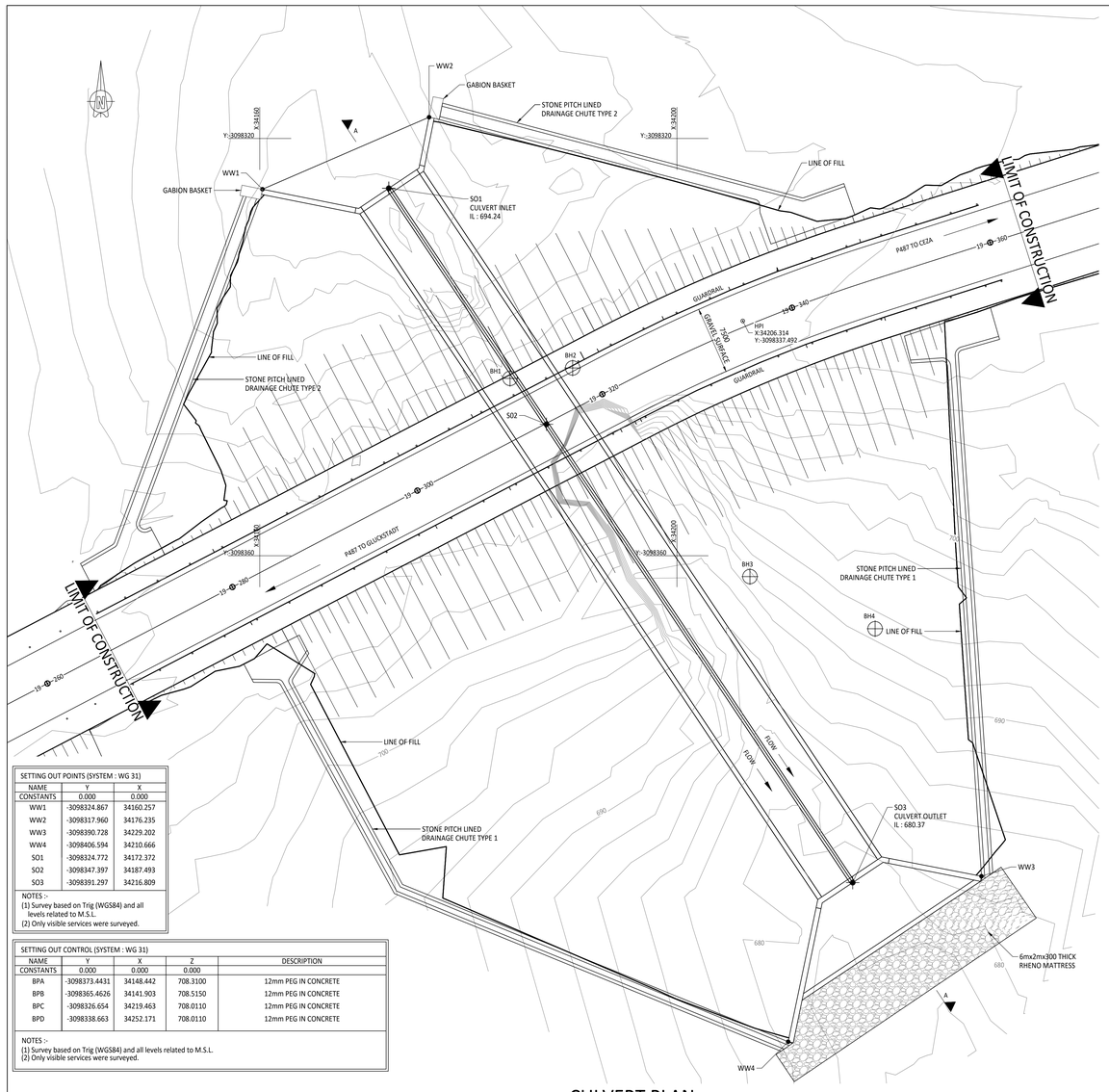


CULVERT PLAN
SCALE 1:200

SETTING OUT POINTS (SYSTEM : WG 31)		
NAME	Y	X
CONSTANTS	0.000	0.000
WW1	-3098324.867	34160.257
WW2	-3098317.960	34176.235
WW3	-3098390.728	34229.202
WW4	-3098406.594	34210.666
SO1	-3098324.772	34172.372
SO2	-3098347.397	34187.493
SO3	-3098391.297	34216.809

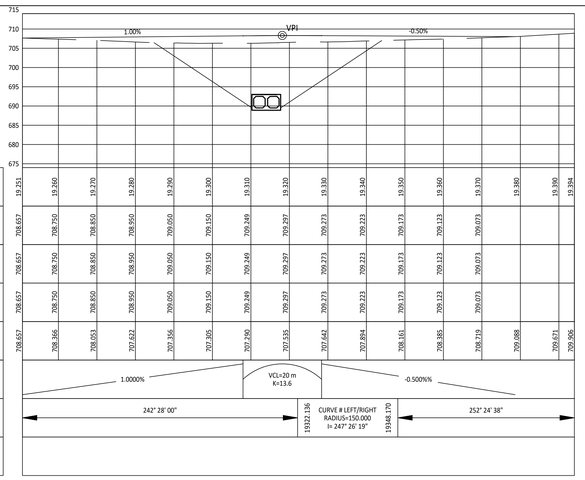
NOTES :-
(1) Survey based on Trig (WGS84) and all levels related to M.S.L.
(2) Only visible services were surveyed.

SETTING OUT CONTROL (SYSTEM : WG 31)				
NAME	Y	X	Z	DESCRIPTION
CONSTANTS	0.000	0.000	0.000	
BPA	-3098373.4431	34148.442	708.3100	12mm PEG IN CONCRETE
BPB	-3098365.4626	34141.903	708.5150	12mm PEG IN CONCRETE
BPC	-3098326.654	34219.463	708.0110	12mm PEG IN CONCRETE
BPD	-3098338.663	34252.171	708.0110	12mm PEG IN CONCRETE

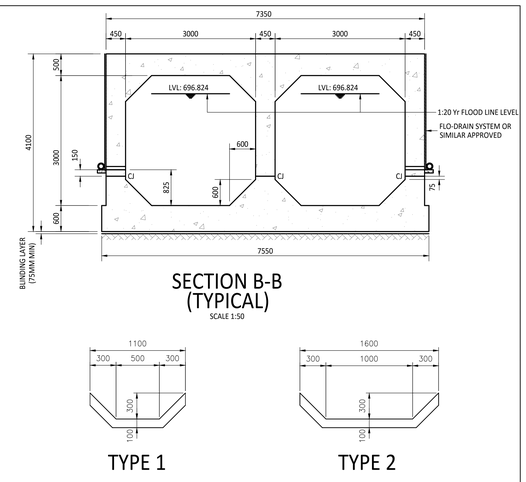
NOTES :-
(1) Survey based on Trig (WGS84) and all levels related to M.S.L.
(2) Only visible services were surveyed.

SECTION A-A
CULVERT LONG-SECTION
SCALE 1:200

Chainage Distance (km)	
FINAL ROAD LEVELS	Left
	Centre Line
	Right
C/L Ground Levels	
Vertical Curves	
Horizontal Alignment	
Super Elevation	



LONGSECTION P487
SCALE 1:500

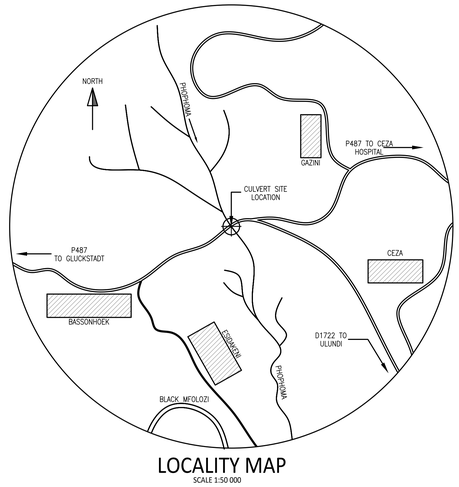


SECTION B-B
(TYPICAL)
SCALE 1:50

TYPE 1

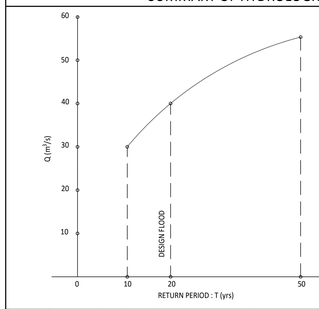
TYPE 2

DRAINAGE CHUTE DETAILS
SCALE 1:25



LOCALITY MAP
SCALE 1:50 000

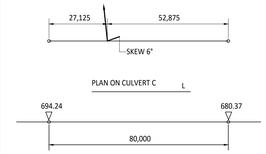
SUMMARY OF HYDROLOGIC, HYDRAULIC AND GEOMETRIC DATA

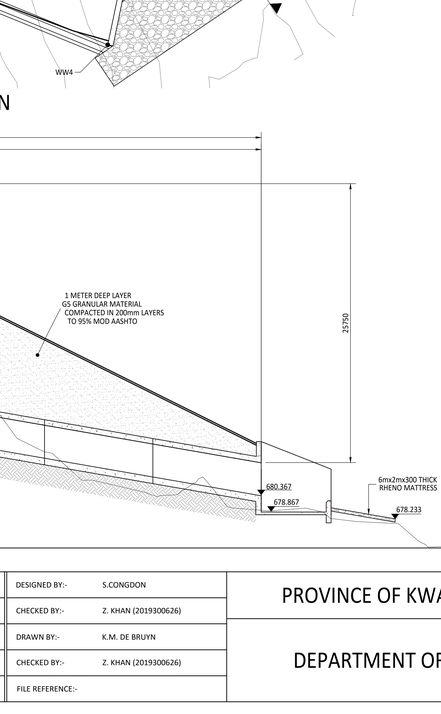


T (yrs)	Q (m^3/s)	% RMF	HW (m)	FLOODLINE ELEVATION (m)	MAX. EXIT VELOCITY (m/s)	EXIT CONDITION
10	30.8	7.84	2.09	696.33	13.67	VEGETATION MODERATE TAILWATER
20	40.9	10.41	2.58	696.82	14.48	
50	55.9	14.22	3.31	697.55	15.29	

KZN - R.M.F = $10^6/(A/10^6)^{1-0.1K}$ = 393m^3/s K = 5.6

CATCHMENT AREA : 1.82 Km^2
CATCHMENT SLOPE : 20.2%
SLOPE AT STRUCTURE: 13.7%
M.A.P = 1131mm
DESIGN FLOOD RETURN PERIOD = 1:20 Yrs





GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BUNDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16
THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10
AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP GS MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16.7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
AMENDMENTS				

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER: STRUCTURAL DESIGN

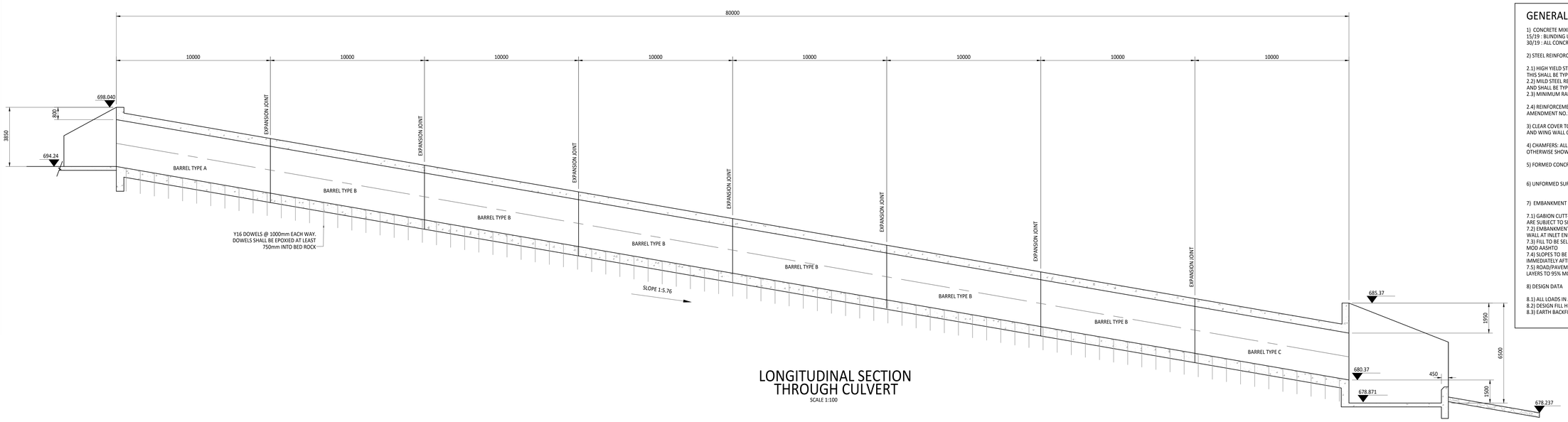
HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

PROPOSED 3.0M X 3.0M BOX CULVERT
GENERAL ARRANGEMENT

STAKED KM DISTANCE	SHEET :-
19.3	1 OF 9
SCALE	PLAN NO.:-
AS SHOWN	STC3922/1

STC3922/1



LONGITUDINAL SECTION THROUGH CULVERT

SCALE 1:100

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

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AND SHALL BE TYPE A ROUND BARS TO SABS 920
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Y = 3 x BAR DIAMETER

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F2 : VISIBLE SURFACES

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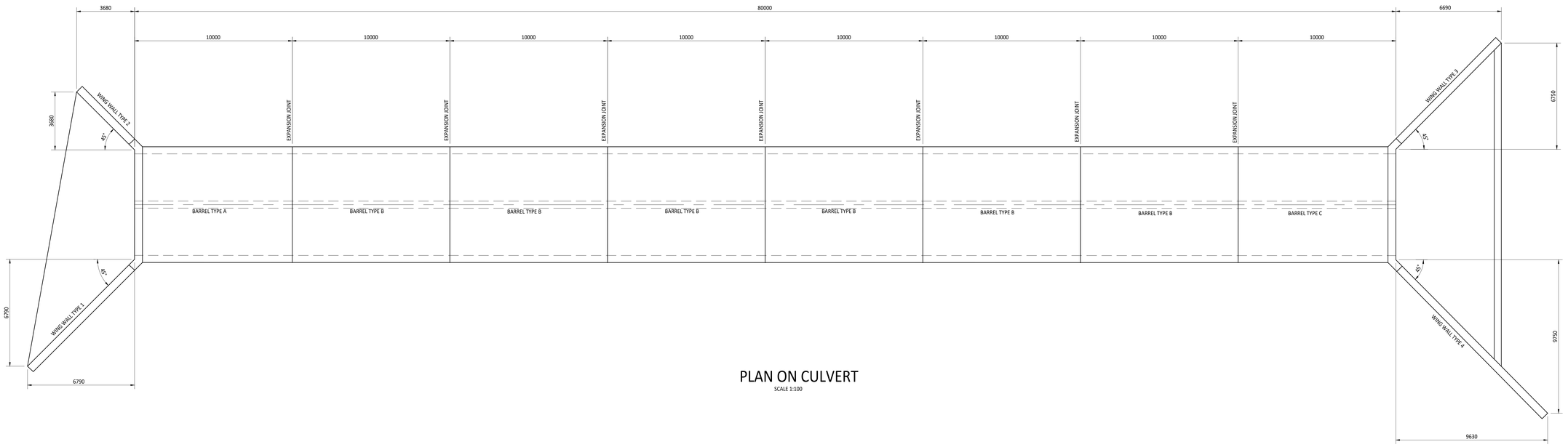
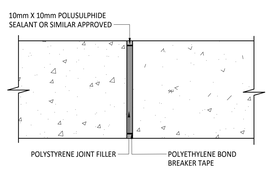
8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS



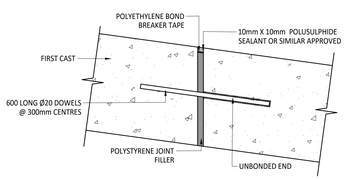
PLAN ON CULVERT

SCALE 1:100



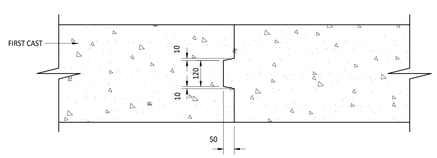
EXPANSION JOINT: BARREL WALLS

SCALE 1:10



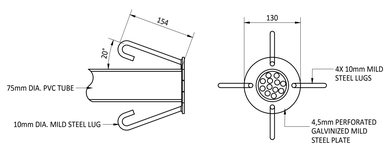
EXPANSION JOINT: BARREL ROOF & FLOOR SLABS

SCALE 1:10



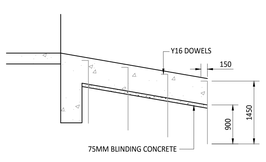
TYPICAL CONSTRUCTION JOINT

SCALE 1:10



TYPICAL WEEPHOLE COVERS

SCALE 1:5



DOWELS EPOXIED INTO ROCK

SCALE 1:50

REV	DATE	ISSUED	DRAWN	CHECKED
1	21-10-2022	ADDED DOWELS Y16 INTO ROCK	K.M. DE BRUYN	Z. KHAN

SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED

AMENDMENTS

AS-BUILT

SUPERVISING ENGINEER _____ DATE _____

SUPERVISING AUTHORITY _____

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER: STRUCTURAL DESIGN _____

HEAD : TRANSPORT _____

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

PROPOSED 3.0M X 3.0M BOX CULVERT
CULVERT LAYOUT & LONGITUDINAL SECTION

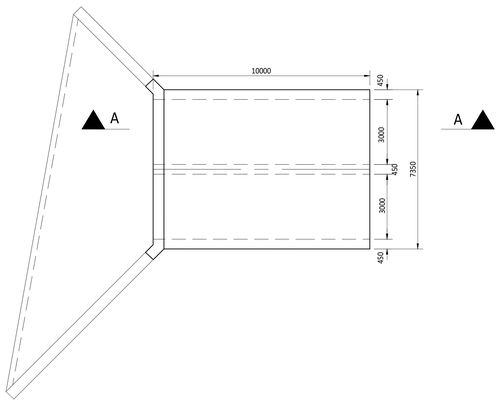
STAKED KM DISTANCE 19.3

SCALE AS SHOWN

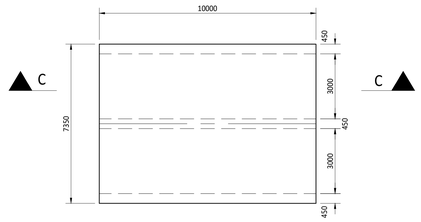
SHEET :- 2 OF 9

PLAN NO.:- STC3922/2

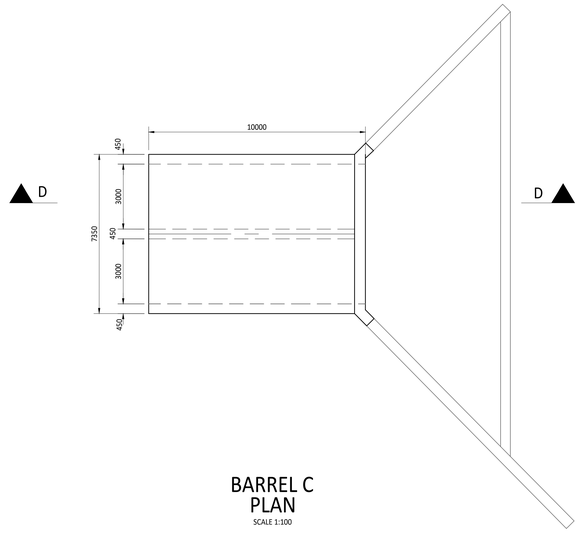
STC3922/2



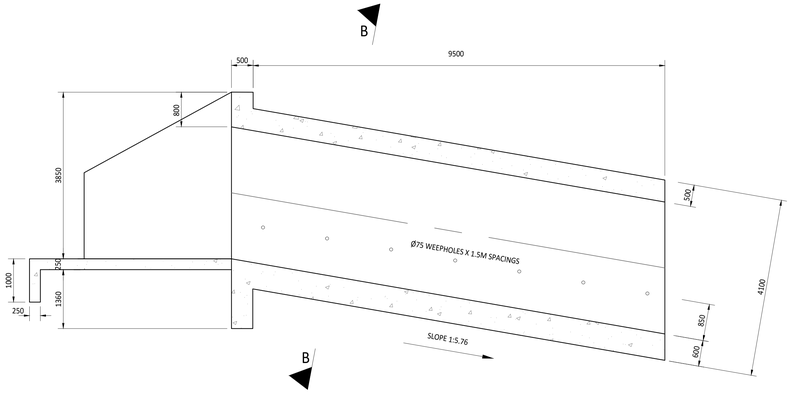
BARREL A
PLAN
SCALE 1:100



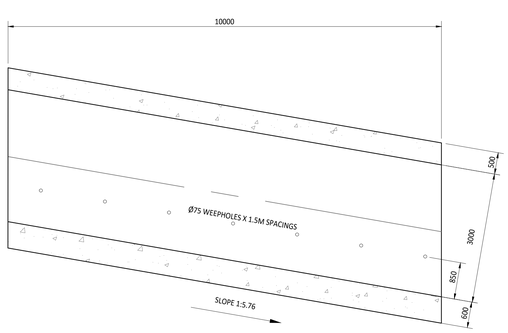
BARREL B
PLAN
SCALE 1:100



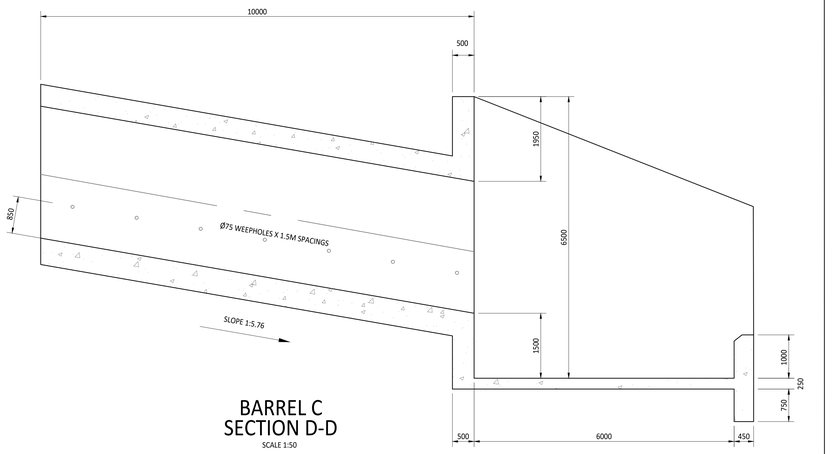
BARREL C
PLAN
SCALE 1:100



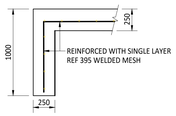
BARREL A
SECTION A-A
SCALE 1:50



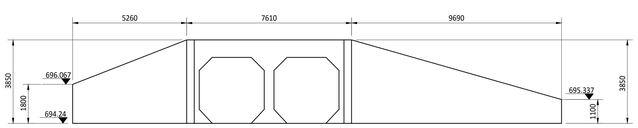
BARREL B
SECTION C-C
SCALE 1:50



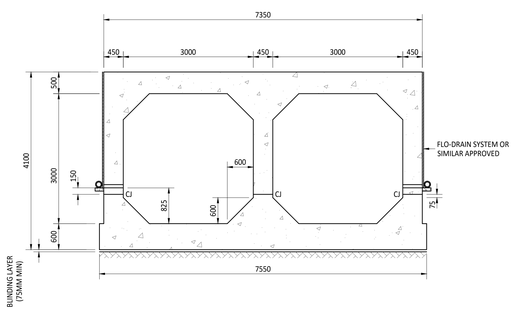
BARREL C
SECTION D-D
SCALE 1:50



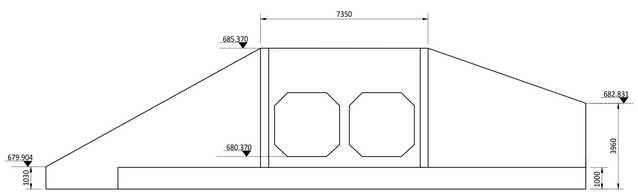
INLET APRON
REINFORCEMENT DETAIL
SCALE 1:25



ELEVATION OF INLET
SCALE 1:100



SECTION B-B
TYPICAL
SCALE 1:50



ELEVATION OF OUTLET
SCALE 1:100

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16
THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10
AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:-R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
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7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
AMENDMENTS				

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER:
STRUCTURAL DESIGN

HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

PROPOSED 3.0M X 3.0M BOX CULVERT
CONCRETE DETAIL - CULVERT BARREL

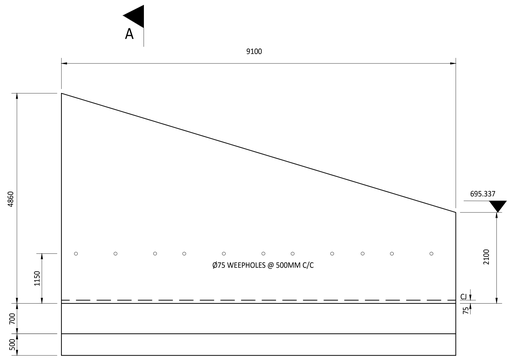
STAKED KM DISTANCE 19.3

SCALE AS SHOWN

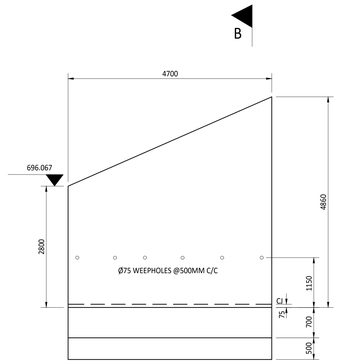
SHEET :- 3 OF 9

PLAN NO.:- STC3922/3

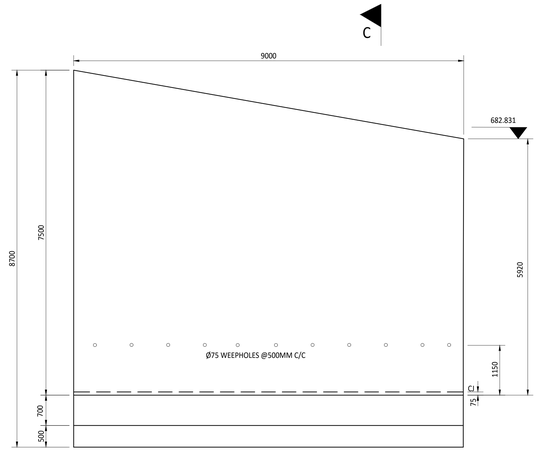
STC3922/3



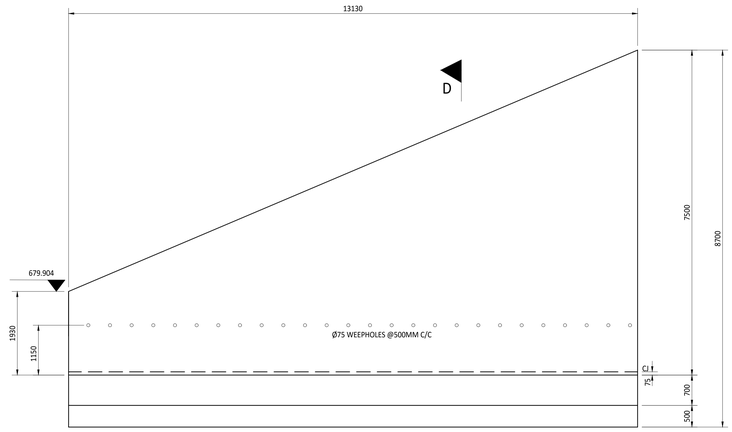
WING WALL 1
SCALE 1:50



WING WALL 2
SCALE 1:50



WING WALL 3
SCALE 1:50



WING WALL 4
SCALE 1:50

WING WALL 1
SECTION A-A
SCALE 1:50

WING WALL 2
SECTION B-B
SCALE 1:50

WING WALL 3
SECTION C-C
SCALE 1:50

WING WALL 4
SECTION D-D
SCALE 1:50

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BUNDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16
THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10
AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

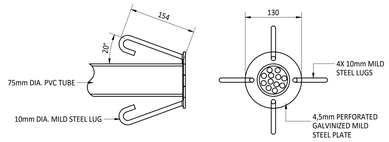
6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS



TYPICAL
WEEPHOLE COVERS
SCALE 1:5

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
AMENDMENTS				

AS-BUILT

SUPERVISING ENGINEER — DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER:
STRUCTURAL DESIGN

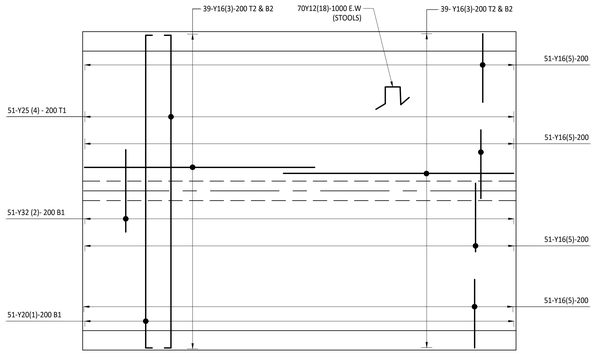
HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

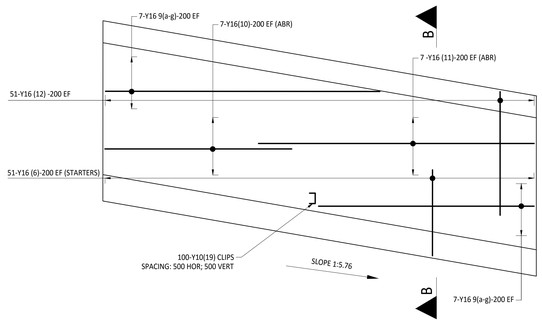
PROPOSED 3.0M X 3.0M BOX CULVERT
CONCRETE DETAIL - WING WALLS

STAKED KM DISTANCE	SHEET :-
19.3	4 OF 9
SCALE	PLAN NO.:-
AS SHOWN	STC3922/4

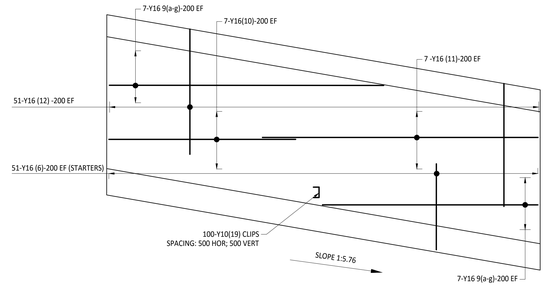
STC3922/4



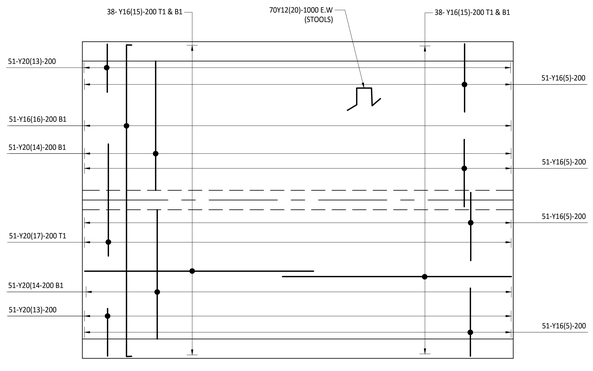
FOUNDATION SLAB
SCALE 1:50



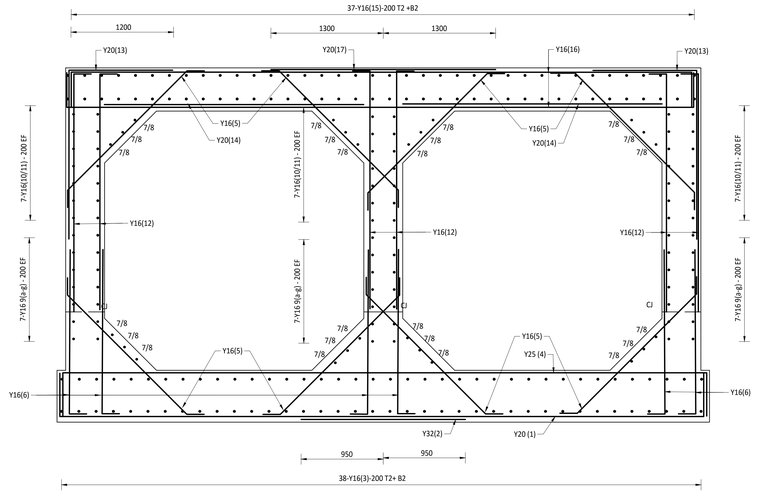
INNER WALL
SCALE 1:50



OUTER WALL
SCALE 1:50



ROOF SLAB
SCALE 1:50



SECTION B-B
SCALE 1:25

Member	Bar mark	"Type and size"		"No. of mbrs"	"No. of bars in each"	Total no.	"Length of each bar T mm"	Shape code	A *	B *	C *	D *	E/R *
		Type	Size						mm	mm	mm	mm	mm
	1	Y	20	6	51	306	8350	38	500	7450	500		
	2	Y	32	6	51	306	1900	20	1900				
	3	Y	16	6	152	912	5325	20	5310				
	4	Y	25	6	51	306	8325	38	500	7450	500		
	5	Y	16	6	408	2448	2525	49	280	280	1950	200	200
	6	Y	16	6	306	1836	2025	38	200	1900			
	7	Y	16	6	24	144	4350	20	4350				
	8	Y	16	6	24	144	6350	20	6350				
	109(A-G)	Y	16	6	42	252	1530-8450	20	1530-8450				
	10	Y	16	6	84	504	4350	20	4350				
	11	Y	16	6	84	504	6350	20	6350				
	12	Y	16	6	306	1836	6400	38	200	2680			
	13	Y	20	6	102	612	3100	37	1950	1200			
	14	Y	20	6	102	612	3000	20	3000				
	15	Y	16	6	148	888	5350	20	5350				
	16	Y	16	6	102	612	7975	38	400	7250	400		
	17	Y	20	6	51	306	2600	20	2600				
STOOLS	18	Y	12	6	70	420	1400	83	200	450	150	150	
CLIPS	19	Y	10	6	300	1800	500	38	100	350	100		
STOOLS	20	Y	12	6	300	1800	1300	83	200	400	150	150	
Reinf. Masses (kg):		≤ 12		3,154		>12 ≤ 25		91,671		> 25		3,671	
This schedule complies with SANS 282							Total Mass for this Schedule (kg):					98496	

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16
THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10
AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER

2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
AMENDMENTS				

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER:
STRUCTURAL DESIGN

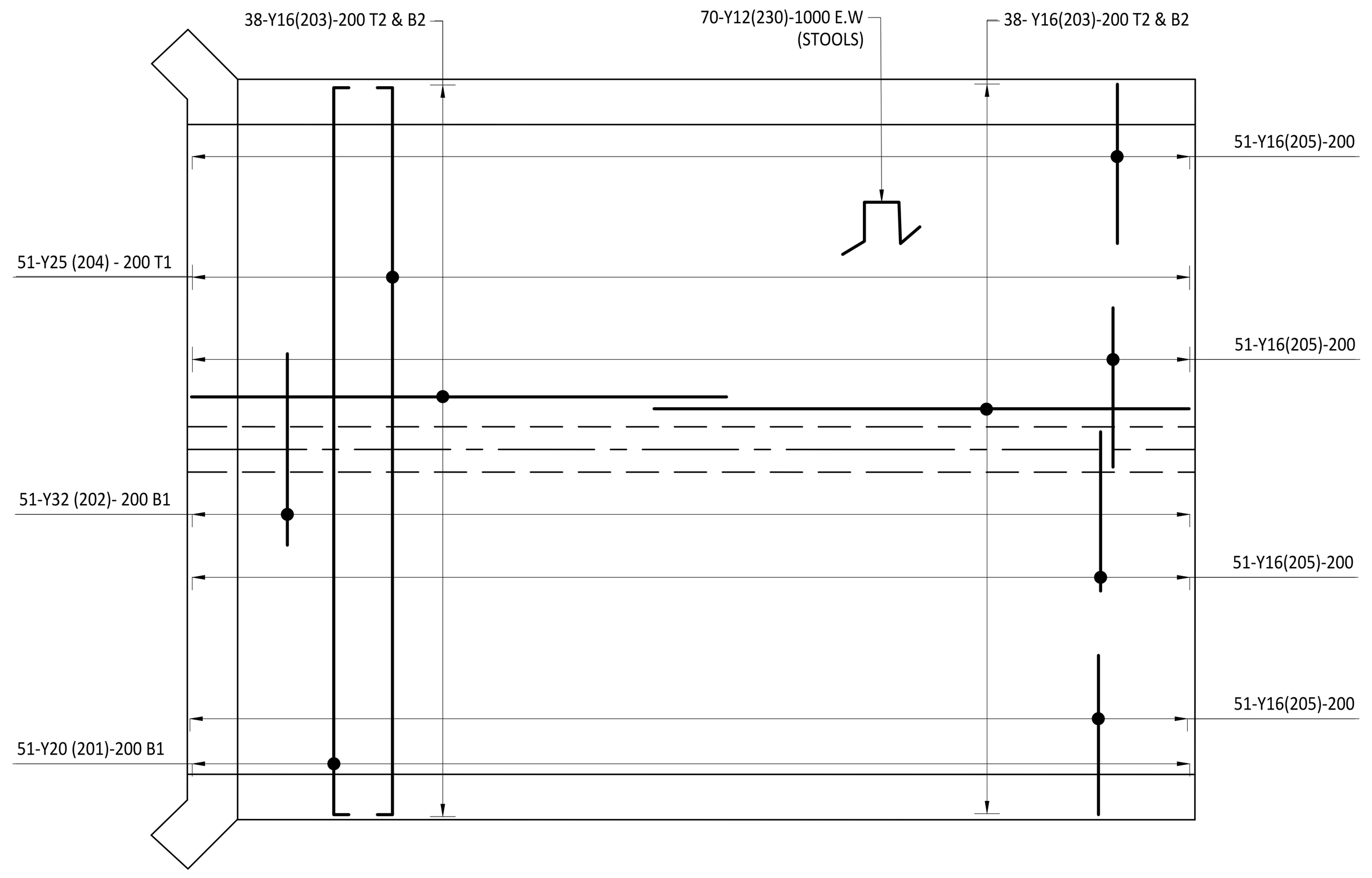
HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

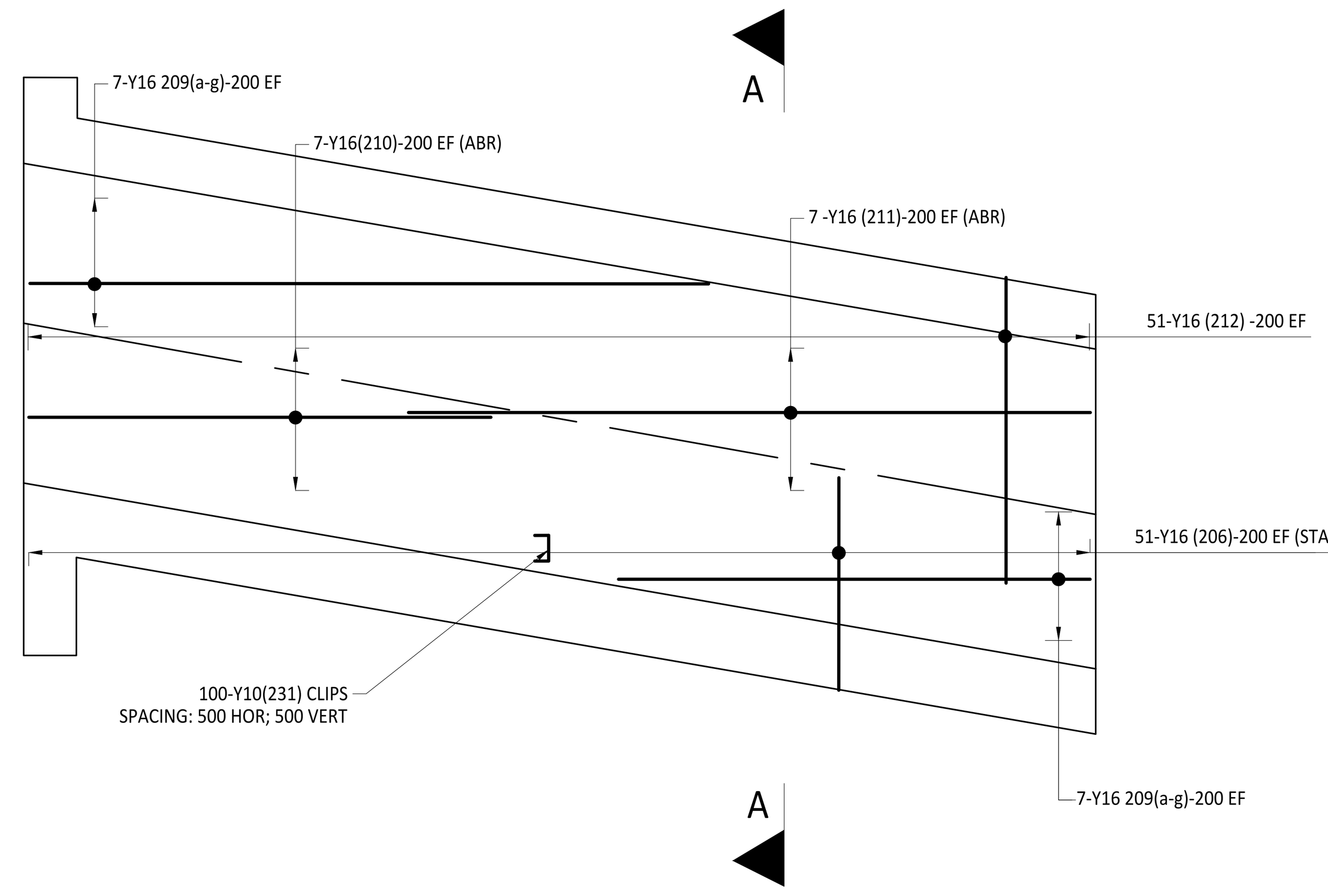
PROPOSED 3.0M X 3.0M BOX CULVERT
REINFORCEMENT DETAILS - BARREL B

STAKED KM DISTANCE	SHEET :-
19.3	6 OF 9
SCALE	PLAN NO.:-
AS SHOWN	STC3922/6

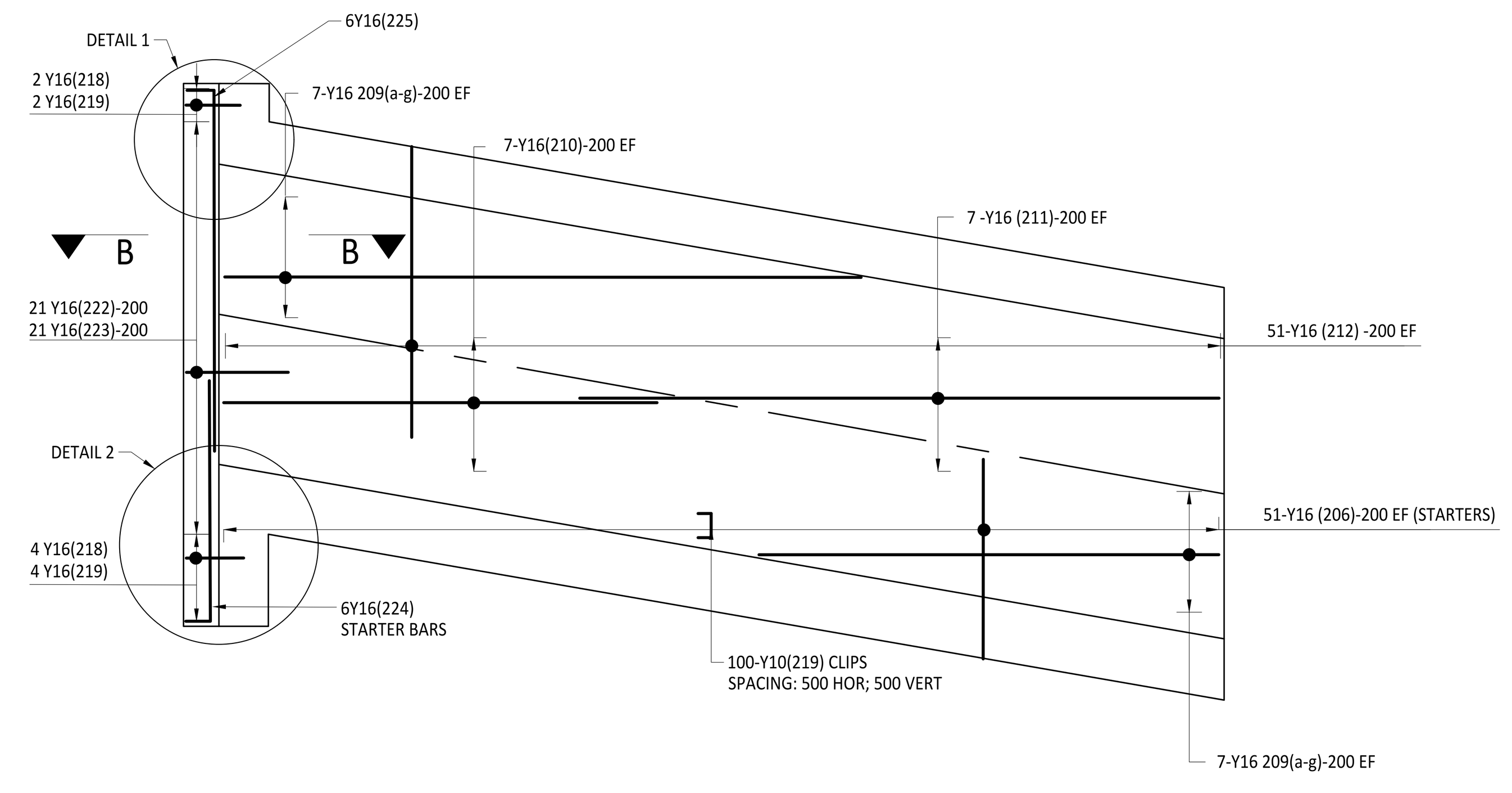
STC3922/6



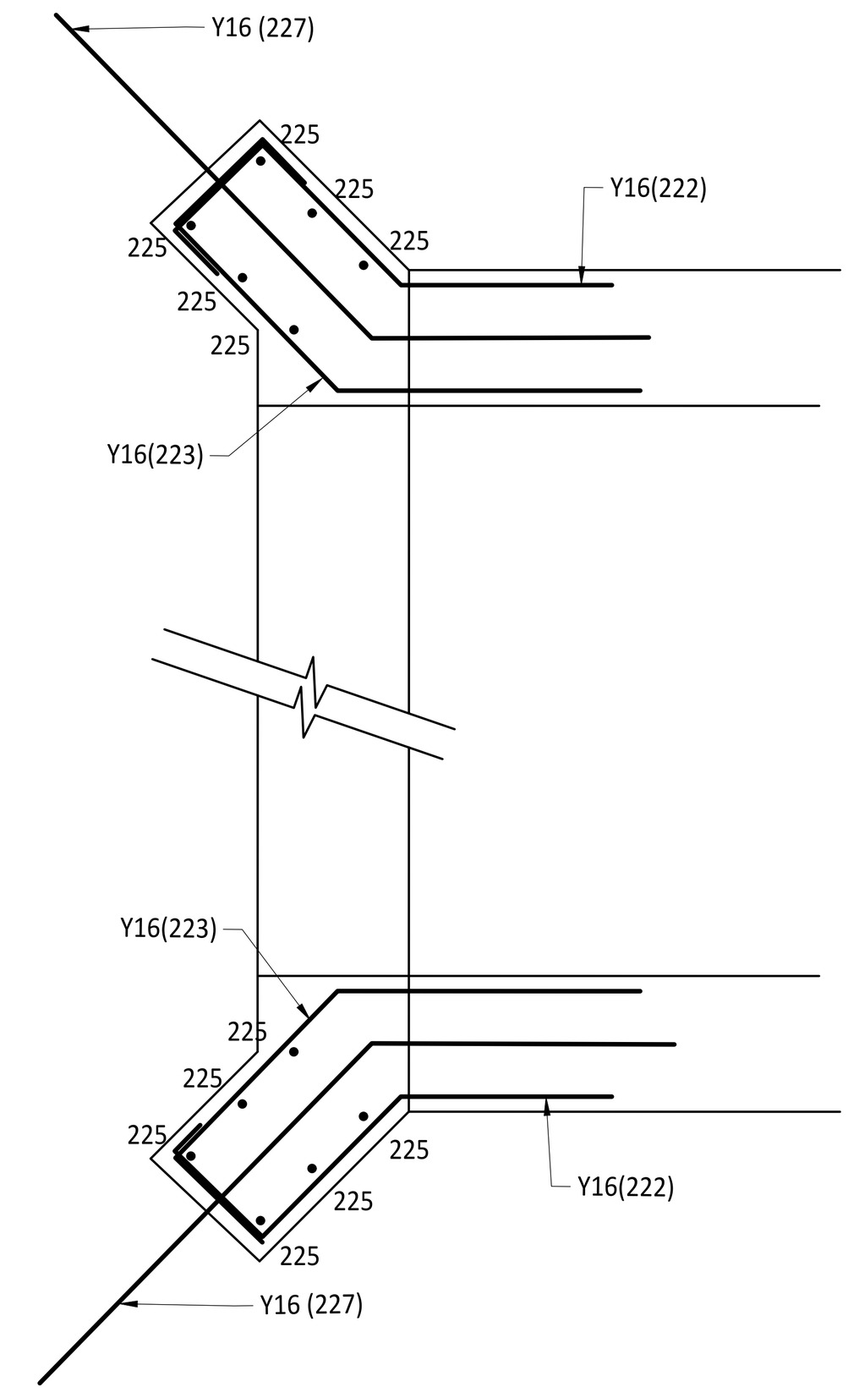
FOUNDATION SLAB
SCALE 1:50



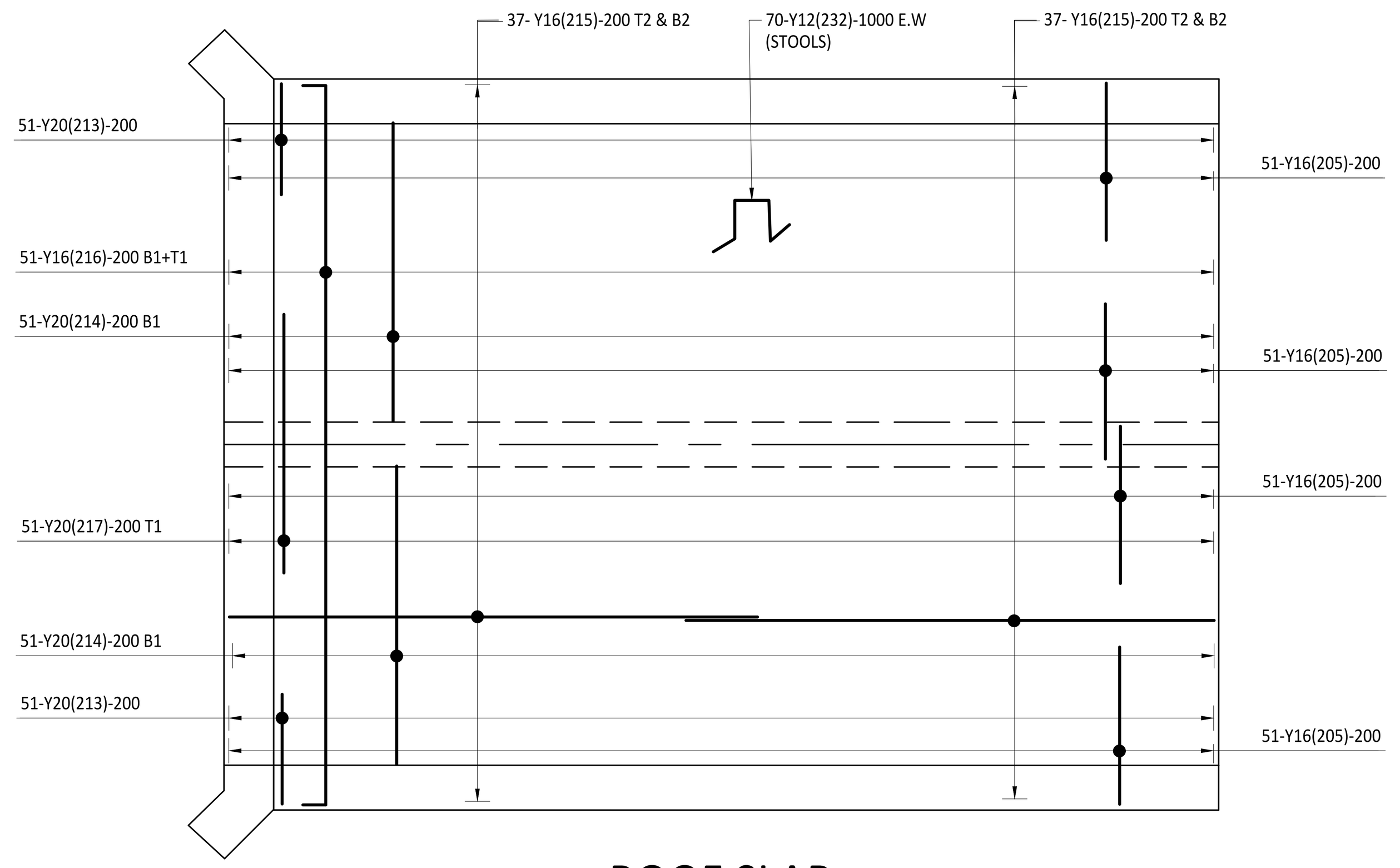
INNER WALL
SCALE 1:50



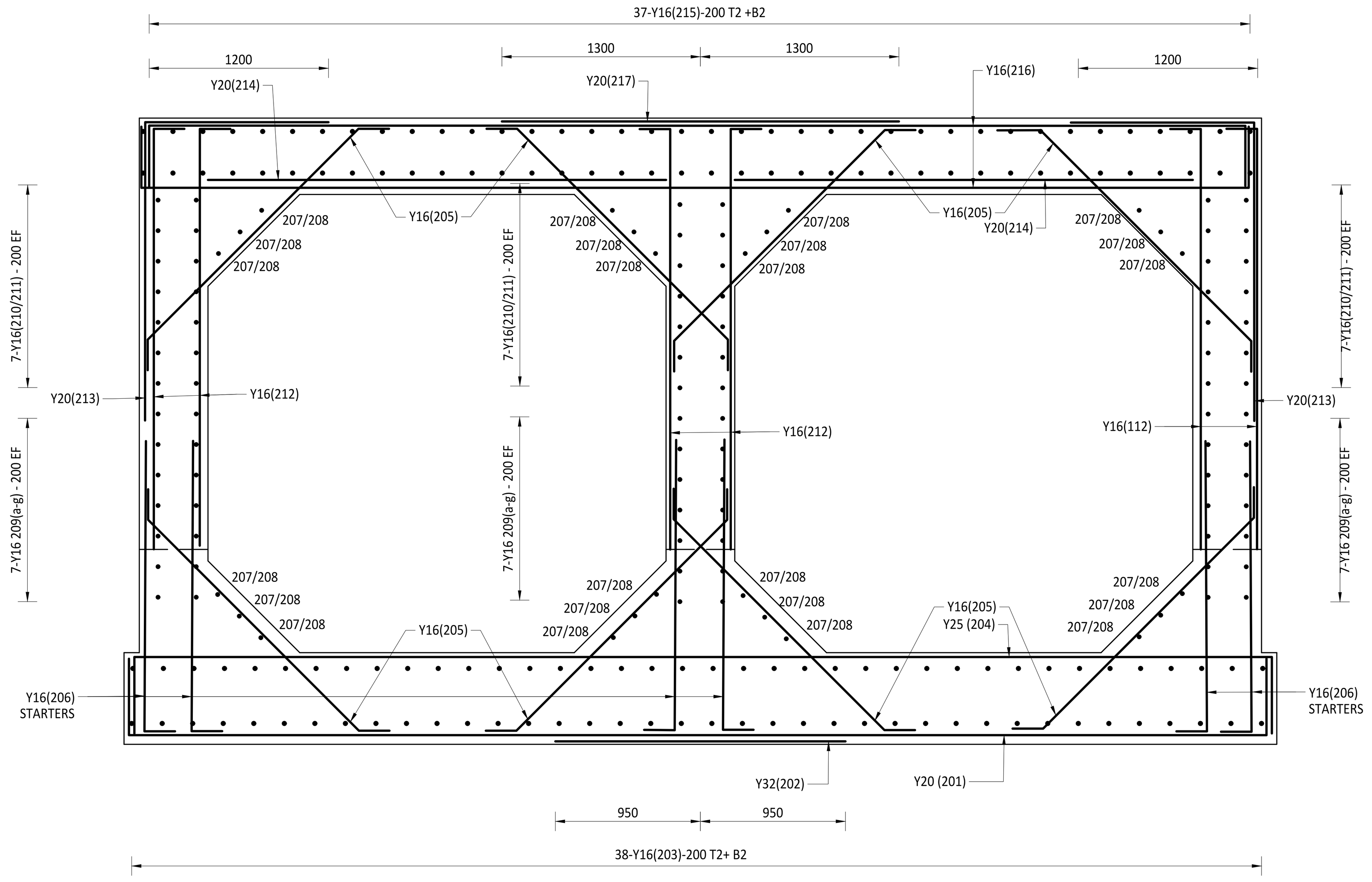
OUTER WALL
SCALE 1:50



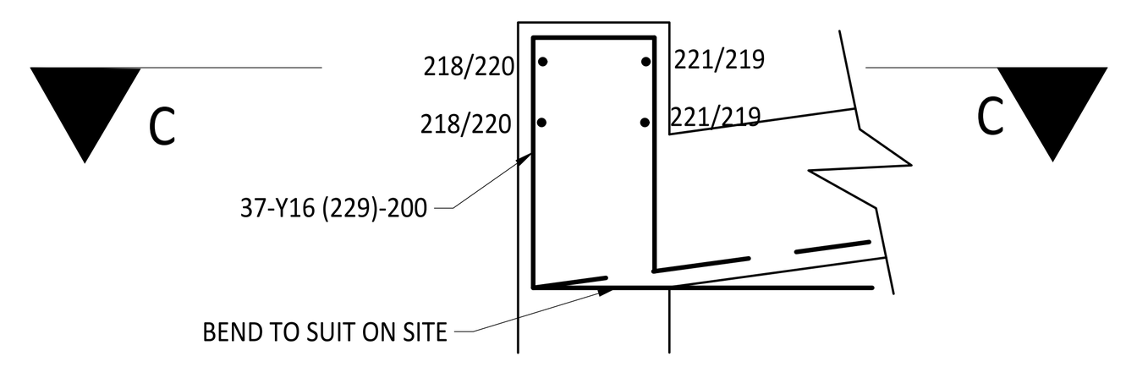
SECTION B-B
SCALE 1:25



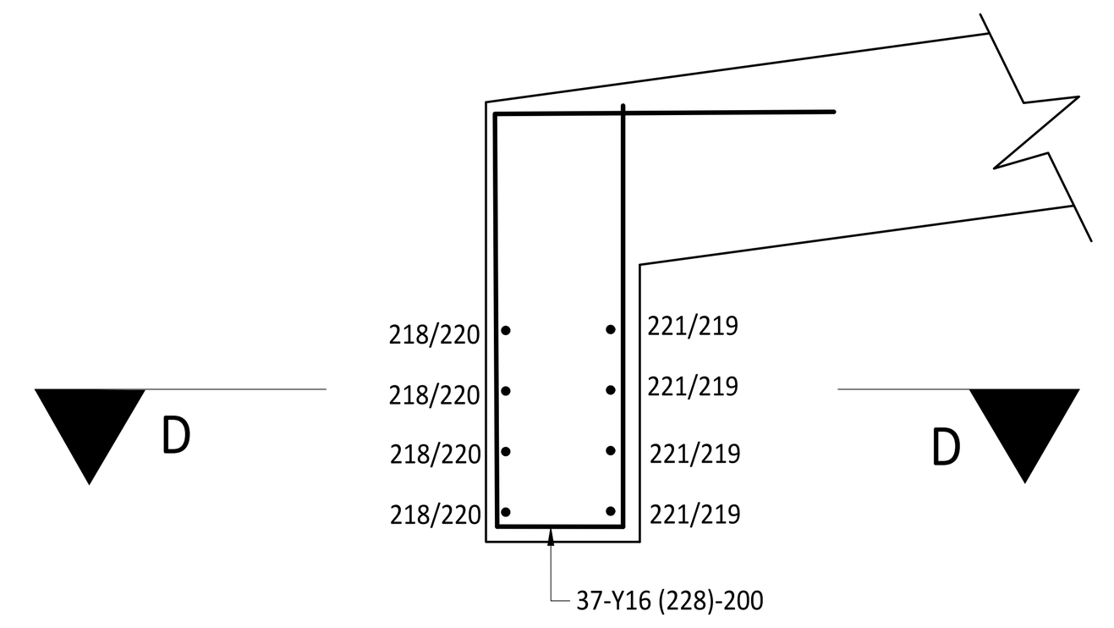
ROOF SLAB
SCALE 1:50



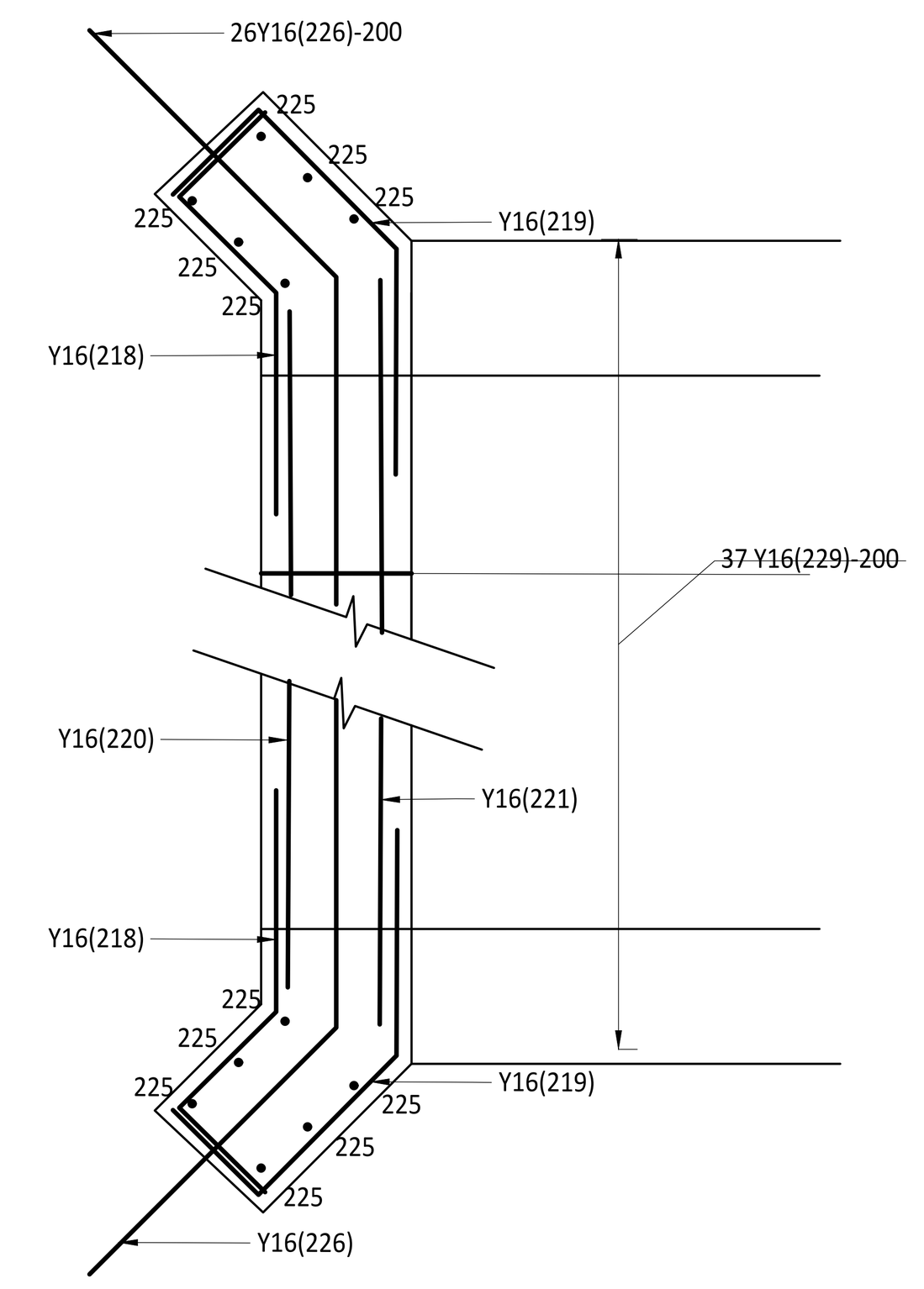
SECTION A-A
SCALE 1:25



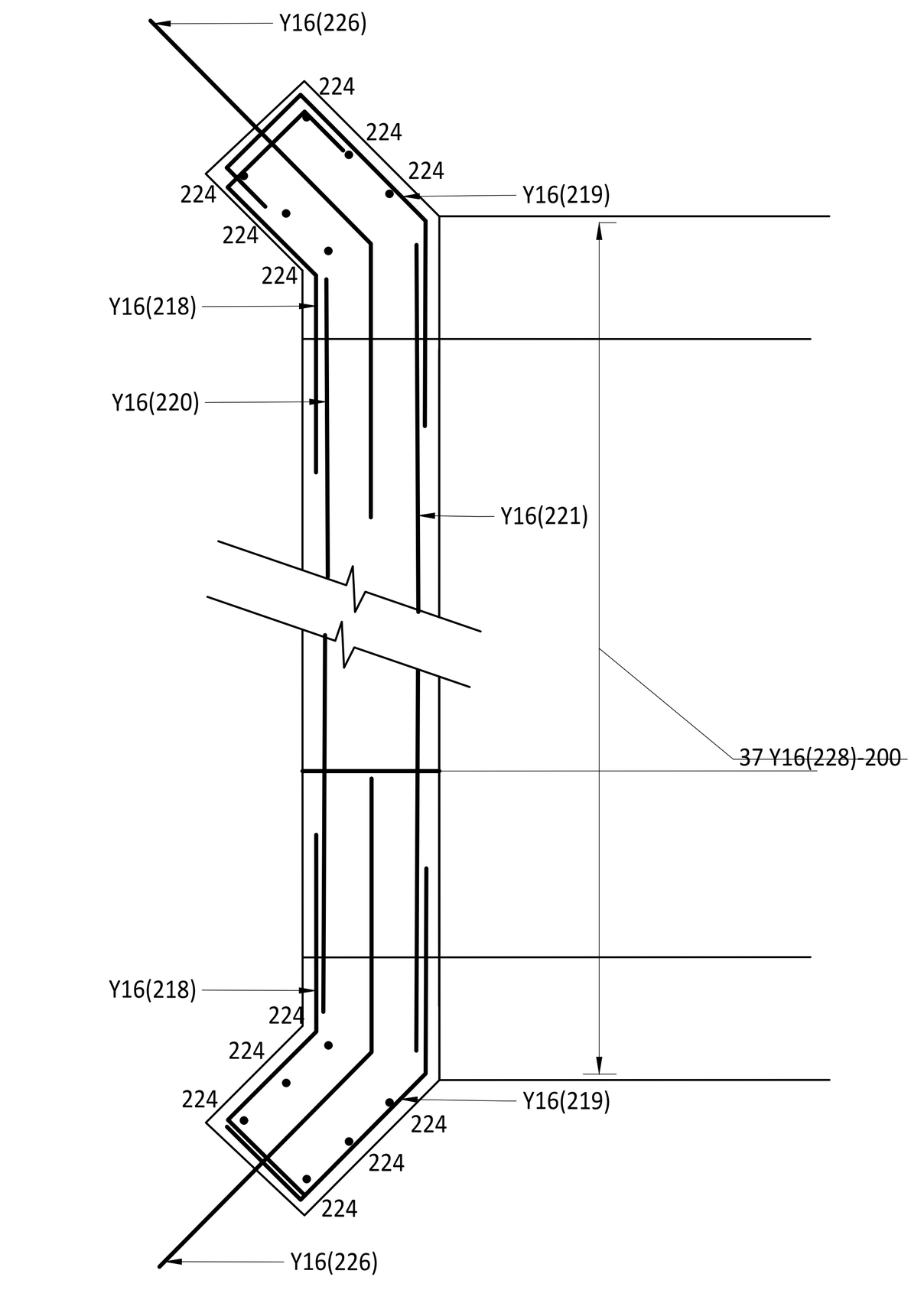
DETAIL 1
SCALE 1:25



DETAIL 2
SCALE 1:25



SECTION C-C
SCALE 1:25



SECTION D-D
SCALE 1:25

Member	Bar mark	"Type and size"		"No. of mbrs"	"No. of bars in each"	Total no.	"Length of each bar † mm"	Shape code	A *	B *	C *	D *	E/R *
		Type	Size						mm	mm	mm	mm	mm
	201	Y	20	1	51	51	7850	38	500	7450			
	202	Y	32	1	51	51	1900	20	1900				
	203	Y	16	1	152	152	5325	20	5310				
	204	Y	25	1	51	51	7825	38	500	7450			
	205	Y	16	1	408	408	2525	49	280	280	1950	200	200
	206	Y	16	1	306	306	2025	38	200	1900			
	207	Y	16	1	24	24	4350	20	4350				
	208	Y	16	1	24	24	6350	20	6350				
	209 (A-G)	Y	16	1	84	84	1530-8450	20	1530-8450				
	210	Y	16	1	42	42	4350	20	4350				
	211	Y	16	1	42	42	6350	20	6350				
	212	Y	16	1	306	306	2800	38	200	2680			
	213	Y	20	1	102	102	3100	37	1950	1200			
	214	Y	20	1	102	102	3000	20	3000				
	215	Y	16	1	148	148	5350	20	5350				
	216	Y	16	1	102	102	7975	38	400	7250	400		
	217	Y	20	1	51	51	2600	20	2600				
	219	Y	16	1	12	12	1750	45	750	650	400	530	
	220	Y	16	1	6	6	7000	20	7000				
	221	Y	16	1	6	6	7250	20	7250				
	223	Y	16	1	42	42	2150	45	1000	770	400	550	
	224	Y	16	1	12	12	2575	37	2400	200			
	225	Y	16	1	12	12	3775	37	3600	200			
	226	Y	16	1	12	12	2100	62	1100	780	1000		
	227	Y	16	1	42	42	2575	62	1570	1130	1000		
	228	Y	16	1	37	37	4150	52	1390	400	1360	1120	
	229	Y	16	1	37	37	3000	52	770	400	830	1120	
STOOLS	230	Y	12	1	70	70	1400	83	200	450	150	150	
CLIPS	231	Y	10	1	100	100	500	38	100	350	100		
STOOLS	232	Y	12	1	70	70	1300	83	200	400	150	150	
PURPOSE MADE REINF (SHAPE 99)	218	Y	16	1	12	12	1625	99A	750	450	400	500	100
	222	Y	16	1	42	42	1775	99A	700	650	400	500	100
Reinf. Masses (kg):		≤ 12		0		>12 ≤ 25		15,849		> 25		612	
This schedule complies with SANS 282							Total Mass for this Schedule (kg):					16461	

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16 THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10 AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

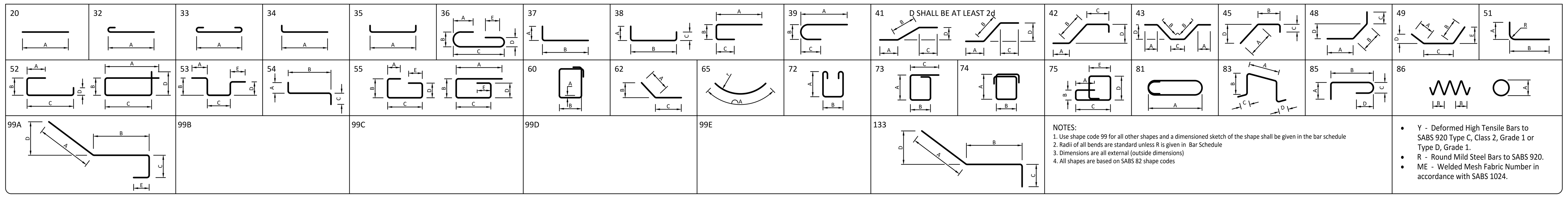
6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS



NOTES:
1. Use shape code 99 for all other shapes and a dimensioned sketch of the shape shall be given in the bar schedule
2. Radii of all bends are standard unless R is given in Bar Schedule
3. Dimensions are all external (outside dimensions)
4. All shapes are based on SABS 82 shape codes

- Y - Deformed High Tensile Bars to SABS 920 Type C, Class 2, Grade 1 or Type D, Grade 1.
- R - Round Mild Steel Bars to SABS 920.
- ME - Welded Mesh Fabric Number in accordance with SABS 1024.

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED

AMENDMENTS

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER: STRUCTURAL DESIGN

HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA

27°59'55.354"S 31°20'51.228"E

PROPOSED 3.0M X 3.0M BOX CULVERT

REINFORCEMENT DETAILS - BARREL A

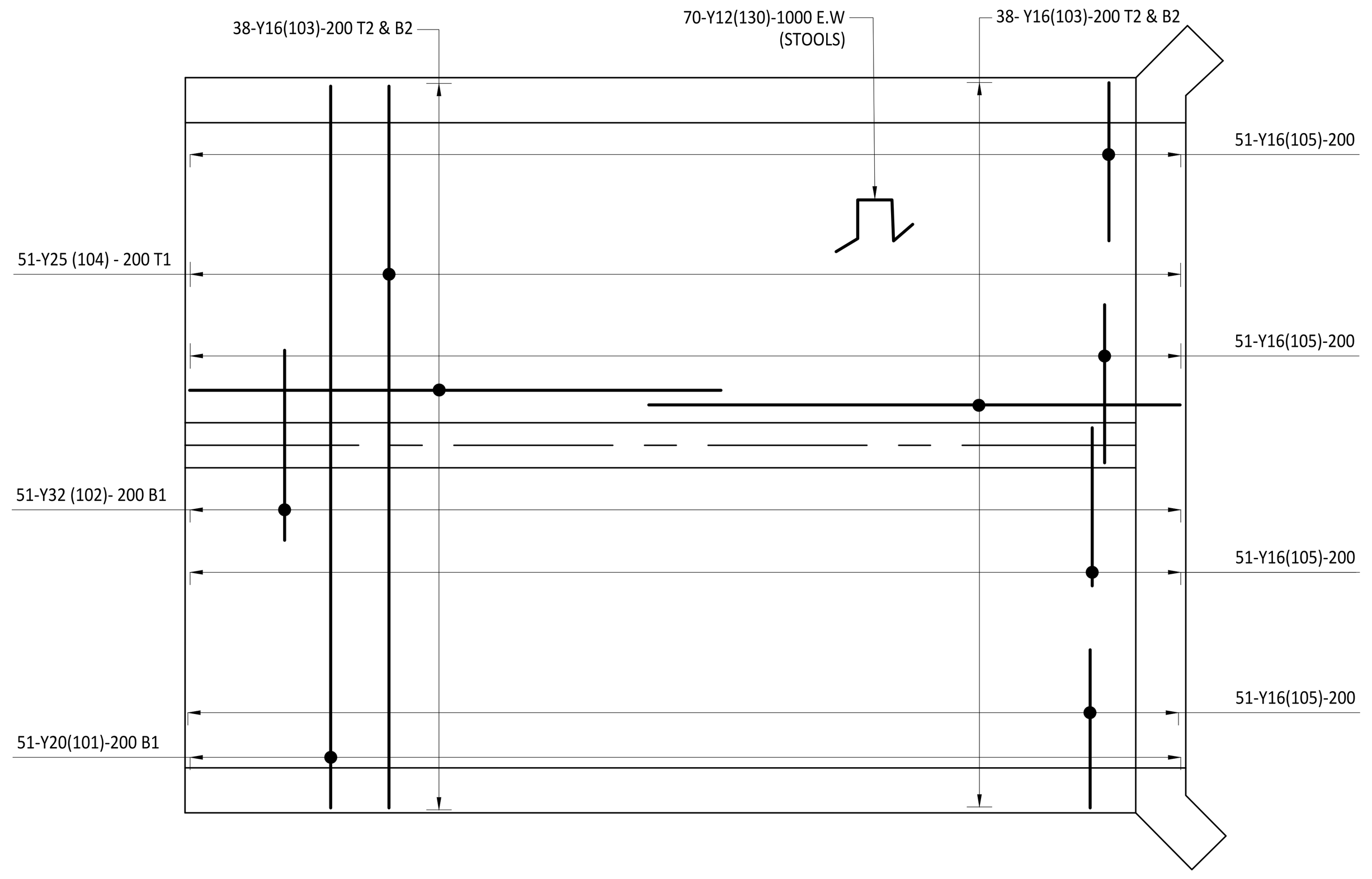
STAKED KM DISTANCE 19.3

SHEET :- 5 OF 9

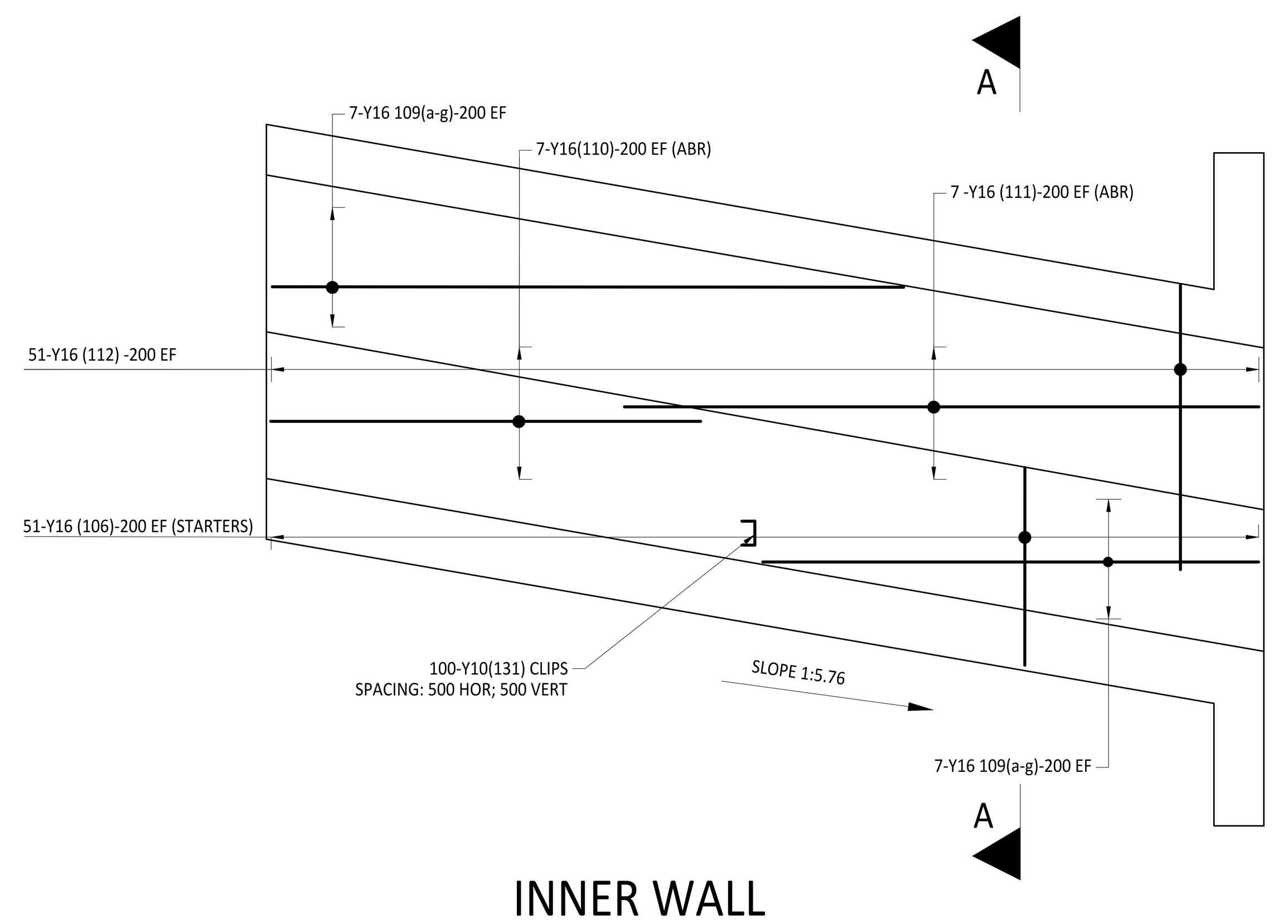
SCALE AS SHOWN

PLAN NO.:- STC3922/5

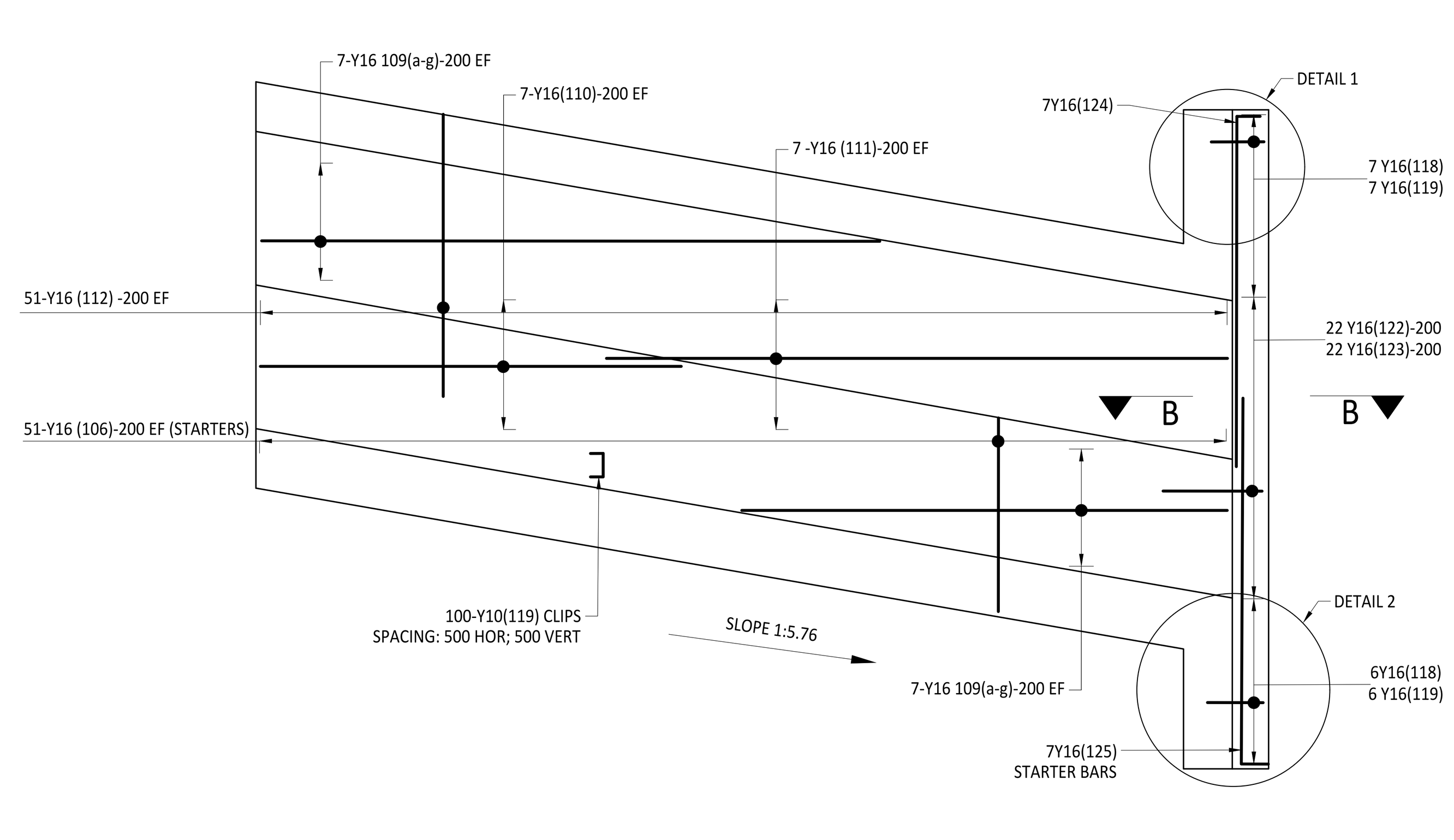
STC3922/5



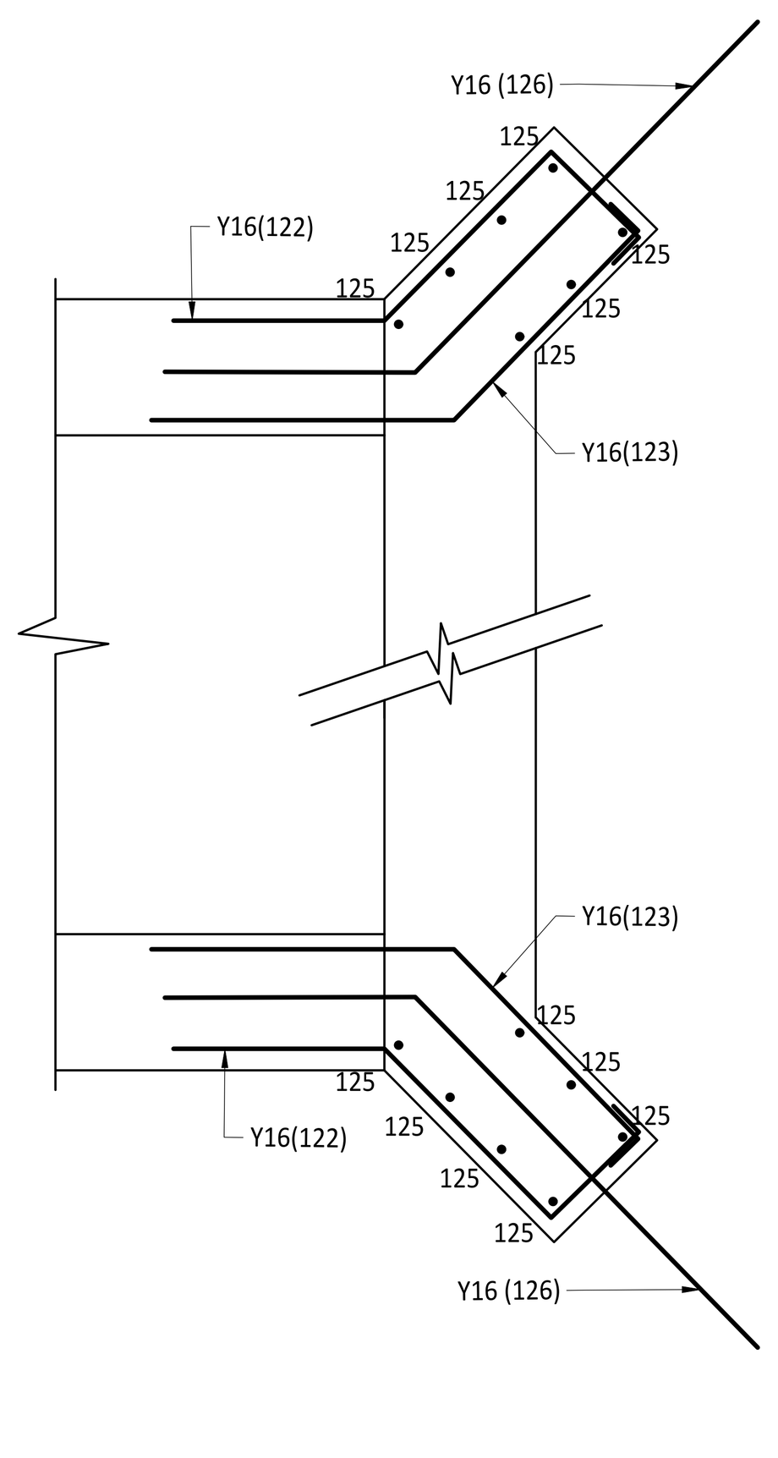
FOUNDATION SLAB
SCALE 1:50



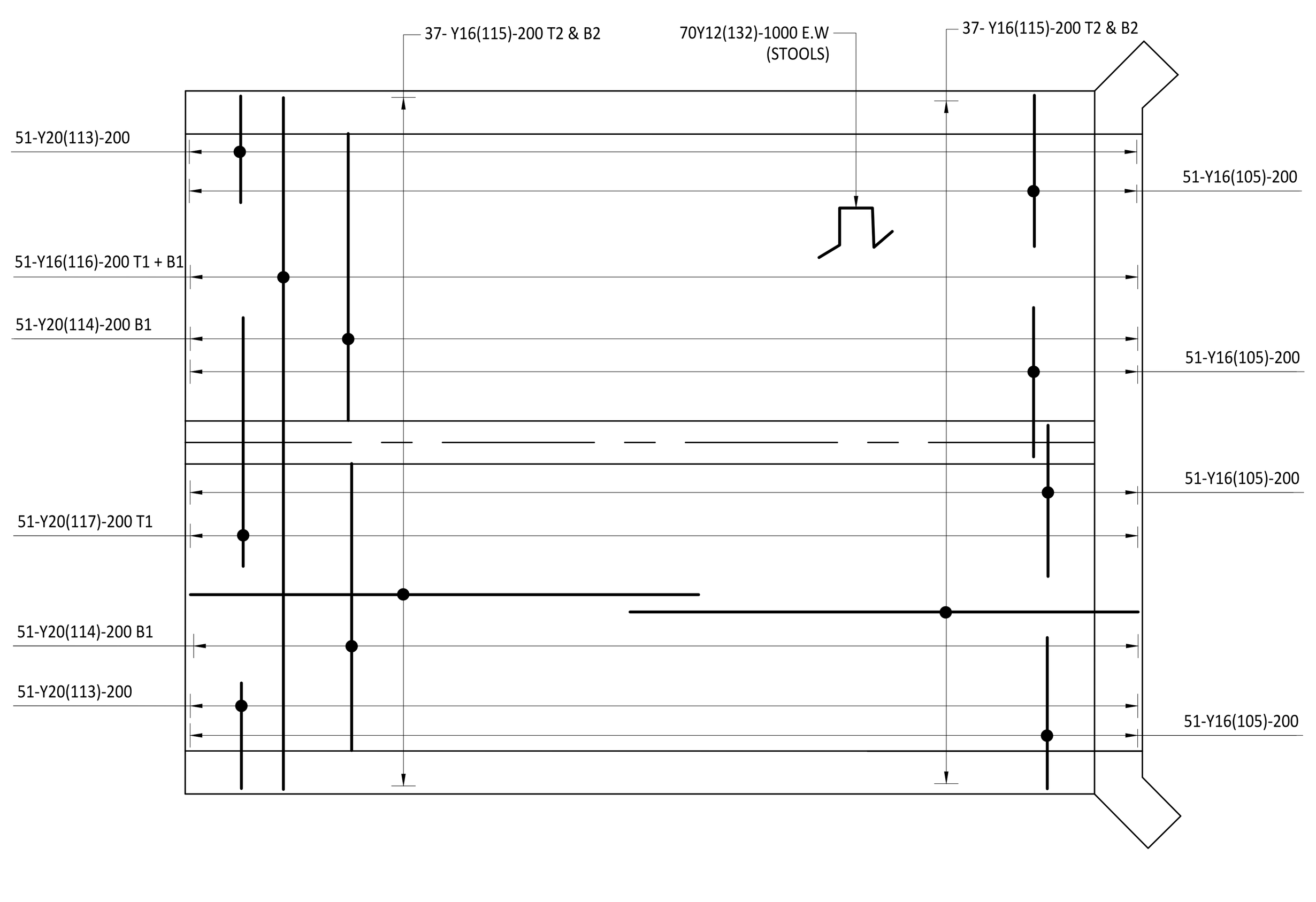
INNER WALL
SCALE 1:50



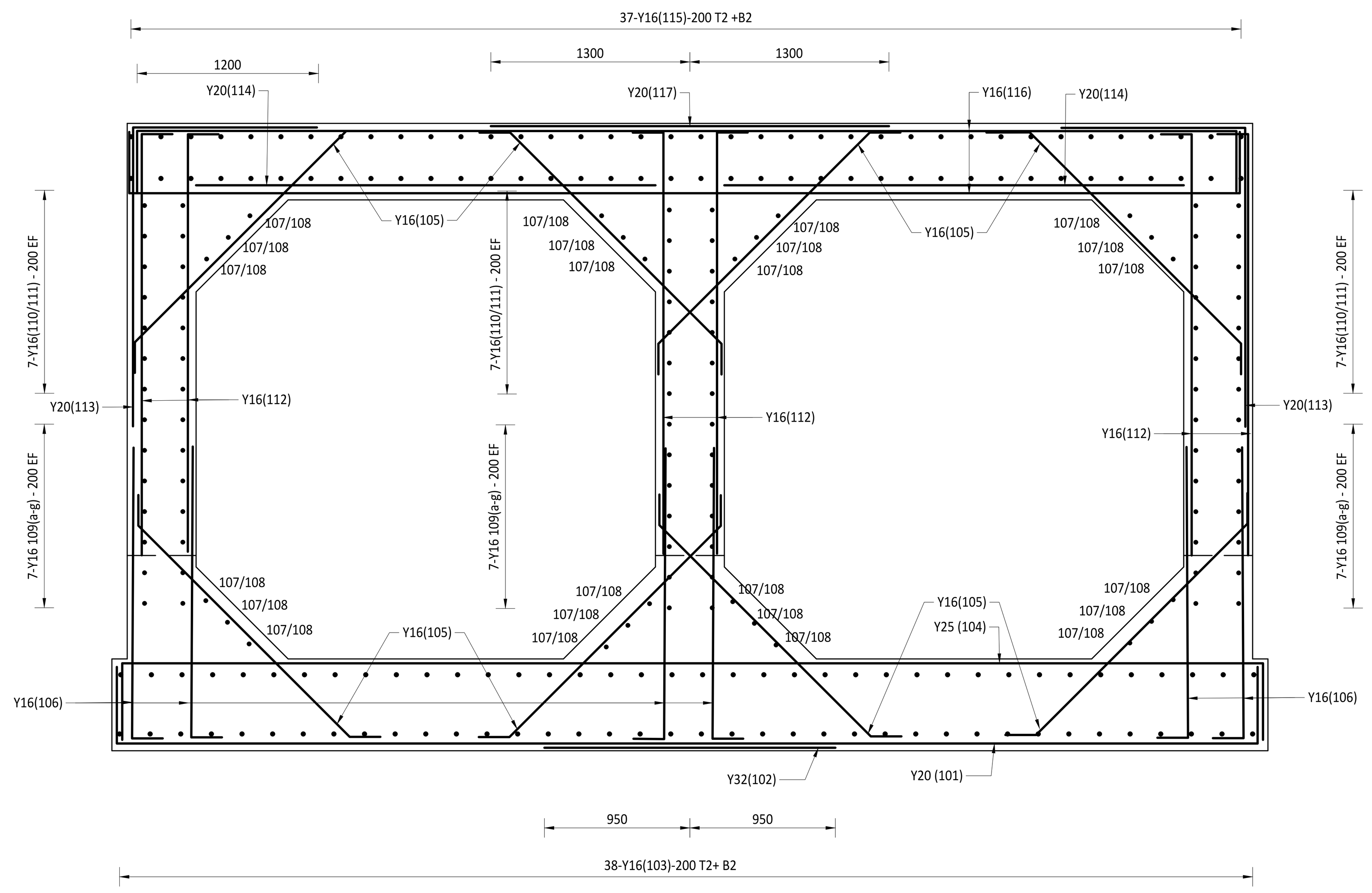
OUTER WALL
SCALE 1:50



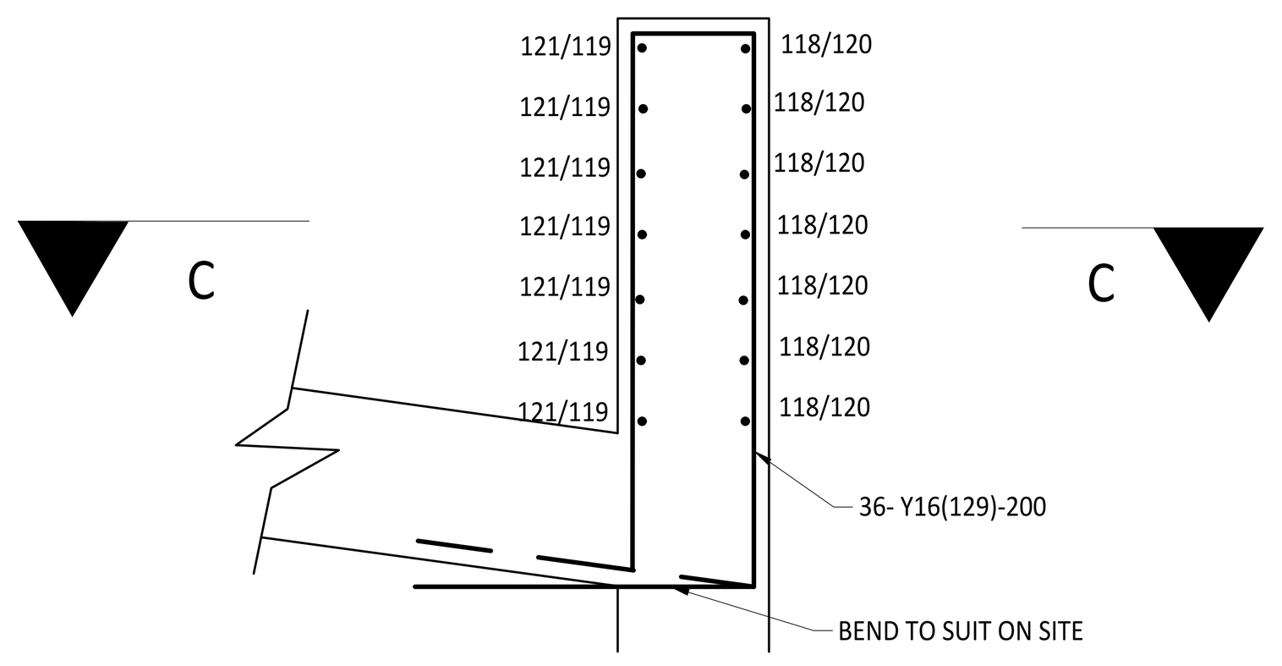
SECTION B-B
SCALE 1:25



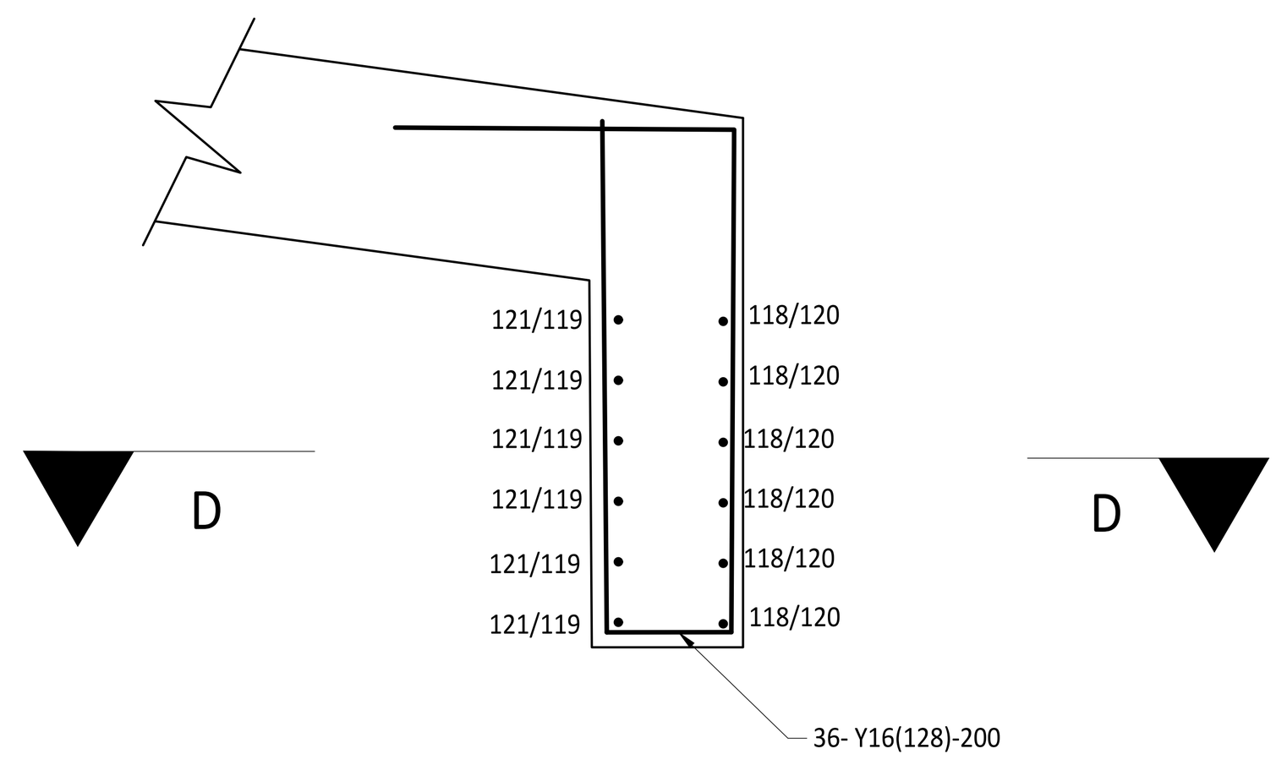
ROOF SLAB
SCALE 1:50



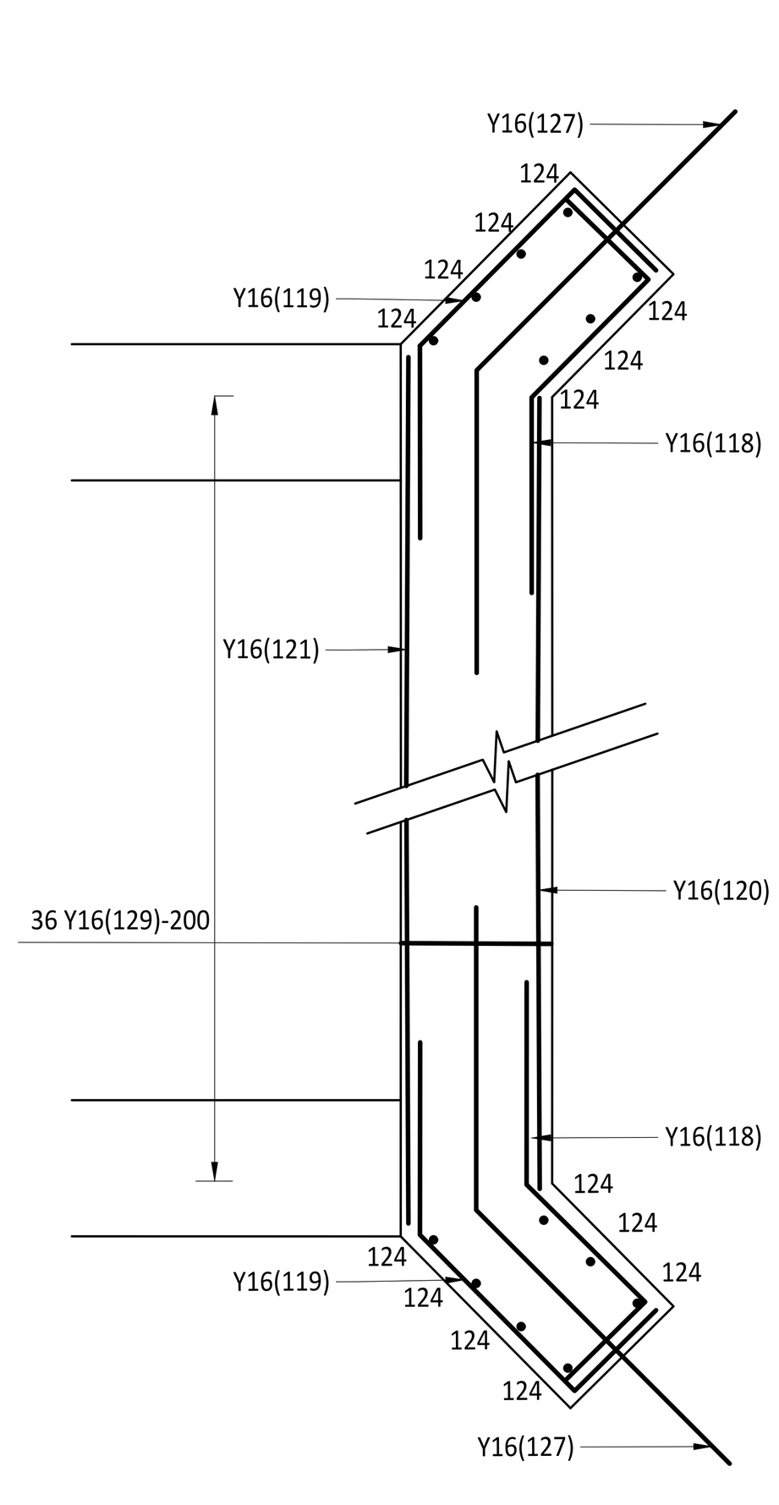
SECTION A-A
SCALE 1:25



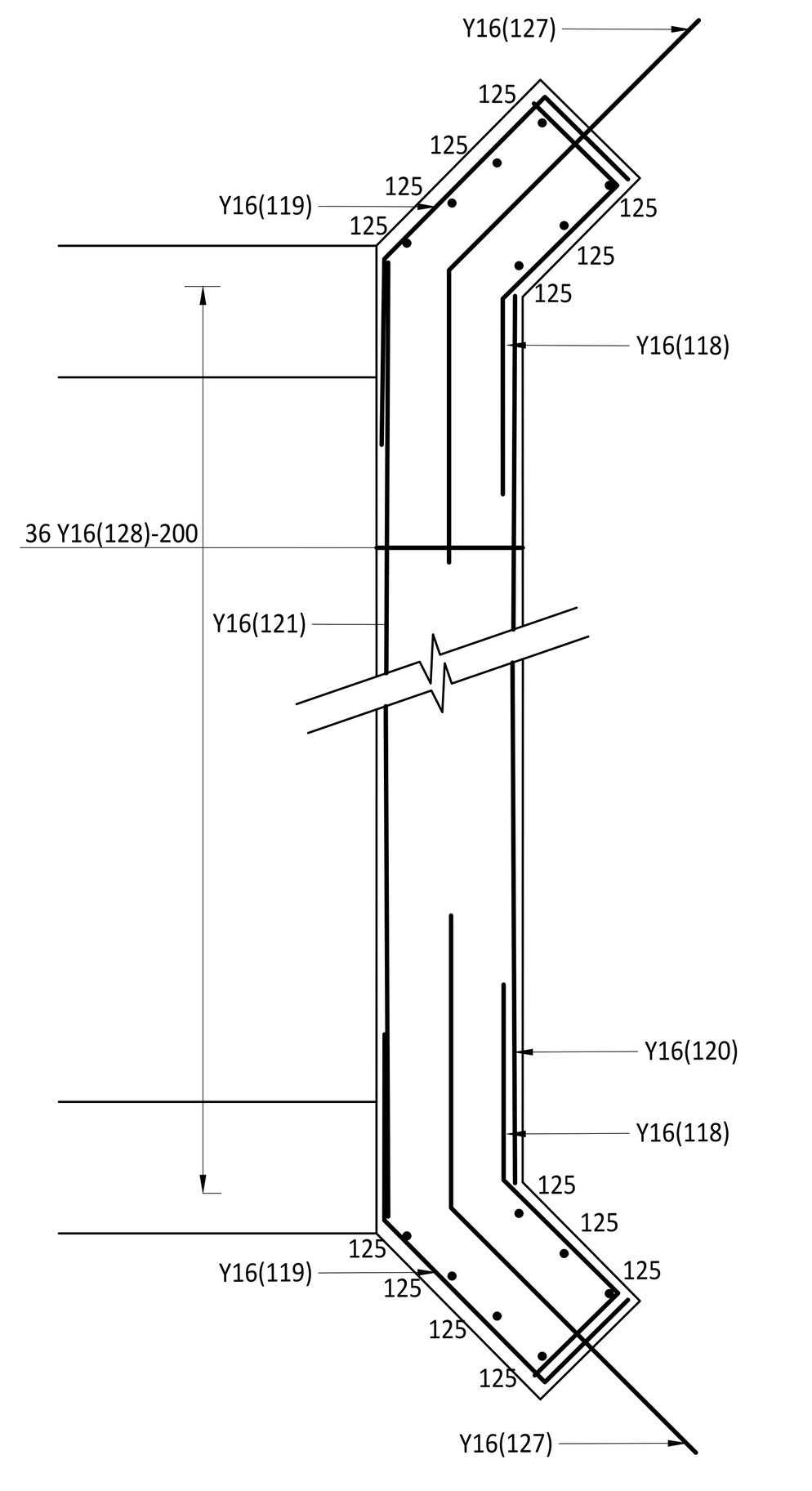
DETAIL 1
SCALE 1:25



DETAIL 2
SCALE 1:25



SECTION C-C
SCALE 1:25



SECTION D-D
SCALE 1:25

Member	Bar mark	"Type and size"		"No. of mbrs"	"No. of bars in each"	Total no.	"Length of each bar † mm"	Shape code	A *	B *	C *	D *	E/R *
		Type	Size						mm	mm	mm	mm	mm
	101	Y	20	1	51	51	8350	38	500	7450	500		
	102	Y	32	1	51	51	1900	20	1900				
	103	Y	16	1	152	152	5325	20	5310				
	104	Y	25	1	51	51	7825	38	500	7450	500		
	105	Y	16	1	408	408	2525	49	280	280	1950	200	200
	106	Y	16	1	306	306	2025	38	200	1900			
	107	Y	16	1	24	24	4350	20	4350				
	108	Y	16	1	24	24	6350	20	6350				
	109 (A-G)	Y	16	1	84	84	1530-8450	20	1530-8450				
	110	Y	16	1	42	42	4350	20	4350				
	111	Y	16	1	42	42	6350	20	6350				
	112	Y	16	1	306	306	2800	38	200	2680			
	113	Y	20	1	102	102	3100	37	1950	1200			
	114	Y	20	1	102	102	3000	20	3000				
	115	Y	16	1	148	148	5350	20	5350				
	116	Y	16	1	102	102	7975	38	400	7250	400		
	117	Y	20	1	51	51	2600	20	2600				
	119	Y	16	1	26	26	1750	45	750	620	400	530	
	120	Y	16	1	13	13	7250	20	7250				
	121	Y	16	1	13	13	7000	20	7000				
	123	Y	16	1	44	44	1600	45	750	470	400	530	
	124	Y	16	1	14	14	3925	37	3750	200			
	125	Y	16	1	14	14	3475	37	3300	200			
	126	Y	16	1	32	32	2575	62	1570	700	1000		
	127	y	16	1	42	42	2200	62	1000	1000	1200		
	128	Y	16	1	36	36	4725	52	1660	400	1660	1120	
	129	Y	16	1	36	36	4950	52	1770	400	1770	1120	
STOOLS	130	y	16	1	70	70	1400	83	200	450	150	150	
CLIPS	131	Y	16	1	100	100	500	38	100	350	100		
STOOLS	132	Y	16	1	70	70	1300	83	200	400	150	150	
PURPOSE MADE REINF (SHAPE 99)	118	Y	16	1	26	26	1930	99A	750	600	400	530	100
	122	Y	16	1	44	44	1750	99A	750	470	400	530	100
Reinf. Masses (kg):		? 12		199		>12 ? 25		15696		> 25		612	
This schedule complies with SANS 282							Total Mass for this Schedule (kg):					16504	

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16 THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10 AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

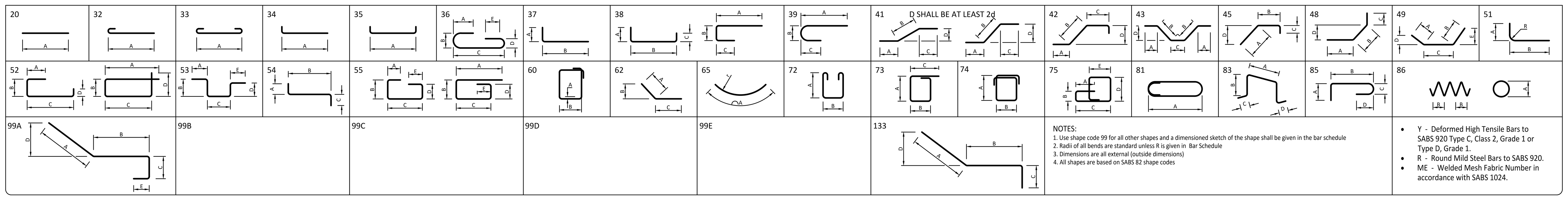
6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS



NOTES:
1. Use shape code 99 for all other shapes and a dimensioned sketch of the shape shall be given in the bar schedule
2. Radii of all bends are standard unless R is given in Bar Schedule
3. Dimensions are all external (outside dimensions)
4. All shapes are based on SABS 82 shape codes

- Y - Deformed High Tensile Bars to SABS 920 Type C, Class 2, Grade 1 or Type D, Grade 1.
- R - Round Mild Steel Bars to SABS 920.
- ME - Welded Mesh Fabric Number in accordance with SABS 1024.

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
AMENDMENTS				

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER: STRUCTURAL DESIGN

HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA

27°59'55.354"S 31°20'51.228"E

PROPOSED 3.0M X 3.0M BOX CULVERT

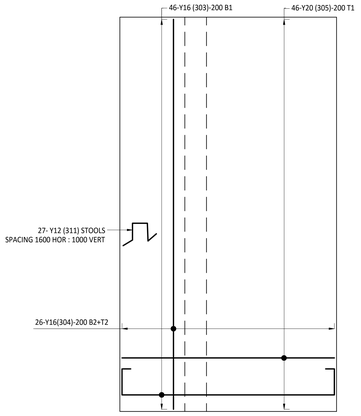
REINFORCEMENT DETAILS - CULVERT C

STAKED KM DISTANCE 19.3

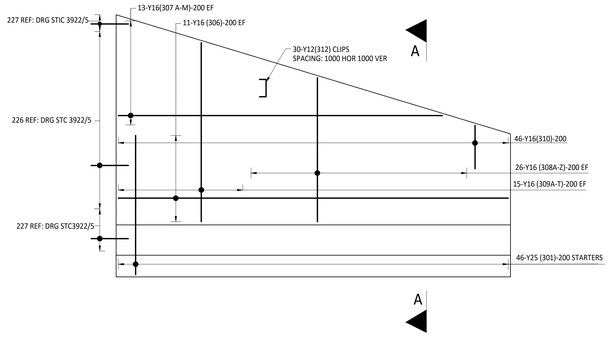
SCALE AS SHOWN

PLAN NO.:- STC3922/7

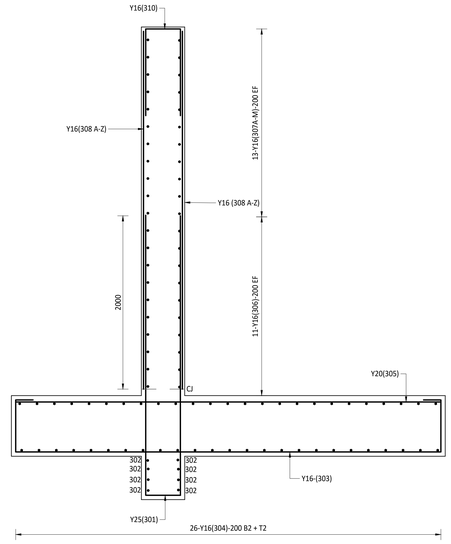
STC3922/7



WING WALL 1
FOUNDATION PLAN
SCALE 1:50

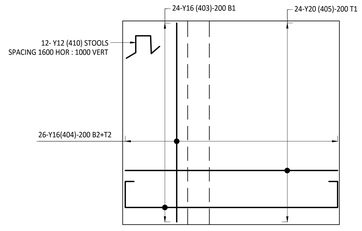


WING WALL 1
ELEVATION
SCALE 1:50

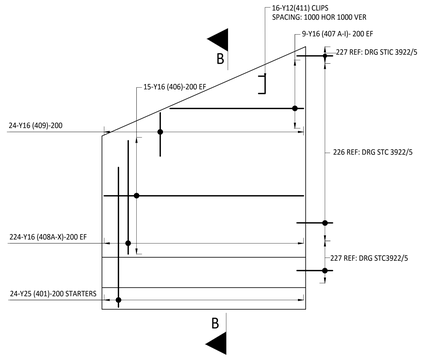


WING WALL 1
SECTION A-A
SCALE 1:50

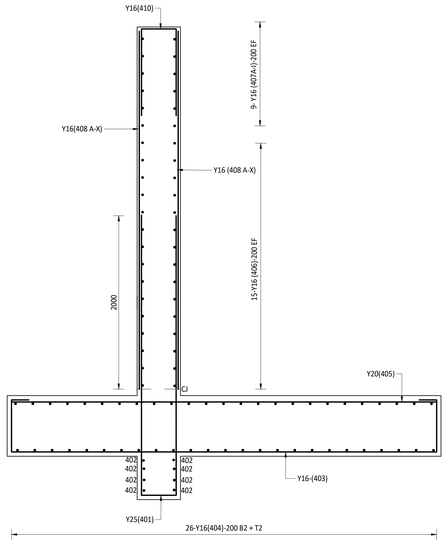
Member	Bar mark	"Type and size" Type	"Type and size" Size	"No. of mbrs"	"No. of bars in each"	Total no.	"Length of each bar † mm"	Shape code	A * mm	B * mm	C * mm	D * mm	E/R * mm
WING WALL 1	301	Y	25	1	46	46	6775	38	3250	400	3250		
	302	Y	16	1	8	8	9000	20	9000				
	303	Y	16	1	45	45	6350	55	200	600	4900	600	200
	304	Y	16	1	52	52	9000	20	9000				
	305	Y	20	1	46	46	4900	20	4900				
	306	Y	16	1	22	22	9000	20	9000				
	307(a-m)	Y	16	1	26	26	250-8230	20	250-8230				
	308(a-z)	Y	16	1	52	52	2280-3780	20	2280-3780				
	309(a-t)	Y	16	1	30	30	3830-4700	20	3830-4700				
	310	Y	16	1	46	46	1425	38	1000	400	1000		
STOOLS	311	Y	12	1	27	27	1600	83	200	550	150		
CLIPS	312	Y	12	1	30	30	650	38	150	400	150		
WING WALL 2	401	Y	25	1	24	24	6775	38	3250	400	3250		
	402	Y	16	1	8	8	4600	20	4600				
	403	Y	16	1	24	24	6350	55	200	600	4900	600	200
	404	Y	16	1	52	52	4600	20	4600				
	405	Y	20	1	24	24	4900	20	4900				
	406	Y	16	1	30	30	4600	20	4600				
	407(A-I)	Y	16	1	18	18	530-4140	20	530-4140				
	408(A-X)	Y	16	1	48	48	2480-4420	20	2480-4420				
	409	Y	16	1	24	24	2325	38	1000	400	1000		
STOOLS	410	Y	12	1	12	12	1600	83	200	550	150		
CLIPS	411	Y	12	1	16	16	650	38	150	400	150		
Reinf. Masses (kg):			≤ 12		82		>12 ≤ 25		6329	> 25		0	
This schedule complies with SANS 282							**Total Mass for this Schedule (kg):**					6,411	



WING WALL 2
FOUNDATION PLAN
SCALE 1:50



WING WALL 2
ELEVATION
SCALE 1:50



WING WALL 2
SECTION B-B
SCALE 1:50

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16
THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10
AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS

REV	DATE	ISSUED	DRAWN	CHECKED
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
AMENDMENTS				

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:

ANDERSON VOGT CONSULTING

CHIEF ENGINEER:
STRUCTURAL DESIGN

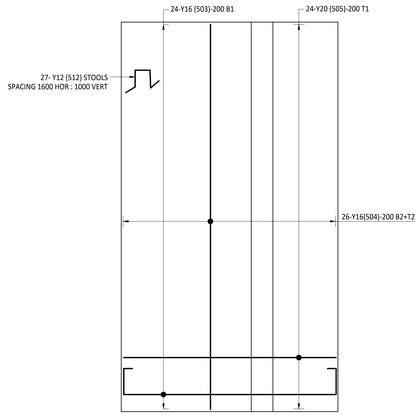
HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

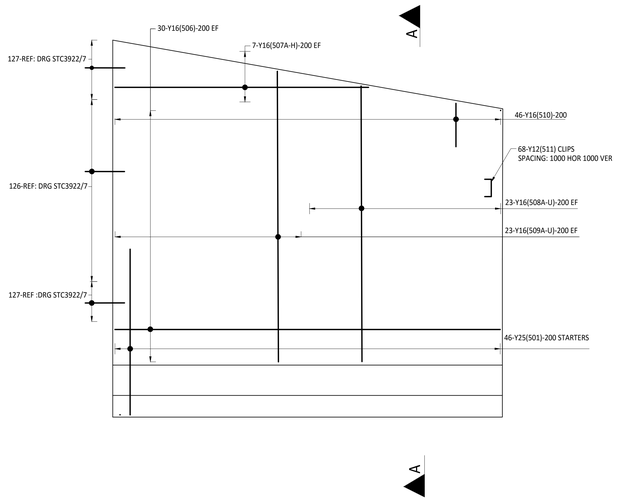
PROPOSED 3.0M X 3.0M BOX CULVERT
REINFORCEMENT DETAILS - WING WALLS 1 & 2

STAKED KM DISTANCE	SHEET :-
19.3	8 OF 9
SCALE	PLAN NO.:-
AS SHOWN	STC3922/8

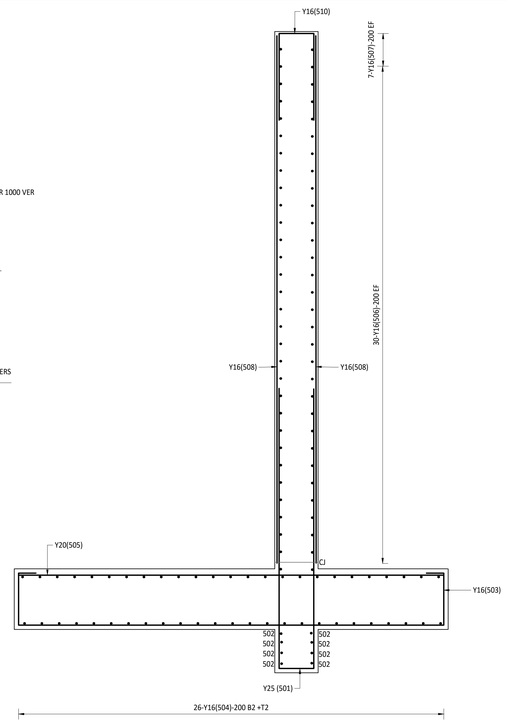
STC3922/8



WING WALL 3
PLAN VIEW
SCALE 1:50



WING WALL 3
ELEVATION
SCALE 1:50



WING WALL 3
SECTION A-A
SCALE 1:50

Member	Bar mark	"Type and size"		"No. of mbrs"	"No. of bars in each"	Total no.	"Length of each bar † mm"	Shape code	A *	B *	C *	D *	E/R *
		Type	Size						mm	mm	mm	mm	mm
WING WALL 3	501	y	25	1	46	46	7950	38	3830	400	3250		
	502	y	16	1	8	8	8900	20	8900				
	503	y	16	1	46	46	6350	55	200	600	4900	600	200
	504	y	16	1	52	52	8900	20	8900				
	505	y	20	1	46	46	4900	20	4900				
	506	y	16	1	60	60	8900	20	8900				
	507(A-H)	y	16	1	16	16	1140-7600	20	1140-7600				
	508(A-U)	y	16	1	46	46	5800-6570	20	5800-6570				
	509(A-U)	y	16	1	46	46	6610-7370	20	6610-7370				
	510	Y	16	1	46	46	2325	38	1000	400	1000		
	511	Y	12	1	68	68	650	83	150	400	150		
	512	Y	12	1	27	27	1600	38	200	550	150		
WING WALL 4	601	Y	25	1	30	30	7950	38	3830	400	3830		
	602	Y	16	1	31	31	6525	38	3100	400	3100		
	603	Y	16	1	4	4	6425	38	3050	400	3050		
	604	Y	16	1	16	16	6900	20	6880				
	605	Y	16	1	66	66	6350	55	200	600	4900	600	200
	606	Y	16	1	104	104	6900	20	6880				
	607	Y	20	1	66	66	4900	20	4900				
	608	Y	16	1	66	66	6900	20	6880				
	609(A-M)	Y	16	1	24	24	1200-6890	20	1200-6890				
	610(A-N)	Y	16	1	28	28	260-6430	20	260-6430				
	611(A-O)	Y	16	1	30	30	5860-7350	20	5860-7350				
	612(A-O)	Y	16	1	30	30	4970-6080	20	4970-6080				
	613	Y	16	1	34	34	3350	20	3350				
	614	Y	16	1	28	28	1850	20	1850				
	615	Y	16	1	66	66	2325	38	1000	400	1000		
	616	Y	12	1	65	65	650	38	150	400	150		
	617	Y	12	1	39	39	1600	83	200	550	150		
	618	Y	12	1	35	35	6690	20	6690				
	619A-Z	Y	12	1	52	52	1675-6590	20	1675-6590				
	620	Y	12	1	8	8	890-1480	20	890-1480				
	621	Y	12	1	22	22	750	37	200	500			
	622A-J	Y	12	1	10	10	8410-12070	20	8410-12070				
	623A-U	Y	12	1	42	42	7105-11272	20	7105-11272				
	624	Y	12	1	99	99	1450	37	980	500			
	625	Y	12	1	99	99	4375	60	1760	350			
	626	Y	12	1	40	40	10975	20	10970				
Reinf. Masses (kg):		? 12		1,894		>12 ? 25		5309		> 25		0	
This schedule complies with SANS 282							**Total Mass for this Schedule (kg):**					7,202	

GENERAL NOTES:

1) CONCRETE MIXES
15/19 : BLINDING UNDER BASE SLABS
30/19 : ALL CONCRETE STRUCTURES

2) STEEL REINFORCEMENT

2.1) HIGH YIELD STRESS STEEL IS INDICATED BY THE PREFIX "Y" e.g Y16
THIS SHALL BE TYPE C, CLASS 2, GRADE 1 TO SABS 920
2.2) MILD STEEL REINFORCEMENT IS INDICATED BY THE PREFIX "R" e.g. R10
AND SHALL BE TYPE A ROUND BARS TO SABS 920
2.3) MINIMUM RADIUS TO BENDS:R = 2 x BAR DIAMETER
Y = 3 x BAR DIAMETER
2.4) REINFORCEMENT SHALL BE BENT IN ACCORDANCE WITH SABS 82-1976 INCLUDING AMENDMENT NO.1 - 1978

3) CLEAR COVER TO REINFORCING: 50mm COVER TO ALL FACES OF BARREL BEARINGS AND WING WALL CHAMFERS

4) CHAMFERS: ALL SHARP CONCRETE EDGES TO BE CHAMFERED 25mm, UNLESS OTHERWISE SHOWN

5) FORMED CONCRETE SURFACES - F1 : CONCEALED SURFACES
F2 : VISIBLE SURFACES

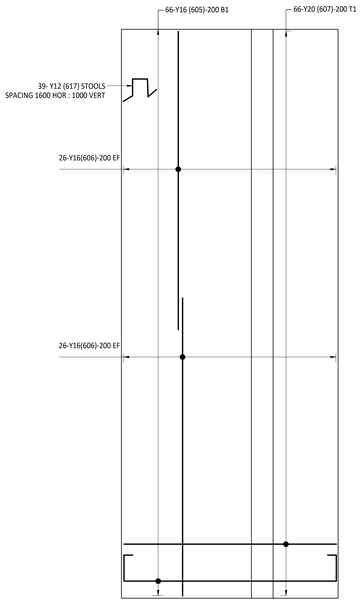
6) UNFORMED SURFACES - U1 : TOP OF TOP SLAB
U2 : TOP OF BASE SLAB WINGWALLS

7) EMBANKMENT PROTECTION:

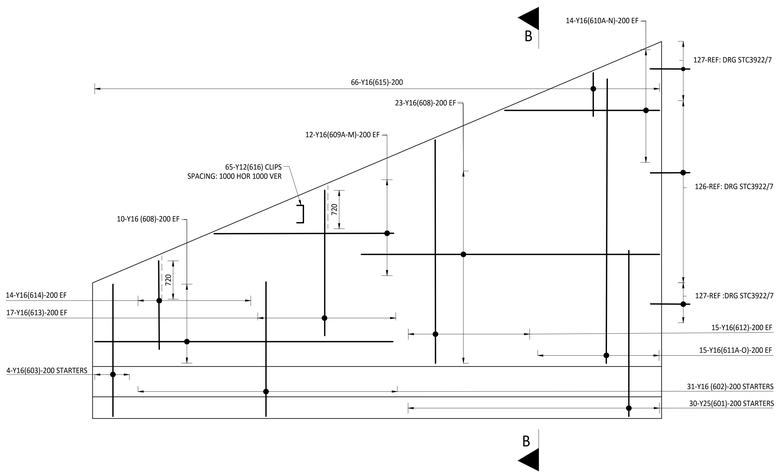
7.1) GABION CUTT-OFF WALL DEPTH AND SLOPE OF STREAMBANK PROTECTION ARE SUBJECT TO SITE CONDITIONS AND APPROVAL OF THE ENGINEER
7.2) EMBANKMENT PROTECTION TO EXTEND 6,0 METERS FROM UPSTAND WALL AT INLET END ONLY
7.3) FILL TO BE SELECT G7 MATERIAL COMPACTED IN 300mm (MAX) LAYERS TO 93% MOD AASHTO
7.4) SLOPES TO BE COVERED WITH 150mm LAYER OF TOPSOIL & GRASSED IMMEDIATELY AFTER CONSTRUCTION.
7.5) ROAD/PAVEMENT LAYER TO BE 1m DEEP G5 MATERIAL COMPACTED IN 200mm LAYERS TO 95% MOD AASHTO

8) DESIGN DATA

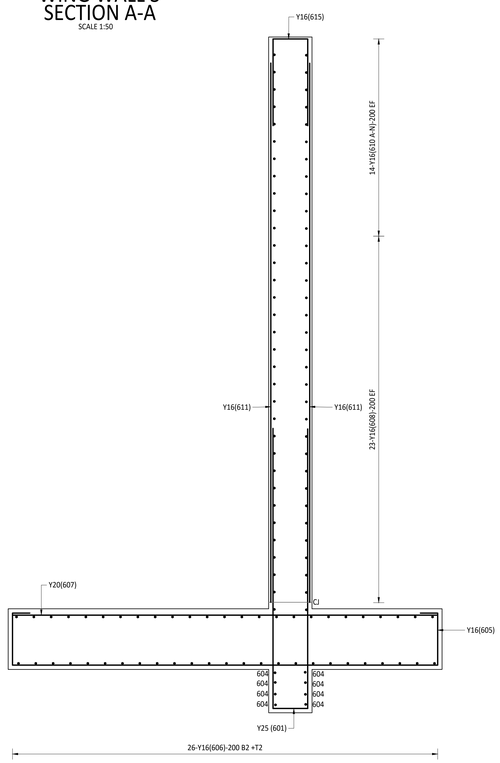
8.1) ALL LOADS IN ACCORDANCE WITH TMH7
8.2) DESIGN FILL HEIGHT (H) = 16,7m
8.3) EARTH BACKFILL MATERIAL TO GEOTECHNICAL ENGINEERS SPECIFICATIONS



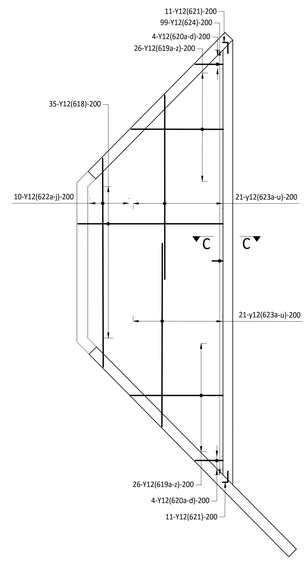
WING WALL 4
PLAN VIEW
SCALE 1:50



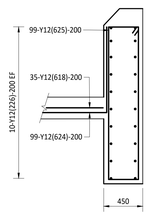
WING WALL 4
ELEVATION
SCALE 1:50



WING WALL 4
SECTION B-B
SCALE 1:50



STILLING BASIN SLAB REINFORCEMENT
SCALE 1:100



SECTION C-C
SCALE 1:25

REV	DATE	ISSUED	DRAWN	CHECKED
1	21-10-2022	STILLING BASIN DETAIL ADDED	K.M. DE BRUYN	Z. KHAN

SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED

AMENDMENTS

AS-BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

APRIL 2022	DESIGNED BY:-	S.CONGDON
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
APRIL 2022	DRAWN BY:-	K.M. DE BRUYN
APRIL 2022	CHECKED BY:-	Z. KHAN (2019300626)
SURVEY PLAN NO:-	FILE REFERENCE:-	

PROVINCE OF KWAZULU - NATAL

DEPARTMENT OF TRANSPORT

CONSULTANT:
ANDERSON VOGT CONSULTING

CHIEF ENGINEER:
STRUCTURAL DESIGN

HEAD : TRANSPORT

MAIN ROAD FROM P487 FROM VRYHEID TO CEZA
27°59'55.354"S 31°20'51.228"E

PROPOSED 3.0M X 3.0M BOX CULVERT
REINFORCEMENT DETAILS - WING WALLS 3&4

STAKED KM DISTANCE	SHEET :-
19.3	9 OF 9
SCALE	PLAN NO.:-
AS SHOWN	STC3922/9

STC3922/9