

PD-ABW-346

**CONSTRUCTION AND OVERSIGHT OF
VOCATIONAL/TECHNICAL EDUCATION CENTERS IN
HONDURAS:
ANALYSIS, RECOMMENDATIONS, AND
PROPOSED WORK PLAN**

APRIL 2000

Prepared by

Claudio Fortunato, P.E.

For

DEVTECH SYSTEMS, INC.

1629 K Street, NW, Suite 1000

Washington, DC 20006 USA

Tel: 202/296-8849

Fax: 202/296-4884

devtech@devtechsys.com

Contract No. 522-C-00-00-00243-00

USAID/Honduras

DEVTECH

A

Claudio D. Fortunato, P.E.
DEVTECH International Consulting Engineer

1124 Lake Francis Drive
Apopka, FL 32712-2114
Telephone (407) 464-0828
Facsimile (407) 464-0838
Cellular (407) 310-8910
Email: CDFConsult@aol.com

MEMORANDUM TO THE FILES

Contract No. 522-C-00-00-00243-00
Site Visit No. 000328-0401 – Tegucigalpa, Honduras
March 28 – April 1, 2000

Scope of Work

During this visit, we intended to examine, analyze, and make observations regarding the bid package documents and recommend a plan of action for the start of construction of some eleven Vocational/Technical Education Centers throughout Honduras.

People Met

Chronologically, we met

Ron Saunders	DEVTECH Chief of Party
Angela Stassano	DEVTECH Consulting Architect
Donald (Duca) Hart	DEVTECH Consulting Monitoring/Evaluation Officer
Michael Lofstrom	DEVTECH Consulting Program Director
John Helwig	USAID/Honduras PSC for Human Resources
Diane Leach	USAID/Honduras Human Resources Officer

Documents Examined

Upon arriving to the office, we found a folder containing several 8 ½ x 11 pages of previously built centers grouped and held by paper clips that would represent bid documents. Since we did not find the information in logical order, we immediately began to examine it and classified it as follows:

Location of Center	Facility	pp	Description
El Mochito Santa Barbara	1) Admin/Tech. Center for Industrial Tailoring (<i>Area Administrativa y Technica en Corte y Confeccion Industrial</i>)	3	Incomplete architectural, lighting, and electrical plans for a 25.3m by 12.3m building with 2m longitudinal sidewalks at each side
	2) Technical Center for Industrial Maintenance (<i>Area Technica de Mantenimiento Industrial</i>)	3	Incomplete architectural, lighting, and electrical plans for a 32.3m x 12.3m building with 2m longitudinal sidewalks at each side
	3) Technical Center for Industrial Minerals (<i>Area Technica de Minería Industrial</i>)	3	Incomplete architectural, lighting, and electrical plans for a 32.3m x 12.3m building with 2m longitudinal sidewalks at each side
Choloma Cortes	4) Admin/Tech. Center for Industrial Tailoring (<i>Area Administrativa y Technica en Corte y Confeccion Industrial</i>)	3	Incomplete architectural, lighting, and electrical plans for a 25.3m x 12.3m building with 2m longitudinal sidewalks at each side
	5) Technical Center for Industrial Maintenance (<i>Area Technica de Mantenimiento Industrial</i>)	2	Incomplete architectural and lighting/electrical plans of a 35.3m x 12.3m building with 2.0m longitudinal sidewalks at each side
	6) Auto Mechanics Center (<i>Area Technica de Mecanica Automotriz</i>)	3	Incomplete architectural, lighting, and electrical plans for a 32.3m x 12.3m building with 2m longitudinal sidewalks at each side
Peña Blanca Cortes	7) Domestic Tailoring Center (<i>Area Technica de Sastreria y Corte y Confeccion Domestica</i>)	2	Incomplete lighting and electrical plans for a non dimensioned building
	8) Cabinet Making Center (<i>Area Technica de Ebanisteria</i>)	1	One incomplete lighting plan for a 42.99m! x 15.54m! building with 2.53m! longitudinal sidewalks at each side
	9) Cabinet Making Center (<i>Area Technica de Ebanisteria</i>)	1	One incomplete electrical plan for a 32.3m x 12.3 building with 2.0m longitudinal sidewalks at each side
	10) Auto Mechanics Center (<i>Area Technica de Mecanica Automotriz</i>)	2	Incomplete lighting and electrical plans for a 32.3m x 12.3m building with 2.0m longitudinal sidewalks at each side
Jorge de Lagos San Marcos De Colón	11) Electrical Layouts	6	Symbols and electrical system layout for the site as a whole and for each building

Jorge de Lagos La Entrada, Copán	12) Electrical Layouts	9	Symbols and electrical system layout for the site as a whole and for each building
Cev Gracias Lempira	13) List of commodities	25	Several non-sequential lists of commodities needed for various departments
	14) Work Schedule (<i>Flugograma de Obra</i>)	2	Gantt chart from March to September about construction of one Vocational/Technical Education Center
Unidentified Site(s)	15) Multi Purpose Administration/Classroom (<i>Area Administrativa y Aula de Usos Múltiples</i>)	1	Incomplete architectural plan of a typical 16.30m x 10.3m building with a 2.0m sidewalk at each end
	16) Auto Mechanics Center (<i>Mecánica Automotriz</i>)	1	Incomplete architectural plan for a 32.3m x 12.3m building with 2.0m longitudinal sidewalks at each side
	17) Architectural building elevations	4	Signed incomplete long side elevations of typical 32.3m x 12.3m buildings
	18) Toilets (<i>Servicios Sanitaria</i>)	1	Detailed plan of 11.0m x 3.90m Men's and Women's Toilets
	19) Structural drawings	3	Signed incomplete structural floor plans for 32.3m x 12.3m buildings 1, 1A, and 1B
	20) Building Cross-Section	1	Incomplete architectural and some structural details of typical 16.3m building cross section

All of the above documents are appended in Appendix 2 of this report.

What is a Bid Package?

Generally, to be acceptable to USAID financed projects a bid package shall be written in English or bilingual. Before issuing Invitations for Bids, prototype bid packages (one for each Vocational/Technical Education Center) must be submitted to the DEVTECH Consulting Engineer for review. Each bid package shall consist of:

- A confidential cost estimate for the exclusive use of DEVTECH and the *Non Government Organization (NGO, Owner)*
- The notice and the instruction to bidders.
- The bid form, including a bid-price schedule, if bidding is for unit price contracts.

- The proposed contract for construction services that includes USAID mandatory clauses as per Enc[4].
- The following technical documents, needed to prepare competitive tenders:
 - The *Initial Environmental Examination (IEE)*, as per Enc[1]
 - The *Soil/Foundation Report* by a soil engineer. *This report will ascertain that the observed and tested subsoil material is adequate to support the structure upon a foundation system recommended by the examining soil engineer.*
 - The design drawings and technical specifications signed by the designing *Architectural Engineer (A&E)*. *Design drawings shall consist of but not limited to*
 - *Civil drawings showing the site plan, complete with existing and finished grades, improvements needed to protect the building(s) from floods or other endangerments, sewage disposal, and electrical supply system.*
 - *Architectural floor and roof plans and details showing wall location and opening dimensions, typical wall sections, openings and finish schedules and details, typical details between and/or connection to various construction materials, and roof drainage details.*
 - *Structural foundation and floor plans and details, reinforced concrete framework (column and beams) and reinforcing details, anchorage and connection details, and roof framing plan and details.*
 - *Mechanical and Plumbing plans and diagrams showing provisions for ventilation, air conditioning (where applicable), and water distribution/evacuation system.*
 - *Electrical plans, schedules, diagrams, and details including power distribution and lighting systems.*

The technical specifications signed by the A&E. *The specifications shall identify the quality of construction materials to be used and the methods of application, testing, and measurement in accordance with governing building construction codes.*

- Other applicable contractual documents, such as bid and performance bond forms, insurance requirements, et cetera.

Problems and Proposed Solutions

01. We could identify no one site of the eleven new Vocational/Technical Education Centers.	A. <i>Accelerate the identification of and the NGO responsible for each new site.</i>
---	---

<p>02. None of the architectural drawings we examined could be included in bid packages.</p>	<p>A. <i>A Professional A&E firm shall prepare bid packages.</i></p> <p>B. <i>Before retaining an A&E firm, its principal shall submit, for DEVTECH Consulting Engineer's review and approval, executed qualifying forms SF-254 and SF-255. These forms are available on the Internet, at http://www.gso.gov/forms. (One must perform and install a free download of Acrobat Reader – an engine that lets one read and print the forms.).</i></p> <p>C. <i>Retain an A&E firm staffed by at least one architect, one soil engineer, one structural/civil engineer, one mechanical/electrical engineer, a survey crew, and draftsmen.</i></p> <p>D. <i>Assure that the scope of work of the retained A&E firm contains minimum requirements as per Enc[2] and Enc[3].</i></p>
<p>03. Absence of a required list of commodities for each building at each new Vocational/Technical Education Center.</p>	<p>A. <i>DEVTECH will elaborate a list of commodities, in cooperation with each Owner, after studying the list for similar buildings included in various reviewed plans and document 13.</i></p>
<p>04. Standard building sizes. <i>Most of the plans we examined indicate buildings measuring 32.3m x 12.3m. We also observed units measuring 35.3m x 12.3m, 42.99m! x 15.54m!, 25.7m x 12.3m, 12.3m x 10.3m, and one restroom building (or area) of 11.0m x 3.9m.</i></p> <p>... 04. <i>Standard building sizes (continued)</i></p>	<p>A. <i>A&E to review space requirements with each Owner and/or DEVTECH and calculate building dimensions following modular units (one adobe occupies a space of 0.10x0.2x0.3).</i></p> <p>B. <i>Avoid odd dimensions because this practice generates higher costs and, at times, less than desirable workmanship.</i></p>

	<p>C. For each standard building type and before conducting a site survey and obtaining a soil/foundation report from the soil engineer, the A&E firm may design only superstructures (i.e., all the construction above the top of the slab on grade).</p> <p>D. USAID requires that all buildings financed with federal funds be made accessible and useful to physically challenged individuals. Hence, the A&E must design ramps, specially designed toilets, and aisles accessible with a wheelchair.</p>
<p>05. Lack of access to toilets for physically challenged individuals.</p>	<p>A. For this problem and other considerations, see handwritten notes on the reviewed plan 18)1/1.</p>
<p>06. Possible clogging of roof drainage gutters and downspouts due to questionable maintenance and high location of the gutters.</p>	<p>A. The A&E designer may consider eliminating gutters and downspouts allowing rain to naturally fall around the buildings. Rainwaters may be collected and dispersed by a peripheral gravel bed and/or a foliage hedge. The latter may also serve to hinder intrusion of dust through open windows.</p>
<p>07. Undesirable interior columns.</p>	<p>A. The interior column, shown in the reviewed plans 19), may be eliminated by properly designing the roof ridge beam to accept the spine beams at each end of the building. See notes on the reviewed plan 19)1/3.</p>
<p>08. Massive roof trusses.</p>	<p>A. The roof truss design can be improved and material saved if the A&E designer would follow the proposed details shown on the appended Enc[5].</p>

	<p>B. <i>The A&E designer should consider the proposed truss configuration at 3.0m spacing, as opposed to 6.0m, which may generate added strength and overall economy.</i></p>
<p>09. <i>Absence of spandrel reinforced concrete beams. Columns and trusses alone are not sufficient to stabilize the building structure. Coupled with thin adobe walls, as shown on the reviewed drawing 20), and a roof deck unable to absorb lateral compression, when subject to high winds, should the frame collapse, the domino effect would destroy the building.</i></p>	<p>A. <i>Pour 0.3m x 0.5m reinforced concrete spandrel beams at top of columns and use minimum 0.3 thick adobe walls at each short end of the building with a 0.3m x 0.3m reinforced concrete bond beam at the top.</i></p> <p>B. <i>Adobe non-bearing walls between columns along the longitudinal elevations may be 0.2m thick (minimum 1/20 of the height) terminating at the top with a 0.2m x 0.2m reinforced concrete bond beam.</i></p> <p>C. <i>The A&E to determine the clear height of the building in accordance with cultural and practical needs. A reduced height could increase strength and reduce cost.</i></p>
<p>10. <i>Undersized column footings and grade beams. To prevent contamination to and rusting of the reinforcement in concrete poured against earth, construction norms dictate that the minimum concrete cover over such reinforcement shall not be less than 0.08m.</i></p> <p>...10. <i>Undersized column footings and grade beams (continued)</i></p>	<p>A. <i>Foundations and slabs on grade must be designed and detailed for each building at each new Vocational/ Technical Education site.</i></p> <p>B. <i>The proper design of foundations and slabs on grade depends, on the one hand, from the magnitude of the overburden (dead, live, and incidental loads – such dynamic, seismic, and wind) and, on the other hand, from the nature and strength of the subsoil, which may vary not only from building to building but, sometime, also within the same building.</i></p>

	<p>C. Not only should the A&E design each foundation for its specific location, but also the effective sizes shall be increased by the minimum concrete cover of 0.08m required over all reinforcement poured against earth.</p> <p>D. The A&E must design grade beams to support the weight of the adobe wall and transmit lateral seismic and/or wind loads to the adjacent soil.</p>
<p>11. Inadequate slab on grade. The reviewed documents show a continuously poured 0.1m non-reinforced concrete slab. Building construction norms dictate that slabs on grade for public and/or light industrial use shall be no less than 0.15m thick and reinforced with no less than 0.01 diameter bars spaced at 0.2m at each direction and placed at 0.03m from the top surface.</p>	<p>A. Increase the thickness of and adequately reinforce the slab on grade.</p> <p>B. After properly compacting the selected base material, pour the concrete slab alternatively in checkerboard pattern panels, of about 6.0m x 6.0m, to reduce the effects of shrinkage due to curing.</p> <p>C. To obtain a sound concrete surface, cure the slab by keeping it continuously wet for the first seven days and before pouring the remaining sections. Repeat the same procedure for these last sections.</p> <p>D. Isolate and thicken the slabs to minimum 0.20m under each vibrating heavy appliance or machine. When the weight of the machine exceeds 500Kg, the mass of the supporting slab should be at least twice the weight of the machine.</p>

Proposed Work Plan

After reviewing, analyzing, and rating the documents available for examination and discussing present obstacles with Mr. Saunders and Ms. Stassano, we recommend the following work plan:

Task	Description	start	finish
1.	Identify all sites	APR 2000	OCT 2000
2.	Negotiate contract with A&E firm	APR 2000	APR 2000
3.	Design typical superstructures	MAY 2000	JUL 2000
4.	Survey sites and soils	MAY 2000	NOV 2000
5.	Design sites and foundations	JUN 2000	DEC 2000
6.	Negotiate contract for ADOBE	APR 2000	APR 2001
7.	Manufacture ADOBE	MAY 2000	MAY 2001
8.	Approve bid packages	JUL 2000	JAN 2001
9.	Advertise for tenders	JUL 2000	JAN 2001
10.	Sign new construction contracts	SEP 2000	MAR 2001
11.	Erect new construction	OCT 2000	DEC 2001

The above work plan makes no reference to the rehabilitation of existing Vocational/Technical Education Centers in disrepair... At this time, it is impossible to predict a work plan for this component of the project because we have no knowledge of the extent and complexity of treatment needed by each center. Once identified and surveyed, we will be able to prepare a meaningful work plan for the rehabilitation of existing centers.

Conclusions and Recommendations

The construction component of the project is in no shape to be implemented at this time because no bid packages are ready for approval and tenders cannot be obtained. We recommend that DEVTECH will, without delay, (a) retain an A&E designer to immediately begin to prepare bid packages and (b) advertise and contract for the production of adobe material.

ENCLOSURE [1]

Initial Environmental Examination (IEE) of Facilities Constructed or Renovated Using Federal Funds

1. Whoever may have construction or renovation components in their grants shall submit an Initial Environmental Examination to the DEVTECH Consulting Engineer for the proposed sites when requesting approval of bid documents. The A&E Designer or a qualified Environmental Specialist may perform this examination.
2. At a minimum, the IEE shall include the following:
 - a. Site plan, showing the location of the facility (or facilities) to be constructed or renovated. For new construction, the plan shall indicate existing and finished contours.
 - b. Completed "Initial Environmental Examination" form (copy attached).
 - c. Potential environmental concerns identified in b., above, with a brief descriptive report including proposed mitigating measures and a plan to safely dispose of medical waste, when applicable.
 - d. Photographs showing the existing conditions.
3. The writer of the IEE shall submit a certificate stating that the approach or methodology employed to accomplish the proposed construction or renovation will be, at a minimum, in compliance with the Environmental Regulations of Honduras.
4. After reviewing the IEE, the DEVTECH Consulting Engineer may require the NGO to include specific environmental protection actions in the construction or renovation contract documents.
5. The construction site plans shall prominently display the following directive in bold letters:
"The Contractor shall comply with the appropriate contract clauses and local regulations to protect the environment."

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

Name and location of the Vocational/Technical Education Center

Address: _____

Name and location of the Owner (NGO):

Address: _____

ENVIRONMENTAL CONCERNS	EXISTING CONDITIONS (WITHOUT CONSTRUCTION or RENOVATION OVER \$150,000)	POTENTIAL PROBLEMS (DUE TO CONSTRUCTION or RENOVATION OVER \$150,000)	PROPOSED MITIGATION MEASURES

NOTES:

- a. An Engineer or an Environmental Specialist, experienced with projects of comparable size and complexity, shall do environmental examination of a construction/renovation. S(he) will be familiar with Honduran environmental regulations.
- b. The Engineer/Environmental Specialist shall recommend specific measures so that, when completed, the facilities will not cause any unacceptable environmental impact.

INITIAL ENVIRONMENTAL EXAMINATION NARRATIVE OUTLINE

1. Background And Activity Description

Describe why the activity is desired and appropriate, and outline the proposed key activities. Provide a current activity description and the purpose and scope of the IEE (if an amendment, why needed and what it covers).

- a. Background
- b. Description of Activities
- c. Purpose and Scope of this IEE

Environmental Baseline Information

This section is critical and should briefly assess the current physical environment that might be affected by the activity. Depending upon the proposed activity, this could include an examination of land use, geology, topography, soil, climate, groundwater resources, surface water resources, terrestrial and aquatic communities, environmentally sensitive areas (i.e., wetlands or protected species), agricultural cropping patterns and practices, infrastructure and transport services, air quality, demography (including population trends and projections), cultural resources, and the social and economic characteristics of target communities.

The information obtained through this process should serve as an environmental baseline for future environmental monitoring and evaluation. Be selective in the environmental information you provide, as it should be specific to the activity being proposed because more information than necessary is undesirable.

Finally, indicate the status and applicability of Honduran programs and procedures in addressing natural resources, the environment, and other related issues.

- d. Location Affected
- e. Environmental Policies and Procedures

2. Evaluation Of Activity Issues With Respect To Environmental Impact Potential

This section of the IEE is intended to define all potential environmental impacts of the activity or project, whether they are direct, indirect, beneficial, undesired, short-term, long-term, or cumulative.

3. Recommended Mitigating Actions

For each proposed activity or major component recommend whether a specific intervention included in the activity should receive a categorical exclusion, negative determination (with or without conditions), positive determination, etc. Recommend what is to be done to avoid, eliminate, or compensate for environmental impacts. For activities where there are expected environmental consequences, incorporate in such activities appropriate environmental monitoring and impact indicators and an evaluation plan.

- a. Recommended IEE determination
- b. Mitigation
- c. Monitoring and Evaluation

4. Summary Of Findings

Summarize the proposed environmental determinations and recommendations.

- a. Environmental Determinations
- b. Conditions

ENCLOSURE [2]

Minimal Scope of Work Requirements For Design Services Contracts Using Federal Funds

1. GENERAL

AGREEMENT

Made in *(location)*, this *(nth)* day of *(month)* in the year of *(year)*

BETWEEN

(name)
(address)

the Employer,

and

(name)
(address)

the A&E Designer.

The Employer wishes to construct eleven new Vocational/Technical Education Centers throughout Honduras, hereinafter referred to as "Facilities."

The Employer and the A&E Designer have agreed on a fix price for professional services in accordance with Attachment A, appended to this contract.

2. DESIGN DRAWINGS and SPECIFICATIONS

- a. Before initiating work on plans and technical specifications, the A&E Designer and the Employer will arrange a program of site surveys. They will discuss needs of subsoil investigation, utilities, space requirements, and any other pertinent data needed to
 - i) Prepare an initial environmental evaluation (IEE), in accordance with Honduran codes and requirements, and
 - ii) Execute a soil exploration program to determine the type of safe foundation that will be used, in accordance with sound engineering principles and Honduran building codes.

- iii) In addition to the IEE and a soil/foundation report, the A&E Designer will design and prepare a set of plans, technical specifications, and cost estimate as directed by the Employer. The A&E Designer will use metric standards of measurement and take into consideration economy of construction methods and materials locally available.
- b. The final drawings and technical specifications will be complemented by
- i) A soil report with a soil engineer's recommendation for type of foundation to be used, and
 - ii) The initial environmental evaluation report (IEE Report).

They shall also include provisions for all civil, architectural, structural, electrical, mechanical, and plumbing disciplines illustrating complete and functioning Facilities. All plans and specifications must be in English or bi-lingual.

- c. Design drawings and technical specifications shall include all details and considerations necessary for a builder to construct the Facilities, such as, but not limited to:
- i) Site Work, including existing and final contours, sewage disposal, power supply system, drives, parking areas, curbs, retaining walls, culverts and end-walls, et cetera.
 - ii) Architectural, including plans, elevations, wall sections, construction details, hardware and finishing schedules, waterproofing, sundries, et cetera.
 - iii) Structural, including framing and concrete reinforcement layout, bar schedules and bending diagrams, bearings and connection details, et cetera.
 - iv) Electrical, Security, and Communications including wiring diagrams, lighting fixtures, control panels, et cetera.
 - v) Mechanical, including air conditioning and/or ventilation systems, as may be applicable.
 - vi) Plumbing, including pipe diagrams and schedules, fixtures, et cetera.

4. TENDER DOCUMENTS (BID PACKAGE)

- a. Upon completion of drawings and technical specifications, the A&E Designer shall compose all necessary documents needed by prospective bidders to submit tenders. In addition to final drawings and technical specifications, the bid package shall include, but not limited to the following:
- i) A cover letter inviting and instructing bidders.
 - ii) A form of tender for fixed unit cost contract containing the bill of quantities.
 - iii) Standard forms for Performance Bonds or Guarantees, as applicable.
 - iv) A standard agreement containing USAID mandatory clauses.
 - v) General and Special Conditions of the construction contract.
 - vi) The Soil/Foundation report.
 - vii) The IEE Report.

- b. Before advertising for public tender, a copy of the bid package will be submitted to the Employer and to the DEVTECH Consulting Engineer for their review and approval together with a final cost estimate, which is for the exclusive use of the Employer.
- c. After receiving comments and approvals by the Employer and the DEVTECH Consulting Engineer, the A&E Designer will make any necessary correction or add any necessary items as required. The A&E Designer will then proceed with generating as many final bid packages as needed to be distributed to bidders to secure competitive tenders, in accordance with Honduran practices.
- d. After receiving tenders, the A&E Designer will chair an evaluation panel, composed of members of his technical team and of the Employer, evaluate them and make written recommendations to the Employer. If so required, the A&E Designer will assist the Employer in negotiating with the successful bidder a contract for construction of the Facility or Facilities.

ATTACHMENT A

This form must be submitted with the proposed contract for Professional services and is subject to USAID and/or DEVTECH's Consulting Engineer's approval. Please, execute in its entirety, sign and affix the date.
(If any entry is not applicable, mark it "NOT APPLICABLE")

ANALYSIS OF PROPOSED COST –FIX PRICE

(name of firm)	(signature)	(date)		
ITEMS	WORK-MONTHS	LOCAL CURRENCY COSTS (IN U.S. DOLLARS)	U.S. COSTS	TOTAL COST (U.S. DOLLARS)
1. home-office salaries ¹				
2. overhead on home-office salaries ² (rate ___ %)				
3. field Staff salary at base pay ¹				
4. field staff differential (if any) (rate ___ %)				
5. fringe benefits (payroll costs)				
6. overhead on field staff salaries ² (rate ___ %)				
1. Subtotal (1 through 6)				
8. travel and per diem – personnel a. travel and per diem within Honduras				
9. transportation – personal baggage				
10. transportation – household effects				
11. transportation – equipment and supplies				
12. other direct costs: a. insurance b. miscellaneous ³				
13. Subtotal (8 through 12)				
14. GRAND TOTAL (7 plus 13)				
15. PROFIT OR FEE				
16. TOTAL FIX PRICE				

¹ List individual salaries on Schedule 1

² Items included in overhead shall not be included in other items in cost breakdown and overhead shall not be applied to field staff differential. Rates are determined by and subject to periodic audits.

³ Itemized separately on Schedule 2

ENCLOSURE [3]

Minimal Scope of Work Requirements For Inspection Services Contracts Using Federal Funds

1. GENERAL

AGREEMENT

Made in (location), this (nth) day of (month) in the year of (year)

BETWEEN

(name)
(address)

the Employer,

and

(name)
(address)

the A&E Inspector.

The Employer wishes to construct eleven new Vocational/Technical Education Centers throughout Honduras, hereinafter referred to as "Facilities."

The Employer and the A&E Designer have agreed on a fix price for professional services in accordance with Attachment A, appended to this contract.

2. OBJECTIVES

The A&E Inspector is the representative of the Employer. In such function, the A&E Inspector will look after the Employer's interest in regards to the construction of the Facilities. The objectives of the A&E Inspector are to provide engineering supervision and inspect the Facilities to assure that the Contractor's performance is satisfactory, and guarantee that the Facilities are executed in conformance with the plans, specifications, the general conditions, and the special requirements of the Construction Contract.

3. SCOPE OF WORK

a. Authorities

As the representative of the Employer, the A&E Inspector will exercise the following authorities:

- i) Receive from the Contractor, on behalf of the Employer, all correspondence, documents, and reports and review them to assure that they are in accordance with the terms of the Contract.
- ii) Render technical interpretations of the plans, specifications, and test results acting as a technical advisor on any Employer/Contractor dispute, which may arise during the course of the construction.
- iii) Inspect the Contractor's work during construction.
- iv) In cooperation with the Employer, approve the construction schedule, materials, and workmanship.
- v) In cooperation with the Employer, reject any of the Contractor's work, which does not conform to approved plans and specifications.
- vi) In cooperation with the Employer, authorize and approve construction change orders.
- vii) Verify Contractor's invoices and, in cooperation with the Employer, authorize progress payments by the Employer.

4. SERVICES

In addition to exercising the authorities vested in section 3.a above, the A&E Inspector services shall include, but not limited to the following functions:

- i. Observe Contractor's performance to assess that it conforms with the terms of the Contract;
- ii. Review any proposal of change in construction made by the Contractor and submit recommendations to the Employer as to the need for such change (indicating the amount of increase or decrease in cost and the extension or reduction in time involved, if any) in order to secure their approval;
- iii. Assure that laboratory tests of materials and workmanship are in accordance with the terms of the Contract;
- iv. Perform the inspection of the construction of the Facilities to include, but not limited to the following:
 1. Foundation excavation;
 2. Footings, walls and columns, beams and slabs, after placement of reinforcement and prior to pouring concrete;
 3. Concrete placement and masonry construction;
 4. Water mains, pipes and joints, before backfilling or embedding;
 5. Waste water system, prior to backfilling;
 6. Electrical wiring and installations;
 7. All plumbing installations;

8. Supervise and evaluate all testing as required by the Contract;
 9. Security system installation;
 10. All timber framing, carpentry work, and finishing, for workmanship and materials, which include roof framing, windows, doors, painting, moldings, trimming, etc.
 11. Site improvement and landscaping.
- v. Prepare monthly progress reports on the Contractor's performance (the reports shall include analysis of any problem or delays affecting the performance of the Contractor and recommendations as to means of correcting the situation); and
- vi. In cooperation with the Employer, conduct the inspection for provisional and/or final acceptance of the Facilities to be performed in accordance with the terms of the Contract.

ENCLOSURE [4]

USAID MANDATORY CLAUSES To be included in all CONSTRUCTION SERVICES CONTRACTS Financed by USAID

A LEGAL EFFECT of USAID APPROVALS and DECISIONS

- i. The parties hereto understand that this contract has reserved to USAID certain rights such as, but not limited to, the right to approve the
 1. Terms of this contract,
 2. The Contractor or Subcontractor, and
 3. Any or all plans, reports, drawings, specifications, bid documents, contracts and subcontracts, or other documents related to this contract and project of which it is part.

- ii. The parties hereto further understand and agree that
 1. USAID, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that

 2. Any decision by USAID to exercise or refrain from exercising these approval rights shall be as a financier in the course of financing this project, and shall not be construed as making USAID a party to this contract.

 3. The parties hereto understand and agree that USAID may, from time to time, exercise the foregoing approval rights or discuss matters, related to these rights or project, with the parties jointly or separately, without thereby incurring any responsibilities or liability to the parties jointly or to any of them.

 4. Any approval (or failure to disapprove) by USAID shall not bar the Employer or USAID from asserting any right, or relieve the Contractor of any liability which the Contractor or Subcontractor might otherwise have to the Employer or USAID.

B. PROCUREMENT

The contractor shall abide by and include in all subcontracts the following USAID additional mandatory clauses:

i. Procurement of Commodities

1. *Place of Procurement*

Commodities needed for the Works shall be obtained only in the United States, or in Honduras.

a. *Procurement in the United States*

Commodities obtained in the United States shall have been produced in the United States. A commodity shall not be eligible as produced in the United States if

- (i) more than 50 percent of the total cost of its components were imported into the United States, and
- (ii) it contains components from any country excluded from the USAID Code 935.

b. *Procurement in the Host Country*

Commodities procured in the host country shall not have

- (i) entered the market on order from, or otherwise to satisfy a specific need of the contractor or subcontractor, except commodities produced in the United States, and
- (ii) been produced in, nor, to the best of the Contractor or Subcontractor's knowledge or the knowledge of any of their agents, contain components from any country excluded from USAID Code 935.

ii. U.S. Carriers

Shipment of commodities for the Facility (or Facilities) from the United States shall be on U.S. flag carriers except as otherwise approved by USAID.

C. MARKING REQUIREMENTS

i. Sign at the Construction Site

Before commencing construction, the Contractor will display at the site an appropriate sign, readable at a reasonable distance, showing that the facility under construction is

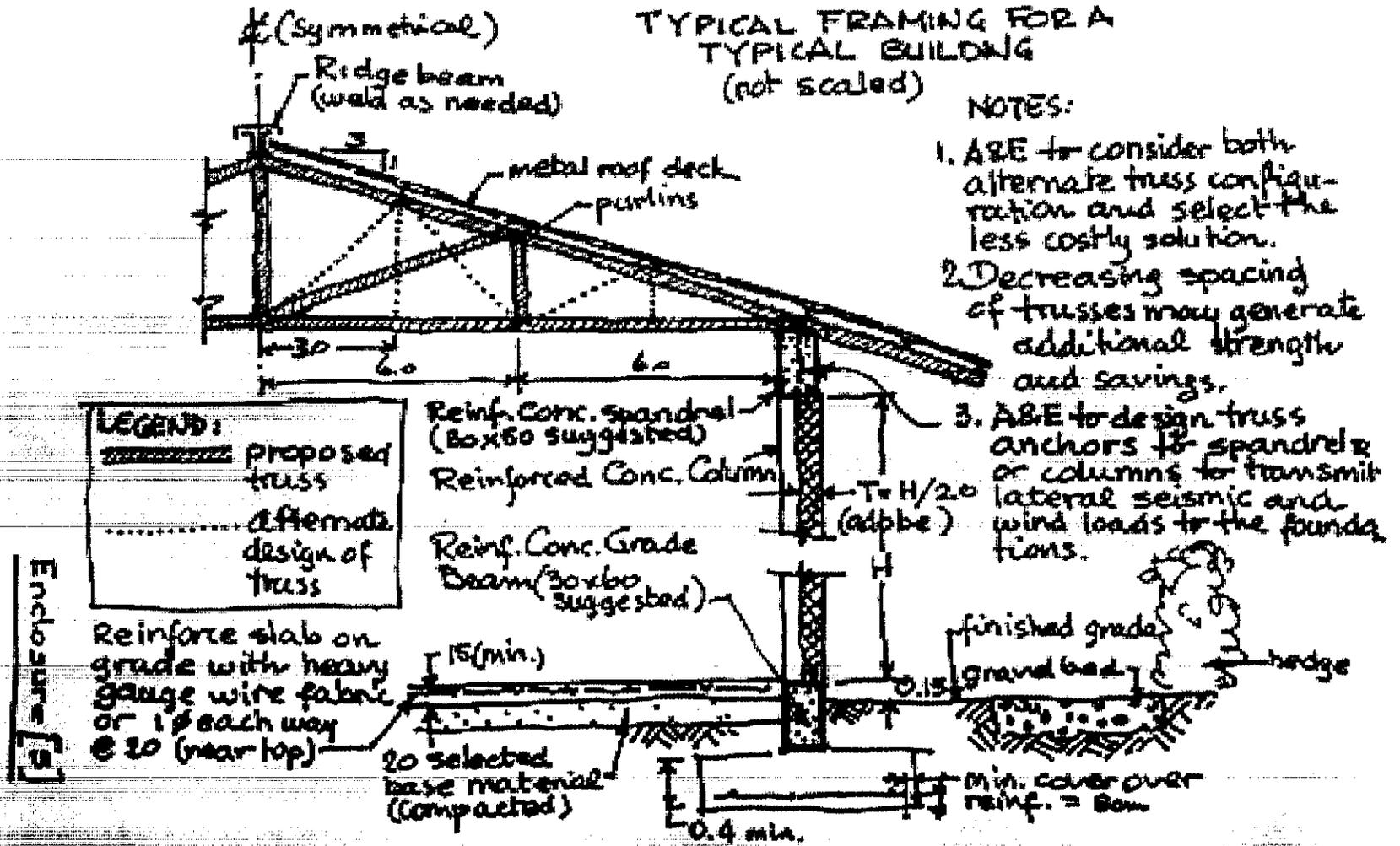
financed by USAID and that the Contractor complies with the appropriate contract clauses and local regulations to protect the environment.

ii. Permanent Plaque

Before the provisional acceptance of the Facilities by the Employer, the Contractor shall furnish and place a durable metal plaque. This item of work must be as directed by the Employer and approved by USAID. The plaque shall be permanently affixed to each Facility giving due credit to the American people for providing the resources to construct it.

Enclosure [E]

TYPICAL FRAMING FOR A TYPICAL BUILDING (not scaled)



NOTES:

1. A&E to consider both alternate truss configuration and select the less costly solution.
2. Decreasing spacing of trusses may generate additional strength and savings.
3. A&E to design truss anchors to spandrel or columns to transmit lateral seismic and wind loads to the foundations.

APPENDIX 2

New Vocational/Technical Education Centers - Honduras

Plans and Other Technical Information of Existing Centers (78 pp)

Please note that these documents, regarding previously constructed vocational centers, are available upon request from USAID/Honduras