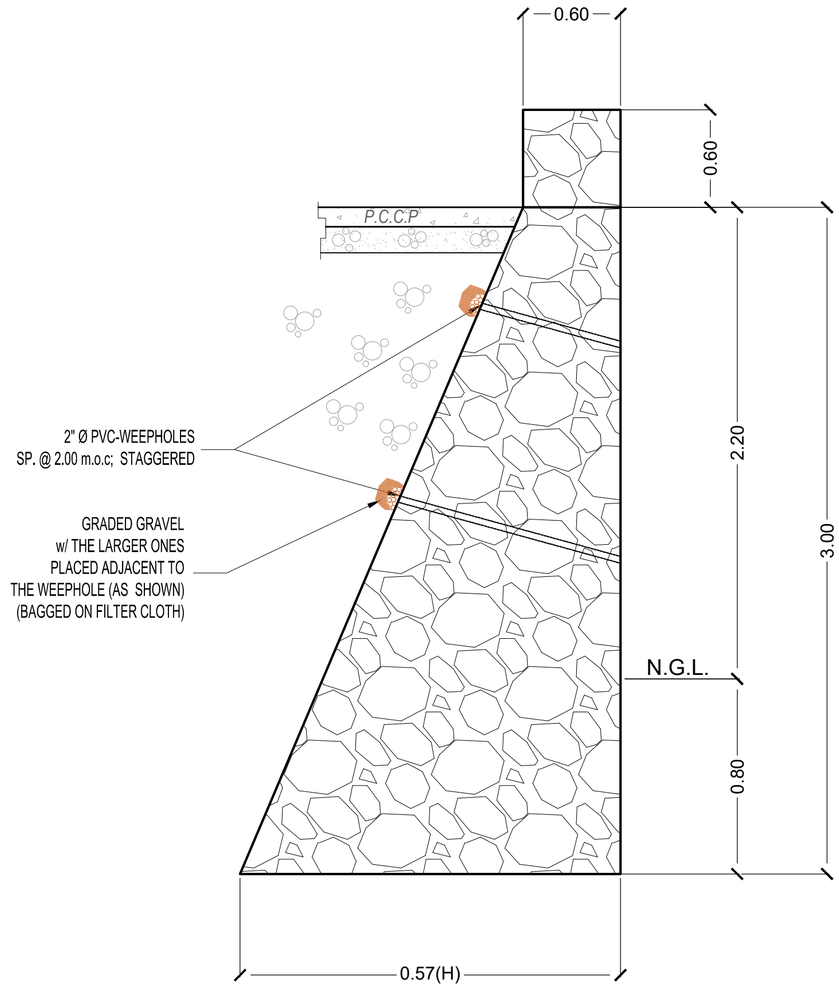
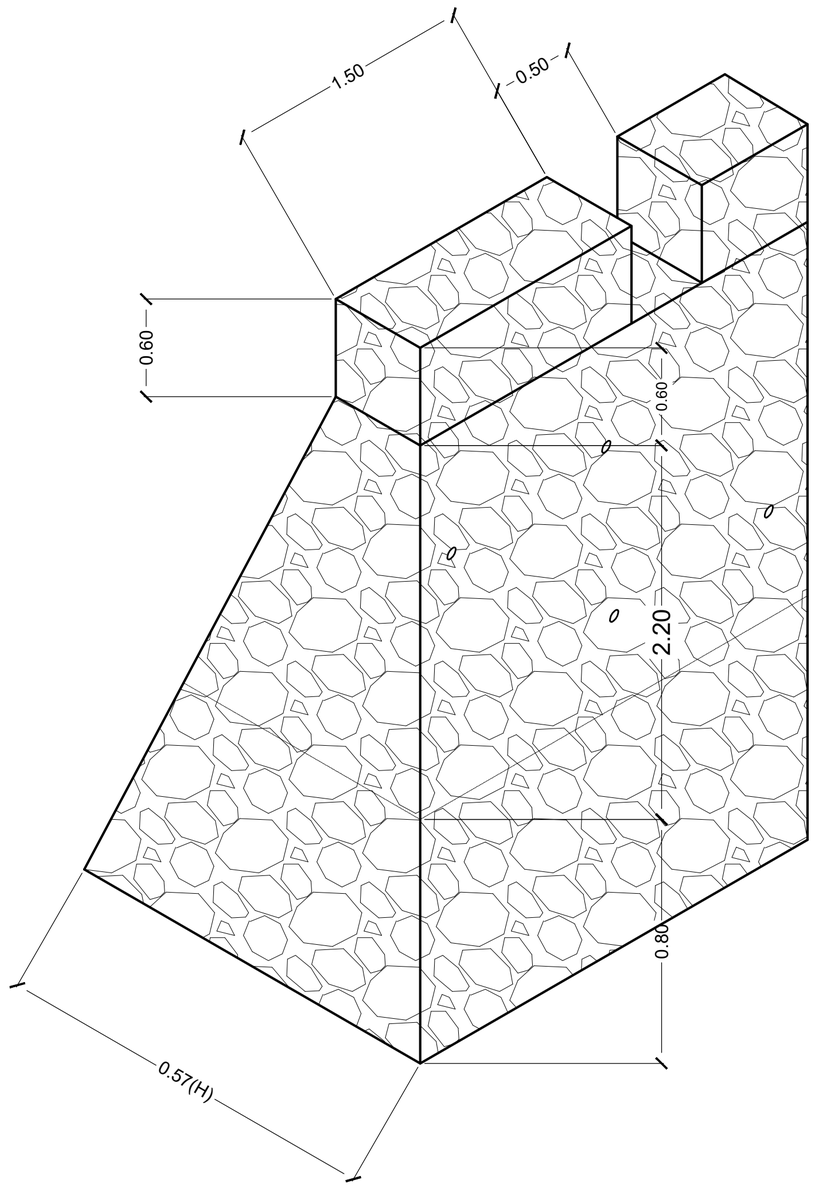
SCHEDULE OF STONE MASONRY

STATION			LENGTH (m)	HEIGHT (m)	REMARKS
STA. 0+080.00	to	STA. 0+097.00	17.00	3.00	RIGHT SIDE
STA. 0+180.00	to	STA. 0+200.00	20.00	3.00	RIGHT SIDE

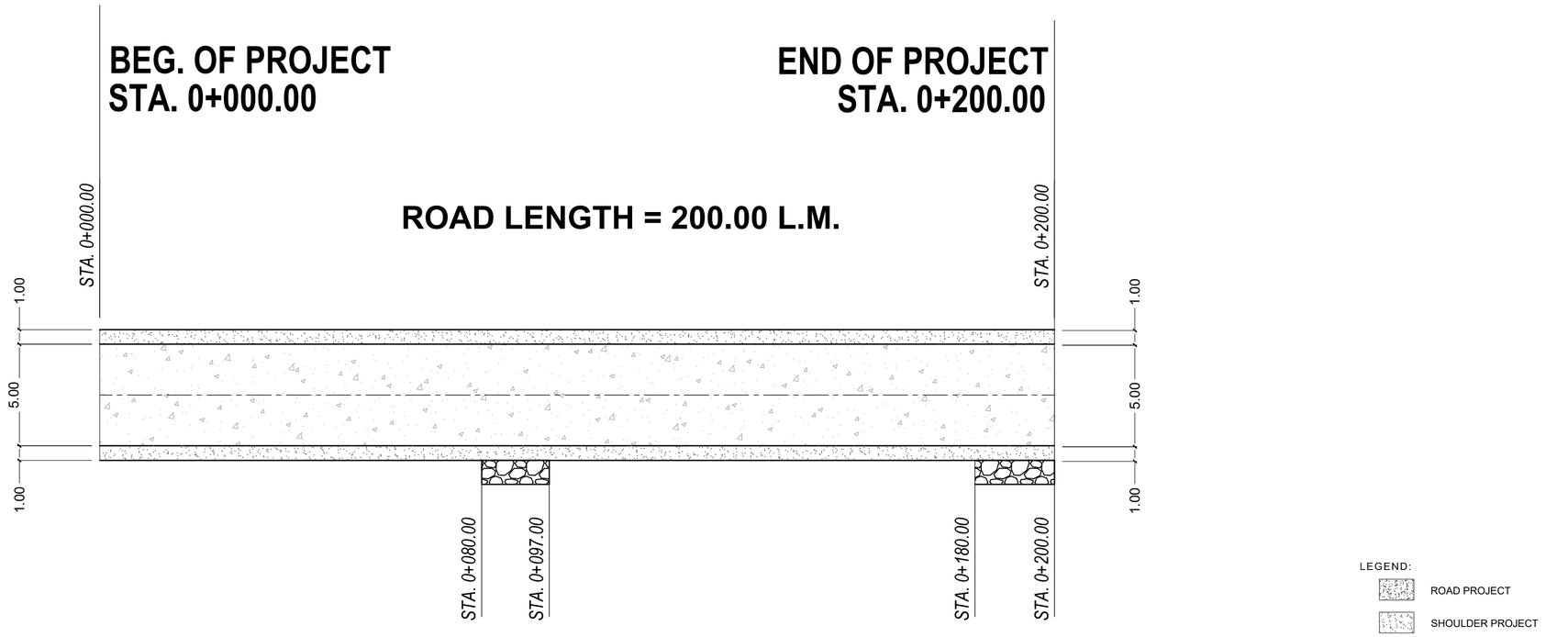


STONE MASONRY DETAILS



ISOMETRIC VIEW

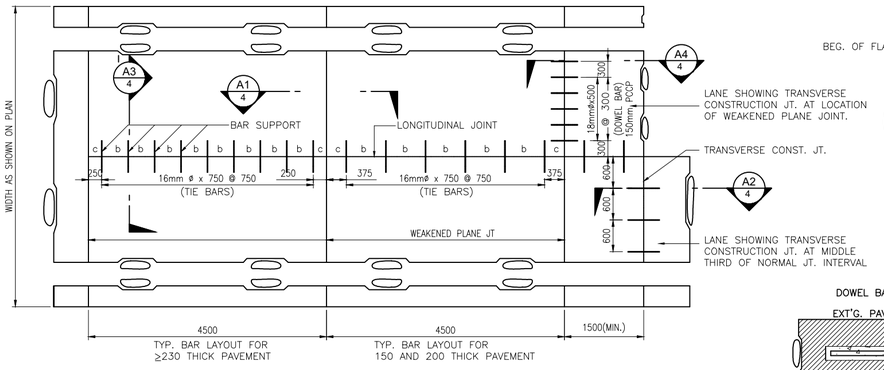
REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE No. IV-A BATANGAS 2ND DISTRICT ENGINEERING OFFICE KUMINTANG ILAYA, BATANGAS CITY	PROJECT NAME AND LOCATION: **CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS** **LOBO, BATANGAS**	SHEET CONTENT: STONE MASONRY DETAILS ISOMETRIC VIEW	DRAFTED: **YVETTE C. CORDOVA** ENGINEER II PREPARED: **MYLEN M. MANALO** ENGINEER II	REVIEWED : **MARICRIS P. VILLANUEVA** ENGINEER II DATE:	SUBMITTED : **GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:	RECOMMENDED: **ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: **SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:	SET NO. R 2 | 10	SHEET NO. 10 18

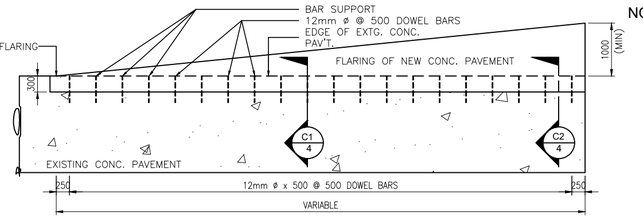


STRAIGHT LINE DIAGRAM

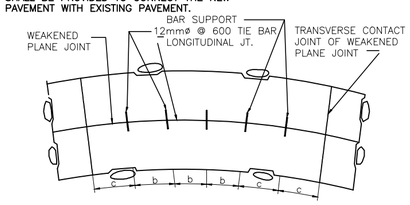
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE No. IV-A
BATANGAS 2ND DISTRICT
ENGINEERING OFFICE
KUMINTANG ILAYA, BATANGAS CITY

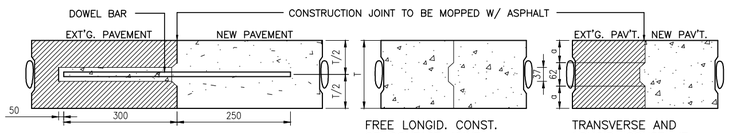
PROJECT NAME AND LOCATION:	SHEET CONTENT:	DRAFTED:	REVIEWED :	SUBMITTED :	RECOMMENDED:	APPROVED:	SET NO.	SHEET NO.
CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS **LOBO, BATANGAS**	TYPICAL ROAD SECTION **STRAIGHT LINE DIAGRAM**	**YVETTE C. CORDOVA** ENGINEER II PREPARED: **MYLEN M. MANALO** ENGINEER II	**MARICRIS P. VILLANUEVA** ENGINEER II DATE:	**GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:	**ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:	**SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:	R 3 | 10	11 18





NOTE: FOR FLARING OF EXTG. CONC. PAVEMENT THE EXISTING CONCRETE PAVEMENT SHALL BE CHIPPED OFF PERPENDICULARLY TO THE EXISTING BASE ABOUT 300mm WIDE TO A DISTANCE WHERE THE FLARE IS LESS THAN 1000mm AND NECESSARY. DOWEL BARS SHALL BE PROVIDED TO CONNECT THE NEW PAVEMENT WITH EXISTING PAVEMENT.

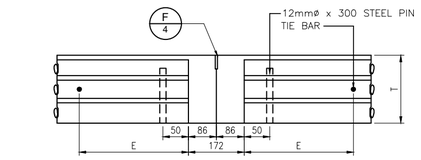




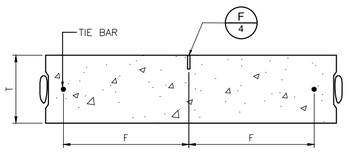
CONSTRUCTION JOINT
(TO BE USED FOR FLARING EXT'G. CONC. PAVEMENT)

FREE LONGID. CONST. OR CONTACT JOINT
(TO BE PROVIDED IN PAVEMENT MORE THAN FOUR LANES IN WIDTH)

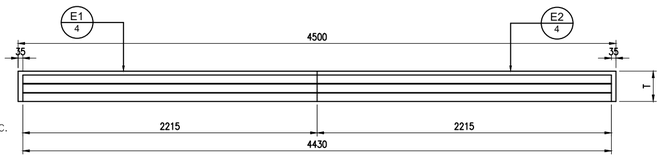
TRANSVERSE AND LONGID. CONST. JT.
(TO BE USED ONLY FOR CONNECTIONS W/ EXTG. CONCRETE PAVEMENT)

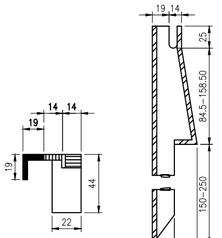


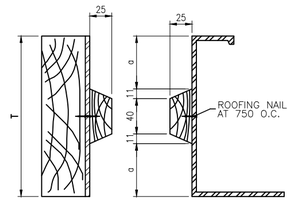
WEAKENED PLANE JT. USED IN FULL WIDTH CONST.



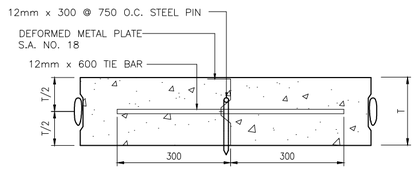
WEAKENED PLANE JT. USED IN HALF WIDTH CONST.



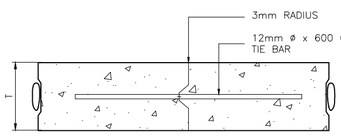




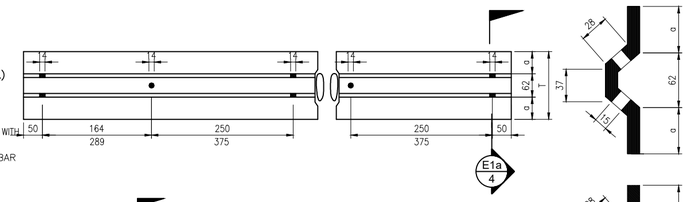
WOODEN SIDE FORM METAL SIDE FORM

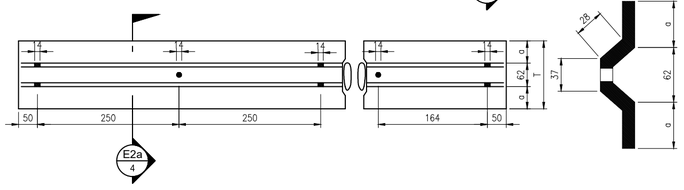


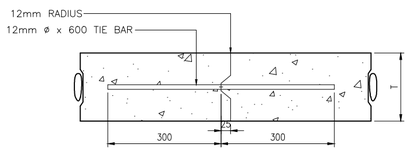
LONGITUDINAL CENTER METAL PLATE JOINTS
(TO BE USED FOR FULL WIDTH OR SIMULTANEOUS CONST. OF TWO OR MORE LANES)



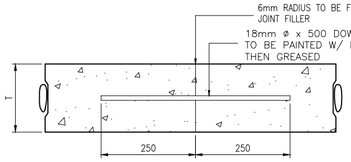
KEYED TRANSVERSE CONSTRUCTION OR CONTACT JT.
(TO BE PLACED ONLY IN MIDDLE THIRD OF NORMAL JOINT INTERVAL)



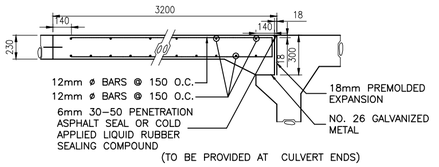




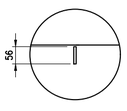
LONGITUDINAL CONSTRUCTION OR CONTACT JOINT
(TO BE USED FOR HALF WIDTH OR LANE AT TIME OF CONSTRUCTION)



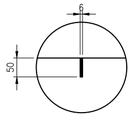
BUTT TRANSVERSE CONSTRUCTION OR CONTACT JT.
(TO BE PLACED ONLY AT LOCATION OF WEAKENED PLANE JOINT)



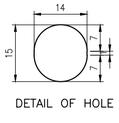
(TO BE PROVIDED AT CULVERT ENDS)



PREMOLDED JT. FILLER
PREMOLDED STRIP TYPE



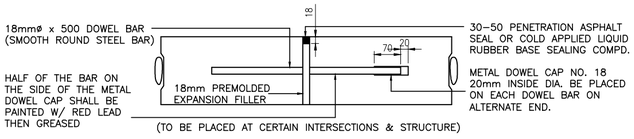
POURED ASPHALT SEAL 30-50 PENETRATION
SAWED GROOVE TYPE



DETAIL OF HOLE

TABLE OF DIMENSIONS

T	a	b	c	E	F	DOWEL BARS mmø	TIE BARS mmø
150	44	750	375–750	289	375	18	12
180	60	750	375–750	289	375	22	12
200	70	750	375–750	289	375	25	12
230	85	500	250–500	164	250	28	12
250	95	500	250–500	164	250	32	12
280	110	500	250–500	164	250	36	12
300	120	500	250 500	164	250	38	12
350	144	500	250 500	164	250	2–32BB	12



(TO BE PLACED AT CERTAIN INTERSECTIONS & STRUCTURE)

NOTES:

1. MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE "DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS, 2004".
2. CONSTRUCTIONS (CONTACT) JOINTS ARE FORMED WHEN CONCRETE ON ONE SIDE OF THE JOINT IS POURED AHEAD AND ALLOWED TO SET BEFORE POURING ON THE OTHER SIDE.
3. AT CONSTRUCTION JOINT, (LONGITUDINAL OR TRANSVERSE) CARE SHOULD BE TAKEN THAT NO CONCRETE FROM THE LAST SLAB PLACED OVERHANGS ANY PORTION OF FIRST SLAB.
4. ALL BARS SHALL BE DEFORMED STEEL BARS.
5. TYPE OF WEAKENED PLANE JOINT TO BE USED SHALL BE AS SPECIFIED IN THE PLANS AND ONLY ONE TYPE SHALL BE USED FOR THE WHOLE PROJECT.
6. MATERIAL FOR THE DEFORMED METAL PLATE SHALL BE BRAND NEW SHEET METAL GAUGE NO. 18 OF IRON FREE FROM RUST AND KINKS.
7. AT LEAST SIX(6) SUCCESSIVE DOWELED BUTT JOINTS AT NORMAL JOINT SPACING, SHALL BE PROVIDED BEFORE OR AFTER AN EXPANSION JOINT.
8. THE GROVE OR CRACK ABOVE JOINT (LONGITUDINAL OR TRAVERSE) SHALL BE SEALED WITH 30–50 PENETRATION ASPHALT SEAL OR COLD APPLIED LIQUID RUBBER COMPOUND AFTER THE CONCRETE HARDENS AND BEFORE OPENING THE PAVEMENT TO TRAFFIC. PENETRATION ASPHALT SEAL ON CONCRETE PAVEMENT JOINTS SHOULD BE POURED IN SUCH MANNER THAT SPILLING WILL BE ELIMINATED/PREVENTED THUS, PROVIDE SMOOTH RIDING/LEVELLING SURFACE.
9. ALL TRANSVERSE JOINTS, EXCEPT CONSTRUCTION JOINTS, SHALL BE CONTINUOUS FROM EDGE TO EDGE.
10. ALL LONGITUDINAL JOINTS SHALL MEET AT INTERSECTIONS WITH NO GAPSOR OFFSETS.
11. AVOID DISCONNECTION OF FORMWORKS ALONG CURB.
12. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
13. TRANSVERSE CONST JOINTS SHALL BE PROVIDED AT THE END OF ANY RUN WHERE LAYING OF CONCRETE HAS BEEN STOPPED FOR THIRTY (30) MINUTES OR LONGER.
14. TRANSVERSE CONST JOINTS WHICH OCCUR AT LOCATION OF WEAKEND PLANE JT. SHALL BE BUTT JTS. WITH DOWELS, IF THE JT. OCCURS IN THE MIDDLE THIRD OF THE WEAKEND JT. INTERVAL (1500 TO 3000), IT SHALL BE KEYED JOINTS WITH THE BARS.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE No. IV-A
BATANGAS 2ND DISTRICT ENGINEERING OFFICE
KUMINTANG ILAYA, BATANGAS CITY

PROJECT NAME AND LOCATION:
CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS
LOBO, BATANGAS

SHEET CONTENT:
STANDARD PORTLAND CEMENT CONCRETE PAVEMENT

DRAFTED:
YVETTE C. CORDOVA
ENGINEER II

PREPARED:
MYLEN M. MANALO
ENGINEER II

REVIEWED :
MARICRIS P. VILLANUEVA
ENGINEER II
DATE:

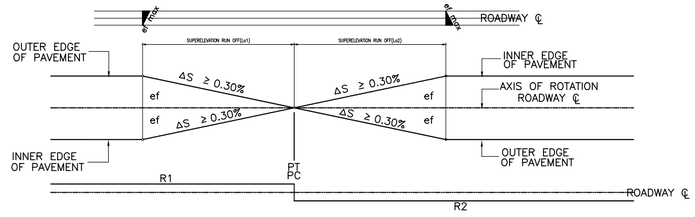
SUBMITTED :
GEMMA L. OLAN
CHIEF, PLANNING AND DESIGN SECTION
DATE:

RECOMMENDED:
ARIEL V. ARMEDILLA
ASSISTANT DISTRICT ENGINEER
DATE:

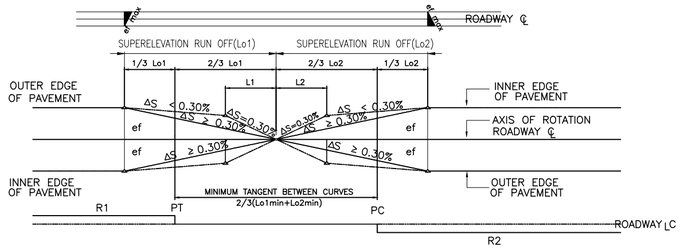
APPROVED:
SONIA D. PAGLICAUAN
DISTRICT ENGINEER
DATE:

SET NO. R 4 10

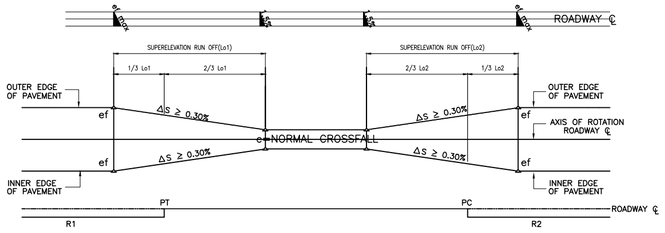
SHEET NO. 12 18



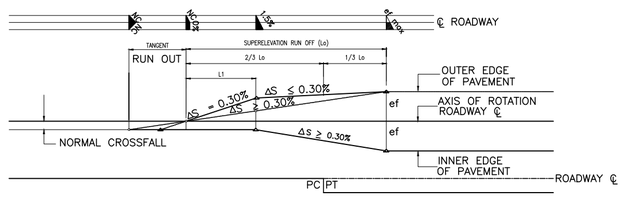
TRANSITION : CIRCULAR CURVE - CIRCULAR CURVE CASE 4



TRANSITION : CIRCULAR CURVE - MINIMUM STRAIGHT CIRCULAR CURVE CASE 3



TRANSITION : CIRCULAR CURVE - STRAIGHT CIRCULAR CURVE CASE 2



TRANSITION : STRAIGHT - CIRCULAR CURVE CASE 1

A D-4 SUPERELEVATION

NOT TO SCALE

RELATION OF DESIGN SPEED TO MAXIMUM RELATIVE PROFILE GRADIENTS (ΔS)							
DESIGN SPEED STANDARD	30km/h	40km/h	50km/h	60km/h	70km/h	80km/h	90km/h
	MAXIMUM ΔS (%)						
AASHTO	0.75 (1/133)	0.70 (1/143)	0.65 (1/150)	0.60 (1/167)	0.55 (1/182)	0.50 (1/200)	0.47 (1/213)

MINIMUM LENGTH REQUIRED FOR SUPERELEVATION RUNOFF							
SUPERELEVATION (%)	2-LANES (LANE WIDTH = 3.05 METERS)						
	DESIGN SPEED (km/h)						
	30	40	50	60	70	80	80
2	18	18	18	18	18	18	18
3	21	25	25	25	25	25	25
4	21	25	30	35	35	35	35
5	22	28	30	35	40	40	40
6	25	30	30	35	40	50	50
7	30	32	35	38	43	50	50
8	35	35	40	42	45	50	55

NOTES :

1. THE ROUNDED VALUES OF SUPERELEVATION RUNOFF LENGTH ARE CALCULATED USING THE MAXIMUM RELATIVE SLOPE BETWEEN THE PROFILES OF THE EDGE (INCLUDE TO CONSIDER WIDENING ON CURVE) OF TRAVELED WAY AND CENTERLINE.
2. ΔS SHOULD NOT BE LESS THAN 0.30% FOR EFFECTIVE DRAINAGE
3. WHEN THE SUPERELEVATION IS GREATER THAN 3% THEN THE SLOPE OF THE LOWER SHOULDER SHALL BE THE SAME AS FOR THE TRAVELLED WAY.
4. IF THE SUPERELEVATION VARIES FROM 7% TO 8% THEN THE SLOPE OF THE HIGHER SHOULDER WILL VARY FROM 0% TO 1% RESPECTIVELY.
5. SUPERELEVATION CAN BE ATTAINED BY REVOLVING THE PAVEMENT ABOUT THE ROADWAY CENTERLINE
6. IN ORDER TO DISTINGUISH WHICH EDGE OF THE CURVE IS TO BE SUPERELEVATED OR TILTED, THE FULL LINE( ) REPRESENTS THE LEFT SIDE, AND THE BROKEN LINES(------) REPRESENTS THE RIGHT SIDE.

LEGEND :

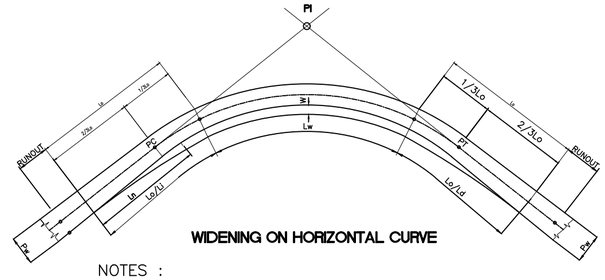
KPH – KILOMETER PER HOUR
Lo – SUPERELEVATION RUN-OFF
RC – REMOVE ADVERSE CROWN, SUPERELEVATE AT NORMAL CROWN SLOPE
PC – POINT OF CURVATURE
PT – POINT OF TANGENCY
℄ – CENTERLINE
R – RADIUS
ef – FULL SUPERELEVATION IN %
L1orL2 – LENGTH BETWEEN SUPERELEVATION 0% AND 1.5% FOR PCCP.
NC – NORMAL CROWN (1.5% FOR PCCP)
ΔS – RELATIVE SLOPE OF PAVEMENT EDGE %
V – DESIGN SPEED

DESIGN VALUES FOR SUPERELEVATION RELATED TO DESIGN SPEED AND HORIZONTAL RADIUS						
DESIGN SPEED	30km/h	40km/h	50km/h	60km/h	70km/h	80km/h
e %	8% (MAX.)	8% (MAX.)	8% (MAX.)	8% (MAX.)	8% (MAX.)	8% (MAX.)
	RADIUS (m)					
NC	ABOVE 500	ABOVE 800	ABOVE 1200	ABOVE 1500	ABOVE 2000	ABOVE 2500
RC	500 ~400	800 ~600	1200 ~800	1500 ~1200	2000 ~1500	2500 ~2000
2	400 ~195	600 ~346	800 ~540	1200 ~777	1500 ~1080	2000 ~1390
3	194 ~131	345 ~232	539 ~363	776 ~522	1079 ~720	1389 ~942
4	130 ~99	231 ~175	362 ~273	521 ~393	719 ~540	941 ~705
5	98 ~79	174 ~141	272 ~219	392 ~316	539 ~433	704 ~567
6	78 ~66	140 ~117	218 ~183	315 ~264	432 ~360	566 ~472
7	65 ~57	116 ~101	182 ~157	263 ~226	359 ~310	471 ~404
8	56 ~30	100 ~50	156 ~80	225 ~120	309 ~160	403 ~230

NOTE :

IN MOUNTAINOUS SECTIONS AND AT BRIDGE APPROACHES, THE DESIGN SPEED OF 30 KPH AND THE MAXIMUM SUPERELEVATION OF 4% INSTEAD OF 8% WILL BE ADOPTED WHEN NECESSARY.

WIDENING (W) OF TWO-LANES PAVEMENT ON CURVE (BASED ON SEMI-TRAILER (WB-12[WB-40] DESIGN VEHICLES)							
R	DESIGN SPEED (KPH)						
	30	40	50	60	70	80	90
30	1.50						
40	1.50						
50	1.50	1.50					
60	1.50	1.50					
70	1.50	1.50					
80	1.50	1.50	1.50				
90	1.30	1.50	1.50				
100	1.30	1.50	1.50				
110	1.30	1.30	1.30				
120	1.10	1.20	1.30	1.40			
130	1.10	1.10	1.20	1.30			
140	1.10	1.10	1.20	1.30			
150	0.90	1.00	1.10	1.10			
160	0.90	0.90	1.00	1.10	1.20		
170	0.80	0.90	1.00	1.10	1.20		
190	0.80	0.80	1.00	1.10	1.20		
200	0.70	0.80	1.00	1.10	1.20		
220	0.70	0.70	0.80	0.90	1.00		
230	0.60	0.70	0.80	0.90	1.00	1.00	
250	0.60	0.70	0.80	0.90	1.00	1.00	
260	0.60	0.70	0.80	0.80	0.90	0.90	1.00
280	0.60	0.60	0.70	0.80	0.90	0.90	1.00
290	0.60	0.60	0.70	0.80	0.90	0.90	1.00
300		0.60	0.70	0.80	0.90	0.90	1.00
340		0.60	0.60	0.70	0.70	0.80	0.90
370			0.60	0.70	0.70	0.80	0.90
400			0.60	0.70	0.70	0.80	0.90
460				0.60	0.70	0.70	0.80
500				0.60	0.70	0.70	0.80
600					0.60	0.60	0.70
700							0.60
800							



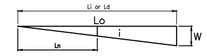
WIDENING ON HORIZONTAL CURVE

NOTES :

1. WIDENING SHALL BE APPLIED ON THE INNER SIDE OF THE CURVE AND SHALL BE ATTAINED LINEARLY ALONG THE REQUIRED SUPERELEVATION RUN-OFF
2. WIDENING SHALL BE APPLIED ON TWO-LANE PAVEMENT.
3. ALGEBRAIC DIFFERENCE OF CROSS-OVER BETWEEN SUPERELVATION (e) AND SLOPE OF SHOULDER SHOULD NOT BE MORE THAN 7%.
4. IF SUPERELEVATION e>7% SHOULDER SHALL BE PAVED.

LEGEND :

W = WIDENING WIDTH
Lo = LENGTH OF SUPERELEVATION RUN-OFF
Lw = LENGTH WIDTH OF FULL WIDENING
Lo/Li = SUPERELEVATION RUNOFF/TRANSITION LENGTH OF WIDENING (INCREASING SECTION)
Lo/Ld = SUPERELEVATION RUNOFF/TRANSITION LENGTH OF WIDENING (DECREASING SECTION)
Pw = NORMAL PAVEMENT WIDTH



$$i = \frac{W\ Ln}{Li\ or\ Ld}$$

METHODS OF WIDENING ON TRANSITION LENGTH

B D-4 PAVEMENT WIDENING

NOT TO SCALE

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PROJECT NAME AND LOCATION:
CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS
LOBO, BATANGAS

SHEET CONTENT:
GEOMETRIC DESIGN STANDARD
SUPER ELEVATION AND PAVEMENT WIDENING

DRAFTED: **YVETTE C. CORDOVA** ENGINEER II
PREPARED: **MYLEN M. MANALO** ENGINEER II

REVIEWED : **MARICRIS P. VILLANUEVA** ENGINEER II DATE:

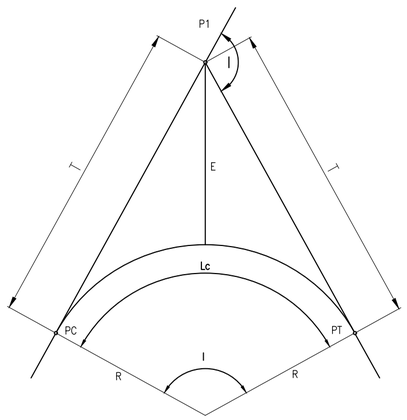
SUBMITTED : **GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:

RECOMMENDED: **ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:

APPROVED: **SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:

SET NO. R 5 10

SHEET NO. 13 18



A 3 SIMPLE CURVE (CIRCULAR)
SCALE NTS

FORMULA:

T = R(tan I/2)

LC = 20(I)/D

E = T(tan I/4)

STA. PC = STA. PI−T

STA. PT = STA. PC+LC

WHERE:

PI = POINT OF HORIZONTAL INTERSECTION

I = INTERSECTION ANGLE (CENTRAL ANGLE)

T = LENGTH OF TANGENT

R = HORIZONTAL RADIUS

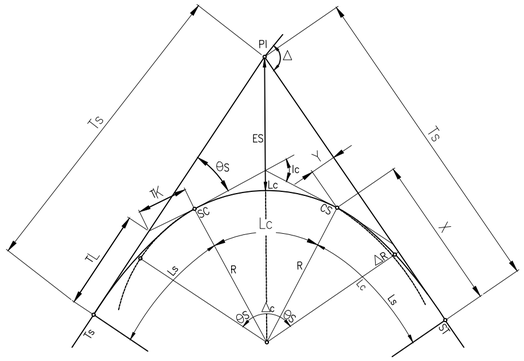
Lc = LENGTH OF CIRCULAR CURVE

E = TOTAL EXTERNAL DISTANCE

PC = POINT OF CURVATURE

PT = POINT OF TANGENCY

NOTE:
NO HORIZONTAL CURVE IS REQUIRED WHEN
THE INTERSECTION (CENTRAL) ANGLE (I)
IS LESS THAN ONE DEGREE (1° 0' 0")



B 3 HORIZONTAL CURVE W/ (CLOTHOID SPIRAL)
SCALE NTS

WHERE:

PI = POINT OF INTERSECTION

Δ = INTERSECTION ANGLE

R = RADIUS OF CIRCULAR CURVE

Ls = LENGTH OF SPIRAL

A = PARAMETER OF CLOTHOID

θS = SPIRAL ANGLE

X,Y = COORDINATES OF POINT SC AND CS WITH RESPECT TO MAIN TANGENTS

ΔR = OFFSET BETWEEN CIRCULAR CURVE AND MAIN TANGENT ("THROW" OF SPIRAL)

Ts = TOTAL TANGENT DISTANCE

TL = LONG TANGENT OF SPIRAL

TK = SHORT TANGENT OF SPIRAL

Δc = CENTRAL ANGLE OF CIRCULAR CURVE

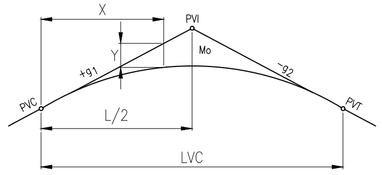
LC = LENGTH OF CIRCULAR CURVE

TS = BEGINNING OF SPIRAL CURVE

SC = BEGINNING OF CIRCULAR CURVE

CS = END OF CIRCULAR CURVE

ST = END OF SPIRAL CURVE

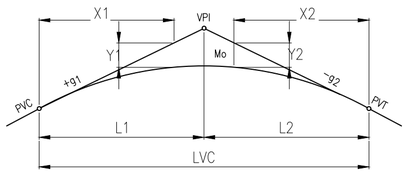


B-1 3 SYMMETRICAL
SCALE NTS

FORMULA:

$Mo = \frac{LVC(g2-g1)}{800}$

$Y = \frac{X^2\,(Mo)}{(L/2)^2}$



B-2 3 UNSYMMETRICAL
SCALE NTS

FORMULA:

$Mo = \frac{L1L2(g2-g1)}{200LVC}$

$Y1 = \frac{(Mo)(X1)^2}{(L1)^2}$

$Y2 = \frac{(Mo)(X2)^2}{(L2)^2}$

WHERE:

PVI = POINT OF VERTICAL INTERSECTION

PVC = POINT OF VERTICAL CURVE

PVT = POINT OF VERTICAL TANGENCY

LVC = LENGTH OF VERTICAL TANGENCY

g1,g2 = GRADIENT

Mo = MIDDLE ORDINATE

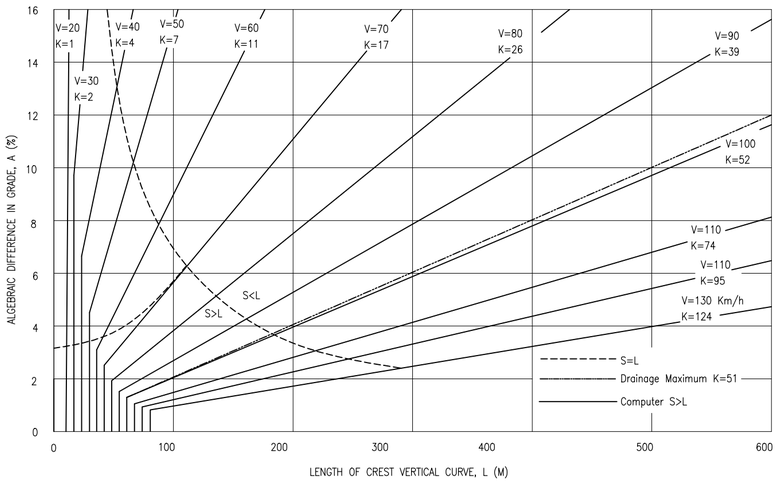
X1,X2 = DISTANCE FROM PVC OR PVT TO ANY POINT OF CURVE

Y1,Y2 = VERTICAL OFFSET W/ RESPECT TO DISTANCE X

NOTE:
NO VERTICAL CURVE IS REQUIRED WHEN THE
ALGEBRAIC DIFFERENCE IN GRADES IS LESS THAN 0.50 %

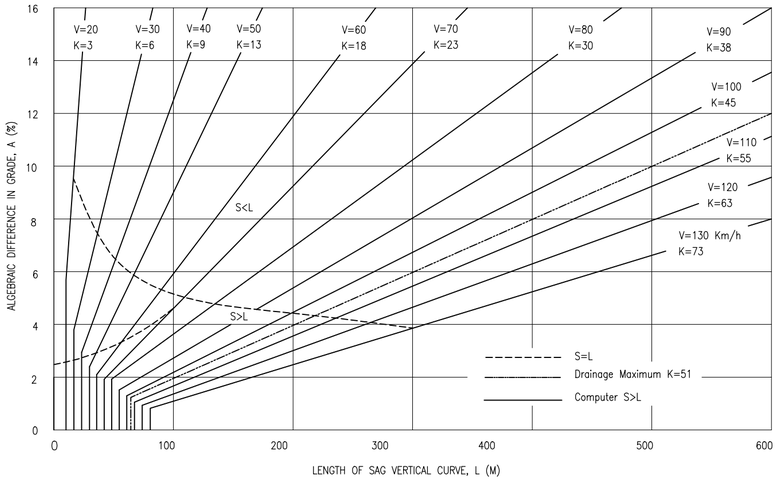
C 3 HORIZONTAL CURVE
SCALE NTS

D 3 VERTICAL CURVE
SCALE NTS



CREST VERTICAL CURVES

BASED ON MINIMUM STOPPING SIGHT DISTANCE(HEADLIGHT DISTANCE)



SAG VERTICAL CURVES

BASED ON MINIMUM STOPPING SIGHT DISTANCE(HEADLIGHT DISTANCE)

FORMULA:

LVC = KA

A = G2−G1

LEGEND:

A − ALGEBRAIC DIFFERENCE OF GRADIENTS (%)

K − RATE OF VERTICAL CURVATURE

E 3 DESIGN CONTROLS VERTICAL CURVES
SCALE NTS

STD−H ROAD GEOMETRIC DESIGN, HOR. AND VERT. CURVES
SCALE AS SHOWN

1.0 SPECIFICATIONS & REFERENCE

1.1 ALL WORKS SHALL COMPLY WITH THE DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES AND AIRPORTS", 2013 EDITION, VOLUME II, SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS PERTAINING TO THIS PROJECT.

1.2 DPWH DESIGN GUIDELINES AND CRITERIA STANDARDS 2015 EDITION AS REFERENCE.

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PROJECT NAME AND LOCATION:
CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS
LOBO, BATANGAS

SHEET CONTENT:
GEOMETRIC DESIGN STANDARD HORIZONTAL AND VERTICAL

DRAFTED: **YVETTE C. CORDOVA**, ENGINEER II
PREPARED: **MYLEN M. MANALO**, ENGINEER II

REVIEWED : **MARICRIS P. VILLANUEVA**, ENGINEER II, DATE:

SUBMITTED : **GEMMA L. OLAN**, CHIEF, PLANNING AND DESIGN SECTION, DATE:

RECOMMENDED: **ARIEL V. ARMEDILLA**, ASSISTANT DISTRICT ENGINEER, DATE:

APPROVED: **SONIA D. PAGLICAUAN**, DISTRICT ENGINEER, DATE:

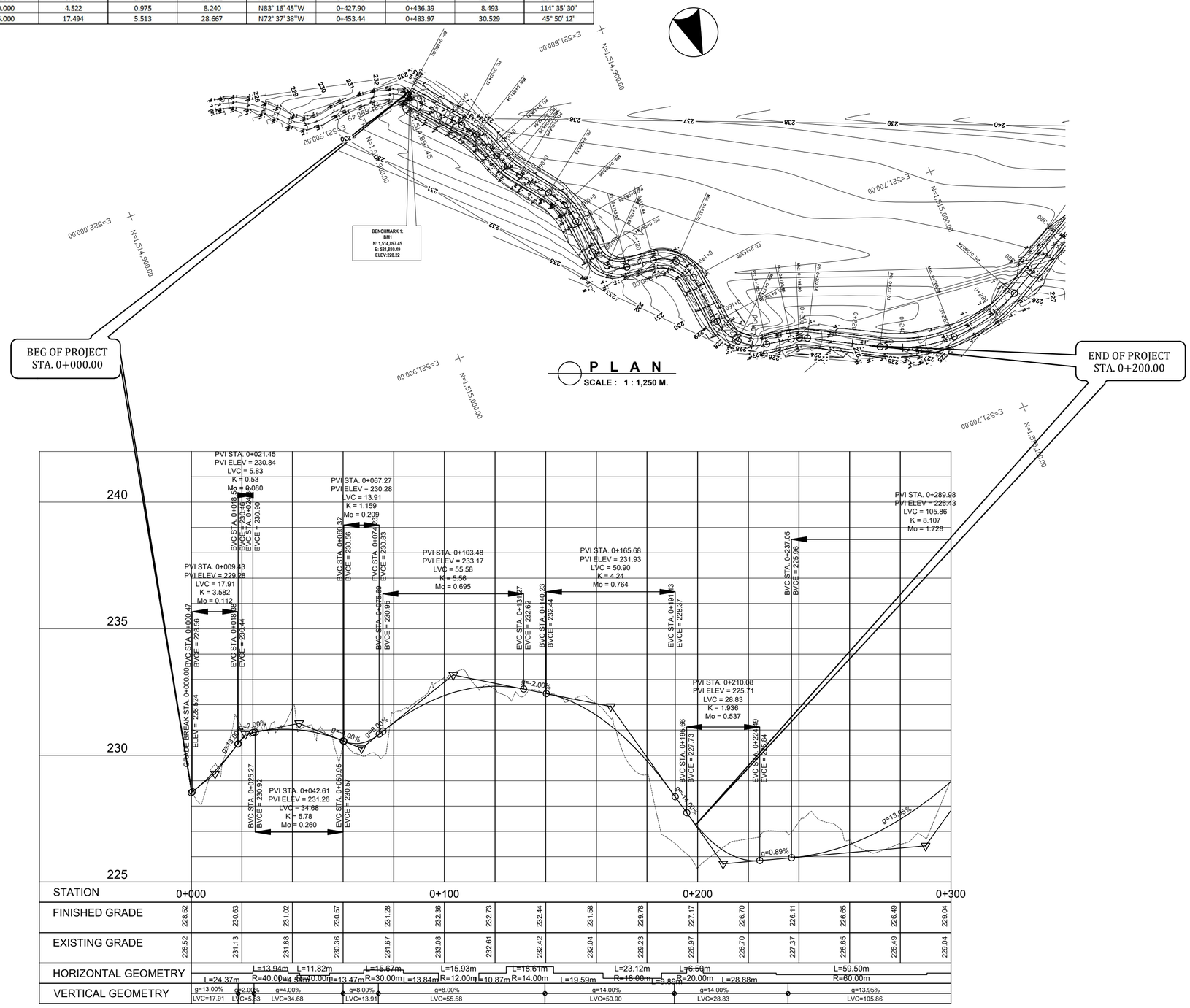
SET NO. R 6 10

SHEET NO. 14 18

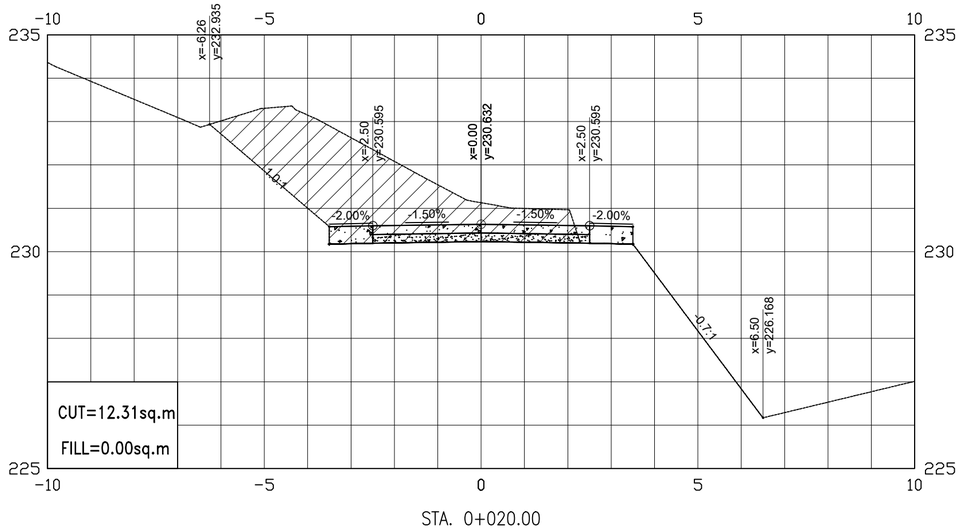
PI NO.	STATION	COORDINATES		AZIMUTH	DISTANCE	Included Angle	RADIUS	EXTERNAL TANGENT	EXTERNAL SECANT	CHORD LENGTH	CHORD DIRECTION	STATION OF PC	STATION OF PT	Lc(m)	D
		EASTING	NORTHING				(m)	(m)	(m)	(m)					
POT				140° 11' 58"											
PI 1	0+031.41	521860.7121	1514920.206	160° 09' 54"	31.41	160° 02' 05"	40.000	7.041	0.615	13.868	N29° 49' 04"W	0+024.37	0+038.31	13.938	28° 38' 52"
PI 2	0+048.79	521854.7647	1514936.694	143° 14' 25"	10.487	163° 04' 31"	40.000	5.951	0.440	11.773	N28° 17' 51"W	0+042.84	0+054.66	11.816	28° 38' 52"
PI 3	0+076.14	521838.3456	1514958.674	173° 09' 35"	21.485	150° 04' 50"	30.000	8.016	1.052	15.488	N21° 48' 00"W	0+068.13	0+083.79	15.666	38° 11' 50"
PI 4	0+107.02	521834.6239	1514989.699	97° 04' 59"	23.231	103° 55' 24"	12.000	9.388	3.236	14.789	N44° 52' 43"W	0+097.64	0+113.57	15.933	95° 29' 35"
PI 5	0+135.41	521803.6301	1514993.55	173° 15' 56"	21.844	103° 49' 03"	14.000	10.974	3.788	17.274	N44° 49' 33"W	0+124.44	0+143.05	18.615	81° 51' 04"
PI 6	0+176.11	521798.467	1515037.274	99° 40' 12"	33.054	106° 24' 16"	18.000	13.465	4.479	21.564	N43° 31' 56"W	0+162.64	0+185.76	23.121	63° 39' 43"
PI 7	0+198.93	521772.2134	1515041.748	118° 18' 14"	13.167	161° 21' 58"	20.000	3.281	0.267	6.476	N71° 00' 47"W	0+195.65	0+202.16	6.504	57° 17' 45"
PI 8	0+263.49	521715.3233	1515072.385	61° 59' 03"	61.334	123° 10' 49"	60.000	32.455	8.215	57.093	S89° 53' 39"W	0+231.03	0+290.54	59.501	19° 05' 55"
PI 9	0+370.32	521616.7011	1515018.802	121° 03' 08"	79.783	120° 25' 56"	12.000	6.868	1.826	11.922	N88° 43' 54"W	0+363.45	0+375.93	12.476	95° 29' 35"
PI 10	0+432.42	521562.4206	1515051.485	72° 23' 23"	56.492	131° 20' 15"	10.000	4.522	0.975	8.240	N83° 16' 45"W	0+427.90	0+436.39	8.493	114° 35' 30"
PI 11	0+470.94	521525.1836	1515039.665	142° 21' 22"	34.546	110° 02' 01"	25.000	17.494	5.513	28.667	N72° 37' 38"W	0+453.44	0+483.97	30.529	45° 50' 12"

Table of Existing Benchmarks

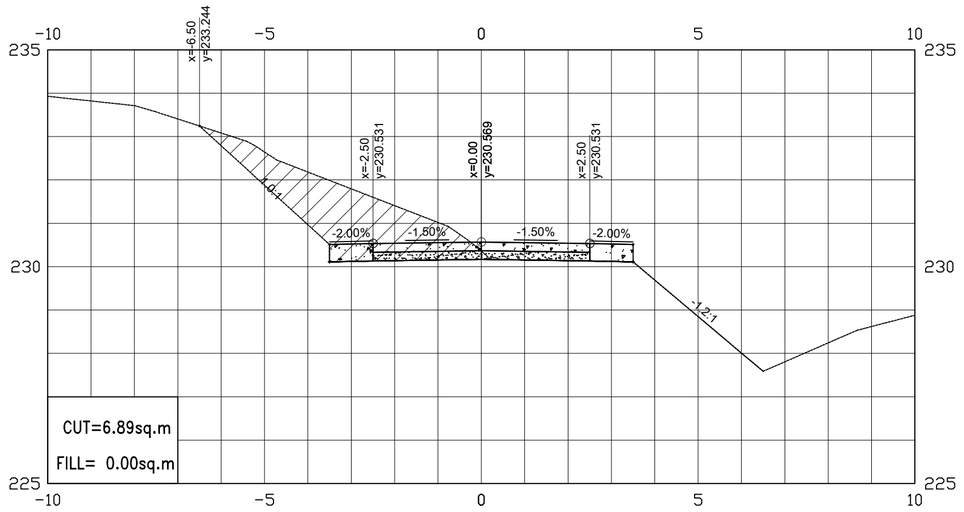
BM	NORTHING	EASTING	ELEVATION	REMARKS
1	1,514,897.45	521,880.49	228.22	BM1



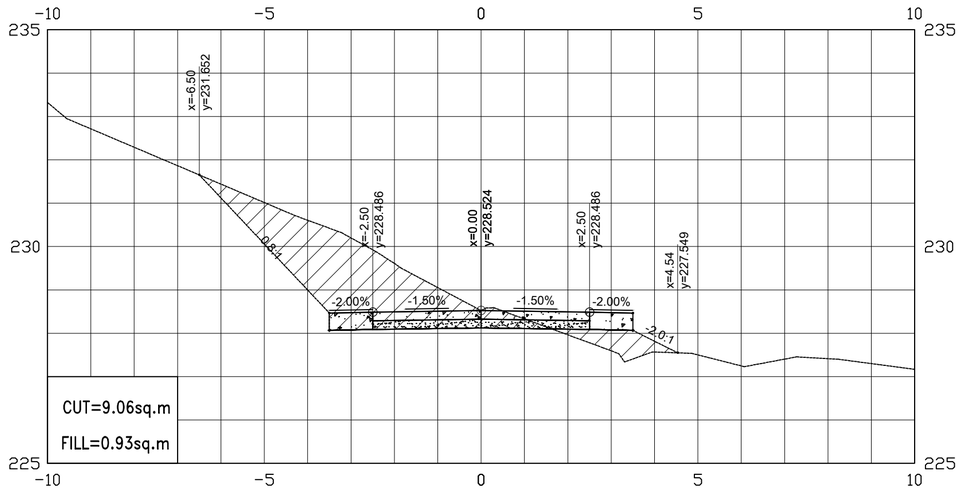
REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE No. IV-A BATANGAS 2ND DISTRICT ENGINEERING OFFICE KUMINTANG ILAYA, BATANGAS CITY	PROJECT NAME AND LOCATION: **CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS** **LOBO, BATANGAS**	SHEET CONTENT: GEOMETRIC DESIGN STANDARD HORIZONTAL AND VERTICAL	DRAFTED: **YVETTE C. CORDOVA** ENGINEER II PREPARED: **MYLEN M. MANALO** ENGINEER II	REVIEWED : **MARICRIS P. VILLANUEVA** ENGINEER II DATE:	SUBMITTED : **GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:	RECOMMENDED: **ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: **SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:	SET NO. R 7 | 10	SHEET NO. 15 18



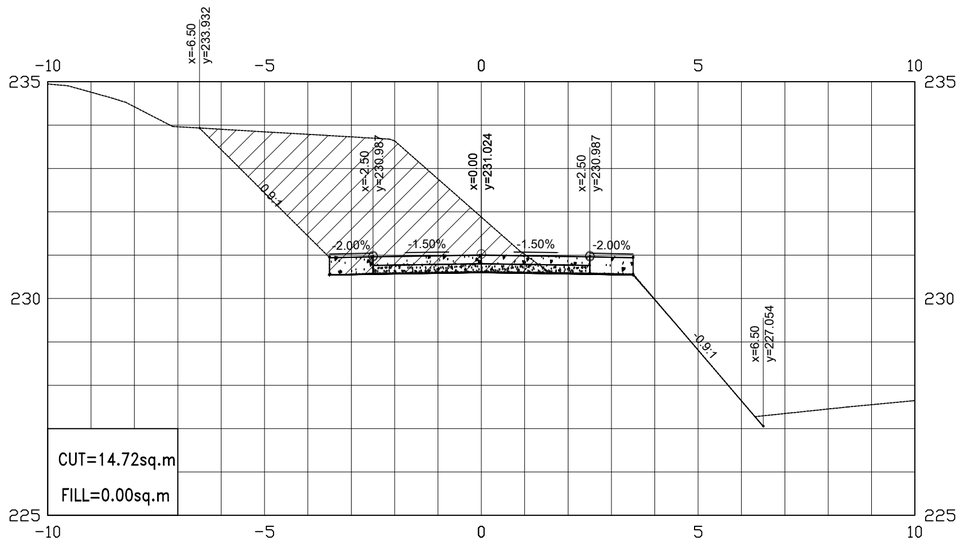
STA. 0+020.00



STA. 0+060.00



STA. 0+000.00



STA. 0+040.00

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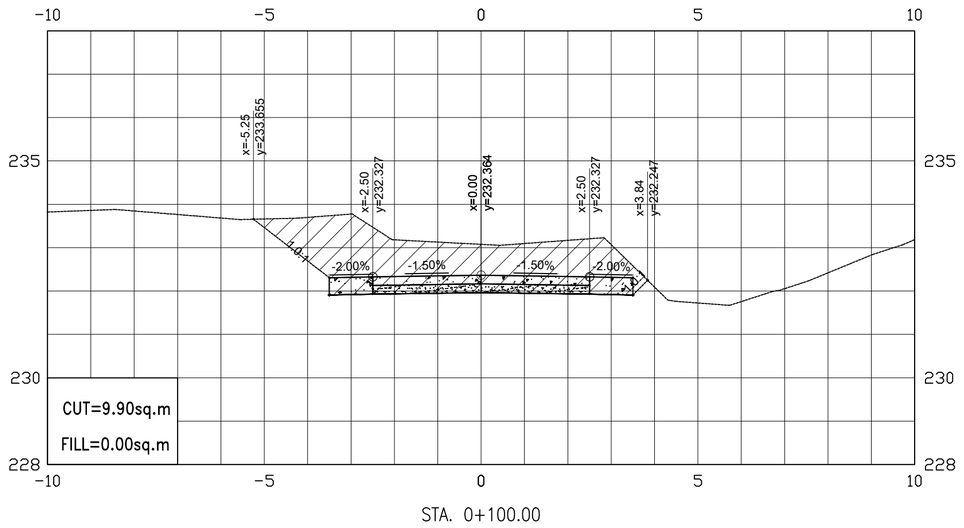
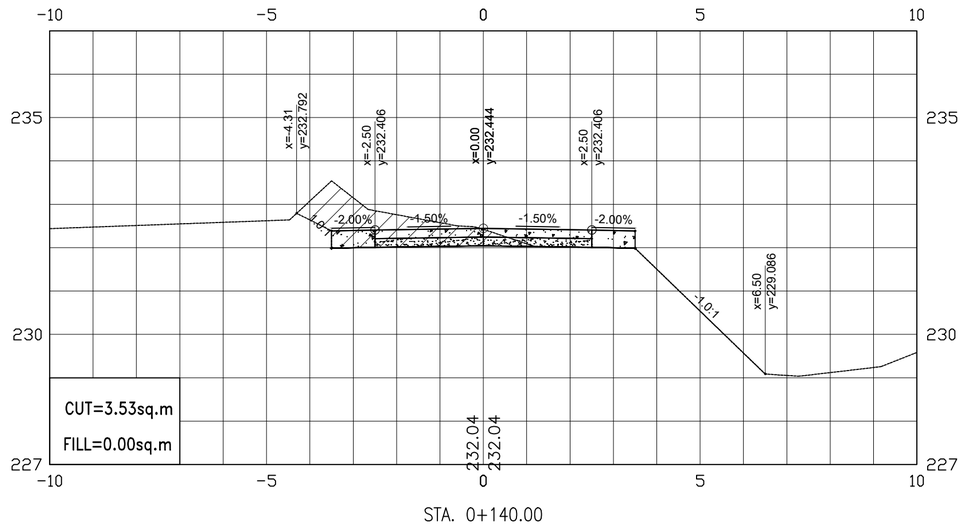
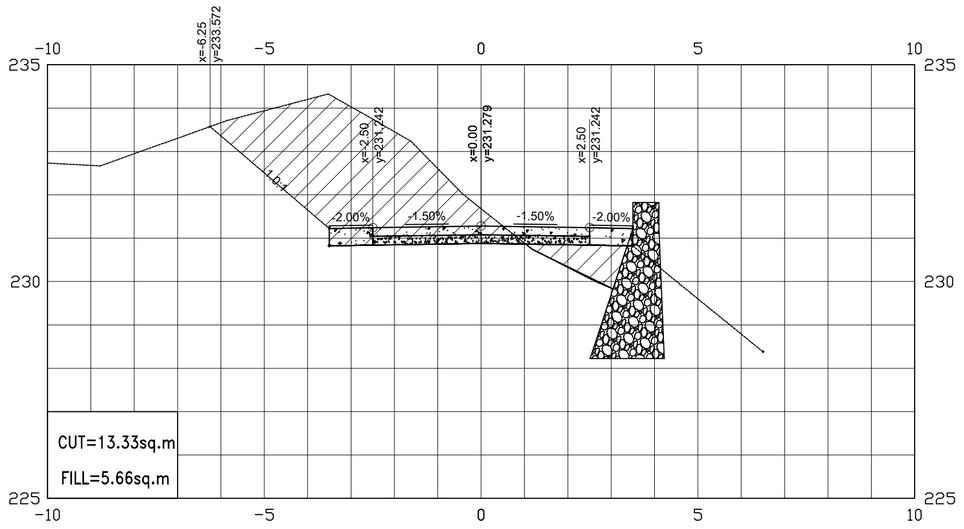
PROJECT NAME AND LOCATION:	SHEET CONTENT:	DRAFTED:	REVIEWED :	SUBMITTED :	RECOMMENDED:	APPROVED:	SET NO.	SHEET NO.
CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS **LOBO, BATANGAS**	CROSS SECTION (STA 0+000 - STA 0+060)	**YVETTE C. CORDOVA** ENGINEER II PREPARED: **MYLEN M. MANALO** ENGINEER II	**MARICRIS P. VILLANUEVA** ENGINEER II DATE:	**GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:	**ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:	**SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:	R 8 | 10	16 18



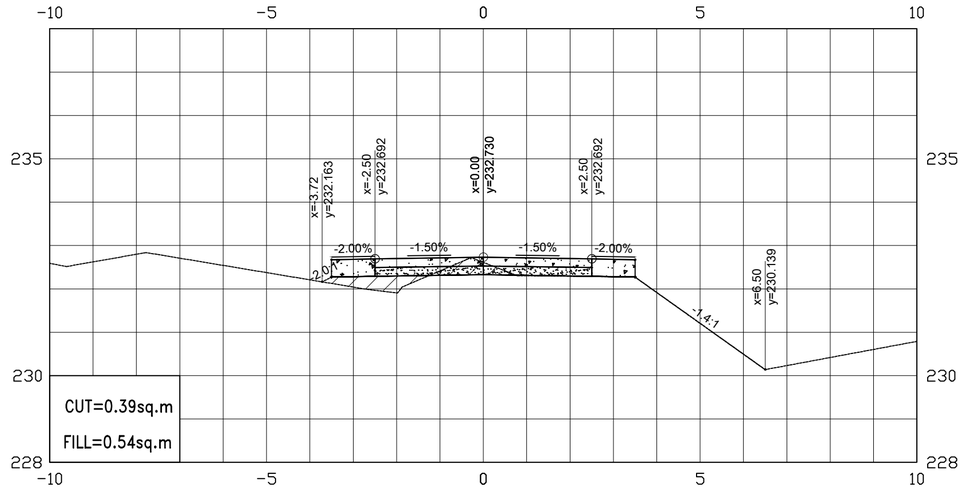
STA. 0+100.00



STA. 0+140.00



STA. 0+080.00



STA. 0+120.00

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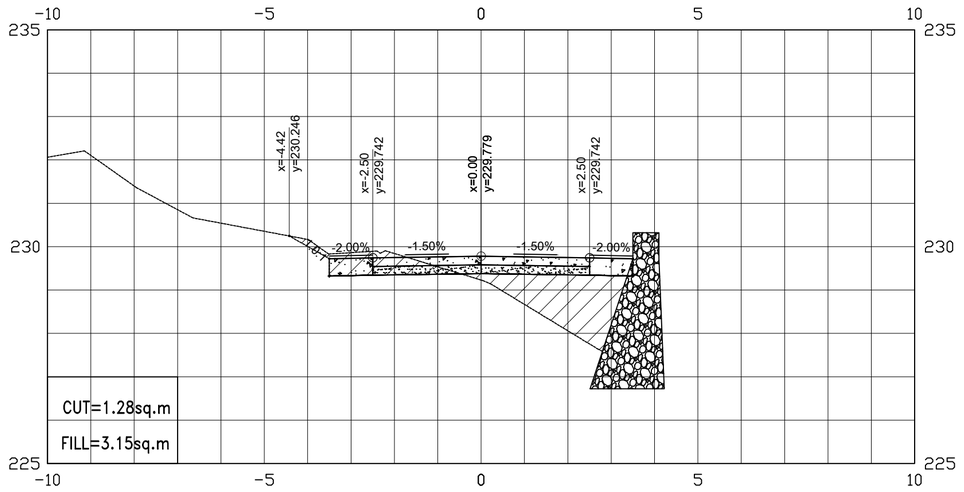
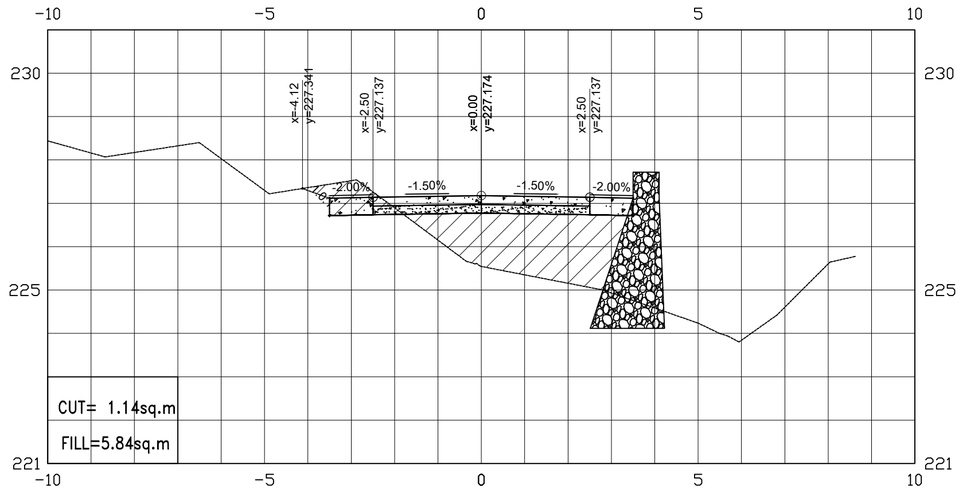
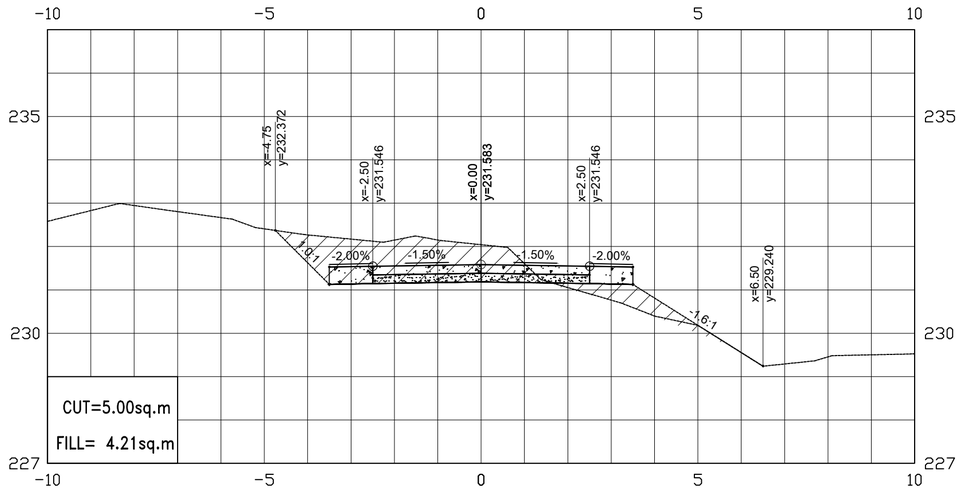
CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS **LOBO, BATANGAS**	CROSS SECTION (STA 0+080 - STA 0+140)	**YVETTE C. CORDOVA** ENGINEER II PREPARED: **MYLEN M. MANALO** ENGINEER II	**MARICRIS P. VILLANUEVA** ENGINEER II DATE:	**GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:	**ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:	**SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:	R 9 | 10	17 18



STA. 0+180.00



STA. 0+200.00



STA. 0+160.00

REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE No. IV-A BATANGAS 2ND DISTRICT ENGINEERING OFFICE KUMINTANG ILAYA, BATANGAS CITY	PROJECT NAME AND LOCATION: **CONCRETING OF BRGY. MALALIM NA SANOG FMR, BRGY. MALALIM NA SANOG, LOBO, BATANGAS** **LOBO, BATANGAS**	SHEET CONTENT: CROSS SECTION (STA 0+160 - STA 0+200)	DRAFTED: **YVETTE C. CORDOVA** ENGINEER II PREPARED: **MYLEN M. MANALO** ENGINEER II	REVIEWED : **MARICRIS P. VILLANUEVA** ENGINEER II DATE:	SUBMITTED : **GEMMA L. OLAN** CHIEF, PLANNING AND DESIGN SECTION DATE:	RECOMMENDED: **ARIEL V. ARMEDILLA** ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: **SONIA D. PAGLICAUAN** DISTRICT ENGINEER DATE:	SET NO. R 10 10	SHEET NO. 18 18