1. GENERAL:

1.1 THIS DRAWING CONTAINS ONLY GENERAL NOTES, SPECIFIC NOTES PERTAINING TO PARTICULAR ELEMENTS OF WORK ARE SHOWN ON RELEVANT DRAWINGS.
1.2 NO DIMENSIONS ARE TO BE OBTAINED FROM SCALING DRAWINGS.
1.3 UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETRES.
1.4 ABBREVIATIONS:

- N.T.S NOT TO SCALE
- S.O.L SETTING OUT LINE
- C.J CONSTRUCTION JOINT
- M.J MOVEMENT JOINT
- I.D INTERNAL DIAMETER
- S.O.P SETTING OUT POINT
- N.G.L NATURAL GROUND LEVEL
- F.R.L FINISHED ROAD LEVEL
- M.S.L MEAN SEA LEVEL

1.5 ALL ROAD CHAINAGES ARE IN METERS
1.6 LEVELS ARE MEASURED IN METERS ABOVE MEAN SEA LEVEL (MSL)
1.7 ALL CO-ORDINATES ARE BASED ON WGS 84
1.8 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH BOTH THE STANDARD AND PROJECT SPECIFICATIONS
1.9 IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT A DETAIL SURVEY OF THE EXISTING BALUSTRADES. THE CONTRACTOR WOULD NEED TO ACCURATELY SURVEY AND MEASURE THE LENGTHS OF EACH AND EVERY TOP RAIL TO FIT AND SUIT THE EXISTING JOINTS ON SITE. ALL DIMENSIONS TO BE CONFIRMED PRIOR TO MANUFACTURING ANY PRECAST TOP RAILS.

2. TRAFFIC ACCOMMODATION:

THE TYPE AND DISPOSITION OF ALL ITEMS OF SIGNAGE ARE TO BE IN ACCORDANCE WITH THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL VOL 2 Ch 13 : ROADWORKS SIGNAGE (JUNE 1999).
IT IS THE CONTRACTOR'S RESPONSIBILITY TO DESIGN AND COMPILE TRAFFIC ACCOMMODATION LAYOUTS AND ISSUE THEM TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF THE ACCOMMODATION.

THE TYPE AND DISPOSITION OF ALL SIGNS, INDICATORS AND MARKINGS ARE TO BE TO THE SATISFACTION OF THE TRAFFIC MANAGER. NOTE THAT 3 DAYS ADVANCE WARNING MUST BE GIVEN TO THE TRAFFIC DEPARTMENT PRIOR TO THE COMMENCEMENT OF WORK.

THE DESIGN AND CONSTRUCTION OF DELINEATORS IS TO BE TO THE SATISFACTION OF THE ENGINEER.

RETROFLECTIVE SIGNS ARE TO BE USED THROUGHOUT.

REFER TO ROAD TRAFFIC SIGNS MANUAL (3rd EDITION) VOL4: TRAFFIC SIGN DESIGN (NOV 1997) FOR LETTERING DETAILS OF TRAFFIC INFORMATION SIGNS.

THE CLOSING OR OPENING OF A LANE MAY NOT TAKE PLACE DURING THE FOLLOWING HOURS:

(A) PEAK HOURS
MONDAY TO FRIDAY 06:00-09:30 MORNING PEAK
15:00-19:00 EVENING PEAK
ANY WEEKDAYS BEFORE SCHOOL OR PUBLIC 12:00-19:00
HOLIDAYS OR POTENTIAL LONG WEEKENDS

(B) NIGHT TIME HOURS
ALL WEEK 20:00-04:00

ALL INAPPLICABLE SIGNS ARE TO BE COVERED OR OTHERWISE KEPT INVISIBLE TO TRAFFIC.

THE PLACING OF TRAFFIC CONES IS TO PROCEED FROM THE UPSTREAM END WHEN CLOSING LANES AND THE REMOVAL FROM THE DOWNSTREAM END WHEN OPENING UP.

APPROVED HIGH VISIBILITY CLOTHING IS TO BE WORN BY ALL PERSONS WORKING IN THE ROADWAY.

EVERY CONSTRUCTION VEHICLE IS TO BE EQUIPPED WITH AN AMBER FLASHING LIGHT, WHICH MUST BE IN OPERATION AT ALL TIMES WHILE THE VEHICLE IS ON SITE.

NB: THE WEST-EAST AND THE EAST-WEST TRAFFIC ACCOMMODATION SHALL NOT BE DONE SIMULTANEOUSLY, AND THE SIGNS INVENTORY HAS BEEN BASED ON THIS REQUIREMENT.

3. MATERIAL AND FINISHES:

THE MATERIAL AND WORK SHALL COMPLY WITH THE RELEVANT CLAUSES OF SERIES 6000 OF THE STANDARD SPECIFICATIONS, THE PROJECT SPECIFICATIONS AND SHALL INCLUDE THE FOLLOWING.

3.1 CHARACTERISTIC STRENGTH OF MATERIALS:
3.1.1 REINFORCEMENT : TO BE IN ACCORDANCE WITH SABS 920 (2011)

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

3.1.2 CONCRETE:

DESCRIPTION	CHARATERISTIC STRENGTH (MPa)	CONCRETE CLASS (MPa/mm)	YOUNG'S MODULUS (GPa)
IN-SITU CONCRETE	W40	40/20	28
PC HANDRAIL UNIT	W40	40/20	28

CLASS W CONCRETE SHALL HAVE MAXIMUM WATER: BINDER RATIO OF 0.45, MINIMUM TOTAL BINDER CONTENT OF 360kg, OF WHICH 20-30% SHALL CONSIST OF PULVERISED FLY ASH (DURAPOZZ) AND THE REMAINING PORTION OF CEM 1 THE ADDITION OF SUPERPLASTICISER ADMIXTURES IS RECOMMENDED. ALL CONCRETE ON THE PROJECT SHALL BE NON- REACTIVE TO ASR (ALKALI SILICA REACTION), ALL THE REQUIRED TEST SHALL BE DONE AS OUTLINED IN COLTO AND THE PROJECT SPECIFICATIONS, DURING THE CONCRETE MIX APPROVAL PHASE. IT REMAINS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE CONCRETE MIX DESIGN IN WITHIN THE PROJECT SPECIFICATION. ONLY ONCE THE ENGINEER APPROVES THE MIX DESIGN CAN THE CONTRACTOR PROCEED WITH CASTING ANY CONCRETE.

3.2 SURFACE FINISHES: CLASS F3-STEEL SHUTTER FINISH

3.3 MINIMUM CONCRETE COVER: 40mm, UNLESS OTHERWISE NOTED

3.4 PROPRIETARY ANCHOR INJECTION MORTAR AND CEMENTITIOUS CAULKING MATERIALS SHALL COMPLY WITH THE SPECIFICATIONS GIVEN.
3.5 ALL EXPOSED SHARP CORNERS EXCEPT VERTICAL ENDS OF HANDRAIL SHALL BE CHAMFERED 20mm X 20mm.
3.6 ALL REINFORCEMENT AND ANCHOR BARS TO BE HOT-DIP GALVANIZED IN ACCORDANCE WITH SANS 121/ISO 1461 TO 85 MICRON THICKNESS (MINIMUM).

4. PRECAST UNITS:

4.1 MANUFACTURE:

4.1.1 THE FOLLOWING IDENTIFICATION MARKING SHALL APPEAR ON THE END OF EACH UNIT:
a) THE MOULD NUMBER AND TYPE OF UNIT
b) THE DATE OF CASTING
4.1.2 CONCRETE CURING ALTERNATIVE METHODS:
a) STEAM CURING
ALL HANDRAIL UNITS SHALL BE STEAM CURED WITH SATURATED STEAM USING A MAXIMUM STEAM TEMPERATURE OF 55 °C. ON REMOVAL OF THE UNIT FROM THE MOULD AND COOLING TO AMBIENT TEMPERATURE, UNITS SHALL BE SPRAYED WITH WATER AND WRAPPED WITH POLYTHENE "CLING WRAP" UNTIL DELIVERY TO SITE.
b) WATER CURING
ALL HANDRAIL UNITS SHALL, POST STRIPPING FROM MOULDS, BE STORED IN WATER BATH FOR 5 CONTINUOUS DAYS AND IMMEDIATELY ON REMOVAL BE WRAPPED WITH POLYTHENE "CLING WRAP" UNTIL DELIVERY ON SITE.

4.2 TOLERANCES:

THE SHUTTER SHALL BE MANUFACTURED TO TOLERANCES THAT WILL ENSURE THAT UNITS AFTER CASTING COMPLY WITH THE FOLLOWING TOLERANCES:
4.2.1 DIMENSIONS:
TRANSVERSAL: 3mm-0mm
LONGITUDINAL : 0mm-5mm
4.2.2 SURFACE IRREGULARITIES AND WARP MEASURED BY MEANS OF A STRAIGHT EDGE:
TRANSVERSAL: +-2mm OVER WIDTH OF RAIL
LONGITUDINAL : +-3mm OVER LENGTH OF UNIT
4.2.3 SQUARENESS OF ENDS:
NO DIMENSIONS SHALL DEVIATE BY MORE THAN 3mm FROM THE THEORETICAL SQUARE PLANE CORRESPONDING TO THE FURTHEST PROJECTING CONCRETE.
4.2.4 TOLERANCES APPLICABLE TO ERECTION OF UNITS:
4.2.4.1 DIMENSION FROM SETTING OUT LINE TO INSIDE FRONT FACES: +10mm-0mm
4.2.4.2 STEPS IN CONCRETE FRONT FACES AT ABUTTING UNITS: 2mm
4.2.4.3 DEVIATION FROM VERTICAL AND HORIZONTAL LINE AND LEVEL MEASURED OVER ANY 5 UNITS: 5mm

4.3 ERECTION OF PARAPET UNITS:

4.3.1 GENERAL:
4.3.1.1 SHRINKAGE COMPENSATED CEMENTITIOUS GROUT: FIBRE REINFORCED POLYMER MODIFIED CAULKING MIX AND INJECTION MORTAR AS APPROVED BY THE ENGINEER.
4.3.1.2 NO UNIT SHALL BE TRANSPORTED OR ERECTED BEFORE IT HAS ATTAINED A CHARACTERISTIC CONCRETE STRENGTH OF 30MPa.
4.3.1.3 IN ORDER TO ACHIEVE GOOD ALIGNMENT WITH A UNIFORM APPEARANCE THE FOLLOWING PROCEDURE IS REQUIRED FOR EACH INDIVIDUAL BRIDGE:
a) ONLY UNITS OF MATCHING COLOUR AND FINISH FROM ONE MOULD SHALL BE USED IN A PARTICULAR PARAPET.
b) LINING UP OF THE PARAPET UNITS SHALL BE COMPLETED OVER AN EXTENSIVE LENGTH OF THE BRIDGE PRIOR TO GROUTING.
4.3.1.4 THE PREPARATION OF THE CONCRETE SURFACES PRIOR TO THE PLACING AND GROUTING IN OF THE UNITS AND THE GROUTING OPERATION SHALL BE AS SPECIFIED IN CLAUSE 6408(b) OF THE STANDARD SPECIFICATIONS AND SHALL INCLUDE PRESATURATION OF SUBSTRUCTURE PRIOR TO GROUTING AND COMPLIANCE WITH THE RECOMMENDATIONS OF THE GROUT MANUFACTURER.

POSSIBLE ERECTION PROCEDURE:

1. REMOVE OR CUT RECESS OF EXISTING ALUMINIUM HANDRAILS.
2. DRILL 24 ø HOLES INTO EXISTING PARAPET AS PER DETAIL.
3. PREPARE CONTACT SURFACES AS IN 5.1.4 OF NOTES.
4. PLACE AND GROUT Y20 HOT DIP GALVANISED DOWEL BARS.
5. PLACE PRECAST UNITS & ENSURE ALIGNMENT AS IN 4.4 OF NOTES.
6. GROUT PRIMARY HOLES IN PRECAST UNITS AND GAP BETWEEN PRECAST UNITS AND EXISTING PARAPETS (STAGE1) WITH CEMENTITIOUS POURABLE GROUT.
7. CAULK SECONDARY LAYER WITH FIBRE REINFORCED POLYMER-MODIFIED MORTAR.

5. STEELWORK

5.1. FABRICATION, ERECTION AND CORROSION PROTECTION OF STEELWORK TO BE IN ACCORDANCE WITH THE PROJECT SPECIFICATION.
5.2. THE FOLLOWING GRADES OF STEELWORK SHALL BE USED

GRADE	STRUCTURAL MEMBER
S355JR	273x12mm CHS STRUT
S355JR	STRUT CAST IN BASE PLATE 1 AND 2 60 X 60 X 170 BLOCK
STAINLESS STEEL GRADE 1.4401	PIN

5.3. UNLESS NOTED OTHERWISE, HIGH STRENGTH FRICTION GRIP BOLTS, NUTS AND WASHERS SHALL BE CLASS 8.8 TO SANS 135, SANS 136, SANS 1143 AND SANS 1282.
5.4. WELDING TO BE IN ACCORDANCE WITH BS 5135 AND THE PROJECT SPECIFICATION. DIMENSIONS OF FILLET WELD ARE LEG LENGTHS.
5.5. WELDS SHALL BE AIRTIGHT AND THE STRUT SHALL BE HERMETICALLY SEALED. STEELWORK TO BE COMPLETELY DRY BEFORE WELDING COMMENCES.
5.6. ALL STEELWORK (EXCLUDING STAINLESS STEEL) SHALL RECEIVE A DUPLEX COATING SYSTEM (HOT DIP GALVANIZING PLUS PAINT).
5.7. ALL STEEL TO BE HOT DIP GALVANISED AS PER ISO 12944 PARTS 4 AND 5.
5.8. ALL STEELWORK TO BE HOT DIP GALVANIZED TO SANS 121 PRIOR TO PAINTING.
5.9. ALL PAINTING WORKS SHALL TAKE PLACE AS SOON AS POSSIBLE AFTER HOT DIP GALVANIZING HAS BEEN COMPLETED AND PRIOR TO TRANSPORT TO SITE. ALTERNATIVE PROPOSALS BY THE CONTRACTOR SHOULD BE SUBMITTED FOR THE APPROVAL OF THE ENGINEER.
5.10. DAMAGE TO GALVANISED SECTION DURING FABRICATION, TRANSPORTATION AND/OR ERECTION SHALL BE REPAIRED BY ABRADING WITH 80GRIT SAND PAPER AND PAINTING WITH AN APPROVED TWIN PACK ZINC RICH EPOXY PAINT
5.11. WHERE A MACHINE SURFACE IS SPECIFIED, IT SHALL BE MACHINED WITHIN A DEVIATION OF 0.25mm AND ZINC SPRAYED TO A THICKNESS OF 65um.

6. PREPARATION AND PAINTING OF HOT DIP GALVANIZED STEEL

6.1. SURFACE PREPARATION SHALL BE DONE BY SWEEP BLASTING FOR THIS PROJECT. CHEMICAL CLEANING SHALL ONLY BE DONE ON WRITTEN APPROVAL OF THE ENGINEER. PREPARATION SHALL BE CONDUCTED IN ACCORDANCE WITH HDGASA 01-1990 – CODE OF PRACTICE FOR SURFACE PREPARATION AND APPLICATION OF ORGANIC COATINGS
6.2. WARNING: SWEEP BLASTING SHALL BE UNDERTAKEN STRICKLY IN ACCORDANCE WITH THE PROCEDURES AS SPECIFIED IN THE CODE OF PRACTICE, WITH PARTICULAR REFERENCE TO THE SELECTION OF APPROPRIATE ABRASIVE, BLASTING NOZZLE PRESSURE AND ANGLE OF DEFLECTION OF THE BLASTING MEDIA. FAILURE TO DO SO WILL RESULT IN DAMAGE OF THE HOT DIP GALVANIZED COATING.
6.3. A HOLD OR WITNESS POINT SHALL BE ESTABLISHED AFTER SWEEP BLASTING HAS TAKEN PLACE BEFORE PAINTING IS COMMENCED WHERE THE CONTRACTOR TO GIVE THE ENGINEER 48 HOURS NOTICE FOR INSPECTION.
6.4. THE PAINT SYSTEM SHOULD CONSIST OF THE FOLLOWING COATINGS:
6.4.1. 1X COAT OF ZINC RICH EPOXY PRIMER (DFT = 50µm)
6.4.2. 2X COATS OF EPOXY MICACEOUS IRON OXIDE (DFT = 2x75µm)
6.4.3. 1X COAT OF ACRYLIC POLYURETHANE FINISH (DFT = 2x40µm).

7. QUALITY CONTROL PROCEDURES

7.1. QUALITY CONTROL IN DUPLEX COATING SHOULD BE CARRIED OUT AS FOLLOWS; BEFORE COMMENCING WORK, TO CHECK REMOVAL OF SHARP EDGES, WELD SPATTER, SLIVERS AND SIMILAR MECHANICAL INTERFERENCE WITH THE APPLICATION OF ORGANIC COATINGS. AFTER CLEANING, WHEN THE SURFACE MUST BE TESTED TO ENSURE THAT IT IS "WATER-BREAK" FREE.
7.2. DURING AND AFTER EACH COAT OF PAINT TO ENSURE THAT THE PAINT TO ENSURE THAT THE PAINT IS UNIFORMLY APPLIED TO THE CORRECT WET FILM OR DRY FILM THICKNESS AS APPROPRIATE. GLOSS, UNIFORMITY AND ABSENCE OF CRATERS, FISH EYES, BLISTERS, RUNS, SGAS AND OTHER VISIBLE DEFECTS.
7.3. TOTAL COATING DRY FILM THICKNESS, DETERMINED BY AN ELECTROMAGNETIC GAUGE CALIBRATED ON A SIMILAR HOT DIP GALVANIZED BUT UNPAINTED SURFACE. ALTERNATIVELY, THE GAUGE MAY BE CALIBRATED ON SMOOTH POLISHED STEEL PLATE, THEN THE THICKNESS OF THE HOT DIP GALVANIZED (WITHOUT PAINT) CAN BE MEASURED. THE MEAN OF AT LEAST 10 HOT DIP GALVANIZED THICKNESS READINGS IS THEN DEDUCTED FROM TOTAL LAYER THICKNESS OVER STEEL TO OBTAIN THE AVERAGE THICKNESS OF PAINT

DRAWING NUMBER	DRAWING TITLE
S5023-5001	GENERAL NOTES & DRAWING LIST
S5023-5002	TYPICAL GALVANIZED STEEL RAILING
S5023-5003	TYPICAL GUARDRAIL TO END BLOCK CONNECTION
S5023-5004	TYPICAL GABION BOX DETAIL
S5023-5005	TYPICAL CULVERT HEADWALL DETAIL
S5023-5006	TYPICAL STRUCTURAL NUMBER DETAILS
S5023-5007	TYPICAL PRECAST BALUSTRADES
S5023-5008	TYPICAL REPAIR DETAILS
S5023-5009	DETAILS OF CLASS 1 IN-SITU BRIDGE BALUSTRADE
S5023-5010	CONCRETE PARAPET DETAILS 90mm TYPICAL DESIGN
S5023-5011	ACCOMMODATION OF TRAFFIC: SINGLE CARRIAGEWAY ROAD STOP/GO CONTROL
S5023-5012	ACCOMMODATION OF TRAFFIC: SINGLE CARRIAGEWAY ROAD PARTIAL ROAD CLOSURE TWO WAY TRAFFIC
S5023-5013	TRAFFIC SIGNAL CONTROL AT NIGHT FOR HALF WIDTH CONSTRUCTION
S5023-5014	FOUR LANE DUAL CARRIAGEWAY – ONE LANE CLOSED STANDARD
S5023-5015	ACCOMMODATION OF TRAFFIC: FOUR LANE DUAL CARRIAGEWAY- SHOULDER CLOSED STANDARD
S5023-5016	TYPICAL ROAD SIGN LAYOUT FOR UPGRADING A T- INTERSECTION
S5023-5017	ACCOMMODATION OF TRAFFIC: ROAD SIGN LAYOUT FOR MATERIAL INVESTIGATION WORK
S5023-5018	ACCOMMODATION OF TRAFFIC: MOBILE WORK ON ROAD CENTRELINE
S5023-5019	ACCOMMODATION OF TRAFFIC: GRAVEL ROAD (LOW VOLUME <100/DAY) ONE LANE CLOSED

FOR TENDER

REVISIONS

NO	DATE	DESCRIPTION	EXAM	APP
			S.M	
00	AUGUST 2025	ISSUED FOR TENDER	S.M	

DESIGNED BY		
DRAWN BY	M. VILJOEN	JAN 2024
CHECKED BY	W.KRIEL	JAN 2024
APPROVED BY	S MOHAMED	JAN 2024
CORR FILE	CORR FILE	EST. No

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ROADS INFRASTRUCTURE MANAGEMENT

CONTRACT NO. 6Q/2025/26
STRUCTURES TERM TENDER

GENERAL NOTES

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD
Making progress possible. Together.

A0	SCALE	AS SHOWN
CoCT PROJECT NO.		S5023
CoCT DRAWING NO.		5001
REVISIONS NO.		00