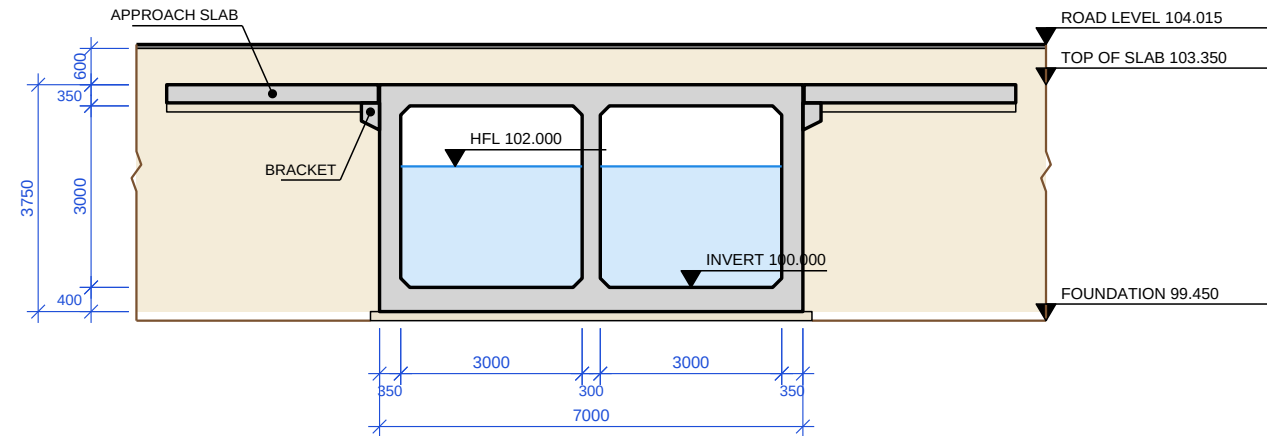
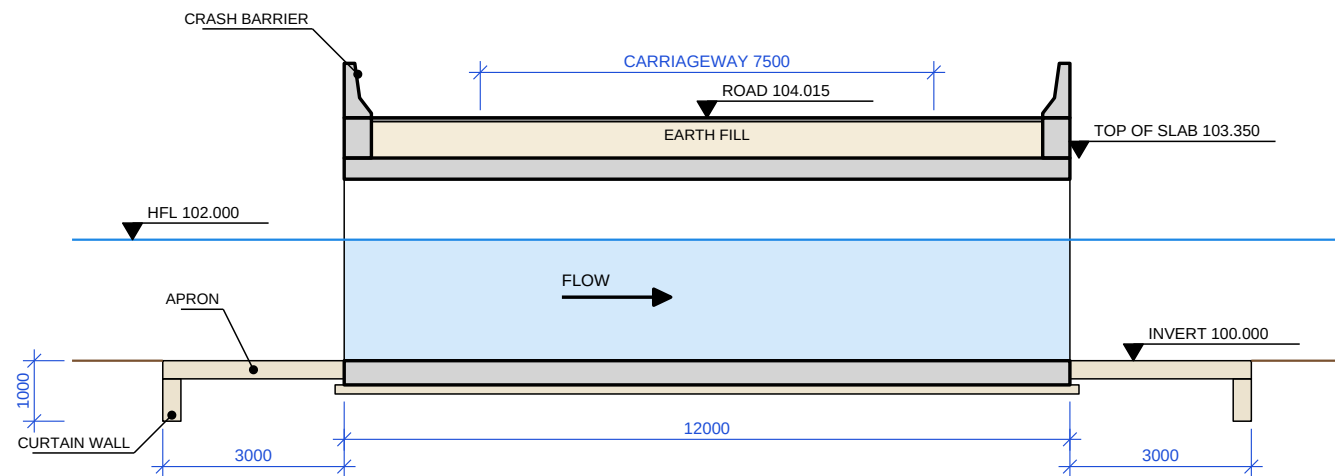
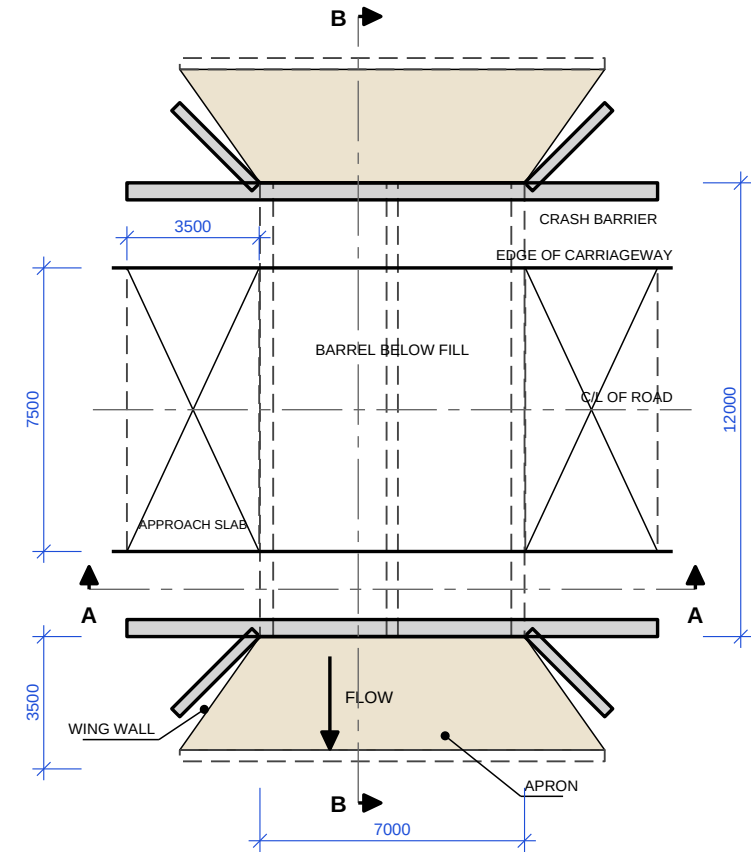




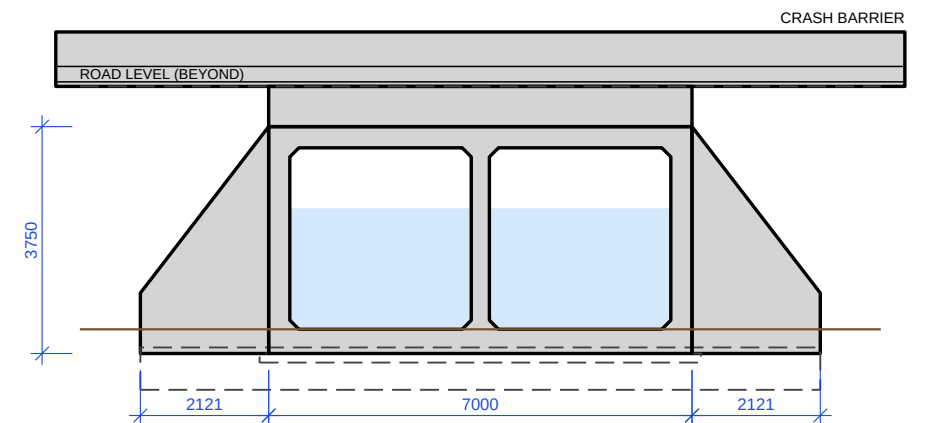
CROSS SECTION A-A
SCALE 1:125



LONGITUDINAL SECTION B-B
SCALE 1:125



PLAN
SCALE 1:200



ELEVATION (OUTLET END)
SCALE 1:125

NOTES

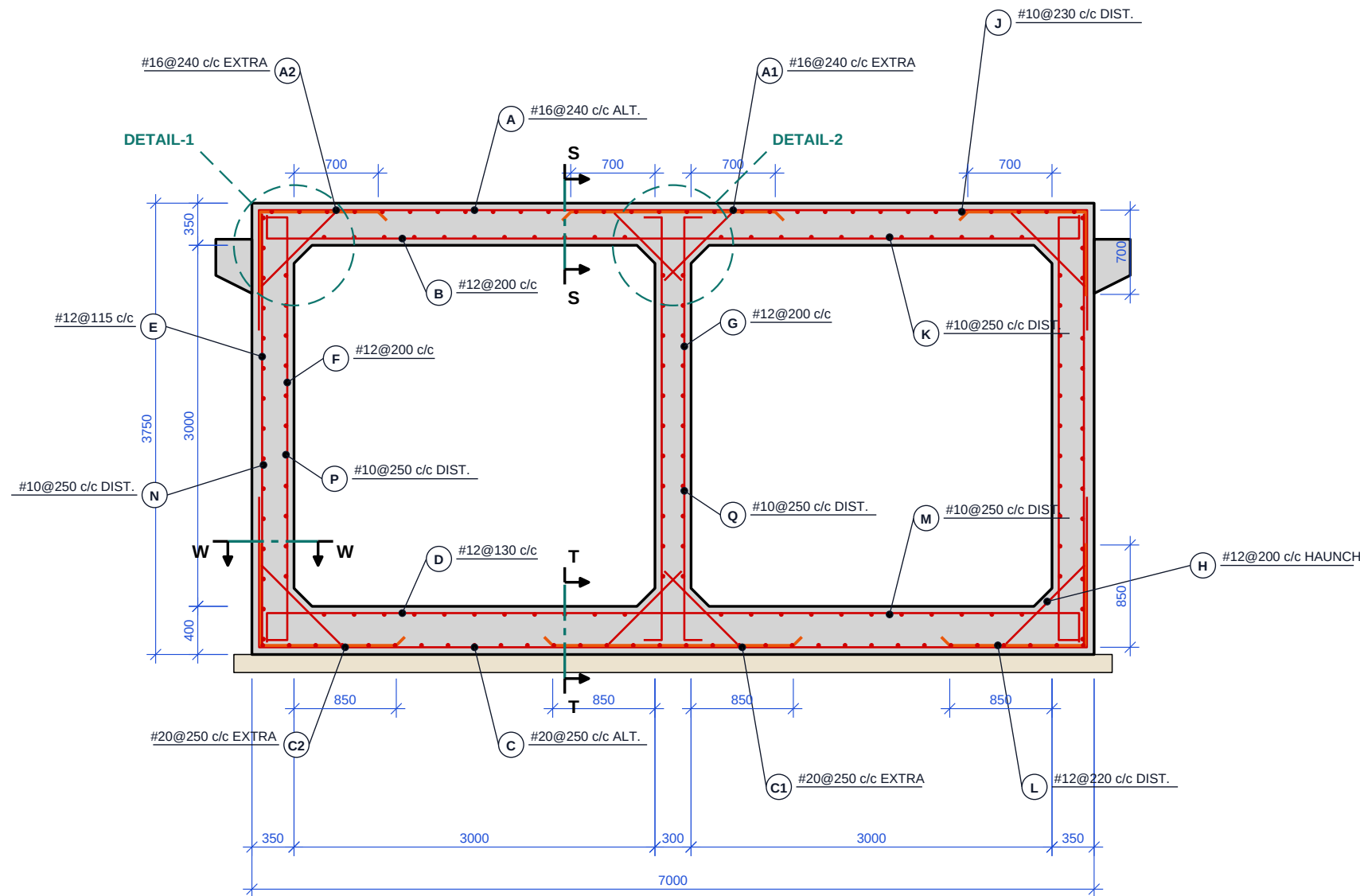
- All dimensions are in mm and levels in metres unless noted otherwise.
- Concrete: barrel M30, levelling course / apron / curtain walls M15 (PCC).
- Reinforcement: HYSD bars Fe500 conforming to IS 1786. Clear cover 50 mm.
- Live load: IRC Class A (2 lane), 70R tracked, 70R wheeled; fill over top slab 600 mm.
- Skew angle 0 deg (drawings shown square to the barrel). Haunches 150x150 at all internal corners.
- Wing walls, aprons and curtain walls are nominal; design separately if required.
- Weep holes / filter media behind walls as per MoRTH specifications.
- Crash barrier at both barrel ends, 900 mm above road.
- Approach slabs 3.5 m long on brackets cast with outer walls (see details).

Design: IRC 112:2020, IRC 6:2017, IRC SP 13 | Generated by BoxCulvert Designer

BOX CULVERT

GENERAL ARRANGEMENT

CLIENT			STRUCTURE	
-			2 x 3 m x 3 m RCC BOX	
DESIGNED	CHECKED	DATE	SCALE	SHEET
-	-	31-10-2026	AS SHOWN	1 of 5



TYPICAL CROSS SECTION - REINFORCEMENT
SCALE 1:50

REINFORCEMENT SCHEDULE

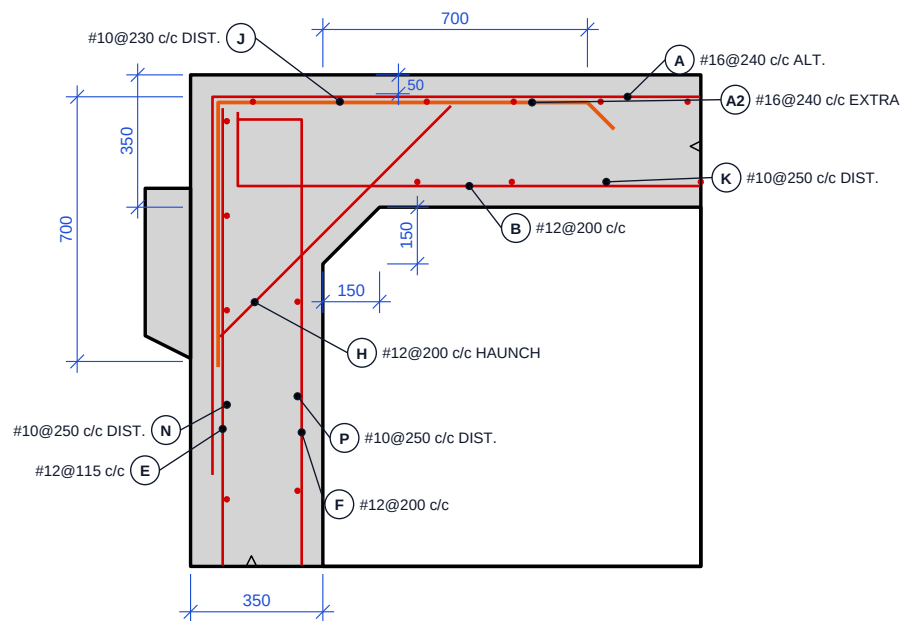
MARK	LOCATION	BARS
A	Top slab: outer (top) face, U-bar lapped with wall bars (alter	#16@240 c/c
A1	Top slab: Extra negative bar over inner supports, 700 mm each	#16@240 c/c
A2	Top slab: Extra negative corner bar, 700 mm from wall face, ie	#16@240 c/c
B	Top slab: inner (bottom) face, continuous, ends bent 90° up in	#12@200 c/c
C	Bottom slab: outer (bottom) face, U-bar lapped with wall bars	#20@250 c/c
C1	Bottom slab: Extra negative bar over inner supports, 850 mm ea	#20@250 c/c
C2	Bottom slab: Extra negative corner bar, 850 mm from wall face,	#20@250 c/c
D	Bottom slab: inner (top) face, continuous, ends bent 90° down	#12@130 c/c
E	Outer walls: outer (earth) face	#12@115 c/c
F	Outer walls: inner (cell) face, ends bent 90° into slabs	#12@200 c/c
G	Inner walls: both faces, ends bent 90° into slabs	#12@200 c/c
H	Haunches: Haunch bar, straight, parallel to haunch, across the	#12@200 c/c
J	Top slab: top face	#10@230 c/c
K	Top slab: bottom face	#10@250 c/c
L	Bottom slab: bottom face	#12@220 c/c
M	Bottom slab: top face	#10@250 c/c
N	Outer walls: outer face	#10@250 c/c
P	Outer walls: inner face	#10@250 c/c
Q	Inner walls: both faces	#10@250 c/c

NOTES

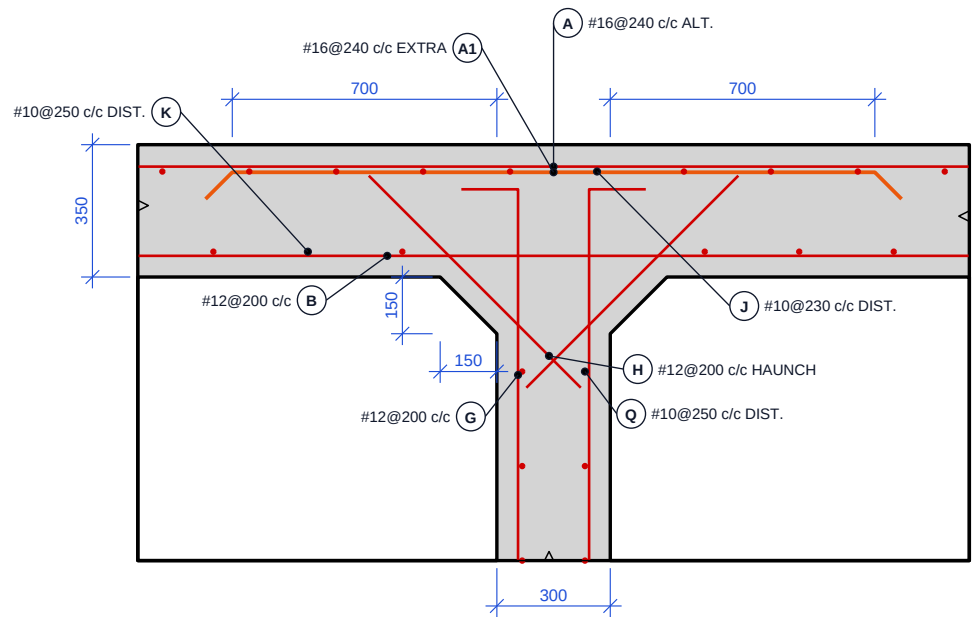
- Clear cover to main reinforcement 50 mm on all faces.
- Concrete M30; steel Fe500. Main bars placed in the outer layer.
- Outer-face U-bars A and C lap with wall bars E; lap length = 1000 mm for mark A (#16).
- Negative steel: A/C continuous (alternate) + A1/C1 over inner supports + A2/C2 at corners (orange); lengths from support faces.
- Positive steel B and D continuous. Distribution bars J to Q run along the barrel.
- Laps staggered, max 50% at a section. B, D, F, G anchored with 90° bends; extra bars cranked 45°.
- See Reinforcement Details - 2 for DETAIL-1, DETAIL-2 and sections S-S, T-T, W-W.

Design: IRC 112:2020, IRC 6:2017, IRC SP 13 | Generated by BoxCulvert Designer

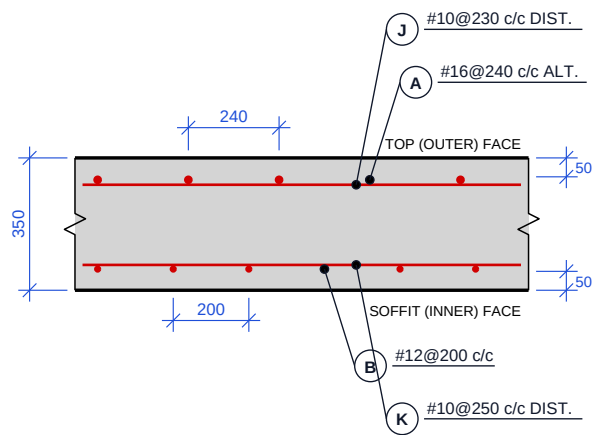
BOX CULVERT				
REINFORCEMENT DETAILS				
CLIENT			STRUCTURE	
-			2 x 3 m x 3 m RCC BOX	
DESIGNED	CHECKED	DATE	SCALE	SHEET
-	-	31-10-2026	AS SHOWN	2 of 5



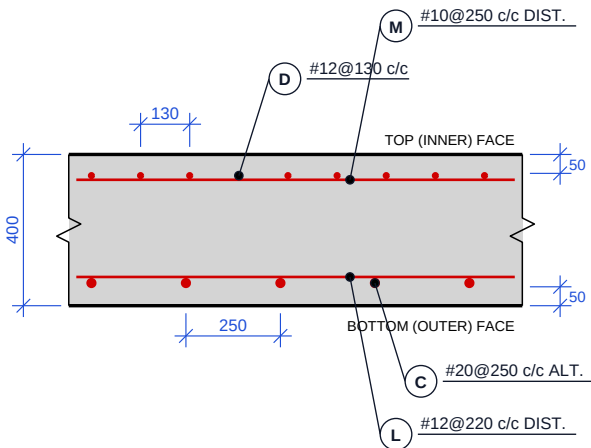
DETAIL-1: OUTER CORNER AND HAUNCH
SCALE 1:20



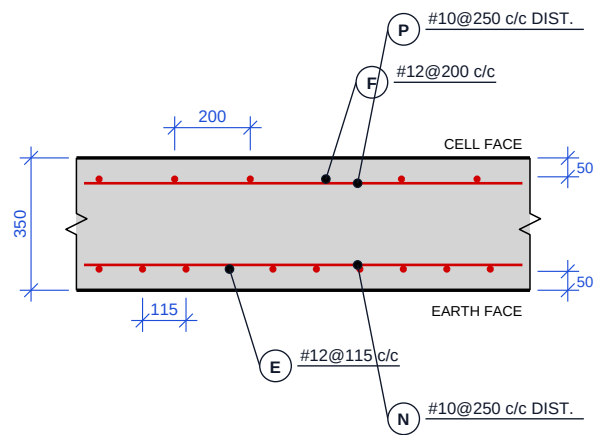
DETAIL-2: INNER WALL JUNCTION AND HAUNCHES
SCALE 1:20



SECTION S-S (TOP SLAB)
SCALE 1:20



SECTION T-T (BOTTOM SLAB)
SCALE 1:20

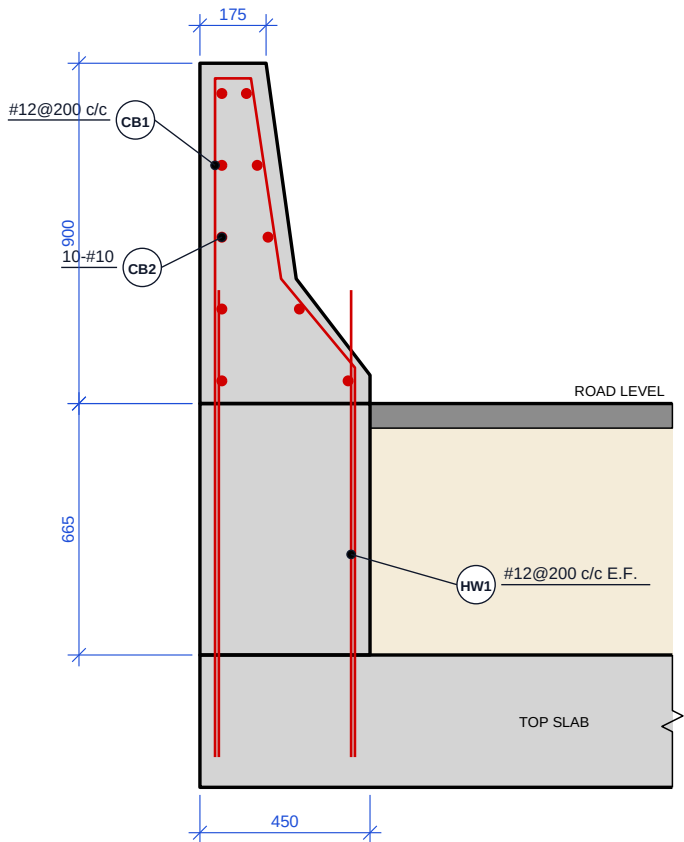


SECTION W-W (OUTER WALL)
SCALE 1:20

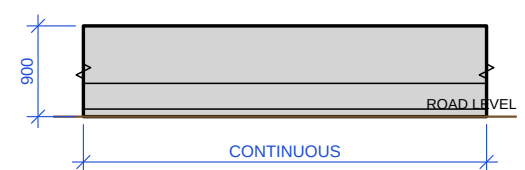
- NOTES**
1. Clear cover 50 mm to the outermost bars on all faces; main bars in the outer layer.
 2. Bar marks as per the reinforcement schedule and BBS. Anchorage bends 90°; extra bars cranked 45°.
 3. Negative (hogging) slab steel: alternate continuous bars (A, C) with extra bars (A1, A2, C1, C2) over the supports; lengths dimensioned from the support faces.
 4. Haunch 150 x 150 at all internal corners; haunch bars H straight, parallel to the haunch at cover, extended across the corner to the far-face reinforcement of slab and wall (MOST standard arrangement).
 5. Sections S-S, T-T and W-W are taken at mid-span / mid-height as marked on the cross section.

Design: IRC 112:2020, IRC 6:2017, IRC SP 13 | Generated by BoxCulvert Designer

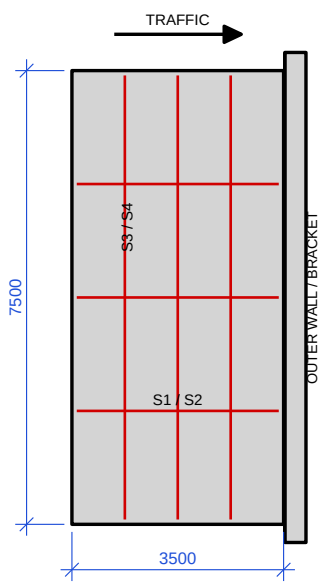
BOX CULVERT				
REINFORCEMENT DETAILS - 2				
CLIENT			STRUCTURE	
-			2 x 3 m x 3 m RCC BOX	
DESIGNED	CHECKED	DATE	SCALE	SHEET
-	-	31-10-2026	AS SHOWN	3 of 5



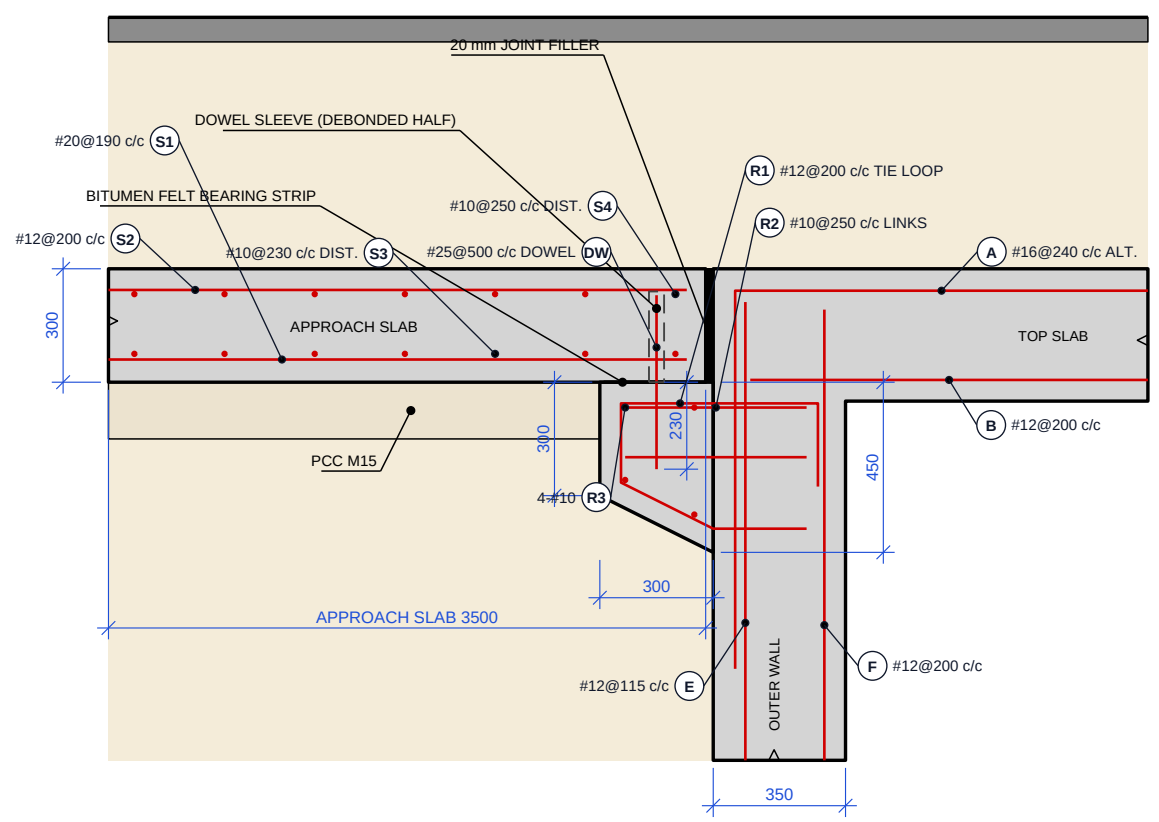
CRASH BARRIER - SECTION
SCALE 1:20



CRASH BARRIER - ELEVATION
SCALE 1:75



APPROACH SLAB - PLAN
SCALE 1:125



BRACKET AND APPROACH SLAB - SECTION
SCALE 1:20

SCHEDULE OF REINFORCEMENT

MARK	LOCATION	BARS
S1	Approach slab: Main bar - bottom face (along traffic), 2 slabs	#20@190 c/c
S2	Approach slab: Main bar - top face (along traffic), 2 slabs	#12@200 c/c
S3	Approach slab: Distribution - bottom face, 2 slabs	#10@230 c/c
S4	Approach slab: Distribution - top face, 2 slabs	#10@250 c/c
R1	Brackets: Main tie - closed loop on bracket outline, top leg bent down in wall, 2 nos	#12@200 c/c
R2	Brackets: Horizontal hairpin links, 2 layers, legs @ 250, 2 nos	#10@250 c/c
R3	Brackets: Longitudinal bars at corners of R1 loop (4 per bracket)	#10@200 c/c
DW	Brackets: Dowel bracket to approach slab, debonded (sleeved) in the slab half	#25@500 c/c
CB1	Crash barrier: Vertical U-bar, legs anchored 300 mm into headwall/slab, 2 ends	#12@200 c/c
CB2	Crash barrier: Longitudinal bars, 10 per barrier, 2 ends	#10@200 c/c
HW1	Headwall: Vertical bars both faces, 300 mm into slab and barrier, 2 ends	#12@200 c/c
HW2	Headwall: Horizontal bars both faces, 2 ends	#10@200 c/c

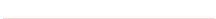
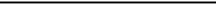
NOTES

- Crash barrier reinforcement is nominal; collision design per IRC 6 / MoRTH standard drawings where a containment level is specified.
- Cover to railing / barrier reinforcement 40 mm.
- Approach slab 3.5 m x 7.5 m x 300 mm on 150 mm PCC M15 over compacted granular fill.
- Bracket designed as corbel: VEd = 143.4 kN/m, main tie R1 #12@200 c/c (closed loop, MOST type).
- Dowels debonded (sleeved) over half length to allow rotation of the approach slab.

Design: IRC 112:2020, IRC 6:2017, IRC SP 13 | Generated by BoxCulvert Designer

BOX CULVERT				
RAILING & APPROACH SLAB				
CLIENT			STRUCTURE	
-			2 x 3 m x 3 m RCC BOX	
DESIGNED	CHECKED	DATE	SCALE	SHEET
-	-	31-10-2026	AS SHOWN	4 of 5

BAR BENDING SCHEDULE - BOX CULVERT (BARREL LENGTH 12 m)

MARK	MEMBER	DESCRIPTION	SHAPE	DIMENSIONS (mm)	DIA	SPACING	NOS	CUT LEN (m)	TOTAL (m)	kg/m	WEIGHT (kg)
A	Top slab	Negative bar - outer (top) face, U-bar lapped with wall bars (alternate bars, co		a=6900, b=1000	16	240	50	8.836	441.8	1.580	698.2
A1	Top slab	Extra negative bar over inner supports, 700 mm each side of wall face, ends cran		a=1700, c=100	16	240	50	1.900	95.0	1.580	150.1
A2	Top slab	Extra negative corner bar, 700 mm from wall face, leg into wall, slab end cranke		a=1000, b=700, c=100	16	240	100	1.768	176.8	1.580	279.4
B	Top slab	Positive bar - inner (bottom) face, continuous, ends bent 90° up into walls		a=6750, b=196	12	200	60	7.094	425.6	0.889	378.3
C	Bottom slab	Negative bar - outer (bottom) face, U-bar lapped with wall bars (alternate bars,		a=6900, b=1250	20	250	48	9.320	447.4	2.469	1104.6
C1	Bottom slab	Extra negative bar over inner supports, 850 mm each side of wall face, ends cran		a=2000, c=100	20	250	48	2.200	105.6	2.469	260.7
C2	Bottom slab	Extra negative corner bar, 850 mm from wall face, leg into wall, slab end cranke		a=1150, b=850, c=100	20	250	96	2.060	197.8	2.469	488.3
D	Bottom slab	Positive bar - inner (top) face, continuous, ends bent 90° down into walls		a=6750, b=244	12	130	92	7.190	661.5	0.889	588.0
E	Outer walls	Vertical bar - outer (earth) face		a=3650	12	115	208	3.650	759.2	0.889	674.8
F	Outer walls	Vertical bar - inner (cell) face, ends bent 90° into slabs		a=3512, b=169	12	200	120	3.802	456.2	0.889	405.5
G	Inner walls	Vertical bar - both faces, ends bent 90° into slabs		a=3512, b=150	12	200	120	3.764	451.7	0.889	401.5
H	Haunches	Haunch bar, straight, parallel to haunch, across the corner to far-face steel		a=950	12	200	480	0.950	456.0	0.889	405.3
J	Top slab	Distribution - top face		a=11900	10	230	31	11.900	368.9	0.617	227.7
K	Top slab	Distribution - bottom face		a=11900	10	250	26	11.900	309.4	0.617	191.0
L	Bottom slab	Distribution - bottom face		a=11900	12	220	32	11.900	380.8	0.889	338.5
M	Bottom slab	Distribution - top face		a=11900	10	250	26	11.900	309.4	0.617	191.0
N	Outer walls	Horizontal - outer face		a=11900	10	250	30	11.900	357.0	0.617	220.4
P	Outer walls	Horizontal - inner face		a=11900	10	250	26	11.900	309.4	0.617	191.0
Q	Inner walls	Horizontal - both faces		a=11900	10	250	26	11.900	309.4	0.617	191.0
S1	Approach slab	Main bar - bottom face (along traffic), 2 slabs		a=3400	20	190	78	3.400	265.2	2.469	654.8
S2	Approach slab	Main bar - top face (along traffic), 2 slabs		a=3400	12	200	76	3.400	258.4	0.889	229.7
S3	Approach slab	Distribution - bottom face, 2 slabs		a=7400	10	230	30	7.400	222.0	0.617	137.0
S4	Approach slab	Distribution - top face, 2 slabs		a=7400	10	250	28	7.400	207.2	0.617	127.9
R1	Brackets	Main tie - closed loop on bracket outline, top leg bent down in wall, 2 nos		a=521, b=220, c=209, d=273, e=247	12	200	76	1.374	104.4	0.889	92.8
R2	Brackets	Horizontal hairpin links, 2 layers, legs @ 250, 2 nos		a=491, b=250	10	250	60	1.212	72.7	0.617	44.9
R3	Brackets	Longitudinal bars at corners of R1 loop (4 per bracket)		a=7400	10	200	8	7.400	59.2	0.617	36.5
DW	Brackets	Dowel bracket to approach slab, debonded (sleeved) in the slab half		a=460	25	500	30	0.460	13.8	3.858	53.2
CB1	Crash barrier	Vertical U-bar, legs anchored 300 mm into headwall/slab, 2 ends		a=95, b=1160	12	200	140	2.367	331.4	0.889	294.6
CB2	Crash barrier	Longitudinal bars, 10 per barrier, 2 ends		a=13920 (+1 lap)	10	200	20	14.550	291.0	0.617	179.6
HW1	Headwall	Vertical bars both faces, 300 mm into slab and barrier, 2 ends		a=1265	12	200	140	1.265	177.1	0.889	157.4
HW2	Headwall	Horizontal bars both faces, 2 ends		a=6900	10	200	16	6.900	110.4	0.617	68.1

STEEL ABSTRACT

DIAMETER (mm)	WEIGHT (kg)
#10	1,806.2
#12	3,966.5
#16	1,127.7
#20	2,508.4
#25	53.2
TOTAL	9,462.1 kg (9.462 t)

NOTES

1. Cutting lengths include bend deductions of 2ϕ per 90° bend.
2. Lap length per IRC 112 cl 15.2.5 (α6 = 1.5); stock length 12 m.
3. Wing walls excluded. Railing / barrier reinforcement is nominal.

Design: IRC 112:2020, IRC 6:2017, IRC SP 13 | Generated by BoxCulvert Designer

BOX CULVERT				
BAR BENDING SCHEDULE				
CLIENT			STRUCTURE	
-			2 x 3 m x 3 m RCC BOX	
DESIGNED	CHECKED	DATE	SCALE	SHEET
-	-	31-10-2026	NTS	5 of 5