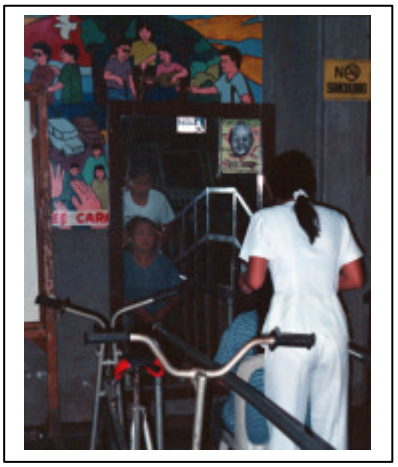
ARCHITECTURE & DEVELOPPEMENT

REPORT OF MISSION

Reconstruction of the orthopedic and prosthetic workshop in Bocolod, Negros (Philippines)



Sandra Jeanette D' Urzo
Architect and consultant A&D
for Handicap International
February 2002

144 rue de Flandre 75019 Paris tel/fax 33 1 44 65 23 79
archidev@archidev.org www.archidev.org
Association régie par la loi 1901

CONTENTS

1.Introduction

This report follows the mission of technical support and assistance to the overall planning of the project for the new orthopedic and prosthetic workshop, to be built in Bocolod, Negros Occidental.
The mission took place on site between the 10th and the 22nd of February 2002.

Beyond the general framework in which the partners, roles, contracting parties were defined , the general objectives of the mission also included specifications of the construction, and the set up of guidelines to be followed to organize the layout of the project: I am infact convinced that a rehabilitation, even known as of " urgency ", is useless if it is not accompanied by a clear redefinition by spaces, circulations and functions.

The priorities of this mission can be resumed in the following points:

- Guarantee a qualitative approach to the operation, adapting the project to the means and the environment in which fits the orthopedic-prosthetic workshop and relating it to the effective needs of its beneficiaries.
- Guarantee the respect of the juridical and administrative clauses of the operation and establish the technical constraints and building requirements;
- Produce and assemble the information in order to give HI a solid understanding of the intervention, and avoid misunderstandings on the roles of the intervenants;

This document therefore can be considered as a “work-in-progress”, focused on a correct definition of the program and of the priorities as regards to the building itself, but certainly not exhaustive. I believe it can be enriched progressively during the phases of construction by the constant dialogue between the client, the local authorities, the project manager and the beneficiaries.

- **Environmental / Social contexts of the operation:**

Even though the Island of Negros has been relatively safe from natural disasters over these years, recent facts have urged the local population to face different types of calamities and experience all kind of problems.
In the past rich resources were plundered and left Negros with a cultivation of exclusively sugarcane which seems totally unprofitable: the population of the island is considered to be the only one who has starved out of hunger in recent times, when the sugarcane market dropped considerably, with no alternative cultivation to switch over to.
Another resource is related to the gold and copper mines in the south of the island but they seem to be causing even more problems and side effects than benefits, as to heavy mineral pollution of the water creating intoxication and illnesses. Besides, as recently as 1995, a mining act was amended to effectively encourage the destruction of rich wildlife and tribal areas such as those around Sipaly and Hinoba-an (Negros Occidental). The copper mine has recently closed, leaving a huge open-air crater, with no reforestation attempts foreseen at present time.
Add to this the combined climatic forces of typhoons and regular earthquakes to integrate short term emergencies to long lasting problems.
Some attempts are made by international NGO's and indigenous committees to introduce technological solutions for filtering the water, and new strategies for these areas including sustainable management programs, education, rural development, small-scale economic activities (especially related to the manufacturing of bamboo furniture, as recent source of benefit), and disaster preparedness and risk prevention.

- **Type of intervention:**

The typhoon Nanag which passed in the Philippines in November 2001 has left significant damages in infrastructure on the island of Negros Occidental and totally destroyed the coastal Orthopaedic and Prosthetic workshop leaving the machines and tools out of order . This workshop was operating since more than fifteen years, on a location some 30 Km away from the NORFI Rehabilitation Centre in Bocolod city. This distance caused a major problem to its patients, having to move independently (and nearly always using public transport) from one destination to the other each time they need a therapy or a fitting. Besides this, the accessibility for disabled people is undermined by a very bad access road. These reasons seem to have determined the rapid decision to look for an alternative site for its reconstruction.
The Rehabilitation centre itself, in Bocolod city, is owned and ruled by Norfi, that operates since twenty years offering rehabilitation services and providing a well-assisted medical care. This building has not been damaged and guarantees a good position (easily reachable by patients, well connected with public transportation, accessible for the users): it has been agreed that the future site of the workshop will correspond to the "terrain-vague" in its back yard, belonging to the Provincial authorities. The province allows a fifty-year agreement with Norfi for its use. The area seems to be perfectly responding to the requirements of a new orthopedic-prosthetic workshop in terms of space, proximity, relation. Common spaces and administration services can be shared with the existing centre and will help to gain some space. The existing plot measures are sufficient but don't allow additional /not strictly required functions.

- **Working staff/users**

At the present moment there a two technicians engaged by Norfi daily manufacturing fittings and appliances. The production of the material would hold on to the same, based on an average of 25 patients per month, but this number can be increased by when newly-trained technicians will be joining the staff (in a couple of months, after HI training program). Since 1996 Norfi also successfully carries out an agreement with the Haagse Hoge School, in The Netherlands. Under this program, twice a year, three to four students of the Human Kinetic Technology Institute complete their internship at Norfi. They design, produce, test and modify devices related to specific disabilities and follow individual patient identified by Norfi's medical specialists. They will share the workshop's space together with the technicians, which gives both the opportunity to integrate the work on technical devices in a more consistent and complementary way.

- **Causes of damage/ basic needs**

Most of the disabled persons that use the centre have been affected by car accidents, or work accidents (on the fields, or due to incorrect use of machinery), congenital disabilities, illnesses.
Norfi's basic programs therefore render services that include **Physical therapy** -Thermotherapy, Electrotherapy, Exercises, manual muscle training, assistive device measurements- and **Occupational therapy** – ADL, Coordination, motor development, sensory perceptual training- and Speech Therapy.

The idea is that the two structures, rehabilitation/therapy center and o&p workshop, should provide a common follow-up of the patients, by integrating the production cycle in one building (fittings/prosthesis/orthesis, canes, crutches, special chairs for children with cerebral palsy, toys for mentally retardate children…) with psychological assistance and occupational therapies in the other one. But certain factors/rules have to be considered in programming the location of the activities of the workshop: common accesses but different activities can generate an incompatibility of uses. Occupational therapies, for instance, located in the back of the building, cannot be facing a production area because noise, air pollution would interfere with the daily activities. Moreover, the workshop has to ensure some independent parts, especially as regards to some of the heavy machinery areas: the technicians will be trained to switch from wood and leather appliances to fiber glass, which implies more sophisticated machinery

Administrative framework, local partners, beneficiaries

- **Financing.**. This project represents the second phase of a vaster operation financed by **ECHO** to support the victims of the Typhoon Nanang, which included Emergency/Reconstruction/Development activities. HI has obtained the financing November 2002. The amount, that has been redefined various times, is of 20.000 EUROS for the construction of the workshop. A separated budget is kept for orthopedic raw material and imported machinery;
  A contribution has also been asked by Norfi to the Municipality,in order to redesign the exterior spaces (playground for children, test area for devices). This contribution has been considered for a small scale intervention, but has to be formalized.
- **Deadlines.** The start-up date has been January 2nd.,2002, which means that the construction has to be completed by June 2002. This date also corresponds to the beginning of the rainy season (usually around may) during

which the operations would surely be interrupted: the construction has therefore to be covered by May, and interior partitions/finishing can be carried out until June. If no major complications occur, the construction will start between 10-15 March, after choosing the building contractor.

- **Partners.**

- the COMMISSIONER and BENEFICIARY of the operation is:

NORFI: Negros Occidental Rehabilitation Foundation Incorporated, WHO collaborating, registered at the Security and Exchange Commission of the Ministry of finance of the Philippines. Norfi has been responsible for :

1. Identifying the project manager. Arch.Rogelio Diaz, in charge of the construction.
2. Providing technical means / buying construction material directly (permission has been asked to HI) for the workshop.
3. Workshop follow-up and participation in administrative process. Authorization on the plot asked to the provincial authorities. Integrative financing will be asked to the Municipality.

Norfi, Corner Cottage Road-Lacson street, Bacolod city- 6100 Philippines
Tel. 435-3794 Fax. (6334)433-5767 e-mail: norfi@nol.ph

- the Project manager of the operation is:

Architect Rogelio Muyco Diaz, chosen by the client, Dean of the faculty of Architecture and Fine Arts of Bocolod. Has accepted to carry out the work, one of his collaborators taking over during the month of May. Has a particular relationship with Norfi, since he has been a patient himself, which gives him a very good understanding of the needs;
The project manager's responsibilities:

- Co-ordinate the technical phases of the project and respect the contract deadlines;
- Gather the technical documents to start the call for tender
- Schedule the conditions in a detailed specification
- Obtaining all the administrative building permits
- Supervise the general quality of the work according to regulations
- Analyze and approve all of the executive plans (if done by the contractor)
- Analyze and approve the monthly follow-ups for the payments
- Co-ordinate his action together with the public services (water, electricity, telephone….)
- Regularly inform NORFI and HI on the schedule

Organize the final verification and acceptance that the building work has been satisfactorily completed to specification

Arch. R. Diaz, la Consolation College, ARFIEN Dept., Sta Monica Building, Bacolod.
Tel. 4349661 loc. 56

3. METHODOLOGY

Programming the intervention

3a. Legal documentation:

1. Project partnership contract signed between Norfi and HI
2. Contract to be signed between HI and A&D, with consultancy work/technical support as part of a larger agreement.
3. Contract signed between Norfi and Arch. R. Diaz, with copy sent to HI.
4. Ownership of the site: Norfi provides the certificate from the provincial authorities. Permission to use the land for specific building purposes.
5. Building permit: the local architect will make the request. A meeting has been arranged during my stay with Mrs. Joy Valdes, mayor of Bacolod and previously President of Norfi. Building request has been asked soon after.
6. Call for tenders: the architect will provide all necessary application documents for the bidding and chose the building enterprise on the basis of selected criteria (see page...). Approximate deadline for quotations: March 10th.
7. Donors: 1.Conctracts signed between HI and ECHO on the financing of the program, 2. (eventually) Contract between Norfi and Municipality of Bacolod for additional financing.

3b. Consultation of enterprises /SEE ANNEX 1
3c. Construction phase
3d. Equipment phase

Analysis of the building site:

Surveys. A cadastral survey has been sent by the provincial authorities to Norfi, and the measurements correspond to the ones made by Arch. Diaz and myself.
The surface is rectangular approx. 13 m X 23 m but, given the legal distances from property boundaries, the net construction area is of 9 m. X 18,5 m. A fire-wall will be built on one side of the property and a narrow passage leading to an informal settlement will be closed; no specific geological/hydrological surveys have been undertaken, as the building site is has firm ground and no major risks seem to endanger the construction: a drainage canal will be relocated all around the boundaries and the construction itself raised 40cm. above the actual ground level, to avoid any water infiltration and floodings during heavy rainy season. The filling soil will be provided by the local authorities without additional charges.
Networks, accesses. Electricity, telephone lines, gas , water supply and sewerage system are easily likeable to the main grid, as the building surface is located less than 50 m. from the main axe in Bacolod (Lacson street).
All construction and waste materials will be transported through the secondary entrance on the right side of the building (see plan), and a new fence placed after the heavy machinery has been put in place;

SPATIAL LAYOUT AND DESCRIPTION OF MAIN FUNCTIONS

The spatial requirements for the whole workshop building impose the use of the entire available surface of the plot: a small slice of land is kept as garden on the main façade, as to enlarge the minimum distance from the existing building (which has a large overhang). The main access for patients will be through the rehabilitation center, and a staff entrance is opened on the other side. The production area is kept in the most remote area of the plot, while the dormitories (2 rooms for patients that can't return home on a day trip) are placed on the opposite side. The waiting room can thus be used as a collective space for the dormitories when the center is closed.
One of the two rooms, if not frequently used, can be used as meeting and training room for the technicians and converted into a flexible space.
The building is articulated around two concrete colored blocks (visually recognizable for patients) separated by a large sliding bamboo screen, that opens and closes the center.

FUNCTIONS	QUANTITY	SURFACES M2
Production area: (assembly+ machine room)	1	39,0
Resin	1	9,3
Cast room	1	9,3
Waiting space	1	14,0
Fitting	1	18,0
Staff room	1	4.6
Store	1	20,0
Rooms/dormitory	2	18,4
Services	1	

Total workshop area (without outside spaces)		169

Outside spaces/ special interventions

- **Playground for children/ test area for the devices produced in the workshop:**

- These functions will be placed in the area next to the existing building. Part of it will be paved with concrete (2 meters wide approx. by the whole length) and part of it will be grass/green area; the two dead trees should be removed and a new fence will be placed. A design by Arch.Diaz for the steelen fence is strongly suggested.
An opening/connection can be planned on this side of the existing building to allow patients to enter the area more easily. The existing wall can be covered by climbing plants(eg. bougainvilleas).
After meeting the staff of the occupational therapy a preliminary design has been made considering children affected by particular diseases (eg. Tactile defensive patients), for whom sand is the most appropriate material. Swings and "spider webs"-fixed on the boundary wall- will be provided together with other stimulating games, according to the financial support given by the Municipality.

- **Existing back facade (badly damaged) and spaces "in between":**

- The wall will be repainted in a neutral color and the fences of the windows as well (color to decide); the "space in between" the new and the old building (backside) will be filled up to level the ground to the interior (+ 45 cm.) and planted with palm trees and white river-pebbles ("zen garden").

- The existing passage between the old and new building will become the main access for the patients who visit the workshop: it has to be widened (to become 2,50 m.) and paved again with concrete; the water drainage will be relocated.

- **The staff access on the back side:** concrete pavement.

DESCRIPTION OF THE WORKS

A – FOUNDATIONS AND WALLS

All of the construction works concerning the orthopedic and prosthetic workshop include:

- Excavation works, filling on the main façade (at least in between old and new structure)
- Structure, roofing, water drainage
- Carpentry, false ceilings
- Floor and wall covering, lining, painting
- Electricity, Telephone
- Plumbing
- Partitions
- Decorations and special treatments

B – OUTDOOR WORKS

The outdoor spaces are necessary to integrate the building and connect it to the existing structure

- Design of the accesses on both sides of the building
- Planning of a small playground for children
- Green surfaces, lawns; removal of two trees
- Water supply and discharge
- Electricity/power supply
- Fences

C – EQUIPMENTS

- Furniture including tables, chairs, cupboards
- Electrical devises (telephones, informatic devices…)
- Special equipment for the workshop to be installed in its right position.

A. Machinery and assembly area

A.1 Special advices to program this area

Please refer to the detailed plan of the workshop area, taking in account the division of the space into three sub-areas (leather work, steel work and wood work).

A.1. machinery

- The actual machinery still used in the old appliance building is absolutely not adapted nor sufficient to start up with the new production; implementation of machinery has already been taken into account by HI , some of it (vacuum pump in the resin room) will be imported. The rest of the machinery will be provided in the Philippines.
- The workshop will be used by an average of 5 to 6 people (minimum staff :3, max.7) which means that special attention has to be given to circulation, spaces and specific alignment in between the machines, reinforced platforms under heavy machinery (over 200 kg);
  Strict attention to activity and passage areas is also necessary for safety reasons
- the electric plan should be submitted for final revision to HI local staff.

A.1.Architectural quality of the working space

- Location/Accesses. The use of the machines, especially when used at the same time, produce a lot of noise and air pollution. To avoid disturbing the care areas, the area is placed in the back area of the plot. The staff access on the back is used as safety exit. Soundproofing is important between the fitting area and the workshop.
- Ventilation/Lightening. The area is ventilated on two sided by large openings in between the structural pillars. Visual surveillance of the workshop can be useful. Fans will be provided to ease the
  Natural lightening is integrated by well-controlled electric lightening in order to avoid accidents.
- Flooring/Roof: Depending on the choice of the roof material (tiles produced in Kabankalan or corrugated iron sheets) insulation under the slope of roof has to be provided. Heavy duty f flooring for passage and tool impact (red-colored concrete has been proposed in production and store areas). No false ceilings will be provided in this area.

B. Fitting room

A.1. Architectural quality of the fitting

This room houses a delicate moment and a particular concern should be given to it: the patient's first contact with the appliance should be protected from any view from outside, although good ventilation and natural lightening have to be ensured.
My suggestion has therefore been to look for a "filtering space" realized with a permeable material: the architectural solution has been to provide a bamboo screen, supported by a metal frame and anchored to the main structure, in front of the main façade. The space in between the panel and the façade is large enough to test the appliance in an outside intimate space.

A.2. The fittings

Parallel bars will be placed near the window, and vertical mirrors on the sides. A ceiling ventilator will be placed on the false ceiling. Easy-to-clean tiled floor.

C. Resin

Natural ventilation is guaranteed by large openings (the whole back façade is left open, from 1.20 cm. to the roof, secured by steelen fences).
An aspiration hood is installed over the resin preparation surface and an evacuation canal is placed in the side of the building (suggested height 1m.)
For specific details see plan 2.

D. Cast room

The room is to be fitted with a moveable metal gratings for plaster waste, and a decanting tank, all of which need to be emptied regularly.
Tiled surface to ease the cleaning.
Natural ventilation and lighting.
NB. Adjustable bars have to be fixed on the wall to ease the patients in the moulding phase.

E. Dormitory

Two rooms furnished with double beds will host patients that need longer medical care. A first option was to keep the entrances to the rooms independent from the building but a second layout uses the main entrance distributes all spaces (gain in space, use of a common area to the dormitory and better control of the in-and-outs).
False ceilings and a “warmer” pavement are advised.

F. Store

Insulated against damp and direct sunlight. Direct access from outside is ensured by a large door for deliveries and loading materials. Special shelves and grates are fixed on the walls to use the space in a most rational way. Insulated cupboard for inflammable goods.

Access to workshop and proximity with the outside test area for devices.

What has been done during the mission

- Visit of Norfi's rehabilitation center and survey of the construction site
- Visit of the destroyed orthopedic and prosthetic workshop on the coast
- Meetings and up-dates with the medical directors and responsible of Norfi's programs
- Interviews with the technicians and care specialists of the different areas (physical and occupational therapies), identification of the needs; interview with the internship students from the Netherlands.
- Meeting with the architect: definition of specifications and orientation given to the special layout of the project.
- Preliminary project outlined and revised with the local architect: realization of 1/100 plans, facades, circuits, detailed workshop layout
- Photographic survey
- Study of the materials, of local technologies and building capacities by visiting other construction sites in Bacolod
- Visit of a building recently realized by the architect, to understand his personal approach to construction
- Meeting with the mayor J.Valdes to submit the proposal for the building and explain the needs and objectives
- Assisting the architect in the final presentation to NORFI and HI
- In Manila: Visit of Tahanang's appliance workshop (training place for Norfi's technicians, up-to date machinery)

Recommendations:

Although an important preliminary phase and orientation work has been carried out during the two-weeks mission the specifications concerning the construction still need to be defined in a more detailed way by the architect.The exchanges of documents and advises with the architect will go until the construction phase will start.
The guidelines are set, the general program has been approved by the client and the qualitative elements have been taken into account, while the quantitative aspects will certainly be rectified as soon as the dossier for contractors is ready .
The involved parties have been easy to define, as Norfi is a reliable medical organization that has consolidated its partnership with HI. In this particular case they represent both the client AND the beneficiary. My work was eased by the fact that both the architect and the construction area had been previously identified by Norfi.

Nevetheless some matters have to be settled before starting with the construction and special attention has to be put into some of the stages outlined in the following paragraphs, to prevent from inaccuracies and ambiguities that may raise in the future

- **General concerns for the execution**

- During the construction phase I would recommend a visit of an HI representative on site every two weeks in order to supervise the stages of work (corresponding i.e. to the different stages of construction, foundations, walls, finishings..), control the requests for payments, keep the involved parts updated on the progress of the construction, and act as an advisory capacity.
- the selection of the contractor is a delicate step: Echo requires that the selection is extended to at **least three enterprises** and expect a document from the project manager on the criteria of choice. The ANNEX 1 document provides a frame of usually **adopted criteria** that may be used by the project manager.
-It is necessary to have a detailed cost estimate, divided in labour costs, supervision/execution costs, and the costs of the materials. The budget has been evaluated with the architect during my stay: his own fee is quite contained (3%) and the qualified craftsmen would cost between 30-35 % of the total costs. This leaves about 65% for the materials, direcly bought by Norfi.
- It is anyway adviseable to keep a **10% difference** on the total budget to undertake additional works (equipment, finishings..) in the last phase.

The agreement taken with Norfi on the materials has to be submitted to certain conditions, specifically mentioned in the contract signing:

1. It is essential that the detailed technical specifications for the construction include **criteria of quality** for the employed materials, so that there will be no increase of the costs if the quality is not the expected one.
2. It is necessary that the charge book on the construction mentions that the project has been designed according to all **general regulations** concerning accessability for disabled persons, labour laws, health and safety conditions (fire exits, fire estinguishers), para-sismic precautions and risk prevention treatments on the building**.**
3. **It is the project manager and not Norfi who will attest the quality of the chosen materials (by a written approval of every single material)**

I have noticed that often contractors use very poor concrete structures resulting from a wrong proportion between sand and cement. This economy on material undermines the resistance of the finished elements; only the project manager, with its technical skills to judge the quality, togeather with a rigorous contractor will avoid such risks.

4. The cost estimate has to be detailed for each phase: labour costs and costs of the materials themselves . The project manager has to define the exact quantities that are required before starting the construction phase, which cannot be changed unpredictibly during the construction . The prices should aswell be compared on the basis of market prices, to assure the convenience of the chosen product and its competitiveness.
5. The price list of the chosen materials will be submitted to HI for examination.
6. To avoid any kind of ambiguities on the engagement of the different parties (project manager, contractor) on the choice of the materials (it may occur when the material does not satisfy or shows inconveniences in the future) the contract has to specify the **approval of BOTH project manager AND contractor in respect of the quantity and quality of the chosen product**.
7. The same risks, as mentionad above, may occur in the **timing of the steps during the executiuon phase**: the contractor can blame the architect for delays on materials while the architect may say it is the contractor that has shifted the deadlines: some precision has to be given on the schedule for work, with a clause that engages the architect to deliver all materials on time, or a saction will be applied. The contractor should immediately inform the architect by a written paper on all delays caused by the lack of material supply.

- The bamboo panel: the bamboo has to be previously treated against moisture and insects, and once assembled the panel is lifted about 15 cm. from the floor to avoid humidity from the ground.
Some examples of assembly of the bamboo have been transmitted to the architect even though local craftsmen are usually qualified to treat and adapt bamboo to different uses.

- **<u>Contracts</u>**

1. A specific contract between NORFI and HI has to be signed for this operation. In this case HI technically and financially assists the client on the construction of the workshop. This contract will include the above mentioned clauses on materials, deadlines and responsibilities of parties.
2. A contract between NORFI and the architect R.DIAZ will be signed after the charge book and all supporting documents have been discussed with the client. These specifications should previously have been sent to HI for comments and final validation; the contract has to mention all duties expected from the project manager, from the preliminary studies to the final acceptance of works (see “project manager’s responsabilities, page 6)
3. A copy of the owner’s certificate, written by the provincial authorities, that authorises Norfi to build on the plot and use the construction should be sent to HI.
4. Contract between the contractor and Norfi. The contractor has been chosen by the architect after a restricted consultation (the criteria chosen among those selected in ANNEX 1, and the motivated choice is sent to HI).

All contact models can be found in the “Rules of intervention of the association for Construction projects”, written by the Infrastructure and the Administrative financial Coordination of HI, but should be adapted and integrated to this specific project.

- **End of the construction/start of operation**

- It is suggested to plan two stages of acceptance, once the works of the construction are finished: a **provisional acceptance**, with or without reserves of the client, and a **final acceptance of the works** (usually, for small buildings, between three and six months later) to give time to repair the defects that have eventually appeared during the provisional acceptance; once the reserves are lifted the payment of the retained security takes place.
- Once the building is completed HI should ensure that the orthopedic material and medical furniture mentioned in the separate budget is delivered in due time and ensure that the center can start its activities within the planning.
- Some changes may occur concerning the deadlines of the previously determinated schedule (only for furniture and finishings), with specific agreements taken with ECHO.

These recommendations will be sent to both the architect and to Norfi .

The attached preliminary project, plans and details, are certainly subjected to changes, in function of detailed specifications, of building permissions and in respect to availability of the materials.

I remain at disposal for more precise details concerning the implementation of the project.

Sandra Jeanette D'Urzo, consultant A&D

ANNEX 1 - SELECTION OF ENTERPRISES

Name of the pre-qualified enterprises					
Number of enterprises		**1**	**2**	**3**	**4**
PHASE 1 **Elimination criteria**	yes/no				
Eligibility	yes/no				
Offer at less 50%	yes/no				
Complete bidding documentation	yes/no				
Respect of the contract deadlines	yes/no				
PHASE 2 **Selection criteria (enterprise)**					
Annual turnover	10				
Amount of recent contracts	5				
Years of experience	10				
Regional experience	10				
Experience in basic structure	10				
Experience in finishings	5				
Price offer	15				
Similar building sites	5				
Equipment of the enterprise	15				
Human resources	15				
Total phase 2	**100**				
PHASE 3 **Selection criteria (offer)**					
Proposed methodology	20				
Planning	30				
Equipment & machinery	10				
Insurances	10				
Organization and staff	30				
Total phase 3	**100**				

Phase 1 : NO= Eliminated
Phase 2 : less than 70=eliminted
Phase 3 : less than 70=eliminated