

SCHEDULE OF LOADS

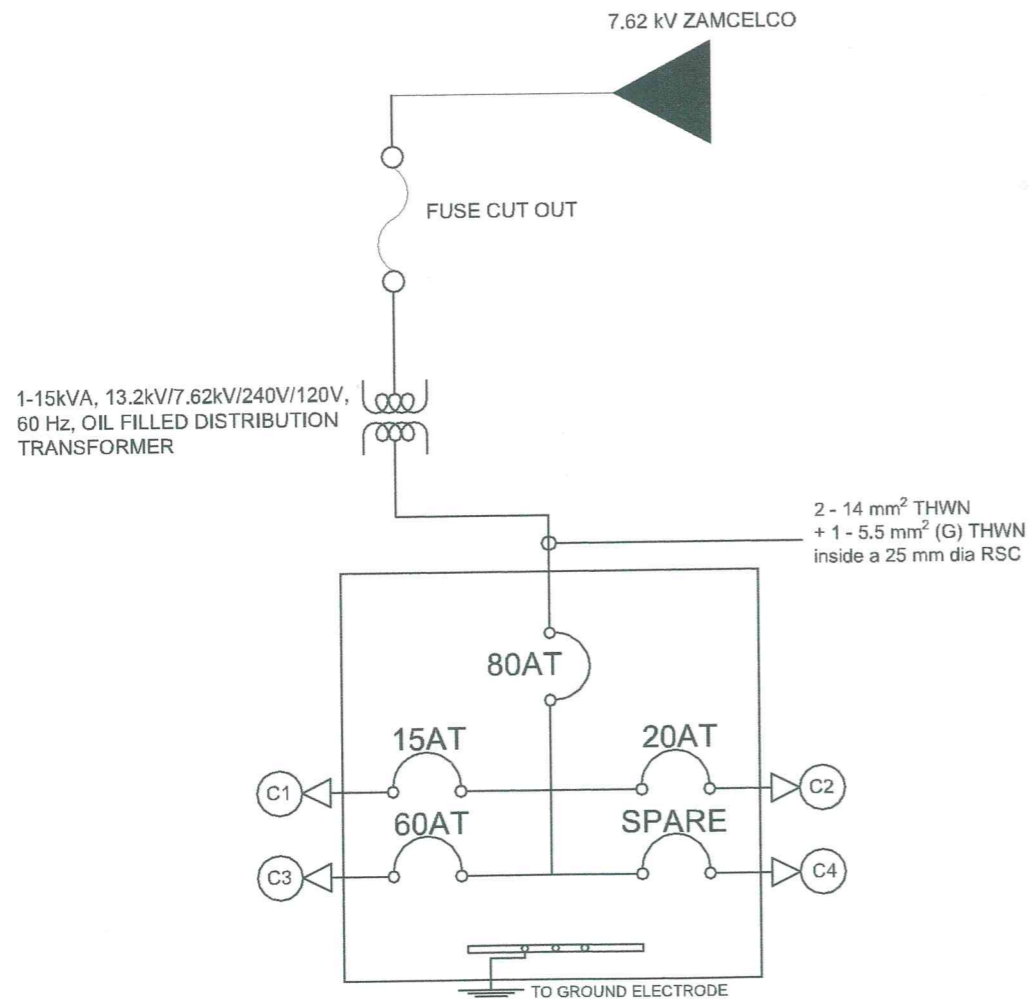
MAIN PANEL BOARD (MPB)															
LOCATION: GUARD HOUSE															
CKT NO.	LOAD DESCRIPTION	LOAD RATING				NOMINAL VOLTAGE	BREAKER RATING				CONDUCTOR			CONDUIT	
		PF	WATTS	CONNECTED VA	CURRENT (A)		AT	AF	KAIC	POLES	SIZE IN SQ. MM	SIZE IN SQ. MM (G)	TYPE	SIZE IN MM	TYPE
1	17 - 11W LED BULB	0.85	434	511	2.22	230	15	100	10	2	2 - 2.0	1 - 2.0	THWN	20	PVC
	1 - 13W LED BULB														
	5 - 30W LED BULB														
	4 - 21W LED TUBE LIGHT														
2	5 - TWO GANG CONVENIENCE OUTLET	0.85	1530	1800	7.83	230	20	100	10	2	2 - 3.5	1 - 2.0	THWN	20	PVC
3	SPECIAL POWER OUTLET FOR WELDING MACHINE	0.85	4250	5000	21.74	230	60	100	10	2	2 - 5.5	1 - 3.5	THWN	20	PVC
4	SPARE	0.85	1275	1500	6.52	230	20	100	10	2	2 - 3.5	1 - 2.0	THWN	20	PVC
TOTAL CONNECTED LOADS		0.85	7489	8811	38.31	230	80	100	10	2	2 - 14.0	1 - 5.5	THWN	25	RSC

DESIGN COMPUTATION AND ANALYSIS (MPB)

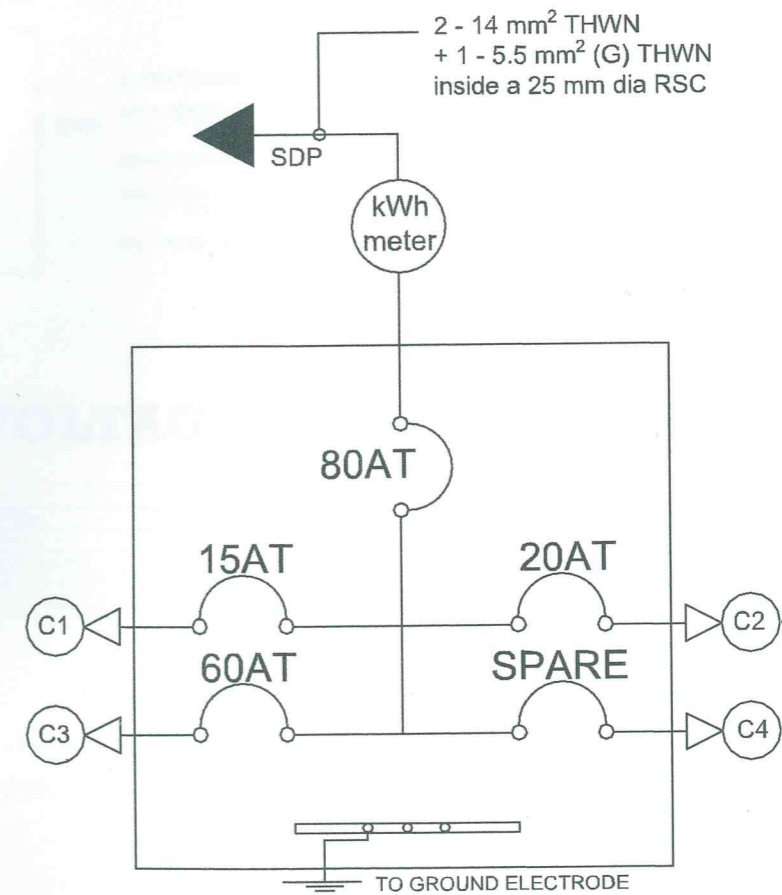
CONDUCTOR SIZE:
 $38.31A + 21.73A(25\%) = 43.74A$
USE: 2 - 14 SQ. MM THWN + 1 - 5.5 THWN (G) in a 25mm Diameter RSC

OVERCURRENT PROTECTIVE DEVICE OF MAIN PANEL BOARD:
 $(38.31 - 21.74)A + 60A = 76.57A$
USE: 80 AT, 240V, 60Hz, 2P, BOLT-ON TYPE CIRCUIT BREAKER

RISER DIAGRAM OF THE SYSTEM

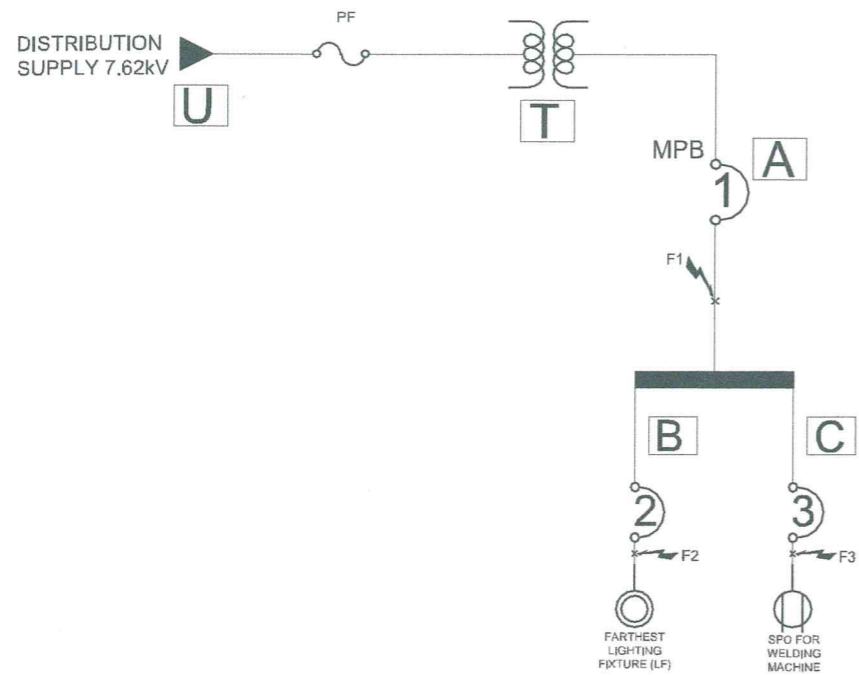


SINGLE LINE DIAGRAM

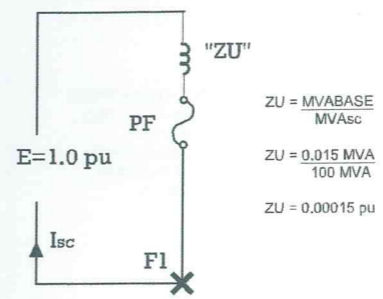


REV.	DATE	BY	DESCRIPTION	PROJECT:	DRAWN BY:	PREPARED BY:	REVIEWED BY:	SUBMITTED BY:	RECOMMENDING PROJECT IMPLEMENTATION:	APPROVED FOR PROJECT IMPLEMENTATION:	SHEET NO.
				PROPOSED 300 CU. M. REINFORCED CONCRETE GROUND TANKS AT BALUNO & BANDERA-DULJAN FOR DUMALON WATER SYSTEM	ARTHUR A. REYES PRINCIPAL DRAFTSMAN B - DESIGN DIVISION	JEREMIAH R. CRUZ ENGINEER B (I.O.) - DESIGN DIVISION	REX D. SALE, JR. SUPERVISING ENGINEER A - DESIGN DIVISION	EDITO M. BAUTISTA, JR. CIC - DESIGN DIVISION	MARIA ACOSTA - DE FIESTA DM A - ENGINEERING & CONSTRUCTION DEPARTMENT CIC - TECHNICAL SERVICES GROUP	REYNALDO R. CABILN ACTING GENERAL MANAGER	53

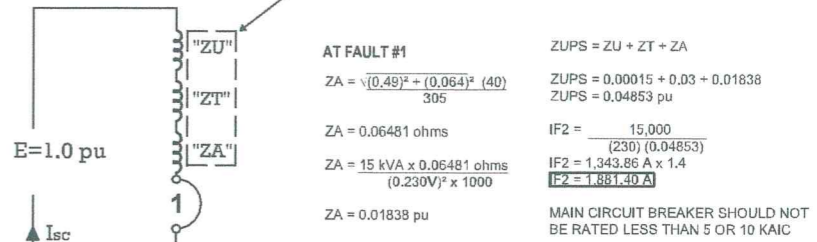
SINGLE LINE DIAGRAM WITH ASSUMED FAULT POINTS



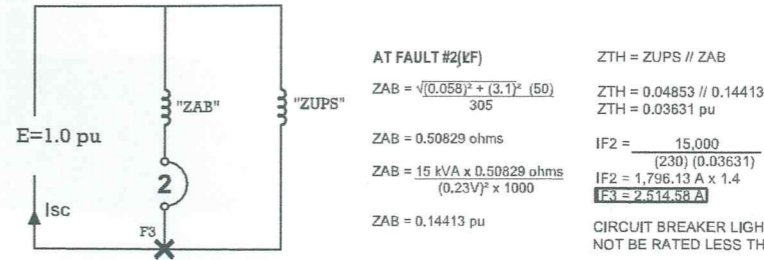
IMPEDANCE DIAGRAM :



IMPEDANCE DIAGRAM :



IMPEDANCE DIAGRAM :



IMPEDANCE DIAGRAM :



SHORT CIRCUIT ANALYSIS AND CALCULATION

DATA NEEDED:
 MVABASE: 15 KVA
 MVA_{sc}: 100 MVA
 KVABASE (pri): 7.62 kV
 KVABASE (sec): 230 V
 %Z OF TRANSFORMER: 3%

CONDUCTOR PER UNIT IMPEDANCE TABLE										
ID	CONDUCTOR DESCRIPTION	CONDUCTOR SIZE	LENGTH	CONDUCTOR/Ø	MVA BASE	KV BASE	R/305	X/305	Z/305	ZPU
U	UTILITY IMPEDANCE	-	-	1	0.1	7.62	-	-	-	0.00015
T	TRANSFORMER	-	-	1	0.015	0.230	-	-	-	0.03
A	TRANSFORMER - MPB	14 SQ. MM	40	1	0.015	0.230	0.49	0.064	0.06481	0.01838
B	MPB - FARTHEST LIGHTING OUTLET	2.0 SQ. MM	50	1	0.015	0.230	3.1	0.058	0.50829	0.14413
C	MPB - SPO FOR WELDING MACHINE	5.5 SQ. MM	30	1	0.015	0.230	1.2	0.050	0.11814	0.03350

VOLTAGE DROP CALCULATION

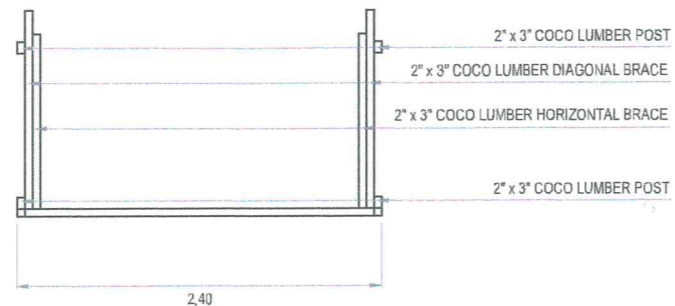
VOLTAGE DROP TABLE											
CKT	DESCRIPTION	CURRENT (A)	CONDUCTOR SIZE	R/305	X/305	CONDUIT	LENGTH	V _S	V _D	V _R	%VD
FL	FEEDER LINE	38.31	14 SQ. MM	0.49	0.064	RSC	40	230	4.965	225.035	2.16%
SPO	SPO FOR WELDING MACHINE	21.74	5.5 SQ. MM	1.2	0.050	PVC	30	230	5.136	219.898	4.39%
CO	FARTHEST CONVENIENCE OUTLET	6.26	3.5 SQ. MM	2	0.054	PVC	40	230	3.285	221.579	3.59%

REMARKS: VOLTAGE DROP FROM THE TRANSFORMER SECONDARY TERMINAL TO THE FURTHEST LOAD DID NOT EXCEED THE ALLOWABLE VOLTAGE DROP OF 5%

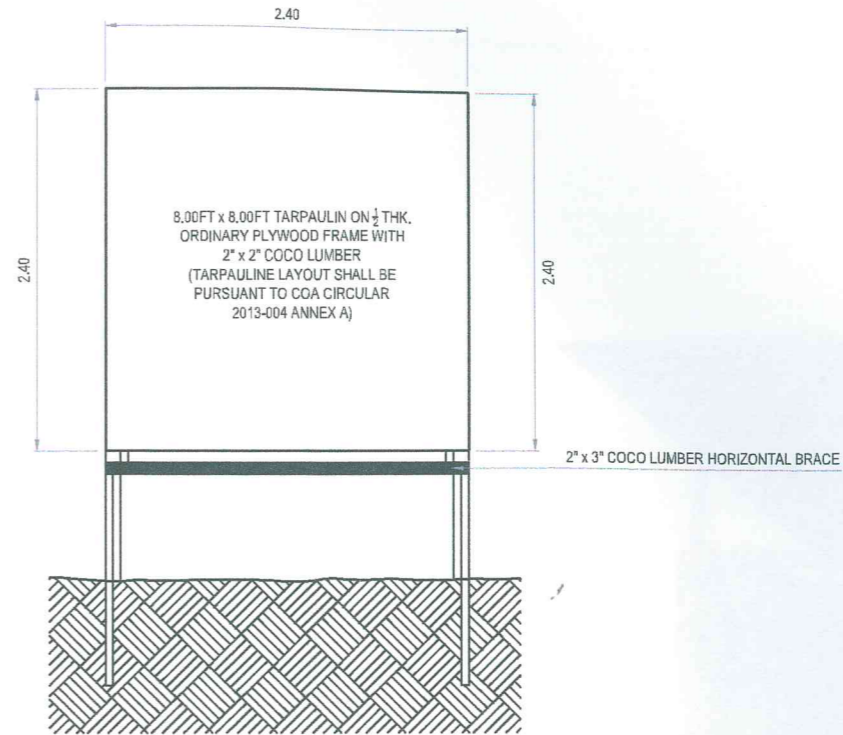
FORMULA:
 $VD = KDI(\sqrt{R^2 + X^2})$
FEEDER LINE:
 $VD = (2) \cdot \left(\frac{40}{305}\right) \cdot (38.31) \cdot (\sqrt{0.49^2 + 0.064^2}) = 4.941 \text{ V}$
 $\%VD = \frac{(4.965)}{230} \times 100\% = 2.16\%$

PERCENT VOLTAGE DROP:
 $\%VD = \frac{(V_{Dph} + VD_m)}{V_s} \times 100\%$
SPO FOR WELDING MACHINE:
 $\%VD = \frac{(4.965 + 5.136)}{230} \times 100\% = 4.39\%$

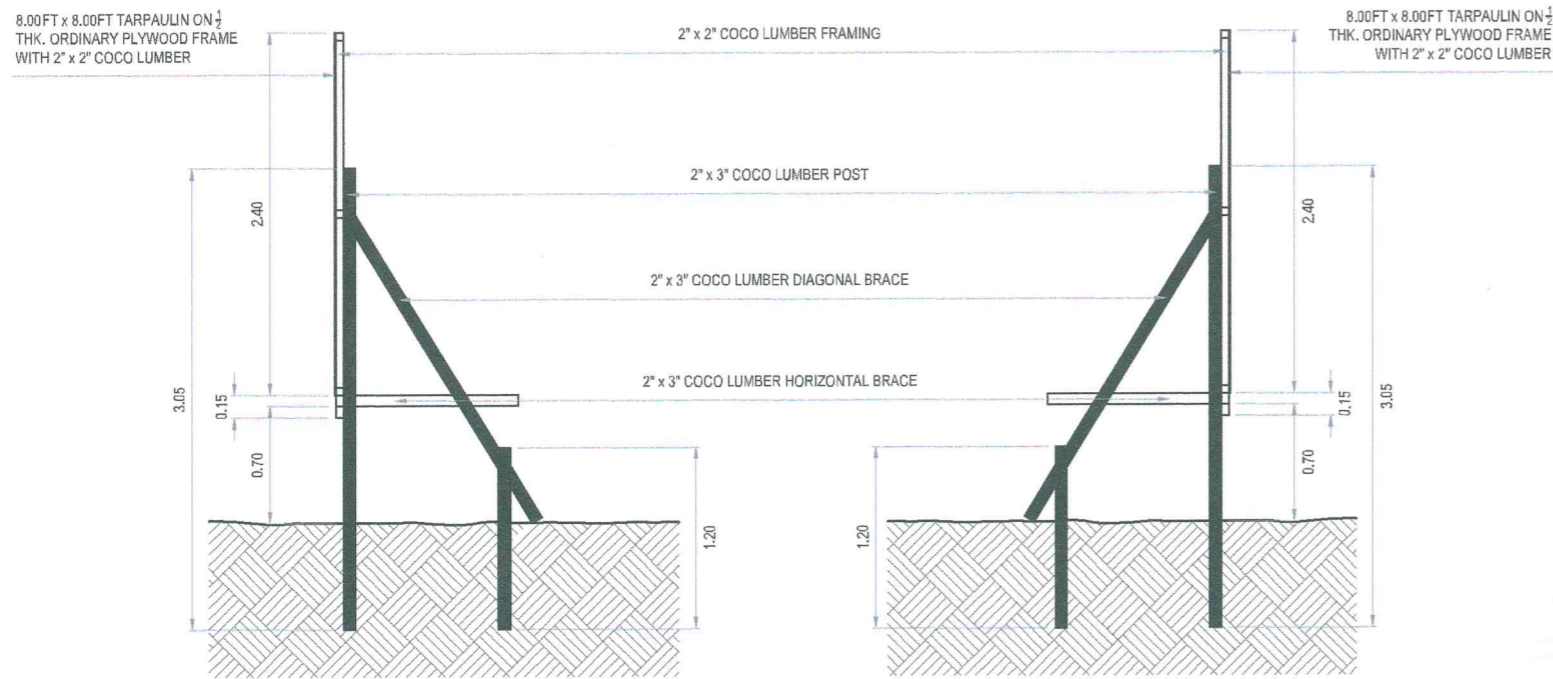
	REVISIONS REV. DATE BY DESCRIPTION	PROJECT: PROPOSED 300 CU. M. REINFORCED CONCRETE GROUND TANKS AT BALUNO & BANDERA-DULJAN FOR DUMALON WATER SYSTEM	DRAWN BY: ARTHUR A. REYES PRINCIPAL DRAFTERMAN B - DESIGN DIVISION	PREPARED BY: JEREMIAH R. CRUZ ENGINEER B (I.O.) - DESIGN DIVISION	REVIEWED BY: REX D. SALE, JR. SUPERVISING ENGINEER A - DESIGN DIVISION	SUBMITTED BY: EDITO M. BAUTISTA, JR. OIC - DESIGN DIVISION	RECOMMENDING PROJECT IMPLEMENTATION: MARLI ACOSTA - DE FIESTA OIA - ENGINEERING & CONSTRUCTION DEPARTMENT OIC - TECHNICAL SERVICES GROUP	APPROVED FOR PROJECT IMPLEMENTATION: REYNALDO R. CABILAN ACTING GENERAL MANAGER	SHEET NO. 54
	SHEET CONTENT: AS INDICATED								



PLAN
SCALE: 1:50M.

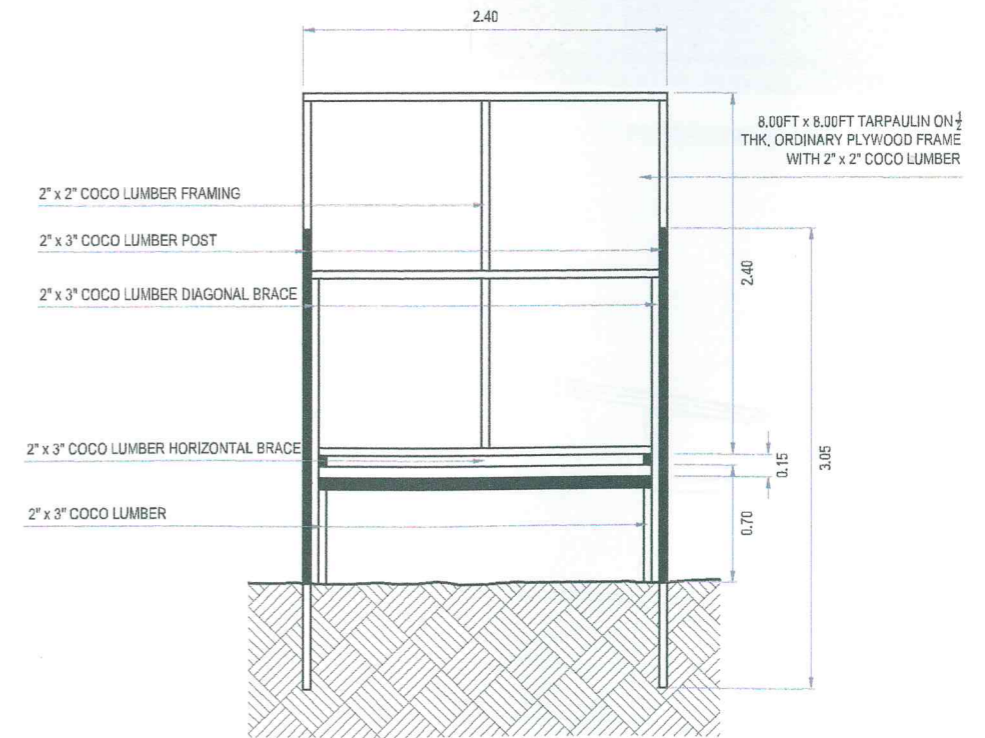


FRONT ELEVATION
SCALE: 1:50M.



LEFT SIDE ELEVATION
SCALE: 1:50M.

RIGHT SIDE ELEVATION
SCALE: 1:50M.



REAR ELEVATION
SCALE: 1:50M.

	<table border="1"> <thead> <tr> <th>REV.</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				REV.	DATE	BY	DESCRIPTION													PROJECT: PROPOSED 300 CU. M. REINFORCED CONCRETE GROUND TANKS AT BALUNO & BANDERA-DULIAN FOR DUMALON WATER SYSTEM	DRAWN BY: DARRELL B. SALARITAN SENIOR DRAFTSMAN - DESIGN DIVISION	PREPARED BY: BUNNY L. DAMPIOS SENIOR ENGINEER A - DESIGN DIVISION	REVIEWED BY: REX D. SALE, JR. SUPERVISING ENGINEER A - DESIGN DIVISION	SUBMITTED BY: EDITO M. BAUTISTA, JR. OIC - DESIGN DIVISION	RECOMMENDING PROJECT IMPLEMENTATION: MARLI ACOSTA - DE FIESTA AGM - TECHNICAL SERVICES GROUP	APPROVED FOR PROJECT IMPLEMENTATION: REYNALDO R. CABLAN GENERAL MANAGER	SHEET NO. 55
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SHEET CONTENT: AS INDICATED																												