

Name	Y-Coord	X-Coord	Cover	Inlet	Depth	Length	Slope	Type	Size
ST 2	-13285.99	281066.81	708.63	708.20	0.43	16.31	4.91%	1000 Concrete	1000 mm
ST 3	-13290.33	281066.91	708.67	707.40	0.97				
ST 4	-13173.31	281076.42	700.38	708.20	1.48	23.78	1.26%	1000 Concrete	1000 mm
ST 5	-13128.41	281076.08	700.20	708.40	1.40				
ST 6	-13078.27	281085.40	720.71	718.00	1.81	14.53	2.13%	1000 Concrete	1000 mm
ST 7	-13089.18	281085.61	719.33	718.00	0.74				

No.	Radius	Tr. In	Tr. Out	Tan. In	Tan. Out	Deflection
0	0.00	0.00	0.00	0.00	0.00	0.00
1	30.00	0.00	0.00	2.47	2.47	5.24
2	30.00	0.00	0.00	13.66	13.66	48.52
3	30.00	0.00	0.00	10.92	10.92	40.05
4	30.00	0.00	0.00	8.76	8.76	32.33
5	30.00	0.00	0.00	13.78	13.78	48.21
6	30.00	0.00	0.00	6.30	6.30	23.45
7	30.00	0.00	0.00	2.49	2.49	9.28
8	30.00	0.00	0.00	4.54	4.54	16.11
9	30.00	0.00	0.00	2.10	2.10	8.00
10	30.00	0.00	0.00	0.59	0.59	2.15
11	30.00	0.00	0.00	3.01	3.01	11.26
12	15.00	0.00	0.00	15.47	15.47	91.47
13	30.00	0.00	0.00	2.20	2.20	8.24
14	30.00	0.00	0.00	0.98	0.98	3.44
15	30.00	0.00	0.00	6.80	6.80	28.31
16	30.00	0.00	0.00	6.30	6.30	26.00
17	30.00	0.00	0.00	19.83	19.83	66.55
18	15.00	0.00	0.00	10.07	10.07	61.42
19	15.00	0.00	0.00	11.98	11.98	77.14
20	30.00	0.00	0.00	8.54	8.54	31.46
21	15.00	0.00	0.00	10.06	10.06	61.41
22	15.00	0.00	0.00	4.12	4.12	30.44
23	30.00	0.00	0.00	16.94	16.94	61.37
24	30.00	0.00	0.00	20.87	20.87	69.39
25	30.00	0.00	0.00	8.50	8.50	31.39
26	30.00	0.00	0.00	8.30	8.30	30.16
27	30.00	0.00	0.00	8.00	8.00	29.13
28	15.00	0.00	0.00	14.67	14.67	88.42
29	15.00	0.00	0.00	9.01	9.01	61.57
30	0.00	0.00	0.00	0.00	0.00	0.00

Position	SV	Y-Coord	X-Coord
PH0	6.000	-13865.008	281087.185
BOC1	124.360	-13874.241	281070.893
PH1	74.831	-13879.025	281079.233
BOC2	138.233	-13879.733	281076.715
BOC2	160.548	-13885.548	281083.663
PH2	173.467	-13889.624	281090.040
BOC3	186.388	-13897.632	281093.310
BOC3	249.019	-13892.990	281086.637
PH3	259.845	-13892.328	281085.859
BOC4	265.971	-13894.451	281084.910
BOC4	303.307	-13897.798	281081.680
PH4	311.881	-13897.180	281084.945
BOC5	325.844	-13897.868	281081.310
BOC5	338.885	-13894.271	281076.138
PH5	351.896	-13893.249	281079.301
BOC6	364.447	-13892.447	281077.015
PH6	417.858	-13895.152	281070.704
BOC7	428.467	-13895.699	281070.257
BOC7	459.716	-13779.448	281076.085
PH7	462.198	-13779.698	281074.328
BOC8	464.881	-13772.288	281072.305
BOC8	534.035	-13731.535	281081.449
PH8	538.494	-13730.666	281081.438
BOC9	544.388	-13724.658	281080.555
BOC9	582.307	-13693.845	281086.405
PH9	584.431	-13693.845	281086.175
BOC10	586.530	-13693.823	281085.723
BOC10	627.536	-13691.997	281085.388
PH10	627.536	-13691.997	281085.388
BOC11	628.115	-13690.555	281084.995
BOC11	678.931	-13682.251	281082.113
PH11	681.969	-13682.198	281081.921
BOC12	684.461	-13681.386	281081.821
BOC12	718.257	-13598.313	281046.362
PH12	720.711	-13598.853	281047.016
BOC13	742.986	-13598.853	281046.777
BOC13	808.684	-13525.235	281029.391
PH13	810.984	-13525.235	281029.114
BOC14	813.084	-13521.619	281031.891
BOC14	884.993	-13485.581	281053.089
PH14	885.975	-13485.581	281053.084
BOC15	886.896	-13483.923	281054.136
BOC15	919.311	-13402.088	281069.368
PH15	926.255	-13426.437	281059.217
BOC16	932.939	-13421.017	281059.085
BOC16	949.794	-13414.449	281058.156
PH16	967.575	-13404.325	281061.119
BOC18	985.412	-13384.254	281028.156
BOC17	985.593	-13384.075	281028.129
PH17	1003.112	-13384.461	281025.233
BOC17	1020.920	-13384.187	281024.441
BOC18	1056.812	-13335.215	281067.596
BOC18	1106.984	-13295.964	281081.683
PH18	1074.555	-13320.011	281076.965
BOC19	1125.134	-13270.090	281081.836
BOC19	1175.548	-13262.511	281086.901
BOC19	1145.357	-13263.771	281081.020
BOC20	1175.548	-13262.446	281086.549
PH18	1183.368	-13239.446	281078.465
BOC20	1191.688	-13229.556	281071.511
BOC21	1245.230	-13199.358	281073.165
PH19	1254.091	-13181.243	281079.089
BOC21	1262.853	-13163.863	281088.854
BOC22	1290.994	-13190.404	281079.072
PH20	1295.018	-13191.398	281080.074
BOC22	1299.042	-13181.607	281080.007
BOC23	1339.850	-13227.974	281082.037
PH21	1356.199	-13234.810	281044.019
BOC23	1370.542	-13230.745	281080.362
BOC24	1405.040	-13222.320	281084.280
PH21	1423.795	-13217.272	281074.540
BOC24	1441.970	-13214.511	281076.305
BOC25	1499.588	-13205.701	281068.763
PH22	1507.874	-13206.125	281063.179
BOC25	1516.160	-13200.888	281091.345
BOC26	1569.024	-13217.690	281108.009
PH22	1585.832	-13217.265	281105.646
BOC26	1593.460	-13216.501	281104.559
BOC27	1641.044	-13208.790	281101.897
PH23	1648.860	-13205.290	281108.209
BOC27	1659.576	-13204.754	281106.684
BOC28	1701.831	-13201.245	281144.307
PH23	1713.547	-13200.124	281158.599
BOC28	1724.863	-13204.727	281151.381
BOC29	1736.984	-13200.789	281158.572
PH24	1749.095	-13215.757	281159.407
BOC29	1763.207	-13216.184	281167.785
PH24	1767.287	-13220.798	281171.569

GENERAL LAYOUT
SCALE 1:1000

ISSUED FOR TENDER PURPOSES
THE MASTER HELD AT JUSBEN CONSULTING OFFICE BEARS THE ORIGINAL SIGNATURE OF APPROVAL

Jusben Consulting
Engineers P.O. Box 390
Mafemina
1000

REF. NO. N/A
DATE AS SHOWN
DATE APRIL 2023

designed FG
drawn SC
checked LF

CITY OF MBOMBELA
City of Mbombela
1 Nel Street
Mafemina
1201

GENERAL:
1. THIS DRAWING IS TO BE READ IN CONNECTION WITH ALL RELEVANT DRAWINGS AND CONTRACT SPECIFICATIONS ANY DISCREPANCIES TO BE BROUGHT TO ENGINEER'S ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.
2. CONTRACTOR TO KEEP A FULL SET OF DRAWINGS ON SITE.
3. CONTRACTOR TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE.
4. SCALING OF DRAWINGS IS NOT PERMITTED. FIGURED DIMENSIONS ONLY TO BE USED.
5. LARGE SCALE DETAILS TO BE USED WHERE AVAILABLE.
6. CONTRACTOR TO IDENTIFY AND EXPOSE ALL UNDERGROUND SERVICES ON SITE WHERE RELEVANT.
7. CONTRACTOR IS TO BE IN ACCORDANCE WITH ALL RELEVANT DRAWINGS, CONTRACT SPECIFICATIONS OR SABS 1000.
8. SHOULD THE ENGINEER BE REQUIRED ON SITE, 24 HOURS NOTICE IS REQUIRED.

ROAD CONSTRUCTION NOTES:
1. ROAD ALIGNMENT AND LEVELS ARE POSITIONED ACCORDING TO AVAILABLE SURVEY INFORMATION AND MAY REQUIRE ADJUSTMENT AS INSTRUCTED BY THE ENGINEER TO SUIT THE CONDITIONS ON SITE.
2. THE CONTRACTOR IS TO CONFIRM ALL SETTING OUT COORDINATES AND DATUMS PRIOR TO CONSTRUCTION COMMENCING.
3. THE CONTRACTOR SHALL ENSURE THAT ALL MATERIALS ARE STOCKED AND STORED SAFELY.
4. THE FOLLOWING TEST RESULTS ARE TO BE PROVIDED:
5. ROAD MATERIALS INDICATORS (CMT) FOR ALL IMPERMITTED MATERIALS TO BE PROVIDED PRIOR TO WORK COMMENCING.

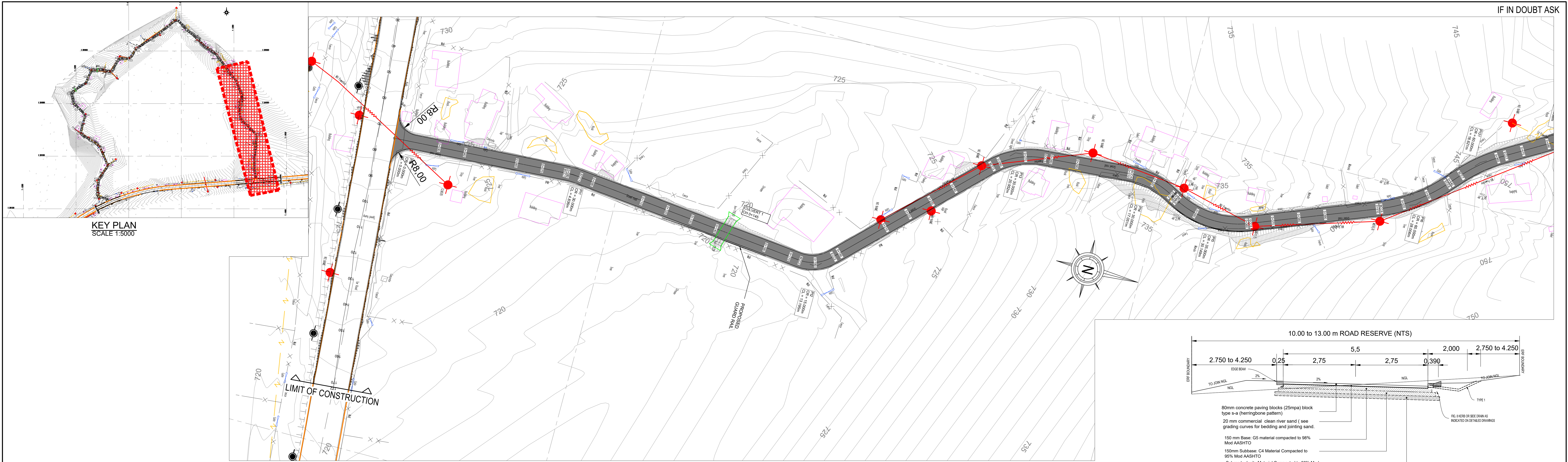
ROAD CONSTRUCTION NOTES:
6. IF THE CONTRACTOR SHALL NOT PROCEED TO THE NEXT LAYER BEFORE THE LEVELS AND COMPACTION TEST RESULTS OF THE PRECEDING LAYER HAVE BEEN APPROVED.
7. PRIOR TO EMULATION OF SUBBASE LAYER, THE CONTRACTOR MUST SUBMIT PROPOSED STABILISATION DESIGN FOR APPROVAL.

PROJECT TITLE
PAVING OF ROAD FROM MAFEMINI TO NTIBANE AT LEHAWU WARD 40

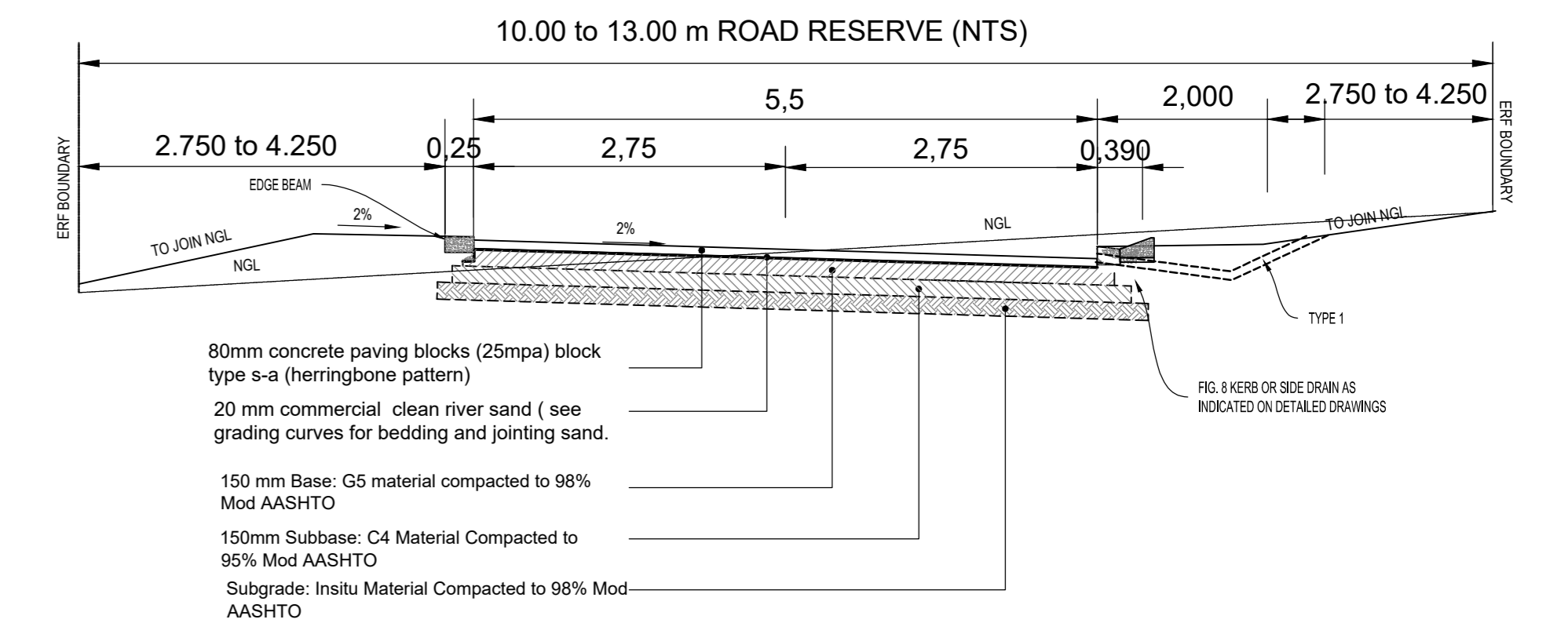
DRAWING TITLE

DATE

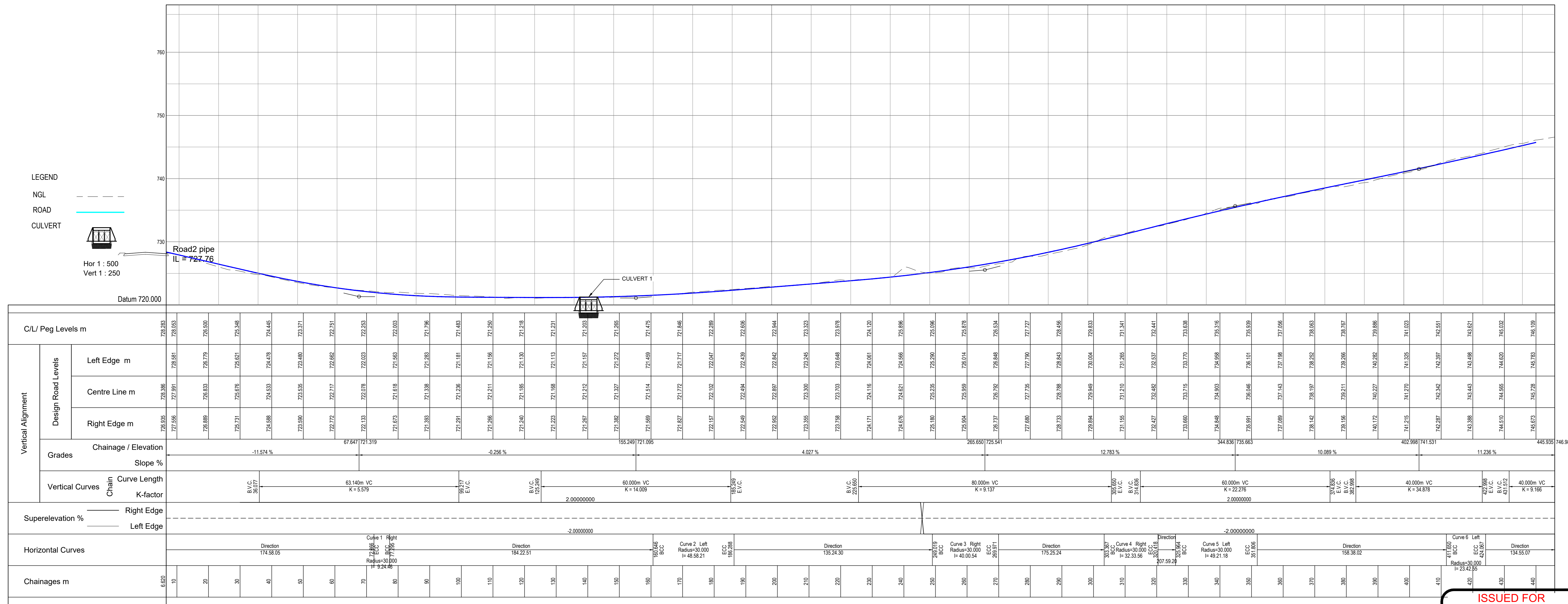
AS SHOWN	DATE	ISSUED FOR TENDER PURPOSES	SCALE	DATE	ADDITIONS	BY	CHK	FILE NO.
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ROADS LAYOUT (CH 6- CH 445)
SCALE 1:1 000



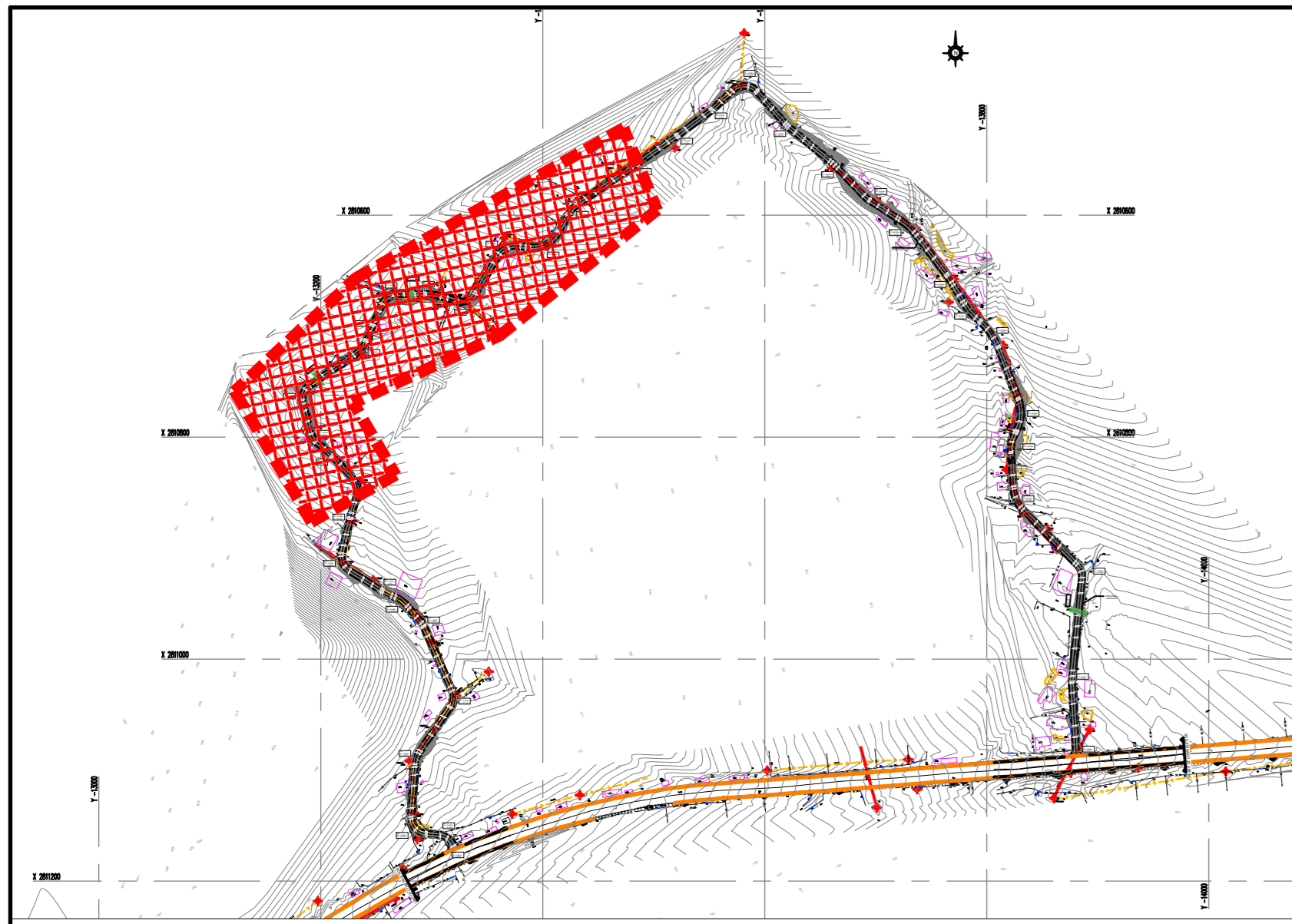
TYPICAL SECTION AND LAYER WORKS - 5.5 m ROAD (CLASS 5b - f)
SCALE 1:50



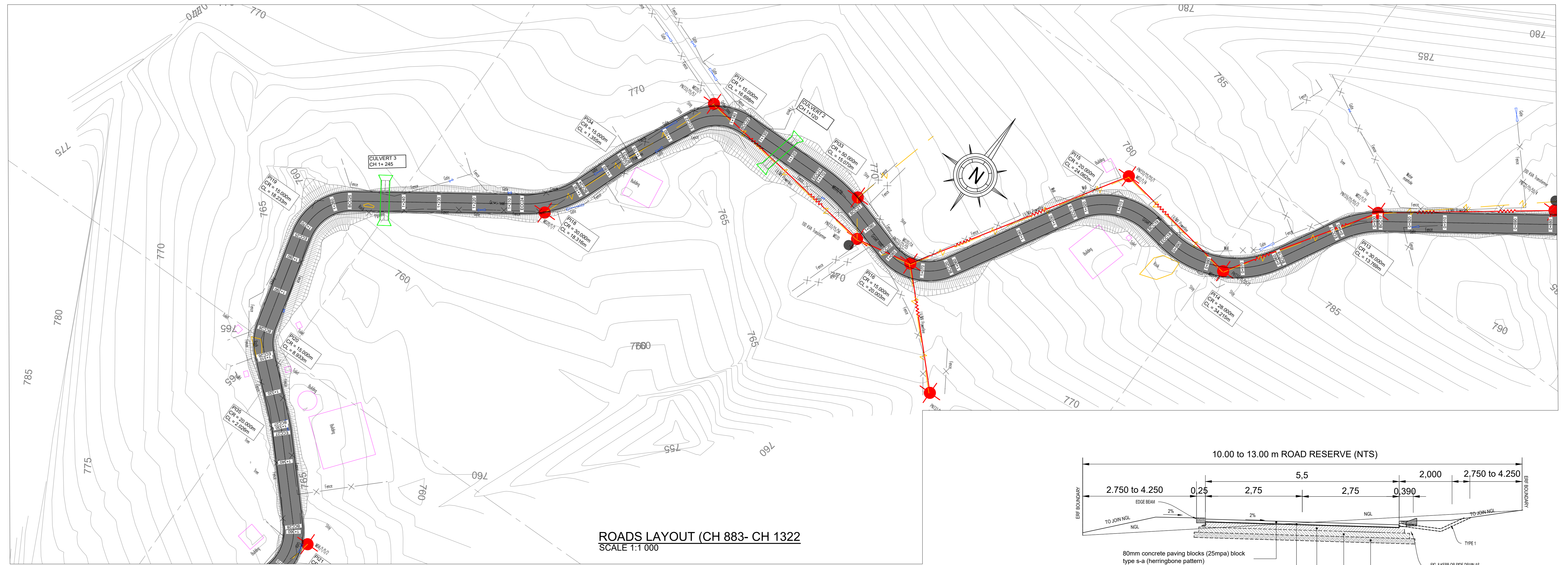
Longsection for 6 to 445

ISSUED FOR TENDER PURPOSES

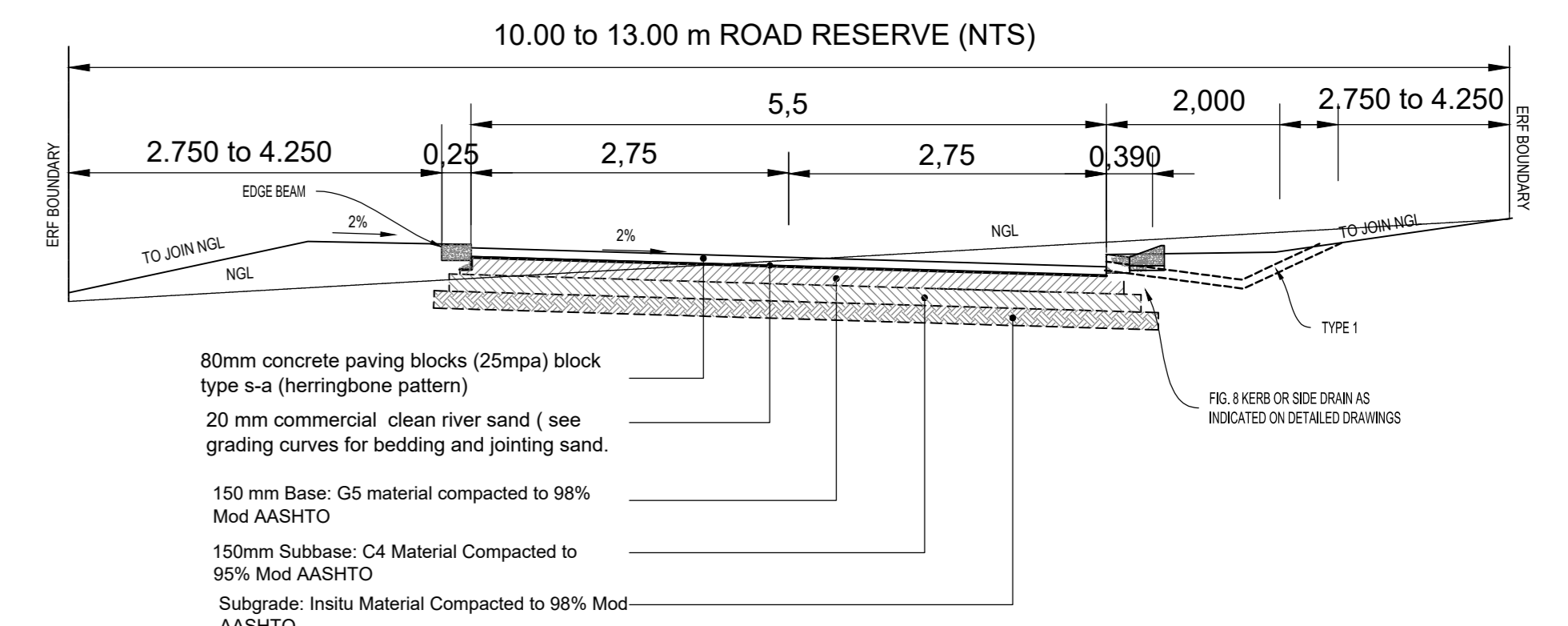
THE MASTER HELD AT JUSBEN CONSULTING OFFICE BEARS THE ORIGINAL SIGNATURE OF APPROVAL



KEY PLAN
SCALE 1:5000

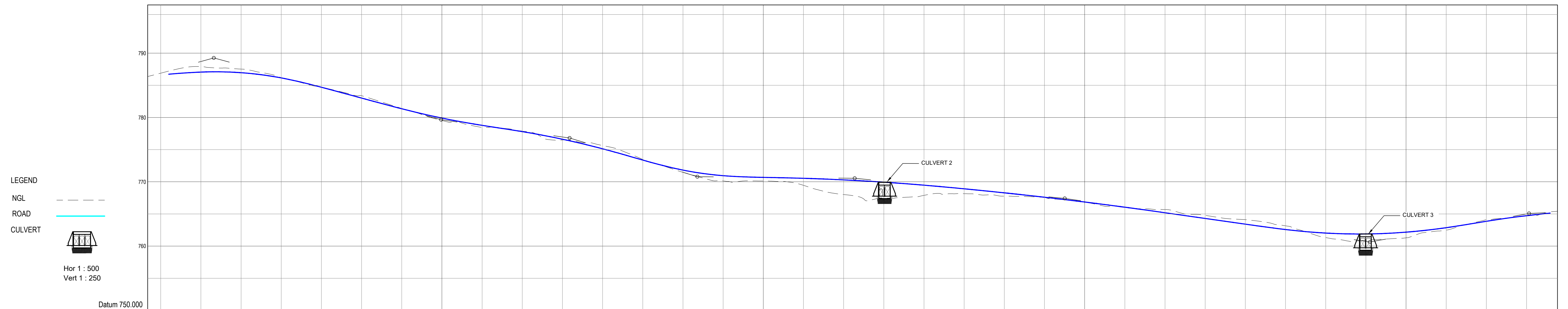


ROADS LAYOUT (CH 883- CH 1322)
SCALE 1:1 000



TYPICAL SECTION AND LAYER WORKS - 5.5 m ROAD (CLASS 5b - f)
SCALE 1:50

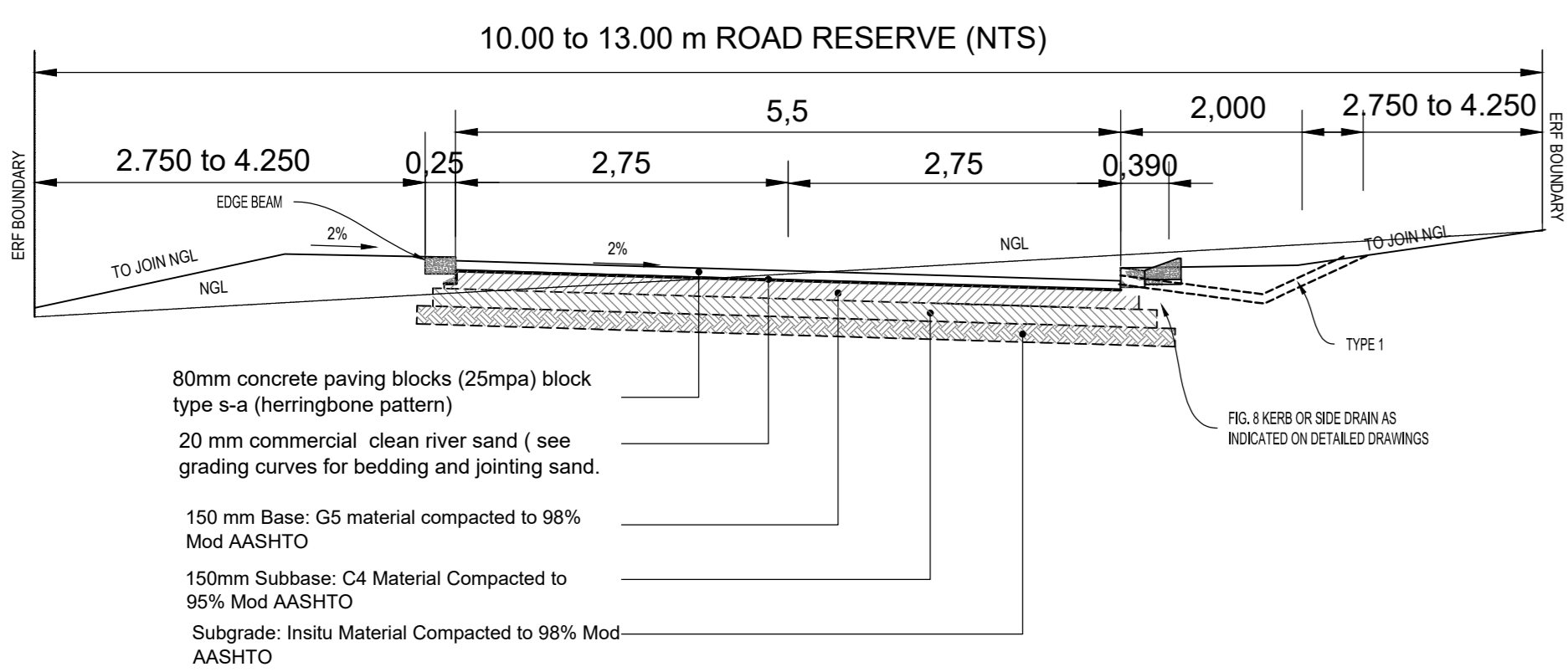
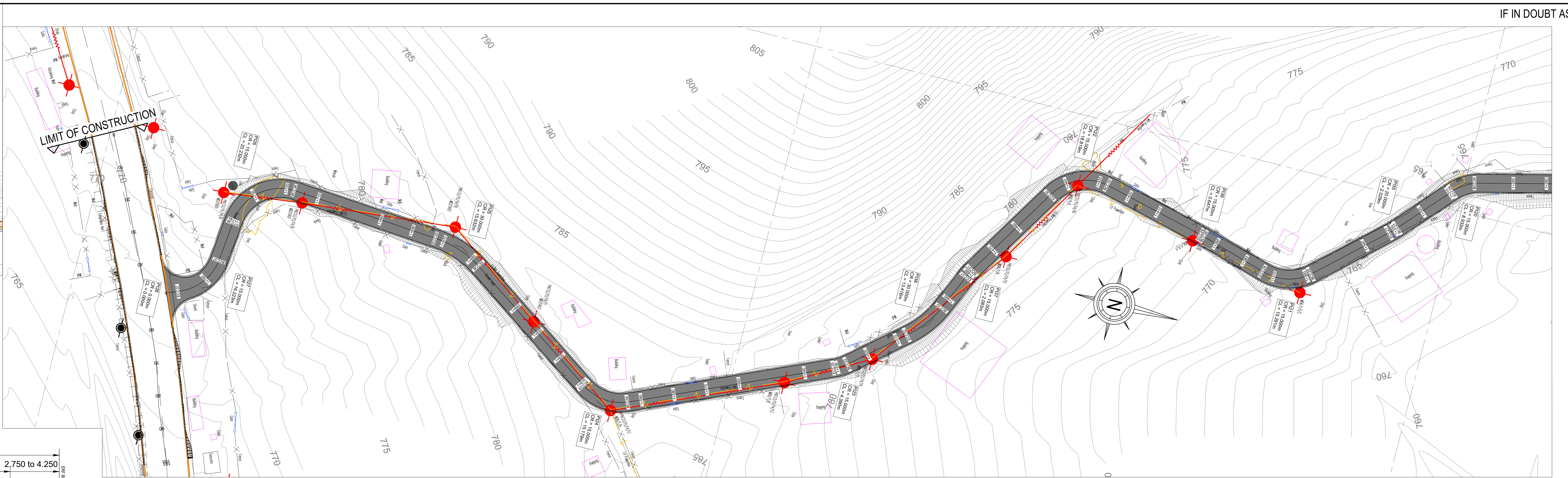
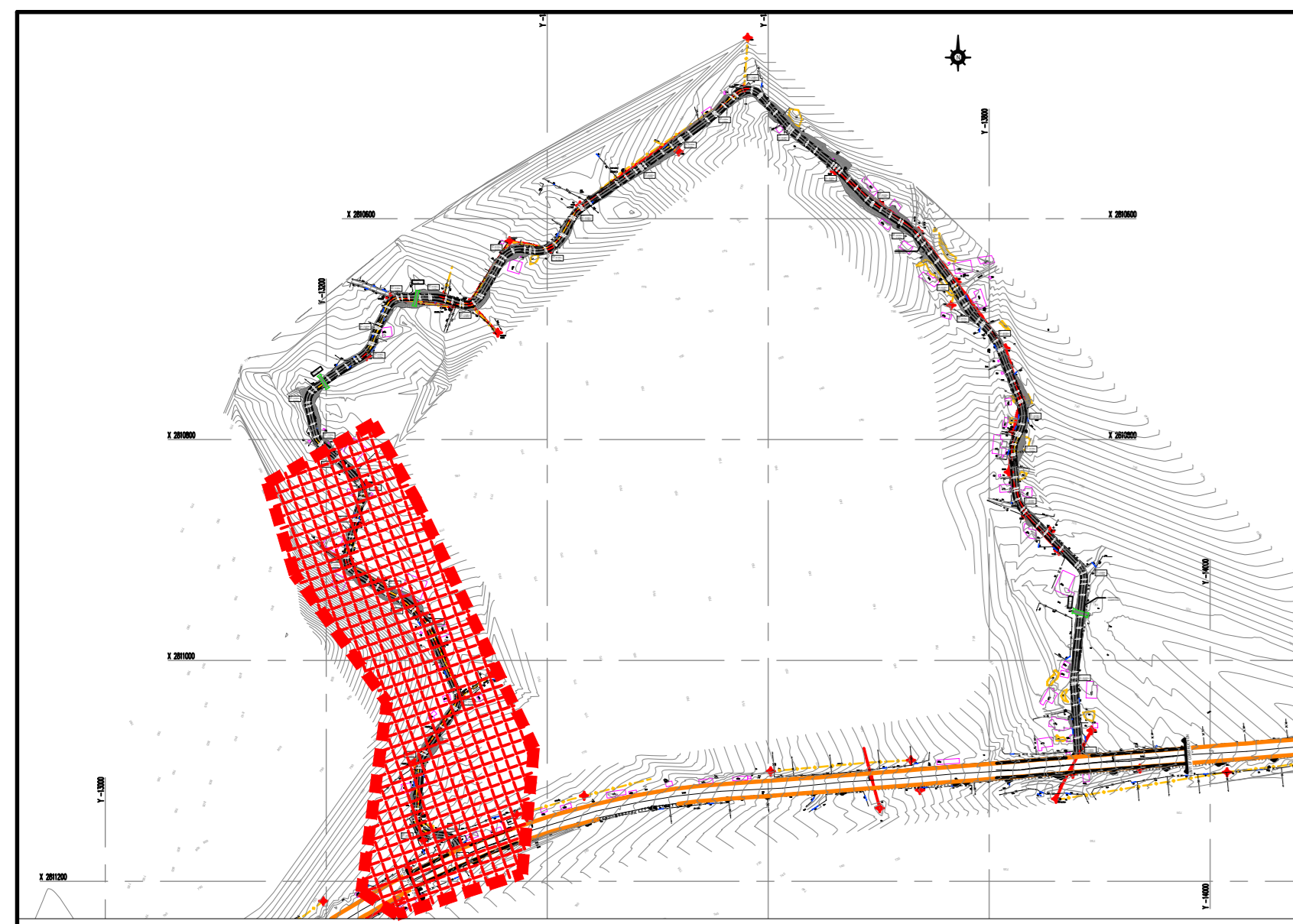
Longsection for 1322 to 1757



Vertical Alignment		Chainage / Elevation	
Design Road Levels	Left Edge m	768.971	768.971
	Centre Line m	768.971	768.971
	Right Edge m	768.971	768.971
Grades	Slope %		13.851 %
Vertical Curves	Chain	60.00m VC	K = 2.187
	K-factor		
Superelevation %	Right Edge		
	Left Edge		
Horizontal Curves	Direction	55.4725	
	Radius	30.000m	
Chainages m	Start	880	
	End	1322	

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ROADS LAYOUT (CH 1322- CH 1757) SCALE 1:1 000

TYPICAL SECTION AND LAYER WORKS - 5.5 m ROAD (CLASS 5b - f) SCALE 1:50

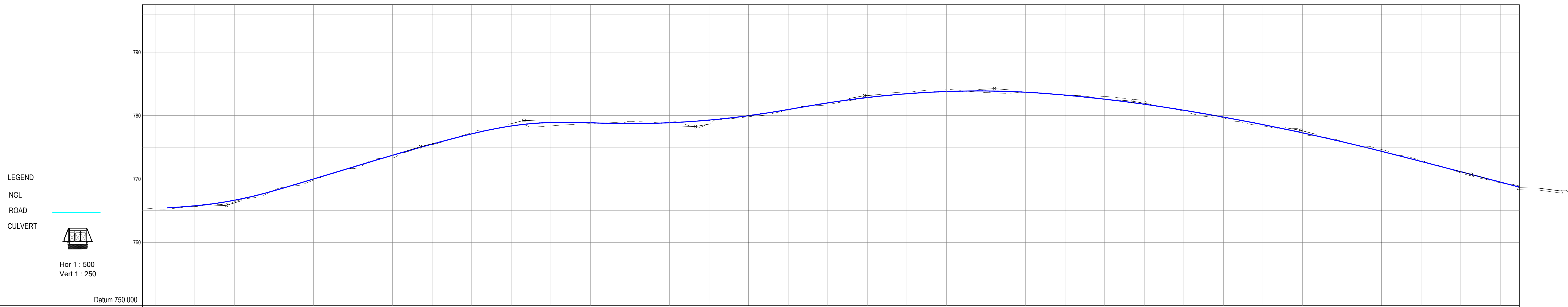


Table with columns for C/L Peg Levels m, Vertical Alignment (Design Road Levels, Chainage / Elevation, Vertical Curves), Superelevation %, Horizontal Curves, and Chainages m.

Longsection for 1322 to 1757

ISSUED FOR TENDER PURPOSES

THE MASTER HELD AT JUSBEN CONSULTING OFFICE BEARS THE ORIGINAL SIGNATURE OF APPROVAL

Jusben Consulting Engineers P.O. Box 390 Maseru 1000

Revision table with columns for REF. NO., AS SHOWN, APRIL 2023, and design/checked/checked by.

CITY OF MBOMBELA logo and address: 1 Nel Street Mbotseana 1201

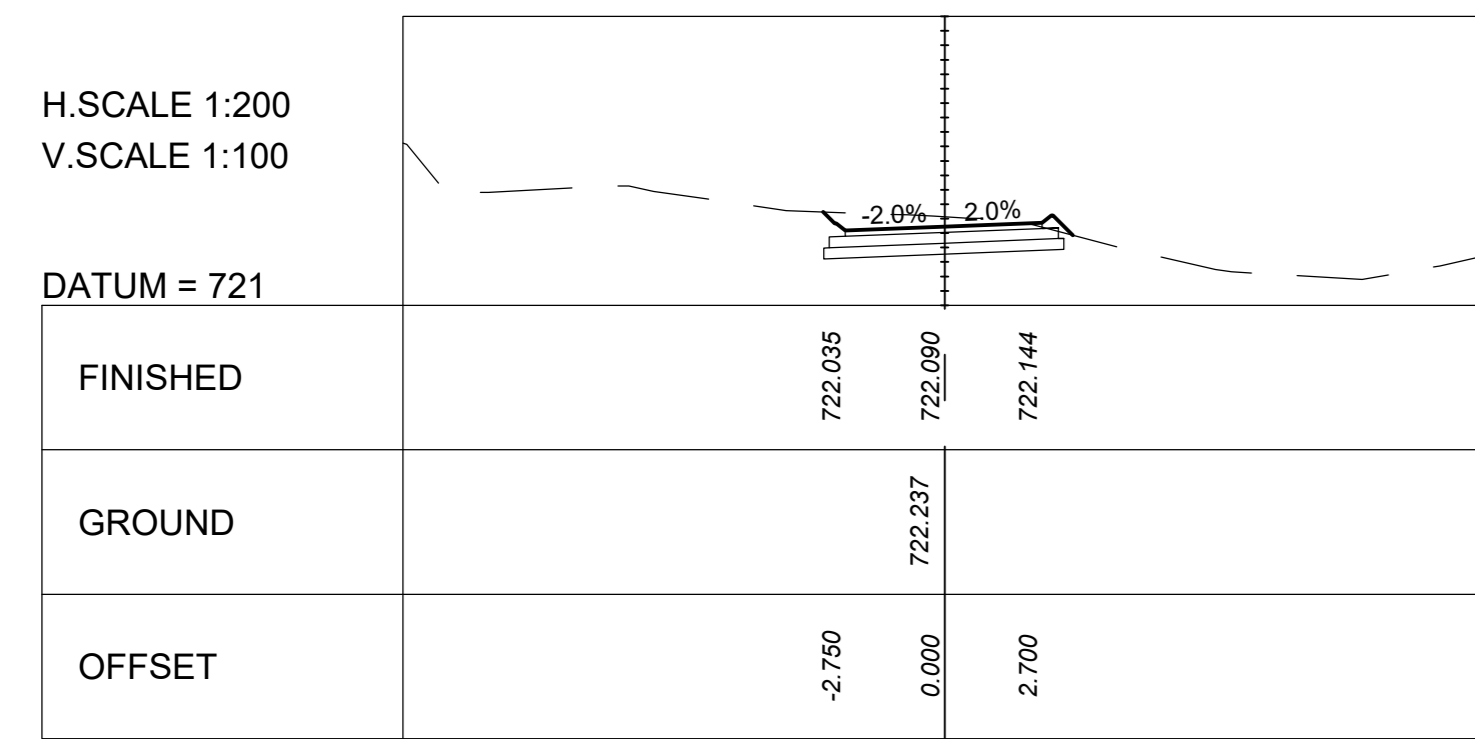
GENERAL NOTES: 1. THE DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND CONTRACT SPECIFICATIONS...

ROAD CONSTRUCTION NOTES: 1. ROAD ALIGNMENT AND LEVELS ARE POSITIONED ACCORDING TO AVAILABLE SURVEY INFORMATION...

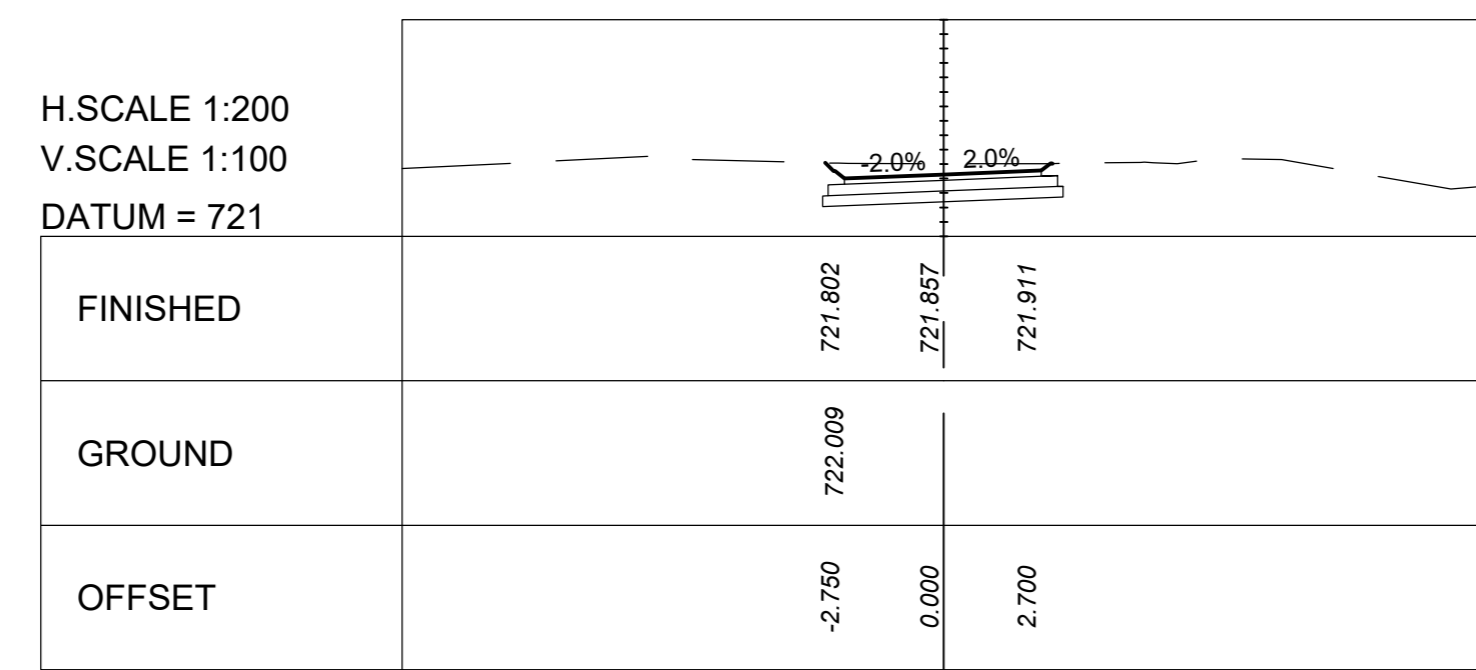
ROAD CONSTRUCTION NOTES: 2. THE CONTRACTOR SHALL NOT PROCEED TO THE NEXT LAYER BEFORE THE LEVELS AND COMPACTION TEST RESULTS OF THE PRECEDING LAYER HAVE BEEN APPROVED...

PROJECT TITLE: PAVING OF ROAD FROM MAFEMINI TO NTIBANE AT LEHAWU WARD 40. ROAD LAYOUT AND LONG SECTION (CH 51+960 - CH 52 + 910)

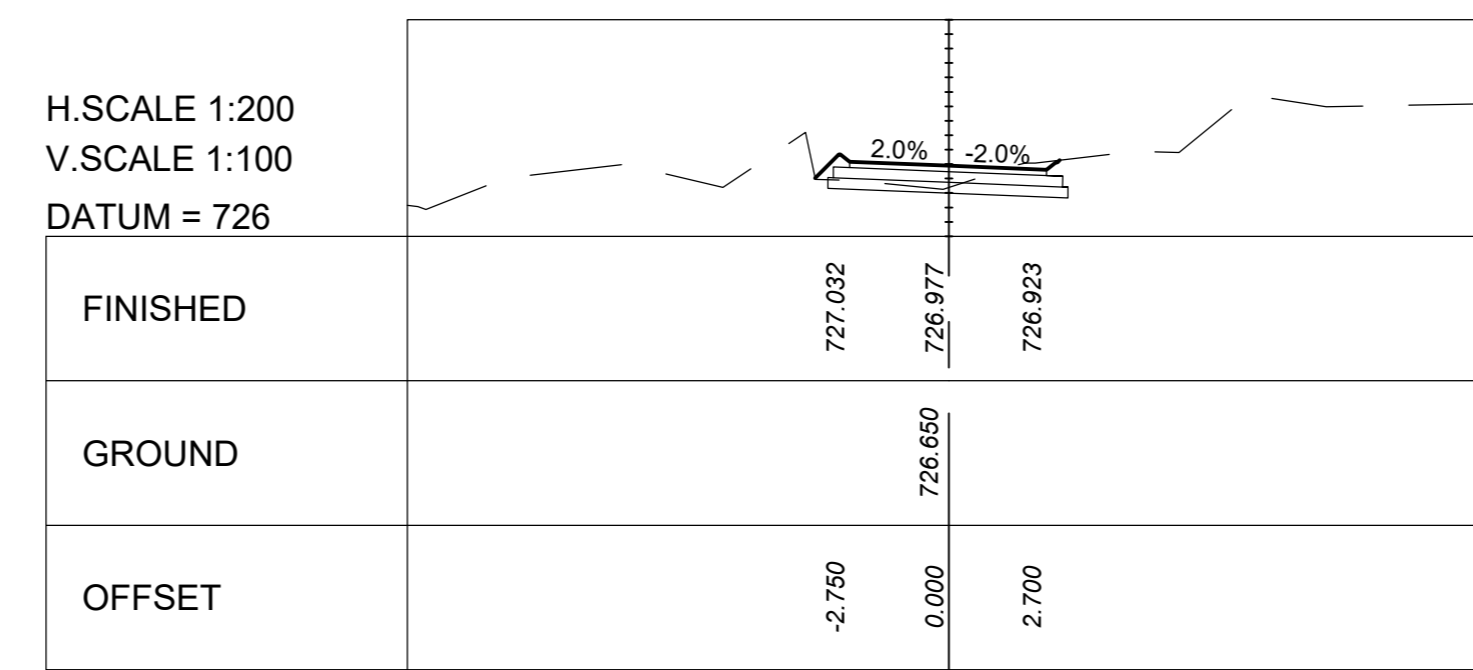
Approval table with columns for AS SHOWN, DATE, SCALE, and EXECUTIVE OFFICER.



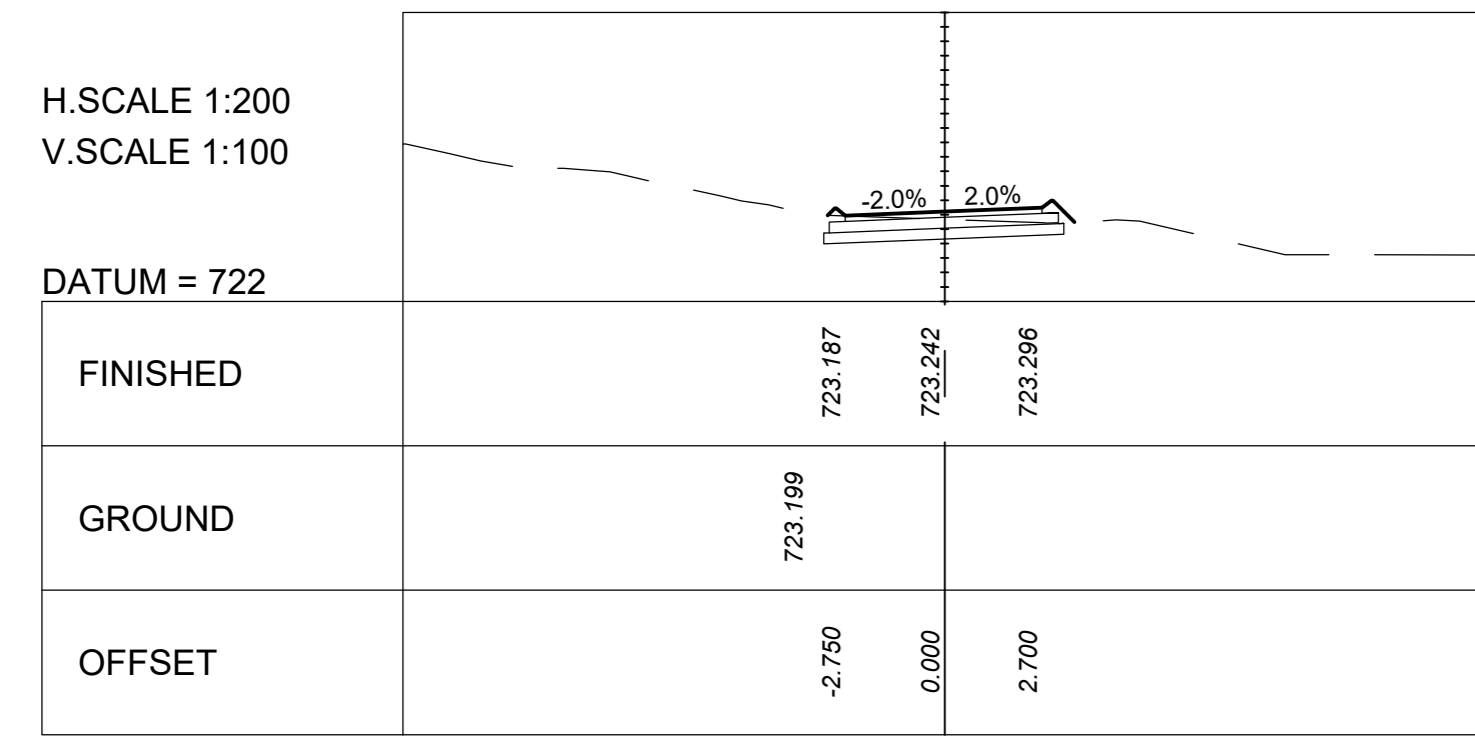
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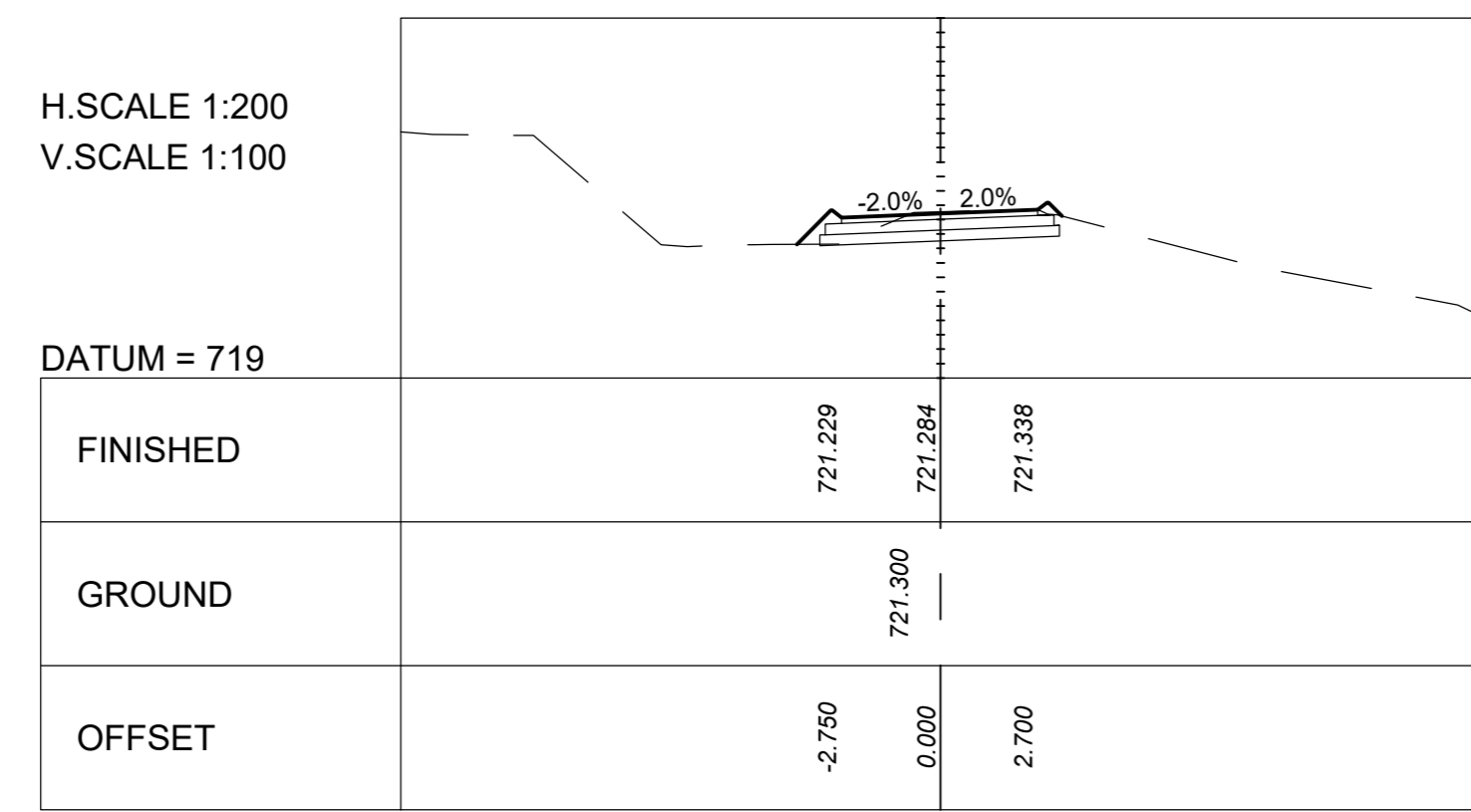
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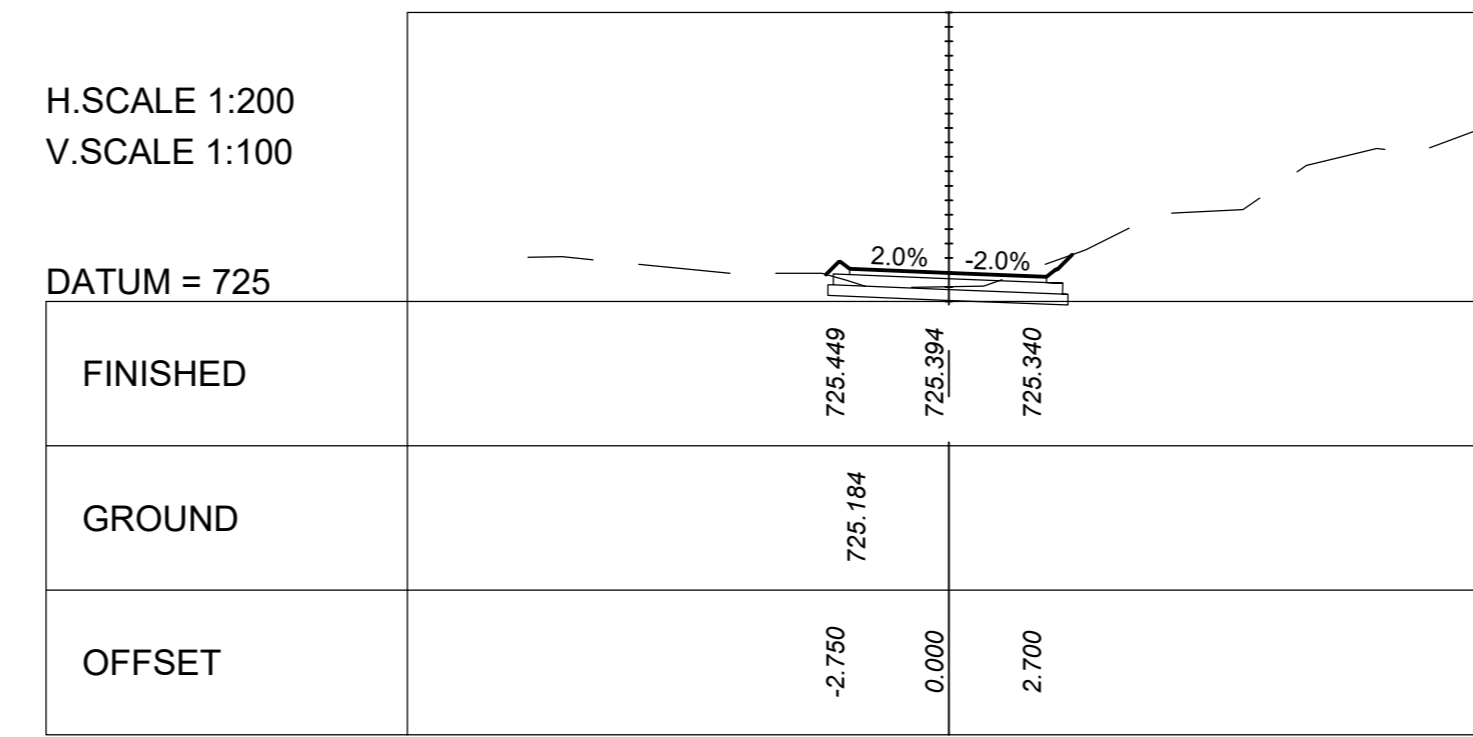
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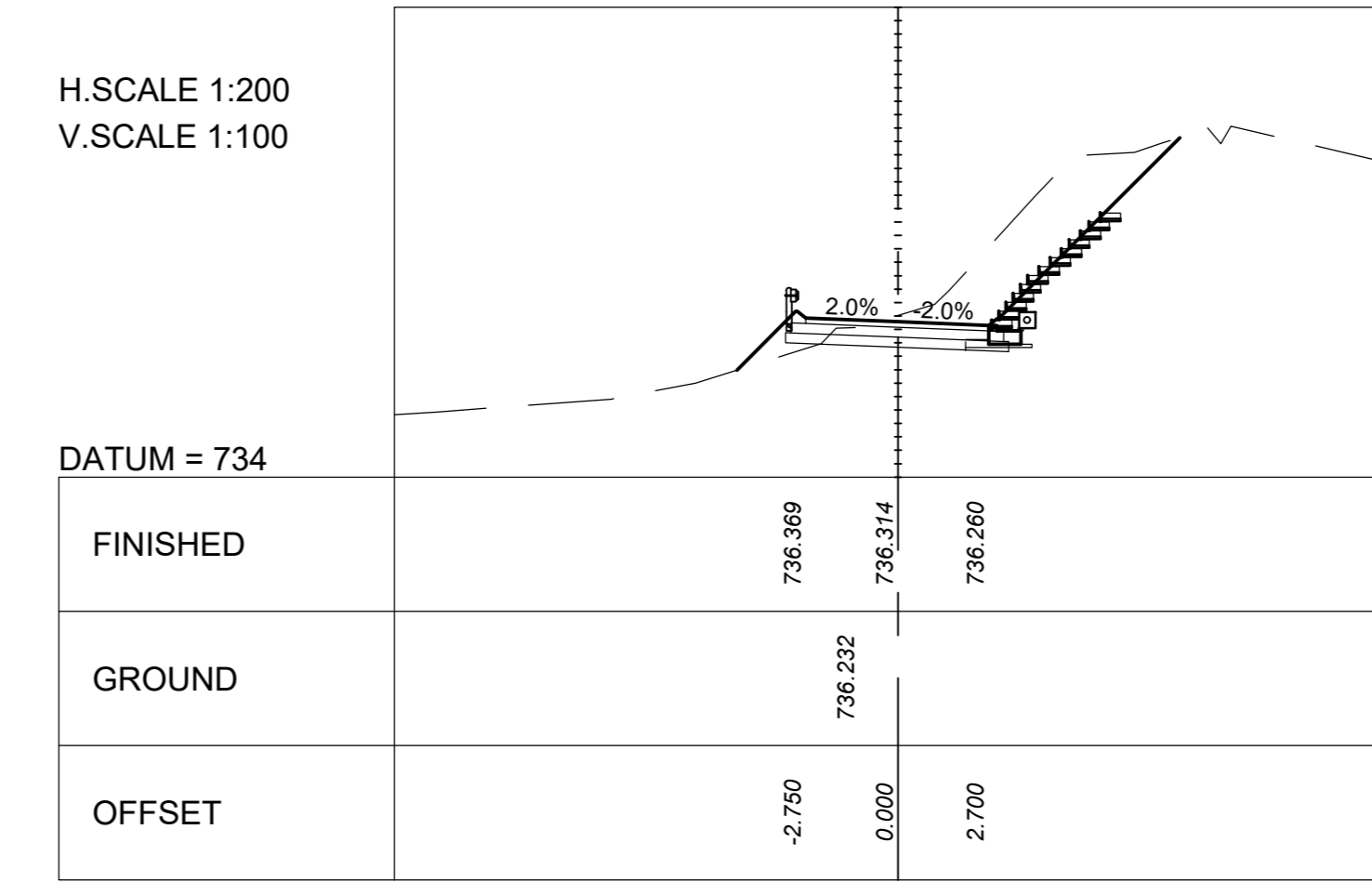
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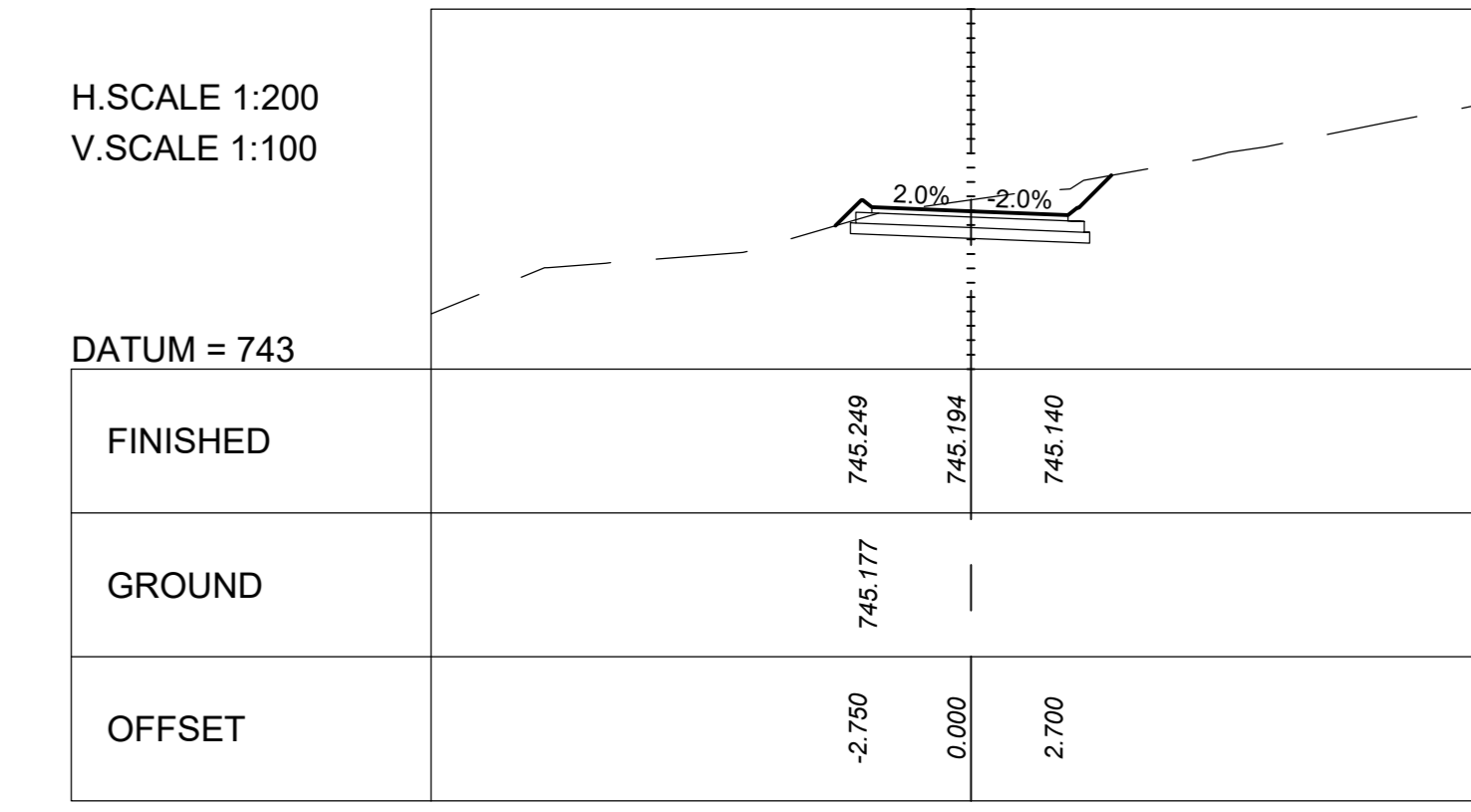
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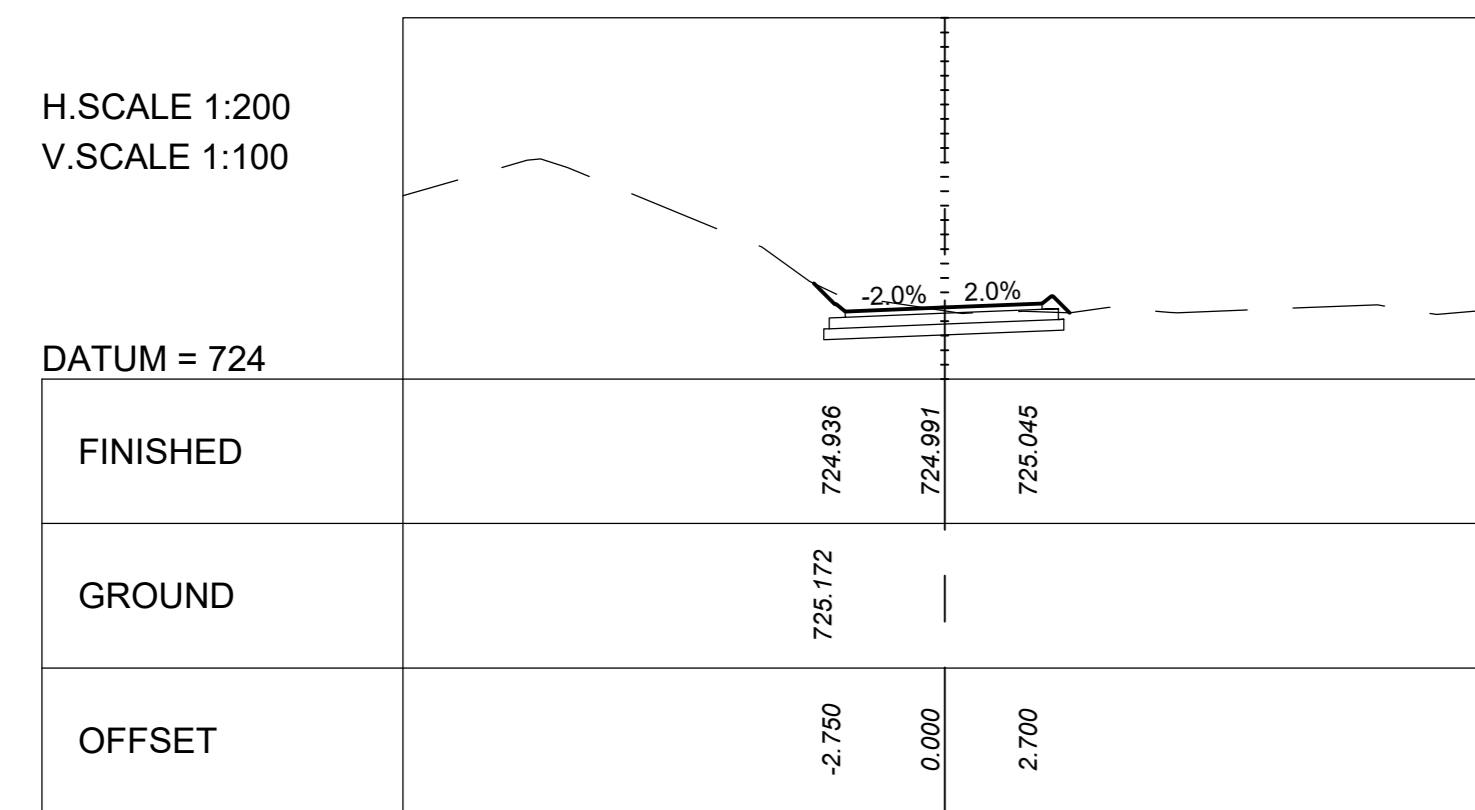
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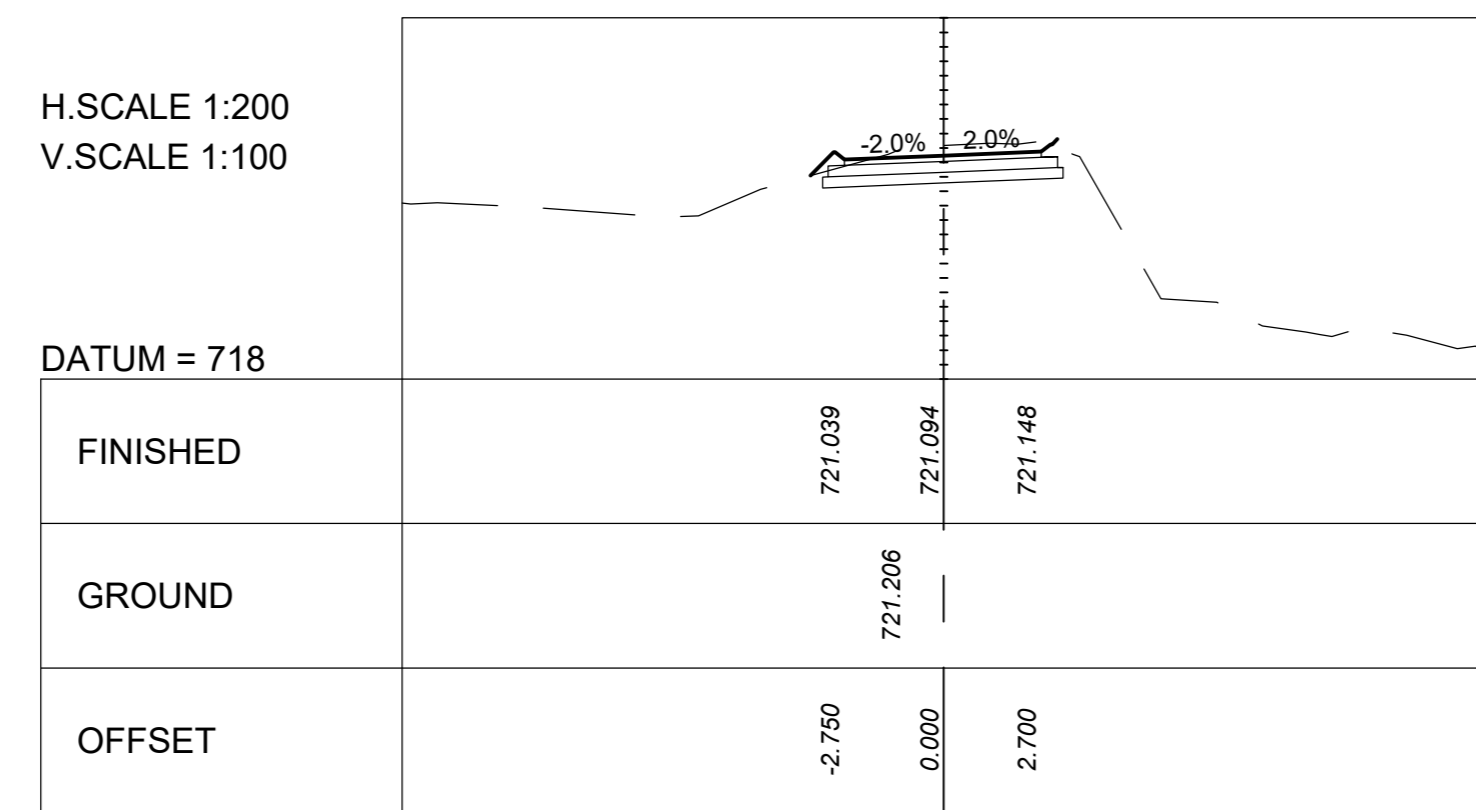
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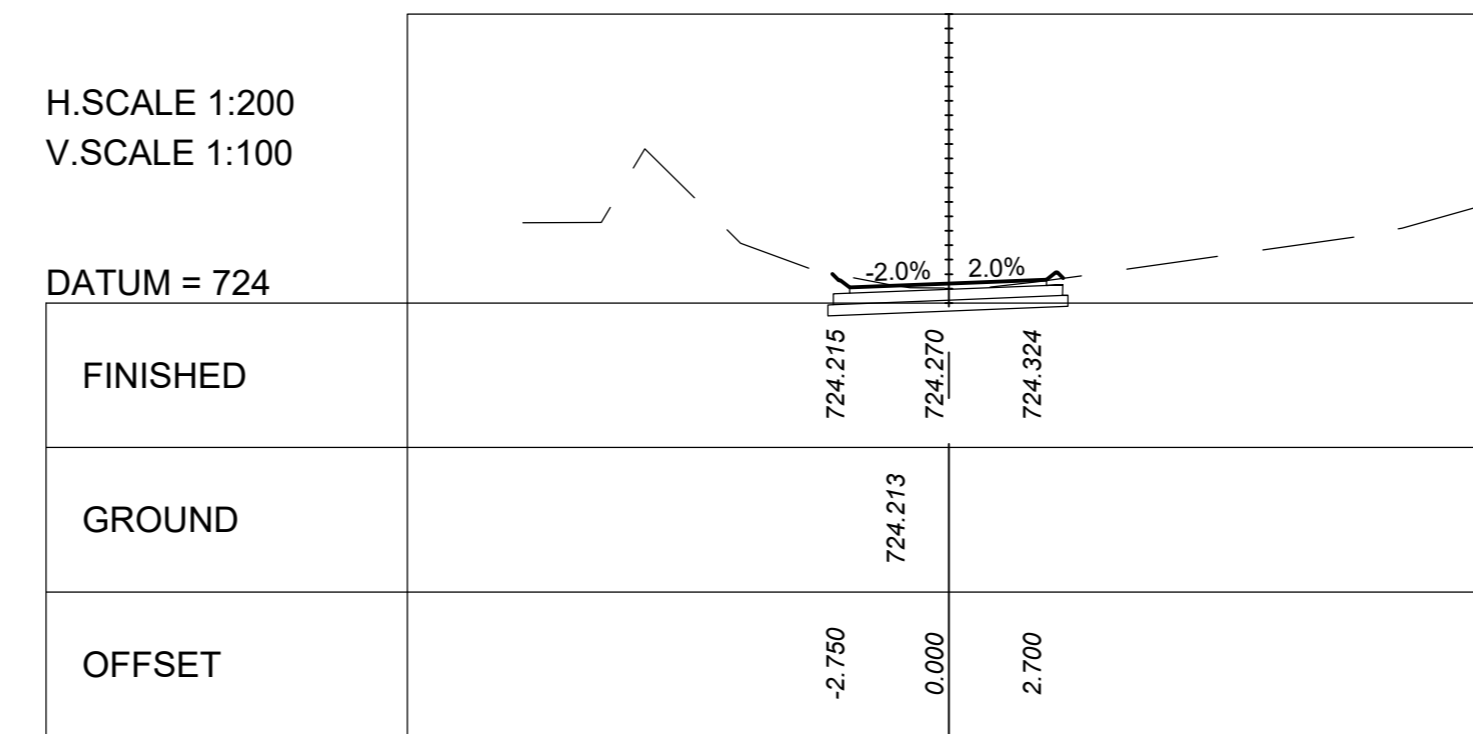
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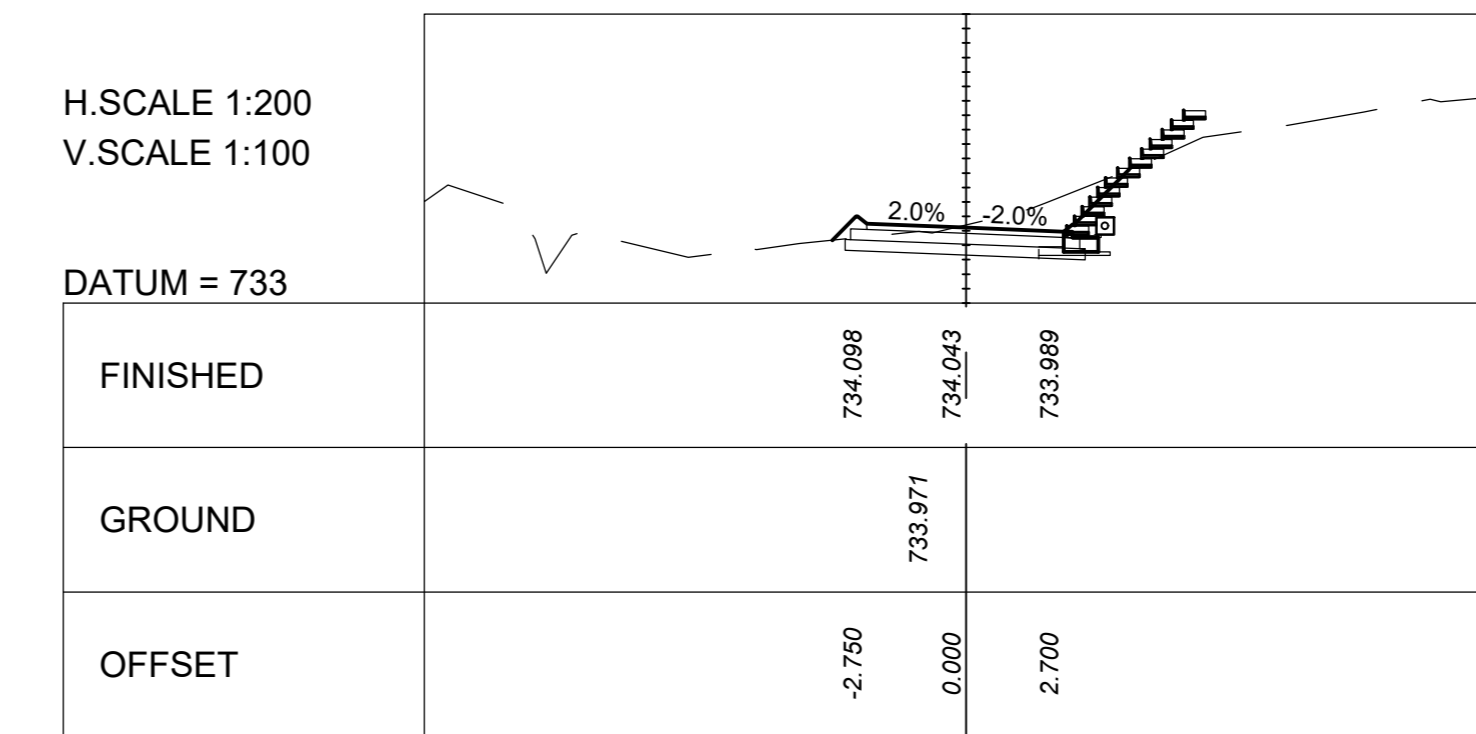
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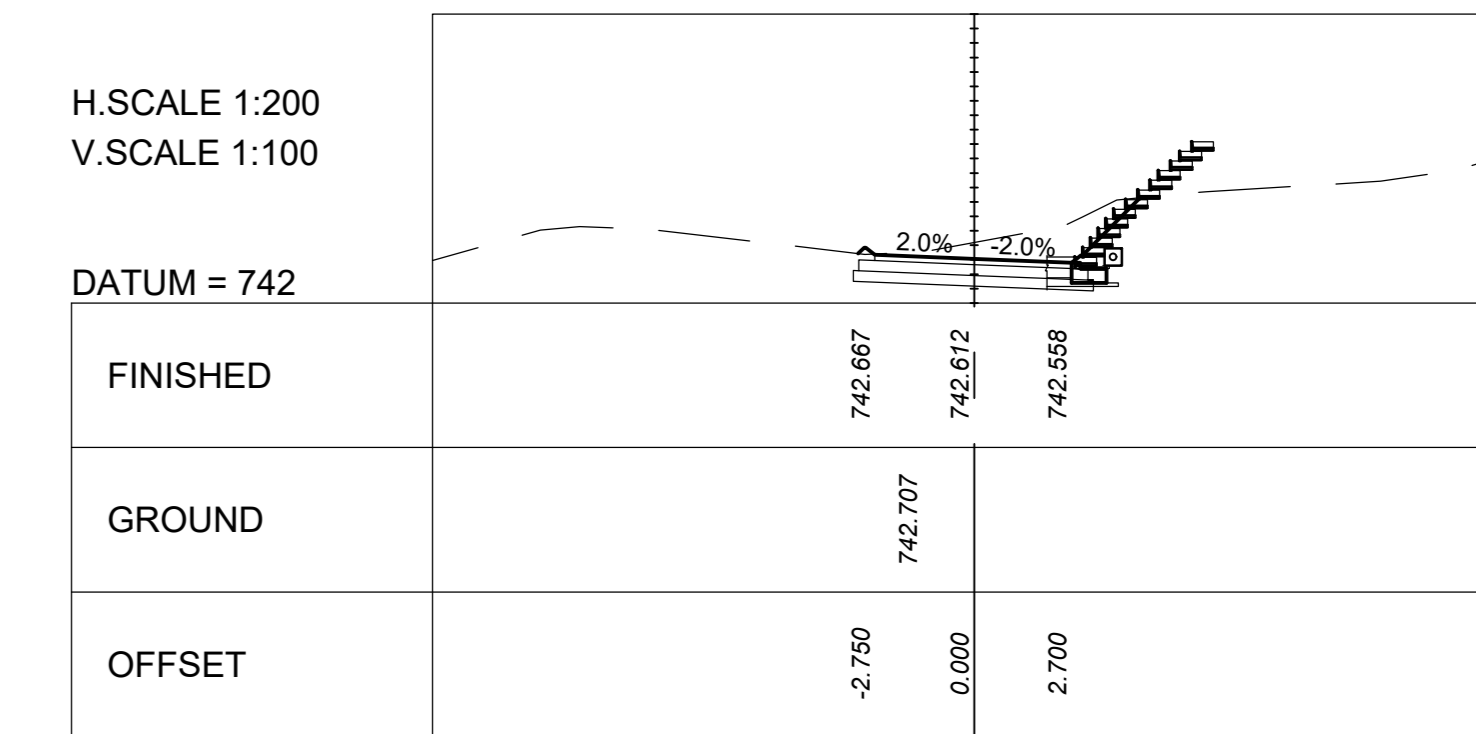
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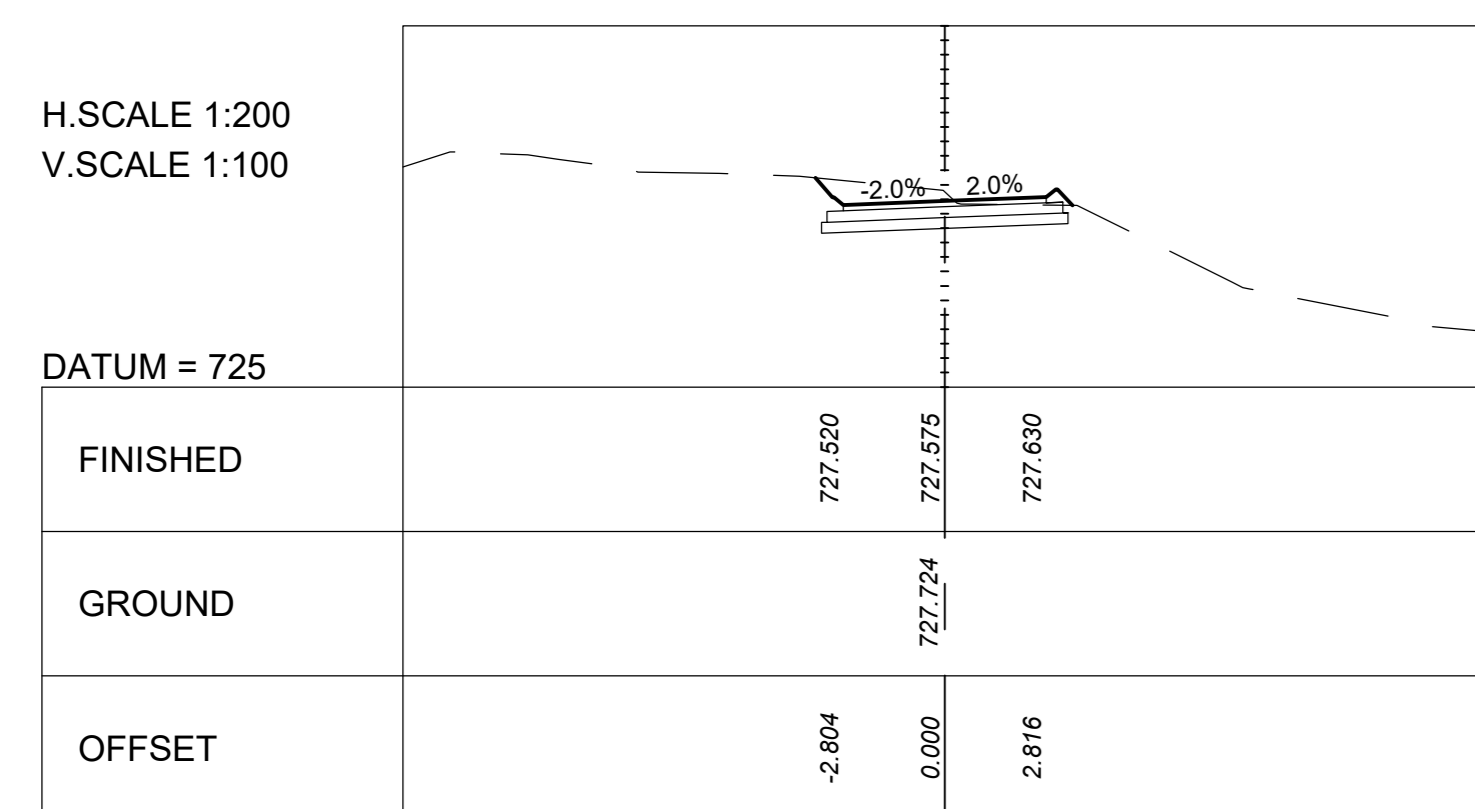
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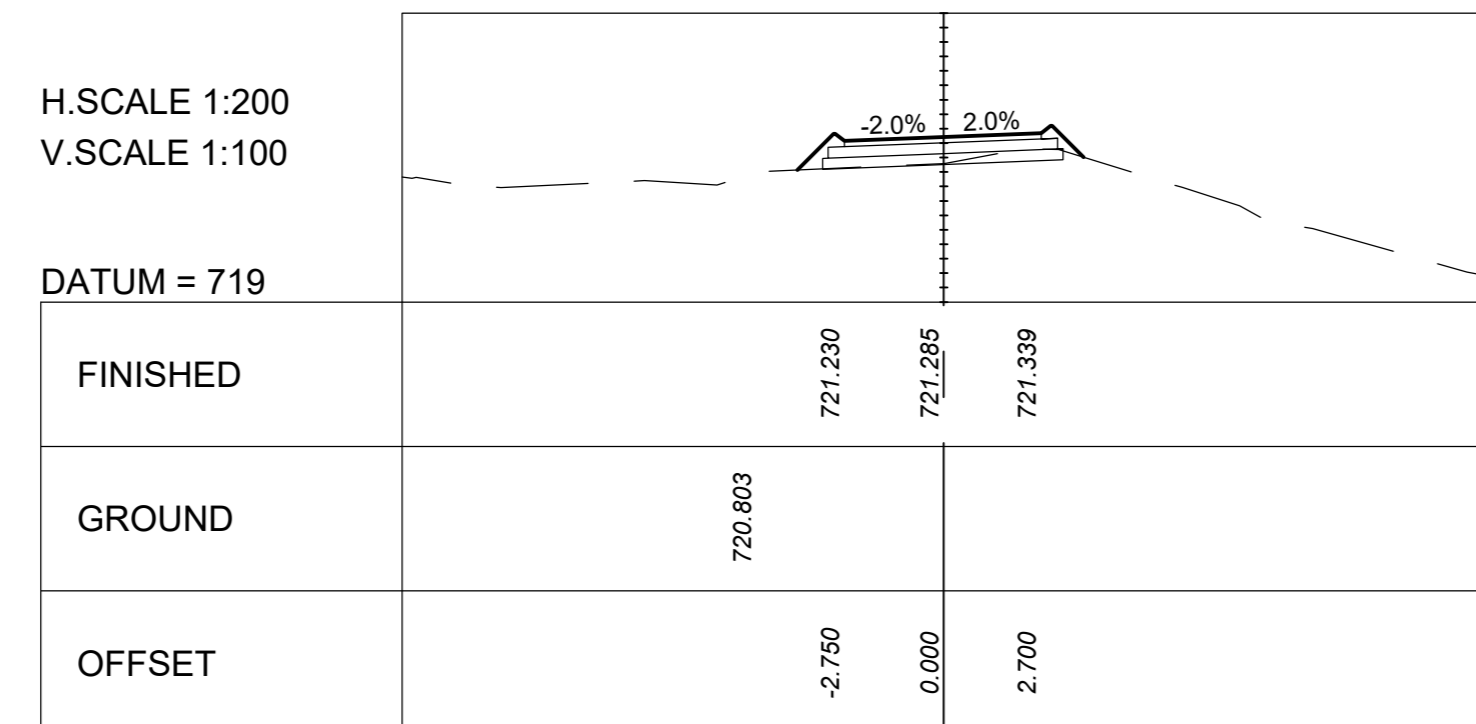
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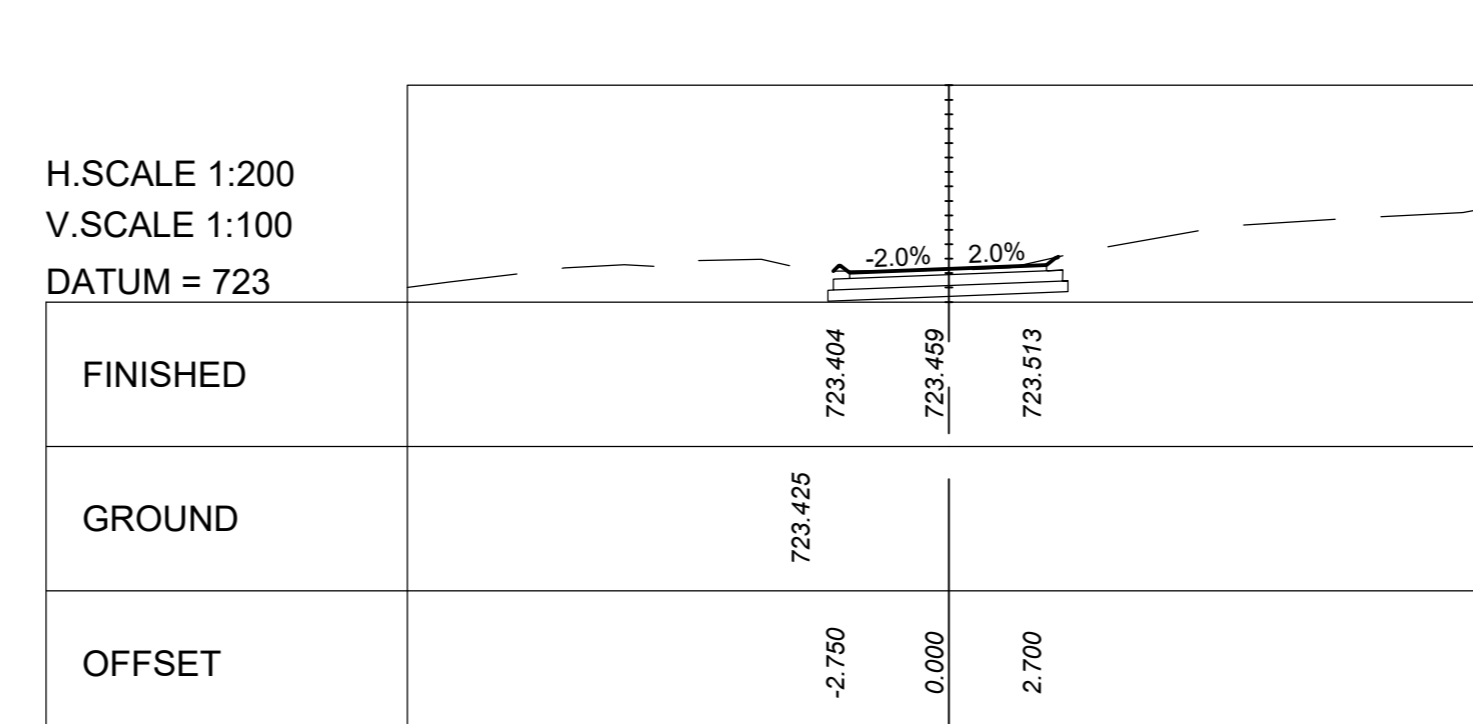
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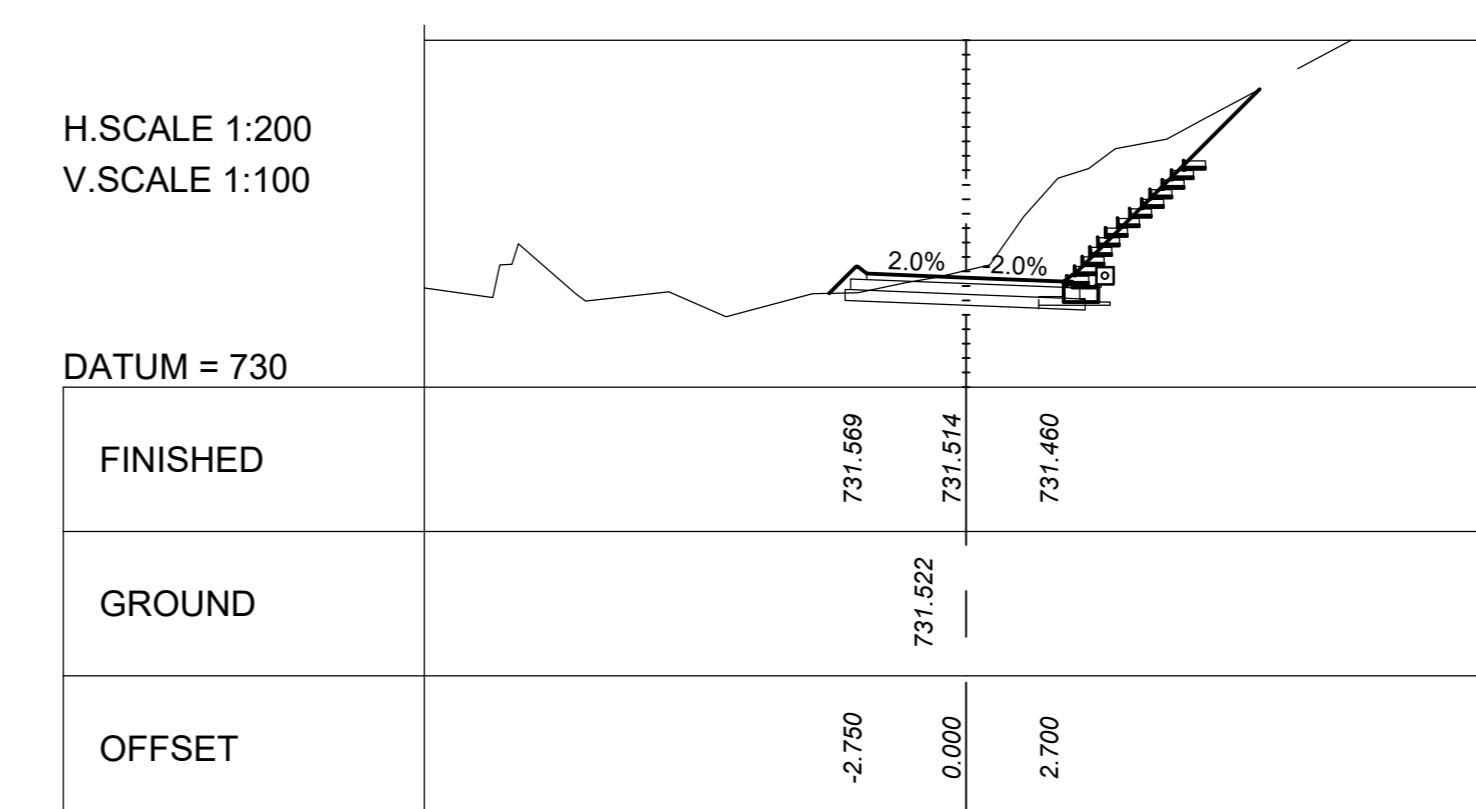
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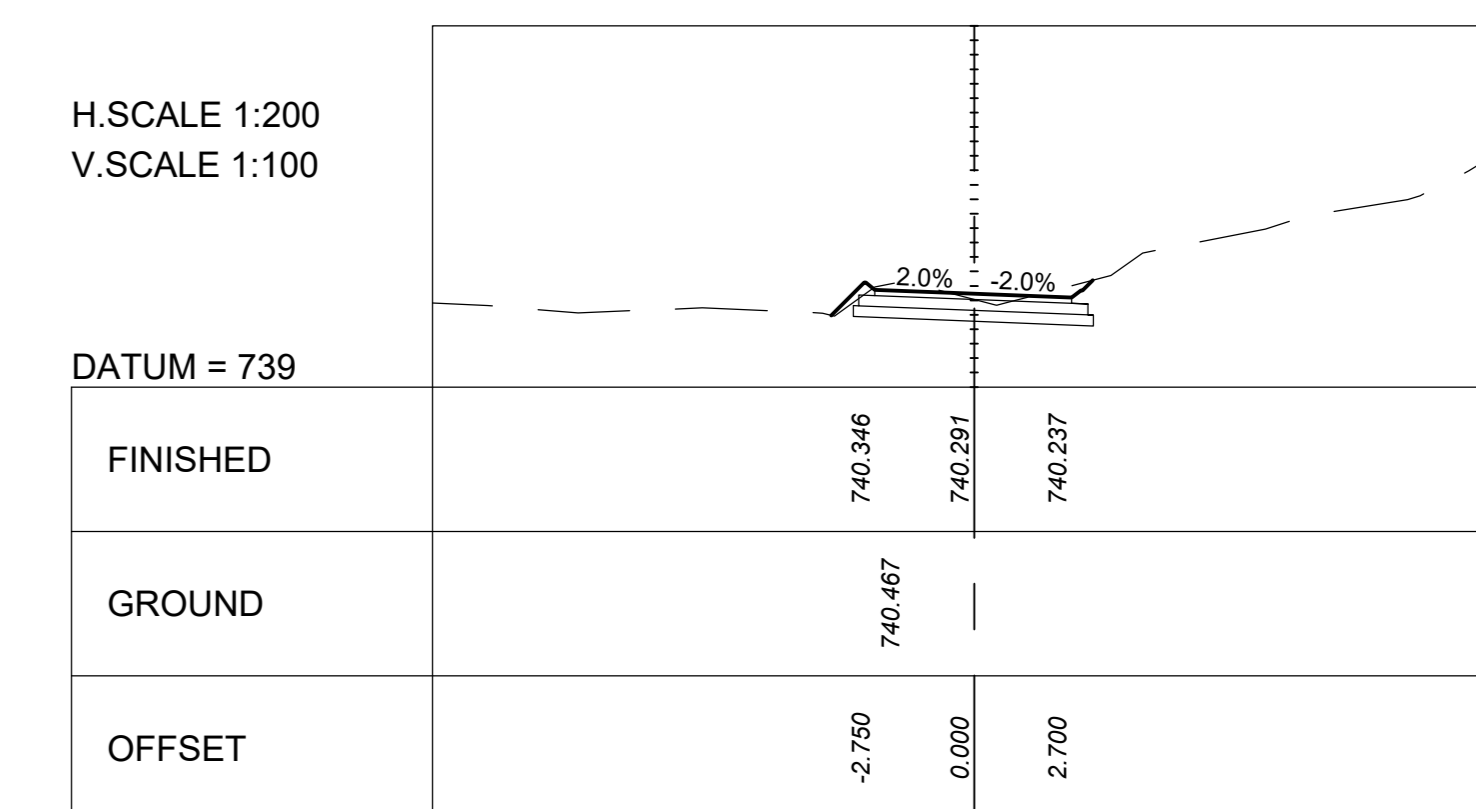
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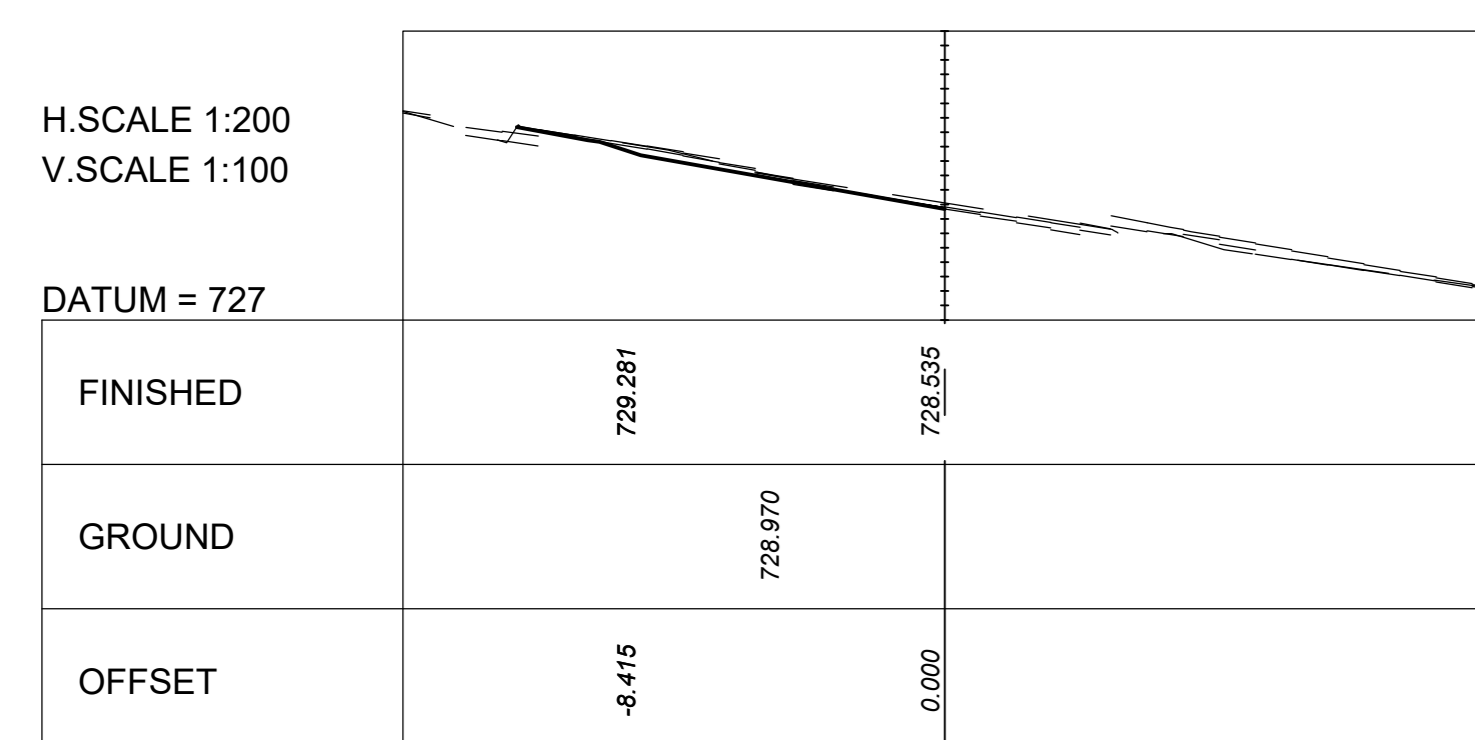
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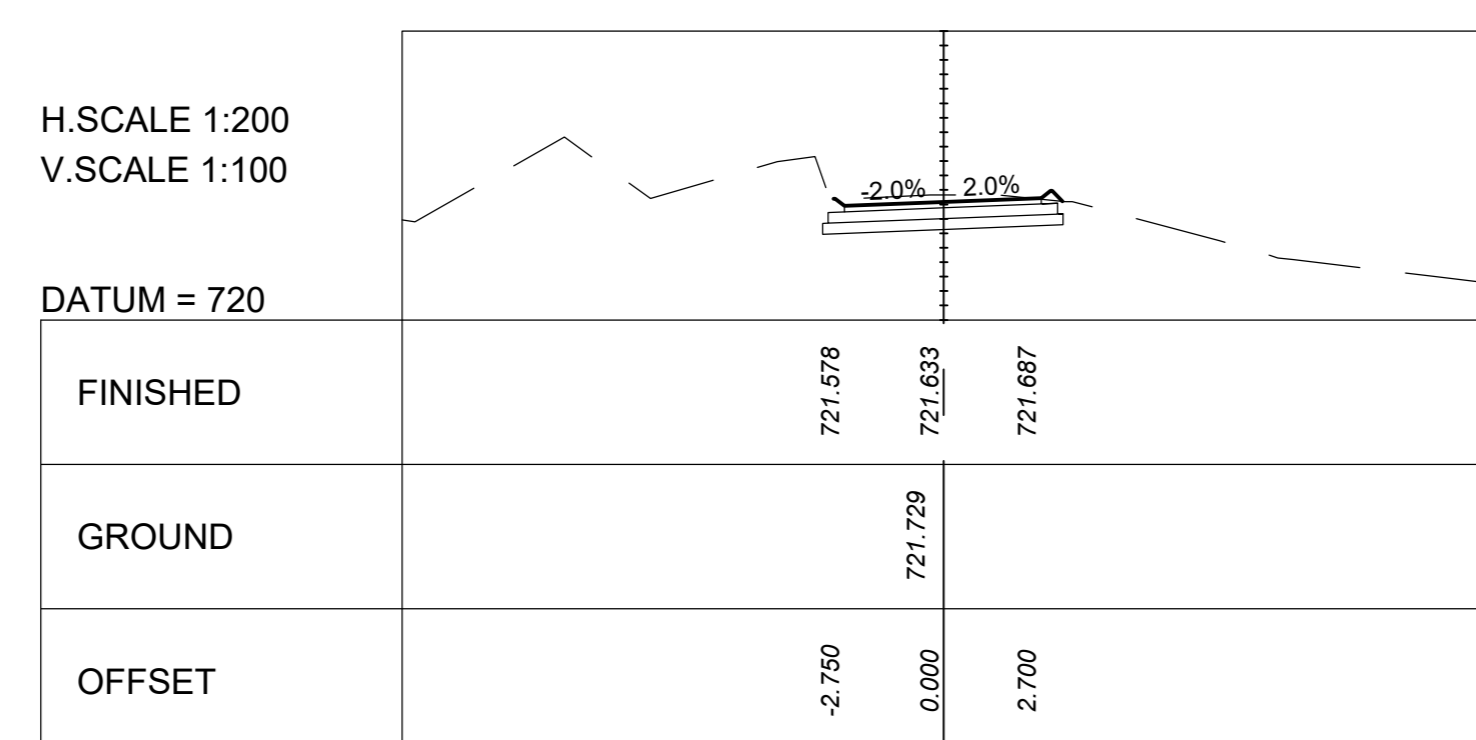
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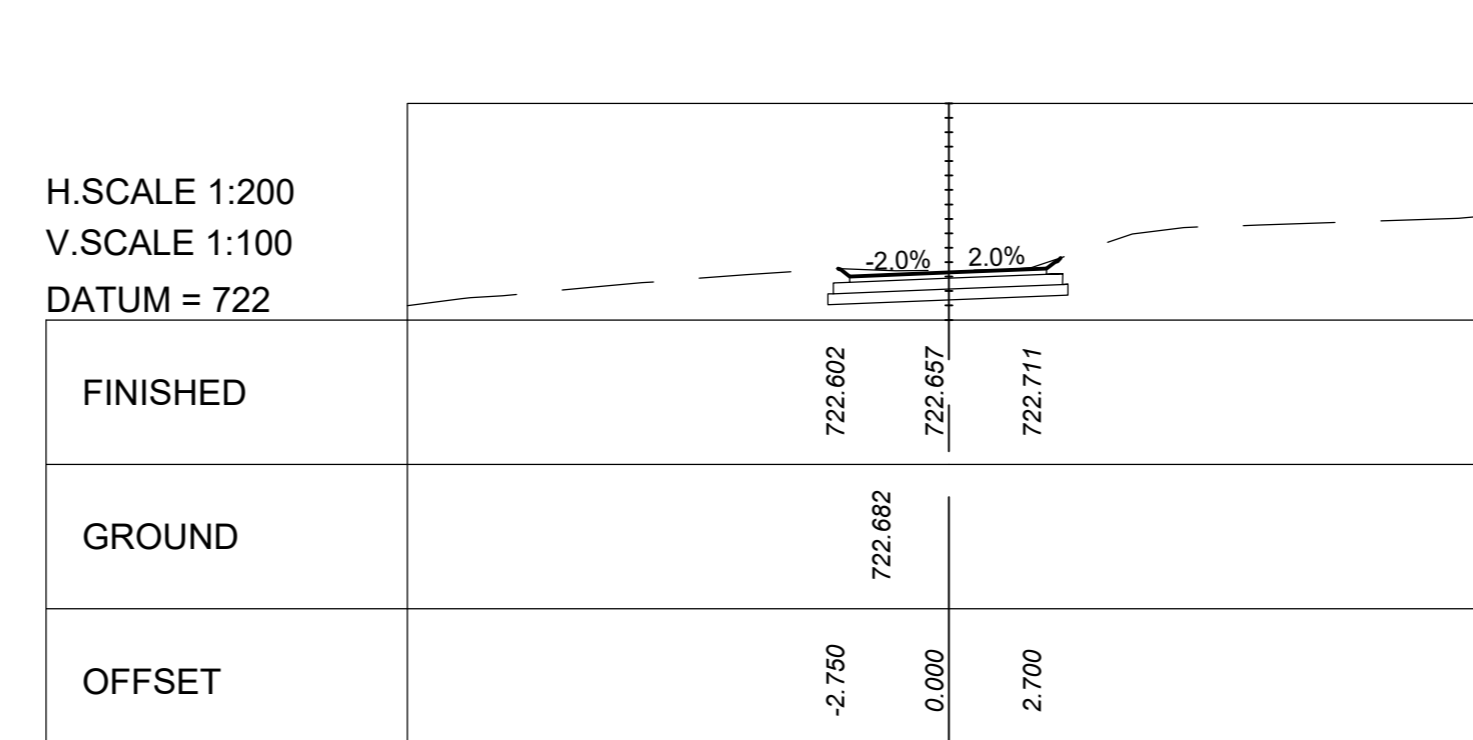
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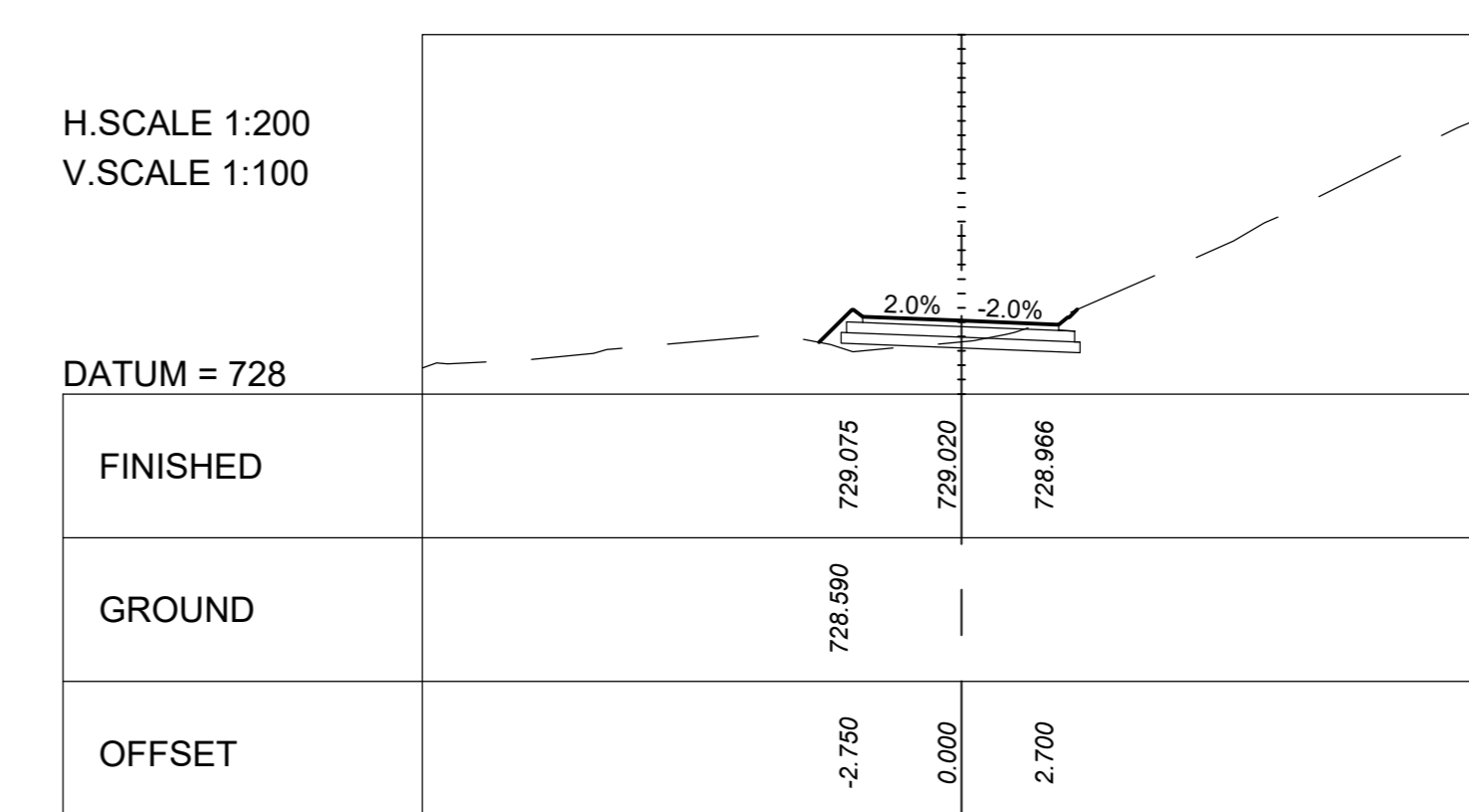
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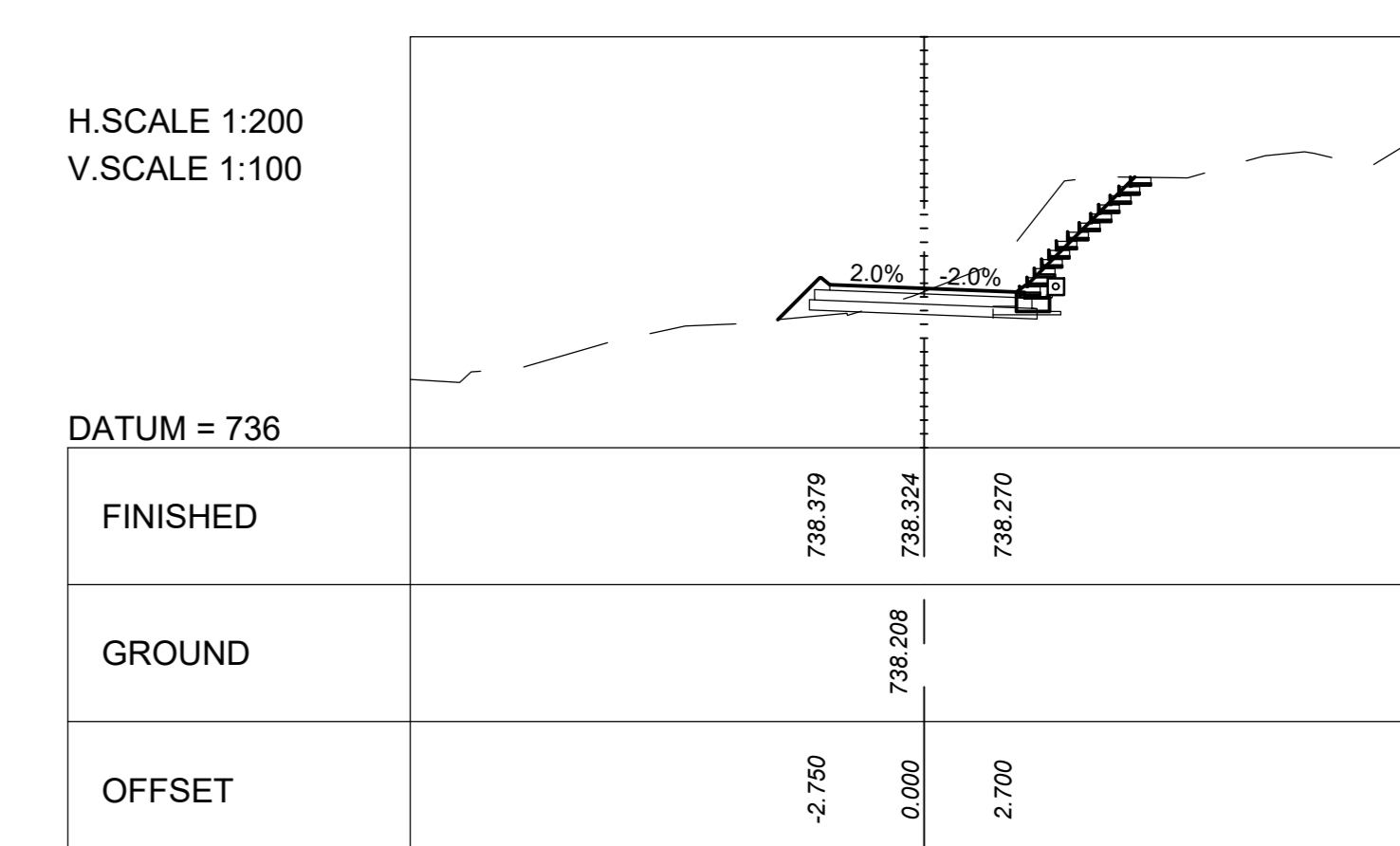
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CHAINAGE 0+200



CHAINAGE 0+300



CHAINAGE 0+380

ISSUED FOR TENDER PURPOSES
THE MASTER HELD AT JUSBEN CONSULTING OFFICE BEARS THE ORIGINAL SIGNATURE OF APPROVAL

Jusben Consulting Engineers P.O. Box 390 Mafemini 1000	REF. NO. N/A	designed FG	DATE CITY OF MBOMBELA
	DATE AS SHOWN	check SC	City of Mbombela 1 Nel Street Mafemini 1201
REVISION	DATE APRIL 2023	check LF	
Drawing number P22001-61-ST2-R-705/A			

GENERAL:	ROAD CONSTRUCTION NOTES:	ROAD CONSTRUCTION NOTES:
1. THE DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND CONTRACT SPECIFICATIONS ANY DISCREPANCIES TO BE BROUGHT TO ENGINEER'S ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.	1. ROAD ALIGNMENT AND LEVELS ARE POSITIONED ACCORDING TO AVAILABLE SURVEY INFORMATION AND MAY REQUIRE ADJUSTMENT AS INSTRUCTED BY THE ENGINEER TO SUIT THE CONDITIONS ON SITE.	1. THE CONTRACTOR SHALL NOT PROCEED TO THE NEXT LAYER BEFORE THE LEVELS AND COMPACTION TEST RESULTS OF THE PRECEDING LAYER HAVE BEEN APPROVED.
2. CONTRACTOR TO KEEP A FULL SET OF DRAWINGS ON SITE.	2. THE CONTRACTOR IS TO CONFIRM ALL SETTING OUT COORDINATES AND DATUMS PRIOR TO CONSTRUCTION COMMENCING.	2. PRIOR TO EMULATION OF SUBBASE LAYER, THE CONTRACTOR MUST SUBMIT PROPOSED STABILISATION DESIGN FOR APPROVAL.
3. CONTRACTOR TO VERIFY ALL LEVELS AND DIMENSIONS ON SITE.	3. THE CONTRACTOR SHALL ENSURE THAT ALL MATERIALS ARE STOCKED AND STORED SUITABLY.	3. THE CONTRACTOR SHALL ENSURE THAT ALL MATERIALS ARE STOCKED AND STORED SUITABLY.
4. SCALING OF DRAWINGS IS NOT PERMITTED. FIGURED DIMENSIONS ONLY TO BE USED.	4. THE FOLLOWING TEST RESULTS ARE TO BE PROVIDED:-	4. THE FOLLOWING TEST RESULTS ARE TO BE PROVIDED:-
5. LARGE SCALE DETAILS TO BE USED WHERE AVAILABLE.	5. ROAD MATERIAL INDICATIONS (CMT) FOR ALL IMPORTED MATERIALS TO BE PROVIDED PRIOR TO WORK COMMENCING.	5. ROAD MATERIAL INDICATIONS (CMT) FOR ALL IMPORTED MATERIALS TO BE PROVIDED PRIOR TO WORK COMMENCING.
6. CONTRACTOR TO IDENTIFY AND EXPOSE ALL UNDER GROUND SERVICES ON SITE WHERE RELEVANT.		
7. CONSTRUCTION IS TO BE IN ACCORDANCE WITH ALL RELEVANT DRAWINGS, CONTRACT SPECIFICATIONS OR SABS 1100.		
8. SHOULD THE ENGINEER BE REQUIRED ON SITE 24 HOURS NOTICE IS REQUIRED.		

PROJECT TITLE	PAVING OF ROAD FROM MAFEMINI TO NTIBANE AT LEHAWU WARD 40
DRAWING TITLE	ROAD CROSS SECTIONS SHEET 1 OF 4
EXECUTIVE OFFICER	AS SHOWN
SCALE	A
DATE	2023/04/20
ISSUED FOR TENDER PURPOSES	SC LF
ADDITIONAL APPROVALS	
BY	
CHKD	
FILE NO.	

- GENERAL NOTES:**
1. THE DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS.
 2. ANY DISCREPANCIES & AMBIGUITIES ON THE ENGINEERS DRAWINGS TO BE REPORTED TO THE CONSULTANT IMMEDIATELY.
 3. LEVELS AND DIMENSIONS TO BE CHECKED BEFORE ANY WORK COMMENCES. DIMENSIONS MUST NOT BE SCALED.

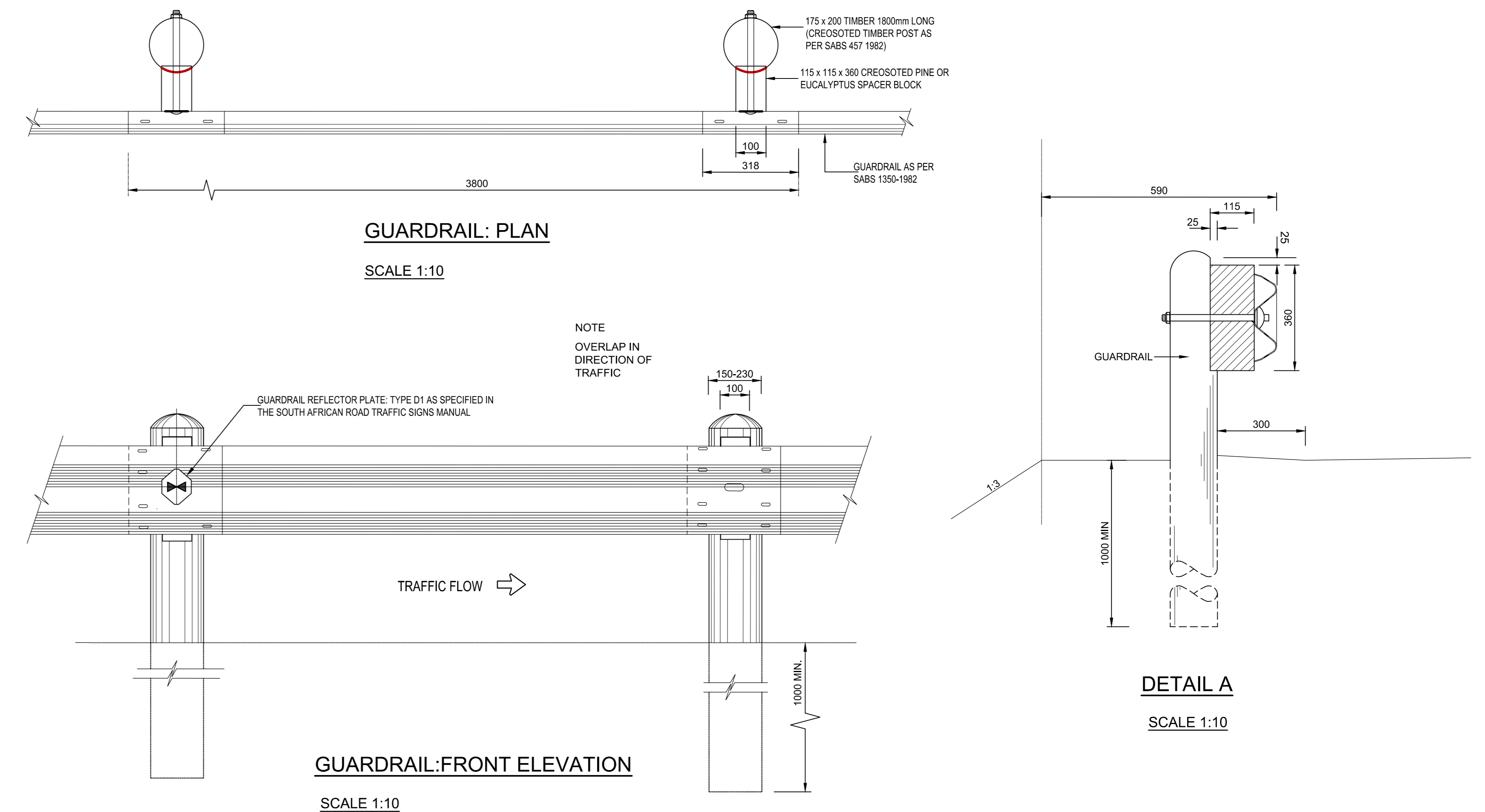
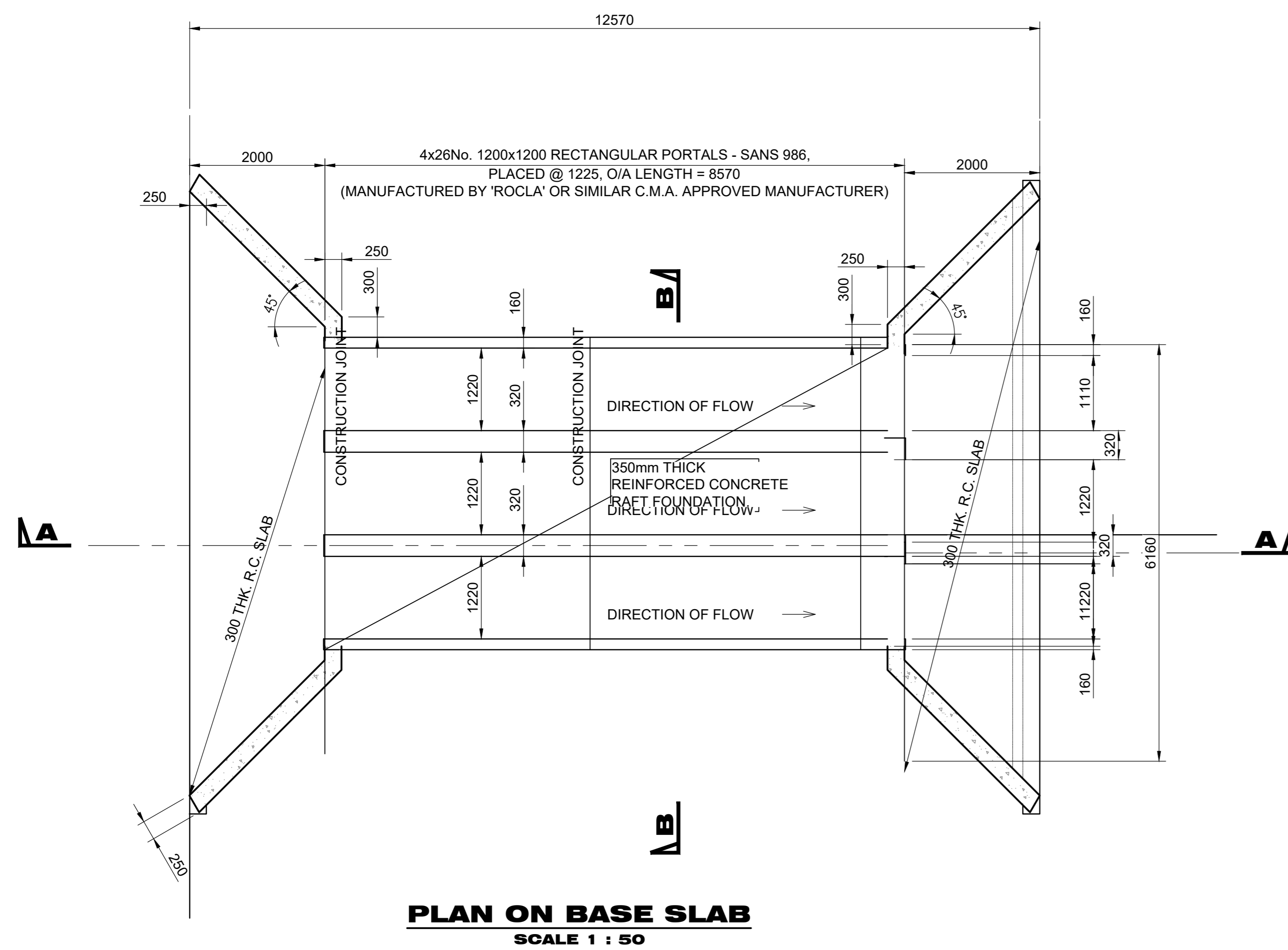
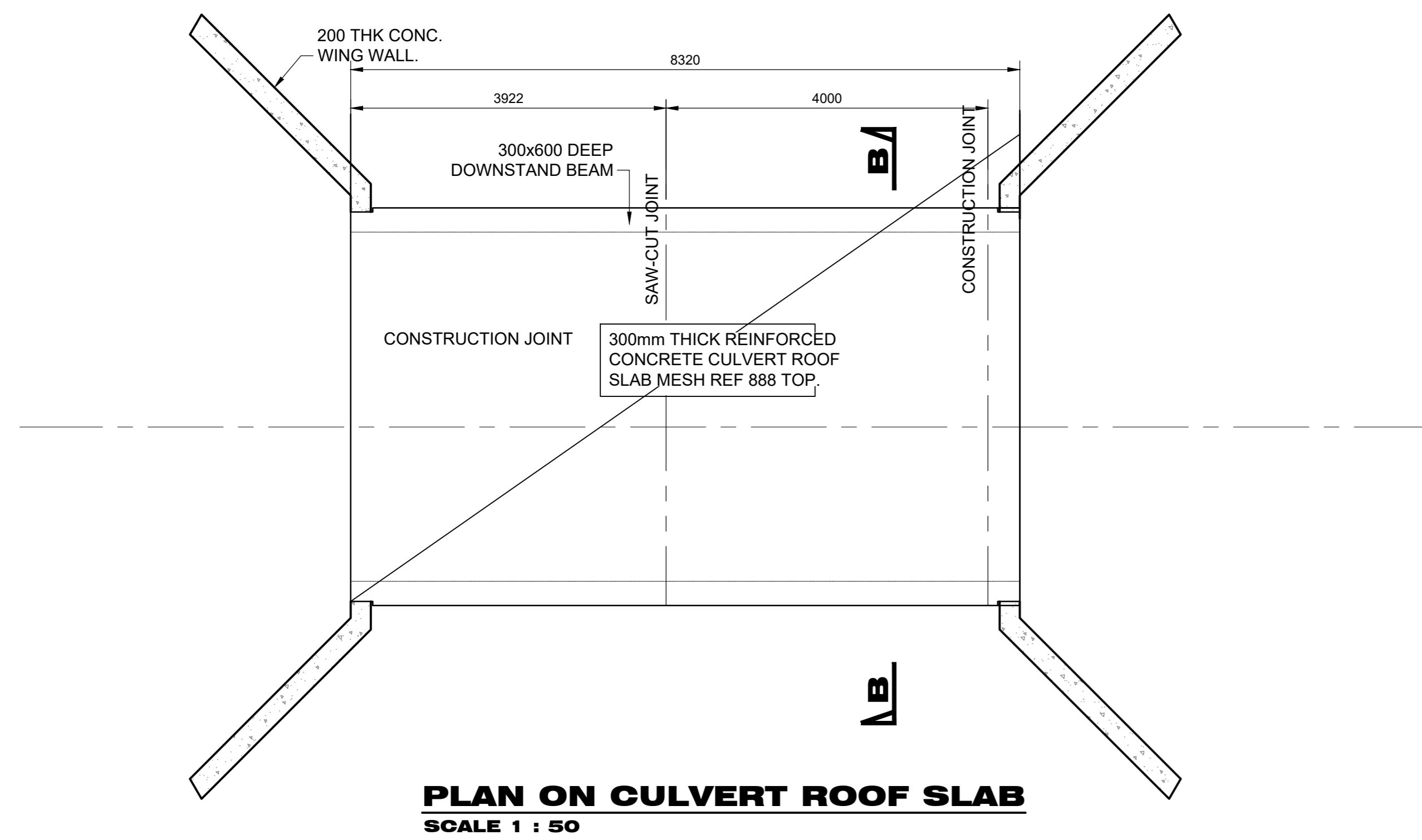
- CONCRETE NOTES:**
1. CONCRETE LEVELS AND DIMENSIONS DO NOT INCLUDE FINISHES.
 2. CHARACTERISTIC COMPRESSIVE STRENGTH OF CONCRETE TO BE:
 - BLINDING 10 MPa
 - BRICKWORK FOOTING 20 MPa
 - COLUMN BASES 20 MPa
 - BEAMS AND SUSPENDED SLABS 20 MPa
 - RETAINING WALLS 20 MPa
 - PLINTHS 20 MPa
 - SURFACE BEDS 20 MPa
 - COLUMNS 30 MPa
 3. ALL BASES TO HAVE DOWN BLENDING LAYER.
 4. CONCRETE CONSTRUCTION AND QUALITY CONTROL TO BE IN ACCORDANCE WITH SABS 1506-G.
 5. CONCRETE CURE TESTING TO BE IN ACCORDANCE WITH SABS METHOD 801. AT LEAST ONE SET OF CUBES SHALL BE TAKEN FROM EACH DAY'S CASTING AND FROM AT LEAST EVERY 50m OF CONCRETE OF EACH GRADE PLACED.
 6. NO CONCRETE TO BE PLACED WITHOUT ENGINEER'S APPROVAL.
 7. CONCRETE FINISHES TO BE:
 - SURFACE BED POWER FLOAT
 - SUSPENDED SLABS TOP POWER FLOAT
 - BOTTOM OFF SHUTTER
 - COLUMNS OFF SHUTTER
 - BEAMS OFF SHUTTER
 8. BEAM AND COLUMN EDGES TO HAVE 20x20 CHAMFER.
 9. BEAM SIZES DENOTED AS WIDTH x DEPTH.
 10. ONLY APPROVED COVER BLOCKS TO BE USED.
 11. ALL FOUNDATIONS TO BE INSPECTED BY ENGINEER BEFORE CASTING.
 12. REMOVAL OF FORMWORK (IN DAYS):

Type of structural member or formwork	Portland cement & Portland cement 15		Portland cement 20	
	Hot or normal	Cold	Hot or normal	Cold
A. Beams, sides, walls & unbraced columns	6	5.5	7	4
B. Slabs with props left underneath	4	7	4	10
C. Slabs with props left underneath & not a finished floor construction	7	12	10	17
D. Slab props including columns	10	17	9	17
E. Beams props	14	21	12	21

GENERAL NOTES
CONSTRUCTION TO BE IN ACCORDANCE WITH THE SPECIFICATION AND THIS DRAWING.

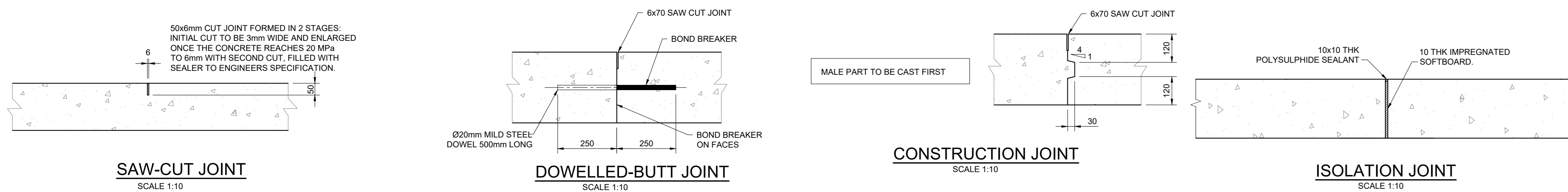
CONCRETE CLASS	STRENGTH in MPa at 28 days	MIN CEMENT CONTENT Kg/m ³	STONE mm
40/19	40	485	20
30/19	30	395	20
25/19	25	350	20
20/19	20	300	20
MEMBER	CONCRETE CLASS	Internal cover mm	Exposed cover mm
Foundations/Pile caps	30/19	50	50
Beams			
Slabs / surface bed	30/19	50	50
Columns / Plinth			
Blinding	10/19		

- NOTES**
1. ALL EXPOSED CORNERS TO HAVE 20x20 mm CHAMFER U.O.N.
 2. CONCRETE TO HAVE WOODFLOATED FINISH U.O.N.
 3. FOUNDING MATERIAL TO BE APPROVED BY ENGINEER BEFORE CASTING ANY CONCRETE.
 4. ALL FOUNDATIONS TO HAVE BLINDING 60mm MIN.
 5. MINIMUM GROUND BEARING CAPACITY 250KPa.



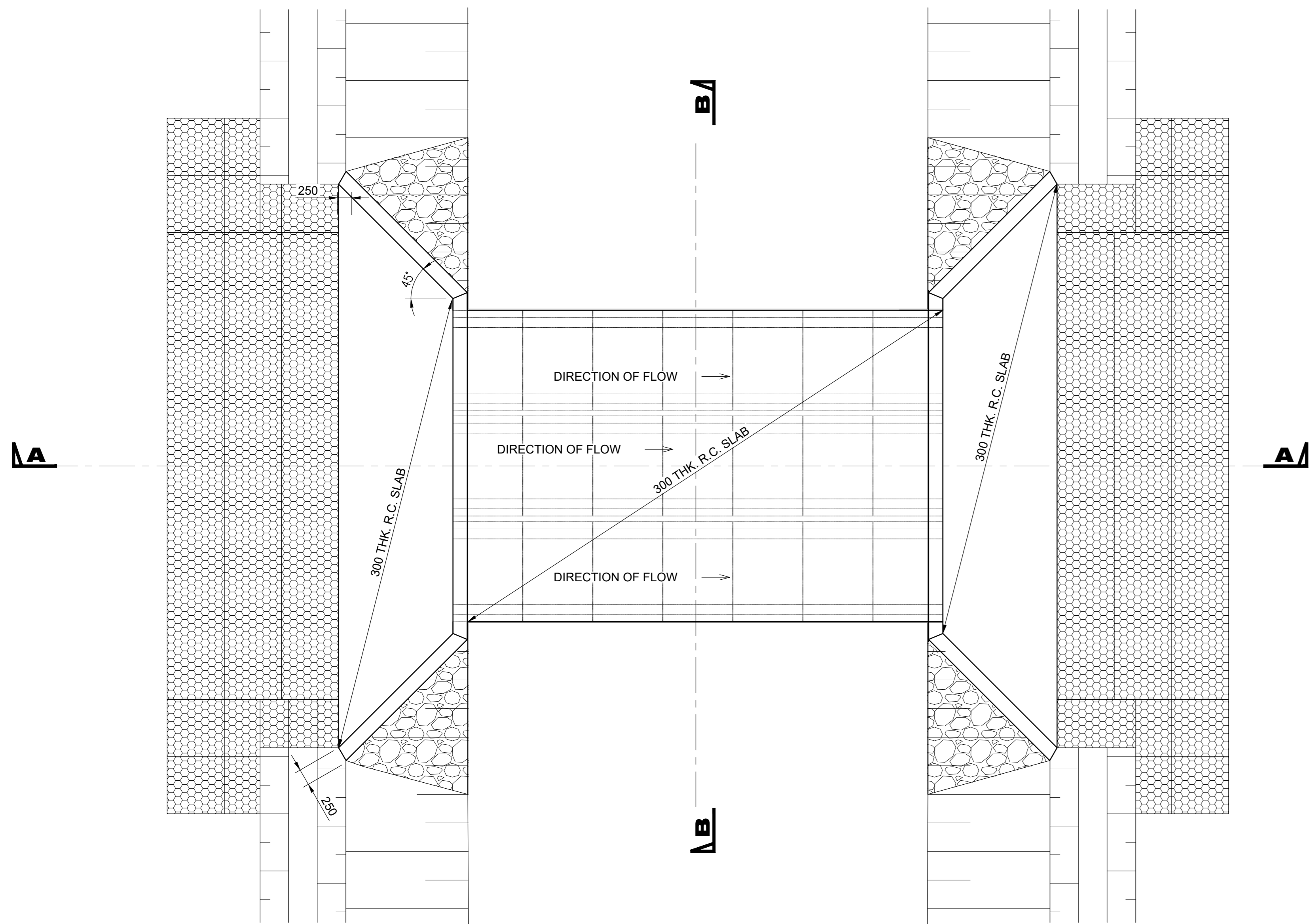
- SPECIFICATIONS:**
1. BOLT: HIGH TENSILE STEEL 16mm [
 2. WASHER: STEEL SPRING 10mm THICK.
 3. SPACER/BLOCK: GUM OR PINE TREATED WITH CREOSOTE ACCORDING TO ANY METHOD IN SABS 05.
 4. POLE: 150mm [TO 230mm] GUM OR PINE TREATED WITH CREOSOTE ACCORDING TO ANY METHOD IN SABS 05.
 5. ALL GUARDRAILS SHALL BE GALVANIZED AS SPECIFIED (NOT TO BE PAINTED).
 6. ALL GUARDRAILS SHOULD BE PLACED AT MINIMUM 1500mm FROM ANY STRUCTURE.

ISSUED FOR TENDER PURPOSES

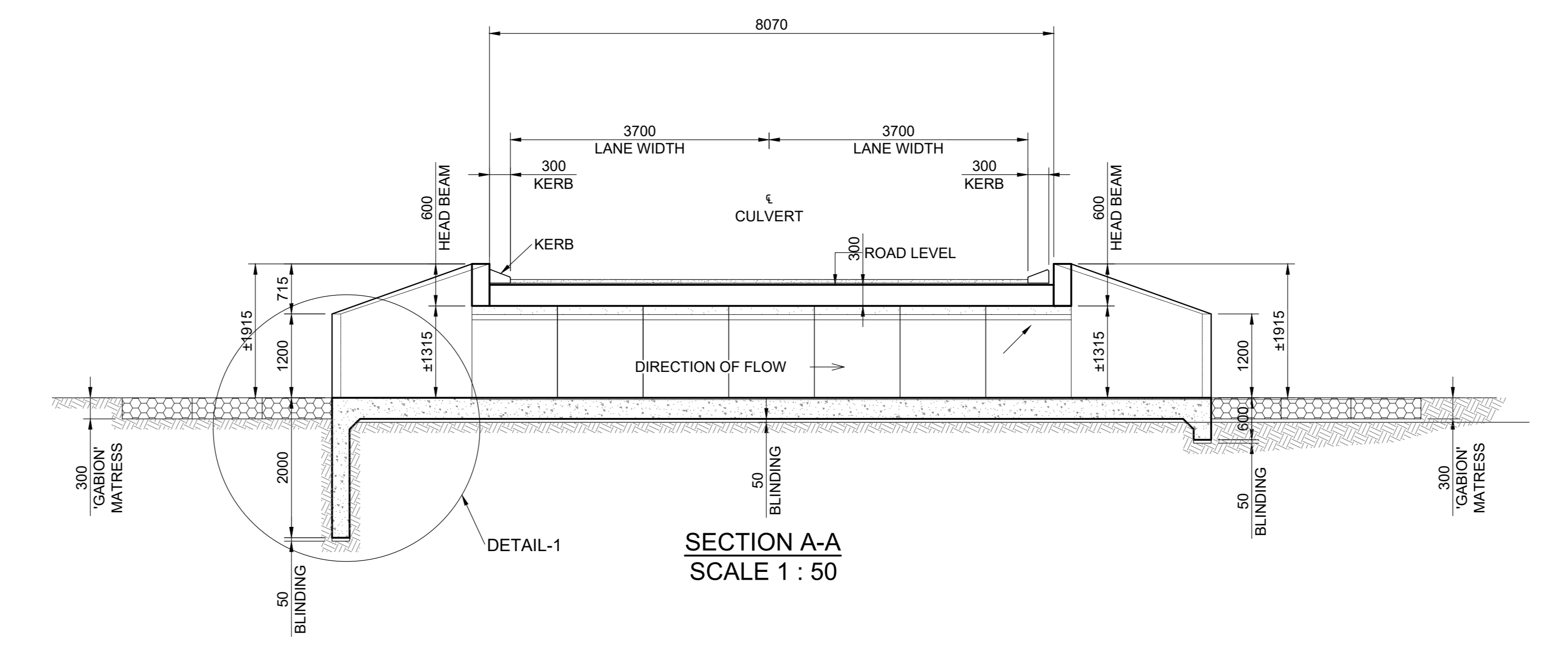


- GENERAL NOTES:**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S DRAWINGS.
 - ANY DISCREPANCIES & AMBIGUITIES ON THE ENGINEER'S DRAWINGS TO BE REPORTED TO CONSULTING OFFICE IMMEDIATELY.
 - LEVELS AND DIMENSIONS TO BE CHECKED BEFORE ANY WORK COMMENCES. DIMENSIONS MUST NOT BE SCALED.
- CONCRETE NOTES:**
- CONCRETE LEVELS AND DIMENSIONS DO NOT INCLUDE FINISHES.
 - CHARACTERISTIC 28 DAY COMPRESSIVE STRENGTH OF CONCRETE TO BE:
 - BLINDING 10 MPa
 - BRICKWORK FOOTING 20 MPa
 - COLUMN BASES 25 MPa
 - BEAMS AND SUSPENDED SLABS 25 MPa
 - RETAINING WALLS 25 MPa
 - PLINTHS 25 MPa
 - SURFACE BEDS 30 MPa
 - COLUMNS 30 MPa
 - ALL BASES TO HAVE 50mm BLINDING LAYER.
 - CONCRETE CONSTRUCTION AND QUALITY CONTROL TO BE IN ACCORDANCE WITH SABS 1000.
 - CONCRETE CURE TESTING TO BE IN ACCORDANCE WITH SABS METHOD 801 AT LEAST ONE SET OF COBBES SHALL BE TAKEN FROM EACH DAY CASTING AND FROM AT LEAST EVERY 50m OF CONCRETE OF EACH GRADE PLACED.
 - NO CONCRETE TO BE PLACED WITHOUT ENGINEER'S APPROVAL.
 - CONCRETE FINISHES TO BE:
 - SURFACE BED POWER FLOAT
 - SUSPENDED SLAB TOP POWER FLOAT
 - BOTTOM OFF SHUTTER
 - COLUMNS OFF SHUTTER
 - BEAMS OFF SHUTTER
 - BEAM AND COLUMN EDGES TO HAVE 25° CHAMFER.
 - BEAM SIZES INDICATED AS WIDTH x DEPTH.
 - ONLY APPROVED COVER BLOCKS TO BE USED.
 - ALL FOUNDATIONS TO BE INSPECTED BY ENGINEER BEFORE CASTING.
 - REMOVAL OF FORMWORK (IN DAYS):

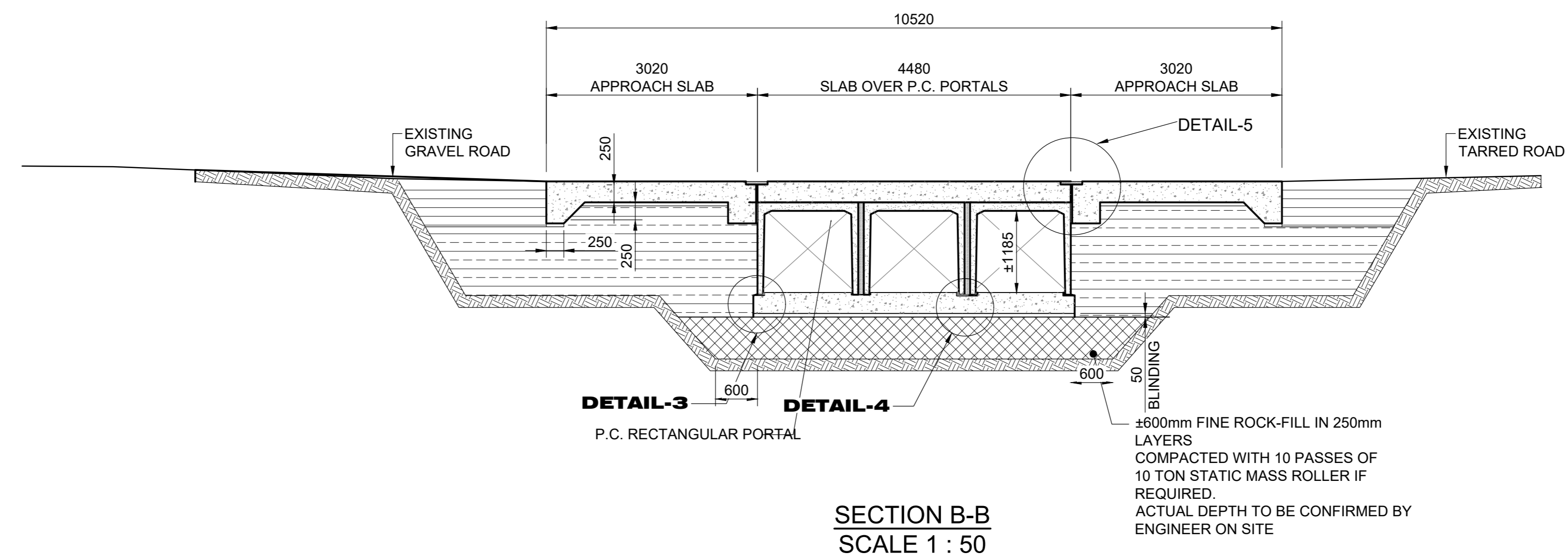
Type of structural member or formwork	Portland cement & normal	Portland cement 50	High or normal	Cold
a. Beam sides, walls & unbraced columns	0.75	1.5	2	4
b. Slabs with props left in-situ	4	7	4	10
c. Beams with props left in-situ & ribs of a fixed floor construction	7	12	10	17
d. Slab props including carcases	10	17	9	17
e. Beam props	14	21	12	21



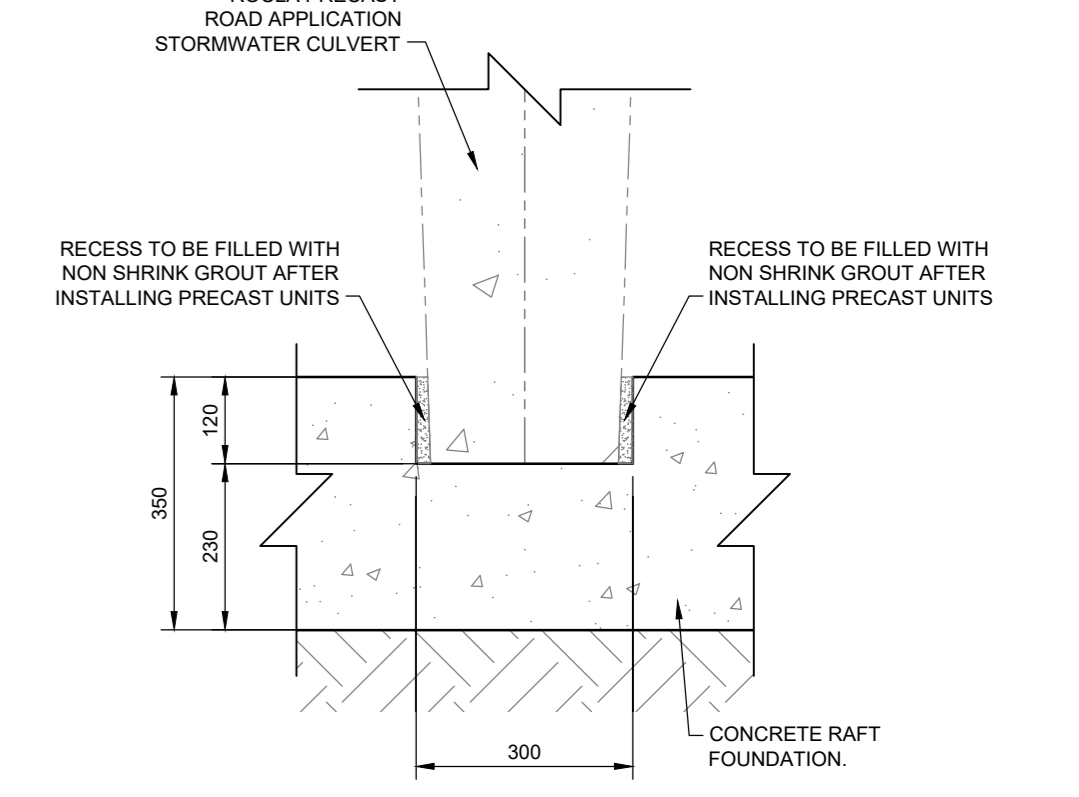
CULVERT PLAN
SCALE 1 : 50



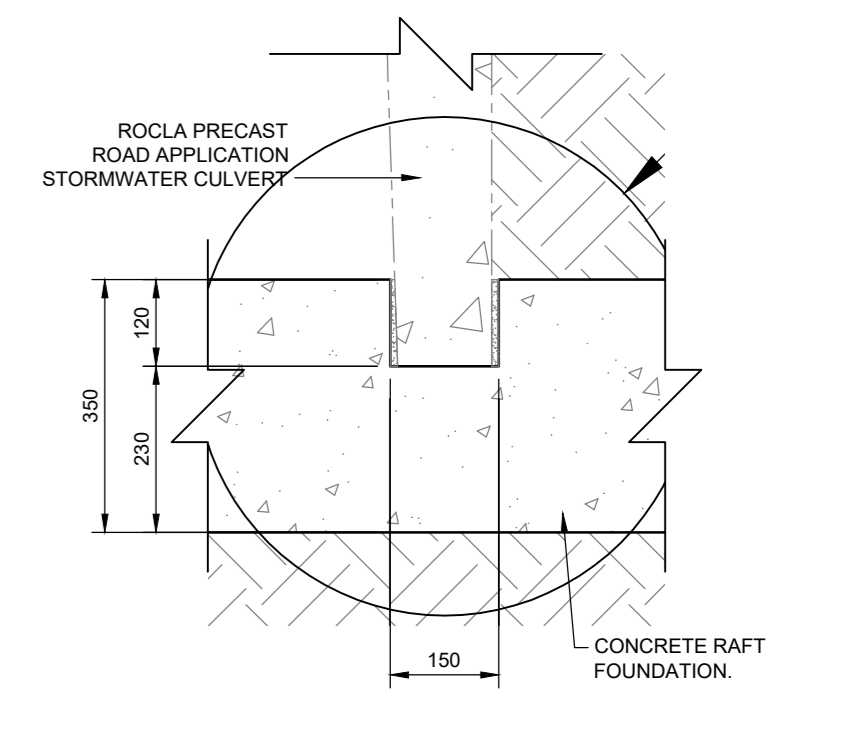
SECTION A-A
SCALE 1 : 50



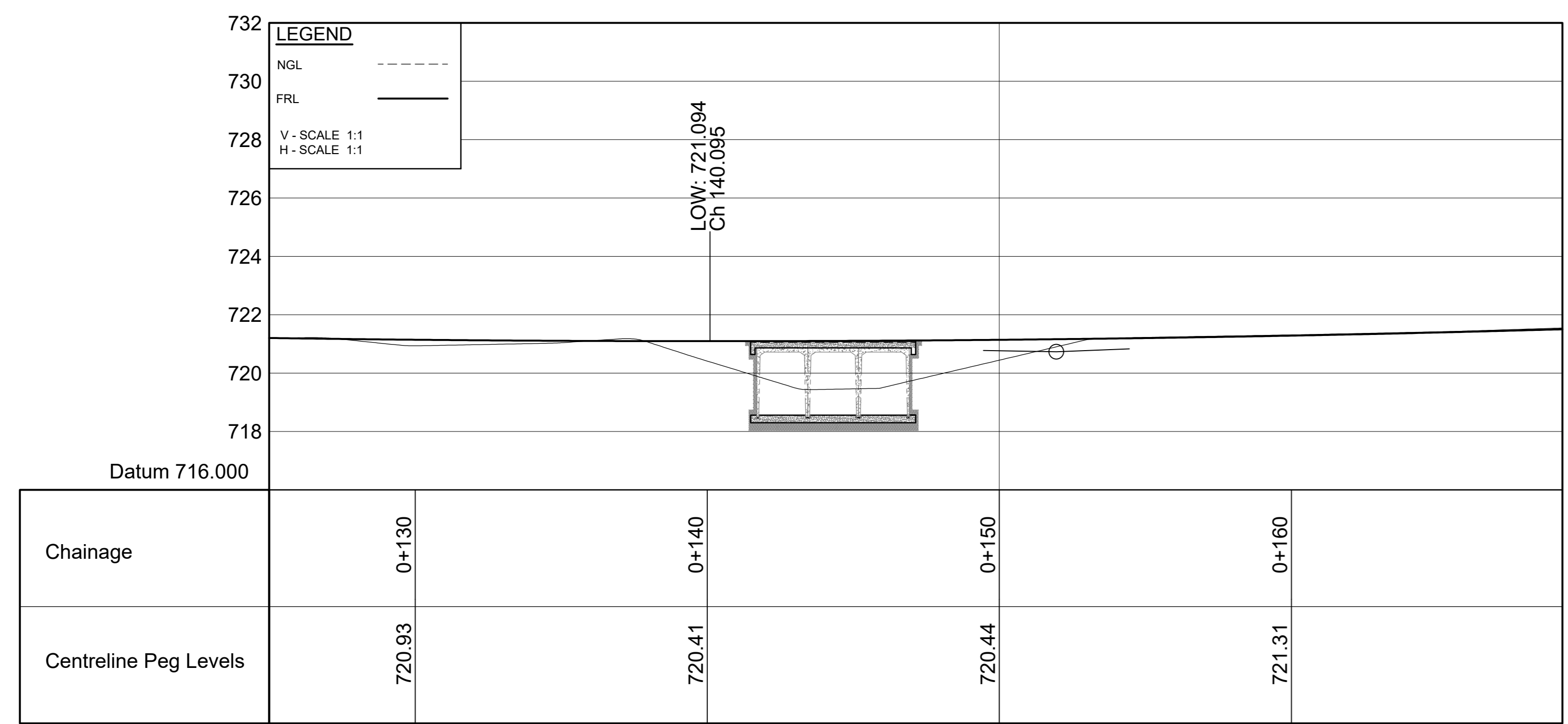
SECTION B-B
SCALE 1 : 50



DETAIL 4
SCALE 1:10



DETAIL 3
SCALE 1:10



Long section for 0+110 to 0+180

GENERAL NOTES

CONSTRUCTION TO BE IN ACCORDANCE WITH THE SPECIFICATION AND THIS DRAWING.

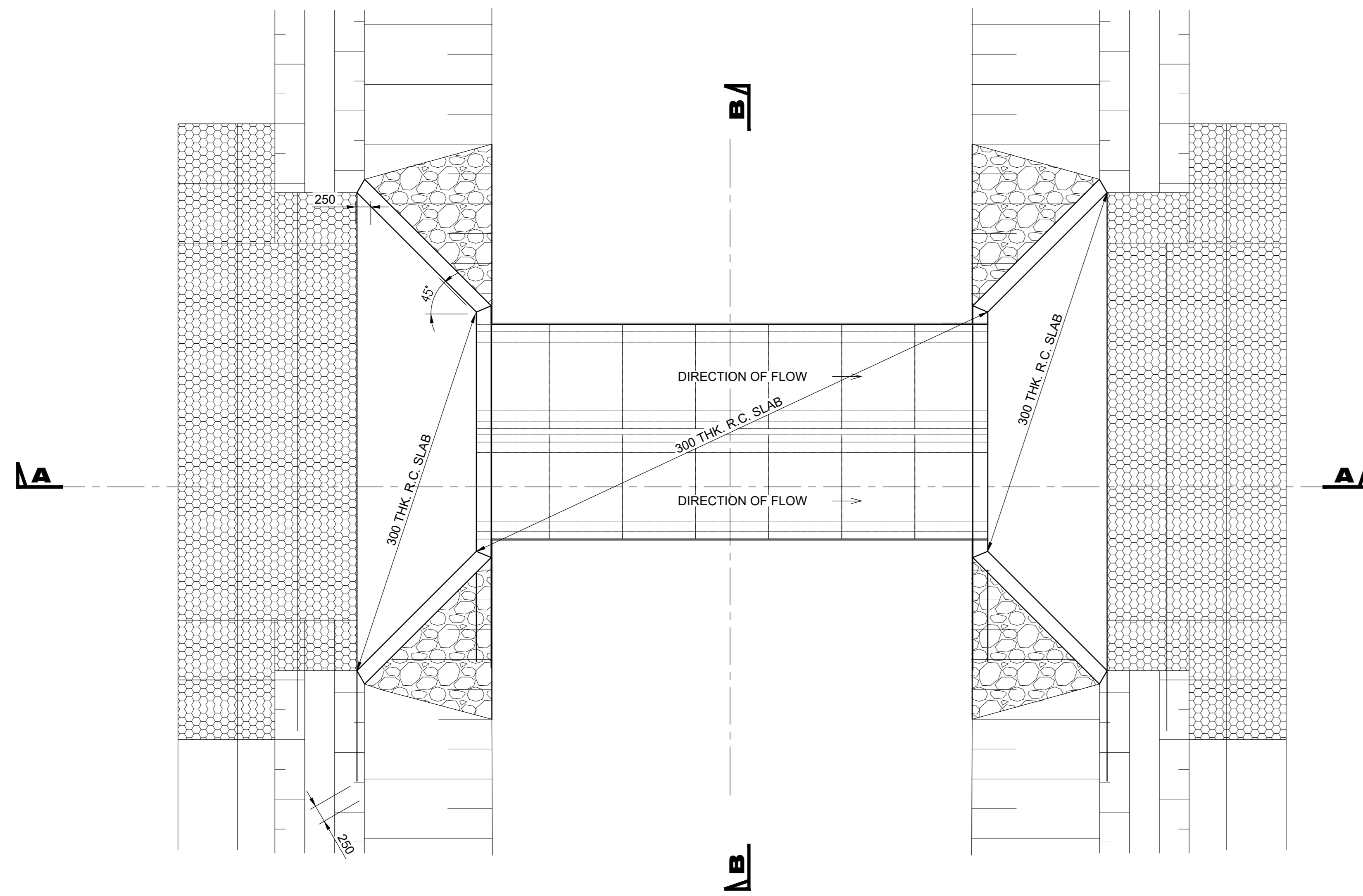
CONCRETE CLASS	STRENGTH in MPa at 28 days	MIN CEMENT CONTENT Kg/m ³	STONE mm
40/19	40	485	20
30/19	30	355	20
25/19	25	350	20
20/19	20	300	20

MEMBER	CONCRETE CLASS	Internal cover mm	Exposed cover mm
Foundations/Pile caps	30/19	50	50
Beams	30/19	50	50
Slabs / surface bed	30/19	50	50
Columns / Plinth	30/19	50	50
Blinding	10/19		

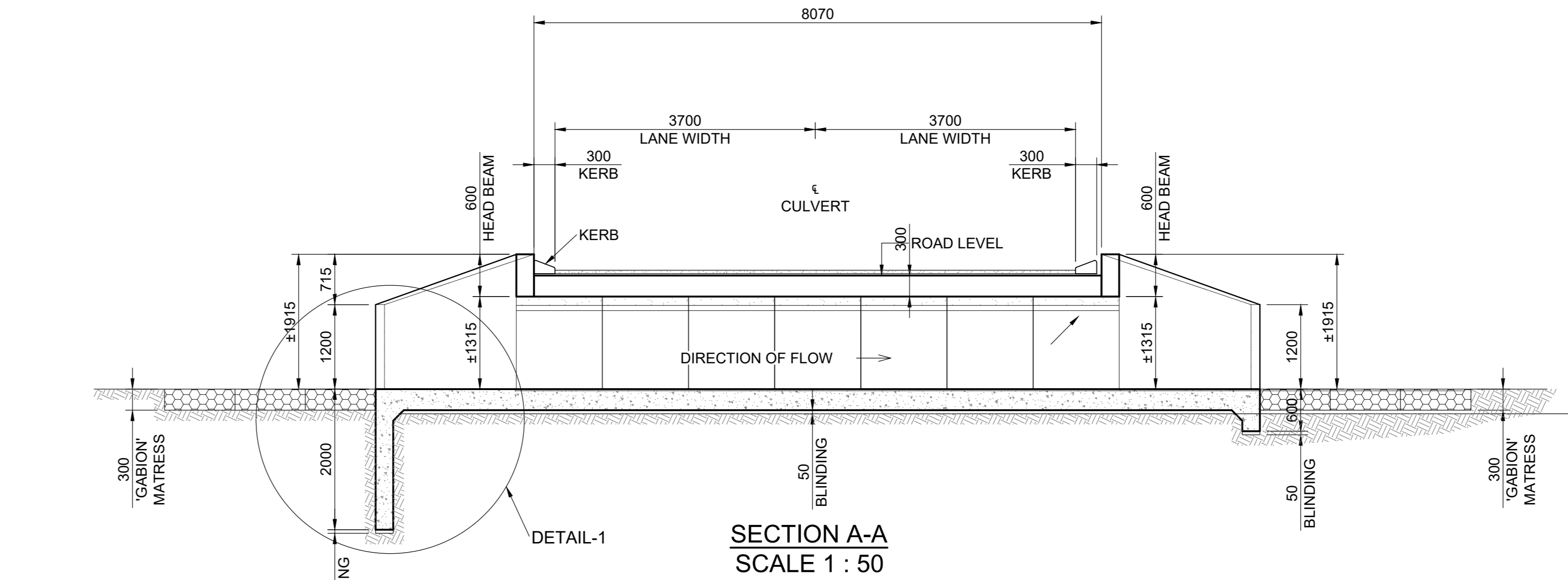
- NOTES**
- ALL EXPOSED CORNERS TO HAVE 20x20 mm CHAMFER U.O.N.
 - CONCRETE TO HAVE WOODFLOATED FINISH U.O.N.
 - FOUNDING MATERIAL TO BE APPROVED BY ENGINEER BEFORE CASTING ANY CONCRETE.
 - ALL FOUNDATIONS TO HAVE BLINDING 60mm MIN.
 - MINIMUM GROUND BEARING CAPACITY 250KPa.

ISSUED FOR TENDER PURPOSES

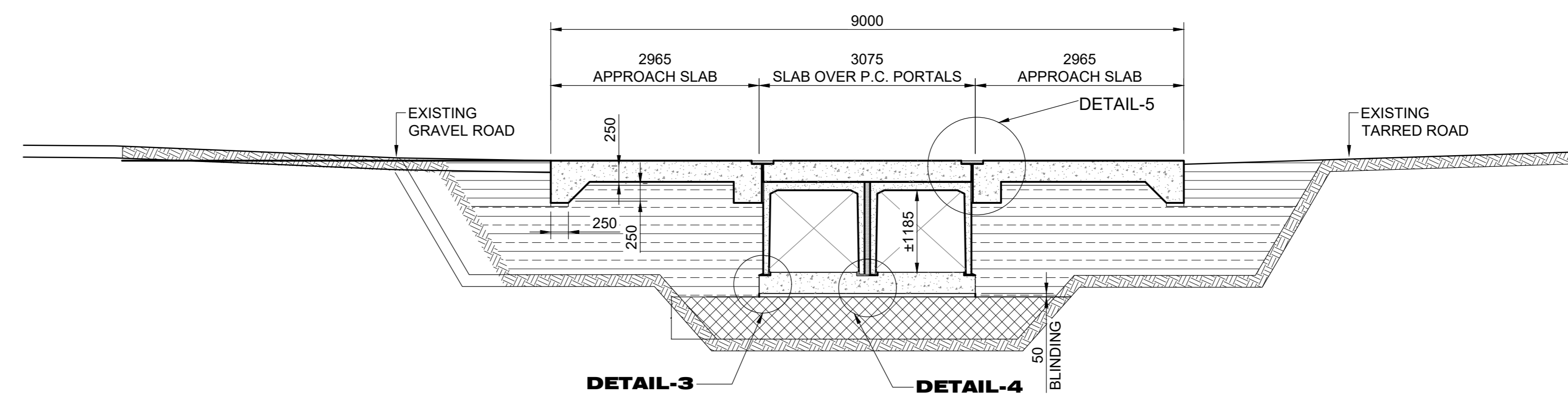
THE MASTER HELD AT JUSBEN CONSULTING OFFICE BEARS THE ORIGINAL SIGNATURE OF APPROVAL



CULVERT PLAN
SCALE 1 : 50



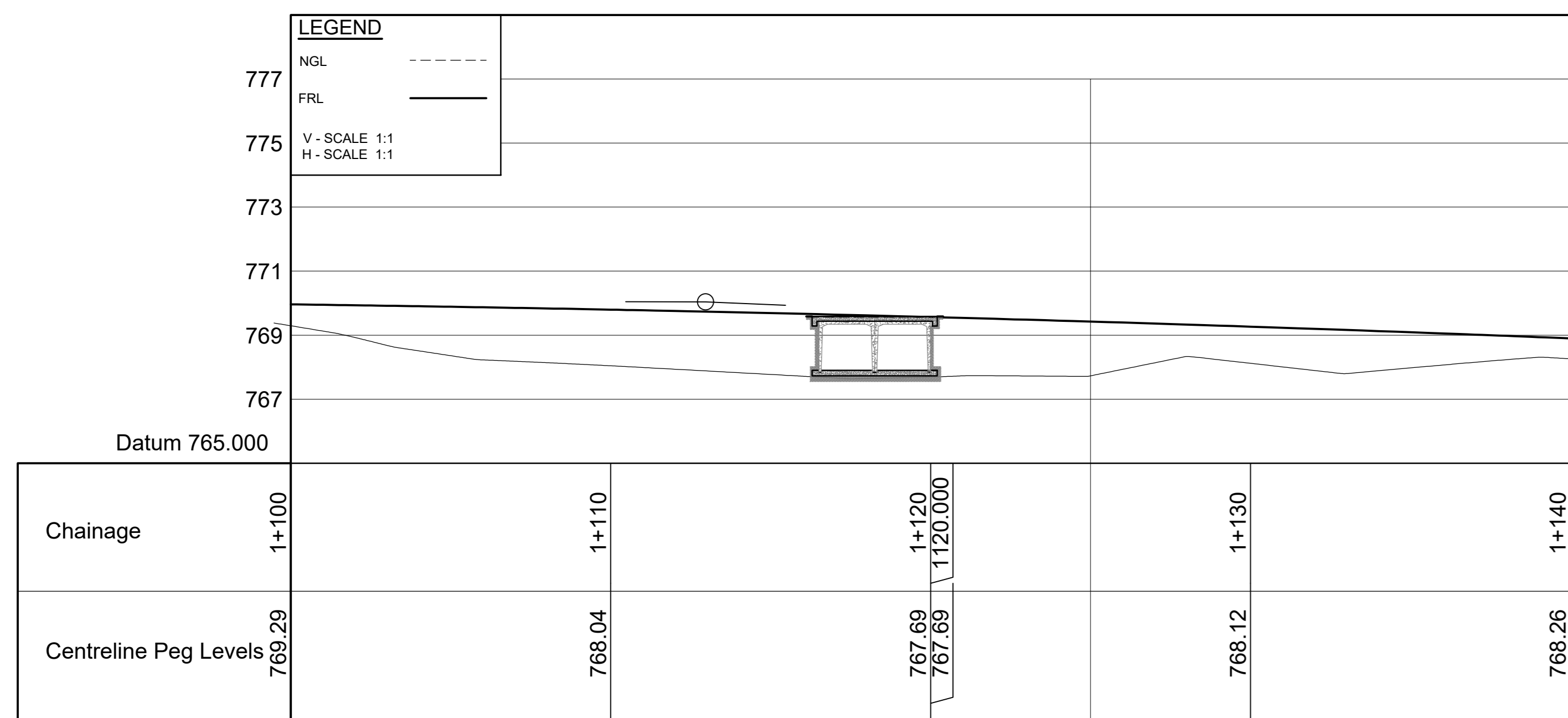
SECTION A-A
SCALE 1 : 50



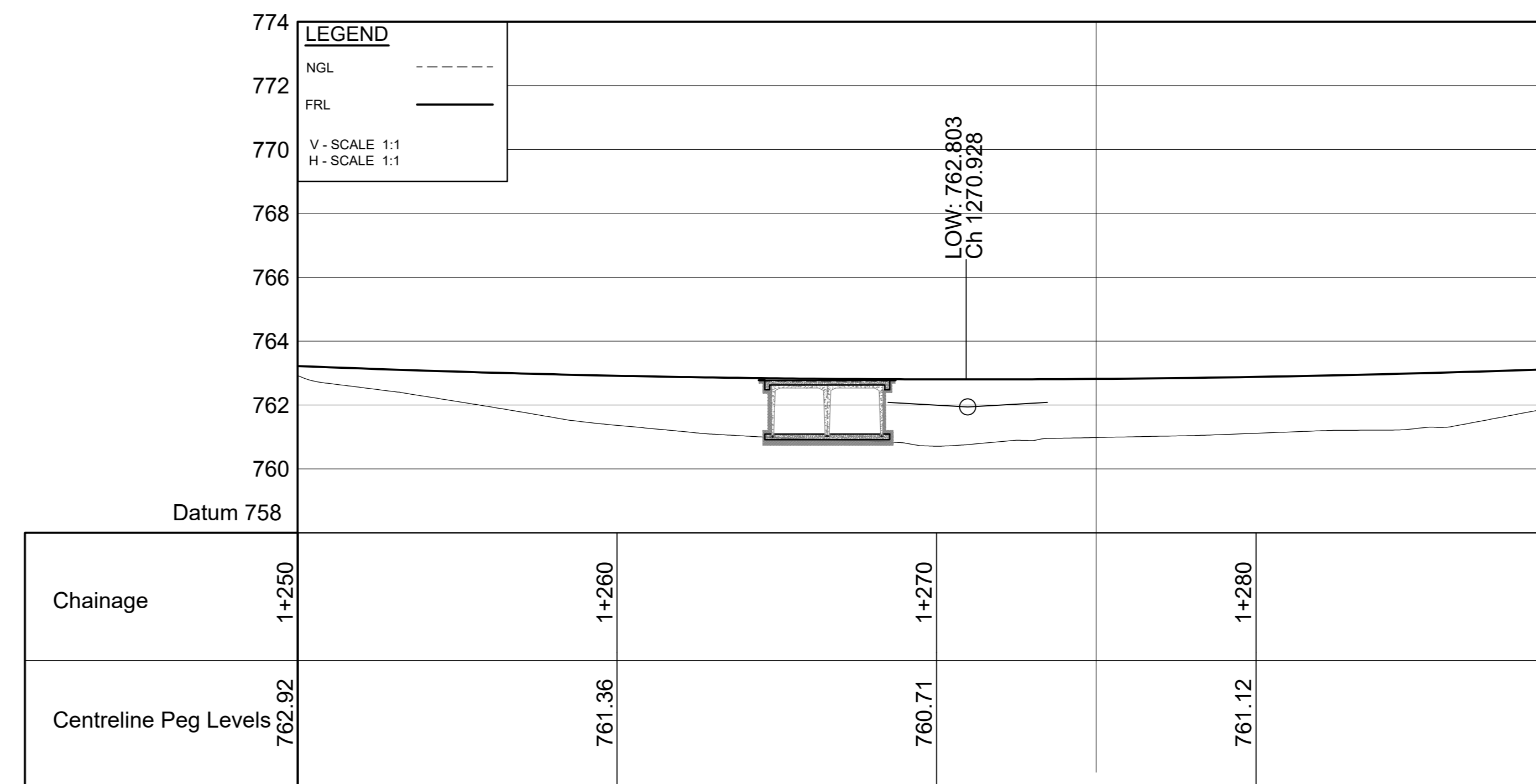
SECTION B-B
SCALE 1 : 50

- GENERAL NOTES:**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERING DRAWINGS.
 - ANY DISCREPANCIES & AMBIGUITIES ON THE ENGINEERS DRAWINGS TO BE REPORTED TO US CONSULTING ENGINEERS IMMEDIATELY.
 - LEVELS AND DIMENSIONS TO BE CHECKED BEFORE ANY WORK COMMENCES. DIMENSIONS MUST NOT BE SCALED.
- CONCRETE NOTES:**
- CONCRETE LEVELS AND DIMENSIONS DO NOT INCLUDE FINISHES.
 - CHARACTERISTIC 28 DAY COMPRESSIVE STRENGTH OF CONCRETE TO BE:
 - BLINDING 10 MPa
 - BRICKWORK FOOTING 20 MPa
 - COLUMN BASES 25 MPa
 - BEAMS AND SUSPENDED SLABS 25 MPa
 - RETAINING WALLS 25 MPa
 - PLINTHS 30 MPa
 - SURFACE BEDS 30 MPa
 - COLUMNS 30 MPa
 - ALL BASES TO HAVE 50mm BLINDING LAYER.
 - CONCRETE CONSTRUCTION AND QUALITY CONTROL TO BE IN ACCORDANCE WITH SABS 1200-C.
 - CONCRETE CURE TESTING TO BE IN ACCORDANCE WITH SABS METHOD M81 AT LEAST ONE SET OF COBBES SHALL BE TAKEN FROM EACH DAY'S CASTING AND FROM AT LEAST EVERY 50m OF CONCRETE OF EACH GRADE PLACED.
 - NO CONCRETE TO BE PLACED WITHOUT ENGINEERS APPROVAL.
 - CONCRETE FINISHES TO BE:
 - SURFACE BED POWER FLOAT
 - SUSPENDED SLAB TOP POWER FLOAT
 - BOTTOM OFF SHUTTER
 - COLUMNS OFF SHUTTER
 - BEAMS OFF SHUTTER
 - BEAM AND COLUMN EDGES TO HAVE 25 x 25 CHAMFER.
 - BEAM SIZES INDICATED AS WIDTH x DEPTH.
 - ONLY APPROVED COVER BLOCKS TO BE USED.
 - ALL DIMENSIONS TO BE INSPECTED BY ENGINEER BEFORE CASTING.
 - REMOVAL OF FORMWORK (IN DAYS):

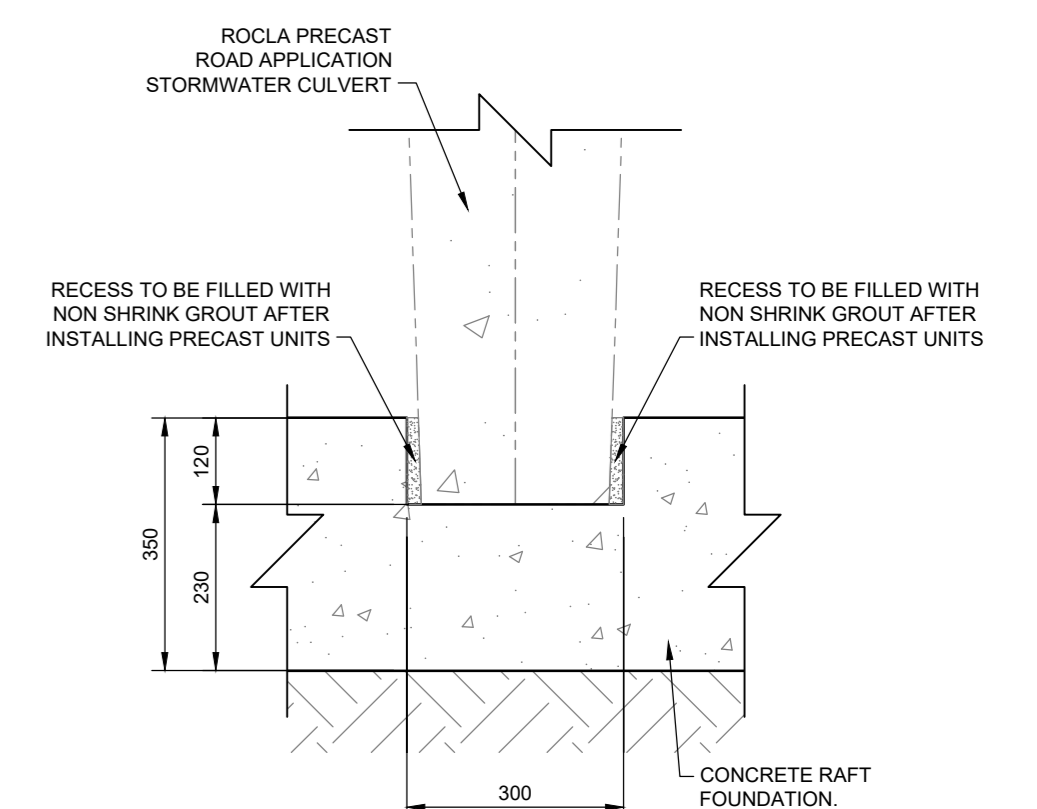
Type of structural member or formwork	Portland cement & fine or normal	Coarse	18% or normal	Coarse
a. Slabs, walls, walls & unbraced columns	0.75	1.5	2	4
b. Slabs with props left in-situ	4	7	4	10
c. Slabs with props left in-situ & ribs of a fixed floor construction	7	12	10	17
d. Slab props including carlines	10	17	9	17
e. Slab props including carlines	14	21	12	21



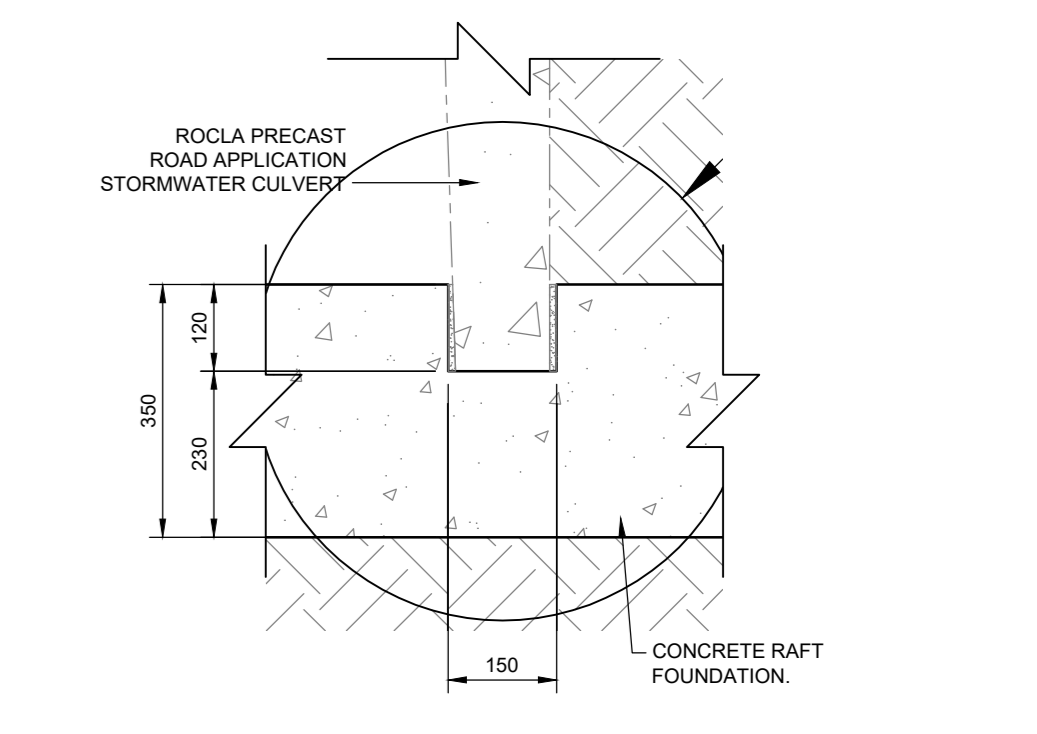
Long section for 1+080 to 1+180



Long section for 1+200 to 1+320



DETAIL 4
SCALE 1:10



DETAIL 3
SCALE 1:10

GENERAL NOTES

CONSTRUCTION TO BE IN ACCORDANCE WITH THE SPECIFICATION AND THIS DRAWING.

CONCRETE CLASS	STRENGTH in MPa at 28 days	MIN CEMENT CONTENT Kg/m ³	STONE mm
40/19	40	485	20
30/19	30	355	20
25/19	25	350	20
20/19	20	300	20

MEMBER	CONCRETE CLASS	Internal cover mm	Exposed cover mm
Foundations/Pile caps	30/19	50	50
Beams	30/19	50	50
Slabs / surface bed	30/19	50	50
Columns / Plinth	30/19	50	50
Blinding	10/19		

NOTES

- ALL EXPOSED CORNERS TO HAVE 20x20 mm CHAMFER U.O.N.
- CONCRETE TO HAVE WOODFLOATED FINISH U.O.N.
- FOUNDING MATERIAL TO BE APPROVED BY ENGINEER BEFORE CASTING ANY CONCRETE.
- ALL FOUNDATIONS TO HAVE BLINDING 60mm MIN.
- MINIMUM GROUND BEARING CAPACITY 250kPa.

ISSUED FOR TENDER PURPOSES

THE MASTER HELD AT JUSBEN CONSULTING OFFICE BEARS THE ORIGINAL SIGNATURE OF APPROVAL