Programming guide for the setting up of a rehabilitation centre

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Programming guide for the setting up of a rehabilitation centre

John Mejia Rios

and Handicap International’s Infrastructure and Rehabilitation technical co-ordinations

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About the author
The conditions under which building projects involved in Handicap International’s activities vary from one country to another, but the principles which we shall be presenting here are of a general nature and are based on the association’s experience and on some considerations which are specific to the field of architecture.

It is to be observed that most rehabilitation centres are relatively small units, and this makes things easier both for the architect and for Handicap International as far as planning the process as a whole is concerned, so as to be able to avoid the various parties involved working separately from each other. In this regard, the so-called “Programming, Design, Performance, Appropriation” (PDPA) approach, which will be explained below, seems appropriate for strengthening the holistic and participatory vision of a project and to serve as central thread for any construction project as a whole, whether concerning a new building or conversion work.

The material features which need to be defined for future rehabilitation centre projects can best be oriented along the lines of the architects’ well loved maxim: Long lifetime, low energy consumption, and flexibility.

Applying this golden rule in a context of participatory planning involving all of the project’s active parties will lead to functional and adapted buildings whatever the level of development of the country concerned.

The present guide sets itself the objective of providing Handicap International’s teams with a clear understanding of the working procedures which lead from the launching of operations through to the completed building. One essential part of this procedure is the programming phase, in which a detailed formulation of needs is put together and the areas of the future centre are defined and organised. This phase will be given special attention.

In reaction to the fragmented nature of the underlying experience, this guide – the fruit of an inter-project analysis - is to be a structured tool meant to help the work of teams involved in advising and defining future centres. We do not imagine that Handicap International’s teams are going to take the place of the other parties involved in the building, but rather that they should so far as possible be in a position to convey the experience which the association has and in this way be as effective as possible in relation with the partners and in the monitoring of the professionals working on the project.
1. Construction projects: overview
The PDPA approach

Unlike in the classical procedure, in which each professional comes in separately, the Programming - Design - Performance - Appropriation (PDPA) approach seeks to bring the various parties involved in the building project to work together, integrating the partners of the client and the future users into the making of the decisions which will give shape to the construction. What this means is that, when a plan is being drawn up, it is the ability to build bridges between the various sectors of professional responsibility which is more important than pure professional know-how as such, if there is to be any successful synthesis of the numerous and often contradictory needs which have to be satisfied.

The physical environment which enables the various care departments to function as a whole is the outcome of a process of analysis, decision making and action. Despite what is commonly thought, the future construction begins to be defined not at the point where the architect and the engineer come into play, but well before then, as soon as decisions begin to be taken concerning objectives, feasibility, future site and functional programme.

Nor does the definition of the construction come to an end with the inauguration: it continues into the assessment of the level of suitability by the staff and future users (use and wear), one more element in getting the department as a whole under way.

The PDPA approach seeks on the one hand to provide a framework within which the building programmes may be drawn up. On the other hand, it also seeks to enhance the material and architectural functional qualities of the building itself, while at the same time to limit costs (in terms of plans, capital investment and overheads) and to reduce the overall construction time.

So as to simplify the approach to the range of activities which go to make up the framework for the process of construction, we shall distinguish four interacting phases, each of which in turn is made up of a number of different elements: viz.,

- **operational programming**, composed of the preliminary studies and the architectural and technical programme;
- **design**: sketch, preliminary project and project, plus performance plans and bid specifications;
- **performance**: site preparation, and performance co-ordination and control;
- **appropriation**: acceptance and upkeep of the construction, and assessment by the users of the building’s degree of suitability.

In practice, validating each stage enables the client to make the necessary commitments on the basis of costs and credits. The respective density of each phase may vary from project to project, but the contents, and the tasks and decisions to be made should be defined as of the start of operations - which can only energise and shorten the process, with considerable consequent savings.

The work done in the initial stages of a project is of great importance for what follows, as it enables the client’s objectives to be set with exactness and the essential elements of the future functional and technical programme to be defined well in advance.
2. Rehabilitation centre construction project
2.1. Definition of objectives

Any building operation needs to have clear objectives. There are very precise questions which should be asked: what are the aims (social project, economic project, ...), what are the services and with what means (financial possibilities, available and/or necessary personnel, techniques)?

Logically, a project should be drawn up in a perspective of progression: i.e., future developments are to be forecast on the basis of an initial objective. This enables the type of operation, the location and the suitable layout to be determined, so as not to hinder the centre’s future development.

This programming approach presupposes preliminary reflection as to the true nature of the objectives to be reached and of the needs to be met; it may lead the client to question the very appropriateness of carrying out the operation.

2.2. Composition

We shall here analyse the case of a centre which comprises the two essential services: viz.,
- physiotherapy and rehabilitation care;
- an appliance manufacturing and fitting workshop.

It is a question of properly understanding the structure and functioning of the whole range of therapeutic activity on behalf of the disabled person, which in turn is going to define the features of the building housing the activities.

Nevertheless, it is obvious that these departments may in point of fact be set up step by step, or else be set up within already existing structures; and this may give rise to other kinds of situation:
- rehabilitation department only;
- appliance department only;
- a centre specialising in children;
- and so on.

For each centre, the team in charge of programming will have to adapt the elements proposed here to the real objectives, conditions and prospects of the particular project.
It needs first of all to be asked whether a new building is the only possible answer to the needs. Indeed - as is often the case with the projects which Handicap International is involved in - although premises may be made available, expert intervention needs to be envisaged in order to reorganise the installation. Conversion goes faster and costs less when it is timely and well programmed.

Location criteria
A good location for the centre is an essential precondition for its successful operation.
Before purchasing land or choosing a building to convert, the centre’s possible future development needs to be thought of, so as to avoid being rapidly in the position of being short on space. It is a good idea to provide for land for any possible future extensions, and also for the development of necessary outdoor activities: games, handisport, outdoor circuit, circuit for wheelchairs, and so on.

In the case of a new building, it is advisable to keep at least 3 m² of free land per m² of construction.

Although one can make do with less - and, when it comes to a case of conversion, one admittedly does not always have much say in the matter - there are even so certain essential criteria to be taken into account: viz.,
- a good situation with respect to the road and communications network;
- proximity to the village or other main location of the catchment area, which will enable as many patients as possible to make the trip to the centre;
- avoiding sources of noise and pollution, and in particular rubbish dumps, factories, main roads, insect nests, etc.; wind direction needs to be borne in mind when orienting the building;
- avoiding slopes of over 12 %: choose gently sloping or flat ground, so as to make it easier for disabled persons to move around there.

In case of conversion work, when any of the above mentioned problems arise, it is up to the team in charge of the operation to decide whether they can be coped with or not. If they can, then protections are to be installed; and, if not, then best look for some place else.
3. Operational programming

This is the determination to develop preliminary studies and the architectural programme in a logical continuity.
In this way, operational programming is defined by its social, environmental, functional and technical nature.
3.1. Preliminary studies

The first step in setting up a building project consists in carrying out preliminary studies. These are essential for any new building, but equally for conversion projects on a certain scale (such as for a regional centre) and for heavy conversion work.

Advisability study
This concerns whether the project being considered actually matches the political, economic and social situation in the possible beneficiary sectors. At this point, one also begins looking into the presence of any elements for the viability of the future structure (cf. objectives).

Economic feasibility study
This concerns the drawing up of a budget forecast as a basis for fund raising.

This budget is to be defined according to a certain number of parameters:
- area required to meet user and staff needs;
- applicable building standards;
- probable installation operating cost.

Estimating ground area
The size of a rehabilitation centre is determined by a certain number of factors, the main one of which is the amount of activity.

The amount of the services to be provided is to be calculated on the basis of the following:
- catchment area data: extent, communications, and so on;
- epidemiological factors, war victim estimates, at-risk areas, etc.;
- population density.

On the basis of these criteria and taking into account what is available in terms of money and personnel, it is thus possible to define the following:
- the number of prospective patients in rehabilitation and / or appliance fitting;
- the quantity of appliances to be manufactured, taking also into account any supply requirements for peripheral programmes;
- personnel requirements and training requirements for local people.

This is all essential information for determining the minimum surface area to be adopted and to define, for the benefit of the design team, the quality of the various spaces and their disposition.

It is obvious that these estimates are to be made with the help of statistics for the region and the impact zone (demographics, epidemiology, war victims, landmines, and so on).

In the case of new buildings, we are proposing a rule of thumb to you, based on the volume of activity.

This tool enables you to have an overall estimate of ground area for cost forecast calculation purposes (cf. table on p. 15, “Approximate ground area”).

These figures are the fruit of Handicap International’s experience – but, beware! They are going to vary depending on the location, specific particularities of the services you are planning to provide (e.g., CBR pilot project, cerebral palsy children, etc.) and the architects choices. In reality, they tend to come out right to the nearest 10 %.

The approximate ground area thus calculated is valid purely for cost estimation purposes. It may be reduced during the phase of drawing up the functional programme and again during the phase of the architectural design of the project (functional and dimensional optimisation).
Choice of type of building
The idea is to build as simply and cheaply as possible within the demands of treatment standards (but still without forgetting the pleasantness and quality of the spaces!), and taking full account of considerations of cultural acceptability.

One should take one’s inspiration from other buildings in the region, analysing their forms and their construction materials… Beware of “concrete jungles”. Traditional know-how and materials may be incorporated in the building, on condition that:
- discussion can be sparked off with local partners as to the validity of their use;
- they meet use requirements;
- there exists a long-term organisational dynamic in the local partners;
- a competent maintenance structure can be set up.

A rule: the further you move away from the architectural style of the region, the more you spend in terms of both time and money.
A principle: using local materials is always to be preferred to importing material; and likewise as far as building techniques are concerned.

All of this seems quite logical and to be more or less well integrated into Handicap International’s approach; but the arguments need strengthening as far as the partners are concerned:
- favouring the local economy and local jobs;
- avoiding import duties and heavy transport surcharges;
- facilitating maintenance by having materials and know-how locally available, with less risk of anything running out of stock;
- using local materials can help the building blend in architecturally with surrounding constructions.

Once the type of building has been determined, a unit cost per square meter is calculated. For this, one takes as a base the prices of other nearby constructions or else ministerial statistics (public works, health and others).

Estimated area x unit cost = total construction cost

### EXAMPLE OF APPROXIMATE GROUND AREA CALCULATION

| REHABILITATION CENTRE | NATIONAL OR REGIONAL LEVEL | Staff of 15  
(rehabilitation specialists + technicians + admin) |
|-----------------------|---------------------------|-------------|
| **TYPE OF PREMISES**  | **MINIMUM UNIT**  
**AREA in m²** | **DIMENSION**  
**CRITERION** | **QUANTITY** | **AREA in m²** | **CARD TO BE**  
**CONSULTED**  
(chapter 7) |
| RECEPTION | 10 | Unit | 1 | 10 | 1 |
| WAITING ROOM | 12 | Unit | 1 | 12 | 2 |
| CONSULTATION | 17 | Unit | 1 | 17 | 3 |
| PHYSIOTHERAPY | 9.5 | N rooms | 2 | 19 | 4 |
| FITTING + | 25 | Unit | 1 | 25 | 8 |
| TWO BOOTHS | 6 | N booths | 2 | 12 | |
| TREATMENT | 4 | N persons | 3 | 12 | 7 |
| TEAM OFFICE | | | | | |
| GYM | 60 | Unit | 1 | 60 | 5 |
| MOULDING | 9,6 | Unit | 1 | 9.6 | 6 |
| TOILETS | 2.5 | Unit | 2 | 5 | |
| ADMIN | 12 | N offices | 2 | 24 | |
| MEETING ROOM | 15 | 1 m²/pers | 1 | 15 | |
| CAST ROOM | 4,5 | N technicians | 2 | 9 | 9 |
| THERMOFORMING | 14 | Unit | 1 | 14 | 13 |
| STORE | 26.5 | Unit | 1 | 26.5 | 12 |
| ASSEMBLY | | | | | |
| WORKSHOP | | | | | |
| MACHINE ROOM | 5 | N technicians | 3 | 15 | 11 |
| CHANGING ROOMS | 8 | 1 m²/pers | 1 | 8 | 16 |
| **% passageways** | **10 %** | **Whole** | |
| **TOTAL SUB-TOTAL** | | | | | **347** |
| **APPROXIMATE TOTAL AREA** | | | | | **381.7** |

N = number of
Valid only for cost forecasting! This list is not exhaustive.
The spaces and quantities required by your particular project need to be calculated with respect to the operation’s specific objectives.
To the above should be added:
- 15 % to 20 % for developing the site;
- 15 % to 20 % for furnishings and fittings;
- 10 % for the unexpected;
- professional fees;
- land costs

to get the total cost of the project.

3.2. Conversions

With the approximate area data, the client can:
- begin to make an inventory of existing buildings in the region which match the location criteria and could house the project;
- look into the possibility, with local and health authorities, of taking over a building belonging to them.

Criteria for assessing the appropriateness of conversion:
The area (in square metres) and layout should match the programmed needs of the new structure.
Conversion costs should not exceed 60 % of those for an equivalent new construction.
The physical condition of the building should enable a conversion which would have as long a lifetime as a new building’s.

Once a suitable looking building has been spotted, a diagnosis should be made: i.e., an architectural and technical inspection, analysing the features and present state of the whole of the building, so as to guide the client as to the feasibility of the operation.

This comprises:
- Initial state:
A visit by the team in charge of the project (client, users’ representative, Handicap International representative).
Analysis of existing technical documents.
If plans are not provided, a survey of the whole premises should be carried out.

The analysis of the plans should be accompanied by the drawing up of a descriptive form per space, indicating each one's main features (layout, technical equipment, natural lighting, safety, natural ventilation, and so on), to be presented to the client. This should shed some light on which areas would be the most suitable for housing the production side (ease of sound-proofing, of delivery, etc.) and the care facilities (quiet, natural lighting and ventilation, accessibility, and so forth).

Check out the quality of the technical equipment and that it meets the standards applicable in the country, and if need be (for heavy conversion work with structure overload and / or extension) run a technical audit of the mechanical resistance of the existing structures.

- (Town planning) potential of site:
This is no luxury! It is a necessary consideration for effective centre integration.

Conduct an analysis of how the building functions with respect to its environment (neighbourhood, other health services, transport, public services, shops, and so on and so forth).
Also analyse the architectural perception of the existing building - that is to say, what people seem to think about its appearance and its history (cultural acceptability), the visibility of the entrance, the accessibility of the ways in from the point of view of a disabled person, the separation from the street (transition with public space: garden, yard, car park, or whatever), and safety.
Foresee future developments in the area, asking about town planning projects to come.

- Propose conversion scenarii:
In the case of heavy conversion work or conversion involving an extension, this is to be done with the help of an architect who will subsequently be put in charge of drawing up the plans for the project.
If it is more a case of light conversion work, then this reflection can be carried out with the project’s partners and users, with support from the Handicap International technical coordinations (Rehabilitation, and Infrastructure).
The idea is to thoroughly understand the limits placed by the existing spaces on the needs as expressed in the preliminary studies, so as to move on to:

- a definition and realistic operational simulation of the activities and their inter-relations (cf. programming, reference table, patient itinerary, production cycle, and so on);
- definition and adaptation of areas (cf. programme cards) – is an extension indispensable?
- relation between indoor and outdoor activities;
- proposals for one or more sceneri of fitting out (activity zoning: patient, admin, production zones, etc.);
- general definition of technical aspects and financial estimate of work to be undertaken (economic feasibility of the operation).

These proposals are to be submitted for the client’s choice and approval.

- **The project:**
  - drawing up a detailed room by room description of work to be undertaken;
  - drawing plans, including furniture and equipment locations and all technical details.

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### 3.3. Programme

The technical and architectural programme, or charge book, defines the project in terms of its destination and function. Taking as its basis the preliminary studies and Handicap International’s experience, it should clearly set forth the needs to be met, the services to be provided in the building, the personnel required and the operating principles foreseen. It should further specify the kind of atmosphere which is being looked for in the centre, in terms of therapeutic quality and working conditions in the spaces which are to be created.

Although very significant progress has been made since the Infrastructure co-ordination was set up, it is clear that deficiencies in the work of programming are still significantly limiting the development of building projects. Work needs to be undertaken on clarification as regards the structuring of the programme and how it fits in with the construction process as a whole.

With this aim in view, the clients and HI teams on the ground need to be made fully aware of the need to give time to the careful drawing up of the programme for any construction operation.

It is quite clear that imprecise programmes which are constantly being tampered with all through the performance of the building work are a source of disorder and improvisation, inevitably leading to deadlines and budgets being exceeded.

Seeing that the programme comes under the aegis of the client, Handicap International should provide technical and methodological support to its drawing up, so that it will express needs clearly, firmly and precisely.

One of the prime duties of the client is to provide the architect with a well structured programme for the drawing up of the preliminary project, and not to make alterations except for serious reasons.

Projects are never identical to one another. Projects are impacted by environmental and cultural factors (needs to be satisfied, topology, climate, and so on) which give them their specificity, making the idea of imposing a standard plan quite absurd.

Having said this, however, in the case of centres which aim to have the same kind of level of activity, programme solutions are found to be fairly close to one another, which means that it is indeed possible to use a first solution in order to derive a second one from it.

In this, it is important to take the fullest possible account of local conditions: an approach successfully carried out elsewhere is not going to be able to be transplanted mechanically. The programme needs to be structured in a way that gives full value to local variations in terms of needs, environment, culture and so on and so forth.
3.4. Programming tools

In drawing up the programme, it is preferable not to start from scratch. On the contrary: the team in charge of programming and managing a new project can get support from the experience and decisions taken elsewhere by Handicap International, and it is this which we are going to present in this guide in the form of programming aid tools: i.e.,

- programme content;
- patient itinerary;
- production cycle;
- reference table: spatial organisation;
- organisation chart;
- programme cards per activity.

This document will enable communication of the solutions found by Handicap international in setting up other rehabilitation centre projects.

Setting up a programming team

For any operation involving a considerable sum of investment, it is indispensable to set up a programming team. The team should be made up of the partners and all those who are interested by the project. Without being too large, it should be committed to defining and writing the programme description (charge book) which is to serve as a basis for drawing up the architectural and construction project.

The team will include:
- the client;
- an HI representative, in an advisory capacity;
- a staff representative (physiotherapists, orthopaedic technicians, etc.);
- a representative of the users’ associations.

Local people should be well represented on the team, as it will have a certain number of decisions to make about the location and scale of the installation and about building standards. The team should be advised by a (local or expatriate) architect and a local builder. HI’s Infrastructure technical co-ordination should provide constant monitoring to guarantee the transfer of the association’s experience in this field.

Under the aegis of the client, the team should:
- define the architectural and technical programme;
- fix the provisional budget;
- define the building process.

The fact of involving various active parties in the team is a way of making the decision making process more democratic as regards the programme as such, and opens the way for the involvement of future staff and users in defining the construction, which is going to be a key point for future appropriation.

Phasing:
- Drawing up a clear and succinct programme description (cf. contents);
- Infrastructure technical co-ordination approval;
- approval by client.
3.5. Programme contents

When it comes to investing in a building operation, the rational use of resources needs thinking about seriously. In this sense, it can indeed be said that there are no small projects! The programme requires often complex analyses, and obliges the client (and partners) to address all of the questions raised by the operation. The aim of this is to keep uncertainty to a minimum.

At this point, however, there is a certain preconception which needs to be done away with, and which consists in assimilating the programme to a mere definition of areas. Defining areas does, indeed, require particular attention, but it finds its true importance only in conjunction with ideas of functionality, quality, comfort, safety and so on and so forth. Setting about drawing up a building operation programme simply in terms of the definition of areas would be the very opposite of what a programming approach is supposed to be:

“The programme is the key part of the operation. The quantifiable and technical aspects are fairly easy to define; on the other hand, the functional, qualitative and developmental aspects require deeper reflection.”

(Jacques Armand and Yves Raffestin, *140 séquences pour mener une opération de construction* [“140 sequences for running a building operation”], Le Moniteur, 1997)

If it is agreed that the solution lies in putting up a new building, then a thorough programme description has to be drawn up, concerning the data, the needs, the limitations and the requirements.

The defining studies result in the programme, which should contain the following elements:

**Presentation of the operation**
- Nature and identity of the operation
- the parties involved and their roles:
  - the client;
  - the partners;
- the project manager;
- the future users;
- the future management
- Conclusions of preliminary studies.

**The fundamental project management objectives**
- Quality of services to be provided:
  - nature of services to be set up (rehabilitation, appliance fitting, child cerebral palsy patients, etc.);
  - the various functions planned for (admin, training, and so on);
  - relations between the future infrastructure and the outside world (deliveries, exchanges, and so on and so forth);
  - those coming into the infrastructure (staff, users…);
- Quality of the accommodation:
  - architecture: image, symbol, impact (especially in the case of a public building, expression of a development dynamic);
  - reception, atmosphere, working conditions, functioning, management, and so on;
  - life span of future installation.

**The physical context of the operation (urban, rural…)**
- Site characteristics: situation: type of land; area; boundaries; identity of landowner.
- The physical environment:
  - land: topology, initial condition;
  - type of ground;
  - natural risks: flooding, landslides, etc.;
  - geography and climate: temperature.
- The environment:
  - results of preliminary studies (impact);
  - neighbourhood, disclosure of negative factors;
  - architectural features of nearby buildings;
  - social environment.
- Site services:
  - existing or future access;
  - existing networks: waste water, drinking water, electricity, telecommunications, and so on;
  - means of transport.
- Applicable regulations.
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**Infrastructure life: activities, areas, functioning**
- General installation concept:
  - from the patient’s point of view: definition of patient itinerary;
  - from the medical staff’s point of view: functional dynamics in the rehabilitation departments;
  - definition of production cycle in workshop (in relation to the technology employed).
- Relations between functions:
  - flowchart;
  - description of activities and attribution of spaces;
  - volume and areas;
  - operational requirements: lighting, acoustics, hygrometry, safety;
- requirements for technical services and for the equipment in terms of upkeep: floors, walls;
- furniture, storage space.

**Limitations and requirements**
- Planning, installation and architectural requirements by client, over and above regulatory requirements.
- General regulations: accessibility for disabled persons, labour laws, health and safety, and so forth.
- Technical requirements – client’s preferences as to type of structure and materials to be used;
- Operating limitations and requirements: janitoring, maintenance and operating.

**Time and cost requirements**
- Time requirements: indication of phases, general provisional schedule, opening deadline.
- Financial requirements: cost of work and site development, payment of architect.
3.6. Description of patient itinerary

Handicap International deems the patient to be the centre of the whole organisation of the department and of the spatial structure of the building housing it.

Here it is a question of differentiating and properly understanding all of the activities going on in a treatment service. These may be described in terms of the patient’s itinerary.

This represents the various possibilities which a patient may encounter on arriving in the department, from reception through to the end of treatment.

Particular attention will be paid to variations in procedure according to country.

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<th>ACTIVITIES</th>
<th>SPACE</th>
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<td></td>
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<td>REGISTRATION</td>
<td>Administrative registration</td>
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<td>Register</td>
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<td></td>
<td>Moulding</td>
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<td>Technical form and paper model</td>
<td>- Moulding post included in consulting room</td>
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<td>Once produced, the negative goes on to the casts room</td>
<td></td>
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<tr>
<td>FITTING</td>
<td>During manufacture</td>
<td>- Quiet room with preparation booths</td>
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<td></td>
<td>Alterations</td>
<td>- Access close to workshop</td>
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<td></td>
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<td>Fitting prior to delivery</td>
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</tr>
<tr>
<td>REHABILITATION WITH APPLIANCE</td>
<td>Physiotherapy consultation</td>
<td>- Rehabilitation room</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation exercises</td>
<td>- Indoor circuit</td>
</tr>
<tr>
<td></td>
<td>Appliance adjustment</td>
<td>- Gym</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Outdoor circuit</td>
</tr>
<tr>
<td>PAYMENT</td>
<td>Accounts</td>
<td>- Office</td>
</tr>
<tr>
<td>DELIVERY</td>
<td></td>
<td>- Fitting room and store</td>
</tr>
<tr>
<td>DISCHARGE</td>
<td></td>
<td>- Medical consulting room</td>
</tr>
<tr>
<td>LONG TERM FOLLOW-UP</td>
<td>Organisation of long term patient follow-up:</td>
<td>- Community Based Rehabilitation (CBR) office</td>
</tr>
<tr>
<td></td>
<td>- direct, on appointment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- indirect, via local association;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- home visits.</td>
<td></td>
</tr>
</tbody>
</table>
### 3.7. Appliance manufacturing cycle

We shall here specify the various stages of manufacture, the spaces in which they take place and their defining features. Note that the techniques used determine the creation of specific premises and the distribution of activities in the various areas of the workshop - essential features to be borne in mind in laying out and sizing the premises.

<table>
<thead>
<tr>
<th>CYCLE</th>
<th>ACTIVITIES</th>
<th>PREMISES AND SPECIFICITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECISION TO FIT APPLIANCE</td>
<td>Functional assessment of patient Diagnosis and treatment plan Prescription for appliance: cost, function, quality, context, life objective, explanation, and so on</td>
<td>Meeting room Collective decision of treatment team The patient and family are invited</td>
</tr>
<tr>
<td>MANUFACTURE AND FINISHING OF POSITIVE</td>
<td>Preparation of materials Manufacture and finishing of positive Drying Cutting out Tool washing Waste disposal</td>
<td>Casts room Store Gratings Decanting tank Sink</td>
</tr>
<tr>
<td>DESIGN AND CONTROL</td>
<td>Choice of technique Design and definition of process Quality control Document storage</td>
<td>Office of orthotist-prosthetist in charge of workshop</td>
</tr>
<tr>
<td>SELECTION OF MATERIALS</td>
<td>Choice and ordering</td>
<td>Consumables store</td>
</tr>
<tr>
<td>METALWORK</td>
<td>Estimate, cutting out, piercing, etc. Steel struts Finishing of parts and assembly Welding</td>
<td>Separate machines room with ventilation and dust collection In case of welding, post screened off and well ventilated</td>
</tr>
<tr>
<td>WOODWORK</td>
<td>Cutting, piercing, polishing, etc; Manufacture: legs, feet, etc.</td>
<td>Machine room with dust aspiration device Woodwork area in workshop</td>
</tr>
<tr>
<td>PLASTICS</td>
<td>Plastic fit on plaster positive Thermoforming Injection</td>
<td>Plastics area in assembly shop Thermoforming and injection room Ventilated areas with aspiration hood</td>
</tr>
<tr>
<td>ASSEMBLY</td>
<td>Assembly of elements produced in the various shops Assembly and finishing: orthoses, prostheses, walking aids, and so on.</td>
<td>Workshop with benches fitted with vices Individual tool kits Collective tool kits</td>
</tr>
<tr>
<td>LEATHERWORK</td>
<td>Preparation and cutting out of leather Production of orthopaedic shoes on last or mould Sewing up</td>
<td>Work area in workshop Separate room Optimal lighting</td>
</tr>
<tr>
<td>FITTING</td>
<td>During manufacture Adjustment and finishing Dynamic fitting</td>
<td>Quiet room with walking circuit Access close to workshop</td>
</tr>
<tr>
<td>FINISHED PRODUCTS</td>
<td>In store prior to delivery</td>
<td>Store</td>
</tr>
<tr>
<td>WHEELCHAIRS</td>
<td>Adjustment, repair, etc;</td>
<td>Independent workshop Access to appliance shop and store Wheelchair practice circuit</td>
</tr>
</tbody>
</table>
3.8. Reference table: spatial organisation

The architectural organisation as a whole needs to facilitate communication (common areas, activity interfaces, and so on) between the technicians in charge of appliance work and the care staff; they form a single team!
Handicap International strives for a real integration of the disability professionals, based on effective service to the patients; the building’s functional organisation should therefore follow this logic.

**The general layout concept**
- Rehabilitation and appliance departments.
The rehabilitation and appliance departments lie in one and the same building. They can be adjoining, as long as there is good sound-proofing. There is thus a “patient” area clearly separated off from the noisy, dusty appliance workshop.
- Other groups of activity supplement the 2 main departments:
  - admin and management;
  - training and meetings;
  - outdoor activities;
  - common infrastructure.
You can refer to the technical cards per area in chapter 7. The reference table in this section reproduces the list of areas per group of activity. This may help you define the composition of a centre during the programming phase.

<table>
<thead>
<tr>
<th>AREA</th>
<th>FUNCTION</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Rehabilitation department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RECEPTION</td>
<td>Reception of patients and visitors</td>
<td>The area of first contact with the patient and his or her family should project a positive image of the centre:</td>
</tr>
<tr>
<td></td>
<td>Orientation</td>
<td>- dimensions suited to reception of motor-impaired persons;</td>
</tr>
<tr>
<td></td>
<td>Telephone reception</td>
<td>- wheelchairs provided for;</td>
</tr>
<tr>
<td></td>
<td>Centralisation and management of files</td>
<td>- natural lighting and careful finishing;</td>
</tr>
<tr>
<td></td>
<td>Links</td>
<td>- ventilation.</td>
</tr>
<tr>
<td></td>
<td>- general entrance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- admin</td>
<td></td>
</tr>
<tr>
<td>WAITING AREA</td>
<td>For patients and their family</td>
<td>Supplementary to reception:</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>- same features;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- dimensions according to volume of centre’s activity;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- children’s play space;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- place for persons unable to sit down;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- posters on walls;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- information panels and brochures.</td>
</tr>
<tr>
<td>CONSULTATION</td>
<td>To be used by rehabilitation staff, appliance technicians and physicians</td>
<td>Room dedicated to assessment of new patients:</td>
</tr>
<tr>
<td></td>
<td>General assessment of patient, diagnosis and treatment plan</td>
<td>- confidentiality of consultation;</td>
</tr>
<tr>
<td>MEASUREMENT</td>
<td>Negative moulding</td>
<td>- quiet area, near waiting space;</td>
</tr>
<tr>
<td>AND MOULDING</td>
<td>Washing of patient</td>
<td>- natural lighting;</td>
</tr>
<tr>
<td></td>
<td>Technical form</td>
<td>- finishing appropriate to hygiene.</td>
</tr>
<tr>
<td>REHABILITATION ROOM</td>
<td>Detailed specific assessment</td>
<td>This room is part of the patient’s itinerary, but the activity going on in it is the starting point for good appliance manufacture.</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation</td>
<td>Proximity to casts room.</td>
</tr>
<tr>
<td></td>
<td>Massage</td>
<td>Interface room.</td>
</tr>
<tr>
<td></td>
<td>Electrotherapy</td>
<td></td>
</tr>
<tr>
<td>GYM</td>
<td>Prone, seated and standing rehabilitation</td>
<td>Individual room and / or several booths</td>
</tr>
<tr>
<td></td>
<td>Walking rehabilitation</td>
<td>Key place in the relationship between the physiotherapist and his or her patient</td>
</tr>
<tr>
<td></td>
<td>Pulley therapy</td>
<td>Quiet room, near to gym</td>
</tr>
<tr>
<td></td>
<td>Psychomotor therapy</td>
<td>Natural lighting preferable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ventilation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A well lit and ventilated space, communicating directly with the outdoor rehabilitation circuit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The floor must not be slippery, and must be easy to clean.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dimensions according to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- size of equipment and their respective spaces;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- ease of movement for patients and staff.</td>
</tr>
</tbody>
</table>
## Programming guide for the setting up of a rehabilitation centre

### COVERED REHABILITATION CIRCUIT (RAIN / SUN)
- Walking rehabilitation with apparatus: stands, parallel bars, beams, obstacles. Wheelchair
- Outdoor installation in supplement to the gym
- Can be used in all weathers
- For example: veranda, protected terrace, etc.

### CARE STAFF OFFICE
- Files work
- Meetings
- Innovation and research
- Lesson preparation
- Documentation
- Discussion of treatment schedules: confidentiality.
- Quiet area
- Natural lighting and ventilation
- Near to rehabilitation room and gym

### B. Admin and management

#### MANAGEMENT
- Management
- Personnel co-ordination
- Able to receive several persons at the same time. Assistant’s office

#### ADMINISTRATION
- Management
- Accounts
- Statistics
- Direct link to workshop and rehabilitation

#### OFFICE
- Visiting professionals

### C. Appliance workshop

#### CASTS ROOM
- Cast manufacture
- Manufacture and finishing of positive
- Drying
- Cutting out
- Is part of the workshop, and should be located near the moulding room.
- Plaster work being very dirty, it needs to be separated off.
- Gratings
- Short distance to stores and to assembly.
- Natural lighting, ventilation.
- Direct or very nearby access to outside, to facilitate disposal of heavy waste.

#### FITTING ROOM
- Preparation of patients
- Fitting and adjustment of appliances
- Correction
- This is the setting for a delicate moment – the patient’s first contact with his or her appliance: confidentiality.
- It is a room for dynamic fitting, with preparation booths.
- To be fitted out with parallel bars.
- Close to:
  - rehabilitation circuit;
  - assembly shop.

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### Chapter 3: Operational programming

**Reference table: spatial organisation**

<table>
<thead>
<tr>
<th>AREA</th>
<th>FUNCTION</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVERED REHABILITATION CIRCUIT (RAIN / SUN)</td>
<td>Walking rehabilitation with apparatus: stands, parallel bars, beams, obstacles. Wheelchair</td>
<td>Outdoor installation in supplement to the gym Can be used in all weathers For example: veranda, protected terrace, etc.</td>
</tr>
<tr>
<td>CARE STAFF OFFICE</td>
<td>Files work Meetings Innovation and research Lesson preparation Documentation</td>
<td>Discussion of treatment schedules: confidentiality. Quiet area Natural lighting and ventilation Near to rehabilitation room and gym</td>
</tr>
</tbody>
</table>

---

**Workshop in Thailand**
The workbench, fitted with a vice and a full individual tool kit, to which are added the collective tools, represents the main element. The organisation of the work space should favour the setting up of activity areas rather than closed rooms. Even so, the more nuisance-generating activities (machines and plaster casting) need to be separated off. Depending on the project, and if space and resources permit, certain activities treated here as areas may become rooms per se – on condition that they are properly meshed into the assembly shop. Area: dimensions according to items of equipment and their respective spaces, taking full account of work safety features.

The workbench, fitted with a vice and a full individual tool kit, to which are added the collective tools, represents the main element. The organisation of the work space should favour the setting up of activity areas rather than closed rooms. Even so, the more nuisance-generating activities (machines and plaster casting) need to be separated off. Depending on the project, and if space and resources permit, certain activities treated here as areas may become rooms per se – on condition that they are properly meshed into the assembly shop. Area: dimensions according to items of equipment and their respective spaces, taking full account of work safety features.

<table>
<thead>
<tr>
<th>AREA</th>
<th>FUNCTION</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSEMBLY SHOP</td>
<td>Manufacture of prostheses, orthoses and walking aids.</td>
<td>The workbench, fitted with a vice and a full individual tool kit, to which are added the collective tools, represents the main element. The organisation of the work space should favour the setting up of activity areas rather than closed rooms. Even so, the more nuisance-generating activities (machines and plaster casting) need to be separated off. Depending on the project, and if space and resources permit, certain activities treated here as areas may become rooms per se – on condition that they are properly meshed into the assembly shop. Area: dimensions according to items of equipment and their respective spaces, taking full account of work safety features.</td>
</tr>
<tr>
<td></td>
<td>The premises are to be divided up into distinct areas corresponding to the various work stations needed for the manufacture of the appliances: - thermoforming area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manufacture of polypropylene fits and levators, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- leatherwork area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orthopaedic shoes, and moulded leather fits.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- finishing area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leatherwork, trimming and finish</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- welding area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protective screen</td>
<td></td>
</tr>
<tr>
<td>MACHINE ROOM</td>
<td>Work with heavy machines: cutting, piercing, and so forth.</td>
<td>The machines produce a lot of noise and dust: it is better to separate them off. Locate right away from the treatment facilities. Area: defined according to the dimensions of the machines and their respective spaces. Facilitate movement: swing doors. Opening for dust aspiration tube, if device installed outside. Minimise journeys to and from assembly and stores.</td>
</tr>
<tr>
<td>STORE</td>
<td>Storage of consumables</td>
<td>Separate off, to protect items stored there. Raised floor, in case of flooding. Organisation: should facilitate access to materials, and especially to the most cumbersome (such as 40 kg bags of plaster), leather on trestles, 6 m long tubes, and so forth. Outside: swing door entrance and delivery bay for vehicles are indispensable. Inside: special access to workshop to limit distances; likewise as regards casts room, to reduce handling of the 40 kg bags of plaster to a strict minimum; direct link to wheelchair workshop.</td>
</tr>
<tr>
<td></td>
<td>Storage of material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finished products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stock control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supply to appliance workshop and wheelchair workshop.</td>
<td></td>
</tr>
<tr>
<td>AREA</td>
<td>FUNCTION</td>
<td>FEATURES</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>OFFICE</td>
<td>Workshop chief&lt;br&gt;Apliance design&lt;br&gt;Organisation of activities&lt;br&gt;Document storage</td>
<td>Natural lighting&lt;br&gt;Ventilation</td>
</tr>
<tr>
<td>CHANGING ROOM</td>
<td>Men’s / women’s changing rooms</td>
<td>With lockers.&lt;br&gt;With washroom.</td>
</tr>
<tr>
<td>WHEELCHAIR WORKSHOP</td>
<td>Whole process of manufacture and repair of wheelchairs and tricycles for disabled persons</td>
<td>Independent workshop&lt;br&gt;Direct link with wheelchair practice circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Training and meeting area:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLASSROOM</td>
<td>Training courses&lt;br&gt;Technical meetings&lt;br&gt;Meetings with families&lt;br&gt;Video projections, etc;</td>
<td>As much natural lighting as possible&lt;br&gt;Ventilation&lt;br&gt;Area defined according to number of persons&lt;br&gt;Accessible to wheelchairs</td>
</tr>
<tr>
<td>LIBRARY</td>
<td>General documentation&lt;br&gt;Lesson preparation</td>
<td>Complements classroom&lt;br&gt;Same features: quiet space</td>
</tr>
<tr>
<td>E. Outdoor activities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHILDREN’S PLAY AREA</td>
<td>Rehabilitation programme&lt;br&gt;Games for disabled and non-disabled persons</td>
<td>Can be visually supervised from indoors&lt;br&gt;Safety of equipment</td>
</tr>
<tr>
<td>WALKING REHABILITATION CIRCUIT</td>
<td>Balance practice&lt;br&gt;Walking on beam&lt;br&gt;Walking on uneven ground&lt;br&gt;Group rehabilitation, etc.</td>
<td>Safety of equipment&lt;br&gt;Size according to land available</td>
</tr>
<tr>
<td>WHEELCHAIR CIRCUIT</td>
<td>Training on various kinds of ground: earth, concrete, sand, stones, bricks, etc; Moveable slalom&lt;br&gt;Bridge with ramp</td>
<td>Safety of equipment&lt;br&gt;Near to wheelchair workshop</td>
</tr>
<tr>
<td>SPORTS GROUNDS</td>
<td>Handisport activities: badminton, volleyball, basketball, football, etc.</td>
<td>Handisport dimensions according to land available</td>
</tr>
</tbody>
</table>

Workshop in Madagascar
### Programming guide for the setting up of a rehabilitation centre

**TRANSITIONAL AND / OR VEHICLE ACCESS AREA**
- Garden, yard, etc;
- Pedestrian and / or vehicle entrance
- Centre supply
- Dropping off patients
- Parking for centre cars

**REST ROOM**
- For all centre staff

**SANITATION**
- Staff toilets
- Users’ toilets
- Latrines with tank

**MAINTENANCE AND GARDENING PREMISES**
- Tool shed

**FLAT**
- For caretakers

#### F. Collective equipment:

<table>
<thead>
<tr>
<th>AREA</th>
<th>FUNCTION</th>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSITIONAL AND / OR VEHICLE ACCESS AREA</td>
<td>Garden, yard, etc; Pedestrian and / or vehicle entrance Centre supply Dropping off patients Parking for centre cars</td>
<td>With manoeuvring space Composed as per street Centre’s image Gateway: 400 cm Guard box if need be</td>
</tr>
<tr>
<td>REST ROOM</td>
<td>For all centre staff</td>
<td>In some centres, possibility of having lunch</td>
</tr>
<tr>
<td>SANITATION</td>
<td>Staff toilets Users’ toilets Latrines with tank</td>
<td>Take local habits into account</td>
</tr>
<tr>
<td>MAINTENANCE AND GARDENING PREMISES</td>
<td>Tool shed</td>
<td>Water tap</td>
</tr>
<tr>
<td>FLAT</td>
<td>For caretakers</td>
<td>To be strategically sited for security</td>
</tr>
</tbody>
</table>

*Kosovo*

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*Chapter 3 • Operational programming • 3.8 Reference table: spatial organisation*
4. Design

The professional in the best position to carry out design studies is the architect.
4.1. Appointment of project manager

The objectives for this phase are as follows:

- to complete the preparatory study and decide on the exact location, and the building plan and method, so as to be able to submit the various requests for authorisation needed to the relevant public authorities;
- to prepare the necessary documents, including execution drawings.

Decisions relating to the architectural project are to be taken after presentation and discussion with those concerned, and are to be approved by the client. By conducting the design work step by step, the architect is able to make the necessary adjustments relating to user needs, technical problems, design issues, and so on.

The architecture is not something which is imposed: it results from dialogue and a series of experiences.

In line with the PDPA approach, it is a good idea to develop this participatory aspect of the architectural project, so as to ensure the coherence, relevance and effectiveness of the project which is put forward, and to generate a dynamic of appropriation, which is a primordial requirement for the centre’s future viability.

The design phase can be divided up into several steps:

- **Sketch**: This enables the project manager to put forward the first graphic interpretations of the programme and to present one or more possible solutions for it. The plans are to be drawn up on a scale of 1 : 500.
- **Preliminary project**: This specifies the outward aspect and general composition in terms of planes and volumes and proposes technical provisions. The plans are to be drawn up on a scale of 1 : 200, with details at 1 : 100.
- **Project and execution plans**: By means of planes, sections and elevations, it specifies the forms of the various elements of the building, the type and characteristics of the materials and the conditions under which they are to be used. It enables provisional cost forecasting of the work to be undertaken broken down by trade, and an overall deadline to be set. The plans are to be drawn up on a scale of 1 : 100, with details at 1 : 50 and 1 : 20.

Each project is different and requires its own particular studies.

In the projects which we have analysed, we find that, although the design work on centres has developed with experience, in several cases over-hasty design studies are to be found, or even no such studies at all, with consequent problems of quality and functioning in the resulting building. The mistakes made have sometimes been repeated due to a failure to analyse causes, or to communicate assessments which have already been performed.

Although there is progress in respect to the proper understanding of Handicap International’s position in regard to building projects, there are still officers in charge on the ground who think they can do it all themselves. One can only salute such a spirit of initiative, of course – but: the jack of all trades is liable to be master of none!

It is not Handicap International’s role to take the place of the project management (architect, engineer, firms…).

Both for new building and for conversion, whether at a national or at a regional level, design studies are vital and are to be carried out by an architect (local or expatriate).

This does not apply to light conversion work, which may be carried out by the local team with advice from Handicap International’s technical co-ordinations.

On appointing a project manager, the Infrastructure Technical Co-ordination must monitor the project continuously to ensure that the results of experience capitalisation and the association’s general approach are fully taken into account at each step of the design work.

At this stage, it must not be lost sight of that what are to be created are spaces adapted for disabled persons. Architecture deals with harmony and equilibrium; it can feed into the therapeutic project, insofar as it is itself a language (materials, texture, colour, light, and so on).
4.2. Call for tender

The architect is to be contractually obliged to accompany the client throughout the call for tender process and the selection of firms. On the basis of approved studies, the architect is to advise the client on:
- preparing the consultations with firms in line with the manner of ordering;
- analysing tenders;
- preparing necessary details to enable works contracts to be signed.

In preparing the call for tender, the architect is further obliged to make as much progress as possible with the construction execution drawings and site performance methods. The idea here is to avoid too many changes being made to the project by contractors, and to have the technical arguments at hand so as to be able to insist on strict adherence to the project plans. It is up to the building companies to adapt themselves so as to perform the project precisely, with full respect paid to the architectural part of it.

Any further technical plans or changes proposed by the contractors are to get the project manager’s approval prior to any execution.
5. Performance

The object in this stage is to carry out the construction within the deadline and budget ceiling laid down, while respecting the agreed quality criteria. The construction phase involves a certain number of interdependent activities. A shortcoming in any one of these can lead the entire production plan awry – whence the extreme importance of meticulous construction planning.
The local team and the Infrastructure Technical Co-ordination are to ensure permanent contact with the client, the site manager and the architect, so as to:

- **make sure that the building work corresponds exactly to the project as defined in the plans, thus avoiding any arbitrary changes to the original plans, be it in terms of structure of spatial layout**;
- check that the site manager does his job with respect to the quality and provenance of materials and the method of their use;
- generally check that the building work goes forth according to the previously determined schedule.

**Preparation of site**
This responsibility is to be entrusted under contract to a professional site manager. This is often the person who in fact carries out the project. Good site preparation and planning will have a positive impact on the operations.

At this point in the construction work, the architect and the contractor should draw up a detailed schedule to respect contract deadlines. The schedule should show how the building work is to progress, taking into account the fixed parts, the equipment and the first supply of materials.

On the basis of the descriptive technical file, the basic tasks to be performed on the site are to be defined:
- these tasks should concern only one trade and correspond to a job which can easily be identified on site;
- they should not last too long, so as to be easily manageable;
- the logical relation between the tasks and their interdependence should be examined.

Handicap international should:
- help the client ensure that any material or equipment not mentioned in the building contract is nevertheless supplied in due time;
- in co-ordination with the future users, help the project management hire the operational and maintenance personnel and undertake training for them.

**Acceptance of work**
The architect should:
- ensure the organisation of the acceptance of the work and follow up any reservations until they are lifted;
- proceed with the examination of any disorder noted by the client;
- put together the file of work executed, which is needed for the operations of the centre.

To complete your information on the execution and site supervision phases, refer to the “Rules of intervention of the association for construction projects”, Infrastructure Technical Co-ordination, Handicap International, 2000, available from the Infrastructure Technical Co-ordination or from the technical co-ordinations secretariat.
6. Appropriation
This phase corresponds to:
- the operational start-up;
- programming building maintenance;
- assessment of the level of appropriation of the building by its users.

Use and wear are the key terms.
As of the start-up of operations, the client (owner and party in charge) and the users are to take charge of the maintenance charter and final state file, so as to ensure the “proper use” and life span of the centre.

Appropriation, which should be started off very early, at the participatory stages of the project, becomes tangible as of acceptance and operational start-up. It comes into its own in the way in which the staff and the users make use of the premises and adapt them according to how their activities evolve.

Assessing the level of appropriation
This assessment should take place at the end of the first year of operations, and highlights the initial issue: formulating the programme; The point is to describe the goodness of fit between the project as executed and the needs put forward in the programme, in terms of:
- the functionality of the premises;
- the qualities of the various spaces and how they match their use;
- the project’s “flexibility” in adapting to changes and new behaviours;
- the representations generated by the project, in relation to the socio-cultural context.

A report on this reflection is to be sent to the Infrastructure Technical Co-ordination.

All of these elements are to be taken account of in the analysis of the viability of the whole range of activities involved in an Handicap International rehabilitation programme.

All of the positive factors and problems thereby raised will lead to further formulations to help in the setting up and carrying out of future projects.
7. Programme cards

These cards are above all designed to serve as aids for programming, providing you with the architectural and technical arguments to better help our various partners in defining a rehabilitation centre. They are an effective tool for both conversion work and new building.
We have dedicated one card to each of the essential components of a rehabilitation centre, but not all activities are represented. This is in the logic of a “data bank”, which is to grow richer with experience.

The drawings on the cards are suggested arrangements for the various elements intrinsic to each activity, so as to determine the minimum necessary area and the operating criteria. They are in no way intended to be seen as “standard plans”, as they need to be altered and adapted according to the character of each project to be carried out. The drawings are structure on a grid made up of 60 cm x 60 cm units to help visualise the various dimensions and relations. The dimensions of the various elements are in metres. Regarding equipment and furniture, measurements are given as follows: length x width x height (l x w x h).
DESCRIPTION OF PROGRAMME CARDS

The essential elements going to make up a rehabilitation centre are given here on descriptive cards.

Blue cards: rehabilitation dept
Red cards: appliance fitting dept

- Card number
- Title
- Furniture and fittings list
- Example of arrangement per activity area
- Activities and minimum areas
- Staff, users and accessibility criteria
- Passageway and / or supplementary activity
- Activity unit
- Indispensable area
- Functional relations with centre as a whole
- Premises architecture, materials and atmosphere
- Photograph

chapter 7 • Programme cards • Data bank
PROGRAMME CARD N° 1

Reception

ACTIVITIES
Reception of patients and their family. Visitors
Information and orientation. Telephone reception. Appointments.
Registering, centralising and managing files.
Helping users find their way around and reach the departments.

AREA: 10 m² with reception booth and desk

STAFF: 1 receptionist

USERS: 2 to 4 persons. Appointments system.

ACCESSIBILITY: adapted for motor-impaired persons.
Width of passage: 0.90 m
Desk reception to ease contact with disabled and elderly persons, children and so on.

FITTINGS
1 telephone socket
1 double electric socket
1- Reception booth: h = 90 cm
2- Desk : 140 x 75 x 75 cm
3- 2 cupboards 150 x 30 x 180 cm
2 chairs for the users

ARCHITECTURAL QUALITY
The place of the first meeting with the patient and his or her family should project a positive image of the centre.

The receptionist tends to be sitting down, and the patient may well be wearing an appliance or be in a wheelchair. For these reasons, reception should take place at a desk, facilitating exchange between these people.

Natural lighting and frontal sunlight protection.
Good outward visibility, especially towards the entrance to the centre.

FUNCTIONAL RELATIONS
Should be situated so as to enable visual surveillance of access and of waiting area. Near to the other administrative offices and to the consulting room.
PROGRAMME CARD N° 2

Waiting area

ACTIVITIES
Waiting and patient information

AREA OF EXAMPLE: 12 m²
Minimum area = 1 m² per person

USERS
Patients with appointments and their relatives

ACCESSIBILITY
Width of passage between furniture: 1 m minimum.
Arrange a place for wheelchairs to turn around: 1.5 to 1.7 m diameter

FITTINGS
Provide specific elements to inform patients on centre activities: notice board, posters, photos, and so forth.
1- Chairs (or benches)
2- Low table for brochures and miscellaneous information
3- Place for wheelchair or tricycle
4- Rest for persons unable to sit

ARCHITECTURAL QUALITY
This space complements reception and is important in the first impression patients get of the centre.
Its layout is simple, and it should be reassuring in its pleasantness and cleanliness.
Use easy-to-wash material, tiled floor.
Room needs to be made for persons unable to sit and for wheelchairs.
If possible, provide a play area for children to ease waiting (indoors or out).
Take account of climate. In hot countries, this area should be open so as to have good ventilation.

FUNCTIONAL RELATIONS
Functional unit with reception
Direct access to general passageways.
Near to the consulting room.
PROGRAMME CARD N° 3

Consulting room

ACTIVITIES
First and second consultations of all patients;
General and functional assessment. Diagnosis.
Definition and planning of treatment project.
Prescriptions – 3 possibilities: rehabilitation only, appliance fitting only, or rehabilitation + appliance
MINIMUM AREA: 17 m² consultation + examination

STAFF: 1 physiotherapist and / or 1 orthotist-prosthetist
and / or 1 psychomotrician and possibly 1 physician
USERS: 1 patient and 1 to 3 relatives
ACCESSIBILITY: adapted for motor-impaired persons and persons in wheelchairs.
Examination table to be accessible on all sides

FITTINGS
2 double electric sockets
13 bulbs with switch
1 washstand
1- Examination table 190 x 90 x 70 cm
2- Desk with chair
2 chairs
3- 2 lockable cupboards
1 viewing box
1 stool

ARCHITECTURAL QUALITY
During consultation, the care team seek to reassure the patient and encourage him or her to come out with personal information; an atmosphere of the most absolute intimacy is therefore essential.
A quiet place, away from the workshop.
Natural lighting and frontal protection: eaves or sun-break.
Natural ventilation crossing at over 2 m.
Windows and / or mosquito netting.
Finish good enough for hygiene purposes: tiled floor, skirting boards and washable wall paint. Protection from outside views preferable.

FUNCTIONAL RELATIONS
The consulting room may be given direct access from reception and be near the waiting area. Access onto the general passageways.
PROGRAMME CARD N° 4

Physiotherapy

ACTIVITIES
Specific detailed assessment
Seated, prone and standing rehabilitation
Physiotherapy massage
Electrotherapy sessions

MINIMUM AREA: 9.5 m²

STAFF AND USERS
1 or 2 physiotherapists plus patient

ACCESSIBILITY
adapted for persons in wheelchairs. N.B. rotation area

FITTINGS
1 electric socket for electrotherapy
1- Physiotherapy table accessible on 3 sides: 180 x 70 x 75 cm
2- Wall bars 80 x 15 x 540 cm
3- Cupboard
1 stool
Hooks on wall

ARCHITECTURAL QUALITY
These rooms are arranged for treating one or several patients.
They are to be quiet, pleasant spaces, and are the key place in the physiotherapist’s relationship with his or her patient.
The room is also much used by the psychomotricians.
Confidentiality.
Natural lighting indispensable.
Windows which can be opened and natural ventilation crossing at over 2 m.

FUNCTIONAL RELATIONS
Location to be carefully chosen to optimise staff and patient movement. Near waiting area, gym and physiotherapist’s office.
PROGRAMME CARD N° 5

Gymnasium

**ACTIVITIES**
Rehabilitation and walking training
Seated, prone and standing rehabilitation
Pulley therapy. Psychomotor therapy (if there are many child patients, a special room will be needed).

**MINIMUM AREA:** 60 m²

**STAFF**
All of the physiotherapy staff

**USERS**
Several patients at a time; individual or group work.

**ACCESSIBILITY**
Swing doors

**FITTINGS**
General ceiling lighting
If need be, ventilators every 4 m.
1- Pulley cage
2- 1 low table 165 x 90 x 45 cm
3- 6 m parallel bars
   70 cm separation
   60 cm surrounding activity area
to be respected
Parallel bars for children
50 cm separation
Adjustable height
1 wall mirror
1 mobile mirror
4- Steps / rehabilitation ramp:
   250 x 80 x 60 cm
   1 m surrounding activity area
to be respected
Fixed training bikes
Benches
Fire extinguisher

**ARCHITECTURAL QUALITY**
This should be a vast room with no partitioning to allow free movement for the patients and dynamic rehabilitation.
Particular attention is to be paid to the flooring, which needs to be not too slippery and not too dusty, and easy to look after (lino, wood...).

Natural lighting should be optimal, with frontal sun breaks.
Windows which can be opened and natural ventilation crossing at over 2 m.
Ceiling ventilators, if necessary
Good finish to facilitate upkeep.
A pleasant space to encourage patients’ effort.

**FUNCTIONAL RELATIONS**
Should be close to physiotherapy and fitting rooms.
Preferably near waiting area.
Direct exit on to outdoor rehabilitation circuit.
PROGRAMME CARD N° 6

Moulding

FITTINGS
1 electric socket for plaster saw
1- Wall bars for femur moulding
   Separation = 60 cm
   Adjustable height
2- Examination table with 1 or 2 stools
3- Shower accessible to disabled persons: 140 x 100 cm
4- Sink for plaster strips
5- Wall cupboard 100 x 40 cm

ARCHITECTURAL QUALITY
This room can be an interface between the workshop and the rehabilitation departments, as it is part of the patients’ area and the activities going on it in constitute the beginning and the guarantee of successful appliance fitting;

Light and natural lighting help create a favourable therapeutic atmosphere.

Natural cross ventilation.

Easy-to-clean tiled floor

ACTIVITIES
Measuring and manufacture of negative moulds
Preparation of materials and washing of tools
Washing patient after taking imprint

MINIMUM AREA: 9,6 m²

FUNCTIONAL RELATIONS
The measuring room should be near the plaster cast workshop.
In small centres, it can be included in the consulting room.

STAFF AND USERS
1 or 2 technicians at a time plus 1 patient
Individual patient treatment to respect intimacy

ACCESSIBILITY
Total accessibility for disabled persons. Minimum passage width = 90 cm.
PROGRAMME CARD N° 7

Care staff room

ACTIVITIES
Discussion of difficult cases and planning of treatment
Innovation and research, file work, lesson plans, document storage

AREA: 16 m².
MINIMUM AREA: 4 m² per person

STAFF
4 rehabilitation staff at a time, plus visiting professionals

ACCESSIBILITY
adapted for disabled persons
minimum passage width = 90 cm

Fittings
1 double electric socket
1 telephone socket
4 desks 150 x 75 cm
4 chairs
2 shelves 150 x 30 cm
1 notice board

ARCHITECTURAL QUALITY
Quiet, confidential room for individual and/or collective work on patient files
Can serve as an office for visiting staff.
Natural lighting
Natural ventilation crossing at over 2 m.

FUNCTIONAL RELATIONS
This office should be set in the heart of the rehabilitation department, so as to optimise rehabilitation staff movement. Access onto general passageways.
PROGRAMME CARD N° 8

Fitting room

ACTIVITIES
Fitting sockets, adjusting lengths, dynamic fitting of appliances prior to delivery

MINIMUM AREA
booth = 4,8 m²; booth with wheelchair rotation area: 6 m²
Dynamic fitting circuit: 25 m²

STAFF AND USERS
1 rehabilitation technician and patient per booth
1 patient, 1 physiotherapist and 1 orthotist-prosthetist during fitting on bars

ACCESSIBILITY: All passage widths to booths should be 90 cm and 1.5 m minimum to gym.

FITTINGS
1- 1 (of the) fitting booth[s], separated by light partitions fitted with:
1 examination table: 185 x 60 cm
1 chair
1 curtain for closing off
1 electric socket

2- Walking space
Parallel bars for dynamic fitting
l = 6 m
Spacing = 60 cm
Height = 90 cm

ARCHITECTURAL QUALITY
By the nature of its activities, this room is an interface between the departments and could be located (along with the cast room and the stores) as a buffer zone to enhance soundproofing.

This room houses a delicate moment: the patient’s first contact with the appliance.

The patient’s intimacy is to be preserved by avoiding any view from outside.
Non-slip floor
Natural lighting.
Natural cross ventilation plus, if need be, ceiling fans, as patients tend to perspire a lot during fitting.

FUNCTIONAL RELATIONS
This room should be near the plaster cast and the assembly workshops.
Access to general passageways
Communication with gym or outdoor rehabilitation circuit desirable

chapter 7 • Programme cards • Data bank
PROGRAMME CARD N° 9

**Cast room**

**ACTIVITIES**
Preparation of plaster. Production and finishing of positive moulds
Storage and cleaning of everyday equipment
Storage of positives

**AREA:** 21.6 m²
4.5 m² per technician, minimum

**STAFF**
up to 5 technicians
No patient access

**ACCESSIBILITY**
Motor-impaired technicians. Work surfaces adaptable for persons in wheelchairs

**FITTINGS**
1. Moveable metal gratings on gutter (5 x 5 cm grid) with sloping decanting tank
2. Concrete sink tank (tap height = 60 cm), decanting tank outlet
3. Work surface along wall:
   - height 90 cm
   - 2 sockets under work surface
   - Light with switch
   - 1 plaster silo and 1 sand tank
4. Shelves for storing positives, 40 cm deep
5. Table 150 x 150 x 90 cm for readjusting positives
   - 4 vices fixed on table
6. Drier for positives

**FUNCTIONAL RELATIONS**
Near to or with direct access to moulding room
Close to “plastics area” to limit journeys and handling of positive moulds

**ARCHITECTURAL QUALITY**
The plaster work in this room is very dirty and needs to be isolated off.
The room is to be fitted with moveable metal gratings for plaster waste, and a decanting tank, all of which need to be emptied regularly.
The sink outlet system should be connected up to the decanting tank to avoid pipes choking.
Tiled sloping floor for ease of cleaning
Natural ventilation indispensable
Natural lighting
This is one of the rooms which can serve as a buffer between rehabilitation and appliance work.
**ACTIVITIES**
Assembly and finishing of prostheses, orthoses and walking aids. Assembly of foot frame, leg and socket, static alignment, fitting and finishing.

**AREA:** Assembly room + collective tools = 69 m²
Between 7 and 9 m² per technician (inc. passage)
Finishing area = 15.5 m² and can be included in the assembly shop or be in a separate room

**STAFF:** individual work stations for 10 technicians. Finishing area: up to 4 technicians at a time.

**ACCESSIBILITY:** Total accessibility for technicians in wheelchairs; some of the benches should be of adjustable height.

h below = 70 cm; h above (work surface) = 80 cm
Central workshop passage width = 2 m minimum.

**FITTINGS**
1 compressed air circuit with socket per pair of benches.
Compressor outside
1 220 v socket per bench
4 connections (380 v and 220 v) for collective tools
1 light per 2 benches, 100 W
1- 10 work benches each with stool and cupboard
2- 6 cupboards (collective tools, material under way, finished products)
3- Column drill
4- Double honing lathe
5- Welding bay with screen
6- Sewing machines
7- Cutting out table
Ventilators every 3 m

**Safety:** fire extinguishers, emergency stop on machines
Emergency kit
Notice board

**ARCHITECTURAL QUALITY**
The benches with their vices and individual tool kits are the main element of this room. Its size should scrupulously respect an activity area around each bench and machine as well as easy passage for technicians and materials. Optimal natural lighting completed by well controlled electric lighting is to be planned for in order to avoid accidents.
Separation and soundproofing with respect to patient areas
Safety bars
False ceiling and good cross ventilation to evacuate the heat coming from the machines and the welding
Heavy duty flooring for passage and tool impact

**FUNCTIONAL RELATIONS**
Central area, where technicians meet up.
Direct links to store, cast room and machines.
Work space organisation should promote the idea of areas of activity rather than closed off rooms.
Access to general passageways.
**ACTIVITIES**

Work with heavy machines on various materials: metal, wood, plastics.
Disposal of waste and dust

**AREA:** 28.2 m². Depending on the case

Minimum 5 m² per technician

**STAFF**

5 technicians at a time

**ACCESSIBILITY**

Swing doors, 1.5 m wide minimum
Door and central aisle adequate for wheelchairs

**FITTINGS**

Well thought-out electrical system:
- 220 v sockets, 3-phase sockets with fuse box
- Emergency stop buttons
- Connection to compressed air circuit

1 light per machine

1- 2 milling machines: 3 x 380 v / 50 Hz / 1.5 kW (3 phase)
2- Column drill: 380 v / 50 Hz / 1 kW (3 phase)
3- Plane: 380 v / 50 Hz / 0.55 kW
4- Band saw: 380 v / 50 Hz / 1.5 kW (3 phase)
5- Honing and polishing lathe: 380 v / 50 Hz / 2.5 kW
6- Aspiration device (if outside, opening for tube)
Ceiling ventilators
1 fire extinguisher

**FUNCTIONAL RELATIONS**

Double door for ease of access to assembly shop and for moving equipment
Minimise distances to assembly and stores
Near to welding bay

**ARCHITECTURAL QUALITY**

Closed room dedicated to the heavy machines, which produce a lot of dust and noise.
To avoid sound pollution, should be away from care areas.
Strict attention to activity and passage areas around machines for safety reasons!
False ceiling and effective ventilation for ease of evacuation of the heat from the machines.
Floor will need reinforcing here and there according to the weight of the machines (when over 200 kg).
Plan dust evacuation separating metal, plastics and wood. Fire risk in case of mix!
Window for visual surveillance from workshop.

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**PROGRAMME CARD N° 11**

Machine rooms
PROGRAMME CARD N° 12

ACTIVITIES
Storage of consumables to supply workshop, and possibly outlying departments
Storage of material. Stock control

MINIMUM AREA: 26.5 m²

STAFF
1 stock controller, perhaps plus technicians

ACCESSIBILITY
Double doors for ease of goods and personnel flow
Avoid direct street access (theft!)

FITTINGS
1- Several rows of wall-fitted consoles or metal shelves
   depth = 50 cm
   Space between shelves = 50 cm
   minimum for storing cumbersome goods
2- For polysar and plastic boards, cardboard etc., have stock shelves of
   l = 120 x w = 100 cm.
   Vertical storage for 2 m boards.
   Shelves for metal tubes and bars, accessible from both ends, should be placed high at
   180 cm.
3- Tool cupboard
   130 x 40 x 200 cm
4- Desk with socket
   General ceiling lighting
5- Insulated cupboard for inflammable goods

ARCHITECTURAL QUALITY
The store should be insulated against damp and direct sunlight, for better conservation of the consumables stored there.
Good natural aeration indispensable.
Raised floor against possible flooding.
Access for delivery vehicles to facilitate unloading.
Should be safe against theft.
Natural lighting to optimise sorting and storage.
The inside layout should enable handling of long objects.
Plan for a dangerous materials area (thinners, resin, bottles of gas, etc.)

FUNCTIONAL RELATIONS
Direct exit on to loading bay
Good workshop access, as much interaction.
Store should be near cast room to limit handling of the 40 kg bags of plaster.
PROGRAMME CARD N° 13

**ACTIVITIES**
Heating boards in oven. Manufacturing sockets in polypropylene, rough orthoses, splints, levators, and so on.

**AREA OF EXAMPLE:** 19 m².
Minimum area for an activity area in workshop: 14 m². Possibility of arranging a plastics room with thermoforming and resin: **25 m² minimum**.

**STAFF**
2 technicians plus possible apprentices

**ACCESSIBILITY**
Double passageway.
If separate room, allow for 1.5 m² min; wheelchair rotation space.

**Fittings**
2 3-phase and 2 monophase sockets
1- Oven
   380 v / 50 to 60 Hz / 5 kW AC
2- Bench with vice 150 x 80 cm
3- Vacuum pump
   220 v / 50 Hz / 0.11 kW AC
4- Shelf for keeping pre-cut boards
   150 x 40 x 180 cm
5- Column vice
6- Preparation table for cutting, gluing, etc;
   l = 140 cm / w = 80 cm

**Architectural Quality**
The plastics area of the assembly shop should be near the cast room, given their complementary activities.
This area is kept dust-free for the sake of the finished quality of the products.
The area should be well ventilated to give the technicians the best possible working conditions.

**Functional Relations**
Near cast room and machine room, so as to optimise technicians’ movements.
### ACTIVITIES
Preparing resins, cutting and preparing materials, injection

### AREA OF EXAMPLE: 9 m²
Minimum area for an activity area in workshop: 7 m²
Possibility of arranging a plastics room with thermoforming and resin: 25 m²

### STAFF
2 technicians plus possible apprentices

### ACCESSIBILITY
Total for disabled persons
If separate room, allow for 1.5 m² min; wheelchair rotation space.

### Fittings

1. Bench with vice
   170 x 80 cm
2. Aspiration hood connected to network
3. Special cupboard for inflammables
   120 x 40 cm
4. Vacuum pump
   220 v / 50 Hz / 0.11 kW AC
5. Column for resin injection
   2 double 220 v sockets

### Architectural Quality
Part of assembly shop, should be near the cast room.
Natural ventilation indispensable because of the toxic nature of the substances being handled
An aspiration hood should be installed over the resin preparation surface.
In some centres it may prove highly functional to set up a plastics room for both thermoforming and resin.

### Functional Relations
Near cast room and machine room, so as to optimise technicians' movements
PROGRAMME CARD N° 15

ACTIVITIES
Appliance design
Personnel and activity organisation
Document storage

MINIMUM AREA: 7.8 m²

STAFF
1 workshop manager and 2 staff

ACCESSIBILITY
Width of passage = 90 cm

Fittings
Interphone
1 double 220 v socket
1 telephone socket
1 desk
140 x 70 cm
2 chairs
3 shelves
100 x 40 cm

FUNCTIONAL RELATIONS
Direct access from assembly shop
Near admin office

ARCHITECTURAL QUALITY
This is the appliance workshop technical manager’s office.
A certain peace and quiet is needed for work on various files.
Visibility on to assembly shop is important: glass window.
Natural lighting and ventilation indispensable.
Soundproofing: medium

Workshop office
PROGRAMME CARD N° 16

Changing room

ACTIVITIES
Changing clothes
Keeping technicians’ and rehabilitation staff’s personal effects

AREA: 7.2 m² per block
Minimum area = 1 m² per person

STAFF
All staff, 8 persons per block
Separate men’s and women’s blocks could be arranged

ACCESSIBILITY
Width of passage = 90 cm

FITTINGS
1- 1 locker per person
2- Wooden benches
3- Wash basin

ARCHITECTURAL QUALITY
Washable floor for hygiene
Good natural ventilation
Men / women partition to be planned for
Ceiling light and ventilator if needed

FUNCTIONAL RELATIONS
Access on to general passageway. Near staff toilets.
About the author

John Mejia Rios, a Colombian architect, has produced this guide as part of the termination of his studies for recognition of his degree in France.

During his time with us in Handicap International, I was able to judge the quality of his work, the seriousness of his approach, his listening and analytical capacities and his love of his work. Our two different visions were often complementary.

I would have liked to have been able to tell this to him directly at his degree ceremony scheduled for late September 2000, but John sadly died on the 1st of September, during his mission to Sierra Leone.

Sophie Feenew
Infrastructure Technical Co-ordination
15 September 2000