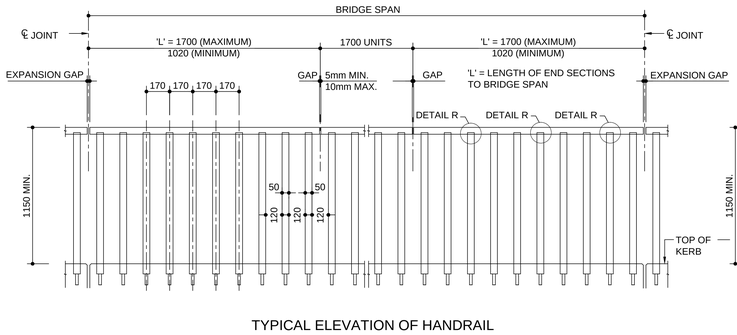
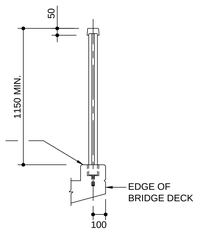


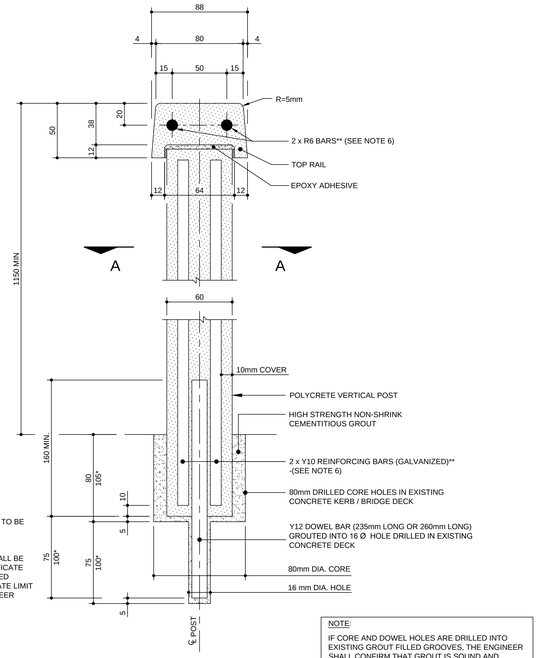
TYPICAL ELEVATION OF HANDRAIL

SCALE 1:15



TYPICAL SECTION
OF HANDRAIL

SCALE 1:15



✶ THESE DIMENSIONS APPLY IF POSTS ARE TO BE EMBEDDED INTO NEW CONCRETE.

✶✶ ANY DEVIATION FROM THE DETAILED REINFORCEMENT TYPE OR DIAMETER SHALL BE ACCOMPANIED BY AN ENGINEERS CERTIFICATE INDICATING SUITABILITY OF THE PROPOSED SYSTEM IN THE SERVICEABILITY & ULTIMATE LIMIT STATE, FOR APPROVAL OF BY THE ENGINEER

NOTE:

IF CORE AND DOWEL HOLES ARE DRILLED INTO EXISTING GROUT FILLED GROOVES, THE ENGINEER SHALL CONFIRM THAT GROUT IS SOUND AND SUITABLE FOR ANCHORING NEW POSTS.

FIXING OF POSTS

SCALE 1:2

ELEVATION OF
HANDRAIL ON GRADE

SCALE 1:15

ELEVATION OF HANDRAIL
ON FOOTBRIDGE STAIRWAY

SCALE 1:15

DETAIL 'K'

SCALE 1:5

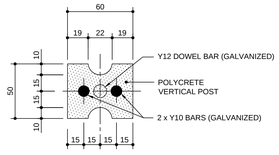
DETAIL R - PROPOSED FIXING OF HANDRAILS

SCALE 1:2

NOTE:

DETAIL R - FIXING OF HANDRAIL TO POSTS AS PER SUPPLIERS DETAIL AND MUST BE APPROVED BY *THE ENGINEER*. **(INCLUDE IN METHOD STATEMENT)**

FIXING OF HANDRAIL TO POSTS TO BE ATTACHED AT 3 POINTS PER 'L' (SEE TYPICAL ELEVATION)



SECTION A-A

SCALE 1:2

NOTES:

1. GENERAL

1.1 THE REQUIRED LENGTH OF THE HANDRAIL, THE LAYOUT AND THE REQUIRED UNIT QUANTITIES AND LENGTHS SHALL BE DETERMINED ON SITE.

1.2 HANDRAIL DESIGNED FOR LOADING ON PEDESTRIAN BARRIERS ACCORDING TO TMH 7, CLASS II (i.e. 4.5 kN/m VERTICALLY & 4.5L kN TRANSVERSE). ALSO TO BE USED FOR 1,5 kN/m LOAD CASE.

2.0 MATERIALS AND FINISHES

THE MATERIAL AND WORK SHALL COMPLY WITH THE RELEVANT CLAUSES OF SERIES 6000 AND 7000 OF THE STANDARD COLTO SPECIFICATIONS & ETHEKWINI MUNICIPALITY SPECIFICATIONS, THE PROJECT SPECIFICATIONS AND SHALL INCLUDE THE FOLLOWING.

2.1 CHARACTERISTIC STRENGTH OF MATERIALS:

2.1.1 REINFORCEMENT:

DESCRIPTION	CHARACTERISTIC STRENGTH (MPa)	YOUNG'S MODULUS (GPa)
MILD STEEL BARS	250	200
HIGH TENSILE STEEL	450	200

2.1.2 CERTIFICATION AS TO USING FLAME RETARDANT POLYCRETE WITH UV STABILISER - POLYCRETE CHARACTERISTIC STRENGTH SHALL BE 75 MPa

2.2 SURFACE FINISHES: - CLASS F3 - STEEL SHUTTER FINISH
CLASS U3 - STEEL TROWEL FINISH

2.3 MINIMUM POLYCRETE COVER : 10mm
2.4 MINIMUM LAP LENGTH : 150mm

3. MANUFACTURE

3.1 THE PRECAST HANDRAIL UNITS SHALL CONFORM TO ALL DETAILS, INCLUDING DIMENSIONAL TOLERANCES SHOWN ON THE DRAWINGS.
3.2 THE SHUTTER RELEASE AGENT MUST NOT STAIN THE FINISHED PRODUCT. IT MUST BE CLEANED WITH A SOLVENT PRIOR TO APPLYING EPOXY ADHESIVE.
3.3 ALL REINFORCEMENT SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

4. TOLERANCES

4.1 MANUFACTURING TOLERANCES:

THE MOULD SHALL BE MANUFACTURED TO TOLERANCES THAT WILL ENSURE THAT UNITS COMPLY WITH THE FOLLOWING TOLERANCES AFTER CASTING:

4.1.1 DIMENSIONS:
SECTIONAL DIMENSIONS : +5mm - 0mm
LENGTHS : +0mm - 5mm
4.1.2 SURFACE IRREGULARITIES AND WARP MEASURED BY MEANS OF A STRAIGHT EDGE:
VERTICAL : 2mm
HORIZONTAL : 3mm OVER THE LENGTH OF UNIT
4.1.3 SQUARENESS OF ENDS:
NO DIMENSION SHALL DEVIATE BY MORE THAN 2mm FROM THE THEORETICAL SQUARE PLANE CORRESPONDING TO THE FURTHEST PROJECTING POLYCRETE.

4.2. ERECTION TOLERANCE:

4.2.1. DIMENSIONS FROM SETTING OUT LINE TO FRONT FACE:
5mm OUTWARD, 0mm INWARD.
4.2.1 STEPS IN POLYCRETE FRONT FACES AND ABUTTING UNITS: 3mm
4.2.2 DEVIATION FROM LINE AND LEVEL MEASURED OVER ANY 5 UNITS: 5mm
4.2.3 POSTS SHALL ALWAYS BE FIXED VERTICAL IN THE CASE OF DECKS ON GRADE AND STEPS IN FOOTBRIDGES. THE ENGINEER TO ADVISE ON VERTICAL ALIGNMENT FOR ALL STRUCTURES ON VERTICAL CURVES.

5. ERECTION OF HANDRAIL UNITS

5.1 GENERAL:

5.1.1 NON-SHRINK CEMENTITIOUS GROUT AND EPOXY GROUT AS APPROVED BY THE ENGINEER.
5.1.2 NO UNIT SHALL BE TRANSPORTED OR ERECTED BEFORE IT HAS ATTAINED A CHARACTERISTIC STRENGTH OF 75MPa.
5.1.3 IN ORDER TO ACHIEVE GOOD ALIGNMENT WITH A UNIFORM APPEARANCE THE FOLLOWING PROCEDURE SHALL BE FOLLOWED FOR EACH INDIVIDUAL BRIDGE:
a) ONLY UNITS OF MATCHING COLOUR AND FINISH FROM ONE MOULD SHALL BE USED IN A PARTICULAR HANDRAIL.
b) LINING UP OF THE HANDRAIL UNITS SHALL BE COMPLETED OVER THE FULL LENGTH OF THE BRIDGE PRIOR TO FINAL GROUTING.
5.1.4 THE PREPARATION OF THE POLYCRETE SURFACES PRIOR TO THE PLACING AND GROUTING IN OF THE UNITS AND THE GROUTING OPERATION SHALL BE AS SPECIFIED IN THE PROJECT SPECIFICATIONS AND SHALL INCLUDE THE RECOMMENDATIONS OF THE GROUT MANUFACTURER.

5.2 ERECTION PROCEDURE:

5.2.1 ERECT TEMPORARY PROTECTION SCREEN.
5.2.2 REMOVE ANY EXISTING POSTS, BRACKETS AND PATCH BOLT HOLES, WHERE APPLICABLE.
5.2.3 DRILL 80 mm DIA. AND 16 mm DIA. HOLES INTO THE EXISTING KERB AS PER DETAIL.
5.2.4 PREPARE CONTACT SURFACES AS IN 5.1.4 ABOVE.
5.2.5 PLACE AND GROUT VERTICAL POSTS OF PRECAST UNITS AND ENSURE ALIGNMENT AS IN 4.2
5.2.6 GROUT AND FIX TO TOP RAIL.
5.2.7 REMOVE TEMPORARY PROTECTION SCREEN AFTER COMPLETION OF WORK.

PROVIDE A DETAILED METHOD STATEMENT FOR PRE AND POST HANDRAILING ERECTION PROCEDURES

6. ALTERNATIVES

ANY DEVIATION FROM THE DETAILED REINFORCEMENT TYPE OR DIAMETER SHALL BE ACCOMPANIED BY AN ENGINEER'S CERTIFICATE INDICATING SUITABILITY OF THE PROPOSED SYSTEM IN THE SERVICEABILITY & ULTIMATE LIMIT STATES, FOR APPROVAL BY *THE ENGINEER*

FOR TENDER PURPOSES ONLY

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	25/02/2014	FOR TENDER PURPOSES ONLY

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 - 29917

Project Title

REPAIR DAMAGED HANDRAIL USING POLYCRETE HANDRAIL SYSTEM TO VARIOUS STRUCTURES WITHIN THE CITY

.

Drawing Title

PEDESTRIAN PARAPET
PRECAST POLYCRETE
LAYOUT

SCALES	AS SHOWN	Date:	25/02/2014
Designed:	J. HARRIPERSHAD	Checked:	P. G. FENTON
Drawn:	J. HARRIPERSHAD	Surveyed:	N/A

Manager: Structures

Deputy Head : Roads Provision

A. PETERS HEAD : ENGINEERING

Drawing No.	Sheet	of	Rev.
47637	01	01	V1