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Level Datum =55.000

DITCH 2

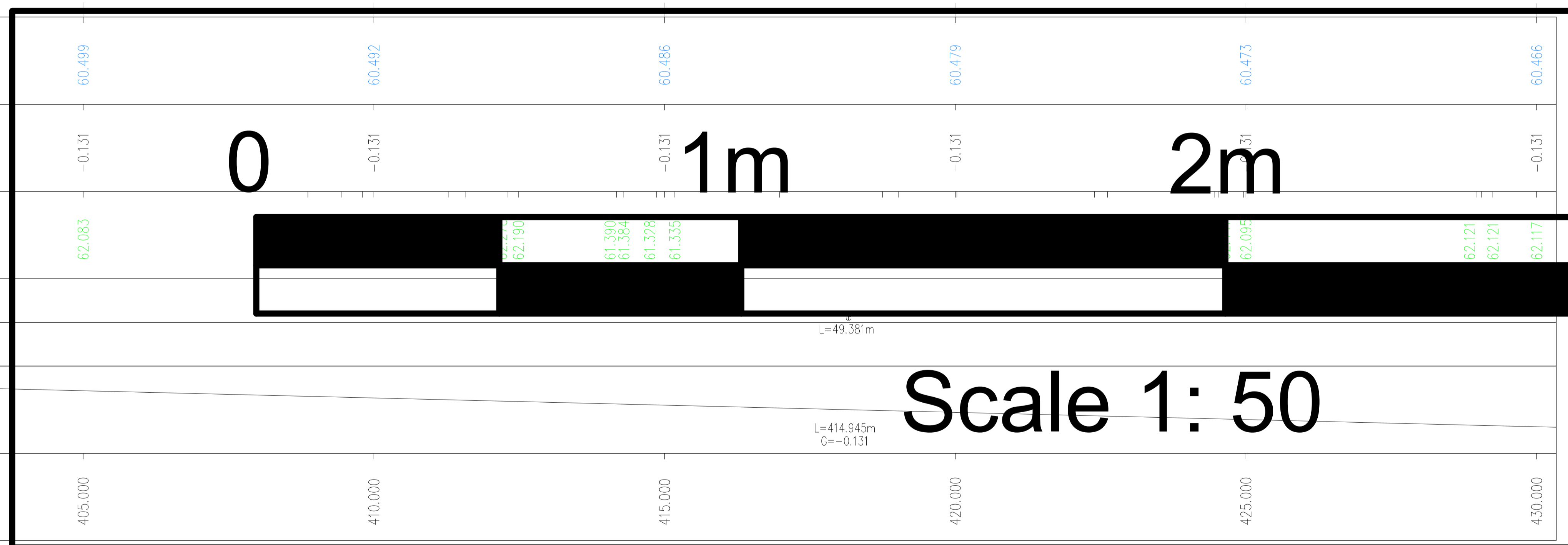
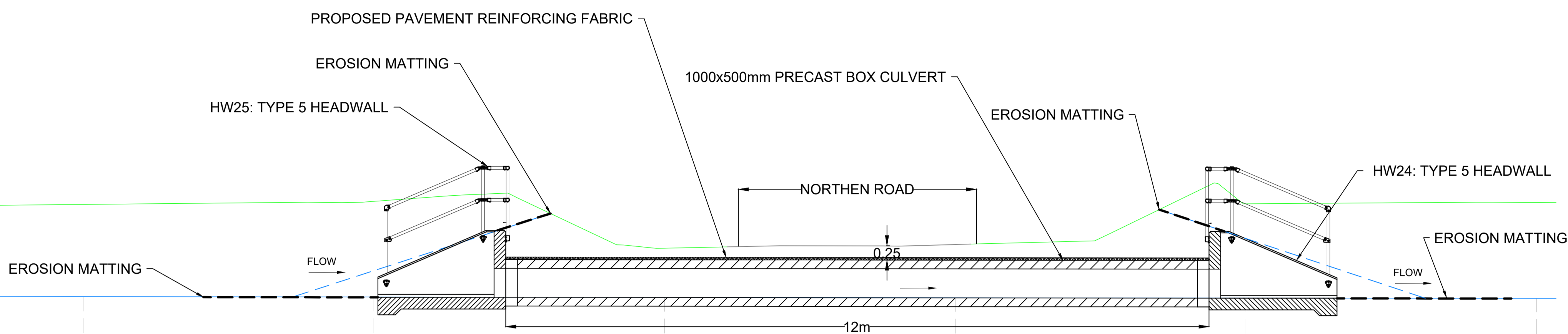
GRADIENT

E.G.L

HORIZONTAL

VERTICAL

CHAINAGE



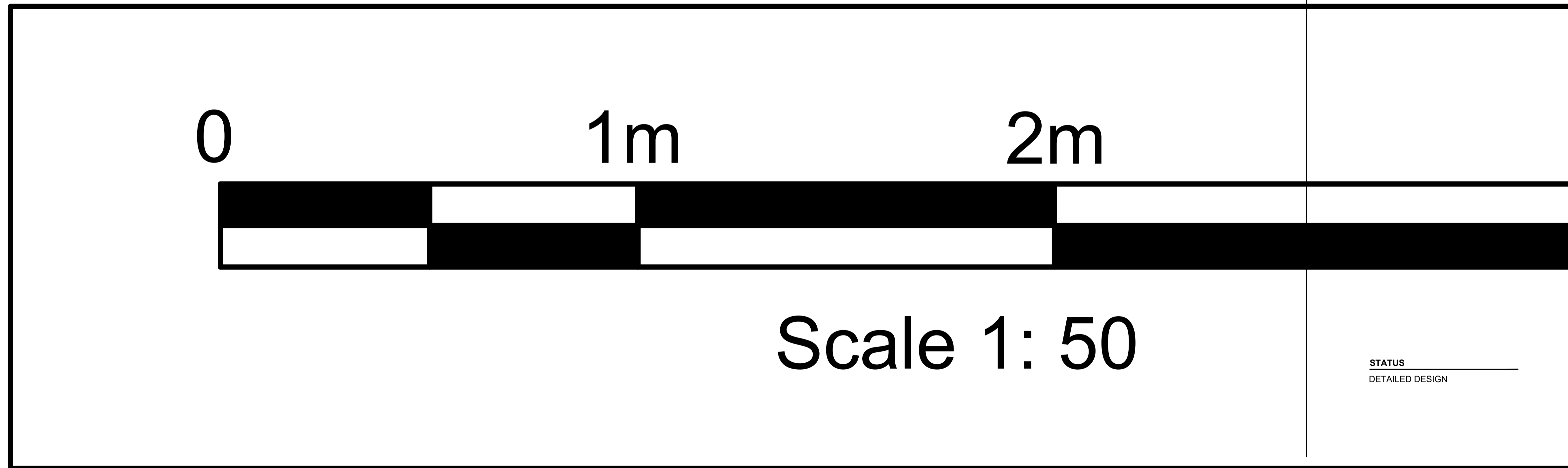
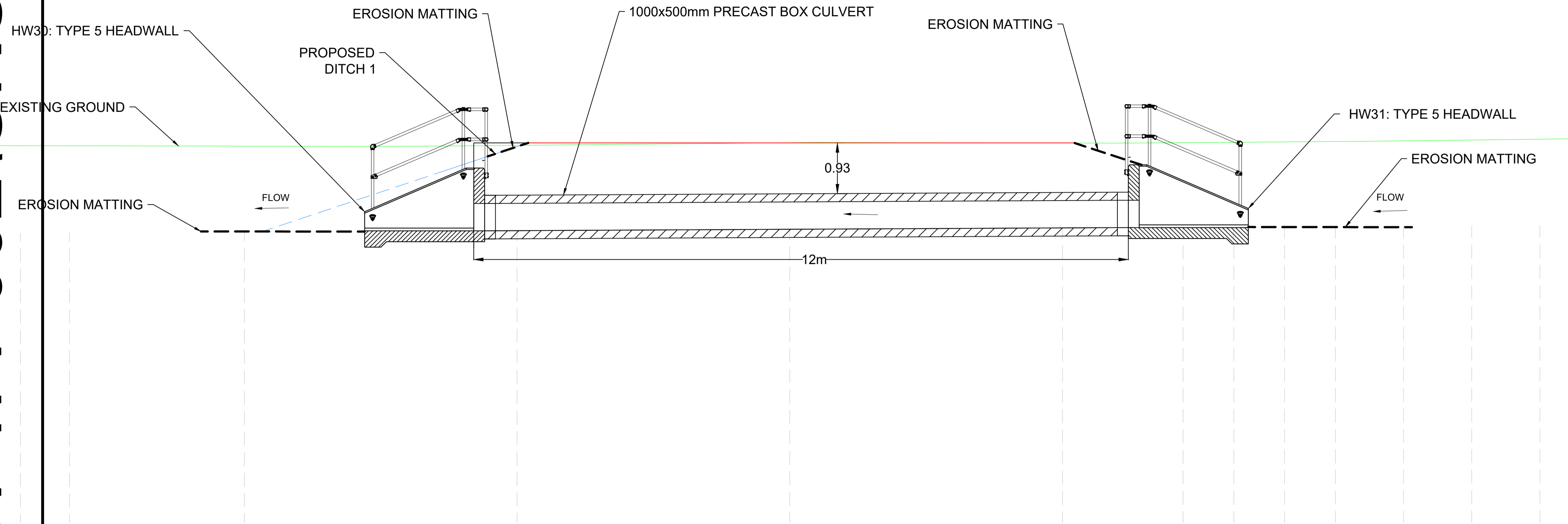
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DETAILED DESIGN

SCALE 1:50

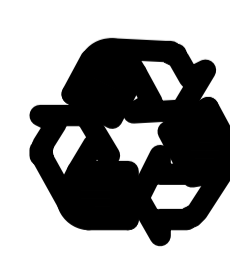
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FARM CROSSING



BC5
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AECOM

PROJECT

FLOOD ALLEVIATION
SCHEME

CLIENT

VALE OF GLAMORGAN COUNCIL

AECOM
1 CALLAGHAN SQUARE
CARDIFF
CF10 5BT
TEL: (029) 20674600
FAX: (029) 20674699

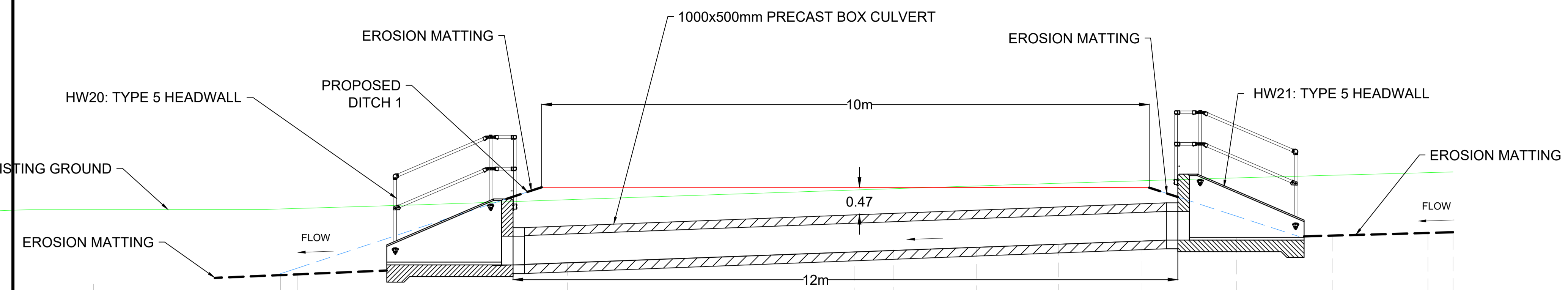
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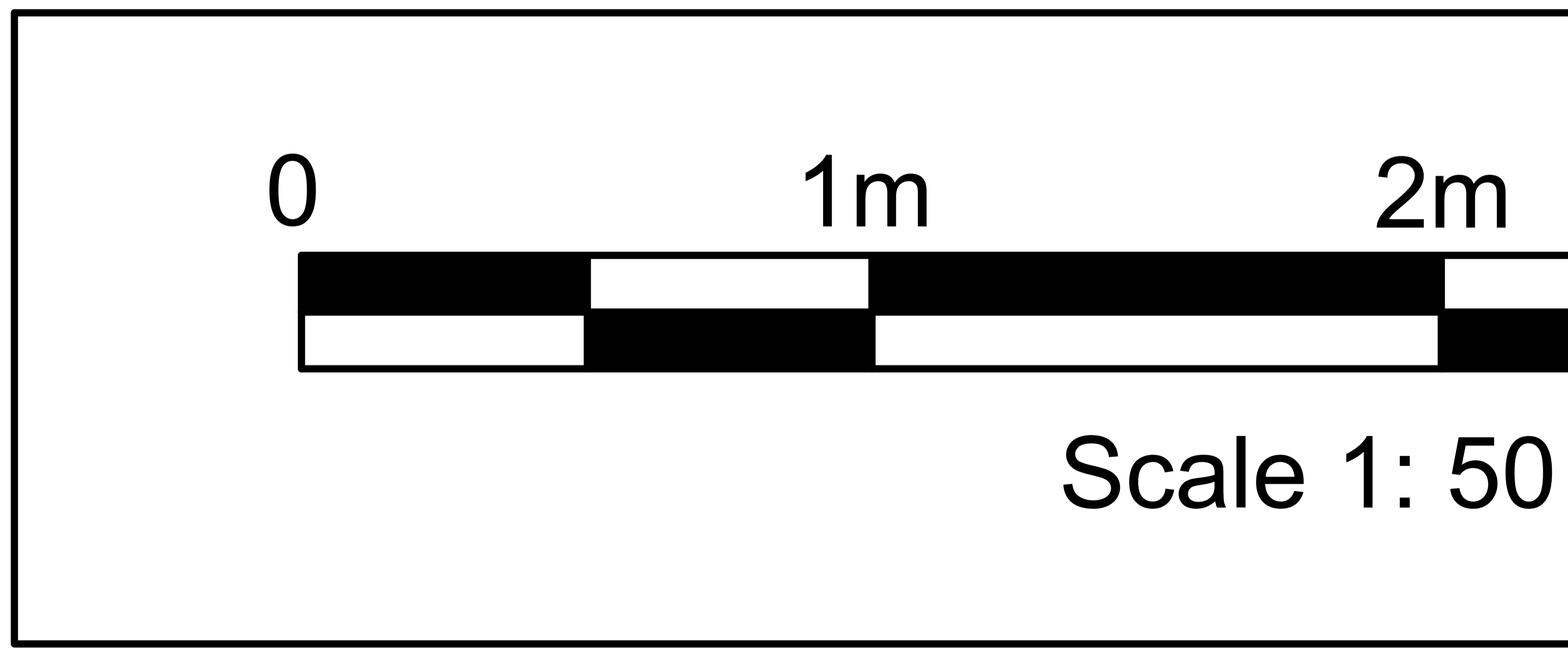
PROJECT NUMBER

60160078

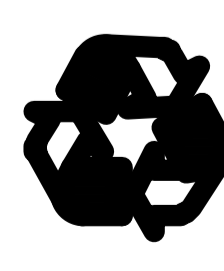
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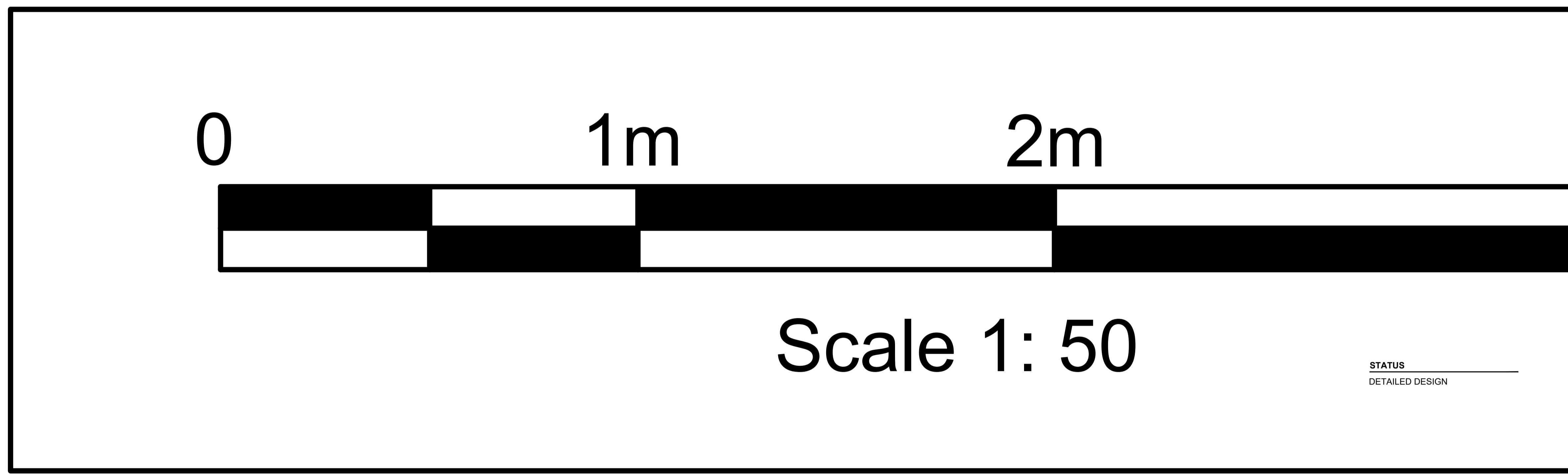
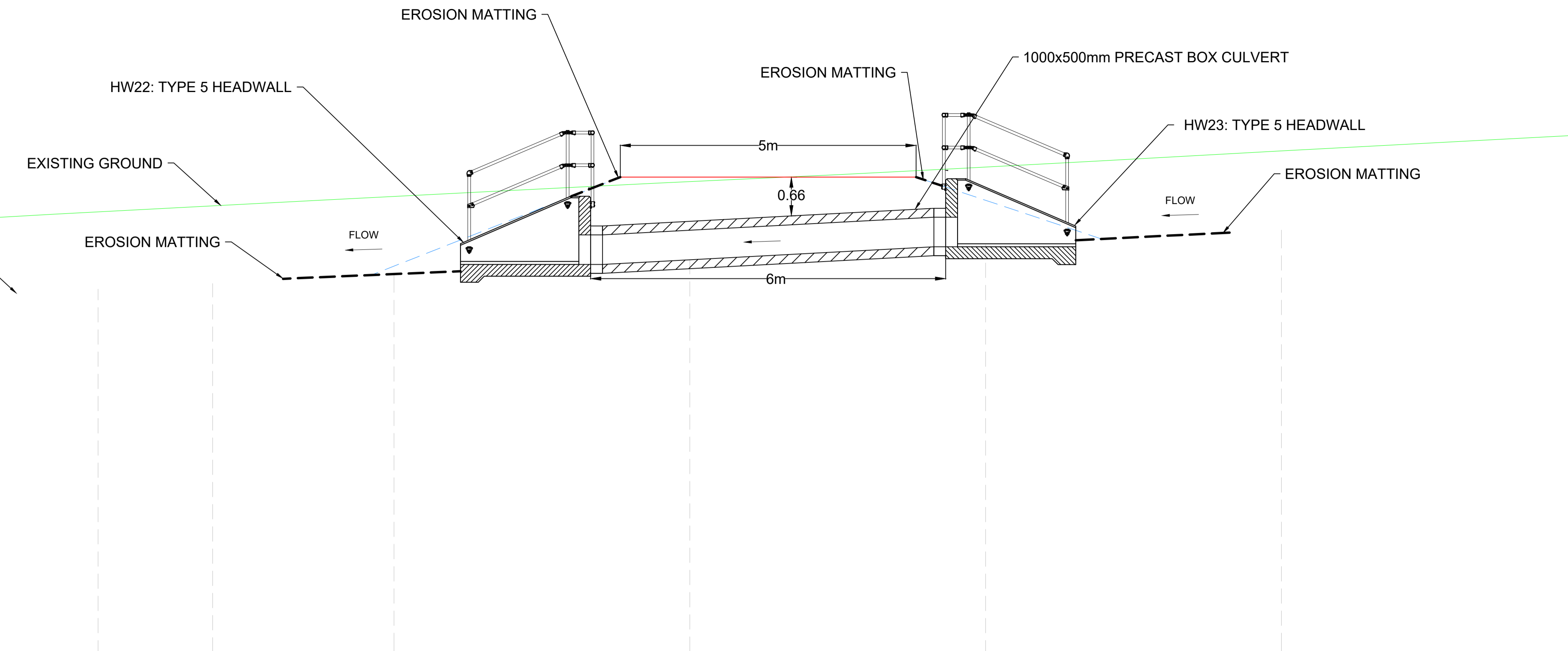


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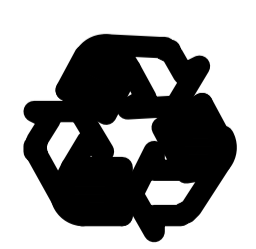
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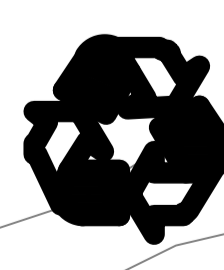


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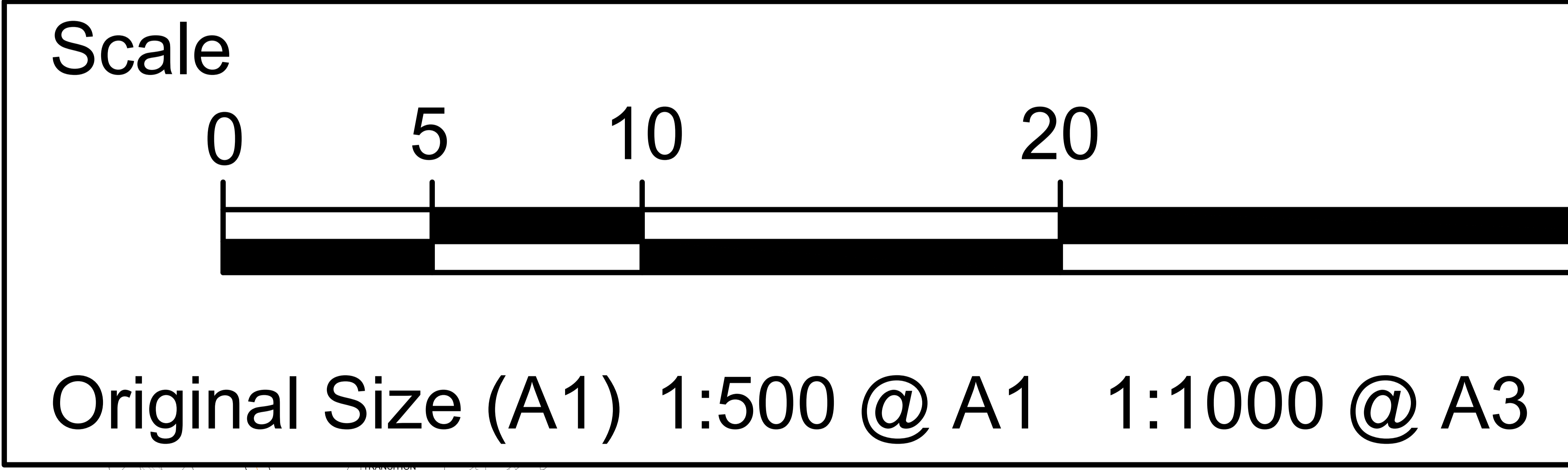
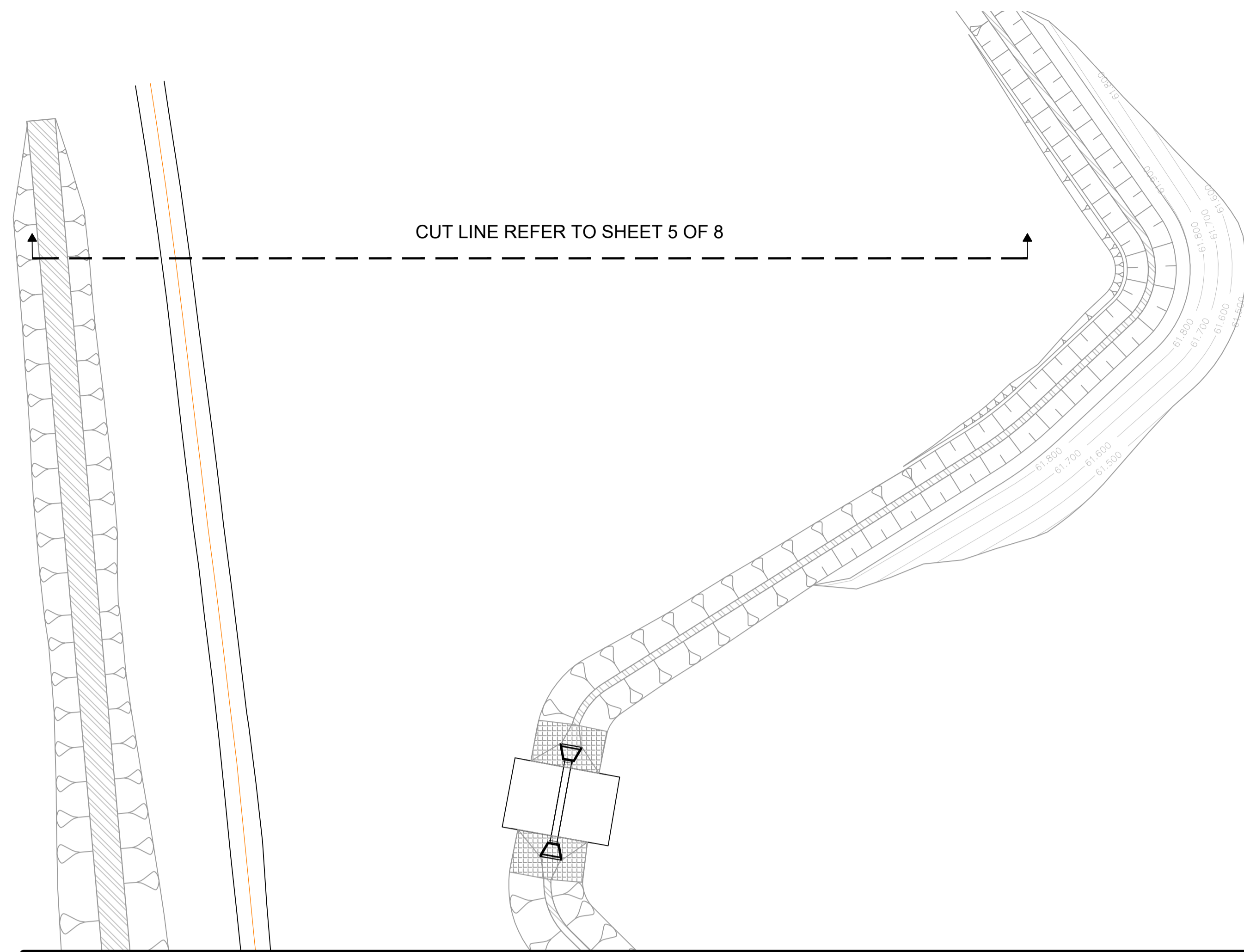
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CUT LINE REFER TO SHEET 1 OF 8



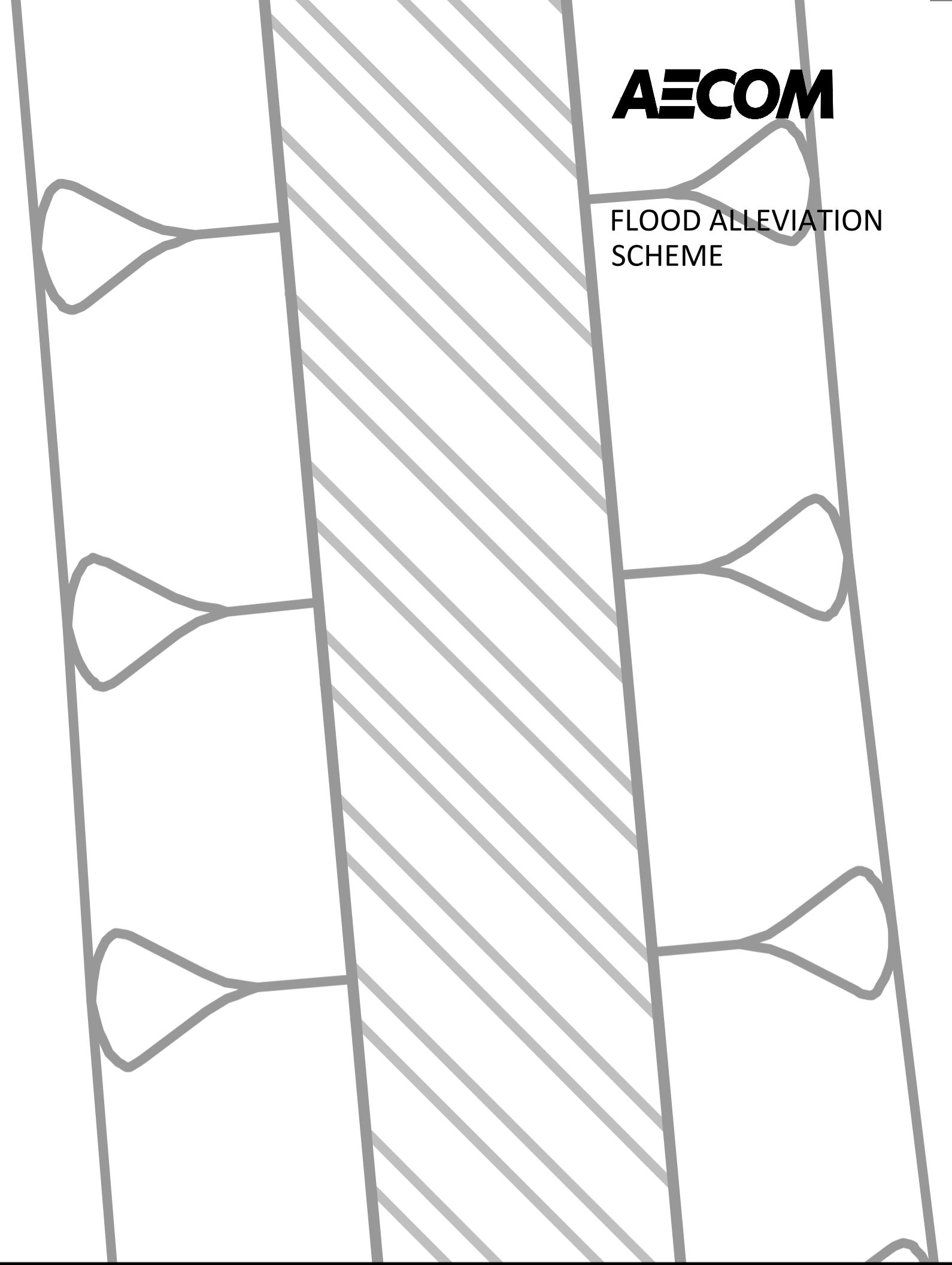
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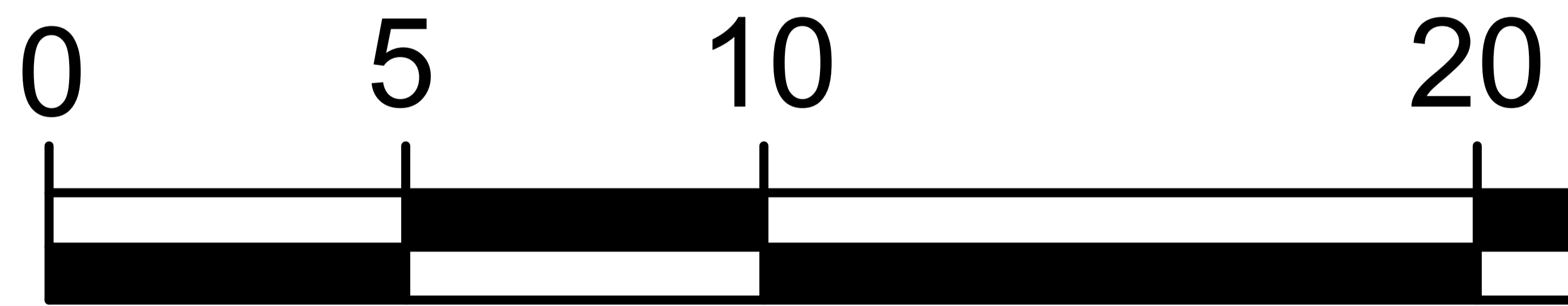


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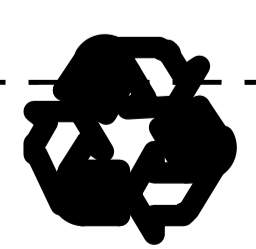
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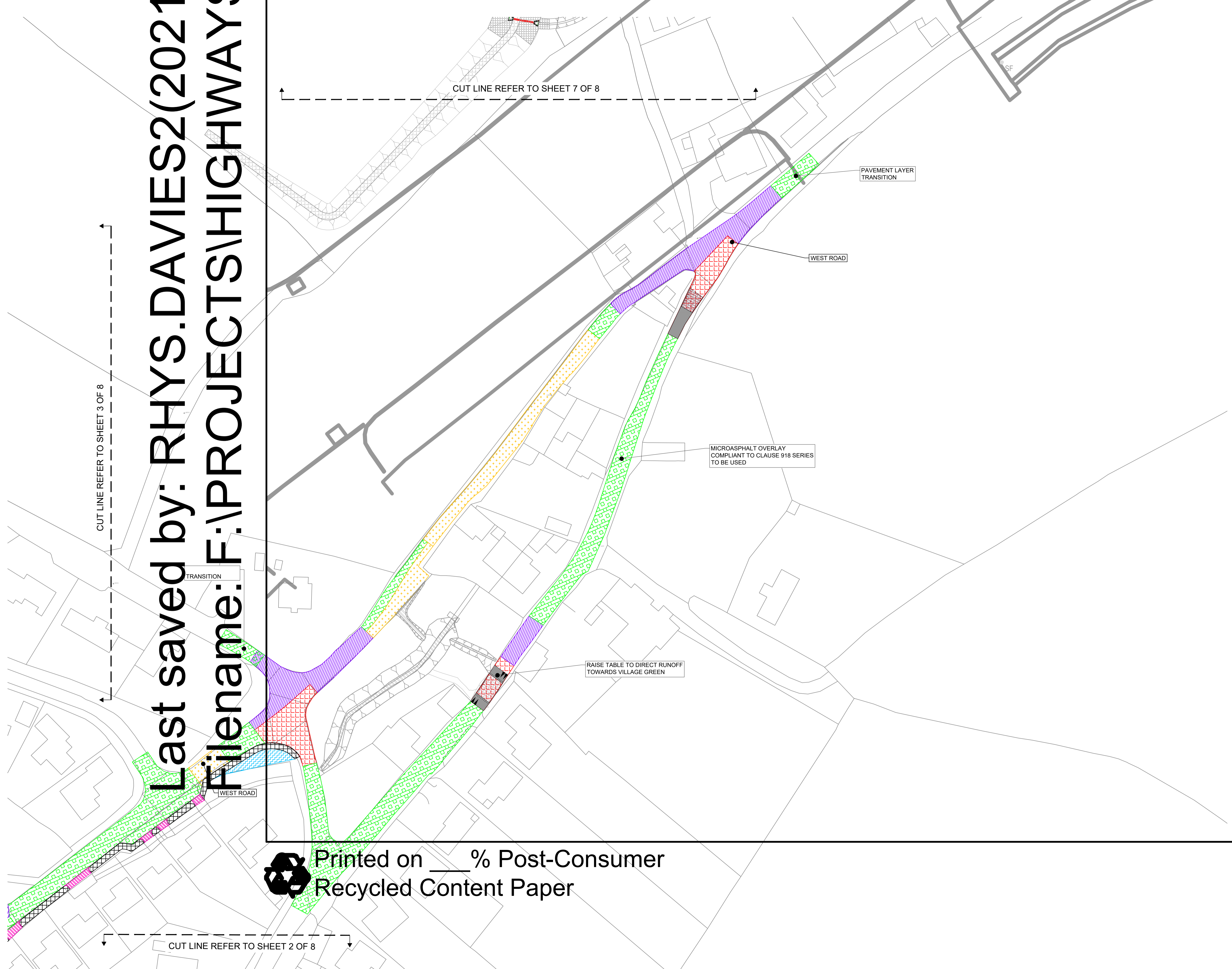


Original Size (A1) 1:500 @ A1 1:1000 @ A3



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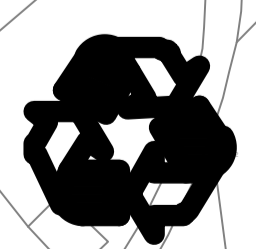
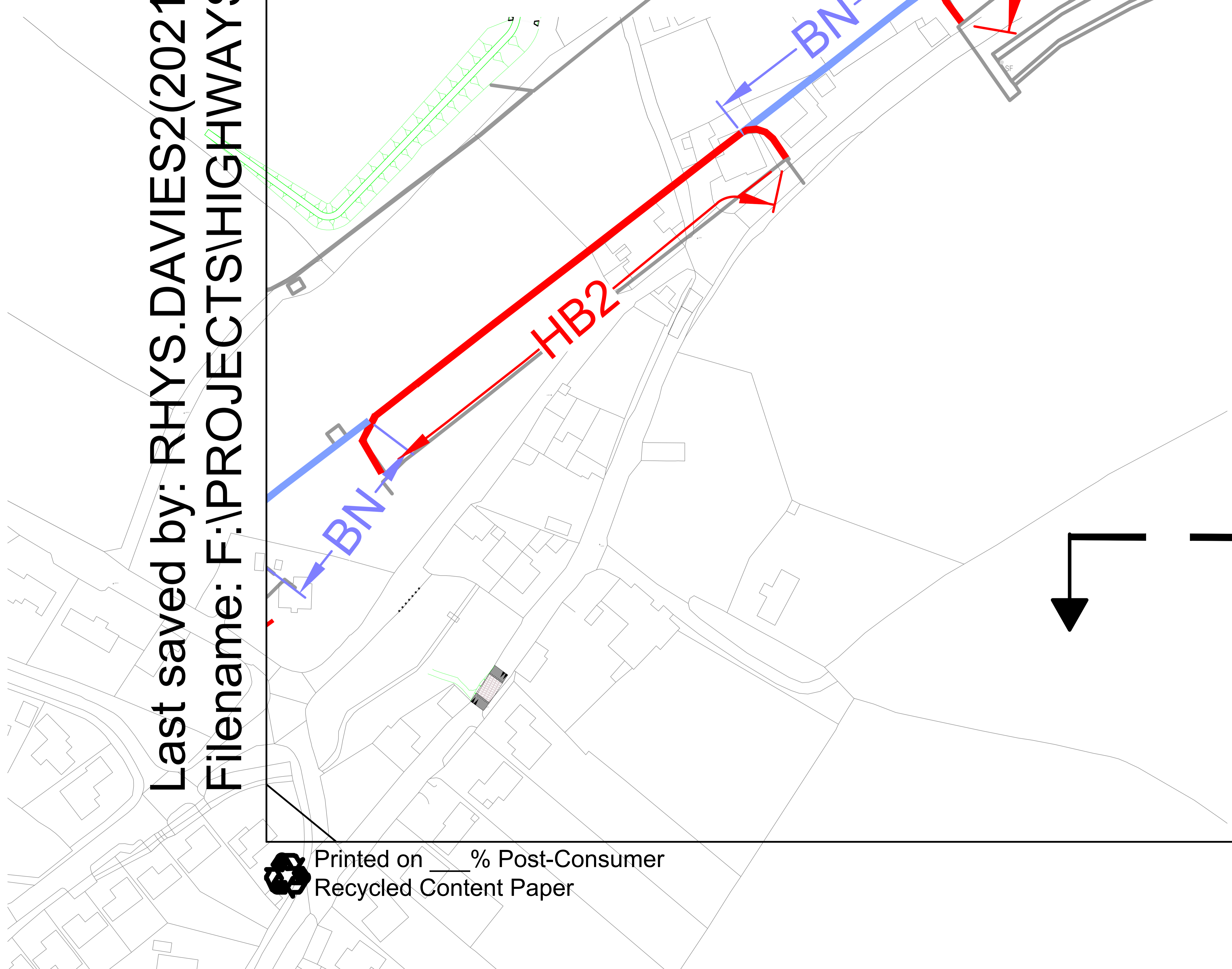


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DETAILED DESIGN

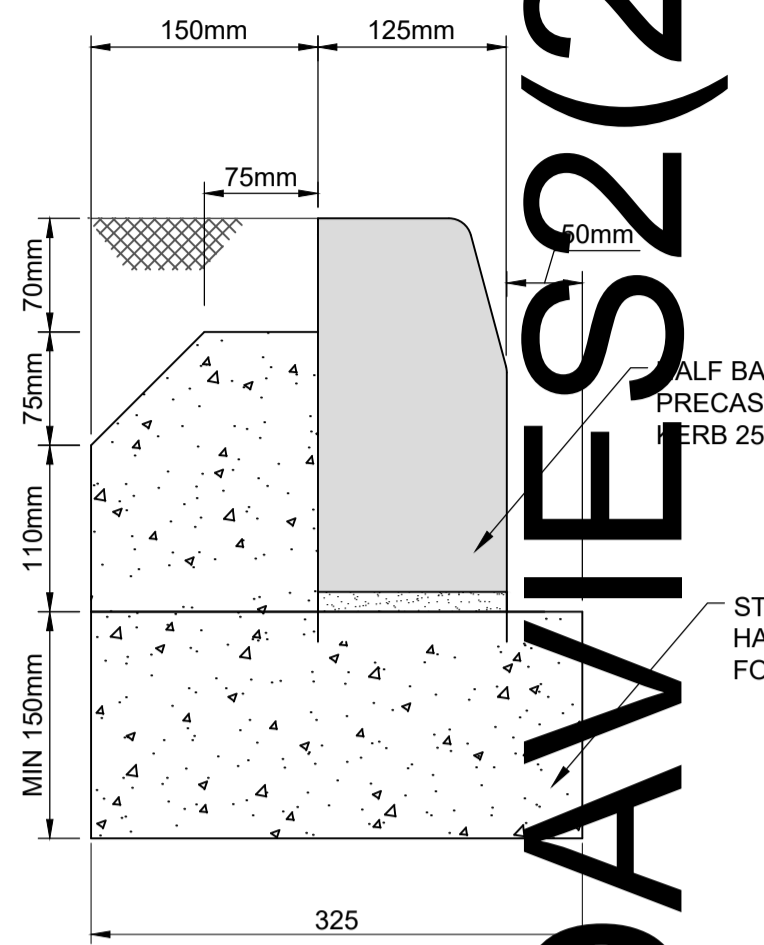
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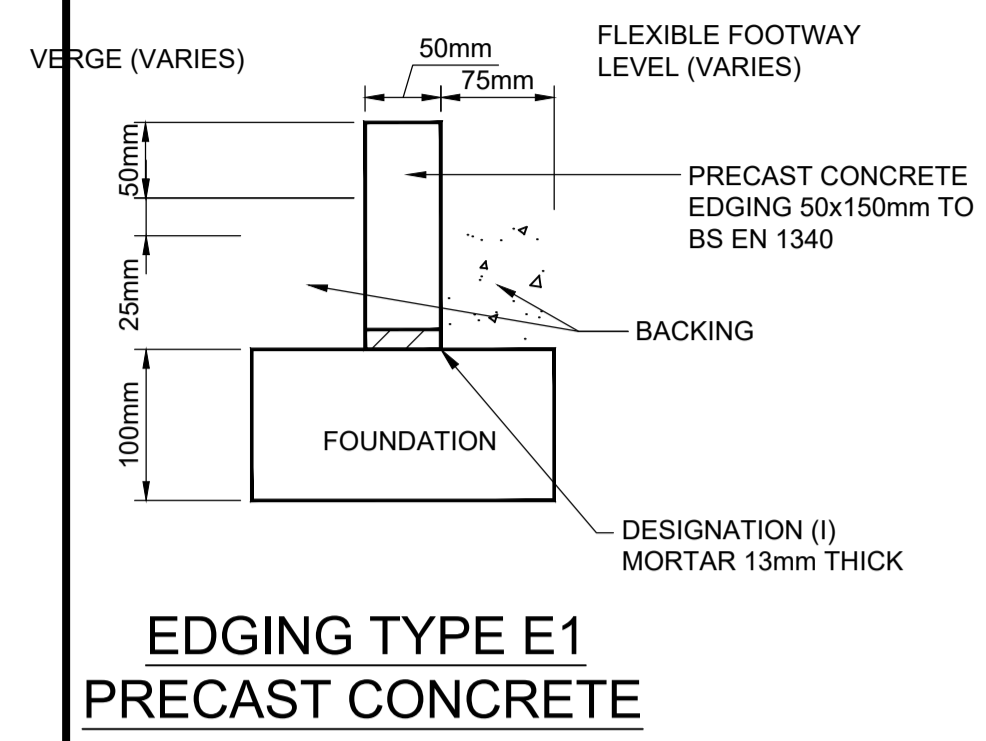


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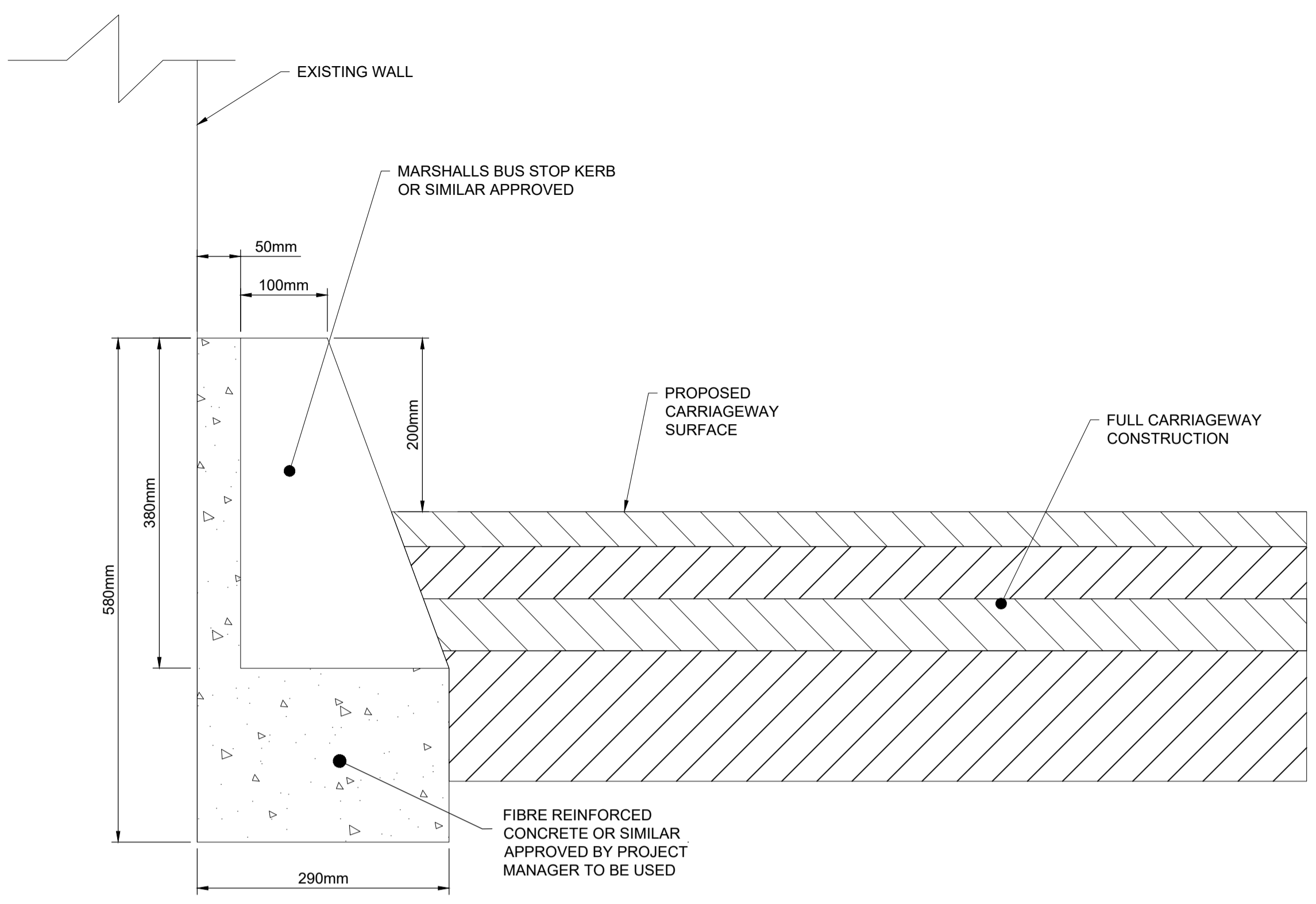


SECTION VIEW

HB2 - HALF BATTER KERB DETAIL



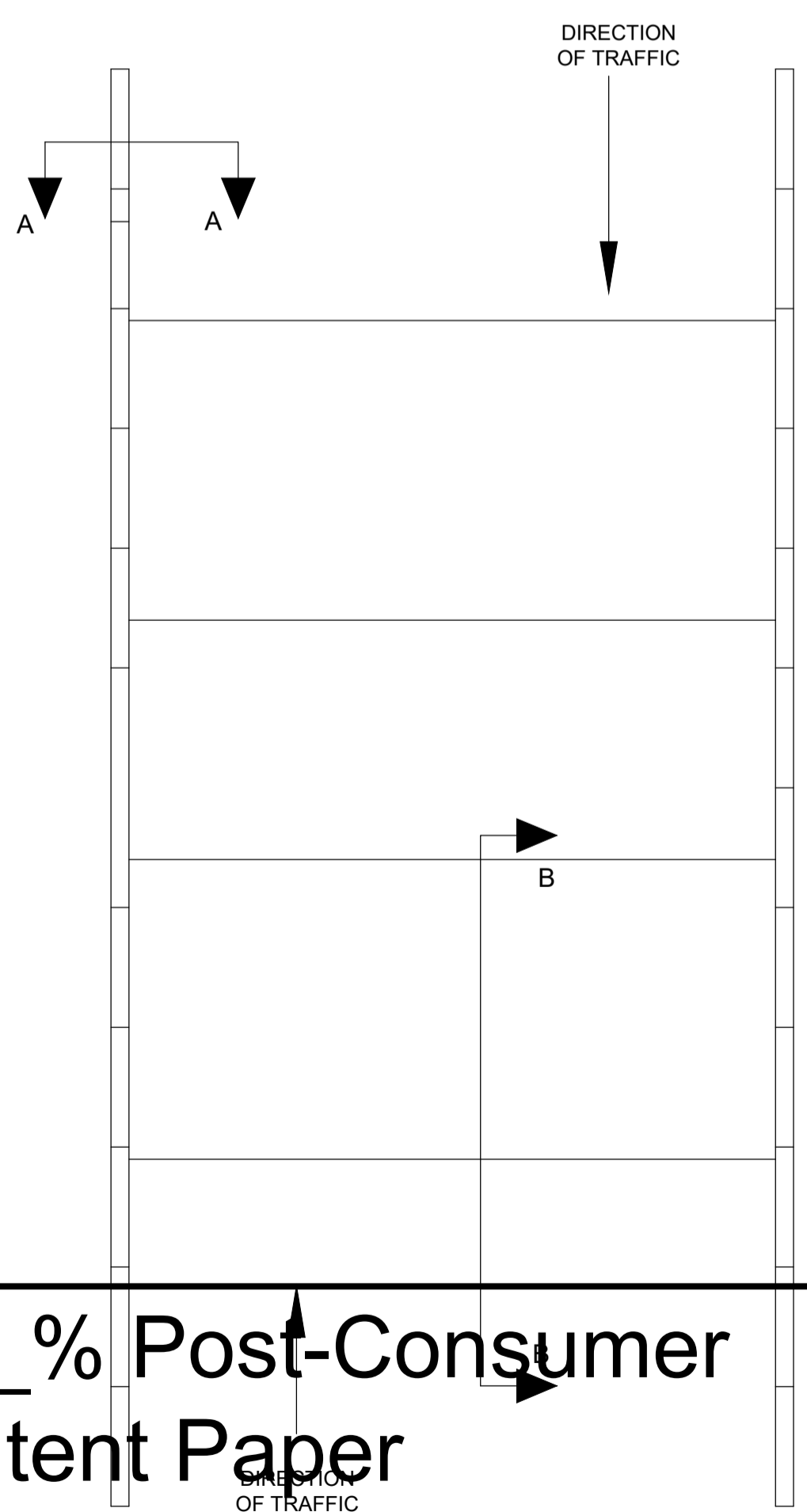
EDGING TYPE E1
PRECAST CONCRETE



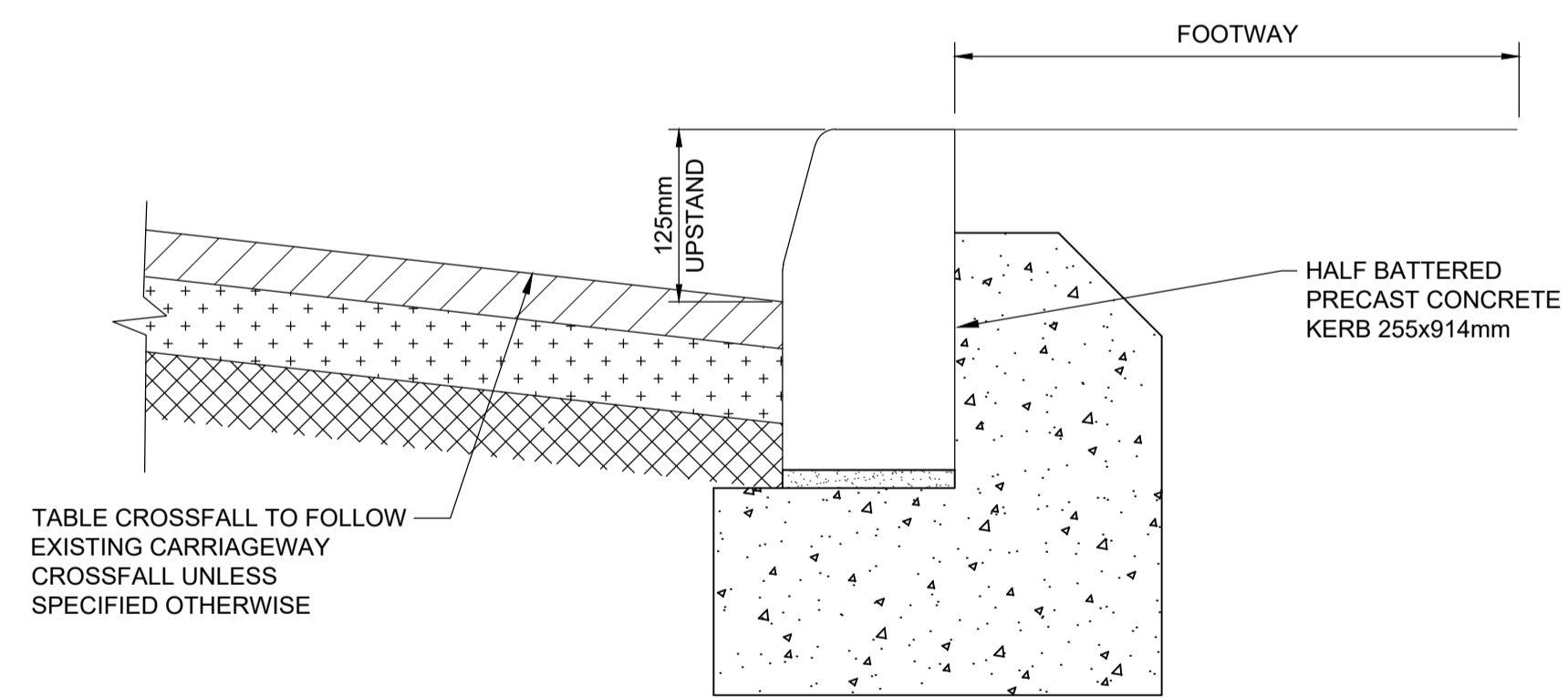
MARSHALLS BUS STOP KERB
EDGE DETAIL - 200mm UPSTAND



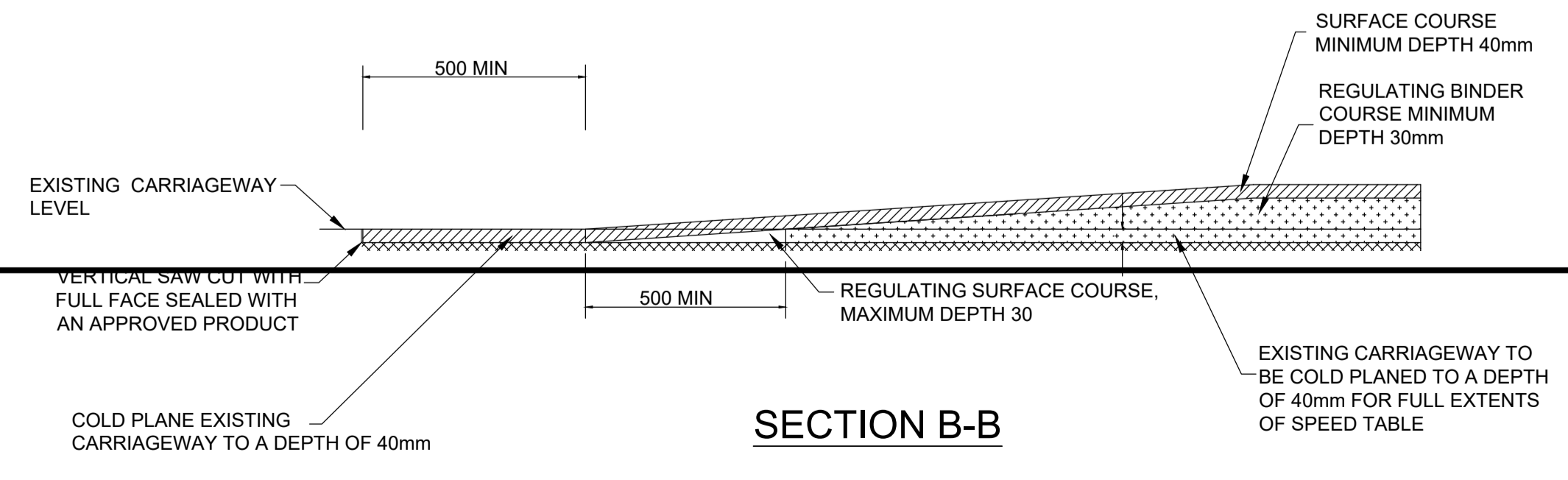
PLAN VIEW OF RAISED TABLE



PLAN VIEW OF RAISED JUNCTION



SECTION A-A



SECTION B-B

APPROACH TO RAISED JUNCTIONS AND RAISED
TABLE SECTIONS

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- TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION / INFORMATION.
- DIMENSIONS AND LEVELS ARE IN MILLIMETER UNLESS OTHERWISE STATED.
 - DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
 - FOR PAVEMENT LAYOUT REFER DRAWING NO.60509148-ACM-SHT-30-0700-CT-0701 TO 0708.
 - BSI PD6691 GUIDANCE ON THE USE OF BS EN 13108, BITUMINOUS MIXTURES - MATERIAL SPECIFICATIONS
 - SUB-BASE LAYERS TO BE IN ACCORDANCE WITH MCHW SERIES 800, CLAUSES 803, 804, 805 AND 806.
 - WHERE A CBR VALUE IS LESS THAN 2.5% AN ALTERNATIVE SUBGRADE DESIGN INVOLVING GEOTEXTILES OR SOIL STABILISATION MUST BE CONSIDERED.
 - ASPHALT CONCRETE TO BE IN ACCORDANCE WITH BS EN 13108-01 AND BS 594987.
 - HRA TO BE IN ACCORDANCE WITH BS EN 13108-04 AND BS 594987. SMA TO BE IN ACCORDANCE WITH CLAUSE 937 & 942 AND BS 13108-5. MATERIAL THICKNESS AS PER TABLE 2 AND 3.
 - PSV REQUIREMENTS SHALL BE DECLARED IN ACCORDANCE WITH CD 236, TABLE 3.3A AND CS 228 TABLE 4.2.
 - CBR VALUES TO BE TO BE MEASURED ONSITE ON REGULAR INTERVALS OR MINIMUM 2 PER LOCATIONS, AS THEY ARE IDENTIFIED AS FULL PAVEMENT CONSTRUCTION. ADDITIONAL TEST MAY BE REQUESTED.
 - CONTRACTOR TO POSITIVELY IDENTIFY EXISTING UTILITIES IN THE VICINITY OF THE WORKS PRIOR TO EXCAVATION. AS PER AS BUILT INFORMATION AND C2 ENQUIRIES THE AVERAGE DEPTH OF UTILITIES SHALL BE GREATER THAN 500mm BUT ANY NECESSARY MEASURE AND PRE CONSTRUCTION LIAISON WITH UTILITY PROVIDERS IS RECOMMENDED PRIOR TO COMMENCEMENT OF WORKS. REFER TO CROSS SECTION DRAWING NO'S 60160078-ACM-SHT-30-0120-CT-0121 TO 128 AND UTILITIES DRAWING NO'S 60509148-ACM-SHT-30-0140-CT-0140 TO 0148.
 - WHILE IMPLEMENTING THE PAVEMENT DESIGN THE FOLLOWING ASSUMPTIONS WERE MADE:
 - DESIGN LIFE OF 2MSA.
 - FOUNDATION TYPE 2, RESTRICTED WITH SUBBASE ONLY. FOUNDATION DEPTH OPTIMISED AS AGREED WITH VOGC ANTICIPATING THAT THE SUBBASE WILL ACT AS REGULATORY LAYER TO ALLOW ASPHALT CONSTRUCTION (IN ACCORDANCE WITH CD 225 FIGURE 3.18).
 - ASPHALT THICKNESS, 200mm WITH AC 40/60 ASPHALT BASE AS. IN ACCORDANCE WITH CD 226 FIGURE A.1.
 - MEASURES SHOULD BE DEPLOYED TO ENSURE NOISE, VIBRATION, DUST ARE MINIMIZED DUE TO CONSTRUCTION ACTIVITY.

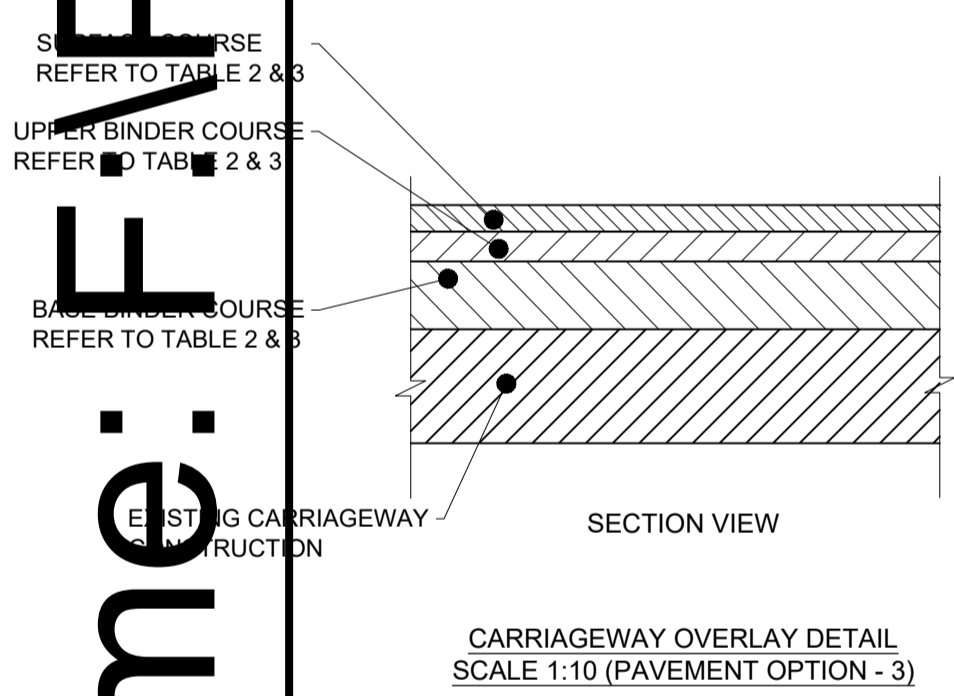
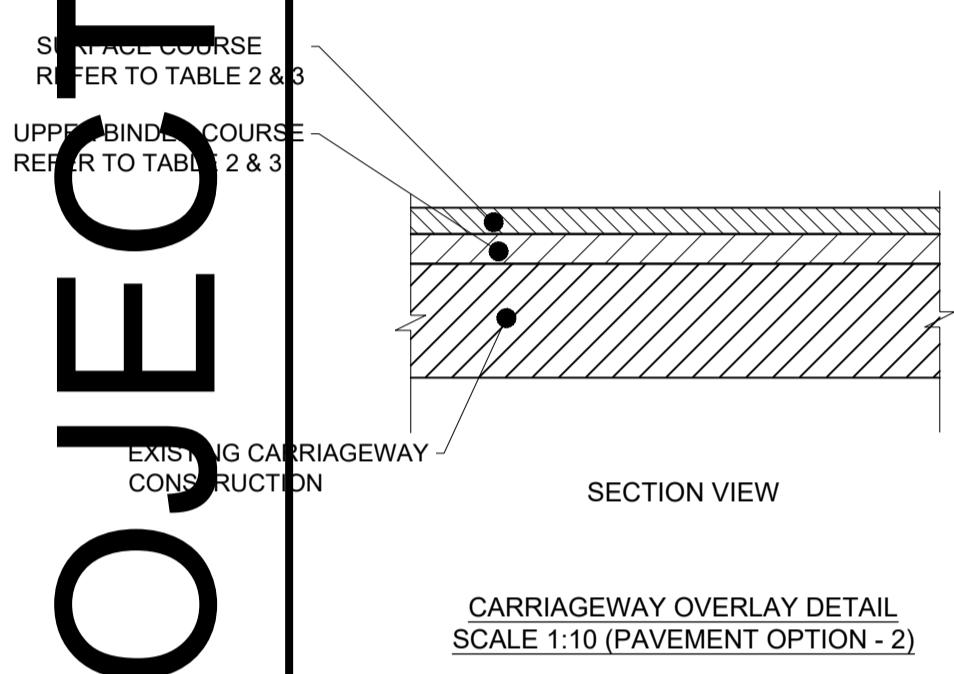
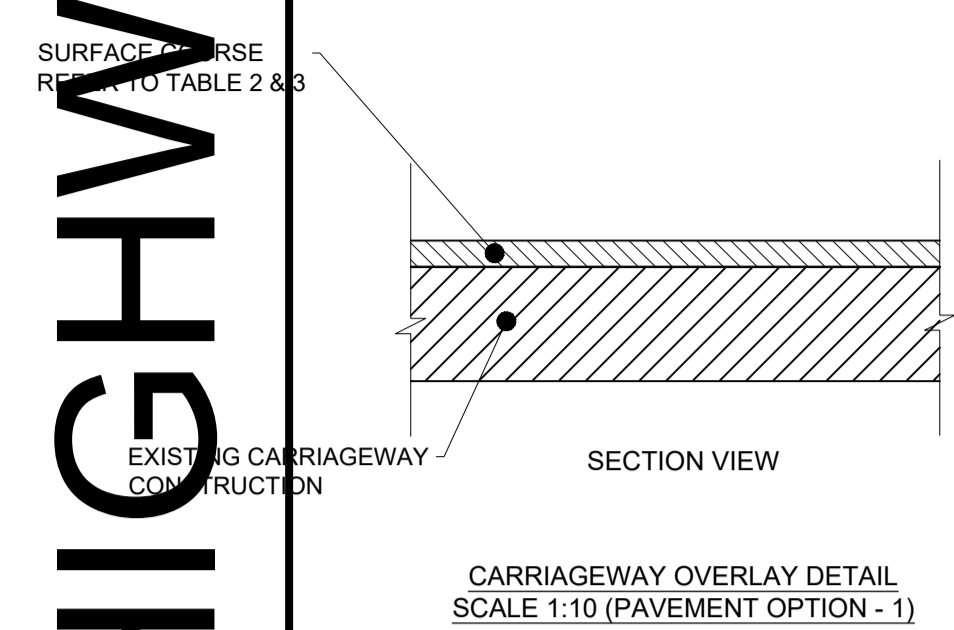


TABLE 1

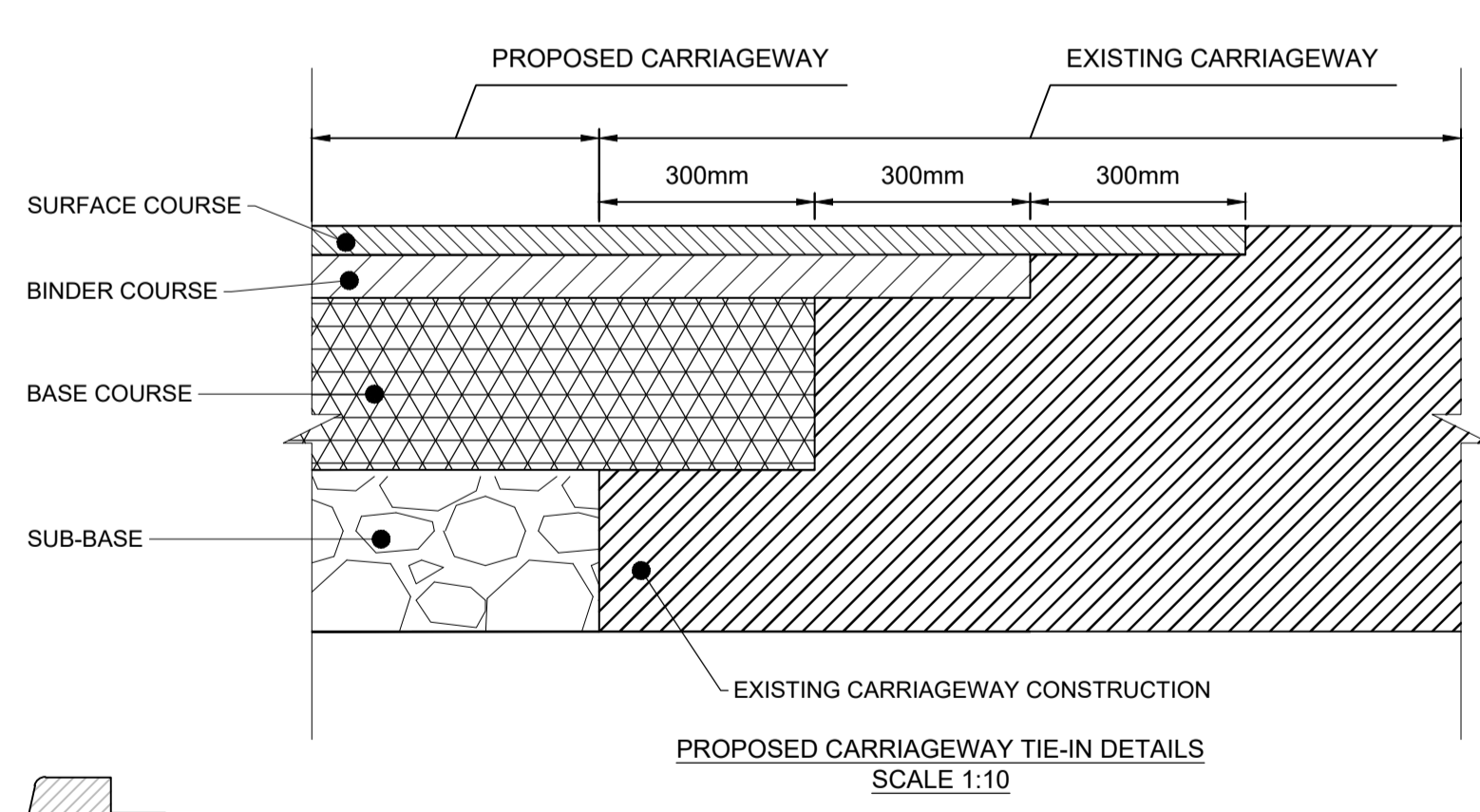
SUB BASE THICKNESS (mm)

SUBGRADE CBR	SUB BASE (mm)	FOUNDATION TYPE
CBR> 15%	200	1
	150	2
CBR> 10%- 15%	230* (NOTE 6.)	1
	180	2
CBR> 5%- 10%	320* (NOTE 6.)	1
	240	2
CBR> 2.5% - 5%	450* (NOTE 6.)	1
	350	2

TABLE 2

Proposed option P2 for Collector Major Access road Variable thickness layout

Level Increase (mm)	Mill (mm)*	New Base Course (mm)****	New (lower) Binder Course (mm)**	New (upper) Binder Course (mm)**	New Surface Course (mm)***
0	-40				40
10	-30				40
20	-20				40
30	-10				40
40	-60			60	40
50	-50			60	40
60	-40			60	40
70	-30			60	40
80	-20			60	40
90	-10			60	40
100	-10			70	40
110	-10			80	40
120	-10			90	40
130	-10			100	40
140	-10		60	50	40
150	-10		60	60	40
160	-10		70	60	40
170	-10		80	60	40
180	-10		90	60	40
190	-10		90	70	40
200	-10		90	80	40
350	-10			60	40
370	-10			60	40



LEGEND

- * Minimum requirement to mill 10mm
- ** Permitted range [BS.594987] 50-100mm
- *** Permitted range [BS.594987] 40mm
- **** Permitted range [BS.594987] 70-150mm for AC32 base

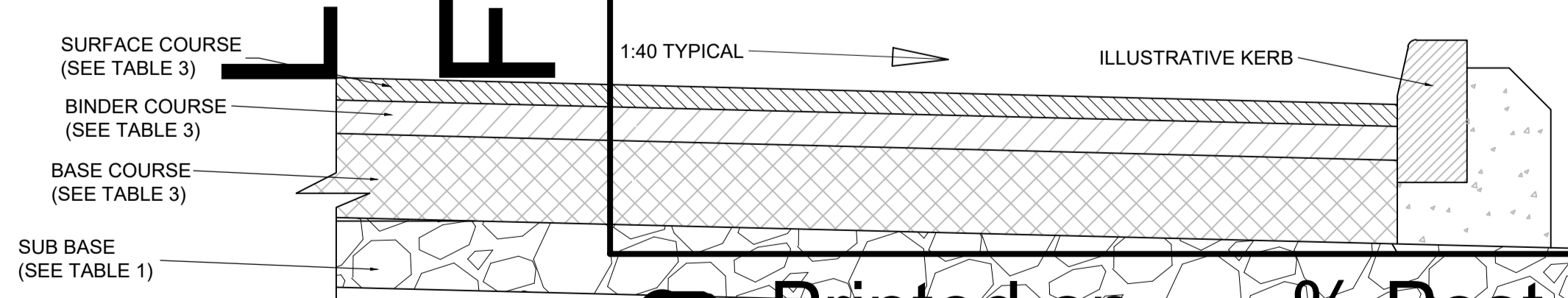


TABLE 3

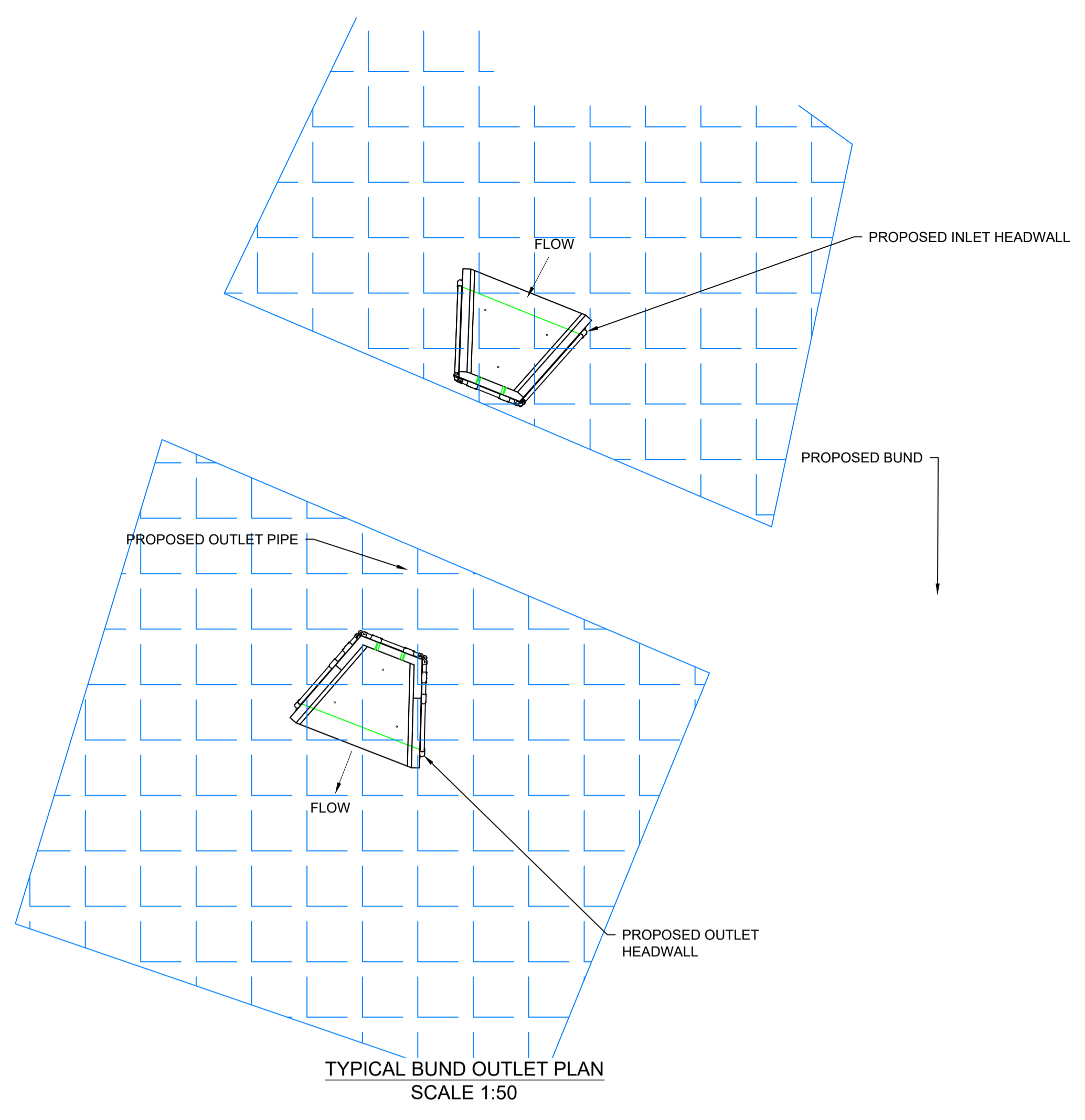
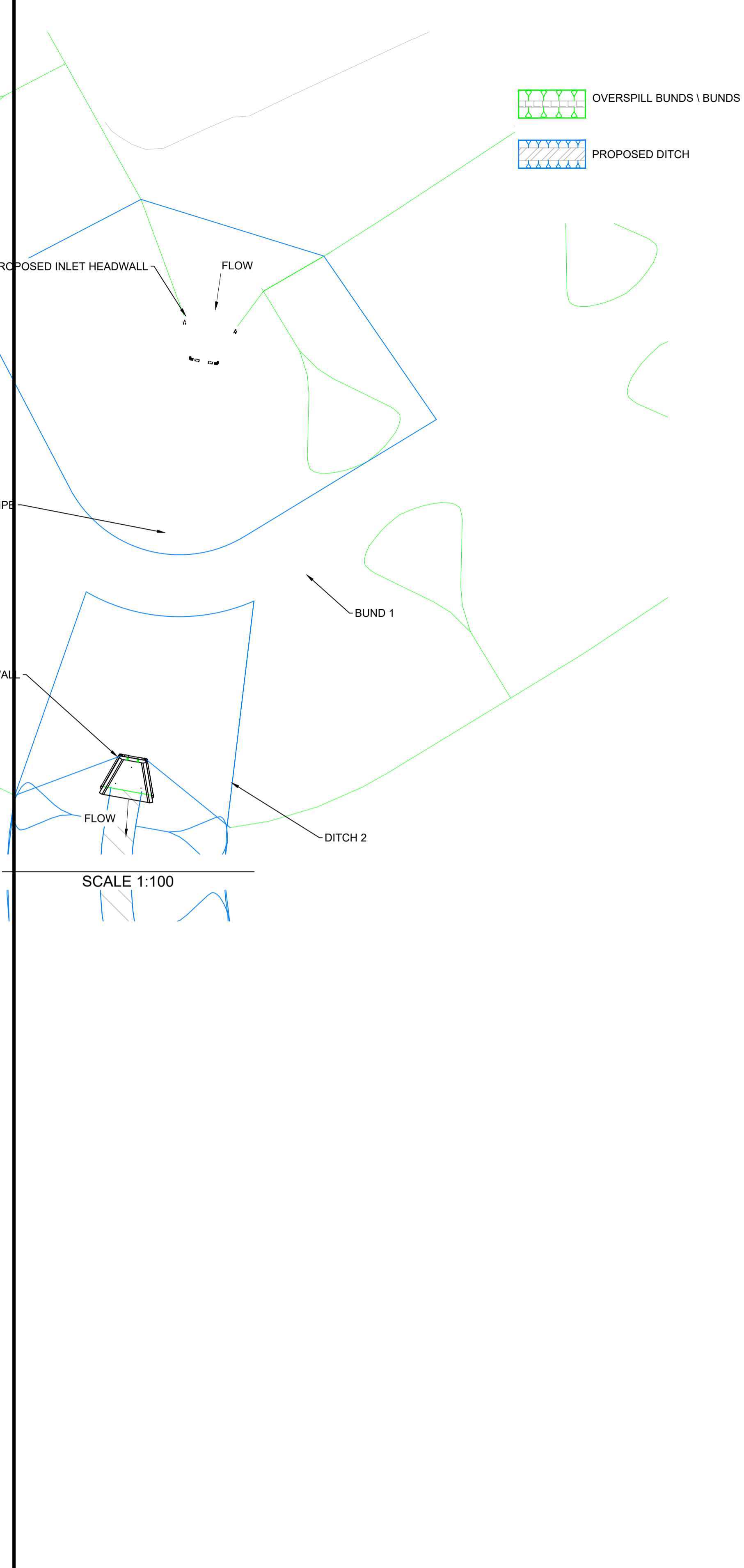
	PAVEMENT OPTION 1: OVERLAY 0-40mm	PAVEMENT OPTION 2: OVERLAY 40-130mm	PAVEMENT OPTION 3: OVERLAY 130-370mm	PAVEMENT OPTION 4: ROAD RECONSTRUCTION
"SURFACE COURSE THICKNESS & MATERIAL"	SMA 14 BIN 40/60, 40MM THICK, MIN PSV 60	SMA 14 BIN 40/60, 40MM THICK, MIN PSV 60	SMA 14 BIN 40/60, 40MM THICK, MIN PSV 60	SMA 14 BIN 40/60, 40MM THICK, MIN PSV 60
"BINDER COURSE THICKNESS & MATERIAL"		"AC20 DENSE BIN100/150 THICKNESS REFER TO TABLE 2"	"AC20 DENSE BIN100/150 THICKNESS REFER TO TABLE 2"	"AC20 DENSE BIN100/150 THICKNESS 60MM"
"BASE COURSE THICKNESS & MATERIAL"			"AC32 DENSE BIN100/150 THICKNESS REFER TO TABLE 2"	"AC32 DENSE BIN100/150 THICKNESS 100MM"

STATUS
DETAILED DESIGN

PROJECT NUMBER
60160078

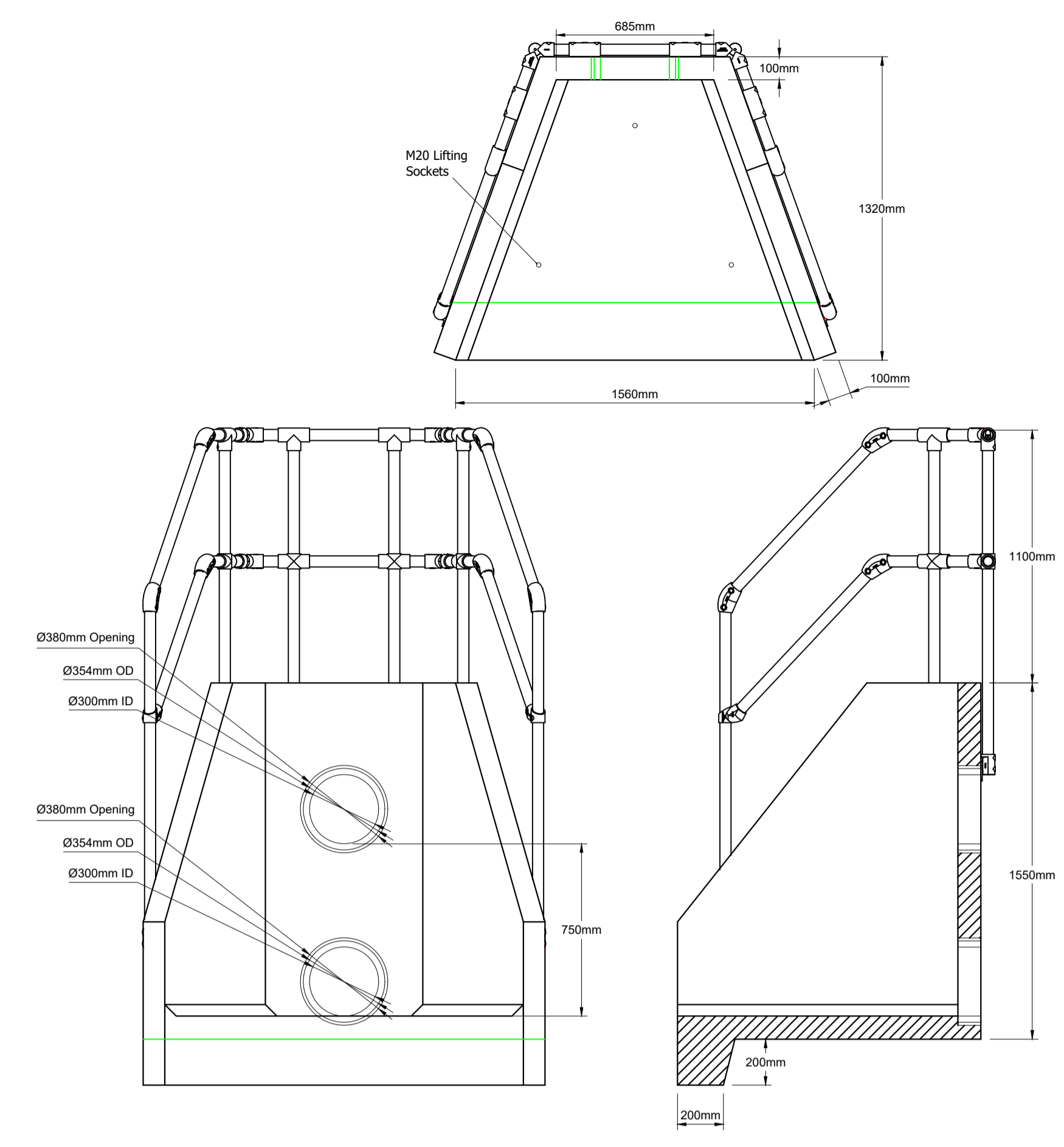
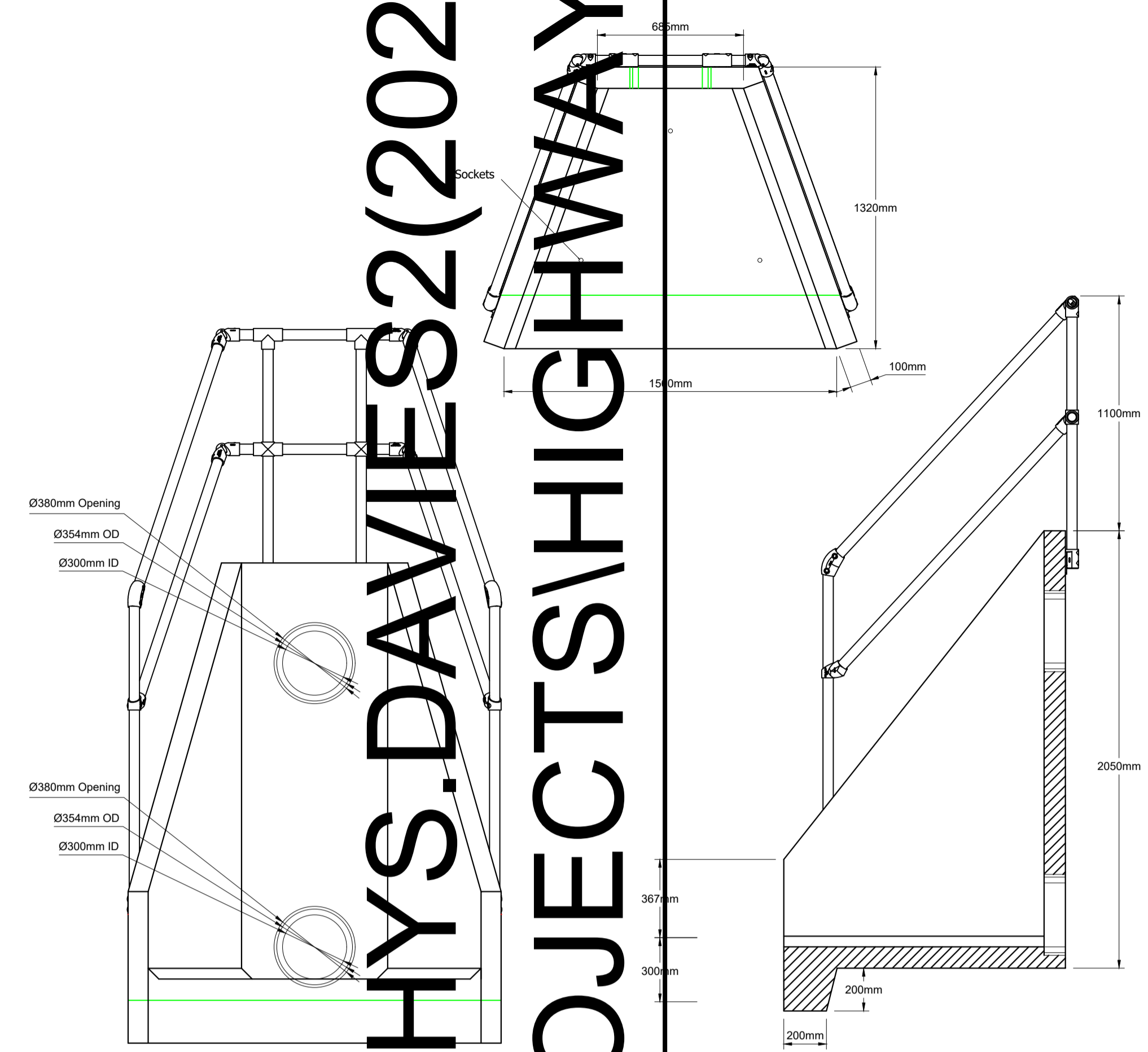
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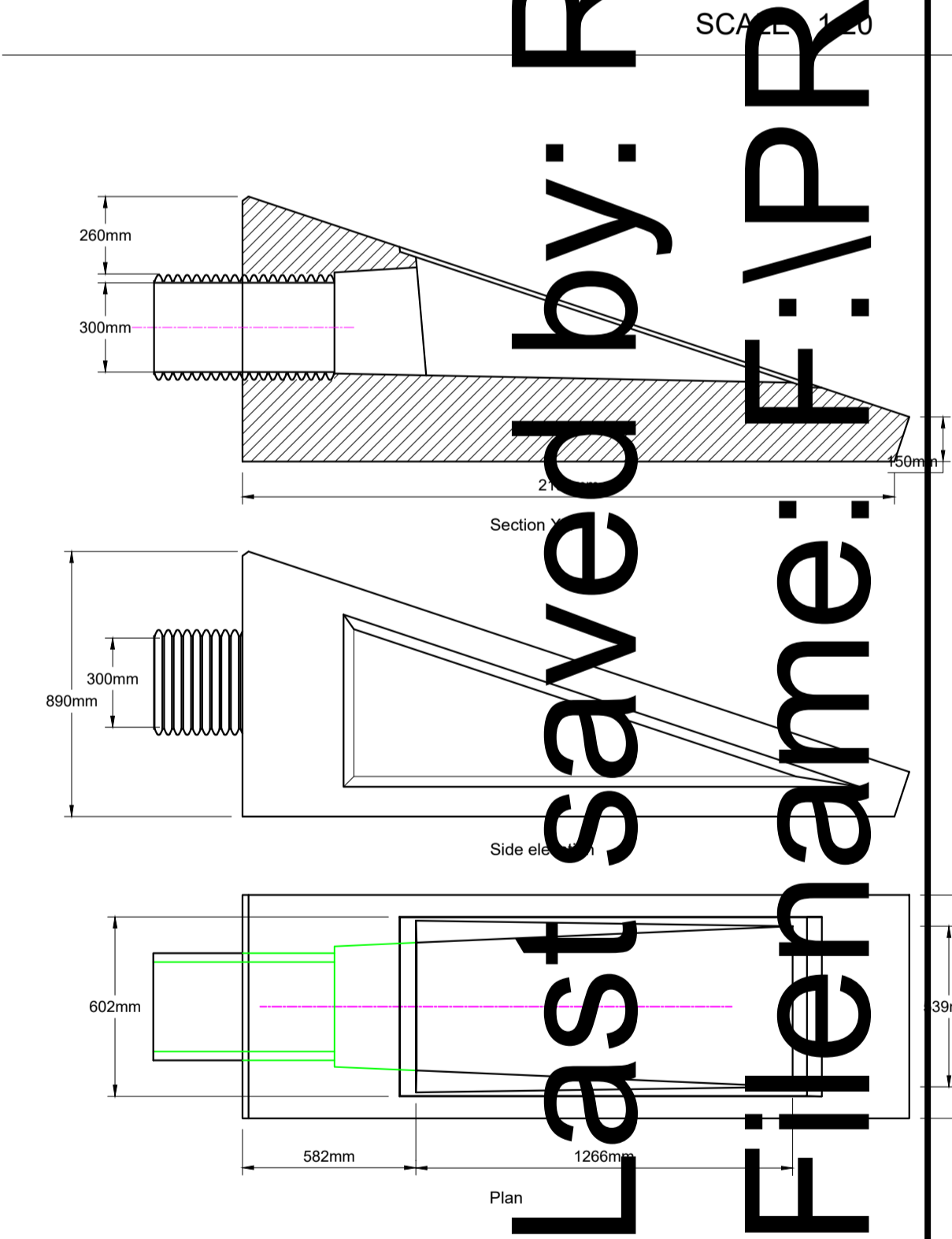


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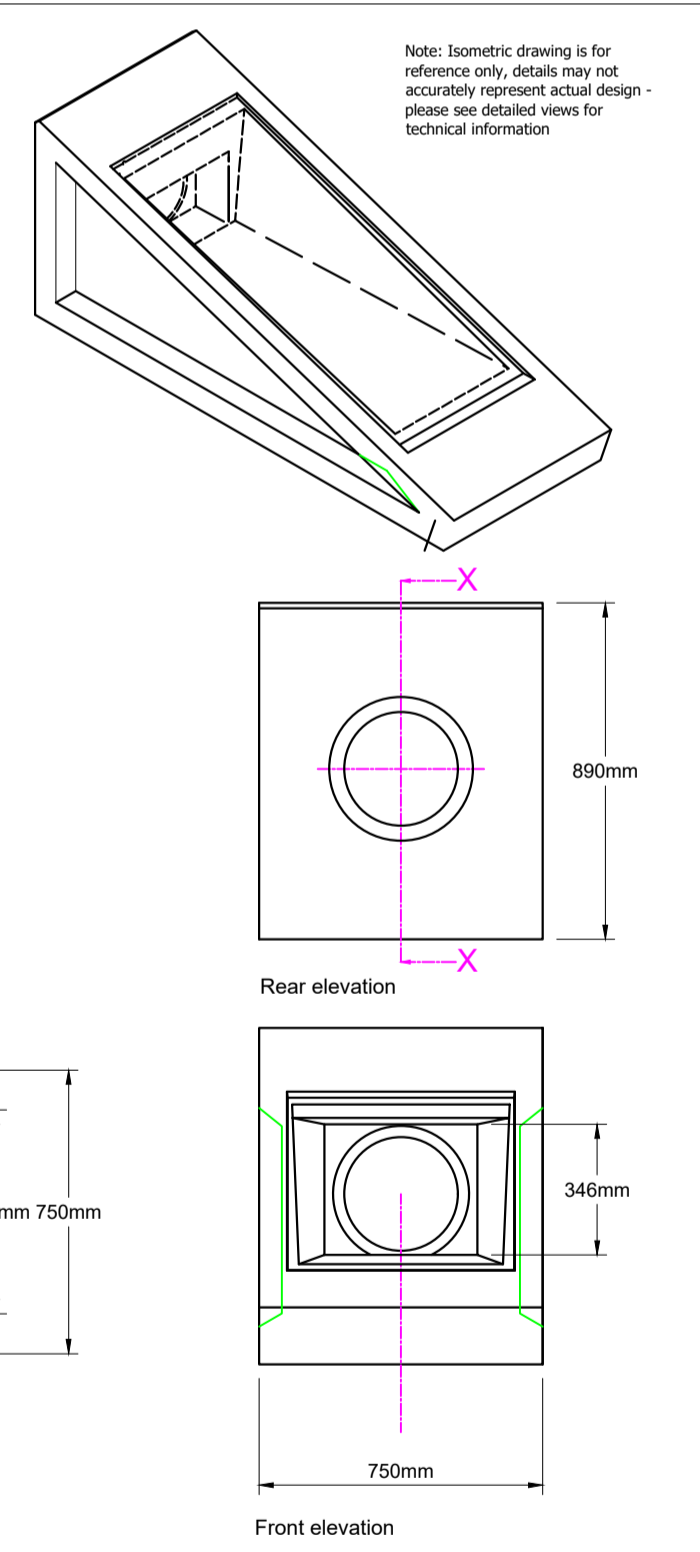
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HEADWALL TYPE 2- BUND OUTLET
SCALE - 1:20



HEADWALL TYPE 3
SCALE - 1:20



FILTER DRAIN (TYPE K)
SCALE - 1:20

CARRIER DRAIN (TYPE S)
SCALE - 1:20

CARRIER DRAIN (TYPE Z)
SCALE - 1:20

HEADWALL NOTES

- ALL DIMENSIONS IN mm
- ALL MEASUREMENTS ± 1mm

SPECIFICATION INFORMATION

- OPENING IN BACK WALL CAST TO SUIT OUTSIDE DIAMETER OF THE PIPEWORK

HEADWALL INSTALLATION

UNITS SHOULD BE BEDDED ON A MINIMUM 150mm THICK WELL COMPACTED CLASS 6N* OR 6K* WELL GRADED GRANULAR MATERIAL WITH A 50mm TOPPING OF FINE MATERIAL (CLASS 6L*) TO ENSURE UNITS ARE LEVEL AND STABLE.
*MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS: VOLUME (MCHW1) SPECIFICATION FOR HIGHWAY WORKS, SERIES 600 (NOV 09).

HANDLING

- WEIGHT OF CONCRETE IS BASED ON 2.4 TONNE/M³+5% IS RECOMMENDED FOR SIZING LIFTING EQUIPMENT.
- ALL LIFTING POINTS SHALL BE USED AS SPECIFIED BELOW - ANCHOR POINTS & LOOPS - TOTAL QTY: 3
- UNIT TO BE LIFTED AS PER LIFTING DIAGRAM

CONCRETE

- MIX REF: SELF-COMPACTING DC4/DS4 MIX
- LIFTING STRENGTH BASED ON 2 CUBES = 20N/MM²
- CHARACTERISTIC 28 DAY CUBE STRENGTH = 50N/MM²
- CONCRETE PROVIDES DESIGN CHEMICAL CLASS 4 (DC4) TO SPECIAL DIGEST 1, TABLE F2.

REINFORCEMENT

- REINFORCEMENT TO BS EN 13369
- SCHEDULING, DIMENSIONING, BENDING & CUTTING TO BS8666
- CAGE TO BE MACHINE TIED WITH STEEL WIRE

MANUFACTURE

- MANUFACTURE TO BS EN 15258:2008 PRECAST CONCRETE PRODUCTS - RETAINING WALL ELEMENTS, FACTORY PRODUCTION CONTROL CERTIFICATE NUMBER: 0086-CPR-650448 & BS EN 13369
- TOLERANCES TO BS EN 13369 CLAUSE 4.3.1.1
- FINISHING:

Class	Top			
	Sides	Base	Rear of back wall	
A	A	A	Self-Levelling	

- MARKING: UNITS SHALL BE INDELIBLY MARKED TO SHOW:
 - MOULD REFERENCE CODE
 - DE-MOULD DATE
 - JOB REFERENCE NUMBER & UNIQUE PRODUCT NUMBER
 - UNIT WEIGHT (KG)

DESIGN

- CONCRETE DESIGN TO EC2
- ALTHON HAVE DESIGNED THE CONCRETE UNITS ONLY, THE SITE CONDITIONS SHOULD BE ASSESSED FOR SUITABILITY BY THE SCHEME DESIGNER
- UNITS ARE DESIGNED TO WITHSTAND A VERTICAL LIVE LOAD SURCHARGE OF 10KN/M²
- WEIGHT OF SOIL = 18KN/M³
- ANGLE OF INTERNAL FRICTION = 30 DEG.
- DESIGN LIFE: >50 YEARS

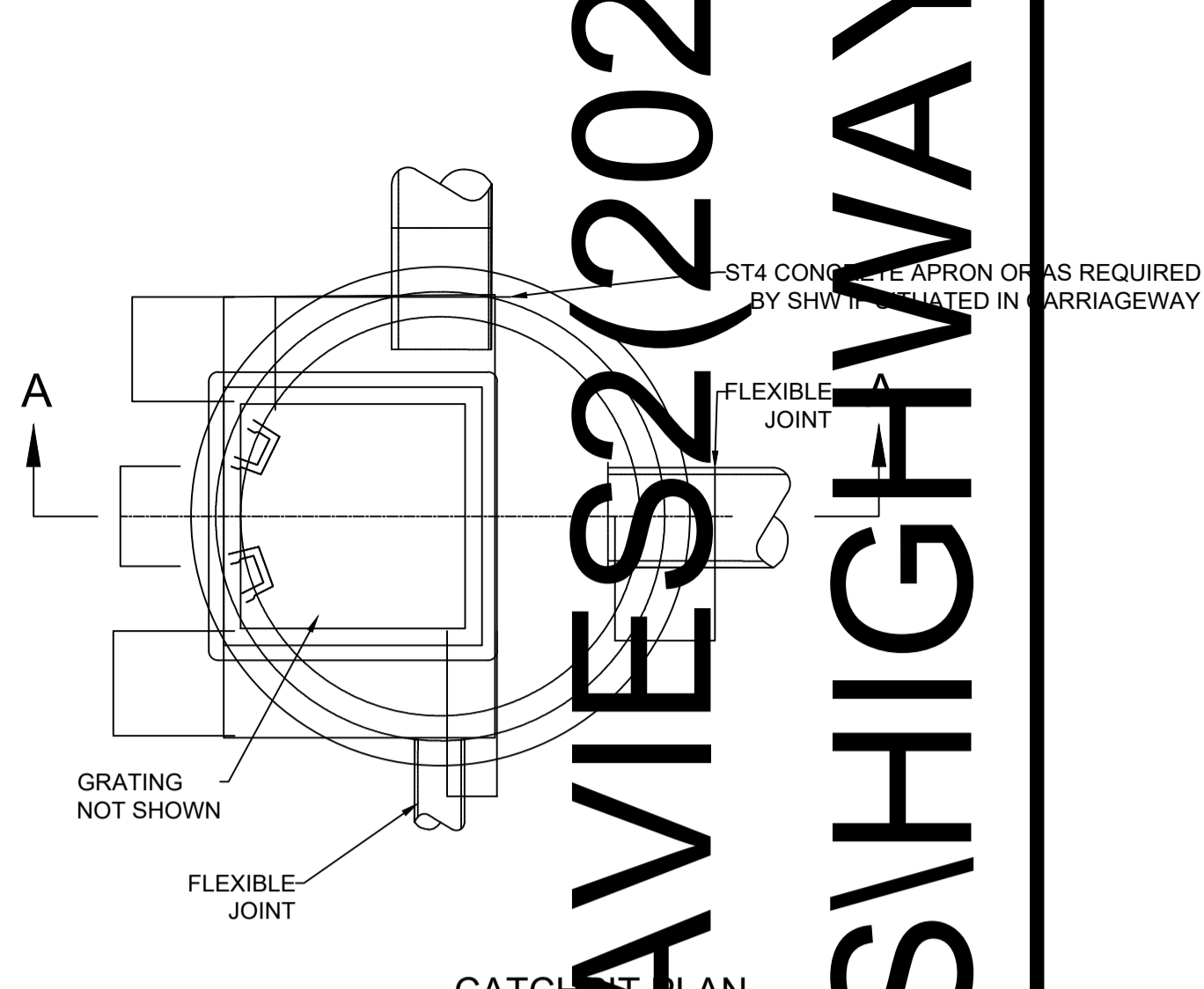
Min Cover	Cover Block	Min Cover	Max Cover
Size (mm)	Size (mm)	Size (mm)	Size (mm)
All Faces	33	28	38

Exposure Classification	Exposure induced		Corrosion induced	Freeze/thaw	Chemical attack
	by Carbonation	by Chloride			
All Faces	XC3/4	XD2	XF3	XA2	

PIPE BEDDING NOTES

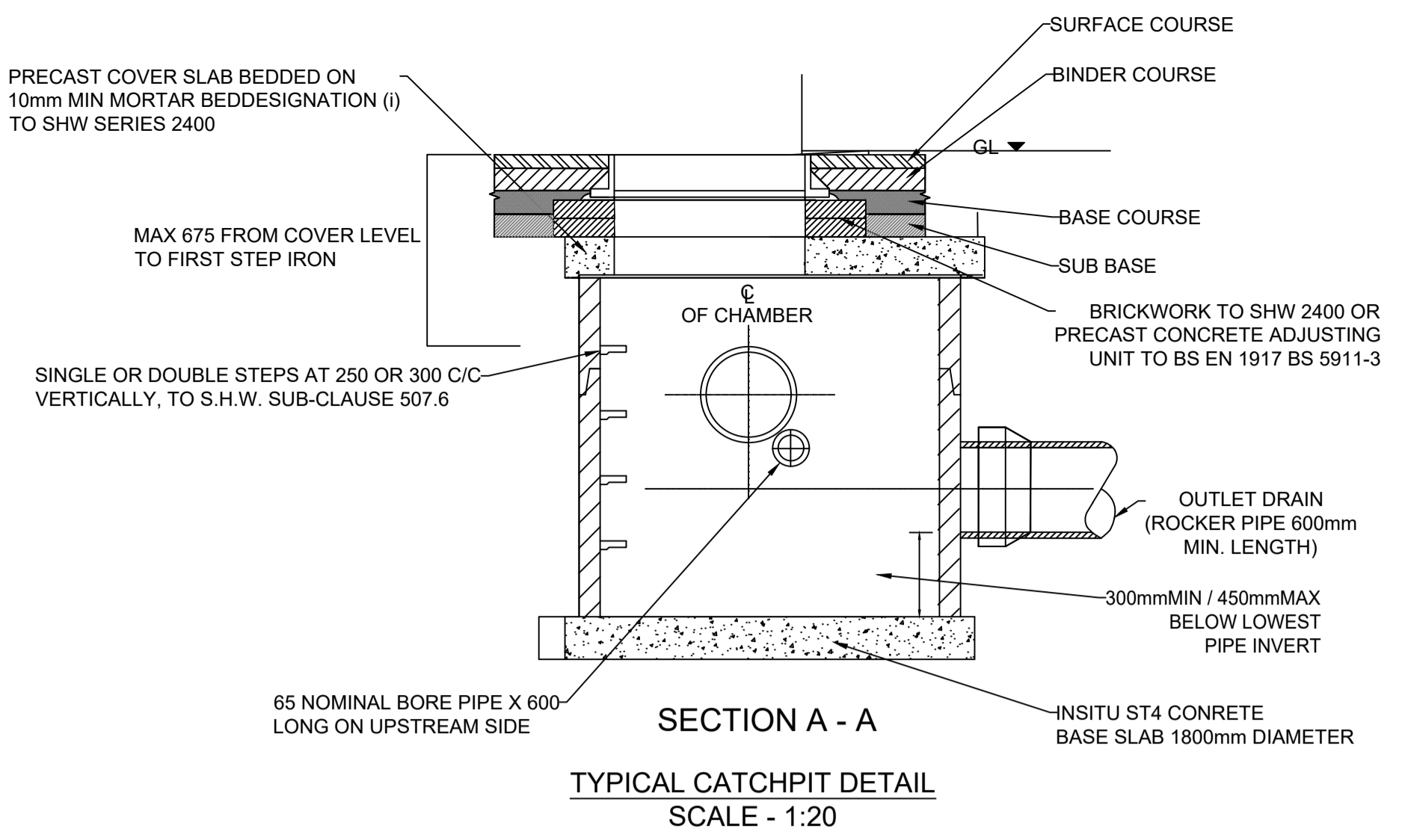
- THE DETAILS ARE TO BE READ IN CONJUNCTION WITH APPENDIX 4 OF THE SPECIFICATION FOR HIGHWAY WORKS 1998 AS AMENDED
- DIMENSION X IS THE EXTERNAL DIAMETER OF THE PIPE
- THE MINIMUM OR MAXIMUM WIDTH OF THE TRENCH APPLIES ON AND BELOW A LINE 300mm ABOVE THE OUTSIDE TOP OF THE PIPE. ABOVE THE 300mm LINE, FOR CARRIER DRAIN TRENCHES, BACKFILL SHALL BE AS DESCRIBED IN CL.505 OF S.H.W.
- THE CONCRETE SURROUND MAY BE EXTENDED TO THE SIDES OF THE TRENCH. CLASS 8 MATERIAL IS TO BE USED TO FILL ANY VOIDS FORMED
- FOR TYPE Z TRENCH THE CONCRETE COVER MAY BE FORMED TO A RADIUS BATTER OR HORIZONTAL SURFACE. MIN. COVER OF CONCRETE SHALL BE 150mm.
- PERFORATED PIPES ARE TO LAID WITH PERFORATIONS FACING UPWARDS.

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- CATCHPIT NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES
 - CATCHPIT TO BE CONSTRUCTED IN PRECAST CONCRETE TO BS EN 1917 AND BS EN 1911-3.
 - MORTAR TO BE DESIGNATION (i) TO SHW SERIES 2400.
 - PIPE TO BE BUILT INTO CATCHPIT TO DRAW DOWN PORTION OF FILTER BENCH. IT IS NOT REQUIRED FOR CARRIER DRAIN CONNECTIONS OR UNCONTAMINATED GROUND AREAS WHERE STANKS ARE REQUIRED. PIPE IS TO BE PLACED ABOVE ANY CONCRETE BED TO FILTER DRAIN.
 - SEE SHW SUB CLAUSE 507.7 REGARDING BACKFILLING/SURROUND TO CHAMBER.
 - ALL ST CONCRETE SHALL BE TO SHW CLAUSE 10.05.
 - CATCHPIT TO BE TYPE B UNLESS STATED OTHERWISE.

PIPE DIAMETER	ROCKER PIPE LENGTH
100mm-600mm	600mm
675mm-750mm	1000mm
OVER 750mm	1250mm



ALL DIMENSIONS IN mm
ALL MEASUREMENTS ± 1mm
SPECIFICATION INFORMATION
OPENING IN BACK WALL CAST TO SUIT OUTSIDE OF THE BOX CULVERT INVERT LEVEL OF CULVERT CAN BE SET TO MANUFACTURER SPECIFICATION

BOX CULVERT HEADWALL INSTALLATION
UNITS SHOULD BE BEDDED ON A MINIMUM 200mm THICK WELL COMPACTED CLASS 6L SELECTED GRANULAR MATERIAL. MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME (MCHW1) SPECIFICATION FOR HIGHWAY WORKS, SERIES 000 (NOV 09), SIT THE HEADWALL LEVEL OR WITH A SLIGHT FALL 1:50 FROM BOX CULVERT TO SPILL MOUTH

CONCRETE
CLASS DC-1 ACCORDING TO BS 8500-1:2015+A1:2016. BLINDING CONCRETE TO BE GRADE ST2 IN ACCORDANCE WITH BS 8500-1:2015+A1:2016. CONCRETE FORMED FINISHES AS FOLLOW:

CONCRETE FORMED FINISHES	
TOP OF BOX ROOF SLAB	U4
BURIED SURFACES	F1, U1
BOX SOFFIT AND INTERNAL WALLS	F2
EXPOSED WINGWALLS VERTICAL FACES	F6
HEADWALL EDGE FASCIA	F3
TOP OF HEADWALL / WINGWALLS	U3
F2 TO VERTICAL FACES OF SAFETY BARRIER BASE SLAB	
F1 TO OTHER BURIED SURFACES	

THE FOLLOWING CONCRETE STRENGTH CLASSES, EXPOSURE CLASSES AND COVERS TO REINFORCEMENT SPECIFIED AS FOLLOWS IN ACCORDANCE WITH BS EN 1992-2:2005, UK NA, BS EN 206:2013+A1 AND BS 8500-1:2015+A1

LOCATION	EXPOSURE CLASSES	CONCRETE STRENGTH	NOMINAL COVER TO REINFORCEMENT (mm)
RC PRECAST BOX BURIED STRUCTURE	XC3/C4, XD3, XF2	C40/50	45 + Δc
RC PRECAST HEADWALL / WINGWALL	XC3/C4, XD3, XF4	C40/50	45 + Δc
CAST IN-SITU APPROACH SLAB	XC3/C4, XD3, XF4	C32/40	55 + Δc

HANDLING
A. WEIGHT OF CONCRETE IS BASED ON 2.4 TONNE/M³+5% IS RECOMMENDED FOR SIZING LIFTING EQUIPMENT.
B. ALL LIFTING POINTS SHALL BE USED AS SPECIFIED IN SHOP DRAWINGS
C. UNIT TO BE LIFTED AS PER LIFTING DIAGRAM

REINFORCEMENT
TO BE GRADE B550B OR B550C IN ACCORDANCE WITH BS EN 10080:2005 AND BS 4449:2005

FILL MATERIAL
FILL MATERIAL AT TOP OF BOX STRUCTURE MINIMUM 200M THICK TYPE 1 SUBBASE MATERIAL IN ACCORDANCE WITH MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME 1 - SPECIFICATION FOR HIGHWAY WORKS - SERIES 0800 ROAD PAVEMENTS - UNBOUND, CEMENT AND OTHER HYDRAULICALLY BOUND MIXTURES.

FILL MATERIAL TO SIDE OF STRUCTURES TO BE CLASS 6N AND 6P IN ACCORDANCE WITH MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME 1 - SPECIFICATION FOR HIGHWAY WORKS - SERIES 0600 EARTHWORKS.

FILL MATERIAL BELOW OF STRUCTURE TO BE MINIMUM 200MM THICK GRANULAR BEDDING CLASS 6L IN ACCORDANCE WITH MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME 1 - SPECIFICATION FOR HIGHWAY WORKS - SERIES 0600 EARTHWORKS.

WATERPROOFING
TOP DECK SURFACE (BETWEEN HEADWALLS) WILL BE PROTECTED WITH A PROPRIETARY SPRAY APPLIED BRIDGE DECK WATERPROOFING SYSTEM TO MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME 1 - SPECIFICATION FOR HIGHWAY WORKS - SERIES 2000 WATERPROOFING FOR CONCRETE STRUCTURES.

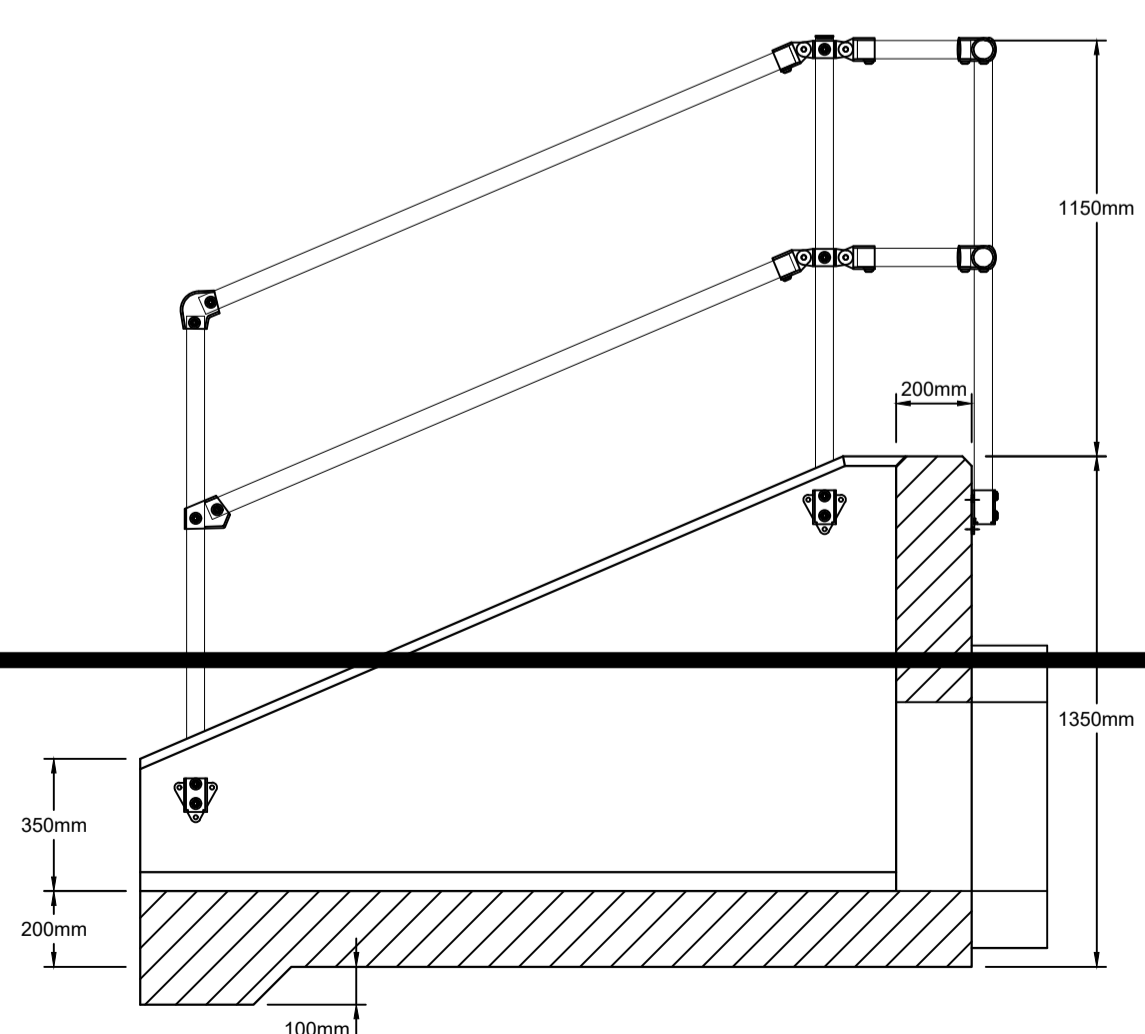
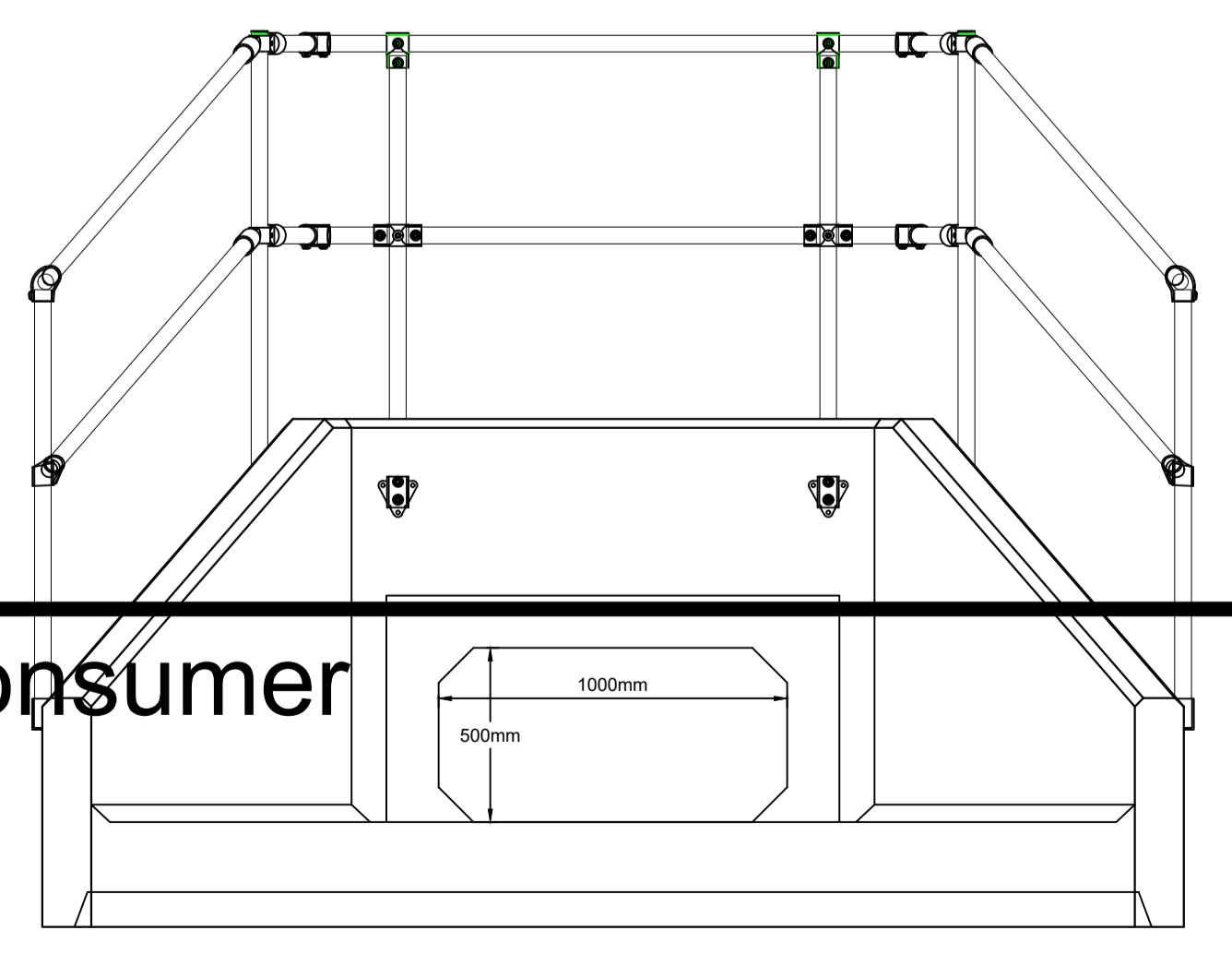
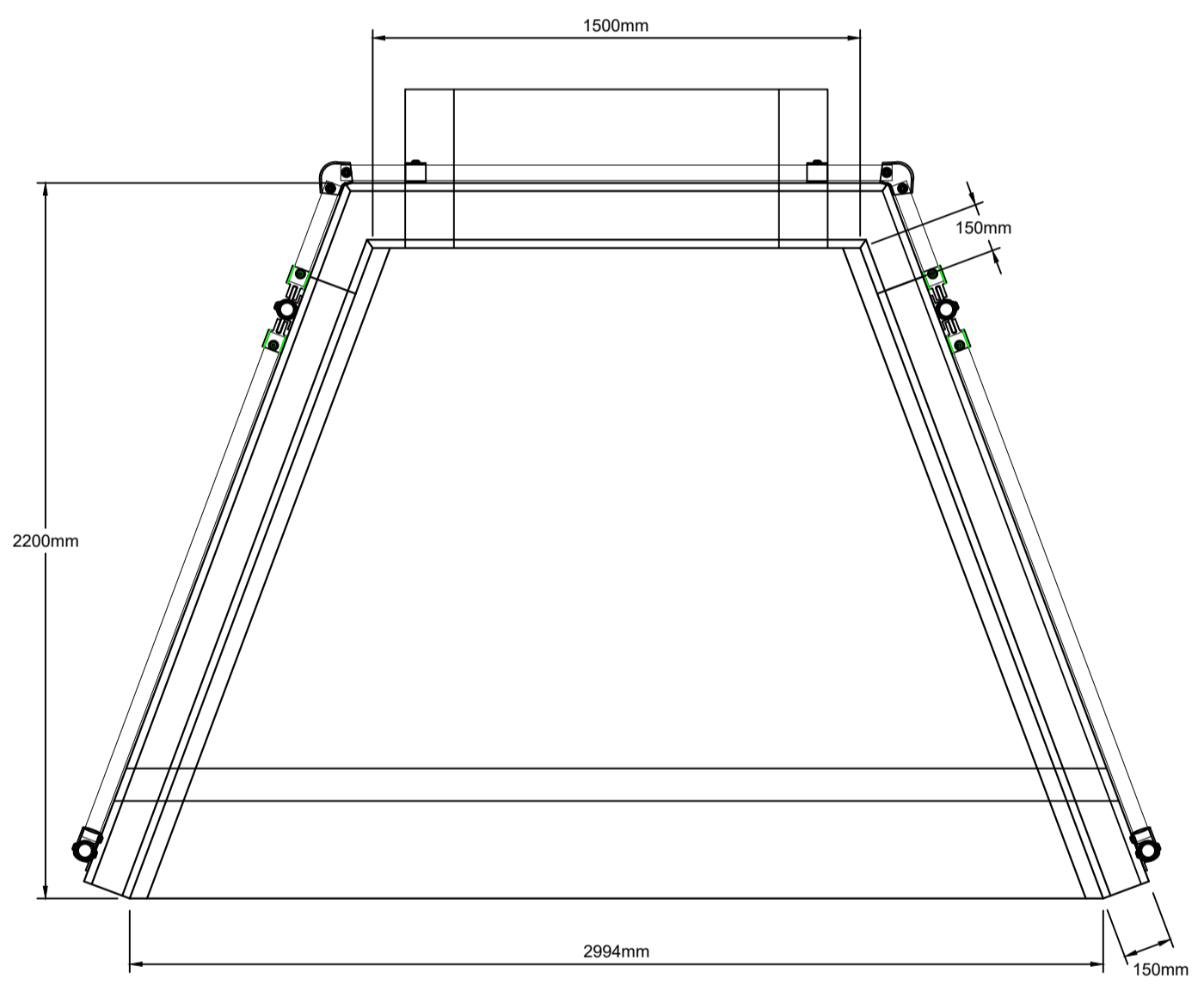
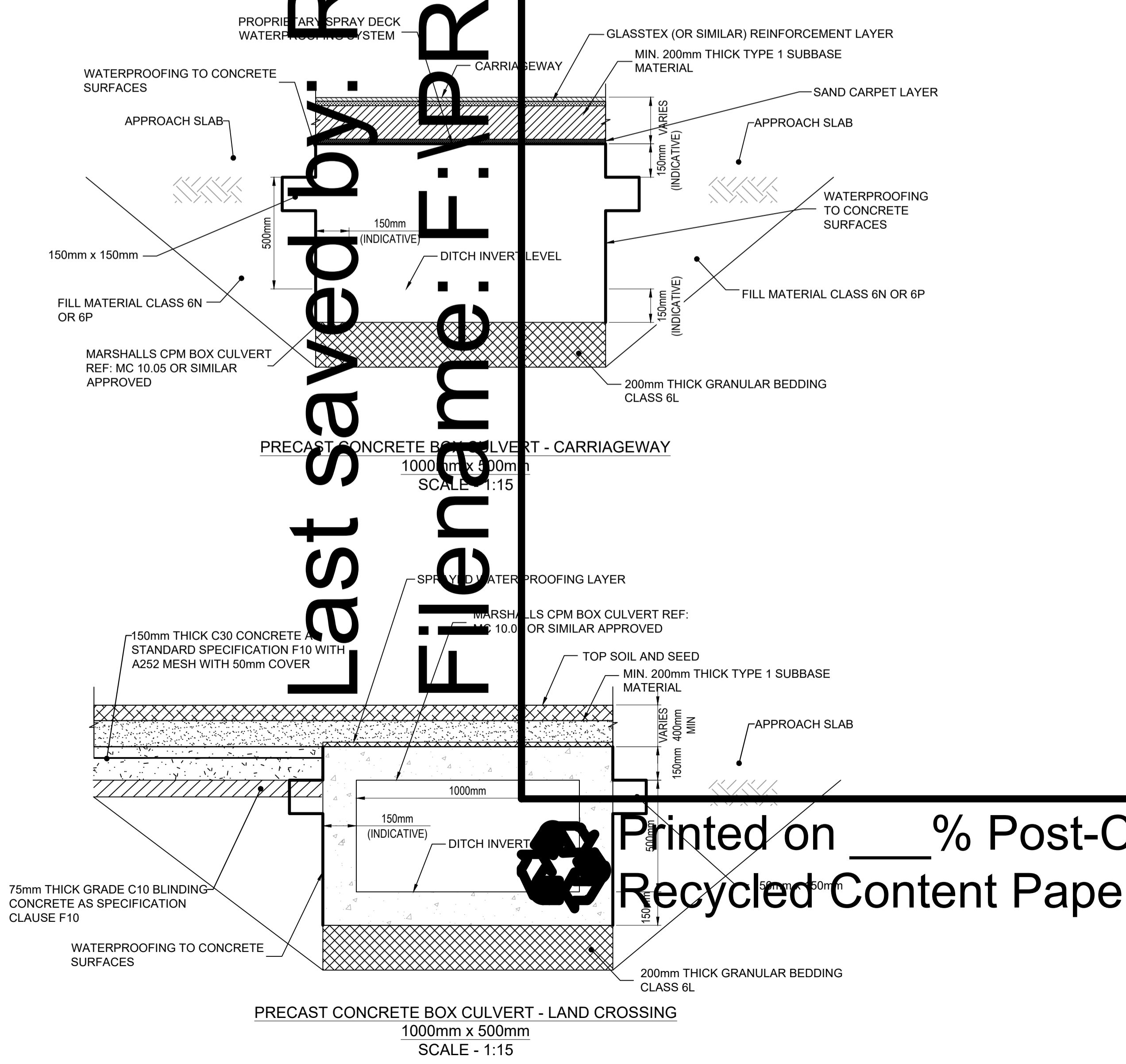
ALL ACCESSIBLE CONCRETE SURFACES GREATER THAN 150MM BELOW FINISHED GROUND LEVEL TO RECEIVE WATERPROOFING TO BELOW CONCRETE SURFACES IN ACCORDANCE WITH MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, VOLUME 1 - SPECIFICATION FOR HIGHWAY WORKS - SERIES 2000 WATERPROOFING FOR CONCRETE STRUCTURES.

MANUFACTURE
A. MANUFACTURE TO BS EN 15258:2006 PRECAST CONCRETE PRODUCTS - RETAINING WALL ELEMENTS
B. TOLERANCES TO BS EN 13369 CLAUSE 4.3.1.1

DESIGN
A. PERMANENT ACTIONS - MATERIAL DENSITIES AND LOAD FACTORS WILL BE AS LISTED IN BS EN 1990 AND BS EN 1991 AND ASSOCIATED UK NATIONAL ANNEXES. IN PARTICULAR: NOMINAL DENSITY OF REINFORCED CONCRETE: 25KN/M³; NORMAL DENSITY FOR STEEL WORK: 78.5 KN/M³; NOMINAL DENSITY OF HOT ROLLED ASPHALT FOR PAVEMENT AND SUBBASE: 23KN/M³
B. SNOW, WATER, WIND AND THERMAL ACTIONS - THERMAL ACTIONS TO BE IN ACCORDANCE WITH BS EN 1991-1-5 SECTION 6 & UK NA. WIND AND THERMAL ACTIONS ACTING TOGETHER WILL NOT BE CONSIDERED.
C. LIVE LOADS - LOAD MODEL 1 AND LOAD MODEL 2 IN ACCORDANCE WITH BS EN 1991-2: 2003 AS MODIFIED BY NA TO BS EN 1991-2:2003 WILL BE USED FOR CULVERTS BC1, BC2, BC4 AND BC6. TRAFFIC SURCHARGE ACCORDING TO EUROCODE DESIGN MODELS AND PD 6694-1:2011. GEOTECHNICAL COMBINATION ACCORDING TO EUROCODE AND PD 6694-1:2011
D. FOOTWAY VARIABLE ACTIONS - LOAD MODEL 4 (CROWD LOADING) IN ACCORDANCE WITH BS EN 1991-2, CL.4.3.5, TO BE APPLIED TO THE FULL DECK AREA FOR THE CULVERT. HORIZONTAL LOAD AT THE TOP OF THE PARAPET EQUAL TO 1.4 KN/M AS PER CLASS 3 BS 7818 AND ULS/SLS COMBINATION ACCORDING TO TABLE 2 BS 7818.
E. ACCIDENTAL ACTIONS - ACCIDENTAL ACTION / SERVICE VEHICLE TO BE IN ACCORDANCE WITH 5.6.3 OF BS EN 1991-2 AND UK NA2.
F. ACTIONS DURING THE CONSTRUCTION - ACTIONS ON THE SUPERSTRUCTURE WHILE BEING LIFTED INTO POSITION TO BE IN ACCORDANCE WITH 4.2 OF BS EN 1991-1-4 AND UK NA.
G. SOIL PARAMETERS - EARTH PRESSURE COEFFICIENT FOR THE BURIED BOX IN ACCORDANCE WITH BS EN 1997-1:2004+A1:2003 AND UK NA+A1:2014 AND TABLE B1 OF PD 6694-1:2011. EARTH PRESSURE COEFFICIENT FOR HEADWALL AND WINGWALLS IN ACCORDANCE WITH BS EN 1997-1:2004+A1:2003 AND UK NA+A1:2014 AND PD 6694-1:2011. AS CONSERVATIVE ASSUMPTION, ANGLE OF FRICTION OF 30° AND SOIL DENSITY OF 19 KN/M³ WILL BE CONSIDERED IN THE DESIGN. SOIL PARAMETERS LISTED IN TABLE 3 OF THE "TECHNICAL NOTE" ISSUED ON DECEMBER 2020 WILL BE USED FOR THE BEARING CAPACITY AT THE EXACT FOUNDATION LEVEL FOR EACH CULVERT.

FABRICATION SPECIFICATION
A. MANUFACTURE LAW EN 1090-2 EXC CLASS 1
B. MATERIAL GRADE IS TO BE: BS EN 10025 S275
C. WELDING CARRIED OUT LAW EN 1090-2 PARA 7.5.4 - 7.5.18
D. ALL FILLET AND BUTT WELDS TO HAVE A MINIMUM THROAT THICKNESS OF 6MM & JOINTS TO BE FULLY WELDED WHERE POSSIBLE.
E. ENSURE VERTICAL FLATS ARE FULLY WELDED BOTH SIDES WHERE POSSIBLE.
F. ALL SHARP EDGES AND BURRS ARE TO BE REMOVED.
G. REMOVE ALL WELD SPLATTER.
H. HOLES BY PUNCHING ARE PERMITTED WITH REAMING.
I. GALVANISING IS CARRIED OUT AFTER FABRICATION TO BS EN ISO 1461

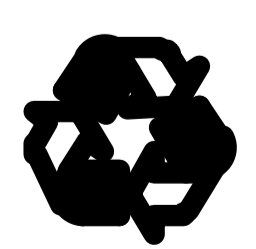
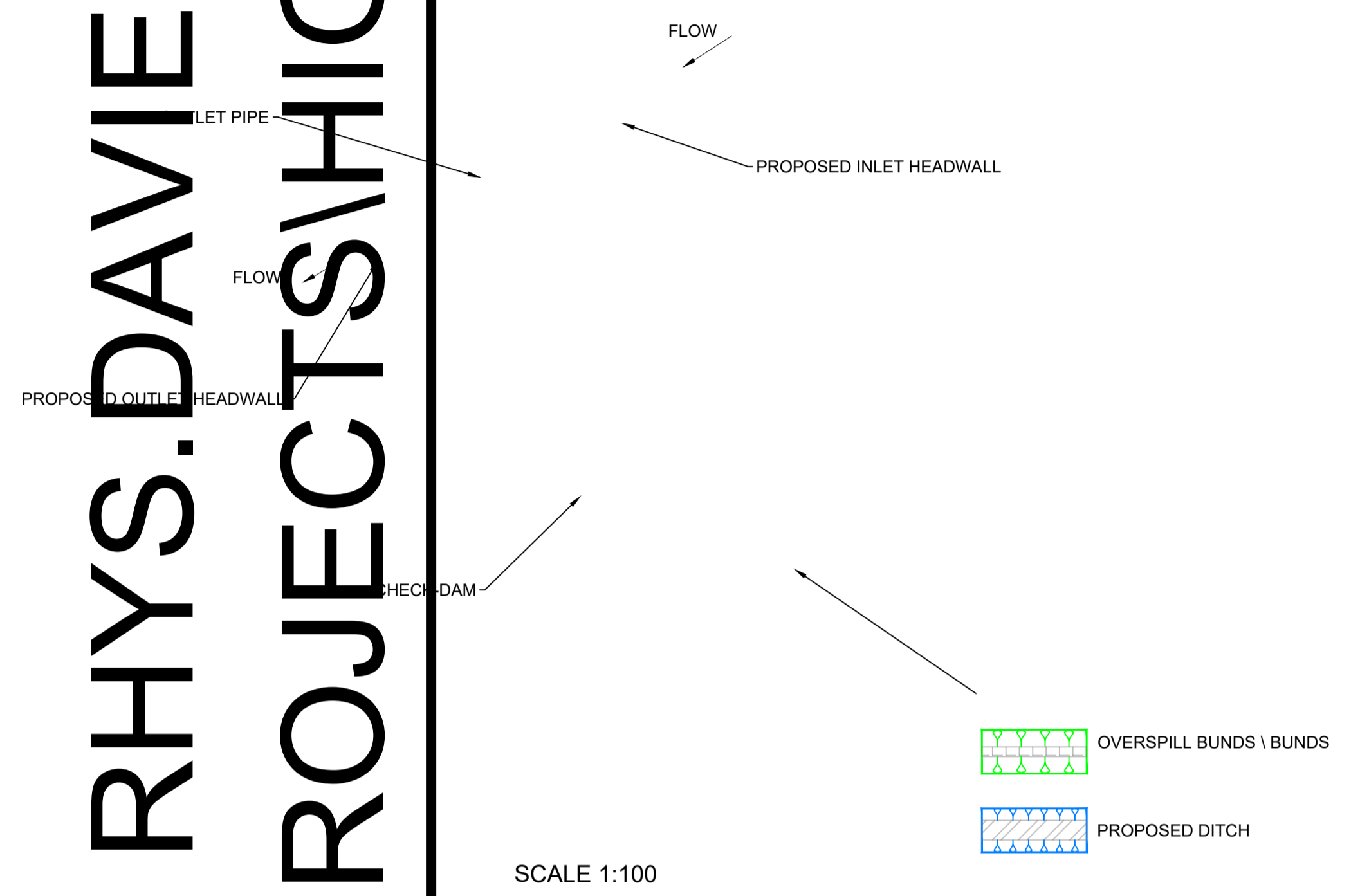
PEDESTRIAN RESTRAINT SYSTEM
PEDESTRIAN RESTRAINT SYSTEM IS TO PREVENT THE FALL FROM THE HEIGHT AT THE TOP OF THE HEADWALL AND WINGWALLS. ACCORDING TO CD 377 REVISION 4, 8.13, THE RAILS AND THE POSTS SHALL MEET THE CLASS 3 NOMINAL LIVE LOADS IN BS 7818. AS PER TABLE 8.6, CD 377 MINIMUM HEIGHTS OF PEDESTRIAN PARAPETS ABOVE THE ADJACENT PAVED SURFACE NEEDS TO BE 1150MM.



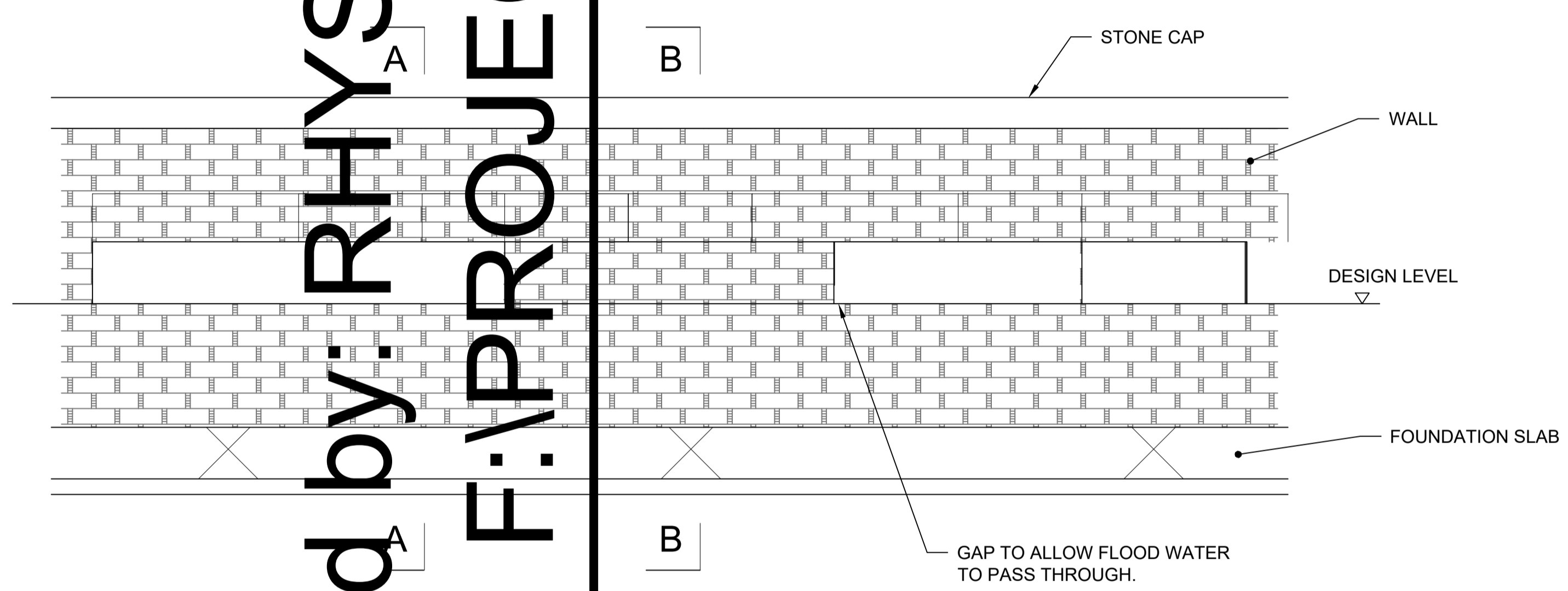
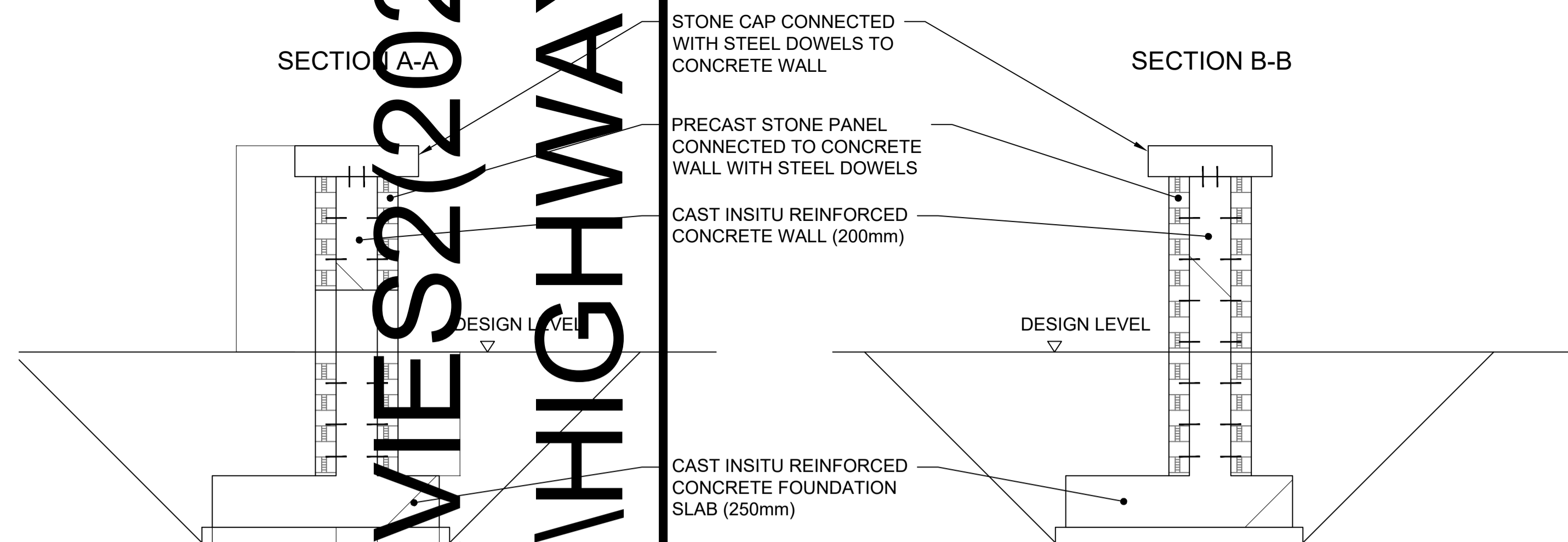
HEADWALL TYPE 5
SCALE - 1:20

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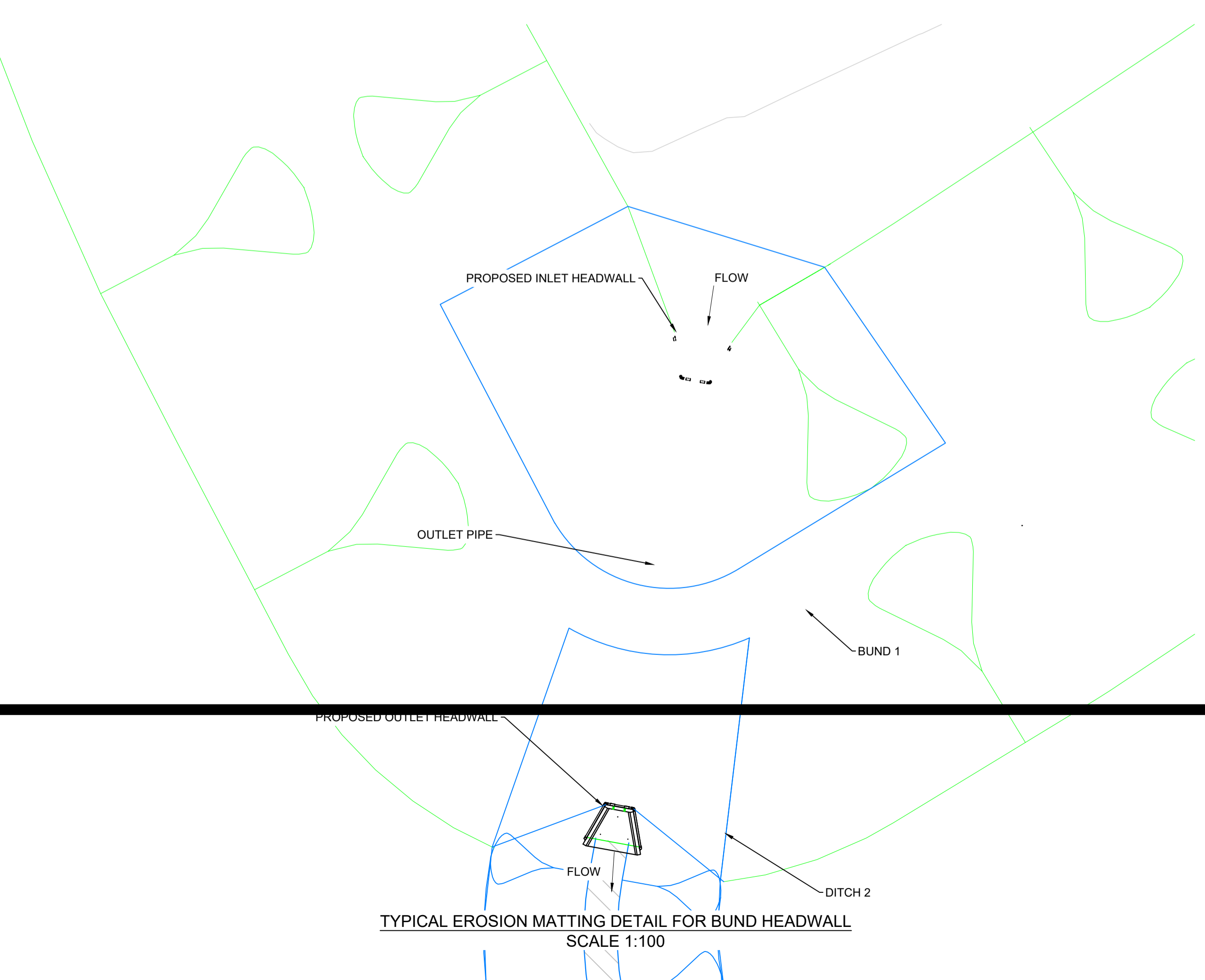


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STONE WALL DETAIL - DITCH 3
SCALE - 1:20

Notes
-2m LONG DRAINAGE SLOTTED TO BE PROVIDED
-CONTRACTOR TO SEEK OVERSEEING ORGANISATION APPROVAL ON REINSTATEMENT SOLUTION PRIOR IMPLEMENTATION



STATUS
DETAILED DESIGN

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PROJECT NUMBER
60160078

TYPICAL EROSION MATTING DETAIL FOR BUND HEADWALL
SCALE 1:100

Manhole Information						Pipe Information					
USMH	USCL (m)	USIL (m)	USMH Dia (mm)	US Easting (m)	US Northing (m)	DSMH	DSIL (m)	Pipe Dia (mm)	Pipe Length (m)	Pipe Slope (1:X)	DS Pipe Type
MH1a	53.625	52.200	1200	298082.128	169798.820	MH1	51.950	225	46.796	187.2	Carrier
MH1	53.375	51.950	1200	298044.462	169771.141	MH2	51.480	225	45.684	97.2	Carrier
MH2	52.830	51.405	1200	298008.076	169743.429	MH3	51.163	300	72.530	300.0	Carrier
MH3	52.715	51.163	1200	297950.691	169699.072	MH4	50.953	300	63.017	300.0	Carrier
MH4	52.700	50.953	1200	297900.562	169660.886	MH5	50.620	300	100.000	300.0	Carrier
MH5	51.700	50.620	1200	297845.246	169577.579	HW1	50.605	300	4.469	297.9	Carrier
MH6	63.350	62.300	1200	297814.928	170257.724	MH7	61.650	150	80.000	123.1	Filter
MH7	62.700	61.650	1200	297824.975	170178.357	MH8	61.117	150	80.000	150.0	Filter
MH8	62.450	61.117	1200	297833.214	170098.782	MH9	60.850	150	45.865	171.8	Filter
MH9	61.900	60.850	1200	297842.360	170053.838	MH10	60.56	150	27.658	95.4	Filter
MH10	61.400	60.56	1200	297852.312	170028.033	HW18	60.468	150	15.224	165.5	Carrier

Headwall	Type	Invert Level (m)	Easting (m)	Northing (m)
HW1	3	50.605	297839.580	169579.994
HW2	3	58.054	297602.358	169777.753
HW3	3	58.098	297606.280	169778.732
HW4	3	58.550	297688.445	169816.656
HW5	3	58.586	297692.444	169818.936
HW6	1	62.024	297924.470	170311.866
HW7	2	61.999	297922.153	170298.860
HW8	1	59.675	298224.414	170148.613
HW9	2	59.500	298223.109	170145.173
HW10	1	58.186	298155.692	170008.217
HW11	2	57.906	298162.290	170007.044
HW12	4	52.857	298135.145	169826.874
HW13	4	52.850	298135.343	169820.470
HW14	4	52.785	298118.712	169810.774
HW15	4	52.687	298105.659	169801.566
HW16	1	62.043	298460.618	170118.672
HW17	2	61.993	298455.515	170107.888
HW18	4	60.468	297838.486	170021.660
HW19	4	52.724	298118.266	169805.352
HW20	5	57.580	297550.289	169676.301
HW21	5	57.999	297552.542	169682.285
HW22	5	53.364	297577.712	169752.270
HW23	5	53.864	297581.882	169763.570
HW24	5	60.479	297854.190	170016.797
HW25	5	60.499	297865.355	170022.116
HW26	5	60.734	297875.423	170150.183
HW27	5	60.745	297877.641	170162.381
HW28	5	60.564	297915.211	170052.697
HW29	5	60.416	297920.168	170056.728
HW30	5	60.355	297838.48	169987.517
HW31	5	61.9838	297840.678	169999.721
HW32	5	60.512	297881.676	170029.92
HW33	5	60.522	297885.651	170031.83

Gully	Cover Level (m)	Easting (m)	Northing (m)
G1	55.549	298164.820	169897.055
G2	54.211	298127.524	169843.953
G3	53.671	298154.576	169811.544
G4	53.802	298112.504	169820.960
G5	53.815	298095.419	169812.636
G6	53.749	298081.947	169802.159
G7	53.422	298096.448	169785.686
G8	53.425	298092.103	169785.273
G9	53.584	298069.564	169791.577
G10	53.625	298057.779	169782.762
G11	53.418	298044.898	169773.980
G12	53.320	298038.494	169768.017
G13	53.214	298030.168	169761.664
G14	52.943	298016.779	169751.746
G15	52.814	298005.743	169743.080
G16	52.764	297992.969	169733.348
G17	52.755	297978.159	169721.387
G18	52.722	297960.305	169707.861
G19	52.689	297951.054	169700.881
G20	52.675	297940.949	169693.382
G21	52.687	297929.978	169685.269
G22	52.695	297918.516	169676.843
G23	52.701	297917.713	169676.232
G24	52.689	297901.269	169662.518
G25	52.525	297887.693	169643.159
G26	52.399	297880.107	169630.169
G27	53.475	298105.353	169760.276
G28	53.367	298101.881	169761.604

Box Culvert	Size (mm)	Length (m)
BC1	500 x 1000	6.000
BC2	500 x 1000	12.000
BC3	500 x 1000	12.000
BC4	500 x 1000	12.000
BC5	500 x 1000	12
BC6	500 x 1000	6
BC7	500 x 1000	4