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**FIRST EVALUATION
and
RECOMMENDATIONS
for
CONTINUING
OPERATION of
CONSTRUCTION
RESOURCE
and DEVELOPMENT
CENTRE**

USAID/JAMAICA

BY EDWARD SCOTT

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of
CONSTRUCTION RESOURCE & DEVELOPMENT CENTRE:
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by
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INTRODUCTION

This document presents the results of an evaluation of the first ten months of the Construction Resource and Development Centre's (CRDC) efforts and consequent recommendations for the Centre's continuing operations. The focus of the evaluation as outlined in the Consultant's scope of work and as clarified in meetings with pertinent USAID and CRDC management personnel concerns the evaluation of the role impact of the CRDC to date and assessment of the resources necessary to meet the current and planned objectives of the organisation. In view of the specific focus of the work, and the limited time available for the evaluation process and production of the report (2 1/2 weeks) USAID, CRDC and the Consultant agreed that many of the elements normally associated with a USAID sponsored evaluation were not to be presented in extensive detail. The time constraint was a particular concern, since a second task - the development of a comprehensive three year plan for CRDC based on the evaluation had to be completed during the same 2 1/2 week period. Completion of the work would not have been possible without the strong support provided by the CRDC and USAID staff as well as the outstanding co-operation of the wide range of organisations and individuals in both the public and private sectors contacted in the course of this effort.

2.0 METHODOLOGY

The focus of this evaluation and the nature of the CRDC operation required a review of both the process and product aspect of the organisation. Development of the information necessary to complete the task entailed extensive interviews with organisations and individuals pertinent to CRDC's work as well as close examination of the actual CRDC products such as training programmes and materials, reports, survey instruments etc.

The interview process began with group meetings with the organizations relevant to the CRDC operation such as CAST, VTDI, Masterbuilders, Electrical Contractors Association, PSOJ, HEART etc. Discussions at this level focused on the role and impact of the CRDC and to a lesser extent on the utility of specific CRDC products. Subsequently, interviews were held with individuals within the network and focused on specific CRDC activities and products and also helped to clarify information obtained in group meetings. Many of the individuals interviewed were contacted on two or three occasions as additional information and clarification became necessary. A list of the organisations and individuals contacted appears as Annex I. Multiple contacts are indicated with an asterisk.

The more general issues of the evaluation (i.e. role and impact) as well as CRDC's organisation and management are assessed largely in terms of the CRDC concept as outlined in this document and the generally accepted norms of organisational behaviour and management principles. Consequently, these observations are largely subjective. CRDC's products are evaluated primarily on their technical merits as they are applied in the local context.

3.0 SUMMARY OF THE EVALUATION

The outcome to the evaluation reveals that the CRDC has performed admirably in fulfilling its role and achieving the objectives for its first year of operation (January 1, 1984 - November 21, 1984). The organisation has also made significant advances towards the objectives established for operations in its second year.

The success of the CRDC is largely attributed to the strong co-operation and support obtained from the network of organisations and individuals which relate to CRDC's task and the professionalism, teamwork and almost missionary zeal with which the CRDC staff has approached its work in an atmosphere of tight time frames and harshly limited resources. In fulfilling its mandate, CRDC has demonstrated a number of characteristics which are of particular interest to USAID. Specifically, CRDC has

- 1) avoided duplication of effort in both its research and training activities while making important contributions in both areas;
- 2) demonstrated the potential for the long term sustainability of its activities at the conclusion of the recommended USAID-supported effort to strengthen the CRDC's capabilities;
- 3) developed strong and productive linkages with a broad range of public and private sector groups related to and operating within the context of the Jamaican Construction Sector, thus forming a solid base for productive growth.

The resources available to CRDC have not been adequate to fulfill the limited objectives for the first year. The organisation has had to rely on volunteers and in-kind contributions to do much of its work. This type of

input cannot be relied upon to continue indefinitely. The inadequacy of resources has led to undue stress on staff and must not be continued if the CRDC is to develop a stable basis of operations from which it can continue to produce positive results and realize its potential for self-sustainability in the future.

The success of the CRDC to date has led to a variety of requests for specific assistance and a broad-based demand from its clients that CRDC expand activities to more fully respond to the identified needs of the Construction Sector. CRDC is in an excellent position to comply with the increasing demand for this services and should be provided with the financial support necessary to increase its capacity during its development and stabilization process.

4.0 THE CONSTRUCTION RESOURCE & DEVELOPMENT CENTRE: BACKGROUND

The CRDC is a Limited Liability Company (private, non-profit) organised under Jamaican laws and chartered in December 1983. Operations commenced in January 1984. The organisation was fully staffed by March 1984 and pertinent systems were in place by May of this year.

Initial organisational and financial support came from the Incorporated Masterbuilders of Jamaica, Electrical Contractors Association, Joint Trade Unions, Building Research Institute and HEART all of whom are represented on the CRDC Management Committee. A grant of J\$82.6 thousand dollars was provided by USAID to assist with the Centre's operations during the first year.

The idea of the CRDC arose within the context of the 1981 - 82 building boom as it became clear that rapid growth in the Industry coupled with the emigration of large numbers of skilled craftsmen in the late '70's had resulted in a shortage of labour at the advanced skill level. The problem was compounded by the lack of appropriate training programmes aimed at upgrading the unskilled and semi-skilled adult labour force.

The situation was further complicated by the lack of a recognized system of performance standards at the Grades I, II and III skill levels which permitted job applicants of dubious standard to claim the highest skill/pay level (Grade I). In the absence of any objective means of certification of performance levels, builders were forced into a "pot-luck" employment process resulting in costly and inefficient use of time and materials. No referral/placement system was available to channel those craftsmen who were observed to have appropriate skills.

Representatives of the Construction Industry also noticed that the construction skills training that was being provided by the public sector institutions was producing a number of graduates in trade categories and at skill levels which did not reflect Industry requirements. Since data accurately reflecting the Industry's needs were not available, little could be done to redress the observed anomalies.

The CRDC was thus formed to assist the Construction Industry to resolve the identified needs of the sector and to work with public sector institutions to obtain the appropriate results.

At the time of its inauguration, the CRDC was specifically charged with the following tasks as summarized in the initial CRDC proposal to USAID.

- 1) Provide detailed information concerning current utilization of construction labour and the skill requirements of the Industry and recommend the manner in which these requirements can be met.
- 2) Co-ordinate the input of expertise from the Industry in training not available through existing institutions, career information, job referral and placement.

5.0 EVALUATION OF THE CRDC

5.1 ROLE

Although the role of the CRDC in relation to the public and private sectors was not clearly defined as such in the initial proposal to USAID, the founders' expectations can be extrapolated from the various documents in the CRDC files such as the original Articles of Association, proposals and periodic reports. As implied in these documents, and as further clarified in interviews with the founding members, the CRDC was expected to play the role of a bridging agency, interpreter, co-ordinator and catalyst.

In its role as bridging agency, CRDC was initially expected to effectively link needs and resources of the Private Construction Sector with those of the Public Sector. The effective discharge of this role required that the CRDC also build appropriate bridges or links between the previously fragmented organisations in the Private Construction Sector so as to provide the basis for a consistent approach to the process of needs analysis, research and subsequently, a unified, clear, detailed and accurate Private Sector voice in the ensuing dialogue within the Industry itself and between the Industry and Government.

As interpreter for the Construction Sector, CRDC was expected to move between the various Industry groups to obtain the input necessary to permit the members to clearly identify, organise and articulate their status and needs in a manner which would be meaningful to pertinent Government institutions and other groups related to the Construction Sector.

The responses of groups outside the Private Construction Sector would in turn be carried back to CRDC's sponsors and presented to them in a fashion which would not only facilitate mutual understanding but would also promote continued interaction and progress toward problem resolution.

The effectiveness of the aforementioned process is related to the degree to which CRDC could co-ordinate the participants' activities, input and reactions. The quantity of information processed in the exchange and the overall quality of the presentations would be meaningless if each of the individual actors continued to go their own way, pursuing narrowly-defined interests as has been the case in the past. Thus the co-ordination of members' activities regarding the approach and response elements of the

information development and dialogue process became a big element in CRDC's efforts. Data development, and providing a platform for information exchange, would not be sufficient in themselves to bring about the results desired by CRDC's membership. Co-ordination was clearly necessary.

At the time of CRDC's inception, the sponsors often experienced both missed opportunities and internal industry conflicts. It was hoped that the CRDC, acting within the industry but having no specific or financial interest in it, could, based on its impartial position, act as a catalyst by identifying opportunities for growth, progress and collaboration and providing a focal point through which the various groups in the industry could organise and act productively.

5.1:1 Appropriateness of CRDC's Role

There can be little question that the establishment of an organisation like CRDC with the multifaceted role conferred upon it, was necessary and appropriate within the context of the Jamaican Construction Sector. It is, in fact, unfortunate that CRDC was so long in coming.

In terms of generally accepted precepts of organisational theory, the conduct of the multifaceted role assumed by CRDC is seen as a vital link both in the process of efficient long term growth and productivity and in the resolution of short term conflicts and crises.

Witness, for example, the importance of the role played by the Tourist Board, export associations, trade groups and associations of contractors, engineers, educators etc., here in Jamaica and in countries all over the world.

These groupings often play a combination of research, development and communication roles similar to CRDC's. In fact, the existence and quality of such groups is traditionally used as an indicator regarding the overall posture or health of the national industries.

In terms of the Jamaican Construction context, it is doubtful that the industry could organise and act in a coherent and productive manner without an organisation to fulfill the CRDC's role. The range of individuals, interests and activities within the industry are simply too diverse. In this regard, it is important to note that members of the Industry contacted during this evaluation consistently described the endless conflicts and failed organising efforts which have characterised the Construction Sector in the past as contrasted with clear trends toward significantly-improved communications and co-ordinated actions observed following CRDC's inception as an impartial and responsive point of Industry-wide contact and facilitator of public and private sector dialogue.

5.1:II Assessment of CRDC's Success in Fulfilling its Role

Based on information received from respondents regarding their perceptions and experience with CRDC's conduct of specific activities, success in this area is rated as very high. The interview process did not reveal anything but approval for the way in which CRDC has conducted its operations in response to the sponsors' role expectations. In fact, a majority of respondents indicated that the organisation had actually exceeded expectations. A number of specific examples were raised repeatedly during discussions. These were:

- a) the way in which CRDC acted as a bridging agency within the Industry to permit the collection and validation of information regarding the basic training needs survey and the supervisory training needs analysis.

CRDC was able to elicit support for this work throughout the Industry and across association boundaries in a manner which had not been previously accomplished. For example, in the past, due to competition and concern for confidentiality, the various contractors would not permit other members or associations access to the data (site diaries, time sheets, wage bills etc.) needed to accurately determine the true picture regarding labour utilization rates, training needs and manpower requirements within the Industry. CRDC's work in this area is generally considered to be the first successful effort of its type with clear benefits accruing to both the Industry and public sector training institutions. The nature and extent of this work is described in detail in the evaluation of the impact of CRDC's work.

- b) The way in which CRDC used the bridges it established between the competing companies and associations to act as a co-ordinator in organising the Industry and their representatives in their dialogue with HEART. The Industry presented itself as a coherent body with detailed data and specific recommendations arising from CRDC's Needs Analysis and Labour Utilization survey and was successful in obtaining significant changes in public sector training in terms of the number of people trained for specific trades as well as in the level and content of the training programmes themselves.

Other activities mentioned in relation to the co-ordination aspect of CRDC's role include the handling of the Foreman/Supervisors Training Programme now in progress at CRDC, the Building Maintenance, Blueprint Reading and Welding Upgrading programmes for employed adults in the Industry. CRDC organised Industry-wide support and resources to develop and present these programmes on a professional basis. Two programmes which have been completed are being handed over to public institutions where they will be continued as regular programmes in CAST (Blueprint Reading, summer programme) and at the Portmore Academy (Building Maintenance).

- c) The way in which CRDC acted out its role as interpreter of the Industry's needs and concerns in presenting the Industry's case to public and private sector groups and in

explaining the position of the groups to Industry members. Specific examples cited in this context are the training needs survey and training programmes mentioned above. Respondents consistently stressed the importance of CRDC's interpreter role in ensuring the productive continuity of the private/public sector dialogue. One respondent, a long time member of an Industry association summed up the situation by saying: "We've spent too long shouting at the stars and talking to ourselves. We're finally talking to each other and coming to understand one another. We've got to keep this up."

- d) The way in which CRDC has acted as a catalyst in its recent initiatives regarding the collection, analysis and dissemination of data pertaining to the current status of the Industry and the opportunity to develop an on-going information service which could serve both Private Industry and Public Sector needs.

Having demonstrated its impartiality (ability to act for the Industry as a whole rather than for a specific interest group) and respect for the confidentiality of information provided by members, CRDC found itself in the position of catalyst for an Industry-wide mobilization targeted at the development of a data/research service which would provide the Industry with the information it needs to clearly define its current situation and then present its status/needs to Government in the face of an impending sharp decline in Industry activity. It is important to note here that the Industry has had numerous crises in the past but has not been able to organise effectively, particularly in terms of developing accurate, detailed data which it could use to analyse its status, determine its specific requirements, make appropriate recommendations and enter into productive, data-based dialogue with Government regarding needed policies.

The CRDC's work has also had a catalytic effect in a number of more discreet areas. For example, the Manager of the Estate Maintenance Department at the University of the West Indies stated that the noticeable improvements in the quality of work performed by his staff after they attended the CRDC Building Maintenance programme were responsible for continuing participation in such training, and his request for CRDC's assistance in establishing an in-house training programme to meet the University's on-going needs. The development of this programme at UWI is now in its early stages.

5.1:III Recommendation: Role of CRDC

The multifaceted role which has been established for CRDC is both timely and appropriate. CRDC has successfully fulfilled its role to date. No changes in role are suggested at this time. It is important to note that one potential role, that of general spokesman for the Construction Industry, has not been conferred upon CRDC. The organisation should act as spokesman only on specific issues and as clearly authorized by the CRDC membership so as to avoid potential problems in the future.

5.2 ACTIVITIES

5.2:I Specific Objectives - Phase I

Objective 1:

"Implement a survey of two housing, two commercial and two infrastructural construction projects and analyse the collected data to determine present patterns of labour utilization and deployment within the Construction Sector in particular:

- the breakdown of the labour force on each project by trade categories;
- the breakdown of the labour force on each project by grades within trades; and
- the prevailing patterns of subcontractation by trade areas with respect to large contractors, specialized subcontractors and general task subcontractors working on each project."

Work on this survey began in early January 1984 and was completed in late April. Examination of the survey instrument, methodology, graphs and reports reveal that the work is both practical and professional. No major weaknesses could be found in this work which was used as the basis for CRDC's effort in connection with objectives two and three below. The methodology appears as Annex II and the report as Annex III.

Objective 2

"Collate the findings of the project survey with analyses resulting from the NPA's training needs survey of large and small establishments in the Construction Industry, macrostatistics from the NPA regarding planned and approved building projects and Department of Statistics census data in order to produce a comprehensive report for HEART, identifying the prioritized training needs of the Industry at entry and trade levels."

The results of the project survey were analyzed as required but the macro data expected from NPA and Department of Statistics proved to be unavailable. However, a comprehensive report (Annex III) based on the CRDC's micro data was prepared and presented at a HEART co-ordinated seminar on May 19, 1984. The Analysis as well as the needs identification and training prioritization elements of the report are thorough and accurately reflect the data developed during the survey (Objective 1). These elements of the work reflect commonly accepted principles applied to such work and are well done in terms of both detail and presentation.

Objective 3

"Determine, in conjunction with HEART and all relevant agencies, strategies whereby the identified and prioritized training needs of the Industry can be met at Grade III (entry level), Grade II and Grade I levels in five prioritized trades."

Based on the work conducted regarding objectives one and two above, the strategies were developed and included in the comprehensive report presented on May 19. Examination of the report reveals that work on objectives one to three was, in fact, a well-conceived process which resulted not only in the preparation of the comprehensive report (Annex III) but also in the presentation of seventeen specific recommendations (Annex IV) designed to assist the overall HEART programme (VTDI, training academies etc.,) to avoid

inappropriate allocation of resources and also serve the Construction Industry by ensuring that training institutions' production more accurately reflects the needs of the Industry in terms of numbers of graduates trained in the skills demanded and at the necessary levels of performance.

The utility of the data analysis and recommendations were validated at the May 19th seminar at which time HEART organizations reached a unanimous decision that the outcome of the report and the recommendations would form the basis for allocating numbers of students by trade areas in construction trade training at the new HEART Academy at Portmore.

The overall trades training strategy was also adopted at the meeting, thus providing a coherent process for developing skilled craftsmen from points of entry through the highest level of skills. The strategy also permitted public and private training groups to identify which training was appropriate at the various levels and which type would be undertaken by the various institutions. This facilitated both more effective focus for training at the various levels and also enabled the various public and private training groups to avoid duplication of effort.

Objective 4

"Implement a survey of a sample of senior management and supervisory personnel within the Construction Sector to determine the training requirements at supervisory level."

The survey began in early May and was completed in June. CRDC's staff worked with Industry representatives and CAST staff to set up, conduct and compile survey results and also to prepare and present subsequent recommendations for training. The outcome of the study was presented to Industry through the CRDC membership.

With Industry/CAST feedback - the basis for course content and process was determined. Since none of the existing institutions was prepared to run the training programmes the first pilot programme was presented by CRDC at its facility. This course is now in progress. Upon reviewing the study, and meeting with the curriculum developers, teachers and students, it appears that the course provides a clear reflection of the identified needs and is both thorough in content and format. Course materials include elements adopted from US Training Programme for Construction Supervisors as well as materials developed at CRDC specifically for the Jamaican context. A description of the process used in this work appears as Annex V.

Objective 5

"Determine, in conjunction with CAST and all relevant agencies, strategies whereby the identified supervisory training needs of the Industry can be met."

The strategy developed was based on the survey noted above and reflects the needs of the local context as well as generally accepted norms and procedures for supervisory training.

In developing and presenting an initial Foreman/Supervisory Training Programme, CRDC actually surpassed the objectives set for year one and completed work set for year two. Discrete elements of the initial programme are currently being expanded for delivery on a modular basis during 1985.

A summary of the Supervisory Needs Analysis appears as Annex VI. A summary of the initial Foreman/Supervisors course outline and other pertinent data appears as Annex VII and VIII. A summary of proposed programmes in development appears as Annex X.

Objective 6

"Determine in conjunction with all relevant agencies, a strategy for future trade testing, certification, registration, placement and tracing in at least five prioritized trades on a national basis."

The strategy has been developed by CRDC and discussed with both private and public groups. The basis for much of the work was provided in achieving Objectives one to three. A summary of the strategy examined at the CRDC's offices revealed that the approach is both pragmatic and makes good use of existing resources and earlier work in this area. The CRDC has actually gone beyond the development of the strategy itself and is now working with the appropriate range of public and private groups in an effort to implement the pertinent tasks. A broad agreement has been reached at staff level of groups likely to implement the process but decisions regarding agency responsibility need to be taken at the senior policy level of these agencies which include SDC, MYCD and HEART. Nevertheless, certain concrete steps have been taken to implement elements of the strategy. For example, certification at Grade III (entry level) has been accorded to nearly seven hundred (700) recent graduates of public sector programmes. The files of these individuals have been transferred to CRDC where they are used for referral and placement.

Objective 7

"Determine in conjunction with all relevant agencies, a strategy for developing and implementing testing certification, registration, placement and tracing systems for supervisory personnel."

The required strategy has been developed by the CRDC. A short summary of the work examined at the CRDC offices reveals that the approach is appropriate

to the local context and reflects generally accepted norms for work in this area. CRDC has actually surpassed the requirements for this objective in that the testing and registration elements of this work is already underway at CRDC on a pilot basis in conjunction with the Foreman/Supervisors training programme now in process.

Objective 8

Determine the feasibility of running specialist upgrading programmes at trade and supervisory levels on a commercial basis."

CRDC has surpassed the requirements established for this objective. The feasibility of this approach has not only been tested but a number of courses have been completed and have proven to be profitable. These courses are shown in the following table:

TABLE #1

TRAINING COURSES IMPLEMENTED BY CRDC ON A COMMERCIAL BASIS

<u>Building Maintenance</u>	
Income	16,800
Cost	<u>7,800</u>
Profit	9,000
<u>Blueprint Reading</u>	
Income	5,250
Cost	<u>1,459</u>
Profit	3,791
<u>Foreman/Supervisors Training</u>	
Income	4,900
Costs	<u>2,327</u>
	2,573

While each of the three courses presented on a fee basis made a profit in terms of actual cash exchanges, the data available do not reflect the fact that a significant amount of the development was provided to CRDC at no cost to public and private sector supporters. Furthermore, certain materials used in each course were obtained at no cost to CRDC. If these factors could be accurately quantified, the final profit, if any, would be very low. However, this low profit or loss is normal in most situations where new product development is required. Once the development phase is completed and appropriate systems and materials are in place, profits from running the range and numbers of courses proposed by Industry personnel, and which are not available in public institutions, would provide a significant contribution to CRDC's operating expense requirements.

Review of the course development process, curricula, materials and presentation methods reveal that these courses are thorough, professional, and reflect the identified needs. Instructors and students evaluations reveal that the courses were both well presented and received. Course outlines and related data and evaluation summaries are presented in Annex VII and VIII. Evaluation instruments appear as Annex IX.

Objective 9

"Determine the feasibility of providing testing, certification, registration, placement and career counselling services on a commercial basis."

CRDC's work to date as well as discussions with contractors suggest that there is definitely a potential market for these services, with the possible exception of career counselling for which insufficient information was

available. Establishment of the registration and referral/placement elements on a commercial basis appears to provide a strong income-earning potential in the future. These elements were consistently raised by Industry representatives as a priority in view of the current situation in which contractors have no choice but to hire specialists on a random basis and suffer the consequences of wasted materials and lost time.

Although there appears to be a strong demand for the testing and certification process it is not yet clear if CRDC would actually be the source of these services. VTDI and the public training academies may well assume the largest role in these areas. The situation cannot be finally clarified until HEART and the Construction Industry reach final decisions on these matters. Since HEART is still involved in making necessary policy decisions and developing its processes pertaining to the elements of this objective, the results may not be clear for another two years.

Objective 10:

"Determine a strategy whereby the Construction Resource and Development Centre will become capable of operating without foreign donor assistance after its initial three years of operation and encompass this strategy in a formal proposal."

The basis for self-sustainability is clear in terms of the activities which have been established as appropriate areas of CRDC's activity. These are:

1) Training

The Centre provides training which is not available at public institutions or from other Industry sources. In addition to the courses presented to date, CRDC has nine others either in the development or request stages. This is after only ten months of operation. These additional courses will bring the number of available programmes to twelve within the next six months. It is not unreasonable

to assume that over the next two years a total of twenty-five courses will be developed and presented by CRDC on a regular basis. Potential income from these courses based on current realities is displayed on table #2.

2) Registration/Referral

CRDC now receives an average of five contacts per week requesting assistance in the referral/placement process even though no marketing has been done in this area. Results so far have been good as indicated by discussions with contractors. Since the Industry hires approximately 2,000 specialist workers directly and 18,000 indirectly, at Grades III, II and I each year, based on Department of Statistics Labour Force Survey and CRDC's Labour Utilization Subcontraction rates, it is not unreasonable to assume CRDC would eventually play an active role in the hiring of at least 7,000 of these over time given the absence of any other respected industry source. This would provide an income of J\$105,000 referral fee based on a \$15.00 referral fee once the system is set up (2 - 3 years). This fee was frequently mentioned by Industry contacts as an acceptable cost. A higher fee might be charged and this would be covered in each contractor's contract with the client.

A registration fee of J\$20.00 would be charged to each certified worker at the time their data is entered into the system. Assuming that CRDC dealt with only the top one thirds of the construction labour force (the most highly skilled and trade school graduates) the potential client group would number approximately 15,000. ($45,000 \text{ labour force} / (1/3) = 15,000$). It is important to note that CRDC already has a file of approximately 700 Grade III candidates who are recent HEART graduates. Names of participants in CRDC's courses are also filed for referral.

Given the Industry's strong desire to end the chaos in the hiring process, CRDC's reputation for impartiality, confidentiality and competency plus its early initiatives in this area, and a lack of any other organization to play this role, it is not unreasonable to assume that the registration and placement process will become a reality within the next three years and that CRDC would be the organization of choice to deliver these services.

The table presented later in this section presents the potential income from this source. (See table #4 page 30).

3) Research and Information Services

CRDC has already conducted one research study for HEART concerning training needs which made a significant impact by improving public/private sector relationships and improving the overall efficiency of the trades training process. Other more discrete studies were conducted as the basis for training programmes now on line at the Centre.

In view of its heavy work load and the Centre's severely limited financial and human resources CRDC did not actively pursue other major research and development opportunities during the six month period following the completion of the HEART study. However, within the past two months, associations and individuals within the Private Sector have made strong initiatives which would serve to significantly expand CRDC's activities in this area. Such a move would be an appropriate complement to current CRDC activities and, assuming necessary financial resources were available, would permit the organization to make significant short and long term contributions to the rational and productive growth of the Construction Sector and assist the Government as well.

If the heavy development costs of equipping, systemizing and stabilizing the CRDC in this type of work could be met, this activity would likely become the organization's most important source of income.

The Industry's initiative in question refers to requests that CRDC prepare a detailed study which would permit Industry representatives to analyse the overall status/health of the Sector. In addition, Industry wishes CRDC to develop an ongoing research and information dissemination system.

The proposed short term research regarding the current status of the Industry would provide the detailed information the Industry needs to fully understand many of the apparent problematic trends observed by participants in the Construction Sector (e.g. lack of financing level of contractor's debts, volume of construction by type, absence of projects on line, Government payment time lines, volume of work performed by non-Jamaican firms

etc.) and facilitate both internal co-operation towards redress as well as the necessary fact-based dialogue with Government on policies. In addition to serving the immediate needs of the Industry, the timely and professional conduct of the study would permit CRDC to make a significant impact on the Industry in terms of the marketing of research services.

The long term research effort would regularly update indicators of Industry health and expand the data base to include more detailed information on labour utilization, employment levels, cost indices, changing trends in methods, technology, materials etc., productivity rates, volume and types of projects coming on line, methods and levels of available financing, etc.

This type of information would facilitate improved internal efficiency, planning communication, decision making and, in terms of the members' immediate points of view, help reduce the destructive effects of the boom/bust cycle. Distribution of information produced over the long term would be provided through a periodic newsletter paid for by recipients either by subscription or by increased CRDC membership dues.

The various associations within the Industry have also expressed a desire to use an expanded CRDC research capability to conduct discrete studies in response to specific interests of their members.

Costs for specialized research would be covered by the associations which, as CRDC's members, would be charged lower rates than those demanded by other research firms operating without CRDC's knowledge of the Industry or its access to key information sources.

Inquiries made during the course of this evaluation as regards the issue of sustainability, revealed that the local establishments with no relation to the Construction Industry charge from J\$175,000 to J\$230,000 for a three month study similar to that which CRDC performed for the HEART Trust.

If CRDC is assisted in the development of a strong data base and research capability it would be in a position to perform similar work at approximately sixty per cent of the cost charged elsewhere. The savings to CRDC's members would be possible due to the wide range of detailed Industry-oriented information which CRDC would develop over time through

- work on its periodic data dissemination activities
- related information collection and analysis systems
- permanent staff with thorough knowledge of Industry characteristics, mechanisms and personnel
- quick access to additional appropriate information
- staff knowledge of Industry personnel and CRDC's reputation for professionalism
- impartiality and respect for confidentiality

All of the foregoing characteristics would enable significant savings in time required for data collection and processing, and thus lower production costs.

Since CRDC has already received six specific expressions of interest from individual associations based simply on its position in the Industry and without having marketed this type of product, it is highly probable to assume that five or six research assignments per year could be secured if appropriate systems were in place, product quality demonstrated and marketing conducted. Examples of research studies based on actual expressions of interest, which would be conducted by CRDC, include:

- i) a study of buyer preference and financing capability, conducted for a group of private developers specializing in home construction;
- ii) a study of the types and volume of work performed by Jamaican versus expatriate architects conducted for a private firm of architects and planners;
- iii) a comparative study of Public/Private Sector design costs for a group of consulting engineers; and
- iv) a study of cost indices regarding construction labour material and building types, conducted for a group of quantity surveyors.

Despite the eminent feasibility of CRDC expanding its research and data capabilities to efficiently conduct the work, the initial costs involved in purchasing, programming computers, training staff and collecting base data, and establishing internal and external systems are simply too high to be borne by CRDC and its members in the near term.

Given the scepticism which remains in the Industry due to past interpersonal and organizational rivalries, the traditional lack of co-operation between the various elements of the Industry, and the lack of experience with research on data services, it would be inappropriate to assume that Industry representatives would be willing to jump head first into research and data collection and offer the full financial support necessary to firmly establish the capability without first testing the water and purchasing the product on an incremental basis. Development of the necessary capability implies equipment purchase, systems development, testing, staff training etc., all of which require substantial up front financing.

Substantial financial support would have to be provided over a two to three year period. After that period, payment by users even on a limited basis as currently proposed would cover recurring costs.

An investment in the development of an expanded CRDC research and data capability is both timely and appropriate for both CRDC and USAID. The CRDC would be in a position to greatly enhance and stabilize its early achievements in bringing unity, co-operation and higher levels of efficiency to the Construction Sector through improved communication based on fact and rational analysis rather than emotional reaction.

The Public Sector would also be a beneficiary of a strengthened research and data process since it would have at its disposal timely and accurate information which is not currently available elsewhere.

The obvious Public Sector beneficiaries would include the Ministry of Construction, Ministry of Labour, HEART, SDC, PIOJ and MYCD.

4) Membership Dues

As the reputation and productivity of CRDC increases over time so, too, will its membership spread among Industry associations, private firms and individual entrepreneurs.

The cost of membership should vary according to the nature of the organization and business volume. Comments made by Industry spokesmen during the evaluation suggest the following range

Industry Associations - J\$5,000 - 20,000 per year
 Private Firms - J\$ 500 - 1,000 per year
 Individual Contractors - J\$ 250 - 500 per year

Final costs would require further testing but the range presented above is a conservative reflection of current membership dues in similar local situations.

Assuming that CRDC actively markets membership and provides appropriate incentives such as preferential rates in training courses and seminars, discounts on research work and referrals of craftsmen, complimentary newsletters and advisory services, etc., it is quite likely that income from dues will flow as indicated below

Industry Associations	10 @ J\$10,000	100,000
Private firms	20 @ J\$ 1,000	20,000
Individual Contractors	30 @ 300	9,000
Other associations		
Government finance etc. (various)		<u>30,000</u>
		J\$159,000
		=====

5) FUNDS FROM NON-INDUSTRY SOURCES

In keeping with its efforts towards self-sustainability and being aware that USAID support will not last indefinitely, CRDC has actively pursued alternate means of financing its activities. For example, CRDC has developed contacts with two international groups attracted by the success of the Women's Construction Collective. Both groups have expressed interest in financing the expansion of the WCC's activities and assisting with the recurring costs of operations. Funding at a substantial level appears to be forthcoming within the next three months. This grant alone could assure WCC financial stability over the next two years at its current low level of expenditures.

The Grace Kennedy Staff Foundation, a local social welfare institution has already provided a grant of J\$10,000 in support of CRDC's work with WCC and has expressed an interest in continuing the relationship.

Outside the realm of benevolent activities, the CRDC has developed contacts with a cross section of local and international groups regarding funding for a variety of research and development activities such as

- o a study of the role of the rural handy man and implications for training delivery
- o Disaster Mitigation Training
- o a study on using bauxite waste to produce tiles

Based on current discussions regarding levels of funding for these activities and with a view towards ongoing activities in this area, the following annual income levels are projected for 1986.

TABLE # 3	
<u>PROJECTED ANNUAL INCOME FOR 1986</u>	
	J\$
Grants for social/community development (construction oriented e.g. WCC and rural low income housing)	200,000
Local social welfare/community development	10,000
Special projects of interest to the Construction Industry	100,000
Internationally funded construction- oriented resource and development	100,000
Contributions (\$/materials/equipment) by international construction associations	<u>50,000</u>
	J\$460,000 =====

TABLE #4

CRDC'S PROJECTED REVENUES 1986 - 1988

	<u>1986</u>	<u>1987</u>	<u>1988</u>
Training Programmes @ \$5,000 per course	75,000	100,000	125,000
Placement/Referral	-	-	50,000
Registration of skilled tradesmen	-	-	50,000
Research Information Services	50,000	150,000	300,000
Membership dues	50,000	50,000	160,000
International grants for social welfare/ community development	200,000	250,000	250,000
Local grants for social welfare community development	10,000	10,000	10,000
Special projects	100,000	150,000	150,000
Internationally funded research and development	100,000	150,000	200,000
Contribution from international construction associations	<u>50,000</u>	<u>60,000</u>	<u>60,000</u>
	<u>J\$635,000</u> =====	<u>J\$920,000</u> =====	<u>J\$1,355,000</u> =====

5.2:II ASSESSMENT OF CRDC'S PROGRESS TOWARDS PHASE II OBJECTIVES

Having achieved the objectives established for its first year before the completion of the specified term (ten months rather than twelve) CRDC began work on those activities established for phase II (January to December 1985). Of the nine objectives established for the second year, work has actually been completed on one objective and is well underway on three others. These specific objectives are described below following the sequence in the original USAID proposal.

Objective 1

"Carry out further surveys as agreed with NPA, the Department of Statistics and HEART."

CRDC has begun early development work in two areas. However, only one of these is focused specifically on public sector initiatives and neither is limited to the construction project basis initially envisaged. The two areas are:

- o a survey of housing improvement requirements and financing capability in one urban and one rural community - in conjunction with the Office of Disaster Preparedness
- o a study of the Industry's current status and health conducted for the combined professional associations of the Private Construction Sector.

The two research activities in question are in the early stages of development and will require considerably more resource support than CRDC now has at its disposal. A summary of assistance requested from and provided by CRDC is given in Annex XII.

Objectives 2 and 3

"Determine approval trade standards at Grades III, II and I levels in at least five trade areas.

Develop and implement through joint efforts with relevant government and private sector agencies entry level and upgrading training programmes in at least five trade areas."

Work in these areas is at what might be termed the early design stage. Progress beyond this level, however, is not subject to CRDC's actions since final decisions and orders to proceed require policy level actions at the upper levels of the HEART Trust and pertinent ministries and agencies. Given the public sector's current focus on reorganizing internal processes, establishing new academies etc., the necessary decisions to implement will likely not be forthcoming in the next year. CRDC should reorient work in this area towards those elements which can be conducted by Private Industry. For example, while the Public Sector is engaged in other priorities, Industry representatives could form small working groups of trade specialists to work with Government training institution personnel to begin to detail the Industry standards, review existing materials and specify appropriate changes etc. The results of such work, coming directly from Industry, would shorten the implementation process, enhance the credibility of the results, and hopefully, hasten the Public Sector's decision making process. At a minimum, CRDC should restate these objectives in terms of work it can actually co-ordinate and conduct. It should not assume responsibility for the completion of activities over which it has no real control. The time frame for actual implementation of the activities dependent on Government should be extended by at least two years.

Objective 4

"Develop and implement, in co-ordination with relevant agencies at least three specialist upgrading courses at trade and/or supervisory level which can be run on a commercial basis providing income for the Centre."

Work pertaining to this objective has been completed, is of good quality, and merits continuation. CRDC should take advantage of its experience with the four courses presented to date (i.e. Building Maintenance, Welding Upgrading, Blueprint Reading and Foreman/Supervisory Training) and move into the modification and redesign stages of the course development process to incorporate lessons learned, add to and improve training materials, improve presentation techniques, etc. This suggestion should not be taken as an indication that work to date has not been good. On the contrary, review of the course development process, materials and curriculum, the evaluations by students and teachers both oral and written, and feedback from participants' employers clearly reflect the high quality of work done to date. Simply stated, a good start inevitably merits some modification and improvement prior to finalization.

In addition to the courses with commercial potential already presented, one course (air conditioning) is in the final development stages of preparation. CRDC plans to present at least three new courses in the next quarter.

5.2:III EVALUATION OF KEY CRDC ACTIVITIES

In addition to the specific objectives established for CRDC in the USAID funded proposal, the organization conducts additional activities which are inherent to the achievement of specific objectives and are key elements of the organization's role, performance and impact. These include Government liaison, Industry liaison and the operation of the Women's Construction Collective.

1) Government Liaison

The Centre's work in this area has been very good. Its successful conduct of original work on site survey, needs analysis, and training recommendations on construction-related training in the Public Sector, has made a significant contribution towards improving training efficiency and Public/Private Sector communication. This work formed the basis for productive ongoing relationships with Government and Industry influence on Government's training decisions critical to the long term efficiency of the Construction Industry.

Initially focussed on Government manpower training agencies (e.g. HEART, VIDI, MYCD, etc.) CRDC's liaison has expanded to include contacts in other Government-related agencies (e.g. Ministry of Labour, Ministry of Construction, Office of Disaster Preparedness and the Planning Institute of Jamaica.)

Respondents contacted during the evaluation, indicated that CRDC has produced useful products and has conducted its work with high levels of professionalism and energy. Interviews reflected numerous instances where CRDC's activity has initiated productive exchanges of both short and long term value to Private and Public Sector interests. These exchanges include examples of both formal and informal relationships. Formal exchanges realised to date include sectoral board membership, joint development of training and research materials and collaborative Industry/Government decision making on manpower policy. Informal exchanges include the

development of ongoing interpersonal relationships, exchanges of training materials and research data, frequent cross sectoral communication regarding Industry/Government trends, policies and problems.

Specific examples most frequently mentioned in evaluation interviews pertain to Industry/Government collaboration on the HEART Advisory Skills Committee, CRDC/VTDI/CAST curriculum and programme efforts. The background of all these efforts as described in interviews is one of improved communication and co-ordination.

2) Industry Liaison

CRDC's work has been unusually successful given the Industry's historic tendency for internal conflict. CRDC has effectively brought together disparate associations and individuals on a variety of issues relating to the achievements of the specific objectives detailed earlier in this report. More importantly, CRDC is on the verge of coordinating a very important break-through in Industry-wide cooperation.

As described in detail in the section evaluating the feasibility of self-sustained CRDC operations (objective 10 phase I) regarding recent Industry-wide requests for expanded CRDC research and data activities, Industry factions are coming together for the first time in a coherent and productive manner to work on the development of a broad data base which will serve to improve Industry efficiency, growth and communication on a long term basis.

Cooperation among selected Industry associations and individuals regarding the achievement of specific CRDC's/Government liaison role and, most importantly, sector wide support for the research and data work now under discussion are the most valuable indicators of CRDC's success in Industry liaison. The initiative is, however, still at a very delicate stage and will require strong vocal and financial support from all the participants in the CRDC network in order to permit the activity itself to proceed and subsequently facilitate continuing improvements within the Industry.

3) Women's Construction Collective

This programme which was begun under the auspices of CRDC represents the first successfully organized effort to recruit, train and place women in the Construction Industry, and to provide necessary support mechanisms to

help individuals handle on the job problems and job-induced changes in their personal lives.

The introduction of this concept and the continuing success of the programme have been instrumental to opening new avenues for the employment of women and in attracting attention and financial support for CRDC from both Jamaican and international communities.

Although the programme is very new, it has trained thirty-four previously unemployed women in the Construction trades and placed all but five in appropriate jobs. Of the five who were not placed in jobs, four were due to pregnancies and one was asked by the other participants to leave because she was not "serious" about the programme.

Examination of the programme's progress and feedback from the women and their employers reveal that this programme has been unusually well-conceived and operated to date. WCC is being discussed as a model for successful development activities for women in the US, Canada and throughout the Caribbean.

Consequent to its success, there are strong indications that WCC will be financially independent of CRDC in the future. However, programmes such as WCC are difficult to sustain over time without strong administrative and technical support. Such support should continue to be provided by CRDC for the foreseeable future.

5.2:IV RECOMMENDATIONS REGARDING CRDC ACTIVITIES

- a) The activities conducted to date have been both well executed by CRDC and well received by their clientele. Without exception, the initiatives should be continued and current achievements strengthened and stabilized. A significant increase in assured resources will be required during the development phase of the CRDC organization to provide activity continuity and organizational stability.
- b) The outcome of the supervisory needs survey (objective 4) and the implementation strategies (objectives 6 and 7) should be written in more detail and circulated more widely so as to prepare the ground for necessary actions planned for phase II.
- c) Self-sustainability of CRDC appears eminently feasible based on current achievements and recent initiatives. Financial assistance should be provided to the organization to enable CRDC to develop itself appropriately and achieve this goal. Particular attention

should be paid to the potential offered by the expansion of research and information services.

- d) While the progress towards achieving phase II's objectives has been very good, strong potential for problems exist since completion of certain proposed tasks is dependent on forces beyond CRDC's control. Specifically, objectives 3, 4 and 6 are dependent on levels of Government actions which are unlikely to be realized in the next year. The objectives should be restated and the work restructured to emphasise activities which can be completed within the Private Sector and thus facilitate Government's response.
- e) The WCC should continue to function within CRDC for the foreseeable future. Social, community development groups such as this are traditionally very fragile during their early years.

Potential for long term survival is enhanced through linkages with stronger organizations having a more diverse support group and providing needed administration and management guidance.

5.3 CRDC'S INTERNAL ORGANIZATION AND MANAGEMENT

Although the organization is in the early and fragile stage of development, sound methods of operation have been introduced. Overall, the administrative capability of the organization is quite good particularly when contrasted with the limited resources available for staff and equipment.

Documents, correspondence, resource materials and accounts are well organized, properly filed and are easy to retrieve and use. The accounts themselves are in good order and up to date and indicate that CRDC has no outstanding debt. The Auditor, Cooper and Lybrand, was interviewed during the evaluation as a preliminary audit was being completed. He confirmed the evaluator's observations. The Auditor further stated that very little reorganization would have to be done to accommodate the CRDC expansion currently under discussion, but additional resources in personnel and equipment would be required to handle increased volume.

The operating systems developed by CRDC for the conduct of its range of work are appropriate to the local context while incorporating internationally-accepted technology and methods. The systems used for research and training development, in particular, are very good and are much more thorough and professional than those normally encountered in similar organizations in developing countries.

These systems emphasize the use of available resources and the avoidance of duplication of effort. The CRDC approach to these types of activities should be thoroughly expressed in a written document, for use in setting CRDC policy in the future and for sharing with other similar organizations.

Staff work and interpersonal relations are characterised by high levels of interest and energy and reflect solid teamwork and communication. This situation is both unusual and commendable in view of the high levels of stress imposed on CRDC personnel because of inadequate resources.

The availability of resources is the most critical issue in determining CRDC's prospects for continued viability and eventual self-sustainability.

In order to conduct its work and achieve its objectives CRDC has had to rely on extensive use of volunteers in its research and training work. The facilities are equipped with items loaned on a temporary basis. Many of the rudiments of office operation (copy machine, paper cutters etc.,) are simply not available. Currently the production of a simple report entails three to four days of lost time as staff, including the Director, travel among supportive offices to borrow office equipment, use supporters' duplicating machines, enlist friendly secretaries' aid in typing materials and deliver and retrieve draft copies for supporters' review and comments.

None of the training programmes produced to date would have been possible had not high level Industry personnel and training staff employed elsewhere donated significant amounts of time (average 200 hours/course) to help make CRDC a success. Such extensive interaction with the local construction and training community has been very helpful in building a viable network of CRDC contacts and supporters. However, the current level of supporter input cannot continue for much longer.

CRDC volunteers interviewed during this evaluation included airport managers, officers of construction associations, teachers, curriculum developers, department heads at trade schools, local contractors, engineers and architects. The respondents consistently said that given the requirements of their own business, they could not provide volunteer services indefinitely. These individuals were, however, unanimous in stating strong commitment to CRDC's activities and interest in assisting the organization to obtain the means necessary to continue and improve its work and establish itself on a permanent basis. The high level of resources necessary to permit CRDC to realise its potential and internalise its successes are beyond the supporter ability to provide these by themselves.

As indicated in the table below, the significant accomplishments of CRDC to date have been achieved with a total of only five permanent staff consisting of three professionals, one secretary and one trainee. Financial resources totalled only J\$215,000 (US\$53,641).

TABLE # 5 OUTLINE OF CRDC'S STAFF INTAKE

<u>CRDC's Staff</u>	
<u>Position</u>	<u>Starting Date</u>
1 Director	January 1984
1 Secretary	February 1984
1 Researcher	March 1984
1 WCC Manager	May 1984
1 WCC Trainee	July 1984

TABLE #6 CRDC'S FINANCIAL RESOURCES

<u>Source</u>	<u>Amounts</u>
	\$
Masterbuilders Association	13,500
Electrical Contractors	1,000
U.S.A.I.D.	82,600
Grace Kennedy Staff Foundation	10,500
C.I.D.A	50,700
Miscellaneous	821
Training Programmes	25,443
HEART Trust	30,000
	<u>J\$214,564</u>
	=====

The constant uncertainty regarding the availability of funds for the next payroll or required activity, and the long, irregular hours involved in the constant movement through the network to borrow equipment, elicit volunteer input and identify potential sources of income have caused high levels of stress. While discussions conducted during the evaluations revealed that staff have held up very well to now, it is likely that without significant improvement in organizational stability disintegration will begin to occur inside CRDC within the next six months.

The disintegration process is quite common under the circumstances and will result in decreasing levels of productivity. This trend is followed by a search for other employment. If another job cannot be found, as is the case in most third world situations, apathy soon becomes the chief characteristic of organizational life. Given the current reputation of CRDC, most staff, and in particular, the Director, have already been offered other opportunities. The departure of key CRDC staff would inevitably result in a significant drop in productivity and a rupture, if not termination, of the process of expanding and solidifying current achievements. These developments would not only be unfortunate for the CRDC in view of its outstanding achievements to date, but would also result in unnecessary lost opportunities for both the Construction Industry and related Public Sector institutions.

5.3:1 Recommendation

Although the CRDC has been well organized and operated to date, the severe scarcity of resources have begun to produce clear signs of stress among staff. Adequate resources should be provided to permit stabilisation and avoid the sequential process or organizational stress, apathy and disintegration.

5.4 IMPACT OF CRDC'S ACTIVITIES

The impact of CRDC's activities is rated very high and in fact, well out of proportion to the resources invested in the organization. The Centre's achievements have resulted in significant contributions to improvements in the Construction Industry and related Public Sector institutions. Observable benefits have been realised both in terms of outcomes of the activities themselves and the atmosphere of enhanced communication and active co-operation which have developed as a consequence of CRDC's staff approach to their work. Specific examples of the impact of the Centre's activities are as follows:

5.4:1 Impact Of The Restructuring of Construction Trades Conducted Through The Heart Programme

As a result of the Centre's study on labour utilization and training needs, trade training, particularly at the new Portmore Academy, has been reorganised in two important ways. First, the numbers of new students assigned to each trade area were drastically changed in total numbers and proportions from those which HEART originally planned for the Academy. Second, the number of people to be trained each year was drastically reduced to permit programme improvement and better reflect actual manpower needs. Both actions were taken to reflect the CRDC study and followed the list of seventeen recommendations which CRDC prepared and submitted, all seventeen of which were accepted by the appropriate HEART committees by unanimous vote.

The professionalism with which this work is conducted, opens the door to ongoing effective communication between the Construction Industry and Public Sector institutions. Further, if time were available to quantify the funds which have been saved by a more accurate channelling of students and

resources, it could be shown that savings to Government, due to this initiative alone, would vastly exceed the total yearly budget of the CRDC. Additional economies could be shown regarding the savings to participants in the avoidance of lost opportunities and the incalculable negative psychological and career effects inappropriate training and/or continued unemployment have had on the lives of trainees. Savings could also be shown on the Industry side in terms of the increased productivity of appropriately trained participants.

5.4:II Impact of the Needs Surveys and Supervisory Training

Consequent to this survey, CRDC identified a number of skill areas in which training was needed. No such work had been conducted in recent Jamaican history. Based on the survey CRDC developed and is now presenting, it is the first training programme in Jamaica specifically directed at construction supervisory personnel.

This process also resulted in CRDC's presentation of one other course geared to establish technical skills needed at the supervisory level (Blueprint Reading) and the development of six additional courses covering technical skills needed for proper work site supervision. The additional courses which are on line will be presented in the next six months and are also "firsts" in the Jamaican Construction Industry. Training of this type has been proven, on a worldwide basis, to improve overall site efficiency, cut costs and improve the lives of participants. Similar results can be expected locally in the next few years.

5.4:III. Impact of the Women's Construction Collective (WCC)

The WCC has succeeded in bringing trained women into the Construction Industry on an organized basis (selection, training, continuous follow-up

support) for the first time in Jamaica and the Caribbean. This well organized approach to introducing women onto construction sites has already had a positive impact on the Industry. At each site where women have been placed, employers report reductions in site violence and the consequent loss of work time, both of which lead to improved productivity. For the women themselves, all of whom were previously unemployed, the training and placement efforts of the WCC have provided regular employment and income for the first time in their lives. The employment plus WCC support services have helped to build and reinforce significantly increased levels of self-esteem.

The support services themselves have helped the women deal effectively with the dramatic changes of employment and changes in self-esteem and status that have been brought to their lives.

The WCC model is having an impact well beyond the local context. Initiatives are under way to use the model in the Eastern Caribbean and Canada during the next six months. Plans are also underway to use the model in the US as an example of what can and should be done regarding needs and possibilities of women in development. Following on in this latter context, the model is slated to be prepared for dissemination on a worldwide basis.

5.4:IV Promotion of Private/Public Sector Dialogue

Representatives of the Private and Public Sector who have had experience with the training and research activities conducted by CRDC agree that the Centre's work has opened the door to a productive interchange of ideas and information on a level which has not been previously experienced locally.

Earlier communications between the Sectors had been characterized by dialogue based on tradition, beliefs and desires rather than accurate data. Consequently, discussions were frequently unproductive and ended in

intransigence and animosity. Real cooperation was seldom evident. Recent communications, however, are characterized by serious planning and action which have already resulted in improved efficiency as in the case of the Portmore Academy and future-related Public Sector construction trade training. This change in approach has also resulted in actions which will continue to promote these productive relationships. For example, new Public/Private Sector Committees have been formed and old ones redesigned to reflect Industry input into Public Sector policy. There have also been, as with the CRDC and HEART organizations, exchanges of Board members between Public and Private Sector with a focus on Human Resource Development.

5.4:V Promoting Communication with Construction Sector

Due to its demonstrated capability to conduct research within the Construction Industry, and the Centre's reputation for professionalism, impartiality and respect for the confidentiality of information provided by members, CRDC has been asked to conduct a study of the Industry's status. The study itself will provide the Industry with significant benefits through better understanding of their current status and will form the basis for a productive fact-based dialogue with Government.

The current importance, however, lies in the manner in which the initiative was developed. For the first time in recent history, representatives of all Industry associations as well as many individual contractors and firms have come together to cooperate on matters of mutual interest.

Previously, the Industry has been highly factionalised because of organizational, business and interpersonal rivalries. Each group preferred to have its own way even on issues of mutual concern.

Furthermore, the Industry has asked CRDC to promote periodic reports containing a range of data which is designed to permit it to plan and operate more effectively and continue to communicate on a professional, if not always friendly, basis.

5.5. DEMAND FOR EXPANSION OF SERVICES: CRDC'S CAPABILITY AND APPROPRIATENESS OF RESPONSE

A key outcome of CRDC's activities to date and a useful means of validating other indicators of the Centre's success is the strong demand for increased levels of service for the Construction Industry and various Public Sector groups. The nature of the current demand is consistent with the Centre's approved role. The work which would be conducted in responding to the demand represents an extension of the activities which have already been conducted successfully by the CRDC.

Consequently, the appropriateness of the additional work in terms of CRDC's role and ability to perform the type of work requested are not key items of concern at this time.

The important issues are whether or not

- the expanded services are really necessary;
- the CRDC given its current low levels of staff and funds, could handle the necessary expansion; and
- what structural, or other changes, would CRDC have to make if resources necessary for expansion were to be made available.

In view of the fact that no other service organization has the confidence of the Industry and the demonstrated success in this sector, it was natural that CRDC be approached to conduct the types of work at hand.

For the first time in recent Jamaican history, the Industry has at its disposal an organization which it trusts to help resolve problems which have been outstanding in the Industry for the past fifteen years or more.

It would appear entirely inappropriate for any individual concerned with development, or more traditionally-conservative, issues to suggest that such basic aspects of sectoral growth as the more efficient training of youth and current employees and the development of an elementary data base for improved planning, operation and communication are not necessary. Obviously, such activities are necessary and should be conducted on a scale which at least begins to reflect the actual level of need. An outstanding and very rare opportunity exists to provide a reasonable and relatively inexpensive response to such long term needs. CRDC is the only organization currently in a position to act quickly, in the face of the opportunity and with strong Industry support. It should be provided with the opportunity to do so.

A reasonable response to Industry's requests would entail action in three areas;

- research and data development
- human resource development
- special projects related to efforts of potential benefit to development in the construction field, public and private. Women's development issues like the WCC in terms of its non-training elements, would be included in the special projects category.

CRDC has worked effectively in all three areas to date. Although the resources available in the past were more limited than those which would be required in the future, there is no reason to assume that CRDC could not adapt quickly and efficiently. In fact, the Centre has demonstrated certain characteristics which provide a much stronger basis for effective growth than

is usually the case in similar situations where expansion is at hand. These characteristics are:

- a) CRDC, unlike many organizations which have moved into the field, has already had extensive experience with the basic pertinent processes and expert technicians working in the field. This experience would facilitate a move into computerized data work assuming the availability of appropriate staff training and limited technical assistance in the early stages;
- b) extensive knowledge of, and established working relationships with, a wide range of professionals in the three types of work entailed in the proposed expansion, together with freedom from bureaucratic hiring procedures, would permit fast and accurate recruitment and hiring;
- c) the internal elements of CRDC (staff, system procedure) are currently very strong and, if the expansion takes place in the near future would easily adapt to the change;
- d) the strong support of an Industry whose representatives have continuously demonstrated a willingness to help the Centre overcome growth-related problems.

No major changes would be required in terms of CRDC's role, method of operation, or approach to its work. The Board of Trustees of the CRDC would, however, have to be expanded to provide a more appropriate reflection of the variety of Industry associations and interests. Currently, the key Industry organizations on the Board are the Masterbuilders Association, Electrical Contractors Association and the Joint Trade Unions. While these organization should continue to play their important role in CRDC, other key private sector groups such as the Architects Association, Quantity Surveyors Association and PSQJ should join the Board of Trustees so as to provide a formal opportunity to express their organizations' interests and furnish advice and assistance with the Centre's mission.

5.6 RESOURCES NECESSARY FOR EXPANSION

5.6:1 Personnel

Numbers and distribution of staff should reflect the functional lines of the organization and provide sufficient personnel in each key area to ensure that adequate time and close attention can be given to each pertinent task to ensure quality performance upon which to build a stable base for the move from dependence to self-sustainability. CRDC must be able to market its services effectively and great care must be taken to employ the best possible technicians in each key area.

Since the staff will be working extensively with the private sector and will be expected by its clientele to perform according to the Private Sector's accepted methods, procedures, timelines and behaviours, CRDC should focus its recruitment and hiring efforts on individuals with extensive Private Sector experience. Furthermore, it will be important to ensure that adequate support staff is available to ensure that professional staff has the assistance and time necessary to produce work of consistently high quality. Great emphasis must be placed on the marketing of products which are timely and of consistently high quality if the Centre is to achieve self-sustainability. The demands of the market place leave no room for delays, error or other shoddy performance. In this regard, it will be important for USAID, usually accustomed to dealing with the problems of bureaucracy, to consider the differing expectations and requirements of the Private Sector environment since staff background, salary and organizational support requirements do vary from those often encountered in the Public Sector. To staff CRDC effectively

a minimum of eight professionals and seven support personnel will be required. The staffing pattern, arranged along functional lines, should be as follows.

Management and Administration

Executive Director

Administrator

Secretary

Messenger

Research

Senior Research Officer

Research Officer

Research Assistants (temporary as needed)

Human Resource Development

Human Resource Development Officer

Secretary/typist (shared with Research)

Special Projects (Bauxite Project, WCC etc.,)

Special Projects Officer

Communication (newsletter, data dissemination, marketing, public relations)

Communications Officer

Secretary/typist (shared with Human Resource Development)

Data Processing

Computer Programmer/analyst

Computer Operator (key board - data processing)

5.6:II Finance

Funding at a level of approximately US\$386,160 should be provided over a two to three year period. Expenditure during the first year will be relatively high compared to later years in order to cover both staff salaries and the high cost of equipping the office (the majority of CRDC's equipment is currently borrowed), purchasing a small data processing system, purchasing needed training materials, etc. Funding requirements will decrease considerably in year two once the initial equipment and materials purchases have been made, and will drop sharply in year three, when CRDC should be almost fully self-supporting. The recommended allocation of funds is described below.

5.6:III Recommendation

Resources as described should be made available to CRDC in order to permit the Centre to continue the work currently on hand and to establish a stable base from which to respond to the increased levels of activity required by the CRDC network.

The budget outlined should remain keyed to the US rather than Jamaican dollar to protect the Centre's organizational stability against the potentially damaging effects of inflation and further devaluation of the local currency.

TABLE #7
ALLOCATION OF FUNDS IN US\$'000's

	1985	1986	1987
Personnel	97.9T	108.0	50.0
Technical Assistance (data processing/video Facilities	12.0		
	7.2	7.2	
Utilities	3.6	3.6	
Office Equipment	39.25		
A.V. Equipment	5.35	1.0	
Equipment Maintenance and Insurance	2.0	2.0	
Vehicle	10.0		
Maintenance and Insurance (for two vehicles)	4.05		
Legal/Auditing)	1.0	1.0	
Postage/Printing	1.0	1.0	
Computer Costs	18.0	1.0	
Training (computer)	2.0	2.0	
Staff Development	3.0	1.0	
Resource Texts/Journals	<u>2.0</u>	<u>1.0</u>	<u> </u>
	US\$207.36	128.8	50.0
	=====	=====	=====
TOTAL		US\$386,160	

- Note:
- 1) Budget assumes late personnel status in 1985.
 - 2) Certain standard budget costs will be covered by other income.
 - 3) Project will be fully operational/income earning by mid 1986
 - 4) A major portion of income earned in '86 will be held over to cover any costs in 1987.

ANNEX I
ORGANISATION AND INDIVIDUALS CONTACTED

*CRDC STAFF

Ruth McLeod - Director
Elizabeth Dixon - Research Officer
Carmen Griffiths - Secretary

*WOMEN'S CONSTRUCTION COLLECTIVE

Enith Martin - Manager
Sharon Wynter - Management Trainee
Totsy Hemmings - Member
Sandra Hall - Member
Asalee Bailey - Member

USAID STAFF

- * Dr. Joseph Carney - EHRD
- * Audrey Tomlin - EHRD
- * Jack Hjelt - Housing
Sarah Frankel - Housing
- * Talbot Penner - Private Enterprise Development
- * David Rybak - Private Enterprise Development
Michael McLeod - Private Enterprise Development
Julio Schlotthauer - Deputy Director
R. Friedline - Programme Officer

CRDC MANAGEMENT COMMITTEE

- * Sydney Delvaile - President of Masterbuilders
Richard Hilton - Vice President of Masterbuilders
- * Milton Haughton - Vice president of Electrical Contractors
Karl Lcwin - HEART Representative

VOCATIONAL TRAINING & DEVELOPMENT INSTITUTE

- Mr. Butterfield - Principal
- * Mr. Kennedy - Senior Vocational Instructor
Mr. Fowlin - Head of Building Department
Mr. Williams - Certification Officer
Mr. Muschette - Curriculum Development Officer

CAST

- Alfred Sangster - Principal
- * George Blankson - Building Department Head
David Harrison - Architectural Planning
Mike Pattison - Land Surveyor
- * Claudette Fraser - Placement Officer

HEART

Dr. Joyce Robinson - Managing Director
Joyce McKenzie
Stanley Dunwell - Projects Co-ordinator
Dr. Wall

R.C.A.

- * Fred Harrington

BUILDING RESEARCH INSTITUTE

* Steven Hodges - Information Consultant

PLANNING INSTITUTE OF JAMAICA

Barbara Boland - Head of Manpower

Myrtle Hazel

Grace Strachan

OFFICE OF DISASTER PREPAREDNESS

* Franklyn McDonald - Director

Keith Ford

Beverley Lewis

PROFESSIONAL ASSOCIATIONS

* Marvin Goodman - President of Jamaica Institute of Architects

Maurice Stoppi - Building Societies Association

Andrew Graham - Society of Quantity Surveyors

Vincent Lawrence - Institution of Engineers

Winston Dwyer - Bunkers Association

Colin Whittingham - Developers Association

Philip Gore - President Developers Association

Brian Goldson - Joint Consultative Committee

PRIVATE SECTOR ASSOCIATION OF JAMAICA

Sam Mahfood - President

* Dennis Sedahoum - USAID Consultant

* Veyden McMorris - Construction representative

* Delroy Lindsay

Justin Vincent

Larry Mansfield - Aid Economist

Maureen Heydon - Economist

UNIVERSITY OF THE WEST INDIES

Clive Simpson - Estate Manager

COOPERS AND LYBRAND - CRDC AUDITORS

* Steve Holland

OTHER PROFESSIONALS INVOLVED IN DATA COLLECTION AND ANALYSIS

Shannon Ricketts - Institute of Management and Production

Louis Stephenson - Jamaica Exporters Association

Camille Needham - Jamaica Hotel & Tourist Association

Wesley Vanriel - Jamaica Manufactures Association

Barry Whyte - National Development Foundation

Vivian Rochester - Life Insurance Companies Association

CRDC TRAINING PROGRAMME PARTICIPANTS AND STAFF

- * Henry Sutherland - Co-ordinator of Foreman/Supervisor's programme
- Fitzgerald Warren - Participant, McGregor & Levy Ltd.
- Leo Byfield - Participant, Airport Authority
- Allan McLeod - Lecturer Industrial Relations - Foreman/Supervisor's Programme.

METHODOLOGY

The methodology utilised in this study was based on the following premises:

- a) data collection had to be project based rather than company based due to the difficulties associated with subcontractation;
- b) main contractors, project management and subcontractors would have to grant CRDC access to confidential documentation and information;
- c) a variety of data collection techniques would have to be utilised;
- d) assumptions would have to be made regarding the relationship between labour utilisation profiles determined on a project basis and the reflection of these profiles in the 'ecology' of the overall labour force.

Following incorporation of CRDC in December 1983, the Master-builders and the Architects agreed to allow the Centre access to site diaries, wage bills and time and task sheets. In addition, CRDC was permitted access to sites and site personnel for interviewing purposes.

Six projects were identified. Of these only one, infrastructure two, had not been completed by the end of the data collection exercise. However, due to the repetitive nature of this form of infrastructure work, it was possible to utilise the infrastructure two data prior to full completion of the project. Specifications and comprehensive data on all six projects are detailed in the Appendices.

The following data collection techniques were utilised over a period of three months by CRDC staff and research assistants recruited from the CAST Building Department.

- 1) All available labour data was extracted from site diaries kept by the principal contractor and the supervising architect.
- 2) Labour data extracted from site diaries was complemented by, and checked against, labour data extracted from wage bills, task sheets (these detailed subcontracted labour) and time sheets. In a number of cases, each subcontractor was interviewed on site in order that the size and structure of his subcontracted work group could be identified and quantified in terms of pay. This in turn allowed for the calculation of factors for individual subcontractors which when applied to labour cost totals on task sheets enabled quantification of mandays on site by different labour categories.
- 3) Following the production of labour utilisation profiles on each project, site supervisors were interviewed in depth for feed-back on the relationship between identified labour profiles and building specifications. This information was double checked with project management.
4. During each site visit, informal interviews were held with site supervisors, foreman, subcontractors and tradesmen concerning their perceptions of training requirements for labour and the potential for job opening in the future.

RECOMMENDATIONS RESULTING FROM THE HEART
SEMINAR ON CRDC'S SURVEY - HELD 25.5.84

1. That the ASTP be phased out in its present form and that multi-skill training in construction be concentrated at Kenilworth and Portmore.
2. That the training programme at Portmore and Kenilworth be open ended and competency based, allowing training groups (of twenty each) to proceed through training on the basis of individual group performance.
3. That the Portmore site contractors be requested to allow appointed instructors access to workshop space prior to official handing over of the facilities. This will allow instructors to have an important input into shop layout etc.
4. That no trainees be admitted to Portmore until one month following official hand over to allow administrators and instructors to make adequate preparations for commencement of training.
5. That there should be an initial intake of three hundred trainees into the HEART Academy at Portmore. The first intake should be assessed and tested during a four week period prior to streaming into basic, vocational and advanced programmes. Only after the first three hundred have been allocated to programmes trainees should the balance of a further two hundred trainees be taken in.
6. That basic training should be in general construction and incorporate exposure to all the trade areas offered in the academic.
7. That vocational level training should emphasise general construction but offer options to major in one specialist area.
8. That vocational and advanced training programmes should include on-the-job experience arranged through placement on live construction sites.
9. That the trade offered at Portmore be as follows:

Rough Carpentry
Joinery
Electrical Installation
Masonry
Plumbing - general
Welding/Pipefitting
Steelwork (bending, fixing and fabrication)
Painting and Decoration.

10. That the workshop space at Portmore be divided as follows:

Trade Area	Number of Shops
Woodwork machine shop	1
Carpentry bench shop	2
Masonry	2 (with design all allowing for)
Electrical Installation	2
General Plumbing	1½
General Welding	1

Trade Area	Number of Shops
Painting and Decoration	1
Welding and Pipefitting	1
Steelfixing, bending and fabrication	1
TOTAL	<u>12</u>

11. That scaffolding and blue print reading be incorporated as an integral part of the vocational and advanced programmes.
12. That trainee selection should be based on the trade ratios identified in the Construction Resource & Development Centre's training needs analysis report.
13. That the ratio between trainees entering basic vocational and advanced training be determined on the basis of the identified spread of applicants.
14. That the establishment of tripartite trade committees with the responsibility for determining standards at grades III, II and I in the trade areas offered at the Kenilworth and Portmore academies be considered an urgent priority be the HEART Trust. All standards should be formulated to allow for appropriate performance based trade testing.
15. That Construction Resource & Development Centre should initially be responsible for organising evening classes at Portmore on the undertaking that the evening class programme will be handed over to the Academy once it has been developed.
16. That Construction Resource & Development Centre be adequately funded to allow for labour utilisation and training needs analysis to be carried out on a broader basis in order that HEART be kept fully apprised of the detailed training needs of the construction sector.
17. That Vocational Training Development Institute be considered responsible for developing assessment and testing procedures to be utilised in the Building Skills Programme.

DEVELOPMENT PROCESS USED IN FOREMAN/SUPERVISORS
TRAINING PROGRAMME

The development process reflects that used for other CRDC training programmes and is composed of thirteen phases.

1. Needs analysis
2. Decision to develop overall Foreman's programme prior to further development of discrete and specific components aimed at higher levels of Supervisory Management.
3. Identification and purchase of Foreman Training Programme. Materials produced by Associated General Contractors of America (AGC)
4. Review and modification of AGC material, using training and industry personnels' input.
5. Development of course outline based on (4) and identification of resource personnel
6. Determinaiton of detailed content based on (4) and preparation of materials.
7. Marketing
8. Pre-evaluation of participants and start up of training delivery
9. Regular application of course evaluation and instruments to obtain detailed participant feedback re: ongoing courses and detailed content requirement for future specialists. Component to be delivered in 1985 on modular basis.
10. Post evaluation of participants
11. Certification and entry of participants into referral files
12. Overall evaluation and assessment of training programme and resource personnel
13. Modificaiton of programme and scheduling of next delivery.

SUMMARY OF SUPERVISORY TRAINING
NEEDS STUDY CONDUCTED JUNE 1984.

Methodology

A sample of fifty individuals were interviewed on four building sites using questionnaires comprised of open ended and coded questions. Responses were recorded using cassette recorders. Individuals interviewed included project managers, site supervisors, foremen, lead hands and artisans. Questions focused on present occupation, working experience, training background, perception of supervisory roles, functions, perceived supervisory weakness and perceived specific training needs.

Findings

Prioritised training needs were identified in the following areas:-

1. General Supervisory Management Skills
 - industrial relations
 - leadership
 - motivation & training
 - human relations and communication

2. Technical Skills
 - Blue print Reading
 - Building standards and codes
 - Site lay out
 - Foundation systems
 - Electrical and plumbing systems

3. Site Management
 - Planning and scheduling
 - Report Writing and Record Keeping
 - Costing and Estimation
 - Safety procedures

A need was identified for

- a) a single overview programme geared to foremen and included elements of 1, 2 & 3.

- b) a series of more detailed course focusing on specific components within the three general areas (eg. costing and estimation) and targeted at site supervisors.

Respondents all recommended that training delivery be on an evening class and/or day release basis in order to avoid disruption of their income generating activities.

COURSE NAMES	MODULES	RESOURCE PERSON	QUALIFICATIONS
BUILDING MAINTENANCE I	Safety in Buildings	Godfrey Perkins	Ja. Association of Safety Professionals
	* Plumbing and Drainage	William Bryan Ian Fowlin	VTDI Instructor - VTDI
	* Masonry Maintenance	Clement Morgan	VTDI
	* Carpentry Maintenance	Hubert Carrol	VTDI
	* Painting and Decorating	Hubert Carrol	VTDI
	* Electrical and Mechanical Maintenance	Joseph McPherson	VTDI
	Air Conditioning Maintenance	Harold Purrier	Lecturer CAST
	Disaster Preparedness	Lorna Soho	ODP
	* Preventative Maintenance	Michael Roberts Clive Simpson	Property Manager LOJ Estate Manager UWI
	* Check Listing and Report Writing	Michael Roberts	Property Manager LOJ
	Session with Supervisors	Ruth McLeod	Director - CRDC
	Human Relations	Ruth McLeod	Director - CRDC
	Pest Control	Robin Simpson	Federated Pharmaceutical
	Diagnosis - Electrical/Mechanical	Milton Haughton	Vice President Electrical Contractors
Diagnosis - Plumbing and Drainage	Ian Fowlin	Instructor - VTDI	

* same resource persons for course II

COURSE NAMES	MODULES	RESOURCE PERSON	QUALIFICATION
BUILDING MAINTENANCE II	Disaster Preparedness * Electrical and Mechanical Maintenance * Plumbing and Drainage Painting and * Decorating * Masonry Maintenance Carpentry Main- * tenance Preventative * Maintenance Safety Principles * Report Writing and Check Listing Emergency Medical Care Human Relations Practical Problem Solving - panel discussion	Mr. Robinson Nurse Thomas Allan McLeod Hubert Carrol William Bryan Joseph McPherson	ODP - West Indies Paper Company Airports Authority VTDI

* same resource persons as course 1

COURSE NAME	MODULES	RESOURCE PERSON	QUALIFICATION
FOREMAN/ SUPERVISORY TRAINING	Foreman/Supervisor's Role	Henry Sutherland	Lecturer
	Leadership		
	Motivation and Training for Production		
	Problem Solving and Decision Making		
	Communication		
	Planning and Organising		
	Technical Report Writing and Record Keeping		
	Costing and Estimation	H. Lawrence	Lecturer
Industrial Relations	A. V. McLeod]]]]]	Industrial Relations Consultant	
Evaluation	Milton Haughton]		

COURSE NAME	MODULES	RESOURCE PERSON	QUALIFICATION
BLUEPRINT READING AND PLAN INTERPRETATION	Introduction to Blueprint	David Harrison	Architect/Lecturer CAST
	Working Drawings		
	Symbols and Lines		
	Sections and Symbols		
	Site Plans and Foundation		
	Elevations		
	Details	George Blankson	Head of Building Section - CAST
	Schedules and Grid		

COURSE NAME	MODULES	RESOURCE PERSON	QUALIFICATION
WELDING SEMINAR	Safety and Protection - clothing and shielding Selecting Electrodes and Metal Identification Welding Sources Arc Welding Process Practical Demonstration in Advanced Welding Techniques	Angel L. Ortiz Six Instructors from Lluidas Vale Youth Camp (HEART) Delta Supplies Technical Advisors	Training Consultant

COURSE TITLE:	COURSE CONTENT:	DATE :		SESSIONS :		NO. OF TRAINEES :		TRAINEES :		OCCUPATION	SALARY RANGE
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp		
BUILDING MAINTENANCE I (Total Hours = 84)	PRACTICAL :	30.1.84	3.4.84	12*		19	18	12	6 ³	Plumber	\$120 - \$185 (Weekly)
METHOD OF PRESENTATION:	1. Safety in Buildings				6					General Maintenance	
Slides	2. Plumbing and Drainage				18					Electrician	
Handouts	3. Masonry Maintenance				6					Refrigeration Technician	
Group Discussions	4. Carpentry Maintenance				6					Building Contractor	
Practical Demonstrations in Lab	5. Painting and Decorating				6					Carpenter	
EVALUATION	6. Electrical and Mechanical Maintenance				12						
Written and oral evaluations were done of the course and the participants	7. Air-Conditioning Maintenance				6						
	THEORY :				60						
	8. Disaster Preparedness				3						
	9. Preventative Maintenance				3						
	10. Diagnosis - Plumbing and Drainage				3						
	11. Session with Supervisors				3						
	12. Check Listing and Report Writing				3						
	13. Human Relations				3						
	14. Pest Control				3						
	15. Diagnosis - Electrical/Mechanical				3						
	Evaluation				24						
	Graduation										

NOTES * Last two sessions are reserved for Evaluation and presentation of certificates

³Six women from WCC of the six, four are employed. The general feedback in terms of promotions and pay increase is that the participants were not sent on the programme with the idea of a promotion and pay increase in mind, but to upgrade their skills and also to introduce them to any new techniques.

COURSE TITLE:	COURSE CONTENT:	DATES :		SESSIONS :		TRAINEES :		NO. OF TRAINEES :		OCCUPATION	SALARY RANGE
		start	fin	Wks	Hrs	Start	Fin	Emp	Unemp		
Building Maintenance II (Total Hours = 70) METHOD OF PRESENTATION: Lectures Slides Group Discussions Practical Demonstrations in Lab. EVALUATION: Written and oral evaluations were done of the course and the participants	PRACTICAL: 1. Disaster Preparedness 2. Electrical and Mechanical Maintenance 3. Plumbing and Drainage 4. Painting and Decorating 5. Masonry Maintenance 6. Carpentry Maintenance THEORY: 7. Preventative Maintenance 8. Safety Principles 9. Report Writing and Check Listing 10. Emergency Medical Care 11. Human Relations 12. Practical Problem Solving Evaluation Graduation	30.5.84	31.7.84	11*	4 12 12 6 6 6 46 3 3 6 3 6 3 24	10	10	6	4 ²	Electricians Refrigeration Technician General Maintenance Plumber Supervisor Light and Power Supervisor	\$150 - \$185 per week

² 4 women from WCC
of the 4, 2 are
employed

COURSE TITLE:	COURSE CONTENT:	DATES :		SESSIONS :		TRAINEES :		NO. OF TRAINEES :		OCCUPATION	SALARY RANGE	
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp			
BLUEPRINT READING AND PLAN INTERPRETATION (Total Hrs = 30) METHOD OF PRESENTATION: Lectures Handouts Drawings EVALUATION Written and oral evaluations were done of the course and the participants	1. Working Drawings 2. Symbols and Lines 3. Sections and Symbols 4. Site Plans and Foundation 5. Elevations 6. Details 7. Schedules and Grid Evaluation Graduation	28.3.84	20.6.84	12*		15	15	15	-	Masons General Maintenance Social Worker Time Keeper Business Woman Tow Operator Carpenter Site Supervisor Steel Fixer	\$120 - \$200 (per week)	
					3							
					6							
					3							
					6							
					3							
					6							
					3							
			<u>3</u>									
			30									

COURSE TITLE	COURSE CONTENT:	DATE :		SESSION :		TRAINEES :		NO. OF TRAINEES :		OCCUPATION	SALARY RANGE
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp		
WELDING SEMINAR		30.5.84	1.6.84		24	23	23	23		Welders (subcontractors)	
METHOD OF PRESENTATION:	1. Safety and Protection Clothing and Shielding									-Apprentices	
Practical Demonstration	2. Selecting Electrodes and Metal Identification									-Supervisors	
Film	3. Welding Power Sources										
Handouts	4. Arc Welding Process										
Group Discussions	5. Practical Demonstra- tions in Advanced welding techniques										
Talks											

NOTE: A three day workshop put on by Construction Resource & Development Centre and the Ministry of Youth for employees at Reginald Aitken

COURSE TITLE	COURSE CONTENT	DATE		SESSIONS		NO. OF TRAINEES		NO. OF TRAINEES		Placement	SALARY RANGE
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp		
BASIC BUILDING CONSTRUCTION FOR WOMEN 1	Construction and site Investigation	10.10.83	31.11.84	5	115	10	9	-	9	8 *	\$180 per fort night
	General Safety				3						
	Drawing and Freehand Sketching				2						
	Dimensioning and Setting out				5						
	Tools - Masonry and Carpentry				5						
	Soils and Foundations				10						
	Formwork Construction (Wood and Metal)				5						
	Walls and Partitions - Concrete and Rendering				10						
	Roof and Stairs				37						
	Glossary of Terms				10						
	Materials and Estimation				5						
	Carpentry - Working with Wood				10						
	Total				13						
	Eveluation Presentation of Certificates				<u>115</u>						

Sponsored by Population Council - Course Design - CRDC
Evaluation and Presentation not included in training hours.

* One not placed due to pregnancy and the other asked to leave because of low interest level

COURSE NAME	COURSE CONTENT	DATE		SESSIONS		NO. OF TRAINEES		NO. OF TRAINEES		Placement	SALARY RANGE
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp		
BASIC BUILDING CONSTRUCTION FOR WOMEN II				5	145	15	15	-	15	13*	\$180 per fortnight
	Construction and Site Investigation				3						
	General Safety				3						
	Drawing and Freehand Sketching				6						
	Dimensions and Setting Out				6						
	Tools - Masonry and Carpentry				12						
	Soils and Foundation				6						
	Formwork Construction (Wood and Metal)				12						
	Walls and Partitions (Concrete and Rendering)				24						
	Roof and Stairs				12						
	Glossary of Terms				12						
	Materials and Estimations				12						
	Basic Plumbing				22						
	Carpentry - Working with Wood				<u>15</u>						
	Total				145						
Evaluation											

Sponsored by Grace Kennedy Foundation and
Canadian International Development Agency (CIDA) Course Designed by CRDC

* Two not placed due to pregnancy

COURSE TITLE:	COURSE CONTENT:	DATE		SESSION		TRAINEES		NO. OF TRAINEES		OCCUPATION	SALARY RANGE	
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp			
FOREMAN/ SUPERVISORY TRAINING (Total Hours = 30) METHOD OF PRESENTATION: Lectures and handouts EVALUATIONS: Written and oral evaluations are being done of the course and the participants	1. Foreman/Supervisor's Role 2. Leadership 3. Motivation and Training for Production 4. Problem Solving and Decision Making 5. Communication 6. Planning and Organising 7. Technical Report Writing and Record Keeping 8. Costing and Estimation 9. Industrial Relations 10. Overview Evaluation Graduation	26.9.84	12.12.84	12*		17#	4	14	-	Supervisors Foremen	\$150 - \$250 (weekly)	
					3							
					3							
					3							
					3							
					3							
					3							
					3							
					3							
					3							
					3							
					30							

Three participants came only for the first session

PROJECTIONS

COURSE TITLE :	COURSE CONTENT :	DATE :		SESSIONS :		TRAINEES :		NO. OF TRAINEES :		OCCUPATIONS	SALARY RANGE
		Start	Fin	Wks	Hrs	Start	Fin	Emp	Unemp		
BASIC AIR CONDITIONING AND REFRIGERATION METHOD OF PRESENTATION: Lectures Handouts Lab visits	1. Safety Links			12*	30	15	15	15	-	Air Conditioning Technicians Electricians	\$150 - \$180 (weekly)
	2. Trouble Shooting										
	3. Window Air Conditioning Unit										
	4. Electrical Circuit										
	5. Preventative Maintenance										
BLEUPRINT READING AND PLAN INTERPRETATION II METHOD OF PRESENTATION: Lectures Slides, handouts site visits and drawings				10	30	17	17	17		Small Contractors Masons Carpenters	\$150 - \$200 (weekly)
BUILDING MAINTENANCE III METHOD OF PRESENTATION: Slides, handouts group discussions practical demonstrations in lab				10	80	20	20	20	-	Electricians Plumbers Carpenters	

MODULES	RATING	NO. OF TRAINEES	NO. OF TEACHERS	EXPENDITURE						REGISTRATION FEE									
				RESOURCE PERSON	COURSE MATERIALS (CLEAN)	COURSE MATERIALS (PRINTED)	ADVERTISING	MARKETING	MISCELLANEOUS										
<u>BUILDING MAINTENANCE I & II</u>																			
Painting & Decorating	ok	28	134	\$25 - \$35 per hour	\$1130	\$500	\$360	\$250	\$130	\$350									
Pest Control	useful																		
Elec. & Mechanical	V. useful																		
Plumbing and Drainage	V. useful																		
Human Relations	ok																		
Masonry Maintenance	useful																		
Check Listing and Report Writing	useful																		
Carpentry Maintenance	useful																		
Safety	useful																		
Disaster Preparedness	useful																		
Preventative Maintenance	useful																		
Plumbing Diagnosis	ok																		
Emergency Medical Care	useful																		
Panel Discussion	useful																		
Air Conditioning	useful																		
<u>BLUEPRINT READING</u>																			
Symbols and Lines	useful	15	30	\$35	-	\$110	\$149	\$100	\$50	\$350									
Floor Plan	useful																		
Sections & Symbols	V. useful																		
<u>Site Plan and Foundation Details</u>																			
Site Plan and Foundation Details	useful	14	30	\$35	-	\$550	\$367	\$160	\$200	\$350									
<u>FOREMAN/SUPERVISORY TRAINING</u>																			
Foreman/Supervisor's Role	V. useful																		
Leadership	useful																		
Motivation and Training for Production	ok																		
Communication	ok																		
Planning and Organising	useful																		
<u>WELDING SEMINAR</u>																			
Safety and Protection	V. useful	23	18	\$390	-														
Selecting Electrodes and Metal Identification	V. useful																		
Welding Power Source	V. useful																		
Arc Welding Process	V. useful																		
Practical Demonstrations in Advanced Welding Techniques	V. useful																		
TOTAL		80	232		1150	960	876	510	400										

BUILDING MAINTENANCE COURSE 1/1
PARTICIPANTS' EVALUATION SHEET

1. What is your main occupational interest?
.....
.....

2. Please indicate your assessment of the programme so far by circling the appropriate number for each section of the course

		useless		o.k.		very useful
30.1.84	Orientation	1	2	3	4	5
	Safety in Buildings	1	2	3	4	5
31.1.84	Disaster Preparedness	1	2	3	4	5
6.2.84	Plumbing and Drainage	1	2	3	4	5
7.2.84	Concept of Preventative Maintenance	1	2	3	4	5
13.2.84	Plumbing and Drainage	1	2	3	4	5
14.2.84	Plumbing Diagnosis	1	2	3	4	5

3. What were your expectations of the course?
.....
.....
.....

4. Are these expectations being met? Yes No
Please explain your answer.
.....
.....

5. What part of the course have you found most interesting?
.....
.....

6. What part of the course have you found least interesting?
.....
.....

7. What, if anything, would you like to see added to the course?
.....
.....

8. What, if anything, would you like to see taken out of the course?
.....
.....

9. In the space below, please make any additional comments, criticisms or suggestions concerning the course.
.....
.....

BLUEPRINT READING AND PLAN INTERPRETATION COURSE #1/2
PARTICIPANTS' EVALUATION SHEET

Please answer the following questions as frankly as possible.

1. What is your occupation?

..... Businessman

2. Please indicate your assessment of the programme so far by circling the appropriate number for each section.

		useless	o.k.		very useful
		1	2	3	4
4.4.84	Symbols and lines Floor-Plan				4 (5)
11.4.84	Symbols and Lines - Floor Plan -				4 (5)
18.4.84	Sections and Symbols				4 (5)
25.4.84	Site Plans and Foundations				4 (5)
2.5.84	Site Plans and Foundations				4 (5)
9.5.84	Elevations				4 (5)
16.5.84	Details				4 (5)
30.5.84	Details				4 (5)

3. What were your expectations of the course?

..... To be able to interpret the reading of Blueprints

4. Are these expectations being met? Yes No
 Please explain your answer.

..... I do a very small amount of construction, and so I have to rely on my builder for technical help. In doing this course, I became more knowledgeable about the plan interpretation.

5. What part of the course so far have you.....

- a) most valuable
- b) least valuable
- c) most difficult Sections and Symbols
- d) least difficult

6. How would you assess the quality of the instruction you have received. Please tick the appropriate box.

terrible fair good excellent

7. Have you any suggestions as to how the course could be improved?

Yes No

Please write down your suggestions.

..... Since we have no textbooks, I think a set of approximately two or three set of drawings should be given as hand-outs, and the lectures should be based on these plans. One set of drawing was given out and lectures were given on this plan, but for instance, it had a timber roof, maybe we would like to know about a concrete slab roof.

EVALUATION QUESTIONNAIRE
 BLUEPRINT READING AND PLAN INTERPRETATION
 COURSE #2/1

Please answer the following questions as frankly as possible.
 You do not have to put your name on the paper.

1. What is your occupation?
Technician / Maintenance Services U.W.I.
2. How many years have you spent working in the building construction sector?
12 yrs.
3. What were your expectations of the course?
I think the course has covered the basic parts of understanding blue print reading.
4. Are these expectations being met: Yes No
 Please explain your answer in the space below.
Most participants are leaving with the information that they should have on the job and that help.
5. What part of the course so far have you found
 - a) most valuable *All aspects*
 - b) least valuable *—*
 - c) most difficult *Sections*
 - d) least difficult *Plans*
6. How would you assess the quality of the instruction you have received. Please tick the appropriate box.
 Terrible fair good excellent
7. Have you any suggestions as to how the course could be improved
 Yes No
 Please write down your suggestions.
It is my opinion that hand sets could be made easier to read (drawings).
8. What other training courses could Construction Resource & Development Centre develop that would be useful to you?
The basic principles of Plumbing combined with Plumbing Practice.

EVALUATION OF PARTICIPANTS
IN BUILDING MAINTENANCE COURSE #2

Participants are required to answer all questions.

1. Name four elements required for an effective Maintenance Programme.

2. Four aims of a preventative maintenance programme are:

3. Describe three steps that a maintenance technician should take at work after a hurricane alert has been declared.

- a)
- b)
- c)

4. How often should fire extinguishers in a building normally be checked?

- a) hourly b) daily c) weekly d) monthly

5. Name four characteristics of a good supervisor

- 1)
- 2)
- 3)
- 4)

6. Briefly state four of the advantages of a written reports

.....
.....
.....
.....

8. How can the implementation of a check listing system improve the efficiency of your work section or department?

.....
.....
.....
.....

9. Each of the incomplete statements listed below is followed by several words, phrases or numbers. From these, choose one which answers the incomplete statement correctly. Place the letter of that word A B C or D in the numbered blank space at the left of the item. For example

The mortar that is used for practice purpose is:

- a) cement and sand
- b) cement, lime and sand
- C c) white lime and sand
- d) prepared masonry cement

10. Burning waste materials can cause serious fires. Bonfires should never be lit within how many feet of a building?
- 10 feet
 - 15 feet
 - 20 feet
 - 30 feet
11. The thickness of mortar joints used in masonry block work should not be more than
- $\frac{1}{4}$ "
 - $\frac{1}{2}$ "
 - $\frac{3}{8}$ "
 - $\frac{5}{8}$ "
12. Indicate whether the following statements are true or false by circling the appropriate letter.
- T F sand, cement and coarse aggregate are required for mixing mortar
13. T F the actual length of a block is 16"x 6" x 16"
14. What is the actual size of a 6" stretcher block?
15. Name four desirable qualities of mortar.
-
 -
 -
 -
16. The abbreviation A.C. means:
- Alternating Circuit
 - Alterative Current
 - Alternating Current
 - Alternating Cycle
17. The cable used for Domestic Installation Lighting Circuit is :
- 3/036
 - 7/029
 - 7/044
 - 7/036
18. The cable used for Domestic Installation Plug Circuit is:
- 7/036
 - 7/029
 - 7/044
 - 3/036
19. A two way switch has:
- 2 terminals
 - 3 terminals
 - 4 terminals
 - 1 terminal
20. A switch that is used to control one light or a number of lights from three or more position is called a:
- Two-way Switch
 - One-way Switch
 - Pendant Switch
 - Intermediate Switch

10. Burning waste materials can cause serious fires. Bonfires should never be lit within how many feet of a building?
 - a) 10 feet
 - b) 15 feet
 - c) 20 feet
 - d) 30 feet

11. The thickness of mortar joints used in masonry block work should not be more than
 - a) $\frac{1}{4}$ "
 - b) $\frac{1}{2}$ "
 - c) $\frac{3}{8}$ "
 - d) $\frac{5}{8}$ "

12. Indicate whether the following statements are true or false by circling the appropriate letter.
 T F sand, cement and coarse aggregate are required for mixing mortar

13. T F the actual length of a block is 16"x 6" x 16"

14. What is the actual size of a 6" stretcher block?

15. Name four desirable qualities of mortar.
 - 1)
 - 2)
 - 3)
 - 4)

16. The abbreviation A.C. means:
 - a) Alternating Circuit
 - b) Alternative Current
 - c) Alternating Current
 - d) Alternating Cycle

17. The cable used for Domestic Installation Lighting Circuit is :
 - a) 3/036
 - b) 7/029
 - c) 7/044
 - d) 7/036

18. The cable used for Domestic Installation Plug Circuit is:
 - a) 7/036
 - b) 7/029
 - c) 7/044
 - d) 3/036

19. A two way switch has:
 - a) 2 terminals
 - b) 3 terminals
 - c) 4 terminals
 - d) 1 terminal

20. A switch that is used to control one light or a number of lights from three or more position is called a:
 - a) Two-way Switch
 - b) One-way Switch
 - c) Pendant Switch
 - d) Intermediate Switch

- 21. A switch that is used to control lights from one or two position is:
 - a) Two-way Switch
 - b) Intermediate Switch
 - c) One-way Switch
 - d) Marvel Switch

22. What purpose does the thermostat serve in an electrical hot water heater?

23. Why is it important to have all hot water tanks and pipes properly insulated?

24. What is the purpose of a manhole in a drainage system?

25. Which of the following tools is best suited to remove a difficult choke from a water closet? a) plunger b) closet auger c) cane rod. Give for your choice.

26. List three faults that could cause a water closet inlet valve from closing off properly

27. If there was no arrow on a globe valve to indicate the direction of flow, how would you know the proper way to install such valve?

28. Painting first coat or metal requires

29. Door Jamb and doors should be painted with _____
Paint

30. Woodwork is painted not so much for the decoration but for?

17. A switch that is used to control lights from one or two position is:

- a) Two-way Switch
- b) Intermediate Switch
- c) One-way Switch
- d) Marvel Switch

18. What purpose does the thermostat serve in an electrical hot water heater?

19. Why is it important to have all hot water tanks and pipes properly insulated?

20. What is the purpose of a manhole in a drainage system?

fill wire

21. If there was no arrow on a globe valve to indicate the direction of flow, how would you know the proper way to install such valve?

22. Painted, surface coat of metal surfaces

23. Door jamb and doors should be painted with

Paint

24. Woodwork is painted not so much for the decoration but

31. There are four stages of painting processes.
1. _____
 2. _____
 3. _____
 4. _____
32. Colours most suitable for bathroom
1. _____
 2. _____
33. To paint swimming pools and baths this requires
1. _____
34. A highly inflammable Chemical that mixes Lacquer is _____
35. A carpentry is that part of construction work which deals with? _____
36. Joinery is that part of woodwork which deals with? _____
- 37a Cabinet making deals with? _____
- b Joinery is done in shop and _____
38. The chief and basic materials of buildings are
- 1 _____
 - 2 _____
- b. Woods for construction consists of two varieties
- 1 _____
 - 2 _____
39. Pine is classified as _____
- b. Cedar is classified as _____
- c. Woods have certain defects which occur when the tree in _____ and after it has been _____
40. Measuring tools include 1 _____ 2 _____
- b. Cutting tools include 1 _____
- c. Striking tools include 1 _____ 2 _____
- d. Wrecking tools include 1 _____ 2 _____
41. The tools required to make a nail box are
- 1 _____
 - 2 _____
 - 3 _____
 - 4 _____
42. Nails are designated according to their length and _____

EVALUATION OF RESOURCE PERSONNEL

COURSE LEADER

Name of Course Leader:

Key:-

- 1. = Poor
- 2. = Fair
- 3. = Average
- 4. = Good
- 5. = Very Good
- 6. = Excellent

(Tick appropriate box)

	1	2	3	4	5	6
Punctuality						
Attendance						
Presentation Ability						
Understands Material						
Explains points carefully						
Speaks clearly						
Approachable						
Encourage Participation						

PERSONAL EVALUATION

Participants

Key	1. Poor	2. Fair	3. Average	4. Good	5. Very Good	6. Excellent
	Name					
	Job Title					
	PUNCTUALITY					
	ATTENDANCE					
	CLASS PARTICIPATION					
	COMPREHENSION					
	APPEARANCE					
	COMMUNICATION					
	INTERACTION WITH OTHER PART.					
	LEADERSHIP ABILITY					
	SCORE					

MODULES

A. Indicate how you feel about the material presented in the following modules; using the following key

0 = should be omitted/irrelevant material

1 = of little use to everyday situations

2 = information is useful and will assist me in my role as Supervisor

3 = not sure whether it is useful or not

4 = the information is extremely useful and has cleared up a lot of doubts for me.

Example

1. Costing and Estimation - 0. 1. 2. 3. 4.

This will indicate that you found that presentation useful and of assistance in your function as a Supervisor.

++

Modules: I

- | | | | | | | |
|---|---|----|----|----|----|----|
| 1. The Foreman/Supervisor's Role | - | 0. | 1. | 2. | 3. | 4. |
| 2. Leadership | - | 0. | 1. | 2. | 3. | 4. |
| 3. Motivation and Training for Production | - | 0. | 1. | 2. | 3. | 4. |
| 4. Communication | - | 0. | 1. | 2. | 3. | 4. |
| 5. Planning and Organising | - | 0. | 1. | 2. | 3. | 4. |

1) Has this training programme helped you?

1. Yes

2. No

Explain your answer.

2) What areas have you found most interesting?

a)

b)

c)

2b) Least interesting -

a)

b)

c)

3) Are there any areas which you believe could have been omitted?

1. Yes

2. No

3. Uncertain

3b) If yes what areas - a)

b)

c)

4) Has this training helped you to deal with any job-related problem you might have been having?

1. Yes

2. No

If yes, explain

5) On a scale from 1 - 10, what rating would you give to the presenter.

Circle your response.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Low ----- High

6) Were there any areas that you found difficult?

1. Yes

2. No

i. If yes, state the area (s) -

ii. Explain the difficulty.

7) On a scale from 1 - 10, rate yourself as a Supervisor.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Low ----- High

8) Would you recommend this programme to any other Supervisor.

1. Yes

2. No

If no, give reason(s) -

CONSTRUCTION TRAINING PROGRAMMES IN DEVELOPMENT

ANNEX A

TOPIC	LINK AGENCIES	TARGET GROUP	DELIVERY METHOD
Electrical Installation and Maintenance Upgrading	Private Sector firms Electrical Contractors Association and VTDI	Grade III & II Electricians	In six week plant and standard VTDI delivery (day release and evenings)
Plumbing and Drainage Maintenance Upgrading	VTDI Masterbuilders	Grade III & II Plumbers	six weeks - VTDI day release and evenings
Refrigeration and Air-conditioning Maintenance Upgrading	CAST - Property Maintenance Companies (e.g. LOJ and Pan Jam)	In-house maintenance technicians	CAST day release and evenings
Blueprint Reading and Plan Interpretation	CAST	Small contractors and Grade I tradesmen	twelve weeks evening programme at CRDC
Costing and Estimation	CAST	Small contractors, Foremen and Supervisors	ten week evening programme at CRDC
Site Layout Techniques	CAST	Small contractors, Grade I tradesmen	evening/day release
Structural Techniques for improving safety in Vernacular Housing	Office of Disaster Preparedness Pan Caribbean Disaster Preparedness and Prevention Project	Building Inspectors Building Instructors + local artisans	Mobile training unit utilising local schools and churches
Sanitary Installation and maintenance	Grace Kennedy Staff Foundation VTDI	Female community members	50% workshop at VTDI 50% on site for six weeks
Basic Building Skills	C.I.D.A. VTDI Grace Kennedy Foundation	Unemployed untrained women from poor communities in Kingston	Five weeks - full time
Project Planning and Scheduling	Masterbuilders	Site Supervisors	twelve weeks - evenings at CRDC
Project Management	Masterbuilders	Site Supervisors	twelve weeks at CRDC
Foreman/Supervisor Upgrading	CAST Masterbuilders	Foremen, lead hands Supervisors	twelve weeks at CRDC
Construction Culture and Terminology	University of the West Indies	Secretarial and Administrative staff of Construction Companies and Institutions	Day release and evening
Construction Technology based Literacy Training	CAST UWI VTDI Masterbuilders	Adult construction workers functional literacy	Multiple, utilising CAST Building students
Project Development and Management	LDC Working Group NCO Women's Groups	Leaders of Community based Development projects targeted at women	Series of two day workshops