

ACCESS TO QUALITY SERVICES UNIT
MSH USAID REACH

DESIGN ISSUES AND CONSTRUCTION FIELD REPORT

QARABAGH BASIC HEALTH CENTER, KABUL PROVINCE
March 23, 2004 at 11.00 AM

PREPARED BY MIRWAIS HABIBI
HEALTH FACILITIES ADVISER

A field trip to Qarabagh Basic Health Center was arranged to expedite and oversee the transfer of this center which is 100% complete from Luis Burger Group (LBG) to the Ministry of Health (MOH).

Representative from MOH, LBG, USAID/MSH were present. The representatives from the MOH inspected and made an inventory of the building. The MOH representative will meet LBG March 24, 2004 to resolve issues which will bring the building to a standard acceptable to MOH.

I inspected the new BHC facility independently and was surprised at the very low quality of workmanship, use of low grade and sub-standard materials and means and methods adopted to finish the job. We were told there were no specifications issued with the bidding package, this makes the bidding process practically impossible to award, control, evaluate and monitor. Since I have not seen the bidding documents, it would be unprofessional for me to comment any further on this issue. However, I have requested Eng. Arif Parwani to provide me with a complete set of bided construction documents.

In this memorandum I would like to concentrate on plumbing design standard, accessibility, environmental and infection control problems:

Design standards: The plumbing system in the building from what could be observed visually meets no standard norms or plumbing code. No P-traps are installed in any fixture or drain. No vents were observed penetrating the roof, mostly probably do not exit specially for the water closet. A fixture such as a sink pours directly into the drains provided in the rooms. All this will result in stench and smell and will make the building unsafe, uncomfortable and intolerable to use. Infection control will be impossible to exercise and maintain.

Another design issue which begs attention is the fume chimney pipe which is provided for heating stoves. The fume pipe is made of light gage sheet metal which can deteriorate in time and may cause fire in the wooden roof.

Accessibility: An attempt has been made to accessorize the buildings. But it is quite apparent that the designer had no in depth knowledge of the problems associate with the ramp design. Since no construction documents are available I would keep my comments to a minimum. If required other elements of the ramp can be commented on later. For example the ramp to the public toilets does not meet the following requirements. (1) A landing is required at every 76 cm (2'-6") rise, and or 9 meters (30ft.) maximum length. The floor area of the toilet, the location of the hole and the movement of the door opening in to the toilet impedes and negates accessibility requirement.

Infection control: It is a common and standard practice to separate in-patient function from out patient functions in order to minimize infection. In situation as this it may be prudent to provide some kind of a vestibule to separate the two functions so as to have some minimum changing space and hand washing capability. Floor in the delivery room should be monolithic type floor with no joints so that blood is not absorbed in to the joints, thus producing an unsanitary situation.

Environmental Health issue: The designed and build latrine does not meet any accepted WHO standard. A latrine with no pit, where separation of liquid and solid is not considered and where cleaning the solid waste with out decomposition is not a wise and an educational alternative. If we are going to built latrines in the remaining BHC and CBHC then we should move to a type of latrine, where after composting the solid waste, the final product can be safely used as fertilizer.

Once I have the construction documents I will be able to comment in more detail, if such comments are requested.



**Transitional Islamic State of Afghanistan
Ministry of Health**

April 5, 2004

Mr. Bruce Mattweeff
The Louis Berger Group, Inc.
Street 13, Bldg. 5 & 6
Wazir Akbar Khan
Kabul, Afghanistan

Subject: Corrective action at the Qarabagh BCH.

Dear Bruce:

As per discussion with LBG engineer, Mr. Waheedullah at our CTF meeting on 04/31/03 and your subsequent meeting with Eng. Parwani at your office, the following is a list of corrective actions to be taken in order to meet the minimum criteria for acceptance and sign-off of the subject clinic by the MoH engineers

1. P-traps to be installed in all floor drains and plumbing fixtures. No vents were observed penetrating the roof. Installation of vents, specially for the water closet is imperative before finalizing the punch list.
2. There is a metal fume pipe installed for heating stoves. The chimney pipe is of light gauge sheet metal, which can be deteriorated and may cause fire in the wooden roof. Please change the metal chimney pipe with a better quality to minimize the fire hazard.
3. The sheet metal roofing is of light gauge quality and the nailing schedule is very loose. Even a low wind will cause vibration in the roof sheathing, which despite the physical damage to the sheathing will cause discomfort to the

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inhabitants. Although the optimal solution will be to change the existing light gauge material with a better quality sheet metal, but given the cost and time constraints associated with this process, improving the quality and spacing of the nailing to eliminate this problem will be to the satisfaction of this team.

The above three points are voted anonymously by the attendees of the CTF meeting and passed to you for corrective action. However, an independent report-furnished by Eng. Habibi, MSH, is attached for your record.

Sincerely yours,



Dr. Abudllah Sherzai
Admin. Deputy Minister, MoH

-----Original Message-----

From: Moseley, Charles (Kabul/IEEO)
Sent: Wednesday, May 12, 2004 11:47 AM
To: Mallay, Catherine (Kabul/OAA)

Subject: Schools and Clinics

Cathy,

This complements Peter's response to your message.

The contractor(s) with the flaws are school and clinic construction subcontractors to LBG under the REFS Program.

LBG alleges that they were encouraged by the contract and USAID to use local contractors and to out-sourced construction supervision to two NGOs (SFL and CHF). Due to staffing limitation, USAID's oversight of school and clinic construction has been limited to visits the model school in Kabul and the model clinic in Qalabagh (45 km from Kabul).

Recently a number of flaws in still-under-construction schools and clinics have been detected by LBG and others. They include the use of poor quality materials and failure to meet specifications such as in the use of steel rebar. It also appears that construction supervision by the NGOs has been deficient.

Such flaws are generally attributable to inexperienced workman and poor construction supervision (in this case by the NGOs).

I have asked Peter Jezek to continue on our side to oversee the construction of the 33 school and 72 clinic still assigned to LBG and to give special attention to identifying all flaws and having them corrected in line with the terms of the prime and sub-contracts including the contracts with the two NGOs.

His message lays out how he will go about that assignment.

I should add that contrast to the out-source supervision used by LBG, our proposed scope of work for IRD will require them to provide personnel to us who will work under our direct control, guidance and responsibility.

Charley

-----Original Message-----

From: Mallay, Catherine (Kabul/OAA)
Sent: Tuesday, May 11, 2004 7:44 PM
To: Moseley, Charles (Kabul/IEEO); Jezek, Peter (Kabul/IEEO)
Subject:

when either of you have a moment, can you tell me which contractor/projects financed the work with the construction flaws or unsat-performance discovered after completion, such as wall caving in when someone placed his hand on it, etc.. I want to least know for record and consider performance/supervision issues. But won't make a mountain out of a molehill. I just hope it really is a molehill. Thanks. - cathy

From: Moseley, Charles (Kabu/IEEO)
Sent: Monday, May 24, 2004 5:21 PM
To: Jim Myers

Subject: FW: May 15 Weekly Report, Revision 2

Dear Jim,

I am sorry to have to inform you that while your second revision of the May 15 weekly report is greatly improved, it still has serious and intolerable deficiencies that merit the serious attention of upper LBG management and which I must share with my colleagues as I circulate the report to them for their use as they deem fit.

1. In the narrative, no mention is made of the serious deficiencies that have surfaced recently in the quality control and quality control monitoring of schools and clinics.
2. Neither does the Report explain the cause(s) of serious delays being experienced in the completion of the schools and clinics or reason for the extraordinary costs that are reported in comparison with earlier reports. I refer specifically to these examples:

- a. Page A-9 Two building, 20 class-room model school in Kabul - \$688,404
- b. Page A-9 Single building 8-classroom school in Faryar, Maimana, Hemat Abad \$428,898
- c. Page A-9 Single building 8-classroom school in Helmand, Lashkar Gah, Lashkar Gah Bazar \$201,775
- d. Page A-12 Comprehensive Health Clinic in Paktiya, Jani, Khil Projah \$344,880
- e. Page A- 12 Comprehensive Health Clinic in Helmand, Nad Ali, Said Abad \$145,455

Certainly it is reasonable, especially in view of our recent letter and subsequent conversations, to expect and find in the narrative section clear and explicit explanations of both the extraordinary increase in school and clinic costs compared to what you had been reporting and an explanation of same and similar facilities having large differences in cost. In fact the narrative section for schools and clinics on page 19 is limited to 7 and four photos. The brief narrative and photos of the model school in Kabul suggest that the project is perfect or near perfect and ready to be turned over and inaugurated when in fact that is not the case. May 20 is shown on page A-9 as the finish date despite the unresolved grading and other problems. I must ask LBG be more forthcoming in identifying problems and delays including serious cost over runs.

2. All of the tables on pages A-2 through A-4 have a cost column and a total cost line. The problem is the gross lack of consistency in the figures reported. One or two of the tables refer to estimated cost, most simply refer to "cost" with out any sort of qualifier.

Some tables have a management and fees line and amount, some (School and Clinics tables) do not and in one

or two case a foot notes says that CLIN 1 (generally understood to be management and fee) are not included. How are we to understand and use such divergent and unexplained information?

3. All or most tables have a single "percent complete" column. The lack of a second "percent complete last period" column (which is customary for the construction industry) leaves LBG without a space to report and the reader/user of the report without a basis for understanding progress since the last report. I request that the second column be added to all tables and that careful attention be given to assuring the correctness and uniformity of reports and reported information.

These are a mere sampling of deficiencies. Rather than issue a 3rd revised report for the period ending may 15, please takes steps to assure that all information provided by LBG is full supported by fact and consistent. Later this week I will request a meeting with you and your senior staff to review and agree on changes on format and reductions in the frequency of reports.

This is official CTO guidance. Please retain a copy of this message in your project files.

Sincerely,

Charles Moseley.
Cognizant Technical Officer

-----Original Message-----

From: Mike Staples [mailto:mstaples@bergerafghanistan.com]
Sent: Saturday, May 22, 2004 4:30 PM
To: Moseley, Charles (Kabul/IEEO)
Cc: Jezek, Peter (Kabul/IEEO); Mark, Erika (Kabul/IEEO)
Subject: May 15 Weekly Report, Revision 2

Dear Mr. Moseley,

Mr. Myers has authorized me to transmit to you our Weekly Report for the week ending May 15, which has been revised in accordance with your instructions to Mr. Myers of May 17.

Best regards,

Mike

Mike Staples
Public Relations Manager
Louis Berger Afghanistan
Street 13, House 5-6
Wazir Akbar Khan,
Kabul, Afghanistan
Phone +93 (0) 70 220990

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5/24/2004

The Louis Berger Group Inc.
 Schools & Clinics Program
 QC Inspection Report

Contractor: RFCC

Province: Qarabaugh Kubul

District: Qarabaugh

Village: - Qala-e-Qazi

Date: 8/6/2004

Type of building: BHC

Item #	Description	inspected by	Corrected date
1	Replace eaves, soffets, &bird boxes	G Skipper	8/7/2004
2	Replace gutters	G Skipper	8/18/2004
3	Replace doors and frames and repaint	G Skipper	8/24/2004
4	Refinishwindows and frames and repaint	G Skipper	8/24/2004
5	Take out existing floor and wall tile.	G Skipper	8/24/2004
6	Install new tile grout only	Parwis	8/30/2004
7	Take out all ceiling and replace with drywall.	G Skipper	8-25-04
8	Replace hand rails and install hand rails to latrine and guard house	G Skipper	8-25-04
9	Fill all cracks in walls and repaint	G Skipper	9/4/2004
10	Center ceiling fans in rooms	G Skipper	9/4/2004
11	Replace glass in bathroom with obscure glass	Parwis	8/30/2004
	(Latrine) (redo steps on latrine,guard and entrance	Parwis	8/30/2004
1	Replace ceilings with M/R drywall.	G Skipper	8-25-04
2	Install proper light fixtures	Parwis	8/29/2004
3	Remove grout on all tile floors reinstall new grout.	G Skipper	9/7/2004
4	Square up window frames and repair cracks	Parwis	8/30/2004
5	Replace existings walls with M/R drywall and paint	Parwis	8/30/2004
	Guard house:		
1	Install light fixtures	G Skipper	9/7/2004
2	Replace ceilings with M/R drywall.	G Skipper	8/24/2004
3	Replace /repair door and frame and repaint entire building	Parwis	8/29/2004
	Boundry wall :	G Skipper	9/7/2004
1	Replaster wall and repaint	G Skipper	8/26/2004



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June 13, 2005

Dr. James Sarn, CTO, USAID
LTC Scott Short, Director, O/IEE
USAID Café Compound
Kabul, Afghanistan

Log#GG451-Clin2-958-2005

SUBJECT: LBG REFS Schools & Clinics Program – Disposition of Buildings Not Meeting UBC Seismic 4 Design Standards
a. MOPH Training Center (T1), Kabul
Job Order 21, Contract # 02-04-GG451-M-014
b. Yarwaran Comprehensive Health Clinic (C1), Badakshan
Job Order # 6, Contract # 02-04-GG451-M-013

Dear Jim and Scott,

As we discussed there are three possible alternatives in regard to the disposition of these two completed structures that do not meet UBC seismic design criteria.

1. One or both can be handed over to the MOPH "as is", if both the MOPH and USAID can agree on this;
2. Both buildings can be demolished / rebuilt in compliance with UBC seismic design criteria; or;
3. They can be retrofitted so as to ensure that they meet some level of seismic protection in accordance with professionally recognized standards and/or guidelines, other than the UBC, that are also acceptable to the MOPH and USAID.

While our structural consultant engineers, Amman & Whitney (A&W) did not recommend a course of action, we have researched this problem in terms of other seismic standards developed and used in other developing countries as suggested by Arif Parwani of the MOPH. Our research indicates that both of these buildings if construction quality is acceptable, might be termed seismically resistant and could further benefit from structural retrofitting that would result in their meeting an acceptable level of seismic protection.

We therefore seek USAID concurrence in choosing Alternative 3 above and proceeding with this work. Details of this plan implementation, its cost and schedule and its justification are attached. We also present additional background and information on this issue and the other two alternatives.

Please contact me if you have any questions and/or require additional information

Sincerely,

Michael McGovern, P.E.
Manager, REFS Irrigation & Dams;
Schools & Clinics

Concurrence:

cy Greg Schaeffer, USAID
Arif Parwani, MOPH
Frank Jordano, LBG/Wash

LTC Scott Short, Dir. O/IEE



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LBG REFS Schools & Clinics Program – Disposition of Buildings Not Meeting UBC Seismic 4 Design Standards

- a. MOPH Training Center (T1), Kabul
Job Order 21, Contract # 02-04-GG451-M-014
- b. Yarwaran Comprehensive Health Clinic (C1), Badakshan
Job Order # 6, Contract # 02-04-GG451-M-013

Background

In early 2004, the Louis Berger Group (LBG) was requested by USAID to investigate a more “locally and culturally understood Afghan building method” construction technique that might also afford less expensive seismic 4 criteria protection other than that being used in our then on-going schools and clinics design and construction program. LBG complied and reviewed other methods specifically a technique known here as the “Lego” system, which was rejected; and another that relied upon the use of reinforced adobe blocks.

We were also requested by USAID at the same time to include the MOPH in this effort in terms of capacity building by inviting them into the project development, design review, and construction management of the work. LBG and the MOPH settled upon carrying out this model project as the new Training Center immediately behind the MOPH HQ in Kabul as the location for this project so that MOPH facility engineers based in the Kabul HQ could be closely involved in the actual construction on a day to day basis. At the same time LBG added the Yarwaran CHC in Badakshan to this project as our existing contractor in Badakshan was having difficulties mobilizing to this site.

LBG issued a “design-build” contract to Afghan Global Services (AGS) to carry out these two projects and AGS essentially completed the work in late 2004. The contract contained the following clauses:

1. **Paragraph 1.4:** During the construction of the proto-type building, representatives from the Ministry of Health shall be invited to participate in the design and construction
2. Prior to the commencement of construction the Sub-Contractor shall have all design drawings and specifications approved by the Ministry of Health. All drawings presented for approval shall be certified by a structural engineer. *(AGS provided LBG with a certification from two Pakistani engineering firms located in Peshawar and Islamabad.)*

The entire program for these two buildings, and in particular, the Training Center, was to be a joint capacity building exercise with the contractor and the MOPH. In fact AGS worked closely with the MOPH during design and construction, where daily visits by the MOPH engineers were made to the job site in Kabul. And as noted, both buildings are essentially complete. Some unresolved (non-seismic related) quality issues remain at each site.

In December 2004, USAID staff requested that LBG provide a certification from a US based qualified professional engineer that the buildings met recognized seismic 4 protection criteria. LBG communicated with A&W on this in January and February. LBG sent the certified structural engineering design notes that were submitted by AGS to LBG in early 2004 to A&W. A&W noted in an e-mail message to LBG in February that the MOPH Training Center and the Yarwaran Clinic did not meet UBC seismic Zone 4 or Zone 2A criteria. LBG communicated this to USAID and to AGS.



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AGS requested additional time to submit revised structural engineering notes and technical documentation to support their claim that in fact the buildings do meet Seismic 4 design criteria. LBG received this documentation from AGS in mid March and submitted this to A&W in Washington, D.C. The April 21, 2005 letter from A&W is definitive in its earlier findings that both buildings do not meet UBC seismic Zone 4 or Zone 2A criteria and the design notes and documentation are inadequate and incorrect. From late April through May, USAID, the MPH and LBG have attempted to find a solution that involved transferring the Training Center to the MOPH "as is" with the MOPH providing oversight to the contractor, AGS, to correct the remaining deficiencies. This plan was not acceptable to USAID legal counsel due to potential liability issues.

Three Alternative Solutions to This Issue

There are three obvious possible resolutions to this problem as follows.

1. **One or both can be handed over to the MOPH "as is", if both the MOPH and USAID can agree on this:**

This alternative has already been rejected by USAID due to possible USG liability and exposure issues that might arise in the event of a total building or building system failure after hand-over, even in the event the MOPH provided written assurance to assume such liability.

2. **Both buildings can be demolished / rebuilt in compliance with UBC seismic design criteria**

The contractor AGS is solely responsible under the terms of the contract to provide certification by a registered engineer that the building meets seismic 4 design criteria. The contractor provided this certification to LBG but it has been found to be suspect and incorrect. The contractor is responsible for this failure to meet this crucial and specific contract condition. Theoretically, this alternative then could be contractually pursued. LBG could give notice to the contractor to raze these buildings, dispose of the materials, and design-build replacement UBC seismic 4 structures.

The contractor was given a copy of the A&W analysis by LBG and has prepared a letter disputing the findings of the analysis. If LBG were to give notice to the contractor to remedy this problem as noted above, a dispute would likely ensue. Further they say that they have complied with the contract conditions. In any event, this dispute resolution would take time and needless effort as the contractor's design would be found unacceptable. Assume this would take at least one month. The contractor would then re-design the structures, and then rebuild them. Given that there are five and half months left in this 2005 construction season, it is estimated that this work would not be completed until May of 2006.

This scenario assumes the contractor has the financial resources to fund the demolition and disposal of the existing buildings, the re-design, survey, the reconstruction of the two buildings, and the project / construction management. Table 1 shows the CLIN 2 sunk costs in these existing two buildings now vs. assumed replacement costs for the Yarwaran CHC and the Training Center. The replacement costs are simply assumed to be the existing costs plus 10 percent.



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TABLE 1 MOPH Training Center and Yarwaran CHC Costs

	Yarwaran CHC	Training Center	Totals
1 Cost of Existing Buildings (CLIN2)	\$ 151,501	\$ 172,664	\$ 324,165
Cost for Replacement Remedy			
2 Estimated Demolition and Disposal	\$ 25,000	\$ 25,000	\$ 50,000
3 Estimated Cost of Replacement, Re- Design, Survey, PM/CM	\$ 166,651	\$ 189,930	\$ 356,581
Total Remedy -- Cost Estimate	\$ 191,651	\$ 214,930	\$ 406,581

We have spoken to the contractor, AGS, about this and they have said that they would not be able to respond to such a call to remedy the problem. They do not possess the financial resources to carry out this work.

Clearly, this alternative is a non-starter. Traveling down this path would also result in all sunk costs and funding being wasted and AGS' future being possibly comprised; resulting in the loss of a potentially viable contributor to future Afghan reconstruction efforts.

3. The buildings can be retrofitted so as to ensure that they meet some level of seismic protection in accordance with professionally recognized standards and/or guidelines, other than the UBC, that are also acceptable to the MOPH and USAID

We have met with Arif Parwani of the MOPH and asked him what seismic standards are in use by the GOA. He says that the GOA has used UNESCO standards. He said that UNESCO has played a major role in the study and information dissemination of earthquake and seismic hazard data in Afghanistan over the past 40 years. We looked for UNESCO standards in Afghanistan without luck but did find them on the WEB¹. We also found a great deal of information on developing and implementing seismic design and construction practices in developing countries.

Our reading of these sources indicates that both AGS buildings include elements of seismic resistance, such as reinforced grade and bond beams and reinforced walls, and multiple structural cells or rooms. Weaknesses include lack of RCC columns between the grade and bond beams and the stone masonry foundation. It is also possible that the roof system may be defective. Attached is a copy of UNESCO Educational Building Report 13

This alternative may be feasible if USAID and the MOPH could agree to accept two retrofitted buildings that meet some definition of seismic resistance based on UNESCO criteria in Building Report 13. If this is possible, we propose the following work tasks:

1. Locate and engage a structural engineer with a seismic protection specialty in developing countries for a five week STTA assignment;
2. Send the as built drawings of both structures to the engineer and let him/her determine if the buildings are candidates for retrofits that would allow them to become seismic resistant to a level of acceptability to the MOPH and USAID;

¹ Arya A.S., *Projection of Education Buildings against Earthquakes*, Educational Building Report 13, UNESCO Principal Region Office Asia Pacific Bangkok, Thailand 1987



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All actions following this point become part of a continued capacity building exercise with both MOPH engineers and AGS engineers.

3. If this possibility exists, engineer travels to Afghanistan, inspects the two buildings and assists LBG, AGS and the MOPH on developing drawings and specifications for retrofitting these structures so they meet seismic resistance guidelines;
4. The engineer also works with LBG, AFS, and MOPH staff to ensure that any other building deficiency such as truss and roof viability is addressed;
5. The engineer also meets with USAID staff on retrofitting existing school and clinic buildings under the overall USAID program of school and clinic rehabilitation;
6. The engineer provides a half day workshop for MOPH and MOE engineers on rehabilitating structures and retrofitting them for seismic resistance;
7. Based on the engineer's direction, AGS, LBG, and the MOPH develop retrofit plans for both buildings;
8. LBG modifies AGS' contract to carry out the retrofits. AGS builds the retrofits.
9. LBG turns buildings over to USAID. USAID turns buildings over to MOPH.

Illustrative Schedule:

- | | |
|--|---------------------|
| 1. Locate and engage engineer | June 15 – July 1 |
| 2. Send engineer drawings and documentation | July 1 |
| 3. Engineer reviews documents, rules on plausibility | July 8 |
| 4. Assume feasible, engineer travels and arrives in Kabul | July 15 |
| 5. Engineer travels to Badakshan site | July 22 |
| 6. Engineer prepares retrofit plan with LBG, AGS, and MOPH | July 23 – August 10 |
| 7. Engineer holds half day workshop | August 11 |
| 8. Engineer leaves Afghanistan | August 15 |
| 9. LBG, AGS, MOPH finish retrofit drawings and specs | August 30 |
| 10. LBG modifies AGS contract | August 30 |
| 11. AGS completes construction | August 30 – Nov 20 |
| 12. Handover | December 1 |

Illustrative Budget

This budget assumes a retrofit design will be possible and assigns a general allowance estimate for each of the two buildings.

		rate	units	total
Structural Engineer STTA				
1	Salary	per day	\$ 500	30 \$ 15,000
2	Uplifts	LS		\$ 7,500
3	Per diem		\$ 40	30 \$ 1,200
4	Travel and Lodging	LS		\$ 5,000
5	Workshop materials	LS		\$ 1,000
Construction Allowance				
6	Yarwaran Retrofit	LS		\$ 60,000
7	Training Center Retrofit	LS		\$ 75,000
				\$ 164,700
	Contingencies	@	15%	\$ 24,705
Grand Total Estimate				\$ 189,405