



THE REPUBLIC OF UGANDA

MINISTRY OF WORKS AND TRANSPORT

ROAD DESIGN MANUAL

Volume VI: Urban Roads
Part 2: Standard Drawings

FINAL

JULY 2023

Ministry Of Works & Transport
To provide Reliable, Safe works, Transport
Infrastructure & Services

LIST OF STANDARD DRAWINGS

DRAWING Ref.	DRAWING TITLE
GENERAL	
G-1	DRAWING CHECKLIST AND STANDARDS
G-2	EXAMPLE DRAWING TITLEBLOCK
TYPICAL CROSS SECTIONS	
CS 1A	1A (1 TO 3)- TRUNK ROUTES (WITH BRT LANES)
CS 1B	1B (1 TO 3) - TRUNK ROUTES (WITH PT LANES)
CS 2A	2A (1 TO 3) - MAJOR ARTERIAL (WITH MEDIAN BRT TRUNK LANES)
CS 2B	2B (1 TO 2) - MAJOR ARTERIAL (WITH KERBSIDE PT LANES)
CS 3A	3A (1 TO 3) - MINOR ARTERIAL (WITH BRT FEEDER ROUTE)
CS 3B	3B (1 TO 3) - MINOR ARTERIAL (WITH PT ROUTE)
CS 4A-1	4A (1 TO 2) - COLLECTOR (COMMERCIAL & MIXED-USE, PARKING BOTH SIDES) - PAVED
CS 4A-2	4A (1 TO 3) - COLLECTOR (COMMERCIAL & MIXED-USE, PARKING BOTH SIDES) - GRAVEL
CS 4B-1	4B (1 TO 2) - COLLECTOR (RESIDENTIAL, PARKING BOTH SIDES) - PAVED
CS 4B-2	4B (1 TO 3) - COLLECTOR (RESIDENTIAL, PARKING BOTH SIDES) - GRAVEL
CS 4C	4C (1 TO 2) - COLLECTOR (INDUSTRIAL, PARKING BOTH SIDES) - PAVED
CS 5A-1	5A (1 TO 2) - ACCESS (COMMERCIAL, MIXED-USE, RESIDENTIAL - PARKING BOTH SIDES) - PAVED
CS 5A-2	5A (1 TO 2) - ACCESS (COMMERCIAL, MIXED-USE, RESIDENTIAL - PARKING 1 SIDE) - GRAVEL
CS 5B	5B (1 TO 2) - ACCESS (INDUSTRIAL - NO PARKING) - PAVED
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CS 7	7 - ACCESS WAY: NMT ONLY - PAVED & GRAVEL/EARTH
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CUL-2A	SINGLE CONCRETE PIPE CULVERT DETAILS
CUL-2B	DOUBLECONCRETE PIPE CULVERT DETAILS
CUL-3	GENERAL CULVERT CROSSING DETAILS
CUL-4	SINGLE METAL PIPE CULVERT CROSSING
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CUL-6	BOX CULVERT TYPICAL DRAINAGE DETAILS
CUL-7	TYPICAL CULVERT HEADWALL DETAILS
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CUL-10	DOUBLE RCC CULVERT DETAILS
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GU-2	GULLY FRAMES AND POT DETAILS
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CP-2	CATCH PITS AND DROP INLETS DETAILS
CP-3	CATCH PITS AND KERB INLET DETAILS
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D-2	INVERT BLOCK POSITIONING AND DETAILS
D-3	OPEN SIDE DRAINS
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SD-2	DRAINAGE CHANNEL PEDESTRIAN CROSSINGS 2-3m
SD-3	DRAINAGE CHANNEL VEHICULAR CROSSINGS 0-2m

DRAWING Ref.	DRAWING TITLE
ROAD DRAINAGE	
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SWD-1	STORMWATER DRAINS
SWD-2	SLEEVE ARRANGEMENTS FOR DEEP AND SHALLOW CUTTINGS
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MH-02	MANHOLES: SHALLOW & DEEP
MH-03	MANHOLES: SHALLOW & DEEP
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GR-06	TYPICAL GUARDRAIL END TREATMENT - BUILT INTO GROUND
GR-07	TYPICAL GUARDRAIL ON HIGH FILLS
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SH-01	TYPICAL SPEED HUMPS
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VT-02	TYPICAL VEHICLE TURNING FACILITIES
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SL-1	TYPICAL SERVICE LAYOUT FOR 15m & 20m ROAD RESERVES
SL-2	TYPICAL SERVICE LAYOUT FOR 28m & 40m ROAD RESERVES



THE REPUBLIC OF UGANDA
MINISTRY OF WORKS AND TRANSPORT

Approved by:
ENGINEER-IN-CHIEF

Issue Date:
JULY 2023

PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
CONTENTS

DRAWING TITLE
LIST OF STANDARD DRAWINGS

STATUS
FINAL

DRAWING CHECKLIST & STANDARDS

SN	DESIGN ELEMENT / CRITERIA / DESCRIPTION	INCLUDED IN DESIGN	REPORT REFERENCE	REVIEWED	COMMENT / REFERENCE (IF ANY)
1.1	Book of Drawings				
	Location Map - Scale 1: 50 000				
	List of Survey controls (Primary & Secondary Benchmarks)				
	Setting Out data (centreline)				
	Stakeout Data				
	Typical Cross-sections				
	Plan and Profile drawings				
	Detailed Cross-sections – preferably at 20m intervals and alignment geometry points				
	Drainage Details <ul style="list-style-type: none">- Side drains and wing walls- Pipe Culvert Layouts- Culvert schedule				
	Standard Ancillary drawings: <ul style="list-style-type: none">- Road Signs- Humps / Rumble Strips- Road Markings- Junction layout details				
a)	Details to be included on Plan layout				
i)	Plan at original scale of 1:1000 (full size drawing)				
ii)	Graphic bar scale for drawing reduction				
iii)	North Point and Gridlines with coordinates				
iv)	Position and coordinates of Primary Setting out Beacons				
v)	Position and coordinates of Secondary Setting out Beacons / Benchmarks				
vi)	Right of Way Markers				
vii)	Contours at 1.0m intervals (05m intervals in flat lands)				
viii)	Proposed centreline with Chainage numbers at 100m centres along centreline				
ix)	Chainage mark at 20m intervals along proposed centreline				
x)	Existing road edge outline and junctions				
xi)	Proposed road edge outline and junctions				
xii)	Note guiding user to drawings showing existing and diverted Utility services				
xiii)	Markers for extent of cut and fill (tadpoles)				
xiv)	Plan shape of all buildings within the ROW and any likely to be affected by proposals				
xv)	Data boxes containing curve data for each curve including Curve number, chainage, radius, length, deflection angle, coordinates of PI, Transition lengths in and out				
xvi)	Names of Village/Settlements along route				
xvii)	Water courses crossing and adjacent to alignment if any				

SN	DESIGN ELEMENT / CRITERIA / DESCRIPTION	INCLUDED IN DESIGN	REPORT REFERENCE	REVIEWED	COMMENT / REFERENCE (IF ANY)
b)	Details to be included on Profile				
i)	Line illustrating existing ground level along proposed centreline				
ii)	Line illustrating proposed finished road level along proposed centreline				
iii)	Background grid lines for levels and chainages with indicative levels at LHS				
iv)	Illustrative positions and levels of all cross culverts				
v)	Data boxes with all type, size and level details for each culvert				
vi)	Illustrative positions and levels and all bridges				
vii)	Data boxes with names and details of each bridge and reference to bridge drawings				
c)	Details to be contained in Data boxes below Profile				
i)	Chainage with existing ground levels on centreline at 20m intervals (min)				
ii)	Proposed finished road levels on centreline at 20m intervals				
iii)	Level difference on centreline through proposed construction works				
iv)	Lengths of all horizontal transition curves (where relevant)				
v)	Lengths and radii of all circular curves including chainages of start and finish				
vi)	Illustrative details of straight gradients and details of points of vertical intersection				
vii)	Details of start points, finish points and lengths of vertical, K values				
viii)	Details of proposed superelevation percentage including run off lengths				
vix)	Indicator marker posts and plates for culverts and bridges				
d)	Additional Options (alternatively on separate schedules or drawings)				
i)	Roadside drainage channel details including access culverts				
ii)	Road widening on curves and embankments				



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CATEGORY
GENERAL

DRAWING TITLE
DRAWING CHECKLIST & STANDARDS

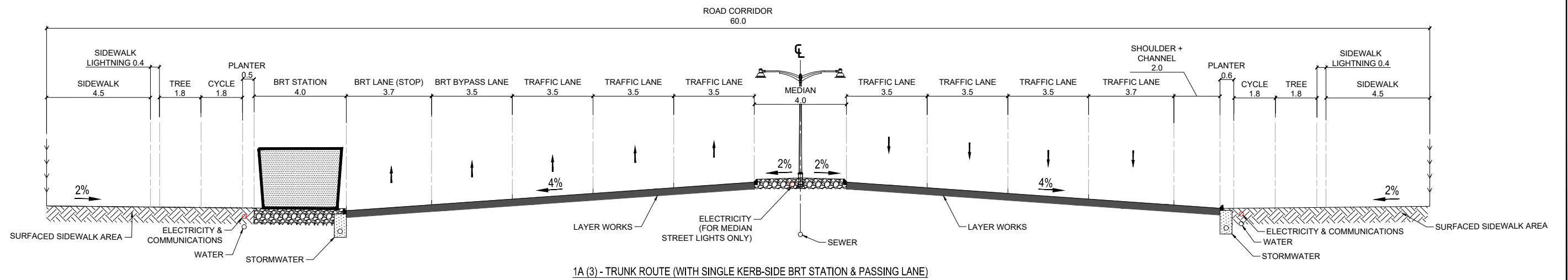
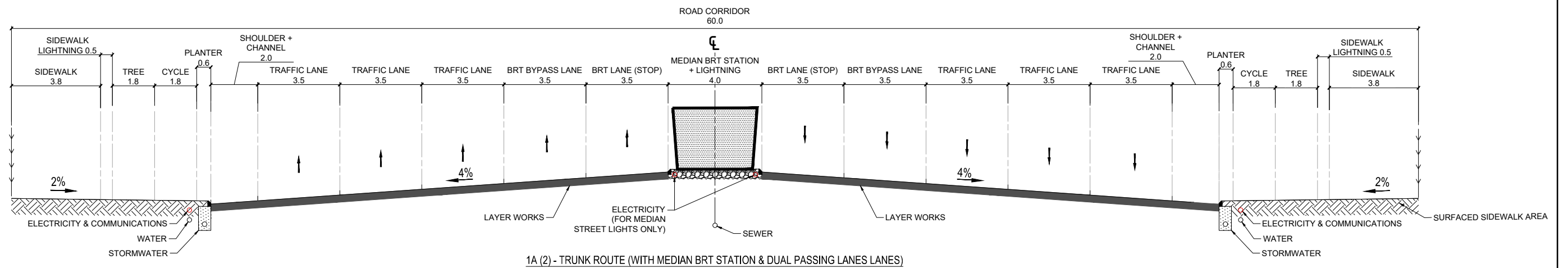
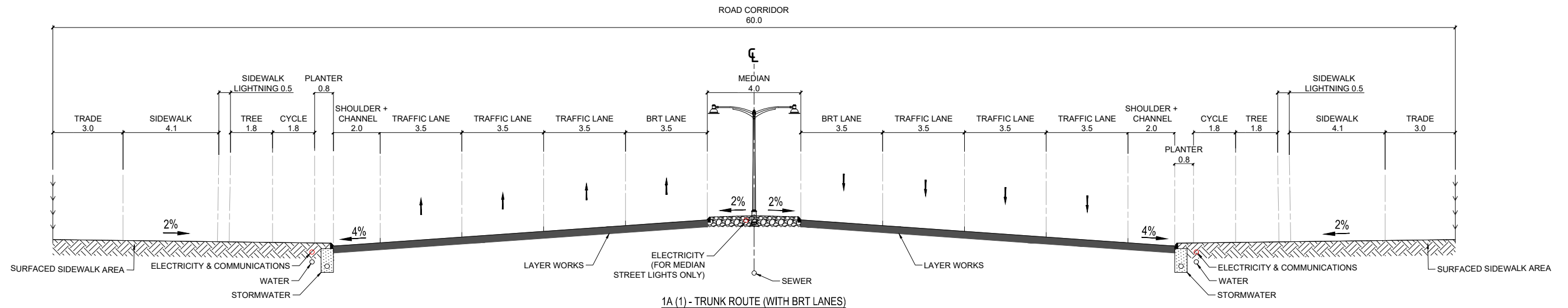
DRAWING REFERENCE
G - 1

STATUS
FINAL

SAMPLE
DRAWING
TITLE BLOCK

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FUNDER			
CONSULTANT			
PROJECT			
DRAWING TITLE			
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PROJECT No.			
DRAWING No.			
DRAWING STATUS			
PAPER SIZE			
SCALE			
CONSULTANTS APPROVAL			
DESIGNED			
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DIVISION:			
NAME:		PROF REG No:	
SIGNATURE:		DATE:	

TYPICAL CROSS SECTIONS



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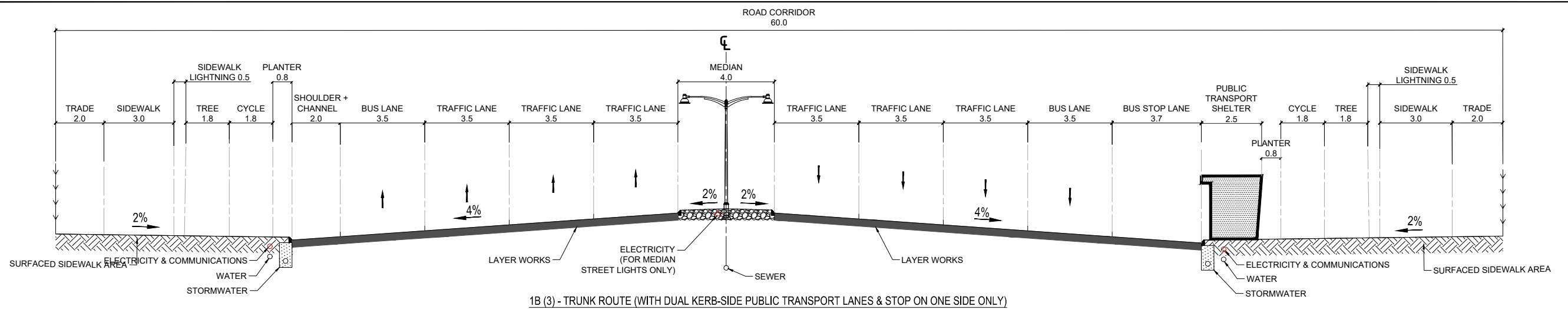
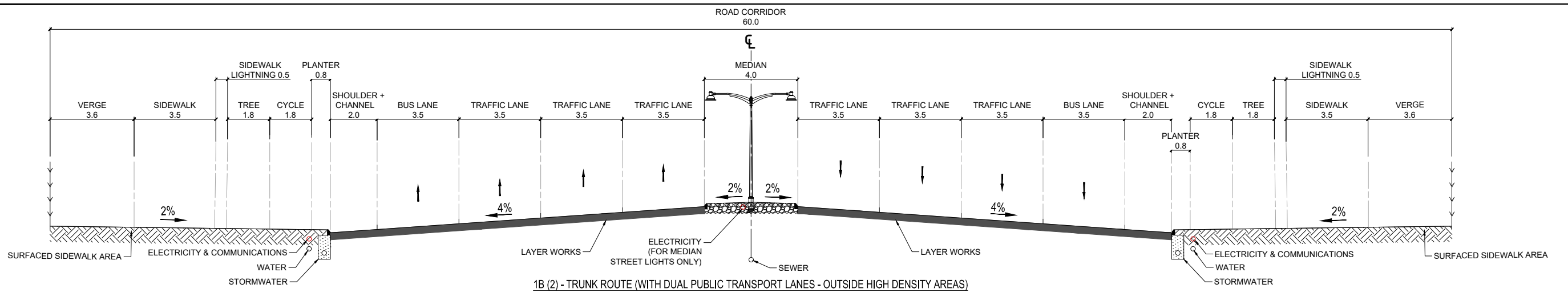
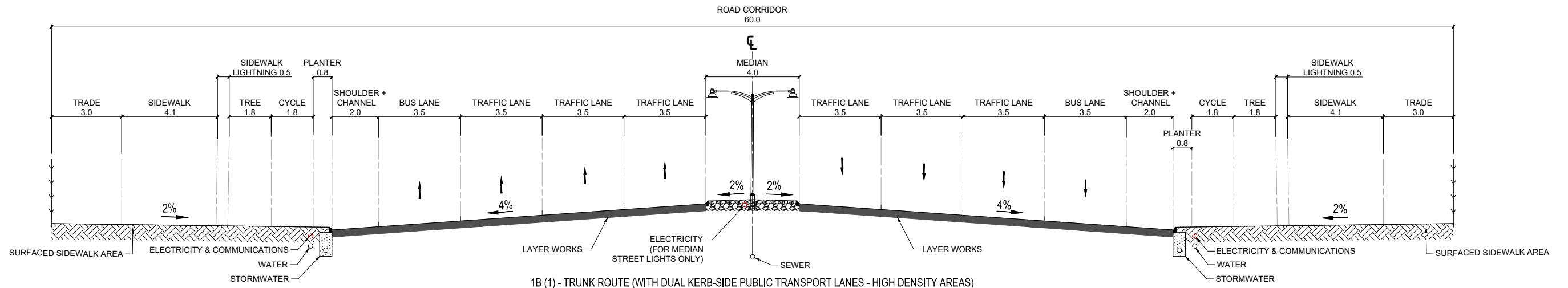
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 1A - TRUNK ROUTES WITH BRT LANES

DRAWING REFERENCE
CS 1A

SCALE
Not to Scale

STATUS
FINAL



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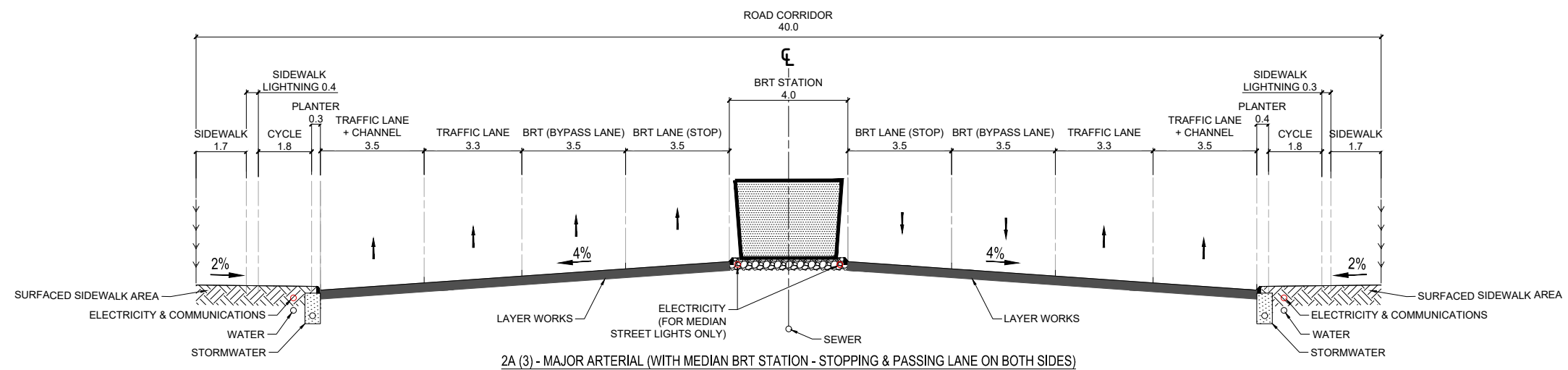
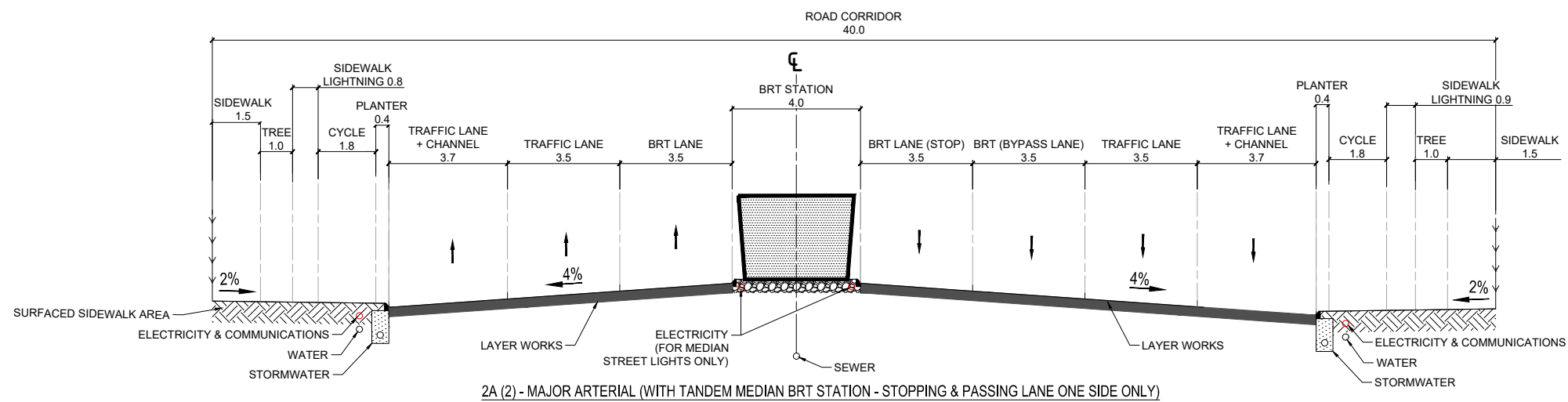
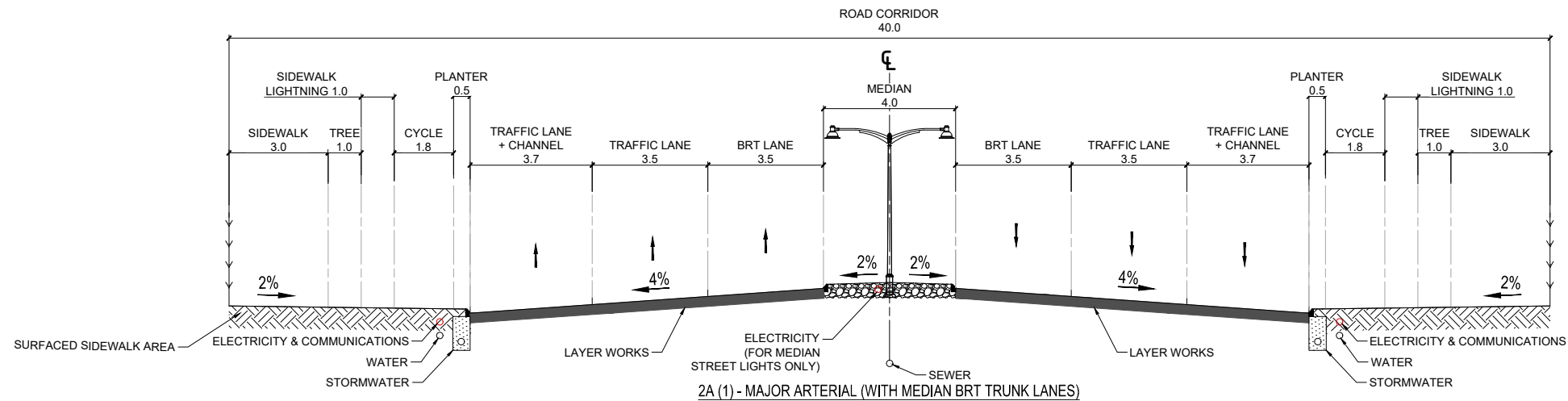
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 1B - TRUNK ROUTES WITH PUBLIC TRANSPORT LANES

DRAWING REFERENCE
CS 1B

SCALE
Not to Scale

STATUS
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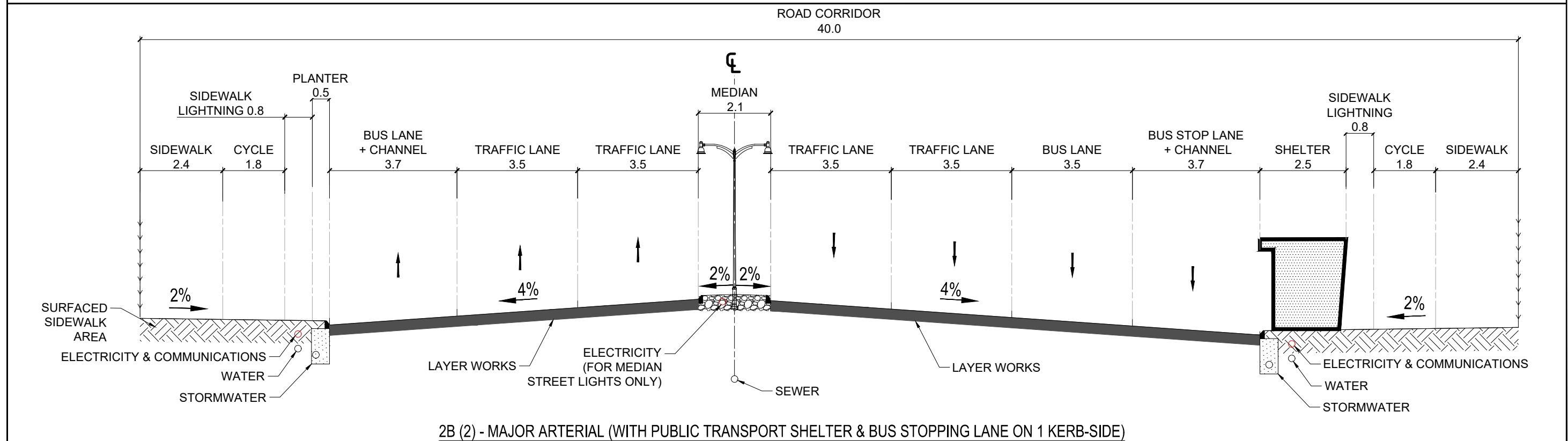
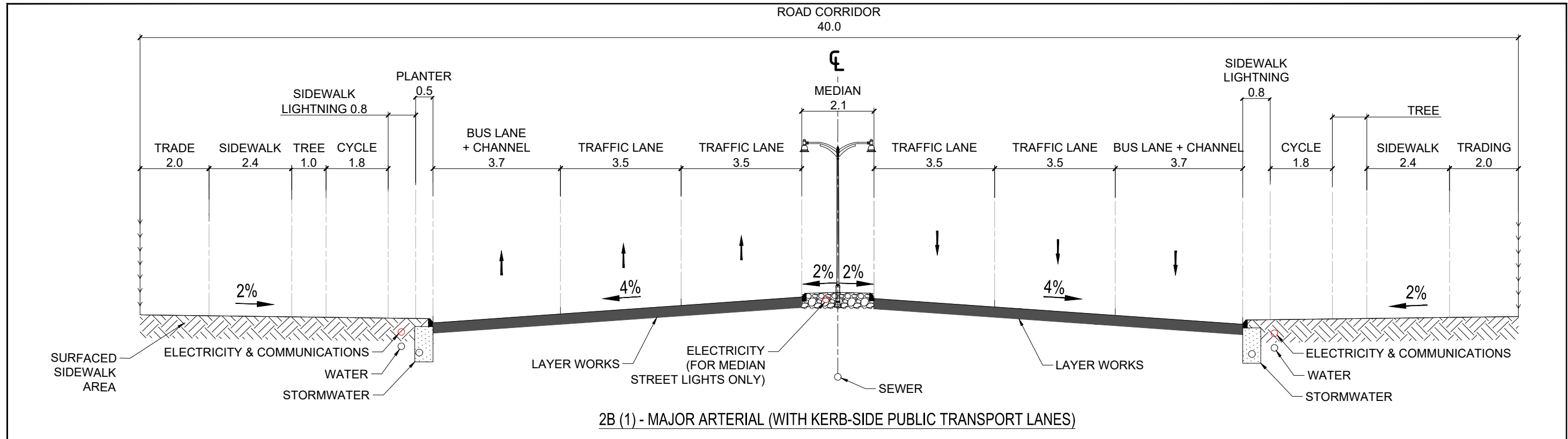
CATEGORY
ROAD DRAINAGE


DRAWING TITLE
CLASS 2A - MAJOR ARTERIAL (MEDIAN BRT LANES)

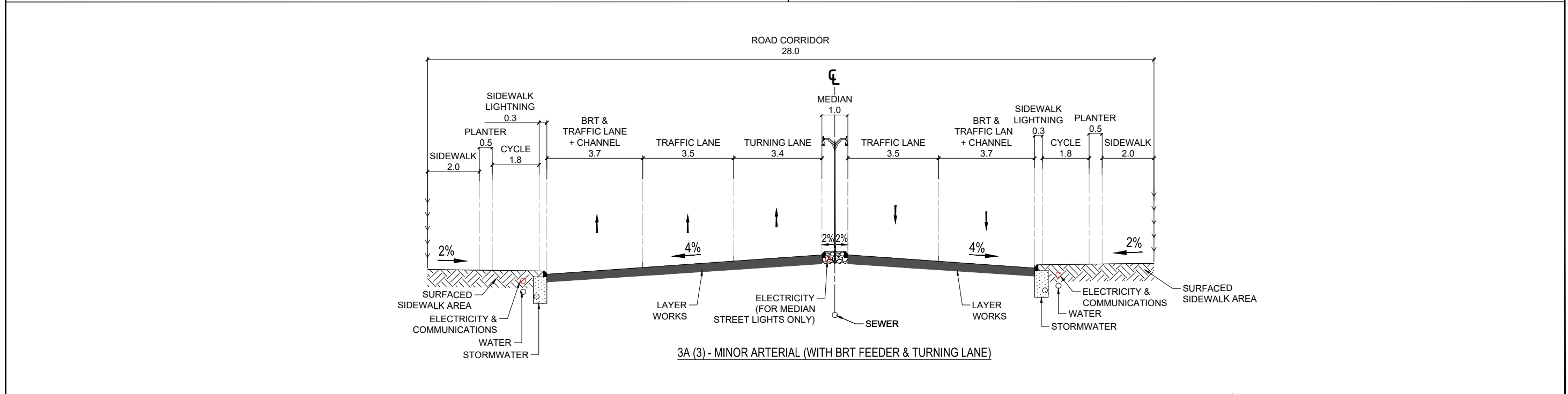
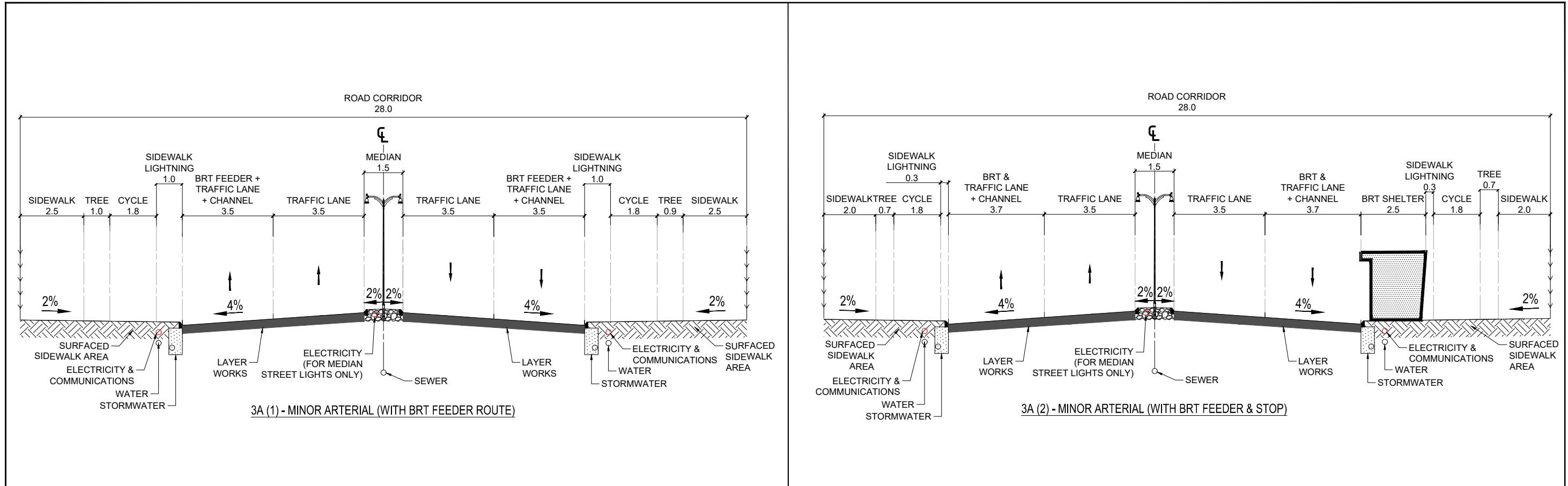
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SCALE
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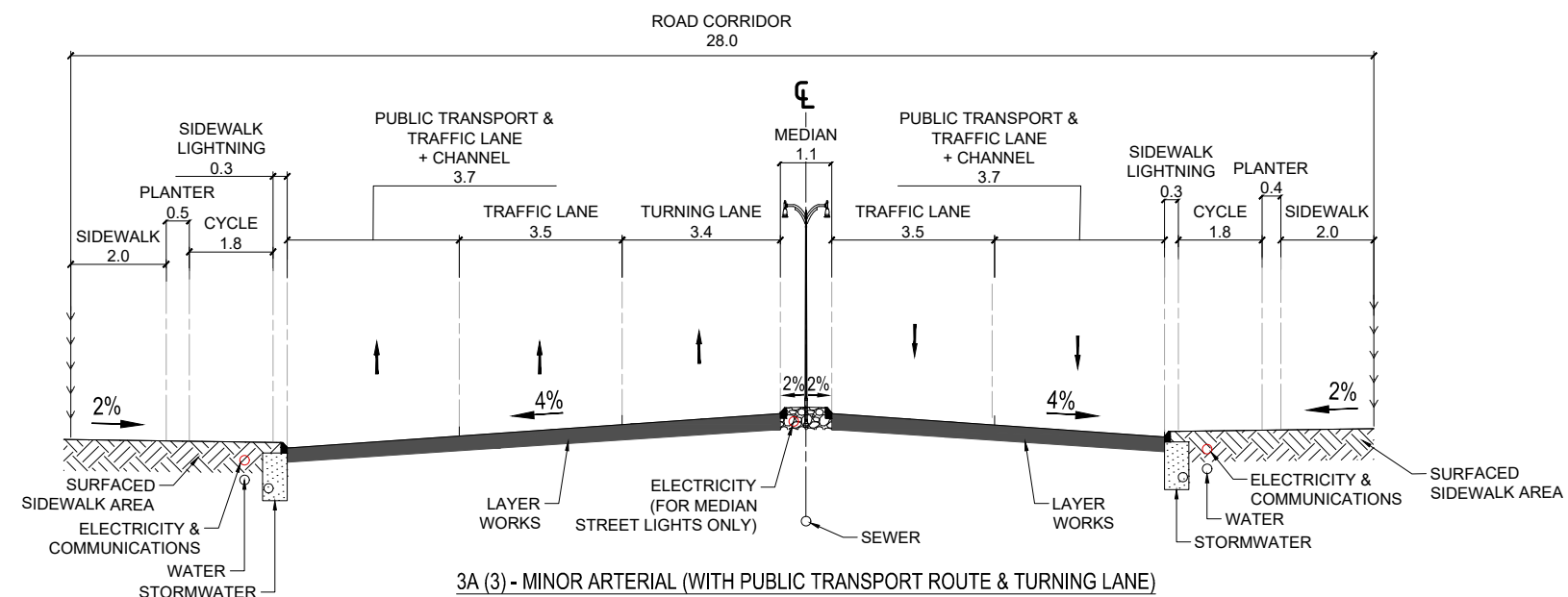
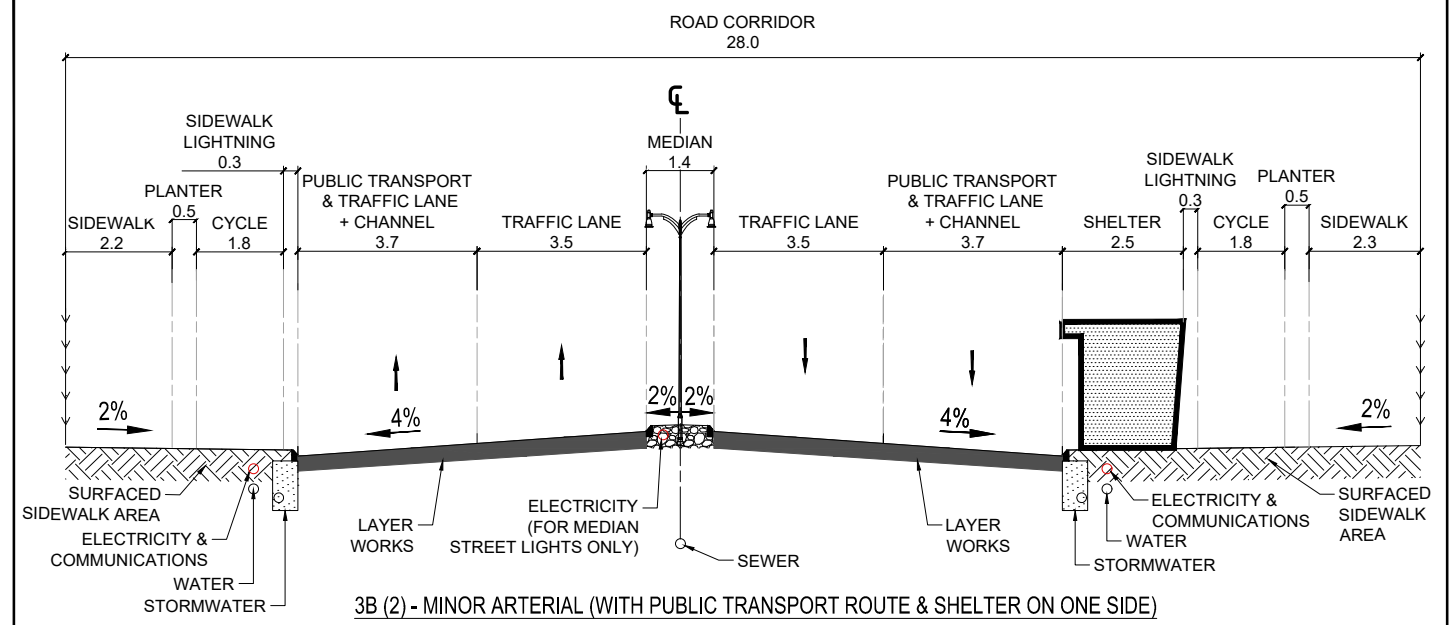
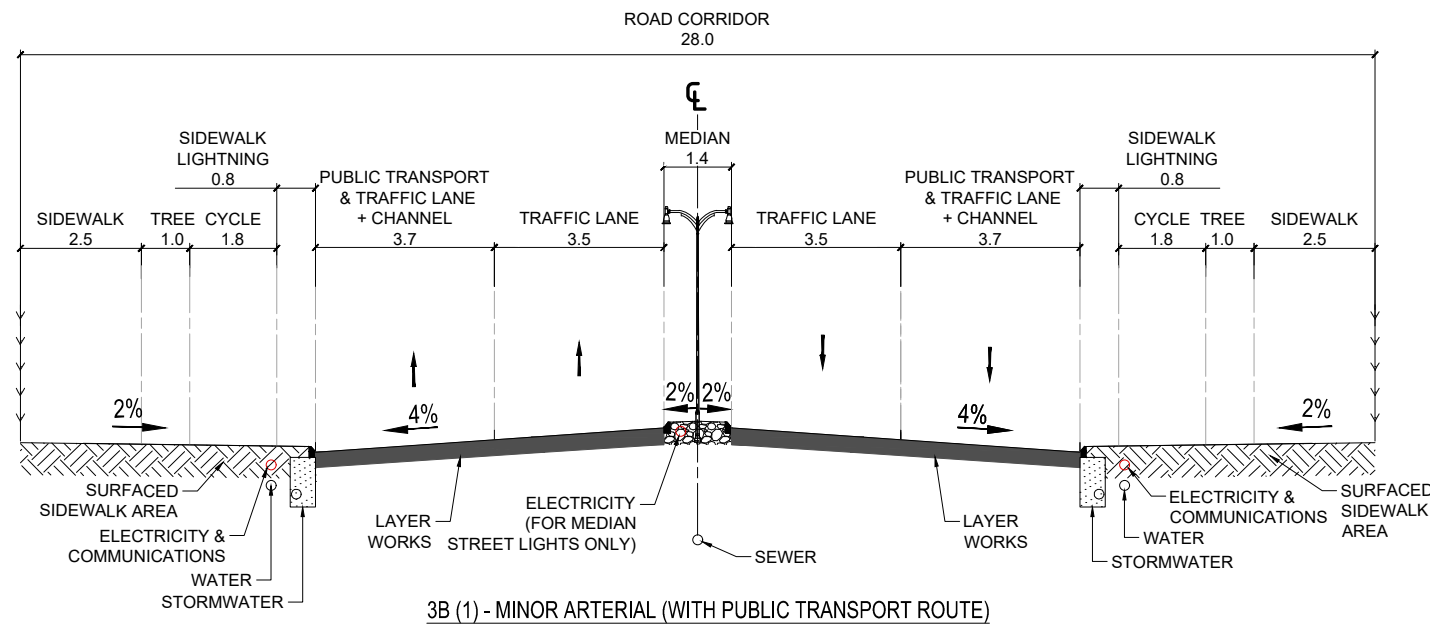
STATUS
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 <p>THE REPUBLIC OF UGANDA MINISTRY OF WORKS AND TRANSPORT</p>	<p>Approved by: ENGINEER-IN-CHIEF</p> <p>Issue Date: JULY 2023</p>	<p>PROJECT TITLE 2023 UGANDA URBAN ROADS DESIGN MANUAL</p> <p>CATEGORY TYPICAL CROSS-SECTIONS</p>	<p>DRAWING TITLE CLASS 2B - MAJOR ARTERIAL (WITH KERB-SIDE PUBLIC TRANSPORT LANES)</p> <p>DRAWING REFERENCE CS 2B</p>	<p>SCALE Not to Scale</p>	<p>STATUS FINAL</p>
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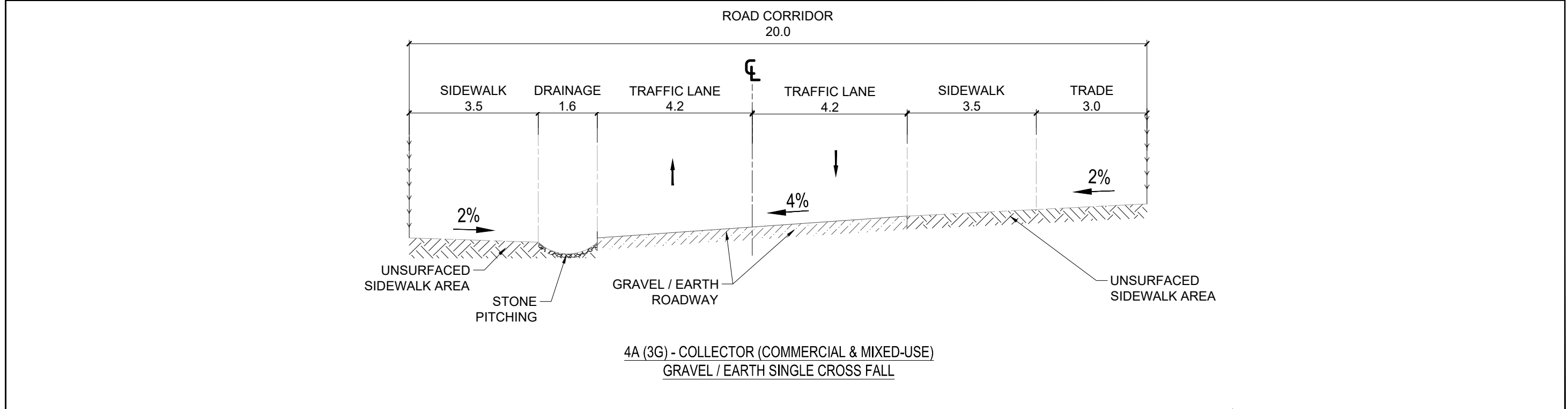
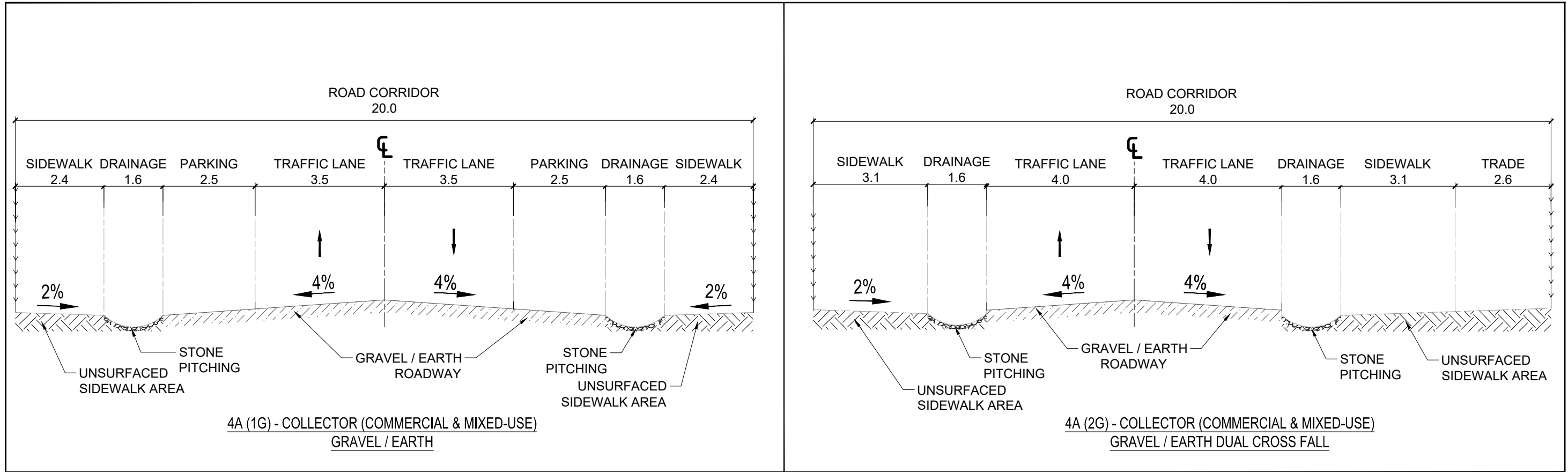
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CATEGORY
TYPICAL CROSS-SECTIONS

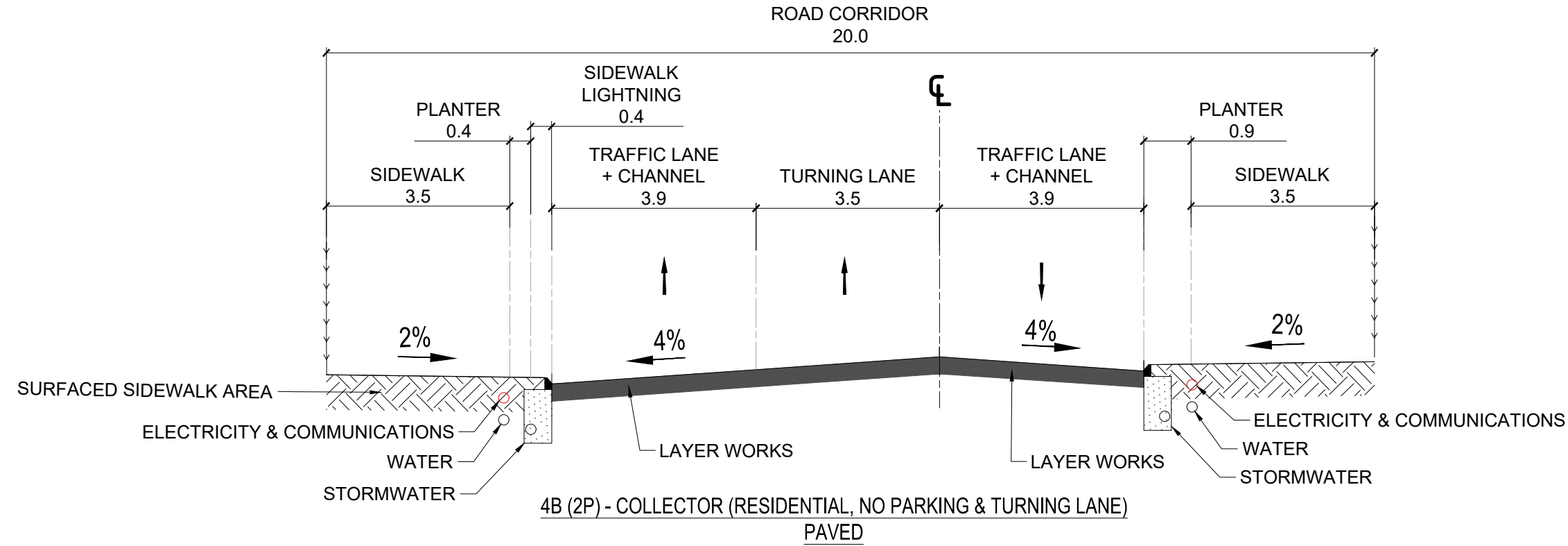
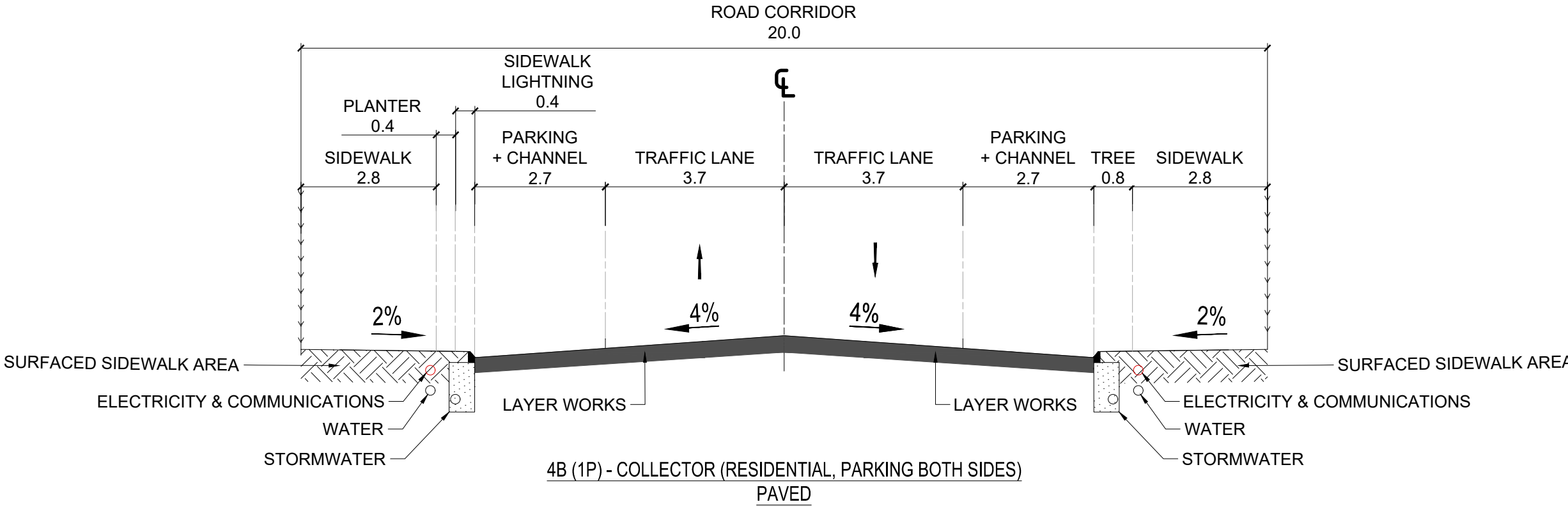
DRAWING TITLE
CLASS 3B - MINOR ARTERIAL (WITH PUBLIC TRANSPORT ROUTE)
DRAWING REFERENCE
CS 3B

SCALE
Not to Scale

STATUS
FINAL



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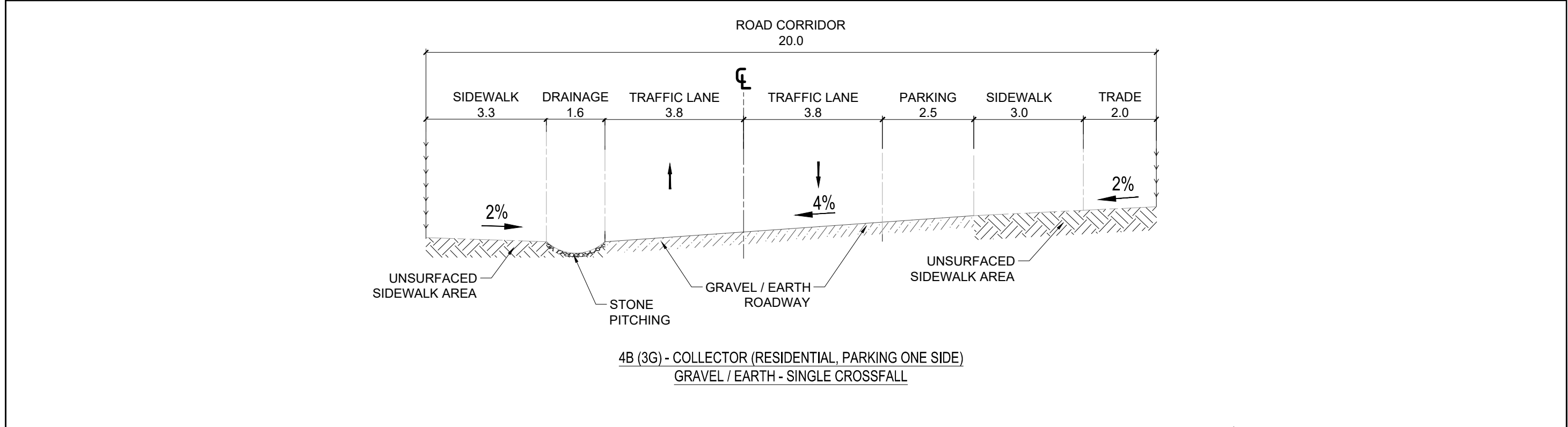
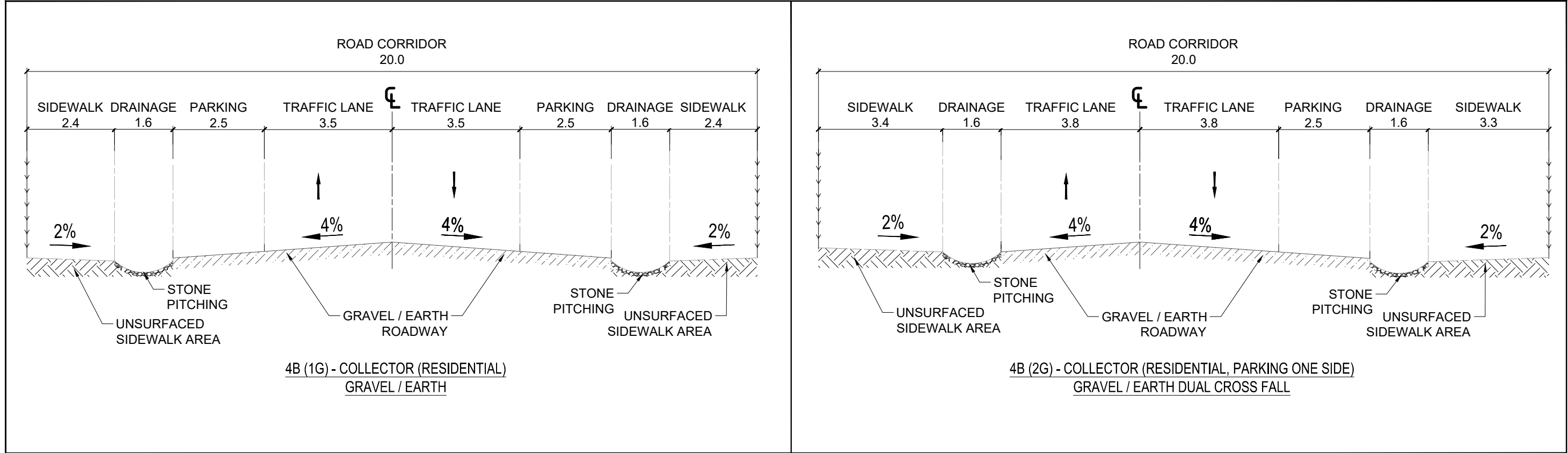
CATEGORY
TYPICAL CROSS-SECTIONS


DRAWING TITLE
CLASS 4B - COLLECTOR (RESIDENTIAL,
PARKING) - PAVED

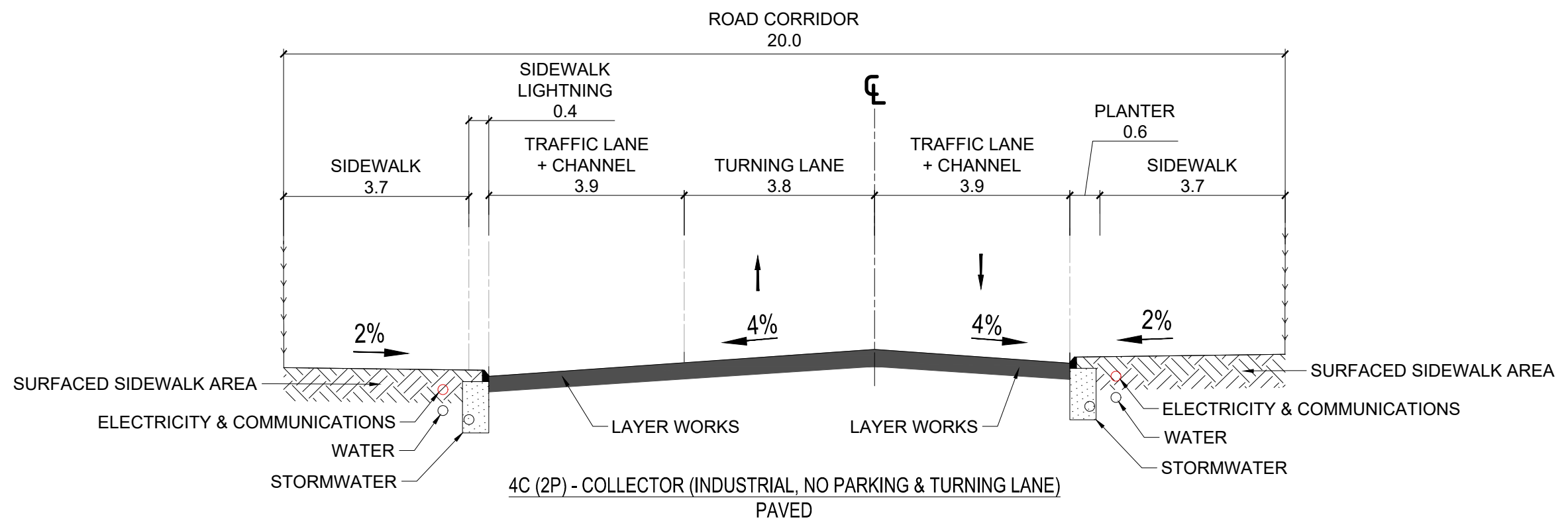
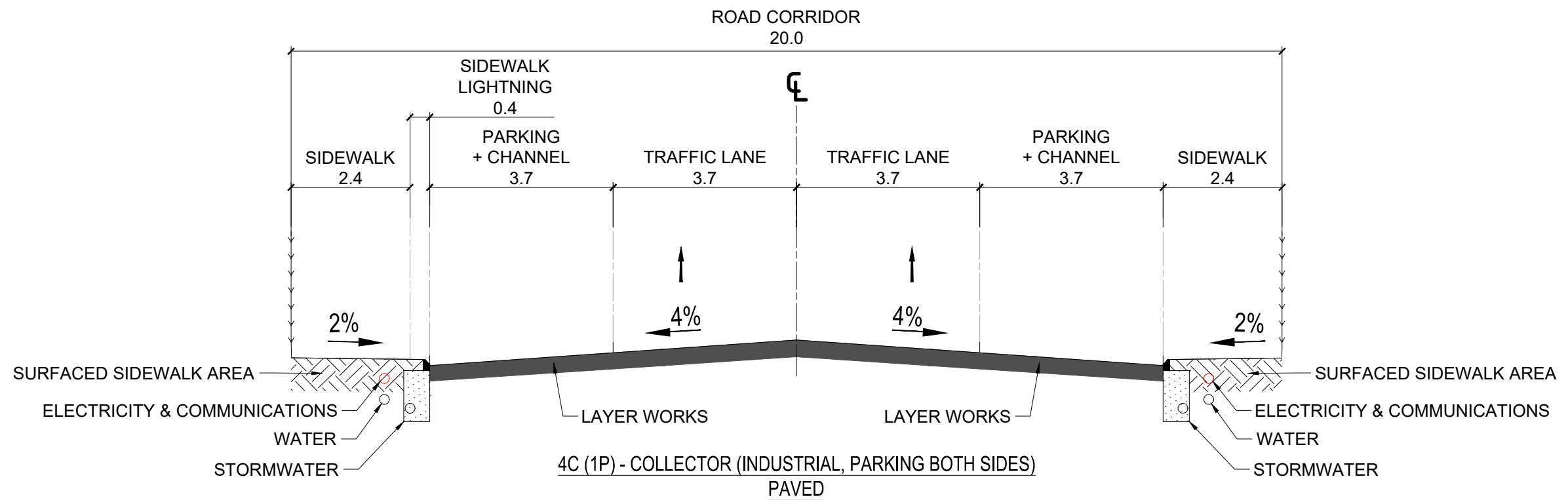
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CS 4B-1

SCALE
Not to Scale

STATUS
FINAL



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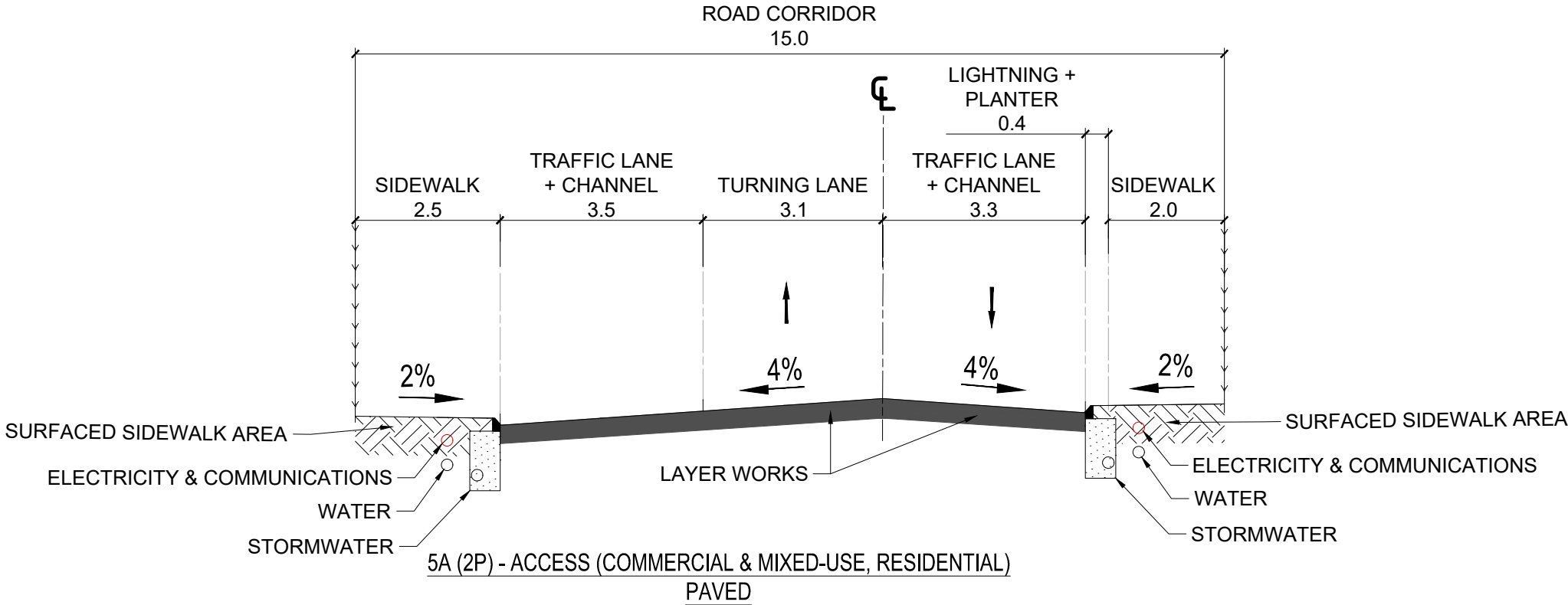
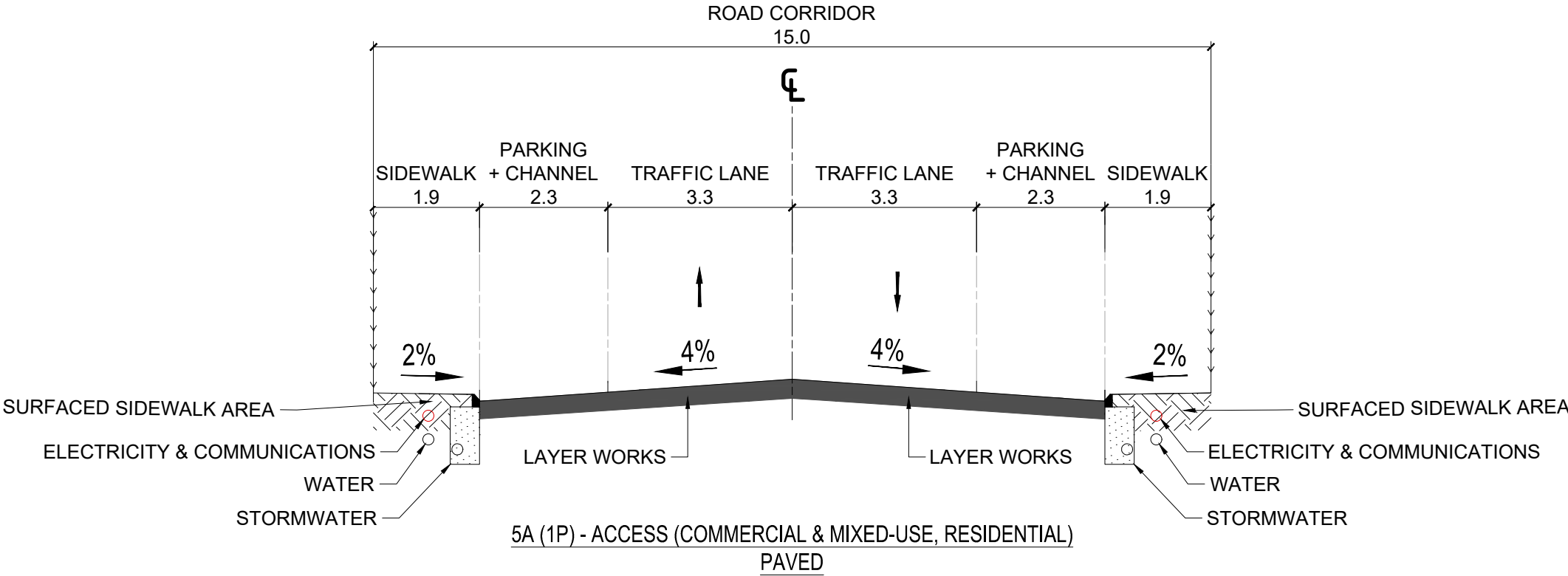
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 4C - COLLECTOR (INDUSTRIAL, PARKING & TURNING LANE) - PAVED

DRAWING REFERENCE
CS 4C

SCALE
Not to Scale

STATUS
FINAL



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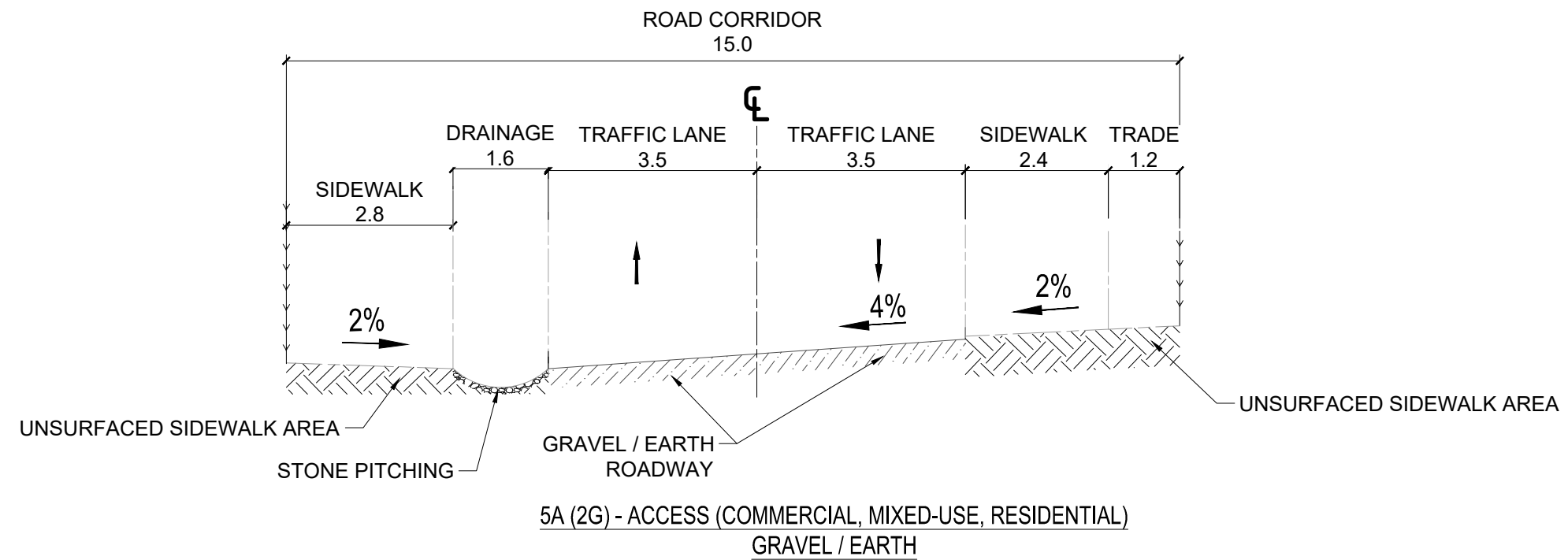
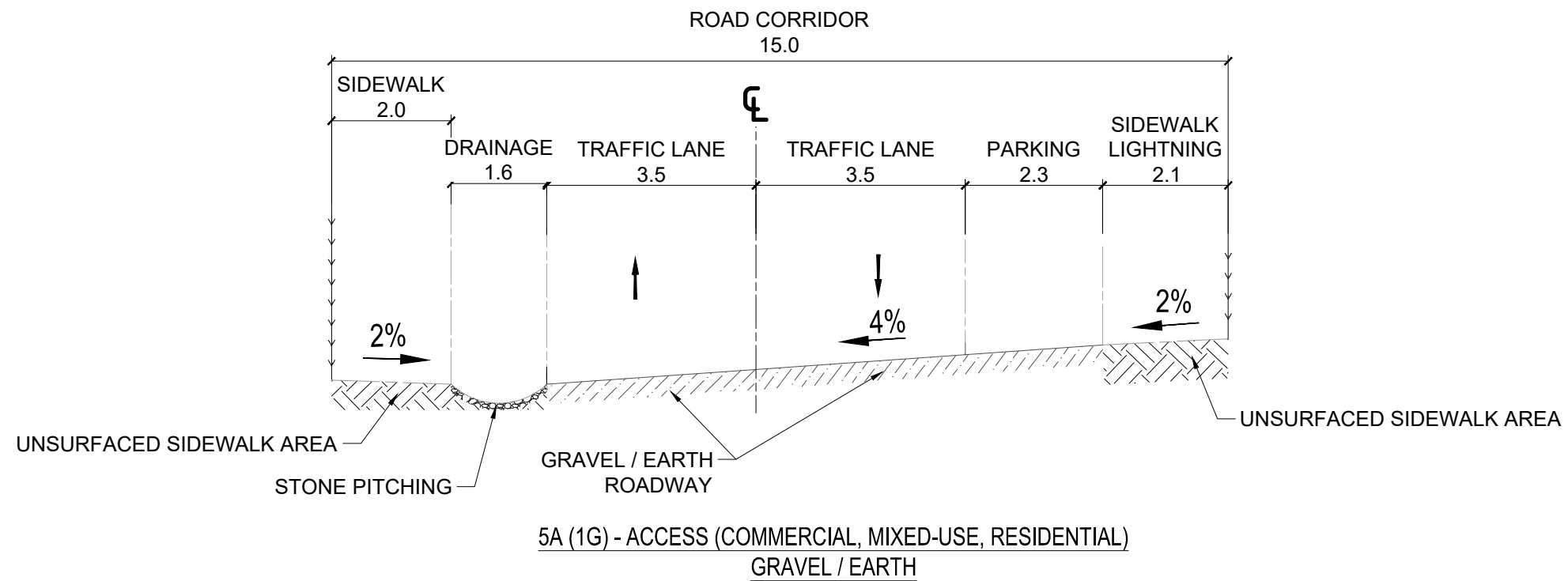
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 5A - ACCESS (COMMERCIAL & MIXED-USE, RESIDENTIAL) PAVED
DRAWING REFERENCE
CS 5A-1

SCALE
Not to Scale

STATUS
FINAL



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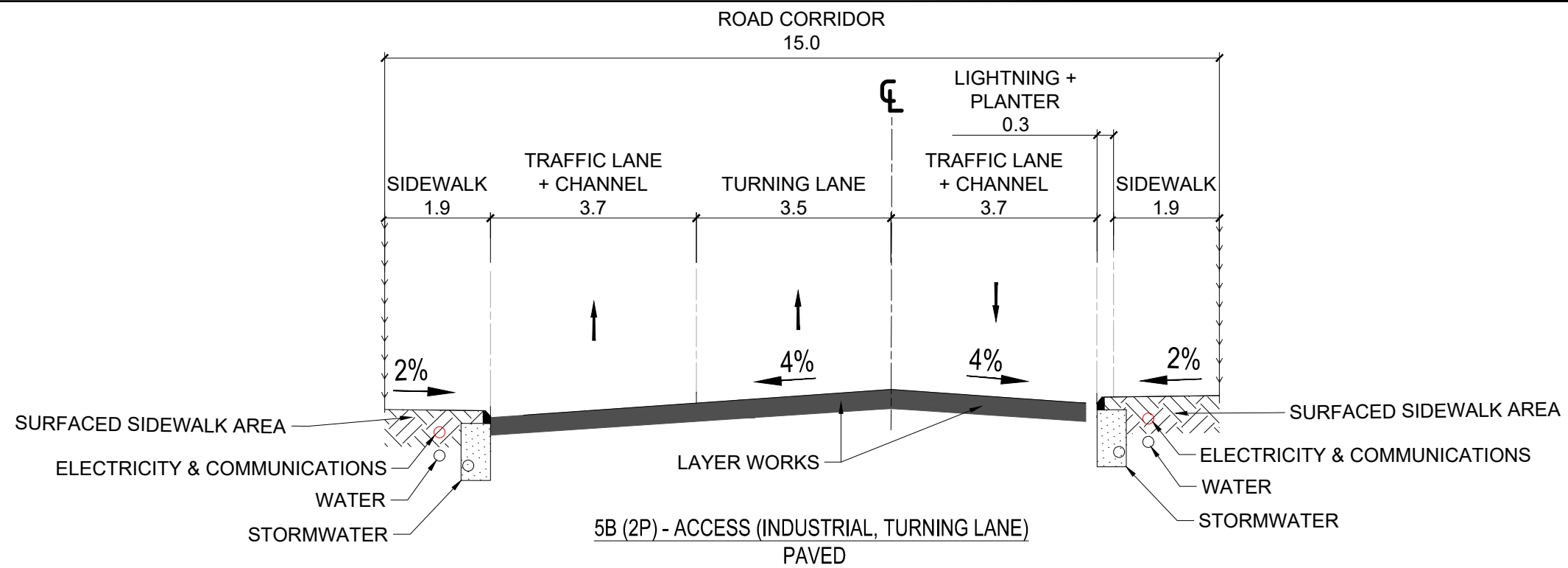
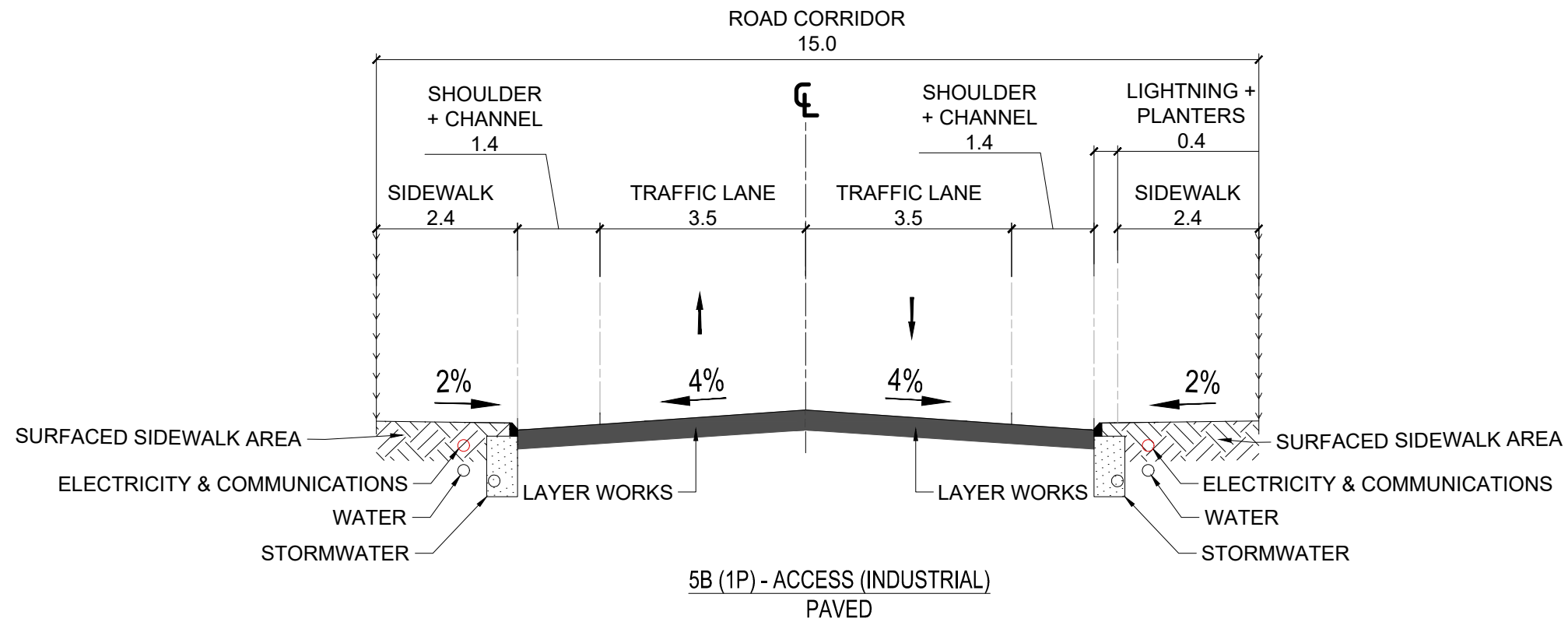
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 5A - ACCESS (COMMERCIAL,
MIXED-USE, RESIDENTIAL) GRAVEL/ EARTH

DRAWING REFERENCE
CS 5A-2

SCALE
Not to Scale

STATUS
FINAL



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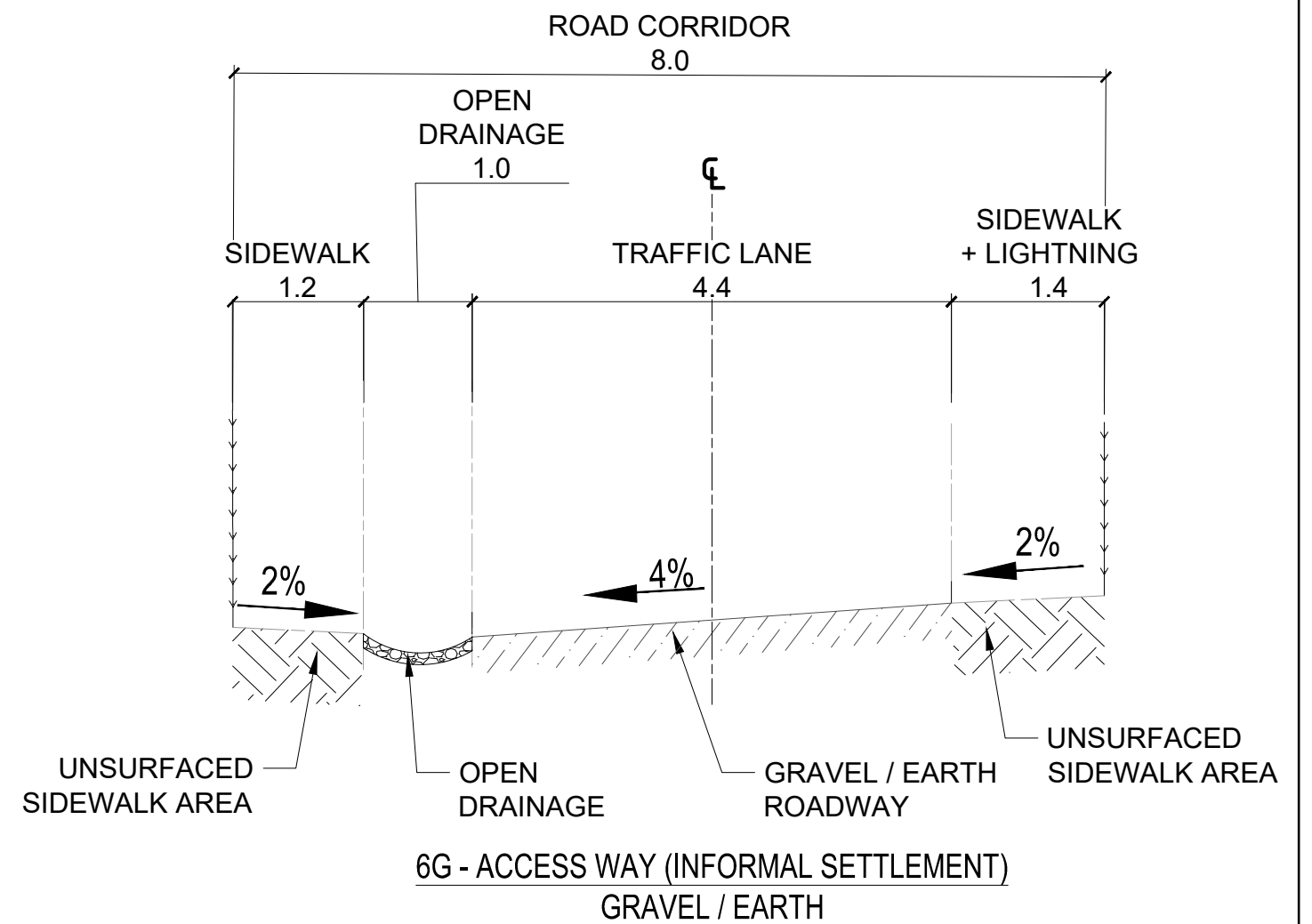
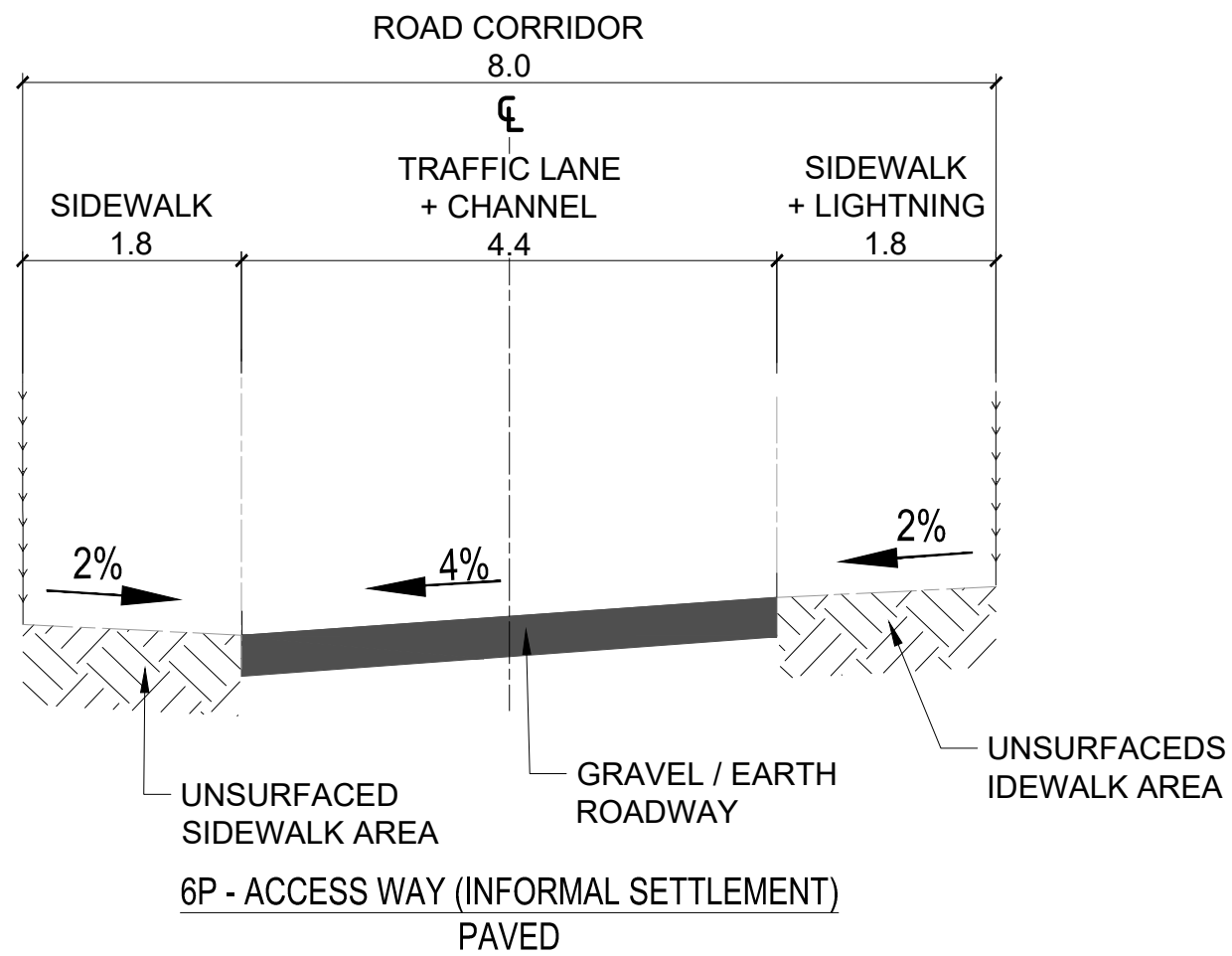
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 5B - ACCESS (INDUSTRIAL) PAVED

DRAWING REFERENCE
CS 5B

SCALE
Not to Scale

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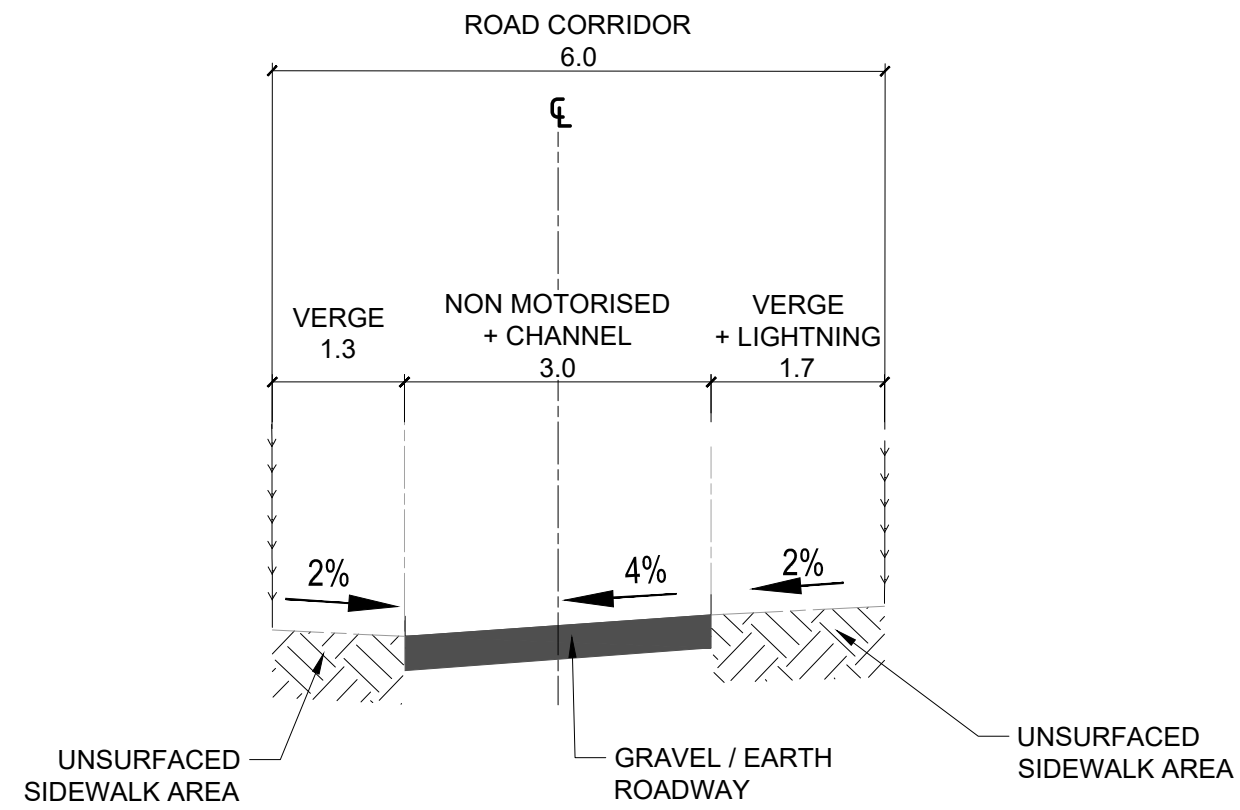
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
CLASS 6 - ACCESS WAY (INFORMAL SETTLEMENT) PAVED & GRAVEL / EARTH

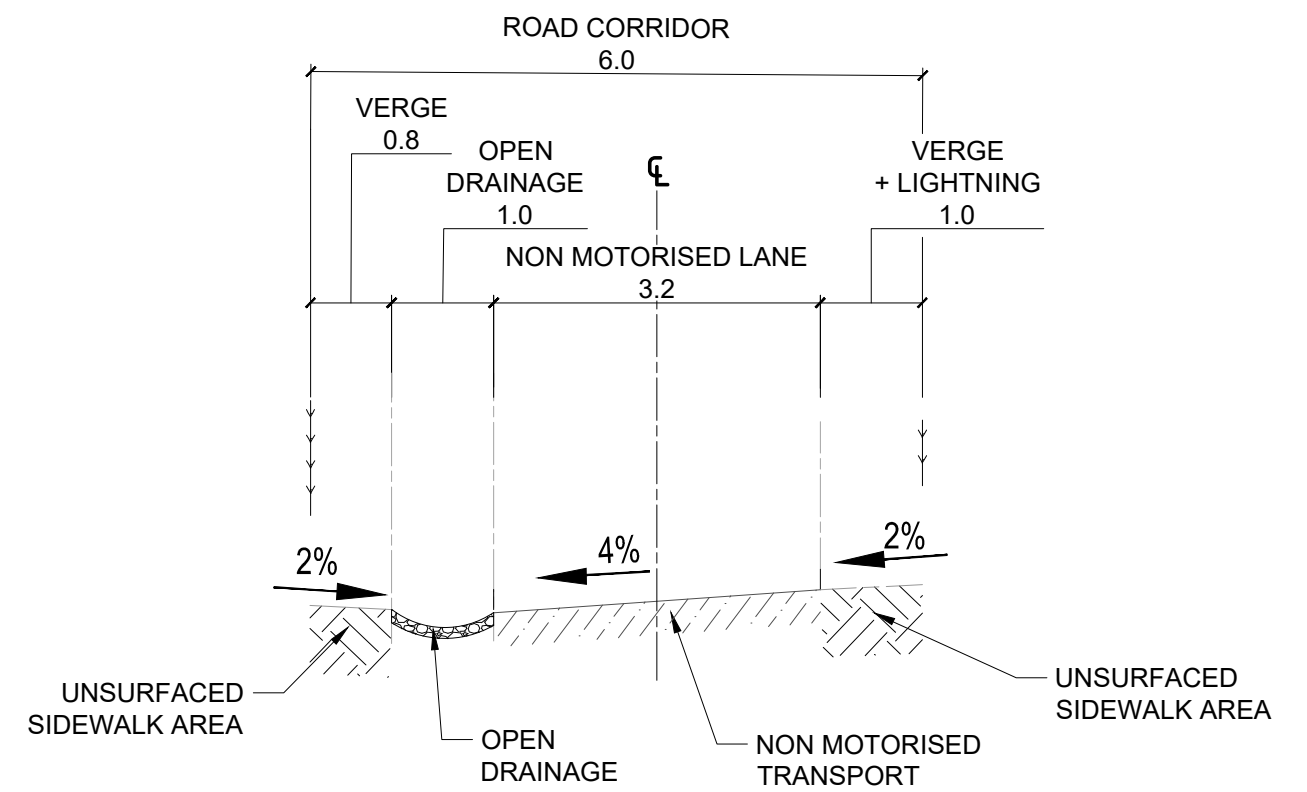
DRAWING REFERENCE
CS 6

SCALE
Not to Scale

STATUS
FINAL



7P - ACCESS WAY (NON MOTORISED TRANSPORT ONLY) - PAVED



7G - ACCESS WAY (NON MOTORISED TRANSPORT ONLY) - GRAVEL / EARTH



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JULY 2023

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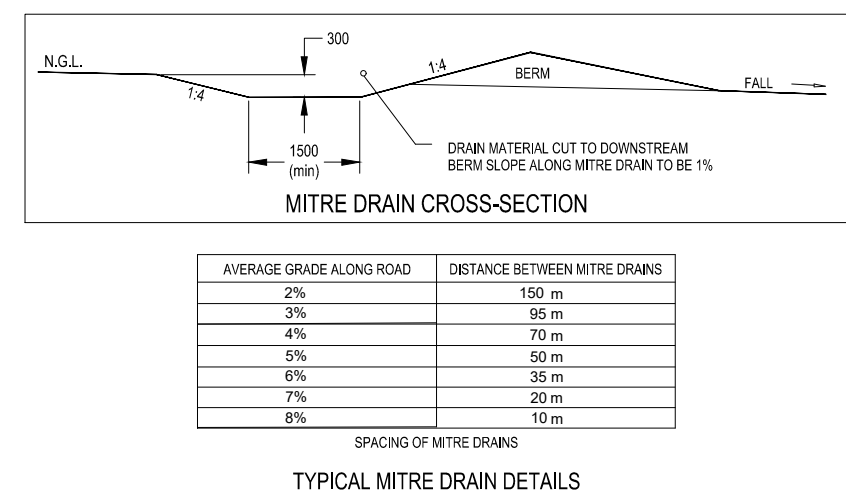
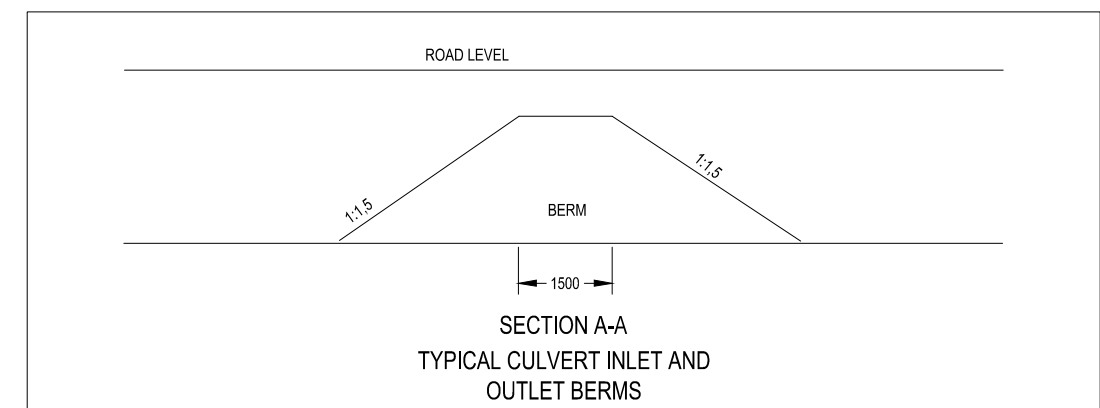
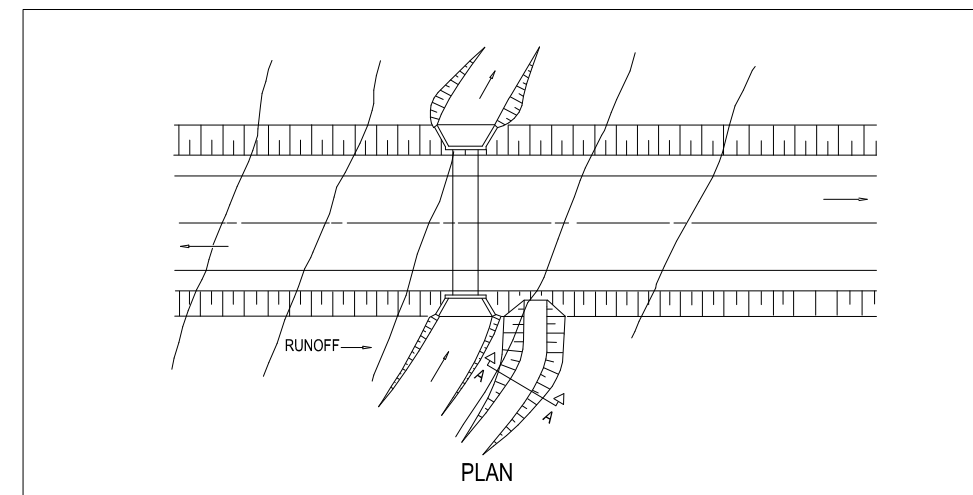
CATEGORY
TYPICAL CROSS-SECTIONS

DRAWING TITLE
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MOTORISED TRANSPORT ONLY) PAVED &
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DRAWING REFERENCE
CS 7

SCALE
Not to Scale

STATUS
FINAL

ROAD DRAINAGE



STATUS
FINAL

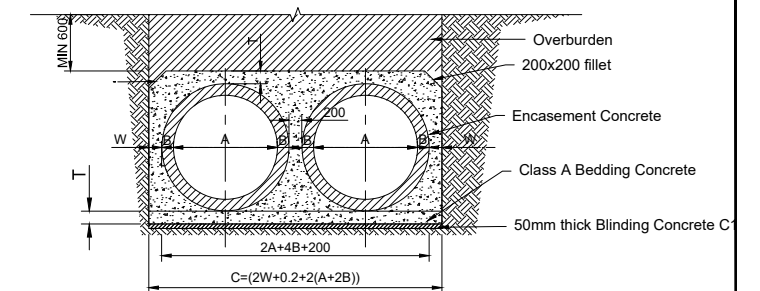


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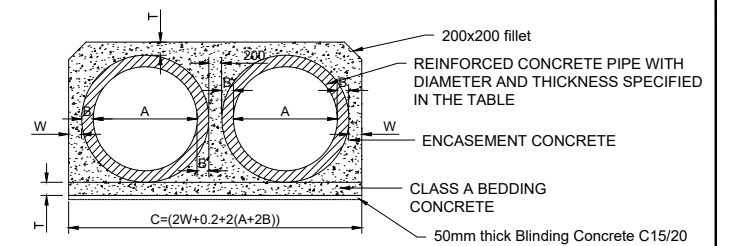
Issue Date:
JULY 2023

CATEGORY
ROAD DRAINAGE

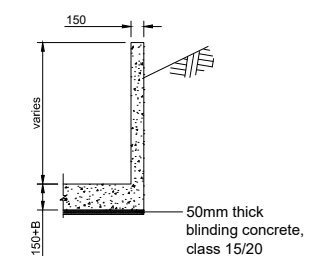
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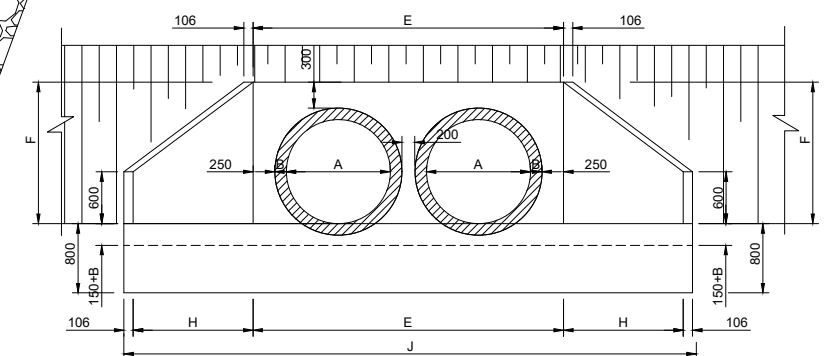
SECTION F-F



TYPICAL ENCASEMENT AND BEDDING CONCRETE
SCALE 1:25



SECTION B-B
SCALE 1:25



FRONT ELEVATION: ORTHOGONAL CROSSING
SCALE 1:25

DIMENSION,REINFORCEMENT AND QUANTITIES FOR PIPE CULVERTS DOUBLE CELL													
	CULVERT DIMENSIONS												
CULVERT	A(m)	B(m)	C(m)	D(m)	E(m)	F(m)	G (m)	H(m)	J(m)	K(m)	L(m)	T(m)	W(m)
DIAMETER 900mm	0.90	0.08	2.85	1.36	2.82	1.28	1.360	1.338	5.496	1.920	1.360	0.27	0.27
DIAMETER 1200mm	1.20	0.10	3.70	1.70	3.50	1.60	2.000	1.968	7.436	2.828	2.000	0.35	0.35



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CATEGORY
ROAD DRAINAGE

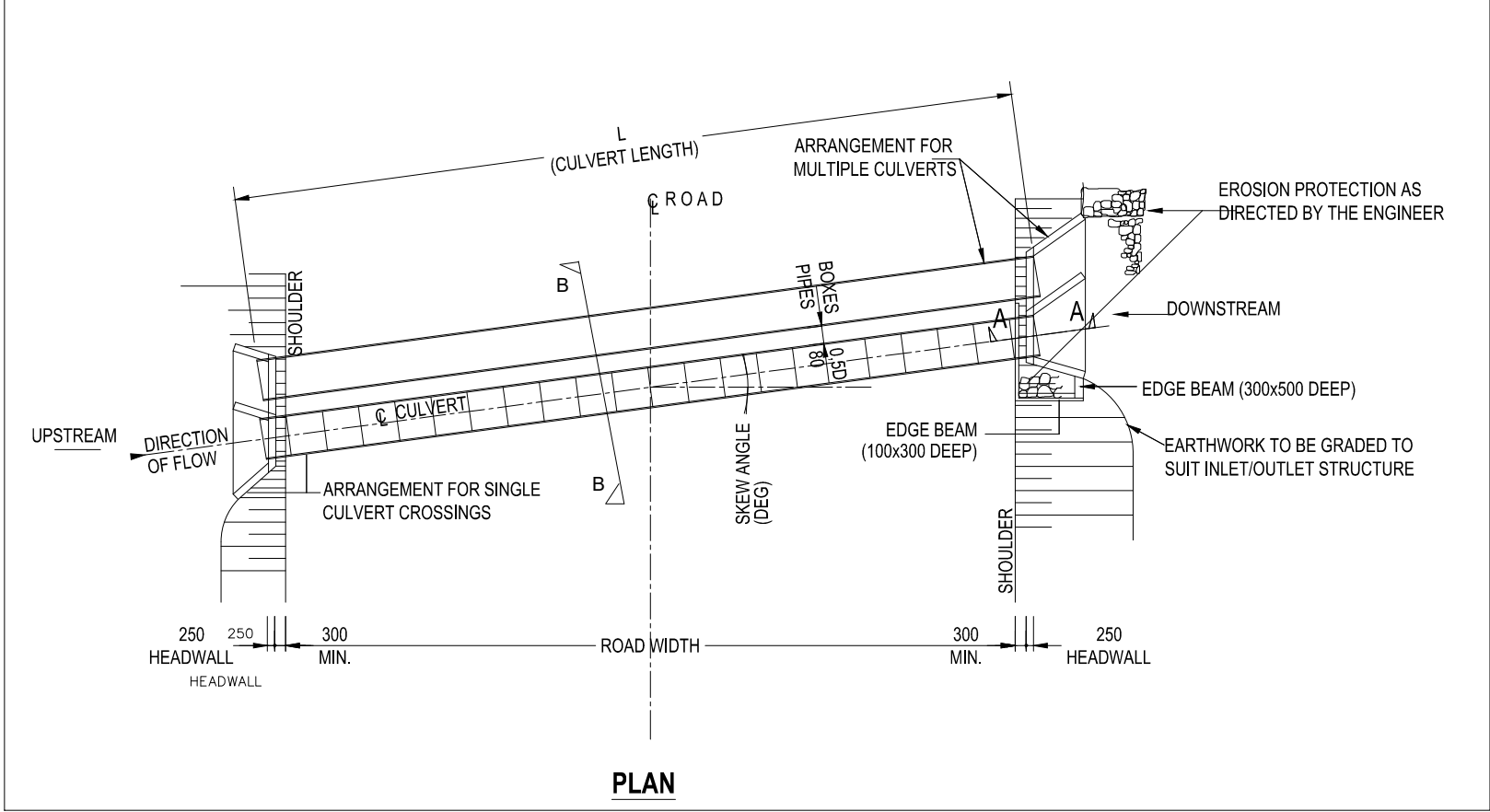
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DOUBLE CONCRETE PIPE CULVERT DETAILS

DRAWING REFERENCE

SCALE
Not to Scale

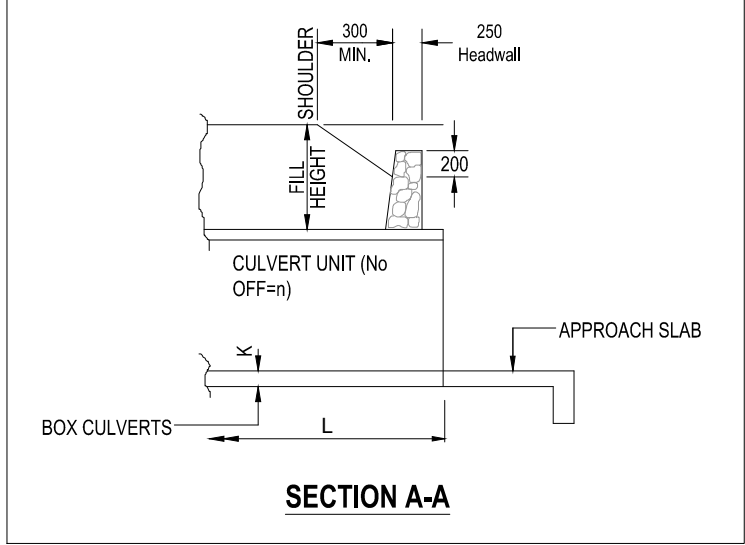
STATUS
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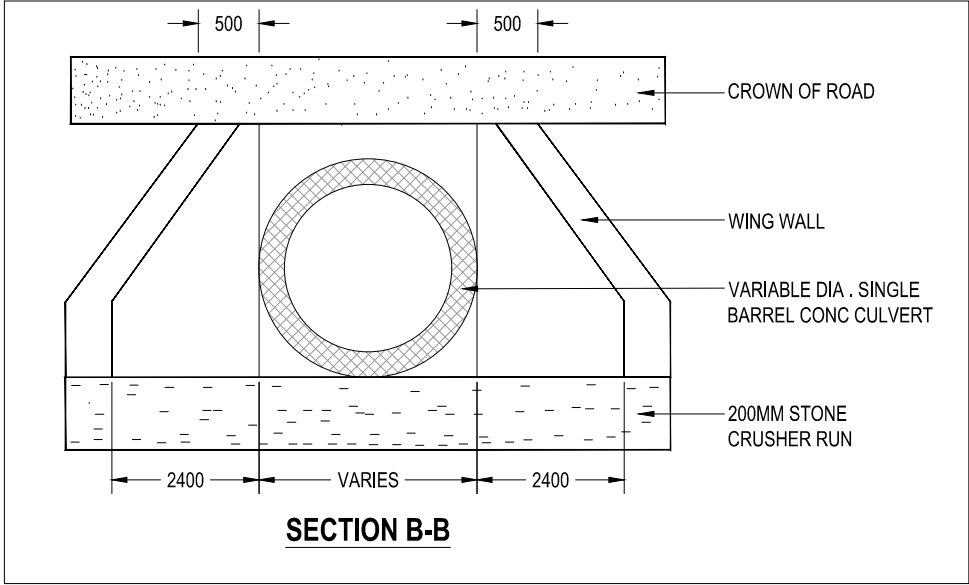
PLAN

NOTES :

1. ALL CONCRETE PIPES TO BE CLASS 75D TO S.A.B.S. 677 OR THE LATEST RELEVANT SPECIFICATION
2. ALL CONCRETE BOX CULVERTS TO BE CLASS C TO S.A.B.S. 986
3. FILL HEIGHT :
 - a) BOX CULVERTS = 300mm MINIMUM
 - b) PIPE CULVERTS = 0.6D OR 300 MINIMUM



SECTION A-A



SECTION B-B



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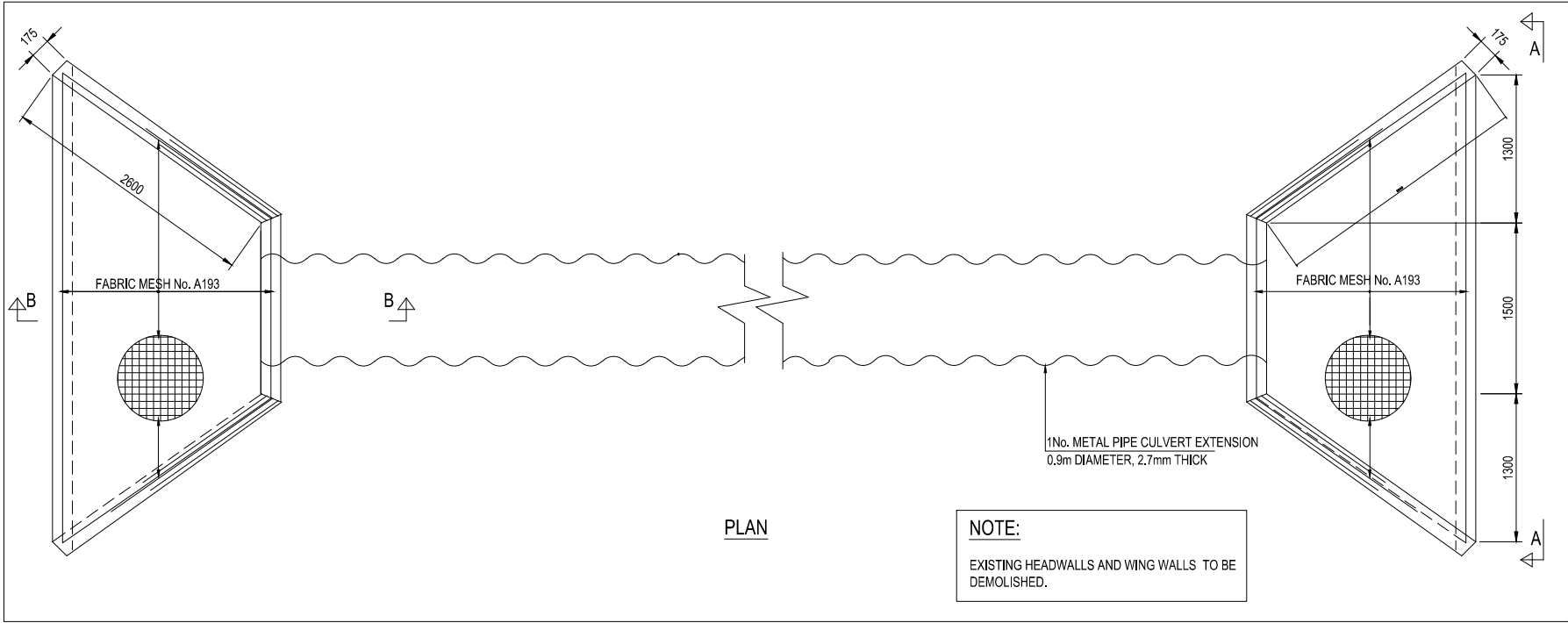
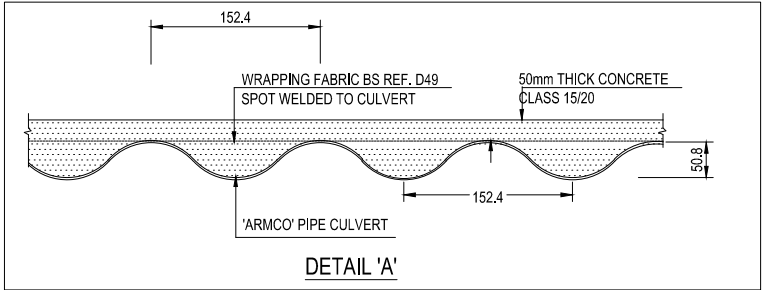
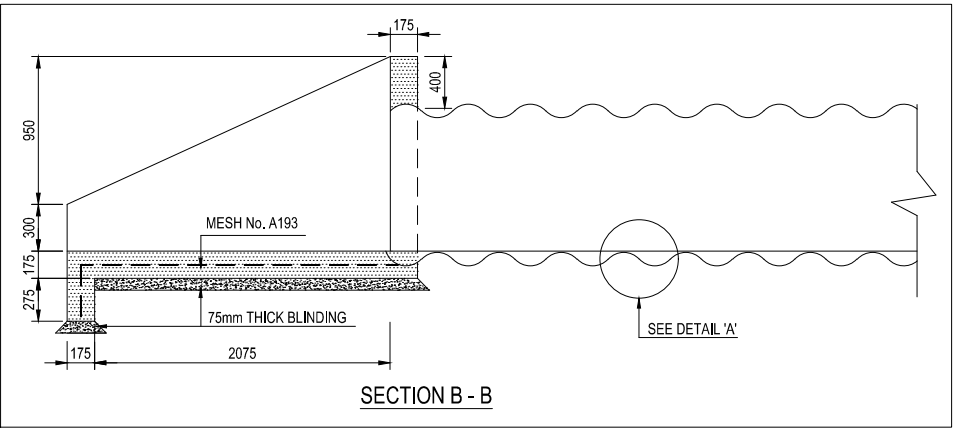
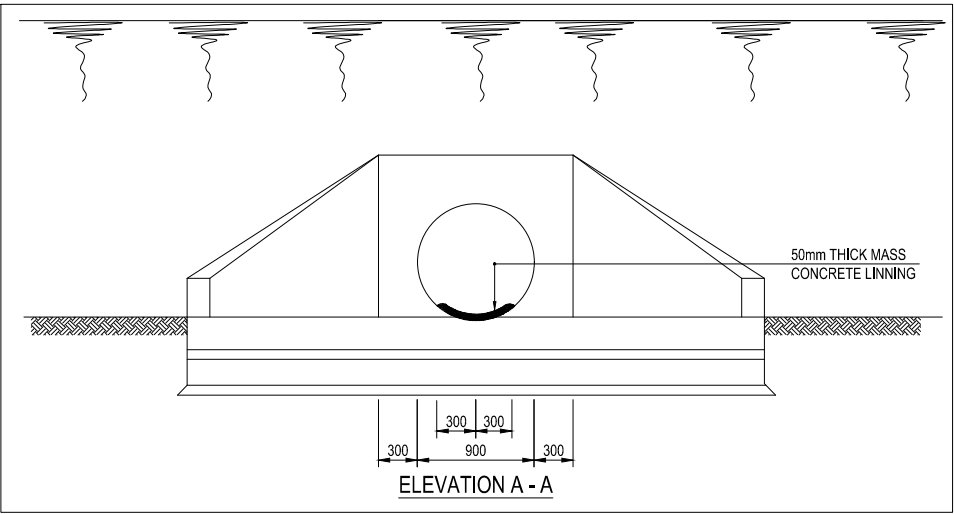
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
GENERAL CULVERT CROSSING
DETAILS

DRAWING REFERENCE
CUL-3

SCALE
Not to Scale

STATUS
FINAL



NOTE:
EXISTING HEADWALLS AND WING WALLS TO BE DEMOLISHED.



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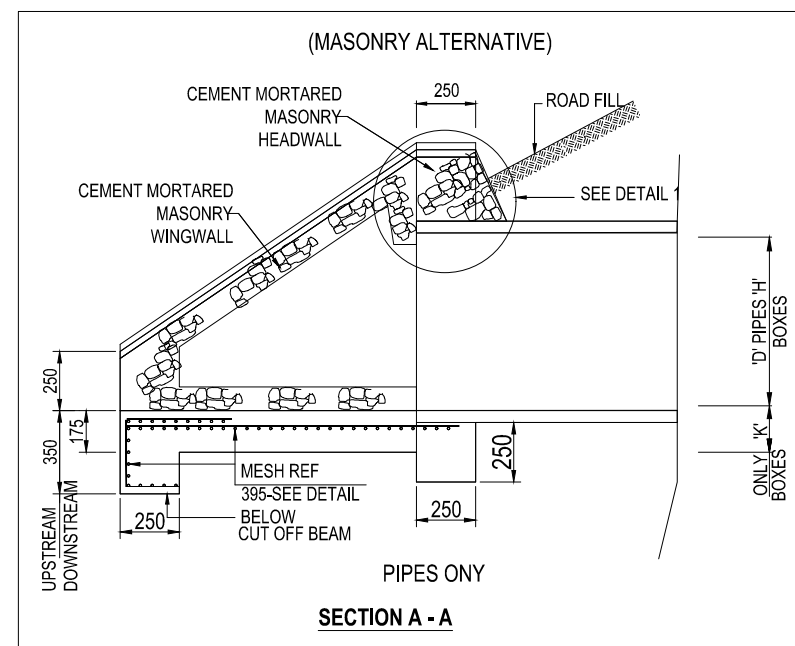
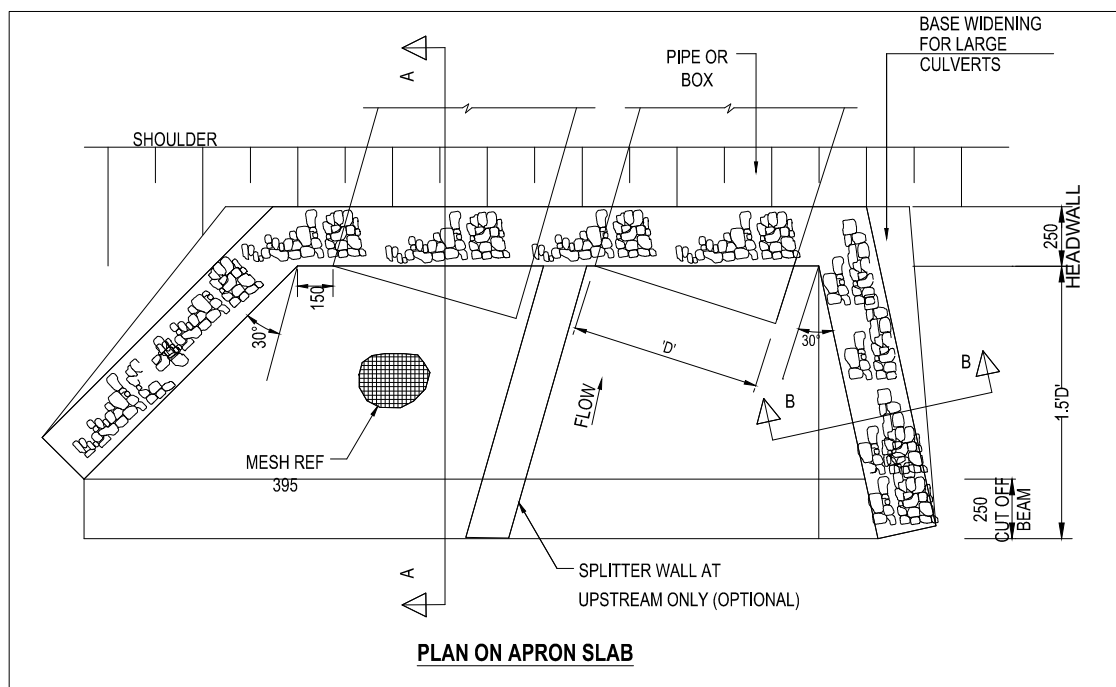
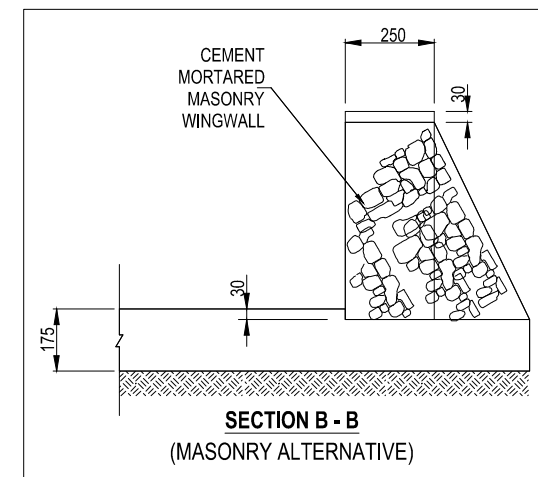
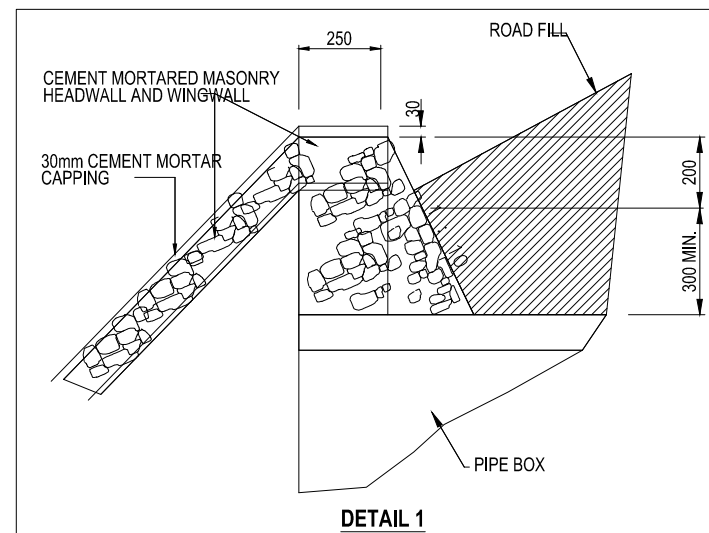
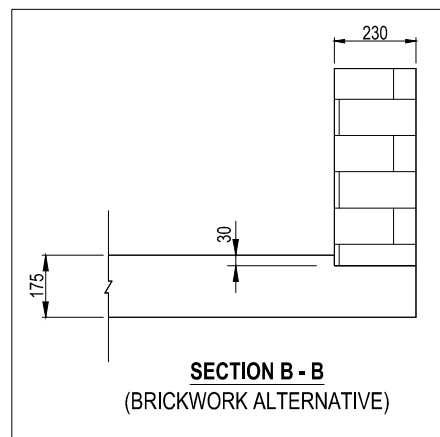
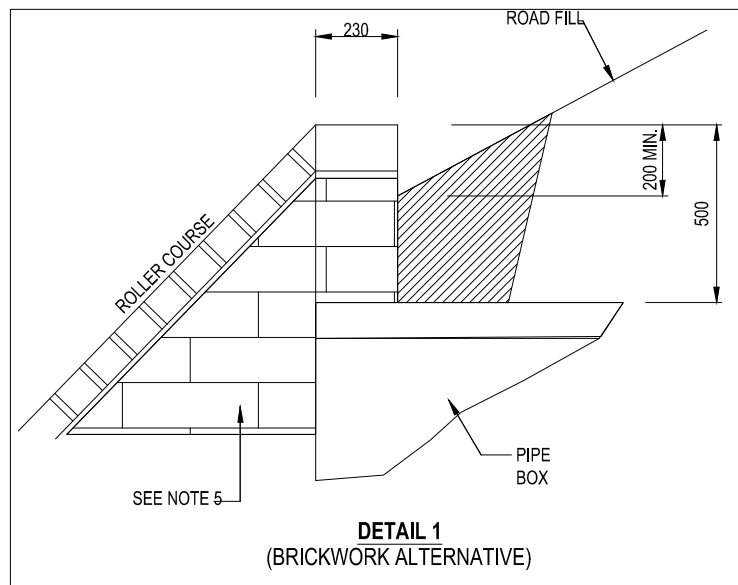
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

DRAWING TITLE
SINGLE METAL PIPE CULVERT
CROSSING
DRAWING REFERENCE
CUL-4

SCALE
Not to Scale

STATUS
FINAL



- NOTES :**
1. MINIMUM COVER TO REINFORCEMENT = 40mm
 2. MAXIMUM CULVERT SIZES TO WHICH THESE DETAILS APPLY ARE : PIPES : D = 900mm; BOX CULVERTS : H = 1800mm
230 THICK CEMENT BRICKWORK TO HEADWALL AND
 3. WING WALL TO EXPOSED FACES CEMENT WASHED AND HORIZONTAL JOINTS RAKED 10mm TOP OF WALL TO FINISHED OFF WITH A ROLLER COURSE WITH VERTICAL JOINTS RAKED 10mm



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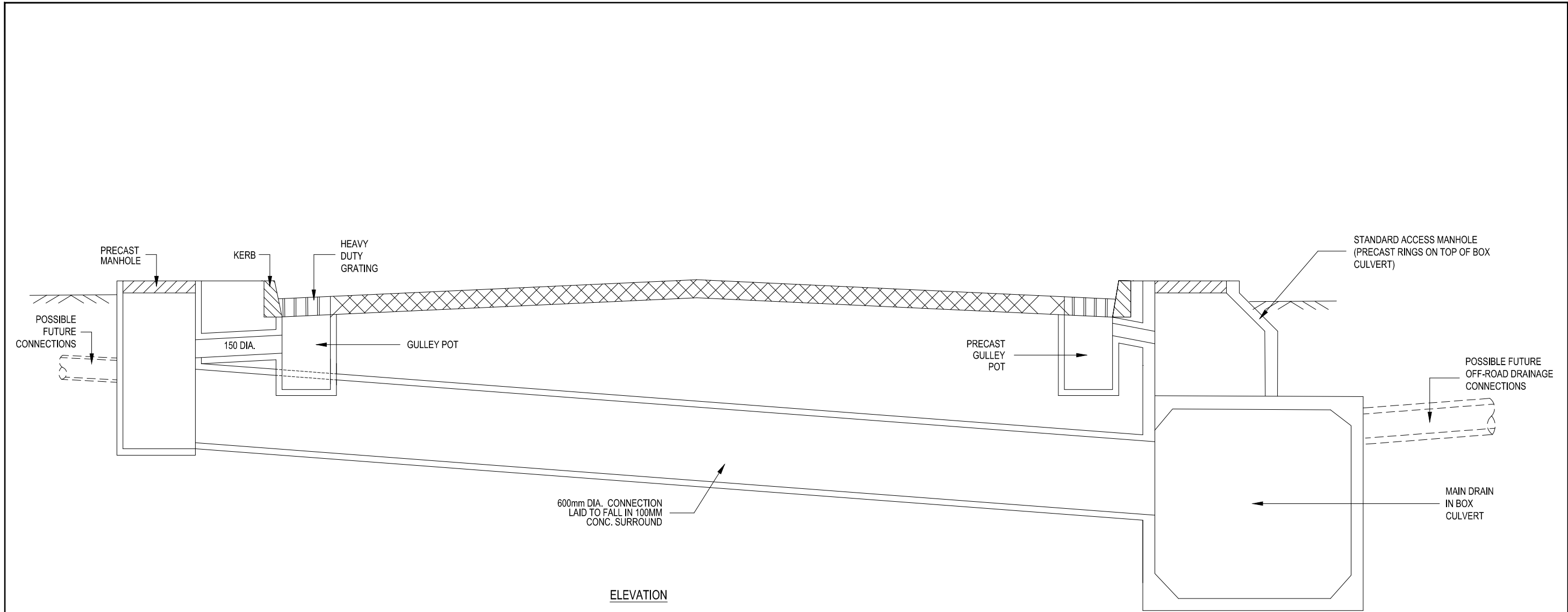
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
CULVERT HEAD AND WING WALLS

DRAWING REFERENCE
CUL-5

SCALE
Not to Scale

STATUS
FINAL



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CATEGORY
ROAD DRAINAGE

DRAWING TITLE
BOX CULVERT TYPICAL DRAINAGE
DETAILS

DRAWING REFERENCE
CUL-6

SCALE
Not to Scale

STATUS
FINAL

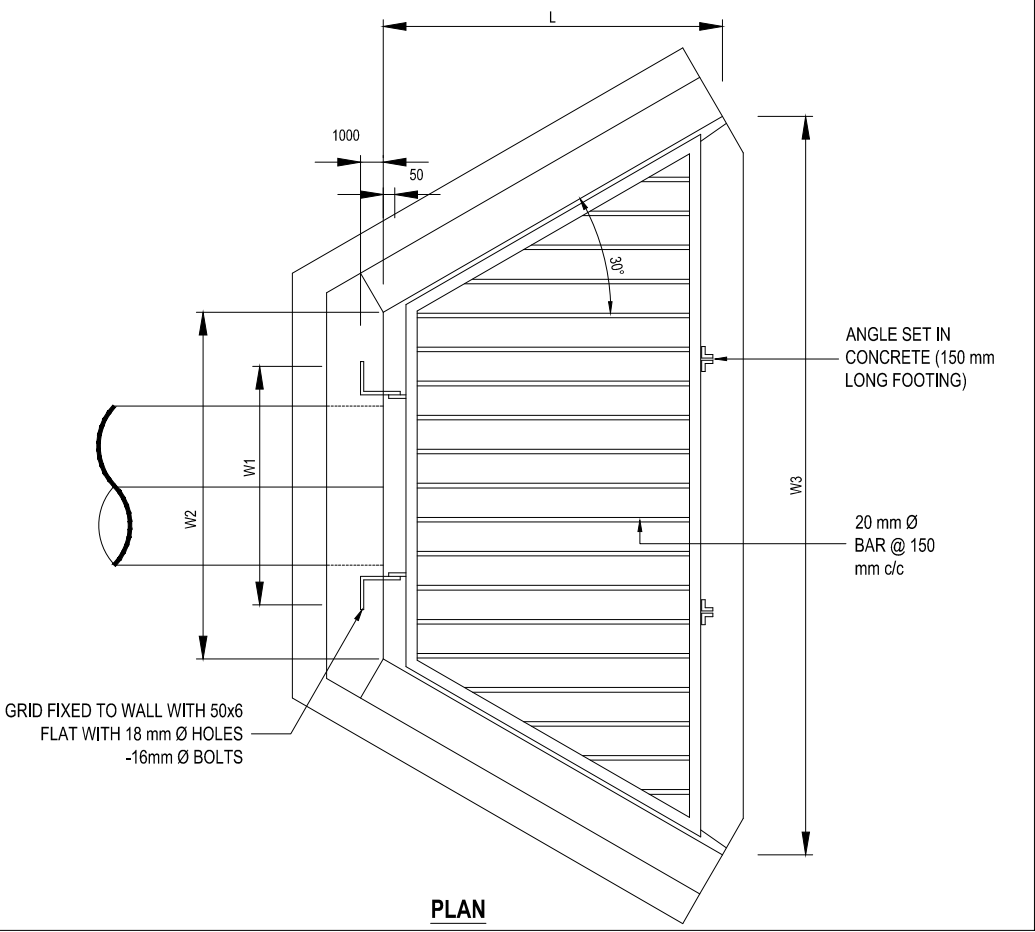
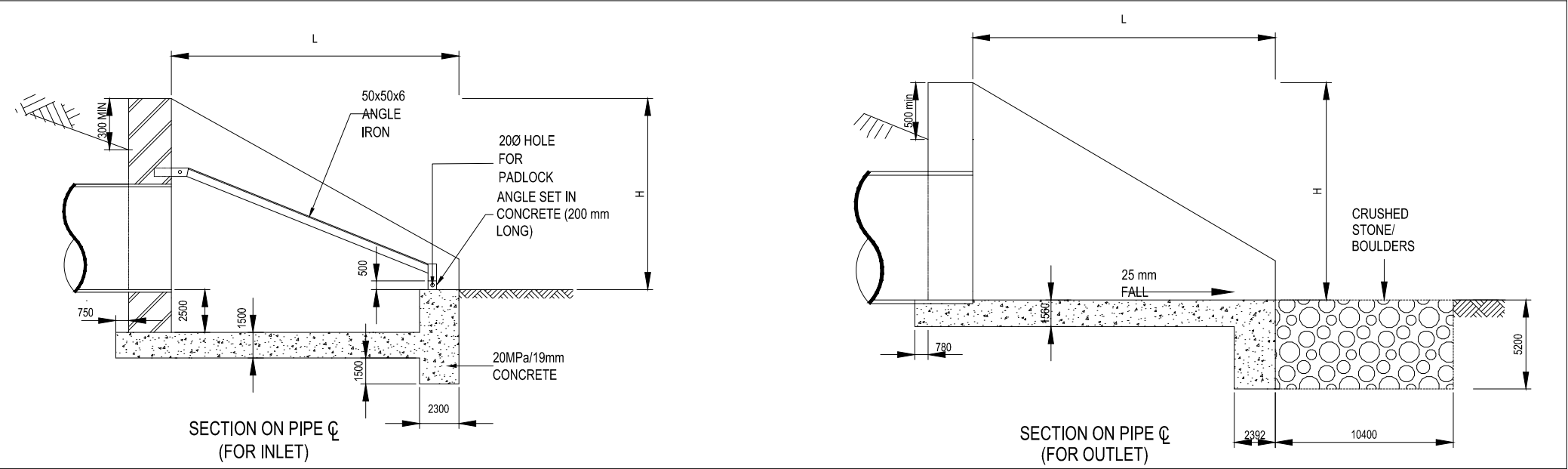


TABLE OF HEADWALL SIZES					
PIPE DIAM.	W1	W2	W3	H	L
300	550	795	2020	870	1060
375	670	950	2350	945	1210
450	800	1115	2700	1020	1370
525	925	1275	3030	1305	1520
600	1050	1435	3360	1190	1670
675	1180	1600	3710	1265	1830
750	1305	1760	4050	1350	1980
825	1420	1910	4350	1425	2110
900	1560	2090	4730	1520	2290
1200	1950	2390	5752	1850	2910
1500	2250	2690	6766	2180	3530

NOTE:
STEEL GRATING AND FIXTURES TO BE HOT DIP GALVANIZED AFTER MANUFACTURING



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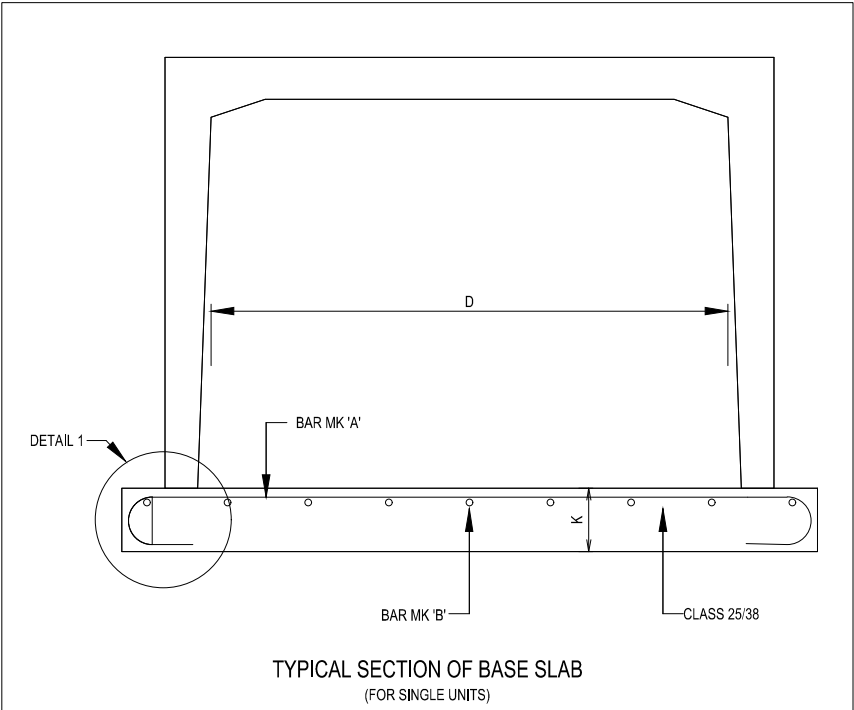
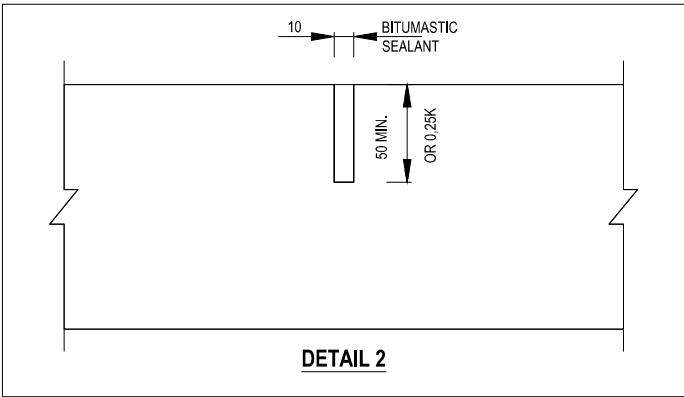
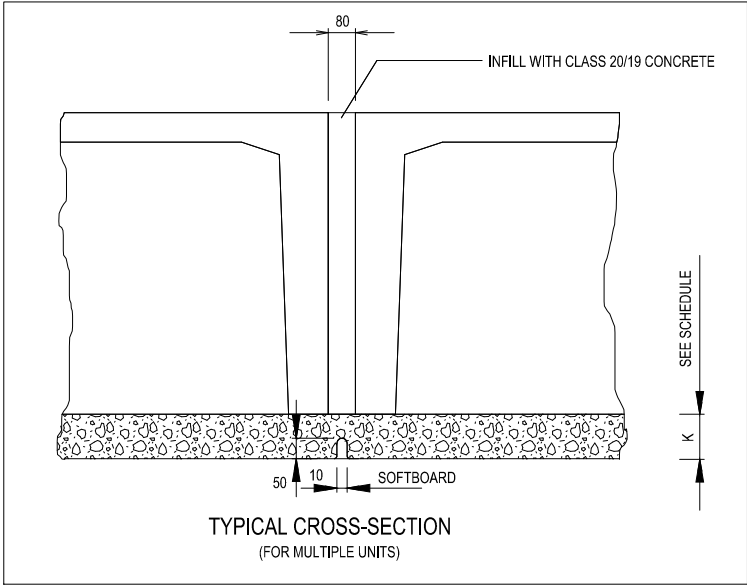
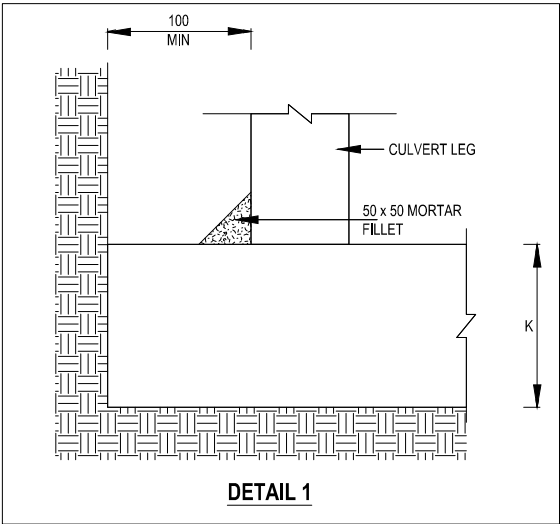
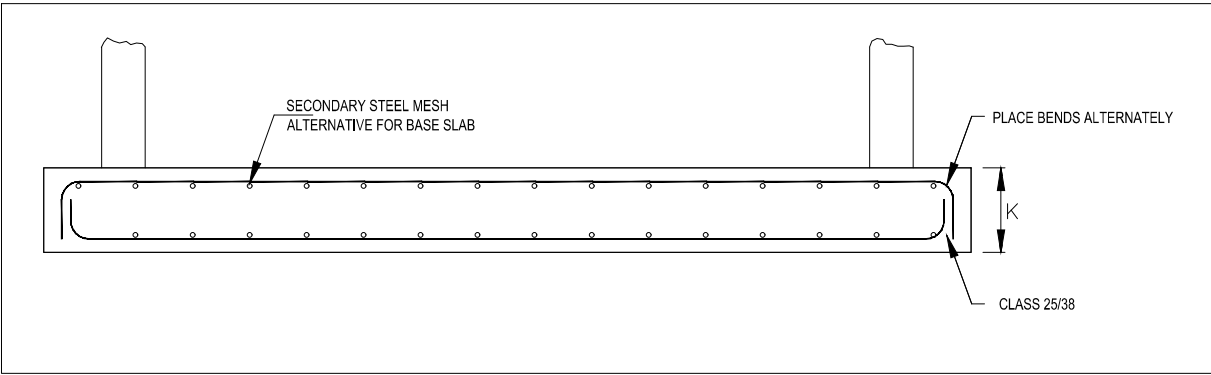
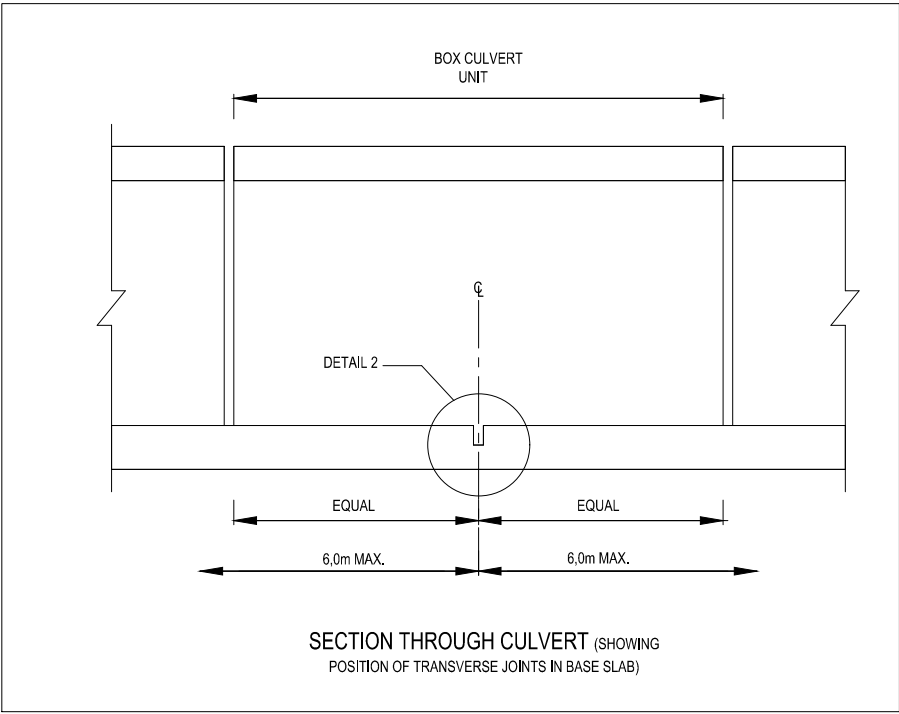
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

DRAWING TITLE
TYPICAL CULVERT HEADWALL
DETAILS
DRAWING REFERENCE
CUL-7

SCALE
Not to Scale

STATUS
FINAL



SCHEDULE FOR BASE SLAB REINFORCEMENT						
DIMENSIONS		REINFORCEMENT				MESH ALTERNATIVE
D	K	BAR MKA	BENDING	BAR MKB	BENDING	
600	130	Y12-225	PLACE HOOKS ALTERNATIVELY	Y10-250	500 LAP	REF 517
750	130	Y12-175		Y10-250		REF 655
900	150	Y12-150		Y10-250		REF 772
1 200	175	Y12-150		Y10-200		REF 772
1 500	175	Y12-125		Y10-200		REF 517 x 2
1 800	200	Y12-12.5		Y10-150		REF 517 x 2
2 400	225	Y16-175		Y10-150		REF 655 x 2
3 000	250	Y16-150		Y10-150		REF 655 x 2

- NOTES :**
1. MINIMUM COVER TO REINFORCEMENT = 40mm



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CATEGORY
ROAD DRAINAGE

DRAWING TITLE
PRECAST BOX CULVERT DETAILS

DRAWING REFERENCE
CUL-8

SCALE
Not to Scale

STATUS
FINAL

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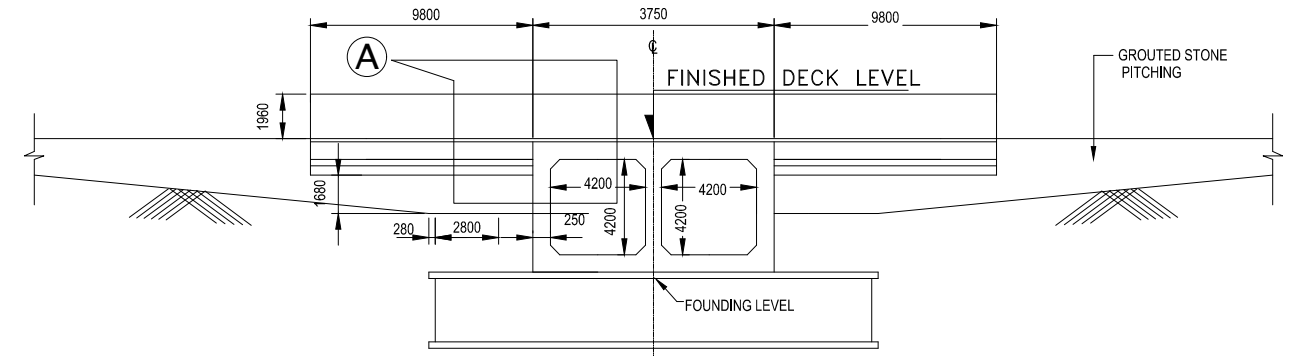
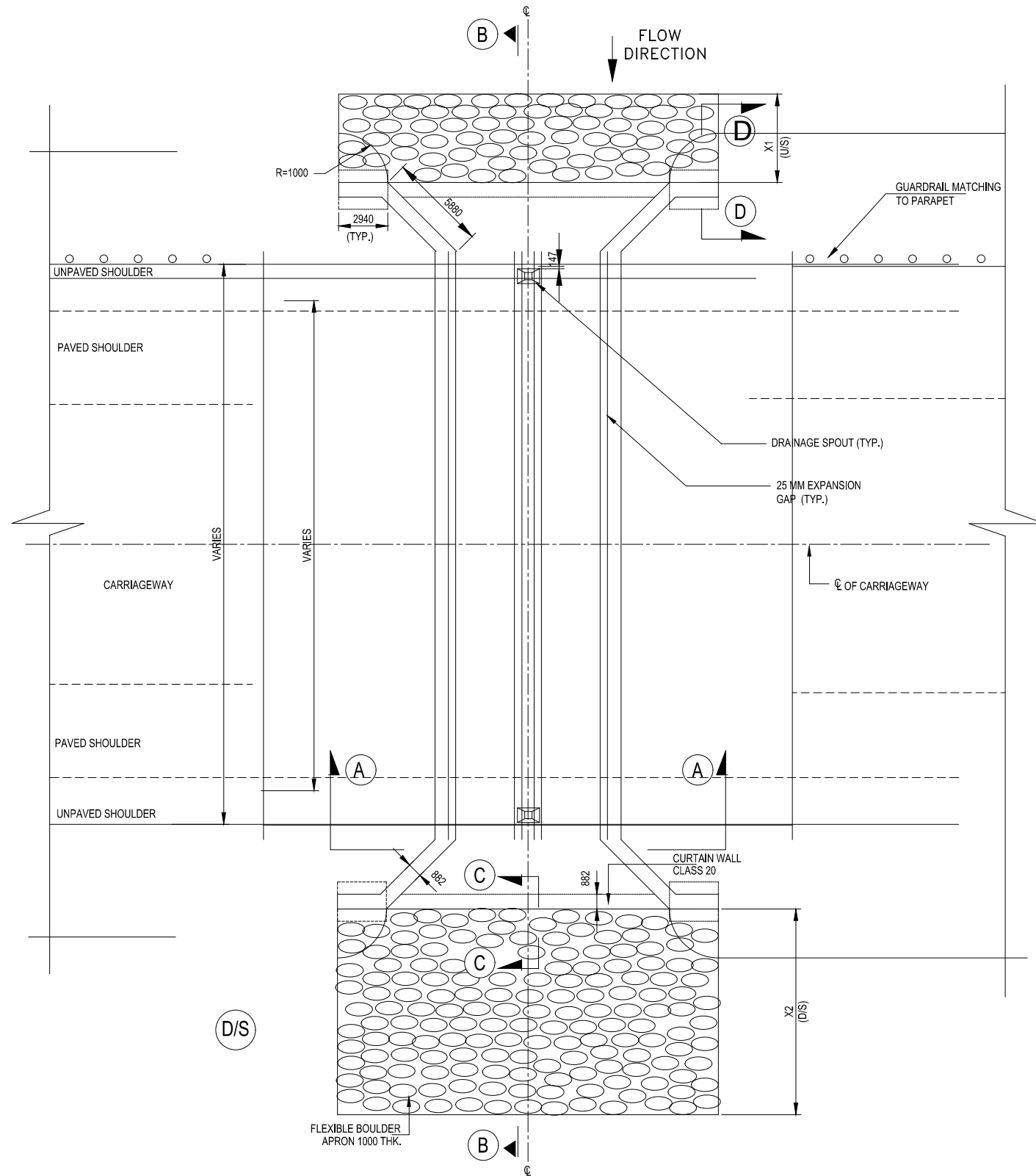
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ROAD DRAINAGE

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DOUBLE RCC CULVERT CROSSINGS

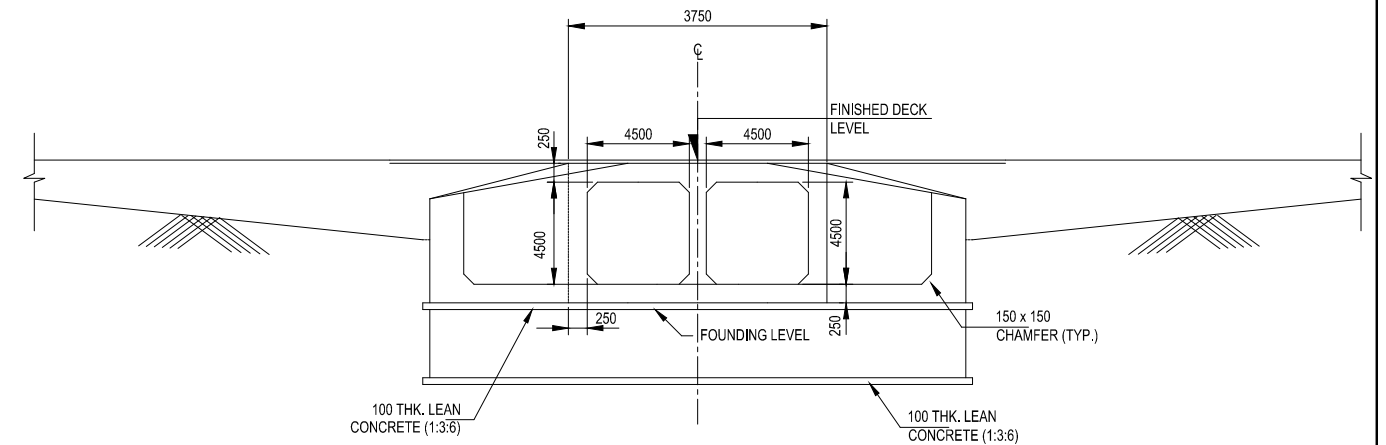
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CUL-9

SCALE
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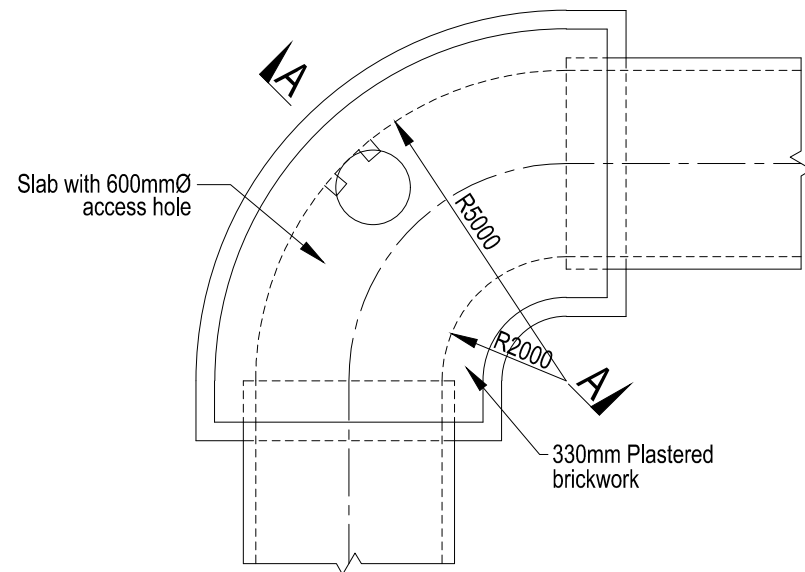
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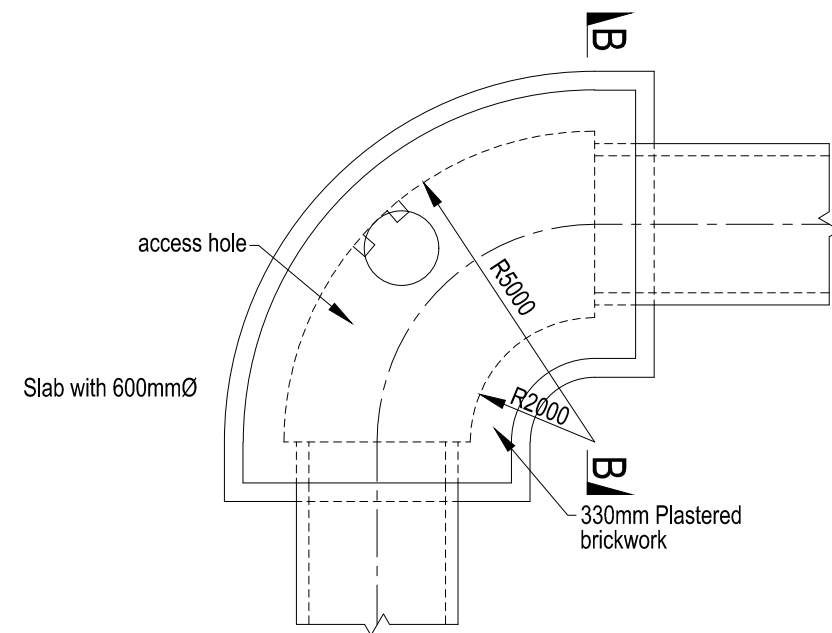
SECTIONAL ELEVATION



SECTION A - A



PLAN
(without access shaft) BEND
FOR BOX CULVERTS



PLAN
(without access shaft)
BEND FOR PIPE CULVERTS
(>750mm Ø)



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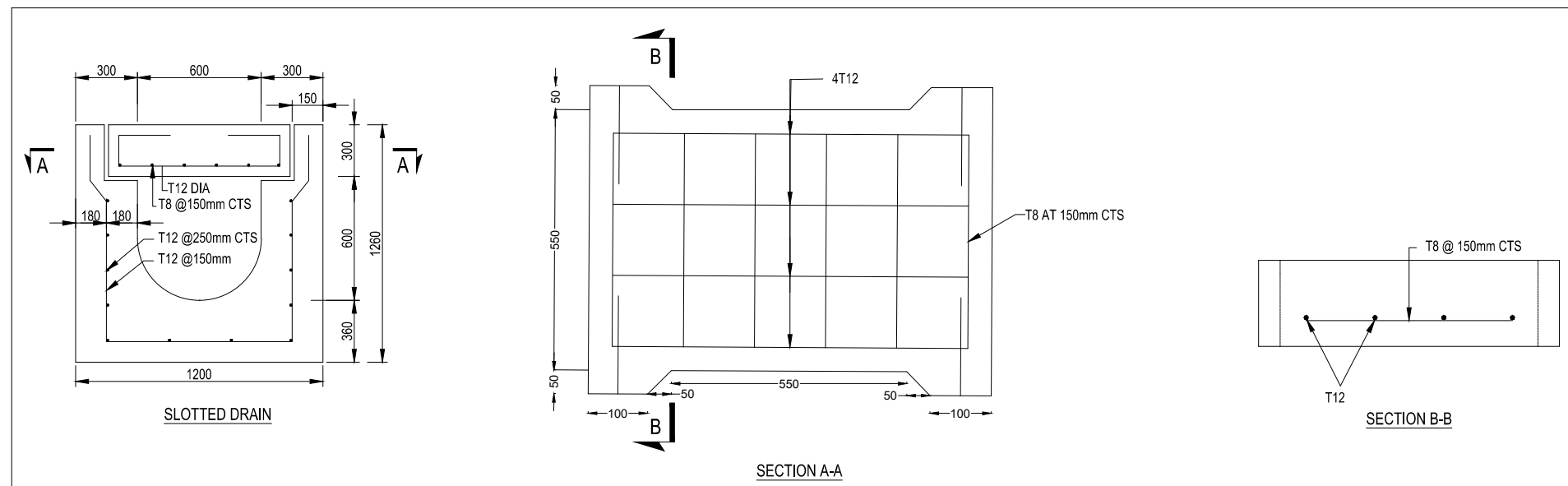
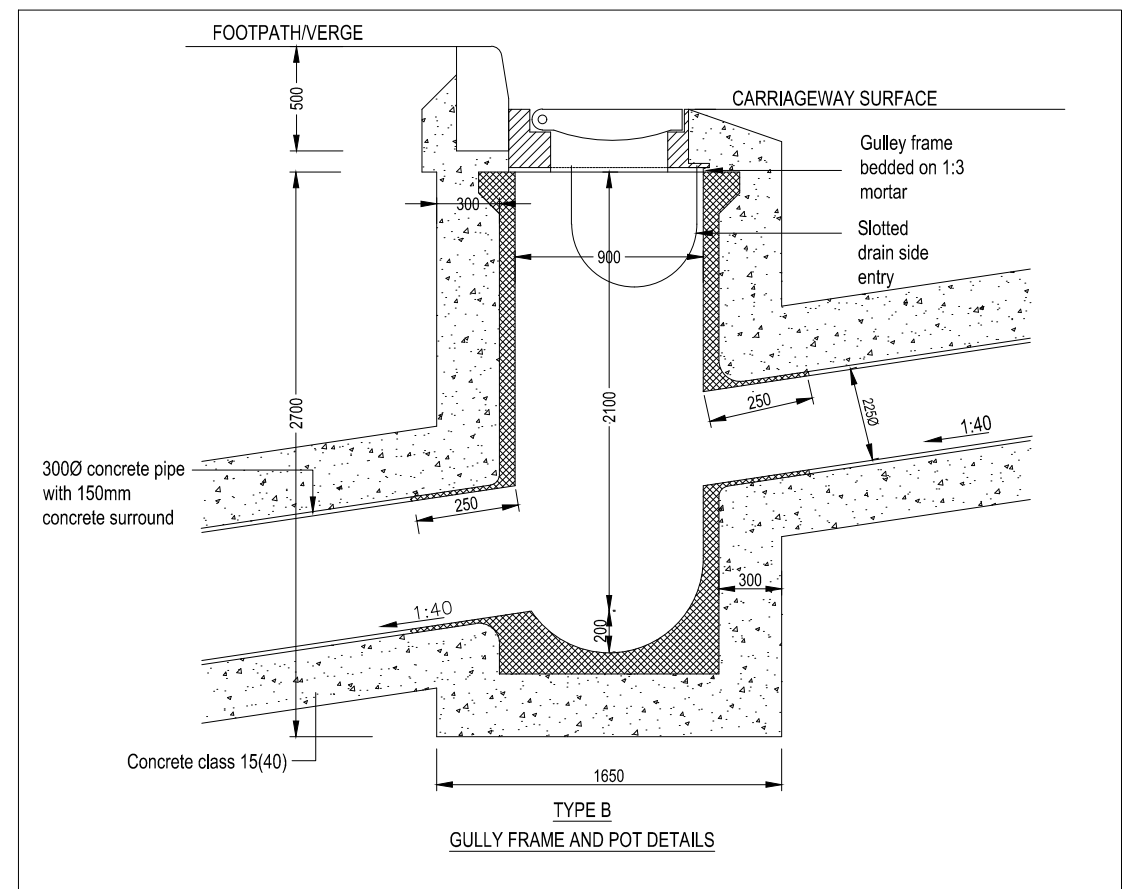
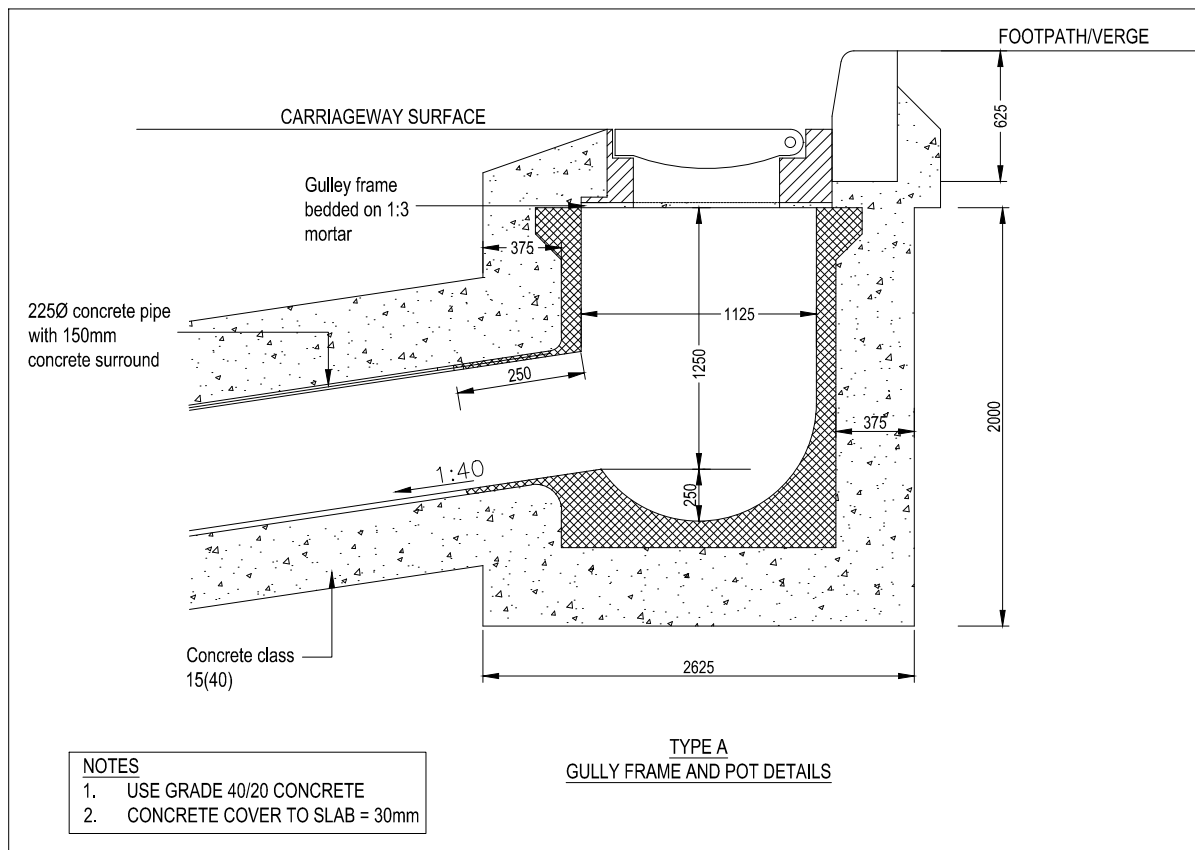
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
CULVERT BEND DETAILS

DRAWING REFERENCE
CUL-11

SCALE
Not to Scale

STATUS
FINAL



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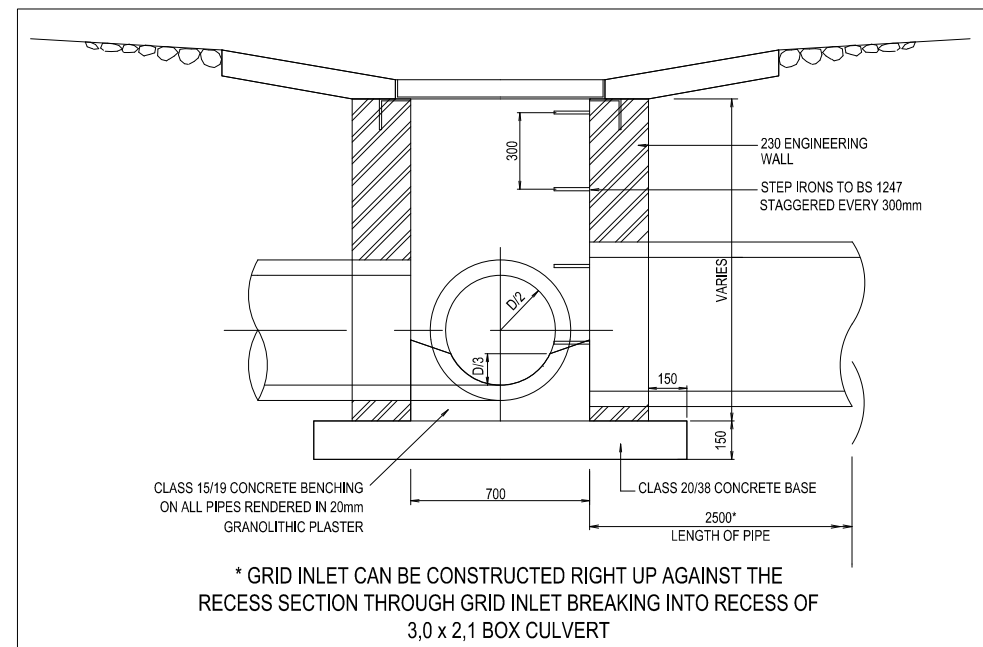
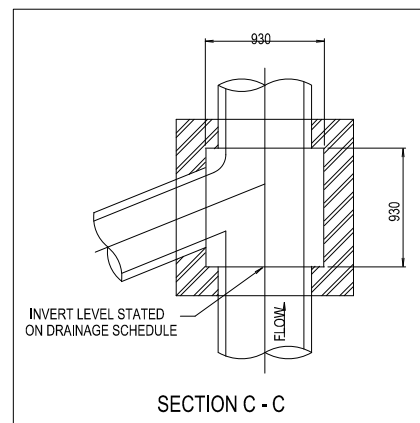
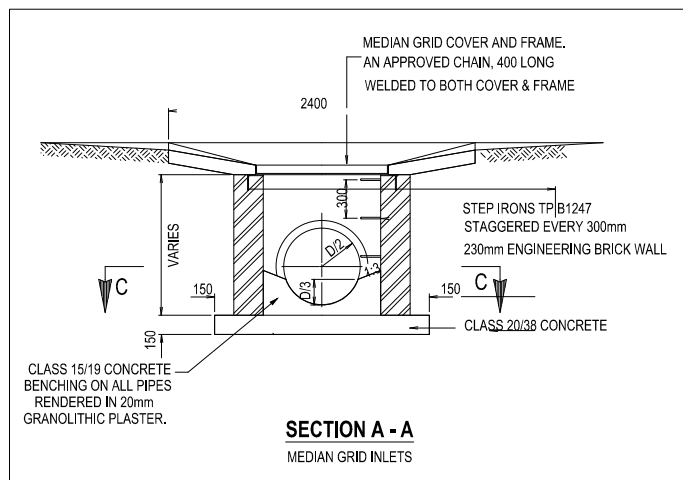
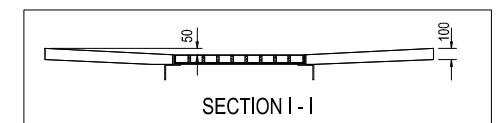
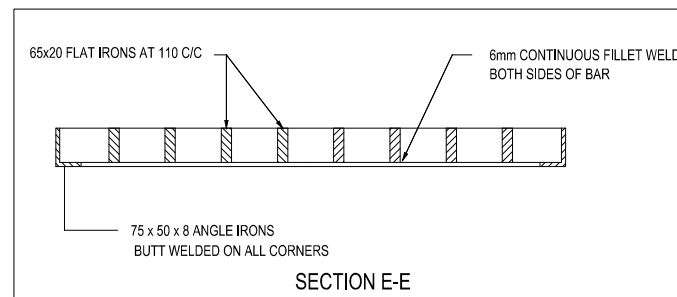
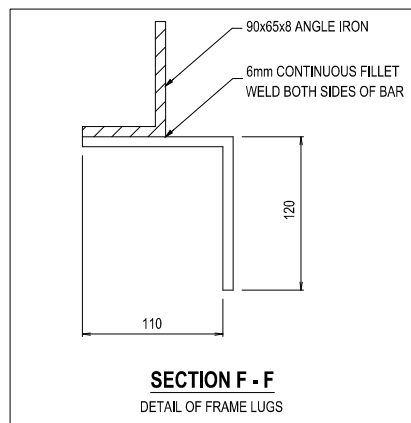
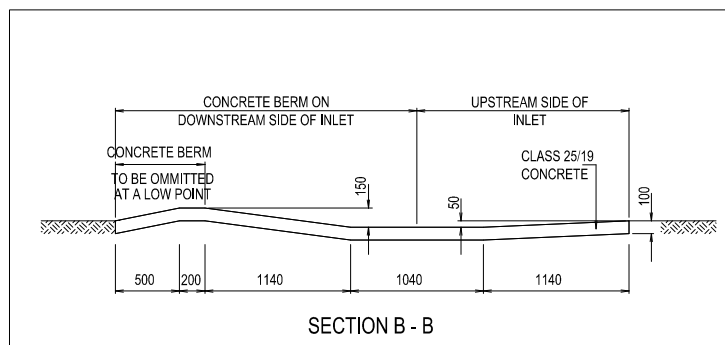
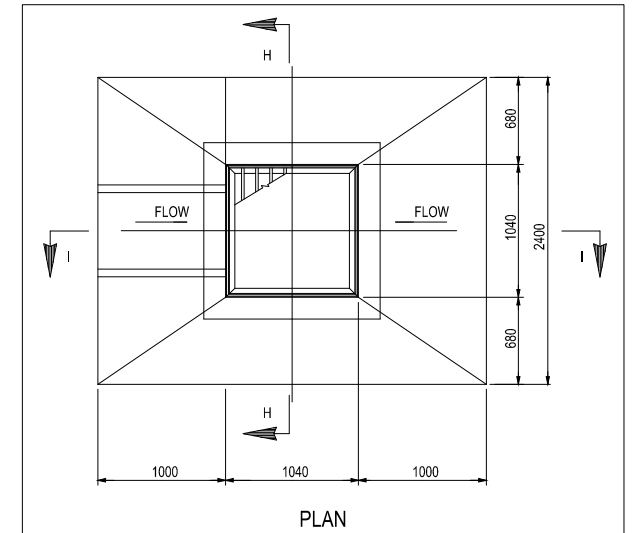
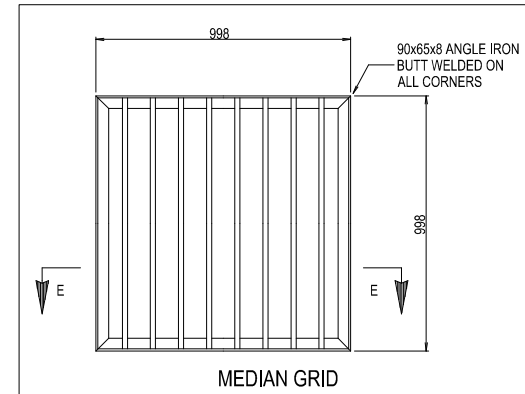
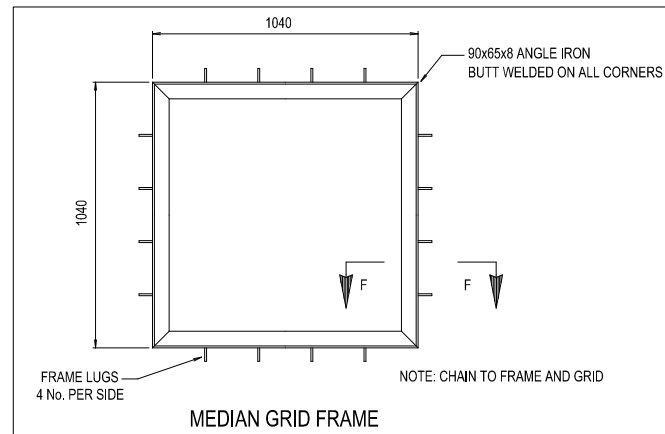
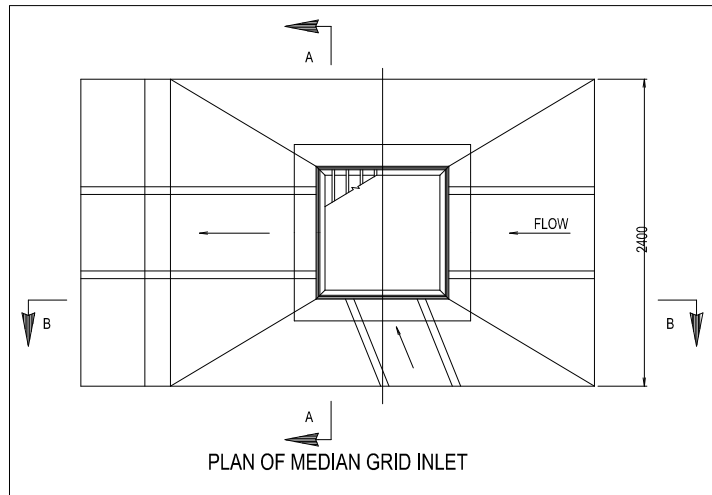
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
GULLY FRAMES AND POT DETAILS

DRAWING REFERENCE
GU-2

SCALE
Not to Scale

STATUS
FINAL



NOTE:
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE

* GRID INLET CAN BE CONSTRUCTED RIGHT UP AGAINST THE RECESS SECTION THROUGH GRID INLET BREAKING INTO RECESS OF 3,0 x 2,1 BOX CULVERT



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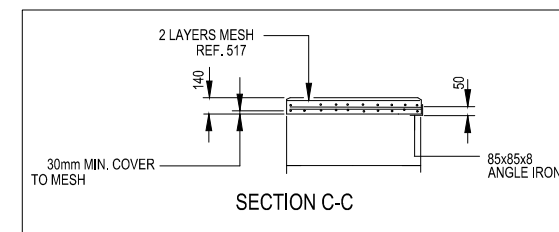
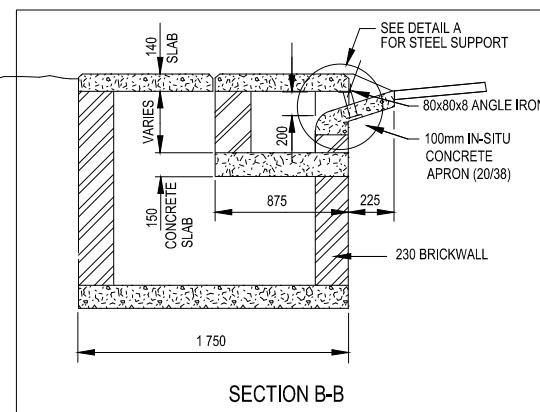
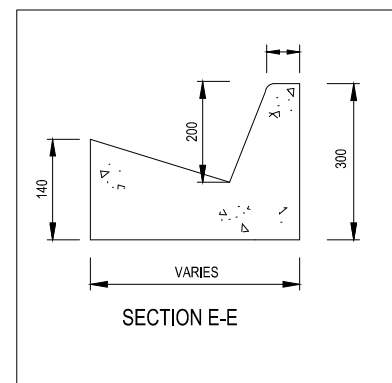
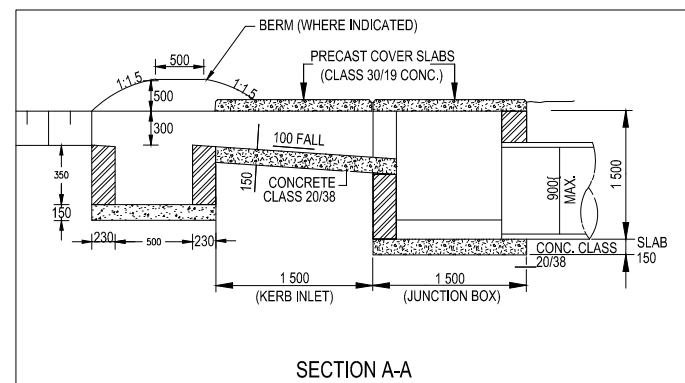
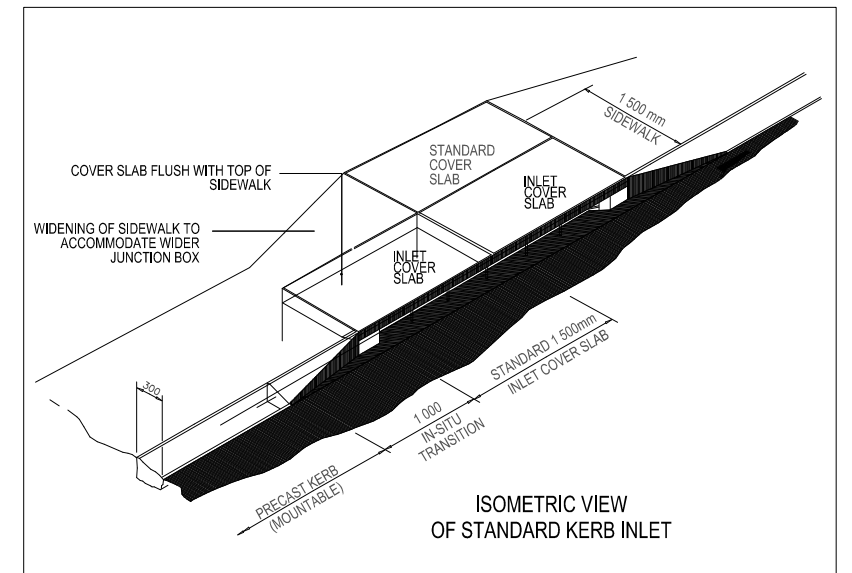
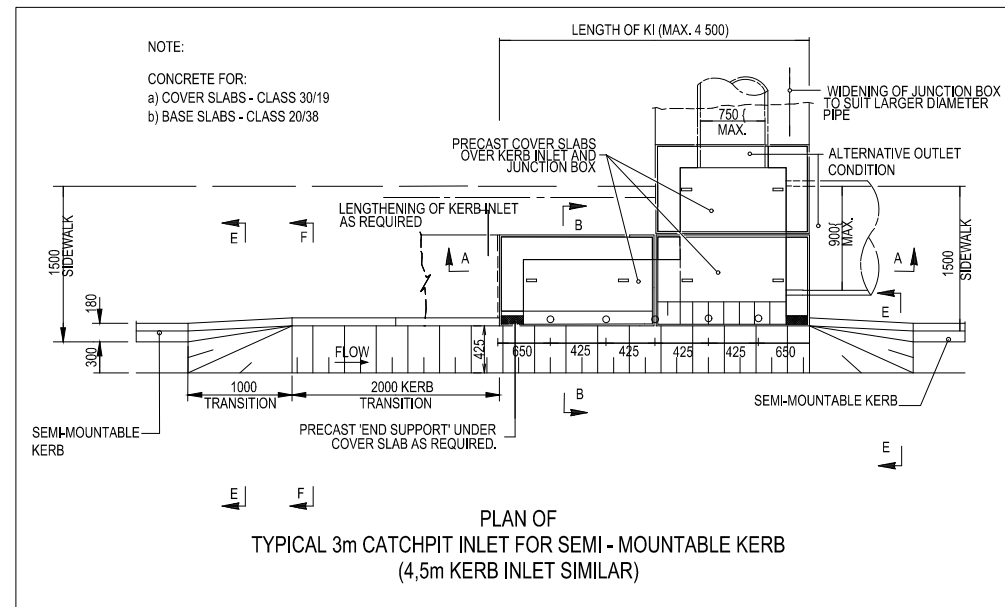
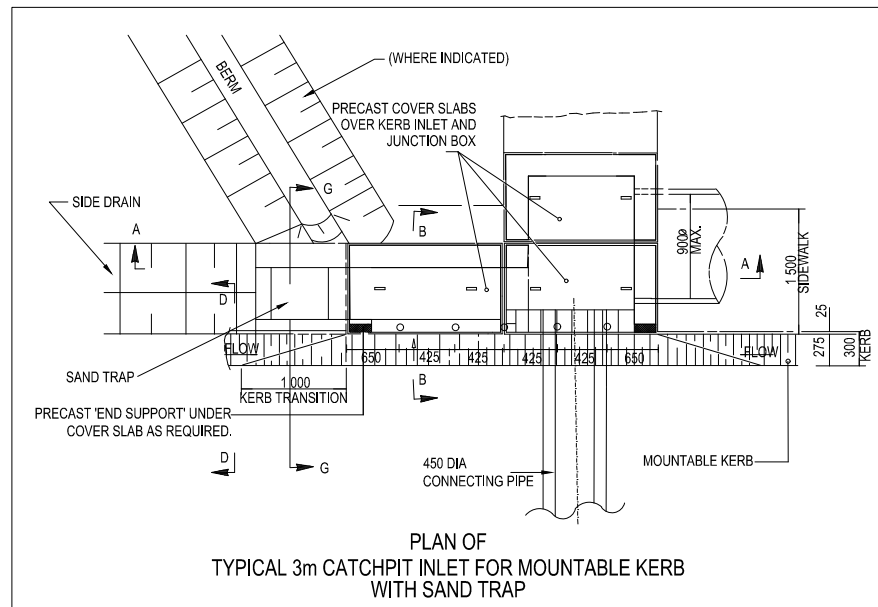
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
CATCH PITS AND DROP INLETS
DETAILS

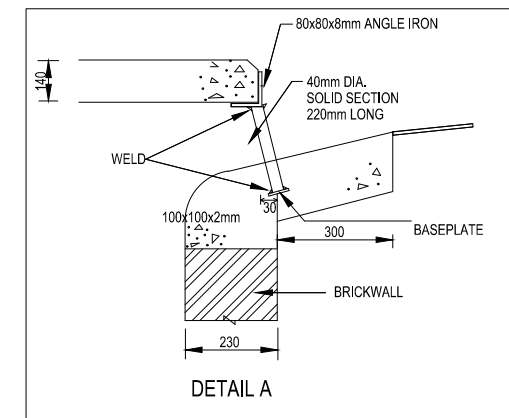
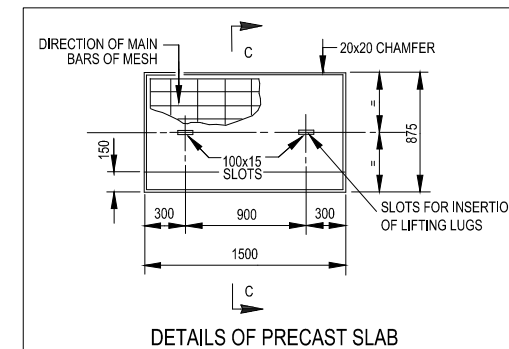
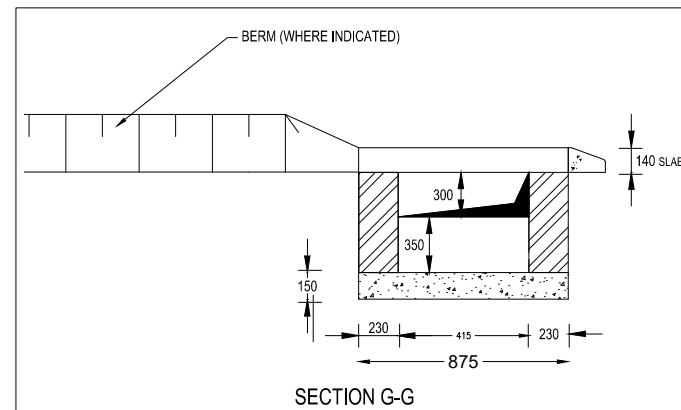
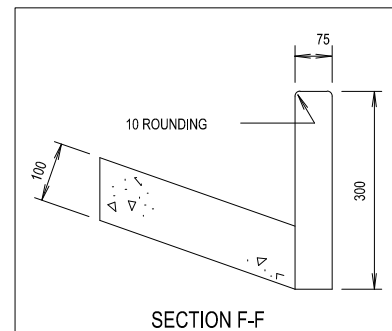
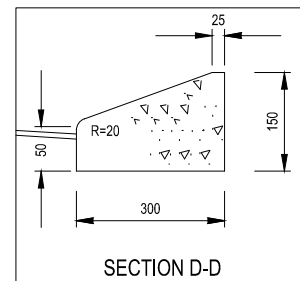
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CP-2

SCALE
Not to Scale

STATUS
FINAL



NOTE:
CONCRETE FOR:
a) COVER SLABS -
CLASS 30/19
b) BASE SLABS -
CLASS 20/38



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Issue Date:
JULY 2023

PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

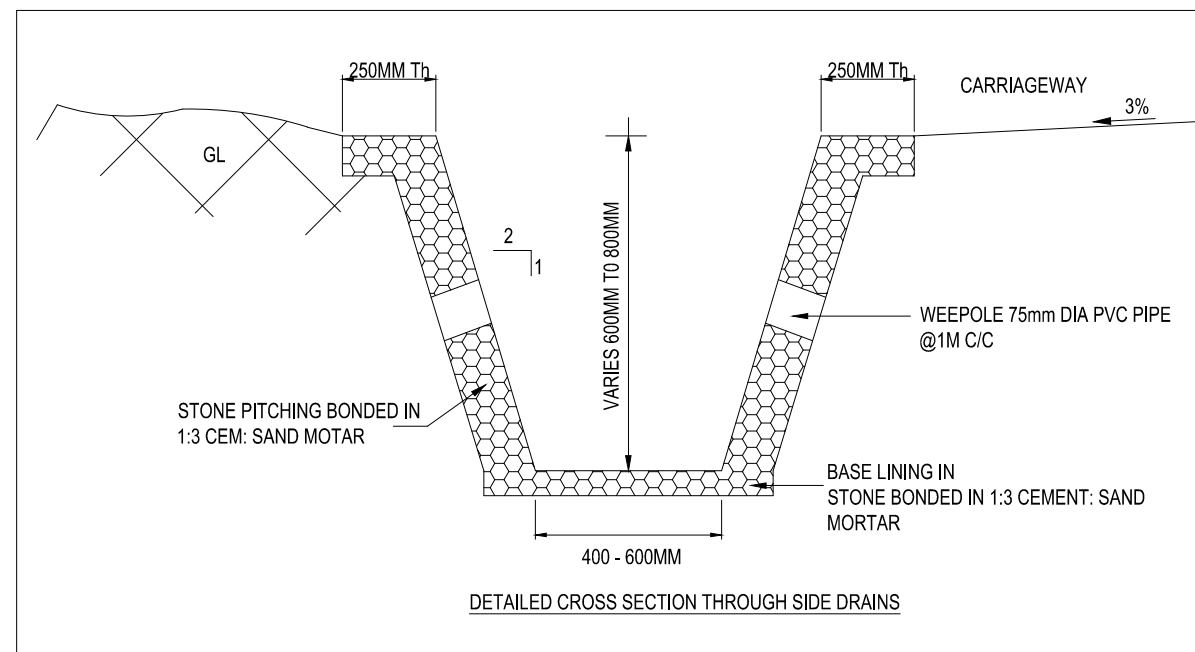
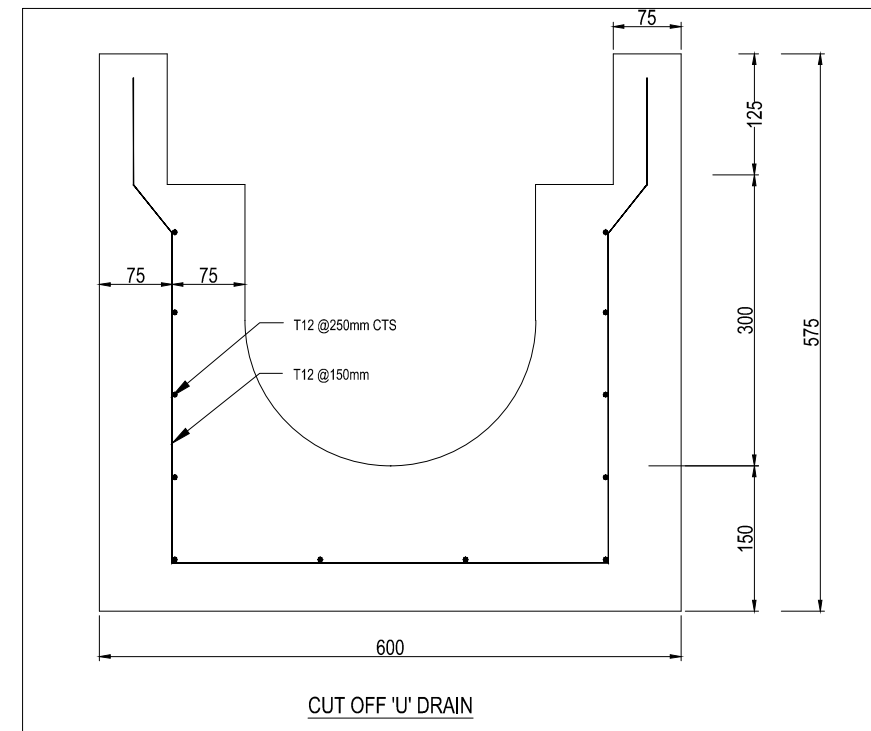
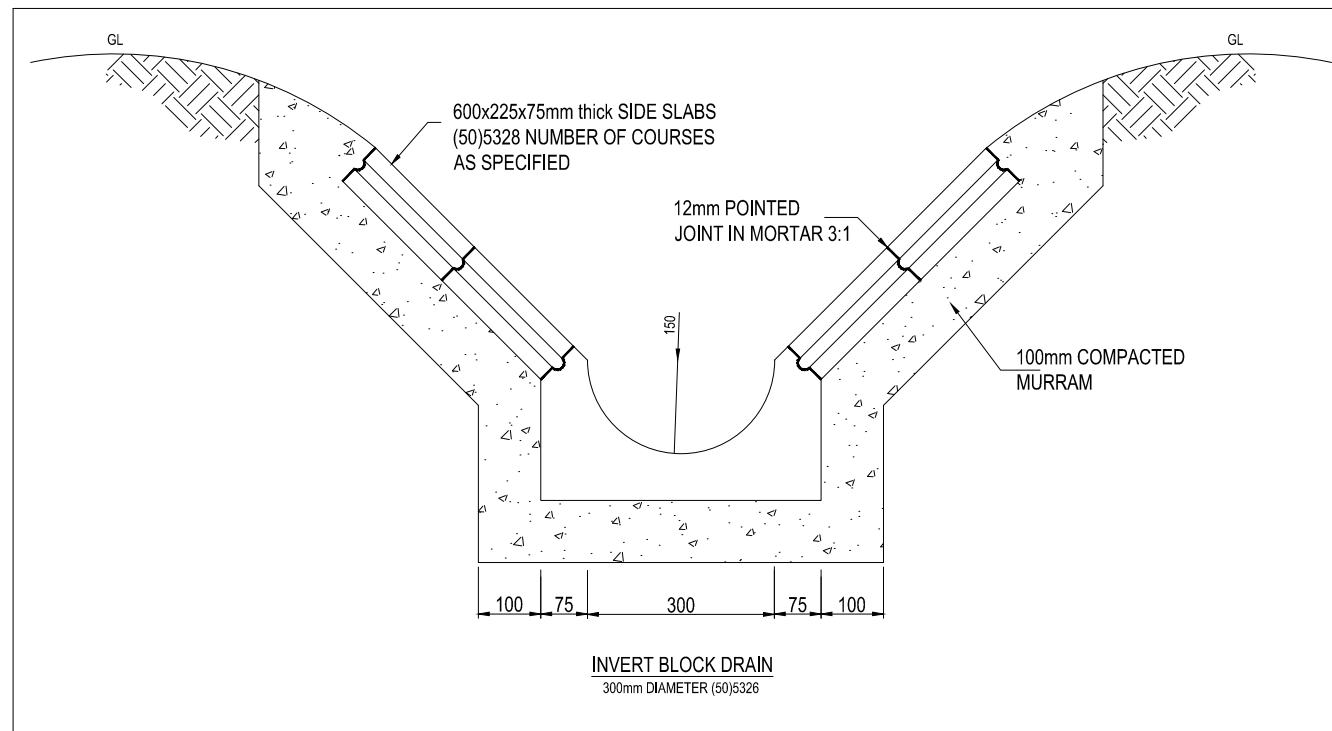
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
CATCH PITS AND KERB INLET DETAILS

DRAWING REFERENCE
CP-3

SCALE
Not to Scale

STATUS
FINAL



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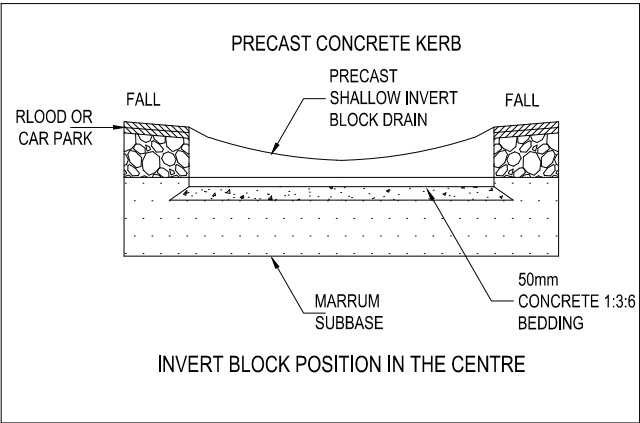
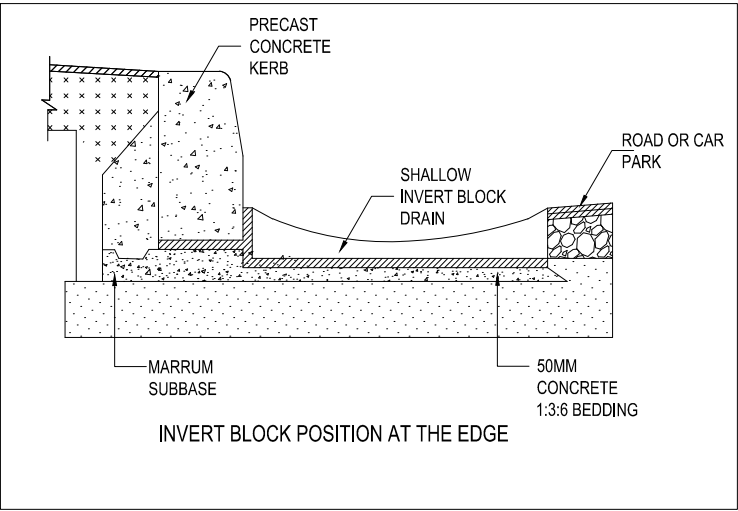
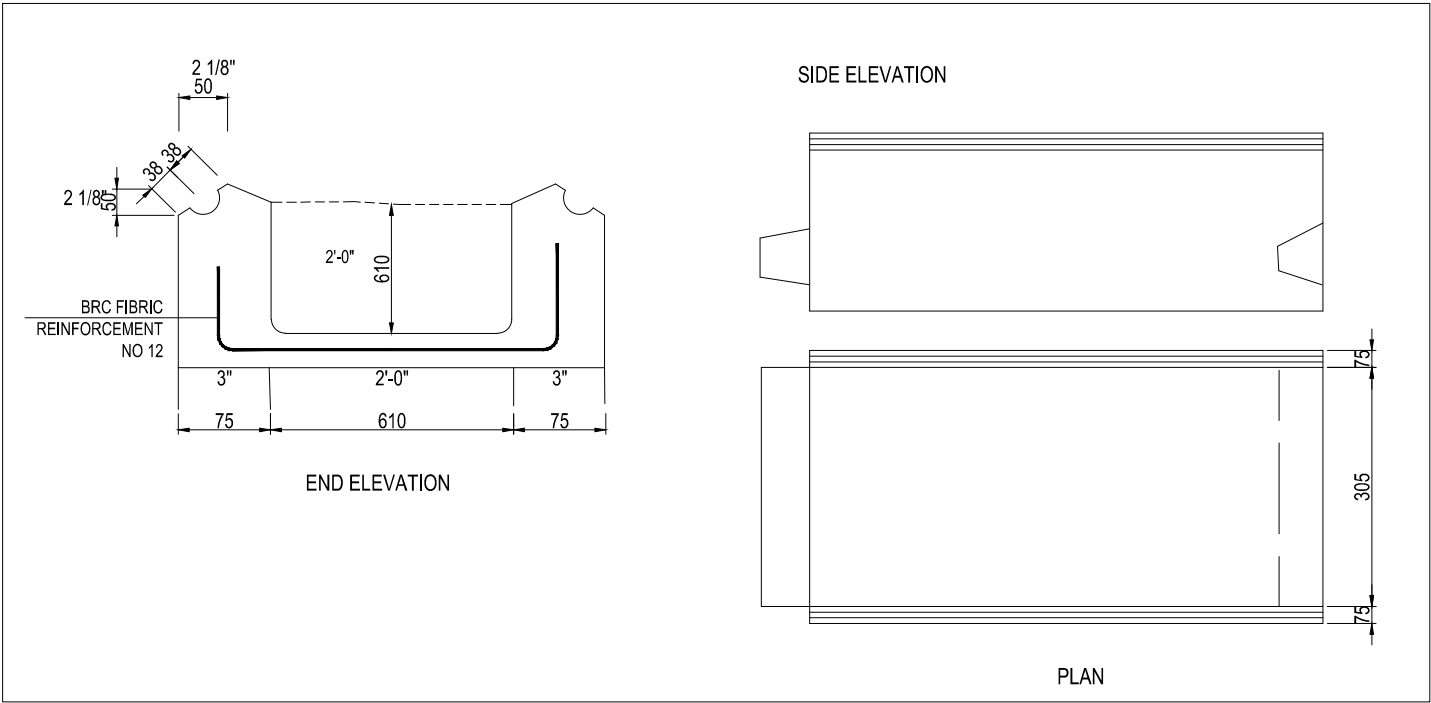
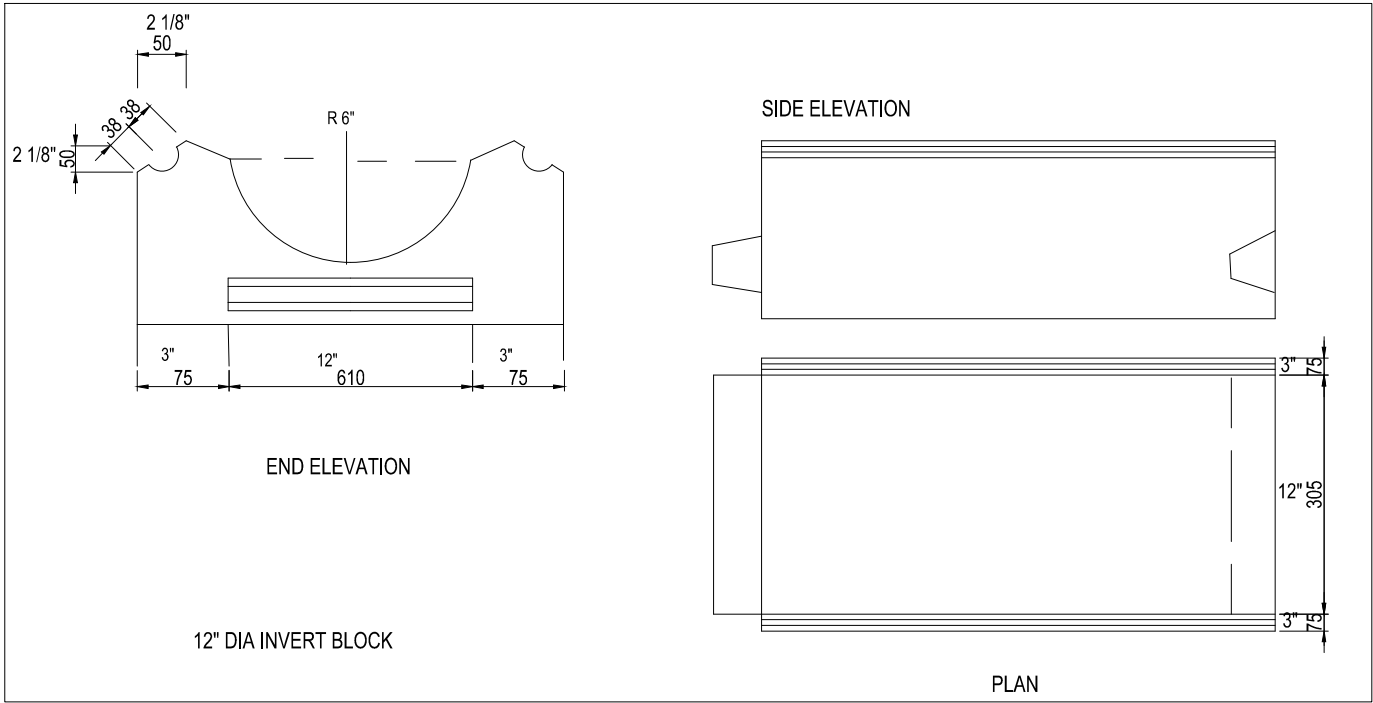
CATEGORY
ROAD DRAINAGE

DRAWING TITLE
OPEN SIDE DRAIN DETAILS

DRAWING REFERENCE
D-1

SCALE
Not to Scale

STATUS
FINAL



U:\Projects\2023\2023 UGANDA URBAN ROADS DESIGN MANUAL\2023 UGANDA URBAN ROADS DESIGN MANUAL.dwg
User: [Name]
Date: 11/07/2023
Time: 10:23



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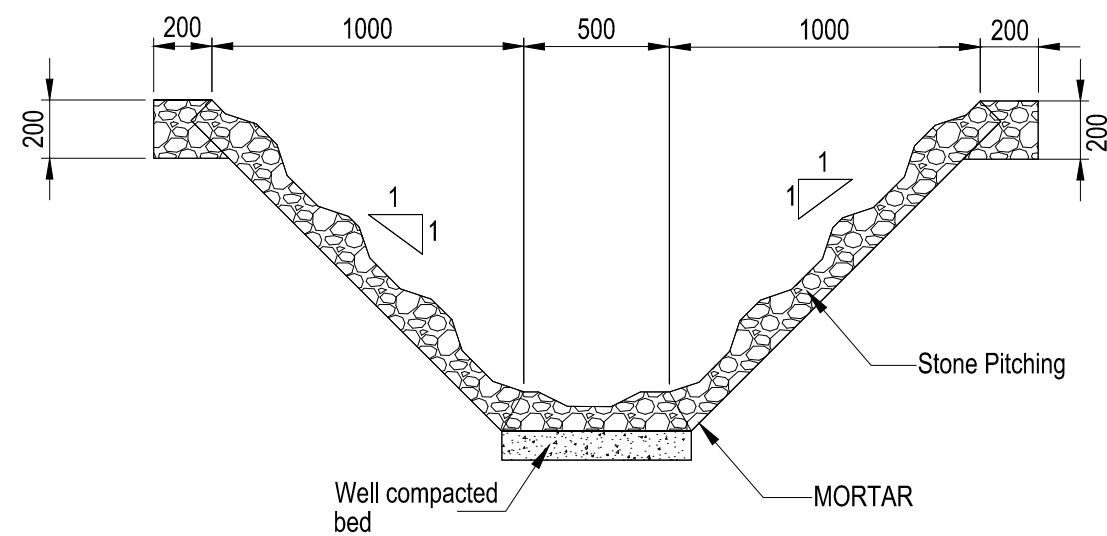
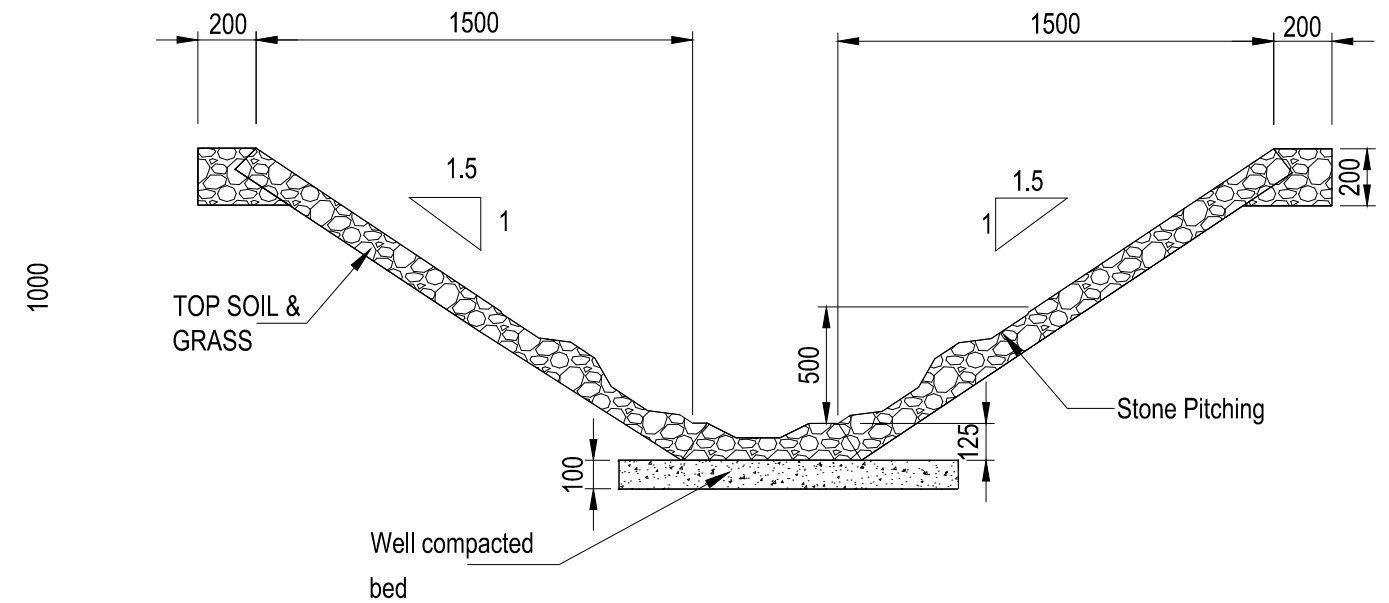
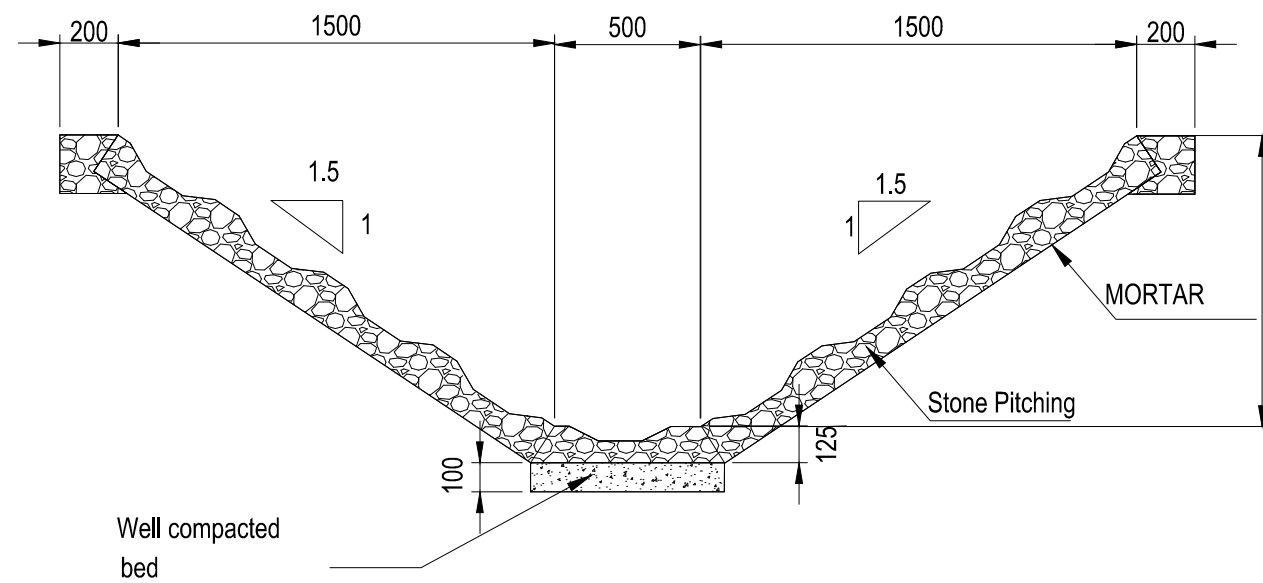
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

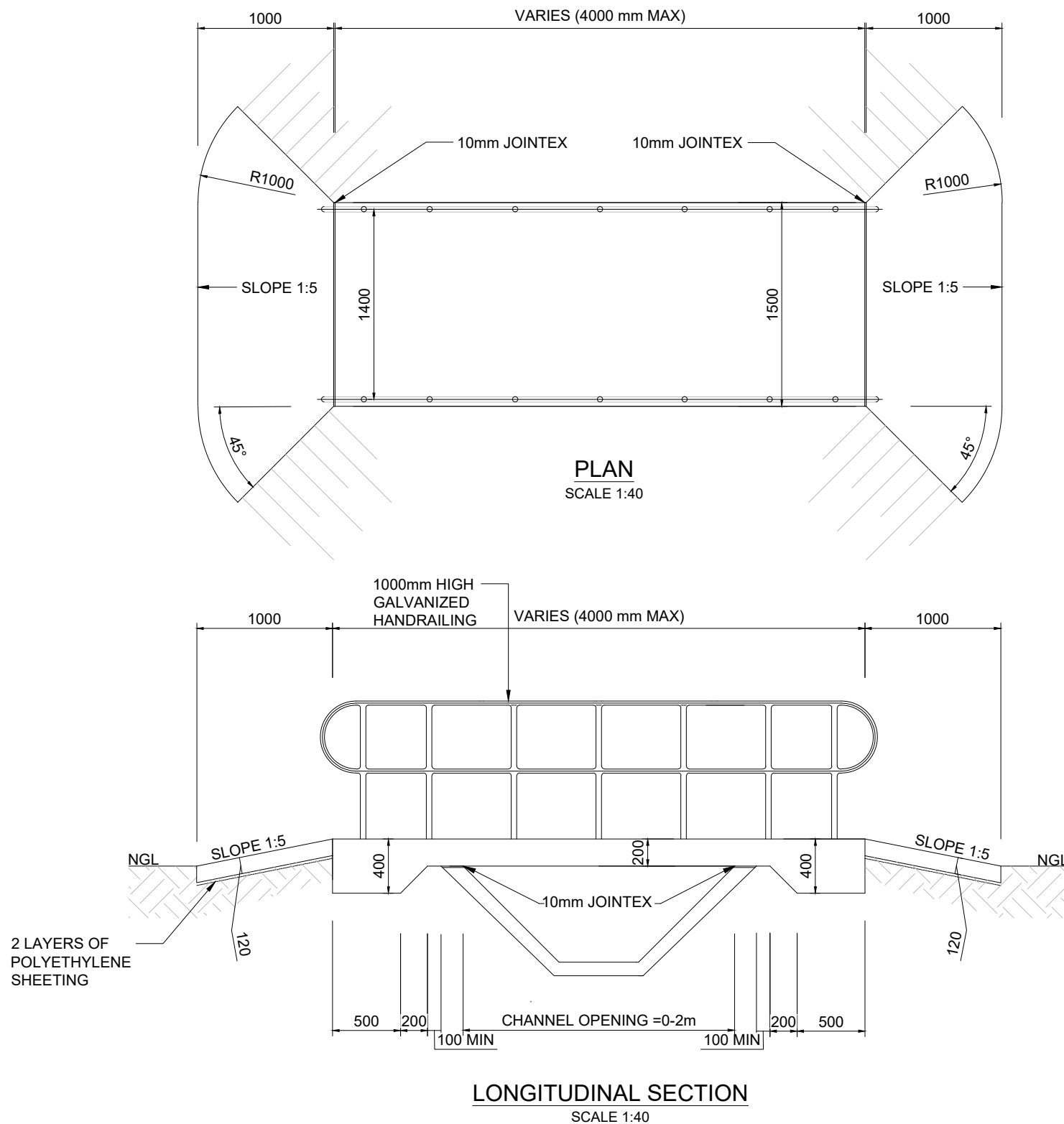
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INVERT BLOCK POSITIONING AND DETAILS
DRAWING REFERENCE
D-2

SCALE
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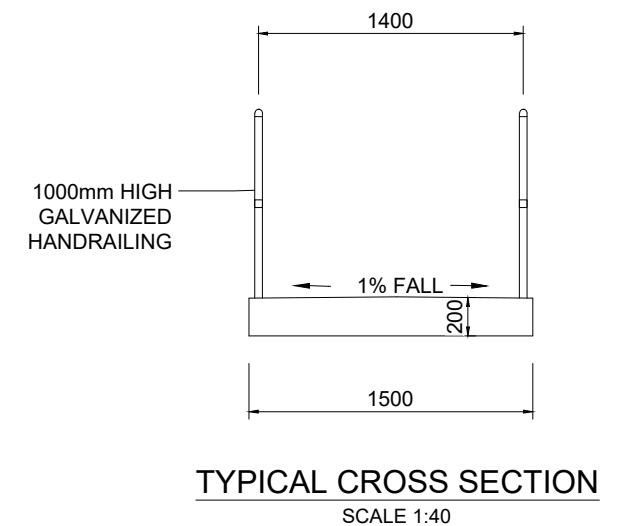
STATUS
FINAL



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- NOTES:
1. CONCRETE:
 - 1.1. CONCRETE CLASSES (CHARACTERISTIC STRENGTH MPa) / STONE SIZE (mm)
BLINDING NO FINES 15/19
BASE/SLAB/STRIP FOOTING 30/19
 - 1.2. ALL DIMENSIONS AND REBAR MUST BE VERIFIED BY THE APPOINTED ENGINEER BEFORE CASTING OF CONCRETE.
 - 1.3. REINFORCED CONCRETE TO BE KEPT WET FOR PROPER CURING.
 - 1.4. MINIMUM CONCRETE COVER TO REINFORCEMENT 50mm
 - 1.5. REINFORCEMENT TO BE DESIGNED TO SUIT SPECIFIC SPAN
 2. LOADING (ACCORDING TO BS 5400):
 - 2.1. LIVE LOAD
PEDESTRIAN LOADING 5 kN/m²
 - 2.2. DEAD LOAD
REINFORCED CONCRETE 25.0 kN/m³
HANDRAIL LOADING 2 kN/m



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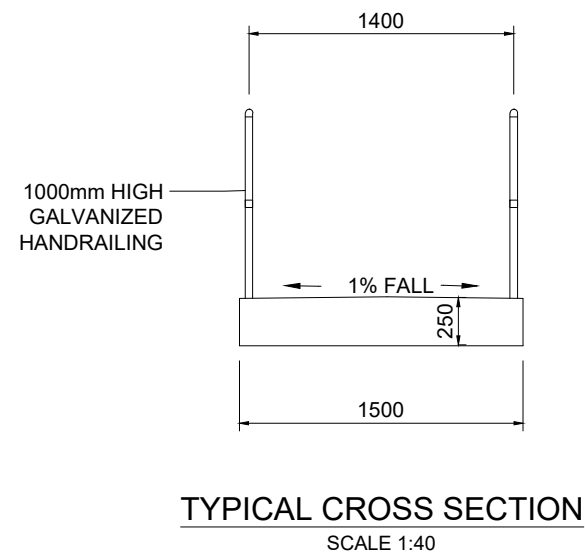
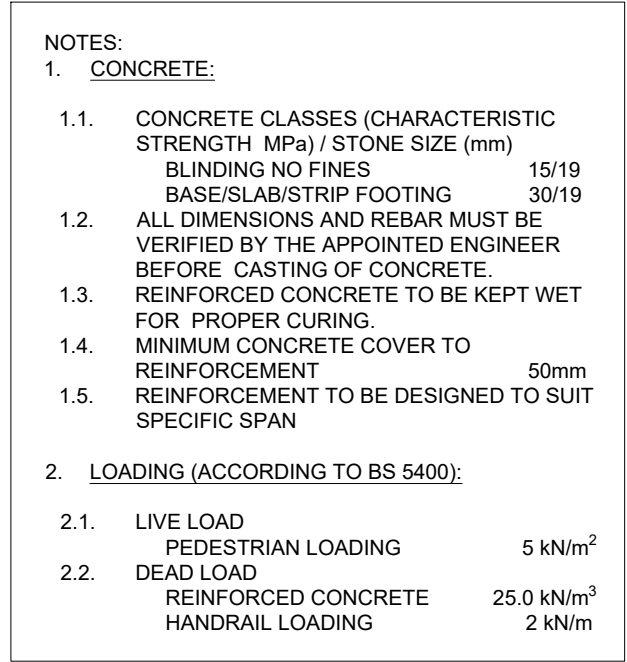
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

DRAWING TITLE
DRAINAGE CHANNEL PEDESTRIAN
CROSSINGS (0-2m SPAN)
DRAWING REFERENCE
SD-1

SCALE
Not to Scale

STATUS
FINAL



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PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

DRAWING TITLE
DRAINAGE CHANNEL PEDESTRIAN
CROSSINGS (2-3m SPAN)

DRAWING REFERENCE

SCALE
Not to Scale

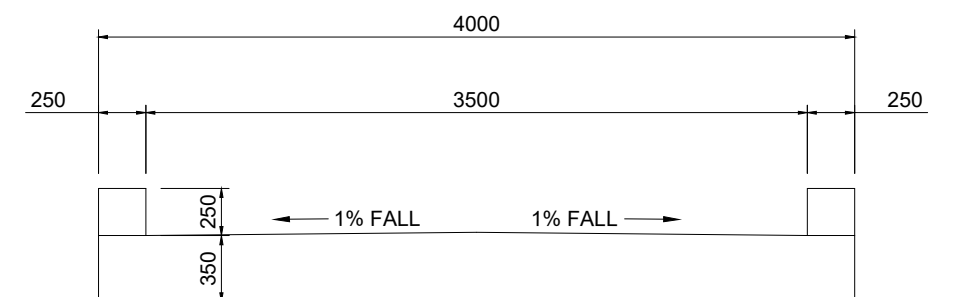
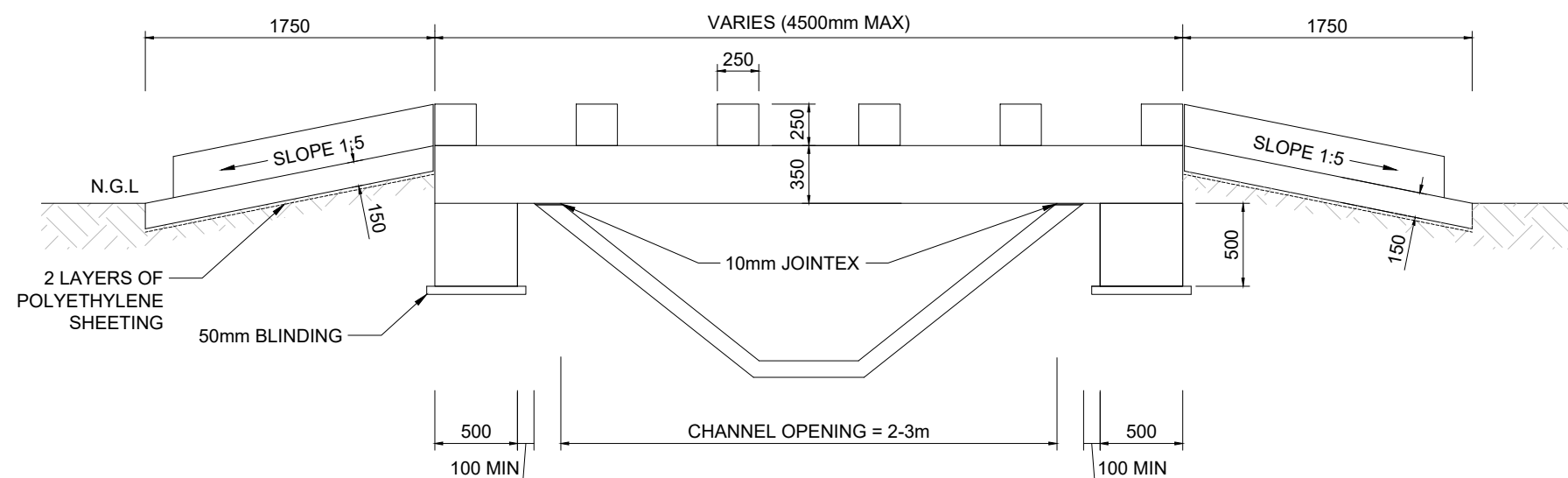
STATUS
FINAL



- [illegible]



STATUS
FINAL



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PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

DRAWING TITLE

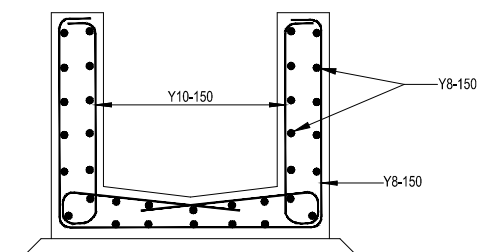
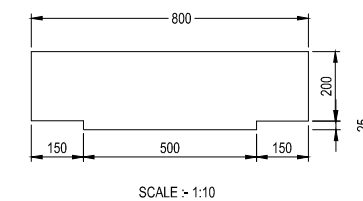
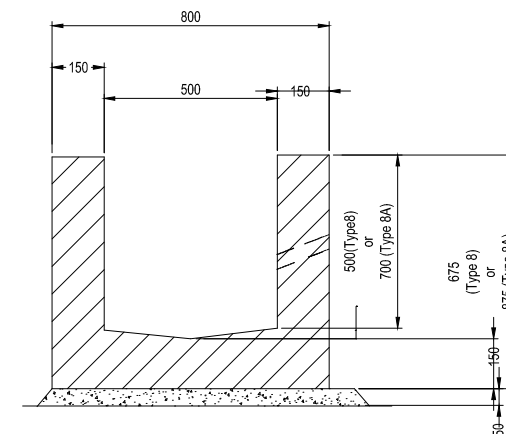
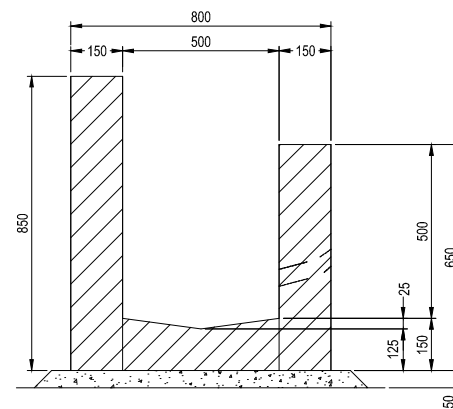
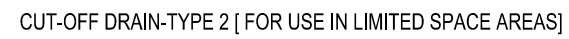
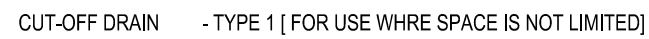
DRAINAGE CHANNEL VEHICULAR CROSSINGS (2-3M SPAN)

DRAWING REFERENCE

SD-4

SCALE
Not to Scale

STATUS
FINAL

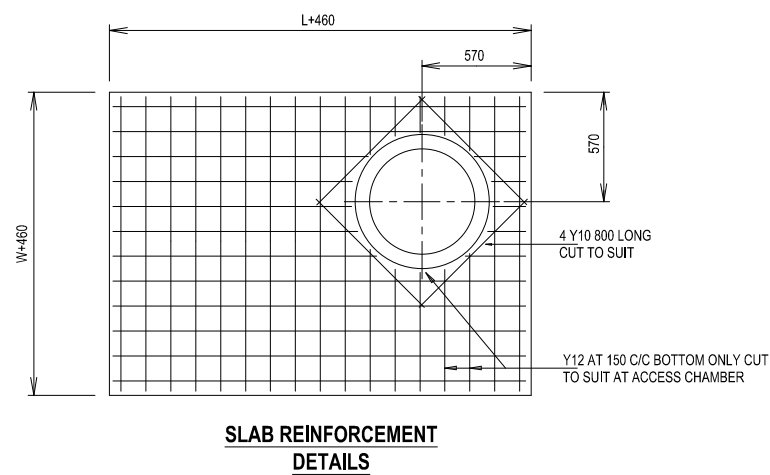


Print Date: July 11, 2023
Print Save Date: July 11, 2023 at 11:10
Print Save By: Jenkins, Herald

A detailed technical cross-section drawing of a manhole. The drawing shows a concrete structure with a central circular opening. The top of the manhole is covered with a concrete surround. A chain is shown welded to the cover and frame. The interior of the manhole features precast access shaft rings and step irons. The bottom of the manhole is sloped and leads into two drainage pipes. The drawing includes various labels for materials and components, as well as dimension lines and section markers.

Labels and dimensions include:

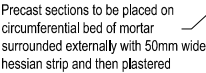
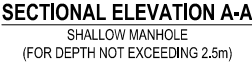
- CONCRETE SURROUNDS TO MANHOLE
- APPROVED CHAIN TO BE WELDED TO BOTH COVER AND FRAME (MIN.400mm LONG)
- TYPE 4A IN SIDEWALKS & STANDS
- TYPE 2A IN ROADS
- PRECAST ACCESS SHAFT RINGS 675 DIAMETER
- STEP IRONS TO B.S. 1247 AT 300 c/c STAGGERED
- INVERT LEVEL AS STATED ON DRAINAGE SCHEDULE
- INVERT LEVEL AS STATED ON DRAINAGE SCHEDULE
- H (Height dimension)
- SEE TABLE B
- SECTION THROUGH MANHOLE



- NOTE:
- WHERE INSUFFICIENT HEADROOM IS AVAILABLE TO CONSTRUCT THE CHAMBER TO THE HEIGHT SHOWN THEN DIMENSION 'H' SHALL BE DECREASED TO PERMIT THE COVER LEVEL TO BE AT GROUND OR FINISHED ROAD LEVEL



STATUS
FINAL



DETAIL 1



NOTES

1. FOUNDATION SLAB 15 MPa/19mm CONCRETE.
2. BRICKWORK TO BE PLASTERED EXTERNALLY.
3. BENCHING TO BE 15MPa/19mm CONCRETE.
4. ELEVATED SLABS 20MPa/19mm CONCRETE.
5. ELEVATED SLABS REINFORCEMENT Y12 @150 c/c BOTH WAYS, COVER 40mm.



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2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

DRAWING TITLE

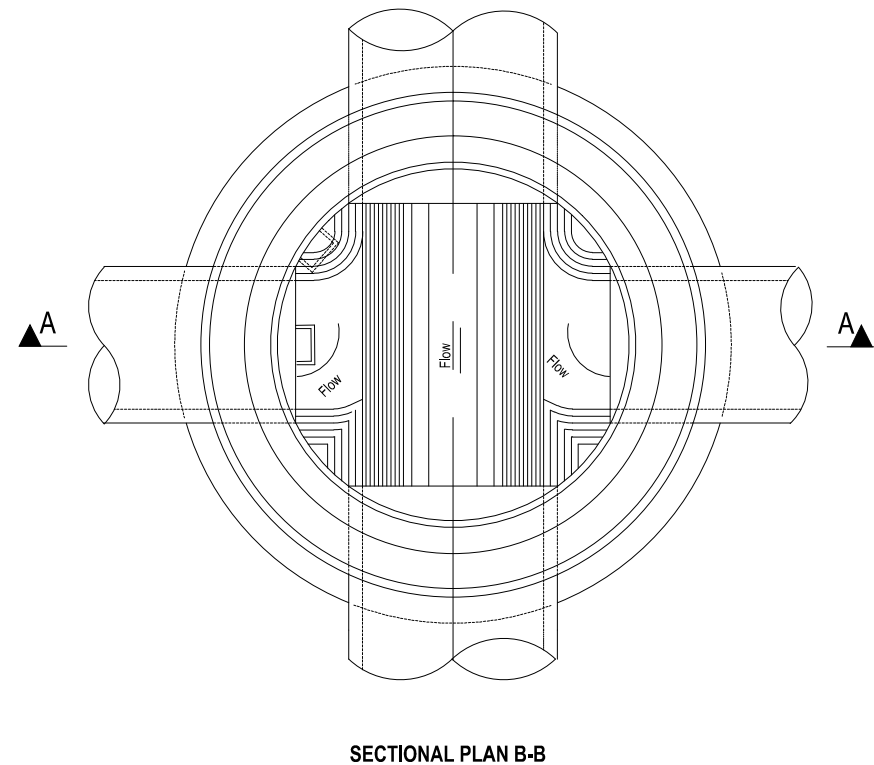
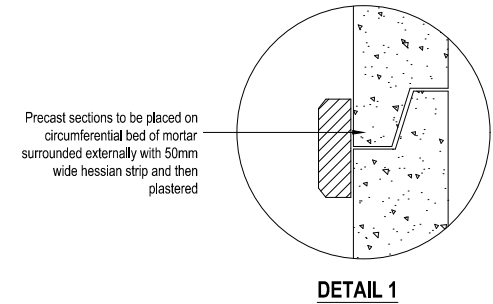
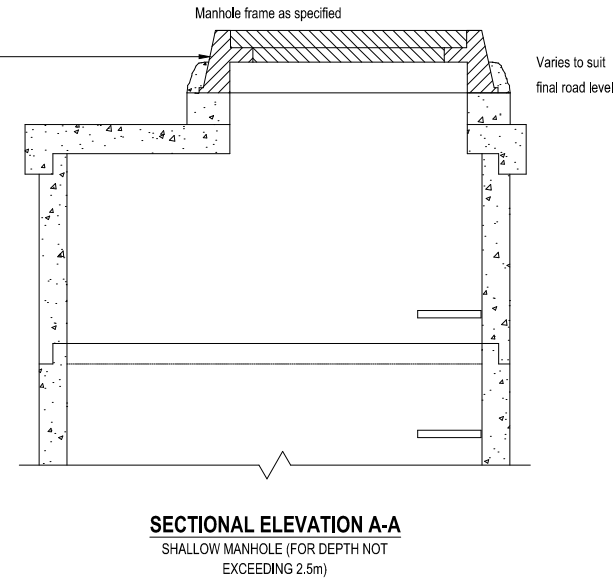
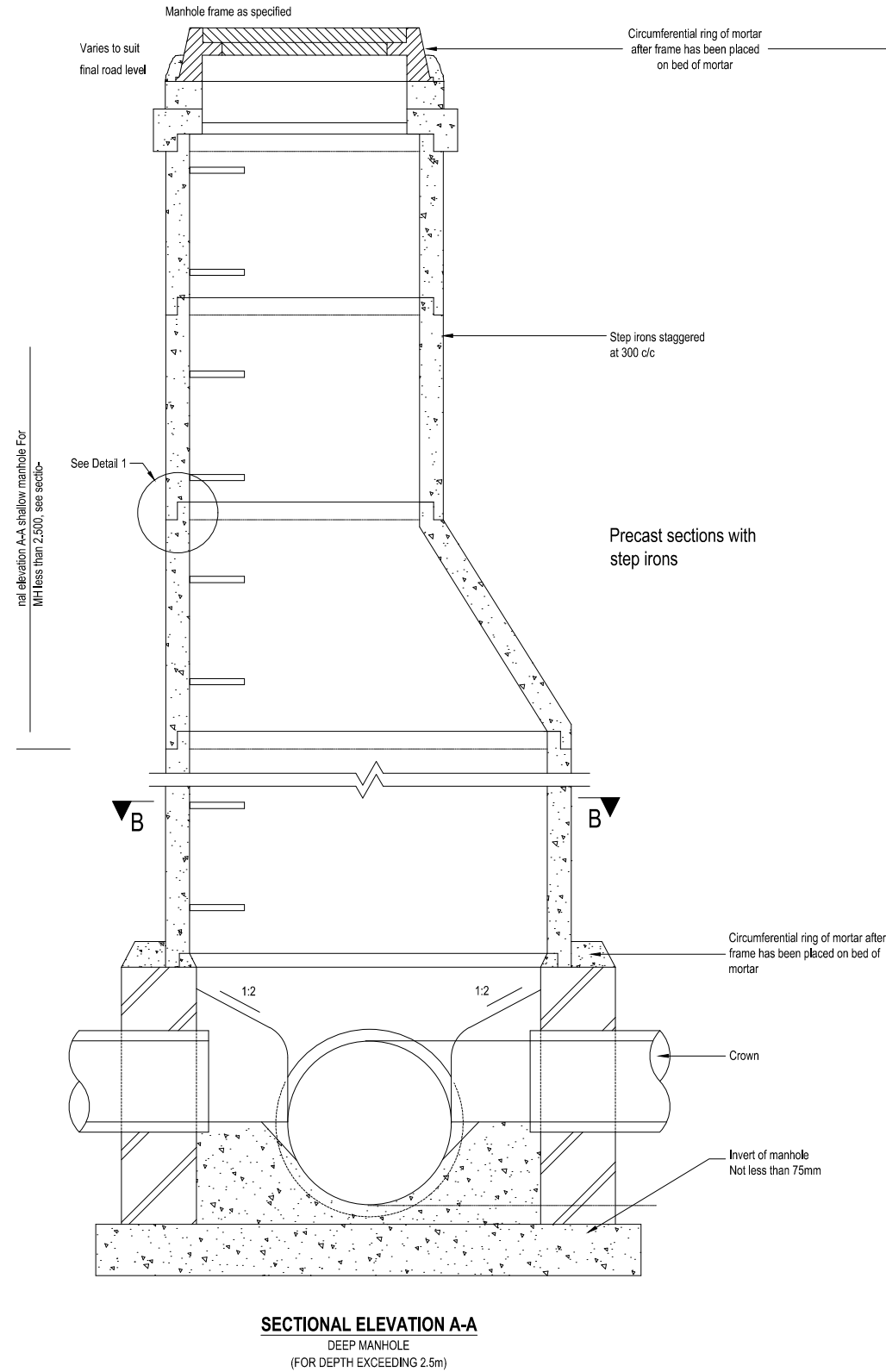
MANHOLES SHALLOW & DEEP

DRAWING REFERENCE

MH-02

SCALE
Not to Scale

STATUS
FINAL



- NOTES**
1. FOUNDATION SLAB 15 MPa/19mm CONCRETE.
 2. BRICKWORK TO BE PLASTERED EXTERNALLY.
 3. BENCHING TO BE 15MPa/19mm CONCRETE.
 4. COVER SLAB 20MPa/19mm CONCRETE.



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PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD DRAINAGE

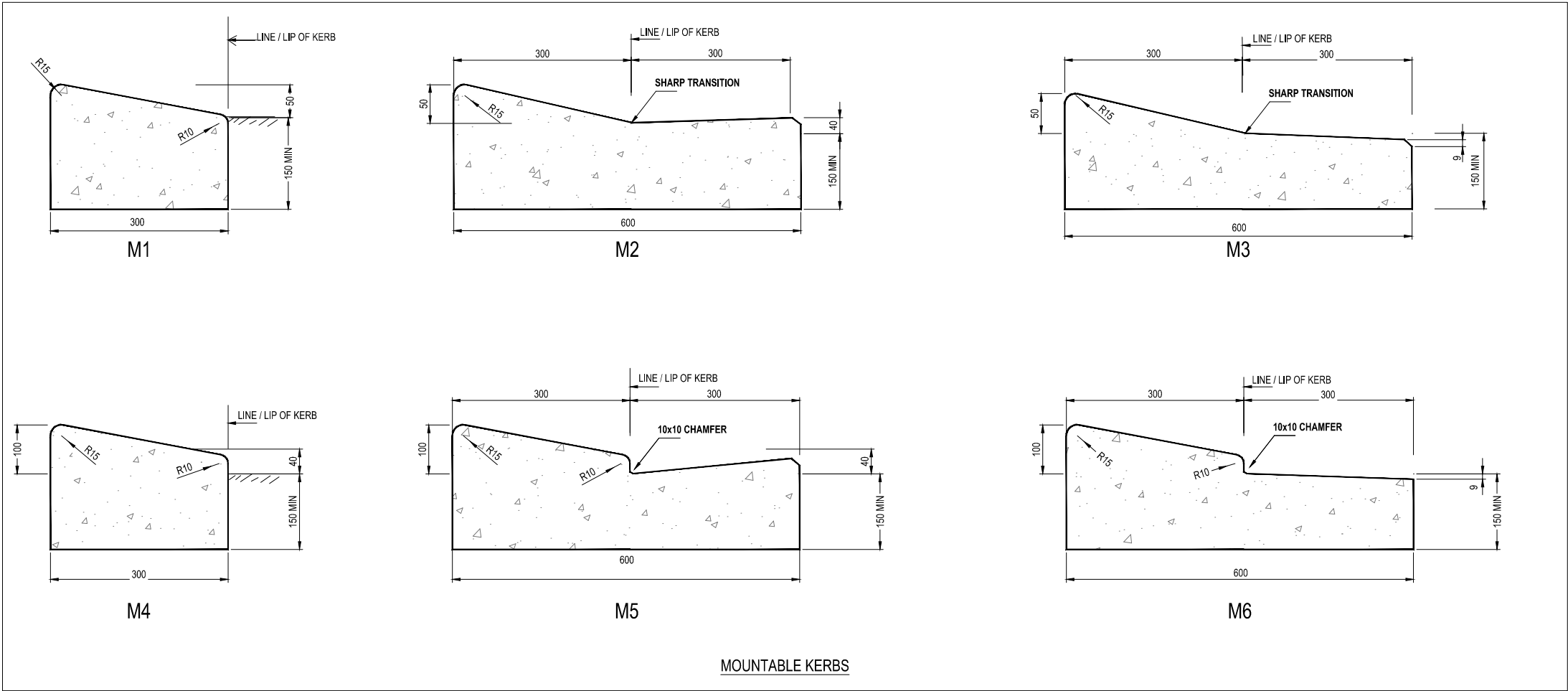
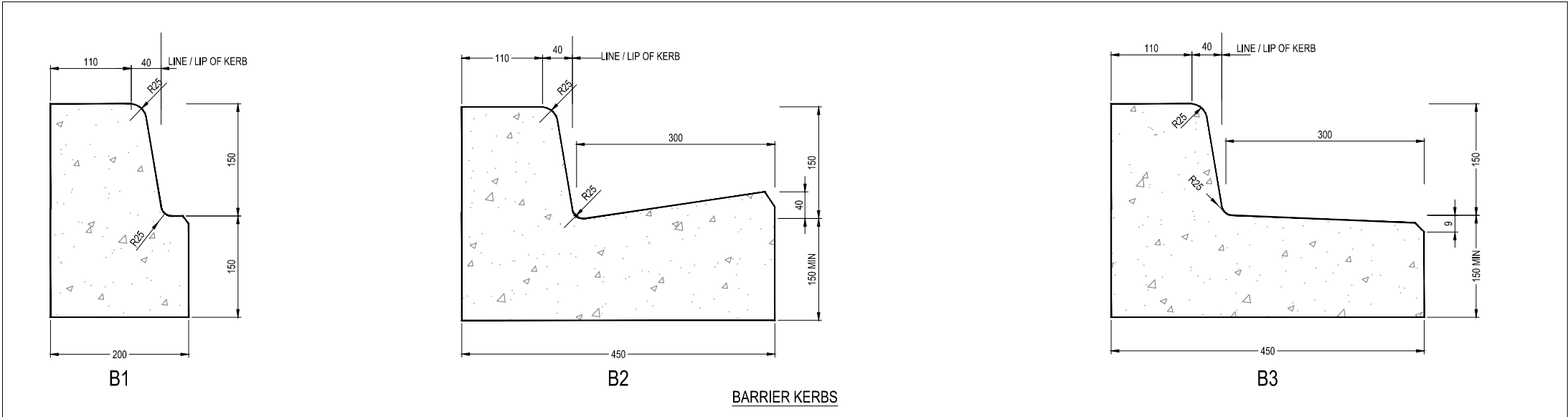
DRAWING TITLE
MANHOLES SHALLOW & DEEP

DRAWING REFERENCE
MH-03

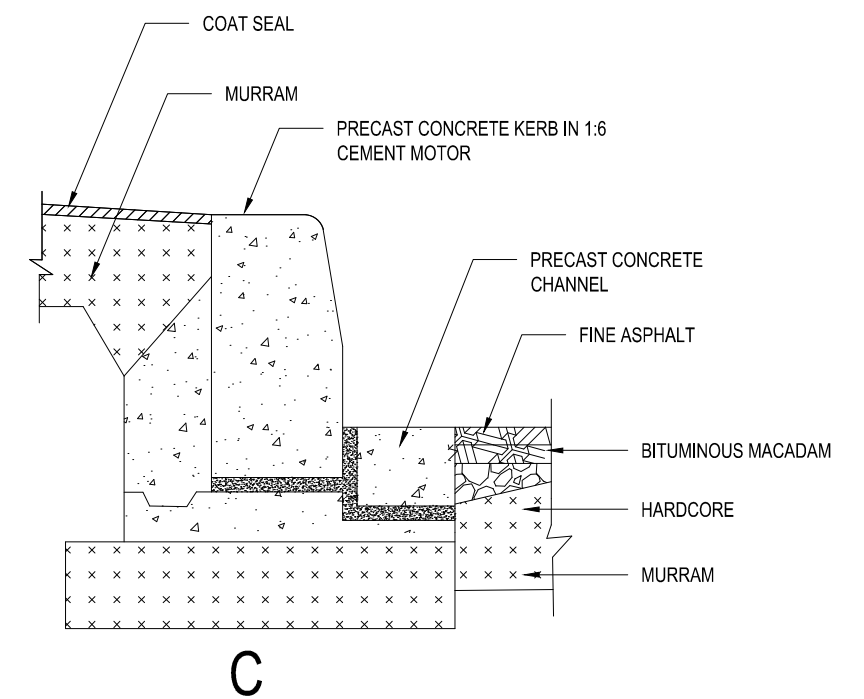
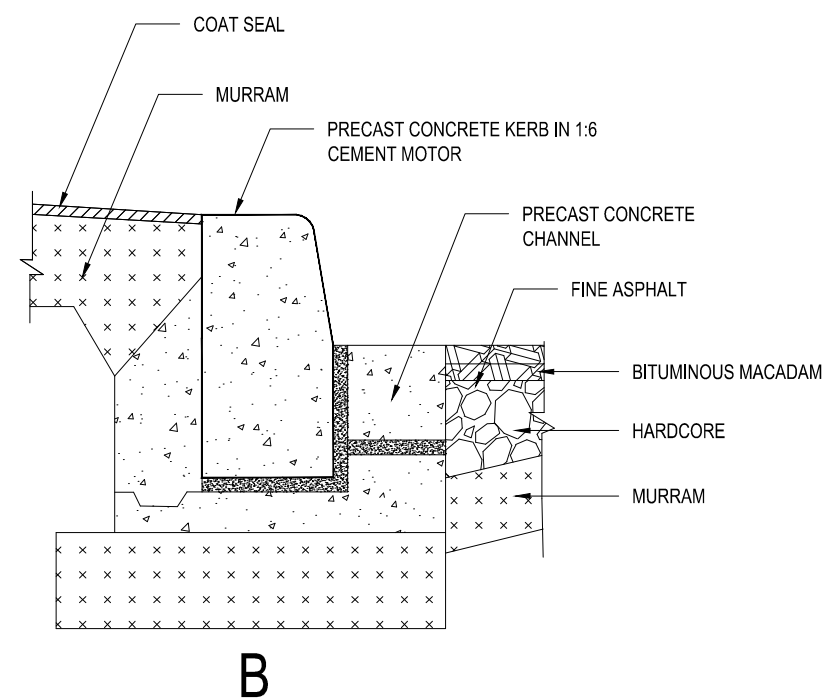
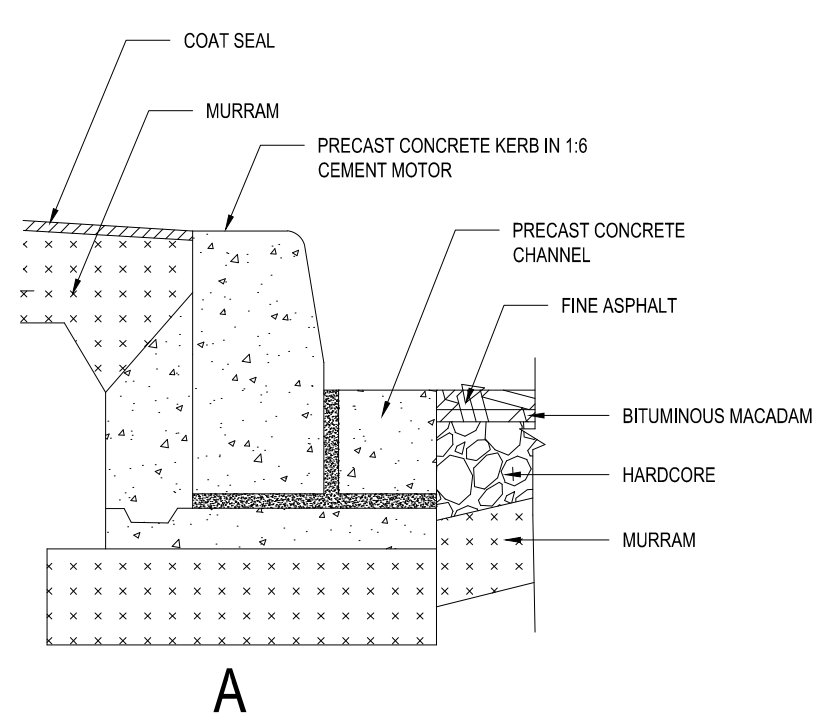
SCALE
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STATUS
FINAL

ROAD FEATURES



 THE REPUBLIC OF UGANDA MINISTRY OF WORKS AND TRANSPORT	Approved by: ENGINEER-IN-CHIEF Issue Date: JULY 2023	PROJECT TITLE 2023 UGANDA URBAN ROADS DESIGN MANUAL CATEGORY ROAD FEATURES	DRAWING TITLE TYPICAL KERB TYPES DRAWING REFERENCE KB-01	SCALE Not to Scale	STATUS FINAL
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STANDARD DETAILS FOR 5" X 10"
KERB WITH 5" X 4" CHANNEL
STANDARD DETAILS FOR 125 X 254
KERB WITH 125 X 100 CHANNEL



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CATEGORY

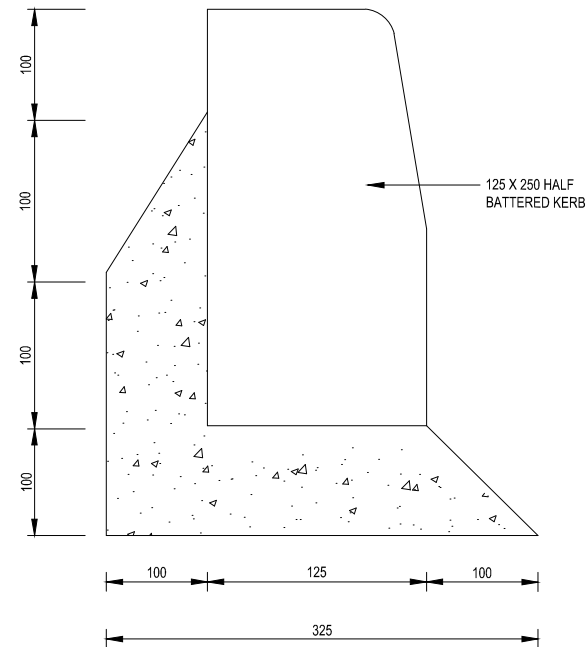
ROAD FEATURES

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CHANNELS
DRAWING REFERENCE
KB-03

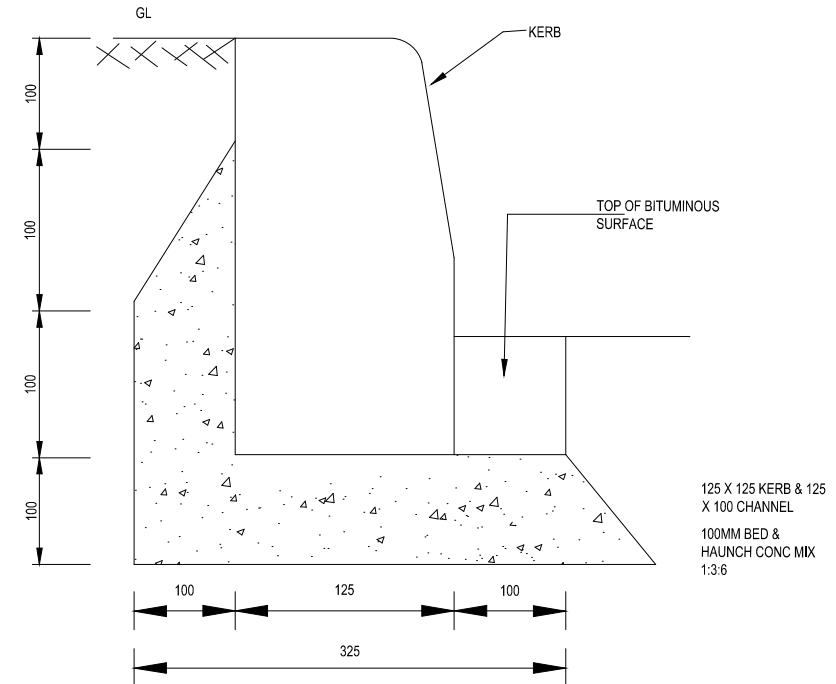
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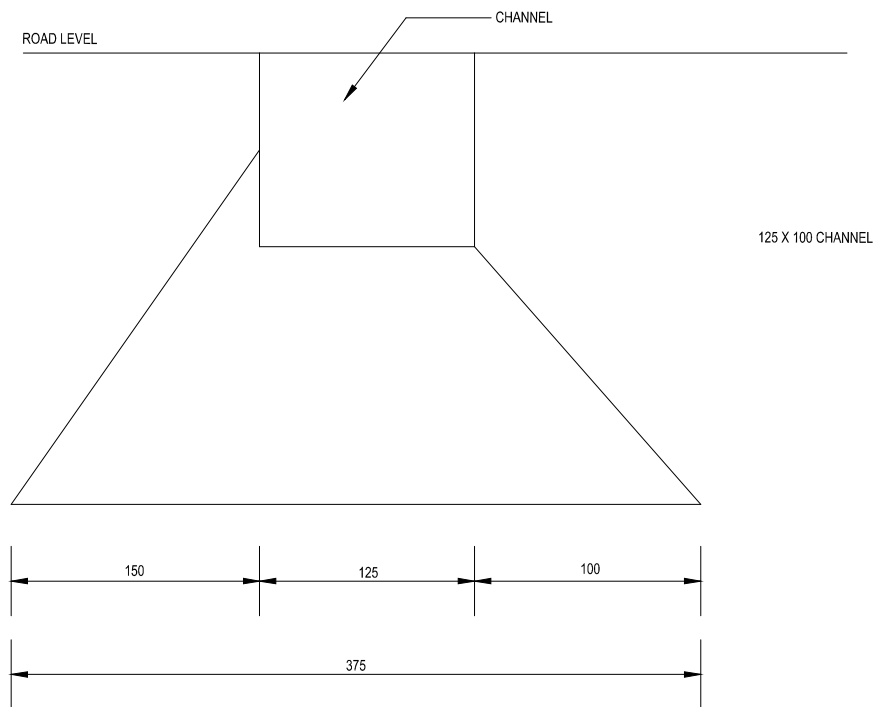
A



B



C



BEDS AND HAUNCHES FOR
125 X 256 AND 125 X 100 CHANNELS

NOTES:
BEDS AND HAUNCH IN COONCRETE CLASS 1:3:6
KERBS AND CHANNELS MAY BE BEDDED DIRECT
ONTO WET CONCRETE, OR ON TO A LAYER OF
CEMENT MORTAR 3:1 IN ACCORDANCE WITH THE
SPECIFICATION FORMWORK WILL NORMALLY BE
REQUIRED TO REAR OF BED AND MAY BE USED
INSTEAD OF SLOPE AT THE FRONT ALL REQUIRED
EXCAVATION FOR BED AND CHANNELS IS
INCLUDED IN THE RATE FOR BEDDING AND
HAUNCHING ALL UNITS ARE IN MM.



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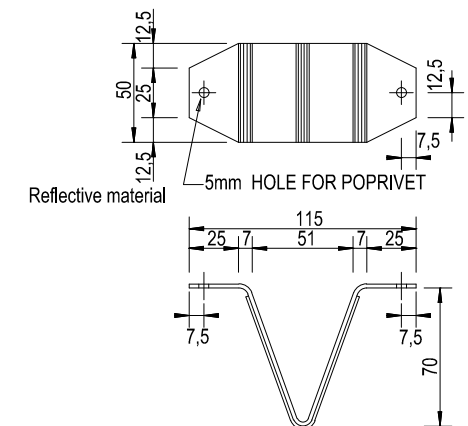
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ROAD FEATURES

DRAWING TITLE
BEDS AND HAUNCHES FOR KERBS
AND CHANNELS

DRAWING REFERENCE
KB-04

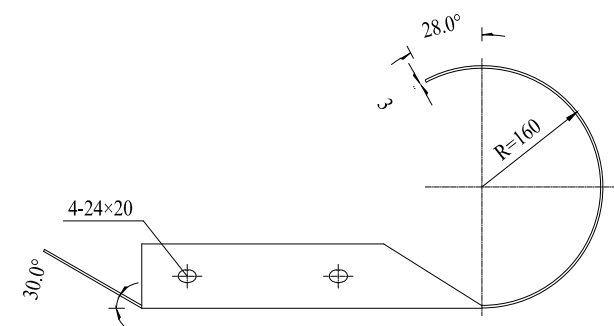
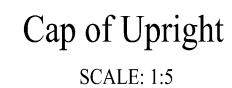
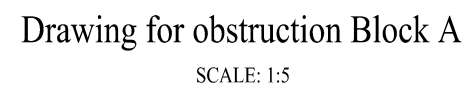
SCALE
Not to Scale

STATUS
FINAL



DETAIL OF GUARDRAIL REFLECTOR





Terminal ,Type D-I
SCALE: 1:10

Notes:

- SCALE: 1:10
1. All the dimensions are in millimeter.
 2. Obstruction block can be made from shape steel, and its technical condition should be in accordance with technical conditions for roll formed shape.



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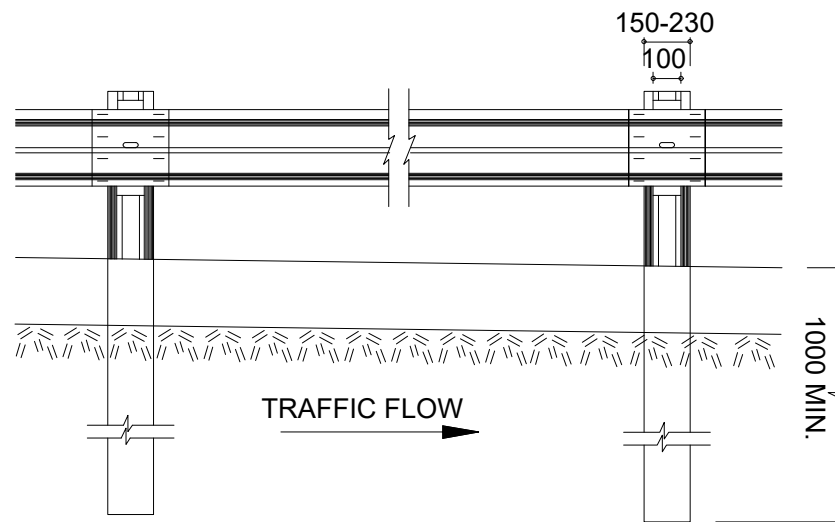
CATEGORY

ROAD FEATURES

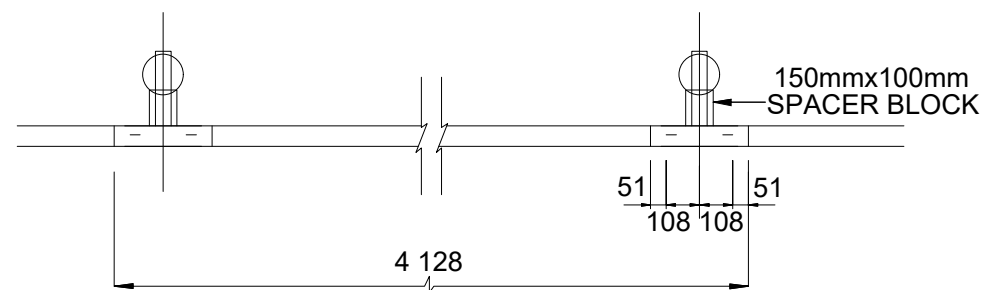
DRAWING TITLE
TYPICAL GUARDRAIL END TREAT -
FISH TAIL
DRAWING REFERENCE
GR-04

SCALE
Not to Scale

STATUS
FINAL



FRONT ELEVATION



PLAN

GUARDRAIL INSTALLATION
INDICATING JOINT LAPPING

TABLE A

GENERAL NOTES FOR GUARDRAIL INSTALLATION	
<ol style="list-style-type: none"> 1. THE TOP OF THE GUARDRAILS POSTS SHALL BE ANGLE-CUT AND FILED SUCH THAT THE SLOPE IS AWAY FROM THE GUARDRAIL FACE. 2. DOMED TOPS MAY BE PERMITTED IF SO DIRECTED BY THE ENGINEER. 3. REINFORCING PLATES MUST BE USED ON EVERY POST, HOWEVER, REFLECTOR BRACKETS ARE TO BE USED WHERE SPECIFIED BY THE ENGINEER. 4. ALL GUARDRAILS, BRACKETS, NUTS, BOLTS AND WASHERS SHALL BE GALVANISED WITH A HOT-DIP GALVANISED ZINC COATING WHICH COMPLIES WITH 5. THE GALVANISED STEEL REFLECTOR BRACKETS SHALL BE REFLECTORISED WITH "SCOTCHLITE" REFLECTIVE SHEETING (HIGH INTENSITY GRADE), OR SIMILAR APPROVED PRODUCT. 	<ol style="list-style-type: none"> 6. POST TO BE 150 - 230mm AND 1,8m LONG (2,1m POST CAN BE USED WHERE REQUIRED) 7. ALTERNATIVE POST TYPES TO BE USED WHERE APPROVED. 8. GUARDRAILS POSTS MUST BE POSITIONED TO SUIT OUTLETS, INLETS AND BRIDGE BALUSTRATION WHEREVER POSSIBLE. 9. WHERE EMBANKMENT WIDTHS DO NOT PERMIT A FLARED APPROACH END THEN THE BURIED APPROACH END MUST BE USED. 10. MINIMUM LENGTH OF GUARDRAIL SECTION IS TO BE 8 LENGTHS (ie 8 x 3,8m)

TABLE B

REQUIREMENTS FOR THE PROVISION OF GUARDRAILS
<ol style="list-style-type: none"> 1. WHERE THE FILL HEIGHT IS MORE THAN 4m FOR SURFACED ROADS AND 6m FOR GRAVEL ROADS AND WITH NO RECOVERY AREA. 2. WHERE AN OBSTRUCTION IS LESS THAN 1m FROM THE SHOULDER BREAKPOINT. 3. WHERE AN OBSTRUCTION APPEARS TO BE MORE DANGEROUS THAN THE GUARDRAIL WOULD BE. 4. ON THE OUTSIDE OF CURVES WHICH HAVE A RADIUS OF LESS THAN 300m AND WITHOUT RECOVERY AREAS. 5. WHERE STANDING WATER DEEPER THAN 1,5m OCCURS NEXT TO THE ROAD. 6. AT APPROACHES TO BRIDGES AND FIXED TO THE BRIDGE BALUSTRADE.



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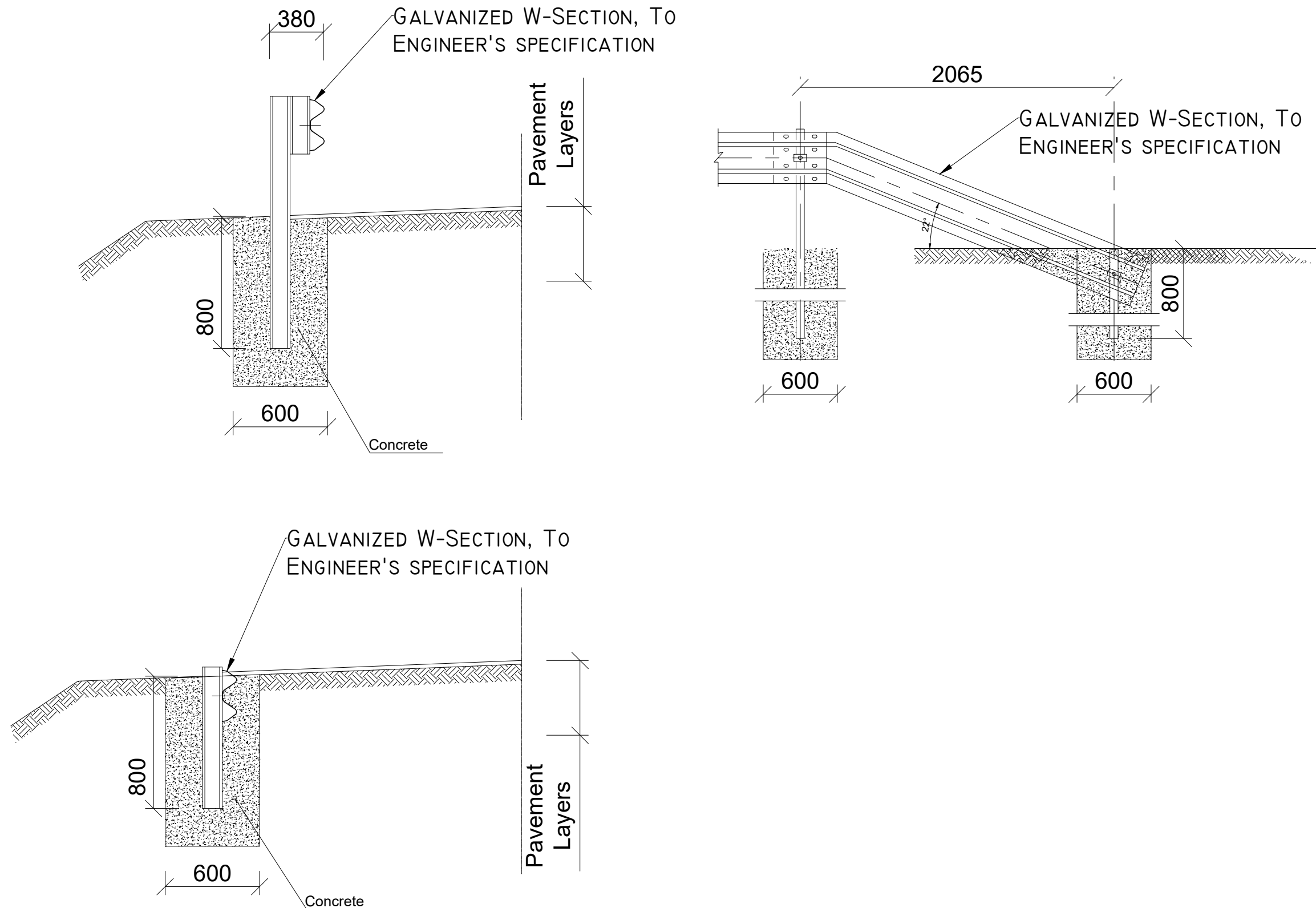
CATEGORY
ROAD FEATURES

DRAWING TITLE
GENERAL GUARDRAIL INSTALLATION
NOTES

DRAWING REFERENCE
GR-05

SCALE
Not to Scale

STATUS



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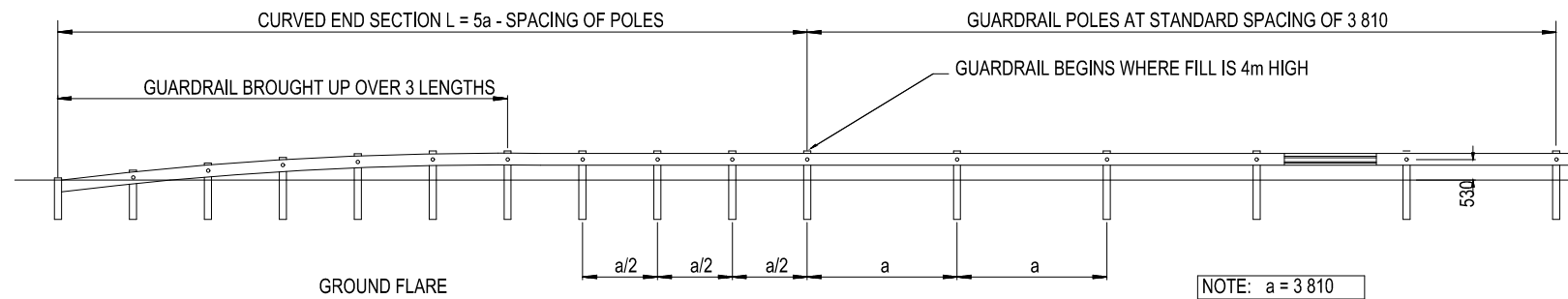
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD FEATURES

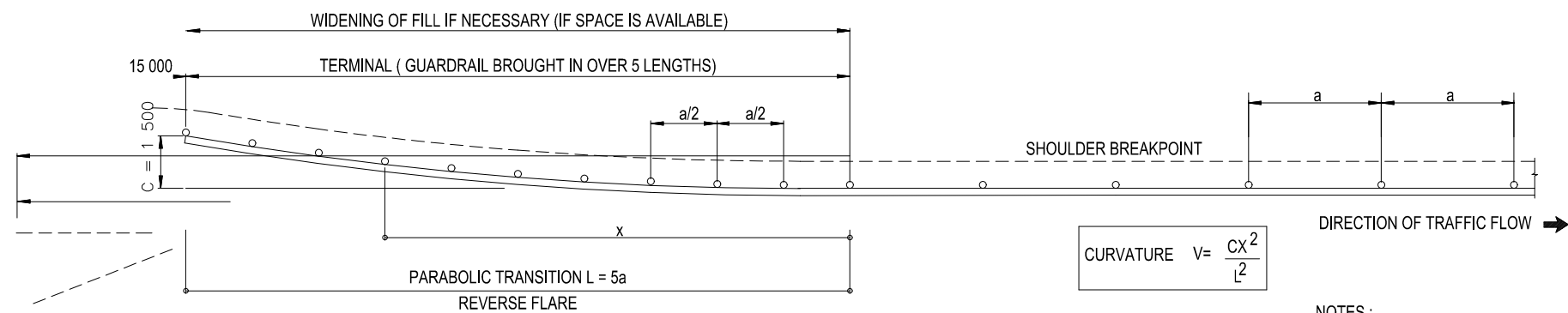
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TYPICAL GUARDRAIL END
TREATMENT - BUILT INTO GROUND
DRAWING REFERENCE
GR-06

SCALE
Not to Scale

STATUS
FINAL



FRONT ELEVATION



PLAN

TYPICAL DETAIL OF BEGINNING AND END OF GUARDRAILS ON HIGH FILLS

- NOTES :
- C - MAX. OFFSET OF PARABOLIC CURVE.
 - a - NORMAL SPACING OF POLES.



THE REPUBLIC OF UGANDA
MINISTRY OF WORKS AND TRANSPORT

Approved by:
ENGINEER-IN-CHIEF

Issue Date:
JULY 2023

PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

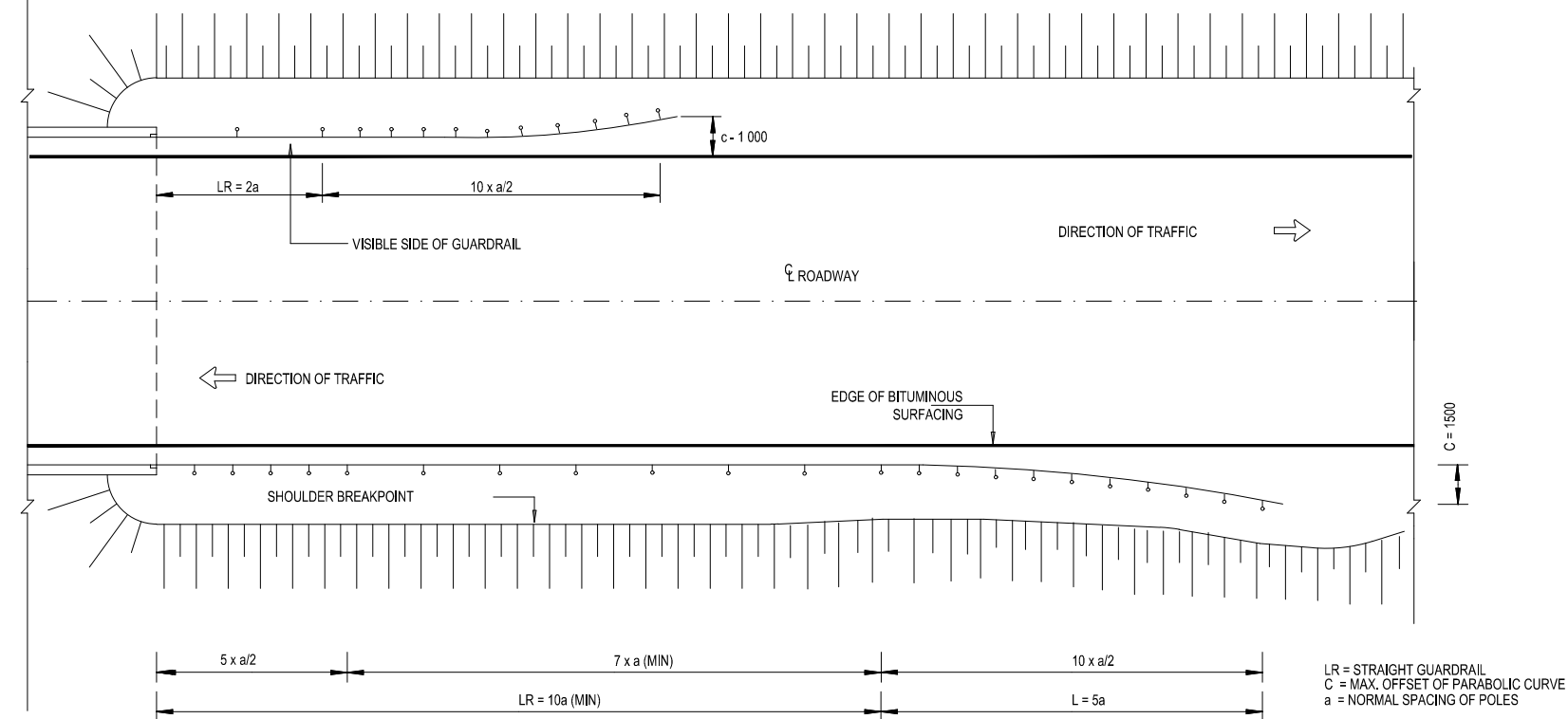
CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL GUARDRAIL ON HIGH FILLS

DRAWING REFERENCE
GR-07

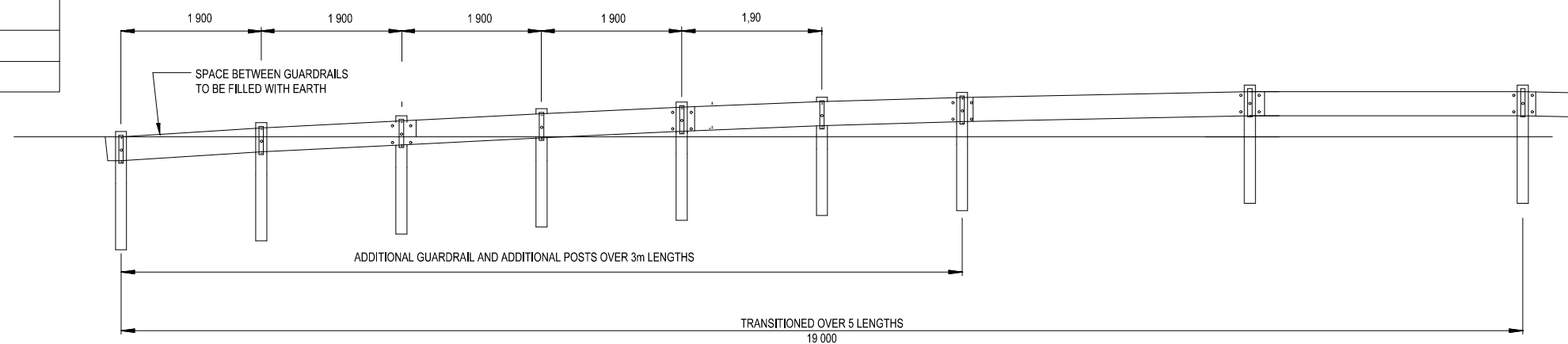
SCALE
Not to Scale

STATUS
FINAL



TYPICAL PLAN OF GUARDRAIL INSTALLATION AT STRUCTURES ON SINGLE CARRIAGEWAY ROADS

MINIMUM LENGTH OF GUARDRAIL (EXCLUDING END SECTIONS)	
DESIGN SPEED (km/h)	MIN LENGTH (m)
60	45
70	52
80	60
90	73
100	85
120	110



ELEVATION



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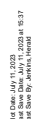
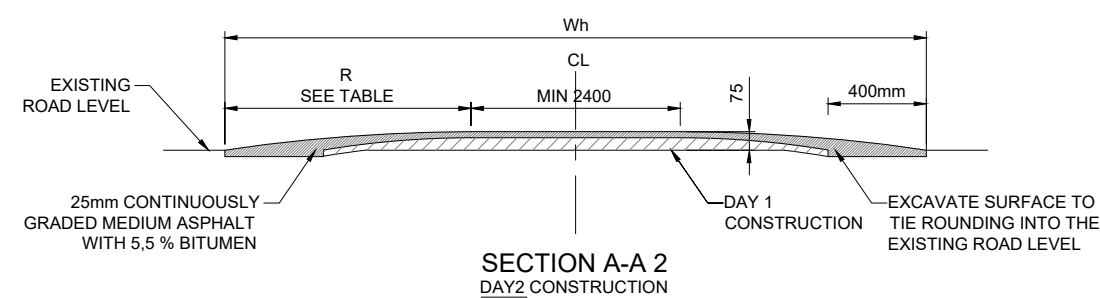
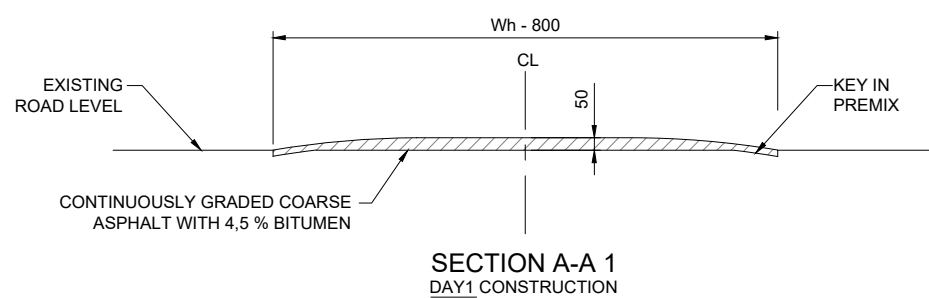
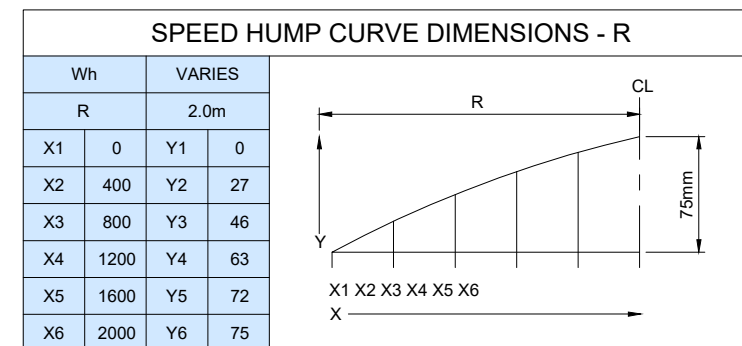
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL GUARDRAIL INSTALLATION
AT STRUCTURES
DRAWING REFERENCE
GR-08

SCALE
Not to Scale

STATUS
FINAL



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CATEGORY

ROAD FEATURES

DRAWING TITLE
TYPICAL RAISED PEDESTRIAN
CROSSING
DRAWING REFERENCE
SH-02

SCALE
Not to Scale

STATUS
FINAL

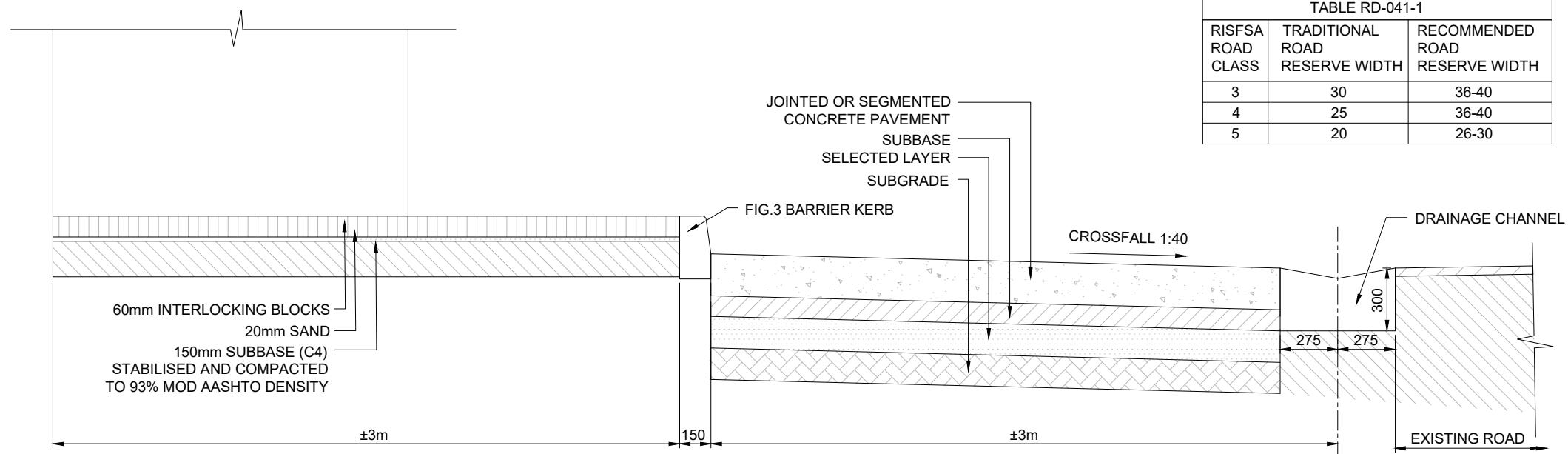
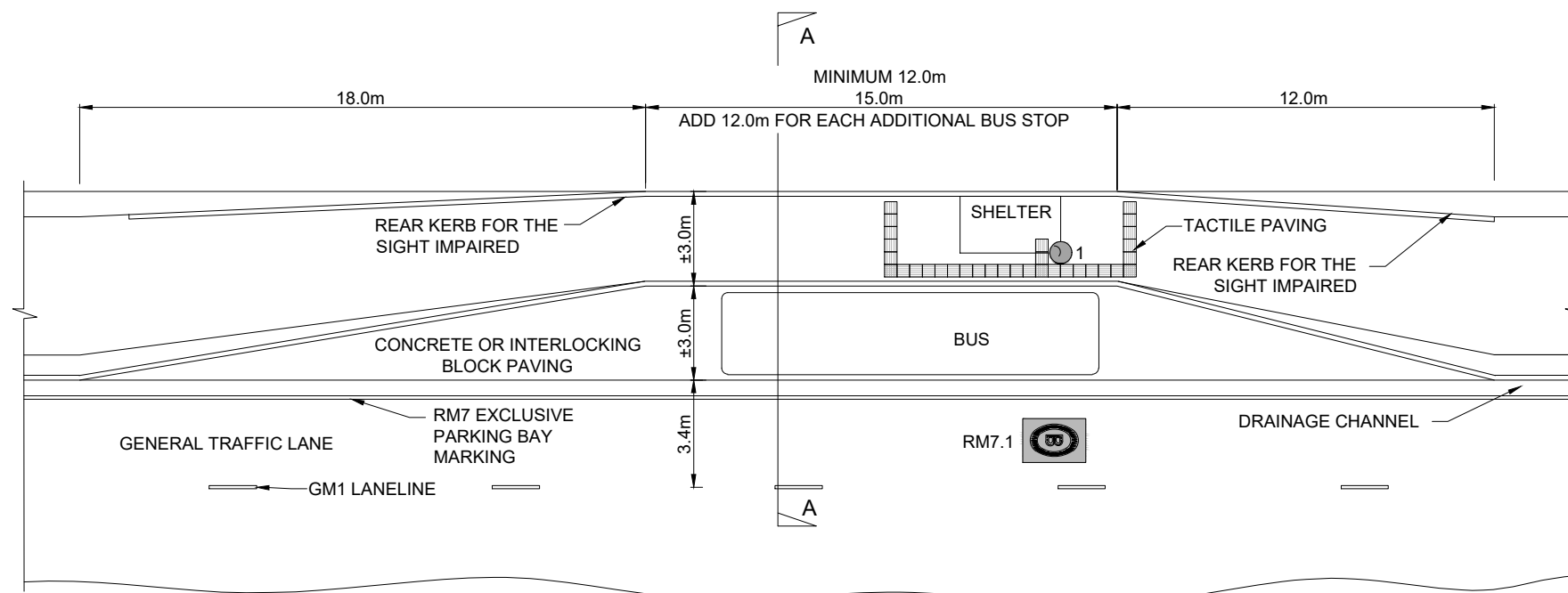


TABLE RD-041-1		
RISFSA ROAD CLASS	TRADITIONAL ROAD RESERVE WIDTH	RECOMMENDED ROAD RESERVE WIDTH
3	30	36-40
4	25	36-40
5	20	26-30

CROSS SECTION A-A THROUGH SIDEWALK AND LAYBY



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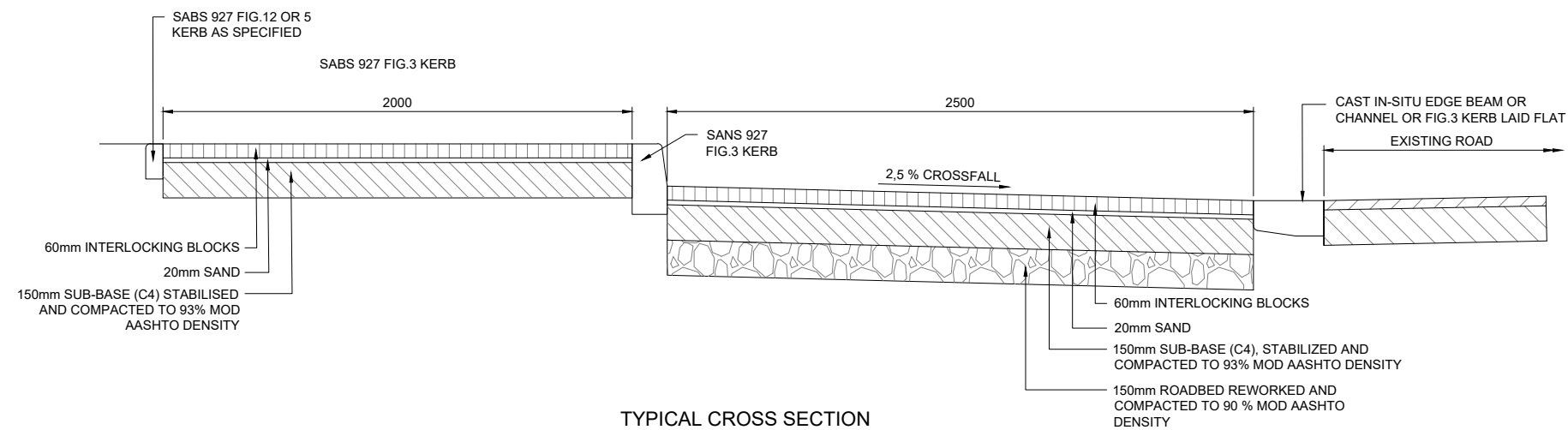
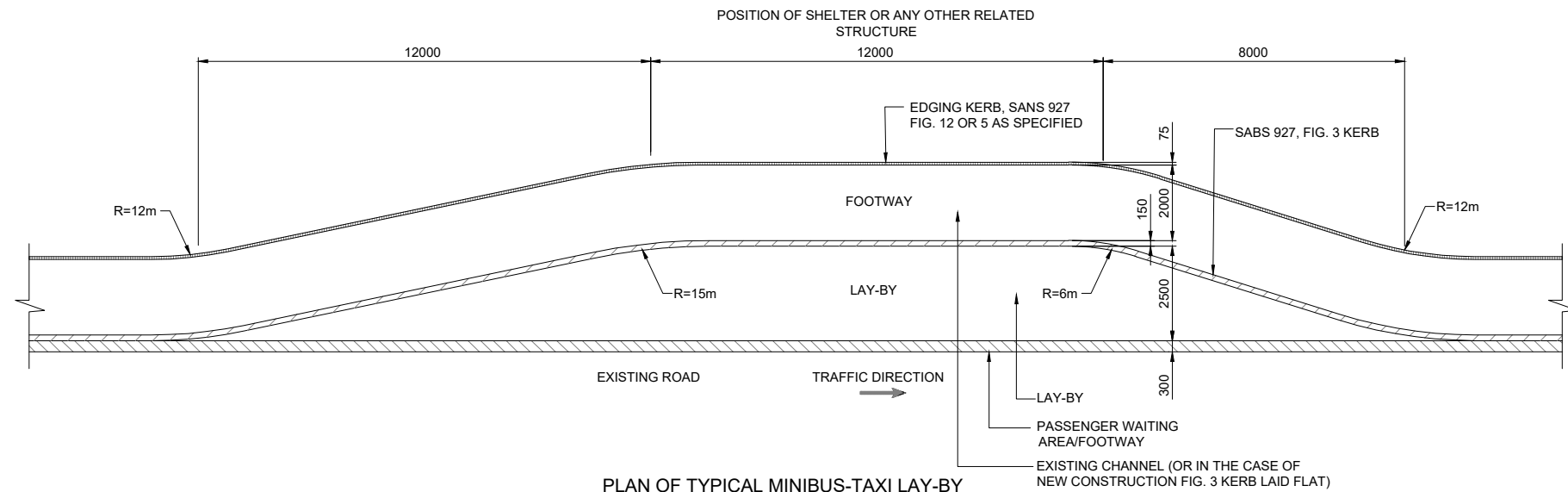
CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL BUS BAY

DRAWING REFERENCE
PA-01

SCALE
Not to Scale

STATUS
FINAL



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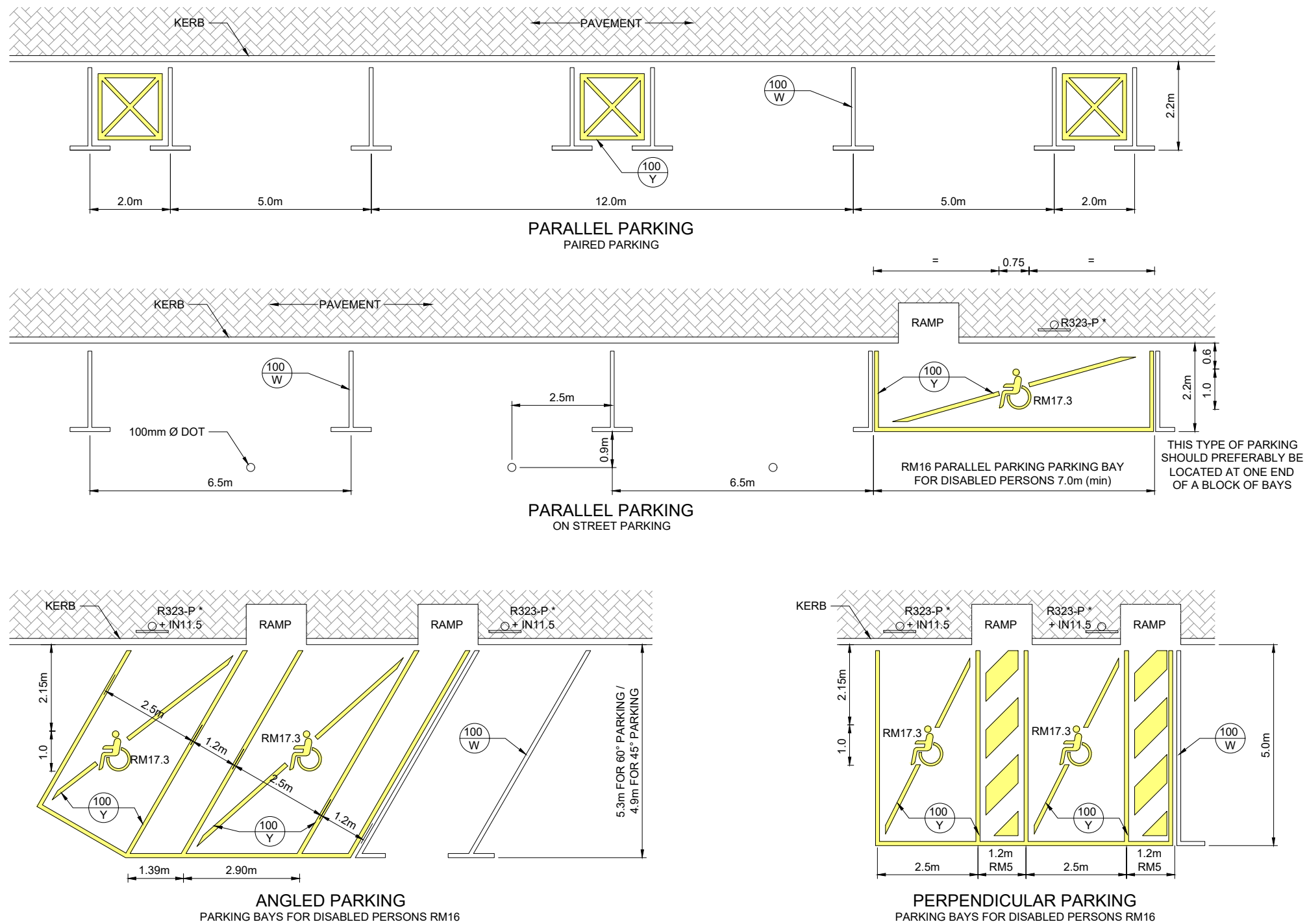
CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL MINIBUS TAXI BAY

DRAWING REFERENCE
PA-02

SCALE
Not to Scale

STATUS
FINAL



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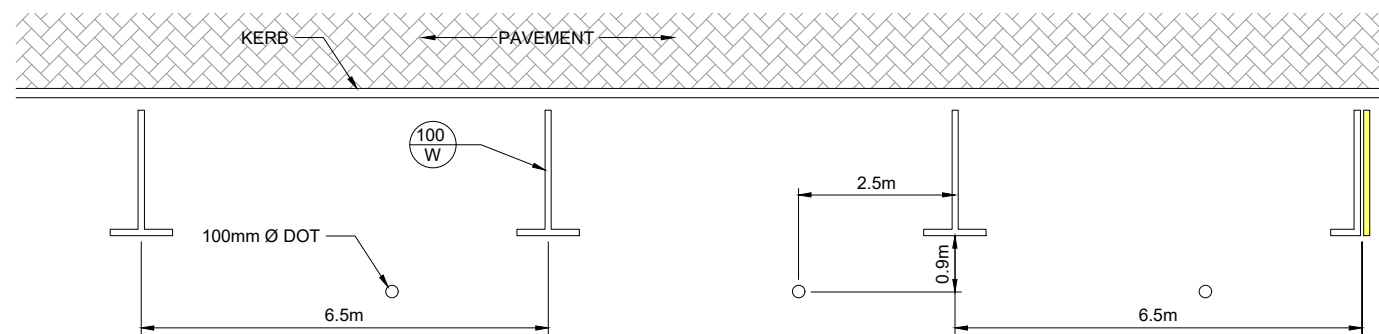
CATEGORY
ROAD FEATURES

DRAWING TITLE
STANDARD DISABLED PARKING BAYS

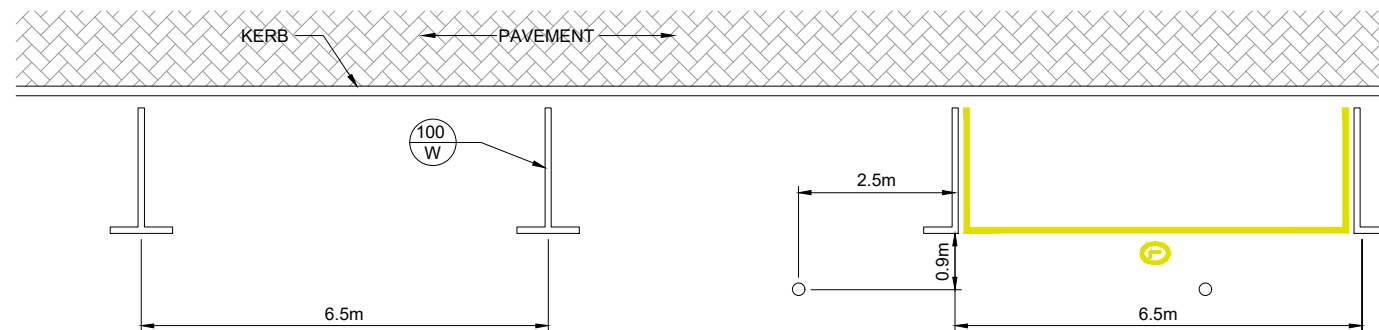
DRAWING REFERENCE
PA-03

SCALE
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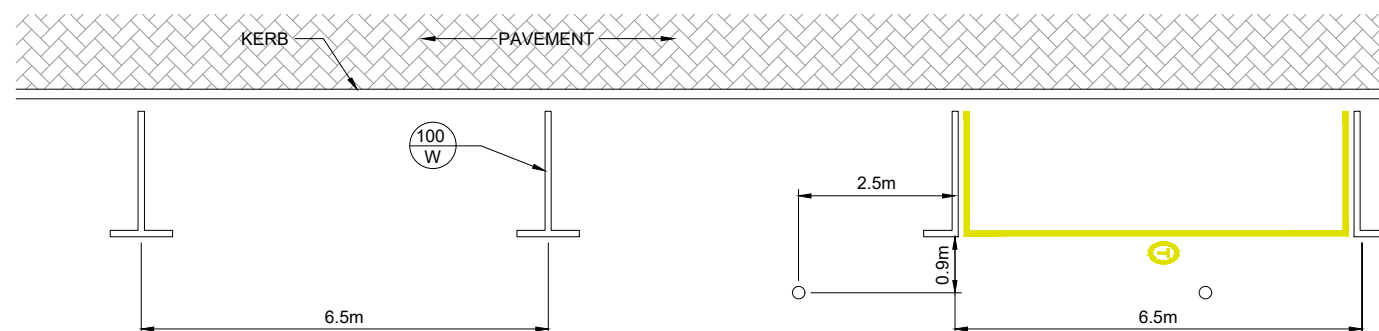
STATUS
FINAL



TYPICAL PARALLEL PARKING BAYS



TYPICAL PARALLEL PARKING BAYS AND LOADING ZONES



TYPICAL PARALLEL PARKING BAYS FOR TAXIS



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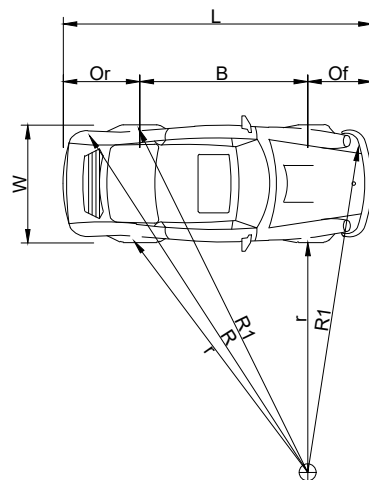
CATEGORY
ROAD FEATURES

DRAWING TITLE
STANDARD PARKING DETAILS

DRAWING REFERENCE
PA-04

SCALE
Not to Scale

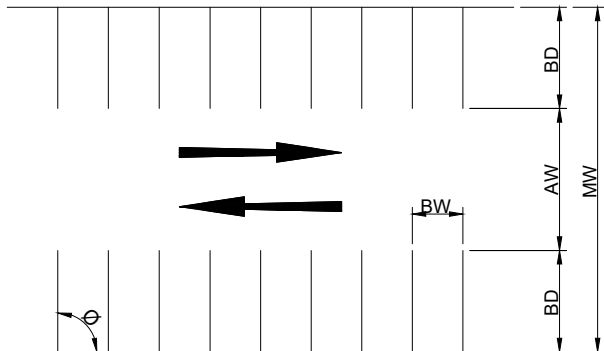
STATUS
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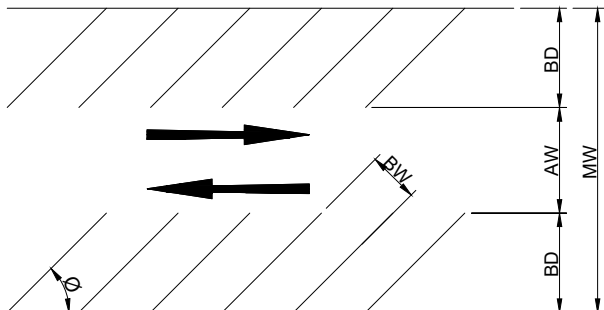
SYMBOL	DIMENSION	VALUE
VEHICLE DIMENSIONS		
L	OVERALL LENGTH	4,80m
W	OVERALL WIDTH	1,80m
B	WHEEL BASE	2,85m
Of	FRONT OVERHANG	0,75m
Or	REAR OVERHANG	1,20m
h	OVERALL HEIGHT	2,00m
MINIMUM TURNING RADII**		
r	INSIDE REAR WHEEL	3,10m
R	OUTSIDE POINT, FRONT BUMPER	6,20m
R1	OUTSIDE FRONT WHEEL	5,85m

** TURNING CIRCLE KERB-TO-KERB = 2 X R1
TURNING CIRCLE WALL-TO-WALL = 2 X R

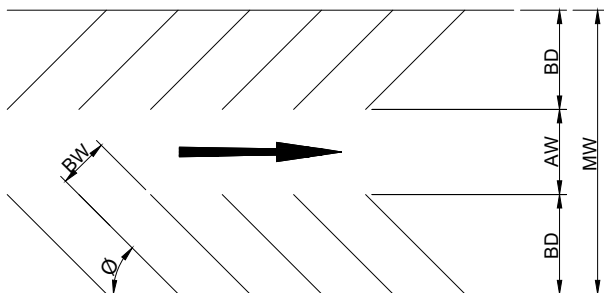
DESIGN VEHICLE
SOURCE : 'RED BOOK', SOUTH AFRICA



PERPENDICULAR PARKING
ONE & TWO WAY



ANGULAR PARKING
TWO WAY



ANGULAR PARKING
ONE WAY

SUMMARY OF PROPOSED PARKING DIMENSIONS						
PARKING ANGLE Ø	BAY WIDTH BW (m)	BAY DEPTH BD (m)	AISLE WIDTH AW (m)		MODULE WIDTH MW (m)	
			2-WAY	1-WAY	2-WAY	1-WAY
90 *	2,4	5,0	8,0	8,0	18,0	18,0
	2,5	5,0	7,5	7,5	17,5	17,5
	2,6	5,0	7,0	7,0	17,0	17,0
60	2,5	5,3	5,4	4,4	16,0	15,0
45	2,5	4,9	5,2	4,2	15,0	14,0

* BASIC PROPOSED STANDARD

SUMMARY OF PROPOSED PARKING DIMENSIONS
NO INTERLOCKING



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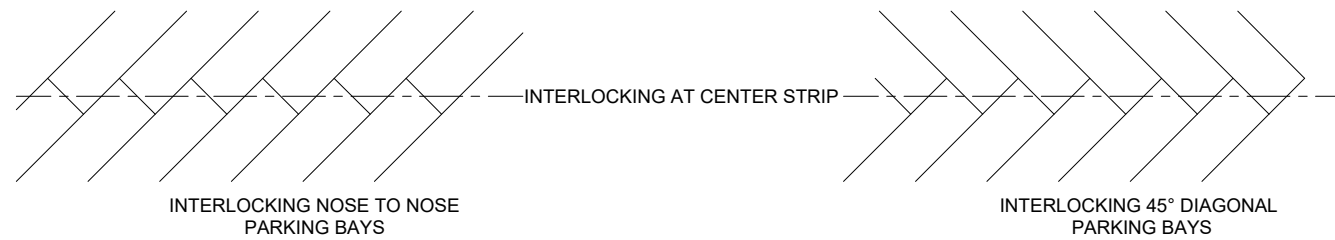
CATEGORY
ROAD FEATURES

DRAWING TITLE
STANDARD PARKING DETAILS

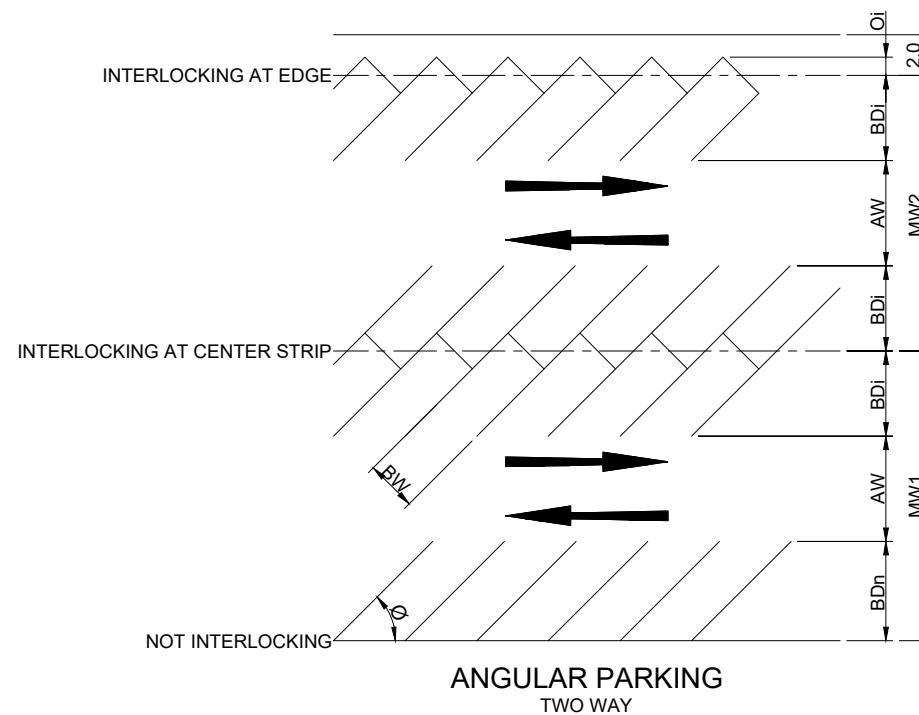
DRAWING REFERENCE
PA-05

SCALE
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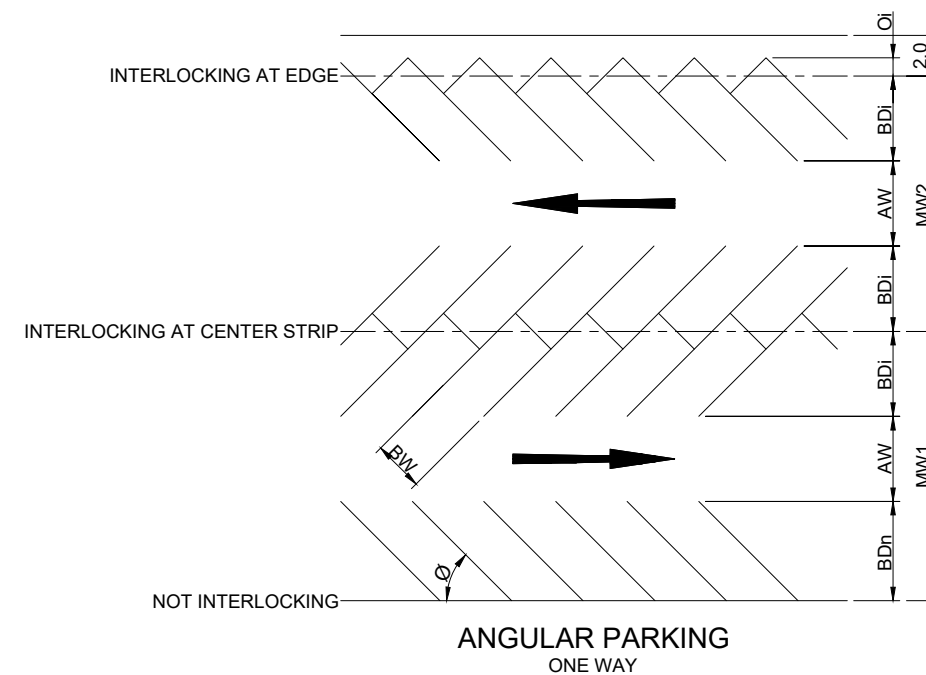
STATUS
FINAL



INTERLOCKING PATTERNS
INTERLOCKING AT CENTRE STRIP



ANGULAR PARKING
TWO WAY



ANGULAR PARKING
ONE WAY

SUMMARY OF PROPOSED PARKING DIMENSIONS										
PARKING ANGLE Ø	BAY WIDTH BW (m)	BAY DEPTH BDn * (m)	BAY DEPTH BDi ** (m)	INTERLOCK OVERLAP Oi (m)	AISLE WIDTH AW (m)		MODULE WIDTH MW1 *** (m)		MODULE WIDTH MW2 **** (m)	
					2-WAY	1-WAY	2-WAY	1-WAY	2-WAY	1-WAY
60	2,5	5,3	4,8	0,5	5,4	4,4	15,5	14,5	15,0	14,0
45	2,5	4,9	4,2	0,7	5,2	4,2	14,3	13,3	13,6	12,6

* BDn - BAY DEPTH FOR NON INTERLOCKING
** BDi - BAY DEPTH FOR INTERLOCKING
*** MW1 - MODULE WIDTH WITH BAYS ON ONE SIDE INTERLOCKING
**** MW2 - MODULE WIDTH WITH BAYS ON TWO SIDES INTERLOCKING

SUMMARY OF PROPOSED PARKING DIMENSIONS
INTERLOCKING



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CATEGORY
ROAD FEATURES

DRAWING TITLE
STANDARD PARKING DETAILS

DRAWING REFERENCE
PA-06

SCALE
Not to Scale

STATUS
FINAL



Issue Date:
JULY 2023

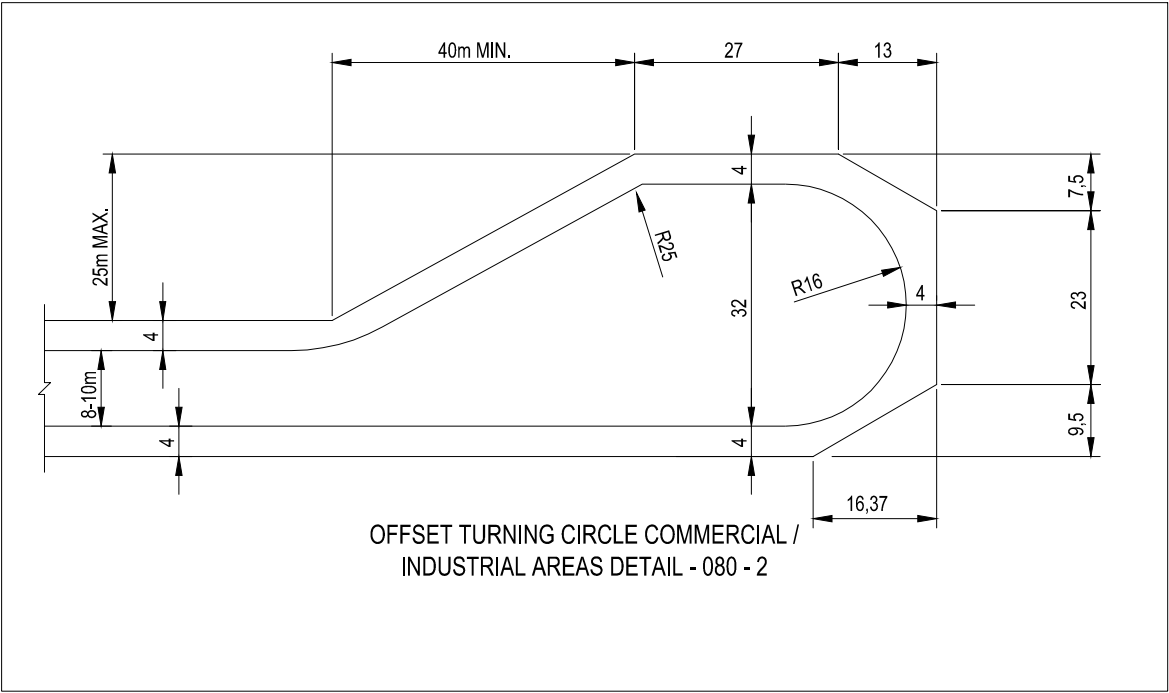
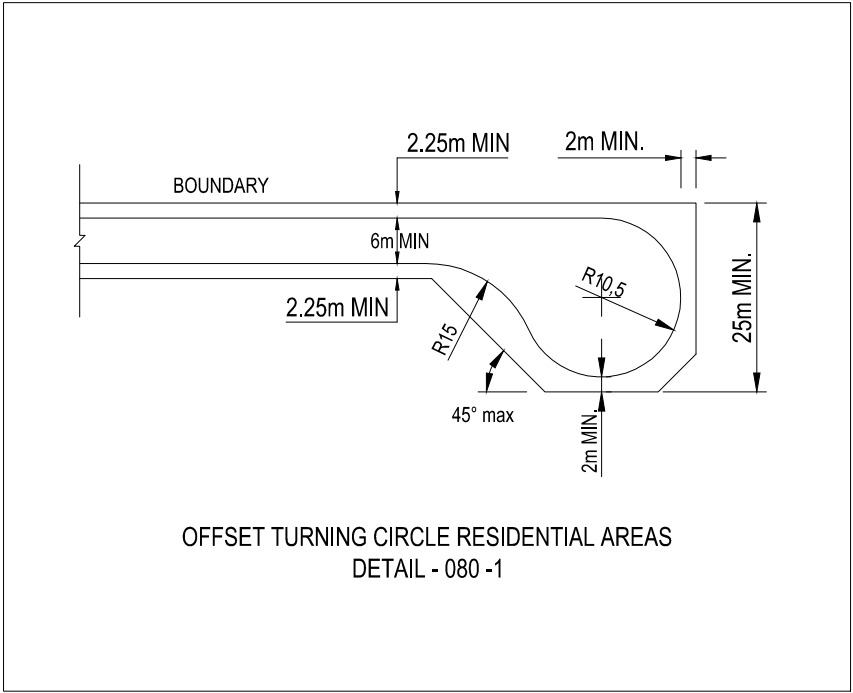
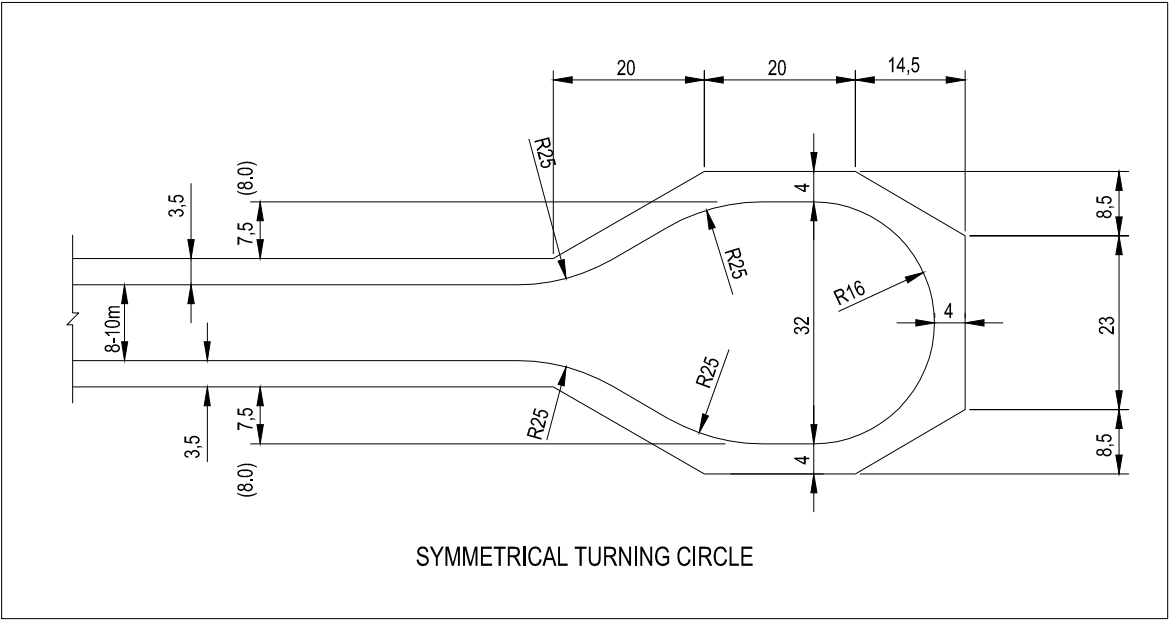
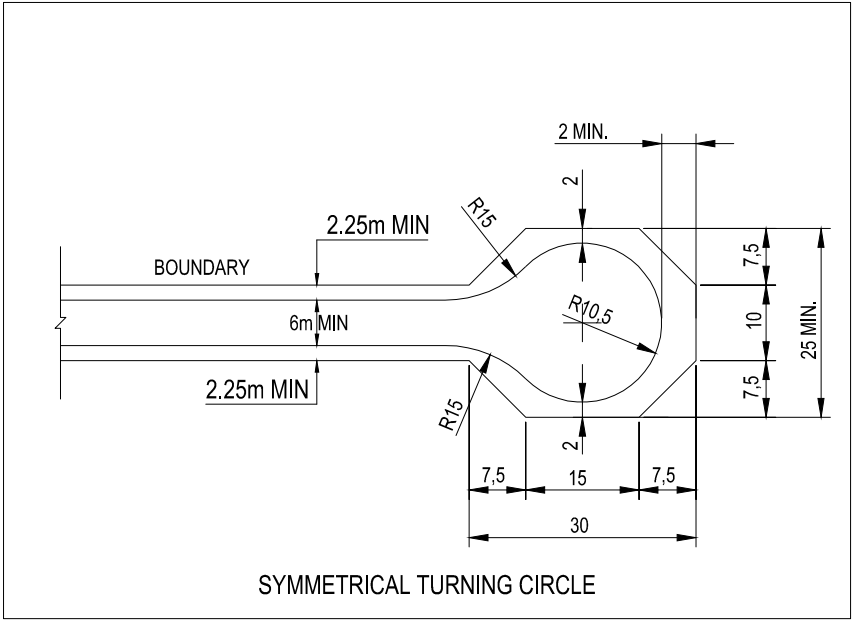
CATEGORY

ROAD FEATURES

DRAWING REFERENCE

3

1



- NOTES:**
- RESIDENTIAL AREAS:**
1. USE 25m RESERVES FOR SHORT CUL-DE-SAC.
 2. "HAMMER HEAD" TURNING BAYS (T, Y OR L) ARE NOT FAVOURED AS THE REVERSING MANEUVER IS HAZARDOUS FOR TRUCKS, BUT THEIR USE IN CERTAIN CIRCUMSTANCES MAY BE PERMITTED.
 3. NO PARKING PERMITTED WITHIN THE TURNING CIRCLE.
- COMMERCIAL / INDUSTRIAL AREAS:**
1. OFFSET TURNING CIRCLE IS NORMALLY PREFERABLE.
 2. DESIRABLE MAX. CROSS FALL ON SURFACE OF 4%.
 3. TURNING CIRCLE (BETWEEN STRAIGHTS) TO HAVE BARRIER KERBS WITH 0.2m WIDE GUTTER.
 4. ALL ROAD WORKS TO COMPLY WITH SANS 1200 SERIES.
 5. AN ISLAND MAY BE CONSTRUCTED IN THE CIRCLE AND LANDSCAPED IF DESIRED.

STANDARD TURNING CIRCLES



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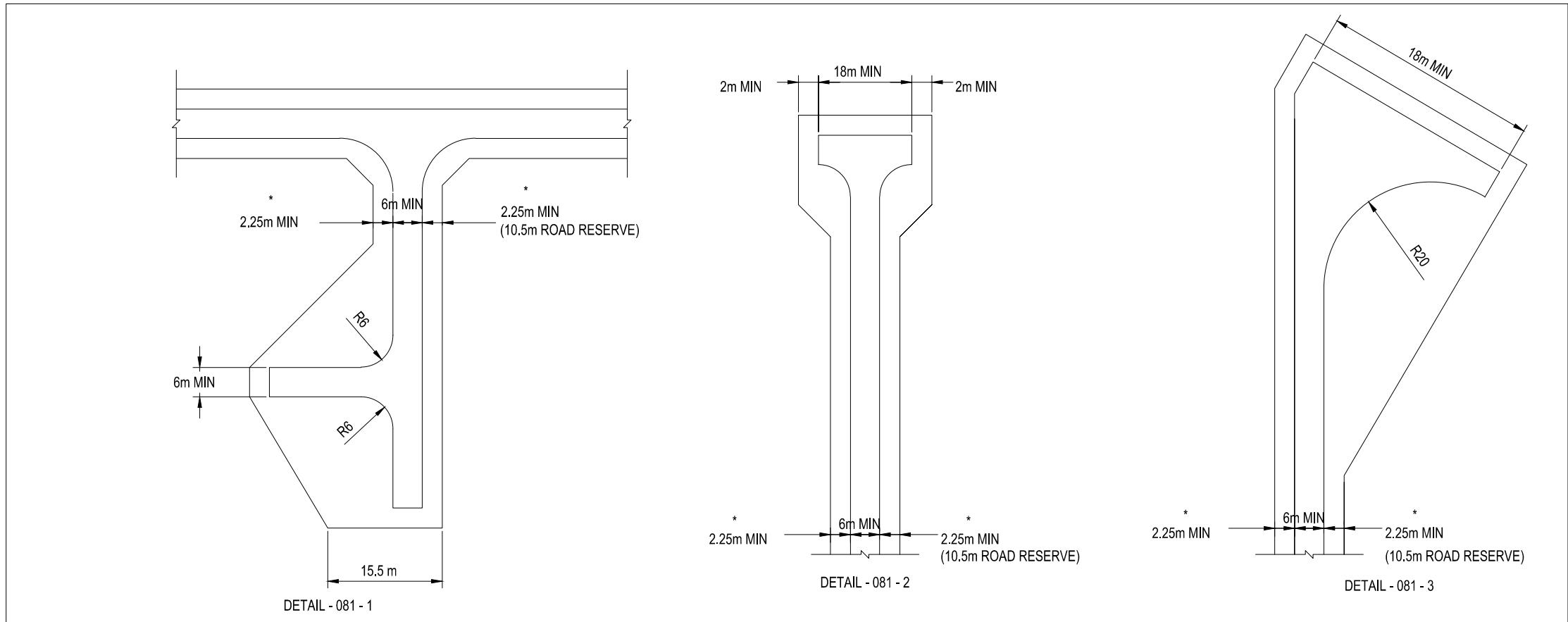
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL VEHICLE TURNING
FACILITIES
DRAWING REFERENCE
VT-02

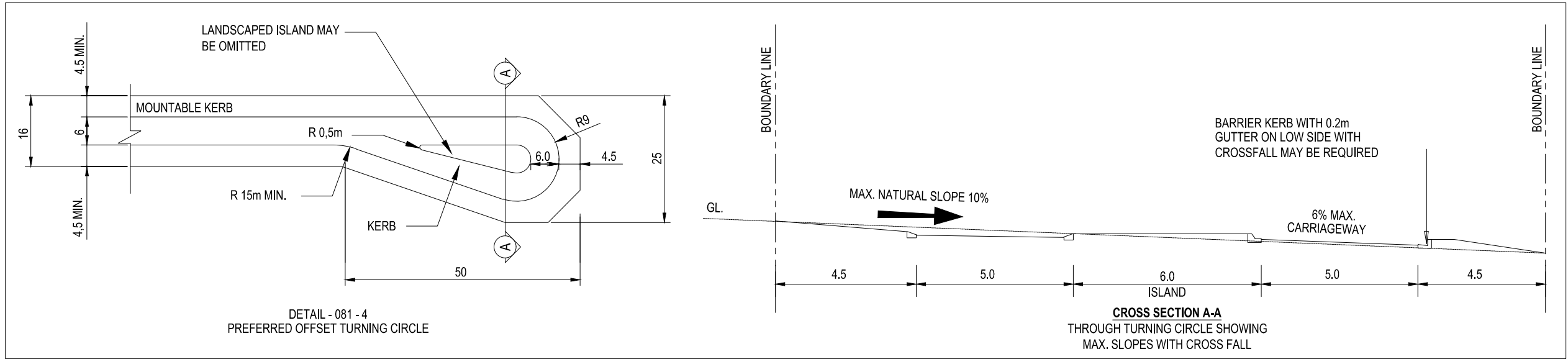
SCALE
Not to Scale

STATUS
FINAL



- | NOTES | |
|--|----------------------------|
| 1. MINIMUM OF 2m SIDEWALK MUST BE PROVIDED. | THE REVERSING MANOEUVRE IS |
| 2. ALL ROAD WORKS TO COMPLY TO SANS 1200. | |
| 3. KERB TYPE 8C IS TO BE USED THROUGHOUT. | |
| 4. OFFSET TURNING IS PREFERABLE | |
| 5. DESIRABLE MAX. CROSS-FALL ON SURFACE 4%. | |
| 6. DIMENSIONS VARY ACCORDING TO RESERVE WIDTH. | |
| 7. ALL ROAD DIMENSIONS ARE EDGE OF "BLACK TOP". | |
| 8. "HAMMER HEAD" TURNING BAYS (T, Y OR L) ARE NOT FAVOURED AS THE REVERSING MANEUVER IS HAZARDOUS FOR TRUCKS, BUT THEIR USE IN CERTAIN CIRCUMSTANCES MAY BE PERMITTED HAZARDOUS FOR TRUCKS, BUT THEIR USE IN CERTAIN CIRCUMSTANCES MAY BE PERMITTED. | |

HAMMER HEAD TURNING FACILITIES



TYPICAL OFFSET TURNING CIRCLE



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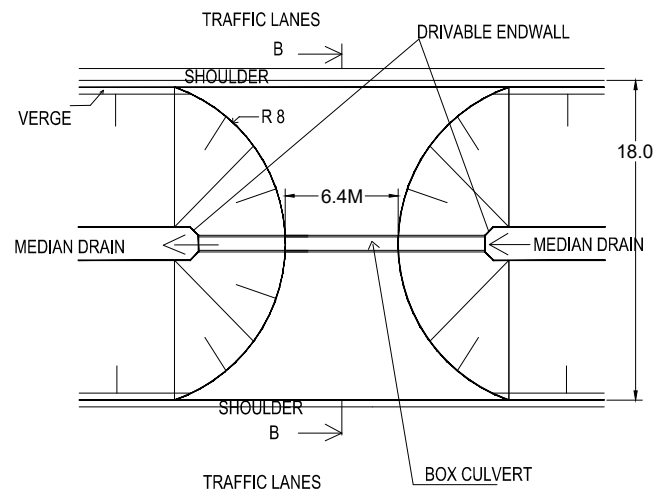
CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL VEHICLE TURNING FACILITIES

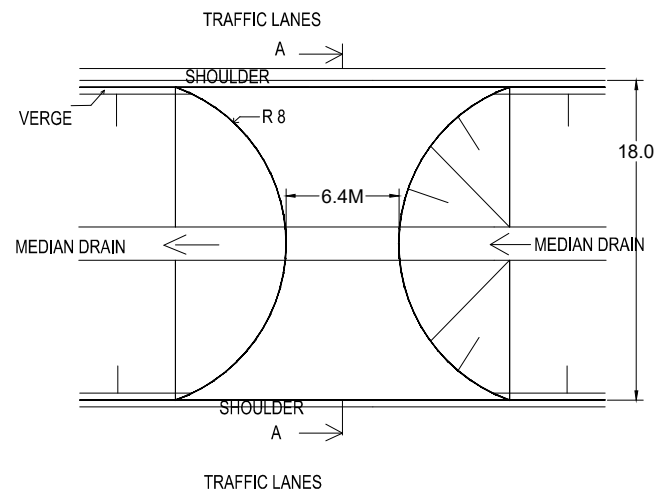
DRAWING REFERENCE
VT-03

SCALE
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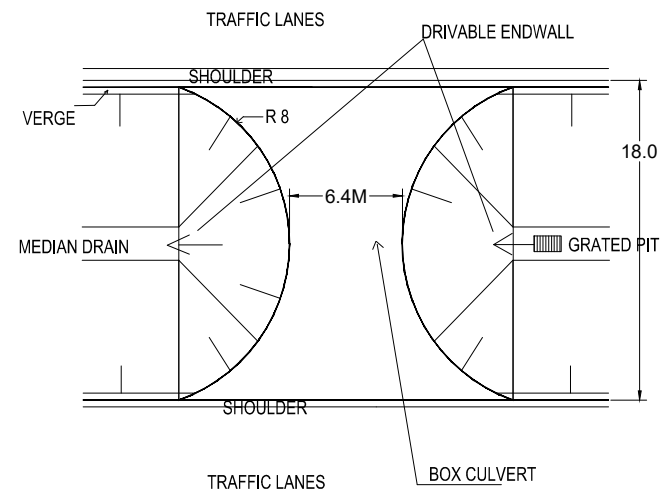
STATUS
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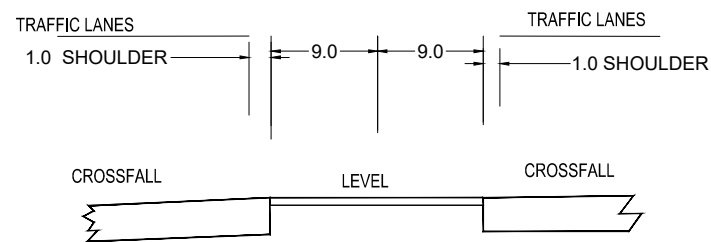
EMERGENCY MEDIAN CROSSING



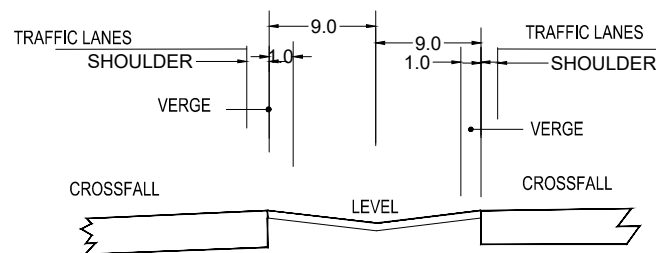
EMERGENCY MEDIAN CROSSING



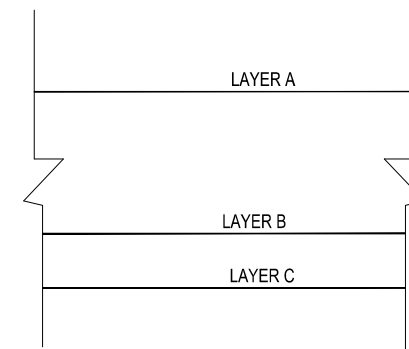
EMERGENCY MEDIAN CROSSING



SECTION B - B



SECTION A - A



EMERGENCY MEDIAN CROSSING PAVEMENT DETAILS



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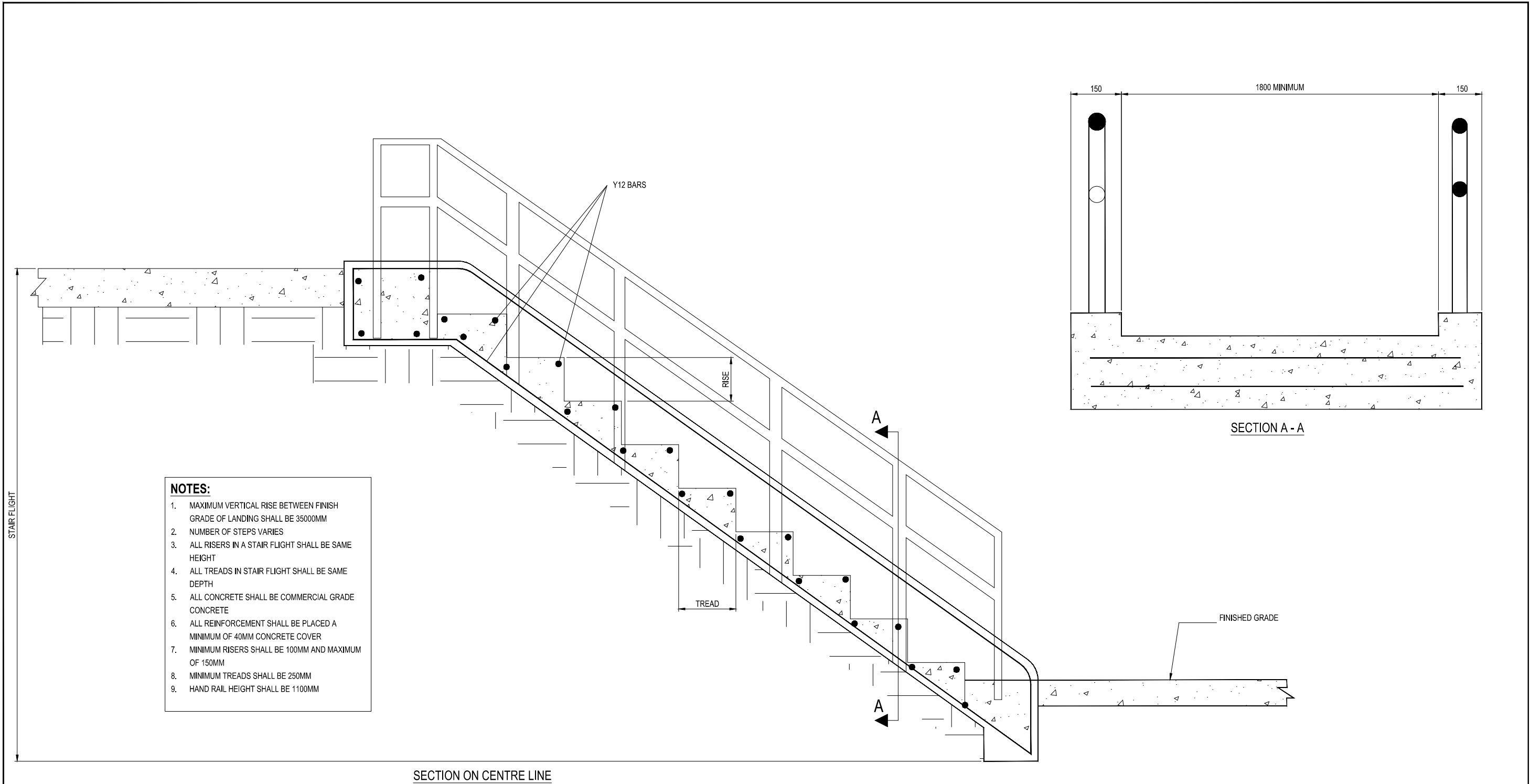
PROJECT TITLE
2023 UGANDA URBAN ROADS DESIGN MANUAL

CATEGORY
ROAD FEATURES

DRAWING TITLE
TYPICAL EMERGENCY MEDIAN
CROSSING DETAILS
DRAWING REFERENCE
EM-01

SCALE
Not to Scale

STATUS
FINAL



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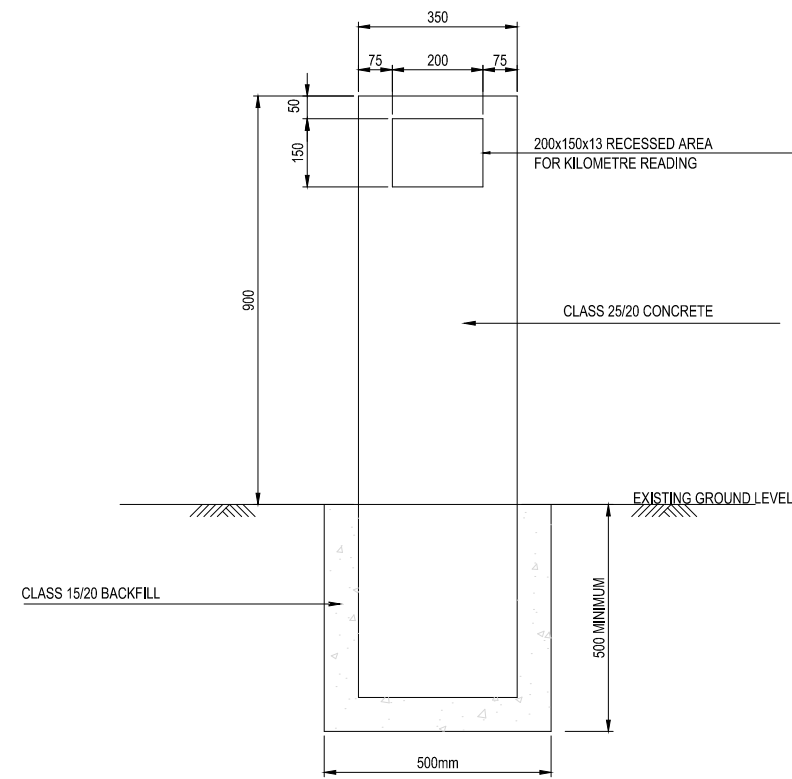
CATEGORY
ROAD FEATURES

DRAWING TITLE
CONCRETE STAIRCASE FOR ROAD ACCESS

DRAWING REFERENCE
CS-01

SCALE
Not to Scale

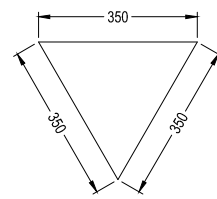
STATUS
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SIDE VIEW

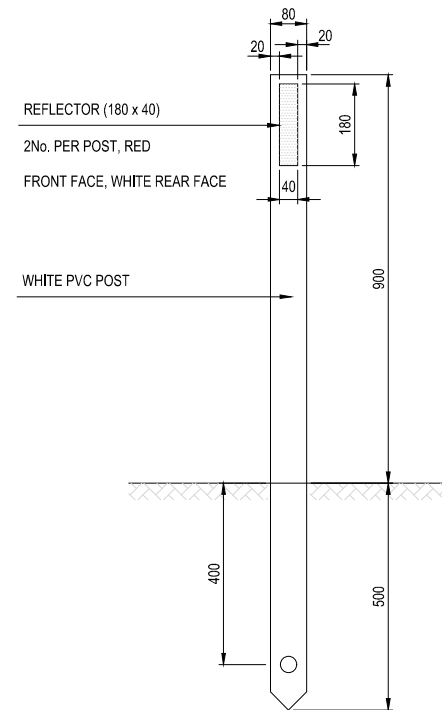


ISOMETRIC VIEW

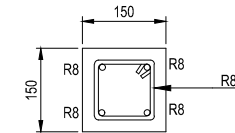


PLAN

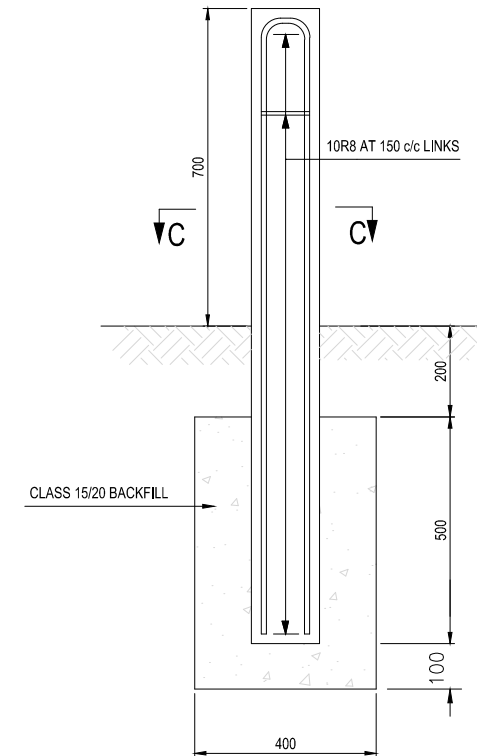
KILOMETRE MARKER POST DETAILS



EDGE MARKER POST



SECTION C-C



CULVERT MARKER POST AND
DUCT MARKER POST

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. KILOMETRE MARKER POSTS SHALL BE INSTALLED AT ALTERNATE TWO KILOMETRE INTERVALS ON ALL CLASS 1 & 2 ROUTES.
3. THE KILOMETRE READINGS SHALL BE PRINTED IN BLACK ON A REFLECTIVE BLUE PLATE TO BE ATTACHED ONTO THE RECESSED AREA BY AN EPOXY RESIN BONDING AGENT, SIKADUR 32 OR SIMILAR APPROVED.



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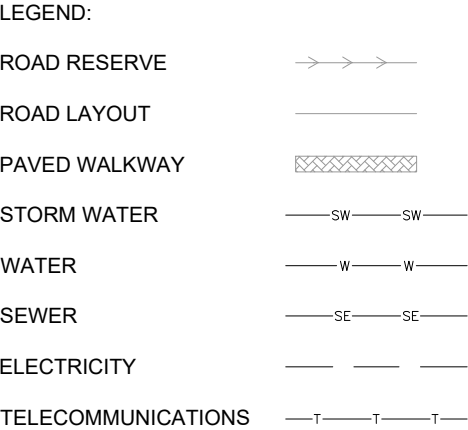
CATEGORY
ROAD FEATURES

DRAWING TITLE
KILOMETER MARK POST

DRAWING REFERENCE
KM-01

SCALE
Not to Scale

STATUS
FINAL



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CATEGORY

ROAD FEATURES





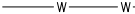





DRAWING TITLE
TYPICAL SERVICES LAYOUT 15m & 20m
ROAD RESERVES
DRAWING REFERENCE
SL-01

SCALE
Not to Scale

STATUS
FINAL



- LEGEND:

ROAD RESERVE	
ROAD LAYOUT	
PAVED WALKWAY	
STORM WATER	
WATER	
SEWER	
ELECTRICITY	
TELECOMMUNICATIONS	
TRAFFIC SIGNAL CABLING	
TRAFFIC SIGNAL HEADS	



SCALE
Not to Scale

STATUS
FINAL