資　　料

1. 調査団員・氏名
2. 調査行程
3. 関係者（面会者）リスト
4. 討議議事録（Ｍ／Ｄ）
5. 収集資料リスト
6. 地質調査結果
7. 敷地測量図

1.　調査団員・氏名

1. 調査団員・氏名

現地調査Ⅰ（期間：2013年9月4日から同年9月17日まで）

氏名	担当分野	調査期間	所属
小林　尚行	総括	9月4日～9月7日	JICA人間開発部 次長
津本　正芳	副業務主任/ 建築計画	9月4日～9月17日	株式会社　山下設計
古池　廣行	建築設計	9月4日～9月17日	株式会社　梓設計
村松　啓子	機材計画/ 維持管理計画	9月4日～9月17日	株式会社　シー・ディー・ シーインターナショナル
北村　聖	保健医療事情	9月7日～9月14日	株式会社　シー・ディー・ シーインターナショナル

現地調査Ⅱ-1(期間：2013年12月11日から同年12月22日まで)

氏名	担当分野	調査期間	所属
藤沼　傑	業務主任/ 建築計画	12月11日～12月22日	株式会社　山下設計
村松　啓子	機材計画/ 維持管理計画	12月11日～12月22日	株式会社　シー・ディー・ シーインターナショナル
亀田　訓和	施工計画/ 積算	12月11日～12月22日	株式会社　山下設計

現地調査Ⅱ-2(期間：2014年1月15日から同年1月31日まで)

氏名	担当分野	調査期間	所属
興梠　康一郎	統括	1月19日～1月29日	JICA人間開発部 専任参事
青木　恒憲	協力計画	1月19日～1月29日	JICA人間開発部 保健第四課　主任調査役
藤沼　傑	業務主任/ 建築計画	1月19日～1月31日	株式会社　山下設計
村松　啓子	機材計画/ 維持管理計画	1月19日～1月31日	株式会社　シー・ディー・ シーインターナショナル
古池　廣行	建築設計	1月15日～1月31日	株式会社　梓設計
佃　圭一	設備計画	1月19日～1月31日	株式会社　梓設計
亀田　訓和	施工計画/ 積算	1月15日～1月21日	株式会社　山下設計
西川　浩平	施工計画/ 積算	1月15日～1月31日	株式会社　山下設計
深美　千宏	機材調達計画/ 積算	1月15日～1月31日	株式会社　シー・ディー・ シーインターナショナル
北村　聖	保健医療事情	1月25日～1月29日	株式会社　シー・ディー・ シーインターナショナル

現地調査Ⅲ　環境社会配慮調査(期間：2014 年 3 月 29 日から同年 4 月 6 日まで)

氏名	担当分野	調査期間	所属
海口　光恵	環境社会配慮	3 月 30 日～4 月 5 日	株式会社　シー・ディー・シーインターナショナル
亀田　訓和	施工計画/積算	3 月 29 日～4 月 6 日	株式会社　山下設計

現地調査 IV　概要説明調査（期間：2014 年 8 月 3 日から同年 8 月 10 日まで）

氏名	担当分野	調査期間	所属
磯野　光夫	総括	8 月 6 日～8 月 9 日	JICA 人間開発部
青木　恒憲	協力企画	8 月 3 日～8 月 9 日	JICA 人間開発部 保健第四課　主任調査役
藤沼　傑	業務主任/建築計画	8 月 3 日～8 月 10 日	株式会社　山下設計
村松　啓子	機材計画/維持管理計画	8 月 3 日～8 月 10 日	株式会社　シー・ディー・シーインターナショナル
古池　廣行	建築設計/設備設計	8 月 3 日～8 月 10 日	株式会社　梓設計
西川　浩平	建築設計	8 月 4 日～8 月 10 日	株式会社　山下設計

2.　調査行程

2. 調査日程

現地調査Ⅰ（日程 2013年9月4日～同年9月17日: 14日間）

日順	日付	曜日	官団員	コンサルタント団員			
				2	3	3	3
				副業務主任/建築計画	建築設計	機材計画/維持管理計画	保健医療事情
			小林 尚行	津本 正芳	古池 廣行	村松 啓子	北村 聖
1	9/4	水	成田→ウランバートル(UB)				
2	9/5	木	建設予定地の視察／JICA事務所協議／日本大使館協議				
3	9/6	金	国立医科大学協議／ウランバートル市協議／教育大臣協議／日本大使館協議／JICA事務所協議				
4	9/7	土	UB→成田	資料解析／市内調査／自然条件調査準備			成田→UB
5	9/8	日		国立第一病院 休日診療視察 市内視察			
6	9/9	月		国立医科大学協議／国立第一病院訪問／UB市保健局／自然条件調査見積もり	1)に同じ	国立医科大学協議／国立第一病院訪問／UB市保健局／医療施設視察	4)に同じ
7	9/10	火		教育・科学省(政策戦略局長)協議／自然条件調査見積もり／建設事情調査	1)に同じ	教育・科学省(政策戦略局長)協議／ADB表敬・協議／国立医科大学協議	4)に同じ
8	9/11	水		保健省(副大臣・政策実施調整局長)表敬・協議／保健開発センター協議／自然条件調査見積評価	1)に同じ	保健省(副大臣・政策実施調整局長)表敬・協議／保健開発センター協議／自然条件調査見積評価	4)に同じ
9	9/12	木		自然条件調査評価、契約交渉、契約締結	建設事情調査／地区病院見学	国立医科大学側と病院診療科協議	4)に同じ
10	9/13	金		自然条件調査関係者会議／植物園のサイト立会／私立病院見学／JICA事務所報告	1)に同じ	1)に同じ	1)に同じ
11	9/14	土		国立第一病院見学／自然条件調査現場立会／建設事情調査	1)に同じ	機材維持管理能力調査	KE701 0910-1130 SEL-NRT
12	9/15	日		団内会議、資料整理	病院休日視察		
13	9/16	月		UB→成田 CA902 1150-1400 ULN-PEK	自然条件調査現場立会 建設事情追加質問	保健セクターベースライン調査	
14	9/17	火			UB→成田 CA902 1150-1400 ULN-PEK CA 183 1725-2145 PEK-HND		

現地調査Ⅱ-1(日程 2013年12月11日～同年12月22日: 12日間)

日順	日付	曜日	コンサルタント団員		
			2	3	5
			業務主任/建築計画	機材計画/維持管理計画	施工計画/積算
			藤沼	村松	亀田
1	12/11	水	成田→UB 9:10 - 11:50 KE706 成田ーインチョン 13:00 - 15:50 KE867 インチョンーウランバートル チェックイン		8:30-11:30CA184羽田 北京
2	12/12	木	JICA事務所報告、日本国大使館挨拶 国立医科大学側との協議（調査日程、調査対象者、病院設立委員会等）		11:55-14:30CA901北京ーウランバートル
3	12/13	金	敷地視察 インフラ管理事務所調査	地域保健基礎データ調査	業務主任と同じ
			第2回調査方針説明・国立医科大学側との協議 （インフラ申請工程 協議）		
4	12/14	土	建設用地確認、病院休日前調査、		
			夜間救急調査		
5	12/15	日	資料整理 団内会議		
6	12/16	月	国立医科大学側との協議 （マスタープラン、 病院基本構成協議）		施工計画調査(各社質問票、面会)
7	12/17	火	国立医科大学側との協議 （各科基本協議）		一般物価、建設物価統計資料調査
8	12/18	水	国立医科大学側との協議 （各科基本協議）		建設積算調査
			PC工法視察	ソフトコンポーネント調査	業務主任と一緒
9	12/19	木	国立医科大学側との協議 （各科基本協議）		建設積算調査 業務主任と一緒
10	12/20	金	国立医科大学側と相手国負担事業協議、 JICA事務所、日本国大使館報告		
11	12/21	土	UB-成田 8:05 - 12:15 KE5866 （MIAT） ウランバートルーインチョン 13:40-16:05 KE5703 (JAL) インチョンー成田		15:30-17:35CA902ウランバートルー北京
12	12/22	日			17:25-21:35CA183北京ー羽田

現地調査Ⅱ-2（日程 2014年1月15日～同年1月31日：17日間）

日順	日	曜	JICA団員		コンサルタント団員							
					2	3	3	5	4	5	3	5
			総括	協力計画	業務主任/建築計画	機材計画/維持管理計画	建築設計	設備計画	機材調達計画/積算	施工計画/積算	保健医療事情	業務調整
			興梠	青木	藤沼	村松	古池	佃	深美	西川	北村	亀田
	1/14	火										羽田→北京
1	1/15	水					成田→UB		成田→UB	成田→UB		北京→UB
2	1/16	木					国立医科大学と調査日程調整		既存病院調査（設備機械、機材）			敷地調査
3	1/17	金					バヤンズルフ地区人口構成調査		機材代理店調査	インフラ設備接続調査		積算調査
4	1/18	土					資料整理			施工計画調査		積算調査
5	1/19	日	成田→UB				団内会議	成田→UB				
6	1/20	月	■JICA事務所（所長・次長・担当）					積算調査票配布				北京→UB
			■国立医科大学（学長・副学長・病院長									
			■教育・科学省（政策戦略局長）＋国立医科大学									
7	1/21	火	■保健省（政策戦略局長（全体、大臣・副大臣報告）、行政管理局長（インフラ）） ■国立医科大学理事長協議			■ 保健省統計調査		■ ウランバートル市統計局 ■ 災害対策省				羽田→北京
8	1/22	水	■健康科学大学 全体会議									
					■ 国立医科大学 各科協議			■ 類似施設調査				
9	1/23	木			■ 保健省営繕部協議	■ ADB協議	■教育・科学省営繕部協議			■設備サブコン調査		
			■調査団内TV会議（磯野専門員と）									
10	1/24	金	■国立医科大学ミニッツ協議 ■保健省 ミニッツ協議 ■教育・科学省 ミニッツ協議		■国立医科大学 各科協議			■ 電力局調査 ■ 電話局調査 ■ 上下水調査				
11	1/25	土			■国立医科大学 各科協議			■ 敷地調査			成田→UB	
12	1/26	日			■国立医科大学 各科協議						1)と同じ	
13	1/27	月	■教育・科学省 －ミニッツ署名					■ バヤンズルフ区役所調査			病院調査	
					■国立医科大学 各科協議			■ 価格調査票回収				
14	1/28	火			■国立医科大学 マスタープラン協議 平面図 運営等							
			■ WHO協議			■国立医科大学 各科協議		■ 価格調査票回収			4)と同じ	
15	1/29	水	■大使館-調査報告 ■JICA事務所-調査報告			■国立医科大学 各科協議		■ 価格調査票回収）			UB-成田	
			UB-成田					■ 教育・科学省営繕部協議（インフラ関係）				
16	1/30	木			■国立医科大学 最終協議							
17	1/31	金			UB-成田							

現地調査Ⅲ　環境社会配慮（日程　2014 年 3 月 29 日～同年 4 月 6 日:　9 日間）

日順	日付	曜日	コンサルタント団員	
			1	2
			環境社会配慮	施工計画/積算
			海口	亀田
1	3/29	土		羽田→北京
2	3/30	日	関空→UB	北京→UB
3	3/31	月	ICA打合せ、教育・科学省・国立医科大学打合せ、UB市環境局聞き取り	JICA報告、敷地調査
4	4/1	火	対象地で希少種確認調査、環境省（MEGD）聞き取り、（Nomin同伴）	積算調査
5	4/2	水	AM: 報告書作成 PM: 希少種再確認、教育・科学省へ報告	技術条件書進捗調査
6	4/3	木	AM: JICA報告 PM: 報告書作成、資料整理	積算調査
7	4/4	金	植物園（建設予定地対象外）の現況確認調査、報告書作成	UB→北京
8	4/5	土	UB→関空	積算調査
9	4/6	日		北京→羽田

現地調査Ⅳ　概要説明調査（日程　2014 年 8 月 3 日～同年 8 月 10 日:　8 日間）

日順	日	曜	JICA団員		コンサルタント団員			
					2	3	3	5
			総括	協力計画	業務主任/建築計画	機材計画/維持管理計画	建築設計設備設計	建築設計
			磯野	青木	藤沼	村松	古池	西川
1	8/3	日		成田⇒UB	成田⇒UB			
2	8/4	月		JICA事務所協議、日本国大使館協議、国立医科大学協議				成田⇒UB
3	8/5	火		国立医科大学協議			現地実施設計事務所調査	
4	8/6	水	UB到着	教育・科学省協議、保健省協議			現地実施設計事務所調査	
5	8/7	木	国立医科大学協議、教育・科学省協議				現地実施設計事務所調査	
6	8/8	金	ミニッツ署名、JICA事務所、日本大使館に報告					
7	8/9	土	UB⇒成田	UB⇒成田				
8	8/10	日			UB⇒成田			

3.　関係者（面会者）リスト

3. 関係者（面会者）リスト

所属	職位	名前
１．教育・科学省		
	大臣	Mr.Gantomor
戦略政策課	局長	Ms.Baavgai Nasanbayar
建設消費者局	副局長	NAMSRAI Demberel
２．保健省		
	副大臣	Dr.AMARSANAA Jazag
政策実行調整課	局長	Dr.Buyanjargal Yadamsuren
公共課国際協力部門	二国間協力実行調整担当	Ms.Tuya
中央保健課	課長	Mr.BAT-ERDENE Ch.
	課長補佐	Ms.BADAMKHATAN Ts.
統計課	事務員	Ms.ARIUNTUYA
建設調整課	会計員	GANCHIMEG.U
	事務員	BATBAATAR.D
３．国立医科大学		
	学長	Dr.BATBAATAR Gunchin
	副学長（医療）	Dr.DAVAADORJ Duger
	副学長（学問）	Dr.SUMBERZUL N.
	副学長（研究国際）	Dr.AMARSAIKHAN Bazar
	副学長（財務）	Dr.SODNOMTSOGT Lkhagvasuren
	医学部長	Dr.OTGONBAYAR Radnaa
放射線部門	部門長	Dr.TUGSJARGAL.P
	研究科長	Dr.Erdembileg
		Dr.Erdenebulgan
		Dr.Tuvshinjargal
		Dr.Munkhbaatar
	専任講師	Dr.Gonchigsuren
産婦人科	専任講師	Dr.MENDSAIHAN Gochoo
検査部門		Dr.Uranbaigal
病理部門	研究科長	Dr.Erdentsogt
内視鏡部門		Dr.Oyuntsetseg
		Dr.Gantuya
小児科	研究科長	Dr.Erdenetuya
		Dr.Enhzol
		Dr.Bayarbat
内科		Dr.Bayasgalan
		Dr.Gelegjamts
		Dr.Batpurev
		Dr.Zulgerel
		Dr.Oyuntsetseg
		Dr.Ichinnorov
		Dr.Ariunaa
脳神経外科		Dr.Byambasuren
		Dr.Tovuudorj
		Dr.Tsagaanhuu

所属	職位	名前
伝統医療科		Dr.Munkhchimeg
外傷・リハビリ科		Dr.Batsukh
ガン科		Dr.Avirmed
肝臓外科		Dr.Sanduijav
耳鼻咽喉科		Dr.Jargalhuu
外科		Dr.Sergelen
麻酔科		Dr.Ganbold
管理部門		Mr.Danshjav
		Mr.Undram
		Mr.Munkhsaihan
		Mr.Purevgerel
薬剤部門		Dr.Enkhjargal
		Dr.Bathuyag
皮膚科		Dr.Dashlhumbe
		Dr.Altanzul
内視鏡部門		Dr.Uranbileg
看護部門	クリニックチーフナース	Ms.Bazardari
	クリニック看護管理長	Ms.Erveehei
看護学校	学長	Ms.Odongoo
４．モンゴル科学アカデミー		
植物園	園長	Mr.DUGARJAV Chultem
	庭師	Mr.JAVKHLANTUGS
	水道技師	Mr.TUMURKHUU
	植物学者	Mr.ARIUNBAYAR
５．第一病院		
	院長	Dr.BYAMBADORJ Batsuuri
	海外事務	Dr.ENKHZORIG B.
６．ウランバートル市		
	助役、社会発展担当	Ms.ENKHTSENGEL Tseyen
保健課	課長	Ms.TUUL Sodnomdarjaa
不動産課	課長	Ms.BATBAYAR
建設都市開発課	課長	Ms.KHORLOO Tserenbat
	インフラ担当	Ms.TSERENBALJID
バヤンズルフ地区	災害担当局長	Mr.Ganzorigt.J
７．アジア開発銀行		
社会部門	事務員	Dr.Altantuya
保健部門	病院発展調整担当	Dr.BOLD Adiya
８．在モンゴル日本大使館		
	大使	清水　武則
	一等書記官	宮下　弘道
	二等書記官	櫟本　昇一
９．ＪＩＣＡモンゴル事務所		
	所長	加藤　俊伸
	次長	岩井　淳武
	所員	今吉　萌子
	所員	大澤　渉

4.　討議議事録（Ｍ／Ｄ）

（１）　討議議事録１

モンゴル国
日本モンゴル教育病院整備計画調査
討議議事録

モンゴル国政府からの要請に応え、日本国政府は「日本モンゴル教育病院整備計画」（以下「プロジェクト」と称す。）の準備調査を行うことを決定し、その調査を独立行政法人国際協力機構（以下「JICA」と称す）が実施するものである。

JICAは人間開発部次長小林尚行を総括とする調査団（以下「調査団」と称す）を2013年9月22日から9月25日までモンゴルへ派遣した。

教育科学省の呼びかけにより、教育科学省、健康科学大学、ウランバートル市、調査団による合同会議が2013年9月24日に教育科学省にて開催され、その内容は別添のとおりであることを確認した。保健省は欠席したため、保健省には本議事録を配布することとする。

2013年10月7日

ウランバートル

小林尚行
調査団長
JICA

L.Gantumur
大臣
教育科学省

Ts. Enkhtsengel
社会開発担当副市長
ウランバートル市

G. Batbaatar
学長
健康科学大学

CC:保健大臣　N. Udval

付属書

Ⅰ教育科学省、健康科学大学、ウランバートル市、調査団は以下について確認した。

1. プロジェクトの目的

本プロジェクトの目的は、2次病院レベルの機能を有する大学教育病院の施設建設と機材調達を通じて、医師等に対する卒後研修を強化すること、そしてウランバートル市民に対する保健医療サービスの質を改善することである。

2. プロジェクトの建設予定地

本プロジェクトの建設予定地は植物園北西地域である。

3. プロジェクトの所管

(1) 教育科学省は、本プロジェクトの所管は教育科学省となること、無償資金協力によって建設される教育病院は健康科学大学の付属病院になること、同教育病院は新しい組織である為、その設置についての内閣令を現在準備していること、本プロジェクトの調査を進めるために、現在ある教育科学省（健康科学大学を含む）と保健省とのワーキング・グループにウランバートル市を加えることを説明した。
(2) ウランバートル市は、建設予定地の土地について法令に従って然るべき措置を行っていること、調査団が調査を進めることを望んでおり、本プロジェクトに対し全面的に協力すること、今後内閣令により病院の所管が決定した場合、決定に沿って必要な手続きを行うことを説明した。
(3) 調査団は、これまでのモンゴル政府からの要請内容から、本プロジェクトの責任機関は教育科学省、実施機関は健康科学大学となることと理解し、調査を進めるためには内閣令が制定されることにより、本プロジェクトの組織体制が明確になることを確認する必要があることを説明した。

Ⅱ教育科学省、健康科学大学、調査団は以下について確認した。

教育科学省は調査団に対し以下について説明した。

(1) 健康科学大学に付属する教育病院の設置についての内閣令の制定につき、10月11日の閣議に諮る方向で取り組む。不可能であれば10月18日の閣議に諮る。
(2) 内閣令が制定された場合、内閣令に基づいて建設予定地の土地の占有権について必要な手続きを速やかに行うこと。
(3) 調査を進めるために、ワーキング・グループの下に、電気や水などの病院のインフラ関係、病院の建設基準、病院の中身についての担当を置き、健康科学大学、保健省、ウランバートル市との検討と手続きを進めること。
(4) 建設予定地に関する環境影響について調査しその結果をJICAに通知すること。
(5) 本会議の内容については保健省に説明すること。
(6) 本議事録を作成することにより教育科学省、健康科学大学、保健省及びウランバートル市と共有し共通認識を図ること。

調査団は教育科学省、健康科学大学に対し以下の通り説明した。

(1) 2013年10月に調査団の派遣を予定すること。

以上

Монгол Улс
"Япон-Монголын сургалтын эмнэлэг байгуулах төсөл"-ийн судалгаа
Хурлын протокол

Япон Улсын Засгийн газар нь Монгол Улсын Засгийн газраас гаргасан төслийн хүсэлтийг хүлээн авч "Япон-Монголын сургалтын эмнэлэг байгуулах төсөл" (цаашид төсөл гэх)-ийн бэлтгэл судалгааг хэрэгжүүлэх шийдвэрийг гаргасан ба энэхүү судалгааг Японы Олон Улсын Хамтын Ажиллагааны Агентлаг (цаашид ЖАЙКА гэх) хэрэгжүүлэх болно.

ЖАЙКА нь Хүний хөгжлийн хэлтсийн орлогч дарга Кобаяши Наоюкигээр ахлуулсан судалгааны баг (цаашид Судалгааны баг гэх)-ийг 2013оны 9 дүгээр сарын 22-ны өдрөөс 9дүгээр сарын 25-ны өдрүүдэд Монгол Улсад томилон ажиллуулсан.

Боловсрол шинжлэх ухааны яамны санаачилгаар Боловсрол шинжлэх ухааны яам, Эрүүл мэндийн шинжлэх ухааны их сургууль, Нийслэл Улаанбаатар хот болон Судалгааны багийн оролцоотойгоор хамтарсан хурлыг 2013оны 9 дүгээр сарын 24-ний өдөр Боловсрол шинжлэх ухааны яаман дээр зохион байгуулсан бөгөөд хурлын агуулга нь хавсралтын дагуу болохыг нягтлав. Эрүүл мэндийн яам дээрх хуралд оролцоогүй тул хурлын протоколын хувийг Эрүүл мэндийн яаманд хүргүүлэв.

2013оны дугаар сарын -ний өдөр
Улаанбаатар хот

ЖАЙКА
Хүний хөгжлийн хэлтсийн
орлогч дарга
Кобаяши Наоюки

Боловсрол шинжлэх ухааны сайд
Л. Гантөмөр

Нийслэлийн Засаг даргын
нийгмийн хөгжлийн асуудал
хариуцсан орлогч
Ц. Энхцэнгэл

Эрүүл мэндийн шинжлэх ухааны
их сургуулийн захирал
Г. Батбаатар

Хувийг: Эрүүл мэндийн сайд
Н.Удвалд

Хавсралт

I. Боловсрол шинжлэх ухааны яам, Эрүүл мэндийн шинжлэх ухааны их сургууль, Нийслэл Улаанбаатар хот, Судалгааны баг нь доорх асуудлуудын талаар тодруулав.

1. Төслийн зорилго

Энэхүү төслийн зорилго нь 2 дугаар шатлалын эмнэлгийн түвшний үйл ажиллагаатай, их сургуулийн сургалтын эмнэлгийг барих, мөн тоног төхөөрөмжийг нийлүүлэх, эмч, эмнэлгийн ажилтнуудын төгсөлтийн дараах сургалтын чадавхыг сайжруулах, Улаанбаатар хотын иргэдэд үзүүлэх эмнэлгийн үйлчилгээний чанарыг сайжруулах юм.

2. Төслийн барилгыг барихаар төлөвлөж буй газар

Энэхүү төслийн хүрээнд баригдах эмнэлэгийг барихаар төлөвлөж буй газар нь Ботаникийн цэцэрлэгийн баруун хойд хэсэг болно.

3. Төслийн харьялал

(1) Боловсрол шинжлэх ухааны яамнаас төслийн хариуцагч байгууллага нь Боловсрол шинжлэх ухааны яам болох, Япон Улсын Засгийн газрын буцалтгүй тусламжаар баригдах сургалтын эмнэлэг нь Эрүүл мэндийн шинжлэх ухааны их сургуулийн харъяа эмнэлэг байх тухай, мөн уг сургалтын эмнэлэг нь урьд өмнө байгаагүй шинэ байгууллага тул түүнийг байгуулах тухай Засгийн газрын тогтоолыг бэлтгэж байгаа талаар, төслийн судалгааг саадгүй явуулах үүднээс Боловсрол шинжлэх ухааны яам (Эрүүл мэндийн шинжлэх ухааны их сургуулийн оролцоотой) болон Эрүүл мэндийн яамны одоогийн ажлын хэсгийн бүрэлдэхүүнд Улаанбаатар хотыг нэмэн оруулах тухай тайлбарлав.

(2) Улаанбаатар хотын зүгээс энэхүү төслийн барилгыг барихаар төлөвлөж буй газрын тухайд хууль тогтоомжийн дагуу шаардлагатай арга хэмжээг авч байгаа талаар, судалгааны ажлыг үргэлжлүүлэн хийхийг хүсч буйгаа илэрхийлэхийн дээр, төслийн үйл ажиллагааг нийслэл хотын зүгээс бүх талаар дэмжин ажиллах, цаашид Засгийн газрын тогтоолоор эмнэлгийн харъяалал шийдэгдвэл тухайн шийдвэрийн дагуу хэрэгцээтэй бүрдүүлэлтийг хийх тухай тайлбарлав.

(3) Судалгааны багаас өнөөг хүртэлх Монгол Улсын Засгийн газраас гаргасан хүсэлтийн агуулгаас харахад уг төслийн хариуцагч байгууллага нь Боловсрол шинжлэх ухааны яам, хэрэгжүүлэгч байгууллага нь Эрүүл мэндийн шинжлэх ухааны их сургууль хэмээн ойлгож байгаа, мөн цаашид судалгааг үргэлжлүүлэхийн тулд Засгийн газрын тогтоол гарч төслийг хэрэгжүүлэх бүтэц зохион байгуулалт тодорхой болсныг батлах шаардлагатай байгааг тайлбарлав.

II. Боловрсол шинжлэх ухааны яам, Эрүүл мэндийн шинжлэх ухааны их сургууль, Судалгааны баг нь доорх асуудлын талаар тодруулав.

Боловсрол шинжлэх ухааны яам нь Судалгааны багт хандан дараах тайлбарыг хийв.

(1) Эрүүл мэндийн шинжлэх ухааны их сургуулийн харьяа сургалтын эмнэлгийг байгуулах Засгийн газрын тогтоолын хувьд 10 дугаар сарын 11-ний өдрийн Засгийн газрын хуралдаанд оруулахаар бэлтгэх, боломжгүй бол 10 дугаар сарын 18-ны хуралдаанд оруулна.
(2) Засгийн газрын тогтоол батлагдсан тохиолдолд уг тогтоол дээр үндэслэн эмнэлгийн барилгыг барихаар төлөвлөж буй газрын газар эзэмших эрхийн талаар зохих арга хэмжээг яаралтай авна.
(3) Судалгааг саадгүй хэрэгжүүлэхийн тулд ажлын хэсгийн доор гэрэл цахилгаан, ус зэрэг эмнэлгийн дэд бүтэцтэй холбоотой асуудлууд болон эмнэлгийн барилгын стандарт, эмнэлгийн дотоод бүтцийг хариуцах хүнийг томилж, Эрүүл мэндийн шинжлэх ухааны их сургууль, Эрүүл мэндийн яам, Нийслэл Улаанбаатар хоттой хамтарч шаардлагатай арга хэмжээг авч бүрдүүлэлтийг хийх.
(4) Эмнэлгийн барилгыг барихаар төлөвлөж буй газартай холбоотой орчны нөлөөллийн тухайд зохих судалгааг явуулж үр дүнг ЖАЙКА-д бичгээр мэдэгдэнэ.
(5) Энэ удаагийн хуралдааны талаар Эрүүл мэндийн яаманд тайлбарлана.
(6) Энэхүү протоколыг үйлдсэнээр Боловрсол шинжлэх ухааны яам , Эрүүл мэндийн шинжлэх ухааны их сургууль, Эрүүл мэндийн яам болон Нийслэл Улаанбаатар хотын хоорондын нэгдсэн нэг ойлголттой болно.

Судалгааны багаас Боловрсол шинжлэх ухааны яам болон Эрүүл мэндийн шинжлэх ухааны их сургуульд дараах тайлбарыг хийв.

(1) ЖАЙКА нь 2013 оны 10 дугаар сард дараагийн судалгааны багийг томилон ажиллуулах төлөвлөгөөтэй байна.

Төгсөв.

（２）　討議議事録 2

MINUTES OF DISCUSSIONS
PREPARATORY MISSION ON
THE PROJECT FOR DEVELOPMENT OF
MONGOLIAN AND JAPANESE UNIVERSITY TEACHING HOSPITAL
IN MONGOLIA

In response to the request from the Government of Mongolia, the Japan International Cooperation Agency (hereinafter referred to as "JICA") decided to dispatch a preparatory mission team (hereinafter referred to as "the Team") on the Project for the development of Mongolian and Japanese University Teaching Hospital (hereinafter referred to as "the Project") headed by Hiroe Ono, Director, Health Division 4, Human Development Department, JICA, visited Mongolia from November 25 to November 29, 2013.

During its stay, the Team and the Ministry of Health of Mongolia held a series of meetings and exchanged their views on the Project as the documents attached hereto.

Ulaanbaatar, November 27, 2013

Dr. Udval Natsag
Minister
Ministry of Health
Mongolia

Ms. Hiroe Ono
Leader
Preparatory Mission Team
Japan International Cooperation Agency
Japan

Witness

Dr. Batbaatar Gunchin
President
Health Sciences University of Mongolia
Mongolia

ATTACHED DOCUMENT

The Minister of Health emphasized the importance of the following points:

- The Project shall follow the policy of the Ministry of Health.
- The teaching hospital under the Project shall provide tertiary healthcare services/specialized consultative healthcare services of high priority at national level. At the same time, the Project shall deliver secondary healthcare services to the population of Bayanzurkh District of Ulaanbaatar City.
- Diagnostic services, in particular, for some of the 33 diseases listed in the Annex of the Health Minister's Order No. 313 of 2013 that are not available in Mongolia, should be incorporated into the Project.
- Seven departments (Internal Medicine, Pediatrics, Surgery, Obstetrics and Gynecology, Traumatology/Orthopedics, Neurology, Infectious Diseases) should be included in the Project.
- The Number of beds for the Project has less priority compared to the quality and safety of diagnostic and treatment capacity as the Ministry of Health has a policy not to substantially increase the total number of beds in the country.
- The Ministry of Health shall be the sole authority to issue the required license for the new hospital when the Project is completed.

JICA has agreed to take above points into consideration when designing the Project, and continue to discuss with Ministry of Health, Ministry of Education and Science, and Health Sciences University of Mongolia.

Attachment: 1.

List of diseases that cannot be currently treated in Mongolia

МОНГОЛ УЛСЫН
ЭРҮҮЛ МЭНДИЙН САЙДЫН ТУШААЛ

2013 оны 08 сарын 29 өдөр Дугаар 313 Улаанбаатар хот

Жагсаалт, журам батлах тухай

Монгол Улсын Засгийн газрын тухай хуулийн 24 дүгээр зүйлийн 24.2, Эрүүл мэндийн тухай хуулийн 8 дугаар зүйлийн 8.2, 8.3 дахь заалтуудыг тус тус үндэслэн ТУШААХ нь:

1. Монгол Улсын иргэн өөрийн оронд эмчлэгдэх боломжгүй өвчин, эмгэгийн улмаас гадаад улсад зайлшгүй шаардлагаар эмчлүүлэх "Өвчний жагсаалт"-ыг нэгдүгээр, "Гадаад улсад зайлшгүй шаардлагаар эмчлүүлэх иргэдэд санхүүгийн дэмжлэг үзүүлэх асуудлаар санал гаргах чиг үүрэг бүхий орон тооны бус зөвлөлийн бүрэлдэхүүн"-ийг хоёрдугаар, "Гадаад улсад зайлшгүй шаардлагаар эмчлүүлэх иргэдэд санхүүгийн дэмжлэг үзүүлэх асуудлаар санал гаргах чиг үүрэг бүхий орон тооны бус зөвлөлийн ажиллах журам"-ыг гуравдугаар, "Гадаад улсад зайлшгүй шаардлагаар эмчлүүлэх иргэдэд эмнэлгийн дүгнэлт гаргах журам"-ыг дөрөвдүгээр, "Гадаад улсад зайлшгүй шаардлагаар эмчлүүлэх иргэдэд эмнэлгийн дүгнэлтийн маягт"-ыг тавдугаар хавсралтаар тус тус баталсугай.

2. Монгол Улсад эмчлэгдэх боломжгүй өвчин, эмгэгийн улмаас гадаад улсад зайлшгүй шаардлагаар эмчилгээ хийлгэх иргэдэд эмч нарын зөвлөлгөөний дүгнэлт гаргах бүрэлдэхүүнийг хууль тогтоомжийн дагуу шинэчлэн чиг үүргийнхээ хүрээнд тушаалаар баталгаажуулан, удирдлагаар хангаж, хяналт тавьж ажиллахыг төв эмнэлэг, тусгай мэргэжлийн төвийн дарга, захирал нарт үүрэг болгосугай.

3. Энэ тушаалыг 2013 оны 10 дугаар сарын 01-ний өдрөөс эхлэн мөрдсүгэй.

4. Тушаалын хэрэгжилтэд хяналт тавьж ажиллахыг Төрийн нарийн бичгийн дарга (А.Эрдэнэтуяа)-д үүрэг болгосугай.

5. Тушаал шинэчлэн батлагдсантай холбогдуулан Эрүүл мэндийн сайдын "Эмнэлгийн дүгнэлт гаргах журам, өвчний жагсаалт батлах тухай" 2011 оны 107, "Зөвлөлийн бүрэлдэхүүн, ажиллах журам батлах тухай" 248 дугаар тушаалууд, 2012 оны 399 дугаар тушаалын хоёрдугаар хавсралтын "Гадаад эмчилгээний зөвлөл" гэсэн хэсгийг тус тус хүчингүй болсонд тооцсугай.

САЙД Н.УДВАЛ

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Эрүүл мэндийн сайдын
2013 оны ..08.. дугаар сарын ..29..-ны
өдрийн ..313..... дүгээр тушаалын
1 дүгээр хавсралт

ГАДААД УЛСАД ЗАЙЛШГҮЙ ШААРДЛАГААР ЭМЧЛҮҮЛЭХ ӨВЧНИЙ ЖАГСААЛТ

№	Өвчний нэр		
	Монголоор	Оросоор	Англиар
А.	**Мэдрэлийн мэс засал**	**Нейрохирургия**	**Neurosurgery**
1	Гүрээний ба нурууны артерийн нарийсал, бөглөрлийн үеийн мэс засал	Хирургическое лечение при стенозе и окклюзии внутренних сонных и вертебральных артерий	Surgical intervention in the stenosis and occlusion of the internal carotid and vertebral arteries
2	Уртавтар тархины эмгэгийн мэс заслын эмчилгээ	Хирургическое лечение при болезни продолговатого мозга	Surgical intervention in oblongata
3	Паркинсоны өвчин, торсион дистони, эпилепси өвчний үеийн стереотакс мэс засал	Стереотаксическое хирургическое вмешательство при болезни Паркинсона, торсионной дистонии и эпилепсии	Stereotaxic surgical intervention in Parkinson disease, Torsion dystonia and Epilepsy
4	Тархины суурь хэсэг ба багана бүтцийн хавдрууд	Опухоли базальной и стволовой части головного мозга	Brain basal part and brainstem tumors
5	Тархины суурь ясны хавдар	Опухоль основной кости	Skull basilar bone tumor
6	Тархины 3 дугаар ховдлын хавдар	Опухоль третьего желудочка головного мозга	Brain third ventricle tumor
7	Дунд тархи ба багана бүтцийн байрлалтай мальформац	Мальформация локализованная всреднем мозге и в стволовой части	Midbrain and brainstem malformations
8	Тархи нугасны хавдрын гамма туяа эмчилгээ	Лечение опухолей головного и спинного мозга гамма облучением	Cyber knife, SBRT for brain and spinal cord tumor
Б.	**Чих хамар хоолой**	**Отоларингология**	**Otorhinolaryngology**
9	Сонсголын мэдрэлийн хавдар	Опухоль слухового нерва	Acoustic neuroma
10	Вегенерийн өвчний хүнд хэлбэр	Тяжелая форма болезни Вегенера	Severe form of the Menieris diseases
11	Меньерийн өвчний хүнд хэлбэр	Тяжелая форма болезни Меньера	Severe form of the Vegeners disease
В.	**Нүд судлал**	**Офтальмалогия**	**Ophtalmology**
12	Нярайн ретинопати	Ретинопатия новорожденных	Infant Retinopaty

Г.	**Зүрх, судасны мэс засал**	**Кардиоваскулярная хирургия**	**Cardiovasculiral surgery**
13	Абляци эмчилгээ хийлгэх шаардлагатай зүрхний хэм алдагдал	Абляци при аритмии	Arrhythmia need to ablation
14	Зүрхний титэм судасны **хүнд** хэлбэрийн нарийсал	Тяжелая степень сужения коронарного сосуда сердца	Severe form of the coronary artery stenosis
15	Хүүхдийн хавсарсан хөх хүнд гажиг	Тяжелые синие врожденные аномалии сердечной перегородки	Severe form of Congenital malformations of cardiac septa
16	Зүрхний том судаснуудын гаж байрлал	Транспозиция больших сосудов сердца	Transposition of the heart great vessels
17	Гол судасны хүнд хэлбэрийн цүлхэнгүүд	Тяжелая форма аневризма аорты	Severe forms of the aortic aneurism
Д.	**Хавдар**	**Онкология**	**Oncology**
18	Толгой хүзүүний эрхтэний хавдрын өргөтгөсөн мэс заслын дараахь согогуудыг хиймэл эрхтнээр хаах	Реконструктивные протезирования после расширенных операций на органах головы и шеи	Prosthesis Reconstruction of functional deficit and anatomical defect after extended surgical treatment.
19	Шүлсний булчирхайн хорт хавдрын IMRT эмчилгээ	IMRT Радиотерапия рака слюнной железы	(IMRT) on Tumors of Salivary Glands
20	Цагаан мөгөөрсөн хоолойн хавдар	Рак трахеи	Cancer of the trachea
21	Улаан хоолой-цагаан мөгөөрсөн хоолойн фистул	Трахео-пищеводный свищ	Tracheoesophageal fistula
22	Туяа эмчилгээний дараах үтрээ-шулуун гэдэсний фистул	Прямокишечно-вагинальный свищ после радиотерапии	Rectovaginal fistul
23	Яс, зөөлөн эдийн хавдрын нөхөн сэргээх мэс засал - Мөч хадгалах боломжтой үеийн хорт хавдар - Бага аарцаг, цээжний хөндийн байрлалтай хорт хавдар	Реконструктивные операции мягких тканей и костей - Органосохраняющие операции на конечностях и гортани - Злокачественные опухоли плевральной полости и малого таза	Reconstruction Surgery of the Soft and Bone Tumors - Limb-sparing resection in the extremities and larynx - Malignant tumors of pelvis and thorax
Е.	**Уушги судлал**	**Пульмонология**	**Pulmonologia**
24	Уушгины төрмөл	Врождённая патология	Congenital disorders of

Ё	Гэмтэл согог судлал	Травматология и ортопедия	Traumatology and orthopedics
25	Түлэгдлийн улмаас үүссэн талбай ихтэй, том мөчид болон цээжний хэлбэр алдагдсан сорив	Послеожоговой стягивающий рубец	Deformities caused by burn scars
26	Дээд болон доод мөчдийн төрөлхийн хүнд хэлбэрийн дутуу хөгжил	Врожденная аномалия верхней и нижней конечноста	Severe form of Congenital Amelia or hemimelia of limbs.
Ё	**Ерөнхий мэс засал**	**Общая хирургия**	**General surgery**
27	Ясны чөмөг шилжүүлэн суулгах мэч засал эмчилгээ	Трансплантация печени и костного мозга	Liver and bone cell transplantation
28	Зүрх шилжүүлэн суулгах мэс засал эмчилгээ	Трансплантация сердца	Cardiac transplantation
29	Элэгний вирусын идэвхижил өндөртэй өвчтөнд элэг бөөр, бөөр шилжүүлэн суулгах эмчилгээ	Трансплантация почки при высокой степени активности печеночного вируса	Kidney transplantation at the high level of virus activation
Ж	**Эх барих эмэгтэйчүүд, үргүйдэл судлал**	**Акушерство, гинекология, бесплодия**	**Oobstetrics' and gynecology and infertility**
30	Төрөлхийн адреногениталь хам шинж	Врождённый адреногенитальный синдром	Congenital Adrenal Hyperplasia
31	Эмэгтэйчүүдийн бэлэг эрхтний гаж хөгжлийн үе дэх нөхөн сэргээх хагалгаа .	Пластическая операция Врождённой аномалии развитий влагалища:	Complete Mayer – Rokitansky-Kustner-Hauser Syndrome: Vaginal re-constructive surgery
32	Өндгөвчний төрөлхийн дутуу хөгжлөөс үүдсэн үргүйдэл	Синдром истошений яичников	Subfertility due to premature ovarian failure
33	Эрэгтэйчүүдийн үрийн сувгийн эмгэгээс үүдсэн үргүйдэл	-Мужское бесплодие в связи с обструкциеий семеноиспускательных каналов и с истошением гонад	-Male infertility due to obstructive azospermia and testicular failure

（３）　第二次概略設計調査

MINUTES OF DISCUSSIONS
PREPARATORY SURVEY ON
THE PROJECT FOR DEVELOPMENT OF
MONGOLIAN AND JAPANESE UNIVERSITY TEACHING HOSPITAL
IN MONGOLIA

In response to a request from the Government of Mongolia, the Government of Japan decided to conduct a Preparatory Survey on the Project for development of Mongolian and Japanese University Teaching Hospital (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Mongolia the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Koichiro Koroki, Senior Assistant Director, JICA, and is scheduled to stay in the country from 15 January to 30 January 2014.

The Team held discussions with authorities concerned of the Government of Mongolia, collected basic information and conducted a field survey at the survey area. In the course of discussions and field survey, each of the parties confirmed the main items described in the attached sheets.

27 January 2014

Mr. Koichiro Koroki
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Ms. Urgamaltsetseg Bandikhuu
Vice Minister
Ministry of Education and Science
Mongolia

Dr. Batbaatar Gunchin
President
Health Sciences University of Mongolia
Mongolia

(Witness)

Dr. Amarsanaa Jazag
Vice Minister
Ministry of Health
Mongolia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to construct a teaching hospital with the status of tertiary hospital and to procure equipment for improving quality of post-graduate training and providing tertiary healthcare services/specialized consultative healthcare services of high priority at national level and secondary healthcare services in the city of Ulaanbaatar.

2. Project site

The site of the Project is in the eight hectare land with the number 136010/0095 that locates in the territory of 12th khoroo, Bayanzurkh District in Ulaanbaatar described in Annex 1.

3. Responsible and Implementing Agency

3-1. The responsible agency is the Ministry of Education and Science.

3-2. The implementing agency is Health Sciences University of Mongolia.

4. Items requested by the Government of Mongolia

4-1. Seven departments (Internal Medicine, Pediatrics, Surgery, Obstetrics and Gynecology, Traumatology/Orthopedics, Neurology, Infectious Diseases) were finally requested as healthcare services of the teaching hospital by the Mongolian side.

4-2. The facilities described in Annex 2 and the equipment described in Annex 3 was finally requested by the Mongolian side.

4-3. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for its approval.

5. Japan's Grant Aid Scheme

5-1. The Mongolian side understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex 4 and Annex 5.

5-2. The Mongolian side will take necessary measures, as described in Annex-6, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Schedule of the Survey

6-1. The consultants of the Team will proceed to conduct further survey in Mongolia until 30 January 2014.

6-2. JICA will prepare the draft report in English and dispatch a mission team to explain the outline design of the Project to the Mongolian side around August 2014.

6-3. In case that the contents of the report are accepted in principle by the Mongolian side, JICA will complete the final report and send it to the Government of Mongolia.

7. Other relevant issues

7-1. Mongolian side expressed the importance of development of post-graduate training for improving the quality of healthcare services particularly in rural areas.

7-2. Mongolian side expressed its recognition of the teaching hospital by the project as a tertiary hospital and a facility for post-graduate training.

7-3. Mongolian side agreed to take necessary measures for securing the land of the project, hiring local consultant for application and supply of infrastructure connections, obtaining building permission and construction permit, and clearing and taking any debris off the construction site.

7-4. Mongolian side agreed to submit the plan of organization of the teaching hospital to the end of February 2014 to JICA.

7-5. Mongolian side agreed to secure and allocate necessary budget and human resources to operate and maintain the facilities and equipment provided by the project.

7-6. Both sides will continue to examine a necessity of soft component for operation and maintenance of the facilities and equipment provided by the project and confirm its necessity until 30 January 2014.

Annex 1 Project site
Annex 2 Components of Facility list
Annex 3 Equipment list
Annex 4 Japan's Grant Aid
Annex 5 Flow Chart of Japan's Grant Aid Procedures
Annex 6 Major Undertakings by each Government

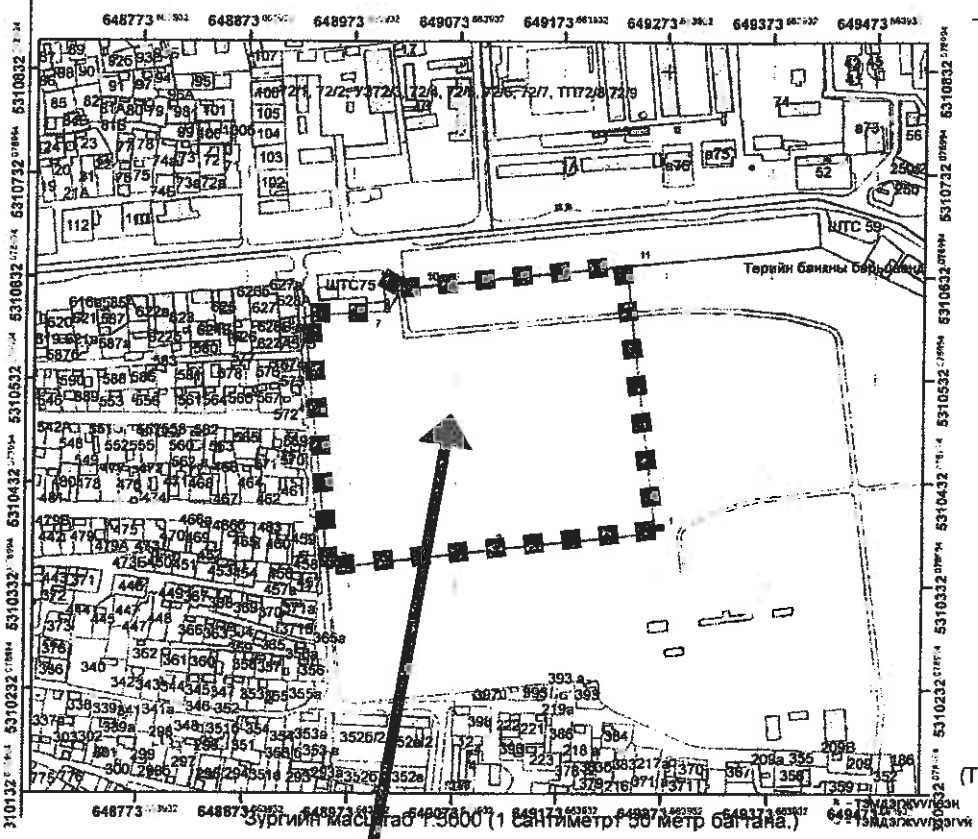
Annex 1

Project Site

АЖ АХУЙН НЭГЖ ЭМШУИС (960003) -н ЭЗЭМШИЖ БАЙГАА
ГАЗРЫН БАЙРШЛЫН КАДАСТРЫН ЗУРАГ

2013-11-1

Нэгж талбарын дугаар : **18649310097497**
Хаяг : Улаанбаатар хот, Баянзүрх дүүрэг, 12-р хороо, - гудамж, - тоот хаалга



Зургийн масштаб 1:3600 (1 сантиметрт 36 метр байгаа.)

№	X	Y	цэгүүд	урт
1	5310383.99	649266.23	1-2	166.05
2	5310386.74	649101.08	2-3	148.47
3	5310349.45	648953.62	3-4	167.13
4	5310515.68	648936.10	4-5	76.69
5	5310591.93	648928.06	5-6	5.08
6	5310594.01	648932.67	6-7	74.56
7	5310598.83	649007.07	7-8	16.62
8	5310613.24	649015.36	8-9	5.97
9	5310619.17	649014.64	9-10	17.16
10	5310620.91	649031.71	10-11	205.36
11	5310642.49	649235.93	11-1	280.27

Талбайн хэмжээ : 80002 квадрат метр

Зураг үйлдсэн : . . . . . /Э.Түвшинбаяр/
(НӨХГ-ийн кадастрын хэлтсийн мэргэжилтэн)
(Тамга) Хянасан : . . . . . /Б.Батчимэг/
(Кадастрын хэлтсийн дарга)

11/11

Annex 2

Components of the Facility

Services	Functions
	Emergency Unit Including emergency delivery and observation wards
Surgery Traumatology / Orthopedic	Operation theatres Including recovery ICU
	Surgical Clinic Surgery Traumatology/Orthopedic Ophthalmology ENT
Internal Medicine Neurology Infectious Diseases	Medical Clinic Internal Medicine Neurology Infectious diseases
Obstetrics and Gynecology Pediatrics	Maternity Clinic Obstetrics and Gynecology Pediatrics
	Radiology
	Laboratory
	Morgue
	Pharmacy
	Inpatient wards
	Lecture rooms
	Administration rooms
	Kitchen
	Laundry
	Mechanical and electrical rooms

Equipment List

Note: All items below are necessary for the Teaching Hospital.
Priority means consideration by the Japanese grant aid project.
A: High priority
B: Medium priority
C: Low priority. Basically these items are to be provided Mongolian side.

Department	Name of Equipment	Priority
Out-patient Area		
Consultation Room		
Common Package	Negatoscope, wall type	A
	Otorhinolaryngo-ophthalmoscope universal set	A
	Family doctors' examination instrument set	B
	Sphygmomanometer	B
	Stethoscope	B
	Height scale	B
	Weight scale	B
	Examination couch	B
	Medical cabinet	B
	Medical desk	B
	Patient chair	B
	Instrument cart	B
	Stretcher	B
	Wheel chair	B
Ob/Gyn.	Gynecology examination table	A
	Stethoscope, infant	A
	Colposcopy	A
	Cryotherapy apparatus	C
	Coagulation apparatus for gynecology	C
	Medical reception table	C
ENT	ENT treatment cabinet	A
	Otolaryngology chair	A
	Surgical Side lamp	A
Treatment Room		
Common Package	Examination couch	B
	Medical cabinet	B
	Medical desk	B
	Patient chair	B
	Instrument cart	B
Internal Medicine	Binocular microscope	A
	Magnifying glass	A
	Laser cautery	A
Surgery	Electro-surgical unit for plaster	A
	Imaging bone ultrasonometer	C
	Ultrasound bone densitometer	C
	Cystometry	C
	Uroflowmeter	C
Pediatrics	Stethoscope, infant	A
	Nebulizer	A
	Aspirator	A
	Syringe pump	A
	Infusion pump	A
	Pulse oximeter	A
	Bilirubin meter	A
	Airway scope	A
	Vein viewer	A
Pulmonology	Nebulizer	A
Endocrinology	ECG, 1ch	A
	Insulin pump	A
	Diabetic foot treatment kit	A
ENT	Audiometer	A
	Tympanometry	A
	Flexible nasopharyngoscopes	A

Department	Name of Equipment	Priority
	Coagulation apparatus	A
	Nebulizer	A
	Stroboscopy	C
	Tympanostomy U-tube	C
	Otologic drill	C
	Head lights	C
	Surgical burrs	C
	Mirror warmers	C
Ophthalmology	Slit lamp	A
	Refract meter	A
	Tonometer	A
	Retinoscope	A
	Visual glass kit	A
	Visual field analyzer	A
	Fully completed green light laser apparatus with accessories	B
	Ultrasonic biometer	B
Instrument Set	Cardiovascular surgical instrument set	B
	Pulmonary surgical instrument set	B
	Gastro surgical instrument set	B
	Gall bladder and liver surgical instrument set	B
	Tracheostomy surgical instrument set	B
	Bone surgical instrument set	B
	Abdominal surgery instrument set	B
	Brain surgical instrument set	B
	Eye surgical instrument set	B
	ENT surgical instrument set	B
	Neurosurgical instrument set	C
Emergency Room	Ultrasound apparatus 3/4D	A
	ECG	A
	Ventilator, CPAP	A
	Ventilator	A
	Dialyzer	A
	Defibrillator	A
	Patient monitor	A
	Fatal monitor	A
	Nebulizer	A
	Pulse oximeter	A
	Airway scope	A
	Syringe pump	A
	Infusion pump	A
	Suction unit	A
	Otorhinolaryngo-ophthalmoscope universal set	A
	Ambulatory manual breathing unit	A
	Negatoscope, wall type	A
	Medical refrigerator	A
	Stretcher, slide type	A
	Medical instrument cart	A
	Examination couch	B
	Medical cabinet	B
	Medical desk	B
	Patient chair	B
	Wheel chair	B
Pharmacy	Dispenser	A
	Medical refrigerator	A
	Counter, tablets, manual	A
	Medical cabinet for Pharmacology	A
	Shelf	B
	Working table	B
Diagnosis Area		
Physical Diagnosis		
ECG Room	ECG	A
	Holter ECG	A
	Treadmill	A
	Ergometer	A
	Examination couch	B

Department	Name of Equipment	Priority
	Screen	C
Ultrasound Room	Ultrasound apparatus 3/4D	A
	Ultrasound apparatus, doppler	A
	Examination couch	B
	Examiner's desk	B
	Examiner's chair	B
	Cart	B
EMG Room	EMG	A
	Examination couch	B
	Examiner's desk	B
	Examiner's chair	B
	Cart	B
EEG Room	EEG	A
	Patient bed	A
	Examiner's desk	B
	Examiner's chair	B
	Cart	B
Spirometer Room	Spirometer	A
	Examiner's desk	B
	Examiner's chair	B
	Cart	B
Imaging Diagnosis		
Radiology Department	MRI	A
	CT scanner	A
	Fluoroscopy X-ray apparatus	A
	Conventional X-ray apparatus	A
	Mobile X-ray apparatus	A
	Mammography	A
	Film developer	A
	Mixer, Barium	A
	Apron, protective, set (small, medium, large)	A
	aprons, protection, gonads, set	A
	position aids, x-ray, Set	A
	Negatoscope, stand type	A
	PACS	A
	Medical cabinet	B
	Cart	B
	Screen	B
	Examiner's desk	B
	Examiner's chair	B
Angiography Room	Angiography	A
	Universal operation table	A
	Instrument cart	B
	Medical cabinet	B
Endoscopy Room	Gastroscopy (flexible type), adult and child	A
	Colonoscopy (flexible type)	A
	Endoscopy light source system	A
	Endoscopy cameras	A
	Endoscopy video processor	A
	Ultrasonic cleaner	A
	Auto endoscope reprocessor	A
	Endoscopy storage cabinet	A
	Bronchoscope	B
	Duodenoscope	B
	Instrument cart	B
	Medical cabinet	B
	Examiner's desk	B
	Examiner's chair	B
	Cart	B
	Endoscopy ultrasound probes	C
Clinical Laboratory		
Common Usage	Centrifuge	A
	Micro centrifuge	A
	Capillary centrifuge	A
	Binocular microscope	A

Department	Name of Equipment	Priority
	Binocular microscope, group teaching system	A
	Safety cabinet	A
	Clean bench	A
	Incubator	A
	pH Meter	A
	Stirrer, hotplate, electric	A
	Stirrer, magnetic	A
	Pipettes, multi volume	A
	Balance	A
	Water distiller	A
	Water bath	A
	Medical refrigerator	A
	Freezer, -20C	A
	Deep freezer, -70C	A
	Medical cabinet for dangerous drug	A
	Medical shelf for dangerous drug	A
	Burner, Bunsen	A
	Stopwatch	B
	Timer, 60 min	C
Biochemistry	Biochemical analyzer (automated)	C
	Blood gases analyzer	A
	Electrolyte analyzer	A
	Therapeutic drug monitoring	A
	ELISA	A
	Hemoglobin meter	A
	Bilirubin meter	A
	Glucometer	A
Hematology	Blood cell counter	A
	Coagulation measuring system	A
	Blood group typing, set	A
	Rotator, blood specimen	A
	Staining apparatus	A
Immunology	Blood sedimentation unit, ESR-Western	A
	Vertical Shaker	A
	Sensitivity disc, applicator	A
Bacteriology	Urine test strips analyzer	B
	Urine sediment analyzer	A
Microbiology	Blood culture apparatus	B
	Anaerobic culture apparatus	A
	C02 Incubator	A
	Incubator	A
	Roller Tubes Incubator	A
	Dry oven	A
	Autoclave	A
	Microwave	A
	Microbiology instrument set	A
Pathology	Cryostat	A
	Automatic tissue processer	A
	Embedding center	A
	Paraffin oven	A
	Stretching hotplate	A
	Paraffin block humidifier	A
	Cytocentrifuge	A
	Fluorescence microscope	A
	Organ photo table	A
	Microtome	A
	Microtome knife	A
	Automatic microtome knife sharpener	A
	Shaker	A
	Staining set	A
	Cabinet, storage, slides and wax block cassettes	A
Washing room	Laboratory washing apparatus	A
	Autoclave	A
	Dry oven	A
	Pipette washer	A

Department	Name of Equipment	Priority
Medical Supportive Area		
Morgue	Morgue refrigerator with 2 place	A
	Morgue table	A
CSSD	Large autoclave	A
	Medium autoclave	A
	Water-jet pump to clean pipettes	A
	Basket, instruments	A
	Sealer, heat, manual, bags and pouches, bench top	A
	Trolley, CSSD packs transport, stainless steel	A
	Cart, Loading, Sterilizer	A
	Needle Destroyer	A
	Bedpan Washer	A
	Sterilizer (boiling type, for instruments)	C
Laundry	Washing machine	B
	Drying machine	B
	Ironing machine	B
	Delivery cart	B
Kitchen	Refrigerator	B
	Water boiler	B
	Boiling pan	B
	Cabinet, cutlery	B
	Cart, food dispensing	B
	Cart, trays, self service	B
	Cooking range	B
	Counter self service	B
	Dish washer	B
	Oven, pastry	B
	Pots and pan kitchen, medium, 100beds set	B
	Freezer	B
	Soup pot, electric	B
	Main menu pot, electric	B
	Cabinet for glass, etc.	B
	Furniture for food shopping	C
	Chopping block, with chopper	C
	Hose with handle for washing kitchen utensils	C
	Industrial blender	C
	Kitchen machine, universal	C
	Kitchen tools, medium,100beds general hospital set	C
	Meat mincer, heavy duty	C
	Meat saw, electric	C
	Microwave oven, low power range	C
	Milk heater	C
	Food mixer	C
	Planetary mixer	C
	Slice, gravity feed	C
	Table ware100beds set	C
	Trays, roll rack	C
	Vegetable mincer	C
Maintenance Room	Dust extraction unit, workshop	B
	Equipment for bio-medical workshop	B
	Equipment for carpenter workshop	B
	Equipment for electrical workshop	B
	Equipment for mechanical workshop	B
	Cabinet, workshop, open, with shelves	C
	Drill, floor standing	C
	Drill, hand	C
	Ladder	C
	Light, inspection	C
	Oscilloscope	C
	Pipe bender	C
	Spray cleaning, compressed air	C
	Power supply for weak currents	C
	Electronic tool sets	C
	Simulator, Multi-parameter patient	C
	Soldering station	C

Department	Name of Equipment	Priority
	Test unit, electric safety	C
	Carpenter tool set	C
	Electrician tool set	C
	Trolley, transport equipment, heavy duty	C
	Welding unit, autopen, with gas bottle	C
	Welding unit, electric	C
	Workbench, workshop	C
In-patient Area		
Ward/ common	Patient bed	A
	IV pole	A
	Flow meter, medical air with humidifier, wall outlet connection type	A
	Flow meter, oxygen with humidifier, wall outlet connection type	A
	Medical cabinet	B
	Instrument cart	B
	Chart holder, bed mounting	B
	Refrigerator	B
	Bedside table	B
	Bedside shelf	B
	Stretcher	B
	Wheel chair	B
Internal Medicine	Nebulizer	A
	Aspirator	A
Surgery	Traction table (fixed height)	A
	Traction set Cervical (wall mounting)	A
	Walker rollator	A
Ob/Gyn	Baby cod	A
Pediatrics	Syringe pump	A
	Infusion pump	A
	Nebulizer	A
	Aspirator	A
Curative Area		
Operation Theater	Operation ceiling lump	A
	Universal operation table	A
	Operation table	A
	Negatoscope, stand type	A
	Operation camera	A
	C-arm X-ray apparatus	A
	Anesthesia machine	A
	Ventilator	A
	Laparoscope set	A
	Microsurgery scope	A
	Patient monitor	A
	Pulse oximeter	A
	Coagulation apparatus	A
	Defibrillator	A
	Incubator	A
	Infant warmer	A
	Fatal monitor	A
	Suction unit	A
	Syringe pump	A
	Infusion pump	A
	Ambulatory Manual Breathing Unit	A
	Airway scope	A
	Instrument cart	A
ICU/Recovery Room	Patient Bed	A
	Negatoscope, wall type	A
	Ultrasound apparatus 3/4D	A
	ECG	A
	Ventilator	A
	Ventilator, CPAP	A
	Patient monitor	A
	Pulse oximeter	A
	Defibrillator	A
	Nebulizer	A
	Suction unit	A

Department	Name of Equipment	Priority
	Syringe pump	A
	Infusion pump	A
	Ambulatory Manual Breathing Unit	A
	Airway scope	A
	Otorhinolaryngo-ophthalmoscope universal set	A
	Medical refrigerator	A
	Medical cabinet for ICU	A
	Medical instrument cart for ICU	A
	ICU Stretcher	A
	Wheel chair	B
Administration Area		
Administration	Shelf, patient record	B
	Ambulance car	B
	IT server, PC desktops, related accessories	C
	IT program service, related accessories	C
	Medical cabinets and wardrobes with hanger, with locker, chairs, mirrors	C
	Toilets with automatic regulates water, washstands and automatic hand dryer	C
	Wardrobe with hanger, cloth keeping cabinets with locker, chairs	C
	Wardrobe with hanger, cloth keeping cabinets with locker, chairs	C
	PC desktop, printers, medical cabinets and wardrobes, with locker, chairs, clocks, file cabinet, telephones	C
	Office furniture, washable and cleanable, PC desktop, notebooks, printers, telephones, TV and video monitors	C
	Long chairs with 3-6 places	C
Conference Room	AV system set	B
Non medical equipment	Patient area waiting chairs and sofas	C
	Administration office furniture	C
	Lecture room, meeting room, training room furniture	C
	Library furniture	C
	Books in the library	C
	Linen (bed sheets, gowns, etc)	C
	Curtain for windows	C
	Building cleaning items (mops, vacuum cleaners, etc)	C
	Administration computer system (hardware and software)	C
	Accounting computer system (hardware and software)	C
	Patient management computer system (hardware and software)	C
	Medical record management computer system (hardware and software)	C
	Notice boards and sign boards	C

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 singed 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) "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)

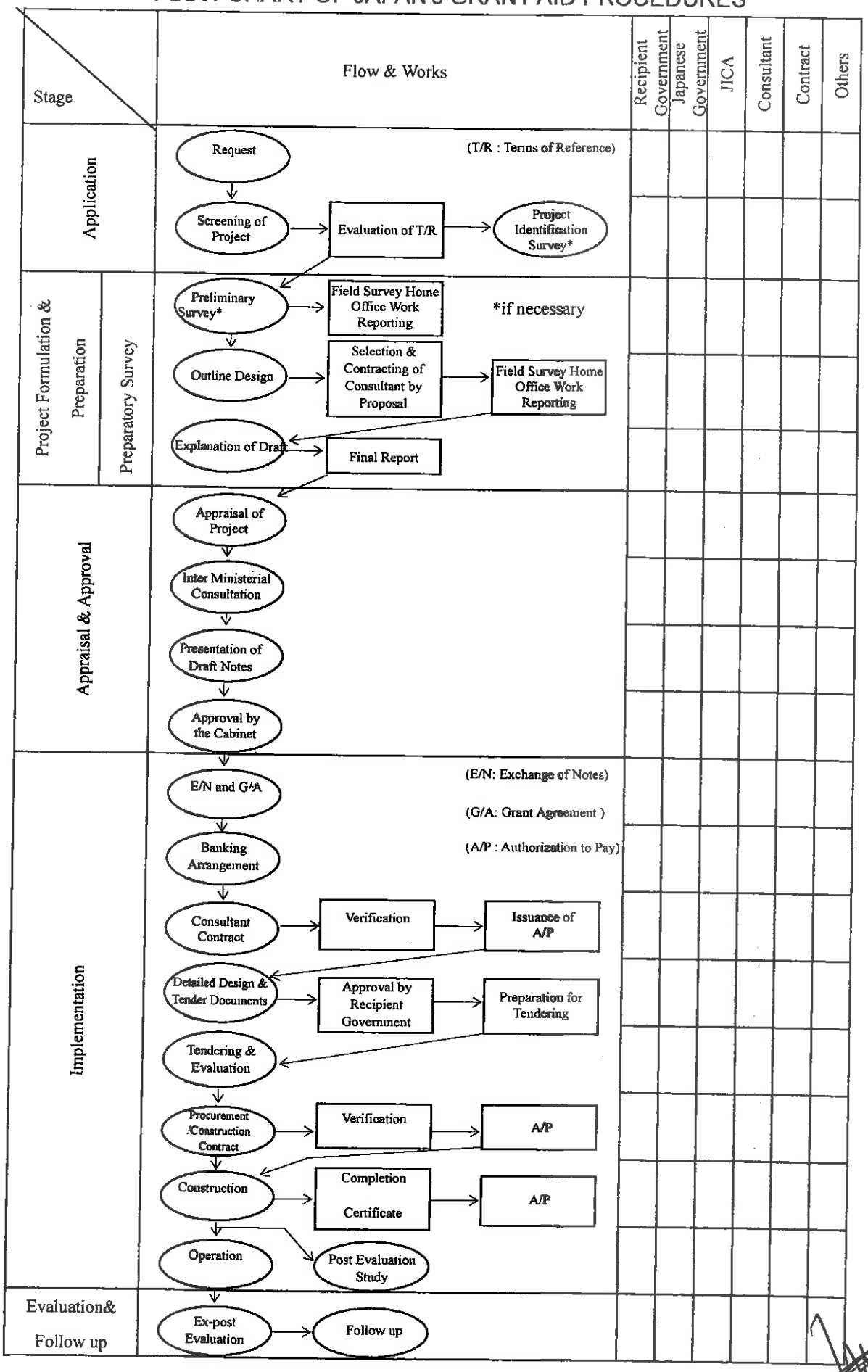
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(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.

Annex 5

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	to secure a lot of land necessary for the implementation of the Project and to clear the site;		●
2	To construct the following facilities		
	1) The building	●	
	2) The gates and fences in and around the site		●
	3) The parking lot	●	●
	4) The access road to the building within the site	●	
	5) The road outside the consruction site		●
3	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the sites		
	1) Electricity		
	a. The distributing power line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm sewer and others to the site)		●
	b. The drainage system (for toilet sewer, common waste, storm drainage and others) with the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
4	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in the recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	●	
	2) Internal transportation from the port of disembarkation to the project site	●	●
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be borne by the Authority without using the Grant		●
6	To accord Japanese physical persons and / or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
7	To ensure that the Facilities and the products be maintained and used properly and effectively for the implementation of the Project		●
8	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		●
9	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
10	To give due environmental and social consideration in the implementation of the Project.		●

(B/A : Banking Arrangement, A/P : Authorization to pay)

（４）　概要説明調査

MINUTES OF DISCUSSIONS
ON THE EXPLANATION OF THE DRAFT REPORT OF THE PREPARATORY SURVEY FOR THE PROJECT FOR DEVELOPMENT OF MONGOLIAN AND JAPANESE UNIVERSITY TEACHING HOSPITAL IN MONGOLIA

In January 2014, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on the Project for Development of Mongolian and Japanese University Teaching Hospital (hereinafter referred to as "the Project") to Mongolia, and through discussions, field surveys and technical examination of the results in Japan, JICA prepared the draft report of the preparatory survey.

In order to explain and to consult the contents of the draft report with the Government of Mongolia, JICA sent to Mongolia the Draft Report Explanation Team (hereinafter referred to as "the Team"), headed by Dr. Mitsuo ISONO, Senior Advisor for Health, JICA from 3 August to 10 August 2014.

As a result of the series of discussions with authorities concerned of the Government of Mongolia and the Team (hereinafter referred to as "both sides") have confirmed the main items described in the attached sheets.

Ulaanbaatar, 8 August 2014

Dr. Mitsuo Isono
Leader
Draft Report Explanation Team
Japan International Cooperation Agency
Japan

Ms. Baavgai Nasanbayar
Director
Department of Strategic Policy and Planning
Ministry of Education and Science
Mongolia

Dr. Batbaatar Gunchin
President
The Mongolian National University of Medical Science
Mongolia

(Witness)

Dr. Buyanjargal Yadamsuren
Director
Department of Policy Implementation and Coordination
Ministry of Health
Mongolia

ATTACHMENT

1. Components of the Draft Report

The Mongolian side agreed and accepted in principle the contents of the draft report explained by the Team. The outline of the Project is described in Annex 1-1, 1-2, 1-3.

2. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Mongolian side by the end of October 2014.

3. Japan's Grant Aid scheme

The Mongolian side understood Japan's Grant Aid scheme and necessary measures to be taken by the Mongolian side which was explained by the Team and described in Annex-4 and Annex-5 of the Minutes of Discussions signed by both sides on 27 January, 2014.

4. Measures to be taken by the Mongolian side

4-1. The Mongolian side agreed to take necessary measures described in Annex 2, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

4-2. The Mongolian side agreed to take necessary measures for hiring local consultant for application and acquisition of technical conditions of infrastructure connections and submit the technical condition documents by the end of September 2014 to JICA.

4-3. The Mongolian side agreed to take necessary measures for supply of infrastructure connections, obtaining building permission and construction permit, and clearing and taking any debris off the construction site by the time the actual construction work starts.

4-4. The Mongolian side agreed to submit the updated plan of organization of the university teaching hospital by the middle of September 2014 to JICA.

4-5. The Mongolian side agreed to allocate necessary staff at least six months before facility completion and cover the costs for operation and maintenance described in Annex 3.

4-6. The Mongolian side agreed to examine future financial plan of university teaching hospital by utilizing multi-financial resources including the budget from the Ministry of Education and Science and the Ministry of Health, and Social Insurance Scheme for sustainable operation and management of the hospital.

5. Confidentiality of the project cost estimation

The Team explained the project cost estimation of the Project described in Annex 4. Both sides agreed that the project cost estimation should never be duplicated or released to any outside parties before signing of all the Contract(s) for the Project. The Mongolian side understands that the project cost estimation is not final and is subject to change.

6. Maintenance Contracts

The Mongolian side requested the Team to include maintenance contracts of specific medical equipment regarding MRI, CT scanner, and Angiography in the Project. The Team agreed to plan the maintenance cost for two years in the Project.

7. The Tentative Project Schedule

The Team explained the tentative project schedule as described in Annex 5.

Annex 1-1 The Outline of the Project
Annex 1-2 Facility Plan
Annex 1-3 Equipment List
Annex 2 Major Undertakings to be taken by Each Government
Annex 3 Cost Estimation to be borne by the Mongolian side
Annex 4 Project Cost Estimation
Annex 5 Tentative Project Schedule

Annex 1-1

The Outline of the Project

Facility

(1) Building outline

Item	Floor Area (m^2)
Main Building: 3 story building with 1 basement level	
① Outpatient Departments (Surgery, Traumatology, Ophthalmology, ENT, Internal Medicine, Neurology, Obstetrics and Gynecology, Pediatrics, Infectious Diseases), Imaging Diagnosis Department, Endoscopy Department, Emergency Unit, ICU Department, Surgery Department, Examination Department, Pharmacy Department, CDDS, Kitchen Department, Administration Department, Education Department (lecture rooms, conference rooms, library), Medical Records Department, Morgue, General Service Department (medical equipment repair, laundry, medical waste) ② Inpatient Ward (104 beds)	15,730 m^2
Boiler Building (single story)	775 m^2
Total	16,505 m^2

(2) Building service outline

- Electrical facilities: Power-supply equipment (incoming/substation/power distribution), emergency power generation system, lights, outlets, communication equipment, fire alarm system, lightning protector
- Mechanical facilities: Air conditioning and ventilation system
- Water supply/discharge and hygiene facilities: Sanitary fixtures, water and hot water supply system, wastewater discharge system, fire-fighting equipment
- Special facilities: Medical gas equipment, elevator system

Medical Equipment

(1) Image diagnosis/treatment equipment
MRI, CT scanner, Angiography, X-ray fluoroscopy unit, General X-ray unit, Mammography, Ultrasound diagnostic equipment, Video-endoscopy system, etc.

(2) Bio-information monitoring/measuring equipment
Patient monitor, Electrocardiograph(ECG), Electroencephalograph(EEG), Electromyograph (EMG), Spirometer, Fatal monitor, etc.

(3) Operation/treatment equipment
Operating table, Operating light, Electrosurgical unit, Anesthesia equipment, Ventilator, Laparoscope operating unit, Microsurgery scope, etc.

(4) Laboratory equipment
Automatic biochemistry analyzer, Automatic immunoassay analyzer, Blood cell counter, Blood gas analyzer, Urine sediment analyzer, Coagulation measuring system, Blood culture apparatus, Fluorescence microscope

(5) Central sterilization and supply department equipment
Large autoclave, Medium autoclave, etc.

(6) PACS (Picture archiving and communication system)
Component: Image report server system, Image interpretation terminal, RIS terminal, Reference PACS terminal, etc.

(7) Other's equipment
Equipment for Out-patient , Equipment for ENT, Equipment for Ophthalmology, Equipment for Emergency, Equipment for Pharmacy, Morgue refrigerator, etc.

Total 272 items

Annex 1-2

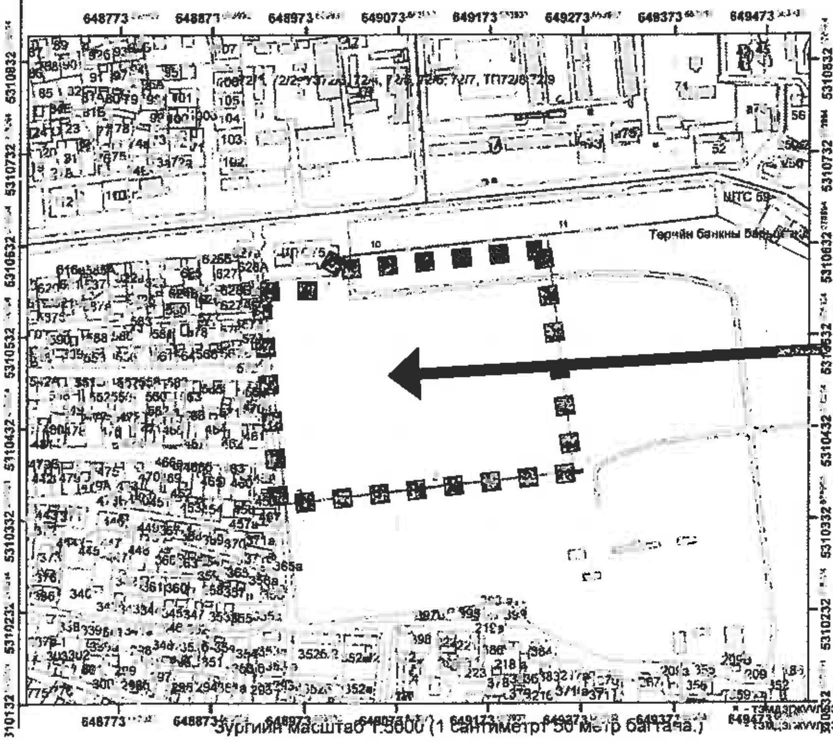
Facility Plan

◇ Project Site

АЖ АХУЙН НЭГЖ ЭМШУИС (960003) -и ЭЗЭМШИЖ БАЙГАА
ГАЗРЫН БАЙРШЛЫН КАДАСТРЫН ЗУРАГ

2013-11-15

Нэгж талбарын дугаар : 18649310097497
Хаяг : Улаанбаатар хот, Баянзүрх дүүрэг, 12-р хороо, - гудамж, - тоот хаалга



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Талбайн хэмжээ : 80002 квадрат метр

Зураг үйлдсэн: .... /Э.Түвшинбаяр/
(НӨХГ-ийн кадастрын хэлтсийн мэргэжилтэн)
(Тамга) Хянасан : .... /Б.Батчимэг/
(Кадастрын хэлтсийн дарга)

◇ Building Zoning

<table>
<tr><th>階
Floor</th><th colspan="7">診療棟
Clinical Building</th><th colspan="3">病棟
Ward building</th></tr>
<tr><td>3</td><td colspan="2">事務管理
Administration department</td><td colspan="2">教育
Lecture hall</td><td>機械
Machine room</td><td colspan="2">検査室
Laboratory Unit</td><td colspan="3">病棟
Inpatient wards
Maternity 32 (48) beds</td></tr>
<tr><td>2</td><td colspan="2">画像診断
Diagnostic imaging
X-ray, Fluoroscopy, CT, MRI, Angio
Mammography</td><td colspan="2">内視鏡
Endoscopy unit</td><td colspan="2">手術部門
Surgical unit</td><td>集中治療
ICU
6+2 beds</td><td colspan="3">病棟
Inpatient wards
Surgical 24 (36)+3(6) beds</td></tr>
<tr><td>1</td><td>薬局
Pharmacy</td><td colspan="4">外来部門
Outpatients Clinics
Surgical, Medical, Maternity Clinics</td><td colspan="2">救急
Emergency Unit
8+2 beds</td><td colspan="3">病棟
Inpatient wards
Medical 24 (36)+3(6) beds</td></tr>
<tr><td>B1</td><td>滅菌部
CSSD</td><td>教育
Library</td><td>施設保守
Workshops Unit</td><td>病歴
Medical records</td><td>機械
Machine room</td><td>霊安
Morgue</td><td>洗濯
Laundry</td><td>厨房
Kitchen</td><td>廃棄物
Medical waste treatment</td><td>施設管理
Housekeeping</td></tr>
</table>

Annex 1-3

Equipment List

Department	No.	Name of Equipment	Unit
Out-patient Area			
Consultation Room			
Common Package	1	Negatoscope, wall type	14
	2	Otorhinolaryngo-ophthalmoscope universal set	14
	3	Family doctors' examination instrument set	8
	4	Sphygmomanometer	14
	5	Stethoscope	14
	6	Height scale	12
	7	Weight scale	12
	8	Examination couch	16
	9	Medical cabinet	17
	10	Medical desk	17
	11	Patient chair	17
	12	Instrument cart	17
Ob/Gyn	13	Gynecology examination table	3
	14	Colposcopy	2
ENT	15	ENT treatment cabinet	1
	16	Otolaryngology chair	1
	17	Surgical Side lamp	1
Treatment Room			
Common Package	18	Examination couch	8
	19	Medical cabinet	10
	20	Medical desk	11
	21	Patient chair	10
	22	Instrument cart	10
Internal Medicine	23	Binocular microscope	1
	24	Magnifying glass	1
Surgery	25	Electro-surgical unit for plaster	1
Pediatrics	26	Stethoscope, infant	2
	27	Nebulizer	1
	28	Aspirator	1
	29	Syringe pump	2
	30	Infusion pump	2
	31	Pulse oximeter	1
	32	Bilirubin meter	1
	33	Airway scope	2
	34	Vein viewer	1
Pulmonology	35	Nebulizer	1
Endocrinology	36	ECG	1
ENT	37	Audiometer	1
	38	Tympanometry	1
	39	Flexible nasopharyngoscopes	1
	40	Coagulation apparatus (for ENT)	1
ENT	41	Nebulizer	1
Ophthalmology	42	Slit lamp	1
	43	Refract meter	1

Department	No.	Name of Equipment	Unit
	44	Tonometer	1
	45	Retinoscope	1
	46	Visual glass kit	1
	47	Visual field analyzer	1
	48	Fully completed green light laser apparatus	1
	49	Ultrasonic biometer	1
Instrument Set	50	Gastro surgical instrument set	2
	51	Gall bladder and liver surgical instrument set	2
	52	Abdominal surgery instrument set	2
	53	Eye surgical instrument set	1
	54	ENT surgical instrument set	1
Emergency Room	55	Operation light、ceiling and mobile	1
	56	Ultrasound apparatus 3/4D	1
	57	ECG	1
	58	Ventilator	1
	59	Defibrillator	1
	60	Patient monitor	1
	61	Fatal monitor	1
	62	Nebulizer	1
	63	Pulse oximeter	3
	64	Airway scope	1
	65	Syringe pump	4
	66	Infusion pump	4
	67	suction unit	2
	68	Otorhinolaryngo-ophthalmoscope universal set	5
	69	Ambulatory manual breathing unit	2
	70	Negatoscope, wall type	2
	71	Medical refrigerator	1
	72	Stretcher, slide type	4
	73	Medical instrument cart	5
	74	Examination couch	3
	75	Medical cabinet	3
	76	Medical desk	3
	77	Patient chair	3
	78	Wheel chair	2
Pharmacy	79	Dispenser	2
	80	Medical refrigerator	2
	81	Counter, tablets, manual	2
	82	Medical cabinet for Pharmacology	2
	83	Shelf	2
	84	Working table	2
Diagnosis Area			
Physical Diagnosis			
ECG Room	85	ECG (for stress test)	1
ECG Room	86	Holter ECG	1
	87	Treadmill	1
	88	Ergometer	1
	89	Examination couch	1
Ultrasound Room	90	Ultrasound apparatus 3/4D	2
	91	Ultrasound apparatus, doppler	2
	92	Examination couch	4

Department	No.	Name of Equipment	Unit
	93	Examiner's desk	4
	94	Examiner's chair	4
	95	Cart	4
EMG Room	96	EMG	1
	97	Examination couch	1
	98	Examiner's desk	1
	99	Examiner's chair	1
	100	Cart	1
EEG Room	101	EEG	1
	102	Patient bed	1
	103	Examiner's desk	1
	104	Examiner's chair	1
	105	Cart	1
Spirometer Room	106	Spirometer	1
	107	Examiner's desk	1
	108	Examiner's chair	1
	109	Cart	1
	110	Patient chair	1
Imaging Diagnosis			
Radiology Department	111	MRI	1
	112	CT scanner	1
	113	Fluoroscopy X-ray apparatus	1
	114	Conventional X-ray apparatus	1
	115	Mobile X-ray apparatus	1
	116	Mammography	1
	117	Film developer	4
	118	Mixer, Barium	1
	119	Apron, protective, set (small, medium, large)	5
	120	Aprons, protection, gonads, set	5
	121	Position aids, x-ray, Set	2
	122	Negatoscope, stand type	3
	123	PACS	1
		Image report sever system	1
		PACS terminal unit for reference	20
		PACS terminal unit for conference	11
		PACS terminal unit(for endoscope)	3
		PACS terminal unit (for ultrasound unit)	4
		terminal unit (for radiology)	3
		RIS terminal unit (for radiology)	5
Radiology Department	124	Medical cabinet	1
	125	Cart	1
Angiography Room	126	Angiography	1
	127	Instrument cart	1
	128	Medical cabinet	1
Endoscopy Room	129	Gastroscopy (flexible type), adult and child	2
	130	Colonoscopy (flexible type)	1
	131	Ultrasonic cleaner	2
	132	Auto endoscope reprocessor	1

Department	No.	Name of Equipment	Unit
	133	Endoscopy storage cabinet	1
	134	Instrument cart	6
	135	Medical cabinet	3
	136	Examiner's desk	1
	137	Examiner's chair	1
	138	Patient chair	1
Clinical Laboratory			
Common Usage	139	Centrifuge	7
	140	Micro centrifuge	5
	141	Capillary centrifuge	2
	142	Binocular microscope	12
	143	Binocular microscope, group teaching system	2
	144	Safety cabinet	2
	145	Clean bench	2
	146	Incubator	2
	147	pH Meter	2
	148	Stirrer, hotplate, electric	3
	149	Stirrer, magnetic	4
	150	Pipettes, multi volume	28
	151	Balance	2
	152	Water distiller	2
	153	Water bath	6
	154	Medical refrigerator	2
	155	Freezer, -20C	2
	156	Deep freezer, -70C	2
	157	Medical cabinet for dangerous drug	4
	158	Medical shelf for dangerous drug	4
	159	Laboratory table with sink, large	8
	160	Laboratory table with sink, medium	3
	161	Burner, Bunsen	6
Biochemistry	162	Biochemical analyzer (automated)	1
	163	Blood gases analyzer	1
	164	Electrolyte analyzer	1
	165	Immunology analyzer	1
	166	Hemoglobin meter	1
	167	Bilirubin meter	1
Hematology	168	Blood cell counter	1
	169	Coagulation measuring system	1
	170	Rotator, blood specimen	2
	171	Staining apparatus	1
Immunology	172	Blood sedimentation unit, ESR-Western	2
	173	Vertical Shaker	2
Bacteriology	174	Urine test strips analyzer	1
	175	Urine sediment analyzer	1
Microbiology	176	Blood culture apparatus	1
	177	Anaerobic culture apparatus	1
	178	CO2 Incubator	1
	179	Incubator	1
	180	Roller Tubes Incubator	1
	181	Dry oven	1

Department	No.	Name of Equipment	Unit
	182	Autoclave	1
Pathology	183	Cryostat	1
	184	Automatic tissue processer	1
	185	Embedding center	1
	186	Paraffin oven	1
	187	Stretching hotplate	1
	188	Cytocentrifuge	1
	189	Fluorescence microscope	1
	190	Organ photo table	1
	191	Microtome	1
	192	Shaker	1
	193	Staining set	1
	194	Cabinet, storage, slides and wax block cassettes	1
Washing room	195	Laboratory washing apparatus	1
	196	Autoclave	1
	197	Dry oven	1
	198	Pipette washer	1
Medical Supportive Area			
Morgue	199	Morgue refrigerator with 2 place	1
	200	Morgue table	1
CSSD	201	Large autoclave	1
	202	Medium autoclave	1
	203	Basket, instruments	15
	204	Sealer, heat, manual, bags and pouches, bench top	2
	205	Trolley, CSSD packs transport, stainless steel	8
	206	Needle Destroyer	1
	207	Bedpan Washer	4
Kitchen	208	Refrigerator	2
	209	Freezer	2
In-patient Area			
Ward/ common	210	Patient bed	97
	211	IV pole	56
Ward/ common	212	Flow meter, oxygen with humidifier, wall outlet connection type	52
	213	Medical cabinet	3
	214	Instrument cart	3
	215	Refrigerator	3
	216	Bedside table	86
	217	Bedside shelf	86
	218	Stretcher	3
	219	Wheel chair	6
Internal Medicine	220	Nebulizer	4
	221	Aspirator	4
Surgery	222	Traction table (fixed height)	2
	223	Traction set Cervical (wall mounting)	2
	224	Walker rollator	4
Ob/Gyn	225	Baby cod	4
Pediatrics	226	Syringe pump	4
	227	Infusion pump	4
	228	Nebulizer	2

Department	No.	Name of Equipment	Unit
	229	Aspirator	2
Curative Area			
Operation Theater	230	Operation ceiling lamp	4
	231	Universal operation table	3
	232	Operation table	1
	233	Negatoscope, stand type	4
	234	C-arm X-ray apparatus	1
	235	Anesthesia machine	4
	236	Laparoscope set	1
	237	Microsurgery scope	1
	238	Patient monitor	4
	239	Pulse oximeter	4
	240	Coagulation apparatus	4
	241	Defibrillator	2
	242	Incubator	1
	243	Infant warmer	1
	244	Fatal monitor	1
	245	Suction unit	4
	246	Syringe pump	4
	247	Infusion pump	4
	248	Ambulatory Manual Breathing Unit	4
	249	Airway scope	4
	250	Instrument cart	8
ICU/Recovery Room	251	Patient Bed	8
	252	Negatoscope, wall type	1
	253	ECG	1
	254	Ventilator	2
	255	Ventilator, CPAP	1
	256	Patient monitor	8
ICU/Recovery Room	257	Central Monitor	1
	258	Pulse oximeter	8
	259	Defibrillator	1
	260	Nebulizer	4
	261	Suction unit	4
	262	Syringe pump	8
	263	Infusion pump	8
	264	Ambulatory Manual Breathing Unit	2
	265	Airway scope	1
	266	Otorhinolaryngo-ophthalmoscope universal set	5
	267	Medical refrigerator	1
	268	Medical cabinet for ICU	2
	269	Medical instrument cart for ICU	4
	270	ICU Stretcher	2
	271	Wheel chair	2
Administration Area			
Administration	272	Shelf, patient record	10

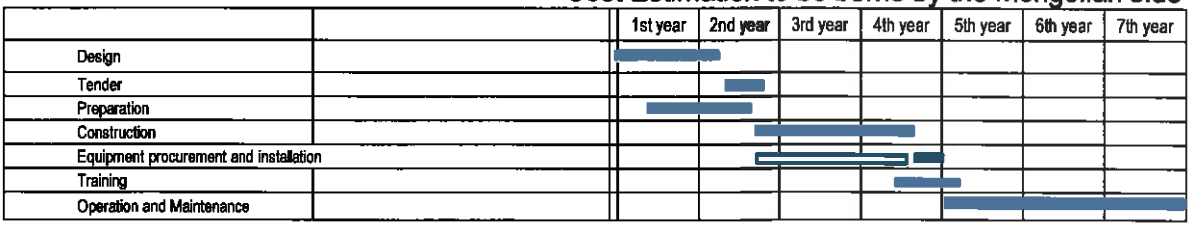
Annex 2

Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure a lot of land necessary for the implementation of the Project and to clear the site;		●
2	To construct the following facilities		
	1) The building	●	
	2) The gates and fences in and around the site		●
	3) a The patient parking lot	●	
	b. The staff parking lot		●
	4) The access road to the building within the site	●	
	5) The road outside the consruction site		●
3	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities		
	1) Electricity		
	a. The distributing power line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm sewer and others to the site)		●
	b. The drainage system (for toilet sewer, common waste, storm drainage and others) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General medical equipment,		●
	Kitchen equipment, Washing equipment, Waste management equipment		●
	Administration equipment, Furniture, Laboratory glassware,		●
	Audio Visual equipment, IT system for hospital management and operation		●
	Linen/uniforms, Ambulances and other vehicles		●
	b. Major medical equipment	●	
	PACS	●	
4	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in the recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	●	
	2) Internal transportation from the port of disembarkation to the project site	●	●
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be borne by the Authority without using the Grant		●
6	To accord Japanese physical persons and / or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
7	To ensure that the Facilities and the products be maintained and used properly and effectively for the implementation of the Project		●
8	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		●
9	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
10	To give due environmental and social consideration in the implementation of the Project.		●
(B/A : Banking Arrangement, A/P : Authorization to pay)			

ANNEX 3

Cost Estimation to be borne by the Mongolian side



			Japan Grant Aid	Mongolia Side	Rough cost estimate for each year (thousand US$, 2014 price) 1st year	2nd year	3rd year	4th year	5th year	6th year	7th year and after
1	Site related works										
	Securing the land	finished		●	$0						
	Preparation of the land										
	Clearance and leveling	80,000㎡		●		$560					
2	Construction										
	Building Permisssion			●	$160						
	Buildings		●								
	Heating plant		●								
	Exterior works										
	Boundary fence	finished		●	$120						
	Patient Parking	6,600㎡	●								
	Staff Parking	3,840㎡		●				$230			
	Approach road	5,000㎡	●								
	Internal road	2,000㎡		●				$310			
	Garden	37,000㎡		●				$240			
3	Infrastructure connection										
	Application for infrastructure connection			●	$40						
	1) Electricity										
	a. The distributing power line to the site			●			$30				* to be verified by Mongolian side
	b. The drop wiring and internal wiring within the site		●								
	c. The main circuit breaker and transformer		●								
	2) Water Supply										
	a. The city water distribution main to the site			●			$30				* to be verified by Mongolian side
	b. The supply system within the site (receiving and elevated tanks)		●								
	3) Drainage										
	a. The city drainage main (for storm sewer and others to the site)			●			$30				* to be verified by Mongolian side
	b. The drainage system (for toilet sewer, common waste, storm drainage and oth		●								
	4) Gas Supply										
	a. The city gas main to the site			●			$30				* to be verified by Mongolian side
	b. The gas supply system within the site		●								
	5) Telephone System										
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building			●			$30				* to be verified by Mongolian side
	b. The MDF and the extension after the frame/panel		●								
	Equipment										
	Furniture	chairs, desks, tables,shelves office automation equipment		●				$1,500			
	Laboratory glass wares	200 pieces		●				$50			
	Linen	100bed linen, 205 staff gowns		●				$100			
	Other consumables			●				$10			
	Kitchen system			●				$470			
	Medical IT system										
	PACS		●								
	Ordering system			●					$1,000		
	Medical chart system			●					$1,000		
	Registration system			●					$1,000		
	Management system			●					$1,000		
	Medical equipment										
	Major medical equipment		●								
	General medical equipment	Washing Equipment ambulance AV system		●				$265			
	other medical equipment			●				$21			

ANNEX 3

Cost Estimation to be borne by the Mongolian side

		1st year	2nd year	3rd year	4th year	5th year	6th year	7th year
Design								
Tender								
Preparation								
Construction								
Equipment procurement and installation								
Training								
Operation and Maintenance								

			Japan Grant Aid	Mongolia Side	Rough cost estimate for each year (thousand US$, 2014 price) 1st year	2nd year	3rd year	4th year	5th year	6th year	7th year and after
4	Administration cost										
	Support staff for	2 full time clerks for assitance		❶		$100	$100	$100			
	custom clearance										
5	tax exemption										
6	Japanese stay support										
7	Hospital Operation Cost										
	Operation cost	205 staff cost medicine & medical equipment purchase cost building running cost equipment running cost		❺					$2,630	$2,630	$2,630
	Maintenance & Repairing cost			❻					$180	$180	$180
8											
	Recruitment of Hospital staff	2 full time clerks		❸			$10				
	Training of Hospital staff	205 staff salary for one year		❹				$640	$640		
	Operation cost before opening of the Hosp	4 months		❷				$275			
	Moving cost from existing faculty			❼				$56			
9	Banking arrangement costs										
	account cost	Probably with Trade & Development		⓫	$0						
	commission costs	Bank of Mongolia		❾	$1	$10	$10	$10			
		commission is 0.035% of payment									
10	Social and Environmental costs										
	Environmental Assesment			❽	$100						
	Plants transplantation	about 250 plants		❿		* to be verified by Mongolian side					
11	Consultation costs		⓬								

	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year
Total cost 2014 thousand US$	$421	$670	$210	$5,140	$7,650	$2,810	$2,810
Inflation rate from 2014	9%	8%	7%	7%	6%	6%	6%
Adjusted total cost thousand US$	$421	$727	$245	$6,348	$9,983	$3,836	$4,004
	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year

ANNEX 3

Cost Estimation to be borne by the Mongolian side

		1st year	2nd year	3rd year	4th year	5th year	6th year	7th year
Design								
Tender								
Preparation								
Construction								
Equipment procurement and installation								
Training								
Operation and Maintenance								

Rough cost estimate for each year (thousand US$, 2014 price)

			Japan Grant Aid	Mongolia Side	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year and after
1	Site related works										
	Securing the land	finished		●	$0						
	Preparation of the land										
	Clearance and leveling	80,000㎡		●		$560					
2	Construction										
	Building Permisssion			●	$160						
	Buildings		●								
	Heating plant		●								
	Exterior works										
	Boundary fence	finished		●	$120						
	Patient Parking	6,600㎡	●								
	Staff Parking	3,840㎡		●				$595			
	Approach road	5,000㎡	●								
	Internal road	2,000㎡		●				$310			
	Garden	37,000㎡		●				$240			
3	Infrastructure connection										
	Application for infrastructure connection			●	$40						
	1) Electricity										
	a. The distributing power line to the site			●			$30	* to be verified by Mongolian side			
	b. The drop wiring and internal wiring within the site		●								
	c. The main circuit breaker and transformer		●								
	2) Water Supply										
	a. The city water distribution main to the site			●			$20	* to be verified by Mongolian side			
	b. The supply system within the site (receiving and elevated tanks)		●								
	3) Drainage										
	a. The city drainage main (for storm sewer and others to the site)			●			$35	* to be verified by Mongolian side			
	b. The drainage system (for toilet sewer, common waste, storm drainage and othe		●								
	4) Gas Supply										
	a. The city gas main to the site			●			$0	* to be verified by Mongolian side			
	b. The gas supply system within the site		●								
	5) Telephone System										
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building			●			$5	* to be verified by Mongolian side			
	b. The MDF and the extension after the frame/panel		●								
	Equipment										
	Furniture	chairs, desks, tables,shelves office automation equipment		●				$1,500			
	Laboratory glass wares	500 pieces		●				$50			
	Linen	100bed linen, 205 staff gowns		●				$100			
	Other consumables			●				$10			
	Kitchen system			●				$470			
	Medical IT system										
	PACS		●								
	Ordering system			●					$1,000		
	Medical chart system			●					$1,000		
	Registration system			●					$1,000		
	Management system			●					$1,000		
	Medical equipment										
	Major medical equipment		●								
	General medical equipment	Washing Equipment ambulance AV system		●				$265			
	other medical equipment			●				$325			

ANNEX 3

Cost Estimation to be borne by the Mongolian side

		1st year	2nd year	3rd year	4th year	5th year	6th year	7th year
Design								
Tender								
Preparation								
Construction								
Equipment procurement and installation								
Training								
Operation and Maintenance								

					Rough cost estimate for each year (thousand US$, 2014 price)						
			Japan Grant Aid	Mongolia Side	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year and after
4	Administration cost										
	Support staff for	2 full time clerks for assitance		●		$100	$100	$100			
	custom clearance										
5	tax exemption										
6	Japanese stay support										
7	Hospital Operation Cost										
	Operation cost	205 staff cost medicine & medical equipment purchase cost building running cost equipment running cost		●					$2,630	$2,630	$2,630
	Maintenance & Repairing cost			●					$180	$180	$180
8											
	Recruitment of Hospital staff	2 full time cleraks		●			$10				
	Training of Hospital staff	205 staff salary for one year		●				$840	$840		
	Operation cost before opening of the Hos	4 months		●				$275			
	Moving cost from existing faculty			●				$50			
9	Banking arrangement costs										
	account cost	Probably with Trade & Development		●	$0						
	commission costs	Bank of Mongolia		●	$1	$10	$10	$10			
		commission is 0.035% of payment									
10	Social and Environmental costs										
	Environmental Assesment			●	$100						
	Plants transplantation	about 250 plants		●		* to be verified by Mongolian side					
11	Consultation costs		●								

	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year
Total cost 2014 thousand US$	$421	$670	$210	$5,140	$7,650	$2,810	$2,810
inflation rate from 2014	9%	8%	7%	7%	6%	6%	6%
Adjusted total cost thousand US$	$421	$727	$245	$6,348	$9,983	$3,836	$4,004
	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year

Annex 4

Project Cost Estimation

The total project expenses required when this cooperation project is implemented are estimated to be [redacted] yen. According to the estimation conditions described in (3) below for the breakdown of expenses to be covered by Japan and expenses to be covered by Mongolia for the items described earlier, the expenses for Japan and Mongolia are described by item (1) and (2) respectively. However, these amounts are the grant limit amounts in the Exchange of Notes.

(1) Expenses Covered by Japan Rough Total project Expenses Approx. [redacted] yen

Table 5-1 Expenses Covered by Japan

Item / Description	Amount (million yen)	Remarks
1. Facility Construction	[redacted]	
2. Procurement of Equipment	[redacted]	
3. Building Design / Construction Supervision / Technical Instruction	[redacted]	
Total	[redacted]	

(2) Expenses Covered by Mongolia Approx. 453 mil. yen (Approx. 7,600,668 thousand Tg)

Table 5-2 Expenses Covered by Mongolia

Item / Description	Amount (thousand yen)	(Tg)
1. project Site Grading/Preparation	56,000	939,597
2. Application/Acquisition of Building Permits (Including fees for local architects)	16,000	268,456
3. project Site Landscaping	116,000	1,946,308
4. Infrastructure Connection Work (Lead-in lines for electricity, hot water, water supply, sewage, gas, telephone)	13,000	218,120
5. Medical Devices / Furniture / Fixtures etc. Not Included in Grant	249,000	4,177,852
6. Bank Service Charges/Payment Fees	3,000	50,335
Total	453,000	7,600,668

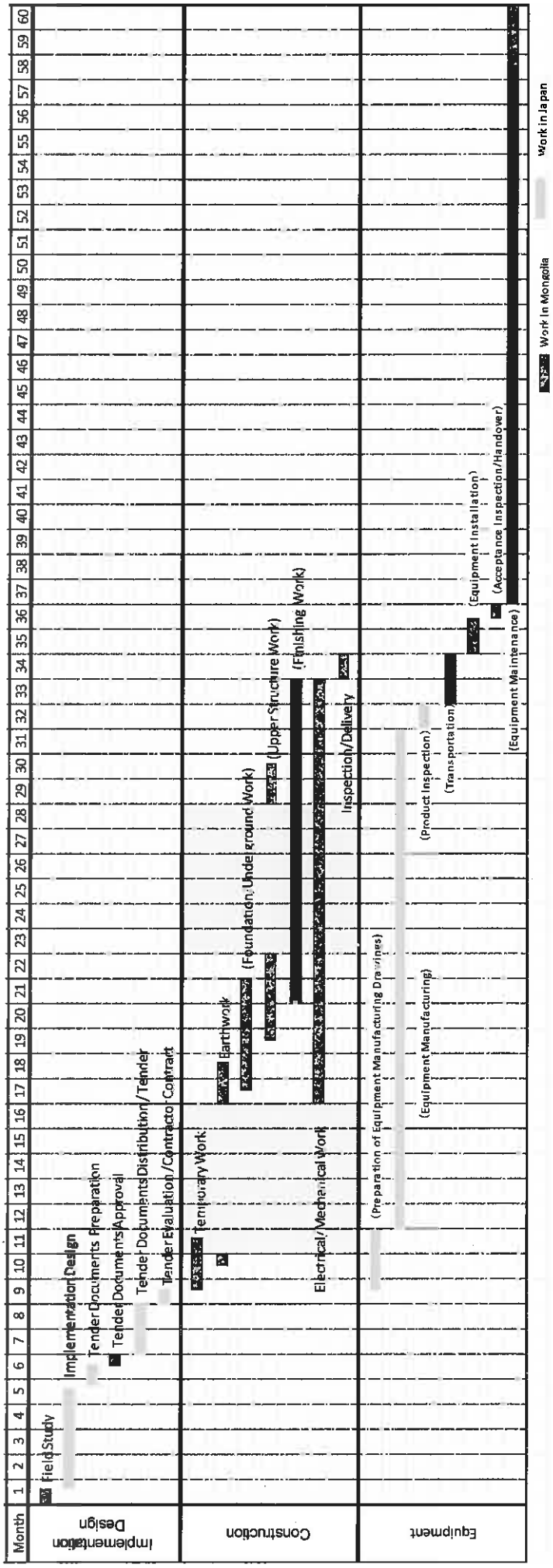
* Prices and the foreign exchange rate as of January 2014, with no consideration to the price escalation or the change in exchange rate

(3) Estimation Conditions

The above amounts were calculated based on the estimation conditions described below.
Time of Estimation: January 2014
Currency Exchange Rate: 1.0 US$ = 101.37 yen = 1,699.18 Tg
1 Tg=0.0596 yen
Construction Period: As described in project implementation schedule.
Other: This project will be implemented in accordance with the grant aid scheme of the Japanese government.

Annex 5

Tentative Project Schedule



5.　収集資料リスト

5. 収集資料リスト

番号	資料の名称	オリジナル コピーの別	発行社等(発行年)
1.	Health organizations of Ulaanbaatar city	コピー	
2.	敷地測量図	コピー	Korea International Cooperation Agency
3.	CENTER FOR HEALTH DEVELOPMENT	コピー	CENTER FOR HEALTH DEVELOPMENT
4.	HEALTH INDICATORS	コピー	GOVERNMENT OF MONGORIA STATE IMPLEMENTING AGENCY OF HEALTH 2011
5.	モンゴル国家基準総合病院の構造と活動	コピー	規格度量衡庁標準化国家評議会 2013
6.	Ulaanbaatar City Master Planning 2030	コピー	ウランバートル市
7.	バヤンズルフ地区の統計データ	コピー	バヤンズルフ区統計局 (2009-2012)
8.	日本モンゴル教育病院人材表（予定）	コピー	国立医科大学
9.	日本モンゴル教育病院組織体制図（予定）	コピー	国立医科大学
10.	REDUCTION OF FLOOD RISK IN ULAANBAATAR CITY	コピー	建設開発省、ウランバートル市緊急対策課、ウランバートル市インフラ課
11.	LAW OF MONGOLIA ON ENVIRONMENTAL IMPACT ASSESSMENTS	コピー	ウランバートル市 (2011)
12.	植物園パンフレット	コピー	モンゴル科学アカデミー
13.	敷地インフラ図	コピー	教育・科学省
14.	日本の大学提携リスト	コピー	国立医科大学
15.	Master Plan	コピー	国立医科大学
16.	国立医科大学収支データ	コピー	国立医科大学 (2009-2012)
17.	敷地占有権証明書	コピー	ウランバートル市
18.	ウランバートル知事令　2013.9.6　A/839	コピー	ウランバートル市
19.	ウランバートル市開発計画ドラフト	コピー	ウランバートル市
20.	Business plan HSUM 2014-2017	オリジナル	国立医科大学
21.	Songinokhairkhan District General Hospital Functional Plan	コピー	ウランバートル市、ADB(2012)
22.	ソングド病院パンフレット	オリジナル	ウランバートル市 ソングド病院
23.	国立第一病院パンフレット	オリジナル	ウランバートル市 国立第一病院

6.　地質調査結果

1 GENERAL GEOTECHNICAL INVESTIGATION

1.1 Purpose of Geotechnical Investigation

Geotechnical investigation to provide subsurface information for the engineering design of proposed building for the Project for Construction of Mongolian and Japanese Teaching Hospital of Health Sciences University was carried out by Soil Trade LLC based on contract dated 10th September 2013 with Yamashita Sekkei Inc. Investigation site is located within 12 horoo of Bayanzurkh district, Ulaanbaatar city.

1.2 Site Location and Scope of Service

Investigation site of proposed construction building of Teaching Hospital for Health Sciences University is located in the territory of Botanical Park locating in 12th khoroo of Bayanzurkh district.

Location of investigation areas and completed boreholes is shown on Figure 1. Information of completed boreholes is listed in below table:

Information of Completed Boreholes

Table 1

No	Borehole Number	Coordinates, m		Elevation, m	Depth, m	Date of Completion y/m/d
		X	Y			
1	BH-1	5310555.4	648982.2	1311.89	15.0	2013.09.16
2	BH -2	5310609.6	649066.9	1312.98	15.0	2013.09.16
3	BH -3	5310465.9	648991.6	1311.77	15.0	2013.09.17
4	BH -4	5310520.1	649076.4	1312.94	15.0	2013.09.17
5	BH -5	5310376.4	649001.2	1311.12	15.0	2013.09.18
6	BH -6	5310430.5	649085.8	1312.70	15.0	2013.09.18
7	BH-7	5310574.3	649161.2	1313.57	15.0	2013.09.19
8	BH -8	5310485.0	649170.6	1313.65	15.0	2013.09.19

1.3 Technical Guideline and Method of Analyses

The actual geotechnical investigation was performed according to Mongolian Design Code Document No. CNR 11-03-01 and consists of 8 boreholes to depths of 15.0 m. Total drilling work was 120 length meters.

Boreholes were performed using a truck-mounted UGB-1VS capable of auger drilling with a rotary push tube of 168 mm, 146 mm and 127 mm in diameter, under supervision of geotechnical engineer J.Odonchimeg and following drilling crew: drilling operators R.Sambuunyam and B.Batchuluun. Field work includes of field logging and sampling.

In situ Standard penetration tests (SPTs) were performed during the borehole drilling in order to obtain in situ strength profiles of the subsurface soils and were carried out on 120 points in accordance the ASTM D 1586 standard. The SPTs were conducted using 63.5kg hammer from 0.76 m free fall to free fall to drive sampler into the ground. Log of boreholes including of record of SPT results is attached in Appendix A.

Based on in situ SPT test results number of blows at 1.0-2.0 m depth ranges to (N_{value})=23-38 and unconfined compressive strength ranges to R_c>400KN/m^2. Unconfined compressive strength for clayey soil below 1.0-2.0 m reaches to R_c>400KN/m^2.

engineer T.Altanchimeg senior technician D.Tungalag, and auxiliary worker M.Enkhbayar in the laboratory of Soil Trade LLC.

Based on observations during field investigation and laboratory test results a senior engineer J.Odonchimeg has completed this geotechnical investigation report for the design study.

2 PHYSICAL AND GEOGRAPHICAL CONDITION

2.1 Geomorphology

Site for proposed construction building is situated in the west terrain of Tuul river basin, within Uliastai and Tuul rivers basin, and comprise of even ground surface predominating transported and accumulative alluvium proluvium deposit. Elevation of investigation area of proposed construction building varies between 1311.12 m and 1313.57 m with relative difference of 2.5 m.

2.2 Hydrogeology

Groundwater was encountered in depths between 9.0m and 10.0m, and stabilized at depth between 8.9m and 9.5m. Groundwater enriches by Tuul, Uliastai rivers water and by seasonal precipitation. Due to infiltration and evaporation groundwater level may increase up to 1.0m from current measurement.

2.3 Climate

According to the Climatic region for construction of Mongolia the climatic condition of the investigation site has cold winters, with relative high snow load and dry hot summers. Climatic characteristics of the area were obtained from the Norms and Regulations on Climate Data (CNR – 23-01.09) and the results from meteorological center of Amgalan as given below table.

Climatic Data

Table 2

No	Description			Unit	Measure
1	Average annual temperature of air			°C	-1.2
2	Absolute maximum temperature of air /1984.07.14/				33.5
3	Computational maximum temperature of air in July				30.2
4	Absolute minimum temperature of air /1995.01.12/				-39.0
5	Absolute minimum temperature of air in the coldest month				-32.0
6	Computational minimum temperature of outside air	The coldest	1 day		-33.7
			3 days		-32.7
			5 days		-31.6
			Air vent		-23.0
		The warmest 1 day			24.7
7	Average annual total precipitation	The maximum seasons humidity	Warm season	%	67
			Cold season		72
		Precipitation	Year	mm	245.2
			Warm season		232.5
			The maximum day/1996.07.31/		68.6
8	Average annual wind speed	Annual		m/sec	2.4
		The maximum wind speed once in 20 years			21-25 /23/
9	Calculation of wind pressure, q_{max}	Once in 5 years		gH/m^2	33
		Once in 10 years			34
		Once in 20 years			42
10	Specified snow load			kg/m^2 /gPa/	50 /0.5/

3 SITE GEOTECHNICAL CONDITION

Investigation site is located within not active developed physical and geological phenomenon, ground surface is relative even. However, encountered groundwater hasn't any effect on construction foundation the existing clayey GRAVEL with sand and poorly graded GRAVEL with sand and clay soils' degree of saturation range to 0.72-0.70 and determine as slightly heaving soils in seasonal freezing depth. Degree of heaving of clayey SAND with gravel varies to K=0.04 and determines as medium heaving soil. Based all these arguments the proposed construction building is located within medium complicated geotechnical condition.

3.1 Subsurface Condition and Soil Classification

Based on laboratory testing encountered soils are subdivided into 3 engineering geological elements. A geological profile was generated based on the subsurface information obtained from the investigation as attached on Figure 2. Laboratory test results are summarized in Appendix C. Groundwater chemical test result is attached in Appendix D and soil chemical test result is attached in Appendix E.

3.2 Physical and Mechanical Properties of Soils

The grading size analysis and physical properties of soils are given based on laboratory test results, mechanical properties of soil are given according to construction norm and calculation of CNR-2.02.01-94.

Top Soil

Clayey sand with gravel: including vegetation roots, dark grey colored, with thickness ranging of 0.4 m.

Degree of earthwork trouble should be calculated as I

3.2.1 Clayey GRAVEL with sand /GC/

Upper and Modern Quaternary aged alluvium proluvium deposit (apQ_{III-IV}) light yellowish colored, stiff consistency, including boulders.

Particle Size of Distribution:

Poorly graded Gravel	52.9%
Poorly graded Sand	29.3%
Silt and Clay	17.8%

Physical Properties of Soil:

Natural Moisture Content, (W)	9.4
Liquid Limit, (LL)	22.0
Plastic Limit, (PL)	14.2
Plasticity Index, (Pl)	7.8
Specific Gravity, (gs)	2.70g/cm^3
Unit Weight, (g)	2.19g/cm^3
Dry Density, (gd)	2.00g/cm^3
Porosity ,(n)	25.95
Voids Ratio, (e)	0.351
Degree of Saturation, (Sr)	0.72
Consistency	< 0

Mechanical Properties of Soil:

Cohesion	C_H =27 kPa

Angle of Internal Friction	$\varphi_{H=}39^0$
Module of Deformation	E= 37MPa
Design Strength	R_0 =450 kPa

Degree of saturation for clayey GRAVEL with sand soil ranges to 0.72, thus this soil determines as slightly heaving soil.

3.2.2 Poorly graded GRAVEL with sand and clay / GP-GC/

Upper and Modern Quaternary aged alluvium proluvium deposit (apQ_{III-IV}) light yellowish colored, stiff consistency, including boulders.

Particle Size Distribution:

Poorly graded Gravel	60.6%
Poorly graded Sand	31.2%
Silt and Clay	8.4%

Physical Properties of Soil:

Natural Moisture Content, (W)	7.8
Liquid Limit, (LL)	22.9
Plastic Limit, (PL)	16.2
Plasticity Limit, (Pl)	6.7
Specific Gravity, (gs)	2.68g/cm^3
Unit Weight, (g)	2.23g/cm^3
Dry Density, (gd)	2.07g/cm^3
Porosity, (n)	22.84
Voids Ratio, (e)	0.296
Degree of Saturation, (Sr)	0.70
Consistency	< 0

Mechanical Properties of Soil:

Cohesion	C_H =16 kPa
Angle of Internal Friction	$\varphi_{H=}44^0$
Module of Deformation	E= 45MPa
Design Strength	R_0 =450 kPa

Degree of saturation for poorly graded GRAVEL with sand and clay soil ranges to 0.70, thus this soil determines as slightly heaving soil.

3.2.3 Clayey SAND with gravel /SC/

Upper and Modern Quaternary aged alluvium proluvium deposit (apQ_{III-IV}) yellowish brown colored, soft to stiff consistency.

Particle Size Distribution:

Poorly graded Gravel	31.7%
Poorly graded Sand	45.9%
Silt, Clay	22.4%

Physical Properties of Soil:

Natural Moisture Content, (W)	10.6
Liquid Limit, (LL)	24.6
Plastic Limit, (PL)	15.8
Plasticity Index, (Pl)	8.8

Specific Gravity, (gs)	2.72g/cm^3
Unit Weight, (g)	2.05g/cm^3
Dry Density, (gd)	1.85g/cm^3
Porosity, (n)	31.82
Voids Ratio, (e)	0.469
Degree of Saturation, (Sr)	0.62
Consistency	< 0

Mechanical Properties of Soiil:

Cohesion	C_H =47 kПа
Angle of Internal Friction	$\varphi_{H=}$ 25^0
Module of Deformation	E= 33МПа
Design Strength	R_0 = 300 kПа

Degree of heaving for clayey SAND with gravel soil ranges to K_f=0.04, thus this soil determines as medium heaving soil.

4 SOIL CHEMICAL PROPERTIES

Determination of soil chemical properties is given in below table 3.

Table 3

No.	Soil Name	Soil Symbol	Reduction in Alkalinity (Rc mmol/l)	Dissolved Silica (Sc,mmol/l)
1	Clayey GRAVEL with sand	GC	0.0215	22.0

5 CONCLUSION AND RECOMMENDATION

5.1 Investigation site of proposed construction building for the Project for Construction of Mongolian and Japanese Teaching Hospital of Health Sciences University is situated within even ground surface, physical geological phenomenon is not developed, groundwater does not any influence on construction foundation, clayey Gravel with sand and poorly graded Gravel with sand and clay soils determine as slightly heaving soils in seasonal freezing depth (degree of saturation range between 0.72 and 0.70), coefficient of heaving for the clayey Sand with gravel soil ranges to K=0.04 determines as medium heaving soil. Based all these arguments the actual investigation site is belong to medium complicated geotechnical condition.

5.2 Norms and calculations of mechanical properties of soil and bedrock, their degree of earthwork troubles are given in below table 4 (6.1 and 6.6)

Table 4

#	Soil Name	Normative Mechanical Properties of Soils			Design Strength, R_0,κPa	Degree of Earthwork Trouble
		Cohesion, C^N, κPa	Angle of Internal Friction, φN, degree	Module of deformation, E^N, MPa		
1	Clayey GRAVEL with sand	27	39	37	450	III
2	Poorly graded GRAVEL with sand and clay	16	44	45	450	III
3	Clayey SAND with gravel	47	25	33	300	II

5.3 Standard freezing depth should be taken as follow: (6.3)

Clayey GRAVEL with sand Poorly graded GRAVEL with sand and clay	2.55 m
Clayey SAND with gravel	2.65m

5.4 Degree of saturation for clayey GRAVEL with sand and poorly graded GRAVEL with sand and clay soils range between 0.72 and 0.70, thus these soils determine as slightly heaving soils; coefficient of heaving for clayey SAND with gravel is K = 0.04, thus this soil determines as medium heaving soils in seasonal freezing depth. (6.1)

5.5 Groundwater was encountered at depths between 9.0m and 10.0m and stabilized at depths between 8.9m and 9.5m.

5.6 The investigated site is situated within seismic zone of 7 degree of and intensity (6.4)

5.7 Electric conductivity of encountered soils are given in below (6.5)

Clayey SAND with gravel	40-80 Om.m
Clayey GRAVEL with sand Poorly graded GRAVEL with sand and clay	2000-10000 in natural moisture condition 200-600 in saturated condition

5.8 The coefficient of Permeability should be taken as follow (5.5)

Poorly graded GRAVEL with sand and clay (GP-GC)	20-60 m/day
Clayey GRAVEL with sand (GC)	100-200 m/day
Clayey SAND with gravel (SC)	1.0-0.5 m/day

6.1 Engineering Standard for Construction of Foundations, Anand.A, Badgai.L, Choibalsan.N, SharaaT, and Magmut. CNR 2.02.01 – 94

6.2 Geotechnical Investigations for Construction Work, CNR 11–03-01

6.3 Climatic and Geotechnical Features for Construction Design. CNR 23-01-09

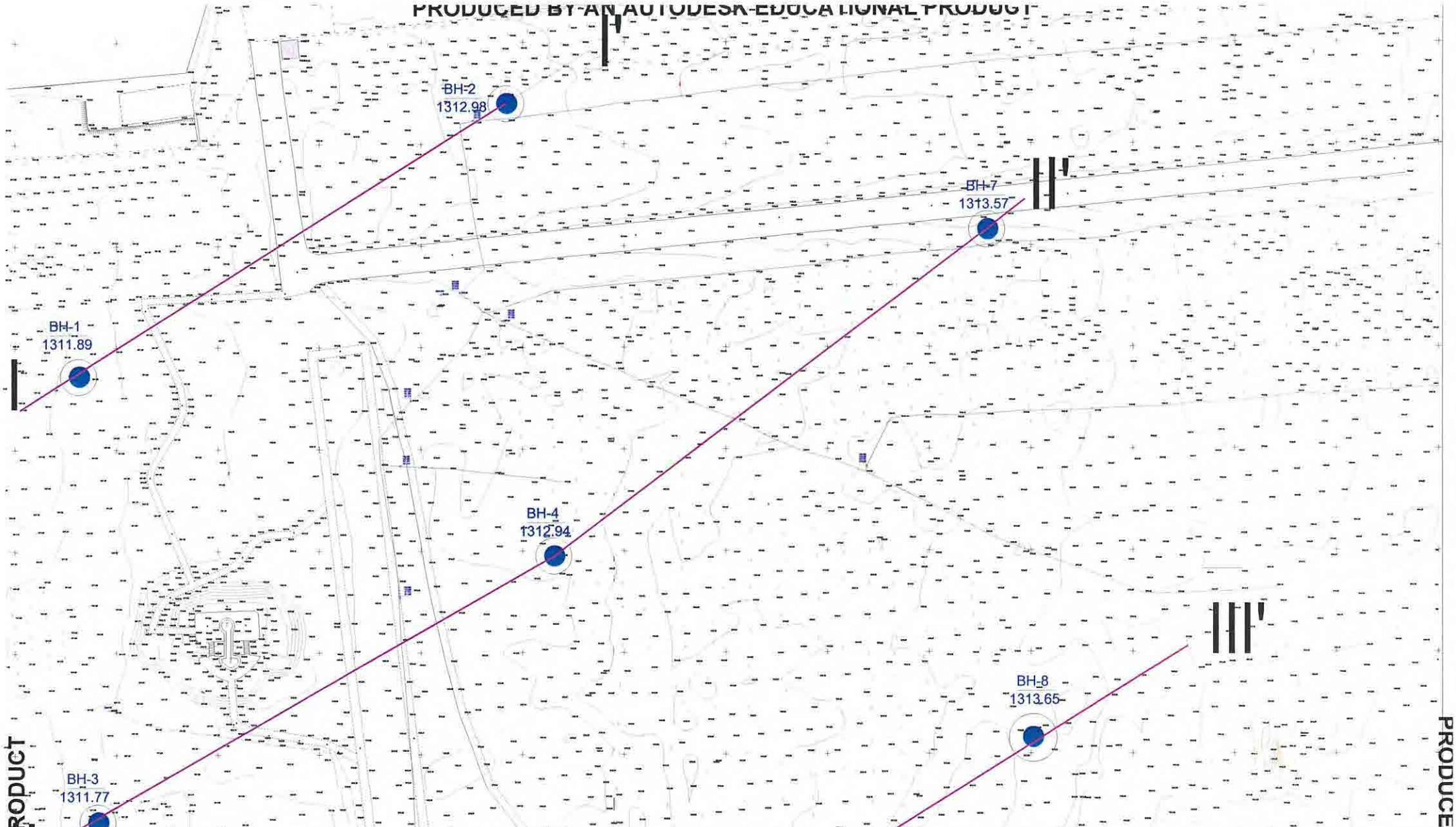
6.4 Seismology Standard of Design and Construction Work in Earthquake Zone, CNR 22-01-01. (2006)

6.5 Hand book of engineering construction work, Stroiizdat, Moscow 1975

6.6 SNiP IV-5-82. Part-Earthwork

LIST OF FIGURES

FIGURE 1	Location of the Site and Completed Boreholes
FIGURE 2	Geological Section



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LEGEND

BH-8 / 1313.65 — Drilling borehole: Number / Elevation, m

I — I' — Engineering-geological section

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		Checked: T.Renchindorj	Date: 02.10.2013	Location map	
		Draw: J.Odonchimeg	Date: 02.10.2013		
		Scale: 1:1000	A-3	Archive №: 2013/086	Figure: 1

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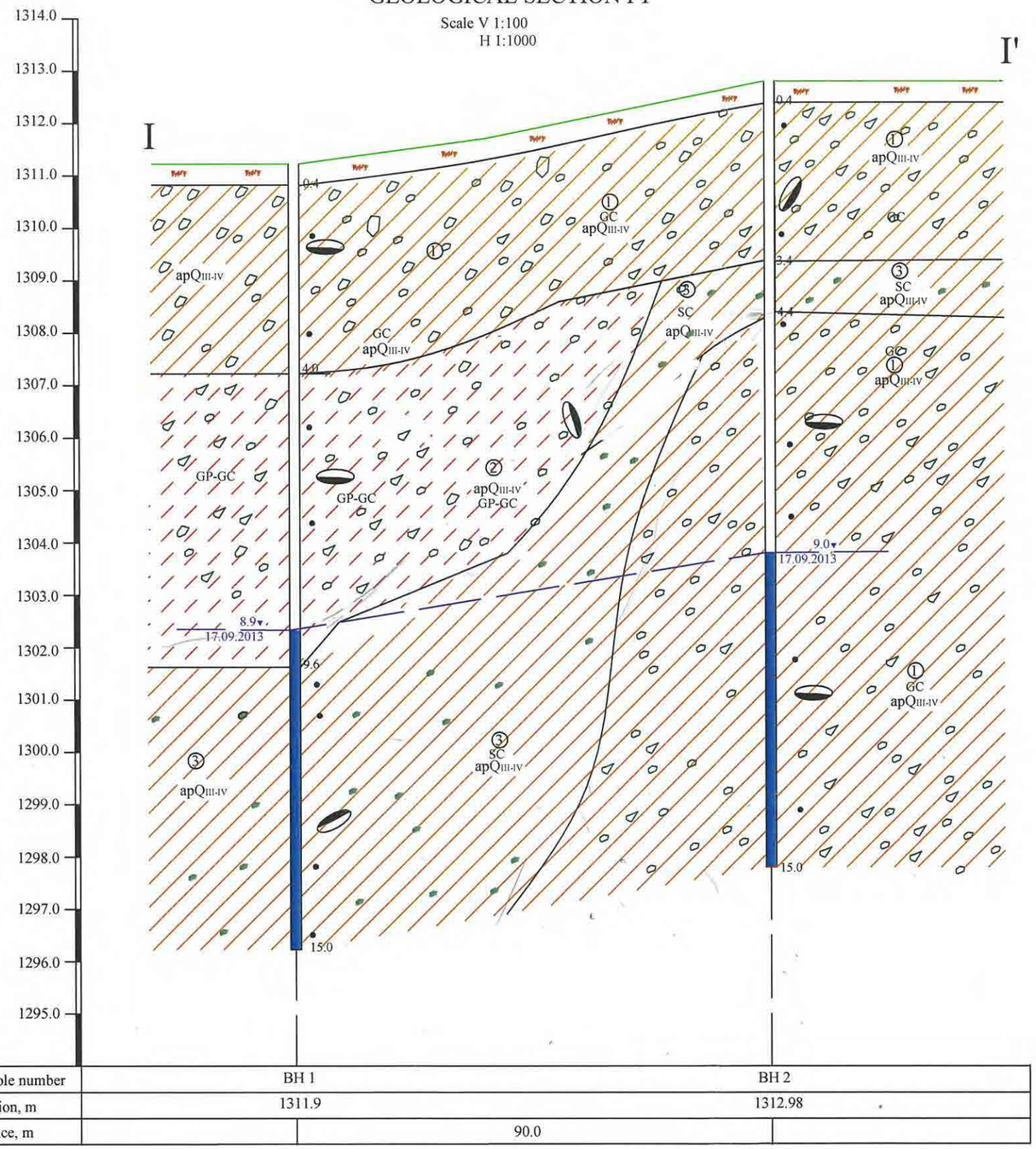
GEOLOGICAL SECTION I-I'

Scale V 1:100
H 1:1000



Borehole number	BH 1	BH 2
Elevation, m	1311.9	1312.98
Distance, m	90.0	

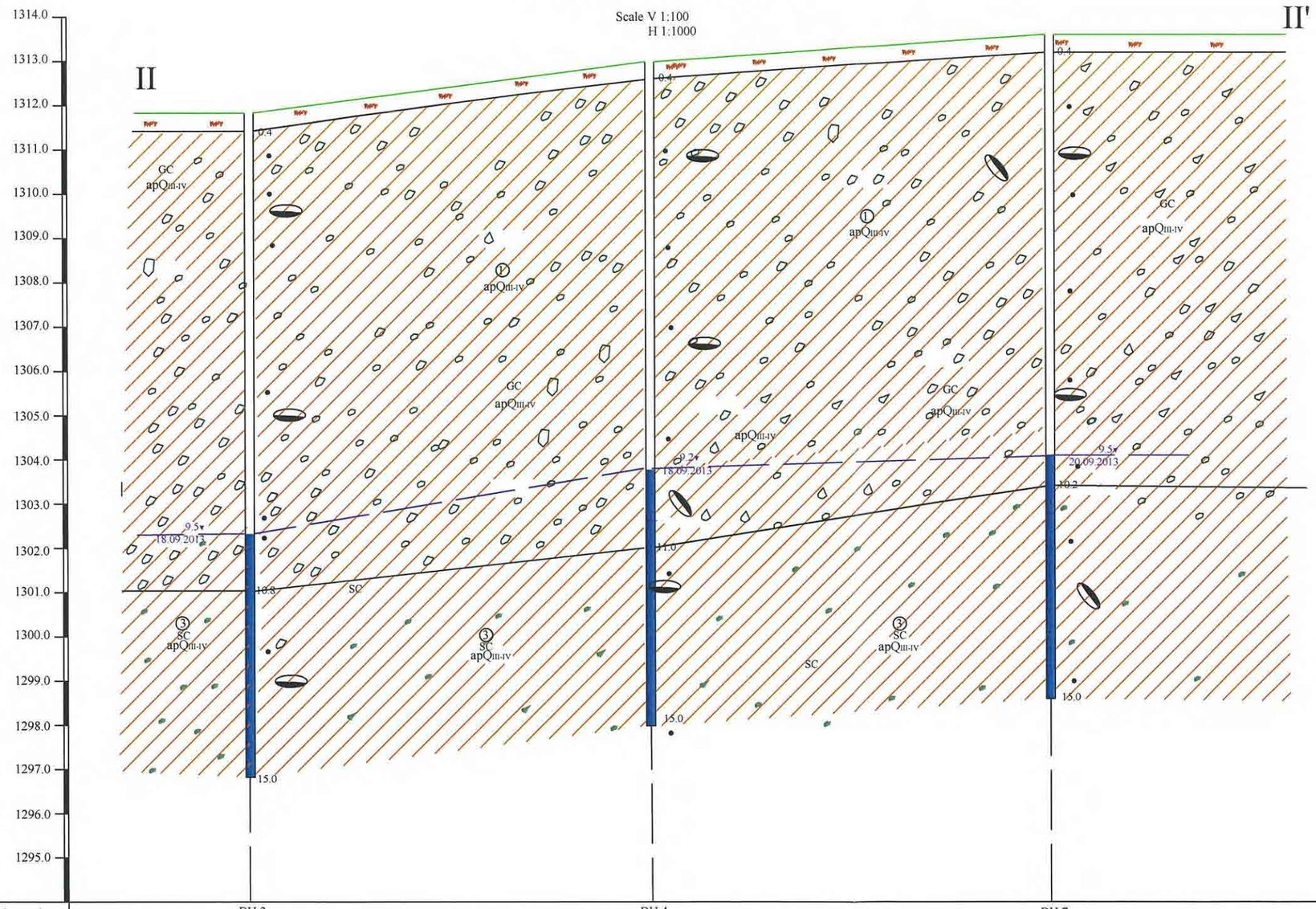
LEGEND

- Top soil. Clayey SAND with gravel - Dark grey, vegetation roots.
- ① Clayey GRAVEL with sand - Yellowish grey, medium to stiff consistency, inculding bouldrers. Upper and Modern Quaternary aged aluvium-proluvium deposit (apQ_{III-IV})
- ② Poorly graded GRAVEL with sand and clay - Yellowish brown, consistency, ,inculding bouldrers. Upper and Modern Quaternary aged aluvium-proluvium deposit (apQ_{III-IV})
- ③ Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium deposit (apQ_{III-IV})
- ① Soil number.
- apQ_{III-IV} Soil age, index of origin.
- 0.2 Aperture of borehole / Boundary of soil
- 9.0 / 17.09.2013 Depth of sampling / Ground water level, m
- 15.0 Depth of borehole, m

SOIL TRADE	SOIL TRADE LLC Geotechnical Investigation & Construction Design	Client: YAMASHITA SEKKEI INC		Project name: The Project for Construction of Mongolia and Japanese Teaching Hospital'	
		Checked: T.Renchindorj	Date: 25.09.2013	Geological section I-I'	
		Draw: J.Odonchimeg	Date: 26.09.2013		
		Scale: V 1:100, H 1:1000	A-3	Archive: 2013/086	Figure: 2.1

GEOLOGICAL SECTION II-II'

Scale V 1:100
H 1:1000



Borehole number	BH 3	BH 4	BH 7
Elevation, m	1311.8	1312.9	1313.6
Distance, m	90.0	90.0	

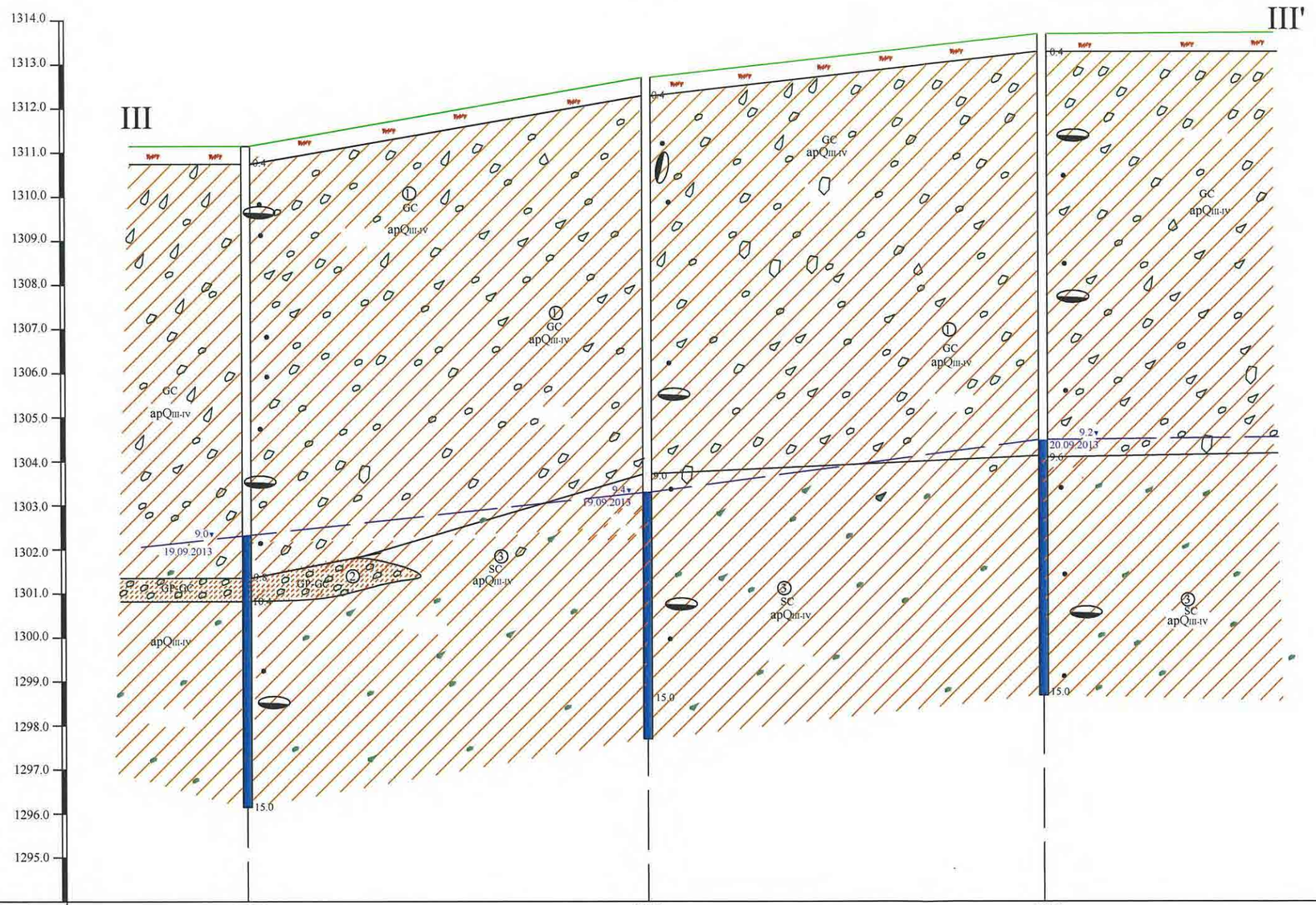
LEGEND

- Top soil. Clayey SAND with gravel - Dark grey, vegetation roots.
- ① GC — Clayey GRAVEL with sand - Yellowish grey, medium to stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium deposit (apQIII-IV)
- ③ SC — Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium deposit (apQIII-IV)
- ① — Soil number.
- apQIII-IV — Soil age, index of origin.
- 0.2 — Aperture of borehole; Boundary of soil
- 9.5 / 18.09.2013 — Depth of sampling; Ground water level, m
- 15.0 — Depth of borehole, m

SOIL TRADE	SOIL TRADE LLC Geotechnical Investigation & Construction Design	Client: YAMASHITA SEKKEI INC		Project name: The Project for Construction of Mongolia and Japanese Teaching Hospital'	
		Checked: T.Renchindorj	Date: 25.09.2013	Geological section II-II'	
		Draw: J.Odonchimeg	Date: 26.09.2013		
		Scale: V 1:100, H 1:1000	A-3	Archive: 2013/086	Figure: 2.2

GEOLOGICAL SECTION III-III'

Scale V 1:100
H 1:1000



Borehole number	BH 5	BH 6	BH 8
Elevation, m	1311.1	1312.7	1313.7
Distance, m	90.0	90.0	

LEGEND

- Top soil. Clayey SAND with gravel - Dark grey, vegetation roots.
- ① Clayey GRAVEL with sand - Yellowish grey, medium to stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium deposit (apQIII-IV)
- ② Poorly graded GRAVEL with sand and clay - Yellowish brown, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium deposit (apQIII-IV)
- ③ Clayey SAND with gravel - Yellowish grey, medium to stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium deposit (apQIII-IV)
- ① Soil number.
- apQIII-IV Soil age, index of origin.
- 0.2 Aperture of borehole
- Boundary of soil
- 9.2 / 20.09.2013 Depth of sampling / Ground water level, m
- 15.0 Depth of borehole, m

SOIL TRADE	SOIL TRADE LLC Geotechnical Investigation & Construction Design	Client: YAMASHITA SEKKEI INC		Project name: The Project for Construction of Mongolia and Japanese Teaching Hospital'
		Checked: T.Renchindorj	Date: 25.09.2013	Geological section III-III'
		Draw: J.Odonchimeg	Date: 26.09.2013	
		Scale: V 1:100, H 1:1000	A-3	Archive №: 2013/086 / Figure: 2.3

APPENDIX A Log of Boreholes and SPT Results

Soil Trade LLC

LOG OF BOREHOLE BH 1

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar

COORDS: N 5310555.4, E 648982.2
ELEVATION: 1311.89 m
HOLE DIA: 168, 146,127 mm
DEPTH: 15.0 m
Ground water level: 8.9m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 16.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Graphic log	Symbol	Description of Soil
	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.
1–4	0.4	4.0	3.6		GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.
5–9	4.0	9.6	5.6		GP-GC	Poorly graded GRAVEL with sand and clay -Yellowish brown, stiff consistency, inculding bouldrers.Upper and Modern Quaternary age's alluvium-prolluvium (apQIII-IV) deposit
10–15	9.6	15.0	6.4		SC	Clayey SAND with gravel - Yellowish grey, wet, stiff consistency, inculding bouldrers. Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.

Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm
1	23/30	9	10	13
2	31/30	11	16	15
3	50/23	22	35	15/8
4	50/22	33	31	19/7
5	50/11	35	50/11	
6	50/9	36	50/9	
7	50/13	47	50/13	
8	50/22	36	40	10/7
9	50/12	41	50/12	
10	50/19	33	39	11/4
11	50/22	37	44	6/7
12	50/17	40	41	9/2
13	50/14	39	50/14	
14	50/16	35	45	5/1
15	50/16	39	47	3/1

Standard Penetration Test: 0 10 20 30 40 50

Sample Depth, m	Symbol
1.0-1.2	●
3.8-4.0	●
5.6-5.8	●
7.2-7.4	●
8.9 ▼ 17.09.2013	
9.2-9.4	●
10.2-10.6	●
13.2-13.4	●
14.8-15.0	●

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 8.9m

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LOG OF BOREHOLE BH 2

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310609.6, E 649066.9
ELEVATION: 1312.98 m
HOLE DIA: 168; 146;127 mm
DEPTH: 15.0 m
Ground water level: 9.0m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: B.Batchuluun
Date: 16.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Soil/ Rock Material Description: Graphic log	Symbol	Description of Soil
0	0.0	0.4	0.4			Top soil. Clayey Sand with gravel - Dark grey colored, vegetation roots.
1–3	0.4	3.4	3.0		GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers. Upper and Modern Quaternary aged aluvium-proluvium (apQ III-IV) deposit.
4	3.4	4.4	1.0		SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.
5–15	4.4	15.0	10.6		GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers. Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.
16–20						

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.0m

Standard Penetration Test: Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm
1	29/30	8	15	14
2	27/30	11	12	15
3	50/21	24	35	15/6
4	50/21	29	38	12/5
5	50/20	31	40	10/5
6	50/20	35	45	5/5
7	50/23	36	41	9/7
8	50/10	45	50/10	
9	50/20	31	35	15/5
10	50/23	30	43	7/7
11	50/20	21	39	11/5
12	50/23	41	37	13/7
13	50/19	45	40	10/4
14	50/17	35	37	13/2
15	50/17	30	38	12/2
16–20				

Standard Penetration Test: 0 10 20 30 40 50

Sample: Depth, m	Symbol
0.8-1.0	●
3.0-3.2	●
4.0-4.2	●
5.4-5.6	●
7.6-7.8	●
9.0 17.09.2013	▼
10.0-10.2	●
13.0-13.3	●
14.8-15.0	●

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Soil Trade LLC

LOG OF BOREHOLE BH 3

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310465.9, E 648991.6
ELEVATION: 1311.77m
HOLE DIA: 168, 146,127 mm
DEPTH: 15.0 m
Ground water level: 9.5m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 17.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Graphic log	Symbol	Description of Soil
	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.
1–10	0.4	10.8	10.4		GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, Upper and Modern Quaternary aged aluvium-proluvium (apQ III-IV) deposit.
11–15	10.8	15.0	4.2		SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQ III-IV) deposit.

Standard Penetration Test

Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm
1	32/30	10	15	17
2	50/25	15	26	24/10
3	50/25	17	25	25/10
4	48/30	20	21	27
5	50/15	25	47	3/01
6	50/25	27	28	22/8
7	50/17	28	45	5/2
8	50/22	36	40	10/7
9	50/12	41	50/12	
10	50/19	33	39	11/4
11	50/22	37	44	6/7
12	50/17	40	41	9/2
13	50/14	39	50/14	
14	50/16	35	45	5/1
15	50/12	41	50/12	

0 10 20 30 40 50

Sample

Depth, m	Symbol
1.0-1.2	
3.8-4.0	
5.6-5.8	
7.2-7.4	
9.2-9.4	
9.5	
18.09.2013	
10.2-10.6	
13.2-13.4	
14.8-15.0	

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.5m

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

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Soil Trade LLC

LOG OF BOREHOLE BH 4

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310520.1, E 649076.4
ELEVATION: 1312.9 m
HOLE DIA: 168, 146,127 mm
DEPTH: 15.0 m
Ground water level: 9.2m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 17.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Soil/ Rock Material Description: Graphic log	Symbol	Description of Soil	Standard Penetration Test: Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm	Sample: Depth, m	Symbol
1	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.	1	38/30	10	18	20	0.8-1.0	
2					GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQ_{III-IV}) deposit.	2	40/30	11	20	20		
3							3	44/30	13	21	23	2.8-3.0	
4							4	47/30	16	23	24		
5							5	50/25	18	26	24/10	4.8-5.0	
6							6	50/23	21	24	26/8		
7							7	50/23	19	33	17/8	6.4-6.6	
8							8	50/20	29	36	14/5		
9							9	50/12	41	50/12			
10							10	50/19	33	39	11/4		
11	0.4	11.0	10.6				11	50/22	37	44	6/7	10.2-10.5	
12					SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQ_{III-IV}) deposit.	12	50/17	40	41	9/2		
13							13	50/14	39	50/14			
14							14	50/16	35	45	5/1	13.8-14.0	
15	11.0	15.0	4.0				15	50/14	37	50/14			
16							16						
17							17						
18							18						
19							19						
20							20						

Standard Penetration Test graph: 0 10 20 30 40 50

Ground water level: 9.2m
18.09.2013

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.2m

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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

Soil Trade LLC

LOG OF BOREHOLE BH 5

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310376.4, E 649001.2
ELEVATION: 1311.12 m
HOLE DIA: 168, 146,127mm
DEPTH: 15.0 m
Ground water level: 9.0m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 18.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Graphic log	Symbol	Description of Soil
	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.
1–9	0.4	9.8	9.4		GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.
10	9.8	10.4	0.6		GP-GC	Poorly graded GRAVEL with sand and clay - Brownish grey, very hard consistency, Upper and Modern Quaternary age's alluvium-prolluvium deposit (apQIII-IV)
11–15	10.4	15.0	4.6		SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.

Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm
1	42/30	12	20	22
2	50/29	22	35	15/14
3	50/24	40	44	6/9
4	50/15	22	50/15	
5	50/14	45	50/14	
6	50/6	34	50/6	
7	50/23	19	33	17/8
8	50/20	29	36	14/5
9	50/12	41	50/12	
10	50/19	33	39	11/4
11	50/22	37	44	6/7
12	50/17	40	41	9/2
13	50/14	39	50/14	
14	50/16	35	45	5/1
15	50/13	41	50/13	
16–20				

0 10 20 30 40 50

Sample: Depth, m / Symbol
4.0-4.2
9.0 ▼ 19.09.2013
9.0-9.4
10.0-10.2

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.0m

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Soil Trade LLC

LOG OF BOREHOLE BH 6

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310430.6, E 649085.8
ELEVATION: 1312.7 m
HOLE DIA: 168, 146,127 mm
DEPTH: 15.0 m
Ground water level: 9.4m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 18.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Soil/ Rock Material Description: Graphic log	Symbol	Description of Soil	Standard Penetration Test: Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm	Sample: Depth, m	Symbol
	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.							
1					GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.	1	45/30	19	22	23	0.8-1.0	
2							2	49/30	21	29	20		
3							3	50/23	23	37	13/8		
4							4	50/24	29	40	10/9		
5							5	50/23	45	39	11/8	4.0-4.4	
6							6	50/17	34	47	3/2	5.0-5.2	
7							7	50/20	31	45	5/5		
8							8	50/20	35	40	10/5	6.8-7.0	
9	0.4	9.0	8.6				9	50/21	41	44	6/6		
10					SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.	10	50/20	40	48	2/5	8.2-8.4	
11							11	50/16	37	49	1/1	9.4 ▼ 19.09.2013	
12							12	50/15	39	50/15			
13							13	50/15	29	50/15			
14							14	50/13	31	50/13		12.0-12.4	
15	9.0	15.0	6.0				15	50/14	45	50/14		14.6-14.8	
16							16						
17							17						
18							18						
19							19						
20							20						

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.4m

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Soil Trade LLC

LOG OF BOREHOLE BH 7

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310574.3, E 649161.2
ELEVATION: 1313.57 m
HOLE DIA: 168, 146,127 mm
DEPTH: 15.0 m
Ground water level: 9.5m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 19.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Soil/ Rock Material Description: Graphic log	Symbol	Description of Soil	Standard Penetration Test: Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm	Sample: Depth, m	Symbol
1	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.	1	36/30	15	16	20	0.8-1.0	
2					GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers. Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.	2	38/ 30	14	15	23	2.0-2.2	
3							3	50/22	22	31	19/7		
4							4	50/23	27	32	18/8	4.0-4.2	
5							5	50/21	28	40	10/6		
6							6	50/20	22	42	8/5	6.0-6.2	
7							7	50/18	31	39	11/3		
8							8	50/16	46	43	7/1		
9							9	50/14	38	50/14			
10	0.4	10.2	9.8				10	50/16	32	48	2/1	9.5 20.09.2013	
11					SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQIII-IV) deposit.	11	50/17	39	40	10/2		
12							12	50/16	42	47	3/1		
13							13	50/12	44	50/12		12.0-12.4	
14							14	50/17	35	40	10/2		
15	10.2	15.0	4.8				15	50/15	32	41	9/01	14.6-14.8	
16							16						
17							17						
18							18						
19							19						
20							20						

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.5m

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

Soil Trade LLC

LOG OF BOREHOLE BH 8

and Standard Penetration Test

CLIENT: YAMASHITA SEKKEI INC.
PROJECT NAME: 'The Project for Construction of Mongolia and Japanese Teaching Hospital'
LOCATION: Botanical gardan, Ulaanbaatar.

COORDS: N 5310485.0, E 649170.6
ELEVATION: 1313.65 m
HOLE DIA: 168; 146;127 mm
DEPTH: 15.0 m
Ground water level: 9.2m

SHEET: 1 of 1
Drill rig: UGB-1VS
Driller: R.Sambuunyam
Date: 19.09.2013
Logged: J.Odonchimeg

Depth, m	Started depth, m	Ended depth, m	Thickness of stratum	Soil/ Rock Material Description: Graphic log	Symbol	Description of Soil	Standard Penetration Test: Depth, m	Number Blows N / Penetration depth, cm	Number of every 15 cm: 15cm	30cm	45cm	Sample: Depth, m	Symbol
1	0.0	0.4	0.4			Top soil.Clayey Sand - Dark grey colored, vegetation roots.	1	46/30	19	23	23	1.0-1.2	●
2					GC	Clayey GRAVEL with sand - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQ_{III-IV}) deposit.	2	47/30	17	20	27		
3							3	50/21	36	47	3/6	2.3-2.5	●
4							4	50/21	31	39	11/6		
5							5	50/23	26	40	10/8		
6							6	50/18	34	44	6/3	5.4-5.6	●
7							7	50/19	29	38	12/4		
8							8	50/20	29	36	14/5	7.0-7.4	●
9	0.4	9.6	9.2				9	50/16	40	48	2/1	9.2 ▼ 20.09.2013	
10					SC	Clayey SAND with gravel - Yellowish grey, stiff consistency, inculding bouldrers.Upper and Modern Quaternary aged aluvium-proluvium (apQ_{III-IV}) deposit.	10	50/15	39	50/15			
11							11	50/14	44	50/14			
12							12	50/14	40	50/14		12.0-12.2	●
13							13	50/14	39	50/14			
14							14	50/16	34	46	4/1		
15	9.6	15.0	5.4				15	50/17	38	44	6/2	14.3-14.5	●
16							16						
17							17						
18							18						
19							19						
20							20						

END OF BOREHOLE @ 15.0 m DEPTH
Ground water level: 9.2m

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APPENDIX C Summary of Laboratory Test Results

Physical Properties of Soil

Client: Yamashita Sekkei INC

Location areo: Ulaanbaatar city. BZD-12 district, Botanical garden

Object Name: The Project for Construction of Mongolia and Japanese Teaching Hospital

No.	Hole №	Depth (m)	Particle size, %															Particle Analysis (%)			Atterberg Limits			Cu	Cc	Soil Type	Soil name	Natural Moisture Content (W), %	Specific gravity G_s, g/cm^3	Density, ρ, g/cm^3	Dry density, ρ_d, g/cm^3	Porosity, n,%	Voids Ratio, e	Degree of Saturation, Sr	Consistency, J_L
			75	50	37.5	25	19	9.5	4.75	2.00	0.850	0.425	0.250	0.106	0.075	<0.075	%	Gravel	Sand	Silt/ Clay	LL	PL	PI												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	BH-1	1.0-1.2			14.1	7.0	7.3	18.4	12.2	10.3	6.5	5.4	3.1	3.0	0.5	12.2	100.0	59.0	28.8	12.2	24.1	14.6	9.5			GC	Clayey GRAVEL with sand	6.90	2.70	2.22	2.08	23.08	0,300	0.62	<0
2	BH-1	3.8-4.0					9.2	17.4	12.5	13.3	6.4	4.2	3.9	7.7	0.8	24.5	100.0	39.2	36.3	24.5	23.3	13.9	9.4			GC	Clayey GRAVEL with sand	7.8	2.71	2.12	1.97	27.43	0.378	0.56	<0
3	BH-1	5.6-5.8		23.5	11.3	8.9	5.2	12.2	7.4	6.7	4.8	5.0	4.3	3.5	0.3	6.9	100.0	68.5	24.6	6.9	20.5	14.3	6.2			GP-GC	Poorly graded GRAVEL with sand and clay	6.8	2.68	2.24	2.10	21.74	0.278	0.66	<0
4	BH-1	7.2-7.4			4.3	15.9	9.0	17.4	13.5	11.6	7.1	5.0	3.5	4.9	0.6	7.2	100.0	60.1	32.7	7.2	20.9	14.8	6.1			GP-GC	Poorly graded GRAVEL with sand and clay	9.0	2.69	2.23	2.05	23.95	0.315	0.77	<0
5	BH-1	9.2-9.4				19.1	8.3	17.1	15.5	16.3	6.4	3.5	2.5	2.6	0.4	8.3	100.0	60.0	31.7	8.3	25.0	17.6	7.4			GP-GC	Poorly graded GRAVEL with sand and clay	7.6	2.68	2.22	2.06	23.02	0.299	0.68	<0
6	BH-1	10.2-10.4				2.5	8.7	15.9	13.3	13.6	12.1	5.2	4.3	5.8	1.0	17.6	100.0	40.4	42.0	17.6	26.4	16.7	9.7			SC	Clayey SAND with gravel	10.2	2.71	2.13	1.93	28.68	0.402	0.69	<0
7	BH-1	13.2-13.4				9.8	4.8	6.3	8.7	13.3	12.3	6.7	8.1	7.6	1.2	21.2	100.0	29.6	49.2	21.2	28.1	17.7	10.4			SC	Clayey SAND with gravel	9.7	2.73	1.91	1.74	36.22	0.568	0.47	<0
8	BH-1	14.8-15.0				15.6	0.9	5.8	11.3	9.9	15.7	10.8	6.8	6.3	1.1	15.8	100.0	33.6	50.6	15.8	24.8	15.2	9.6			SC	Clayey SAND with gravel	8.6	2.72	2.09	1.92	29.25	0.413	0.57	<0
9	BH-2	0.8-1.0			6.6	18.5	2.0	14.2	9.8	9.2	5.5	3.8	4.4	5.1	0.8	20.1	100.0	51.1	28.8	20.1	23.6	13.2	10.4			GC	Clayey GRAVEL with sand	12.1	2.69	2.20	1.96	27.04	0.371	0.88	<0
10	BH-2	3.0-3.2				9.6	2.4	21.6	14.4	11.4	7.3	5.3	4.5	4.6	0.6	18.3	100.0	48.0	33.7	18.3	25.7	15.6	10.1			GC	Clayey GRAVEL with sand	10.6	2.71	2.16	1.95	27.93	0.388	0.74	<0
11	BH-2	4.0-4.2			6.1	4.0	5.4	5.9	3.8	5.3	7.9	7.8	9.8	13.2	2.1	28.7	100.0	25.2	46.1	28.7	23.5	13.2	10.3			SC	Clayey SAND with gravel	8.9	2.70	2.06	1.89	29.94	0.427	0.56	<0
12	BH-2	5.4-5.6	29.2	0.0	0.0	2.1	4.4	9.6	9.0	10.4	3.9	2.9	2.7	3.9	0.6	21.3	100.0	54.3	24.4	21.3	26.1	16.1	10.0			GC	Clayey GRAVEL with sand	11.2	2.72	2.22	2.00	26.60	0.362	0.84	<0
13	BH-2	7.6-7.8			17.1	0.0	0.0	4.9	13.0	9.3	7.7	5.1	6.3	8.7	1.2	26.7	100.0	35.0	38.3	26.7	26.7	16.6	10.1			SC	Clayey SAND with gravel	8.9	2.70	2.06	1.89	29.94	0.427	0.56	<0
14	BH-2	10.0-10.2		32.1	0.0	5.7	4.6	6.8	6.9	6.0	5.7	4.4	4.3	4.1	0.6	18.8	100.0	56.1	25.1	18.8	21.5	14.1	7.4			GC	Clayey GRAVEL with sand	9.6	2.69	2.21	2.02	25.04	0.334	0.77	<0
15	BH-2	13.0-13.3				11.8	10.8	18.3	13.4	13.1	5.9	3.2	3.1	4.6	0.6	15.2	100.0	54.3	30.5	15.2	22.8	15.1	7.7			GC	Clayey GRAVEL with sand	8.4	2.70	2.22	2.05	24.15	0.318	0.71	<0
16	BH-3	1.0-1.2			10.1	1.6	5.4	18.5	13.8	12.7	4.7	5.7	5.5	4.4	0.6	17.0	100.0	49.4	33.6	17.0	22.0	13.1	8.9			GC	Clayey GRAVEL with sand	10.2	2.7	2.16	1.96	27.40	0.378	0.73	<0
17	BH-3	2.9-3.1		27.9	6.4	3.8	3.2	9.4	9.8	10.2	4.1	3.2	3.0	3.1	0.5	15.4	100.0	60.5	24.1	15.4	22.8	13.8	9.0			GC	Clayey GRAVEL with sand	9.6	2.71	2.23	2.03	24.92	0.332	0.78	<0
18	BH-3	6.0-6.2		9.6	7.1	9.2	6.5	12.2	10.1	9.1	5.8	5.1	4.1	5.0	0.8	15.4	100.0	54.7	29.9	15.4	21.0	13.3	7.7			GC	Clayey GRAVEL with sand	12.7	2.7	2.20	1.95	27.70	0.383	0.89	<0
19	BH-3	7.8-8.0		17.5	12.3	4.9	4.8	7.4	7.9	9.4	5.4	4.2	3.9	5.0	0.8	16.5	100.0	54.8	28.7	16.5	20.6	13.7	6.9			GC	Clayey GRAVEL with sand	8.9	2.72	2.22	2.04	25.05	0.334	0.72	<0
20	BH-3	10.2-10.4		6.6	3.1	12.1	8.5	14.6	10.0	6.3	6.2	3.9	3.8	5.9	0.8	18.2	100.0	54.9	26.9	18.2	20.3	13.4	6.9			GC	Clayey GRAVEL with sand	9.6	2.70	2.19	2.00	25.99	0.351	0.74	<0
21	BH-3	14.0-14.2				10.1	5.9	11.9	9.2	12.0	9.2	5.8	5.2	5.7	0.6	24.4	100.0	37.1	38.5	24.4	20.8	13.8	7.0			SC	Clayey SAND with gravel	8.5	2.70	2.06	1.90	29.68	0.422	0.54	<0
22	BH-4	0.8-1.0		9.9	5.9	5.9	1.4	11.2	9.0	8.9	9.3	7.0	5.7	5.9	0.9	19.0	100.0	43.3	37.7	19.0	24.8	14.3	10.5			GC	Clayey GRAVEL with sand	9.6	2.71	2.13	1.94	28.29	0.394	0.66	<0
23	BH-4	2.8-3.0			11.5	11.6	7.8	11.7	10.5	11.6	7.3	5.6	4.1	4.2	0.7	13.4	100.0	53.1	33.5	13.4	23.9	13.7	10.2			GC	Clayey GRAVEL with sand	10.2	2.70	2.20	2.00	26.06	0.352	0.78	<0
24	BH-4	4.8-5.0			8.1	12.9	8.4	14.6	11.0	10.1	4.8	3.6	3.3	3.7	0.6	18.9	100.0	55.0	26.1	18.9	24.9	14.6	10.3			GC	Clayey GRAVEL with sand	9.8	2.70	2.18	1.99	26.47	0.360	0.74	<0
25	BH-4	6.4-6.6		35.0	2.4	7.2	4.5	6.1	5.0	4.9	4.5	3.0	2.9	4.1	0.7	19.7	100.0	60.2	20.1	19.7	25.2	14.7	10.5			GC	Clayey GRAVEL with sand	8.6	2.71	2.23	2.05	24.23	0.320	0.73	<0
26	BH-4	10.2-10.5			3.9	17.8	8.3	13.8	9.1	7.0	5.7	3.5	4.6	6.2	4.1	16.0	100.0	52.9	31.1	16.0	22.8	12.6	10.2			GC	Clayey GRAVEL with sand	8.4	2.69	2.21	2.04	24.21	0.319	0.71	<0
27	BH-4	13.8-14.0			4.2	12.6	5.2	5.8	4.6	5.2	10.1	9.8	6.5	7.8	1.9	26.3	100.0	32.4	41.3	26.3	24.8	16.2	8.6			SC	Clayey SAND with gravel	10.4	2.72	2.14	1.94	28.74	0.403	0.70	<0
28	BH-5	4.0-4.2			4.4	11.1	10.1	21.5	10.7	8.4	5.5	3.8	3.5	4.7	0.7	15.6	100.0	57.8	26.6	15.6	21.0	13.6	7.4			GC	Clayey GRAVEL with sand	11.6	2.7	2.21	1.98	26.66	0.363	0.86	<0
29	BH-5	1.0-1.2		9.6	0.0	15.7	6.9	13.4	7.0	6.0	5.9	4.5	4.2	4.4	0.5	21.9	100.0	52.6	25.5	21.9	21.0	14.1	6.9			GC	Clayey GRAVEL with sand	8.7	2.71	2.19	2.01	25.66	0.345	0.68	<0
30	BH-5	6.0-6.2			5.3	5.6	13.9	10.3	8.3	0.0	7.5	6.4	6.4	7.6	1.4	27.3	100.0	43.4	29.3	27.3	21.3	14.3	7.0			GC	Clayey GRAVEL with sand	9.6	2.70	2.14	1.95	27.68	0.383	0.68	<0
31	BH-5	9.0-9.4			9.3	14.8	10.5	15.9	9.4	9.2	3.7	2.4	2.1	3.1	0.6	19.0	100.0	59.9	21.1	19.0	20.9	13.5	7.4			GC	Clayey GRAVEL with sand	8.5	2.70	2.22	2.05	24.22	0.320	0.72	<0
32	BH-5	10.0-10.2		7.4	7.6	5.3	6.2	13.0	14.1	13.3	7.7	5.3	4.1	4.6	0.6	10.8	100.0	53.6	35.6	10.8	25.1	17.9	7.2			GP-GC	Poorly graded GRAVEL with sand and clay	7.6	2.68	2.23	2.07	22.67	0.293	0.69	<0
33	BH-6	0.6-0.8	15.9	9.8	4.4	9.0	1.7	5.6	8.6	5.0	6.0	4.3	4.2	8.9	2.8	13.8	100.0	55.0	31.2	13.8	21.1	15.3	5.8			GC	Clayey GRAVEL with sand	9.3	2.7	2.21	2.02	25.11	0.335	0.75	<0
34	BH-6	2.0-2.2	0.0	11.0	10.6	10.7	14.0	7.5	9.4	4.3	5.7	2.7	4.5	6.0	1.4	12.2	100.0	63.2	24.6	12.2	20.9	14.5	6.4			GC	Clayey GRAVEL with sand	11.2	2.7	2.24	2.01	25.39	0,340	0.89	<0
35	BH-6	4.0-4.4			10.4	13.4	7.0	15.6	9.9	7.8	4.9	4.2	4.1	4.0	0.6	18.1	100.0	56.3	25.6	18.1	19.1	13.3	5.8			GC	Clayey GRAVEL with sand	10.2	2.71	2.21	2.01	26.00	0.351	0.79	<0
36	BH-6	5.0-5.2		12.0	3.1	11.7	3.5	8.0	6.7	5.5	4.3	5.2	5.7	7.8	1.4	25.1	100.0	45.0	29.9	25.1	20.8	13.7	7.1			GC	Clayey GRAVEL with sand	8.8	2.70	2.12	1.95	27.83	0.386	0.62	<0
37	BH-6	6.8-7.0				10.4	10.6	13.0	11.4	13.1	6.6	5.9	5.1	4.3	0.7	18.9	100.0	45.4	35.7	18.9	20.1	14.9	5.2			GC	Clayey GRAVEL with sand	11.6	2.72	2.09	1.87	31.15	0.452	0.70	<0
38	BH-6	8.2-8.4		13.9	8.1	6.1	9.7	10.8	6.8	7.4	5.5	4.8	4.0	5.6	0.9	16.4	100.0	55.4	28.2	16.4	19.3	14.0	5.3			GC	Clayey GRAVEL with sand	9.2	2.70	2.21	2.02	25.04	0.334	0.74	<0
39	BH-6	12.0-12.4				0.0	15.2	9.3	8.6	10.4	9.3	9.7	8.1	7.6	1.2	20.6	100.0	33.1	46.3	20.6	24.1	16.3	7.8			SC	Clayey SAND with gravel	8.9	2.73	1.91	1.75	35.75	0.557	0.44	<0
40	BH-6	14.4-14.6				5.6	0.9	5.8	11.3	9.9	15.7	10.8	6.8	6.3	1.1	25.8	100.0	23.6	50.6	25.8	22.8	14.8	8.0			SC	Clayey SAND with gravel	10.0	2.72	2.09	1.90	30.15	0.432	0.63	<0
41	BH-7	0.8-1.0				3.9	9.2	18.4	15.8	11.8	8.4	5.7	3.9	5.1	1.1	16.7	100.0	47.3	36.0	16.7	20.9	14.1	6.8			GC	Clayey GRAVEL with sand	8.7	2.70	2.16	1.99	26.40	0.359	0.65	<0
42	BH-7	2.0-2.2	15.9	9.8	4.4	9.0	1.7	5.6	8.6	5.0	6.0	4.3	4.2	8.9	2.8	13.8	100.0	55.0	31.2	13.8	18.8	12.9	5.9			GC	Clayey GRAVEL with sand	9.3	2.69	2.21	2.02	24.83	0.330	0.76	<0
43	BH-7	4.0-4.2					11.4	16.1	9.5	12.1	6.0	4.4	4.8	4.6	0.6	30.5	100.0	37.0	32.5	30.5	20.9	13.8	7.1			GC	Clayey GRAVEL with sand	8.7	2.7	2.10	1.93	28.45	0.398	0.59	<0
44	BH-7	6.0-6.2			10.6	21.7	14.0	15.0	9.4	4.3	2.7	2.7	2.5	4.0	0.9	12.2	100.0	70.7	17.1	12.2	19.5	13.8	5.7			GC	Clayey GRAVEL with sand	11.2	2.69	2.24	2.01	25.12	0.335	0.90	<0
45	BH-7	12.0-12.4		15.2	0.0	0.0	0.0	2.1	4.1	10.9	11.5	12.0	11.5	13.1	1.3	18.3	100.0	21.4	60.3	18.3	24.8	16.3	8.5			SC	Clayey SAND with gravel	13.6	2.72	1.98	1.74	35.92	0.561	0.66	<0
46	BH-7	14.6-14.8					3.8	16.6	10.4	14.5	5.9	4.6	4.6	6.1	0.9	32.6	100.0	30.8	36.6	32.6	22.2	14.9	7.3			SC	Clayey SAND with gravel	14.2	2.71	2.03	1.78	34.41	0.525	0.73	<0
47	BH-8	1.0-1.2		9.4	12.4	7.7	3.4	11.5	9.9	11.2	8.3	3.8	3.0	4.1	0.7	14.6	100.0	54.3	31.1	14.6	22.4	16.3	6.1			GC	Clayey GRAVEL with sand	9.8	2.70	2.20	2.00	25.79	0.348	0.76	<0
48	BH-8	2.3-2.5		14.7	4.3	9.0	2.3	10.7	11.4	11.9	8.3	4.6	3.2	4.3	0.6	14.7	100.0	52.4	32.9	14.7	18.6	13.7	4.9			GC	Clayey GRAVEL with sand	10.5	2.70	2.21	2.00	25.93	0.350	0.81	<0
49	BH-8	5.4-5.6			4.1	12.5	5.9	15.0	12.0	9.9	8.1	3.8	2.0	9.0	2.0	15.7	100.0	49.5	34.8	15.7	23.7	15.3	8.4			GC	Clayey GRAVEL with sand	4.6	2.69	2.17	2.07	22.88	0.297	0.42	<0
50	BH-8	7.0-7.4			8.3	12.2	3.8	15.9	9.1	8.5	4.8	3.5	2.0	14.8	2.3	14.8	100.0	49.3	35.9	14.8	24.2	15.2	9.0			GC	Clayey GRAVEL with sand	4.6	2.69	2.18	2.08	22.52	0.291	0.43	<0
51	BH-8	12.0-12.2			0.0	0.0	0.8	13.6	25.5	22.6	7.5	5.3	4.1	5.7	1.3	13.6	100.0	39.9	46.5	13.6	25.9	16.8	9.1			SC	Clayey SAND with gravel	13.1	2.71	2.10	1.86	31.48	0.460	0.77	<0
52	BH-8	14.3-14.5			0.0	0.0	2.3	8.9	19.1	23.4	8.1	6.0	5.3	4.6	2.8	19.5	100.0	30.3	50.2	19.5	24.8	16.3	8.5			SC	Clayey SAND with gravel	12.8	2.73	2.05	1.82	33.43	0.502	0.70	<0

Date: 2013.09.25-2013.10.02

Cheked by: A. Batsaikhan

Senior engineer: A. Sainbayar

Senior engineer: T. Altanchimeg

Engineer: B. Lavdmaa

Senior technician: D. Tungalag

Technician: G. Otgontuul

Summary of classification by identical properties of soil

Client: Yamashita Sekkei INC

Location areo: Ulaanbaatar city, BZD-12 district, Botanical garden

Object Name: The Project for Construction of Mongolia and Japanese Teaching Hospital

No.	Hole №	Depth (m)	Particle size, %															Particle Analysis (%)			Atterberg Limits			Cu	Cc	Soil Type	Soil name	Natural Moisture Content (W), %	Specific gravity G_s, g/cm^3	Density, ρ, g/cm^3	Dry density, ρ_d, g/cm^3	Porosity, n,%	Voids Ratio, e	Degree of Saturation, Sr	Consistency, J_L
			75	50	37.5	25	19	9.5	4.75	2.00	0.850	0.425	0.250	0.106	0.075	<0.075	%	Gravel	Sand	Silt/ Clay	LL	PL	PI												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1. Clayey GRAVEL with sand /GC/																																			
1	BH-1	1.0-1.2			14.1	7.0	7.3	18.4	12.2	10.3	6.5	5.4	3.1	3.0	0.5	12.2	100.0	59.0	28.8	12.2	24.1	14.6	9.5			GC	Clayey GRAVEL with sand	6.90	2.70	2.22	2.08	23.08	0.300	0.62	<0
2	BH-1	3.8-4.0					9.2	17.4	12.5	13.3	6.4	4.2	3.9	7.7	0.8	24.5	100.0	39.2	36.3	24.5	23.3	13.9	9.4			GC	Clayey GRAVEL with sand	7.8	2.71	2.12	1.97	27.43	0.378	0.56	<0
9	BH-2	0.8-1.0			6.6	18.5	2.0	14.2	9.8	9.2	5.5	3.8	4.4	5.1	0.8	20.1	100.0	51.1	28.8	20.1	23.6	13.2	10.4			GC	Clayey GRAVEL with sand	12.1	2.69	2.20	1.96	27.04	0.371	0.88	<0
10	BH-2	3.0-3.2				9.6	2.4	21.6	14.4	11.4	7.3	5.3	4.5	4.6	0.6	18.3	100.0	48.0	33.7	18.3	25.7	15.6	10.1			GC	Clayey GRAVEL with sand	10.6	2.71	2.16	1.95	27.93	0.388	0.74	<0
12	BH-2	5.4-5.6	29.2	0.0	0.0	2.1	4.4	9.6	9.0	10.4	3.9	2.9	2.7	3.9	0.6	21.3	100.0	54.3	24.4	21.3	26.1	16.1	10.0			GC	Clayey GRAVEL with sand	11.2	2.72	2.22	2.00	26.60	0.362	0.84	<0
14	BH-2	10.0-10.2		32.1	0.0	5.7	4.6	6.8	6.9	6.0	5.7	4.4	4.3	4.1	0.6	18.8	100.0	56.1	25.1	18.8	21.5	14.1	7.4			GC	Clayey GRAVEL with sand	9.6	2.69	2.21	2.02	25.04	0.334	0.77	<0
15	BH-2	13.0-13.3				11.8	10.8	18.3	13.4	13.1	5.9	3.2	3.1	4.6	0.6	15.2	100.0	54.3	30.5	15.2	22.8	15.1	7.7			GC	Clayey GRAVEL with sand	8.4	2.70	2.22	2.05	24.15	0.318	0.71	<0
16	BH-3	1.0-1.2			10.1	1.6	5.4	18.5	13.8	12.7	4.7	5.7	5.5	4.4	0.6	17.0	100.0	49.4	33.6	17.0	22.0	13.1	8.9			GC	Clayey GRAVEL with sand	10.2	2.7	2.16	1.96	27.40	0.378	0.73	<0
9	BH-3	2.9-3.1		27.9	6.4	3.8	3.2	9.4	9.8	10.2	4.1	3.2	3.0	3.1	0.5	15.4	100.0	60.5	24.1	15.4	22.8	13.8	9.0			GC	Clayey GRAVEL with sand	9.6	2.71	2.23	2.03	24.92	0.332	0.78	<0
10	BH-3	6.0-6.2		9.6	7.1	9.2	6.5	12.2	10.1	9.1	5.8	5.1	4.1	5.0	0.8	15.4	100.0	54.7	29.9	15.4	21.0	13.3	7.7			GC	Clayey GRAVEL with sand	12.7	2.7	2.20	1.95	27.70	0.383	0.89	<0
11	BH-3	7.8-8.0		17.5	12.3	4.9	4.8	7.4	7.9	9.4	5.4	4.2	3.9	5.0	0.8	16.5	100.0	54.8	28.7	16.5	20.6	13.7	6.9			GC	Clayey GRAVEL with sand	8.9	2.72	2.22	2.04	25.05	0.334	0.72	<0
12	BH-3	10.2-10.4		6.6	3.1	12.1	8.5	14.6	10.0	6.3	6.2	3.9	3.8	5.9	0.8	18.2	100.0	54.9	26.9	18.2	20.3	13.4	6.9			GC	Clayey GRAVEL with sand	9.6	2.70	2.19	2.00	25.99	0.351	0.74	<0
22	BH-4	0.8-1.0		9.9	5.9	5.9	1.4	11.2	9.0	8.9	9.3	7.0	5.7	5.9	0.9	19.0	100.0	43.3	37.7	19.0	24.8	14.3	10.5			GC	Clayey GRAVEL with sand	9.6	2.71	2.13	1.94	28.29	0.394	0.66	<0
23	BH-4	2.8-3.0			11.5	11.6	7.8	11.7	10.5	11.6	7.3	5.6	4.1	4.2	0.7	13.4	100.0	53.1	33.5	13.4	23.9	13.7	10.2			GC	Clayey GRAVEL with sand	10.2	2.70	2.20	2.00	26.06	0.352	0.78	<0
15	BH-4	4.8-5.0			8.1	12.9	8.4	14.6	11.0	10.1	4.8	3.6	3.3	3.7	0.6	18.9	100.0	55.0	26.1	18.9	24.9	14.6	10.3			GC	Clayey GRAVEL with sand	9.8	2.70	2.18	1.99	26.47	0.360	0.74	<0
25	BH-4	6.4-6.6		35.0	2.4	7.2	4.5	6.1	5.0	4.9	4.5	3.0	2.9	4.1	0.7	19.7	100.0	60.2	20.1	19.7	25.2	14.7	10.5			GC	Clayey GRAVEL with sand	8.6	2.71	2.23	2.05	24.23	0.320	0.73	<0
17	BH-4	10.2-10.5			3.9	17.8	8.3	13.8	9.1	7.0	5.7	3.5	4.6	6.2	4.1	16.0	100.0	52.9	31.1	16.0	22.8	12.6	10.2			GC	Clayey GRAVEL with sand	8.4	2.69	2.21	2.04	24.21	0.319	0.71	<0
18	BH-5	4.0-4.2			4.4	11.1	10.1	21.5	10.7	8.4	5.5	3.8	3.5	4.7	0.7	15.6	100.0	57.8	26.6	15.6	21.0	13.6	7.4			GC	Clayey GRAVEL with sand	11.6	2.7	2.21	1.98	26.66	0.363	0.86	<0
19	BH-5	1.0-1.2		9.6	0.0	15.7	6.9	13.4	7.0	6.0	5.9	4.5	4.2	4.4	0.5	21.9	100.0	52.6	25.5	21.9	21.0	14.1	6.9			GC	Clayey GRAVEL with sand	8.7	2.71	2.19	2.01	25.66	0.345	0.68	<0
20	BH-5	6.0-6.2			5.3	5.6	13.9	10.3	8.3	0.0	7.5	6.4	6.4	7.6	1.4	27.3	100.0	43.4	29.3	27.3	21.3	14.3	7.0			GC	Clayey GRAVEL with sand	9.6	2.70	2.14	1.95	27.68	0.383	0.68	<0
31	BH-5	9.0-9.4			9.3	14.8	10.5	15.9	9.4	9.2	3.7	2.4	2.1	3.1	0.6	19.0	100.0	59.9	21.1	19.0	20.9	13.5	7.4			GC	Clayey GRAVEL with sand	8.5	2.70	2.22	2.05	24.22	0.320	0.72	<0
22	BH-6	0.6-0.8	15.9	9.8	4.4	9.0	1.7	5.6	8.6	5.0	6.0	4.3	4.2	8.9	2.8	13.8	100.0	55.0	31.2	13.8	21.1	15.3	5.8			GC	Clayey GRAVEL with sand	9.3	2.7	2.21	2.02	25.11	0.335	0.75	<0
23	BH-6	2.0-2.2	0.0	11.0	10.6	10.7	14.0	7.5	9.4	4.3	5.7	2.7	4.5	6.0	1.4	12.2	100.0	63.2	24.6	12.2	20.9	14.5	6.4			GC	Clayey GRAVEL with sand	11.2	2.7	2.24	2.01	25.39	0.340	0.89	<0
35	BH-6	4.0-4.4			10.4	13.4	7.0	15.6	9.9	7.8	4.9	4.2	4.1	4.0	0.6	18.1	100.0	56.3	25.6	18.1	19.1	13.3	5.8			GC	Clayey GRAVEL with sand	10.2	2.71	2.21	2.01	26.00	0.351	0.79	<0
36	BH-6	5.0-5.2		12.0	3.1	11.7	3.5	8.0	6.7	5.5	4.3	5.2	5.7	7.8	1.4	25.1	100.0	45.0	29.9	25.1	20.8	13.7	7.1			GC	Clayey GRAVEL with sand	8.8	2.70	2.12	1.95	27.83	0.386	0.62	<0
26	BH-6	6.8-7.0				10.4	10.6	13.0	11.4	13.1	6.6	5.9	4.9	4.3	0.7	18.9	99.8	45.4	35.5	18.9	20.1	14.9	5.2			GC	Clayey GRAVEL with sand	11.6	2.72	2.09	1.87	31.15	0.452	0.70	<0
27	BH-6	8.2-8.4		13.9	8.1	6.1	9.7	10.8	6.8	7.4	5.5	4.8	4.0	5.6	0.9	16.4	100.0	55.4	28.2	16.4	19.3	14.0	5.3			GC	Clayey GRAVEL with sand	9.2	2.70	2.21	2.02	25.04	0.334	0.74	<0
28	BH-7	0.8-1.0				3.9	9.2	18.4	15.8	11.8	8.4	5.7	3.9	5.1	1.1	16.7	100.0	47.3	36.0	16.7	20.9	14.1	6.8			GC	Clayey GRAVEL with sand	8.7	2.70	2.16	1.99	26.40	0.359	0.65	<0
29	BH-7	2.0-2.2	15.9	9.8	4.4	9.0	1.7	5.6	8.6	5.0	6.0	4.3	4.2	8.9	2.8	13.8	100.0	55.0	31.2	13.8	18.8	12.9	5.9			GC	Clayey GRAVEL with sand	9.3	2.69	2.21	2.02	24.83	0.330	0.76	<0
30	BH-7	4.0-4.2					11.4	16.1	9.5	12.1	6.0	4.4	4.8	4.6	0.6	30.5	100.0	37.0	32.5	30.5	20.9	13.8	7.1			GC	Clayey GRAVEL with sand	8.7	2.7	2.10	1.93	28.45	0.398	0.59	<0
31	BH-7	6.0-6.2			10.6	21.7	14.0	15.0	9.4	4.3	2.7	2.7	2.5	4.0	0.9	12.2	100.0	70.7	17.1	12.2	19.5	13.8	5.7			GC	Clayey GRAVEL with sand	11.2	2.69	2.24	2.01	25.12	0.335	0.90	<0
47	BH-8	1.0-1.2		9.4	12.4	7.7	3.4	11.5	9.9	11.2	8.3	3.8	3.0	4.1	0.7	14.6	100.0	54.3	31.1	14.6	22.4	16.3	6.1			GC	Clayey GRAVEL with sand	9.8	2.70	2.20	2.00	25.79	0.348	0.76	<0
48	BH-8	2.3-2.5		14.7	4.3	9.0	2.3	10.7	11.4	11.9	8.3	4.6	3.2	4.3	0.6	14.7	100.0	52.4	32.9	14.7	18.6	13.7	4.9			GC	Clayey GRAVEL with sand	10.5	2.70	2.21	2.00	25.93	0.350	0.81	<0
34	BH-8	5.4-5.6			4.1	12.5	5.9	15.0	12.0	9.9	8.1	3.8	2.0	9.0	2.0	15.7	100.0	49.5	34.8	15.7	23.7	15.3	8.4			GC	Clayey GRAVEL with sand	4.6	2.69	2.17	2.07	22.88	0.297	0.42	<0
35	BH-8	7.0-7.4			8.3	12.2	3.8	15.9	9.1	8.5	4.8	3.5	2.0	14.8	2.3	14.8	100.0	49.3	35.9	14.8	24.2	15.2	9.0			GC	Clayey GRAVEL with sand	4.6	2.69	2.18	2.08	22.52	0.291	0.43	<0
A max			29.2	35.0	14.1	21.7	14.0	21.6	15.8	13.3	9.3	7.0	6.4	14.8	4.1	30.5		70.7	37.7	30.5	26.1	16.3	10.5					12.7	2.72	2.24	2.08	31.15	0.452	0.90	
A min			0.0	0.0	0.0	1.6	1.4	5.6	5.0	0.0	2.7	2.4	2.0	3.0	0.5	12.2		37.0	17.1	12.2	18.6	12.6	4.9					4.6	2.69	2.09	1.87	22.52	0.291	0.42	
A average			15.3	14.3	6.6	9.9	6.8	13.0	10.0	8.7	5.9	4.3	3.9	5.5	1.1	17.7	100.0	52.9	29.4	17.7	22.0	14.2	7.8			GC	Clayey GRAVEL with sand	9.4	2.70	2.19	2.00	25.95	0.351	0.72	<0
																		σ			1.77	0.87	1.32					1.91	0.01	0.04	0.05	2.04	0.04	0.11	
																		ν			0.08	0.06	0.17					0.20	0.00	0.02	0.02	0.08	0.11	0.16	
																		ρ0,85												0.003					
																		ρ0,95												0.005					
																		ε0,85												0.006					
																		ε0,95												0.01					
																		γ^{I}												2.18					
																		γ^{II}												2.18					
2. Poorly graded GRAVEL with sand and clay /GP-GC/																																			
1	BH-1	5.6-5.8		23.5	11.3	8.9	5.2	12.2	7.4	6.7	4.8	5.0	4.3	3.5	0.3	6.9	100.0	68.5	24.6	6.9	20.5	14.3	6.2			GP-GC	Poorly graded GRAVEL with sand and clay	6.8	2.68	2.24	2.10	21.74	0.278	0.66	<0
2	BH-1	7.2-7.4			4.3	15.9	9.0	17.4	13.5	11.6	7.1	5.0	3.5	4.9	0.6	7.2	100.0	60.1	32.7	7.2	20.9	14.8	6.1			GP-GC	Poorly graded GRAVEL with sand and clay	9.0	2.69	2.23	2.05	23.95	0.315	0.77	<0
5	BH-1	9.2-9.4				19.1	8.3	17.1	15.5	16.3	6.4	3.5	2.5	2.6	0.4	8.3	100.0	60.0	31.7	8.3	25.0	17.6	7.4			GP-GC	Poorly graded GRAVEL with sand and clay	7.6	2.68	2.22	2.06	23.02	0.299	0.68	<0
32	BH-5	10.0-10.2		7.4	7.6	5.3	6.2	13.0	14.1	13.3	7.7	5.3	4.1	4.6	0.6	10.8	100.0	53.6	35.6	10.8	25.1	17.9	7.2			GP-GC	Poorly graded GRAVEL with sand and clay	7.6	2.68	2.23	2.07	22.67	0.293	0.69	<0
A max				23.5	11.3	19.1	9.0	17.4	15.5	16.3	7.7	5.3	4.3	4.9	0.6	10.8		68.5	35.6	10.8	25.1	17.9	7.4					9.0	2.69	2.24	2.10	23.95	0.315	0.77	
A min				7.4	4.3	5.3	5.2	12.2	7.4	6.7	4.8	3.5	2.5	2.6	0.3	6.9		53.6	24.6	6.9	20.5	14.3	6.1					6.8	2.68	2.22	2.05	21.74	0.278	0.66	
A average				15.5	7.7	12.3	7.2	14.9	12.6	12.0	6.5	4.7	3.6	3.9	0.5	8.3	100.0	60.6	31.2	8.3	22.9	16.2	6.7			GP-GC	Poorly graded GRAVEL with sand and clay	7.8	2.68	2.23	2.07	22.84	0.296	0.70	<0

3. Clayey SAND with gravel /SC/

1	BH-1	10.2-10.4				2.5	8.7	15.9	13.3	13.6	12.1	5.2	4.3	5.8	1.0	17.6	100.0	40.4	42.0	17.6	26.4	16.7	9.7			SC	Clayey SAND with gravel	10.2	2.71	2.13	1.93	28.68	0.402	0.69	<0
2	BH-1	13.2-13.4				9.8	4.8	6.3	8.7	13.3	12.3	6.7	8.1	7.6	1.2	21.2	100.0	29.6	49.2	21.2	28.1	17.7	10.4			SC	Clayey SAND with gravel	9.7	2.73	1.91	1.74	36.22	0.568	0.47	<0
3	BH-1	14.8-15.0				15.6	0.9	5.8	11.3	9.9	15.7	10.8	6.8	6.3	1.1	15.8	100.0	33.6	50.6	15.8	24.8	15.2	9.6			SC	Clayey SAND with gravel	8.6	2.72	2.09	1.92	29.25	0.413	0.57	<0
11	BH-2	4.0-4.2			6.1	4.0	5.4	5.9	3.8	5.3	7.9	7.8	9.8	13.2	2.1	28.7	100.0	25.2	46.1	28.7	23.5	13.2	10.3			SC	Clayey SAND with gravel	8.9	2.70	2.06	1.89	29.94	0.427	0.56	<0
13	BH-2	7.6-7.8			17.1	0.0	0.0	4.9	13.0	9.3	7.7	5.1	6.3	8.7	1.2	26.7	100.0	35.0	38.3	26.7	26.7	16.6	10.1			SC	Clayey SAND with gravel	8.9	2.70	2.06	1.89	29.94	0.427	0.56	<0
21	BH-3	14.0-14.2				10.1	5.9	11.9	9.2	12.0	9.2	5.8	5.2	5.7	0.6	24.4	100.0	37.1	38.5	24.4	20.8	13.8	7.0			SC	Clayey SAND with gravel	8.5	2.70	2.06	1.90	29.68	0.422	0.54	<0
7	BH-4	13.8-14.0			4.2	12.6	5.2	5.8	4.6	5.2	10.1	9.8	6.5	7.8	1.9	26.3	100.0	32.4	41.3	26.3	24.8	16.2	8.6			SC	Clayey SAND with gravel	10.4	2.72	2.14	1.94	28.74	0.403	0.70	<0
8	BH-6	12.0-12.4				0.0	15.2	9.3	8.6	10.4	9.3	9.7	8.1	7.6	1.2	20.6	100.0	33.1	46.3	20.6	24.1	16.3	7.8			SC	Clayey SAND with gravel	8.9	2.73	1.91	1.75	35.75	0.557	0.44	<0
9	BH-6	14.4-14.6				5.6	0.9	5.8	11.3	9.9	15.7	10.8	6.8	6.3	1.1	25.8	100.0	23.6	50.6	25.8	22.8	14.8	8.0			SC	Clayey SAND with gravel	10.0	2.72	2.09	1.90	30.15	0.432	0.63	<0
45	BH-7	12.0-12.4		15.2	0.0	0.0	0.0	2.1	4.1	10.9	11.5	12.0	11.5	13.1	1.3	18.3	100.0	21.4	60.3	18.3	24.8	16.3	8.5			SC	Clayey SAND with gravel	13.6	2.72	1.98	1.74	35.92	0.561	0.66	<0
11	BH-7	14.6-14.8					3.8	16.6	10.4	14.5	5.9	4.6	4.6	6.1	0.9	32.6	100.0	30.8	36.6	32.6	22.2	14.9	7.3			SC	Clayey SAND with gravel	14.2	2.71	2.03	1.78	34.41	0.525	0.73	<0
12	BH-8	12.0-12.2			0.0	0.0	0.8	13.6	25.5	22.6	7.5	5.3	4.1	5.7	1.3	13.6	100.0	39.9	46.5	13.6	25.9	16.8	9.1			SC	Clayey SAND with gravel	13.1	2.71	2.10	1.86	31.48	0.460	0.77	<0
13	BH-8	14.3-14.5			0.0	0.0	2.3	8.9	19.1	23.4	8.1	6.0	5.3	4.6	2.8	19.5	100.0	30.3	50.2	19.5	24.8	16.3	8.5			SC	Clayey SAND with gravel	12.8	2.73	2.05	1.82	33.43	0.502	0.70	<0
A max				15.2	17.1	15.6	15.2	16.6	25.5	23.4	15.7	12.0	11.5	13.2	2.8	32.6		40.4	60.3	32.6	28.1	17.7	10.4					14.2	2.73	2.14	1.94	36.22	0.568	0.77	
A min				15.2	0.0	0.0	0.0	2.1	3.8	5.2	5.9	4.6	4.1	4.6	0.6	13.6		21.4	36.6	13.6	20.8	13.2	7.0					8.5	2.70	1.91	1.74	28.68	0.402	0.44	
A average				15.2	4.6	5.0	4.1	8.7	11.0	12.3	10.2	7.7	6.7	7.6	1.4	22.4	100.0	31.7	45.9	22.4	24.6	15.8	8.8			SC	Clayey SAND with gravel	10.6	2.72	2.05	1.85	31.81	0.469	0.62	<0
																		σ			2.88	1.78	1.34					1.71	0.01	0.07	0.06	2.26	0.05	0.10	
																		ν			0.12	0.11	0.15					0.16	0.00	0.03	0.03	0.07	0.11	0.16	
																		ρ0,85												0.010					
																		ρ0,95												0.017					
																		ε0,85												0.021					
																		ε0,95												0.03					
																		γ^{I}												2.01					
																		γ^{II}												2.03					

Statictical calculation made by senior engineer: T.Altanchimeg

APPENDIX D Groundwater Chemical Test Result

APPENDIX D

CHEMICAL ANALYSES OF GROUNDWATER

PROJECT NAME: The Project for Construction of Mongolian and Japanese Teaching Hospital of Health Sciences University
LOCATION OF SAMPLE: Ulaanbaatar city
NUMBER AND TYPE OF WATER SOURCE: BH-2
SAMPLED DEPTH: 9 m
SAMPLED DATE: 17 SEP 2013
TESTED DATE: 30 SEP 2013

Anion	Measurement per 1 dm^3			Cation	Measurement per 1 dm^3		
	Mg	mg-eq/l	equ%		mg	mg-eq/l	equ%
Cl^-	14.2	0.40	5.79	$Na^+ + K^+$	49.0	2.13	30.83
SO_4^{2-}	55.0	1.15	16.59	Ca^{2+}	58.1	2.90	41.99
NO_2^-	0.00	0.00	0.00	Mg^{2+}	17.0	1.40	20.27
NO_3^-	10.0	0.16	2.34	NH_4^+	8.5	0.47	6.84
CO_3^{2-}	0.0	0.00	0.00	Fe^{2+}	0.0	0.00	0.00
HCO_3^-	317.2	5.20	75.28	Fe^{3+}	0.1	0.01	0.08
Total	396.4	6.91	100.0	Total	132.7	6.91	100.0

∑ half of NCO_3^- Anion+Cation	370.5 mg/dm^3	Total Dissolved Solids (TDS)	362 ppm
∑ Total Anion+Cation	529.1 mg/dm^3	Free Co_2	26.4 mg/l
Dry Residual	- mg/dm^3	EC	680 µS/sm
pH	6.85	Corrosion	-mg/dm^3
General Hardness	4.30 mg-equ/dm^3	Oxygen Dissolved	-
Solubility	10.24mg/dm^3	Oxygen Reduction potential	-
Dissolved Hardness	- mg-equ/dm^3	Electrical Conductivity (EC)	-
Alkalinity	94,6 mg/l	Oxygen	mg/dm^3
Carbonate Hardness	4.3 mg-equ/l	Permanganate Oxidize	mg-O/l
Silica Acidize SiO_2		Caustic CO_2	3 mg/l

Physical Properties

Color	grey	Turbidity	cm
Odor	6 degree	Sediments	mudy
Taste	0	Temperatur	-°C
		Clarity	0 cm

Formula of chemical composition is given by following equation:

$$M_{0.5}\frac{HCO_3^{2-}75SO_4^{2-}16}{Ca^{2+}42(Na+K)31Mg^{2+}20}$$

Chemical laboratory analysis indicates as nearly to a soft and clear water of hydrocarbon type of calcium group, 1st class. Based on laboratory testing result content carbonate hardness varies high but caustic properties ranges low. The water sample meets to the requirement of norm and standard "Specifications of Water Usage for Concrete Mixture" MNS 12439-2012.

Water sample was analyzed by chemist B.Oyu-Erdene
approved by M.Enkhtuya

APPENDIX E Soil Chemical Test Result

Appendix E

Soil Chemical Test Result
1/312

Soil Trade, LLC 2013.10.02

On following soil sample was conducted Reduction (R_c), Dissolved Silica (S_c):

No.	Soil Sample (depth) date	Reduction in Alkalinity (R_c, mmol/l)	Dissolved Silica (S_c, mmol/l)
1	BH-02 (0.8-1.0m)	0.0215	22.0

Tested by Dr. Sh.Nyamdelger, Magister O.Nasantogtoh

Approved by Academician D. Batsuren

APPENDIX F Technical Specification

A. SPECIFICATION OF THE SOIL INVESTIGATION

This specification is applied to the subsoil exploration to carry out the study on "The Project for Construction of Mongolia and Japanese Teaching Hospital" in Mongolia."

1. Scope of Work

(1) Site Location:

The project site for construction is one block of the botanical garden, Ulaanbaatar.

The exploration shall be carried out to research the stratum, soil condition, characteristics of the soil dynamics, etc. of the site necessary for building construction.

(2) Field Test

1) Boring:

The number of boreholes shall be 6 and the depth of boreholes shall be maximum 12 meters or 4 meters deeper from the supporting layer if the supporting layer appears within 10 meters.

Expenses for increase/decrease of borehole depth shall be adjusted at the time of completion of the work.

The standard penetration test shall be required at every 1.0m intervals and/or at each different stratum.

2) Collection of the sample soils:

Undisturbed samples of soil shall be obtained from where the standard penetration tests are not carried out at every borehole.

(3) Laboratory Test

1) Atterburge limit test
2) Specific gravity of soil
3) Moisture content test
4) Wet & dry density
5) Unconfined compression test
6) Consolidation test

All field and laboratory tests shall be performed in accordance with ASTM specifications.

2. Expenses of the Contractor

The expenses such as materials, tools, articles of consumption, water and power supply, to carry out the work shall be borne by the Contractor.

3. The Contractor should obtain permission from the Client for the following cases;

(1) Any revision of this specification, caused by inevitable reason.
(2) Accident or incident during the exploration.

4. Submission of the Report

4 sets of technical report required should be submitted to the Client within the period contracted.

The technical report should include;

(1) Introduction
(2) Scope of work
(3) Geological setup
(4) Engineering properties of soil samples & foundation type
(5) General notes on soil investigation review
(6) Conclusion and recommendations
(7) Site plan
(8) Soil investigation review sheet
(9) Bore chart of boreholes
(10) Photograph of undisturbed samples of soil
(11) Geological section diagram

B. SPECIFICATION OF THE SITE SURVEY

This specification is applied to the site survey to carry out the study on "The Project for Construction of Mongolia and Japanese Teaching Hospital" in Mongolia."in Mongolia

1. Scope of Work

The site survey shall be carried out by means of transit and level to set out the boundary line, elevation of site, location of existing facilities and roads within the site.

(1) Condition

1) Site Location: The project site for construction is one block of the botanical garden, Ulaanbaatar.
2) Survey Area: approx. 10 ha.
3) Survey Map:
   A map which indicates the topographic conditions, site boundaries, location of internal roads, location of infrastructures (electricity power line, water line, sewage line with depth, telephone line) and location of existing building.
4) Longitudinal and cross section:
   which indicates levels of the site per 0.5m contour lines

(2) Final Product to be submitted

1) Survey map in scale of 1:200 and AutoCAD file indicating;
   ① the boundary line, ② elevation of the site in every 5 meter grid, ③ location of existing facilities and roads within the survey area.
2) Longitudinal and cross section in scale of 1:200
   sectional drawings.

2. Expenses of the Contractor

The expenses such as materials, tools, articles of consumption, etc. to carry out the works shall be borne by the Contractor.

3. Submission

4 sets of blue print copy of survey map and one CD listed in 1-2) of this specification shall be submitted to the Client within the period contracted.

7.　敷地測量図