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1. 調査団員・氏名

現地調査 1-1：2016年1月10日～同年2月6日(28日間)

担当	氏名	所属
団長	菊地太郎	独立行政法人国際協力機構 人間開発部 保健第二グループ 保健第四チーム課長
協力企画	橋爪亜希	独立行政法人国際協力機構 人間開発部 保健第二グループ 保健第四チームジュニア専門員
技術参与	大原佳央里	国立研究開発法人国立国際医療研究センター
総括/建築計画	望月裕明	株式会社山下設計
副総括/建築計画	黒田信吾	株式会社山下設計
建築設計①-a/自然条件調査	西川浩平	株式会社山下設計
建築設計①-b	長岡嶺男	株式会社山下設計
建築設計②	沈斐佳	株式会社山下設計
構造設計①	レイ・ナイン	株式会社山下設計
構造設計②	ウイン・ミン・ウー	株式会社山下設計
設備計画/設備設計(機械設備)②	亀田訓和	株式会社山下設計
設備計画/設備設計(電気設備)①	アグリフォグリオ・アントニー	株式会社山下設計
施工計画/積算①	横山元晴	株式会社山下設計
機材計画/維持管理計画	浅沼靖子	ピンコーインターナショナル株式会社
調達計画/積算	萱野直樹	ピンコーインターナショナル株式会社
保健医療事情	興津暁子	ピンコーインターナショナル株式会社

現地調査 1-2：2016年2月22日～同年2月27日(6日間)

担当	氏名	所属
協力企画	橋爪亜希	独立行政法人国際協力機構 人間開発部 保健第二グループ 保健第四チームジュニア専門員
技術参与	大原佳央里	国立研究開発法人国立国際医療研究センター
総括/建築計画	望月裕明	株式会社山下設計
建築設計①-a/自然条件調査	西川浩平	株式会社山下設計
機材計画/維持管理計画	浅沼靖子	ピンコーインターナショナル株式会社

現地調査 2：2016年2月21日～同年3月19日(28日間)

担当	氏名	所属
総括/建築計画	望月裕明	株式会社山下設計
副総括/建築計画	黒田信吾	株式会社山下設計
建築設計①-a/自然条件調査	西川浩平	株式会社山下設計
建築設計①-b	長岡嶺男	株式会社山下設計
建築設計②	沈斐佳	株式会社山下設計
構造設計①	レイ・ナイン	株式会社山下設計
構造設計②	ウイン・ミン・ウー	株式会社山下設計
設備計画/設備設計(機械設備)①	杉山彰一	株式会社山下設計
設備計画/設備設計(電気設備)①	アグリフォグリオ・アントニー	株式会社山下設計
設備計画/設備設計(電気設備)②	比連崎文彦	株式会社山下設計
施工計画/積算①	横山元晴	株式会社山下設計
施工計画/積算②	小林由佳	株式会社山下設計
機材計画/維持管理計画	浅沼靖子	ピンコーインターナショナル株式会社
調達計画/積算	萱野直樹	ピンコーインターナショナル株式会社
保健医療事情	興津暁子	ピンコーインターナショナル株式会社

概略設計ドラフト説明（マグウェイ総合病院）：2016年8月27日～同年9月3日（8日間）

担当	氏名	所属
団長	渡部晃三	独立行政法人国際協力機構 人間開発部次長 保健第二グループ長
協力企画	橋爪亜希	独立行政法人国際協力機構 人間開発部 保健第二グループ 保健第四チームジュニア専門員
総括/建築計画	望月裕明	株式会社山下設計
副総括/建築計画	黒田信吾	株式会社山下設計
機材計画/維持管理計画	浅沼靖子	ビンコーインターナショナル株式会社
構造設計②	ウイン・ミン・ウー	株式会社山下設計

2. 調査行程

現地調査 1-1：2016年1月10日～同年2月6日(28日間)

			官団員	総括/ 建築計画	副総括/ 建築計画	建築設計①-a/ 自然条件調査	建築設計 ①-b	建築設計 ②	構造設計 ①	構造設計 ②	設備計画/ 設備設計 (機械設備) ②	設備計画/ 設備設計 (電気設備) ①	施工計画/ 積算①	機材計画/ 維持管理 計画	調達計画/ 積算	保健医療 事情
				望月裕明	黒田信吾	西川浩平	長岡嶺男	沈斐佳	レイ・ナイン	ウイン ・ミン ・ウー	亀田訓和	アグリフォグリ オ ・アントニー	横山元晴	浅沼靖子	菅野直樹	興津暁子
				東京→ ヤンゴン	東京→ ヤンゴン		東京→ ヤンゴン			バガン→ ヤンゴン		東京→ ヤンゴン				
1	1/10	日	→ネビドー 保健省協議	→ネビドー 保健省協議		→ダウエイ 地域保健局表 敬、DGH表 敬・調査 ・協議	→マグウェイ MgGH表敬・調査・協議		→ダウエイ 地域保健局 表敬、DGH 表敬・調 査・協議	→ネビドー 保健省協議		→ダウエイ RHD表敬、DGH表敬、既存 施設調査	→マグ ウェイ MgGH表 敬・調 査・協 議	→ネビドー 保健省協議	→マグ ウェイ MgGH表 敬・調 査・協 議	→ネビドー 保健省協議
2	1/11	月	ネビドー 協議 →ヤンゴン	→マグ ウェイ MgGH調 査・協議		DGH調査 ・協議	MgGH調査・協議		DGH調査・ 協議	→マグ ウェイ MgGH調 査・協議		ダウエイ調査、 既存インフラ調査、 現地業者間取り調査	MgGH調 査・協 議、現地 業者間取 り調査	→マグ ウェイ MgGH調 査・協議	MgGH調 査・協議	→マグ ウェイ MgGH調 査・協議
3	1/12	火	→マグ ウェイ	MgGH調 査・協議、 現地業者間 取り調査		DGH調査・協 議、現地業 者間取り調 査	MgGH調査・協議、現地 業者間取り 調査		DGH調査・ 協議、現地 業者間取り 調査	MgGH調 査・協議、 現地業者間 取り調査		ダウエイ調査、既存インフラ 調査、既存施設調査、関係省 庁調査	MgGH調 査・協 議、現地 業者間取 り調査	MgGH調査・協議		
4	1/13	水	マグウェイ調査			DGH調査・協 議、関係省 庁調査	MgGH調査・協議、関係 省庁調査		DGH調査・ 協議、関係 省庁調査	マグウェイ 調査		ダウエイ調査、既存インフラ 調査、既存施設調査、関係省 庁調査	MgGH調 査・協 議、関係 省庁調査	マグウェイ 調査	MgGH調 査・協議	マグウェイ 調査
5	1/14	木	マグウェイ協議			DGH調査・協 議、関係省 庁調査	MgGH調査・協議、		DGH調査・ 協議、関係 省庁調査	マグウェイ 協議		ダウエイ調査、既存インフラ 調査、既存施設調査、関係省 庁調査	MgGH調 査・協 議、関係 省庁調査	マグウェイ 協議	MgGH調 査・協議	マグウェイ 協議
6	1/15	金	→ヤンゴン			DGH調査	MgGH調査		DGH調査	→ヤンゴン		ダウエイ調査	MgGH 調査	→ヤンゴン		
7	1/16	土	→ダウエイ		東京→ ヤンゴン	団内協議 資料整理	団内協議、資料整理		団内協議 資料整理	→ダウエイ		団内協議、資料整理	団内協議 資料整理	→ダウエイ		
8	1/17	日	ダウエイ調査			DGH調査・協 議、施設計 画	MgGH調査・協議、施設 計画		DGH調査・ 協議、施設 計画	ダウエイ 調査		ダウエイ調査、既存インフラ 調査、既存施設調査	MgGH調 査・協 議	ダウエイ調査		
9	1/18	月	ダウエイ協議 →ヤンゴン			DGH調査・協 議、施設計 画	MgGH調査・協議、施設 計画		DGH調査・ 協議	ダウエイ協議		ダウエイ調査、 既存インフラ調 査、既存施設 調査	MgGH調 査・協 議	ダウエイ 協議 →ヤンゴン	DGH調査・ 協議	ダウエイ 協議
10	1/19	火	→ネビドー 保健省ミニッツ協議			DGH調査・協 議、施設計 画	MgGH調査・協議、施設 計画		DGH調査・ 協議	DGH調 査・協 議		ダウエイ調査、既存インフラ 調査、既存施設調査	MgGH調 査・協 議	→ネビドー 保健省ミ ニッツ協 議	DGH調査・ 協議	DGH調 査・協 議
11	1/20	水	保健省ミニッツ調印 →ヤンゴン			DGH調査・協 議、施設計 画	MgGH調査・協議、施設 計画		DGH調査・ 協議	DGH調査・協議		MgGH調 査・協 議	保健省ミ ニッツ調印 →ヤンゴン	DGH調査・ 協議 →ヤンゴン	DGH調 査・協 議 →ヤンゴン	
12	1/21	木	団内協議、大使館報告 ヤンゴン→			DGH調査・協 議、施設計 画	→ヤンゴン →	MgGH調 査・協 議、 施設計画	DGH調査・ 協議	DGH調査・協議		MgGH調 査・協 議	団内協議、 大使館報告	代理店調査 ヤンゴン→	DGH調 査・協 議	
13	1/22	金	東京着	→ダウエイ DGH調査	→マグ ウェイ MgGH調査	DGH調査	東京着	MgGH調査	DGH調査	DGH調査・協議			MgGH 調査	→ダウエイ DGH調査	東京着	DGH調査
14	1/23	土		団内協議 資料整理	団内協議 資料整理	団内協議 資料整理		団内協議 資料整理	ヤンゴン→ マグウェイ	団内協議、資料整理			団内協議 資料整理	団内協議 資料整理		団内協議 資料整理
15	1/24	日		DGH調査・ 協議、施設 計画	MgGH調 査・協 議、 施設計画	DGH調査・協 議、施設計 画		MgGH調 査・協 議、 施設計画	MgGH調 査・協 議	DGH調査・協議		MgGH調 査・協 議	DGH調査・ 協議			DGH調 査・協 議
16	1/25	月		DGH調査・ 協議、施設 計画	MgGH調 査・協 議、 施設計画	DGH調査・協 議、施設計 画		MgGH調 査・協 議、 施設計画	MgGH調 査・協 議	DGH調査・協議		MgGH調 査・協 議	DGH調査・ 協議			DGH調 査・協 議
17	1/26	火		DGH協議 →ヤンゴン	MgGH協議 →ネビドー	DGH協議 →ヤンゴン		MgGH協議 →ネビドー	MgGH調 査・協 議	DGH協議 →ヤンゴン	DGH調査・協議		MgGH調 査・協 議	DGH協議 →ヤンゴン		DGH協議 →ヤンゴン
18	1/27	水		→ネビドー 保健省テク ニカル ノート	保健省テク ニカル ノート	→ネビドー 保健省テク ニカルノート		保健省テク ニカル ノート	MgGH調 査・協 議	→ネビドー 保健省テク ニカル ノート	DGH調査・協議		MgGH調 査 →ヤン ゴン	→ネビドー 保健省テク ニカル ノート		→ネビドー 保健省テク ニカル ノート
19	1/28	木														

			官団員	総括/ 建築計画	副総括/ 建築計画	建築設計①-a/ 自然条件調査	建築設計 ①-b	建築設計 ②	構造設計 ①	構造設計 ②	設備計画/ 設備設計 (機械設備) ②	設備計画/ 設備設計 (電気設備) ①	施工計画/ 積算①	機材計画/ 維持管理 計画	調達計画/ 積算	保健医療 事情
				望月裕明	黒田信吾	西川浩平	長岡嶺男	沈斐佳	レイ・ナイン	ウイン ・ミン ・ウー	亀田訓和	アグリフォグリ オ ・アントニー	横山元晴	浅沼靖子	菅野直樹	興津暁子
20	1/29	金		→ヤンゴン ヤンゴン調査 ヤンゴン→				→ヤンゴン ヤンゴン 調査 ヤンゴン→	MgGH調 査・協議	→ヤンゴン ヤンゴン 調査	DGH調査 →ヤンゴン→		ヤンゴン 調査	→ヤンゴン ヤンゴン 調査 ヤンゴン→		→ヤンゴン ヤンゴン 調査 ヤンゴン→
21	1/30	土		東京着				東京着	MgGH調査 →ヤンゴン	ヤンゴン調 査	東京着		ヤンゴン 調査	東京着		東京着
22	1/31	日							→ダウェイ	資料整理			資料整理			
23	2/1	月							DGH調査・ 協議				ヤンゴン 調査 ヤンゴン →			
24	2/2	火							DGH調査・ 協議				東京着			
25	2/3	水							DGH調査・ 協議							
26	2/4	木							DGH調査・ 協議							
27	2/5	金							DGH調査 →ヤンゴン							
28	2/6	土							→バガン							

現地調査 1-2 : 2016年2月22日～同年2月27日 (6日間)

			官団員	総括/ 建築計画	建築設計① -a/自然条件調査	機材計画/維持 管理計画
				望月裕明	西川浩平	浅沼靖子
1	2/22	月	東京→バンコク			
2	2/23	火	TICA 協議、カンチャナブリ県/バホル病院協議			
3	2/24	水	団内協議 → ネピドー			
4	2/25	木	保健省協議			
5	2/26	金	団内協議 →バンコク→		→ヤンゴン ヤンゴン調査 →バンコク→	
6	2/27	土	東京			

現地調査 2：2016年2月21日～同年3月19日(28日間)

			総括/ 建築計画	副総括/ 建築計画	建築設計①-a/ 自然条件調査	建築設計 ①-b	建築設計 ②	構造設計 ①	構造設計 ②	設備計画/ 設備設計 (機械設備) ①	設備計画/ 設備設計 (電気設備) ①	設備計画/ 設備設計 (電気設備) ②	施工計画/ 積算①	施工計画/ 積算②	機材計画/ 維持管理 計画	調達計画/ 積算	保健医療 事情
			望月裕明	黒田信吾	西川浩平	長岡嶺男	沈斐佳	レイ ・ナイン	ウイン ・ミン ・ウー	杉山彰一	アグリフオグリオ ・アントニー	比連崎文彦	横山元晴	小林由佳	浅沼靖子	萱野直樹	興津曉子
1	2/21	日				東京→ヤンゴン							東京→ヤンゴン			東京→ヤンゴン	
2	2/22	月				→マグウェイ MgGH協議		→マグ ウェイ MgGH 協議					→マグウェイ MgGH協議			→マグ ウェイ MgGH協議	
3	2/23	火				MgGH調査・協議 現地施工業者聞き取り調査							MgGH調査・協議			MgGH調 査・協議	
4	2/24	水				MgGH調査・協議								MgGH調 査・協議		MgGH調 査・協議	
5	2/25	木				MgGH調査・協議								MgGH調 査・協議		MgGH調 査・協議	
6	2/26	金				MgGH調査・協議								MgGH調 査・協議		MgGH調 査・協議	
7	2/27	土				MgGH調査								MgGH調査		MgGH調査	
8	2/28	日				団内協議 資料整理				東京→ヤ ンゴン		東京→ヤン ゴン		団内協議 資料整理		団内協議 資料整理	福岡→ヤ ンゴン
9	2/29	月		東京→ ヤンゴン		MgGH調査・協議			→マグウェイ MgGH調査・協議			→マグ ウェイ MgGH調 査・協議		MgGH調 査・協議		MgGH調 査・協議	→マグ ウェイ MgGH調 査・協議
10	3/1	火		ヤンゴン 調査 →マグ ウェイ		MgGH調査・協議						MgGH調 査・協議		MgGH調 査・協議		MgGH調査・協議	
11	3/2	水		MgGH調 査・協議		MgGH調査・協議						MgGH調 査・協議		自然条件調 査位置確認		MgGH調査・協議	
12	3/3	木		MgGH調 査・協 議、官庁 協議		→ヤン ゴン	MgGH調査・協議、関係省庁聞き取り調査					MgGH調 査・協議、 関係省庁聞 取り調査		自然条件調 査位置確認		MgGH調査・協議	
13	3/4	金		MgGH調 査・協議		ヤンゴン 調査 ヤンゴン →	MgGH調査・協議		MgGH調 査・協議	MgGH調査 敷地内イン フラ、建物 内調査		MgGH調査 敷地内イン フラ、建物 内調査		MgGH調 査・協議		MgGH調査・協議	
14	3/5	土		MgGH 調査		東京	MgGH調査		MgGH 調査	MgGH調査		MgGH調査		MgGH調査		MgGH調査 →ヤンゴン	MgGH 調査
15	3/6	日	東京→ ヤンゴン	団内協議 資料整理	東京→ ヤンゴン		団内協議 資料整理	MgGH調査 →ヤンゴン	MgGH 調査 →ヤン ゴン	MgGH調査 →ヤンゴン	東京→ ヤンゴン	MgGH調査 →ヤンゴン		団内協議 資料整理	東京→ ヤンゴン	→ダウェイ DGH 調査	MgGH 調査 →ヤン ゴン
16	3/7	月	→ダウ エイ DGH 調 査・協議	MgGH調 査・協 議、施設 計画	→ダウェイ DGH 調査 ・協議		MgGH調 査・協 議、施設 計画	→ダウェイ DGH調査・協議						MgGH調 査・協議、 施設計画		→マグ ウェイ MgGH調 査・協議	→ダウ エイ DGH調 査・協議
17	3/8	火	DGH 調 査・協議	MgGH調 査・協 議、施設 計画	DGH 調査 ・協議		MgGH調 査・協 議、施設 計画	DGH調 査・協議、 掘土試験 開始	DGH調 査・協 議、看護 学校協議	DGH調査・協議				MgGH調 査・協議、 施設計画	MgGH調 査・協議 →ヤンゴン	DGH調査・ 協議 →ヤンゴン	DGH調 査・協 議、看護 学校協議
18	3/9	水	DGH 調 査・協 議、関係 省庁聞き 取り調査	MgGH調 査・協 議、施設 計画	DGH 調査・協 議、関係省 庁聞き取り 調査		MgGH調 査・協 議、施設 計画	DGH調 査・協議、 関係省庁聞 取り調査	DGH調 査・協 議	DGH調査・協議、官庁協議				MgGH調 査・協議、 施設計画	MgGH調 査・協議	現地代理店 調査	DGH調 査・協議
19	3/10	木	DGH 調 査・協 議、施設 計画	MgGH調 査・協 議、施設 計画	DGH 調査・協 議、施設計画		施設計画 →ヤン ゴン	DGH調 査・協議、 関係省庁聞 取り調査	DGH調 査・協 議	DGH調査・協議、官庁協議				MgGH調 査・協議、 施設計画	MgGH調 査・協議	現地代理店 調査 CMSD協議	DGH調 査・協議 →ヤン ゴン

			総括/ 建築計画	副総括/ 建築計画	建築設計①-a/ 自然条件調査	建築設計 ①-b	建築設計 ②	構造設計 ①	構造設計 ②	設備計画/ 設備設計 (機械設備) ①	設備計画/ 設備設計 (電気設備) ①	設備計画/ 設備設計 (電気設備) ②	施工計画/ 積算①	施工計画/ 積算②	機材計画/ 維持管理 計画	調達計画/ 積算	保健医療 事情
			望月裕明	黒田信吾	西川浩平	長岡諒男	沈斐佳	レイ ・ナイン	ウイン ・ミン ・ウー	杉山彰一	アグリフオグリオ ・アントニー	比連崎文彦	横山元晴	小林由佳	浅沼靖子	菅野直樹	興津暁子
20	3/11	金	DGH 調 査・協 議、施設 計画	MgGH調 査・協 議、施設 計画	DGH 調査・協 議、施設計画		ヤンゴン 調査 →東京	DGH調 査・協議	DGH調 査・協議	DGH調査 →ヤンゴン→				MgGH調 査・協議、 施設計画	MgGH調 査・協議	現地代理店 調査 ヤンゴン→	ヤンゴン 調査 ヤンゴン →
21	3/12	土	DGH 調 査、施設 計画	MgGH調 査、施設 計画	DGH 調査、施 設計画		東京	DGH調査 →ヤンゴン	DGH調査	東京				MgGH調 査、施設 計画	MgGH調 査・協議 →ヤンゴン	東京	福岡
22	3/13	日	団内協議 資料整 理、施設 計画	団内協議 資料整 理、施設 計画	団内協議 資料整理、施 設計画			→バガン	DGH調査					団内協議 資料整理、 施設計画	→ダウエイ DGH調査		
23	3/14	月	DGH 調 査・協 議、施設 計画	MgGH調 査・協 議、施設 計画	DGH 調査・協 議、施設計画				DGH 調 査・協議					→ヤンゴン	DGH 調 査・協議		
24	3/15	火	DGH 調 査・協議 →ヤン ゴン	MgGH 協議 →ネビ ドー	DGH 調査 ・協議 →ヤンゴン				DGH 調 査・協議 →ヤン ゴン					ヤンゴン 調査 ヤンゴン→	DGH 調 査・協議 →ヤンゴン		
25	3/16	水	→ネビ ドー 保健省テ クニカル ノート	保健省テ クニカル ノート	→ネビドー 保健省テク ニカルノート				→ネビ ドー 保健省テ クニカル ノート					東京	→ネビドー 保健省テク ニカル ノート		
26	3/17	木	団内協議 資料整理						団内協議 資料整理						団内協議 資料整理		
27	3/18	金	→ヤンゴン JICA報告、類似施設視察 ヤンゴン→						→ヤン ゴン						→ヤンゴン JICA報告 類似施設 視察 ヤンゴン→		
28	3/19	土	東京												東京		

概略設計ドラフト説明：2016年8月27日～同年9月3日（8日間）

			官団員	総括/ 建築計画	副総括/ 建築計画	機材計画/ 維持管理 計画	構造設計 ②
				望月裕明	黒田信吾	浅沼靖子	ウイン ・ミン ・ウー
1	8/27	土		東京→ ヤンゴン 団内協議	団内協議	東京→ ヤンゴン 団内協議	
2	8/28	日	東京→ ヤンゴン	→マグウェイ			
3	8/29	月	ヤンゴン 協議	MgGH協議			
4	8/30	火	ヤンゴン 協議	MgGH協議 →ネビドー			
5	8/31	水	団内協議				
6	9/1	木	保健省ミニッツ協議 →ヤンゴン				
7	9/2	金	団内協議、大使館報告 ヤンゴン→				
8	9/3	土	東京				

3. 関係者（面会者）リスト

関係者（面談者）リスト

所 属	氏 名	職 位
保健スポーツ省	医療サービス局	Dr.Myint Han
		局長
		Dr.Thida Kyu
		副局長
		Dr.Aung Win
		副局長
		Dr.Hlay Surp
		副局長
		Dr. Moe Khaing
		部長
		Dr.Than Naing Htut
		部長補佐
		Dr. Phet Mon Than
		医療事務員
マグウェイ総合病院		Dr. U Paw Htun
		院長
		Dr. Zin Minn Phway
		院長補佐
	産婦人科	Dr. Saw Kler Ku
		教授
		Dr. Kyi Kyi Sein
		准教授
		Dr. Myo Mo Mo
		准教授
	小児科	Dr. Yi Yi Khin
		教授
		Dr. Tin Moe Phyu
		准教授
		Dr. Cho Cho Win
		シニアコンサルタント
		Dr. Ye Kyaw Pnu
		講師
		Dr. Pyo Thartor Htay
		准講師
		Dr. Htet Tun Lwin
		一般医
	放射線科	Dr. Than Than New
		シニアコンサルタント
	外科	Dr. Moe Moe Tin
		教授
		Dr. Khaing Khaing Soe
		准教授
		Dr. Min Thet
		准講師
		Dr. Aye Man
		上級医
		Dr. Thida Myint
		大学院生
	整形外科	Dr. Son Hlaing
		教授
		Dr. Soe Win
		准教授
		Dr. Zayar Htun
		大学院生
		Dr. Thant Tin Hun
		一般医
	眼科	Daw Khin Laymun
		看護師
	リハビリ部門	Daw Ni Lar Oo
		事務員
	精神科	Dr. Myo Kyaw Thu
		上級医
		Daw Man Sye
		シスター
	救急外来	Dr. Aung Myint Than
		一般医
		Dr. Mye Peint Phyu
		一般医
	手術&ICU	Dr. Nai Nai Aung
		シニアコンサルタント
		Dr. Hla Htuy Myint
		上級医
		Sr. Ae Ae Kyaw
		一般医
	管理部門	U Chit Tin
		電気技師
		U Ye Tint
		水道技師
		U Myat Kyaw
		衛生管理
農業灌漑省	農業用地管理及び統計部門	U Paing Paw Tun
		部長補佐
		U Aung Myint Oo
		調査員
		Electric Power Dept
マグウェイ消防局		U Kyaw Myint Sein
		郡区技師
		U Aung Win Sein
		副局長
		U Naing Win Tun

所 属	氏 名	職 位
マグウェイ郡区開発委員会	U Htin Aung	副委員長
	U Sein Than Ngwe	上級技師
	U Min Min Than	技術補佐
電力会社（マグウェイ）	U Aye Win	地域部長、統括技師
	U Htwa Nyunt	地区部長、上級技師
	U Kyaw Myint Sein	郡区技師
マグウェイ気象台	U Lwin Oo Maung	所長

4. 討議議事録(M/D)

(1) 現地調査 1-1

MINUTES OF DISCUSSIONS
ON THE PREPARATORY SURVEY ON THE PROJECT FOR
IMPROVEMENT OF MAGWAY GENERAL HOSPITAL AND DAWEI GENERAL HOSPITAL
IN
THE REPUBLIC OF THE UNION OF MYANMAR

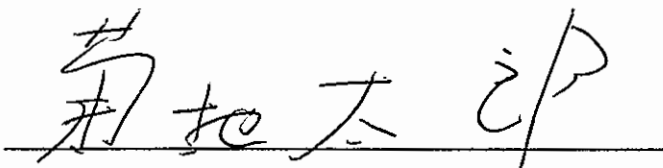
In response to a request from the Government of Republic of the Union of Myanmar (hereinafter referred to as "Myanmar"), the Government of Japan decided to conduct a Preparatory Survey on the Project for Improvement of Magway General Hospital and Dawei General Hospital (hereinafter referred to as "the Project ") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Preparatory Survey Team (hereinafter referred to as "the Team") to Myanmar, which is headed by Mr.Taro Kikuchi, Director of Health Division 4, Human Development Department, JICA, and is scheduled to stay in the country from January 10 to January 22.

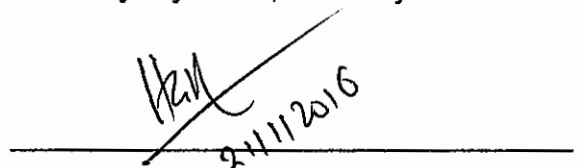
The Team held discussions with the officials concerned of the Government of Republic of the Union of Myanmar and conducted a field survey.

As a result of discussions and field survey, both sides confirmed the main issues described in the attachment. The Team will proceed to further works and prepare the Preparatory Survey Report.

Nay Pyi Taw, January 21st 2016



Mr.Taro Kikuchi
Team leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Dr. Myint Han
Director General
Department of Medical Services
Ministry of Health
Republic of the Union of Myanmar



ATTACHMENT

1. Objective of the Project

The objective of the Project is to make better the quality of healthcare services and educational environment at Magway General Hospital (MgGH) and Dawei General Hospital (DGH) by developing facilities and providing equipment.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Preparatory Survey on the Project for Improvement of Magway General Hospital and Dawei General Hospital”.

3. Project sites

The project sites are located in MgGH and DGH. The proposed layouts of the construction at the sites are shown in the Master Plan (Annex 1)

4. Responsible and Implementing Agency

Department of Medical Services, Ministry of Health (MOH).

5. Items requested by the Government of the Union of Myanmar

5-1 The requested facilities and the requested equipment are described in Annex-2, but not limited to.

5-2 JICA will assess the appropriateness of the items for approval by the Cabinet of the Government of Japan.

6. Japan's Grant Aid

The Myanmar side understands the scheme of Japan's Grant Aid and its procedures described in the Annex 3, 4 and 5 for smooth implementation of the Project as a condition for the Japanese Grant Aid to be implemented. Moreover, the Annex 6, articulating the undertakings to be taken by the Government of Republic of the Union of Myanmar, will be detailed as the Preparatory Survey progresses and shall be agreed at the time of the explanation of the draft Preparatory Survey Report, and then will finally be attached to the Grant Agreement.

7. Schedule of the Study

- 7-1. The consultants will continue the first field survey in Myanmar until February 6 2016, and conduct the second survey from February 21 to March 19, 2016.
- 7-2. JICA will prepare a draft Preparatory Survey Report in English and carry out the third survey in order to explain its contents around August 2016.
- 7-3. After the contents of the draft Preparatory Survey Report is accepted in principle and the undertakings described in the Annex 6 are fully agreed by the Myanmar side, JICA will produce the final version and send its copies to the Myanmar side around October 2016.
- 7-4. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

- 8-1. The Myanmar side confirmed to give due environmental and social considerations during the implementation of the Project and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).
- 8-2. The Myanmar side shall confirm the necessary procedures concerning the environmental assessment based on the Guidelines of Initial Environmental Examination (IEE) and the Environmental Impact Assessment (EIA) under the Environmental Conservation Law. If the project is found applicable to the Guidelines, the Myanmar side shall take necessary measures to obtain environmental license before the tender and report it to JICA Myanmar office.

9. Necessity of Soft Component

Both sides confirmed the necessity of soft component on basic skills and proper use of the equipment. That will be provided under the Project. The team will examine the appropriateness and make the detailed plan by August 2016.

10. Other Relevant Issues

MOH will discuss with the concerned department on the Myanmar side over the guideline for Initial Environmental Examination (IEE) and the Environmental Impact Assessment (EIA) under the Myanmar Environmental Conservation Law.

Japanese side requested the Myanmar side to ensure recruitment and distribution of the sufficient staff in order to provide quality medical services at the both hospitals.

At the level of the MgGH, Japanese side encouraged the Myanmar side to consider facilitating the collaboration with other JICA cooperative operations in the area of medical education.

Japanese side requested the Myanmar side to provide the result of on-going discussion with the international agency that will develop emergency department in DGH.

The deputy minister from the MOH, Myanmar met with the Team during his visit to Dawei and discussed about the Project in DGH. Deputy Minister emphasized that the proposed hospital building in the Project should be at least 3 or 4 storied one, if it is possible since DGH will be upgraded to 500 bedded hospital in the near future. He insisted that the priority of the Project should be the hospital building because the necessary medical equipment will be possibly contributed by the Myanmar side. The Project should be designed in the manner how the concept described in the Annex 2 is realized.

END

Annex 1 Master Plan (MgGH, DGH)

Annex 2 Project Concept

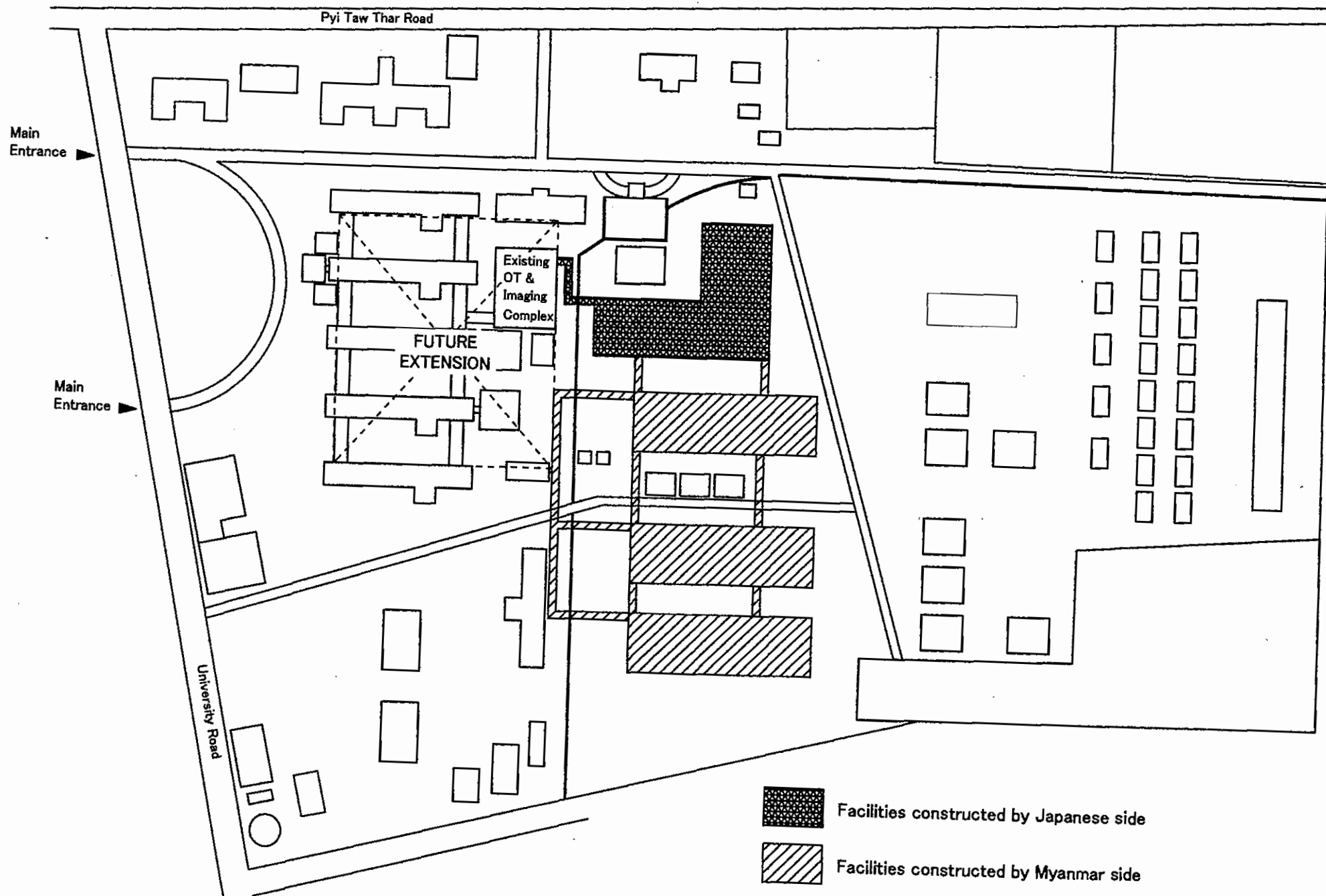
Annex 3 Japan's Grant Aid

Annex 4 Flow Chart of Japanese Grant Aid Procedures

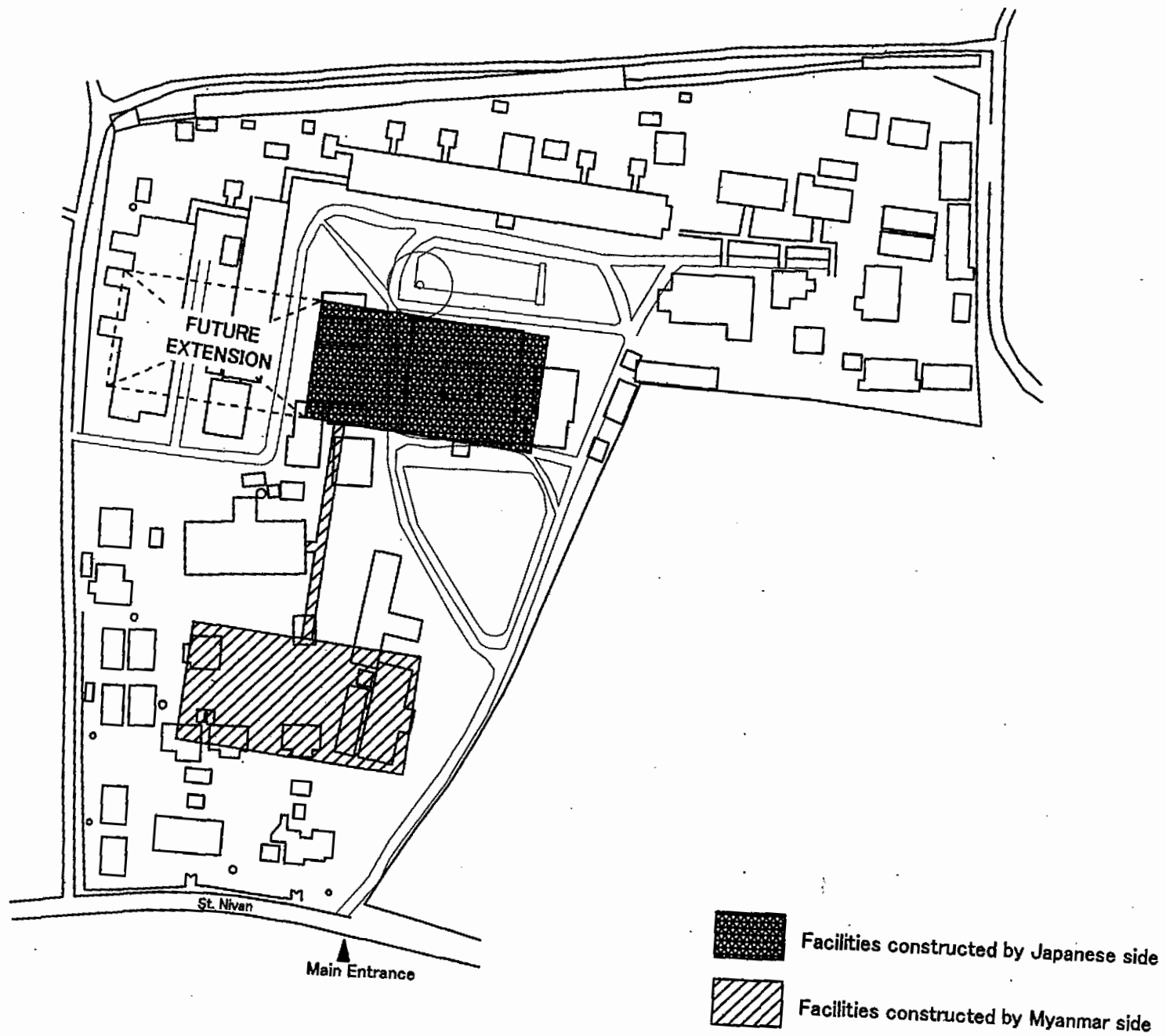
Annex 5 Financial Flow of Japanese Grant Aid

Annex 6 Major Undertakings to be taken by the Government of Republic of the Union of Myanmar

ANNEX-1 Master Plan (MgGH)



ANNEX-1 Master Plan (DGH)



Concept of the Project for Improvement of Regional General Hospitals
(Magway and Dawei)

- Universal design of facilities with international standards for delivering patient-centered healthcare services
- Effective utilization of existing facilities and harmonization with the new facilities installed under the Master Plan
- Favorable educational environment provided to human resource for health such as hospital staff and medical students
- Disaster reduction

1. Facilities

- Magway General Hospital
 - Obstetrics and Gynecology
 - Neonatal Unit
 - Operation Theater
 - Intensive Care Unit
 - Central Sterile and Supply Department
 - Emergency Room

- Dawei General Hospital
 - Out Patient Department
 - Diagnostic Imaging Department (e.g. place for MRI)
 - Emergency Room
 - Operation Theater
 - Central Sterile and Supply Department
 - Intensive Care Unit
 - Laboratory Department including Blood Bank

2. Equipment

Essential equipment for better functioning of the above-mentioned facilities.

END



Annex 3: Japan's Grant Aid

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures:

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is



confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex 6.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

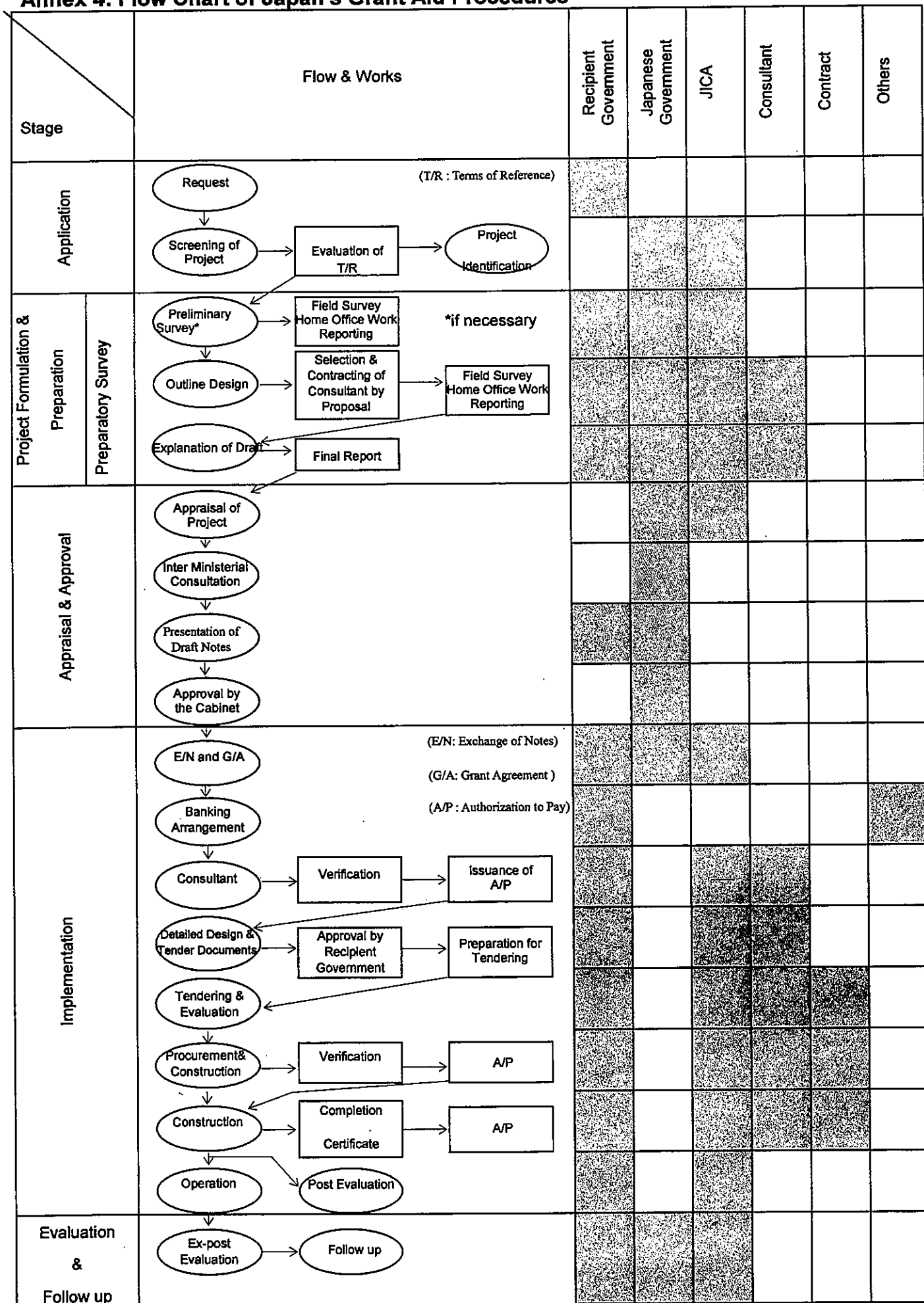
(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

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Annex 4: Flow Chart of Japan's Grant Aid Procedures

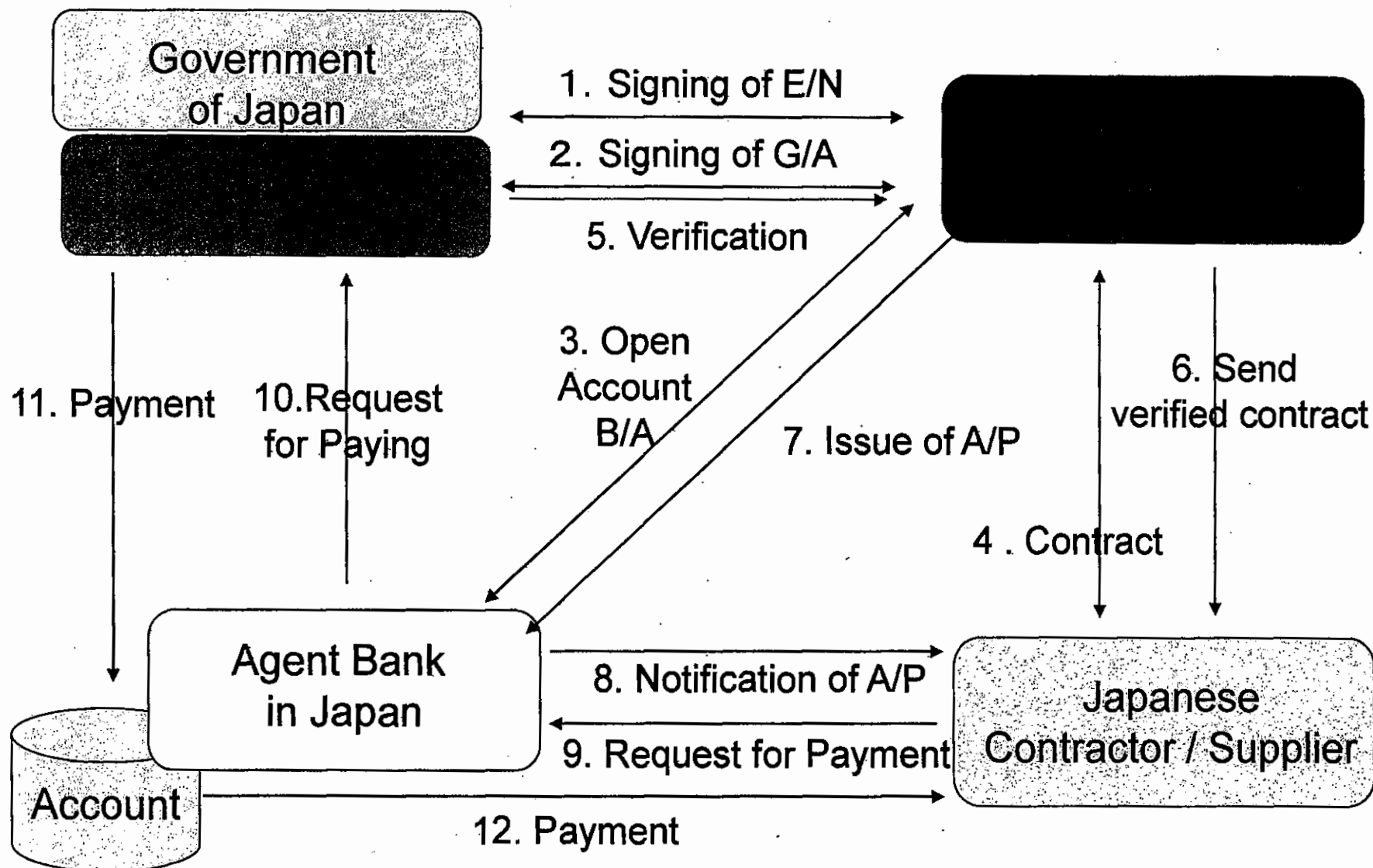


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Annex 5

Financial Flow of Japan's Grant Aid



Annex 6: Major Undertakings to be taken by the Government of Republic of the Union of Myanmar and covered under Japan's Grant Aid (Draft)

Major Undertakings to be taken by Government of Republic of the Union of Myanmar

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A			
2	To take necessary measures to obtain environmental license, if confirmed necessary, and report it to JICA Myanmar office.	before notice of the tender document			
3	To secure the Project site including building area and temporary construction yard and stock yard within the Project area	before notice of the tender document			
4	To obtain the planning and/or building permit	before notice of the tender document			
5	To clear, level and reclaim the Project site including removal of the existing buildings, the existing pavement, underground obstacles and trees if necessary	before notice of the tender document			

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract			
	2) Payment commission for A/P	every payment			
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project			
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project			
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project			
5	To bear all the expenses, other than those to be borne by the Grant Aid	during the Project			
6	To construct the following facility				
	1) The fences in and around the site	before the completion of the construction			
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity The distributing power line to the site.	6 months before completion of the construction			
	2) Water Supply The city water distribution main to the site, if available	6 months before completion of the construction			
	3) Drainage The city drainage main (for storm water, sewer and others) to the site, if available	6 months before completion of the construction			

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	4) Telecommunications Telephone line and Internet line to the MDF and server room in new building, if necessary.	6 months before completion of the construction			
8	To submit environmental monitoring report to JICA Myanmar Office, if applicable	during the Project			

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid by: 1) Allocation of sufficient budget for operation and maintenance 2) Training of staff on the specialized medical services 3) Contracting with agents for maintenance of specialized medical equipment and lift 4) Regular collection and proper disposals of medical waste and waste water	after completion of the construction			
2	To appoint and retain sufficient staff with appropriate skills and experiences for operation and maintenance of new facilities and equipment provided under the Grant Aid	after completion of the construction			
3	To provide general furniture and equipment, other than those to be borne by the Grant Aid, if necessary	after completion of the construction			

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

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Major Undertakings to be covered under the Japan's Grant Aid

No	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct hospital and to procure equipment			
	1) To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
	a) Marine(Air) transportation of the products from Japan to the recipient country			
	b) Internal transportation from the port of disembarkation to the project site			
	2) To construct access roads			
	a) Within the site			
	3) To construct the temporary building			
	4) To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
	a) Electricity			
	- The drop wiring and internal wiring within the site			
	- The main circuit breaker and transformer			
	b) Water Supply			
	- The supply system within the site (receiving and/or elevated tanks)			
	c) Drainage			
	- The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site			
	d) Furniture and Equipment			
	- Project equipment			
2	To implement detailed design, tender support and construction supervision (Consultant)			
	Total			

*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

(2) 概略設計ドラフト説明

Minutes of Discussions
on the Preparatory Survey for the Project for
Improvement of Magway General Hospital and Dawei General Hospital
(Explanation on Draft Preparatory Survey Report)

On the basis of the discussions and field assessment of the above mentioned survey in the Government of Republic of the Union of Myanmar (hereinafter referred to as " Myanmar") in January, 2016, and the subsequent technical examination of the results in Japan, the Japan International Cooperation Agency (hereinafter referred to as "JICA") prepared a draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") on the Project for Improvement of Magway General Hospital and Dawei General Hospital (hereinafter referred to as "the Project"). The Draft Report herewith presented contains only Magway General Hospital and will add Dawei General Hospital later on.

In order to explain the Draft Report and to consult with the concerned officials of the Government of Myanmar on its contents, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") to Myanmar, headed by Kozo Watanabe, Deputy Director General, Human Development Department, and is scheduled to stay in the country from 28th, August to 3rd, September, 2016.

As a result of the discussions, both sides confirmed the main items described in the attached sheets.

Nay Pyi Taw, 1 September, 2016



Mr. Kozo Watanabe

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan



Dr. Myint Han

Director General

Department of Medical Services

Ministry of Health and Sports

The Republic of the Union of Myanmar

ATTACHEMENT

1. Objective of the Project

The objective of the Project is to make better the quality of healthcare services and educational environment at Magway General Hospital (MgGH) by developing facilities and providing equipment thereby contributing to enhance the quality of people's life in Myanmar.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Improvement of Magway General Hospital and Dawei General Hospital".

3. Line Agency

Both sides confirmed the line agency is Department of Medical Services, Ministry of Health and Sports, which would coordinate with all the relevant agencies to ensure smooth implementation of the Project.

4. Project Site

Both sides confirmed that the site of the Project is in MgGH, which is shown in Annex 1.

5. Contents of the Draft Report

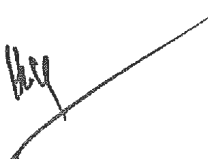
After the explanation of the contents of the Draft Report by the Team, the Myanmar side agreed in principle to its contents.

6. Soft Component of the Project

Considering the sustainable operation and maintenance of the provided facility, technical assistance is planned to be provided under the Project. The Myanmar side confirmed that it would assign necessary number of competent and appropriate C/Ps as described in the Draft Report and their costs.

7. Expected outcomes and Indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Myanmar side has responsibility to monitor the progress of the indicators and achieve the target in year 2022.



[Quantitative Effect]

Indicators	Original (Yr 2015)	Target (Yr 2022)	
		Total No. in MgGH	No. in the Project's facility
Number of delivery (cases)	1,420	1,632	1,632
Number of operations (Surgery)	1,572	1,809	281
Number of operations(Orthopedic)	1,202	1,384	216
Number of operations(Obstetrics/Gynecology)	1,868	2,149	2,149
No. of Ultrasound scanning for Pregnant Women	0 (no data)	4,896	4,896
No. of babies cared by Incubators located at NICU	0 (no data)	146	146

[Qualitative Effect]

- Emergency flow line will be improved by constructing emergency unit in the new building and emergency patients will be treated and transferred to examination room and operation theater complex more effectively.
- Clinical practice environment of medical personnel will be improved through the provision of facilities and equipment.
- Operation will be conducted in safe conditions by constructing operation theater complex.
- Improvement of medical services in MgGH will make it possible to accept patients with difficult diseases.

8. Ex-Post Evaluation

JICA will conduct ex-post evaluation three (3) years after the project completion with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability) of the Project. Result of the evaluation will be publicized. The Myanmar side is required to provide necessary support for them.

9. Japanese Grant Scheme

The Myanmar side understands the Japanese Grant Scheme and its procedures as described in Annex 2, and necessary measures to be taken by the Government of Myanmar.

10. Project Implementation Schedule

The Team explained to the Myanmar side that the expected implementation

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schedule is as attached in Annex 3.

11. Undertakings Taken by Both Sides

11-1. Both sides confirmed to undertakings described in Annex 4. The Myanmar side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage. Contents of Annex 4 will be updated as the Detailed Design progresses, and will finally be used in the contract document.

11-2. To ensure that, especially customs duties and commercial tax, and other fiscal levies which will be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted. If above mentioned duties would not be exempted, those cost would be borne by Ministry of Health and Sports. The Myanmar side confirmed that necessary procedure for tax exemption above mentioned would be taken promptly to avoid delay in implementing the Project.

12. Issues to be Considered for the Smooth Implementation of the Project

Both sides confirmed to the issues to be considered and taken necessary measures for the smooth implementation of the Project described in Annex 5. The Myanmar side clarifies the schedule of budgeting process and take necessary procedure on time.

13. Monitoring during the Implementation

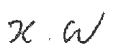
The Project will be monitored and reported every months by the line agency and using the Project Monitoring Report (PMR) in Annex 6.

14. Cost Estimation

Both sides confirmed that the project cost estimation described in the Draft Report was provisional and would be examined further by the Government of Japan for its final approval.

15. Confidentiality of the Cost Estimation and Specifications

Both sides confirmed that the project cost estimation and technical specifications in the Draft Report should neither be duplicated nor disclosed to any third parties until



all the contracts of the Project are concluded.

16. Schedule of the Study

JICA will complete the Final Report of the Preparatory Survey in accordance with the confirmed items and send it to the Myanmar side around October.

17. Environmental and Social Considerations

17-1 General Issues

The project is likely to have minimal adverse impact on the environment under the 'JICA Guidelines for Environmental and Social Considerations (April 2010)'.

18. Other Relevant Issues

18-1. Modification of the title of the Project

The Team explained the title of the Project shall be registered respectively as the implementation schedules will be different in each targeted hospital. The possible name of the project for Magway General Hospital will be "the Project for Improvement of Magway General Hospital" and for Dawei General Hospital will be "the Project for Improving Dawei General Hospital". The Myanmar side understood the necessity of modification of the title of the Project. The official title will be finally confirmed in the E/N if the Project will be implemented.

18-2. Schedule of Explanation on the Draft Report for Dawei General Hospital

The team informed that the Explanation on the Draft Report for Dawei General Hospital will be conducted separately in November or December, 2016.

18-3. Disclosure of Information

Both sides confirmed that the study results excluding the Project cost will be disclosed to the public after completion of the Preparatory Survey. All the study results including the project cost will be disclosed to the public after all the contracts for the Project are concluded.

【Annex 1 Project Site】

【Annex 2 Flow Chart of Japanese Grant Procedures】

【Annex 3 Project Implementation Schedule】

【Annex 4 Major Undertakings to be taken by Each Government】

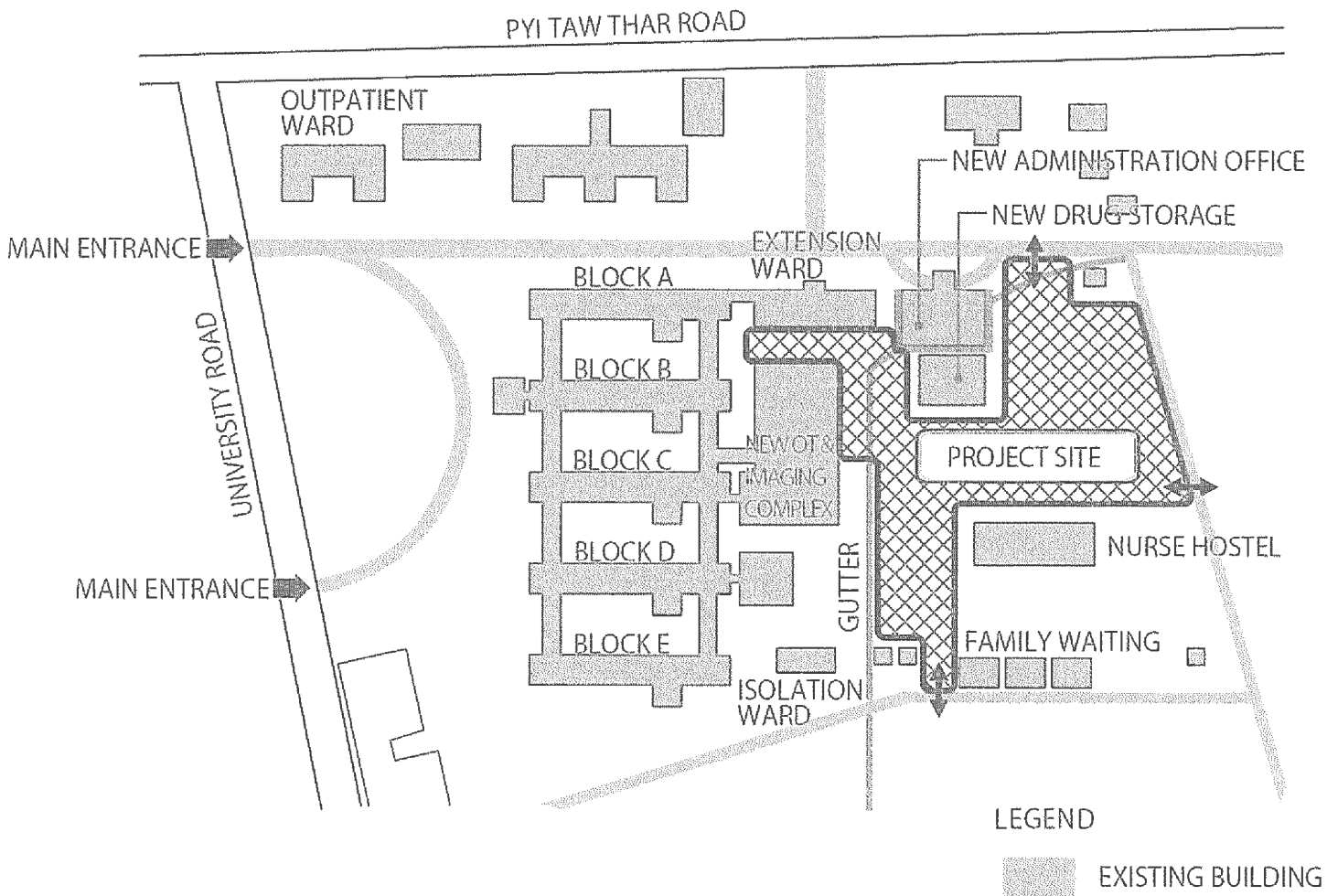
【Annex 5 Budget Preparation Approval Process】

【Annex 6 Project Monitoring Report (template)】

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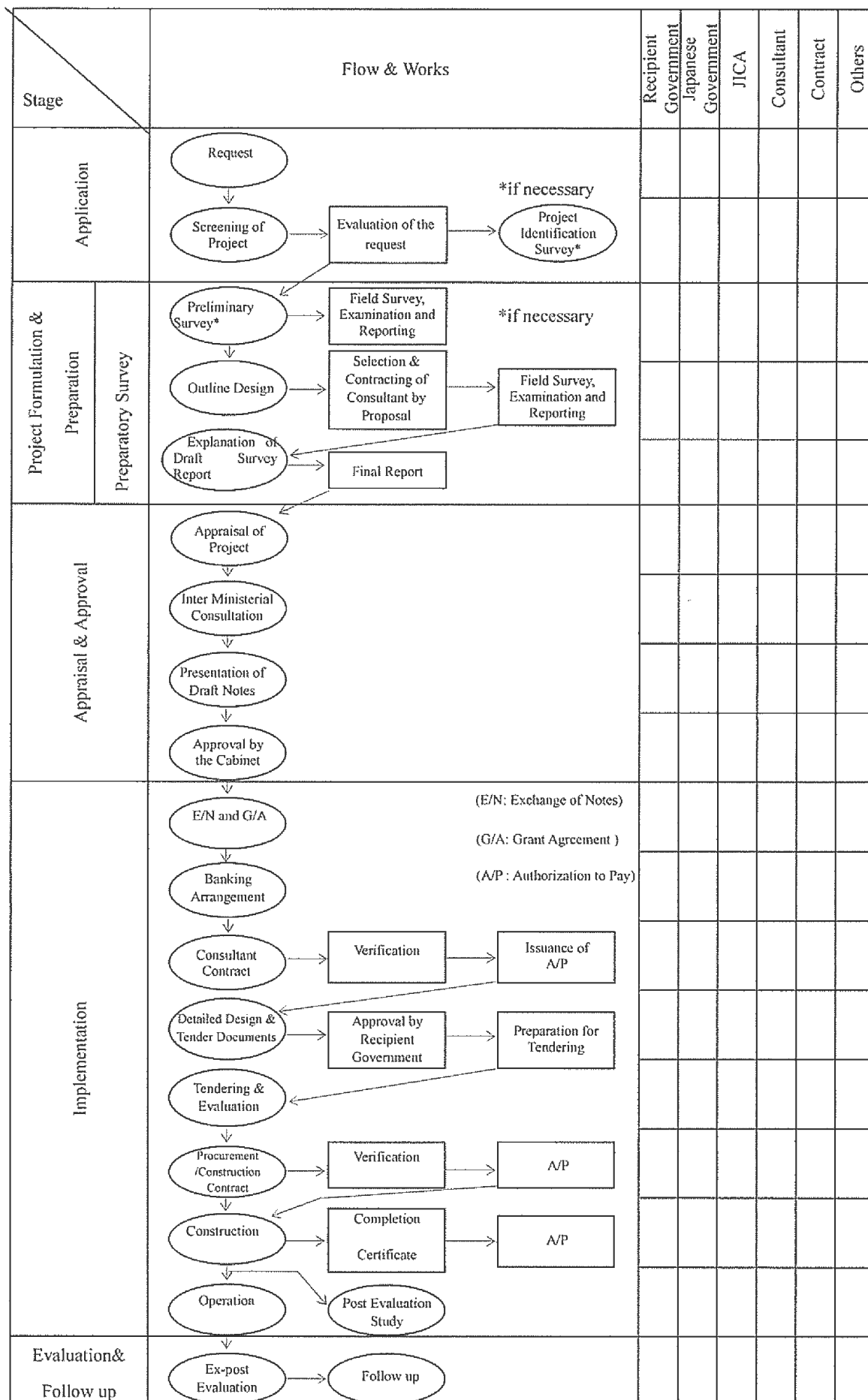
Project Site in MgGH



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FLOW CHART OF JAPANESE GRANT PROCEDURES



PROJECT IMPLEMENTATION SCHEDULE

PROJECT IMPLEMENTATION SCHEDULE

PROJECT PHASE	2016		2017												2018												2019												2020											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec												
Appraisal & Approval																																																		
Cabinet Approval in Japan																																																		
Exchange of Note (G/N) / Grant Agreement (G/A)																																																		
Detail Design & Tendering																																																		
Consultant Agreement																																																		
Detail Design & Tender Documents																																																		
Tendering Procedure																																																		
Construction Contract																																																		
Building Construction																																																		
Equipment Supply																																																		
Soft Component																																																		
Works by Government of Myanmar	FY2016		FY2017												FY2018												FY2019												FY2020											
	13,123Thousand MMK		327,327Thousand MMK												12,353Thousand MMK												699,136Thousand MMK												6,562Thousand MMK											
1) Level the ground of the Project site including demolition of existing buildings and removal of trees																																																		
2) Relocate existing wiring and piping system																																																		
3) Install high voltage lines and a service drop for the new building																																																		
4) Procure and install general furniture																																																		
5) Procure and install medical equipment																																																		
6) Per diem, accommodation and transportation expense for Management Guidance Program attendees																																																		
7) Allocate medical personnel and employment cost																																																		
8) Planting and gardening works around the new building																																																		
9) Obtain approval of IEE/EIA																																																		
10) Obtain building permission																																																		
11) Commissions (Authorization to Pay)																																																		
(Consultant)																																																		
(Construction)																																																		
(Equipment)																																																		

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	MOF		
2	To obtain approval of IEE/EIA if applicable	within 1 month after G/A	MOHS	12,957,000 MMK	
3	To secure the following lands 1) Project site for the new building (approx. 7,000m2) in the Magway General Hospital 2) temporary construction yard and stock yard near the Project area 3) borrow pit and disposal site near the Project area	before notice of the tender document	MOHS		
4	To clear, level and reclaim the following sites 1) Demolition and reconstruction out of the Project site -Building for kitchen for the existing ward -Building for bathroom for the nurse quarter -Building for kitchen for the nurse quarter -Washing are for the nurse quarter -Fence for the nurse quarter -Septic tank for the extension ward 2) Diversion of supply line -Power supply line -Water supply line 3) Removal of trees in the Project site 4) Vacation of the office room on the ground floor in the OT & imaging complex	before notice of the tender document	MOHS	84,845,000 MMK	
5	To obtain the planning, zoning, building permit	before notice of the tender document	MOHS	240,669,000 MMK	
6	To submit the result of DD	end of DD	MOHS		
7	To take necessary procedures for budgetary requests	See Annex 5	MOHS		

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract and the agreement	MOHS	165,000 MMK	
	2) Payment commission for A/P	every payment	MOF	26,965,000 MMK	
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	MOHS		
	2) Internal transportation from the port of disembarkation to the project site	during the Project			

3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	MOHS		
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	MOHS MOF		
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	MOHS		
6	To submit Project Monitoring Report.	every month	MOHS		MD
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity Install high voltage lines and a service drop for the new building	1 month before completion of the construction	MOHS	441,508,000 MMK	
	2) General furniture Procure and install general equipment	1 month after completion of installation work of the equipment by Japanese side	MOHS	113,020,000 MMK (2019)	
	3) Medical equipment Procure and install medical equipment	1 month after completion of installation work of the equipment by Japanese side	MOHS	104,662,000 MMK (2019)	
	4) Planting and gardening Planting and gardening works around the new building	1 month after completion of installation work of the equipment by Japanese side	MOHS	13,011,000 MMK	
8	To ensure that proper personnel will be allocated for utilizing equipment effectively				
	1) Soft Component Per diem, accommodation and transportation fee for Management Guidance Program attendees	during implementation of the Soft Component by Japanese side	MOHS	8,609,000 MMK	
	2) Medical personnel Allocate medical personnel and employment cost	1 month before commencement of installation work of the equipment by Japanese side	MOHS	12,090,000 MMK (2019)	

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3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	MOHS	122,784,000 MMK annually	

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)



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Annex 4

Major Undertakings to be Covered by the Japanese Grant

No	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct facilities and procure equipment - Facilities - Equipment		Facilities 1,871.22 Equipment 316.31	
1)	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
a)	Marine(Air) transportation of the products from Japan to the recipient country			
b)	Internal transportation from the port of disembarkation to the project site			
2)	To construct access roads			
a)	Within the site			
3)	To construct the temporary building			
4)	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
a)	Electricity			
-	The drop wiring and internal wiring within the site			
-	The main circuit breaker and transformer			
b)	Water Supply			
-	The supply system within the site (receiving and/or elevated tanks)			
c)	Drainage			
-	The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site			
d)	Furniture and Equipment			
-	Project equipment			
2	To implement detailed design, tender support, supervision and soft component (Consultant)		247.65	
3	Contingencies		105.94	
	Total		2,541.12	

*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

Annex 5

Total estimated costs to be included in the budget proposal for parliament's approval

An implementing agency of the Government of Myanmar is responsible for submitting a budget proposal to be approved for the next fiscal year's (FY) budget or the current year's supplementary budget. The budget proposal shall include both estimated costs borne by the Government of Myanmar and the grant provided by the Government of Japan. If the proposed budget spans multiple years, it must be appropriated and approved for each fiscal year.

*Expenses to be borne by the Government of Myanmar are subject to change depending on the progress of project implementation. The actual amount to be requested each FY shall be amended accordingly.

Magway General Hospital

	FY2016	FY2017	FY2018	FY2019	FY2020
Expenses to be borne by the Government of Myanmar	13,123 Thousand MMK	327,327 Thousand MMK	12,353 Thousand MMK	699,136 Thousand MMK	6,562 Thousand MMK
Grant to be provided by the Government of Japan	305,500 Thousand MMK	1,701,123 Thousand MMK	12,351,742 Thousand MMK	11,974,873 Thousand MMK	70,049 Thousand MMK
Amount to be requested each FY for budget approval	318,623 Thousand MMK	2,028,450 Thousand MMK	12,364,095 Thousand MMK	12,674,009 Thousand MMK	76,611 Thousand MMK
Total project expenses	27,461,788 Thousand MMK				

Budget preparation/approval process in Myanmar

Budget proposal for next fiscal year	Budget proposal for supplementary budget of current year	Process
August - October	August	Line ministries and departments prepare and submit budget proposal to the Ministry of Planning and Finance (MOPF)
September - December	September - October	The Budget Department scrutinizes and compiles budget proposals, which are to be vetted by a Vice-President and submitted to the Financial Commission
December - January	October - November	The Financial Commission discusses the budget proposals and submits them to the Cabinet with recommendations
December to January	October - November	Union Budget Bill is discussed and approved by the Cabinet
January - March	November	Union Budget Bill is discussed and approved by Pyidaungsu Hluttaw
March	December	Union Budget Law is enacted by Pyidaungsu Hluttaw and approved by the President
April -	December	MOPF allocates budget to each ministry for execution

*The schedule is subject to change every year.

**If the budget proposal cannot be processed and approved at the above-mentioned timings, the implementation agency shall seek alternative ways to secure the necessary budget.

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Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
20XX, Month

Organization Information

Authority (Signer of the G/A)	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> Person in Charge <div style="border-bottom: 1px solid black; margin-bottom: 5px; text-align: center;">(Division)</div> Contacts Address: <div style="border-bottom: 1px solid black; width: 100%;"></div> Phone/FAX: <div style="border-bottom: 1px solid black; width: 100%;"></div> Email: <div style="border-bottom: 1px solid black; width: 100%;"></div>
Executing Agency	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> Person in Charge <div style="border-bottom: 1px solid black; margin-bottom: 5px; text-align: center;">(Division)</div> Contacts Address: <div style="border-bottom: 1px solid black; width: 100%;"></div> Phone/FAX: <div style="border-bottom: 1px solid black; width: 100%;"></div> Email: <div style="border-bottom: 1px solid black; width: 100%;"></div>
Line Agency	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> Person in Charge <div style="border-bottom: 1px solid black; margin-bottom: 5px; text-align: center;">(Division)</div> Contacts Address: <div style="border-bottom: 1px solid black; width: 100%;"></div> Phone/FAX: <div style="border-bottom: 1px solid black; width: 100%;"></div> Email: <div style="border-bottom: 1px solid black; width: 100%;"></div>

Outline of Grant Agreement:

Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____
Project Title	THE PROJECT FOR IMPROVEMENT OF MAGWAY GENERAL HOSPITAL IN MAGWAY REGION
E/N	Signed date: _____ Duration: _____
G/A	Signed date: _____ Duration: _____

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1: Project Description

1-1 Project Objective

In response to the request from the Government of Myanmar, the Government of Japan dispatched a preparatory survey team to Myanmar for the Project from January to March 2016. Through a series of discussions, they confirmed that this hospital development project should be implemented based on the following principles:

- Universal design of facilities for providing patient-centered healthcare services;
- Effective utilization of existing buildings and harmonization with the new building based on a future development plan;
- Favorable educational environment provided to medical personnel including hospital staff and medical students; and
- Facility design for disaster risk reduction to be adopted.

1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

The Magway Region has the highest under-five mortality rate in Myanmar at 1081 per 1,000 live births far above the national average of 72. The maternal mortality rate per 100,000 live births is also higher in the region at 286 than the national average of 2552. These health indicators suggest that it is particularly urgent to improve maternal and child healthcare services in the Magway Region. Meanwhile, the medical services of MgGH have been degraded due to the deterioration and damage of facilities and equipment and due to the lack of beds as demonstrated by the bed occupancy rate exceeding 100%. In other words, some patients under treatment are forced to be discharged and are not able to take necessary operations in some case, thus it is deemed that improvement of facilities in MgGH is significant. Also, due to lack of facilities, equipment and medical specialists, some patient are not received or referred to other medical institutions in Mandalay, approximately 300km away from Magway. In this sense, MgGH cannot fulfill its responsibilities as a regional hub hospital. Moreover, because circulation of patients and medical staff is not adequately considered in the existing buildings, challenges in the provision of adequate medical services such as long transfer time for emergency patients are observed. In addition, educational environment for medical personnel is not favorable due to lack of conference and lecture rooms for hospital staff and students. In these circumstances, the Project for Improvement of Magway General Hospital (hereinafter referred to as "the Project") will be implemented to achieve the overall goal of quality and comprehensive health service for all citizen. In particular in the Magway Region, the Project will aim to strengthen the capacity of MgGH as a regional hub hospital by constructing a new building consisting of an obstetrics ward, a gynecology ward, a neonatal unit, an emergency unit, an operation theater complex, and other relevant departments on the existing premises of MgGH as well as providing equipment required for appropriate healthcare services.

1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)			
Indicators	Original (Yr 2015)	Target (Yr 2022)	
		Total No. in	No. in the

¹ Source: Census in 2014

² 2009, Central Statistical Organization, Ministry of Planning and Finance <http://www.csostat.gov.mm/Myanmar.asp>

		MgGH	Project's facility
Number of Delivery (cases)	1,420	1,632	1,632
Number of operations (Surgery)	1,572	1,809	281
Number of operations(Orthopedic)	1,202	1,384	216
Number of operations(Obstetrics/ Gynecology)	1,868	2,149	2,149
No. of Ultrasound scanning for Pregnant Women	0 (no data)	4,896	4,896
No. of babies cared by Incubators located at NICU	0 (no data)	146	146
Qualitative Effect			
<ul style="list-style-type: none"> • Emergency flow line will be improved by constructing Emergency Unit in the new building and emergency patients will be treated and transferred to Examination Room and Operation Theater Complex more effectively. • Clinical practice environment of medical personnel will be improved through the provision of facilities and equipment. • Operation will be conducted in safe conditions by constructing Operation Theater Complex. • Improvement of medical services in MgGH will make it possible to accept patients with difficult diseases. 			

2: Project Implementation

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	Original: (M/D) Magway General Hospital in the Magway Region Attachment(s):Map	Actual: (PMR) Attachment(s):Map
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Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
New facilities of MgGH	<p>Main building : 3-story, Reinforced concrete structure, 6,330m2 Ancillary buildings: Reinforced concrete structure, 690m2 (including a generator hut, connecting corridors and a ramp)</p> <p>Departments: Emergency unit, Operation theater complex, ICU, Sterilization unit, Delivery Unit, Neonatal Unit, Gynecology ward, and Obstetrics ward.</p>	(PMR)

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Equipment	Medical equipment necessary for clinical activities in the above-mentioned facilities	Please state not only the most updated schedule but also other past revisions chronologically. All change of design shall be recorded regardless of its degree.
Soft Component	Improvement of medical equipment maintenance capability	

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

2-2 Implementation Schedule

2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
Cabinet Approval	Nov 2016		(PMR) As of (Date of Revision) Please state not only the most updated schedule but also other past revisions chronologically.
E/N	Dec 2016		
G/A	Dec 2016		
Detailed Design	Jan 2017 - Aug 2017		
Tender Notice	Aug 2017		
Tender	Nov 2017		
Construction Period	Jan 2018 - Sep 2019		
Installation of Equipment	Aug 2019 - Nov 2019		
Soft component	Sep 2019 - Oct 2020		
Project Completion Date*	Oct 2020		
Defect Liability Period	Nov 2020		

*Project Completion was defined as _____ at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

2-3 Undertakings by each Government

2-3-1 Major Undertakings

See Attachment 2.

2-3-2 Activities

See Attachment 3.

2-3-3 Report on RD
See Attachment 4.

2-4 Project Cost

2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities	Main building : 3-story, Reinforced concrete structure, 6,330m ² Ancillary buildings: Reinforced concrete structure, 690m ² (including a generator hut, connecting corridors and a ramp) Departments: Emergency unit, Operation theater complex, ICU, Sterilization unit, Delivery Unit, Neonatal Unit, Gynecology ward, and Obstetrics ward.		1,871.22	Please state not only the most updated schedule but also other past revisions chronologically.
Equipment	Medical equipment necessary for clinical activities in the above-mentioned facilities		316.31	
Consulting Services	- Detailed design - Tender Support - Supervision - Soft Component		247.65	
Contingency			105.94	
Total			2541.12	

Note: 1) Date of estimation: March 2016
2) Exchange rate: 1 US Dollar = 119.47 Yen
1MMK=0.09223Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of Myanmar

Items			Cost (Thousand MMK)	
	Original	Actual	Original	Actual
Construction works	Level the ground of the Project site including demolition of existing buildings and removal of trees		47,377	Please state not only the most updated schedule but also other past revisions

				chronologically
	Relocate existing wiring and piping system		37,468	
	Install high voltage lines and a service drop for the new building		441,508	
	To obtain approval of IEE/EIA if applicable		12,957	
	To obtain the planning, zoning, building permit		240,669	
Equipment procurement	Procure and install general furniture		104,662	
	Procure and install medical equipment		8,609	
Soft Component	Per diem, accomodation and transportation fee for Soft Component Program attendees		13,011	
	Allocate medical personnel and employment cost		12,090	
	Planting and gardening works around the new building		27,130	
Administrative procedures	Commissions for Authorization to Pay, payment to a consultant and contractors		240,669	
Total			1,058,501	

Note: 1) Date of estimation: March 2016
2) Exchange rate: 1 US Dollar = ¥119.47
1MMK=¥0.09223

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR)

2-5 Organizations for Implementation

2-5-1 Line Agency:

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: (M/D)

Department of Medical Services, Ministry of Health and Sports

Actual, if changed: (PMR)

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2-6 Environmental and Social Impacts

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

3: Operation and Maintenance (O&M)

3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number ,qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

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Original: (M/D)

(1) Operation Structure

It is necessary to deploy medical staff in each department as shown in Table 3-1 so that the new building and equipment of the Project can be utilized appropriately and the required level of medical services can be achieved. It is required to increase the number of medical staffs generally in MgGH as the number of beds and operation theaters increases. Currently there is no neonatologist and emergency physician in MgGH, thus medical specialists in these fields are especially required for legitimate clinical activities. MOHS is currently focusing on the nurture of medical specialists, nurses, technicians, especially emergency physicians who is not common in Myanmar, and also focusing on the in-service education of physicians.

Furthermore it is mentioned in the "Hospital Management Manual" issued in 2011 by Ministry of Health (as of 2011) that the deployment of medical equipment maintenance engineers is mandatory in order to maintain the medical equipment in order.

Table 3-1 Medical Staff Required for the Departments to be Upgraded

Category	O/G	Neonatal unit	Operation			ICU	sterilization	Emergency
			Surgery	Orthopedics	Anesthesiology			
Professor	1	1						
Associate Professor	1			1	1			
Lecturer	3	1						
Assistant Lecturer	4	1	1		1			
Senior Consultant	1							
Junior Consultant								1
Senior Assistant Surgeon					2			1
Assistance Surgeon	5	1	2	3				7
Post Graduate	21		4					
Physicians total	36	4	7	4	4			9
Chief Nurse	4	1	2					2
Nurse	16	8	6			3		12
Trained nurse	20	11	15			5		20
Nurses Total	40	20	23			8		34
Medical Equipment Maintenance Engineer	1							
Medical Assistant	2		6					
Sterilizing worker							1	
Worker	6	4	6				1	2

(2) Maintenance System

● Facilities

Currently an electrical technician and four technicians in charge of plumbing installation are assigned for basic facility maintenance in MgGH. Complicated maintenance and repair works which they cannot cope with are outsourced through the medical superintendent of MgGH. Those technicians will be able to conduct daily maintenance works for the new building, on the other hand repair of building elements and periodical inspections requiring expertise etc. will be outsourced as is with the existing condition.

● Equipment

Currently an electrical technician is working in MgGH and he can fix minor matters such as replacement of ceiling light bulb in operation theaters or repair of suction machines. For complicated repairs, a repair request is made through the medical superintendent in MgGH to CMSD (the Central Medical Stores Depot) under the Department of Medical Services, MOHS. In case even CMSD cannot repair the equipment, CMSD call the local agent and ask them to repair it.

At the completion of the Project, a medical equipment maintenance engineer is expected to be deployed for MgGH.

(3) Facility maintenance plan

The maintenance of facilities is categorized into two types: (i) daily cleaning and (ii) repair of parts from wear and tear, damage, and deterioration. The daily cleaning will be able to behavior which handles facilities carefully as well as early detection of damages and/or malfunctions. The repair of facilities mainly consists of the renovation and restoration of the interior and exterior finish on the structure. Facilities should be refurbished every decade to retain their functions. Items for regular inspection and repair which affect the lifespan of facilities will be presented in the Maintenance Manuals submitted by the contractor at the commissioning of the facilities. Detailed inspection and cleaning methods will be also explained at that time.

Regular inspection points are summarized in Table 3-2 below.

Table 3-2 Summary of regular inspection points of facilities

	Inspection and maintenance points	Frequency
Exterior	Restore and repaint exterior walls	Repaint every 5 years; restore every 3 years
	Inspect and restore roofs	Inspect every 3 years; Restore every 10 years
	Clean gutters and drainage surroundings regularly	Every year
	Inspect and repair exterior door and window sealants	Every year
	Inspect and clean ditches, manholes, etc.	Every year
Interior	Renovate the interior	As necessary
	Restore and repaint partition walls	As necessary
	Replace ceiling materials	As necessary
	Adjust doors and windows to fit the openings	Every year
	Replace door handles, hinges, etc.	As necessary
	Periodical inspection for elevators	once 3 months

(4) Building Equipment maintenance plan

Daily preventive maintenance before there arises a need to repair defects and replace parts is important for maintain building equipment. Its lifespan can be extended by normal operation and daily inspection, lubrication, tune-up, cleaning, and repair. Daily maintenance can prevent defects and accidents as well as chain reactions.

Equipment such as a backup generator and water pumps needs periodical inspection and maintenance. It is important for these kinds of equipment to have annual inspection. The general lifespan of major building equipment is shown below in Table 3-3.

Table 3-3 Lifespan of building equipment

	Equipment	Lifespan
Electrical installations	Distribution board	20~30 years
	LED lamp	20,000~40,000 hours
	Fluorescence lamp	5,000~10,000 hours
	Backup generator	30 years
Plumbing installations	Pump, pipe and valve	15 years
	Tank	20 years
	Sanitary appliance	25~30 years
Air conditioning and ventilation installations	Pipe	15 years
	Exhaust fan	20 years
	Air conditioner	10 years

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(5) Equipment maintenance plan

It is necessary to establish the maintenance formation in the Department of Medical Services, MOHS and MgGH based on the requirements for the medical equipment and medical furniture maintenance described in the "Hospital Management Manual" issued in 2011 by Ministry of Health (as of 2011). The proposed maintenance formation is shown in Table 3-4. The medical equipment is categorized into operation theater, labor room, radiology, clinical laboratory, ICU, laundry and others in the manual mentioned above.

Table 3-4 Proposed Maintenance Formation

The scope of Department of Medical Services, MOHS	The Scope of Administration department in MgGH	The Scope of Maintenance department in MgGH
<ul style="list-style-type: none"> • To create maintenance plan • To ensure and allocate the budget • To create personnel deployment plan • To create personnel training plan 	<ul style="list-style-type: none"> • To arrange the budget requests from each clinical department and apply them to MOHS • To apply personnel plan • To manage inventory list • To hear the situation from each clinical department • To share the information with MS and other administrators (Regular Report) • To plan and implement training (Medical staff, Technicians) • To ask the local agent to repair (Order to manufacturer local agent) 	<ul style="list-style-type: none"> • To clarify the scope of work of MS/the person in charge of the maintenance/ end-users • To manage the inventory list of each clinical department • To instruct on the equipment usage to end users (including daily check and periodical check) • To confirm the lack of parts and consumables • To report the serious malfunction(to the Administration and ask them to apply the repair request) • To adjust or repair the equipment with not so serious malfunction • To identify the malfunction parts • To inspect the repaired equipment on receipt • Notes (for each department) <p>Operation Theater :</p> <ul style="list-style-type: none"> • To maintain the medical gas station under the supervision of anesthetist, to conduct basic maintenance, • To maintain medical electronic devices <p>Labor room :</p> <ul style="list-style-type: none"> • the same scope as operation theater <p>Radiology :</p> <ul style="list-style-type: none"> • To maintain the electrical system by Electrician • To clean up the equipment under the supervision of radiologist <p>Laboratory :</p> <ul style="list-style-type: none"> • To call CMSD(Central workshop) in case Blood Bank Refrigerator do not work well, <p>ICU:</p> <ul style="list-style-type: none"> • To maintain the medical gas pipe and ICU equipment by qualified technician <p>Laundry :</p> <ul style="list-style-type: none"> • To conduct basic maintenance for electrical equipment

Currently there are some problems with medical equipment maintenance in MgGH such as that daily check is not conducted based on standardized procedure and it is not conducted in a planned manner. Soft Component program will be included in the Project considering problems mentioned above in order to improve the maintenance management system.

Actual: (PMR)

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: (M/D)

Annual operation and maintenance cost for the facilities and equipment is estimated as shown in below.

Table 3-5 Estimated operation and maintenance cost (thousand MMK per year)

Item	Estimated expenditures after completion of the Project
1) Human resource	12,090
2) Electricity	32,921
3) Fuel	15,707
5) Medical gas	29,784
7) Facility maintenance	14,067
8) Medicine	11,235
9) Consumables for the equipment	6,980
Total	122,784

4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): (M/D)

Potential Project Risks	Assessment
1. Delay in the Project Implementation	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
Delay and/or shortage of C/P's budget may affect project implementation schedule.	Analysis of Probability and Impact:
	Issues to be Considered for the Smooth Implementation of the Project
	Mitigation Measures:
	Clarifies the schedule of budgeting process and take necessary procedure on time.
	Action during the Implementation:
	Clarifies the schedule of budgeting process and take necessary procedure on time.
	Contingency Plan (if applicable):
2. Delay in allocation of necessary human resources	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
Delay in allocation of necessary human resources may affect operation and maintenance of the hospital services.	Analysis of Probability and Impact:
	Issues to be Considered for the effective implementation.

	Mitigation Measures:
	Clarifies the schedule of budgeting process and take necessary procedure on time.
	Action during the Implementation:
	Clarifies the schedule of budgeting process and take necessary procedure on time.
3. (Description of Risk)	Contingency Plan (if applicable):
	Probability: H/M/L
	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s) (PMR)	

5: Evaluation at Project Completion and Monitoring Plan

5-1 Overall evaluation

Please describe your overall evaluation on the project.

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5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

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5-3 Monitoring Plan for the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of

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monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

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Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Final Report Only)



Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	● ● t	●	●	●	●	●
2	Item 2	● ● t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ● ●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ● month, 2015	2nd ● month, 2015	3rd ● month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

5. ソフトコンポーネント計画書

ソフトコンポーネント計画書

1. ソフトコンポーネントを計画する背景

1-1 本計画の目的

2014 年度から全国に導入された「公的医療施設で提供される保健医療サービス無料化」の影響から、2013 年の 73.6 名/日に比べ平均外来患者数は 2015 年は 146.4 名/日と約 2 倍、平均入院患者数も 54 名/日から 78.4 名/日と同期間に 1.45 倍に増加している¹。このため、特に分娩受入数の増加に伴い、産科病棟の病床数が不足、病院全体の病床稼働率も 2015 年は 150%以上となっている。また、手術件数についても増加の一途を辿っており、2013 年の 4,035 件に比べ 2015 年度は 5,485 件と約 1.36 倍²となっている。

本計画では、ミャンマー国側により建設された「手術・画像診断棟」を活用した病院整備基本構想の下、救急部門、手術部門、ICU(Intensive Care Unit:集中治療室)部門、中央滅菌部門といった中央診療機能の強化に加え、サービス需要の増大する周産期医療サービスへの対応として分娩部門、NICU(Neonatal Intensive Care Unit: 新生児集中治療室)部門、産科/婦人科病棟の整備を行う。整備対象のマグウェイ総合病院は、マグウェイ医科大学の教育病院として指定されており、ハウスオフィサー (MBBS: Medicine Bachelor and Bachelor of Surgery: 内科及び外科学士取得後 1 年目の研修医)、一般医、PGD (Post Graduate Doctor: 内科及び外科学士を終了した卒後医) あるいはレジストラー (登録医) と呼ばれる修士コースに属する専門医の臨床実習指導や講義も実施している。

本計画は、施設及び施設の稼働に必要な機材の整備を通じ、保健人材育成の環境や保健医療サービスの質の向上に資する事を目的に実施されるものである。

1-2 機材活用に係る現状と課題

マグウェイ総合病院の医療機材維持管理は院内にいる医療機材管理責任者及び同チームあるいは保健・スポーツ省医療サービス局傘下の CMSD(Central Medical Stores Depot: 中央医療管理部、以下 CMSD と称す) が行うこととなっている。しかし彼らが修理できる範囲は非常に限定的な内容に留まっている。また、CMSD の医療機材保守に係る活動は医療従事者による日常点検などの動作確認や機能不全報告に依存している。現場の医療従事者は機能不全が発生すると医療機材管理責任者及び同チームまたはオンコールで CMSD に修理対応依頼をすることとなっている。CMSD によるそれらの修理が不可能な場合には代理店に修理依頼を行うが、病院と代理店との間には年間保守管理契約がないことから、代理店の技師派遣が遅れ、結果として医療サービスの提供に支障をきたしているのが現状である。

¹ マグウェイ総合病院「病院統計」より

² マグウェイ総合病院「病院統計」より

(1) 中央医療管理部（CMSD）及び院内の保守管理体制の現状

従来、機材保守管理における各関係者の役割が明確でなく、エンドユーザーである医師、看護師あるいはコメディカルに委ねられており、彼らが日常点検など使用前の動作確認を行い、安全に使用できる機器か否かの確認及び管理を行っている。併せて、人工呼吸器の呼吸回路のような交換部品、輸液セットなどの消耗品の管理も行っている。医療機材の機能不全が生じた際には、院長室を通じて CMSD あるいは民間代理店に修理依頼をしていた。病院と代理店の間には年間保守管理契約が締結されておらず、院長などの病院運営管理責任者は、特に、高度保守管理が求められる医療機材の保守管理契約の必要性は認識しているものの、その業務範囲、必要条件の設定などの知識を十分に有していない。

2016 年 7 月に入手した情報によると、マグウェイ総合病院には新たに 3 名のエンジニア（土木、電気、水）が保健・スポーツ省から配属、常駐の上、施設及び機材の保守管理業務にあたることになっている。しかしながら、彼らのほとんどは工学系の大学を卒業して間もなく、医療機材の保守管理経験を有していない。

CMSD はチーフエンジニアを中心に、アシスタントエンジニア、電気工などを含め、計 6 名が在籍している。ミャンマー国の医療機材保守は、マグウェイ総合病院など地方病院を含め、CMSD が中心となって保守を実践してきた。2012 年以前は、トップレファラル病院であっても、比較的取り扱いが容易な一般医療機器しか保有していなかったため、CMSD の技術レベルは、酸素濃縮器、酸素中央配管、高圧蒸気滅菌器、吸引器など基本的な医療機器に関する軽微な機能不全にしか対応していなかった。また、CMSD では、医療機材の管理ツールがないため、病院からの修理依頼が来るまでは行動を起こす事が出来ない状況にあった。

2012 年以降、保健・スポーツ省による医療機材の大規模調達に伴い、マグウェイ総合病院を含む州病院レベルでも MRI や CT スキャナーの導入が進んでいる。これらの高度な医療機材のメーカーは、各メーカー本部所在国における PL 法（製造物責任法）に対応するため、自社の訓練を受けた技術者（以下、「有資格技術者」と称す）だけが機材の点検・修理等の保守を行うことができるとしていることがほとんどである。したがって、有資格技術者ではない CMSD のエンジニアは、深刻な機能不全への対応や定期点検の実施をすることが出来ない。

今後、CMSD は医療機材の「調達や保守管理業務を一括して実施する医療サービス局の総括部署」として、各病院の関係者と連携しながら、機材の稼働状況の一元管理を図り、機能不全が多く修理金額が高む機材の更新計画を立案し、機材を長く良い状態で使用することが求められている。また、個々の病院の機材の稼働状況を遠隔でも確認する調達機材管理データベースをもとに、積極的な予防メンテナンス活動などを行うことが求められている。併せて、病院運営管理責任者は、代理店との年間保守管理契約締結のための業務範囲、必要条件の設定などの知識を強化する必要がある。

(2) メーカー代理店の保守管理に係る現状

マグウェイ総合病院へのサービスは、メーカーが代理店契約を締結しているヤンゴン所在の代理店あるいはマンダレーにある代理店がオンコールで実施している。代理店の技術者は、メーカー本社あるいはシンガポール、タイなど隣国の代理店でトレーニングを受けた有資格者であるため、ある程度の機能不全には対応が可能である。ヤンゴンの代理店を中心として、マンダレー、ネピドーなど第三次医療施設がある中核都市には支店を設けているケースもあり、マグウェイ総合病院にはマンダレーの代理店からサービスを提供しているメーカーも存在している。

しかしながら、マグウェイ総合病院をはじめとする公的医療施設は代理店と年間保守管理契約³を締結していないことから、機能不全が発生した際にその都度オンコールで修理依頼をしている。オンコールで修理依頼を受けた場合、技術者が直ぐに対応できる状況にならない場合には、代理店が契約を締結している民間病院などへの修理対応を優先する場合もある。

年間保守契約の中には、機材定期点検も含まれる。通常定期点検を受けている機材は、交換部品の交換が適切に行われ、代理店も個別の機器の状況を十分に把握できているため、機能不全が生じにくい、生じたとしてもその対応が容易である。しかしながら、マグウェイ総合病院の機材は保守契約を締結していないことから、定期点検も受けておらず、機能不全がより深刻化することもある。

このような状況を改善するためには、病院は臨床科ごとに優先的に保守管理契約を締結すべき機材を選択し、これら維持管理に係る予算を集計・計上し、代理店との間に年間保守管理契約を締結できるように準備をする必要がある。

(3) 調達医療機材活用に係る現状

マグウェイ総合病院の医療従事者は、既存機材に対する操作・活用の知識を十分に持っており、個別機材を活用した臨床経験も豊富である。

したがって、操作は問題なく行うことができるものの、機材の経年劣化による不調を毎日の日常点検の実施を通じて事前に把握し、予防措置を取るといった予防メンテナンスは十分でない。現在、各臨床科の病棟、手術室及び分娩部門などでは機器の日常点検を目視などで実施しているものの、帳票に記録をつけることなどは行っていない。このため、人によって点検項目や、点検の方法が変わる等標準化された点検が実施されていない。また、次のシフトの看護師に機材の状態を申し送りするのも口頭のみとなっており、正確に伝えることが困難な状況となっている。更に、上述のように、代理店の有資格者による点検を定期的に受ける体制にないため、必要な交換部品の交換など、代理店を通じた予防メンテナンス活動も十分に行われていない。

³ 医療機材の保守管理契約は病院が保健・スポーツ省に予算申請し、メーカー代理店と締結する。契約形態は、交換部品費を含む包括的保守管理契約と、修理サービスのみの年間保守管理契約の2種類がある。

無償資金協力事業で調達される医療機材は、調達業者またはメーカーによる初期操作指導が行われるが、供給業者が機材引渡し時に行う初期操作指導では一つの機種に対して一回の研修を 20 分から最大で 60 分程度しか実施せず、内容も操作指導が大半を占めているため、全てのエンドユーザーが日常点検方法、トラブルシューティング方法含め詳細に身につけることは困難である。今後、調達医療機材を長く良い状態で使用していくためには、供給業者による初期操作指導の範囲内ではカバーしきれない日常点検、トラブルシューティング及び定期点検など予防メンテナンス活動の強化を行うことが重要である。

(4) 機材活用に係る課題分析

前項 (1) ～ (3) を踏まえ、本計画を円滑に立ち上げ、調達機材の持続可能性を確保するに際し、以下 3 点の課題が挙げられる。

- ① CMSD 及び病院運営管理責任者（院長、副院長）が機材の稼動状況を管理できていないため、個別機材の故障状況の把握に時間がかかっている。
- ② 病院及び保守管理を担当する CMSD が保守管理契約締結のために必要な知識を有しておらず、また院内で年間保守管理契約を締結するための予算化ができていないため、適切な年間保守管理契約が締結できておらず、機材の機能不全による医療サービスの中断が生じている。
- ③ 日常点検、定期点検などの予防メンテナンス活動が定まった方法で実施されていないため、機能不全が深刻化し、従って、耐用年数も短くなる傾向にある。

2. ソフトコンポーネントの目標

マグウェイ総合病院へ調達する医療機材を、医療機材管理責任者及び維持管理チームが中心となって、機材管理データベースで管理することにより、機材の稼動・不稼動状況などが個別に管理できるようになる。また、一定の質を確保した医療サービスを安定的に供給するために、日常点検・定期点検の実施など、予防メンテナンス活動が行えるようになる。なお、最終的には、臨床上の重要度に応じ年間保守管理契約が締結され、機材の不稼働時間が減少し、継続的に医療サービスが提供される必要がある。

また、CMSD はマグウェイ総合病院など地方病院の医療機材管理責任者が実施するメンテナンス活動をオンコールでサポート、管理することから、地方病院が実施するそれらの活動（とくに方法や体制）について理解を深め、CMSD として円滑で効率的なメンテナンス活動を管理できるようになることを目標とする。

3. ソフトコンポーネントの成果

3.1 医療機材管理責任者とそのチーム及び CMSD、院長など病院責任者が機材の管理データベースに記された機材の稼動、不稼動状況を閲覧あるいは管理し、機能不全頻度の高い

機材の更新計画を進めることが可能となる。

3.2 保守契約の種類、契約内容、必要条件について、病院側の知識が向上し、最終的には優先度の高い医療機材の保守管理契約が締結される。また、締結された保守管理契約が適切に活用され、機器ごとの定期点検や機能不全発生時の対応がなされる。

3.3 エンドユーザーによる日常点検、代理店のエンジニアによる定期点検などの予防メンテナンス活動の実施を通じ、機材がより安全な状態で長期間使用可能となる。

3.4 医療機材維持管理に関わる各人の職務分掌（病院運営管理責任者、医療機材管理責任者と同チーム、CMSD、エンドユーザーなど）が明確になり、機材の機能不全が早期に発見され、早期に修理される。

4. 成果達成確認方法

成果達成度は以下の方法で確認するものとする。

表 1 成果達成度の確認方法

成果達成度の確認方法	「ソフトコンポーネントの成果」で該当する項目
(1) 技能習熟度にかかる筆記試験	3.1、3.2、3.3
(2) フォーマットを用いた日常点検実施状況	3.3
(3) 調達機材管理データベースの運用（更新）状況	3.1
(4) 交換部品、消耗品の調達計画書	3.1
(5) 代理店との年間保守契約の締結状況（定期点検含む）	3.2
(6) 年間保守費の予算計画、申請状況	3.1、3.2
(7) 機能不全発生時修理フロー	3.4
(8) 医療機材維持管理マニュアル	3.4

5. ソフトコンポーネントの活動〔投入計画〕

本ソフトコンポーネントにおける活動計画は、以下の3回のセッションに分けて実施する。なお、3回に分けて実施する理由は、下記のとおり。

- ① 医療従事者は機材を実際に臨床現場で使用してからでないと維持管理方法の不明点が明確にならない。
- ② 習得した予防メンテナンス活動用の帳票（例：日常点検票）などは実際に使用を開始してみないと運用上の問題点、疑問点が明確にならず、実際に運用できるようにならない。
- ③ 保守管理契約締結交渉（本計画は保守管理契約を付帯しない）は無償保証期間失効直前に行われるため、適切な交渉時期も含めた指導が望ましい。また、契約内容を選択するに際しては、機器の使用実績も併せて確認する。

また、本ソフトコンポーネントの対象者は、マグウェイ総合病院では病院運営管理責任者（院長、副院長）、機器供与対象のエンドユーザー（医師、看護師、コメディカル）、医療機材管理責任者及び同チームとする。同病院の保守サービス（とくに修理）を行う組織

である CMSD の技術者も対象とする。実施場所はマグウェイ総合病院とする。

投入計画は表 2 のとおり。なお、マグウェイ総合病院での実践内容を画像もしくは動画として編集し、この内容がヤンゴンの CMSD 本部勤務者にも一定の知見・技術として定着しうよう、配慮する。

表 2 ソフトコンポーネント活動（投入計画）

セッション	成果	投入内容	主な対象		実施時期
			病院	CMSD	
第 1 セッション	3.1	調達機材管理責任者と同チーム及び各臨床科による機材管理データベースの作成と管理方法	○	○*	機材据付の 2 週間前から開始 *CMSD は機材管理データベースによる管理方法のみ指導（情報共有）
		個別機材の管理帳票（調達年、メーカー、モデル名、機能不全履歴記録、定期点検記録）作成	○		
	3.2	日常点検のポイント、日常点検帳票の運用方法指導	○	○	
	3.3	保守管理契約の種類、必要条件（内容）、金額設定などの指導	○	○	
		機器ごとの定期点検実施回数と内容	○	○	
		機器ごとの消耗品購入計画立案方法指導	○	○	
第 2 セッション	3.1	第 1 セッションで作成、整備した各種帳票を用いての実施研修（シミュレーション）及び課題の抽出、改善方法の指導	○		機材据付完了約 6 ヶ月後に実施
	3.2				
	3.3				
第 3 セッション	3.4	交換部品、消耗品の使用実績調査と調達計画の策定	○	○	機材配備完了約 11 ヶ月後（製造保証期限終了の 1 ヶ月前）に実施
		各種帳票を用いて実施されている維持管理方法をレビュー、課題の抽出、改善方法を指導する。また管理台帳を用いて消耗品・交換部品等の調達計画策定のための指導を行う。	○	○	
		医療機材保守に関する CMSD も含めた各人の職務分掌の明確化、職務分掌の基づく医療機材保守の実践	○	○	
		保証期間内の修理対応への助言と保守管理契約の促進と助言	○	○	
		保守管理契約締結後の契約内容活用についてのアドバイス	○	○	

セッション	成果	投入内容	主な対象		実施時期
			病院	CMSD	
		医療機材維持管理マニュアルの策定、無償保証期間中、保証期間外の機能不全発生時の対応方法の違いを周知する。	○	○	

加えて、現在の CMSD の役割の一つとして、医療機材の調達及び各医療施設への納入がある。CMSD では交換部品及び消耗品を機器本体と同時に納入するが、各病院の消耗品等の使用状況、在庫状況が把握できておらず、各病院による交換部品及び消耗品の適切な購入、管理計画が立てられていない。このため、CMSD は調達時の各機器の交換部品及び消耗品の値段、購入先を病院側に伝え、予算計画が立てられるようにする責務がある。CMSD には機材の維持管理の全体のプロセスを理解し、システムを構築し、管理することが期待されているため、表 2 に挙げた 3.3 及び 3.4 にかかる指導を CMSD に対して行うことは重要であると思料する。

6. ソフトコンポーネント講師

ミャンマーではバイオメディカル技師の国家試験制度はなく、上記投入内容を円滑に実施できるような現地リソースを任命・活用することは困難である。このため、ソフトコンポーネント講師としては医療機材の安全な使用と維持管理方法について包括的な知識、実務経験、マネジメント経験を有する人材を本邦から派遣し、日本の医療現場で実践されている医療機材維持管理の方法を土台に指導する。また、ソフトコンポーネントの効果をより高め、将来的に投入の成果の定着、継続を図るためには、対象者や対象病院の現状について把握し、教育内容・教材に随時反映することが肝要である。派遣要員としては、以下を計画する。

- 院内機材維持管理指導（1名）：
医療機材の保守管理及び途上国の医療現場での業務従事経験を有する者
- 指導補助・研修監理（1名）：
ソフコン教材の作成、参加者の名簿作成等のロジ、ソフコン実施中の教材の改良や新たな教材作成（とくに動画・画像の編集作業）が可能な者

なお、現地の医療従事者は医師を除き、英語の理解力が乏しいことから、研修効果を向上させるために英語－ミャンマー語の通訳を必要期間、雇用する計画とする。

7. ソフトコンポーネントの実施工程

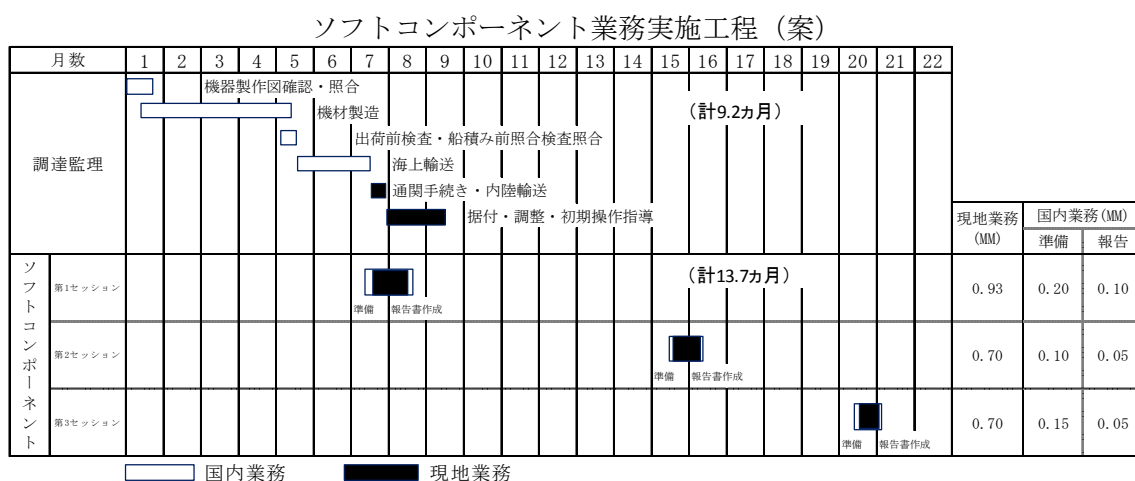
本ソフトコンポーネントは、準備期間も含め、開始から完了まで約 13.7 カ月を要する。

7-1 現地業務

第 1 セッションは機材据付の 2 週間前から開始、0.93 カ月を要する。第 2 セッションは機材据付完了 6 カ月後から開始、0.70 カ月を要する。第 3 セッションは機材据付完了 11 カ月後から開始、0.70 カ月を要する。

7-2 国内業務

本ソフトコンポーネントの内容を充実させ、成果達成を確実なものとするためには、セッションごとに入念な準備が必要となる。また、セッション後にはより良い技術の定着を目的に、研修実施内容や結果の解析を経て課題を抽出し、翌セッションの構成や教材、試験内容等の見直しを行う。したがって、進捗報告や完了届作成にかかる業務も含め、各セッションの準備・報告書作成期間は下表のとおり。



8. ソフトコンポーネントの成果品

ソフトコンポーネント実施の成果品として、以下を提出する。

成果達成度の確認方法
(1) 技能習熟度にかかる筆記試験の結果
(2) 定期フォーマットを用いた日常点検実施状況
(3) 機材管理データベースの運用（更新）状況
(4) 交換部品、消耗品の調達計画書
(5) 代理店との年間保守契約の締結書（案）（定期点検を含む）
(6) 指導に用いたプレゼンテーション資料、動画
(7) 医療機材維持管理マニュアル

なお、病院が保健・スポーツ省に提出する年間保守費については、(4) と (5) の提出が

あれば内容を網羅することが出来ると考える。網羅できない内容の場合には、別途提出を依頼する。

9. 相手国実施機関の責務

9-1 本ソフトコンポーネント実施にかかる相手国責務

- ・ マグウェイ総合病院は、研修受講者となる医師、看護師、コメディカル（ラボテクニシャン、放射線技師）、医療機材管理責任者及び同チーム、電気工などが研修に出席できるよう、調整を行う必要がある。
- ・ **CMSD** が医療機材の調達や保守管理業務を一括して実施することを勘案すると、本ソフトコンポーネントの指導内容を一貫して把握、理解し、**CMSD** 内での定着を図ることが不可欠である。このため、**CMSD** からは少なくとも 2 名が全セッションに参加することが可能なよう、調整することが望まれる。

9-2 医療機材維持管理にかかる相手国責務

本ソフトコンポーネントで実践指導された内容をマグウェイ総合病院が実践するためには、年間保守管理契約費や消耗品・交換部品などの保守費・ランニングコストを確実に手当する必要がある。また、保健・スポーツ省は本無償資金協力事業で建設された施設が開院するまでに、病院専任の医療機材保守管理技術者を任命、配置する必要がある。

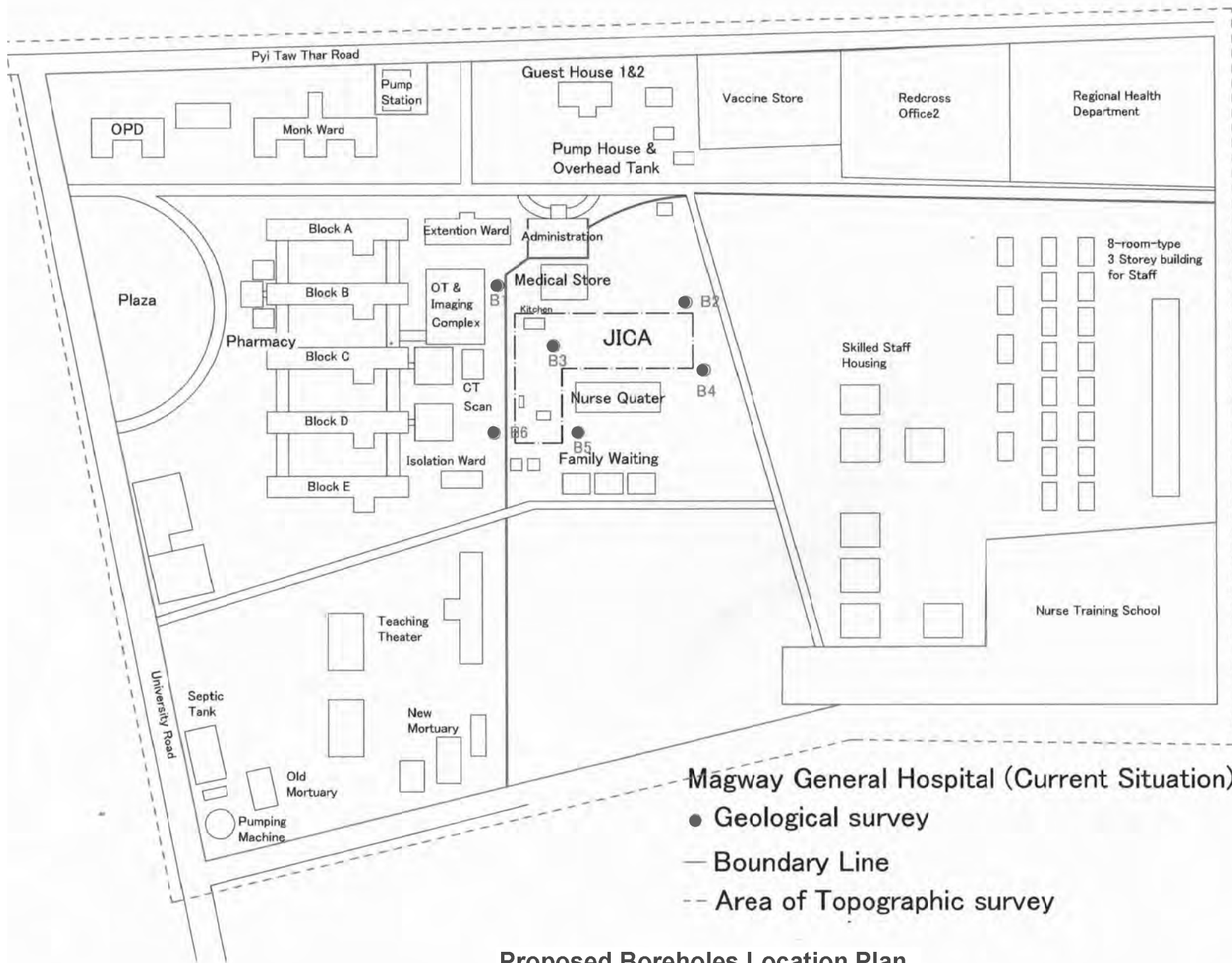
6. 參考資料

参考資料

番号	資料の名称	オリジナル、コピーの別	発行
1	Organization set-up of 500-Beds Hospitals	ソフトコピー	保健省、保健医療サービス局
2	Annual Hospital Statistics Report 2012-13	ソフトコピー	保健省、保健医療サービス局
3	200 bedded equipment list	ソフトコピー	保健省、保健医療サービス局
4	Medical Education System in Myanmar	ソフトコピー	JICA医学教育強化プロジェクト
5	Hospital Profile, MGH	ソフトコピー	マグウェイ総合病院
6	Master Plan _Magway	ソフトコピー	マグウェイ総合病院
7	Vital Statistics, Dept of obstetrics and Gynecology 2015	コピー	マグウェイ総合病院、産婦人科
8	Vital Statistics, Dept of obstetrics and Gynecology 2014	コピー	マグウェイ総合病院、産婦人科
9	Vital Statistics, Dept of obstetrics and Gynecology 2013	コピー	マグウェイ総合病院、産婦人科
10	Leading cause of mortality, newborn (outborn and inborn) 2013-2015	ソフトコピー	マグウェイ総合病院、新生児ユニット
11	Leading cause of morbidity, newborn (outborn and inborn) 2013-2015	ソフトコピー	マグウェイ総合病院、新生児ユニット
12	2011/12 to 2014/15 Hospital Budgets Magway General Hospital	コピー	マグウェイ総合病院
13	The number of major and minor operations in 2015 by department	コピー	マグウェイ総合病院
14	Morbidity and Mortality data by department	ソフトコピー	マグウェイ総合病院
15	Existing equipment list	ソフトコピー	マグウェイ総合病院
16	Hospital Profile, DGH	ソフトコピー	ダウェイ総合病院

7. その他の資料・情報





BORE HOLE No. **BH-1**

BORING LOG (FOR DESIGN PARAMETERS CONSIDERATION)

Sheet No. 1 OF 1

PROJECT NAME : Geological Survey on the Project for Improvement of Regional General Hospitals in the Republic of the Union of Myanmar

LOCATION : In the Compound of Magway General Hospital, Magway Region

GROUND LEVEL : Existing Ground Level

COORDINATE : N 20° 08' 51.0", E 094° 55' 43.8" DEPTH : 30.45 m

BORING EQUIPMENT : TOHO (CD-5) DATE : 26/1/16~ 28/1/16

BORING METHOD : Rotary Drilling Method LOGGED BY : Zaw Min Than

ORIENTATION : Vertical

GROUND WATER LEVEL : 10.20 m

CLIENT
Yamashita Sekkei Inc.

SCALE (m)	ELEVATION (m)	DEPTH GL - (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (gd) CONSISTENCY	SOIL NAME	SOIL DESCRIPTION	DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	STANDARD PENETRATION TEST TEST METHOD (ASTM D 1586-99)					SAMPLING					SCALE (m)
												DEPTH GL - (m)	N-Value (Blows / 30cm)	CURVE OF BLOW ●	SAMPLE (Type & No.)	DEPTH GL - (m)	TCR (%)	SCR (%)	RQD (%)			

1	-1.00	1.00	1.00					Top soil layer, CLAY (Back filled soil)				0.45										1
2	-2.00	2.00	1.00		Dark gray	Loose	Silty SAND	Loose, Dark gray, Silty SAND (Back filled soil).				1.0	SPT-1	1.0								2
3												2.0	SPT-2	2.0								3
4					Yellowish brown	Firm	Sandy Lean CLAY	Firm, Yellowish brown, Low plasticity, Sandy Lean CLAY.		3.00		3.0	UD-1	3.0								4
5												4.0	SPT-3	4.0								5
6												5.0	UD-2	5.0								6
7					Yellowish brown	Medium dense	Clayey SAND	Medium dense, Yellowish brown, Fine to coarse grained sand, Clayey SAND.				6.0	SPT-4	6.0								7
8												7.0		7.0								8
9												8.0	SPT-5	8.0								9
10					Yellowish brown	Medium dense	Silty SAND-I	Medium dense, Yellowish brown, Fine to medium grained sand, Silty SAND-I.				9.0	SPT-6	9.0								10
11												10.0		10.0								11
12					Bluish gray	Dense to very dense	Silty SAND with gravel	Dense to very dense, Yellowish brown, Fine to coarse grained sand, Silty SAND with gravel.		12.50		11.0	SPT-7	11.0								12
13										26/01/16		12.0	SPT-8	12.0								13
14												13.0	SPT-9	13.0								14
15												14.0	SPT-10	14.0								15
16												15.0	SPT-11	15.0								16
17												16.0	SPT-12	16.0								17
18												17.0	SPT-13	17.0								18
19												18.0	SPT-14	18.0								19
20												19.0	SPT-15	19.0								20
21												20.0	SPT-16	20.0								21
22					Yellowish brown	Very dense	Silty SAND-II	Very dense, Yellowish brown, Fine to coarse grained sand, Silty SAND-II.				21.0	SPT-17	21.0								22
23												22.0	SPT-18	22.0								23
24												23.0	SPT-19	23.0								24
25												24.0	SPT-20	24.0								25
26												25.0		25.0								26
27												26.0		26.0								27
28												27.0		27.0								28
29												28.0		28.0								29
30												29.0		29.0								30
	-30.45	30.45	16.95									30.0		30.0								
												30.45		30.45								

NOTES

Relative density description		Consistency description	
Relative density	SPT N-Value (cor)	Consistency	SPT N-Value (cor)
Very loose	0 - 4	Very soft	under 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Firm	5 - 8
Dense	30 - 50	Stiff	9 - 15
Very dense	over 50	Very stiff	16 - 30
		Hard	over 30

Sample key	
● K-1 Disturbed sample (SPT sample)	□ Rock core sample (Core lost)
□ I-1 Undisturbed Sample (Piston sampler)	□ W-1 Water sample
□ D-1 Undisturbed Sample (Denison sampler)	
□ Rock core sample (Single core tube)	
□ Rock core sample (Double core tube)	

Planner structure	
Term	Spacing (mm)
Very thick	> 2000
Thick	600 - 2000
Medium	200 - 600
Thin	60 - 200
Very thin	20 - 60
Thickly laminated	6 - 20
Thinly laminated	< 6

Discontinuities	
Term	Spacing (mm)
Very widely spaced	> 2000
Widely spaced	600 - 2000
Medium spaced	200 - 600
Closely spaced	60 - 200
Very closely spaced	20 - 60
Extremely closely spaced	< 20

Remarks

Geo-friends Engineering & construction Co.,Ltd.

Tel : 951-561431, 959-420107757

www.geo-friends.com

service@geo-friends.com

Revision No. : Rev-0

Revision Date : 19/02/16

Site Geologist : Zaw Min Than

Operator : Aung Zin Tun

Checked by : May Thu

[illegible]

BORE HOLE No. **BH-4**

BORING LOG (FOR DESIGN PARAMETERS CONSIDERATION)

Sheet No. 1 OF 1

PROJECT NAME : Geological Survey on the Project for Improvement of Regional General Hospitals
: in the Republic of the Union of Myanmar

BORING EQUIPMENT : YWE (CD-10)

DATE : 1/2/16- 2/2/16

LOCATION : In the Compound of Magway General Hospital, Magway Region

BORING METHOD : Rotary Drilling Method

LOGGED BY : Naing Htet Aung

GROUND LEVEL : Existing Ground Level

ORIENTATION : Vertical

CLIENT

COORDINATE : N 20°08' 49.6", E 094°55' 46.8" DEPTH : 21.45 m

GROUND WATER LEVEL : 8.80 m

Yamashita Sekkei Inc.

SCALE (m)	ELEVATION (m)	DEPTH (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (g)	SOIL NAME	SOIL DESCRIPTION	DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	STANDARD PENETRATION TEST TEST METHOD (ASTM D 1586-99)					SAMPLING					SCALE (m)	
												DEPTH (m)	N-Value (Blows / 30cm)	CURVE OF BLOW	SAMPLE (Type & No.)	DEPTH (m)	TCR (%)	SCR (%)	ROD (%)				
																				N-Value (Blows / 30cm)			
1	-1.00	1.00	1.00					Top soil layer, Sandy SILT															
2					Reddish brown	Firm to stiff	Sandy Lean CLAY	Firm to stiff, Reddish brown, Low plasticity, Sandy Lean CLAY.															
3	-3.00	3.00	2.00																				
4					Reddish brown	Medium dense	Clayey SAND	Medium dense, Reddish brown, Fine to medium grained sand, Clayey SAND.															
5	-5.00	5.00	2.00																				
6					Yellowish brown																		
7																							
8					Gray	Medium dense	Silty SAND-I	Medium dense, Yellowish brown and gray, Fine to medium grained sand, Silty SAND-I.															
9																							
10	-10.50	10.50	5.50																				
11					Gray																		
12																							
13					Yellowish brown																		
14																							
15																							
16					Gray	Very dense	Silty SAND-II	Very dense, Yellowish brown and gray, Fine to medium grained sand, Silty SAND-II.															
17																							
18																							
19																							
20																							
21	-22.95	22.95	10.95																				
22																							
23																							
24																							
25																							
26																							
27																							
28																							
29																							
30																							

NOTES

Relative density description

Consistency description

Relative density

SPT N-Value (N60)

Consistency

SPT N-Value (N60)

Very loose

0 - 4

Very soft

under 2

Loose

4 - 10

Soft

2 - 4

Medium dense

10 - 30

Firm

5 - 8

Dense

30 - 50

Stiff

9 - 15

Very dense

over 50

Very stiff

16 - 30

Hard

over 30

Sample key

Rock core sample (SPT sample)

Undisturbed Sample (Piston sampler)

Undisturbed Sample (Denison sampler)

Rock core sample (Single core tube)

Rock core sample (Double core tube)

Rock core sample (Core lost)

Water sample

RQD (%)

Term

0 - 25

Very poor

25 - 50

Poor

50 - 75

Fair

75 - 90

Good

90 - 100

Excellent

Planner structure

Term

Spacing (mm)

Very thick

> 2000

Thick

600 - 2000

Medium

200 - 600

Thin

60 - 200

Very thin

20 - 60

Thickly laminated

6 - 20

Thinly laminated

< 6

Discontinuities

Term

Spacing (mm)

Very widely spaced

> 2000

Widely spaced

600 - 2000

Medium spaced

200 - 600

Closely spaced

60 - 200

Very closely spaced

20 - 60

Extremely closely spaced

< 20

Remarks

Geo-friends Engineering & construction Co.,Ltd.

Tel : 951-561431, 959-420107757

www.geo-friends.com

service@geo-friends.com

Revision No. : Rev-0

Revision Date : 19/02/16

Site Geologist : Naing Htet Aung

Operator : U Myint Soe

Checked by : May Thu

BORE HOLE No. BH-6		BORING LOG (FOR DESIGN PARAMETERS CONSIDERATION)						Sheet No. 1 OF 1	
PROJECT NAME : Geological Survey on the Project for Improvement of Regional General Hospitals in the Republic of the Union of Myanmar		BORING EQUIPMENT : YWE (CD-10)		DATE : 26/1/16~ 28/1/16					
LOCATION : In the Compound of Magway General Hospital, Magway Region		BORING METHOD : Rotary Drilling Method		LOGGED BY : Naing Htet Aung					
GROUND LEVEL : Existing Ground Level		ORIENTATION : Vertical		CLIENT					
COORDINATE : N 20°08' 48.8", E 094°55' 43.3"		DEPTH : 30.45 m		GROUND WATER LEVEL : 10.80 m					
				Yamashita Sekkei Inc.					

SCALE (m)	ELEVATION (m)	DEPTH (m)	THICKNESS (m)	DIAGRAM	COLOUR	RELATIVE DENSITY (%)	SOIL NAME	SOIL DESCRIPTION	DATE & DEPTH (m)	CASING (DEPTH (m) & DIAMETER (mm))	WATER DEPTH (m)	STANDARD PENETRATION TEST TEST METHOD (ASTM D 1586-99)					SAMPLING					SCALE (m)	
												DEPTH (m)	N-Value (Blows / 30cm)	CURVE OF BLOW	SAMPLE (Type & No.)	DEPTH (m)	TCR (%)	SCR (%)	ROD (%)				
																				0	20		40
1	-1.00	1.00	1.00					Top soil layer, Silty SAND															
2					Reddish brown	Medium dense	Clayey SAND	Medium dense, Reddish brown, Fine to medium grained sand, Clayey SAND.		3.00			10/30				SPT-1	0.45					1
3													10/30				SPT-2	1.0					2
4	-4.00	4.00	3.00										12/30				SPT-3	1.45					3
5	-5.00	5.00	1.00		Reddish brown	Medium dense	SAND	Medium dense, Reddish brown, Medium to coarse grained sand, SAND.					14/30				SPT-4	2.0					4
6													12/30				SPT-5	2.45					5
7													5.0				SPT-6	3.0					6
8					Yellowish brown	Medium dense	Silty SAND-I	Medium dense, Yellowish brown and reddish brown, Fine to medium grained sand, Silty SAND-I.					25/30				SPT-7	3.45					7
9													6.0				SPT-8	4.0					8
10													4.45				SPT-9	4.45					9
11	-10.50	10.50	5.50										5.0				SPT-10	5.45					10
12													6.0				SPT-11	5.45					11
13													6.45				SPT-12	6.0					12
14													7.0				SPT-13	6.45					13
15													7.45				SPT-14	7.0					14
16													8.0				SPT-15	7.45					15
17													8.45				SPT-16	8.0					16
18													9.0				SPT-17	8.45					17
19													9.45				SPT-18	9.0					18
20													10.0				SPT-19	9.45					19
21													10.45				SPT-20	10.0					20
22													11.0				SPT-21	10.45					21
23													11.45				SPT-22	11.0					22
24													12.0				SPT-23	11.45					23
25													12.45				SPT-24	12.0					24
26													13.0				SPT-25	12.45					25
27													13.45				SPT-26	13.0					26
28													14.0				SPT-27	13.45					27
29													14.45				SPT-28	14.0					28
30													14.45				SPT-29	14.45					29
31													15.0				SPT-30	15.0					30
32													15.45				SPT-31	15.45					31
33													16.0				SPT-32	16.0					32
34													16.45				SPT-33	16.45					33
35													17.0				SPT-34	17.0					34
36													17.45				SPT-35	17.45					35
37													18.0				SPT-36	18.0					36
38													18.45				SPT-37	18.45					37
39													19.0				SPT-38	19.0					38
40													19.45				SPT-39	19.45					39
41													20.0				SPT-40	20.0					40
42													20.45				SPT-41	20.45					41
43													21.0				SPT-42	21.0					42
44													21.45				SPT-43	21.45					43
45													22.0				SPT-44	22.0					44
46													22.45				SPT-45	22.45					45
47													23.0				SPT-46	23.0					46
48													23.45				SPT-47	23.45					47
49													24.0				SPT-48	24.0					48
50													24.45				SPT-49	24.45					49
51													25.0				SPT-50	25.0					50
52													25.45				SPT-51	25.45					51
53													26.0				SPT-52	26.0					52
54													26.45				SPT-53	26.45					53
55													27.0				SPT-54	27.0					54
56													27.45				SPT-55	27.45					55
57													28.0				SPT-56	28.0					56
58													28.45				SPT-57	28.45					57
59													29.0				SPT-58	29.0					58
60													29.45				SPT-59	29.45					59
61													30.0				SPT-60	30.0					60
62													30.45				SPT-61	30.45					61

NOTES

Relative density description	Consistency description
Relative density	SPT N-Value (mcs)
Very loose	0 - 4
Loose	4 - 10
Medium dense	10 - 30
Dense	30 - 50
Very dense	over 50

Consistency	SPT N-Value (mcs)
Very soft	under 2
Soft	2 - 4
Firm	5 - 8
Stiff	9 - 15
Very stiff	16 - 30
Hard	over 30

Sample key

● P-1	Disturbed sample (SPT sample)
□ T-1	Undisturbed Sample (Piston sampler)
□ D-1	Undisturbed Sample (Denison sampler)
□	Rock core sample (Single core tube)
□	Rock core sample (Double core tube)

□	Rock core sample (Core lost)
□	Water sample

RQD (%)	Term
0 - 25	Very poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

Planner structure

Term	Spacing (mm)
Very thick	> 2000
Thick	600 - 2000
Medium	200 - 600
Thin	60 - 200
Very thin	20 - 60
Thickly laminated	6 - 20
Thinly laminated	< 6

Discontinuities

Term	Spacing (mm)
Very widely spaced	> 2000
Widely spaced	600 - 2000
Medium spaced	200 - 600
Closely spaced	60 - 200
Very closely spaced	20 - 60
Extremely closely spaced	< 20

Remarks

Geo-friends Engineering & construction Co.,Ltd.

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Revision No.	Rev-0
Revision Date	19/02/16

Site Geologist : Naing Htet Aung
Operator : Aung Zin Tun
Checked by : May Thu



CONSTANT DISCHARGE PUMPING OUT TEST & RECOVERY TEST RECORD

Pump Well	TW No.1	Pumping Started	6:00 AM	Project	Ground Water Survey
Well Diameter	6"	Duration for Q	6 seconds	Location	Magway General Hospital, Magway
Drilled Depth	250 feet	Discharge Rate	13638.27 L/h (or) 327.27 m ³ /d	Performed by	Zaw Min Than
Screen Depth	40'	Pump Type	(Submersible Pump)	Date	9.04.16
Static Water Level	13.07 m	Pumping Stopped	8:00 AM		
Top of Casing	2 inch	Tank	5 gallon		

Pumped Well					
Form Pumping				For Recovery	
Time since pump started t,(min)	Depth to water level from reference point (m)	Time since pump started t,(min)	Depth to water level from reference point (m)	Time since pump stopped t,(min)	Depth to water level from reference point (m)
0	13.07			0	16.57
1	14.37			1	15.11
2	15.52			2	13.99
3	15.8			3	13.35
4	15.83			4	13.27
5	16.08			6	13.2
10	16.4			8	13.16
15	16.55			10	13.11
20	16.57			15	13.11
25	16.57			20	13.1
30	16.57			25	13.1
35	16.57			30	13.09
40	16.57			40	13.09
50	16.57			50	13.09
60	16.57			60	13.09
80	16.57			80	13.08
100	16.57			100	13.07
120	16.57			120	13.07
150				150	
180				180	
210				210	
240				240	
270				270	
300				300	



LABORATORY

Laboratory Technical Consultant: U Saw Christopher Maung

B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.

Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)



WTL-RE-001

Issue Date - 01-12-2012

Effective Date - 01-12-2012

Issue No - 1.0/Page 1 of 2

W0416 197

WATER QUALITY TEST RESULTS FORM

Client	GEO - Friends Co.,Ltd.
Nature of Water	(TW - 1)
Location	General Hospital Magway Township
Date and Time of collection	18.4.2016
Date and Time of arrival at Laboratory	19.4.2016
Date and Time of commencing examination	20.4.2016
Date and Time of completing	22.4.2016

Results of Water Analysis**WHO Drinking Water Guideline
(Geneva - 1993)**

pH	7.4		6.5 - 8.5
Colour (True)	40	TCU	15 TCU
Turbidity	62	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	296	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness		mg/l as CaCO ₃	
Magnesium Hardness		mg/l as CaCO ₃	
Total Alkalinity		mg/l as CaCO ₃	
Phenolphthalein Alkalinity		mg/l as CaCO ₃	
Carbonate (CaCO ₃)		mg/l as CaCO ₃	
Bicarbonate (HCO ₃)		mg/l as CaCO ₃	
Iron	0.68	mg/l	0.3 mg/l
Chloride (as CL)	80	mg/l	250 mg/l
Sodium chloride (as NaCL)		mg/l	
Sulphate (as SO ₄)	86	mg/l	200 mg/l
Total Solids	708	mg/l	1500 mg/l
Suspended Solids		mg/l	
Dissolved Solids		mg/l	1000 mg/l
Manganese	0.4	mg/l	0.05 mg/l
Phosphate		mg/l	
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature:

Name: Zaw Hein OoB.Sc (Chemistry)

Sr. Chemist

ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

Approved by

Signature:

Name: Soe ThulB.E (Civil) 1980

Technical Officer

ISO TECH Laboratory

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.

Ph: 01-640955, 09-73225175, 09-73242162, Fax: 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com



LABORATORY



Laboratory Technical Consultant: U Saw Christopher Maung

B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.

Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001

Issue Date - 01-12-2012

Effective Date - 01-12-2012

Issue No - 1.0/Page 2 of 2

W0416 197

WATER QUALITY TEST RESULTS FORM

Client	GEO - Friends Co.,Ltd.
Nature of Water	(TW - 1)
Location	General Hospital Magway Township
Date and Time of collection	18.4.2016
Date and Time of arrival at Laboratory	19.4.2016
Date and Time of commencing examination	20.4.2016
Date and Time of completing	22.4.2016

Results of Water Analysis**WHO Drinking Water Guideline
(Geneva - 1993)**

Temperature (°C)	°C	
Fluoride (F)	1.2 mg/l	1.5 mg/l
Lead (as Pb)	Nil mg/l	0.01 mg/l
Arsenic (As)	Nil mg/l	0.01 mg/l
Nitrate (N.NO ₃)	0.3 mg/l	50 mg/l
Chlorine (Residual)	mg/l	
Ammonia (NH ₃)	mg/l	
Ammonium (NH ₄)	mg/l	
Dissolved Oxygen (DO)	mg/l	
Chemical Oxygen Demand (COD)	mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	mg/l	
Cyanide (CN)	Nil mg/l	0.07 mg/l
Zinc (Zn)	Nil mg/l	3 mg/l
Copper (Cu)	Nil mg/l	2 mg/l
Silica (Si)	mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested bySignature: Hein

Name: Zaw Hein Oo
B.Sc (Chemistry)
 Sr. Chemist
 ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

Approved bySignature: Soe Thun

Name: Soe Thun
B.E (Civil) 1980
 Technical Officer,
 ISO TECH Laboratory



LABORATORY

Laboratory Technical Consultant: U Saw Christopher Maung

B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.

Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)



WTL-RE-001

Issue Date - 01-12-2012

Effective Date - 01-12-2012

Issue No - 1.0/Page 1 of 2

W0416 198

WATER QUALITY TEST RESULTS FORM

Client GEO - Friends Co.,Ltd.
 Nature of Water Existing Tube Well Water
 Location General Hospital Magway Township
 Date and Time of collection 18.4.2016
 Date and Time of arrival at Laboratory 19.4.2016
 Date and Time of commencing examination 20.4.2016
 Date and Time of completing 22.4.2016

Results of Water Analysis**WHO Drinking Water Guideline
(Geneva - 1993)**

pH	7.5		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	3	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	296	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness		mg/l as CaCO ₃	
Magnesium Hardness		mg/l as CaCO ₃	
Total Alkalinity		mg/l as CaCO ₃	
Phenolphthalein Alkalinity		mg/l as CaCO ₃	
Carbonate (CaCO ₃)		mg/l as CaCO ₃	
Bicarbonate (HCO ₃)		mg/l as CaCO ₃	
Iron	0.21	mg/l	0.3 mg/l
Chloride (as CL)	120	mg/l	250 mg/l
Sodium chloride (as NaCL)		mg/l	
Sulphate (as SO ₄)	128	mg/l	200 mg/l
Total Solids	781	mg/l	1500 mg/l
Suspended Solids		mg/l	
Dissolved Solids		mg/l	1000 mg/l
Manganese	Nil	mg/l	0.05 mg/l
Phosphate		mg/l	
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Hein OoName: Zaw Hein OoB.Sc (Chemistry)Sr. Chemist

(a division of WEG Co.,Ltd.)

ISO TECH Laboratory

Approved by

Signature: Soe ThitName: S.E (Civil) 1980Technical Officer

ISO TECH Laboratory



Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
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WATER QUALITY TEST RESULTS FORM

Client GEO - Friends Co.,Ltd.
Nature of Water Existing Tube Well Water
Location General Hospital Magway Township
Date and Time of collection 18.4.2016
Date and Time of arrival at Laboratory 19.4.2016
Date and Time of commencing examination 20.4.2016
Date and Time of completing 22.4.2016

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Temperature (°C)		°C	
Fluoride (F)	0.8	mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate (N.NO ₃)	0.8	mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia (NH ₃)		mg/l	
Ammonium (NH ₄)		mg/l	
Dissolved Oxygen (DO)		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	
Cyanide (CN)	Nil	mg/l	0.07 mg/l
Zinc (Zn)	Nil	mg/l	3 mg/l
Copper (Cu)	Nil	mg/l	2 mg/l
Silica (Si)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Heiru

Name: Zaw Hein Oo

B.Sc (Chemistry)

Sr. Chemist

ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

Approved by

Signature: Soe Phit

Name: Soe Phit

A.B (Civil) 1980

Technical Officer

ISO TECH Laboratory

機材 番号	機材名	合計 数量	救急 部門	ICU	新生児 ユニット	手術 部門	滅菌 部門	臨床検査 部門 (既存建物)	産科病棟・ 婦人科病棟	分娩 部門
1	外科用椅子	3				3				
2	麻酔器（人工呼吸器付）	3				3				
3	黄疸計（遠心分離機付）	1			1					
4	血液ガス分析装置	1	1							
5	輸血用冷蔵庫	1				1				
6	無影灯A（2灯式、カメラ・モニター付）	1				1				
7	無影灯B（2灯式）	2				2				
8	中央患者監視装置	3	1	1	1					
9	CPAP装置	4			4					
10	胎児心拍陣痛計	5							2	3
11	除細動装置	4	1	1		1				1
12	分娩台	4								4
13	診断セット	15	3	2					10	
14	心電計	4	2						2	
15	電気メス	3				3				
16	ELISA装置	1						1		
17	救急トrolley	5	2	1	2					
18	検診ベッド	2	2							
19	検診灯	5	3							2
20	胎児ドップラー	3							1	2
21	手術室用手洗い装置	2				2				
22	高圧蒸気滅菌器M	1					1			
23	高圧蒸気滅菌器S	1					1			
24	ICUベッド	4		4						
25	閉鎖型保育器	6			6					
26	開放型保育器	6			6					
27	輸液ポンプ	36		4	8	3			18	3
28	点滴スタンド	43				3			36	4
29	医療器具保管庫	6				3			2	1
30	医療器具カート	6							2	4
31	器械台車	3				3				
32	陣痛ベッド	6								6
33	喉頭鏡	6	2	1		3				
34	リネンカート	3					3			
35	低圧持続吸引器	6			6					
36	薬品保管庫	3	1	1					1	
37	薬品ラック	1	1							
38	薬品トrolley	2							2	

機材 番号	機材名	合計 数量	救急 部門	ICU	新生児 ユニット	手術 部門	滅菌 部門	臨床検査 部門 (既存建物)	産科病棟・ 婦人科病棟	分娩 部門
39	移動式X線装置	1	1							
40	産婦人科検診台	6							4	2
41	手術台A（手動油圧式）	2				2				
42	手術台B（電動油圧式）	1				1				
43	酸素濃縮機	2		1		1				
44	酸素流量計及び加湿器	29		4	12	3			10	
45	酸素吸入セット	4							2	2
46	患者監視装置A（標準測定項目）	32	11	4		5			10	2
47	患者監視装置B（標準測定項目 + EtCO2）	1				1				
48	患者監視装置C（新生児用）	4			4					
49	医薬品冷蔵庫	4		1					3	
50	光線治療器A(上から照射)	5			5					
51	光線治療器B（上下照射）	1			1					
52	回復ベッド	15	7			3				5
53	ストレッチャー	7	6							1
54	吸引器	29	3	2		3			18	3
55	シリンジポンプ	17		4	10	3				
56	経皮黄疸濃度測定器	1			1					
57	超音波ネブライザー	3	3							
58	超音波診断装置	1	1							
59	移動式超音波診断装置	1								1
60	静脈ファインダー	3			3					
61	人工呼吸器	5	1	4						
62	車椅子	4	1						2	1
63	UPS (1.0kVA)	3	1	1	1					
64	UPS (2.0kVA)	2	1							1