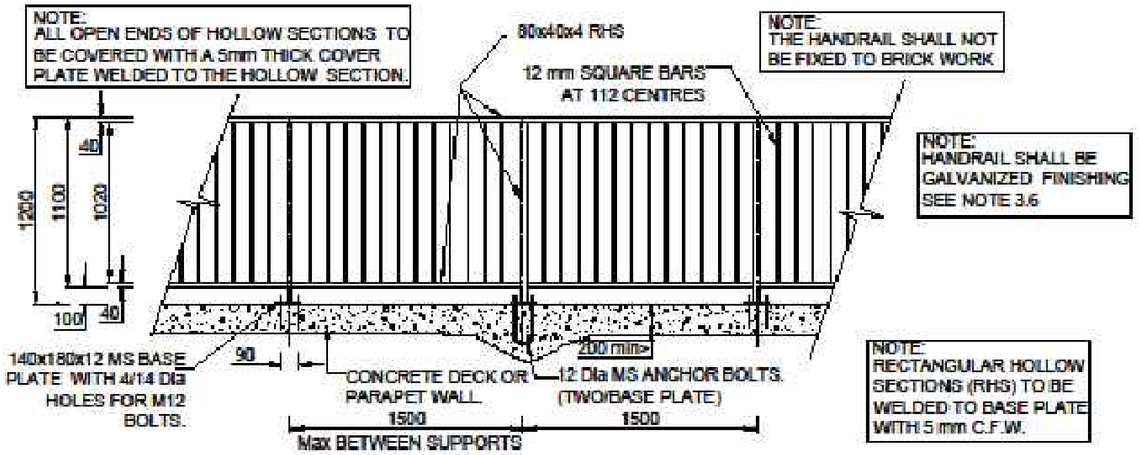
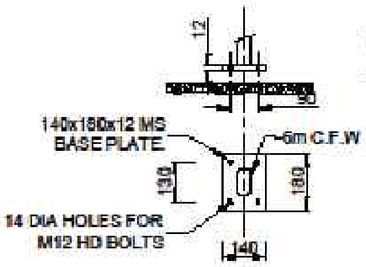


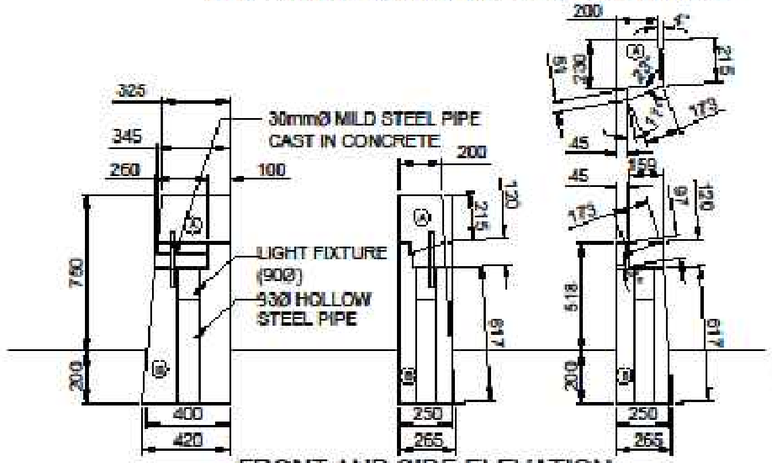
ELEVATION ON HANDRAIL/BALUSTRADE



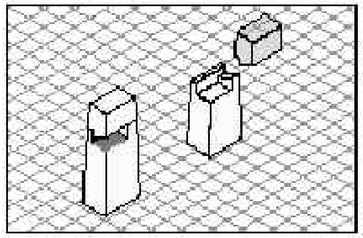
BASE PLATE DETAIL FOR STEEL HANDRAIL

HOLDING DOWN BOLTS.

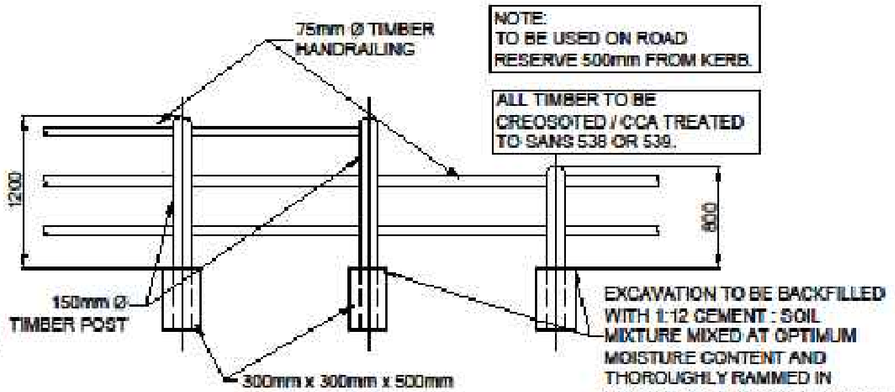
1. THE FOLLOWING SHALL APPLY TO HOLDING DOWN BOLTS:
   - (i) BOLT AND WASHER PLATE MATERIAL SHALL BE GRADE 43 UNLESS OTHERWISE SPECIFIED.
   - (ii) BOLTS SHALL BE KEPT IN POSITION WHILE CONCRETING BY MEANS OF A TEMPLATE.
   - (iii) ROUND WASHERS TO BE USED UNDER NUTS SHALL BE OF SUFFICIENT SIZE TO PROVIDE ADEQUATE BEARING ON BASE PLATE.
   - (iv) BOLT SHANKS SHALL BE DEGREASED BEFORE EMBEDDING IN CONCRETE.
   - (v) HOLDING DOWN BOLTS SHALL BE SUPPLIED COMPLETE WITH NUTS AND WASHERS.
2. NOTE: IF HILTI, RAWLBOLTS OR A SIMILAR TYPE OF BOLT IS USED, EACH BOLT MUST BE ABLE TO RESIST A FORCE IN DIRECT TENSION OF NOT LESS THAN 10kN.



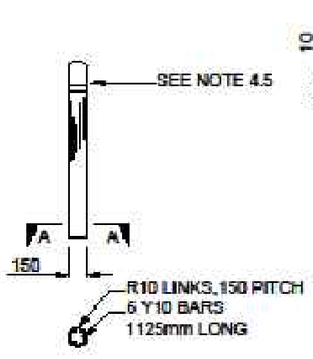
FRONT AND SIDE ELEVATION



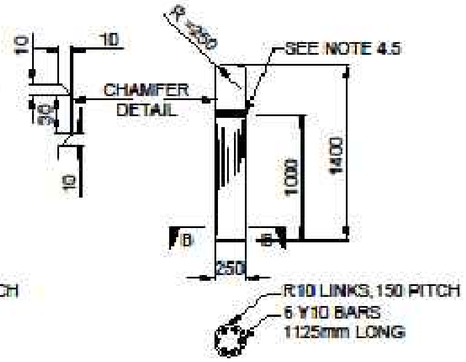
3D VIEW CONCRETE BOLLARD (EXPOSED AGGREGATE FINISH)



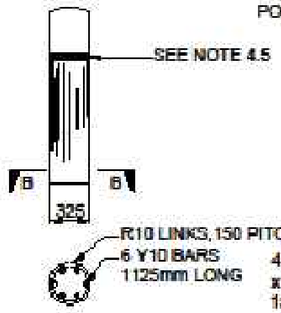
TYPICAL POST AND RAIL TIMBER BALUSTRADE



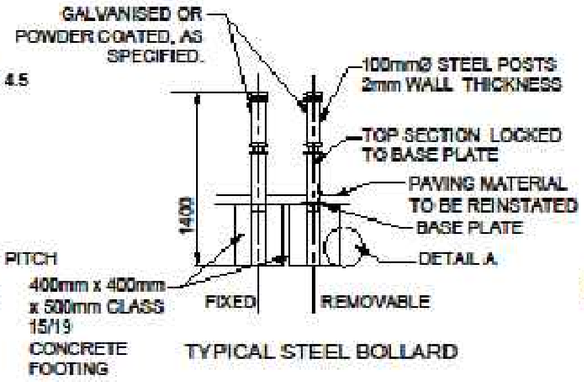
SECTION A-A
150 CONCRETE BOLLARD
(SMOOTH FINISH)



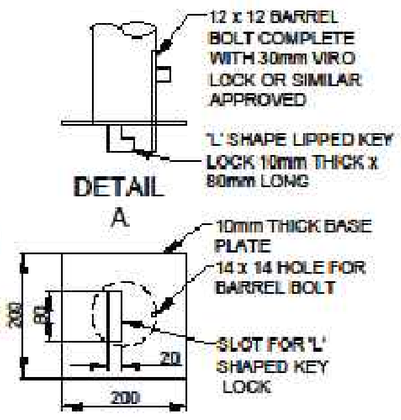
SECTION B-B
250 CONCRETE BOLLARD
(SMOOTH OR EXPOSED AGGREGATE FINISH)



SECTION C-C



TYPICAL STEEL BOLLARD



BASE PLATE DETAIL

LEGEND

NOTES

1. GENERAL:
1.1 ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SANS REQUIREMENTS.
1.2 ALL DIMENSIONS ARE IN MILLIMETERS. (UNLESS OTHERWISE SPECIFIED)
1.3 ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE.
2. REINFORCED CONCRETE:
2.1 REINFORCED CONCRETE WORK SHALL BE IN STRICT ACCORDANCE WITH SECTIONS 702, 703 AND 704 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005.
2.2 CONCRETE COVER SHALL BE AS INDICATED ON THE DRAWINGS OR SPECIFIGATIONS.
3. STRUCTURAL STEELWORK
3.1 STRUCTURAL STEELWORK SHALL BE IN STRICT ACCORDANCE WITH SECTION 809 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005.
3.2 STRUCTURAL STEEL SHALL BE GRADE 300W UNLESS OTHERWISE INDICATED OR SPECIFIED.
3.3 COLD FORMED SECTIONS SHALL BE MADE FROM COMMERCIAL QUALITY STEEL UNLESS OTHERWISE SPECIFIED.
3.4 HOLDING DOWN BOLTS SHALL BE OF THE GRADE SPECIFIED ON THE DRAWINGS.
3.5 PAINTING OF STRUCTURAL STEELWORK SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF SECTION 806 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, 3rd EDITION, 2005.
3.6 ALL STRUCTURAL STEEL, INCLUDING TUBES, SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF SANS 121/ISO1461 AND SANS 32/EN10240 FOR TYPE A1 OR B1 ARTICLES AS APPLICABLE (OR LATEST).
4. CONCRETE BOLLARDS:
4.1 CONCRETE TYPE GLASS 30/19.
4.2. CONCRETE FINISH AS SPECIFIED ON DRAWINGS.
4.3. STEEL REINFORCEMENT TO BE 6Y10 BARS WITH R10 LINKS AT 150mm PITCH.
4.4. 20mm CONCRETE COVER TO REINFORCEMENT.
4.5. UNLESS OTHERWISE SPECIFIED, REFLECTIVE TAPE MUST BE FIXED IN THE RECESS TO ENHANCE VISIBILITY.
4.6. EXPOSED CONCRETE BACKFILL AROUND BOLLARD SPACE TO BE DETERMINED BY PAVING PROFILE.

FOR TENDER PURPOSES

JRA-SD-RD-060

DRG. No.	DRAWING TITLE
REFERENCE DRAWINGS	

DRG. No.	DRAWING TITLE
REFERENCE DRAWINGS	

REV	DESCRIPTION	DATE	BY	CHKD
B	FOR TENDER PURPOSES	12 / 2019	AS	JG
A	FOR APPROVAL	05 / 2019	AS	JG
REVISIONS				

DESIGNED	A . SAMPSON
DRAWN	A. SAMPSON
CHECKED	J. GELDENHUYS

APPROVED :
PROJ. PRINCIPAL: _____
SIGNATURE: _____
DATE: _____

Royal HaskoningDHV
Enhancing Society Together
PO Box 25302
Monument Park Ext 2
0105
Tel: (012) 367 5800
Fax: (012) 367 5890
Email: pretoria@rhdhv.com

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE
Technical Services
P.O. Box 111, Polokwane, 0700
Civic Centre, Cnr Landros Mare & Bodenstein Streets
Polokwane, 0699
South Africa
Tel: 015 290 2095
Cell: 083 382 2434
Email: pikm@polokwane.gov.za

PROJECT/DRAWING TITLE

POLOKWANE NON-MOTORISED TRANSPORT

HANDRAILS-BALUSTRADE AND BOLLARDS

VERMIKULIET STREET, STAAL STREET, RAILWAY STREET AND HOSPITAAL STREET

SCALE	SHEET
1 : 10	1 OF 1
CONTRACT No.	PROJECT No.
PM32/2019	MD4175
DRAWING No.	REV
MD4175 / POL / TYP / 24	B

DRAWING SIZE : A0