巻末資料 6-1-1　数量計算(S2)

MINISTRY OF PUBLIC WORKS AND HOUSING
DIRECTORATE GENERAL OF WATER RESOURCES
DIRECTORATE OF RIVER AND COAST
RIVER BASIN ORGANIZATION FOR BRANTAS

THE PROJECT FOR
CAPACITY DEVELOPMENT OF MT. SEMERU
VOLCANIC DISASTER MEASURES PLANNING

SUB-PROJECT PACKAGE S2
CD KOBOKAN 5, CD PELINTAS CURAH LENGKONG 2,
TANGGUL CURAH LENGKONG

DRAFT

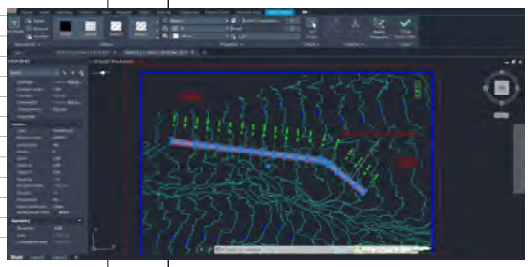
QUANTITY CALCULATION

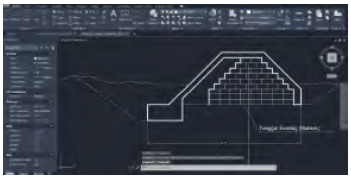
JICA Project Team

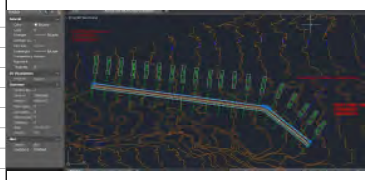
August 2024

Curah Lengkong Dike Summary Bill of Quantity

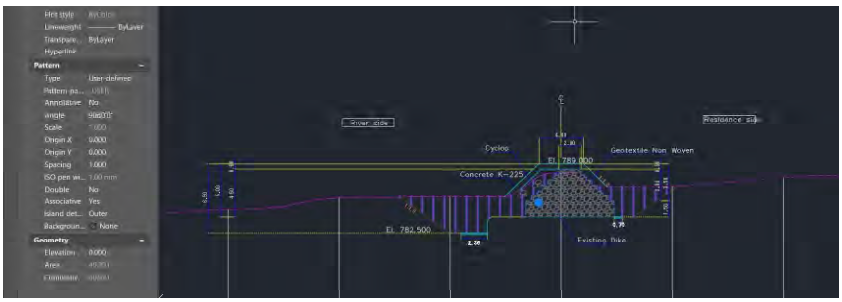
No.	Description	Unit	Volume
A	**PREPARATION WORK**		
1	Stake Out Trace of New Infrastructure & Wooden Stakes (Raft 5/7) Length 1 m	m2	17.922,39
2	1 m Excavation Cross Profile	m	261,00
3	Bowplank Installation	m	1.800,00
B	**DYKE WORK**		
1	Concrete Making and Casting fc' = 20 Mpa (K 225) Mechanical Transported radius 2000 m	m3	12.599,85
2	Cyclops Concrete 60% Concrete fc' 15 Mpa: 40% Split Stone	m3	8.560,45
3	Concrete Making and Casting fc' = 10 Mpa (K 125) Mechanical Transported radius 2000 m	m3	380,00
4	1 m2 Exposed Concrete Wall Formwork with 18 mm Multiflex	m2	19.969,00
5	1 m2 Scaffolding / Supporting Formwork Rafters 5/7 for Concrete Walls Tm 2.50 m	m2	25.783,00
6	Carefully dismantle 1 m2 of Formwork and Scaffolding	m2	19.969,00
7	1 m2 Regular Formwork for Concrete Walls with Multiflex 12 mm or 18 mm	m2	5.814,00
8	Dismantle 1 m2 of Formwork and Scaffolding in the Normal Way (and Clear Debris) for Non Expose	m2	5.814,00
9	Mechanical Sand Excavation (excavated material is dumped nearby)	m3	36.785,08
10	Geotextile, Medium thickness (> 400 to < 800 gr), Manual	m2	15.300,00

Name Structure :	: Curah Lengkong Dike				
Type of work	: Stake Out Trase				
No.	Description	Calculation	Volume	Unit	Drawing reference
1		17922,39	17.922,39	m^2	
					
		Stake Out Trase Total Volume =	17.922,39	m²	

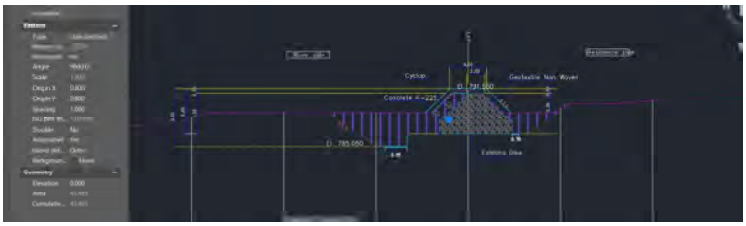
Name Structure :	**: Curah Lengkong Dike**				
Type of work	**: Cross Profile**				
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing reference**
					Assumption according to Cross Section Image per 50 m
1	Dike Length =	900,00 ***m***			
	Measured every =	50,00 m	**261,00**	m	
	Dike Width =	14,500 m			
		Cross Profile Total Volume =	**261,00**	**m**	

Name Structure :	**: Curah Lengkong Dike**				
Type of work	**: BowPlank**				
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing reference**
1	Dike Length =	900,00 ***m***			
	Installed in =	2,00 side	**1.800,00**	m	
		BowPlank Total Volume =	**1.800,00**	**m'**	

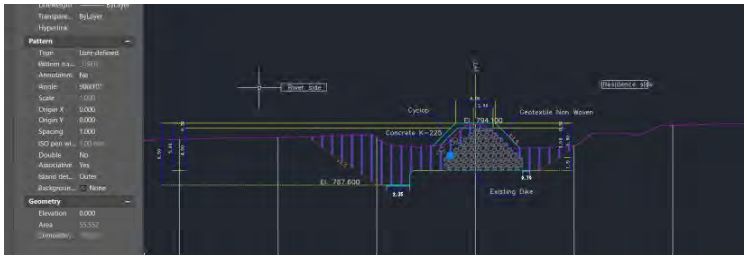
Name Structure :		**: Curah Lengkong Dike**		
Type of work		**: Sand Excavation**		
No.	**Description**	**Calculation**	**Volume**	**Unit**
1	0+000			
	Area	40,99		
	Length	50,000		
	V=	(40,99) / 2 x 50,00	**1.024,78**	m^3



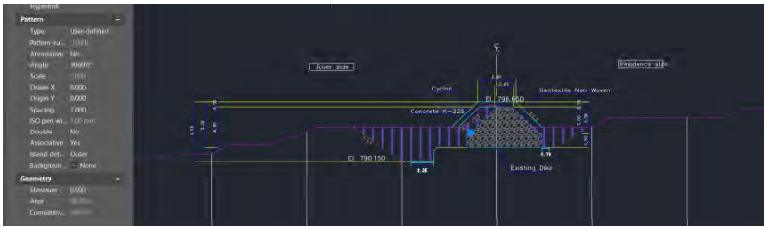
2	0+050			
	Area	43,47		
	Length	50,000		
	V=	(40,99 + 43,47) / 2 x 50,00	**2.111,40**	m^3



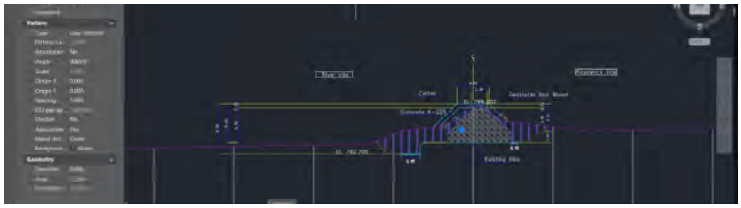
3	0+100			
	Area	55,55		
	Length	50,00		
	V=	(43,47 + 55,55) / 2 x 50,00	**2.475,43**	m^3



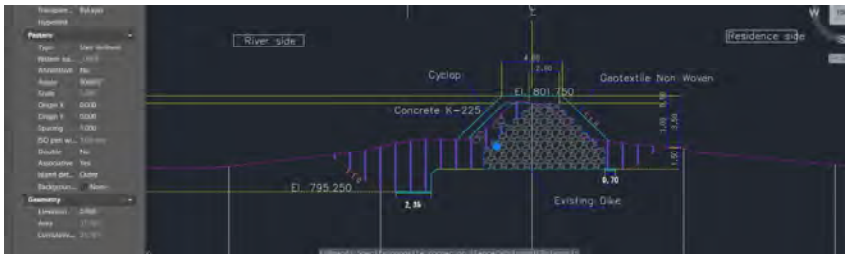
4	0+150			
	Area	40,24		
	Length	50,00		
	V=	(55,55 + 40,24) / 2 x 50,00	**2.394,70**	m^3



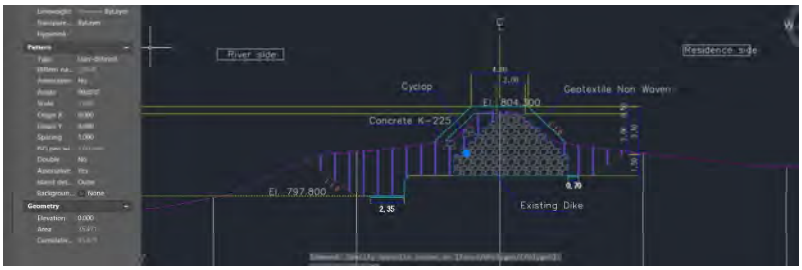
5	0+200			
	Area	32,08		
	Length	50,00		
	V=	(40,24 + 32,08) / 2 x 50,00	**1.808,00**	m^3



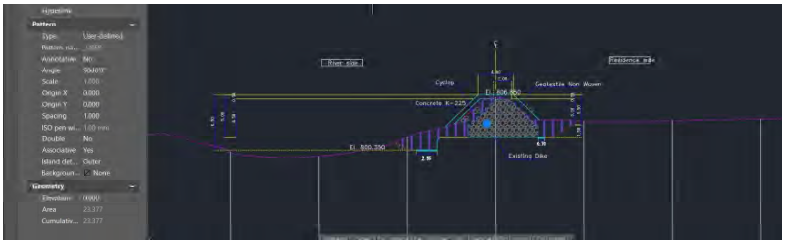
6	0+250			
	Area	31,76		
	Length	50,00		
	V=	(32,08 + 31,76) / 2 x 50,00	**1.596,13**	m^3



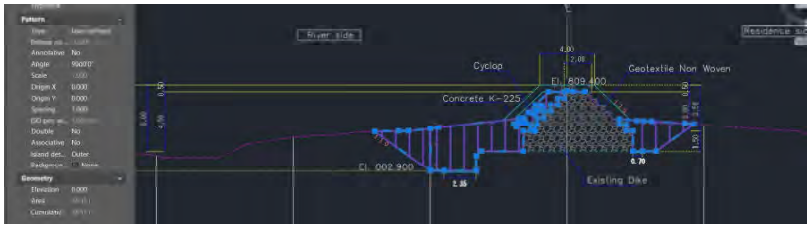
7	0+300			
	Area	35,47		
	Length	50,00		
	V=	(31,76 + 35,47) / 2 x 50,00	**1.680,80**	m^3



8	0+350			
	Area	23,38		
	Length	50,00		
	V=	(35,47 + 23,38) / 2 x 50,00	**1.471,20**	m^3



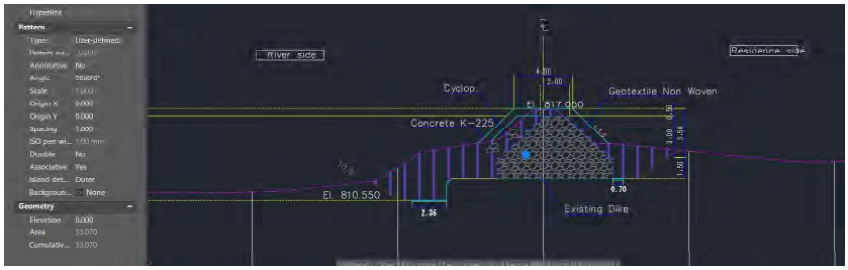
9	0+400			
	Area	36,15		
	Length	50,00		
	V=	(23,38 + 36,15) / 2 x 50,00	**1.488,20**	m^3



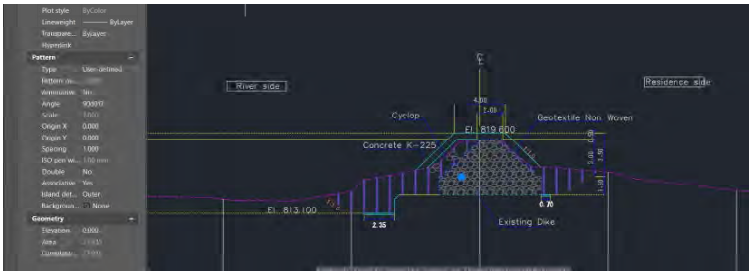
10	0+450			
	Area	27,67		
	Length	50,00		
	V=	(36,15 + 27,67) / 2 x 50,00	**1.595,43**	m^3

11	0+500			
	Area	28,42		
	Length	50,00		
	V=	(27,67 + 28,42) / 2 x 50,00	**1.402,15**	m^3

12	0+550			
	Area	33,07		
	Length	50,00		
	V=	(28,42 + 33,07) / 2 x 50,00	**1.537,25**	m^3

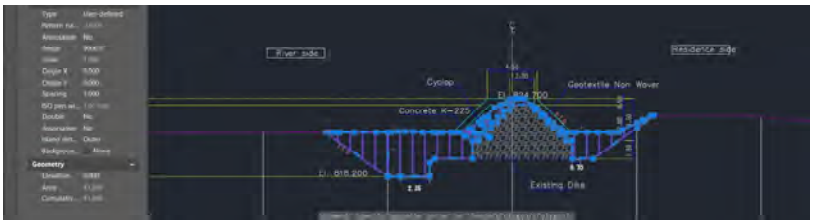


13	0+600			
	Area	27,94		
	Length	50,00		
	V=	(33,07 + 27,94) / 2 x 50,00	**1.525,13**	m^3

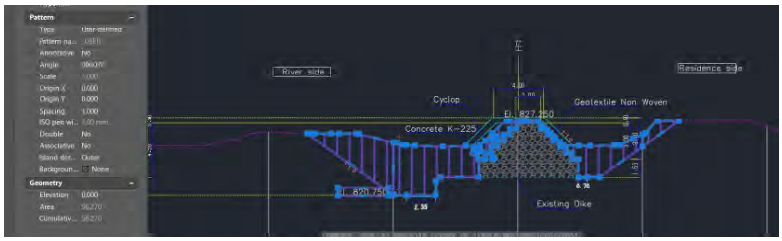


14	0+650			
	Area	39,30		
	Length	50,00		
	V=	(27,94 + 39,30) / 2 x 50,00	**1.680,80**	m^3

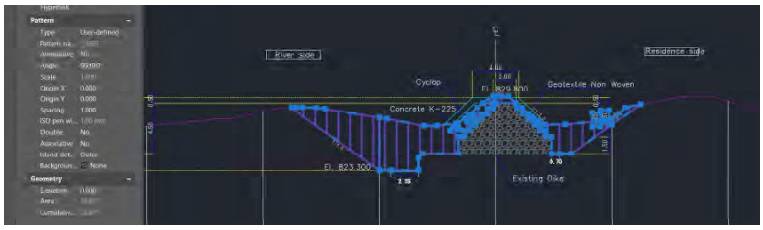
15	0+700			
	Area	41,87		
	Length	50,00		
	V=	(39,30 + 41,87) / 2 x 50,00	**2.029,08**	m^3



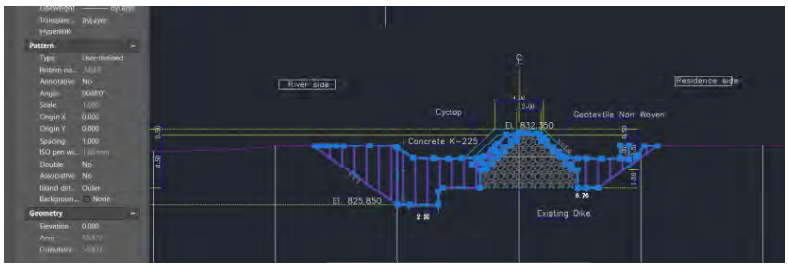
16	0+750			
	Area	56,27		
	Length	50,00		
	V=	(41,87 + 56,27) / 2 x 50,00	**2.453,40**	m³



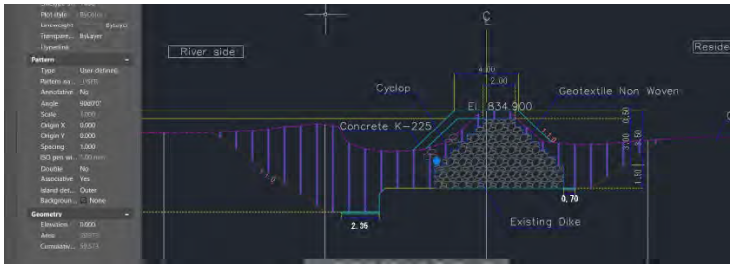
17	0+800			
	Area	58,87		
	Length	50,00		
	V=	(56,27 + 58,87) / 2 x 50,00	**2.878,53**	m³



18	0+850			
	Area	53,43		
	Length	50,00		
	V=	(58,87 + 53,43) / 2 x 50,00	**2.807,58**	m³

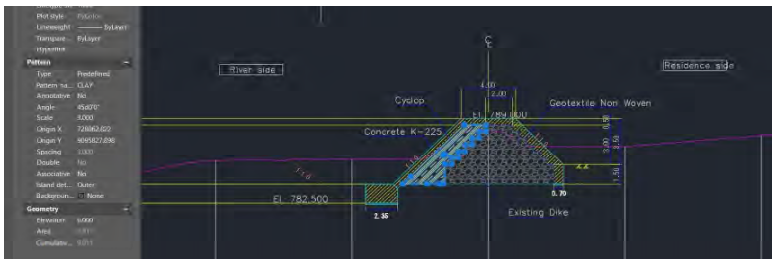


19	0+900			
	Area	59,57		
	Length	50,00		
	V=	(53,43 + 59,57) / 2 x 50,00	**2.825,13**	m³

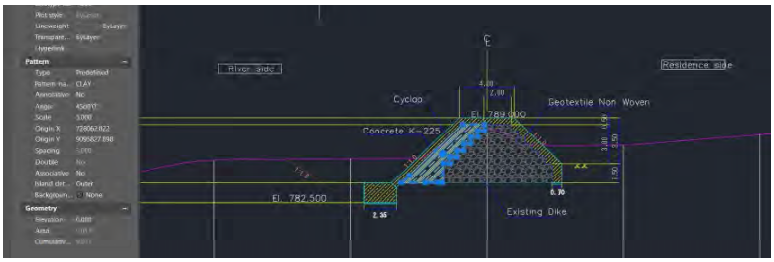


		Sand Excavation Total Volume =	**36.785,08**	**m³**

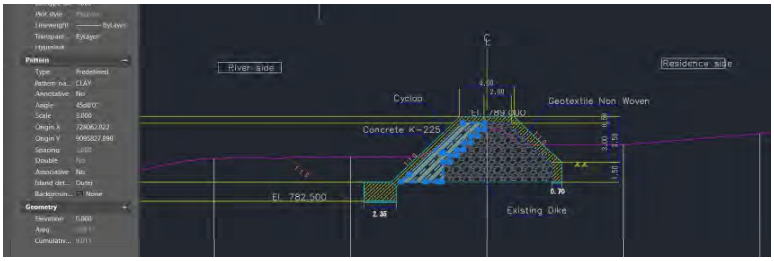
Name Structure :		**: Curah Lengkong Dike**		
Type of work		**: Cyclops Concrete**		
No.	**Description**	**Calculation**	**Volume**	**Unit**
1	0+000			
	Area	9,01		
	Length	50,000		
	V=	9,01 x 50,00	**450,55**	m^3



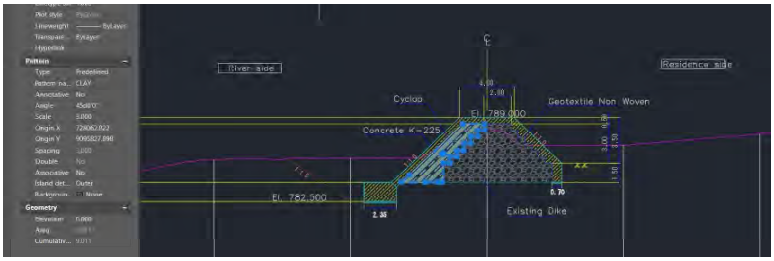
2	0+050			
	Area	9,01		
	Length	50,000		
	V=	9,01 x 50,00	**450,55**	m^3



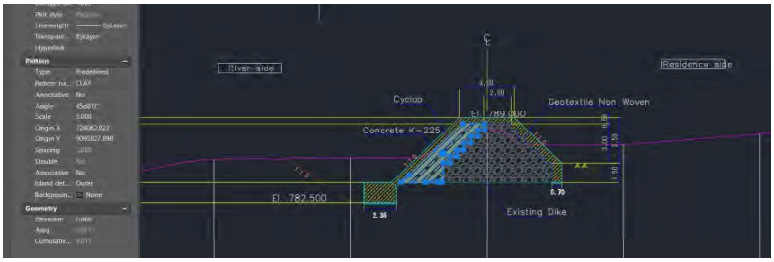
3	0+100			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



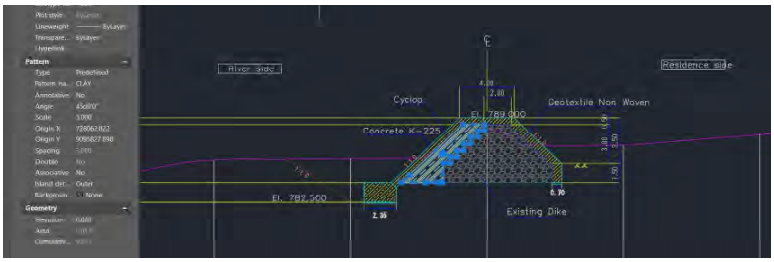
4	0+150			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



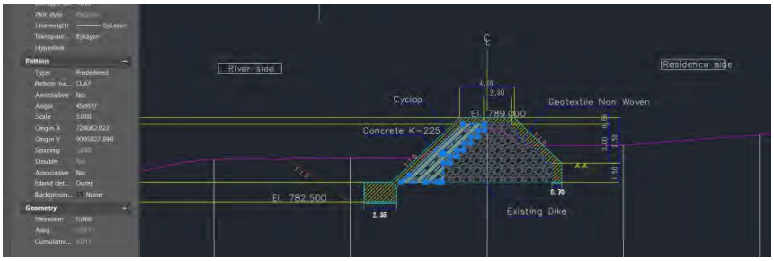
5	0+200			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



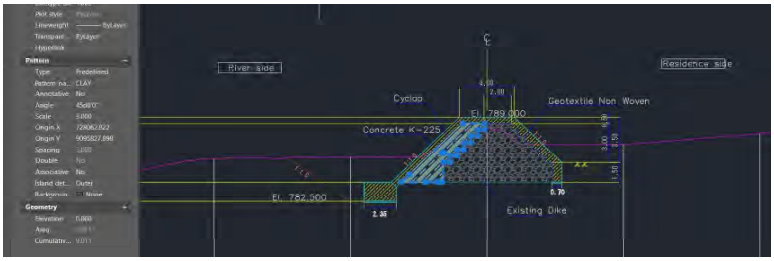
6	0+250			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



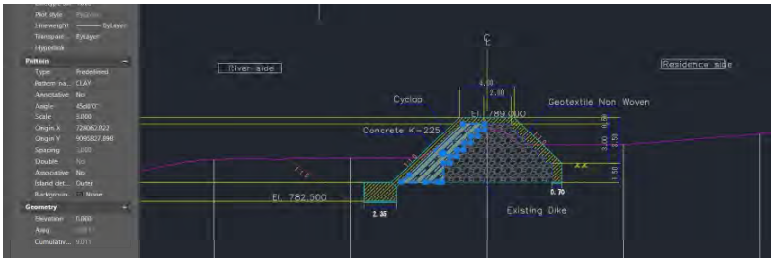
7	0+300			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



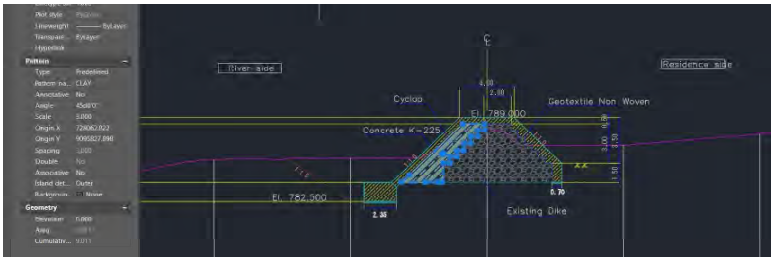
8	0+350			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



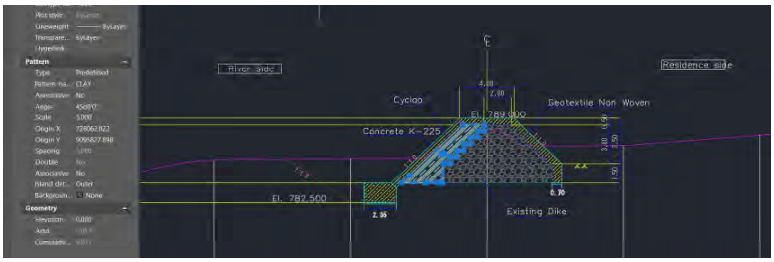
9	0+400			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



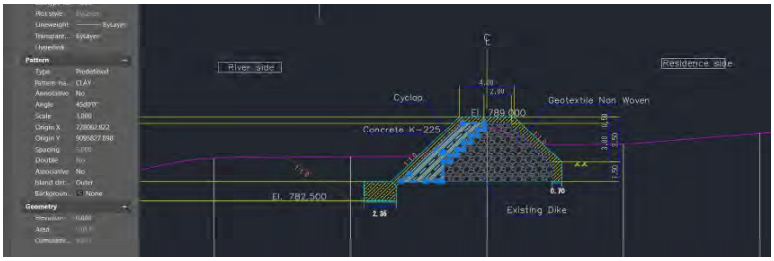
10	0+450			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



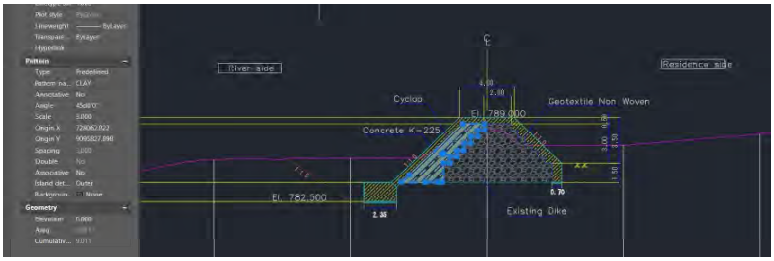
11	0+500			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



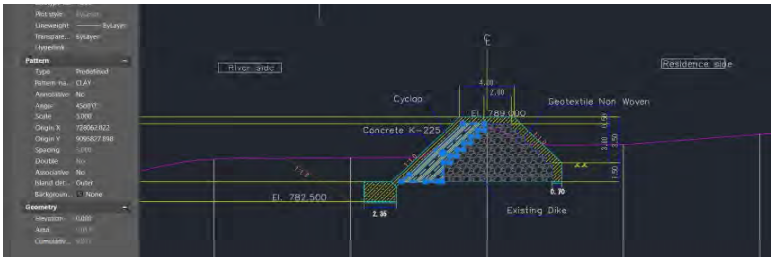
12	0+550			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



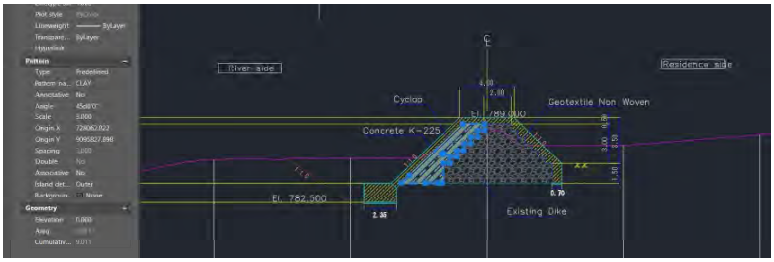
13	0+600			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



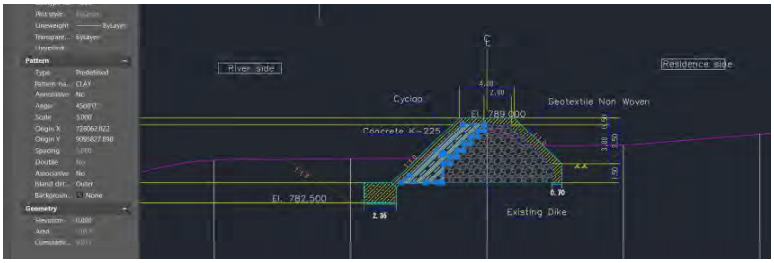
14	0+650			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



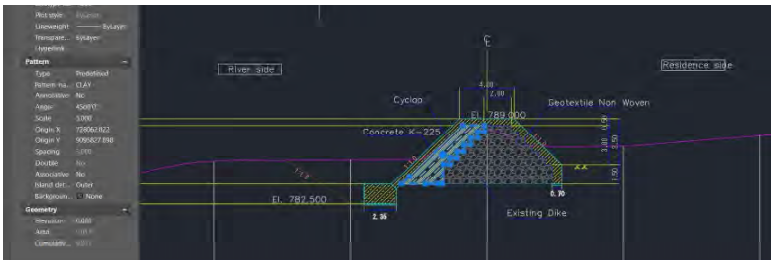
15	0+700			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



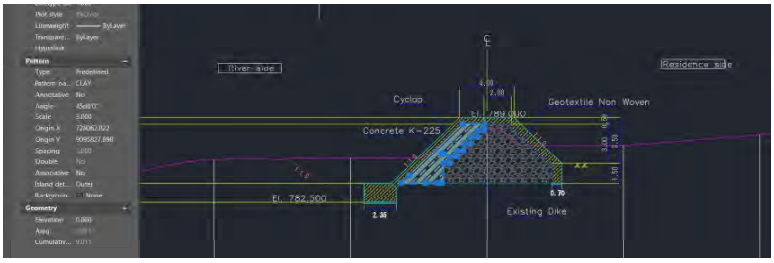
16	0+750			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



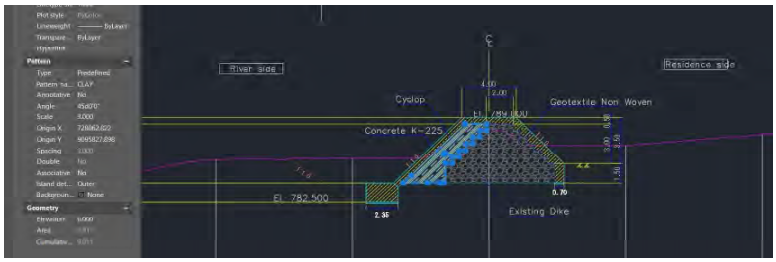
17	0+800			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3



18	0+850			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	**450,55**	m^3

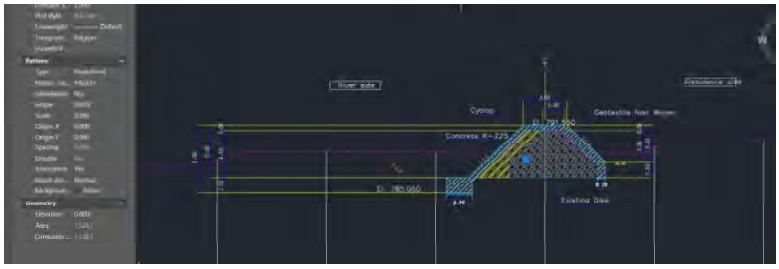


19	0+900			
	Area	9,01		
	Length	50,00		
	V=	9,01 x 50,00	450,55	m³

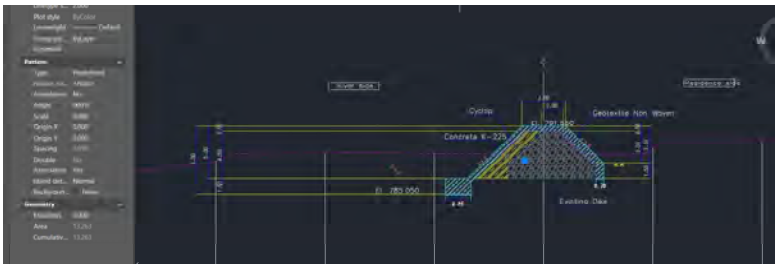


		Cyclops Concrete Total Volume =	**8.560,45**	**m³**

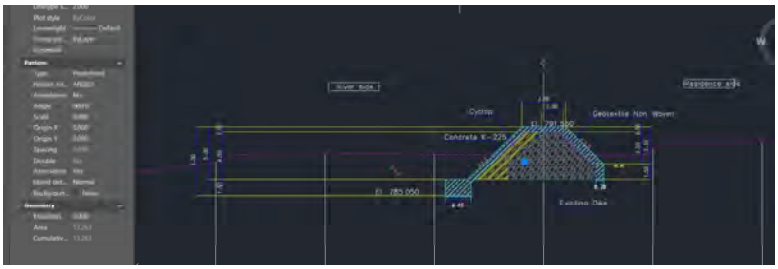
Name Structure :		**: Curah Lengkong Dike**		
Type of work		**: Concrete K-225**		
No.	**Description**	**Calculation**	**Volume**	**Unit**
1	0+000			
	Area	13,26		
	Length	50,000		
	V=	13,26 x 50,00	**663,15**	m^3



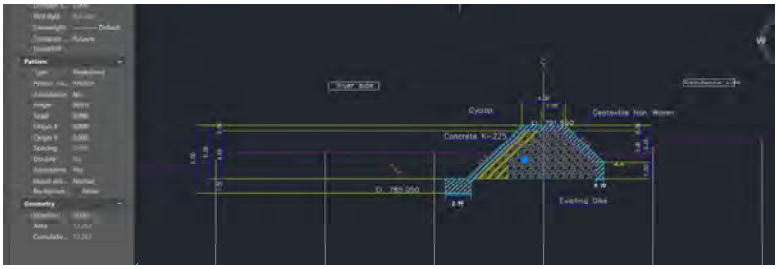
2	0+050			
	Area	13,26		
	Length	50,000		
	V=	13,26 x 50,00	**663,15**	m^3



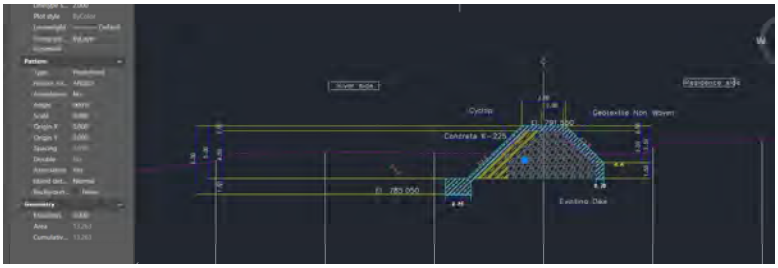
3	0+100			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



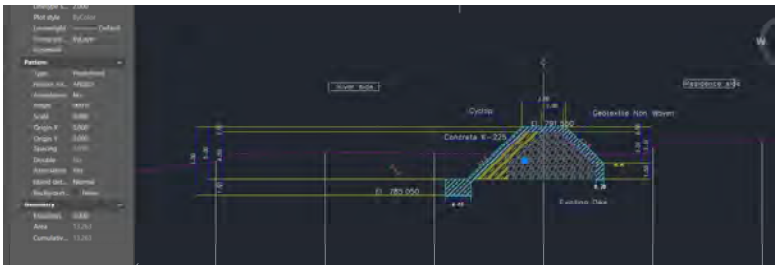
4	0+150			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



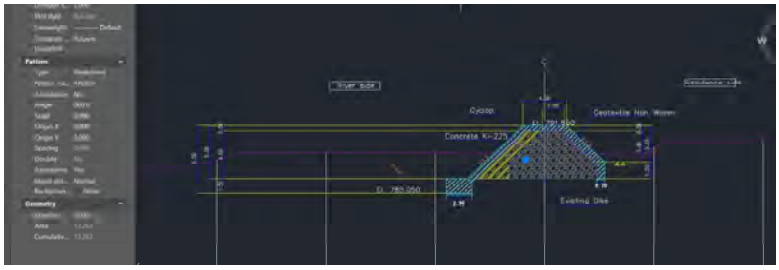
5	0+200			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



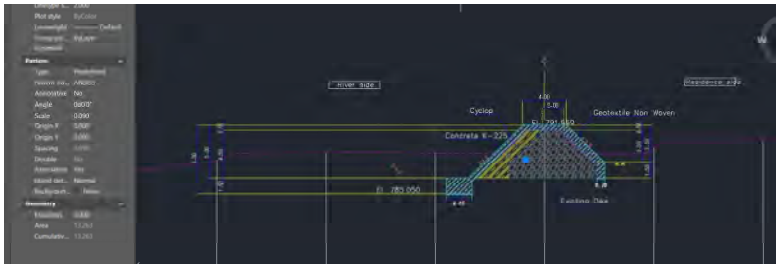
6	0+250			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



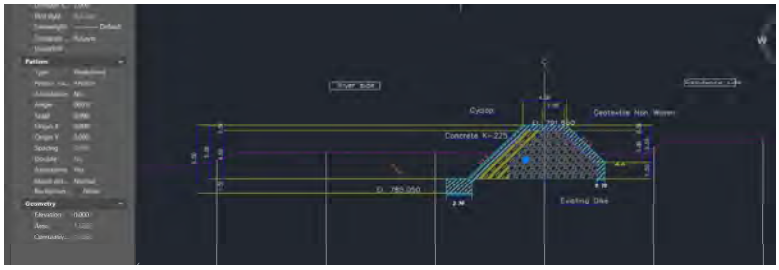
7	0+300			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



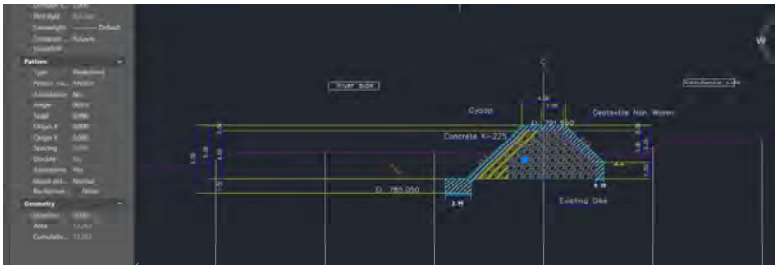
8	0+350			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



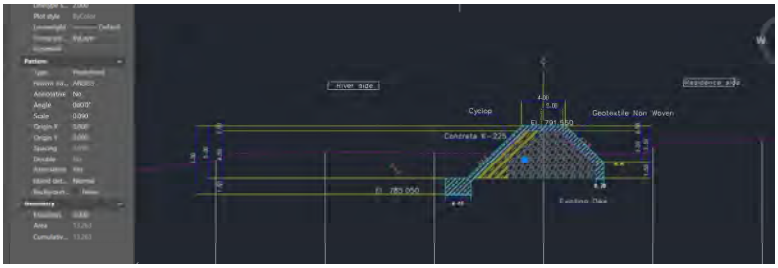
9	0+400			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



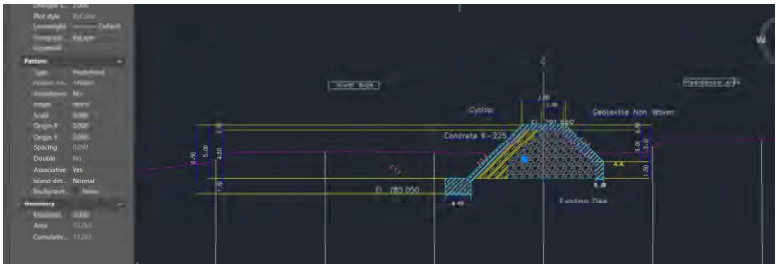
10	0+450			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



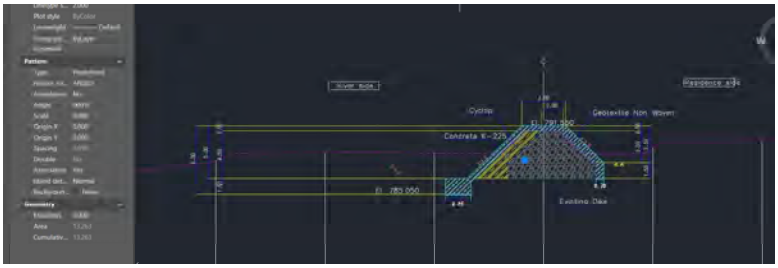
11	0+500			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



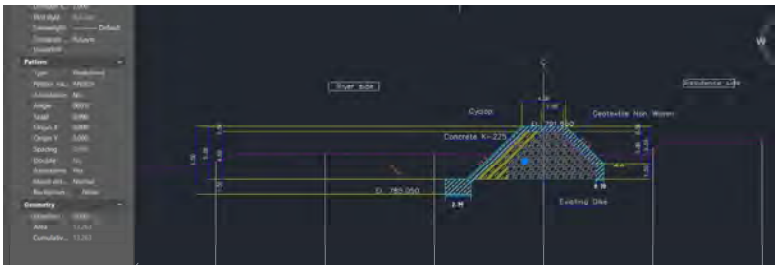
12	0+550			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



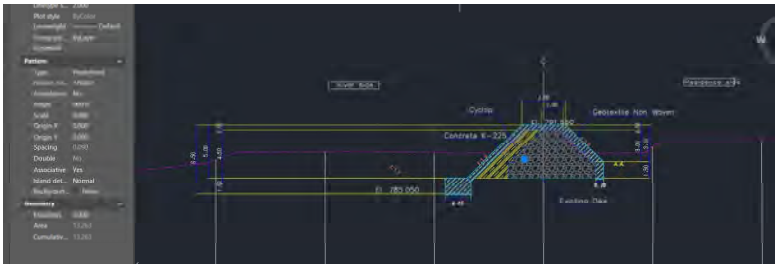
13	0+600			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



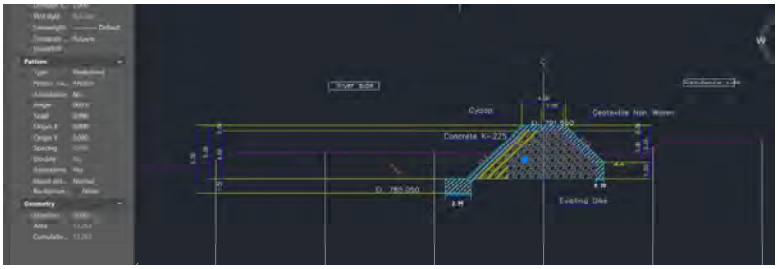
14	0+650			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



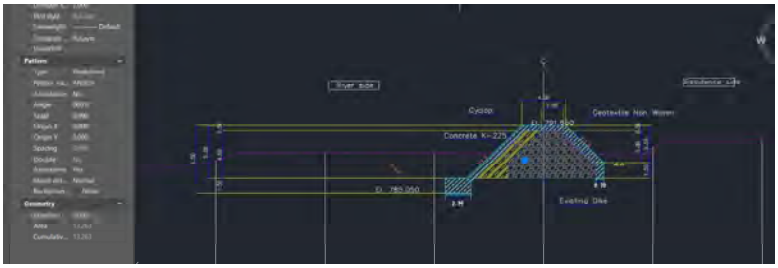
15	0+700			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



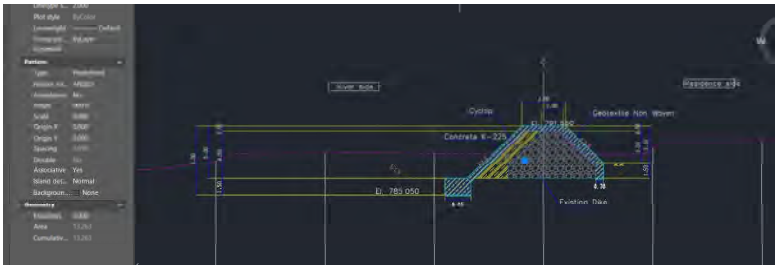
16	0+750			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



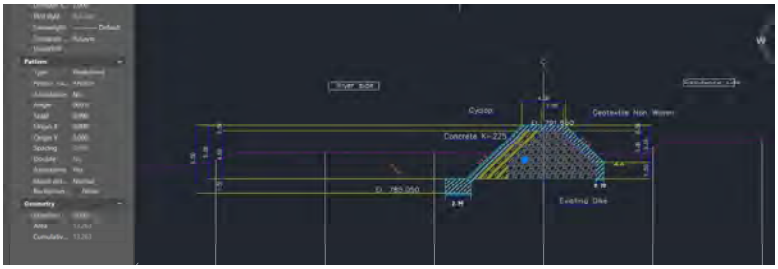
17	0+800			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3



18	0+850			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3

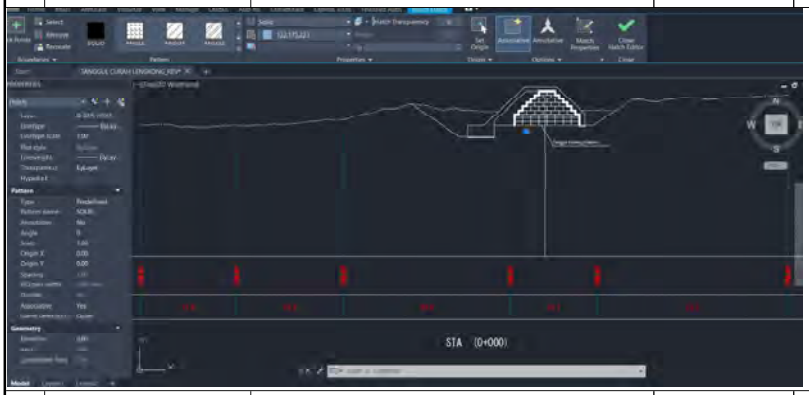


19	0+900			
	Area	13,26		
	Length	50,00		
	V=	13,26 x 50,00	**663,15**	m^3

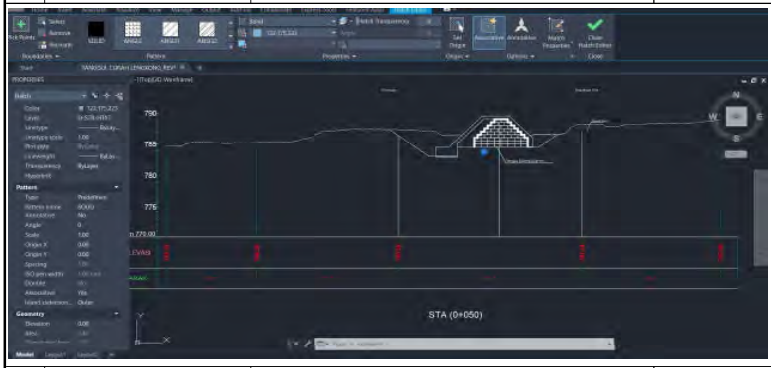


		Concrete K-225 Total Volume =	**12.599,85**	**m³**

Name Structure :		**: Curah Lengkong Dike**		
Type of work		**: Lean Concrete (K-125)**		
No.	**Description**	**Calculation**	**Volume**	**Unit**
1	0+000			
	Area	0,40		
	Length	50,000		
	V=	0.40 x 50.00	**20,00**	m^3



2	0+050			
	Area	0,40		
	Length	50,000		
	V=	0.40 x 50.00	**20,00**	m^3

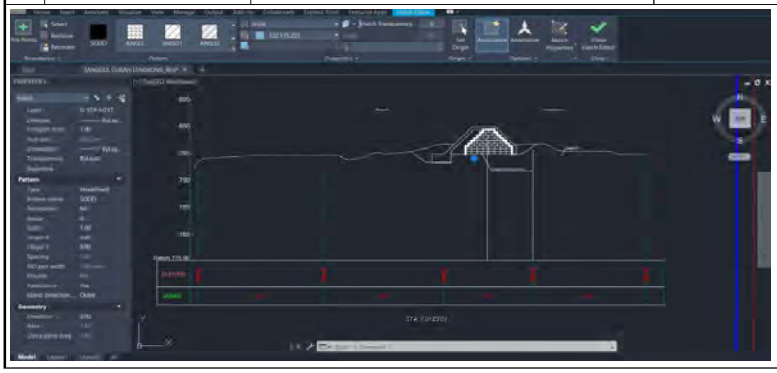


3	0+100			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3

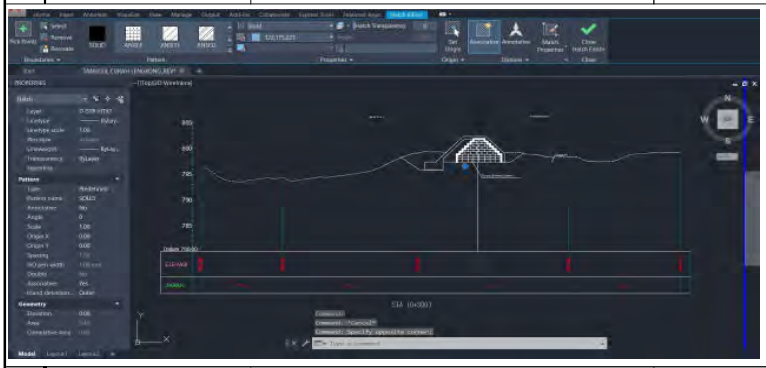
4	0+150			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	20,00	m³

5	0+200			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	20,00	m³

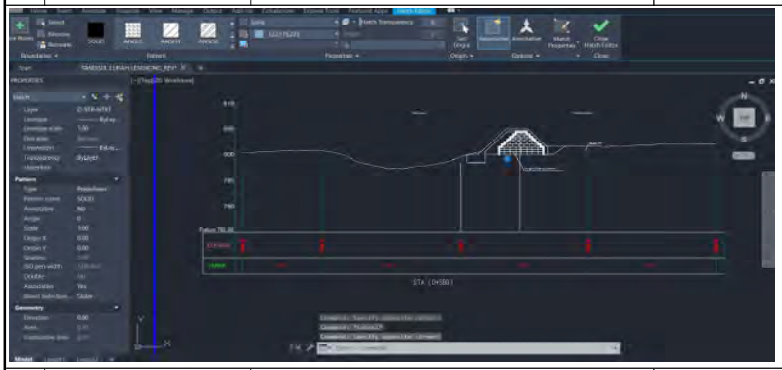
6	0+250			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	20,00	m³



7	0+300			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m³

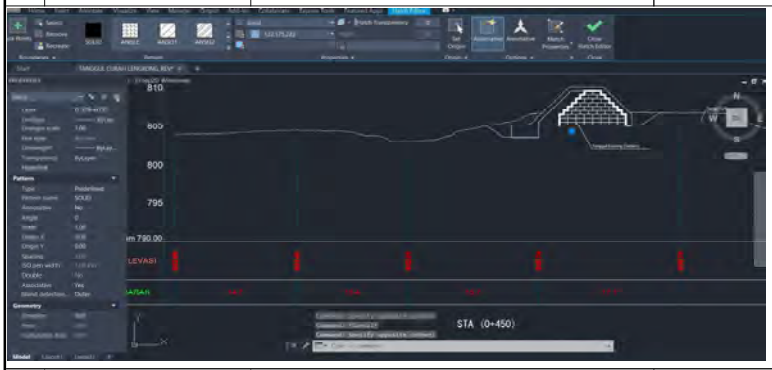


8	0+350			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m³



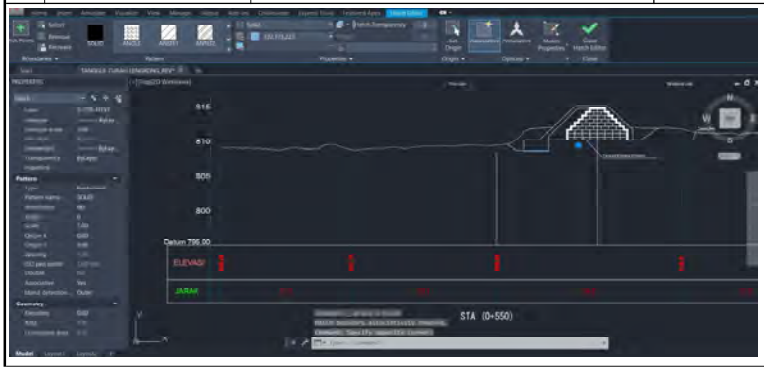
9	0+400			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m³

10	0+450			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3

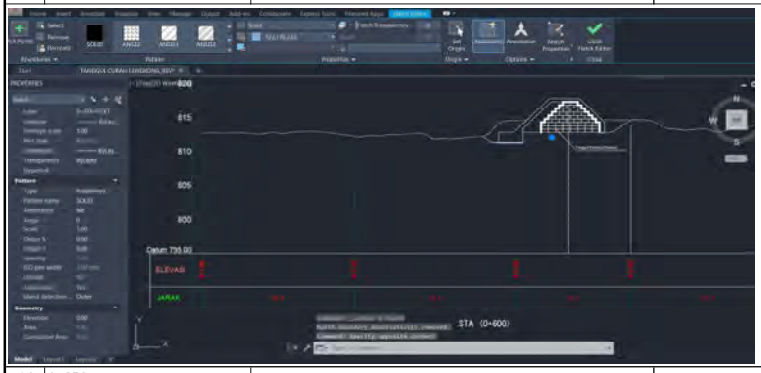


11	0+500			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3

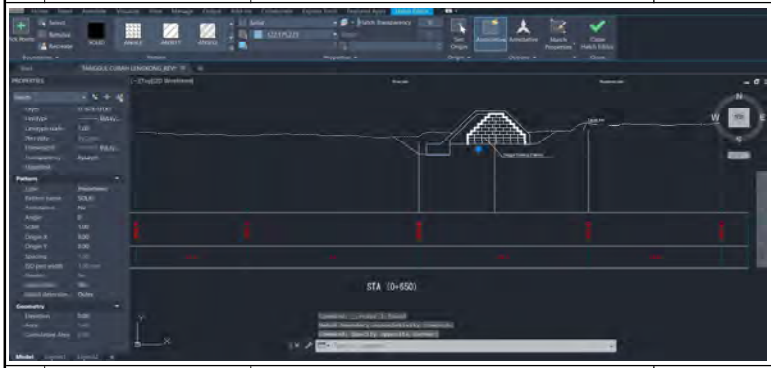
12	0+550			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



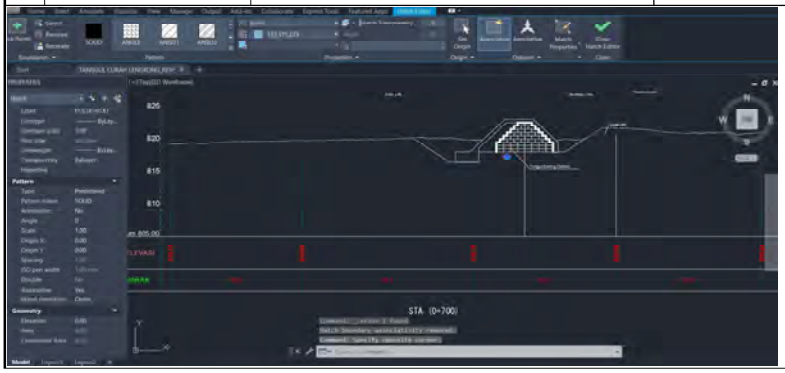
13	0+600			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



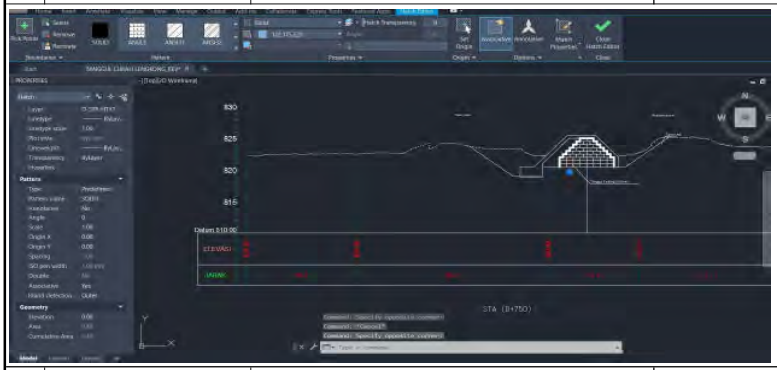
14	0+650			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



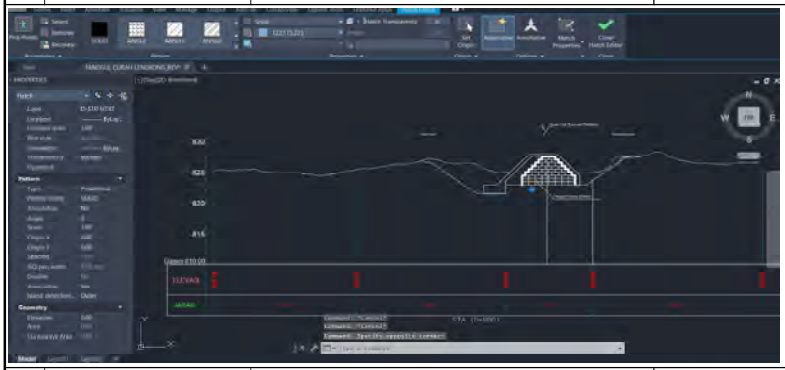
15	0+700			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



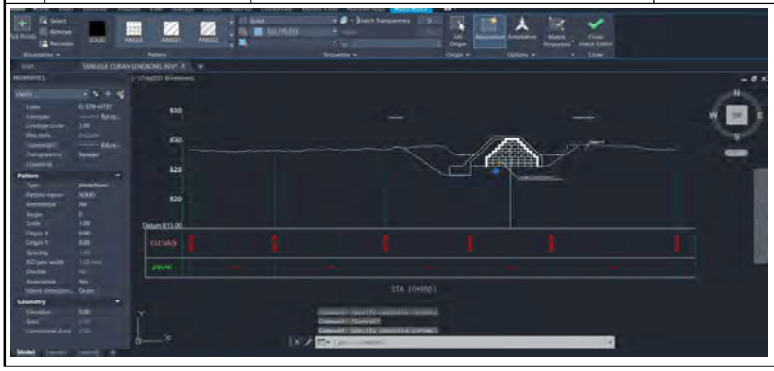
16	0+750			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



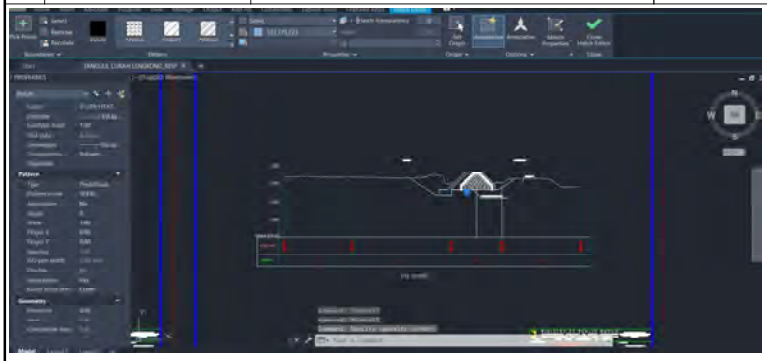
17	0+800			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



18	0+850			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3

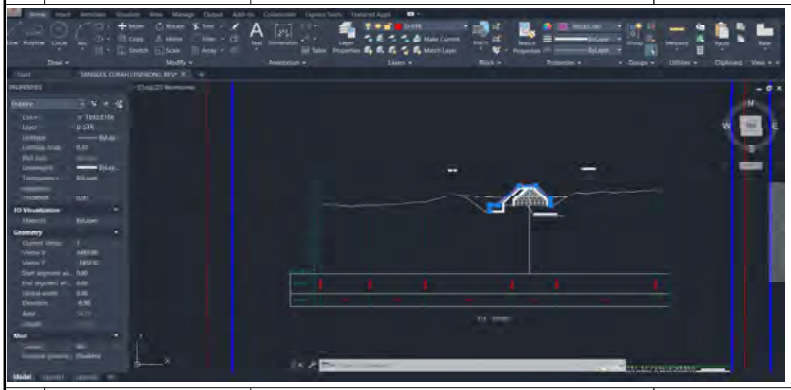


19	0+900			
	Area	0,40		
	Length	50,00		
	V=	0.40 x 50.00	**20,00**	m^3



		Lean Concrete Total Volume =	**380,00**	**m³**

Name Structure :		**: Curah Lengkong Dike**		
Type of work		**: Expose Wall Formwork**		
No.	**Description**	**Calculation**	**Volume**	**Unit**
1	0+000			
	Area	21,02		
	Length	50,000		
	V=	21.02 x 50.00	**1.051,00**	m^3

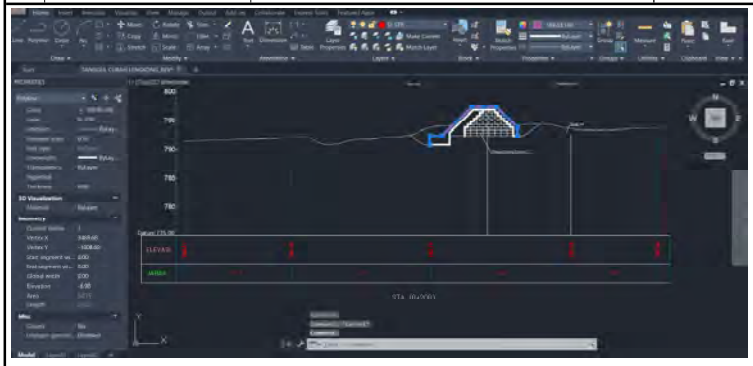


2	0+050			
	Area	21,02		
	Length	50,000		
	V=	21.02 x 50.00	**1.051,00**	m^3

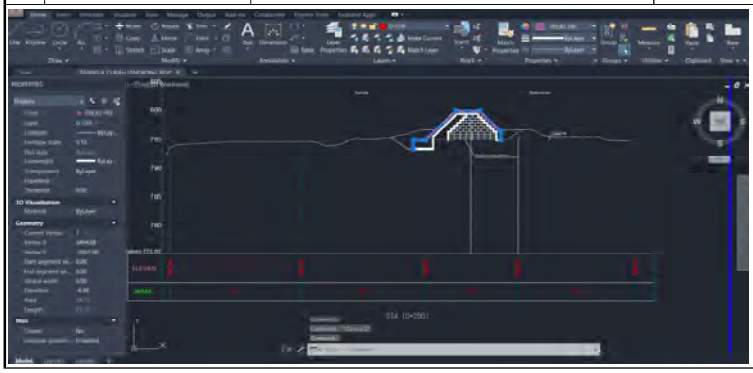
3	0+100			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m^3

4	0+150			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m³

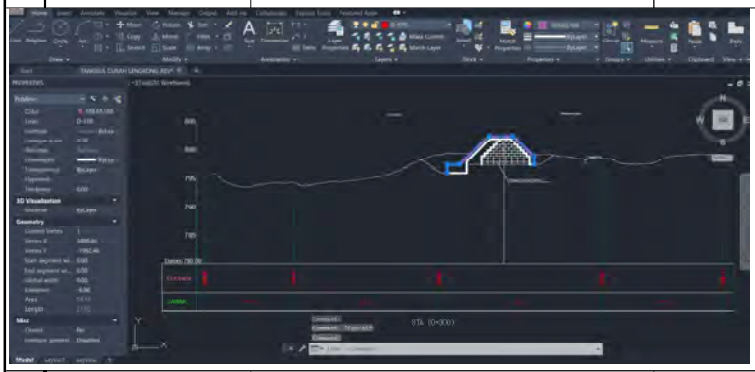
5	0+200			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m³



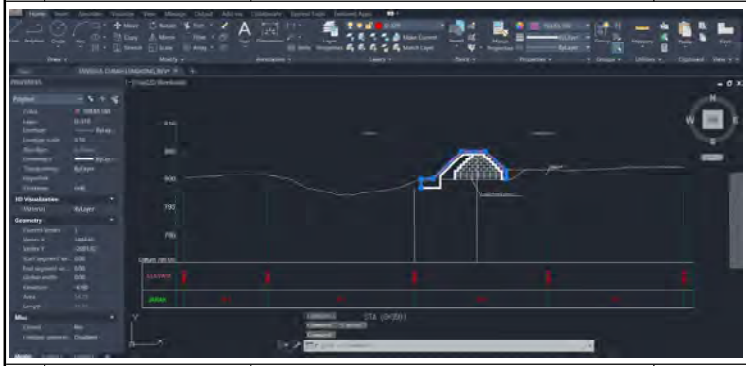
6	0+250			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m³



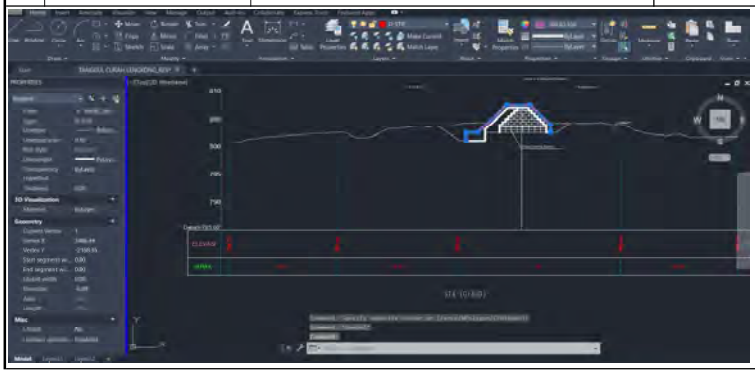
7	0+300			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m³



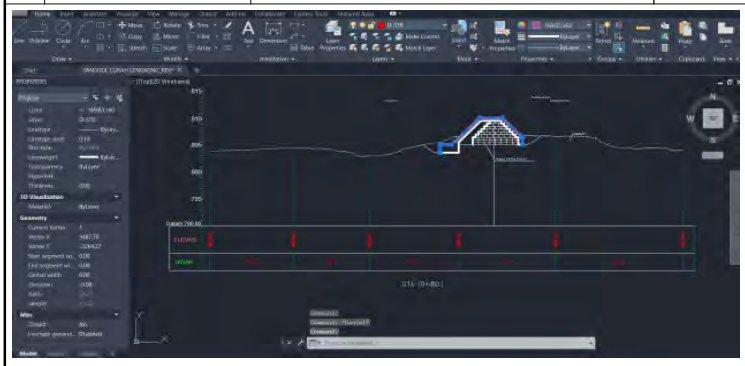
8	0+350			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m³



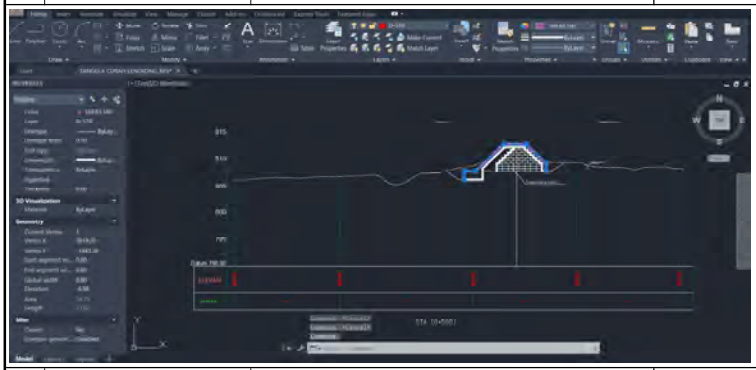
9	0+400			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m³



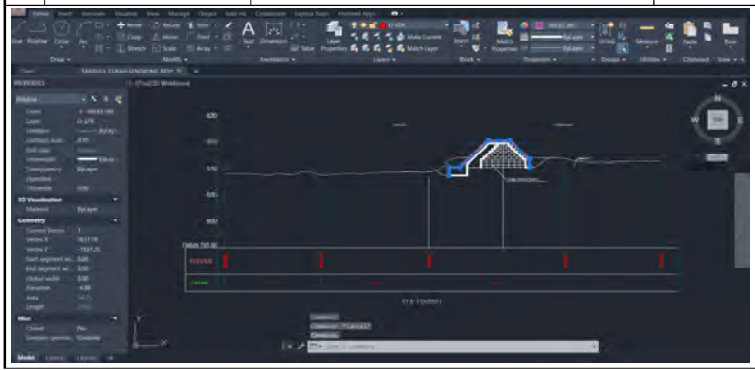
10	0+450			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m²



11	0+500			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m²

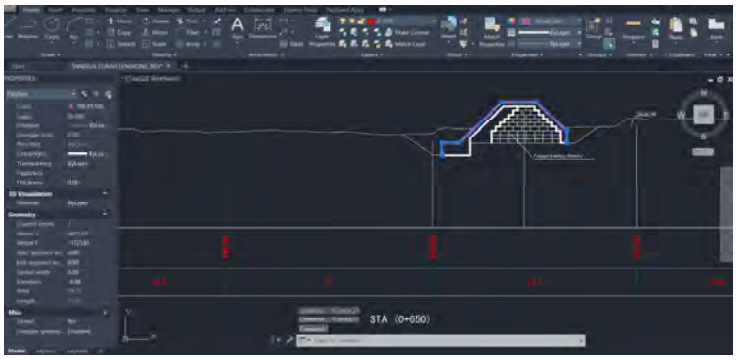


12	0+550			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m²

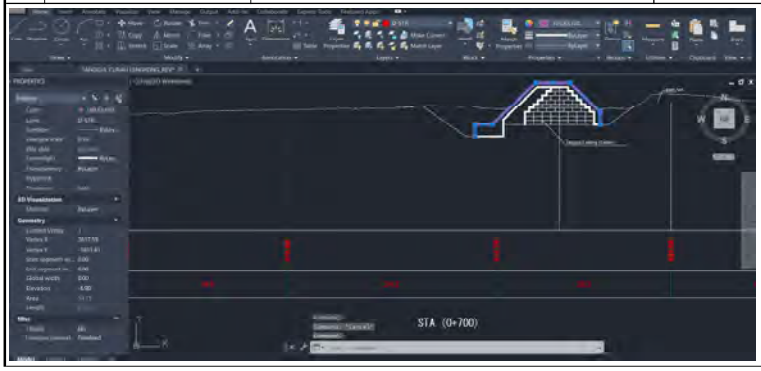


13	0+600			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m²

14	0+650			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m²

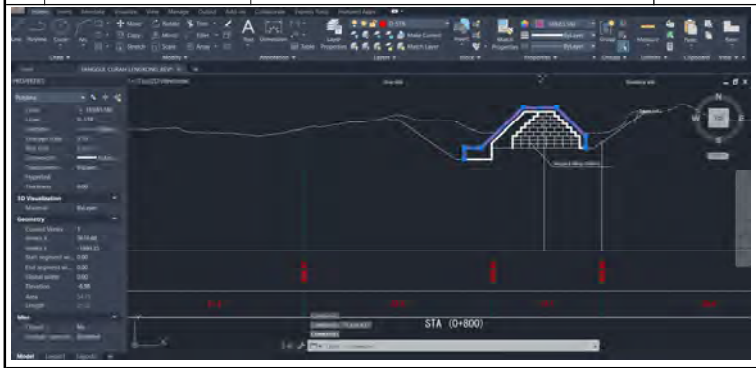


15	0+700			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m²



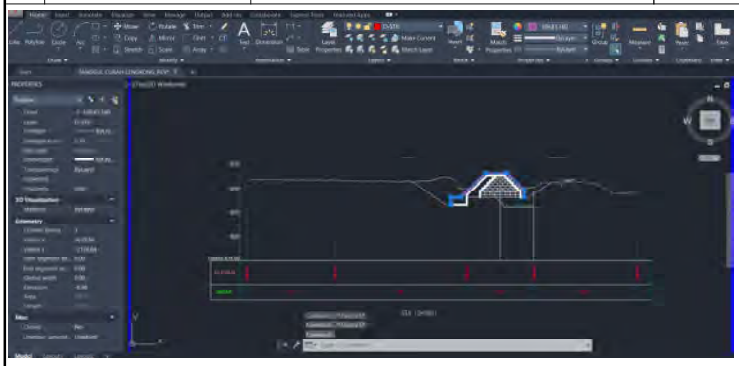
16	0+750			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m^2

17	0+800			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m^2



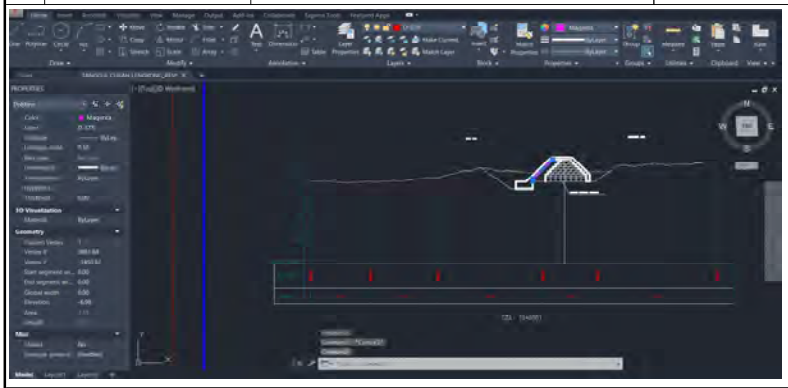
18	0+850			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	**1.051,00**	m^2

19	0+900			
	Area	21,02		
	Length	50,00		
	V=	21.02 x 50.00	1.051,00	m²



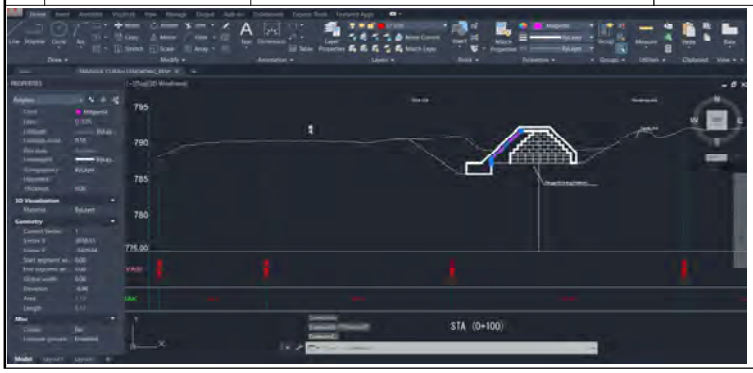
		Expose Wall Formwork Total Volume =	19.969,00	m²

Name Structure :		**: Curah Lengkong Dike**		
Type of work		**: Non Exposed Wall Formwork**		
No.	**Description**	**Calculation**	**Volume**	**Unit**
1	0+000			
	Area	6,12		
	Length	50,000		
	V=	6.12 x 50.00	**306,00**	m^3



2	0+050			
	Area	6,12		
	Length	50,000		
	V=	6.12 x 50.00	**306,00**	m^3

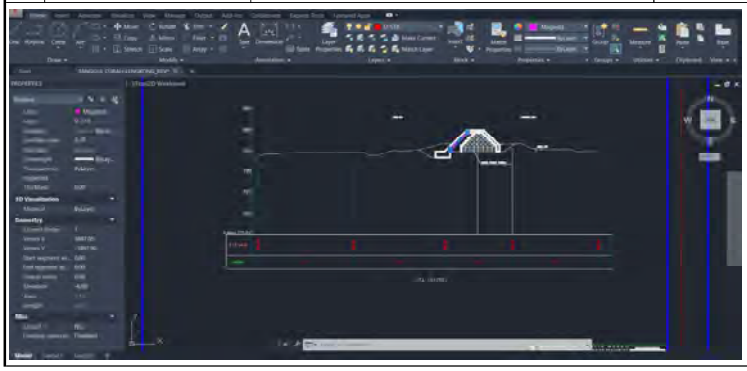
3	0+100			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	**306,00**	m^3



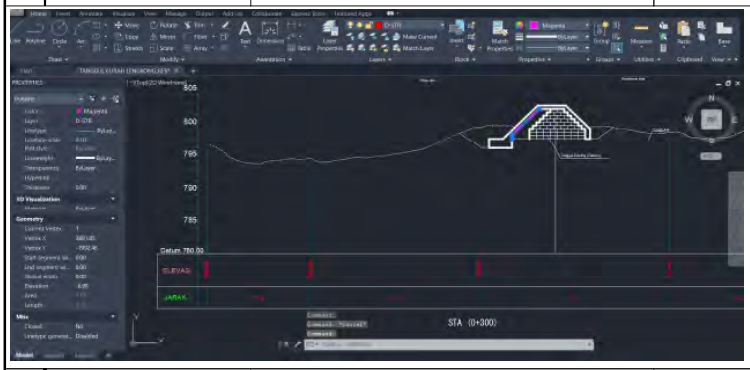
4	0+150			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m³

5	0+200			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m³

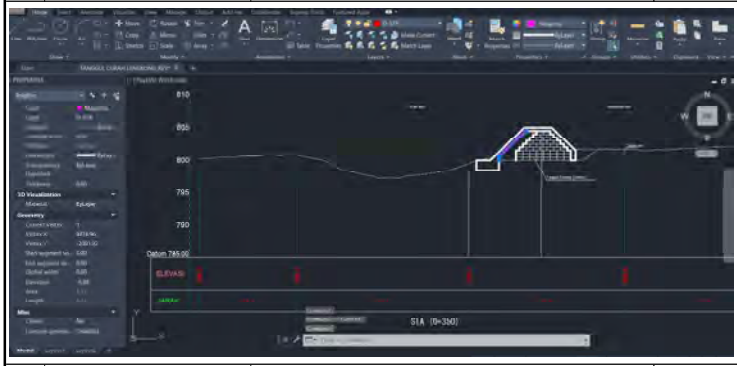
6	0+250			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m³



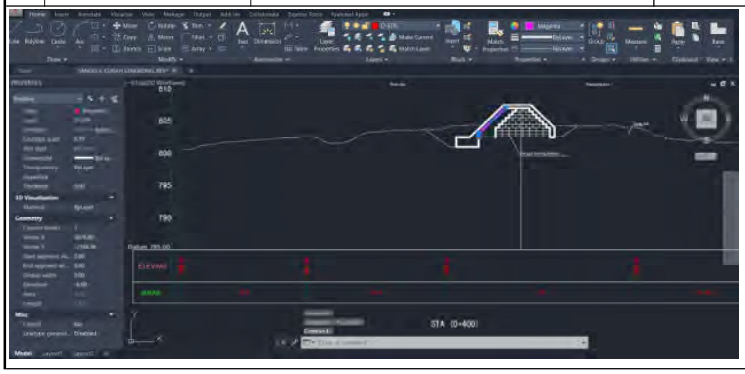
7	0+300			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m³



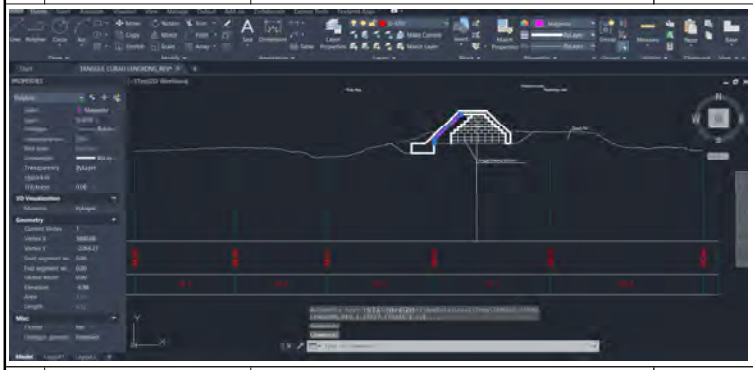
8	0+350			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m³



9	0+400			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m³

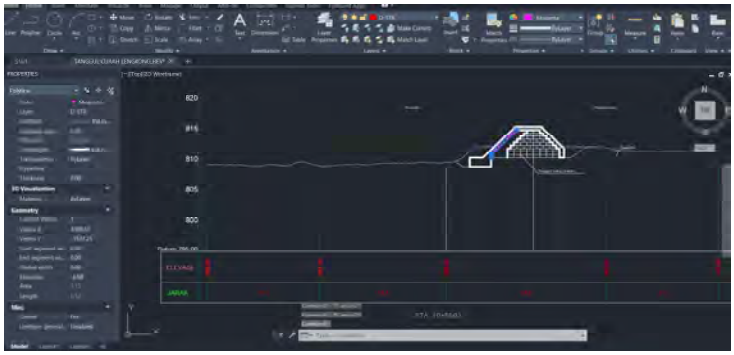


10	0+450			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	**306,00**	m^2

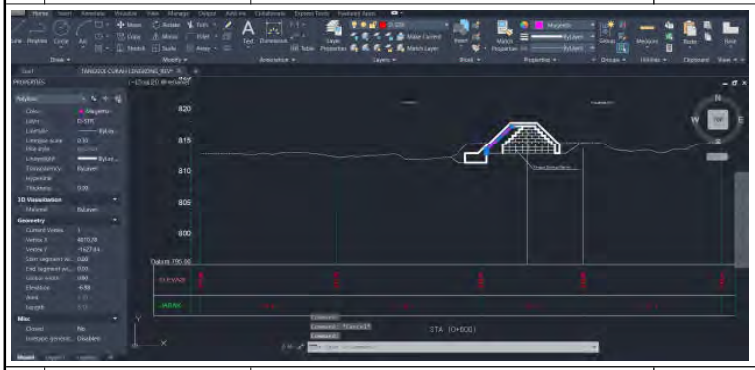


11	0+500			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	**306,00**	m^2

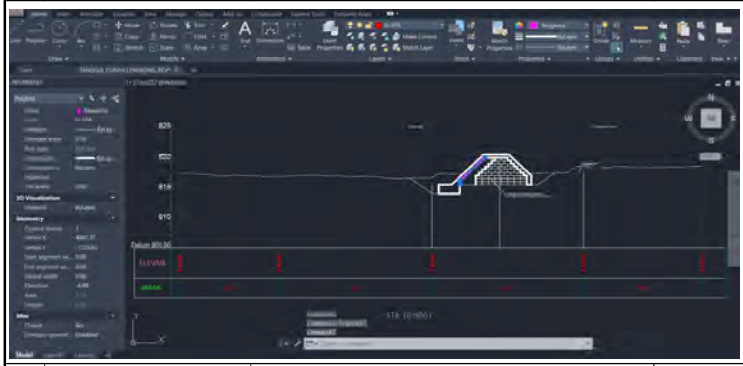
12	0+550			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	**306,00**	m^2



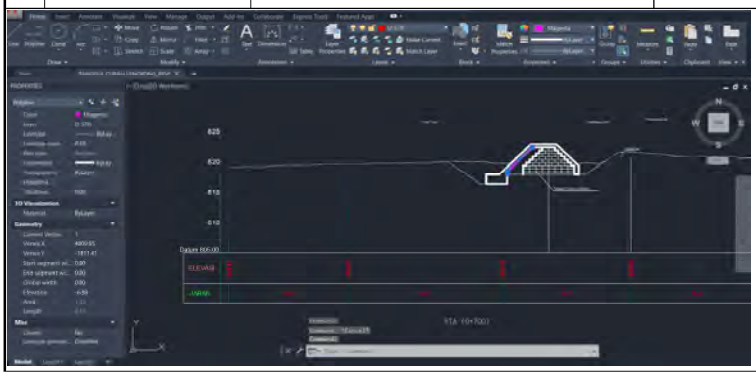
13	0+600			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m²



14	0+650			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m²



15	0+700			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m²

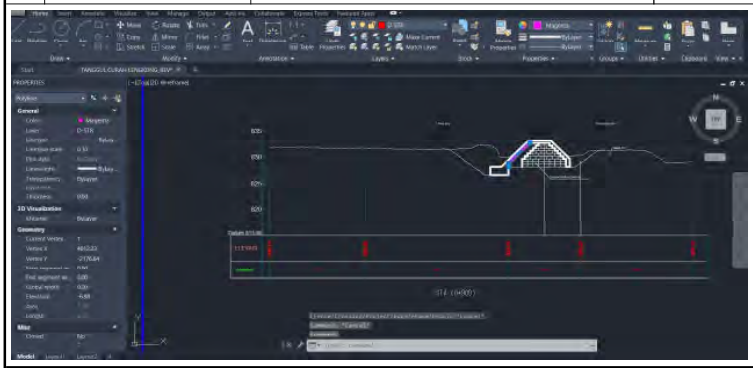


16	0+750			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m²

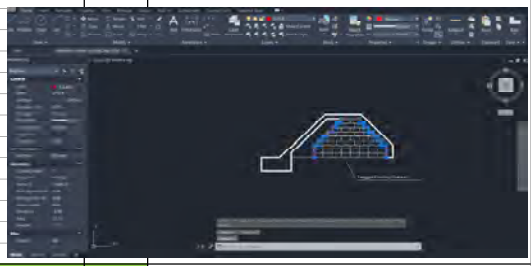
17	0+800			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m²

18	0+850			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	306,00	m²

19	0+900			
	Area	6,12		
	Length	50,00		
	V=	6.12 x 50.00	**306,00**	m²



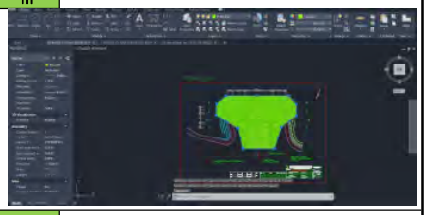
		Non Exposed Wall Formwork Total Volume =	**5.814,00**	**m²**

Name Structure :	**: Curah Lengkong Dike**				
Type of work	**: Geotextile**				
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing reference**
1	Length 1 Section =	17,00 ***m***			
	Dike Length =	900,00 m	**15.300,00**	m^2	
					
		Geotextile Total Volume =	**15.300,00**	**m³**	

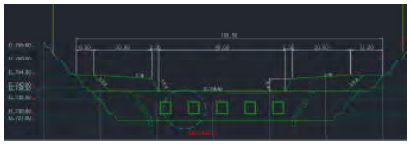
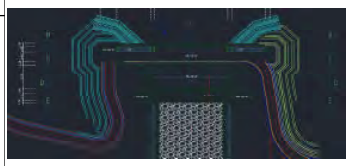
QUANTITY SUMMARY CD PELINTAS CURAH LENGKONG 2

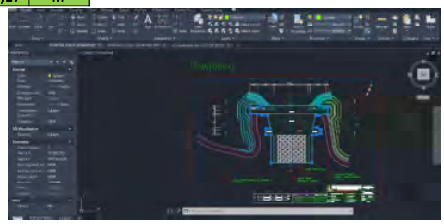
No.	Description	Unit	Volume
A	**PREPARATION WORK**		
1	Stake Out Trace of New Infrastructure & Wooden Stakes (Raft 5/7) Length 1 m	m2	9.910,27
2	1 m Excavation Cross Profile	m	434,00
3	Bowplank Installation	m'	384,17
B	**DEMOLITION WORKS**		
1	Demolition with RDB, Loading of Demolition Results (Rock ϕ > 25 cm) and Transport, (mechanically, transported to the disposal area with a distance of up to 500 m)	m3	900,00
C	**EARTHWORKS**		
1	Mechanical Sand Excavation	m3	80,662,74
2	Backfill Sand (Material from Excavation, Mechanically)	m3	1359,52
D	**CONCRETE WORK**		
1	Concrete Making and Casting fc' = 30 Mpa (K 350) Mechanically Transported within a radius of 2000 m with a Concrete Pump (CP)	m3	4.313,48
2	Concrete Making and Casting fc' = 20 Mpa (K 225) Mechanically Transported within a radius of 2000 m with a Concrete Pump (CP)	m3	3.222,44
3	Cyclops Concrete 60% Concrete fc' 15 Mpa: 40% Split Stone, with Concrete Pump (CP)	m3	12.507,18
4	1 m2 Exposed Concrete Wall Formwork with 18 mm Multiflex	m2	6.599,37
5	1 m2 Scaffolding / Supporting Formwork Rafters 5/7 for Concrete Walls Tm 2.50 m	m2	12.407,19
6	Carefully dismantle 1 m2 of Formwork and Scaffolding	m2	6.599,37
7	1 m2 Regular Formwork for Concrete Walls with Multiflex 12 mm or 18 mm	m2	5.807,82
8	Dismantle 1 m2 of Formwork and Scaffolding in the Normal Way (and Clear Debris) for Non Expose	m2	5.807,82
9	Construction Joint Filler	m3	42,06
10	1 kg Slab reinforcement for BjTP or BjTS diameter > 12 mm Semi-Mechanical method	Kg	44.459,74
11	Irregular Riprap, Less Dense-Many Cavities, Height Difference 0-1 m & Mechanical Tidying	m3	2.909,06
12	Weep Hole	m	553,00
E	**RIVER WATERING & DEWATERING WORK**		
1	1 Piece of Sand Geobag Size 145 x 240 cm	Buah	70,00
2	Backfill Sand (Material from Excavation, Mechanically)	m3	43,50

Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Stake Out Trase

No.	Description	Calculation	Volume	Unit	Drawing reference
1		9910,27	9.910,27	m^2	
					
		Stake Out Trase Total Volume =	9.910,27	m^2	

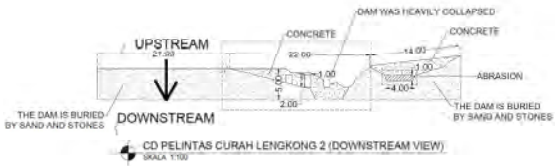
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Cross Profile

No.	Description	Calculation		Volume	Unit	Drawing reference
						The assumption taken is that the longest span is at the Main Dam
1	Maindam span =	108,50	*m*			
	Measure each section =	4,00	section	434,00	m	Section B, C, D, E
						
		Cross Profile Total Volume =		434,00	m	

Name Structure :	: CD Pelintas Curah Lengkong 2				
Type of work	: Bowplank				
No.	Description	Calculation	Volume	Unit	Drawing reference
1	Volume	384,17	384,17	m'	
					
		Bowplank Total Volume =	384,17	m'	

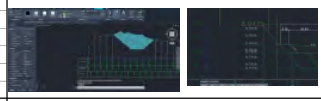
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Demolition

No.	Description	Calculation		Volume	Unit	Drawing reference
						Image Source: Inventory Report by YEC
1	Dimensions =	22,00 x 5,00	m2			
	Width =	5,00	m			
2	Dimensions =	14,00 x 5,00	m2			
	Width =	5,00	m			
	Volume =	**900,00**	**m3**			



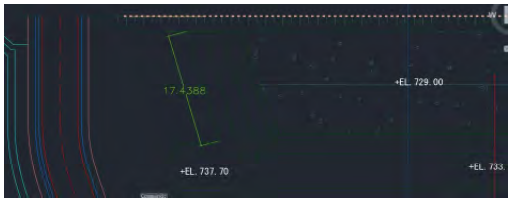
		Demolition Total Volume =	**900,00**	**m³**	

Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Sand Excavation

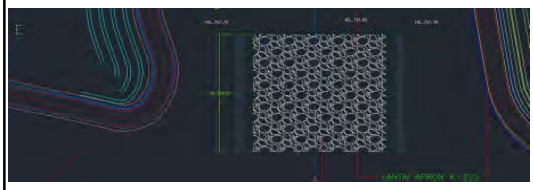
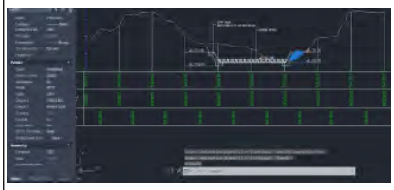
No.	Description	Calculation	Volume	Unit	Drawing Reference
1	STA 0+050				
	Area	1110,71			
	Length	8,943			
	V=	(1.110,71) / 2 x 8,94	4.966,55	m³	
2	STA 0+075				
	Area	312,05			
	Length	25,000			
	V=	(1.110,71 + 312,05) / 2 x 25,00	17.784,50	m³	
3	STA 0+100				
	Area	481,76			
	Length	25,000			
	V=	(481,76 + 481,76) / 2 x 25,00	9.922,55	m³	
4	STA 0+125				
	Area	954,77			
	Length	25,000			
	V=	(481,76 + 954,77) / 2 x 25,00	17.956,55	m³	
5	STA 0+150				
	Area	723,49			
	Length	25,00			
	V=	(954,77 + 723,49) / 2 x 25,00	20.978,18	m³	
6	STA 0+175				
	Area	0,87			
	Length	25,00			
	V=	(723,49 + 0,87) / 2 x 25,00	9.054,41	m³	
		Sand Excavation Total Volume =	**80.662,74**	**m³**	

Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Backfill Sand

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	POT. C-C					
	Area =	20,64	m^2			
	Length =	17,44	m'			
	Volume =	**359,89**	m^3			
	Total Volume =			359,89	m^3	



B.	POT. E-E					
	Area =	11,76	m^2			
	Length =	38,50	m'			
	Volume =	**452,88**	m^3			
	Total Volume =			452,88	m^3	

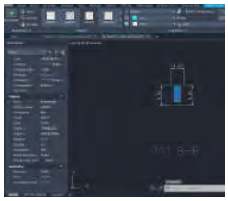
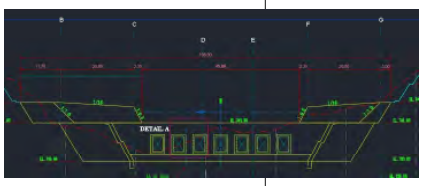



B.	POT. F-F BUFFER FILL					
	Area =	12,15	m^2			
	Spillway Length =	45,00	m'			
	Volume =	**546,75**	m^3			
	Total Volume =			546,75	m^3	

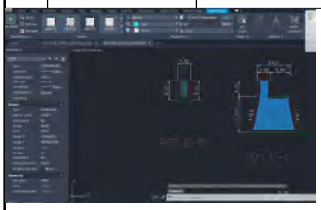
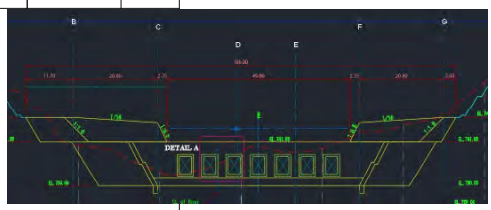
Backfill Total Volume =	1.359,52	m^3

Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Cyclops Concrete (Main Dam)

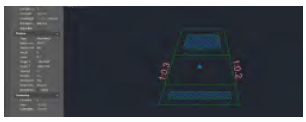
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section B-B**					
	Area =	10,01	m^2			
	Length =	11,70	m'			
	Volume =	**117,08**	m^3			
	Total Volume =			117,08	m^3	

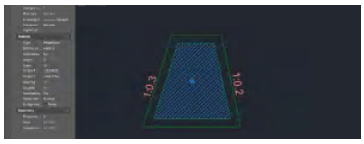
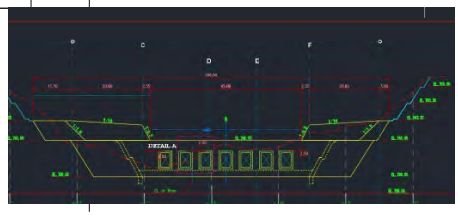
B.	**Section C-C**					
	Area =	109,06	m^2			
	Length =	23,15	m'			
	Volume =		m^3			
	Total Volume =				m^3	

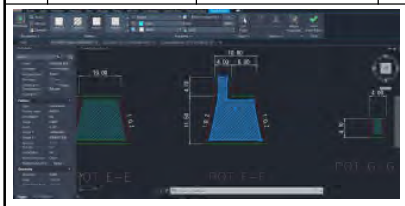
C.	**Section D-D**					
	Area =	18,81	m^2			
	Width 1 piece Drip Hole =	3,00	m'			
	Number of drip holes =	7,00	pcs			
	Volume =	**394,98**	m^3			
	Total Volume =			394,98	m^3	

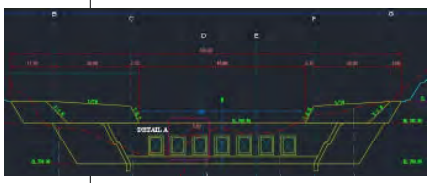


D.	**Section E-E**					
	Area =	64,71	m^2			
	Width 1 piece Drip Hole =	3,00	m'			
	Total of 2 m Width =	6,00	pcs			
	Remaining Width to Edge =	5,00	m'			
	Volume =	**1488,24**	m^3			
	Total Volume =			1.488,24	m^3	

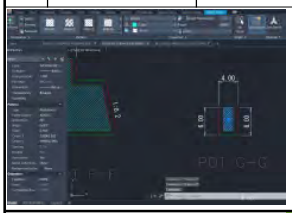



E	**Section F-F**				
	Area =	109,06	m^2		
	Length =	23,15	m'		
	Volume =	**2524,69**	m^3		
				2.524,69	m^3





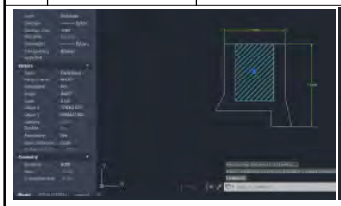
F.	**Section G-G**				
	Area =	10,01	m^2		
	Length =	3,00	m'		
	Volume =	**30,02**	m^3		
	Total Volume =			30,02	m^3



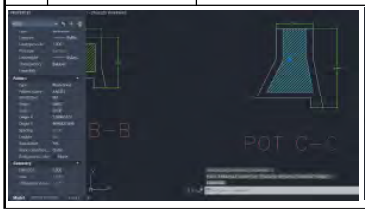
	Cyclops Concrete Sub Total Volume =	**4.555,01**	m^3

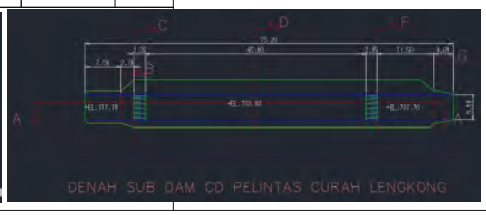
Name Structure :	**: CD Pelintas Curah Lengkong 2**
Type of work	**: Cyclops Concrete (Sub Dam)**

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section B-B**					
	Area =	18,20	m^2			
	Length =	7,30	m'			
	Volume =	**132,86**	m^3			
	Total Volume =			132,86	m^3	

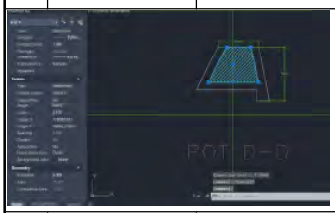


B.	**Section C-C**					
	Area =	42,09	m^2			
	Length =	5,05	m'			
	Volume =	**212,56**	m^3			
	Total Volume =			212,56	m^3	

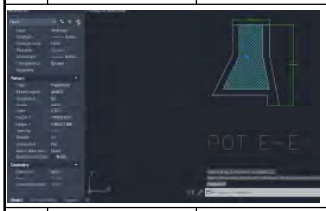




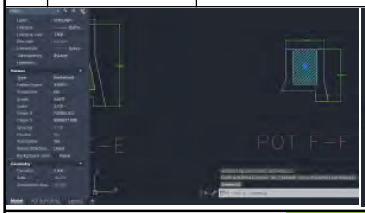
C.	**Section D-D**				
	Area =	25,56	m^2		
	Length =	45,00	m'		
	Volume =	**1149,98**	m^3		
	Total Volume =			1.149,98	m^3



D.	**Section E-E**				
	Area =	42,09	m^2		
	Length =	13,85	m'		
	Volume =	**582,97**	m^3		
	Total Volume =			582,97	m^3



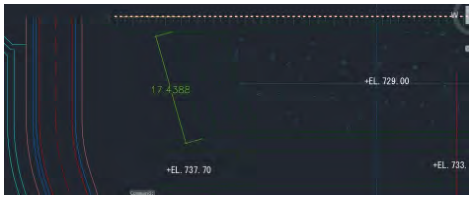
E	**Section F-F**				
	Area =	18,20	m^2		
	Length =	4,00	m'		
	Volume =	**72,80**	m^3		
				72,80	m^3



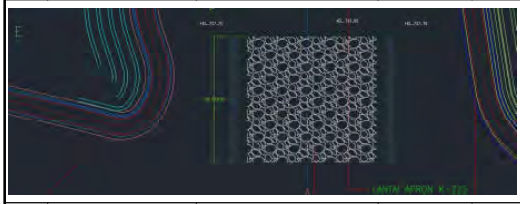
	Cyclops Concrete Sub Total Volume =	**2.151,17 m^3**

Name Structure : **: CD Pelintas Curah Lengkong 2**
Type of work **: Cyclops Concrete (Apron Retaining Wall)**

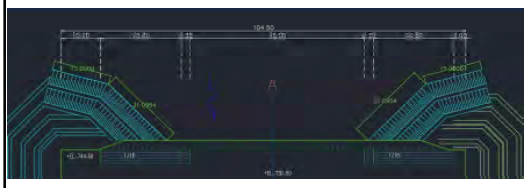
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**POT. C-C**					
	Area =	52,00	m^2			
	Length =	17,44	m'			
	Volume =	**906,85**	m^3			
	Total Volume =			906,85	m^3	

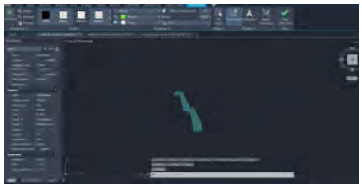


B.	**POT. E-E**					
	Area =	49,77	m^2			
	Length =	38,50	m'			
	Volume =	**1916,15**	m^3			
	Total Volume =				1.916,15	m^3



B.	**POT. F-F BUFFER FILL**					
	Area =	24,50	m^2			
	Numbers of Buffer Fill =	2,00	bu	Kanan-Kiri		
	Length =	36,10	m'			
	Volume =	**1768,67**	m^3			
	Total Volume =				1.768,67	m^3





B.	**Left bank protection**					
	Area =	13,44	m^2			
	Numbers of Buffer Fill =		pcs			
	Length =	90,00	m'			
	Volume =	**1209,33**	m^3			
	Total Volume =				1.209,33	m^3

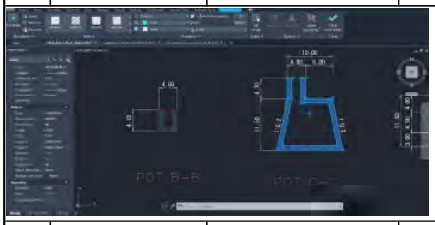
Cyclops Concrete Sub Total Volume =	**5.800,99**	m^3

Cyclops Concrete Total Volume =	**12.507,18**	m^3

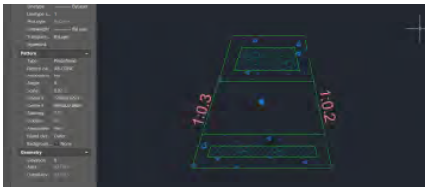
Name Structure :	: CD Pelintas Curah Lengkong 2
Type of work	: Concrete K-350 (Main Dam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section B-B**					
	Area =	14,01	m^2			
	Length =	11,70	m'			
	Volume =	**163,88**	m^3			
	Total Volume =			163,88	m^3	

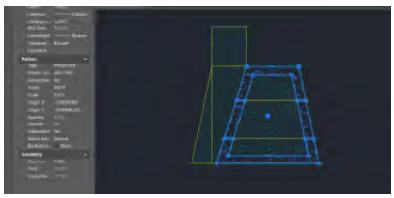
B.	**Section C-C**					
	Area =	51,19	m^2			
	Length =	23,15	m'			
	Volume =	**1185,09**	m^3			
	Total Volume =			1.185,09	m^3	

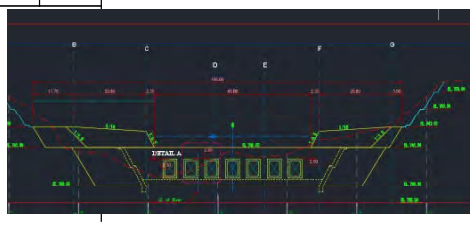


C.	**Section D-D**					
	Area =	42,19	m^2			
	Width 1 piece Drip Hole =	3,00	m'			
	Number of drip holes =	7,00	pcs			
	Volume =	**886,02**	m^3			
	Total Volume =			886,02	m^3	

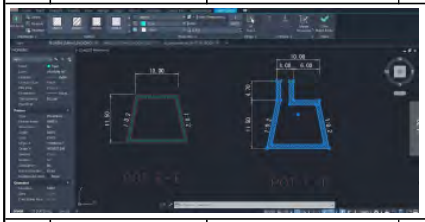


D.	**Section E-E**					
	Area =	37,36	m^2			
	Width 1 piece Drip Hole =	3,00	m'			
	Total of 2 m Width =	6,00	pcs			
	Remaining Width to Edge =	5,00	m'			
	Volume =					
	Volume =	**859,19**	m^3			
	Total Volume =			859,19	m^3	

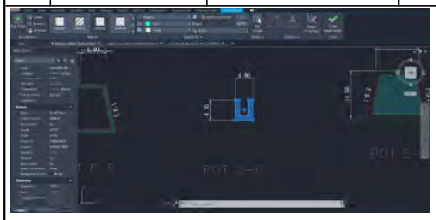


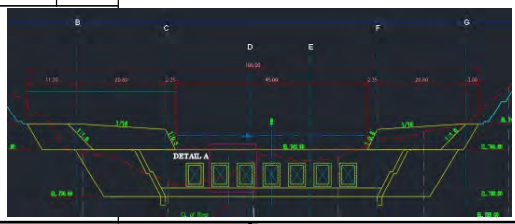


C	**Section F-F**				
	Area =	51,19	m^2		
	Length =	23,15	m'		
	Volume =	**1185,09**	m^3		
				1.185,09	m^3



D	**Section G-G**				
	Area =	11,40	m^2		
	Length =	3,00	m'		
	Volume =	**34,20**	m^3		
	Total Volume =			34,20	m^3



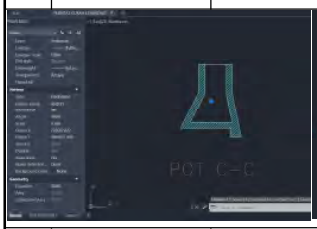


	Concrete K-350 Total Volume =	**4.313,48 m^3**

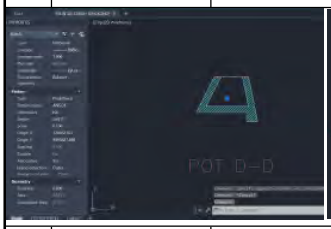
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Concrete K-225 (Sub Dam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Section B-B					
	Area =	19,16	m^2			
	Length =	7,30	m'			
	Volume =	**139,85**	m^3			
	Total Volume =			139,85	m^3	

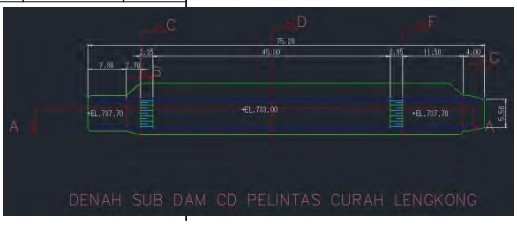
B.	Section C-C					
	Area =	31,83	m^2			
	Length =	5,05	m'			
	Volume =	**160,76**	m^3			
	Total Volume =			160,76	m^3	



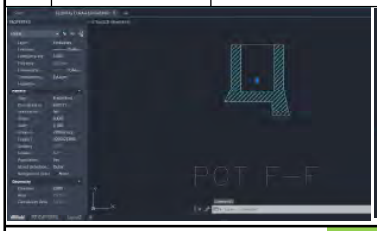
C.	Section D-D					
	Area =	22,45	m^2			
	Length =	45,00	m'			
	Volume =	**1010,30**	m^3			
	Total Volume =			1.010,30	m^3	



D.	Section E-E					
	Area =	31,83	m^2			
	Length =	13,85	m'			
	Volume =	**440,89**	m^3			
	Total Volume =			440,89	m^3	



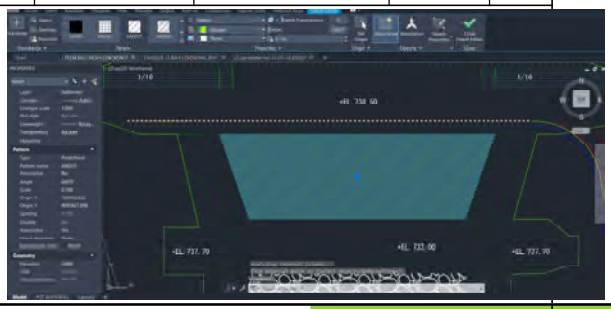
E	Section F-F				
	Area =	19,52	m^2		
	Length =	4,00	m^1		
	Volume =	**78,07**	m^3		
				78,07	m^3



	Concrete K-225 Sub Total Volume =	**1.829,85 m^3**

Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Concrete K-225 (Floor Apron)

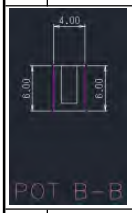
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Apron Slab**					
	Area =	696,30	m^2			
	Length =	2,00	m^1			
	Volume =	**1392,59**	m^3			
	Total Volume =			1.392,59	m^3	

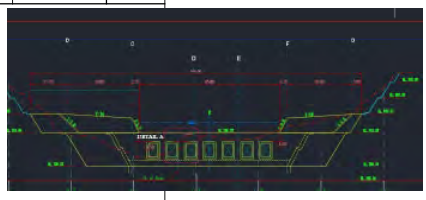


	Concrete K-225 Sub Total Volume =	**1.392,59 m^3**
	Concrete K-225 Total Volume =	**3.222,44 m^3**

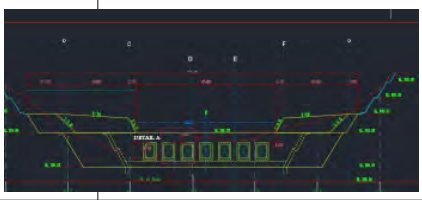
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Expose Wall Formwork (Main Dam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section B-B**					
	Formwork height =	12,00	m'			
	Length =	11,70	m'			
	Volume =	**140,40**	m2			
	Total Volume =			**140,40**	m2	

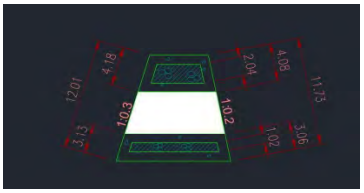


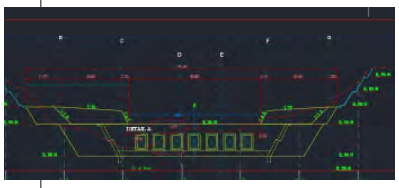


B.	**Section C-C**					
	Formwork height =	32,86	m'			
	Length =	23,15	m'			
	Volume =	**760,71**	m2			
	Total Volume =			**760,71**	m2	

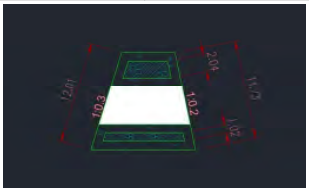


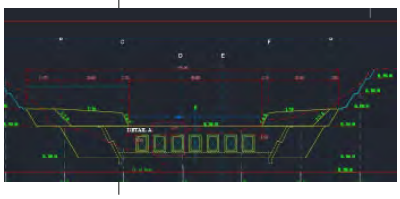
C.	**Section D-D**					
	Formwork height =	22,45	m'			
	Drip Hole Width =	3,00	m'			
	Numbers of Drip Holes =	7,00	buah			
	Volume =	**471,45**	m2			
	Drip Hole Wall Area's =	41,06	m2			
	Numbers of Wall Side =	2,00	buah			
	Numbers of drip holes =	7,00	buah			
	Volume =	**574,88**	m2			
	Total Volume =			**1.046,33**	m2	



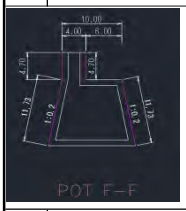


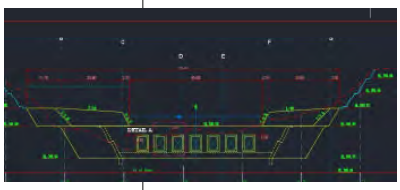
D.	**Section E-E**					
	Numbers of Wall Side =	23,74	m'			
	Width 1 piece Drip Hole =	3,00	m'			
	Total of 2 m Width =	6,00	buah			
	Remaining Width to Edge =	5,00	m'			
	Volume =	**546,02**	m2			
	Total Volume =			**546,02**	m2	



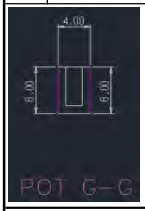


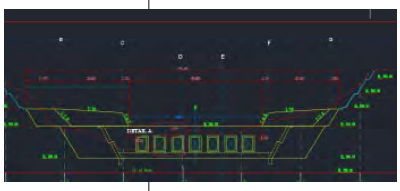
E.	**Section F-F**				
	Formwork height =	32,86	m'		
	Length =	23,15	m'		
	Volume =	**760,71**	m2		
	Total Volume =			**760,71**	m2





E	**Section G-G**				
	Formwork height =	12,00	m'		
	Length =	3,00	m'		
	Volume =	**36,00**	m2		
				36,00	m2

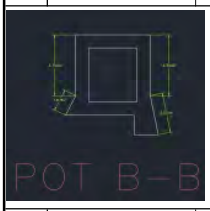




Total Formwork =	**3.290,17**	**m2**

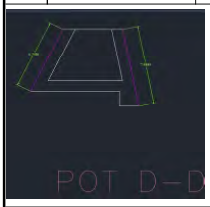
Name Structure :	**: CD Pelintas Curah Lengkong 2**
Type of work	**: Expose Wall Formwork (Sub Dam)**

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section B-B**					
	Formwork height =	14,14	m'			
	Length =	7,30	m'			
	Volume =	**103,19**	m2			
	Total Volume =			**103,19**	m2	



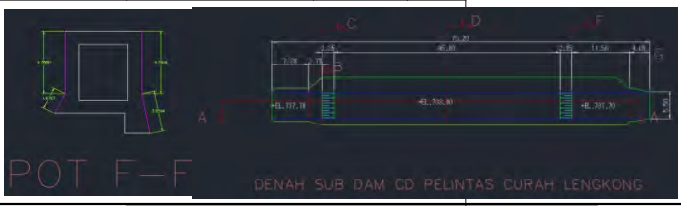
B.	**Section C-C**					
	Formwork height =	23,76	m'			
	Length =	5,05	m'			
	Volume =	**119,97**	m2			
	Total Volume =			**119,97**	m2	

C.	**Section D-D**				
	Formwork height =	14,36	m'		
	Length =	45,00	m'		
	Volume =	**646,07**	m2		
	Total Volume =			**646,07**	m2



D.	**Section E-E**				
	Formwork height =	23,76	m'		
	Length =	13,85	m'		
	Volume =	**329,03**	m2		
	Total Volume =			**329,03**	m2

E	**Section F-F**				
	Formwork height =	14,14	m'		
	Length =	4,00	m'		
	Volume =	**56,54**	m^2		
				56,54	m2

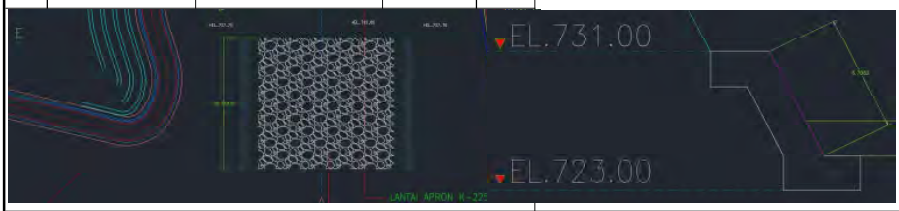


	Expose Wall Formwork Sub Total Volume =	**1.254,81 m2**

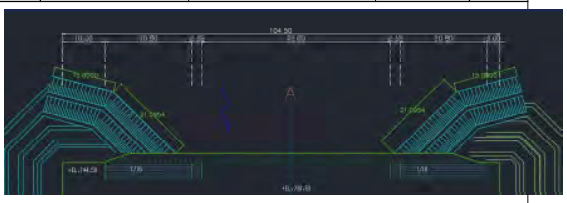
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Expose Wall Formwork (Apron Retaining Wall)

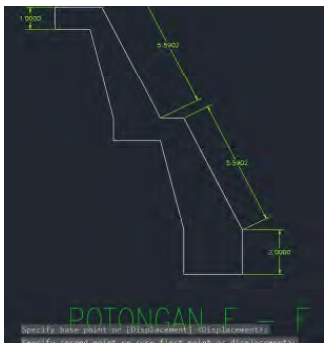
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**POT. C-C**					
	Formwork height =	14,74	m'			
	Length =	17,44	m'			
	Numbers of Retaining Wall = =	2,00	pcs Right & Left			
	Volume =	**514,16**	m^2			
	Total Volume =			**514,16**	m^2	

B.	**POT. E-E**					
	Formwork height =	6,71	m'			
	Length =	38,50	m'			
	Numbers of Retaining Wall = =	2,00	pcs	Right & Left		
	Volume =	**516,53**	m^2			
	Total Volume =				**516,53**	m^2



C.	**POT. F-F BUFFER FILL**					
	Formwork height =	14,18	m^2			
	Length =	2,00	pcs	Right & Left		
	Numbers of Retaining Wall = =	36,10	m'			
	Volume =	**1023,69**	m^3			
	Total Volume =				**1.023,69**	m^2

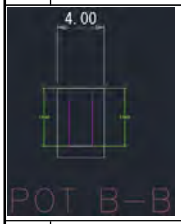


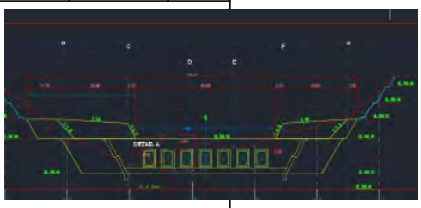


Expose Wall Formwork Sub Total Volume =	**2.054,39**	m^2
Expose Wall Formwork Total Volume =	**6.599,37**	m^3

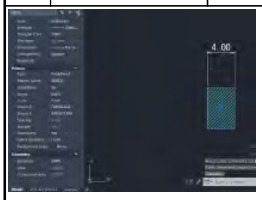
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Non Expose Wall Formwork (Main Dam)

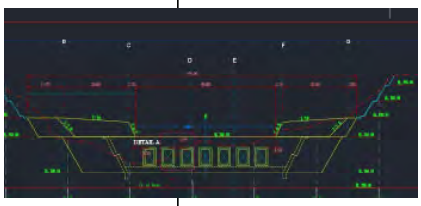
No.	Description	Calculation		Volume	Unit	Drawing reference
A.	Section B-B					
	Formwork height =	10,00	m'			
	Length =	11,70	m'			
	Volume =	117,00	m2			
	Total Volume =			117,00	m2	



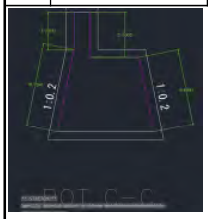


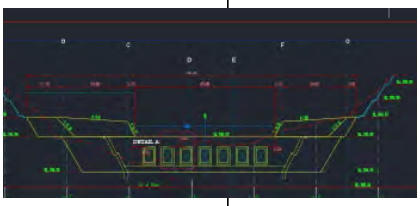
B	Section B-B Joint					
	Area Formwork =	24,00	m2			
	Numbers of Formwork =	2,00	pcs Right & Left			
	Volume =	48,00	m2			
	Total Volume =			48,00	m2	



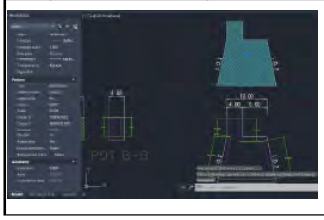


C.	Section C-C					
	Formwork height =	30,79	m'			
	Length =	23,15	m'			
	Volume =	712,84	m2			
	Total Volume =			712,84	m2	

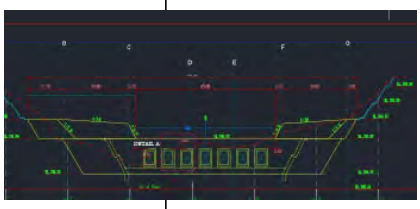




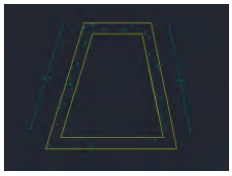
D.	Section C-C Joint					
	Area Formwork =	160,25	m2			
	Numbers of Formwork =	3,00	pcs Right & left			
	Volume =	480,75	m2			
	Total Volume =			480,75	m2	

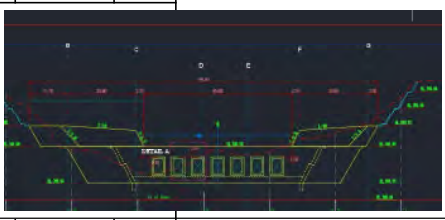


E.	**Section D-D**				
	Formwork Height =	6,12	m'		
	Drip holes width =	3,00	m'		
	Numbers of drip holes =	7,00	pcs		
	Volume =	**128,52**	m2		
	Drip Hole Wall Area's =	41,06	m2		
	Numbers of Wall Side =	2,00	pcs		
	Numbers of drip holes =	7,00	pcs		
	Volume =	**574,88**	m2		
	Total Volume =			**703,40**	m2

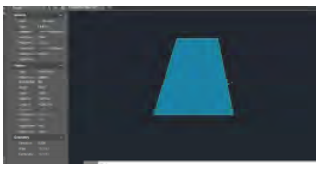


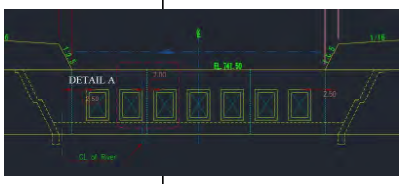
F.	**Section E-E**				
	Formwork Height =	19,61	m'		
	Width 1 piece Drip Hole =	3,00	m'		
	Total of 2 m Width =	6,00	pcs		
	Remaining Width to Edge =	5,00	m'		
	Volume =	**450,95**	m2		
	Total Volume =			**450,95**	m2



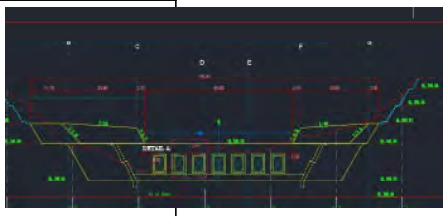


G.	**Section E-E Joint**				
	Area Formwork =	102,06	m2		
	Numbers of Formwork =	4,00	Buah-Ki		
	Volume =	**408,25**	m2		
	Total Volume =			**408,25**	m2

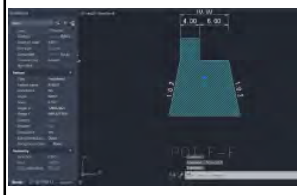


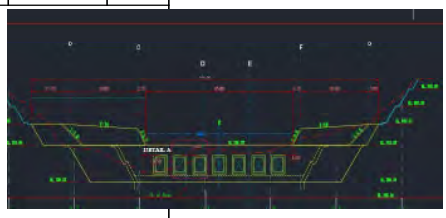


H.	**Section F-F**				
	Formwork Height =	30,79	m'		
	Length =	23,15	m'		
	Volume =	**712,84**	m2		
				712,84	m2

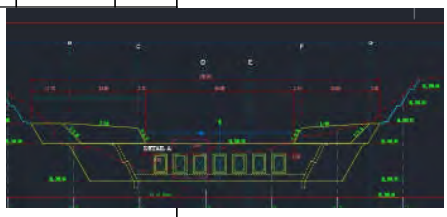


I.	**Section F-F Joint**				
	Area Formwork =	160,25	m2		
	Numbers of Formwork =	3,00	pcs Right & left		
	Volume =	**480,75**	m2		
	Total Volume =			**480,75**	m2

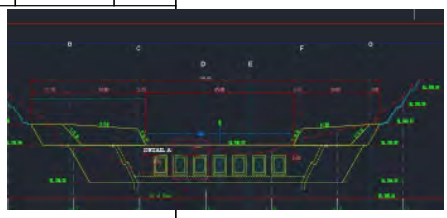




J.	**Section G-G**				
	Formwork Height =	10,00	m'		
	Length =	3,00	m'		
	Volume =	**30,00**	m2		
	Total Volume =			**30,00**	m2



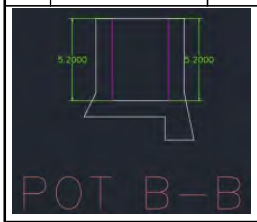
K.	**Section G-G Joint**				
	Area Formwork =	24,00	m2		
	Numbers of Formwork =	2,00	pcs Right & left		
	Volume =	**48,00**	m2		
	Total Volume =			**48,00**	m2

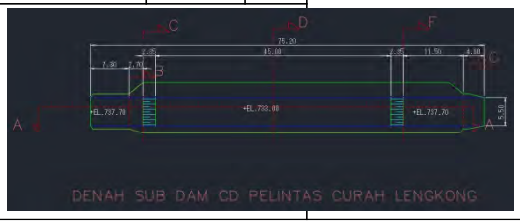


	Total Formwork =	**4.192,78** m2

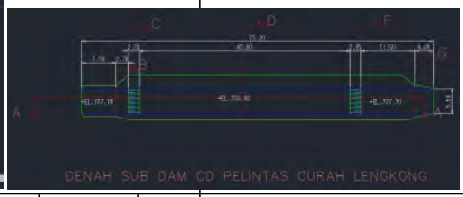
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Non Expose Wall Formwork (Sub Dam)

No.	Description	Calculation		Volume	Unit	Drawing reference
A.	**Section B-B**					
	Formwork height =	10,40	m'			
	Length =	7,30	m'			
	Volume =	**75,92**	m2			
	Total Volume =			**75,92**	m2	

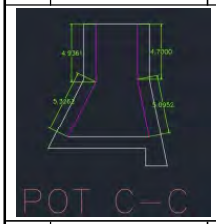




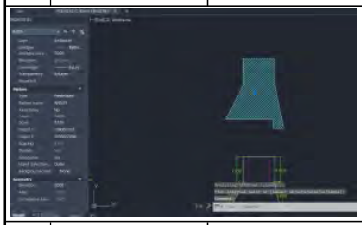
B	**Section B-B Joint**				
	Area Formwork =	37,36	m2		
	Numbers of Formwork =	2,00	pcs Ka-Ki		
	Volume =	**74,73**	m2		
	Total Volume =			**74,73**	m2



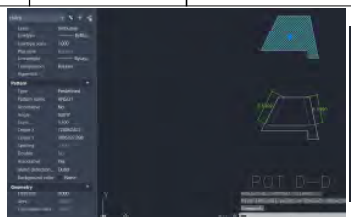
C.	**Section C-C**				
	Formwork height =	20,06	m'		
	Length =	5,05	m'		
	Volume =	**101,29**	m2		
	Total Volume =			**101,29**	m2

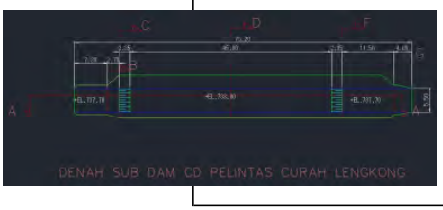


D.	**Section C-C Joint**				
	Area Formwork =	73,93	m2		
	Numbers of Formwork =	2,00	pcs Ka-Ki		
	Volume =	**147,85**	m2		
	Total Volume =			**147,85**	m2

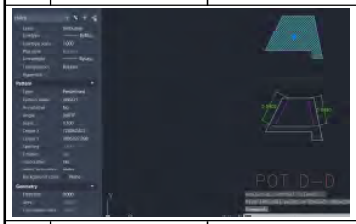


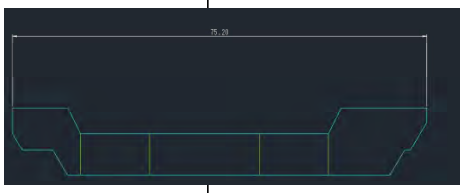
E.	**Section D-D**				
	Formwork height =	10,69	m'		
	Length =	45,00	m'		
	Volume =	**481,01**	m2		
	Total Volume =			**481,01**	m2



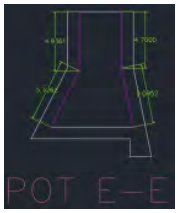


F.	**Section D-D Joint**				
	Area Formwork =	48,07	m2		
	Numbers of Formwork =	4,00	pcs Ka-Ki		
	Volume =	**192,27**	m2		
	Total Volume =			**192,27**	m2

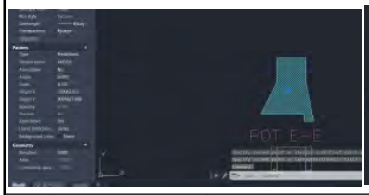




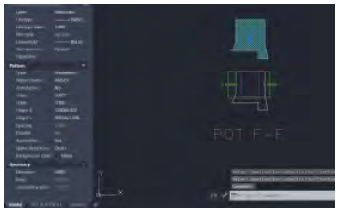
G.	**Section E-E**				
	Formwork height =	20,06	m'		
	Length =	13,85	m'		
	Volume =	**277,80**	m2		
	Total Volume =			**277,80**	m2

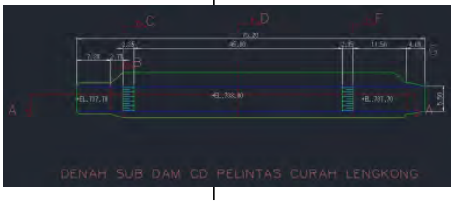


H.	**Section E-E Joint**				
	Area Formwork =	73,93	m2		
	Numbers of Formwork =	2,00	pcs Ka-Ki		
	Volume =	**147,85**	m2		
	Total Volume =			**147,85**	m2



I.	**Section F-F**				
	Formwork height =	10,40	m'		
	Length =	4,00	m'		
	Volume =	**41,60**	m^2		
				41,60	m2



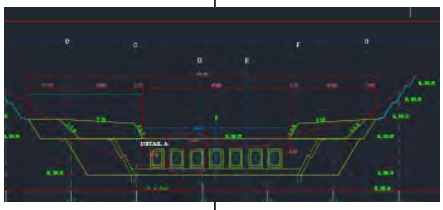


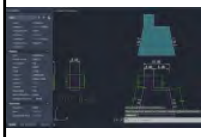
J.	Section F-F Joint				
	Area Formwork =	37,36	m2		
	Numbers of Formwork =	2,00	pcs Ka-Ki		
	Volume =	**74,73**	m2		
	Total Volume =			**74,73**	m2

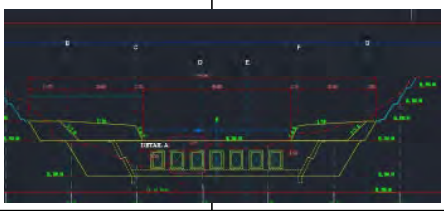
Non Expose Wall Formwork Sub Total Volume =	**1.615,04**	m2
Non Expose Wall Formwork Total Volume =	**5.807,82**	m2

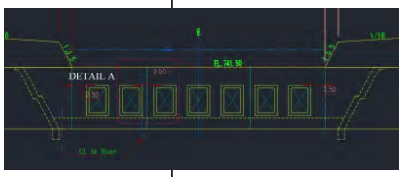
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Joint Filler (Main Dam)

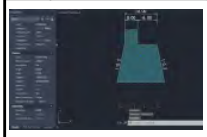
No.	Description	Calculation		Volume	Unit	Drawing reference
A.	**Section B-B Joint**					
	Joint Filler Area =	24,00	m2			
	Numbers of Joint Filler =	2,00	pcs Ka-Ki			
	Volume =	**48,00**	m2			
	Total Volume =			**48,00**	m2	
B.	**Section C-C Joint**					
	Joint Filler Area =	160,25	m2			
	Numbers of Joint Filler =	3,00	Buz Ka-Ki			
	Volume =	**480,75**	m2			
	Total Volume =			**480,75**	m2	
C.	**Section E-E Joint**					
	Joint Filler Area =	102,06	m2			
	Numbers of Joint Filler =	4,00	Buz Ka-Ki			
	Volume =	**408,25**	m2			
	Total Volume =			**408,25**	m2	
I.	**Section F-F Joint**					
	Joint Filler Area =	160,25	m2			
	Numbers of Joint Filler =	3,00	Buz Ka-Ki			
	Volume =	**480,75**	m2			
	Total Volume =			**480,75**	m2	

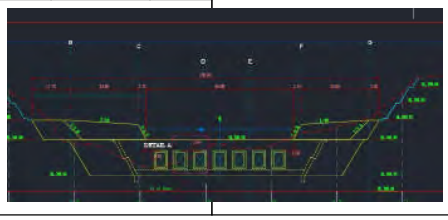




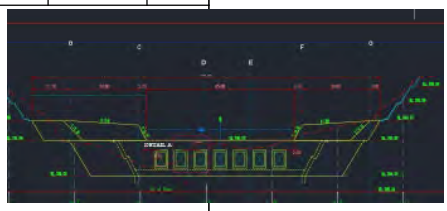








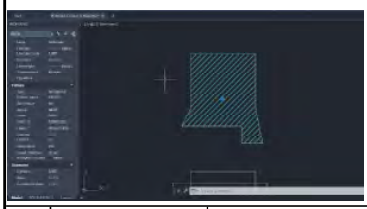
K.	Section G-G Joint				
	Joint Filler Area =	24,00	m2		
	Numbers of Joint Filler =	2,00	Buc Ka-Ki		
	Volume =	**48,00**	m2		
	Total Volume =			**48,00**	m2



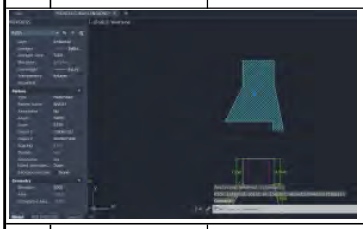
Joint Filler Thickness =	**0,02**	m
Total Area Joint Filler =	**1.465,75**	m2
Joint Filler Sub Total Volume =	29,31504	m3

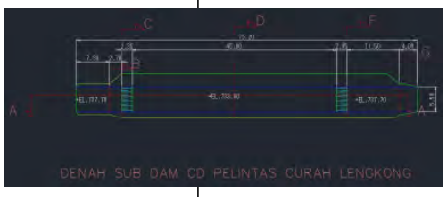
Struktur : **CD Pelintas Curah Lengkong 2**
Jenis Pekerjaan : **Joint Filler (Sub Dam)**

No.	Description	Calculation		Volume	Unit	Drawing reference
A.	**Section B-B Joint**					
	Joint Filler Area =	37,36	m2			
	Numbers of Joint Filler =	2,00	Buc Ka-Ki			
	Volume =	**74,73**	m2			
	Total Volume =			**74,73**	m2	

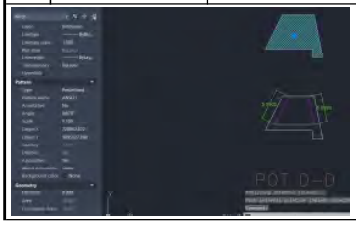


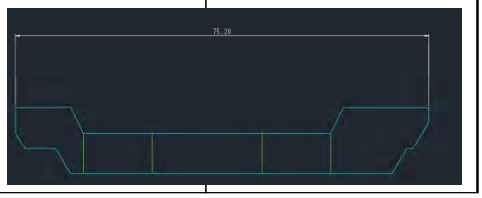
B.	**Section C-C Joint**					
	Joint Filler Area =	73,93	m2			
	Numbers of Joint Filler =	2,00	Buc Ka-Ki			
	Volume =	**147,85**	m2			
	Total Volume =			**147,85**	m2	



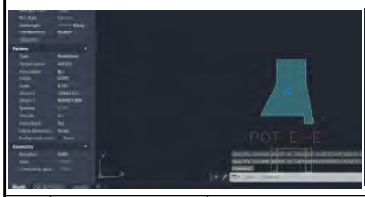


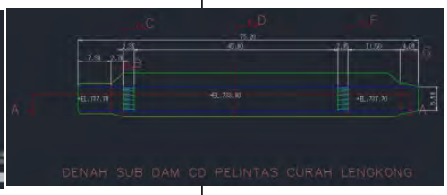
C.	**Section D-D Joint**					
	Joint Filler Area =	48,07	m2			
	Numbers of Joint Filler =	4,00	Buc Ka-Ki			
	Volume =	**192,27**	m2			
	Total Volume =			**192,27**	m2	



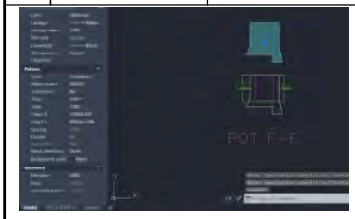


D.	**Section E-E Joint**				
	Joint Filler Area =	73,93	m2		
	Numbers of Joint Filler =	2,00	Buah-Ki		
	Volume =	**147,85**	m2		
	Total Volume =			**147,85**	m2





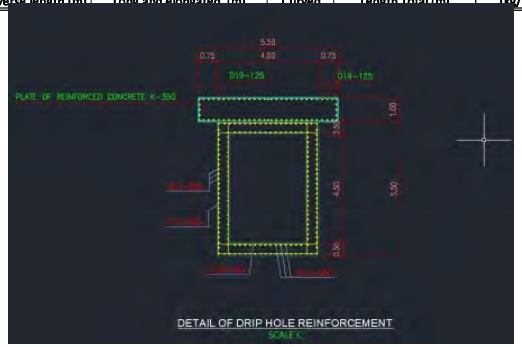
E.	**Section F-F Joint**				
	Joint Filler Area =	37,36	m2		
	Numbers of Joint Filler =	2,00	Buah-Ki		
	Volume =	**74,73**	m2		
	Total Volume =			**74,73**	m2

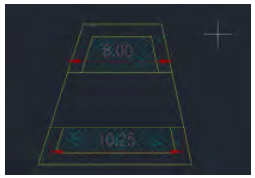


Joint Filler Thickness =	**0,02**	m
Total Area Joint Filler =	**637,42**	m2
Joint Filler Sub Total Volume =	**12,75**	m3
Join Filler Total Volume =	**42,06**	m3

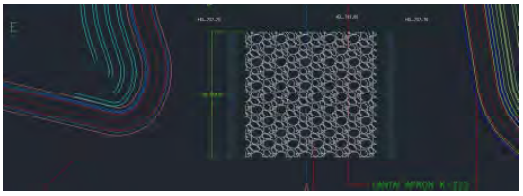
Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Reinforcing Steel

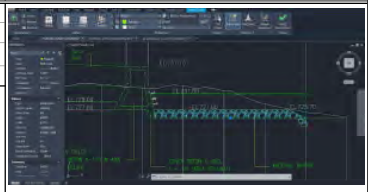
No.	Code	Diameter (mm)	Distance (m)		Length (m) Transverse length (m)	Long and elongated (m)	Curved	Length Total (m)	Weight per m' (kg/m)	Weigth Total (kg)	Numbers of bar	Weigth Total (kg)	Noted
1													
	Slab Reinforcement (D19-125)												
1	Main Reinforcement	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
2	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
3	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
4	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
5	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
6	Tul.Utama	0	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
7	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	





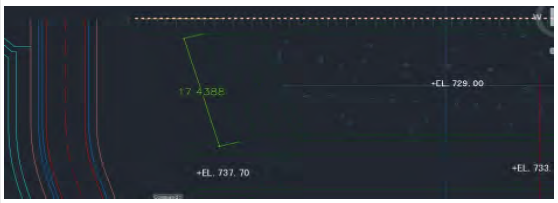
	Drainage Hole Reinforcement (D13-200)												
1	Tul.Utama	13	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
2	Tul.Utama	13	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
3	Tul.Utama	13	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
4	Tul.Utama	13	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
5	Tul.Utama	13	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
6	Tul.Utama	0	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
7	Tul.Utama	13	0,2	1,00	34,00	10,25			1,04	1753	171	1822,86	
	Tul.Bagi	13	0,2	1,00	10,25	34,00			1,04	1802	53	1874,08	
										Total kg / m		44459,74	**kg**
								Reinforcing Steel Total Weight Volume =				**44.459,74**	

Name Structure :	**: CD Pelintas Curah Lengkong 2**				
Type of work	**: Rip-Rap Boulder**				
No.	**Description**	**Calculation**		**Volume**	**Unit**
1					
	Area =	75,56	m2	**2.909,06**	m^2
	Length =	38,500	m		
					
		Rip-Rap Boulder Total Volume =		**2.909,06**	**m³**

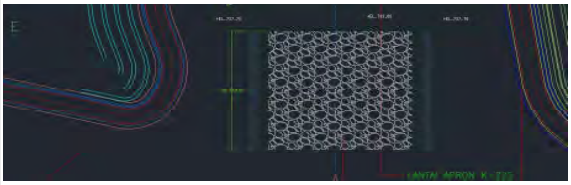


Name Structure : : CD Pelintas Curah Lengkong 2
Type of work : Weep Hole

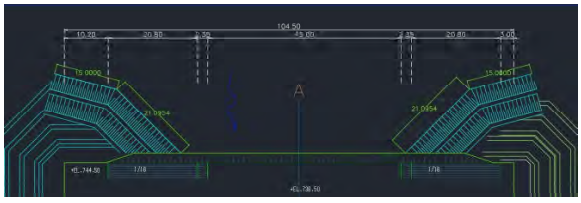
No.	Description	Calculation		Volume	Unit	Drawing reference
A.	POT. C-C					
	Weep Hole Length =	3,50	m'			
	Number of Weep Holes in 1 Section	6,00	pcs			
	Wall Length =	17,44	m'			
	Jarak antar Weep Hole =	2,00	m			
	Distance between Weep Holes =	8,00	pcs			
	Volume =	**168,00**	m'			
	Total Volume =			**168,00**	m'	



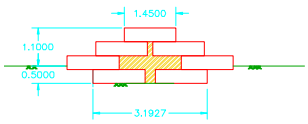
B.	POT. E-E					
	Weep Hole Length =	3,50	m'			
	Number of Weep Holes in 1 Section	2,00	pcs			
	Wall Length =	38,50	m'			
	Jarak antar Weep Hole =	2,00	m			
	Distance between Weep Holes =	19,00	pcs			
	Volume =	**133,00**	m'			
	Total Volume =			**133,00**	m'	



B.	POT. F-F BUFFER FILL					
	Weep Hole Length =	3,50	m'			
	Number of Weep Holes in 1 Section	4,00	pcs			
	Wall Length =	36,10	m'			
	Jarak antar Weep Hole =	2,00	m			
	Distance between Weep Holes =	18,00	pcs			
	Volume =	**252,00**	m'			
	Total Volume =			**252,00**	m'	



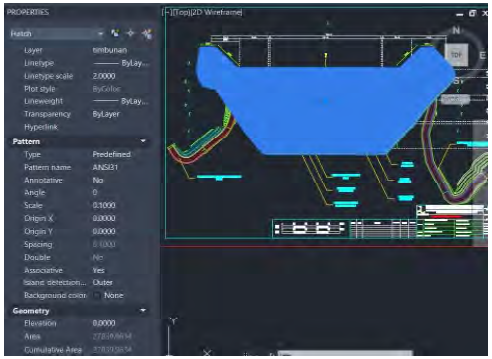
Weep Hole Total Volume =	**553,00**	**m'**

Name Structure :	: CD Pelintas Curah Lengkong 2				
Type of work	: Geo Bag & Sandfill				
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing reference**
1					
	Number of Geobag =	7,00 Pcs			
	Fill Length =	25,000 m			
	Geobag Length =	2,400 m			
	Number of Geobags Lengthwise =	10,000 Pcs			
		Geo Bag Total Volume =	**70,00**	Pcs	
	Fill Area =	0,87 m^2			
	Length =	25 m			
	Fill Volume =	21,750 m3			
	Moving Times =	2,000 Times			
	Total Volume =	43,500 m3			
		Sand Fill Total Volume =	**43,50**	m^3	

CD KOBOKAN 5 QUANTITY SUMMARY

No.	Description	Unit	Volume
A	**PREPARATION WORK**		
1	Stake Out Trace of New Infrastructure & Wooden Stakes (Raft 5/7) Length 1 m	m2	27.839,96
2	1 m Excavation Cross Profile	m	1.713,00
3	Bowplank Installation	m'	795,83
B	**DEMOLITION WORKS**		
1	Demolition with RDB, Loading of Demolition Results (Rock ϕ > 25 cm) and Transport, (mechanically, transported to the disposal area with a distance of up to 500 m)	m3	2,894,72
C	**EARTHWORKS**		
1	Mechanical Sand Excavation	m3	272.734,42
2	Backfill Sand (Material from Excavation, Mechanically)	m3	21.947,27
D	**CONCRETE WORK**		
1	Concrete Making and Casting fc' = 30 Mpa (K 350) Mechanically Transported within a radius of 2000 m with a Concrete Pump (CP)	m3	32.746,75
2	Concrete Making and Casting fc' = 20 Mpa (K 225) Mechanically Transported within a radius of 2000 m with a Concrete Pump (CP)	m3	16.826,00
3	Cyclops Concrete 60% Concrete fc' 15 Mpa: 40% Split Stone, with Concrete Pump (CP)	m3	106.647,96
4	1 kg Slab reinforcement for BjTP or BjTS diameter > 12 mm Semi-Mechanical method	Kg	155.195,04
5	1 m2 Exposed Concrete Wall Formwork with 18 mm Multiflex	m2	26.124,90
6	1 m2 Scaffolding / Supporting Formwork Rafters 5/7 for Concrete Walls Tm 2.50 m	m2	43.297,85
7	Carefully dismantle 1 m2 of Formwork and Scaffolding	m2	26.124,90
8	1 m2 Regular Formwork for Concrete Walls with Multiflex 12 mm or 18 mm	m2	17.172,96
9	Dismantle 1 m2 of Formwork and Scaffolding in the Normal Way (and Clear Debris) for Non Expose	m2	17.172,96
10	Joint Filler	m	134,86
11	Weep Hole	m	1.309,00
12	Irregular Riprap, Less Dense-Many Cavities, Height Difference 0-1 m & Mechanical Tidying	m3	2.323,38
E	**RIVER WORK And DEWATERING**		
1	Geo Bag	Buah	400,00
2	Backfill Sand (Material from Excavation, Mechanically)	m3	4.176,00

Name Structure : : CD Kobokan 5
Type of work : Stake Out Trase

No.	Description	Calculation	Volume	Unit	Drawing reference
					
1					
		27839,96	27.839,96	m^2	
		Stake Out Trase Total Volume =	27.839,96	m³	

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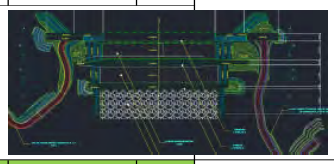
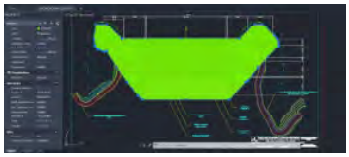
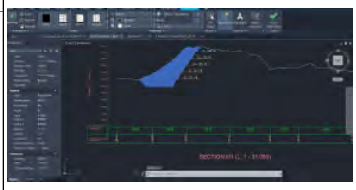
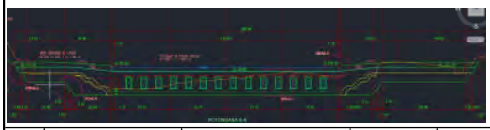
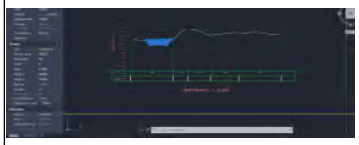
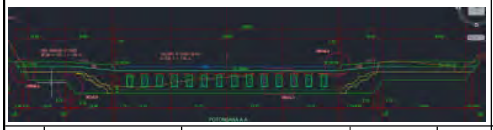
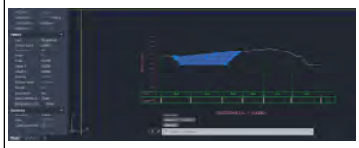
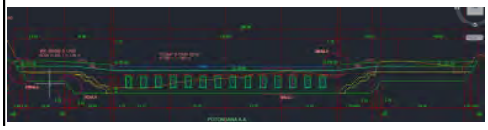
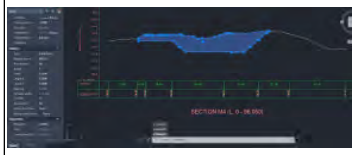
Name Structure :		**: CD Kobokan 5**			
Type of work		**: Cross Profile**			
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing reference**
					The assumption taken is that the longest span is at the
1	Maindam span =	285,50 ***m***			
	Measure each section =	6,00 section	1.713,00	m	Section A, B, C, D, E, F
		Cross Profile Total Volume =	**1.713,00**	**m**	



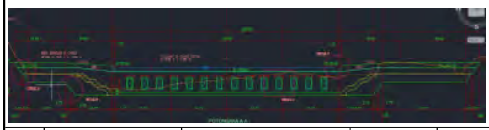
Name Structure : : CD Kobokan 5
Type of work : Bowplank

No.	Description	Calculation	Volume	Unit	Drawing reference
1	Volume	795,83	795,83	m'	
	Total		**795,83**	**m'**	

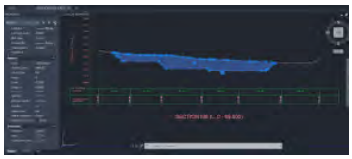
Name Structure : : CD Kobokan 5
Type of work : Sand Excavation

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Section M1					
	Area =	499,54	m^2			
	Length =	8,20	m'			
	Volume =	**4096,23**	m^2			
	Total Volume =			4.096,23	m^3	
						
B.	Section M2					
	Area =	124,77	m^2			
	Length =	0,00	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	Section M3					
	Area =	637,97	m^2			
	Length =	22,50	m'			
	Volume =	**8580,87**	m^3			
	Total Volume =			8.580,87	m^3	
						
D.	Section M4					
	Area =	819,13	m^2			
	Length =	2,70	m'			
	Volume =	**1967,09**	m^3			
	Total Volume =			1.967,09	m^3	
						

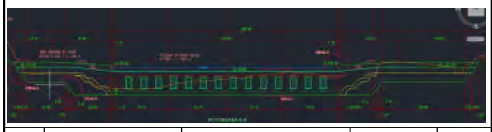
E.	**Section M5**				
	Area =	1.771,07	m^2		
	Length =	3,10	m'		
	Volume =	**4014,80**	m^3		
	Total Volume =			4.014,80	m^3

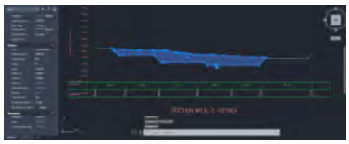


F.	**Section M6**				
	Area =	878,30	m^2		
	Length =	22,00	m'		
	Volume =	**29143,04**	m^3		
	Total Volume =			29.143,04	m^3

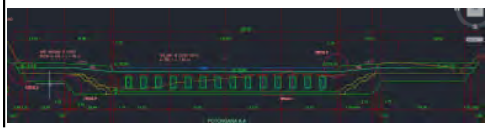


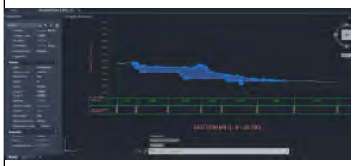
G.	**Section M7**				
	Area =	757,29	m^2		
	Length =	1,75	m'		
	Volume =	**1431,14**	m^3		
	Total Volume =			1.431,14	m^3



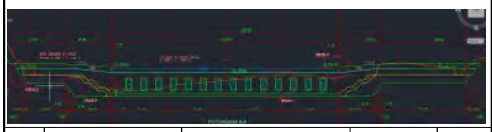


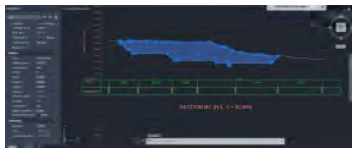
H.	**Section M8**				
	Area =	498,95	m^2		
	Length =	33,75	m'		
	Volume =	**21199,02**	m^3		
	Total Volume =			21.199,02	m^3



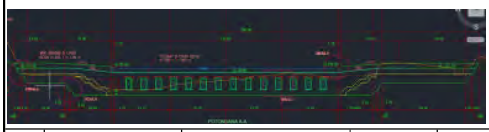


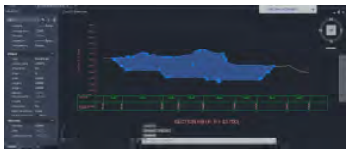
I.	**Section MC**				
	Area =	1.364,25	m^2		
	Length =	33,75	m'		
	Volume =	**31441,37**	m^3		
	Total Volume =			31.441,37	m^3



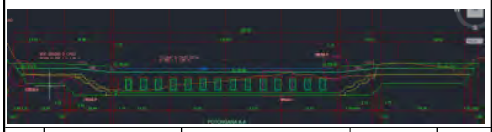


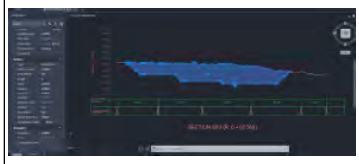
J.	**Section M9**				
	Area =	1.892,23	m^2		
	Length =	33,75	m'		
	Volume =	**54953,09**	m^3		
	Total Volume =			54.953,09	m^3



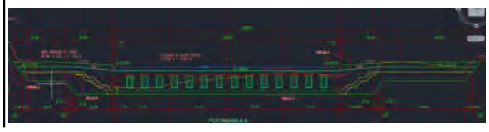


K.	**Section M10**				
	Area =	1.597,17	m^2		
	Length =	33,75	m'		
	Volume =	**58883,75**	m^3		
	Total Volume =			58.883,75	m^3

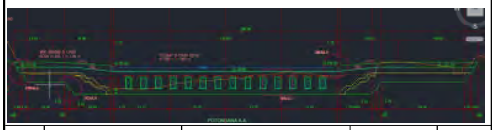




F.	**Section M11**				
	Area =	1.221,18	m^2		
	Length =	1,75	m'		
	Volume =	**2466,06**	m^3		
	Total Volume =			2.466,06	m^3

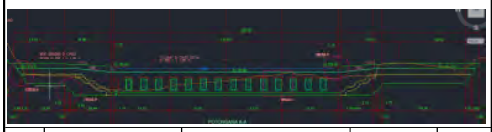


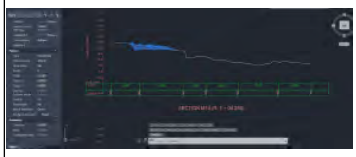
G.	Section M12				
	Area =	2.060,08	m^2		
	Length =	19,00	m'		
	Volume =	**31171,99**	m^3		
	Total Volume =			31.171,99	m^3



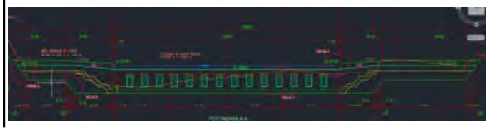
H.	Section M13				
	Area =	403,20	m^2		
	Length =	5,80	m'		
	Volume =	**7143,52**	m^3		
	Total Volume =			7.143,52	m^3

K.	Section M14				
	Area =	87,09	m^2		
	Length =	50,00	m'		
	Volume =	**12257,32**	m^3		
	Total Volume =			12.257,32	m^3

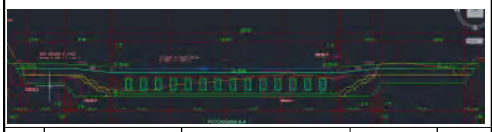


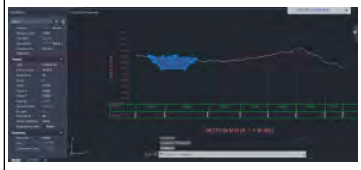


L.	Section M15				
	Area =	487,18	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3

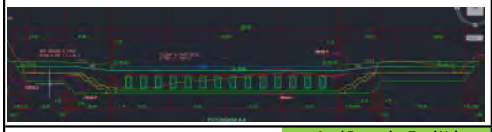


I.	**Section M16**				
	Area =	273,98	m^2		
	Length =	8,20	m'		
	Volume =	**3120,74**	m^3		
	Total Volume =			3.120,74	m^3





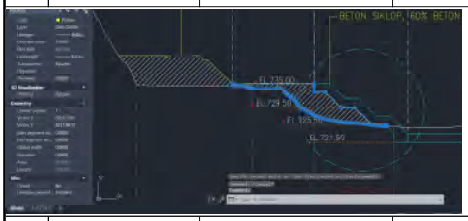
I.	**Section Remainder**				
	Area =	0,00	m^2		
	Length =	6,31	m'		
	Volume =	**864,40**	m^3		
	Total Volume =			864,40	m^3

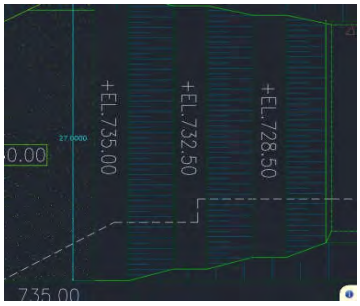


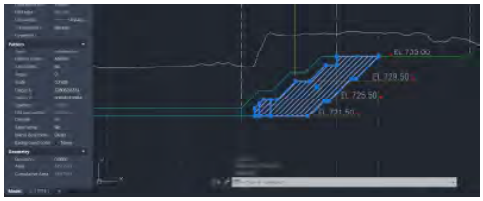
Sand Excavation Total Volume=	**272.734,42**	m^3

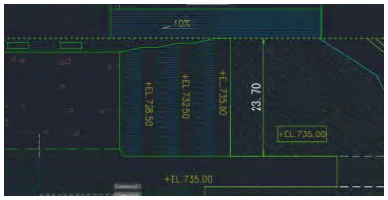
Name Structure : : CD Kobokan 5
Type of work : Backfill

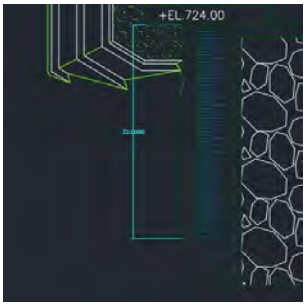
No.	Description	Calculation	Volume	Unit	Drawing Reference
A.	**Apron Right Wall Maindam**				
	Area =	95,07 m^2			
	Length =	27,00 m'			
	Volume =	**2566,87** m^3			
	Total Volume =		2.566,87	m^3	
B.	**Apron Left Wall Maindam**				
	Area =	149,76 m^2			
	Length =	23,70 m'			
	Volume =	**3549,22** m^3			
	Total Volume =		3.549,22	m^3	
E.	**Apron Right Wall Sub dam**				
	Area =	38,71 m^2			
	Length =	32,00 m'			
	Volume =	**1238,59** m^3			
	Total Volume =		1.238,59	m^3	
G.	**Right Wall Bufferfill**				
	Area =	217,96 m^2			
	Length =	54,36 m'			
	Volume =	**11848,04** m^3			
	Total Volume =		11.848,04	m^3	

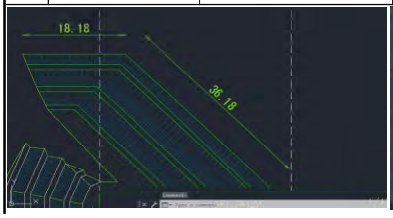




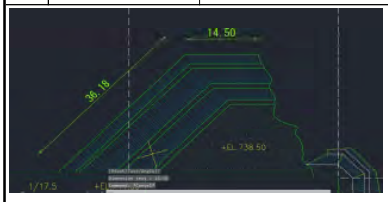


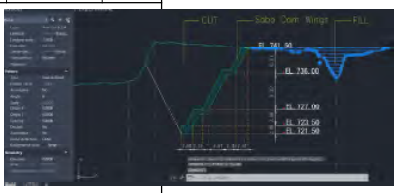




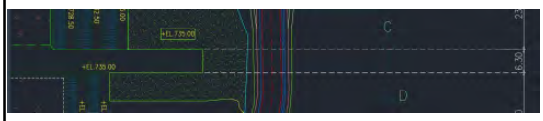


H.	**Left Wall Bufferfill**				
	Area =	44,43	m^2		
	Length =	50,68	m'		
	Volume =	**2251,58**	m^3		
	Total Volume =			2.251,58	m^3





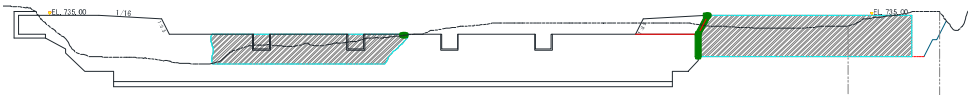
H.	**Sub Dam**				
	Area =	78,25	m^2		
	Length =	6,30	m'		
	Volume =	**492,98**	m^3		
	Total Volume =			492,98	m^3



Backfill Total Volume =	**21.947,27**	**m^3**

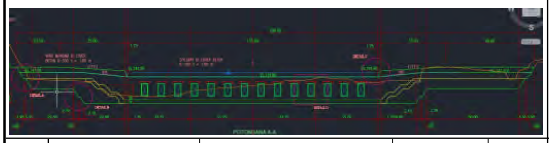
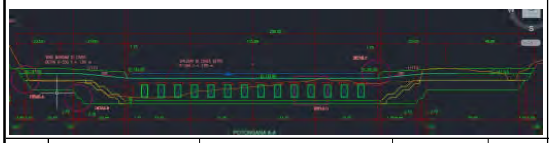
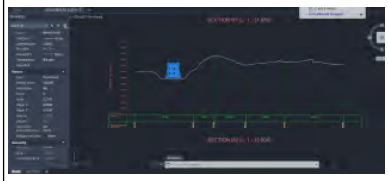
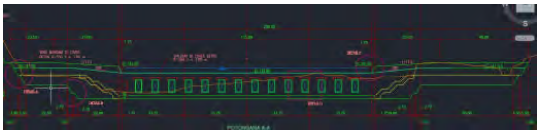
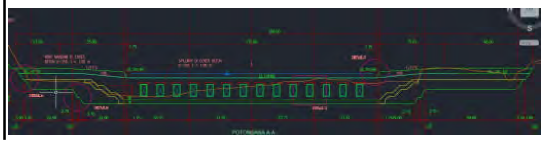
Name Structure : : CD Kobokan 5
Type of work : Demolition

No.	Description	Calculation	Volume	Unit	Drawing reference
1	Estimated width =	3,00 m			
	Estimated area =	964,91 m^2			
	Estimated volume =		2.894,72	m3	

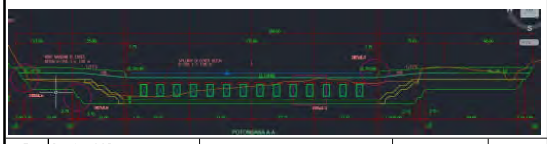


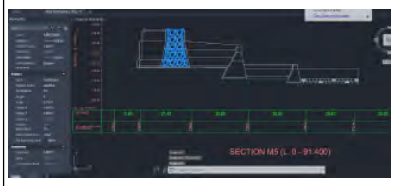
		Demolition Total Volume =	2.894,72	m3

Name Structure : : CD Kobokan 5
Type of work : Cyclop Concrete (Maindam)

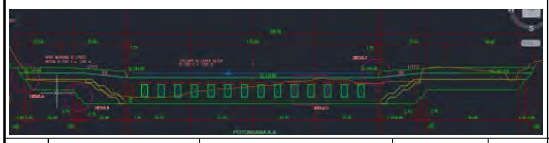
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Area =	93,83	m^2			
	Length =	8,20	m'			
	Volume =	**769,44**	m^2			
	Total Volume =			769,44	m^3	
						
B.	**Section M2**					
	Area =	93,83	m^2			
	Length =	0,00	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	**Section M3**					
	Area =	85,83	m^2			
	Length =	22,50	m'			
	Volume =	**1931,27**	m^3			
	Total Volume =			1.931,27	m^3	
						
D.	**Section M4**					
	Area =	93,83	m^2			
	Length =	2,70	m'			
	Volume =	**253,35**	m^3			
	Total Volume =			253,35	m^3	
						

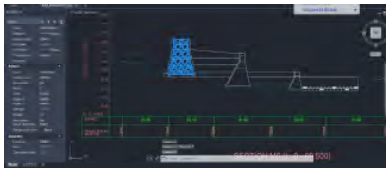
E.	**Section M5**				
	Area =	187,92	m^2		
	Length =	3,10	m'		
	Volume =	**582,54**	m^3		
	Total Volume =			582,54	m^3



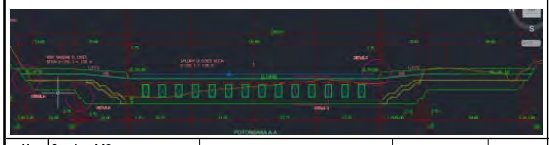


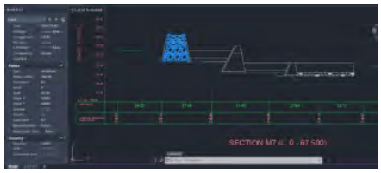
F.	**Section M6**				
	Area =	187,92	m^2		
	Length =	22,00	m'		
	Volume =	**4134,18**	m^3		
	Total Volume =			4.134,18	m^3



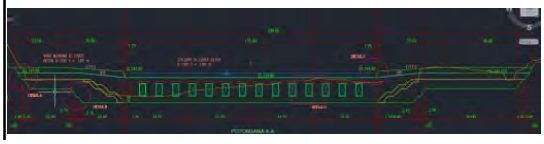


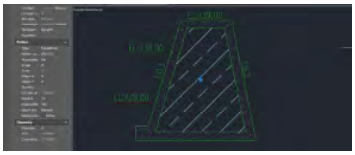
G.	**Section M7**				
	Area =	143,92	m^2		
	Length =	1,75	m'		
	Volume =	**251,85**	m^3		
	Total Volume =			251,85	m^3



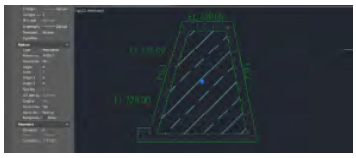


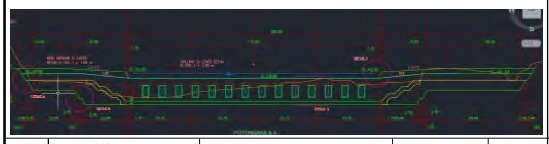
H.	**Section M8**				
	Area =	378,06	m^2		
	Length =	33,75	m'		
	Volume =	**12759,47**	m^3		
	Total Volume =			12.759,47	m^3



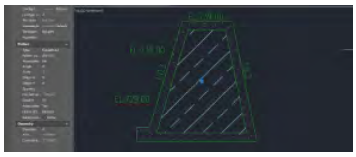


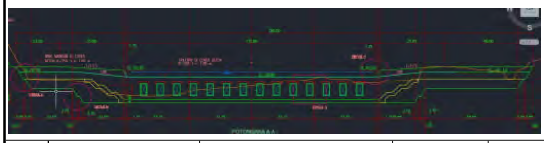
I.	**Section MC**				
	Area =	378,06	m^2		
	Length =	33,75	m'		
	Volume =	**12759,47**	m^3		
	Total Volume =			12.759,47	m^3



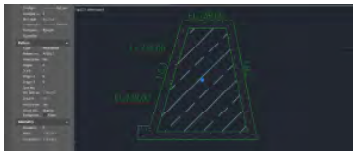


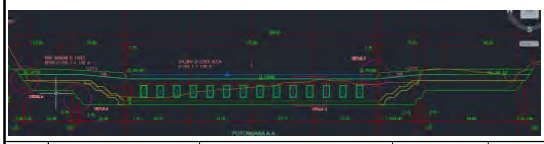
J.	**Section M9**				
	Area =	378,06	m^2		
	Length =	33,75	m'		
	Volume =	**12759,47**	m^3		
	Total Volume =			12.759,47	m^3



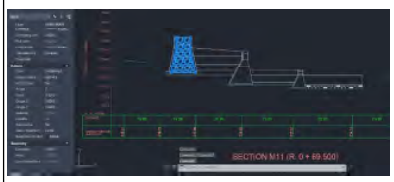


K.	**Section M10**				
	Area =	378,06	m^2		
	Length =	33,75	m'		
	Volume =	**12759,47**	m^3		
	Total Volume =			12.759,47	m^3

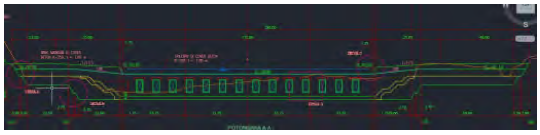


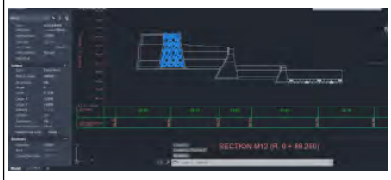


L.	**Section M11**				
	Area =	187,92	m^2		
	Length =	1,75	m'		
	Volume =	**328,86**	m^3		
	Total Volume =			328,86	m^3

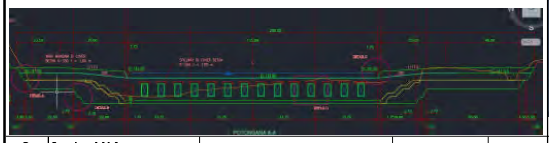


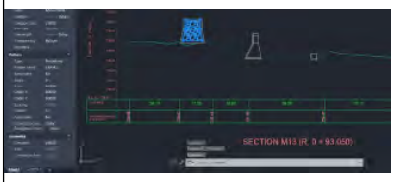
M.	**Section M12**				
	Area =	187,92	m^2		
	Length =	19,00	m'		
	Volume =	**3570,43**	m^3		
	Total Volume =			3.570,43	m^3



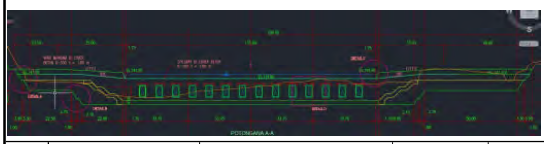


N.	**Section M13**				
	Area =	93,83	m^2		
	Length =	5,80	m'		
	Volume =	**544,24**	m^3		
	Total Volume =			544,24	m^3

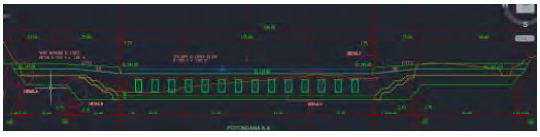


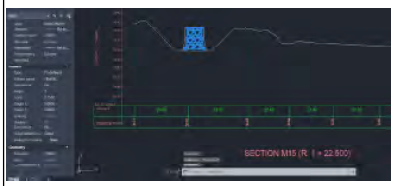


O.	**Section M14**				
	Area =	93,83	m^2		
	Length =	50,00	m'		
	Volume =	**4691,71**	m^3		
	Total Volume =			4.691,71	m^3

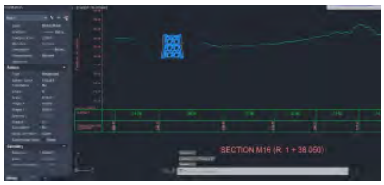


P.	**Section M15**				
	Area =	93,83	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3

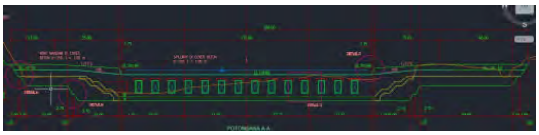




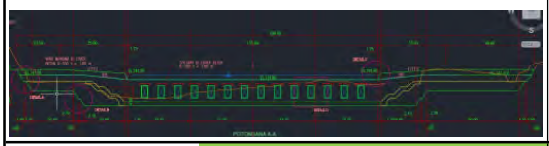
Q.	**Section M16**				
	Area =	104,19	m^2		
	Length =	8,20	m'		
	Volume =	**854,39**	m^3		
	Total Volume =			854,39	m^3

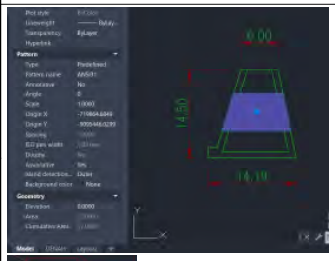


R.	**Section Remainder**				
	Area =	104,19	m^2		
	Length =	6,31	m'		
	Volume =	**657,44**	m^3		
	Total Volume =			657,44	m^3



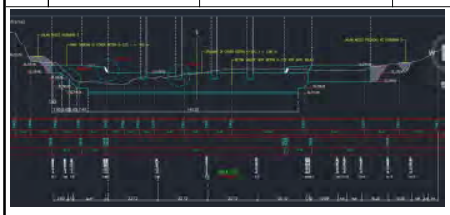
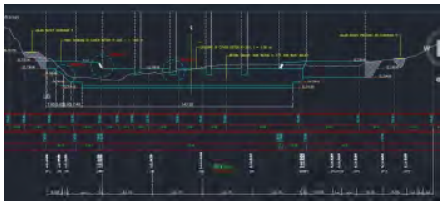
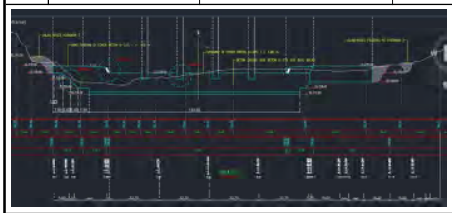
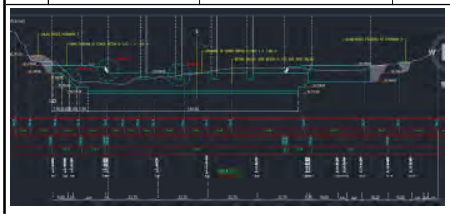
S.	**Reduced Drainage Hole Area**				
	Area =	57,00	m^2		
	Drainage Hole Width =	3,00	m'		
	Number of Drainage Hole =	14,00	pcs		
	Volume =	**2394,00**	m^3		
	Total Volume =			2.394,00	m^2



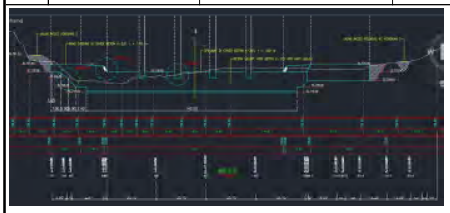


	Maindam Cyclop Concrete Total Volume =	**67.213,57 m^3**

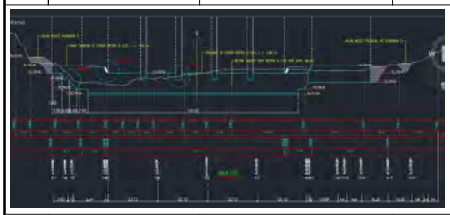
Name Structure : : CD Kobokan 5
Type of work : Cyclop Concrete (Subdam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Area =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	
						
B.	**Section M2**					
	Area =	0,00	m^2			
	Length =	8,55	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	**Section M3**					
	Area =	11,25	m^2			
	Length =	1,25	m'			
	Volume =	**14,06**	m^3			
	Total Volume =			14,06	m^3	
						
D.	**Section M4**					
	Area =	47,89	m^2			
	Length =	2,70	m'			
	Volume =	**129,30**	m^3			
	Total Volume =			129,30	m^3	
						

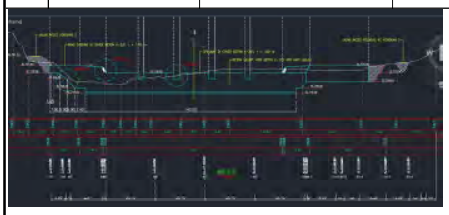
E.	**Section M5**				
	Area =	111,14	m^2		
	Length =	3,10	m'		
	Volume =	**344,55**	m^3		
	Total Volume =			344,55	m^3



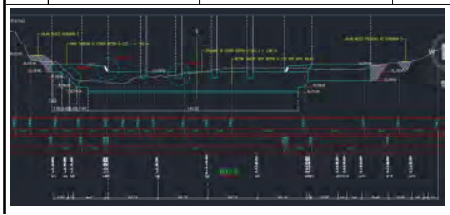
F.	**Section M6**				
	Area =	111,14	m^2		
	Length =	22,00	m'		
	Volume =	**2445,18**	m^3		
	Total Volume =			2.445,18	m^3

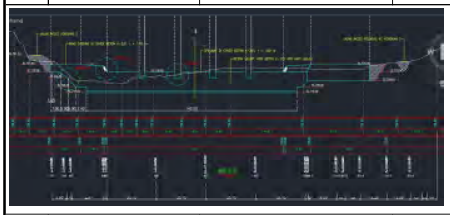
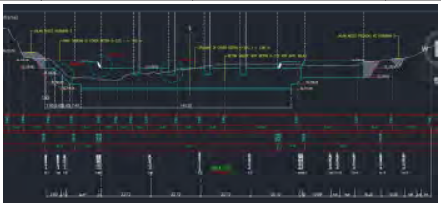
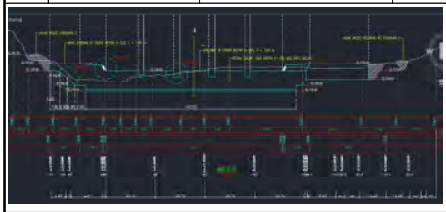
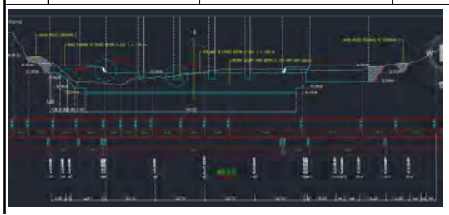


G.	**Section M7**				
	Area =	101,14	m^2		
	Length =	1,75	m'		
	Volume =	**177,00**	m^3		
	Total Volume =			177,00	m^3

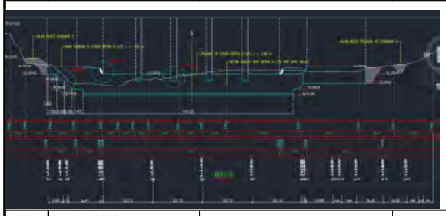


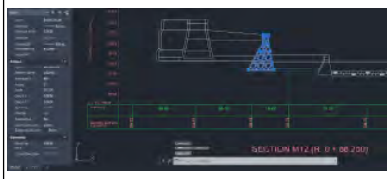
H.	**Section M8**				
	Area =	99,83	m^2		
	Length =	33,75	m'		
	Volume =	**3369,32**	m^3		
	Total Volume =			3.369,32	m^3



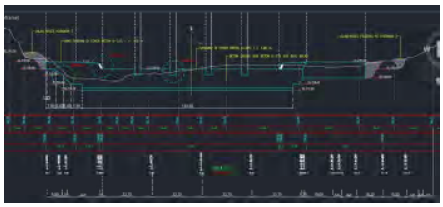
I.	**Section MC**				
	Area =	99,83	m^2		
	Length =	33,75	m'		
	Volume =	**3369,32**	m^3		
	Total Volume =			3.369,32	m^3
					
J.	**Section M9**				
	Area =	99,83	m^2		
	Length =	33,75	m'		
	Volume =	**3369,32**	m^3		
	Total Volume =			3.369,32	m^3
					
K.	**Section M10**				
	Area =	101,14	m^2		
	Length =	33,75	m'		
	Volume =	**3413,48**	m^3		
	Total Volume =			3.413,48	m^3
					
L.	**Section M11**				
	Area =	111,14	m^2		
	Length =	1,75	m'		
	Volume =	**194,50**	m^3		
	Total Volume =			194,50	m^3
					

M.	**Section M12**				
	Area =	111,14	m^2		
	Length =	19,00	m'		
	Volume =	**2111,75**	m^3		
	Total Volume =			2.111,75	m^3

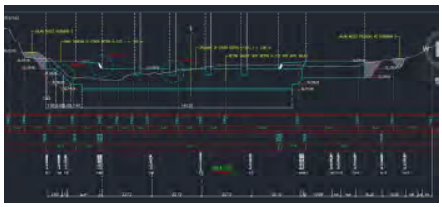




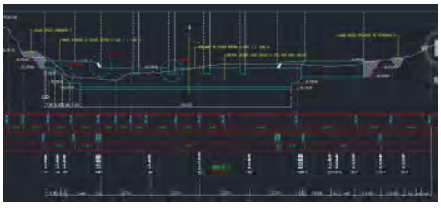
N.	**Section M13**				
	Area =	47,89	m^2		
	Length =	5,80	m'		
	Volume =	**277,77**	m^3		
	Total Volume =			277,77	m^3



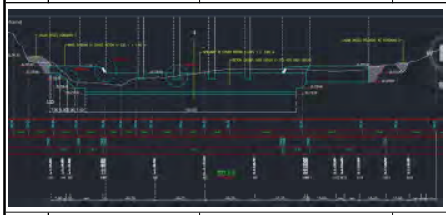
O.	**Section M14**				
	Area =	26,74	m^2		
	Length =	50,00	m'		
	Volume =	**1337,12**	m^3		
	Total Volume =			1.337,12	m^3



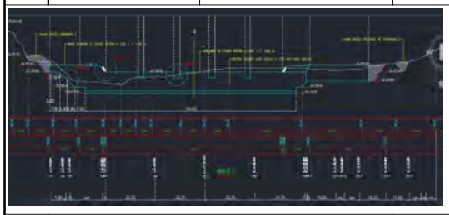
P.	**Section M15**				
	Area =	0,00	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



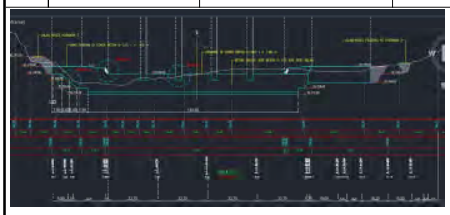
Q.	**Section M16**				
	Area =	0,00	m^2		
	Length =	8,20	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3

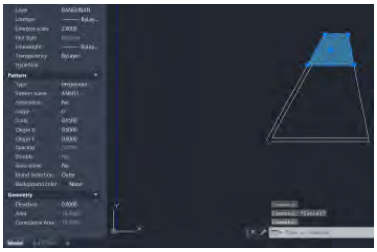


R.	**Section Remainder**				
	Area =	0,00	m^2		
	Length =	6,31	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



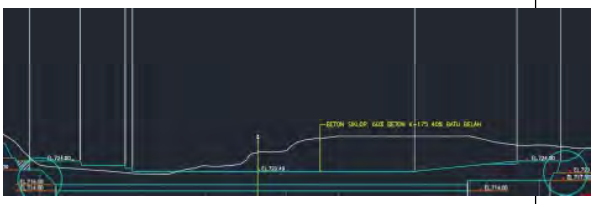
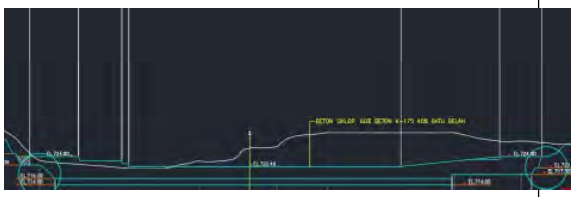
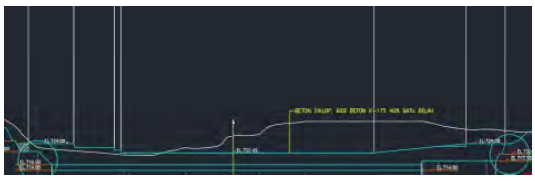
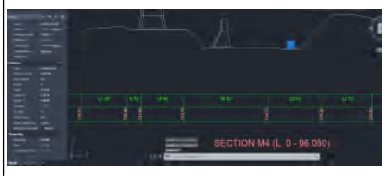
S.	**Reduced Drainage Hole Area**				
	Area =	18,00	m^2		
	Drainage Hole Width =	4,00	m'		
	Number of Drainage Hole =	4,00	pcs		
	Volume =	**288,00**	m^3		
	Total Volume =			288,00	m^2



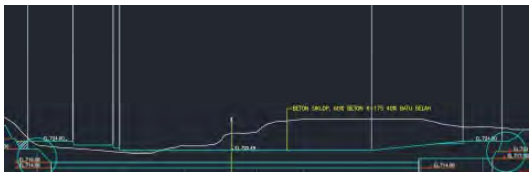


	Subdam Cyclop Concrete Sub Total Volume =	**20.264,67 m^3**

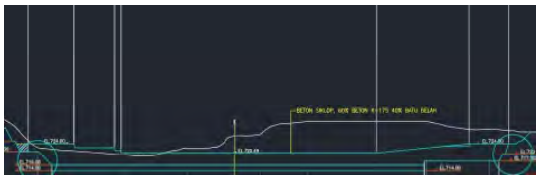
Name Structure : : CD Kobokan 5
Type of work : Cyclop Concrete (Sub-Sub dam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Area =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	
B.	**Section M2**					
	Area =	0,00	m^2			
	Length =	8,55	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	**Section M3**					
	Area =	0,00	m^2			
	Length =	18,25	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
D.	**Section M4**					
	Area =	6,25	m^2			
	Length =	3,60	m'			
	Volume =	**22,50**	m^3			
	Total Volume =			22,50	m^3	
						

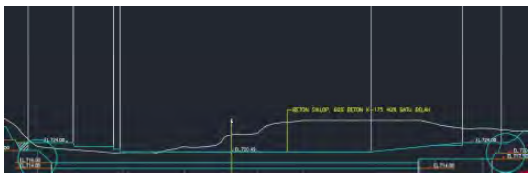
E.	**Section M5**				
	Area =	38,16	m^2		
	Length =	3,10	m'		
	Volume =	**118,29**	m^3		
	Total Volume =			118,29	m^3



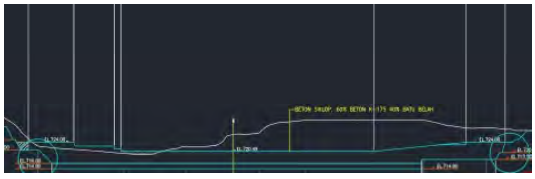
F.	**Section M6**				
	Area =	38,16	m^2		
	Length =	22,00	m'		
	Volume =	**839,46**	m^3		
	Total Volume =			839,46	m^3



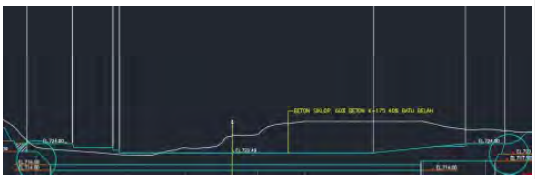
G.	**Section M7**				
	Area =	30,65	m^2		
	Length =	1,75	m'		
	Volume =	**53,64**	m^3		
	Total Volume =			53,64	m^3



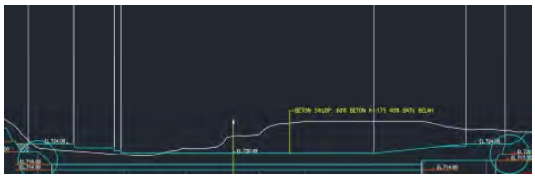
H.	**Section M8**				
	Area =	29,35	m^2		
	Length =	33,75	m'		
	Volume =	**990,42**	m^3		
	Total Volume =			990,42	m^3



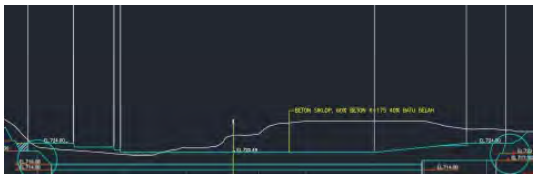
I.	**Section MC**				
	Area =	29,35	m^2		
	Length =	33,75	m'		
	Volume =	**990,42**	m^3		
	Total Volume =			990,42	m^3



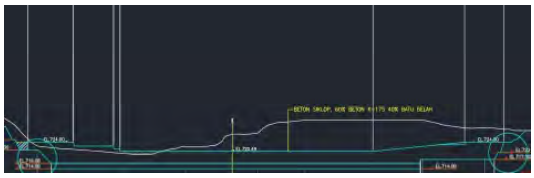
J.	**Section M9**				
	Area =	29,35	m^2		
	Length =	33,75	m'		
	Volume =	**990,42**	m^3		
	Total Volume =			990,42	m^3



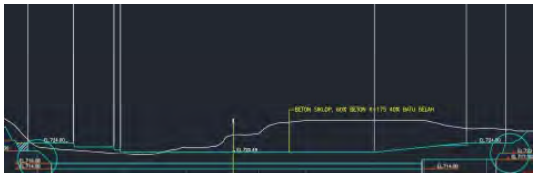
K.	**Section M10**				
	Area =	30,65	m^2		
	Length =	33,75	m'		
	Volume =	**1034,57**	m^3		
	Total Volume =			1.034,57	m^3



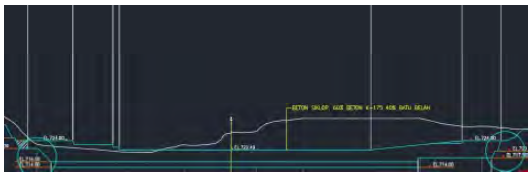
L.	**Section M11**				
	Area =	38,16	m^2		
	Length =	1,75	m'		
	Volume =	**66,78**	m^3		
	Total Volume =			66,78	m^3



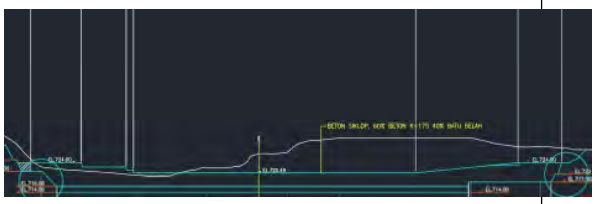
M.	**Section M12**				
	Area =	38,16	m^2		
	Length =	19,00	m'		
	Volume =	**724,99**	m^3		
	Total Volume =			724,99	m^3



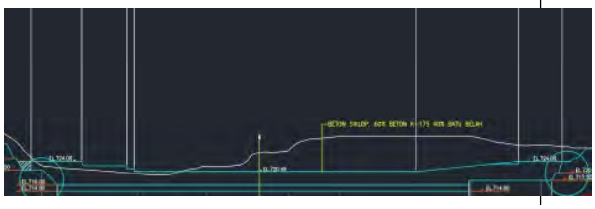
N.	**Section M13**				
	Area =	6,25	m^2		
	Length =	5,80	m'		
	Volume =	**36,25**	m^3		
	Total Volume =			36,25	m^3



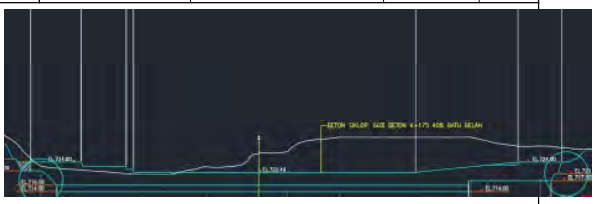
O.	**Section M14**				
	Area =	0,00	m^2		
	Length =	50,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



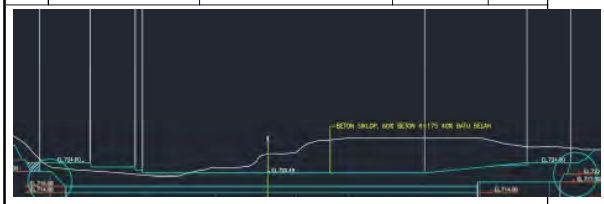
P.	**Section M15**				
	Area =	0,00	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



Q.	**Section M16**				
	Area =	0,00	m^2		
	Length =	8,20	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



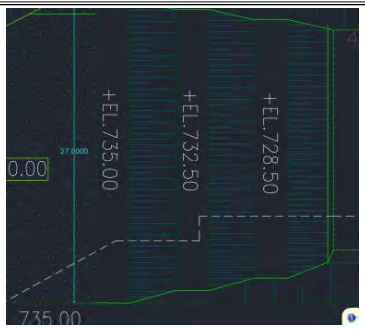
R.	**Section Remainder**				
	Area =	0,00	m^2		
	Length =	6,31	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3

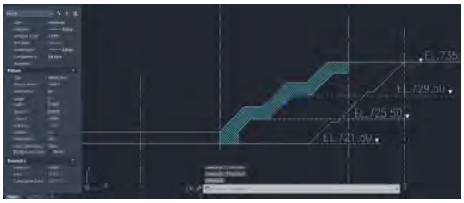


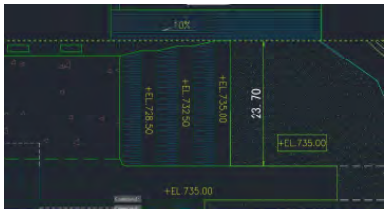
	Sub-Sub dam Cyclop Concrete Sub Total Volume =	**5.867,75 m^3**

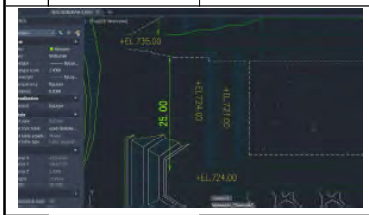
Name Structure : : CD Kobokan 5
Type of work : Cyclop Concrete (Retaining Wall)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Apron Right Wall Maindam					
	Area =	54,90	m^2			
	Length =	27,00	m'			
	Volume =	**1482,29**	m^3			
	Total Volume =			1.482,29	m^3	
B.	Apron Left Wall Maindam					
	Area =	54,90	m^2			
	Length =	23,70	m'			
	Volume =	**1301,11**	m^3			
	Total Volume =			1.301,11	m^3	
C.	Apron Right Wall Subdam					
	Area =	33,50	m^2			
	Length =	25,00	m'			
	Volume =	**837,50**	m^3			
	Total Volume =			837,50	m^3	
D.	Apron Left Wall Subdam					
	Area =	33,50	m^2			
	Length =	27,00	m'			
	Volume =	**904,50**	m^3			
	Total Volume =			904,50	m^3	

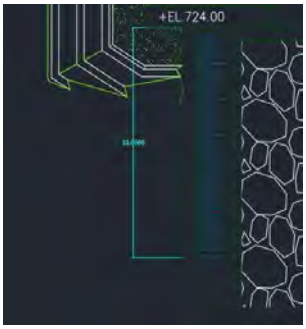




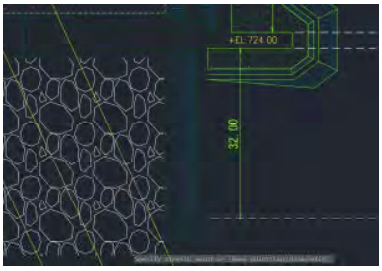




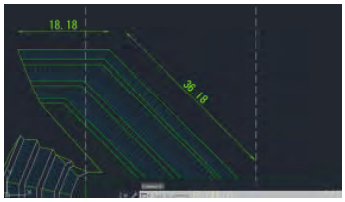
E.	**Apron Right Wall Sub-Subdam**				
	Area =	24,89	m^2		
	Length =	32,00	m'		
	Volume =	**796,48**	m^3		
	Total Volume =			796,48	m^3

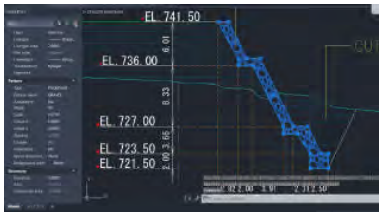


F.	**Apron Left Wall Sub-Subdam**				
	Area =	24,89	m^2		
	Length =	32,00	m'		
	Volume =	**796,48**	m^3		
	Total Volume =			796,48	m^3

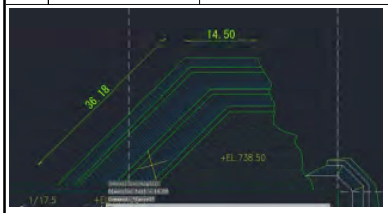


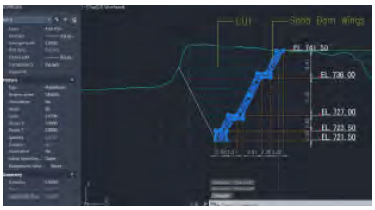
G.	**Right Wall Bufferfill**				
	Area =	35,65	m^2		
	Length =	64,36	m'		
	Volume =	**2294,43**	m^3		
	Total Volume =			2.294,43	m^3



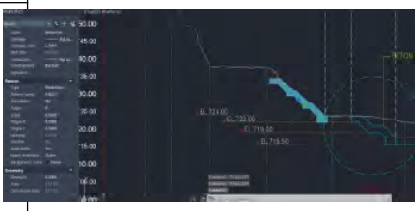


H.	**Left Wall Bufferfill**				
	Area =	35,65	m^2		
	Length =	50,68	m'		
	Volume =	**1806,74**	m^3		
	Total Volume =			1.806,74	m^3





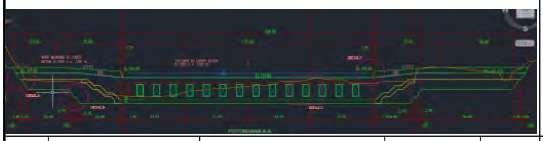
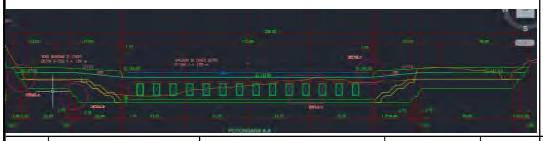
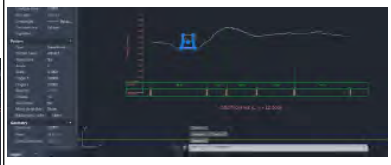
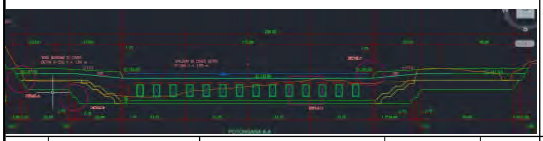
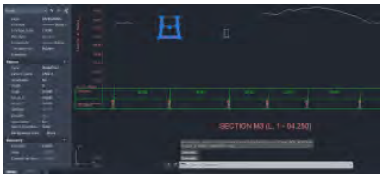
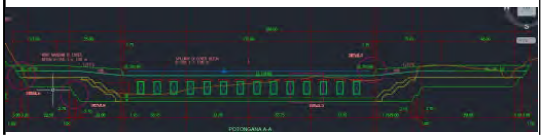
I.	**Right Wall Protection**				
	Area =	34,72	m^2		
	Length =	88,78	m'		
	Volume =	**3082,44**	m^3		
	Total Volume =			3.082,44	m^3



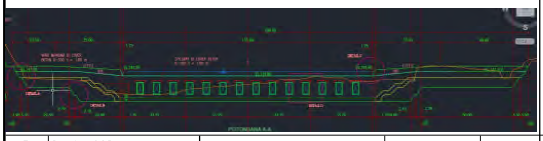
Retaining Wall Cyclop Concrete Sub Total Volume =	**13.301,97**	**m^3**

Cyclop Concrete Total Volume =	**106.647,96**	**m^3**

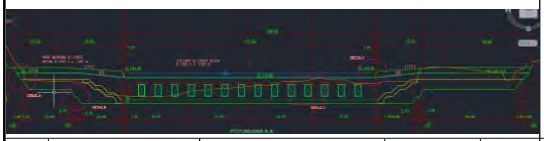
Name Structure : : CD Kobokan 5
Type of work : Concrete K-350

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Area =	34,62	m^2			
	Length =	8,20	m'			
	Volume =	**283,85**	m^2			
	Total Volume =			283,85	m^2	
						
B.	**Section M2**					
	Area =	34,62	m^2			
	Length =	0,00	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	**Section M3**					
	Area =	34,62	m^2			
	Length =	22,50	m'			
	Volume =	**778,86**	m^3			
	Total Volume =			778,86	m^3	
						
D.	**Section M4**					
	Area =	34,62	m^2			
	Length =	2,70	m'			
	Volume =	**93,46**	m^3			
	Total Volume =			93,46	m^3	
						

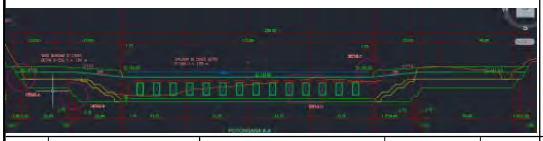
E.	**Section M5**				
	Area =	56,30	m^2		
	Length =	3,10	m'		
	Volume =	**174,53**	m^3		
	Total Volume =			174,53	m^3



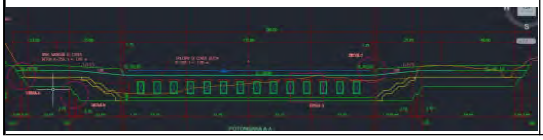
F.	**Section M6**				
	Area =	56,30	m^2		
	Length =	22,00	m'		
	Volume =	**1238,61**	m^3		
	Total Volume =			1.238,61	m^3

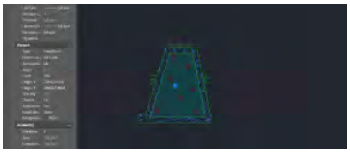


G.	**Section M7**				
	Area =	45,30	m^2		
	Length =	1,75	m'		
	Volume =	**79,28**	m^3		
	Total Volume =			79,28	m^3

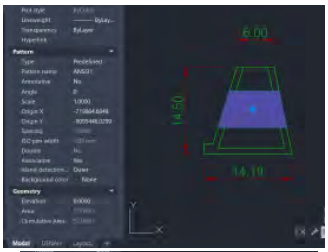


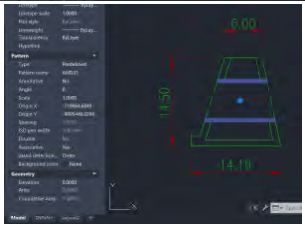
A.	**Spillway Main Dam**				
	Area =	188,28	m^2		
	Spillway Length =	135,00	m'		
	Volume =	**25418,43**	m^2		
	Total Volume =			25.418,43	m^2

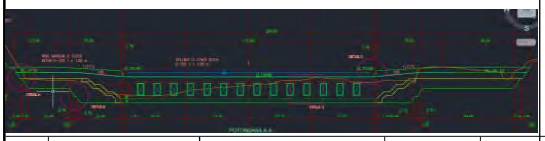




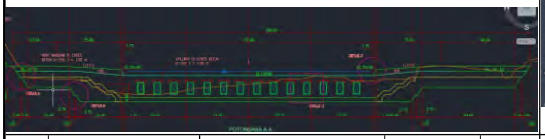
A.	**Drain Hole**				
	Area =	9,50	m^2		
	Drainage Holes Width =	3,00	m'		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	**399,00**	m3		
	Area =	57,00	m^2		
	Drainage Holes Thickness =	0,50	m'		
	umbers of Drainage Hole Wall Side =	2,00	side		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	**798,00**	m3		
	Total Volume =			1.197,00	m^2

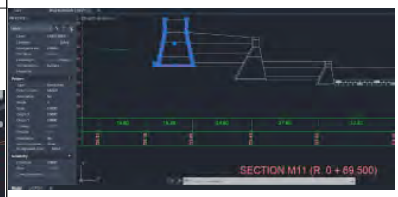




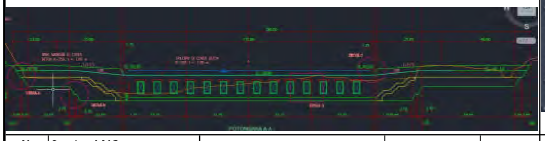


L.	**Section M11**				
	Area =	56,30	m^2		
	Length =	1,75	m'		
	Volume =	**98,53**	m^3		
	Total Volume =			98,53	m^3

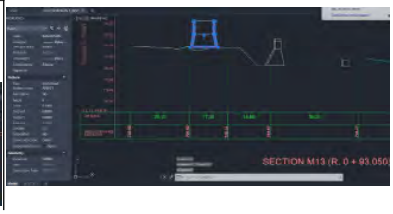




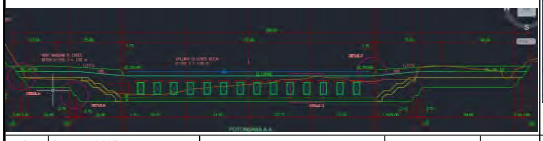
M.	**Section M12**				
	Area =	56,30	m^2		
	Length =	19,00	m'		
	Volume =	**1069,71**	m^3		
	Total Volume =			1.069,71	m^3



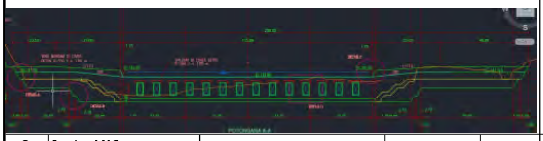
N.	**Section M13**				
	Area =	34,62	m^2		
	Length =	5,80	m'		
	Volume =	**200,77**	m^3		
	Total Volume =			200,77	m^3

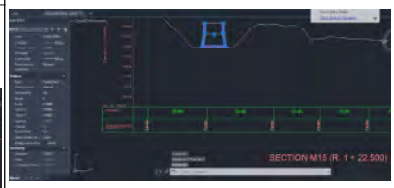


O.	**Section M14**				
	Area =	34,62	m^2		
	Length =	50,00	m'		
	Volume =	**1730,80**	m^3		
	Total Volume =			1.730,80	m^3

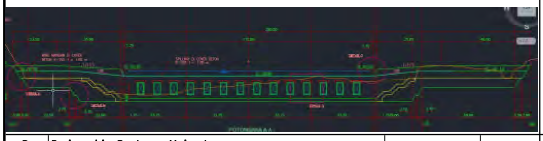


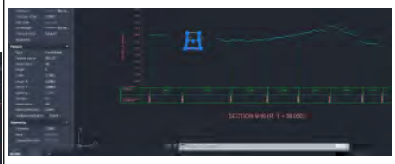
P.	**Section M15**				
	Area =	34,62	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



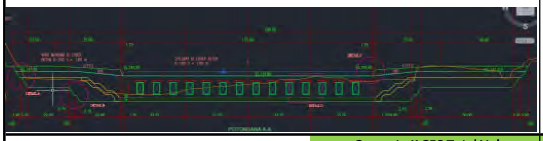


Q.	**Section M16**				
	Area =	34,62	m^2		
	Length =	26,09	m'		
	Volume =	**903,01**	m^3		
	Total Volume =			903,01	m^3



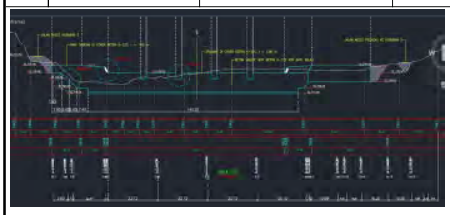
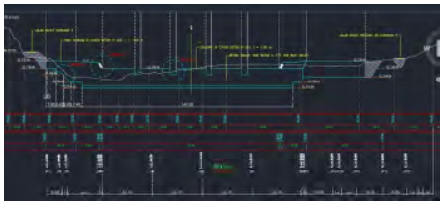
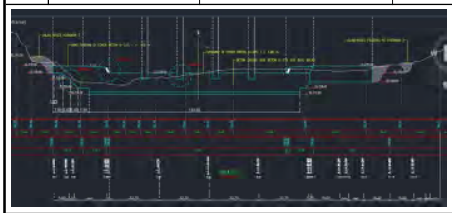
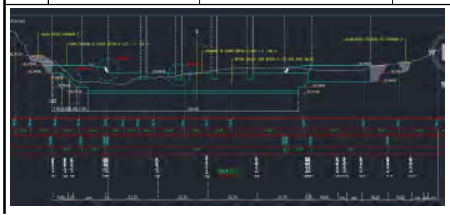


B.	**Reduced by Drainage Holes Area**				
	Area =	12,38	m^2		
	Length =	3,00	m'		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	**520,09**	m^3		
	Total Volume =			520,09	m^3

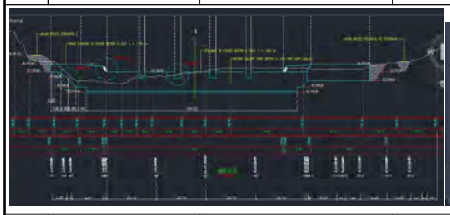


Concrete K-350 Total Volume =	**32.746,75**	**m^3**

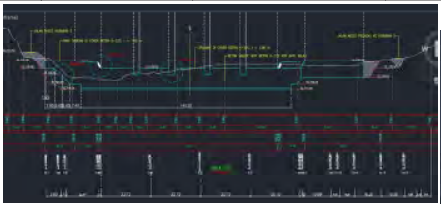
Name Structure : : CD Kobokan 5
Type of work : Concrete K-225 (Sub Dam)

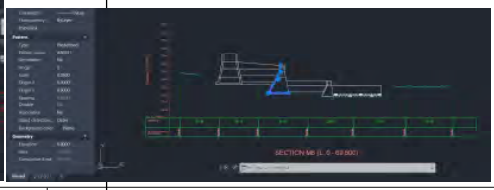
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Area =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	
						
B.	**Section M2**					
	Area =	0,00	m^2			
	Length =	8,55	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	**Section M3**					
	Area =	3,75	m^2			
	Length =	1,25	m'			
	Volume =	**4,69**	m^3			
	Total Volume =			4,69	m^3	
						
D.	**Section M4**					
	Area =	10,71	m^2			
	Length =	2,70	m'			
	Volume =	**28,91**	m^3			
	Total Volume =			28,91	m^3	
						

E.	**Section M5**				
	Area =	16,36	m^2		
	Length =	3,10	m'		
	Volume =	**50,70**	m^3		
	Total Volume =			50,70	m^3

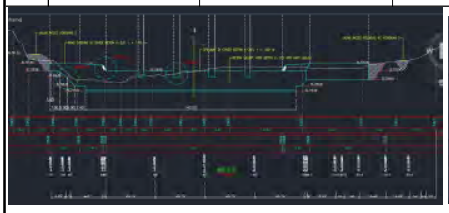


F.	**Section M6**				
	Area =	16,36	m^2		
	Length =	22,00	m'		
	Volume =	**359,82**	m^3		
	Total Volume =			359,82	m^3

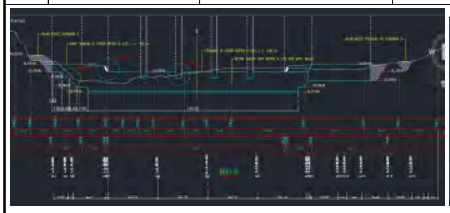




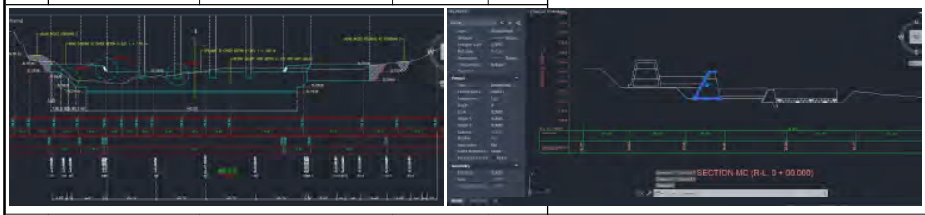
G.	**Section M7**				
	Area =	14,36	m^2		
	Length =	1,75	m'		
	Volume =	**25,13**	m^3		
	Total Volume =			25,13	m^3



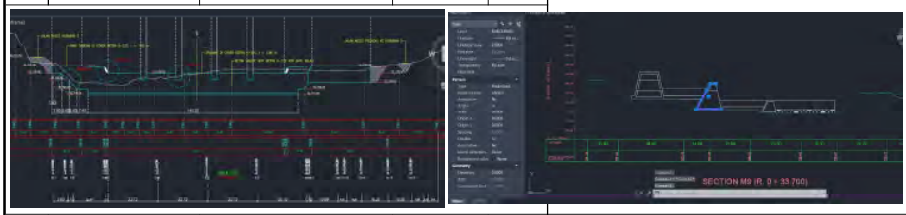
H.	**Section M8**				
	Area =	15,67	m^2		
	Length =	33,75	m'		
	Volume =	**528,81**	m^3		
	Total Volume =			528,81	m^3



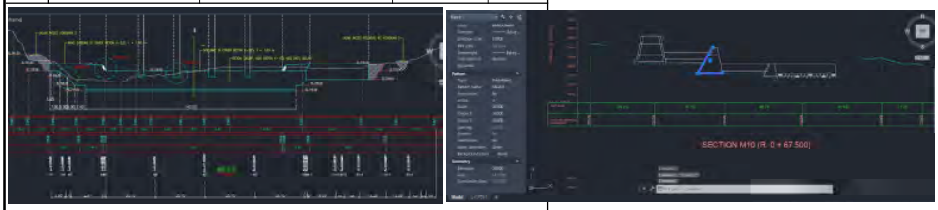
I.	**Section MC**				
	Area =	15,67	m^2		
	Length =	33,75	m'		
	Volume =	**528,81**	m^3		
	Total Volume =			528,81	m^3



J.	**Section M9**				
	Area =	15,67	m^2		
	Length =	33,75	m'		
	Volume =	**528,81**	m^3		
	Total Volume =			528,81	m^3

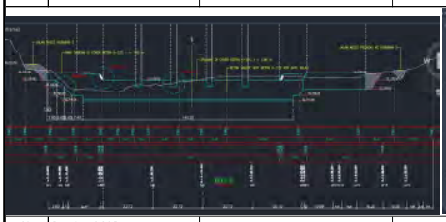
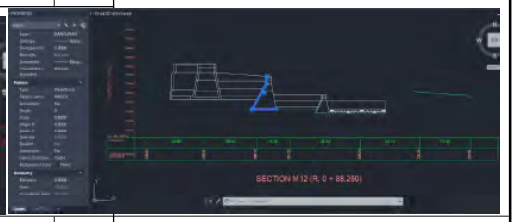


K.	**Section M10**				
	Area =	14,36	m^2		
	Length =	33,75	m'		
	Volume =	**484,64**	m^3		
	Total Volume =			484,64	m^3

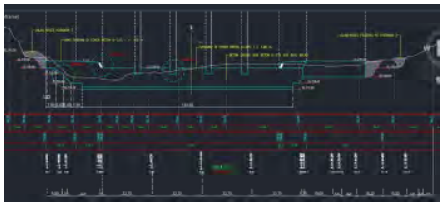


L.	**Section M11**				
	Area =	16,36	m^2		
	Length =	1,75	m'		
	Volume =	**28,62**	m^3		
	Total Volume =			28,62	m^3

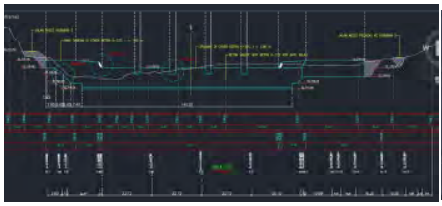
M.	**Section M12**				
	Area =	16,36	m^2		
	Length =	19,00	m'		
	Volume =	**310,75**	m^3		
	Total Volume =			310,75	m^3

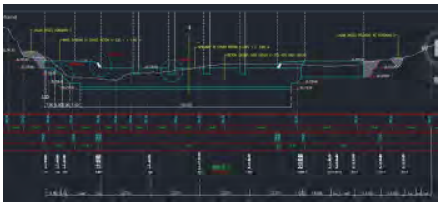
N.	**Section M13**				
	Area =	10,71	m^2		
	Length =	5,80	m'		
	Volume =	**62,11**	m^3		
	Total Volume =			62,11	m^3



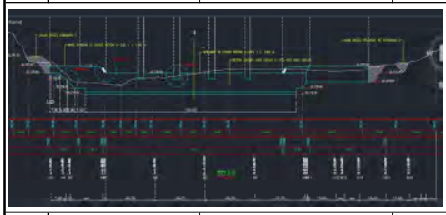
O.	**Section M14**				
	Area =	3,21	m^2		
	Length =	50,00	m'		
	Volume =	**160,62**	m^3		
	Total Volume =			160,62	m^3



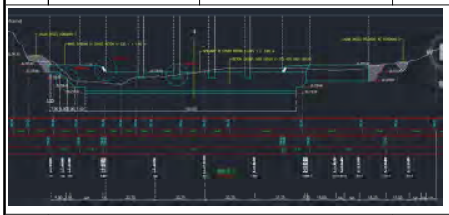
P.	**Section M15**				
	Area =	0,00	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



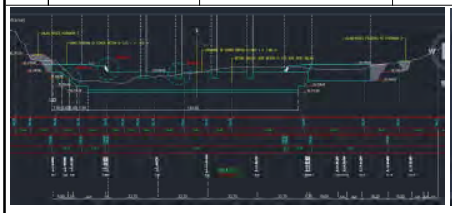
Q.	**Section M16**					
	Area =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	

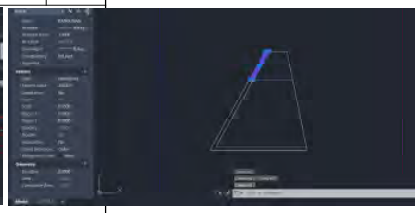


R.	**Section Sisa**					
	Area =	0,00	m^2			
	Length =	6,31	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	



S.	**Reduced by Drainage Holes Area**					
	Area =	2,28	m^2			
	Length =	4,00	m'			
	Numbers of Drainage Holes =	4,00	buah			
	Volume =	**36,52**	m^3			
	Total Volume =			36,52	m^3	

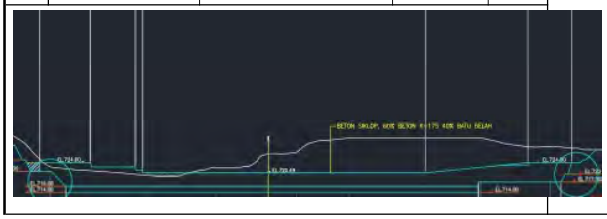




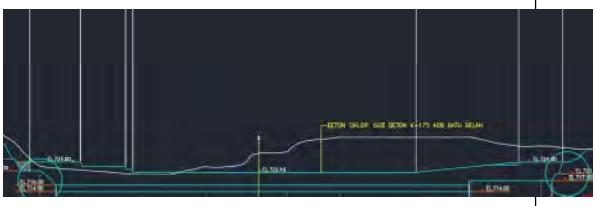
	Concrete K-225 Sub Total Volume =	**3.065,89**	**m^3**

Name Structure : : CD Kobokan 5
Type of work : Concrete K-225 (Sub-Sub Dam)

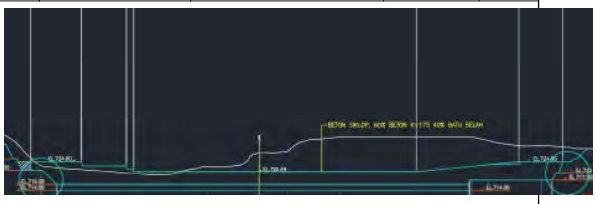
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Area =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	



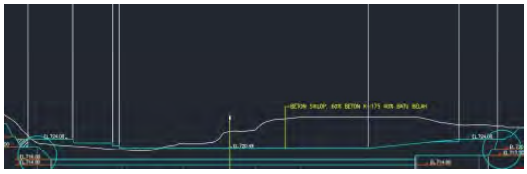
B.	**Section M2**				
	Area =	0,00	m^2		
	Length =	8,55	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



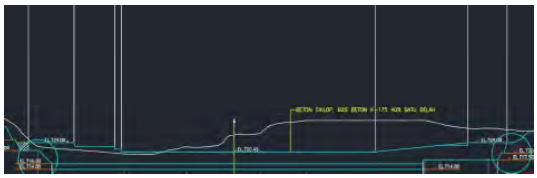
C.	**Section M3**				
	Area =	0,00	m^2		
	Length =	18,25	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



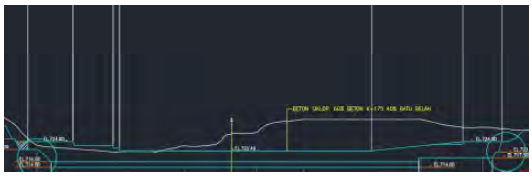
D.	**Section M4**				
	Area =	2,75	m^2		
	Length =	3,60	m'		
	Volume =	**9,90**	m^3		
	Total Volume =			9,90	m^3

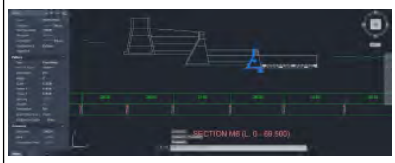


E.	**Section M5**				
	Area =	12,58	m^2		
	Length =	3,10	m'		
	Volume =	**39,01**	m^3		
	Total Volume =			39,01	m^3

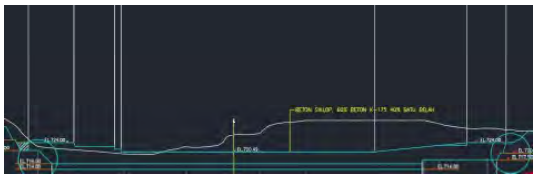


F.	**Section M6**				
	Area =	12,58	m^2		
	Length =	22,00	m'		
	Volume =	**276,82**	m^3		
	Total Volume =			276,82	m^3

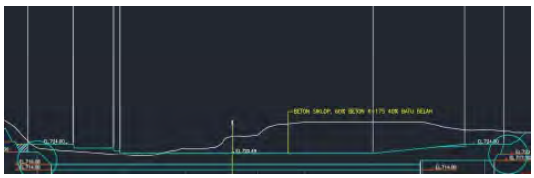


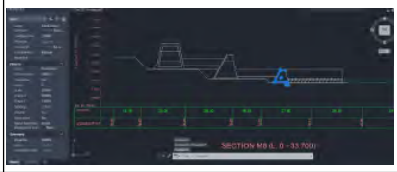


G.	**Section M7**				
	Area =	11,09	m^2		
	Length =	1,75	m'		
	Volume =	**19,40**	m^3		
	Total Volume =			19,40	m^3

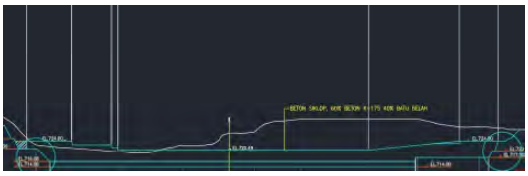


H.	**Section M8**				
	Area =	12,39	m^2		
	Length =	33,75	m'		
	Volume =	**418,30**	m^3		
	Total Volume =			418,30	m^3

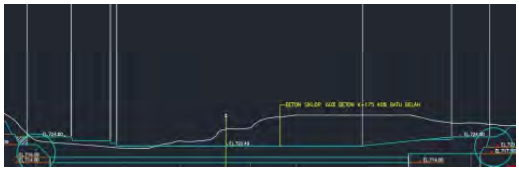




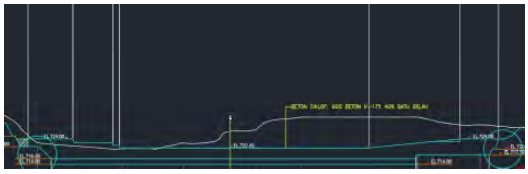
I.	**Section MC**				
	Area =	12,39	m^2		
	Length =	33,75	m'		
	Volume =	**418,30**	m^3		
	Total Volume =			418,30	m^3



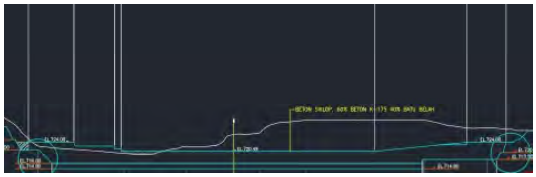
J.	**Section M9**				
	Area =	12,39	m^2		
	Length =	33,75	m'		
	Volume =	**418,30**	m^3		
	Total Volume =			418,30	m^3



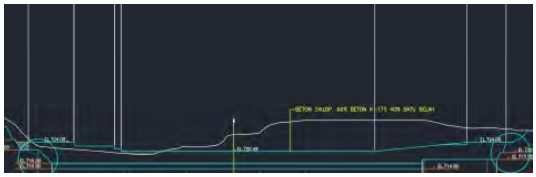
K.	**Section M10**				
	Area =	11,09	m^2		
	Length =	33,75	m'		
	Volume =	**374,16**	m^3		
	Total Volume =			374,16	m^3



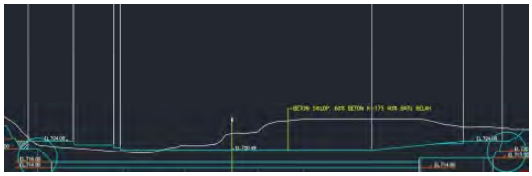
L.	**Section M11**				
	Area =	12,58	m^2		
	Length =	1,75	m'		
	Volume =	**22,02**	m^3		
	Total Volume =			22,02	m^3

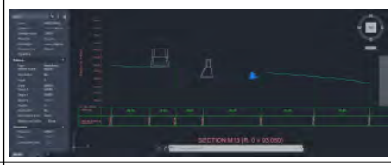


M.	**Section M12**				
	Area =	12,58	m^2		
	Length =	19,00	m'		
	Volume =	**239,07**	m^3		
	Total Volume =			239,07	m^3

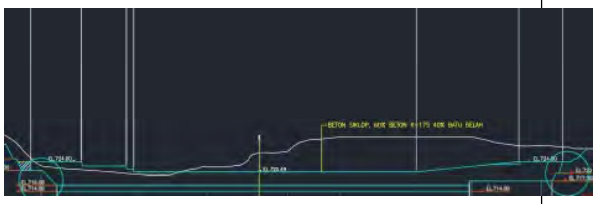


N.	**Section M13**				
	Area =	2,75	m^2		
	Length =	5,80	m'		
	Volume =	**15,95**	m^3		
	Total Volume =			15,95	m^3

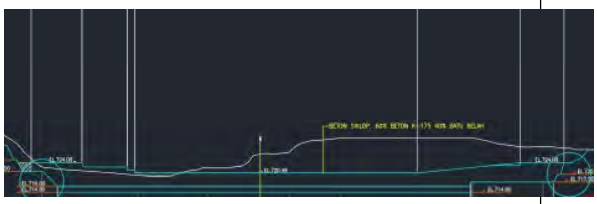




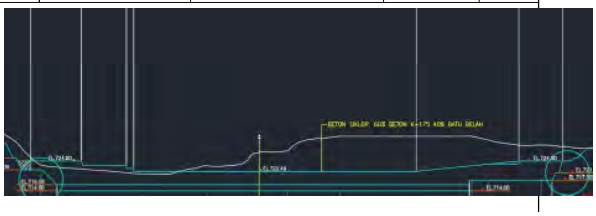
O.	**Section M14**				
	Area =	0,00	m^2		
	Length =	50,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



P.	**Section M15**				
	Area =	0,00	m^2		
	Length =	0,00	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3



Q.	**Section M16**				
	Area =	0,00	m^2		
	Length =	8,20	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3

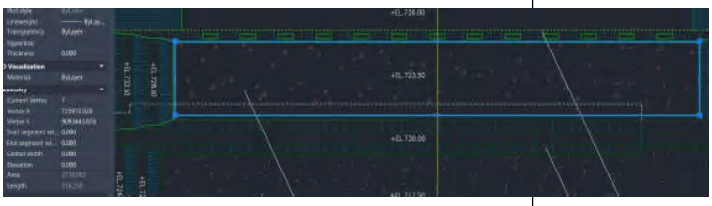


R.	Section Remainder				
	Area =	0,00	m^2		
	Length =	6,31	m'		
	Volume =	**0,00**	m^3		
	Total Volume =			-	m^3

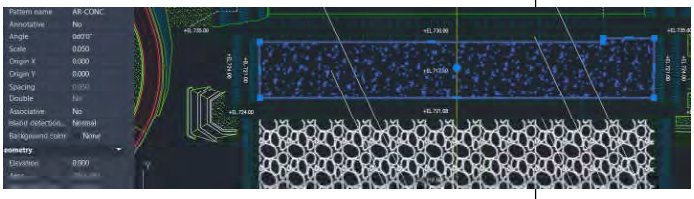
	Concrete K-225 Sub Total Volume =	2.251,22	m^3

Name Structure : : CD Kobokan 5
Type of work :Concrete K-225 (Apron)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Maindam Slab Apron					
	Area =	2718,06	m^2			
	Length =	2,00	m'			
	Volume =	**5436,13**	m^2			
	Total Volume =			5.436,13	m^2	

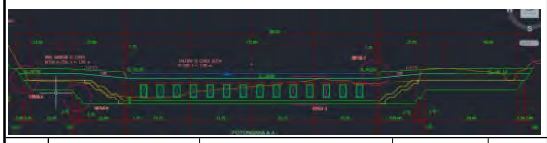
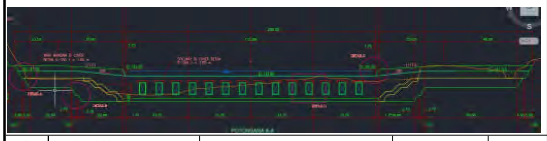
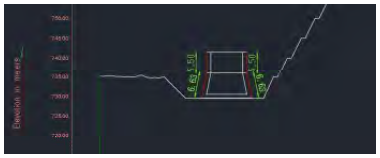
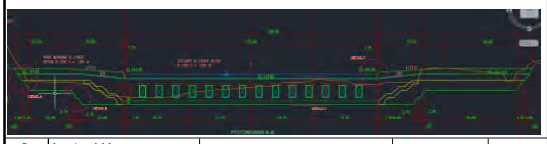
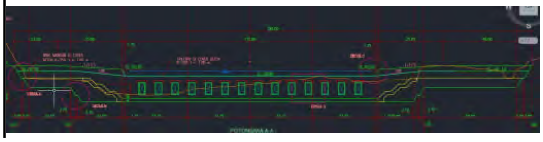


B	Floor Apron Maindam				
	Area =	3036,38	m^2		
	Thickness =	2,00	m'		
	Volume =	**6072,76**	m^2		
	Total Volume =			6.072,76	m^2

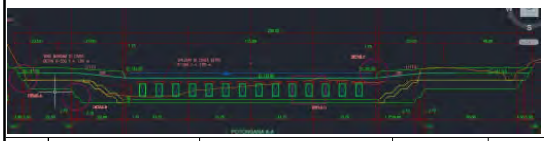


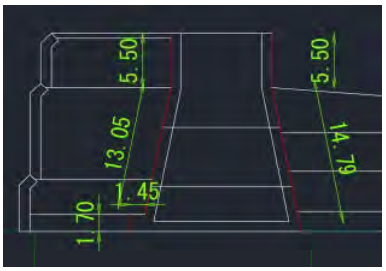
	Concrete K-225 Sub Total Volume =	11.508,89	m^3
	Concrete K-225 Total Volume =	16.826,00	m^3

Name Structure : : CD Kobokan 5
Type of work : Exposed Formwork (Maindam)

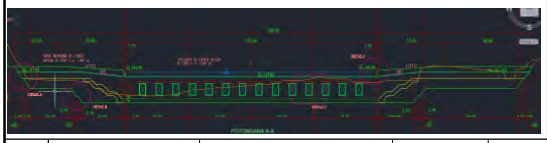
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Formwork Length =	24,26	m'			
	Length =	8,20	m'			
	Volume =	**198,93**	m^2			
	Total Volume =			198,93	m^2	
						
B.	**Section M2**					
	Formwork Length =	24,26	m'			
	Length =	0,00	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	
						
C.	**Section M3**					
	Formwork Length =	24,26	m'			
	Length =	22,50	m'			
	Volume =	**545,85**	m^2			
	Total Volume =			545,85	m^2	
						
D.	**Section M4**					
	Formwork Length =	24,26	m'			
	Length =	2,70	m'			
	Volume =	**65,50**	m^2			
	Total Volume =			65,50	m^2	
						

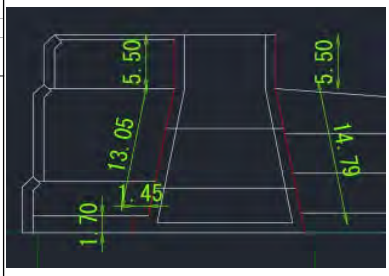
E.	**Section M5**				
	Formwork Length =	41,99	m'		
	Length =	3,10	m'		
	Volume =	**130,17**	m^2		
	Total Volume =			130,17	m^2



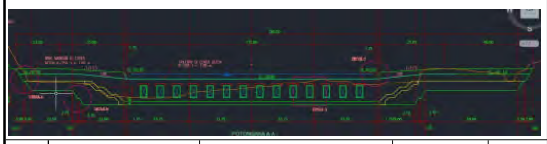


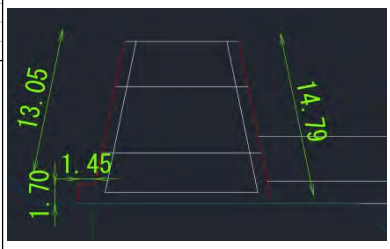
F.	**Section M6**				
	Formwork Length =	41,99	m'		
	Length =	22,00	m'		
	Volume =	**923,78**	m^2		
	Total Volume =			923,78	m^2



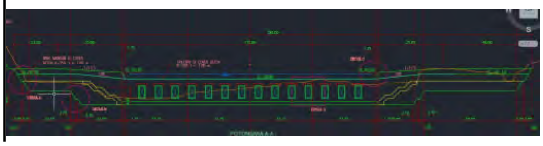


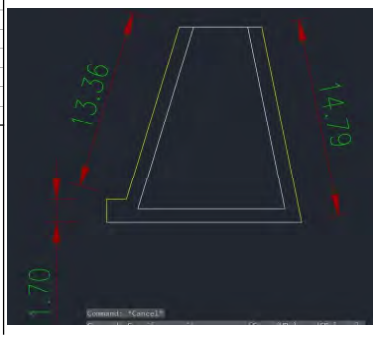
G.	**Section M7**				
	Formwork Length =	30,99	m'		
	Length =	1,75	m'		
	Volume =	**54,23**	m^2		
	Total Volume =			54,23	m^2



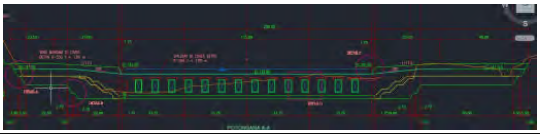


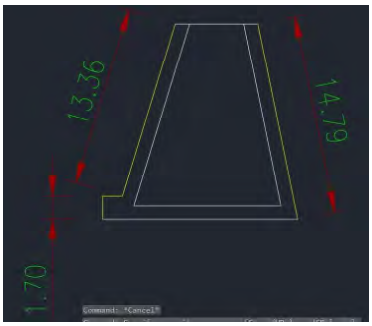
H.	**Section M8**				
	Formwork Length =	29,85	m'		
	Length =	33,75	m'		
	Volume =	**1007,44**	m^2		
	Total Volume =			1.007,44	m^2



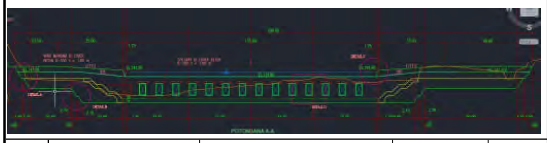


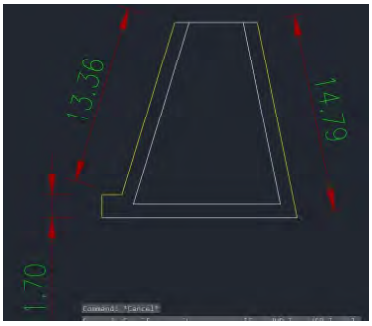
I.	**Section MC**				
	Formwork Length =	29,85	m'		
	Length =	33,75	m'		
	Volume =	**1007,44**	m^2		
	Total Volume =			1.007,44	m^2



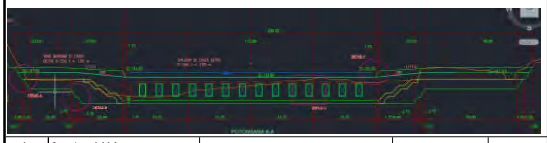


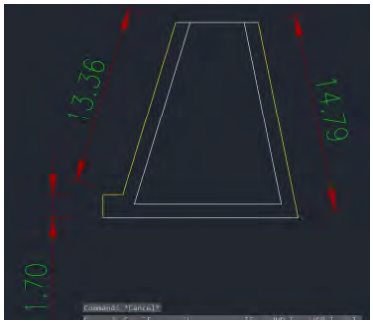
J.	**Section M9**				
	Formwork Length =	29,85	m'		
	Length =	33,75	m'		
	Volume =	**1007,44**	m^2		
	Total Volume =			1.007,44	m^2



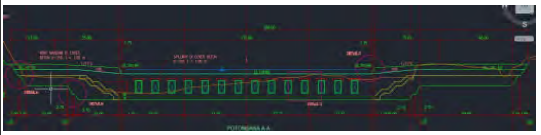


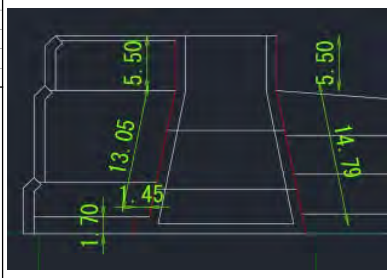
K.	**Section M10**				
	Formwork Length =	29,85	m'		
	Length =	33,75	m'		
	Volume =	**1007,44**	m^2		
	Total Volume =			1.007,44	m^2



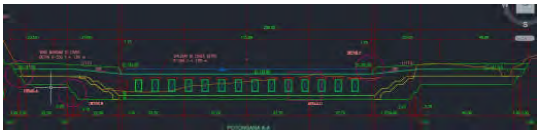


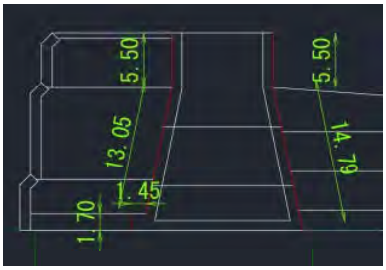
L.	**Section M11**				
	Formwork Length =	41,99	m'		
	Length =	1,75	m'		
	Volume =	**73,48**	m^2		
	Total Volume =			73,48	m^2



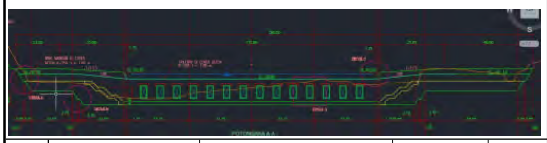


M.	**Section M12**				
	Formwork Length =	41,99	m'		
	Length =	19,00	m'		
	Volume =	**797,81**	m^2		
	Total Volume =			797,81	m^2

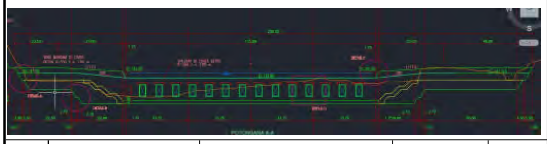


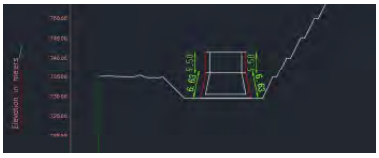


N.	**Section M13**				
	Formwork Length =	24,26	m'		
	Length =	5,80	m'		
	Volume =	**140,71**	m^2		
	Total Volume =			140,71	m^2

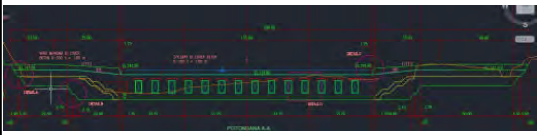


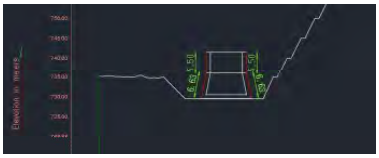
O.	**Section M14**				
	Formwork Length =	24,26	m'		
	Length =	50,00	m'		
	Volume =	**1213,00**	m^2		
	Total Volume =			1.213,00	m^2



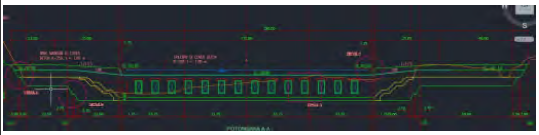


P.	**Section M15**				
	Formwork Length =	24,26	m'		
	Length =	0,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2

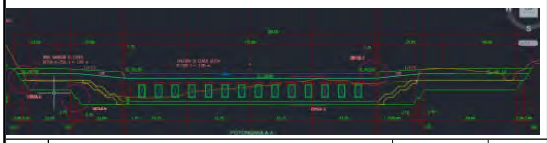




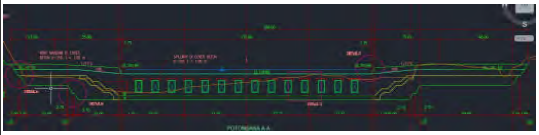
Q.	**Section M16**				
	Formwork Length =	24,26	m'		
	Length =	8,20	m'		
	Volume =	**198,93**	m^2		
	Total Volume =			198,93	m^2

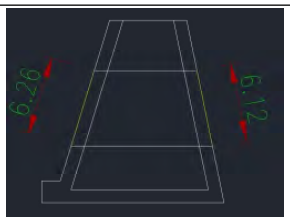


R.	**Section Remainder**				
	Formwork Length =	0,00	m'		
	Length =	6,31	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2

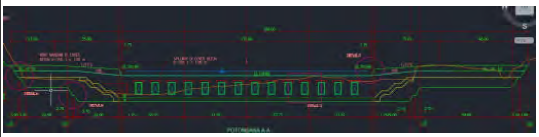


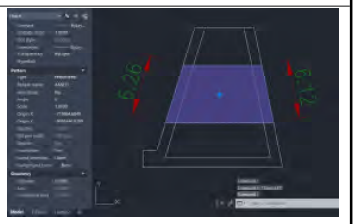
S.	**Reduced by Drainage Holes Area**				
	Formwork Length =	12,38	m'		
	Drainage Hole Width =	3,00	m'		
	Numbers of Drainage Holes =	14,00	buah		
	Volume =	**519,96**	m2		
	Total Volume =			519,96	m^2



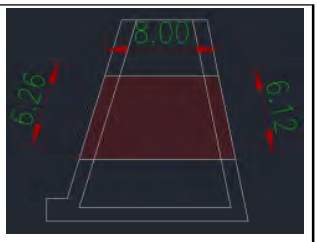


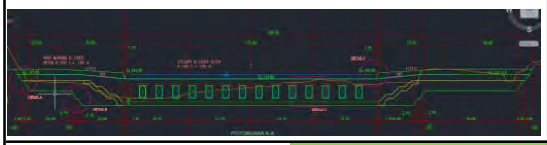
S.	**Plus Wall Conduit drainage hole**				
	Formwork Area =	57,00	m2		
	Numbers of Drainage Holes Side =	2,00	Side		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	**1596,00**	m2		
	Total Volume =			1.596,00	m^2

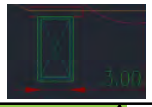




S.	Plus Top Side Conduit drainage hole				
	Top Side Conduit Length =	8,00	m'		
	Drainage Holes Width =	3,00	m		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	336,00	m2		
	Total Volume =			336,00	m^2



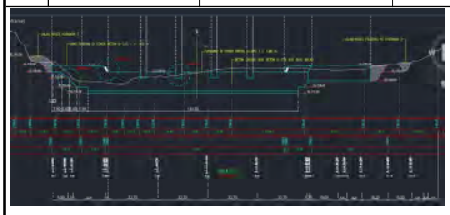




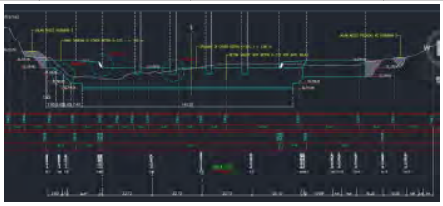
Exposed Formwork Sub Total Volume =	9.784,19	m^2

Name Structure : : CD Kobokan 5
Type of work : Exposed Formwork (Subdam)

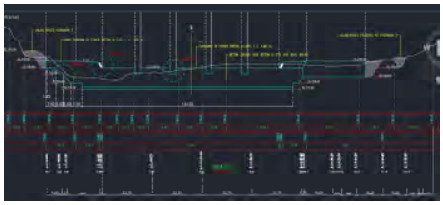
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Section M1					
	Formwork Length =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	0,00	m^2			
	Total Volume =			-	m^2	



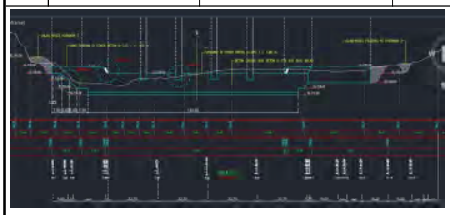
B.	Section M2					
	Formwork Length =	0,00	m^2			
	Length =	8,55	m'			
	Volume =	0,00	m^3			
	Total Volume =			-	m^2	

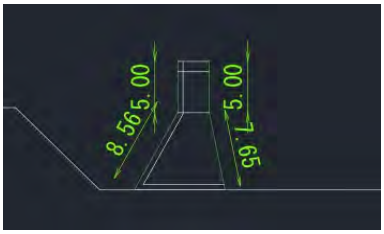


C.	Section M3					
	Formwork Length =	10,00	m'			
	Length =	1,25	m'			
	Volume =	12,50	m2			
	Total Volume =			12,50	m2	

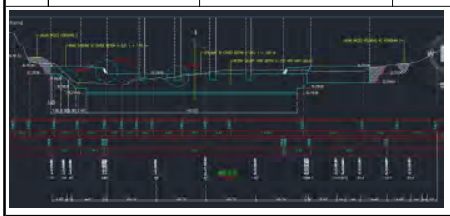


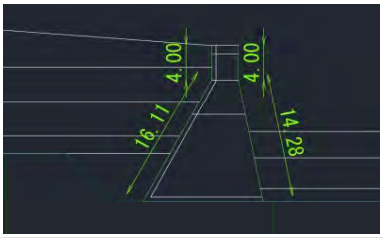
D.	**Section M4**				
	Formwork Length =	26,21	m^2		
	Length =	2,70	m'		
	Volume =	**70,77**	m^3		
	Total Volume =			70,77	m2



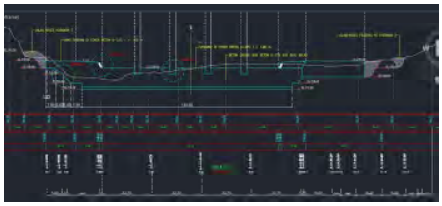


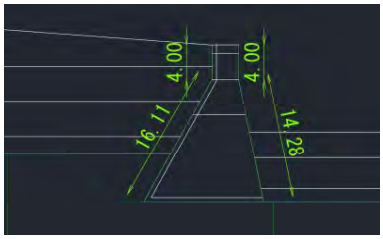
E.	**Section M5**				
	Formwork Length =	38,39	m'		
	Length =	3,10	m'		
	Volume =	**119,01**	m^2		
	Total Volume =			119,01	m2



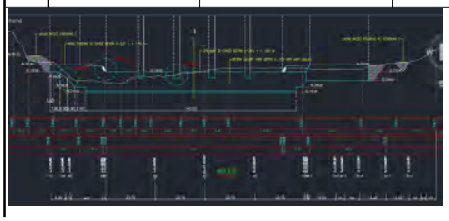


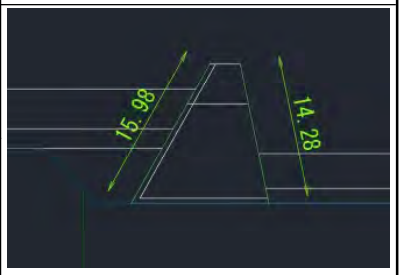
F.	**Section M6**				
	Formwork Length =	38,39	m'		
	Length =	22,00	m'		
	Volume =	**844,58**	m^2		
	Total Volume =			844,58	m2



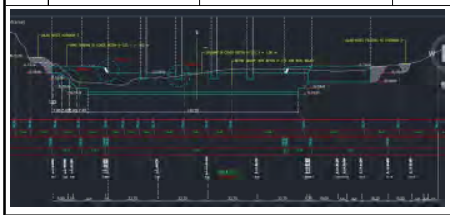


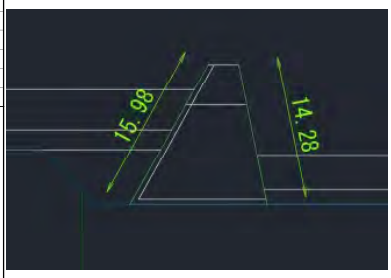
G.	**Section M7**				
	Formwork Length =	30,26	m'		
	Length =	1,75	m'		
	Volume =	**52,96**	m^2		
	Total Volume =			52,96	m2



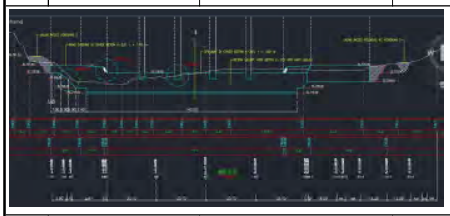


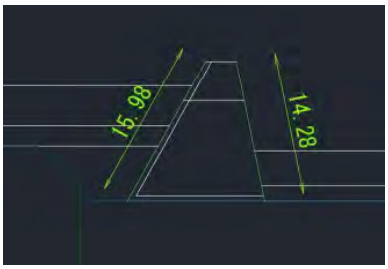
H.	**Section M8**				
	Formwork Length =	30,26	m'		
	Length =	33,75	m'		
	Volume =	**1021,28**	m^2		
	Total Volume =			1.021,28	m2



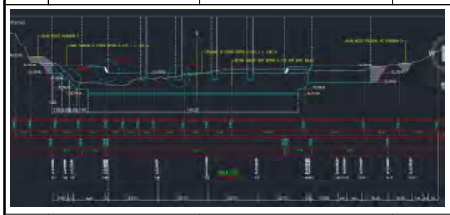


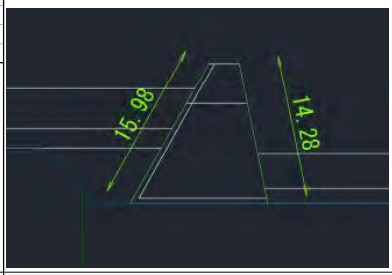
I.	**Section MC**				
	Formwork Length =	30,26	m'		
	Length =	33,75	m'		
	Volume =	**1021,28**	m^2		
	Total Volume =			1.021,28	m2



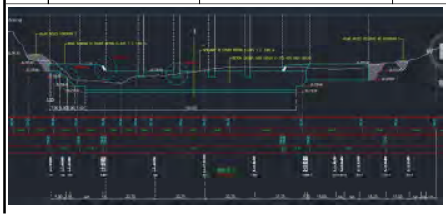


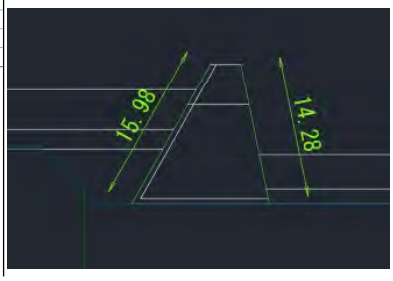
J.	**Section M9**				
	Formwork Length =	30,26	m'		
	Length =	33,75	m'		
	Volume =	**1021,28**	m^2		
	Total Volume =			1.021,28	m2



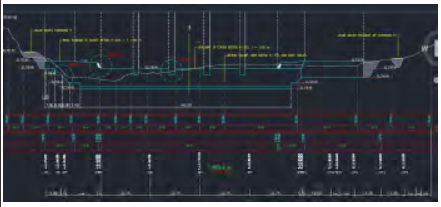


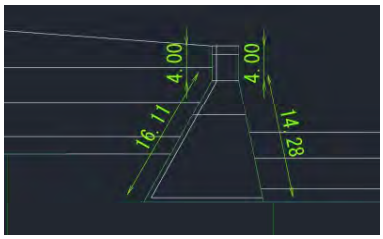
K.	**Section M10**				
	Formwork Length =	30,26	m'		
	Length =	33,75	m'		
	Volume =	**1021,28**	m^2		
	Total Volume =			1.021,28	m2



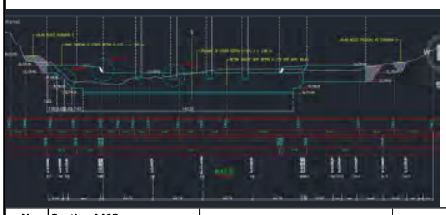


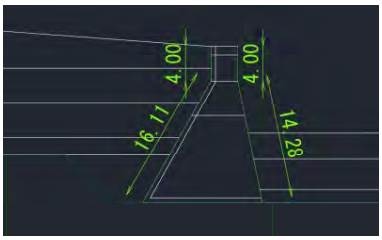
L.	**Section M11**				
	Formwork Length =	38,39	m'		
	Length =	1,75	m'		
	Volume =	**67,18**	m^2		
	Total Volume =			67,18	m2



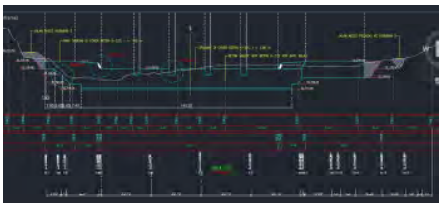


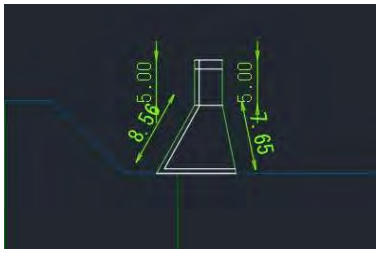
M.	**Section M12**				
	Formwork Length =	38,39	m'		
	Length =	19,00	m'		
	Volume =	**729,41**	m^2		
	Total Volume =			729,41	m2



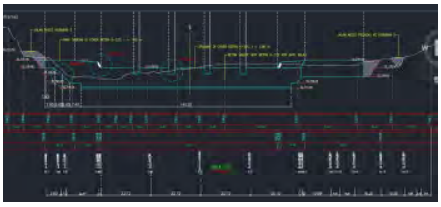


N.	**Section M13**				
	Formwork Length =	26,21	m'		
	Length =	5,80	m'		
	Volume =	**152,02**	m^2		
	Total Volume =			152,02	m2

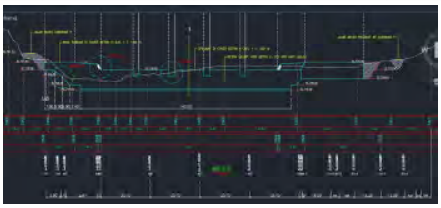




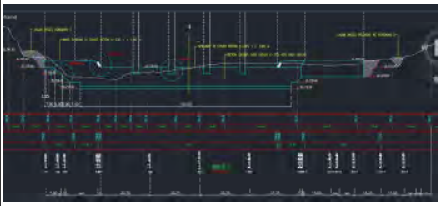
O.	**Section M14**				
	Formwork Length =	18,18	m'		
	Length =	50,00	m'		
	Volume =	**909,00**	m^2		
	Total Volume =			909,00	m2



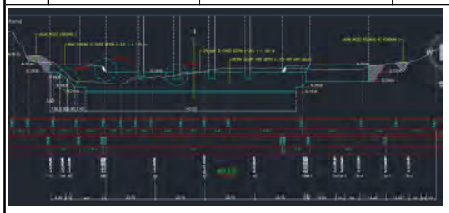
P.	**Section M15**				
	Formwork Length =	0,00	m'		
	Length =	0,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m2



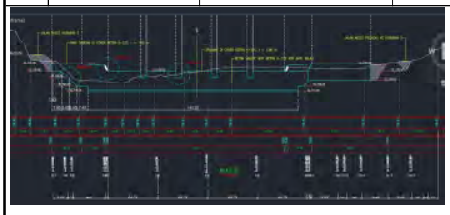
Q.	**Section M16**				
	Formwork Length =	0,00	m'		
	Length =	8,20	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m2

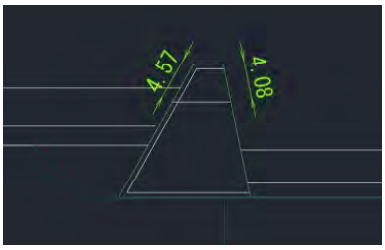


R.	**Section Remainder**				
	Formwork Length =	0,00	m'		
	Length =	6,31	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m2

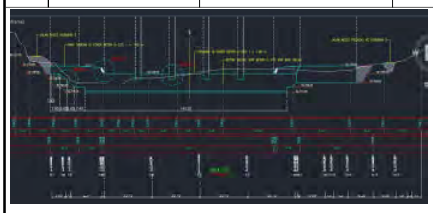


S.	**Reduced by Drainage Hole Area**				
	Formwork Length =	8,65	m'		
	Drainage Hole Width =	4,00	m'		
	Numbers of Drainage Holes =	4,00	pcs		
	Volume =	**138,40**	m^2		
	Total Volume =			138,40	m^2





S.	Plus Wall Conduit drainage hole				
	Formwork Area =	18,00	m2		
Numbers of Drainage Holes Side =		2,00	Side		
	Numbers of Drainage Holes =	4,00	pcs		
	Volume =	**144,00**	m^2		
	Total Volume =			144,00	m^2

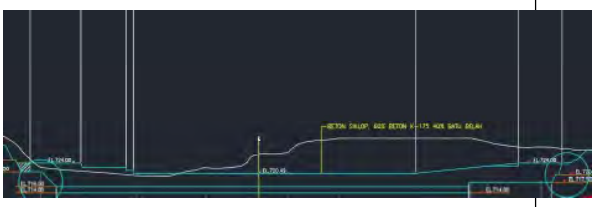


	Exposed Formwork Sub Total Volume =	**7.048,12**	**m^2**

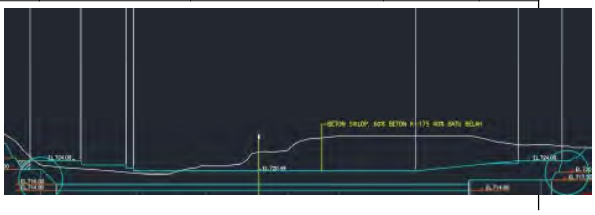
Name Structure : : CD Kobokan 5
Type of work : Exposed Formwork (Sub-Subdam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Formwork Length =	0,00	m'			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	

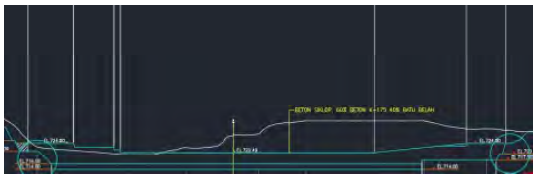
B.	**Section M2**					
	Formwork Length =	0,00	m'			
	Length =	8,55	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	



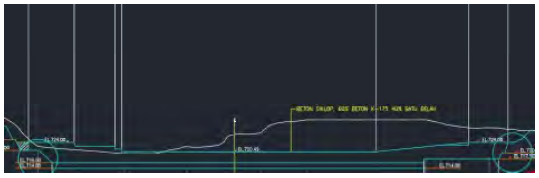
C.	**Section M3**					
	Formwork Length =	0,00	m'			
	Length =	18,25	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	

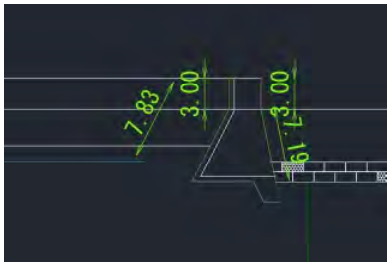


D.	**Section M4**				
	Formwork Length =	6,00	m'		
	Length =	3,60	m'		
	Volume =	**21,60**	m^2		
	Total Volume =			21,60	m^2

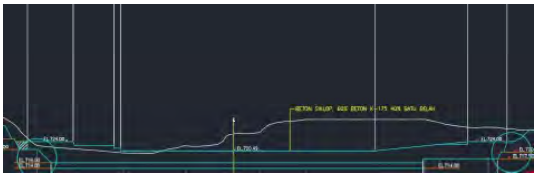


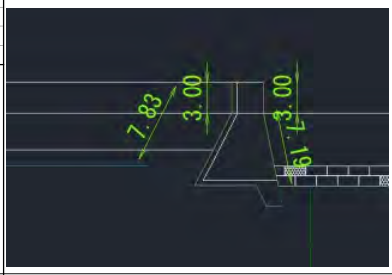
E.	**Section M5**				
	Formwork Length =	21,02	m'		
	Length =	3,10	m'		
	Volume =	**65,16**	m^2		
	Total Volume =			65,16	m^2



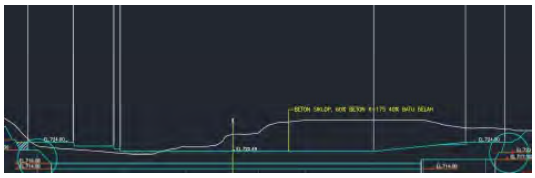


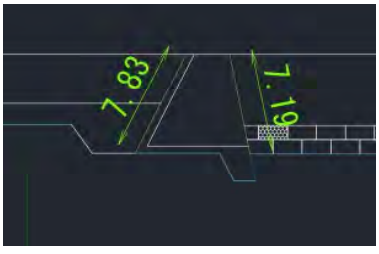
F.	**Section M6**				
	Formwork Length =	21,02	m'		
	Length =	22,00	m'		
	Volume =	**462,44**	m^2		
	Total Volume =			462,44	m^2



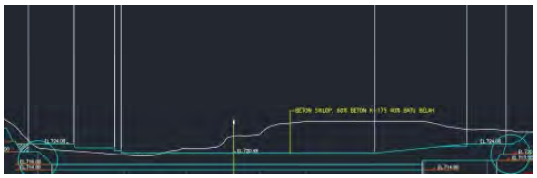


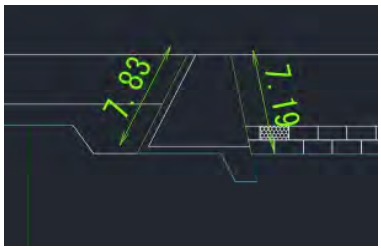
G.	**Section M7**				
	Formwork Length =	15,02	m'		
	Length =	1,75	m'		
	Volume =	**26,29**	m^2		
	Total Volume =			26,29	m^2



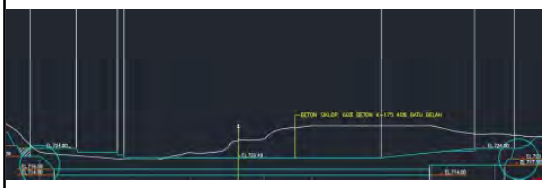


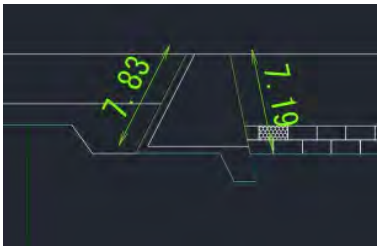
H.	**Section M8**				
	Formwork Length =	15,02	m'		
	Length =	33,75	m'		
	Volume =	**506,93**	m^2		
	Total Volume =			506,93	m^2



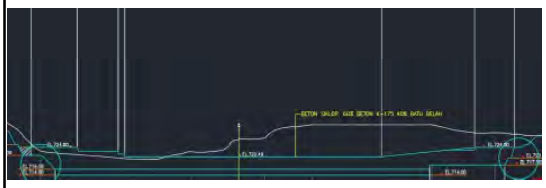


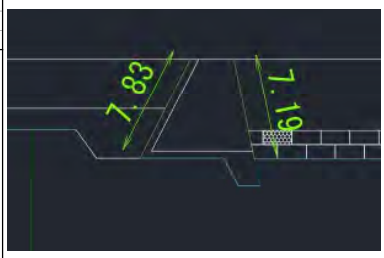
I.	**Section MC**				
	Formwork Length =	15,02	m'		
	Length =	33,75	m'		
	Volume =	**506,93**	m^2		
	Total Volume =			506,93	m^2



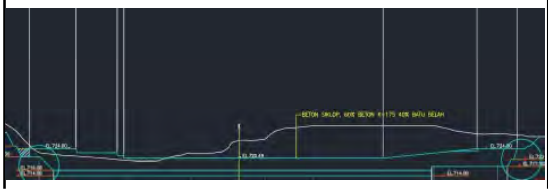


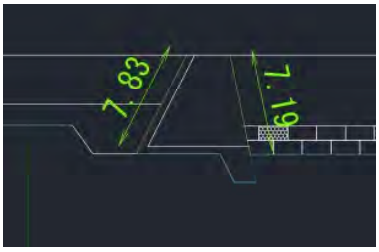
J.	**Section M9**				
	Formwork Length =	15,02	m'		
	Length =	33,75	m'		
	Volume =	**506,93**	m^2		
	Total Volume =			506,93	m^2



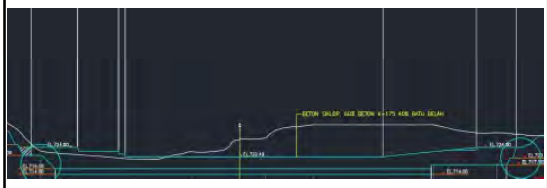


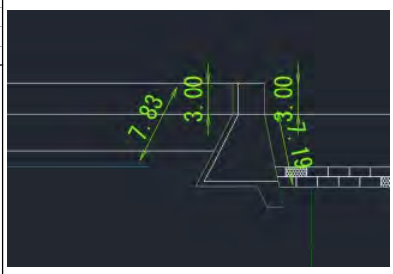
K.	**Section M10**				
	Formwork Length =	15,02	m'		
	Length =	33,75	m'		
	Volume =	**506,93**	m^2		
	Total Volume =			506,93	m^2



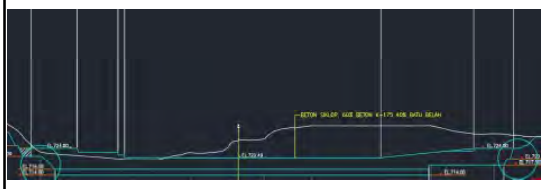


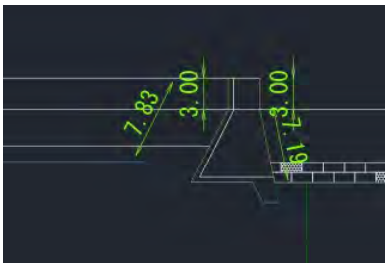
L.	**Section M11**				
	Formwork Length =	21,02	m'		
	Length =	1,75	m'		
	Volume =	**36,79**	m^2		
	Total Volume =			36,79	m^2



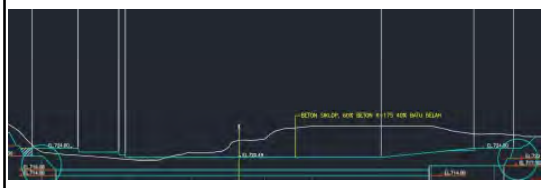


M.	**Section M12**				
	Formwork Length =	21,02	m'		
	Length =	19,00	m'		
	Volume =	**399,38**	m^2		
	Total Volume =			399,38	m^2

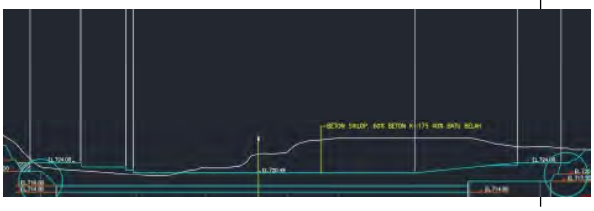




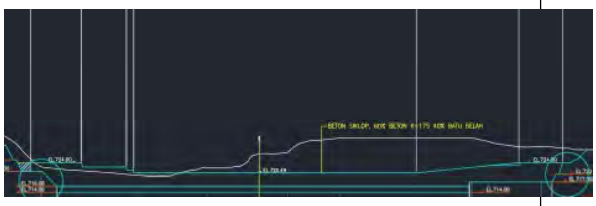
N.	**Section M13**				
	Formwork Length =	6,00	m'		
	Length =	5,80	m'		
	Volume =	**34,80**	m^2		
	Total Volume =			34,80	m^2



O.	**Section M14**				
	Formwork Length =	0,00	m'		
	Length =	50,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2



P.	**Section M15**				
	Formwork Length =	0,00	m'		
	Length =	0,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2



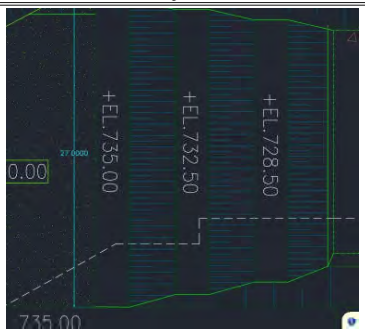
Q.	**Section M16**				
	Formwork Length =	0,00	m'		
	Length =	8,20	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2

R.	**Section Remaider**				
	Formwork Length =	0,00	m'		
	Length =	6,31	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2

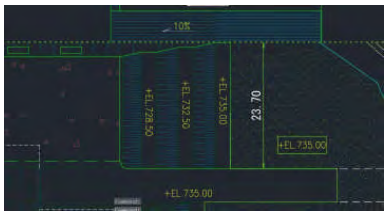
	Exposed Formwork Sub Total Volume =	**3.074,15 m^2**

Name Structure : : CD Kobokan 5
Type of work : Exposed Formwork (Retaining Wall Apron)

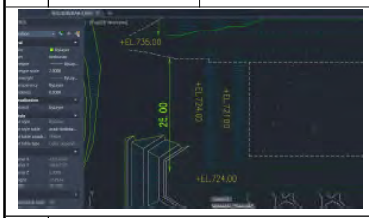
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Apron Right Side Wall Maindam**					
	Formwork Length =	20,27	m'			
	Length =	27,00	m'			
	Volume =	**547,29**	m^2			
	Total Volume =			547,29	m^2	



B.	**Apron Left Side Wall Maindam**				
	Formwork Length =	20,27	m'		
	Length =	23,70	m'		
	Volume =	**480,40**	m^2		
	Total Volume =			480,40	m^2

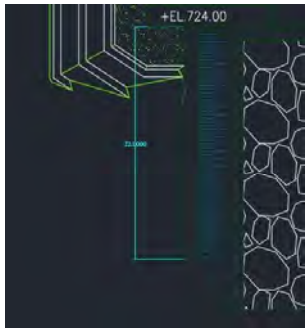


C.	**Apron Right Side Wall Subdam**				
	Formwork Length =	13,19	m'		
	Length =	25,00	m'		
	Volume =	**329,75**	m^2		
	Total Volume =			329,75	m^2

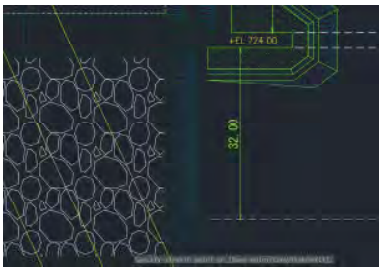


D.	**Apron Left Side Wall Subdam**				
	Formwork Length =	13,19	m'		
	Length =	27,00	m'		
	Volume =	**356,13**	m^2		
	Total Volume =			356,13	m^2

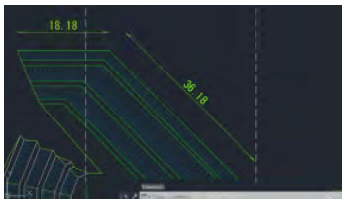
E.	**Apron Right Side Wall Sub-Subdam**				
	Formwork Length =	10,71	m'		
	Length =	32,00	m'		
	Volume =	**342,72**	m^2		
	Total Volume =			342,72	m^2

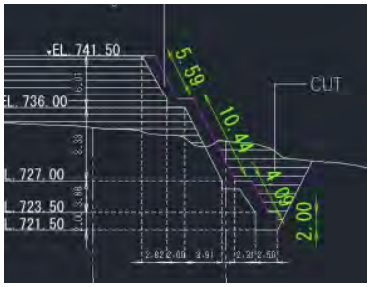


F.	**Apron Left Side Wall Sub-Subdam**				
	Formwork Length =	10,71	m'		
	Length =	32,00	m'		
	Volume =	**342,72**	m^2		
	Total Volume =			342,72	m^2

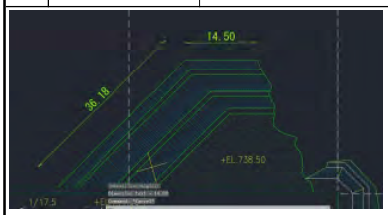


G.	**Right Side Wall Bufferfill**				
	Formwork Length =	22,12	m'		
	Length =	54,36	m'		
	Volume =	**1202,44**	m^2		
	Total Volume =			1.202,44	m^2





H.	**Left Side Wall Bufferfill**				
	Formwork Length =	22,12	m'		
	Length =	50,68	m'		
	Volume =	**1121,04**	m^2		
	Total Volume =			1.121,04	m^2

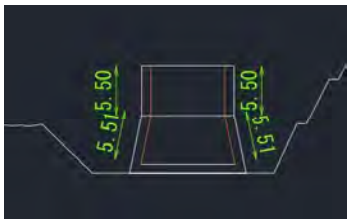
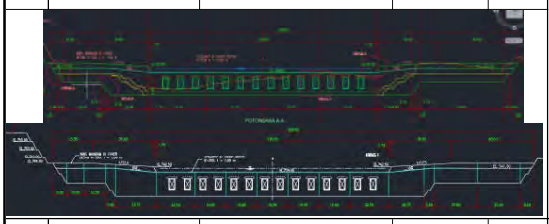
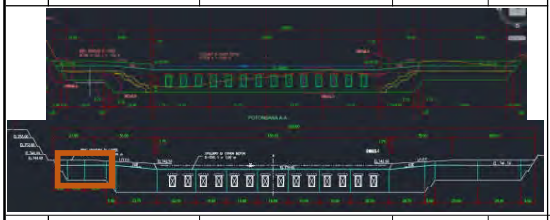
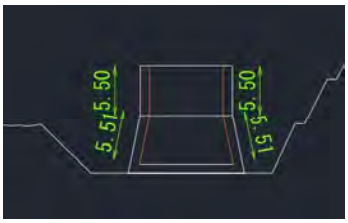
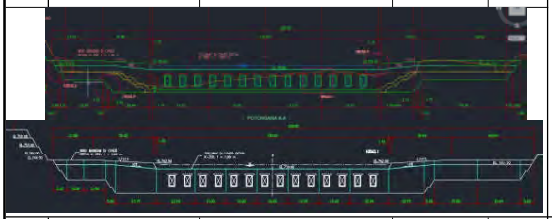
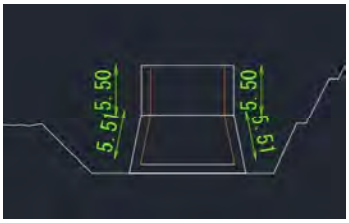
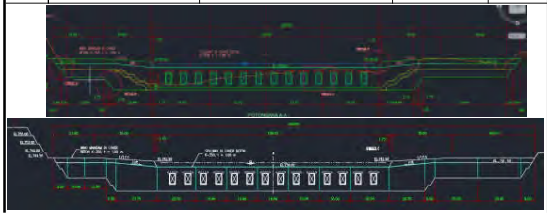


H.	**Right Side Protection Wall**				
	Formwork Length =	16,85	m'		
	Length =	88,78	m'		
	Volume =	**1495,94**	m^2		
	Total Volume =			1.495,94	m^2

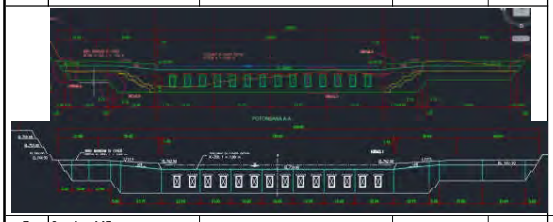
Exposed Formwork Sub Total Volume =	**6.218,44**	m^2

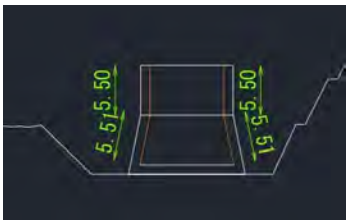
Exposed Formwork Total Volume =	**26.124,90**	m^2

Name Structure : : CD Kobokan 5
Type of work : Non Exposed Formwork (Maindam)

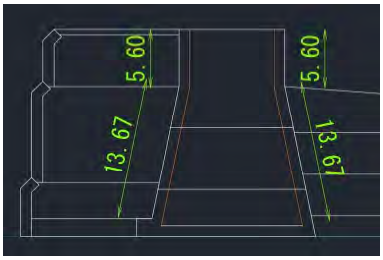
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Formwork Length =	22,02	m'			
	Length =	8,20	m'			
	Volume =	**180,56**	m^2			
	Total Volume =			180,56	m^2	
						
						
B	**Section M1 Joint**					
	Formwork area	128,45	m2			
	Numbers of Formwork =	3,00	pcs Ka-Ki			
	Volume =	**385,35**	m2			
	Total Volume =			385,35	m2	
						
B.	**Section M2**					
	Formwork Length =	22,02	m'			
	Length =	0,00	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	
						
						
C.	**Section M3**					
	Formwork Length =	22,02	m'			
	Length =	22,50	m'			
	Volume =	**495,45**	m^2			
	Total Volume =			495,45	m^2	
						
						

D.	**Section M4**				
	Formwork Length =	22,02	m'		
	Length =	2,70	m'		
	Volume =	**59,45**	m^2		
	Total Volume =			59,45	m^2

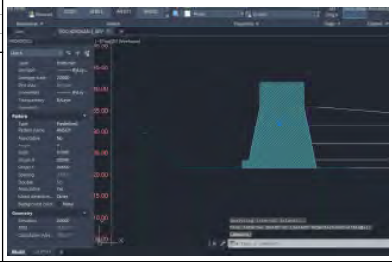




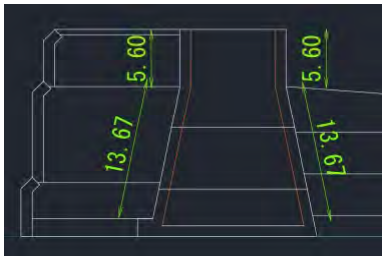
E.	**Section M5**				
	Formwork Length =	38,54	m'		
	Length =	3,10	m'		
	Volume =	**119,47**	m^2		
	Total Volume =			119,47	m^2



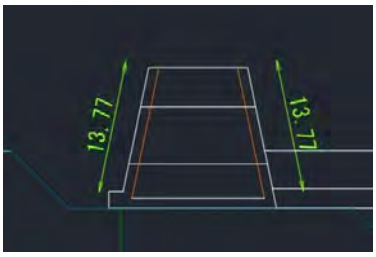
B	**Section M5 Joint**				
	Formwork area	244,22	m2		
	Numbers of Formwork =	1,00	Buah		
	Volume =	**244,22**	m2		
	Total Volume =			244,22	m2



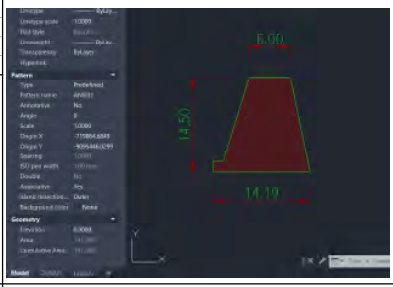
F.	**Section M6**				
	Formwork Length =	38,54	m'		
	Length =	22,00	m'		
	Volume =	**847,88**	m^2		
	Total Volume =			847,88	m^2



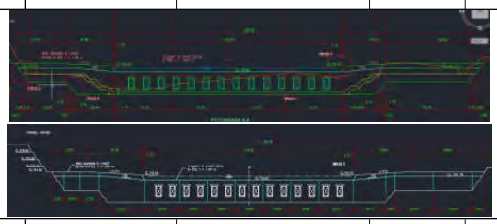
G.	**Section M7**				
	Formwork Length =	27,54	m'		
	Length =	1,75	m'		
	Volume =	**48,20**	m^2		
	Total Volume =			48,20	m^2

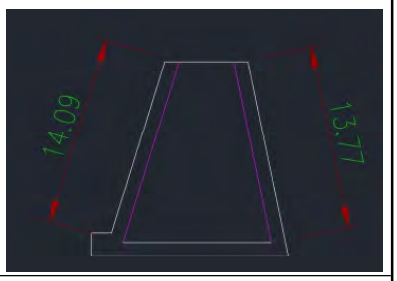


B	**Section M7 Joint**				
	Formwork area	141,59	m2		
	Numbers of Formwork =	8,00	pcs		
	Volume =	**1132,69**	m2		
	Total Volume =			1.132,69	m2

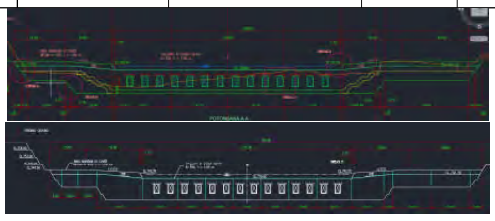


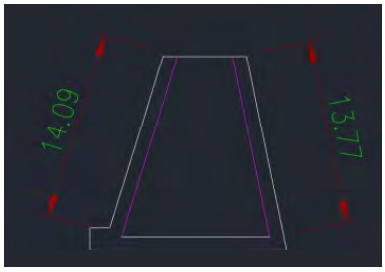
H.	**Section M8**				
	Formwork Length =	27,86	m'		
	Length =	33,75	m'		
	Volume =	**940,28**	m^2		
	Total Volume =			940,28	m^2



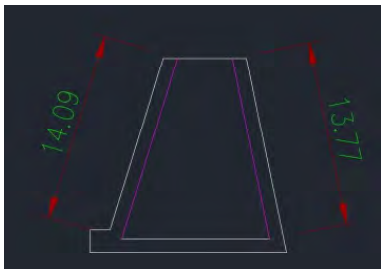


I.	**Section MC**				
	Formwork Length =	27,86	m'		
	Length =	33,75	m'		
	Volume =	**940,28**	m^2		
	Total Volume =			940,28	m^2

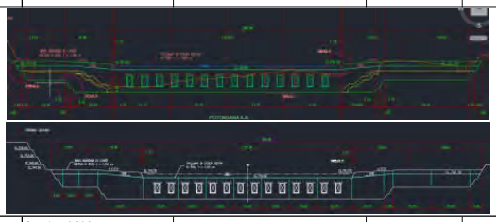


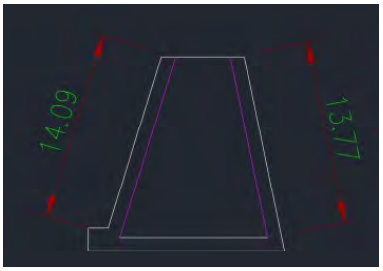


J.	**Section M9**				
	Formwork Length =	27,86	m'		
	Length =	33,75	m'		
	Volume =	**940,28**	m^2		
	Total Volume =			940,28	m^2

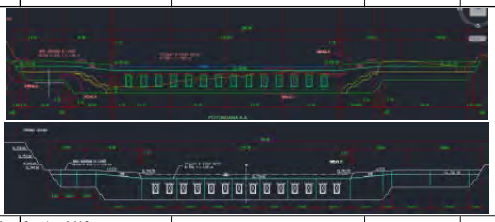


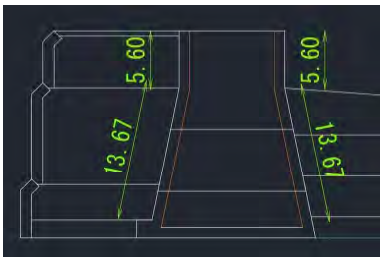
K.	**Section M10**				
	Formwork Length =	27,86	m'		
	Length =	33,75	m'		
	Volume =	**940,28**	m^2		
	Total Volume =			940,28	m^2



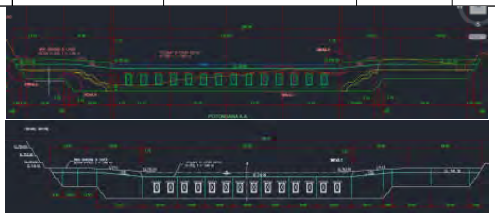


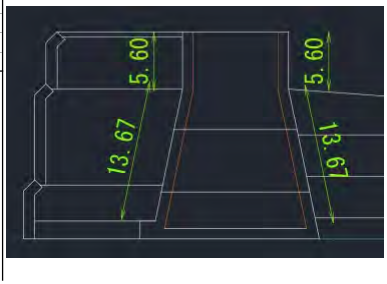
L.	**Section M11**				
	Formwork Length =	38,54	m'		
	Length =	1,75	m'		
	Volume =	**67,45**	m^2		
	Total Volume =			67,45	m^2



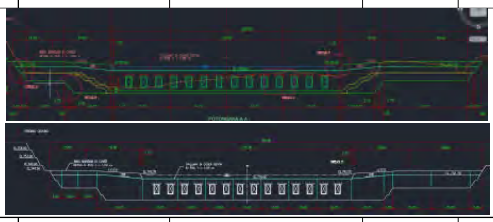


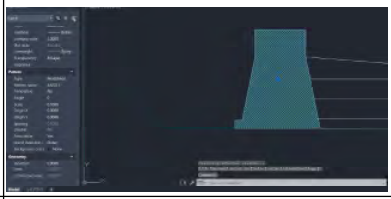
M.	**Section M12**				
	Formwork Length =	38,54	m'		
	Length =	19,00	m'		
	Volume =	**732,26**	m^2		
	Total Volume =			732,26	m^2



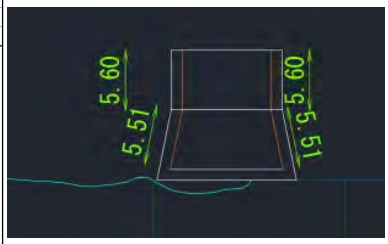


B	**Section M12 Joint**				
	Formwork area	244,22	m2		
	Numbers of Formwork =	1,00	Buah		
	Volume =	**244,22**	m2		
	Total Volume =			244,22	m2

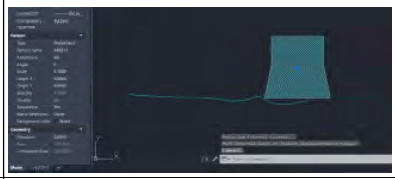




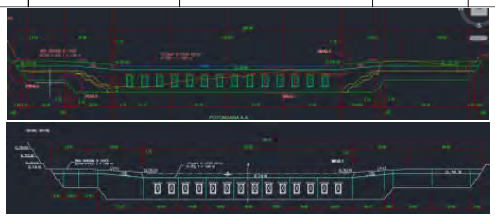
N.	**Section M13**				
	Formwork Length =	22,22	m'		
	Length =	5,80	m'		
	Volume =	**128,88**	m^2		
	Total Volume =			128,88	m^2

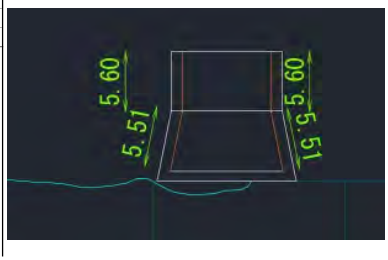


B	**Section M13 Joint**				
	Formwork area	128,45	m2		
	Numbers of Formwork =	3,00	Buah		
	Volume =	**385,35**	m2		
	Total Volume =			385,35	m2

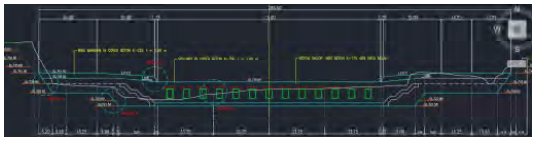


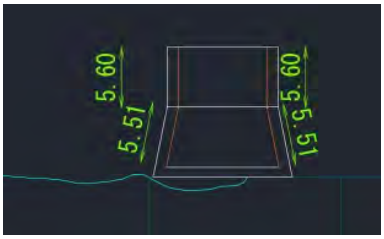
O.	**Section M14**				
	Formwork Length =	22,22	m'		
	Length =	50,00	m'		
	Volume =	**1111,00**	m^2		
	Total Volume =			1.111,00	m^2



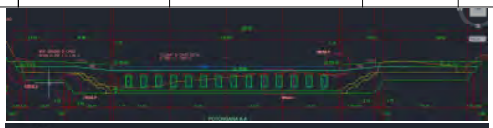


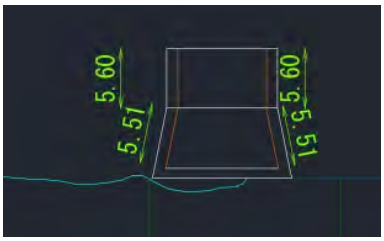
P.	**Section M15**				
	Formwork Length =	22,22	m'		
	Length =	0,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2



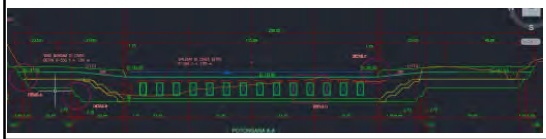


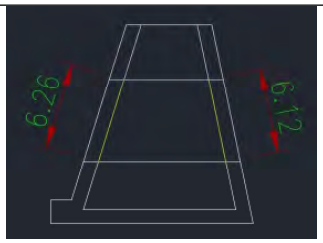
Q.	**Section M16**				
	Formwork Length =	22,22	m'		
	Length =	8,20	m'		
	Volume =	**182,20**	m^2		
	Total Volume =			182,20	m^2



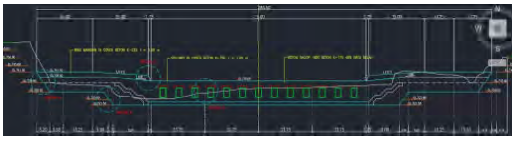


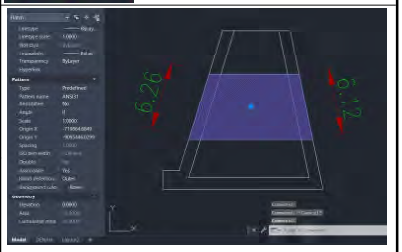
S.	**Reduced by Drainage Holes Area**				
	Formwork Length =	12,36	m'		
	Drainage Hole Width =	3,00	m'		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	**519,12**	m2		
	Total Volume =			519,12	m^2





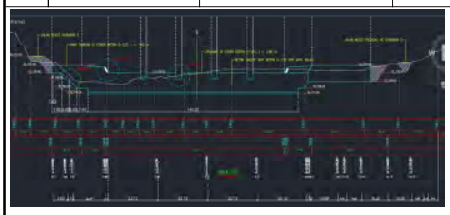
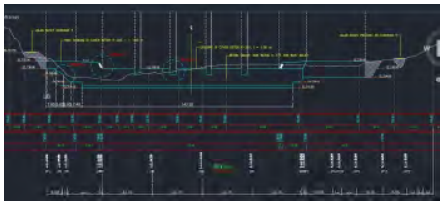
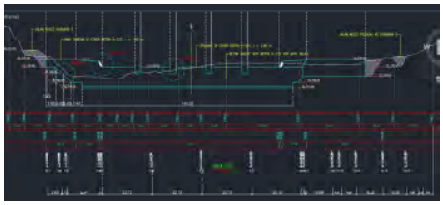
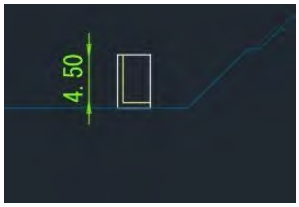
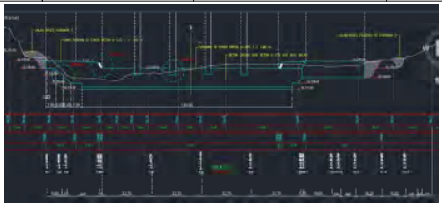
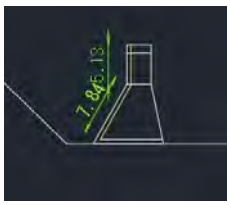
S.	**Plus Wall Conduit drainage hole**				
	Formwork Area =	57,00	m2		
	Numbers of Drainage Holes Side =	2,00	Side		
	Numbers of Drainage Holes =	14,00	pcs		
	Volume =	**1596,00**	m2		
	Total Volume =			1.596,00	m^2



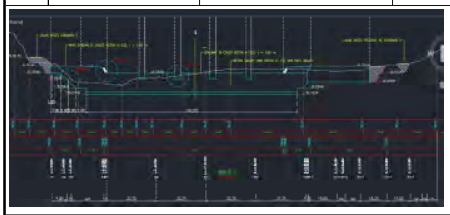


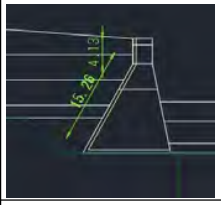
	Non Exposed Formwork Sub Total Volume =	**11.202,60 m^2**

Name Structure : : CD Kobokan 5
Type of work : Non Exposed Formwork (Subdam)

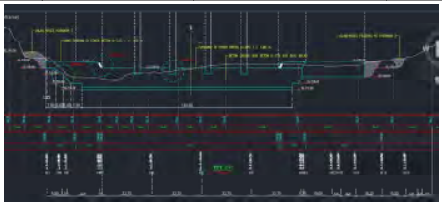
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Formwork Length =	0,00	m^2			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	
						
B.	**Section M2**					
	Formwork Length =	0,00	m^2			
	Length =	8,55	m'			
	Volume =	**0,00**	m^3			
	Total Volume =			-	m^3	
						
C.	**Section M3**					
	Formwork Length =	4,50	m'			
	Length =	1,25	m'			
	Volume =	**5,63**	m2			
	Total Volume =			5,63	m2	
						
D.	**Section M4**					
	Formwork Length =	12,97	m'			
	Length =	2,70	m'			
	Volume =	**35,02**	m2			
	Total Volume =			35,02	m2	
						

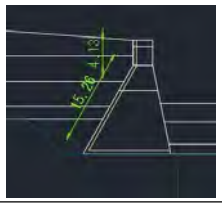
E.	**Section M5**				
	Formwork Length =	19,39	m'		
	Length =	3,10	m'		
	Volume =	**60,11**	m^2		
	Total Volume =			60,11	m2



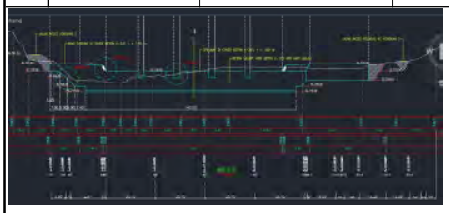


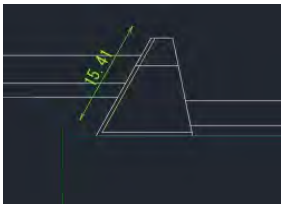
F.	**Section M6**				
	Formwork Length =	19,39	m'		
	Length =	22,00	m'		
	Volume =	**426,58**	m^2		
	Total Volume =			426,58	m2



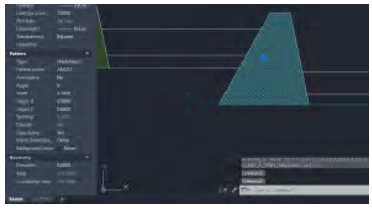


G.	**Section M7**				
	Formwork Length =	15,41	m'		
	Length =	1,75	m'		
	Volume =	**26,97**	m^2		
	Total Volume =			26,97	m2

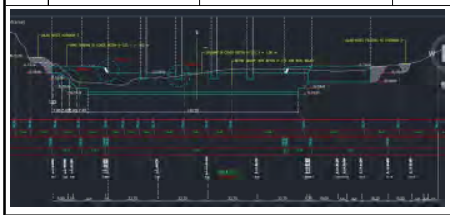


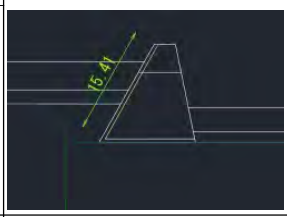


G.	**Section M7 Joint**				
	Formwork area	115,50	m2		
	Numbers of Formwork =	5,00	Buah		
	Volume =	**577,50**	m2		
	Total Volume =			577,50	m2

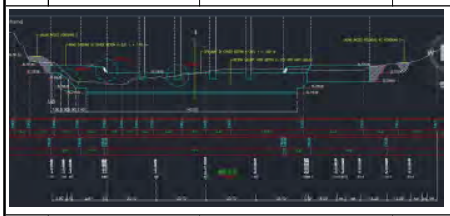


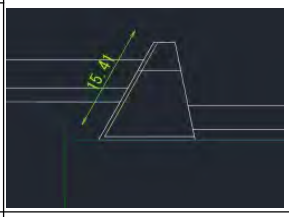
H.	**Section M8**				
	Formwork Length =	15,41	m'		
	Length =	33,75	m'		
	Volume =	**520,09**	m^2		
	Total Volume =			520,09	m2



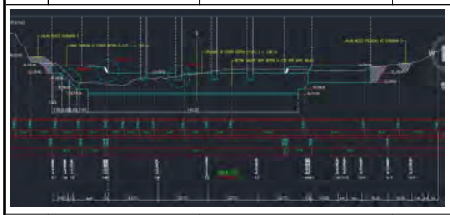


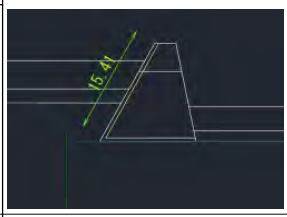
I.	**Section MC**				
	Formwork Length =	15,41	m'		
	Length =	33,75	m'		
	Volume =	**520,09**	m^2		
	Total Volume =			520,09	m2



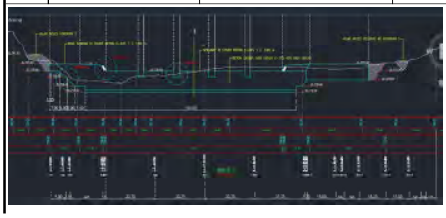


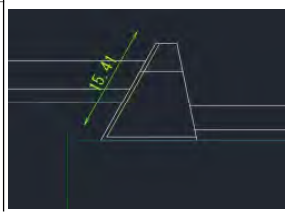
J.	**Section M9**				
	Formwork Length =	15,41	m'		
	Length =	33,75	m'		
	Volume =	**520,09**	m^2		
	Total Volume =			520,09	m2



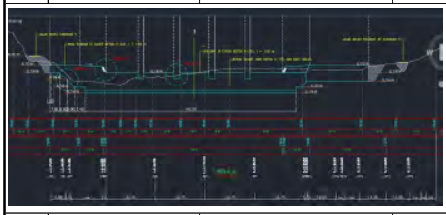


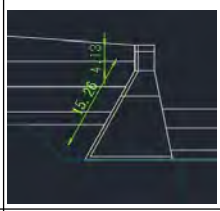
K.	**Section M10**				
	Formwork Length =	15,41	m'		
	Length =	33,75	m'		
	Volume =	**520,09**	m^2		
	Total Volume =			520,09	m2



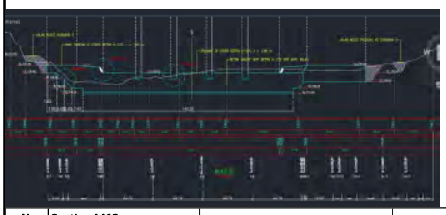


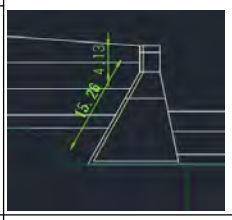
L.	**Section M11**				
	Formwork Length =	19,39	m'		
	Length =	1,75	m'		
	Volume =	**33,93**	m^2		
	Total Volume =			33,93	m2



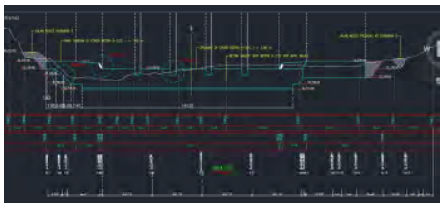


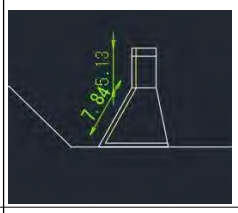
M.	**Section M12**				
	Formwork Length =	19,39	m'		
	Length =	19,00	m'		
	Volume =	**368,41**	m^2		
	Total Volume =			368,41	m2



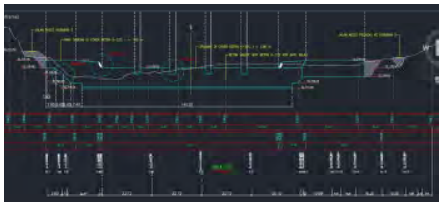


N.	**Section M13**				
	Formwork Length =	12,97	m'		
	Length =	5,80	m'		
	Volume =	**75,23**	m^2		
	Total Volume =			75,23	m2

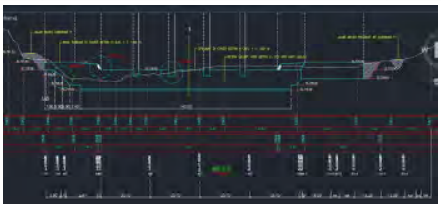




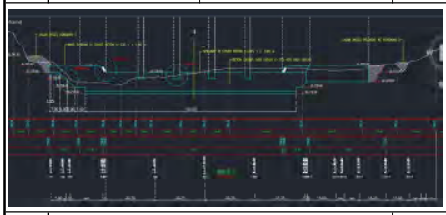
O.	**Section M14**				
	Formwork Length =	6,44	m'		
	Length =	50,00	m'		
	Volume =	**322,00**	m^2		
	Total Volume =			322,00	m2



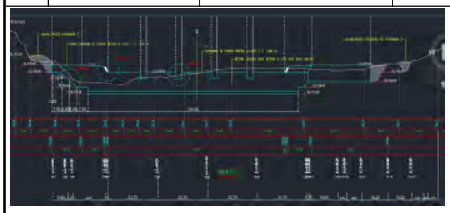
P.	**Section M15**				
	Formwork Length =	0,00	m'		
	Length =	0,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m2

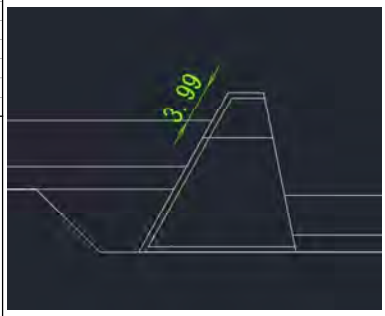


Q.	**Section M16**				
	Formwork Length =	0,00	m'		
	Length =	8,20	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m2

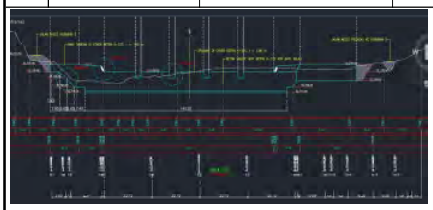


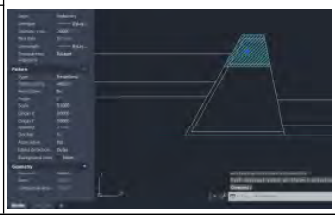
S.	**Reduced by Drainage Holes Area**				
	Formwork Length =	3,99	m'		
	Drainage Hole Width =	4,00	m'		
	Numbers of Drainage Holes =	4,00	buah		
	Volume =	**63,84**	m^2		
	Total Volume =			63,84	m^2





S.	**Plus Wall Conduit drainage hole**				
	Formwork Area =	19,84	m2		
	Numbers of Drainage Holes Side =	2,00	Sisi		
	Numbers of Drainage Holes =	4,00	buah		
	Volume =	**158,72**	m^2		
	Total Volume =			158,72	m^2

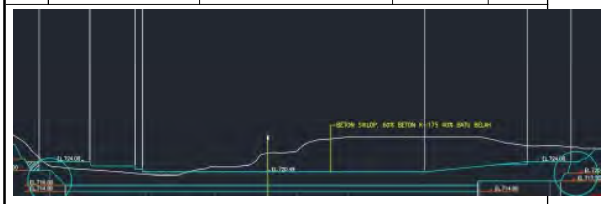




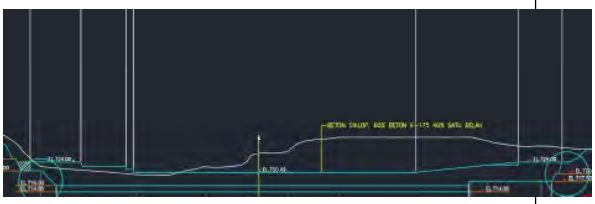
	Non Exposed Formwork Sub Total Volume =	**4.106,60**	**m^3**

Name Structure : : CD Kobokan 5
Type of work : Non Exposed Formwork (Sub-Subdam)

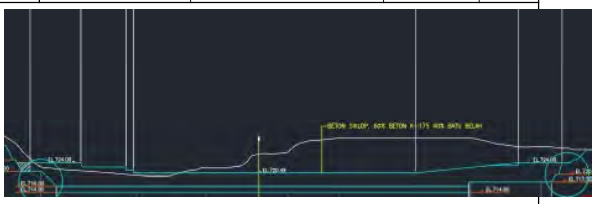
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Section M1**					
	Formwork Length =	0,00	m'			
	Length =	8,20	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	



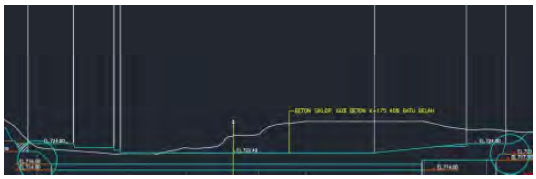
B.	**Section M2**					
	Formwork Length =	0,00	m'			
	Length =	8,55	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	



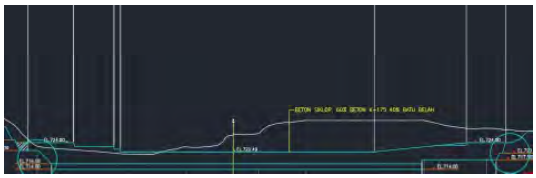
C.	**Section M3**					
	Formwork Length =	0,00	m'			
	Length =	18,25	m'			
	Volume =	**0,00**	m^2			
	Total Volume =			-	m^2	

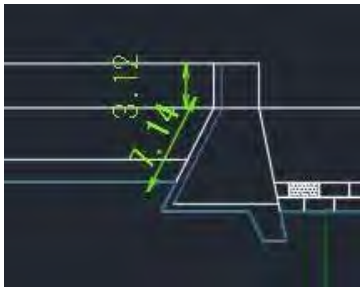


D.	**Section M4**					
	Formwork Length =	2,50	m'			
	Length =	3,60	m'			
	Volume =	**9,00**	m^2			
	Total Volume =			9,00	m^2	

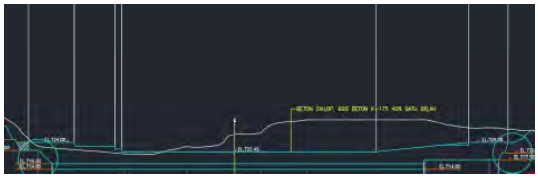


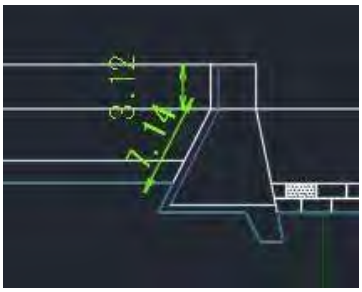
E.	**Section M5**				
	Formwork Length =	10,26	m'		
	Length =	3,10	m'		
	Volume =	**31,81**	m^2		
	Total Volume =			31,81	m^2



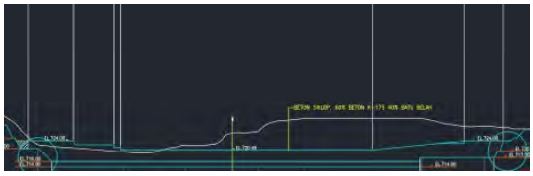


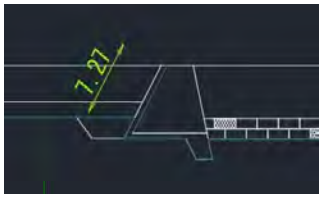
F.	**Section M6**				
	Formwork Length =	10,26	m'		
	Length =	22,00	m'		
	Volume =	**225,72**	m^2		
	Total Volume =			225,72	m^2



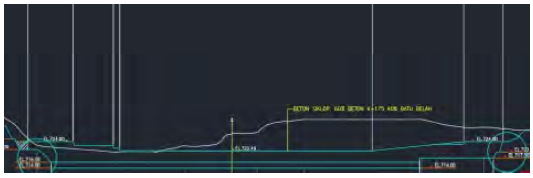


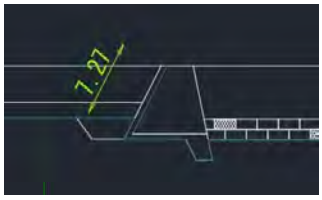
G.	**Section M7**				
	Formwork Length =	7,27	m'		
	Length =	1,75	m'		
	Volume =	**12,72**	m^2		
	Total Volume =			12,72	m^2



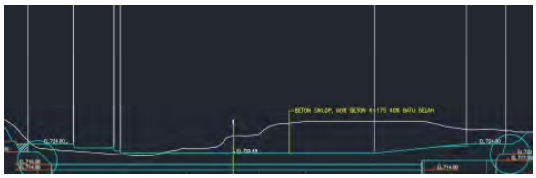


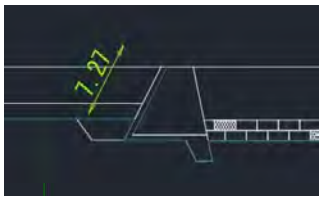
H.	**Section M8**				
	Formwork Length =	7,27	m'		
	Length =	33,75	m'		
	Volume =	**245,36**	m^2		
	Total Volume =			245,36	m^2



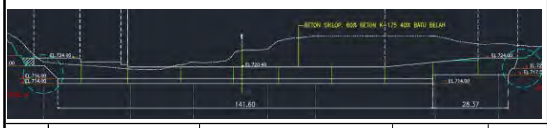


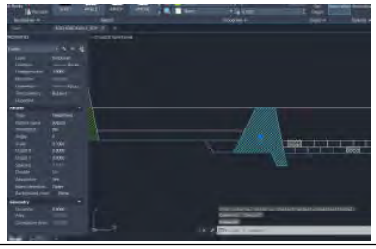
I.	**Section MC**				
	Formwork Length =	7,27	m'		
	Length =	33,75	m'		
	Volume =	**245,36**	m^2		
	Total Volume =			245,36	m^2



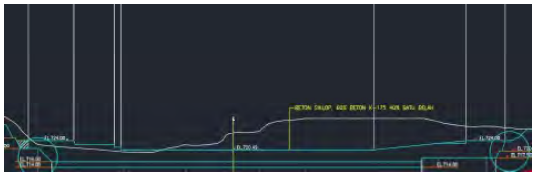


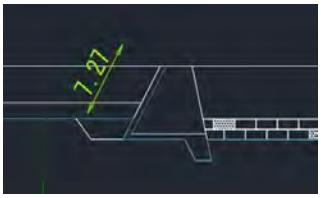
I.	**Section MC Joint**				
	Formwork area =	41,74	m2		
	Numbers of formwork =	9,00	pcs		
	Volume =	**375,66**	m2		
	Total Volume =			375,66	m^2



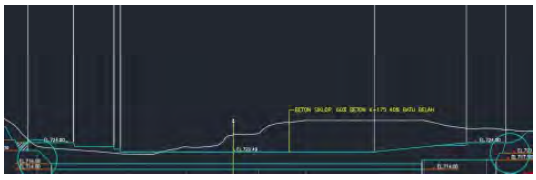


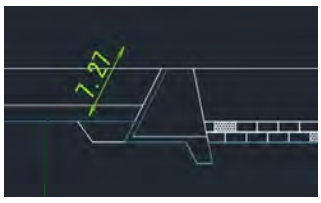
J.	**Section M9**				
	Formwork Length =	7,27	m'		
	Length =	33,75	m'		
	Volume =	**245,36**	m^2		
	Total Volume =			245,36	m^2



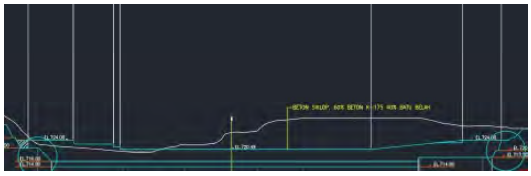


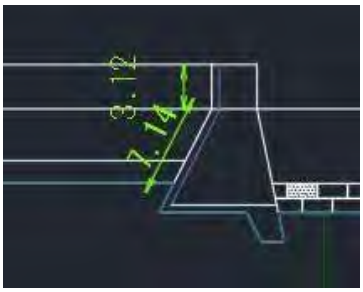
K.	**Section M10**				
	Formwork Length =	7,27	m'		
	Length =	33,75	m'		
	Volume =	**245,36**	m^2		
	Total Volume =			245,36	m^2



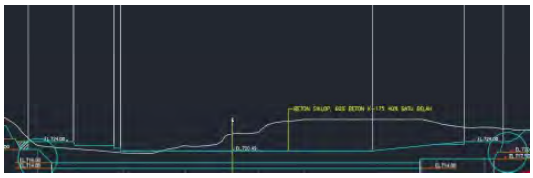


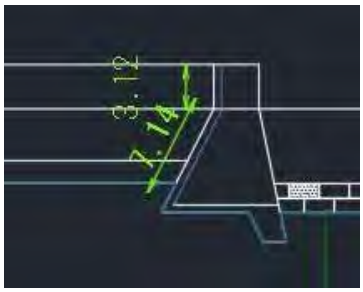
L.	**Section M11**				
	Formwork Length =	10,26	m'		
	Length =	1,75	m'		
	Volume =	**17,96**	m^2		
	Total Volume =			17,96	m^2



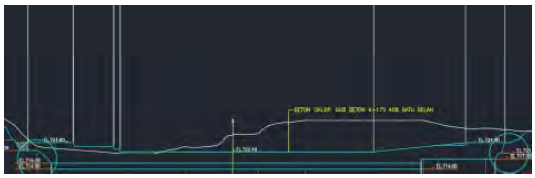


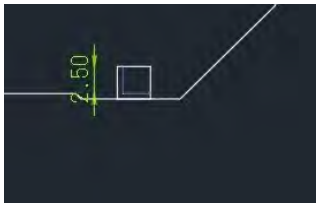
M.	**Section M12**				
	Formwork Length =	10,26	m'		
	Length =	19,00	m'		
	Volume =	**194,94**	m^2		
	Total Volume =			194,94	m^2



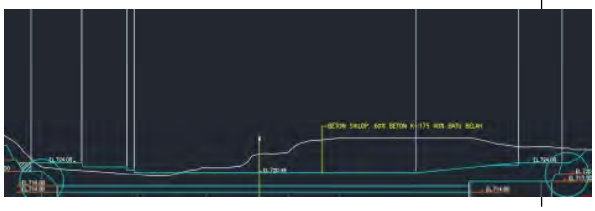


N.	**Section M13**				
	Formwork Length =	2,50	m'		
	Length =	5,80	m'		
	Volume =	**14,50**	m^2		
	Total Volume =			14,50	m^2

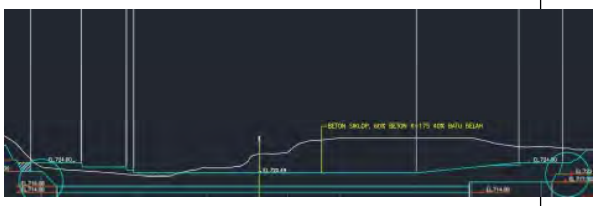




O.	**Section M14**				
	Formwork Length =	0,00	m'		
	Length =	50,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2



P.	Section M15				
	Formwork Length =	0,00	m'		
	Length =	0,00	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2

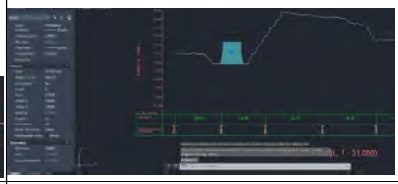
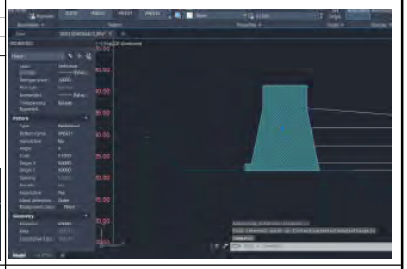
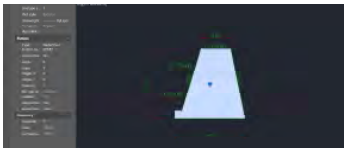
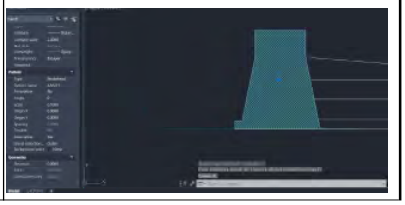


Q.	Section M16				
	Formwork Length =	0,00	m'		
	Length =	8,20	m'		
	Volume =	**0,00**	m^2		
	Total Volume =			-	m^2

Non Exposed Formwork Sub Total Volume =	1.863,75	m^2

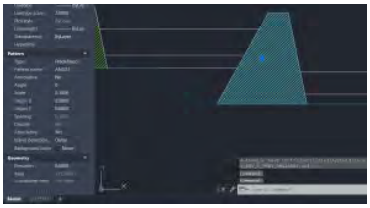
Non Exposed Formwork Total Volume =	17.172,96	m^2

Name Structure : : CD Kobokan 5
Type of work : : Joint Filler (Maindam)

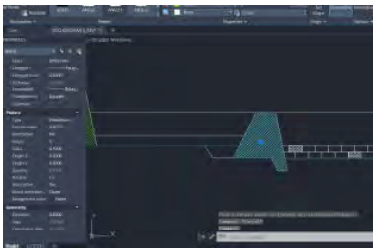
No.	Description	Calculation		Volume	Unit	Drawing Reference
A	**Section M1 Joint**					
	Joint Filler Area =	128,45	m2			
	Numbers of Joint Filler =	3,00	pcs Ka-Ki			
	Volume =	**385,35**	m2			
	Total Volume =			385,35	m2	
						
B	**Section M5 Joint**					
	Joint Filler Area =	244,22	m2			
	Numbers of Joint Filler =	1,00	pcs			
	Volume =	**244,22**	m2			
	Total Volume =			244,22	m2	
C	**Section M7 Joint**					
	Joint Filler Area =	566,34	m2			
	Numbers of Joint Filler =	8,00	pcs			
	Volume =	**4530,74**	m2			
	Total Volume =			4.530,74	m2	
D	**Section M12 Joint**					
	Joint Filler Area =	244,22	m2			
	Numbers of Joint Filler =	1,00	pcs			
	Volume =	**244,22**	m2			
	Total Volume =			244,22	m2	
						

No.	Description	Calculation		Volume	Unit	Drawing Reference
E	**Section M13 Joint**					
	Joint Filler Area =	128,45	m2			
	Numbers of Joint Filler =	3,00	pcs			
	Volume =	**385,35**	m2			
	Total Volume =			385,35	m2	
			Joint Filler Sub Total Area =	**5.789,88**	**m²**	

Name Structure : : CD Kobokan 5
Type of work : Joint Filler (Subdam)

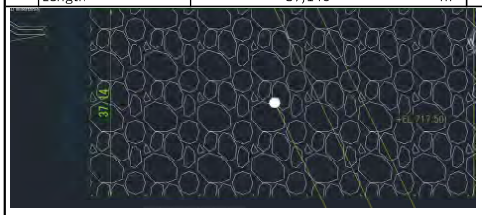
No.	Description	Calculation		Volume	Unit	Drawing Reference
G.	**Section M7 Joint**					
	Joint Filler Area =	115,50	m2			
	Numbers of Joint Filler =	5,00	pcs			
	Volume =	**577,50**	m2			
	Total Volume =			577,50	m2	
						
			Joint Filler Sub Total Area =	**577,50**	**m²**	

Name Structure : : CD Kobokan 5
Type of work : Joint Filler (Sub-Subdam)

No.	Description	Calculation		Volume	Unit	Drawing Reference
I.	**Section MC Joint**					
	Joint Filler Area =	41,74	m2			
	Numbers of Joint Filler =	9,00	pcs			
	Volume =	**375,66**	m2			
	Total Volume =			375,66	m^2	
						
			Joint Filler Sub Total Area =	**375,66**	**m²**	

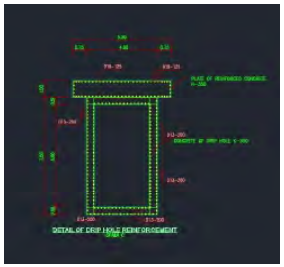
	All Joint Filler Total Area =	**6.743,04**	**m²**
	Joint Filler Thickness =	**0,02**	**m'**
	Joint Filler Total Volume =	**134,86**	**m3**

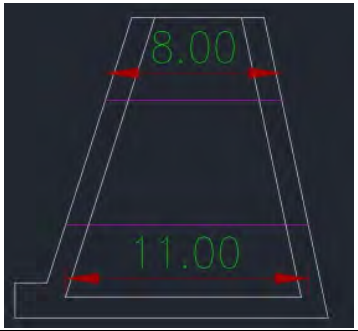
Name Structure : : CD Kobokan 5
Type of work : : Boulder Rip-Rap

No.	Description	Calculation		Volume	Unit	Drawing reference
1						
	Area =	62,56	m2	2.323,38	m^3	
	Length =	37,140	m			
						
		Boulder Rip-Rap Total Volume =		**2.323,38**	**m³**	

Name Structure : : CD Kobokan 5
Type of work : : Reinforcing Steel

No.	Code	Diameter (mm)	Distance (m)		Length (m)				Weight per m' (kg/m)	Weigth Total (kg)	Numbers of bar	Weigth Total (kg)	Noted
					Transverse length (m)	Long and elongated (m)	Curved	Length Total (m)					
A													
	Slab Reinforcement (D19-125)												
1	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
2	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
3	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
4	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
5	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
6	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
7	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	





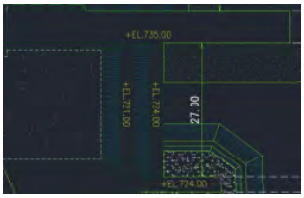
8	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
9	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
10	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
11	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
12	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
13	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
14	Tul.Utama	19	0,125	1,00	12,80	8			2,23	832	104	1855,36	
	Tul.Bagi	19	0,125	1,00	8,00	12,80			2,23	832	65	1855,36	
B	**Drainage Hole Reinforcement (D13-200)**												
1	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
2	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
3	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
4	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
5	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
6	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
7	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	

8	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
9	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
10	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
11	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
12	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
13	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
14	Tul.Utama	13	0,125	1,00	40	11			1,04	3531	321	3672,24	
	Tul.Bagi	13	0,125	1,00	11,00	40,00			1,04	3560	89	3702,40	
										Total kg / m		155.195,04	
									Weight Reinforcing Steel Total Volume =			**155.195,04**	**kg**
												155,20	**ton**

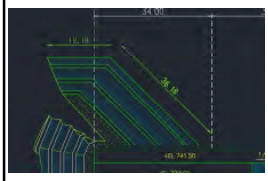
Name Structure : : CD Kobokan 5
Type of work : Weep Hole

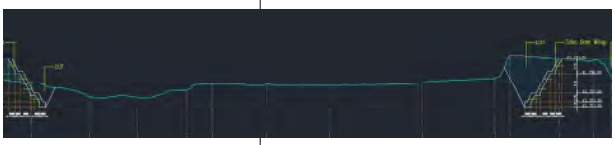
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**POT. B-B**					
	Weep Hole Length =	3,50	m'			
	Number of Weep Holes in 1 Section	6,00	pcs			
	Wall Length =	27,00	m'			
	Jarak antar Weep Hole =	2,00	m			
	Distance between Weep Holes =	13,00	pcs			
	Volume =	**273,00**	m'			
	Total Volume =			273,00	m'	

B.	**POT. E-E**					
	Weep Hole Length =	3,50	m'			
	Number of Weep Holes in 1 Section	2,00	pcs			
	Wall Length =	27,00	m'			
	Jarak antar Weep Hole =	2,00	m			
	Distance between Weep Holes =	13,00	pcs			
	Volume =	**91,00**	m'			
	Total Volume =			91,00	m'	

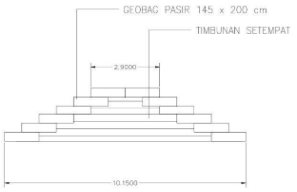


B.	**POT. F-F BUFFER FILL**					
	Weep Hole Length =	3,50	m'			
	Number of Weep Holes in 1 Section	10,00	pcs			
	Wall Length =	54,36	m'			
	Jarak antar Weep Hole =	2,00	m			
	Distance between Weep Holes =	27,00	pcs			
	Volume =	**945,00**	m'			
	Total Volume =			945,00	m'	





Weep Hole Total Volume =	**1.309,00**	**m'**

Name Structure :	**: CD Kobokan 5**				
Type of work	**: Geo Bag & Sandfill**				
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing reference**
1					
	Number of Geobag =	6,00 Pcs			
	Fill Length =	160,00 m			
	Geobag Length =	2,40 m			
	Number of Geobags Lengthwise =	400,00 Pcs	400,00	Buah	
	Fill Area =	8,70 m^2			
	Length =	160 m			
	Moving Times =	3,000 Times			
	Total Volume =		4.176,00	m^3	

ACCESS ROAD QUANTITY SUMMARY

No.	Description	Unit	Volume
A	**Access Road to Kobokan 5, L = 175,00 m**		
1	Mechanical Sand Excavation	m3	2.866,69
2	Backfill Sand (Material from Excavation, Mechanically)	m3	8.193,75
3	Concrete Making and Casting fc' = 20 Mpa (K 225) Mechanically Transported within a radius of 2000 m with a Concrete Pump (CP)	m3	875,00
4	Concrete Floor Slab Expose Formwork with Multiflex 18 mm (TP), JaTm 0.60 m	m2	210,00
5	Concrete Floor Formwork Scaffolding with 5/7 cm Rafters 4.00 m high, JaTm 0.60 m	m2	210,00
6	Dismantle 1 m2 of Formwork and Scaffolding in the Normal Way (and Clear Debris) for Non Expose	m2	3.279,27
7	Joint Filler	m3	2,19
8	Dowel Bar D19, L = 0.80 m	pcs	560,00
9	Cyclops Concrete 60% Concrete fc' 15 Mpa: 40% Split Stone, with Concrete Pump (CP)	m3	4.800,05
10	1 m2 Exposed Concrete Wall Formwork with 18 mm Multiflex	m2	3.069,27
11	1 m2 Scaffolding / Supporting Formwork Rafters 5/7 for Concrete Walls Tm 2.50 m	m2	3.069,27
12	Guidepost	pcs	87,00
13	Box Culvert	pcs	13,00
14	U Ditch	pcs	145,00
B	**Access Road to Pelintas Curah Lengkong, L = 95,00 m**		
1	Mechanical Sand Excavation	m3	3.090,04
2	Backfill Sand (Material from Excavation, Mechanically)	m3	371,74
3	Concrete Making and Casting fc' = 20 Mpa (K 225) Mechanically Transported within a radius of 2000 m with a Concrete Pump (CP)	m3	475,00
4	Concrete Floor Slab Expose Formwork with Multiflex 18 mm (TP), JaTm 0.60 m	m2	114,00
5	Dismantle 1 m2 of Formwork and Scaffolding in the Normal Way (and Clear Debris) for Non Expose	m2	114,00
6	Joint Filler	m3	1,19
7	Dowel Bar D19, L = 0.80 m	pcs	304,00
8	Box Culvert	pcs	18,00
9	U Ditch	pcs	80,00
10	Guidepost	pcs	47,00
C	**Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m**		
1	Mechanical Sand Excavation	m3	20.531,14
2	Backfill Sand (Material from Excavation, Mechanically)	m3	2.482,24
3	Box Culvert	pcs	35,00
4	U Ditch	pcs	200,00
5	Guidepost	pcs	115,00
6	Cyclops Concrete 60% Concrete fc' 15 Mpa: 40% Split Stone, with Concrete Pump (CP)	m3	384,24
7	1 m2 Exposed Concrete Wall Formwork with 18 mm Multiflex	m2	195,60
8	1 m2 Scaffolding / Supporting Formwork Rafters 5/7 for Concrete Walls Tm 2.50 m	m2	195,60
9	Carefully dismantle 1 m2 of Formwork and Scaffolding	m2	195,60

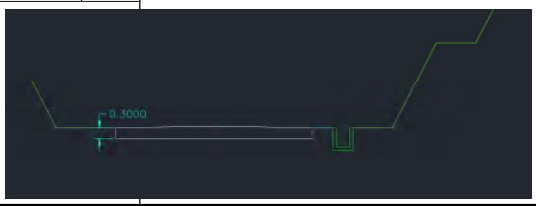
Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work :Concrete K-225

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Concrete K-225**						
	Width =	5,00	m'				
	Length =	175,00	m'				
	Volume =	**875,00**	m^3				
	Thickness =	0,30	m'				
	Total Volume =				**875,00**	m^3	

K-225 Concrete Total Volume = 875,00 m^3

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Formwork

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Formwork**						
	Width =	0,30	m'				
	Length =	525,00	m'				
	Volume =	**157,50**	m2				
	Formwork Section =	52,50	m2				
	Total Volume =				**210,00**	m2	



Formwork Total Volume = 210,00 m^3

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Joint Filler

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Total Joint Filler**						
	Filler Thickness =	0,02	m'				
	Road Section Area =	1,63	m2				
	Numbers of Joint Filler =	**35,00**	pcs				
	Volume =	**1,14**	m3				
	Road Profile =	175,00	m				
	Slab Thickness =	**0,30**	m				
	Volume =	1,05	m3				
	Total Volume =				**2,19**	m^3	

Joint Filler Total Volume = 2,19 m^3

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Dowel Bar

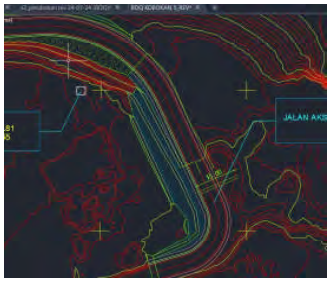
No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Total Dowel Bar**						
	Distance between dowels =	0,30	m'				
	Road Length =	175,00	m'				
	Jumlah =	**583,00**	pcs				
	Joint Across Each Road =	5,00	m				
	Road Length =	175,00	m'				
	Number of Joint =	35,00	pcs				
	Road Width =	5,00	m				
	Distance between dowels =	0,30	m'				
	Number of dowel	16,00	pcs				
	Dowel Total Volume =	560,00	pcs				
					560,00	Pcs	
				Dowel bar Total Volume =		**560,00 Pcs**	

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : U Ditch

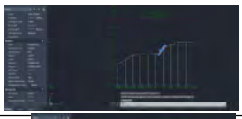
No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Total U Ditch**						
	Road Legth =	175,00	m'				
	U-Ditch Length =	1,20	m'				
	Total Volume =	**145,00**	pcs				
					145,00	Pcs	
				Total Volume U Ditch =		**145 Pcs**	

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Box Culvert

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Total Box Culvert**						
	Cross Road Length =	15,00	m'				
	Box Culvert Length =	1,20	m'				
	Total Volume =	**13,00**	m2				
					13,00	Pcs	
				Total Volume Box Culvert =		**13 Pcs**	



Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Sand Excavation

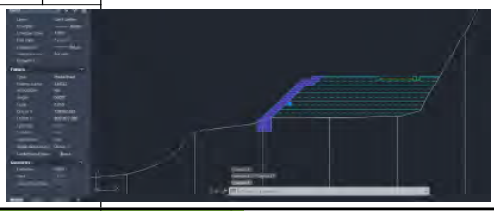
No.	Description	Calculation	Volume	Unit	Drawing Reference
1	STA 0+100				
	Area =	33,89			
	Length =	25,000			
	V=	(33.89 + 33.89) / 2 x 25.00	**847,28**	m³	
2	STA 0+125				
	Area =	46,50			
	Length =	25,000			
	V=	(33.89 + 46.50) / 2 x 25.00	**1.004,85**	m³	
3	STA 0+150				
	Area =	26,45			
	Length =	25,000			
	V=	(46.50 + 26.45) / 2 x 25.00	**911,84**	m³	
4	STA 0+175				
	Area =	12,84			
	Length =	16,000			
	V=	(0.00 + 12.84) / 2 x 16.00	**102,73**	m³	
		San Excavation Total Volume =	**2.866,69**	**m³**	

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Backfill

No.	Description	Calculation	Volume	Unit	Drawing Reference
1	STA 0+000				
	Area =	140,08			
	Length =	25,000			
	V=	(140.08 + 140.08) / 2 x 25.00	**3.501,93**	m³	
2	STA 0+025				
	Area =	121,48			
	Length =	25,000			
	V=	(121.48 + 121.48) / 2 x 25.00	**3.037,10**	m³	
3	STA 0+050				
	Area =	52,55			
	Length =	25,000			
	V=	(52.55 + 52.55) / 2 x 25.00	**1.313,63**	m³	
4	STA 0+075				
	Area =	13,31			
	Length =	25,000			
	V=	(13.31 + 13.31) / 2 x 25.00	**332,78**	m³	
5	STA 0+100				
	Area =	0,33			
	Length =	25,000			
	V=	(0.33 + 0.33) / 2 x 25.00	**8,33**	m³	
		Backfill Sub Total Volume =	**8.193,75**	**m³**	

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Cyclop Concrete for Backfill Slope Revetment

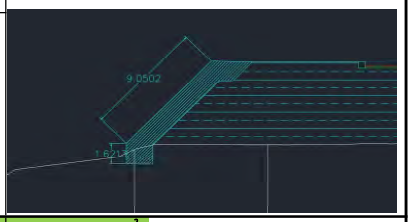
No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Slope revetment**						
	Area =	14,62	m2				
	length of plan =	198,00	m'				
	Volume =	**2893,77**	m3				
					2.893,77	m3	



Cyclop Concrete Sub Total Volume = 2.893,77 m^3

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Formwork Exposed

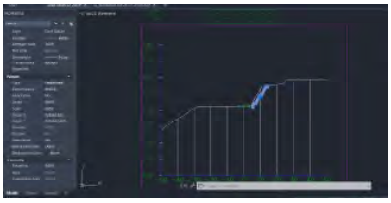
No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Exposed Formwork**						
	Length of 1 Section =	10,67	m				
	length of plan =	198,00	m'				
	Volume =	**2112,66**	m2				
					2.112,66	m2	



Formwork Sub Total Volume = 2.112,66 m^2

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Cyclop Concrete for Excavation Slope Revetment

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	**Slope Revetment**						
	Area =	26,90	m2				
	length of plan =	70,86	m'				
	Volume =	**1906,28**	m3				
					1.906,28	m3	



Cyclop Concrete Sub Total Volume = 1.906,28 m^3

Name Structure : : Access Road to Kobokan 5, L = 175,00 m
Type of work : Formwork Exposed

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Bekisting Expose**					
	Length of 1 Section =	13,50 m				
	length of plan =	70,86 m'				
	Volume =	**956,61** m2				
				956,61	m2	

Formwork Sub Total Volume =	956,61	m^2

Cyclop Concrete Revetment Total Volume =	4.800,05	m^3
Formwork Exposed Total Volume =	3.069,27	m^2

Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : K-225 Concrete

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Concrete K-225					
	Width =	5,00	m'			
	Length =	95,00	m'			
	Volume =	475,00	m^3			
	Thickness =	0,30	m'			
	Total Volume =			475,00	m^3	

Concrete K-225 Total Volume = 475,00 m^3

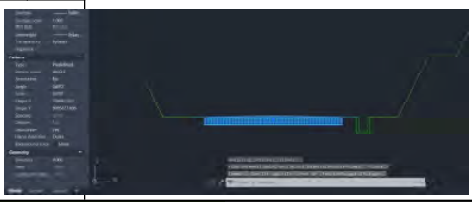
Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : Formwork

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Formwork					
	Width =	0,30	m'			
	Length =	285,00	m'			
	Volume =	85,50	m2			
	Formwork Section =	28,50				
	Total Volume =			114,00	m2	

Formwork Total Volume = 114,00 m2

Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : Joint Filler

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Total Joint Filler					
	Filler Thickness =	0,02	m'			
	Road Section Area =	1,63	m2			
	Numbers of Joint Filler =	19,00	m2			
	Volume =	0,62	m3			
	Road Profile =	95,00	m			
	Slab Thickness =	0,30	m			
	Volume =	0,57	m3			
	Total Volume =			1,19		



Joint Filler Total Volume = 1,19 m^3

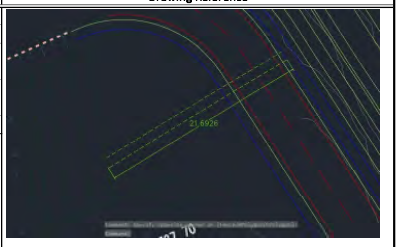
Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : Dowel Bar

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	Total Dowel Bar						
	Distance between dowels =	0,30	m'				
	Road Length =	95,00	m'				
	Jumlah =	316,00	pcs				
	Joint Across Each Road =	5,00	m				
	Road Length =	95,00	m'				
	Number of Joint =	19,00	pcs				
	Road Width =	5,00	m				
	Distance between dowels =	0,30	m'				
	Number of dowel	16,00	pcs				
	Dowel Total Volume =	304,00	pcs				
					304,00	pcs	
				Dowel bar Total Volume =		304,00	pcs

Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : U Ditch

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	Total U Ditch						
	Road Legth =	95,00	m'				
	U-Ditch Length =	1,20	m'				
	Total Volume =	80,00	m2				
					80,00	Pcs	
				Total Volume U Ditch =		80	pcs

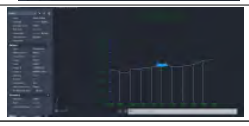
Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : Box Culvert

No.	Description	Calculation			Volume	Unit	Drawing Reference
A.	Total Box Culvert						
	Cross Road Length =	21,60	m'				
	Box Culvert Length =	1,20	m'				
	Total Volume =	18,00	m2				
	Total Volume =				18,00	Pcs	
				Total Volume Box Culvert =		18	pcs

Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : Sand Excavation

No.	Description	Calculation	Volume	Unit	Drawing Reference
1	STA 0+000				
	Area =	13,47			
	Length =	25,000			
	V=	(13.47 + 13.47) / 2 x 25.00	**336,70**	m³	
2	STA 0+025				
	Area =	26,88			
	Length =	25,000			
	V=	(13.47 + 26.88) / 2 x 25.00	**504,34**	m³	
3	STA 0+050				
	Area =	64,02			
	Length =	25,000			
	V=	(26.88 + 64.02) / 2 x 25.00	**1.136,25**	m³	
4	STA 0+075				
	Area =	69,02			
	Length =	25,000			
	V=	(0.00 + 69.02) / 2 x 25.00	**862,75**	m³	
4	STA 0+095				
	Area =	0,00			
	Length =	20,000			
	V=	(25.00 + 0.00) / 2 x 20.00	**250,00**	m³	
	Sand Excavation Total Volume =		**3.090,04**	**m³**	

Name Structure : : Access Road to Pelintas Curah Lengkong, L = 95,00 m
Type of work : Backfill

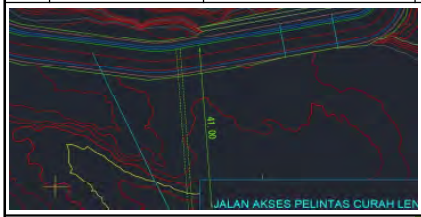
No.	Description	Calculation	Volume	Unit	Drawing Reference
1	STA 0+075				
	Area =	0,66			
	Length =	25,000			
	V=	(0.66 + 0.66) / 2 x 25.00	**16,45**	m³	
2	STA 0+095				
	Area =	23,69			
	Length =	15,000			
	V=	(23.69 + 23.69) / 2 x 15.00	**355,29**	m³	
		Backfill Total Volume =	**371,74**	**m³**	

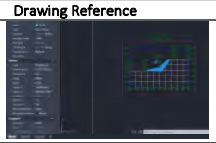
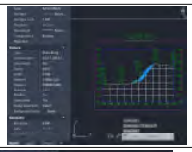
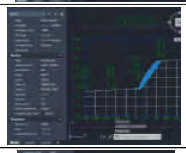
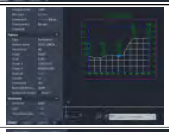
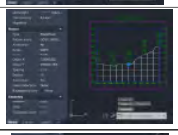
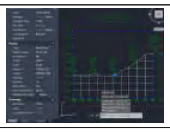
Name Structure : : Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m
Type of work : U Ditch

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	U Ditch					
	Road Legth =	240,00 m'				
	U-Ditch Length =	1,20 m'				
	Total Volume =	200,00 m2				
	Total Volume =			200,00	Pcs	
				Total Volume U Ditch =		200 Pcs

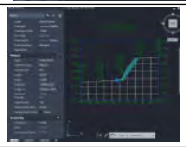
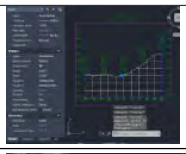
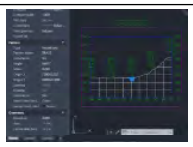
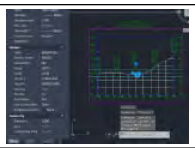
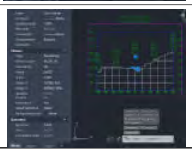
Name Structure : : Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m
Type of work : Box Culvert

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Total Box Culvert					
	Cross Road Length =	41,00 m'				
	Box Culvert Length =	1,20 m'				
	Total Volume =	35,00 m2				
				35,00	Pcs	
				Total Volume Box Culvert =		35 Pcs



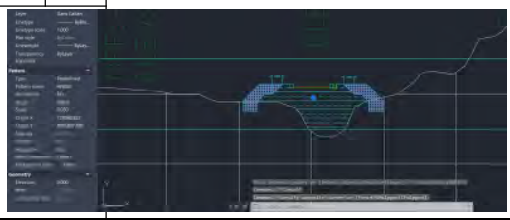
Name Structure :		**: Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m**			
Type of work		**: Sand Excavation**			
No.	**Description**	**Calculation**	**Volume**	**Unit**	**Drawing Reference**
1	STA 0+000				
	Luas	215,42			
	Panjang	25,000			
	V=	(215.42 + 215.42	**5.385,50**	m^3	
2	STA 0+025				
	Luas	263,44			
	Panjang	25,000			
	V=	(215.42 + 263.44	**5.985,76**	m^3	
3	STA 0+050				
	Luas	118,24			
	Panjang	25,000			
	V=	(263.44 + 118.24	**4.771,04**	m^3	
4	STA 0+075				
	Luas	93,78			
	Panjang	25,000			
	V=	(0.00 + 93.78) / 2	**1.172,26**	m^3	
5	STA 0+100				
	Luas	141,11			
	Panjang	25,000			
	V=	(25.00 + 141.11) /	**2.076,41**	m^3	
6	STA 0+125				
	Luas	3,79			
	Panjang	25,000			
	V=	(25.00 + 3.79) / 2	**359,85**	m^3	
7	STA 0+150				
	Luas	6,75			
	Panjang	25,000			
	V=	(25.00 + 6.75) / 2	**396,91**	m^3	
8	STA 0+175				
	Luas	5,67			
	Panjang	25,000			
	V=	(25.00 + 5.67) / 2	**383,40**	m^3	
	Sand Excavation Total Volume =		**20.531,14**	**m^3**	

Name Structure : : Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m
Type of work : Backfill

No.	Description	Calculation	Volume	Unit	Drawing Reference
1	STA 0+075				
	Luas	14,02			
	Panjang	25,000			
	V=	(14.02 + 14.02) /	350,38	m³	
2	STA 0+100				
	Luas	0,23			
	Panjang	25,000			
	V=	(0.23 + 0.23) / 2 x	5,65	m³	
3	STA 0+175				
	Luas	1,61			
	Panjang	25,000			
	V=	(1.61 + 1.61) / 2 x	40,35	m³	
4	STA 0+200				
	Luas	19,54			
	Panjang	25,000			
	V=	(19.54 + 19.54) /	488,50	m³	
5	STA 0+225				
	Luas	55,04			
	Panjang	25,000			
	V=	(55.04 + 55.04) /	1.375,93	m³	
6	STA 0+230				
	Luas	44,29			
	Panjang	5,000			
	V=	(44.29 + 44.29) /	221,44	m³	
	Backfill Total Volume =		2.482,24	m³	

Name Structure : : Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m
Type of work : Cyclop Concrete for Excavation Slope Revetment

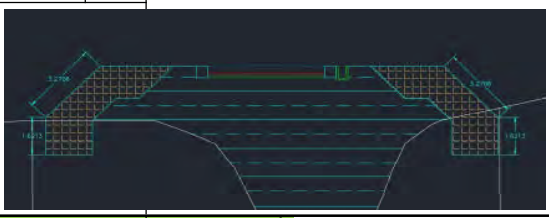
No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	Slope revetment					
	Area =	19,21	m2			
	length of plan =	20,00	m'			
	Volume =	384,24	m3			
				384,24	m3	



Cyclop Concrete Total Volume = 384,24 m³

Name Structure : : Access Road from Pelintas Curah Lengkong to Kobokan 5, L = 230,00 m
Type of work : Exposed Formwork

No.	Description	Calculation		Volume	Unit	Drawing Reference
A.	**Bekisting Revetmen**					
	Length of 1 Section =	9,78 m'				
	length of plan =	20,00 m'				
	Volume =	**195,60** m2				
				195,60	m2	



Exposed Formwork Total Volume = **195,60** **m^2**