

## 8.6 金属加工業用専用工業団地

### 8.6.1 提案の理由

1979年の法令2143による地方都市の工業化を目的とした国家レベルでの工業団地の開発プログラムは、うまくいかなかったと評価されている。原因は3大工業都市ボゴタ、メデジン、カリを対象外としたためであり、地方都市にはまだ工業団地を必要とするだけの企業が育っていなかったということであろう。コロンビアのみならず、各国において地域開発を目的として地方都市に立地された工業団地は、入居企業が少なく失敗例が多い。この反省に立って最近では、工業団地は大工業都市かその近郊に設置すべきであるという考えが強くなっている。

ボゴタ地区のミニ工業団地について調査をしたところ、需要は十分あり成功している。また工場訪問によって、企業規模が小さくなるほど工場敷地が狭く、労働環境も劣悪で、設備の拡張も困難であるということがわかった。また工場建家自体が、重量物を取扱うためのクレーンを設置するような構造になっていないところが多い。

アンケート調査において、工業団地に対する関心度は次のようになっている。

	対象企業数	関心あり	率
零細企業	73社	61社	83.6%
小企業	96社	80社	83.3%
中企業	32社	17社	53.1%

中企業では約半数が、小・零細では80%以上が、適当な工業団地が建設されれば工場移転を検討したいと考えているものと解釈できる。

ここでは、金属加工業専用団地の開発を提案する。

金属加工業専用団地に立地する利点として、次のようなものが考えられる。

- 1) 整備されたインフラストラクチャ（道路、通信、用役供給）が利用できる。
- 2) 共有設備（検査施設など）を共同利用できる。
- 3) 盗難防止などの安全対策が容易に確保できる。
- 4) 敷地に余裕があるために拡張が容易である。

- 5) 同業種団地であるから入居企業による協同事業（集中購買、集中販売など）がやり易い。

#### 8.6.2 提案する専門工業団地の概要

詳細計画はフィージビリティ・スタディ (F/S) を実施した後で作成されるべきであるが、以下にプロジェクト・アイデアの概要を述べておく。

更に、Table 8.7に専門工業団地の設計概念をとりまとめた。

##### (1) 目的

近代的設備を備えたモデル的な金属加工業を団地内に入居させ、コロンビアの金属加工業全体に近代化へのインパクトを与えること。

##### (2) 入居企業

中小・零細規模の金属加工業。  
近代的設備を導入することを条件とする。

##### (3) 立地

ボゴタ、メデジン、カリ地域。  
まず1地域で実験的に団地を開発し、その成果をみて他地域にも建設する。  
上記3地区で成功したら、バランキージャ、ブカラマンガへの建設も検討する。

##### (4) 敷地面積と入居企業数

約10ha. ～15ha. の敷地に20から30企業。  
敷地面積には道路、共有施設用地を含む。

##### (5) 共有設備

機械修理工場、製品検査施設、原材料分析室、測定器具検査室、製品展示場、教育訓練用集会所、用役供給設備、守衛室など。

## (6) インセンティブ

### 1) 税 制

入居企業に対する所得税、機械・原材料の輸入関税、地方税の減免、特別償却方法の適用など。

例えば、辺境地域に立地する企業に与えられる恩典と同等のインセンティブを与える。

### 2) 金 融

低利のハイヤー・パーチェス又はリースで設備を購入させる。ハイヤー・パーチェスとは一定期間（例えば10年間）実施機関が企業に対し生産設備を貸与し、一定期間がすぎた後に所有権を企業に渡す方法を言う。企業は担保など不要で、通常の融資を受けるために必要な諸条件から解放される。

(注) 8.4節で提案したセクター・ローンを当団地にも適用しようとするものである。

工業団地開発の実施には外国からの経済援助及び技術援助が検討されるべきであろう。また IFIの団地開発会社への投資も検討項目となる。

## (7) 実施機関

実施機関は公社か公団など公的なものとする。技術支援の目的で FEDENETAL等の民間団体の参画や外国からの専門家の招聘も必要となろう。

### 8.6.3 団地開発の手順

次のように実施機関が強力なリーダーシップをとる。従来の団地のように、入居する民間企業に工場設計を任せると安価な旧来の機械と技術を使用するので、いつまでたってもコロンビアの金属加工業は近代化できない。

- (1) 実施機関がコンサルタントなどを活用し、団地の F/Sを行うとともに、入居企業が生産すべき製品を identifyする。

- (2) 実施機関が identify した製品毎に F/S を行い、feasible な製品を選択する。
- (3) 実施機関が feasible とされた製品を生産する個別工場を 1 団地当り 20~30 工場設計する。  
工場設計は近代的な機械と技術を使用することを大前提とする。
- (4) 実施機関は個別工場の F/S を基に、民間企業に対しプロジェクトへの参画を呼びかける。
- (5) 実施機関が機械設備を購入するとともに、工場の建設を行う。
- (6) 建設された工場の、運営を希望する民間企業に対して貸与する。工場所有権は実施機関にある。
- (7) 民間企業は運営収益から工場貸与料を実施機関へ支払う。一定期間（例えば 10 年間）経過後、工場所有権を民間企業へ移転する。（ハイヤー・パーチェス方式）

この方式の特徴は、1つは実施機関が金属加工工場の設計、建設を自ら行い、一定期間工場の所有権を保有することによって、真に近代的な工場を建設できることにある。もう 1つは、入居する中小・零細企業は自らの手で資金調達（借入）をする必要がなく、容易に近代的な工場を運営できることにある。

8.9 節に比較的小規模（敷地 10ha、入居企業 20 社、最低限の共有設備）の金属加工業専用団地の layout、設備費用、開発スケジュールの概略を参考のために添付した。

## 8.7 金属加工業振興センター

### 8.7.1 提案の理由

生産技術の近代化の目的は、高「品質」の製品を妥当な「価格」で、要求どおりの「納期」で生産供給することにある。この3つの要素の内、最も基本的な要素は高品質の製品を生産することにある。

国際市場への輸出を図ろうとしても品質が国際水準に達していなければ、価格や納期の問題以前に国際競争に勝つことは不可能である。コロンビアの金属加工業においては市場が国内中心であるため、品質向上に対する切実な要求が出てきていない。

購入者は高品質で価格が割高な製品よりも、品質は劣っても低価格の製品を望む傾向がある。この理由は、購入者側が高品質の製品の方が結局は割安になるということを認識していないことと、購入資金の不足にある。

換言すれば、購入者は高品質のものに対しても、類似の形状品であれば低品質のものと同等の金額しか支払おうとしない傾向にある。これを供給者側からみれば、品質向上に努力してもそのコストがペイしないという意識となり、低品質のままでも通用する国内市場に安住する原因となっている。

コロンビアの金属加工業、機械工業が、他の諸国と比べて発展が遅れてしまった根本原因の1つが、このあたりにあるものと考えられる。品質の向上を達成する手段としては、消費者と供給者の啓蒙、工業規格の整備と普及、技術者の養成、近代的設備の導入、助成などが挙げられるが、ここでは、検査サービスを主たる目的とした金属加工業振興センターの新設又は充実を提言する。

いまコロンビアには中小・零細企業がその地域で容易に利用できる金属加工業のための検査・試験機関がほとんど存在しない。また、各企業が自前で検査設備を持つことは、費用負担が大きく不可能に近い。アンケート調査、企業診断調査においても、満足な品質検査を行なっている中小・零細企業は非常に少ない。

### 8.7.2 金属加工業振興センターの概要

#### (1) 金属加工業振興センターの機能

このセンターには次のような機能を持たせる。

1) 民間企業からの依頼試験の実施及び証明書の発行

これには次のような試験・検査が考えられる。

- a) 材料や製品の機械的性質測定（引張強さ、衝撃強さ、抗折強さ、曲げ強さ、硬さ、内部応力等）
- b) 材料や製品の金属組織試験（マクロ組織、ミクロ組織等）
- c) 材料や製品の化学組成分析（定量分析、定性分析等）
- d) 製品や工具の精度測定（寸法、角度、表面あらさ等）
- e) 製品の内部欠陥探傷検査（磁気探傷、超音波探傷、X線探傷等）
- f) 製品の表面処理検査（メッキ厚さ、塗装厚さ等）
- g) 鋳物砂の試験（粒度、粒形、粘土分、可燃物、含有水分、小型ミル、強度、通気性、充填性等）

2) 民間企業に対する技術指導・相談の実施

これには次のようなサービスが考えられる。

- a) 技術相談
- b) 巡回技術相談

3) 民間企業に対する技術情報や市場情報の提供

これには次のようなサービスが考えられる。

- a) 定期刊行物の発行
- b) 技術講習会の開催

(2) 金属加工業振興センターの組織的位置付け

このセンターの運営母体に関しては、色々検討の余地があると思われるが、ここでは大学、民間団体（FEDMETAL等）及びSENAの共同事業体とすることを提案する。その理由は次のとおりである。

- 1) 大学の持つ先端技術についての技術力と情報、研究・開発力を活用する。

- 2) 民間企業のニーズをセンターの運営に反映させるとともに民間企業のセンター利用の拡大を図る。
- 3) SENAの持つ組織力、類似センター設立及び運営の経験を活用するとともに財務的支援を期待する。

### (3) 金属加工業振興センターの設置場所

金属加工業が集中しているボゴタ、メデジン、カリ、バランキージャ、プカラマンガの5大都市に設置するのが望ましい。

5ヶ所を同時にスタートするケースと、1ヶ所に最初設置しその効果を確認した上で残り箇所に追加設置するケースとが考えられるが、後者を提案したい。この場合、最初の設置場所はボゴタを当てる。

### (4) 金属加工業振興センターが装備すべき設備

このセンターは複雑な高度の技術を必要とする試験・検査を行おうとするものではなく、既に述べたように金属加工業に必要な品質管理のための日常的な試験・検査を実施しようとするものである。したがって、装備すべき設備もこの目的に合った基本的な機器のみでよいと考える。

以上の概念の下に金属加工業振興センターの概略設計を行い、下記の技術データを 8.9節に添付した。

- レイアウト
- 機器リスト
- ワーク・フロー
- センター組織図
- 建設スケジュール

## 8.8 国際工業規格データ・バンク

ICONTECは、1988年のカタログによれば現在約 2,500の規格をコロンビア規格として作成している。標準化を促進している分野は、農業及び牧畜業、金属加工業、電気製品、土木及び建築、安全衛生、化学工業等である。コロンビア規格の作成に当っては、基本的には ISOに準拠しているが、作成過程では、SAE、JASO、JIS、DIN、IEC、BS等も参考にしている。

コロンビア規格の欠点は、量的には所要の全領域を網羅しておらず、まだ不完全である。質的にみれば国際標準規格からみて、国際市場の要求する品質レベルを必ずしも満たすものとはなっていない。（これは ICONTECの要員の不足、予算の不足が一つの原因となっているものと考えられる。）したがって、大学や輸出志向の企業においては、コロンビア規格を使用せず、直接前記のような種々の外国の工業規格を利用しているところも多い。また、コロンビアの工業製品を輸入しようとする外国の輸入業者等は、コロンビア規格ではなく特定の規格を指定する場合も多い。

上記の観点より、民間企業が容易に利用できる国際標準規格のデータ・バンクの設立を提言する。

このデータ・バンクは ISOを始め、世界に流通している工業先進国の、工業規格を収集し、利用者に対して自由に閲覧させ、コピー・サービスを行い、民間企業に対する相談員を配置することが望ましい。設置場所は、少なくともボゴタ、メデジン、カリ、ブカラマンガ、バランキージャの 5都市とし、ICONTECの管理下によって設立、運営されるべきである。



## 8.9 プロジェクト・コスト/スケジュール及び経済効果

8.4節から 8.8節までに中小・零細規模金属加工業の振興のために、実施すべきプログラムやプロジェクトを提案した。各々のプログラムやプロジェクトの概要を明らかにする目的で技術データを本節末に、次のように添付している。すべてのデータは現時点では概略を示すにとどまる。

Tables and Figures of Technical Information

	Layout	List of Organization E & M	Organization Chart	Work Flow	Project Cost	Implemen- tation Schedule
- Foundry Center for SENA	F8. 1	T8. 3	F8. 2	F8. 3	T8. 4	F8. 4
- Electroplating Center for SENA	F8. 5	T8. 5	F8. 6	F8. 7	T8. 6	F8. 8
- Industrial park for Metalworking industry	F8. 9	-	-	-	T8. 8	F8. 10
- Metalworking Promotion Center	F8. 11	T8. 9	F8. 12	-	T8. 10	F8. 13

Notes: F;Figure, T;Table

本節では、プロジェクト・コストの積算方法を 8.9.1項で述べ、8.9.2項では、プロジェクト・コストの集計と実施スケジュールを示し、8.9.3項ではこれらのプログラムやプロジェクトを実施した場合のコロンビア国に与える経済効果について記述する。

### 8.9.1 センター等建設費の積算方法

モデルプラントの建設費には設備機器調達費、海上輸送費/保険料、港湾使用量、乙仲手数料、陸上輸送費/保険料、土地取得費、建屋建設費、据付及び据付指導費等、モデルプラント建設に必要なすべての費用を含め、ドル建にて計上した。

建設費積算の条件及び基準は下記のとおりとした。

(1) 条件

1) 国内費用

機器、海上輸送費等の価格に関しては、1990年 3月における日本の国内価格をベースとして計上した。

2) 現地費用

機器の陸上輸送費、土地代、建築費、その他現地側にて発生する諸費用及び税金等に関しては、当ミッションが現地において1990年 3月時点で置いて調査した現地価格及びパーセントをベースとして計上した。

3) 換算レート

換算レートは下記とした。

Colombian Pesos	465/US \$
Japanese Yen	155/US \$

(2) Plant Direct Cost

1) 設備機器：日本調達（FOB価格）

ただし、メッキ槽の如く製作が容易で、現地にて調達可能と思われるものに関しては、船賃との関係上現地調達とした。

なお、諸設備機器の使用説明書に関しては、邦文より英文への翻訳料を、FOB 価格の 5%と仮定して計上した。

2) 予備品：

機器設備の操業に必要な 2年分を計上した。

なお、現地にて容易に調達可能と思われる予備品に関しては、現地調達として計上した。

### 3) 輸送費及び保険料

機器の調達を日本と仮定し、日本よりコロンビア太平洋岸のブエナ・ヴェンツラ港までの海上輸送費／保険料、港湾使用料等、乙仲手数料、及び建設地をボゴタ地区と仮定した場合の、港よりボゴタまでの内陸輸送費／保険料等を下記の単価及びパーセントにて計上した。

FOB CHARGE (梱包費用等を含む)	:	FOB 価格×7/100
海上輸送費	:	US\$ 266/F. T.
海上保険料	:	C&F ×4/1000
港湾使用料 (現地側)	:	CIF ×1/100
乙仲手数料 ( " )	:	CIF ×4/1000
内陸輸送費 ( " )	:	US\$ 26/TON
内陸輸送保険料 ( " )	:	FOB 価格×8/1000
組立て保険料 ( " )	:	建築費×3/1000

### 4) 土地取得費

CANACOL (CAMARA COLOMBIANA DE LA CONSTRUCCION) によるボゴタの工業地域 (ZONA INDUSTRIAL) の標準土地価格をベースとして計上した。

土地価格 : US\$ 86. 0/M<sup>2</sup>

5) 土地登記費用 : 土地購入金額×17/1000

### 6) 土地取得税

当国においては土地取得税というものはないので計上しない。

### 7) 土地造成費

現在販売されている土地は、たとえ平坦部であっても一般的に造成が必要である故、下記単価を用いてこれを算出した。

土地造成費 (平坦地の場合) : US\$ 2. 6/M<sup>2</sup>

## 8) 建屋建設費

CAMACOLによるボゴタの工業地域の標準価格をベースとして計上した。  
下記価格は、煉瓦造りの1階建て工場（内部仕切りはない）で、必要な電気／水道の配線・配管を施し済みの価格である。

建屋建設費 : US\$ 194.0/M<sup>2</sup>

本稿における工場計画に関し、2階建又は内部仕切りの多い建物等に関しては、CAMACOL標準に記載あるそれらの数値を参考に、適宜修正を施した。

## 9) 工場内の敷地／道路の舗装、芝生の植付け、塀等の費用

下記単価を計上した。

工場内敷地の舗装（コンクリート：厚さ15cm）	:	US\$ 23.7/M <sup>2</sup>
工場内道路の舗装（コンクリート：厚さ20cm）	:	US\$ 36.6/M <sup>2</sup>
芝植付け	:	US\$ 2.6/M <sup>2</sup>
塀の建設費（煉瓦造り）	:	US\$ 31.2/M <sup>2</sup>

工場敷地内の建屋を除いた残りの全土地面積に対する、敷地の舗装、道路の舗装及び芝生の植付けに関する面積比は、各々40%、30%、30%と仮定した。

## 10) 機器等の据付工事費

機器等の据付工事費に関しては工数積算により計上した。

人件費に関しては、CAMACOLの1989年の数値をベースに、その他現地建設会社等より聴取した人件費を勘案し、1990年の価格として計上した。

### 人件費

スーパーバイザー	:	US \$ 12.0/Day
フォアマン	:	US \$ 9.0/Day
一般労働者 (A)	:	US \$ 6.5/Day
一般労働者 (B)	:	US \$ 4.5/Day
掃除夫	:	US \$ 2.2/Day

### 11) 事務所設備費等

事務所設備及び事務所用乗用車、備品及び什器類に関しては、設備費 FOB の 2%～3%と仮定して計上した。

### 12) Engineering Fee 及び据付指導費

モデルプラント別にその必要経費（主として設計費、据付指導費等）を積算して計上した。

### 13) 諸経費

モデルプラントの建設に関連し、施主として必要な Overhead expenses として、Table 8.4, 8.6, 8.8, 8.10 (Estimated project cost) に示す Plant direct cost の 1)～8) までの合計金額の、5%又は10%を計上した。

## (3) 関税及び諸税

機器、予備品及び諸資材の輸入に関し賦課される諸税の種類、及び税率は次のとおりとした。

関税に関しては、“ARANCEL DE ADUANAS LEGIS” の最新資料をベースに、各機器の税率を平均化して計上した。

関税	:	CIF × 10% (一般工作機械)
		CIF × 15% (検査機器等)
LEY75	:	CIF × 18%
IVA (付加価値税)	:	(CIF + 関税 + LEY75) × 10%

注：輸入自由化に関する関税の細目は、現時点においてはその実状不明につき、本項においては考慮しないものとする。

#### (4) 予備費及び金利

予備費及び金利として、Table 8.4, 8.6, 8.8, 8.10 (Estimated project cost) に示す(1)、(2)の合計金額（ただし、土地の購入費等は除外した）の、20%を計上した。

#### (5) 主要機器材

各モデルプラントに導入する主要機器材及び仕様の一覧をTable 8.3, 8.5及び8.9に示す。仕様及び台数については、プラント規模を考慮した。

### 8.9.2 プロジェクト・コストと実施スケジュールの概要

上記の4つのプロジェクトにセクター・ローンを加え、所要資金とスケジュールを集計してTable 8.2に示した。すべてのプログラム／プロジェクトを実施するとすれば総額94.1百万米ドル（内、外貨部分56.3百万米ドル、内貨部分37.8百万米ドル）である。

以下に個別のプログラム／プロジェクトについて若干の説明を加える。

#### (1) 中小・零細金属加工業向セクター・ローン

20百万米ドルを総予算としてその内80%を外貨、20%を内貨と考えた。外貨分は二国間または多国間の経済協力によって資金調達するのが妥当であろう。1社当りローンの規模を仮に200千米ドルとすれば100企業が受益者となる。3年から5年の内に総額を貸付けるようなスケジュールが望ましい。

#### (2) SENAへの鑄造センター

1センター当り9.6百万米ドル（内外貨5.7百万米ドル、内貨3.9百万米ドル）である。内貨の内1.5百万米ドル分は税金（輸入関税、特別輸入関税、輸入付加価値税）である。センター建設の工期は24ヶ月と見込まれる。

(3) SENAへのメッキ・センター

1センター当たり 3.0百万米ドル（内外貨 1.7百万米ドル、内貨 1.3百万米ドル）である。内貨の内 0.4百万米ドルが税金である。センター建設の工期は17ヶ月と見込まれる。

(4) 金属加工業専用工業団地

プロジェクト・コストは56.8百万米ドル（内外貨30.1百万米ドル、内貨 26.7百万米ドル）である。内貨の内 8.7百万米ドルは税金である。このプロジェクト・コストには団地の造成（土地代を含む）、共有施設及び20工場の建設費も含まれている。団地造成と共有施設のみを建設し、工場はプロジェクト・コストから除外するとすれば、上記プロジェクト・コストの35%から40%で済む。20工場、CSF の建設を含む全工期は、建設すべき工場の製品選択まで含めて、31ヶ月と見込まれる。

(5) 金属加工振興センター

1センター当たり、プロジェクト・コストは 4.7百万米ドル（内外貨分 2.8百万米ドル、内貨 1.9百万米ドル）である。内貨の内税金分は約 0.8百万米ドルと見積もられる。

工期は20ヶ月を見込む。

8.9.3 諸提案を実施することによって期待される経済効果

本報告書に提案した振興プログラム／プロジェクトを実施することによって、コロンビア国経済全体にインパクトを与えることになり、いろいろな国家便益を生ずることが期待できる。

主要な項目は次のとおりである。

## (1) 工業化の促進

GDP に占める製造業の比率はここ数年21%前後に停滞している。金属加工業のみを取り出すと、ここ数年低下傾向にあって1986年は 2.4%程度と推定される。輸出においては、コーヒー、石油、石炭が66%を占め、花、バナナ、砂糖を含めると74%を占める（1987年）。一次産品に頼る経済は、— コロンビア経済がコーヒーの相場によって大きく変動した経験でもわかるとおり — 不安定である。金属加工業の振興は、コロンビア経済に占める工業分野の比率を高め、経済の安定に貢献することになる。

## (2) 社会的不公平の是正及び地域振興

金属加工業のみならず中小・零細企業の育成策を推進することによって、特に零細企業が被っている社会的不公正が是正される。具体的には所得格差の是正が進み、社会保障の恩恵が零細企業にも与えられることになる。また中小・零細企業は、地域密着型の産業であるので、これらを育成により地域の活性化にもつながる。

## (3) 資源の有効活用

コロンビアの中小・零細規模の金属加工業は、生産形態が非近代的であり生産効率が悪い。生産形態の近代化によって、原材料、電力、用役などの資源が有効に活用できる。

## (4) 雇用の増大

中小・零細企業は大企業と比べると労働集約的であって雇用の吸収力が強く、その発展は雇用の増大に貢献する。中小・零細企業は、地域に密着した生産活動を行っているので、特に地方の雇用増大に寄与することになる。

## (5) 外貨の節約と獲得

1987年の輸出に占める金属加工製品の割合は 1.3%、一方機械類の輸入に占める割合は17.3%である。これに電気機械 6.6%、輸送機械10.7%を加えると全輸入の34.6%を占める。金属加工業の振興によって、輸入代替が進めば、外貨の節約が可能となる。金属加工業の近代化によって金属加工品の輸



出が増加すれば、外貨獲得にも貢献する可能性がでてくる。

(6) 他分野への波及効果

金属加工業の近代化には投資が必要である。

投資が促進されれば、経済の活性化に寄与し、建設業、輸送業などへ経済の波及効果が期待される。

また農業機械、土木機械などが国産化され、良質で安価な機械が供給されれば、農業や建設業など他の産業セクターの近代化へもインパクトを与えることができる。

Table 8.2 SUMMARY OF PROGRAM/PROJECT COST AND SCHEDULE

Program/Project	Project cost (million US\$) <sup>1/</sup>			Duration of <sup>2/</sup> Construction
	Foreign	Local	Total	
(1) Sector loan for SMEs & MEs in metalworking industry <sup>3/</sup>	16.0	4.0	20.0	3- to 5-year disbursement
(2) Foundry center for SENA	5.7	3.9	9.6	24 months
(3) Electroplating center for SENA	1.7	1.3	3.0	17 months
(4) Industrial park for metalworking industry	30.1	26.7	56.8	31 months
(5) Metalworking promotion center	2.8	1.9	4.7	20 months
<b>Total</b>	<b>56.3</b>	<b>37.8</b>	<b>94.1</b>	

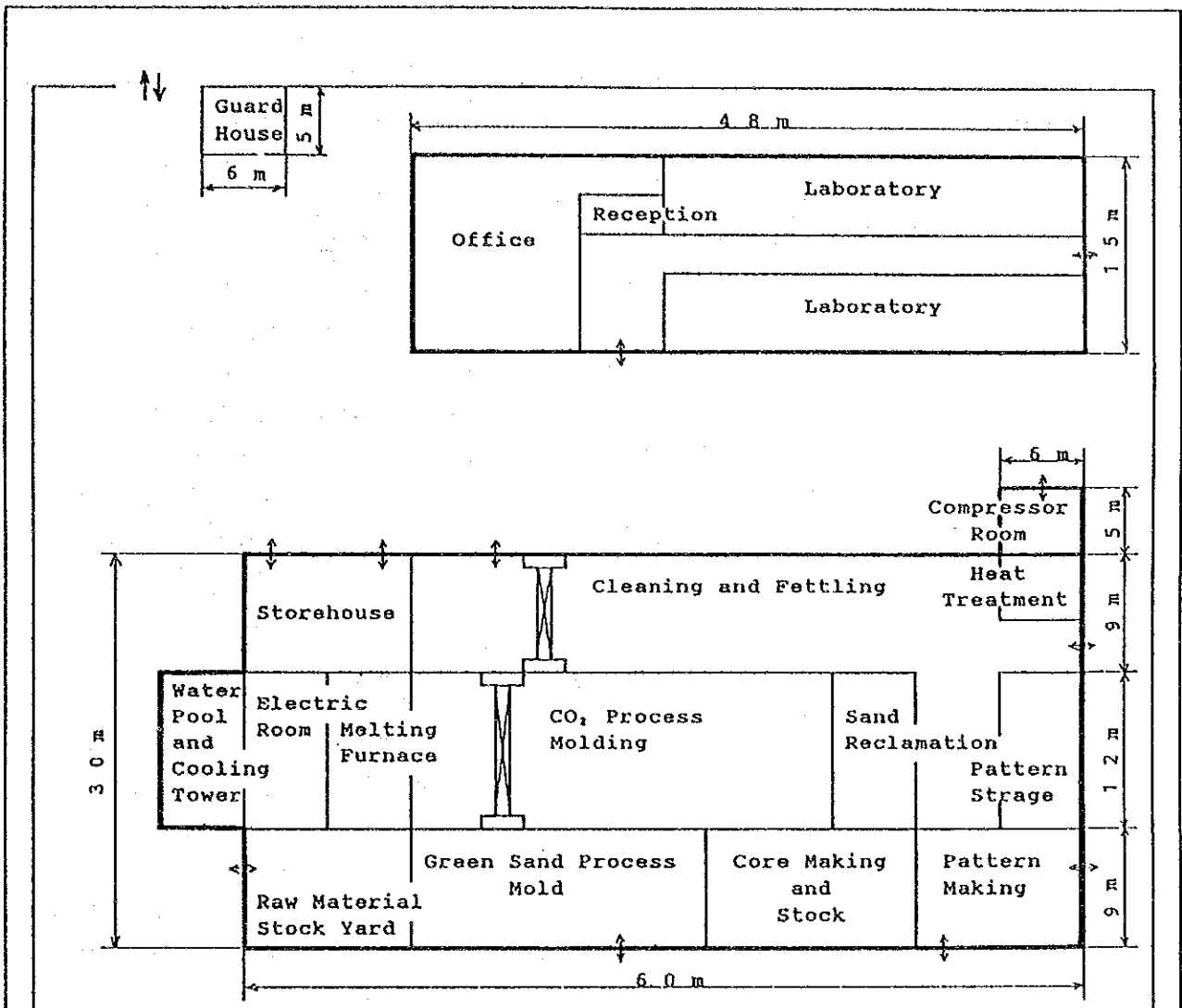
(Notes)

<sup>1/</sup> See Table 8.5, 8.7, 8.9, and 8.11 in detail.

<sup>2/</sup> Duration from the award of contract to the commencement of operation

<sup>3/</sup> A 20% of total loan amount is assumed to be raised as local counter fund.

Figure 8.1 LAYOUT OF FOUNDRY CENTER



Land Area: 80 m × 70 m

Factory : 60 m × 30 m + 6 m × 5 m

Office and Laboratory (first floor): 48 m × 15 m

Training Schoolroom and Looker Room (second floor): 48 m × 15 m

Guard House: 6 m × 5 m

Table 8.3 EQUIPMENT &amp; MACHINERY LIST OF FOUNDRY CENTER

1/4

Process	Name	Qty	Specifications
Melting	* High frequency induction furnace	1 set	500kg, 600kw, 0.5kHz
	* Crucible furnace	1 set	200kg/batch in case of Cu
	* Mixer for lining material	1 set	Capacity: 0.1m <sup>2</sup>
	* Balance for molten metal	1 set	Capacity: 1000kg
	* Balance for auxiliary materials	1 set	Capacity: 20kg
	* Ladle	7 sets	500kg, 200kg, 50kg
	* Ladle drying and heating equip.	1 set	Diesel oil burner
	* CE Meter with recorder	1 set	Range of CE: 3.20 to 4.83%
	* Portable digital thermometer	1 set	Rated scale: 0 to 1760°C
	* Optical pyrometer	1 set	Max. 1600°C
Molding	1) CO <sub>2</sub> molding process		
	* Continuous mixer	1 set	3t/Hr
	* Compaction table	1 set	1500×1000, Max. load:1000kg
	* Sand rammer	1 set	Ramming speed: approx. 800bpm
	* CO <sub>2</sub> gas supplying equipment	1 set	Gas vaporizer capa.:100kg/Hr
	* Agitator for coating materials	1 set	Container capa.:approx. 80 l
	* Boume meter	2 sets	Boume degree: 30 to 40, 40 to 50
	* Shake-out machine with dust hood	1 set	1500×1000, Max. load:750kg
	* Sand crusher	1 set	3 t/h
	* Return sand hopper with belt feeder	1 set	10m <sup>3</sup> , Capa.:3 t/h
	* Sand reclaiming with belt feeder	1 set	600kg/batch, Capa.:3 t/h
	* Dual sand hopper with vibratory feeder	1 set	10m <sup>3</sup> +10 m <sup>3</sup> , Capa.:3 t/h
	* Belt conveyor	1 set	Capa.:3 t/h
	* Bucket elevators	3 sets	3 t/h
	* Control panel	1 set	
	* Dust collector	1 set	Air volume:300m <sup>3</sup> /min.
	2) Green sand molding process		
	* Green sand mixer	1 set	300kg/batch
	* Jolt squeeze molding machine	2 sets	Max. flask: 500×400 ×150/150
	* Green sand conditioning process	1 unit	Capa.:3 t/h

Process	Name	Q'ty	Specification
<b>Core making</b>			
	1) Chemical binder sand core		
	* Versatile mixer	1 set	Max. processing capa. :60 l
	* Agitator for coating material	1 set	Container capa. :approx. 80 l
	2) Shell core		
	* Shell core machine	1 set	Core box: 300 ×300 ×70/70
	3) CO <sup>2</sup> core		
	* Core sand mixer	1 set	50 kg/batch
	* Agitator for coating material	1 set	Container capa. :approx. 80 l
Cleaning	* Table type shot blast with dust collector	1 set	Max. load: 1000 kg
Fettling	* Double headed grinder w/dust collector	1 set	Wheel:405D×50t ×38.1d
	* High frequency electric grinder	2 sets	Wheel:180D, Frequency: 250Hz
	* High frequency electric straight grinder	2 sets	Wheel:75D, Frequency:250Hz
	* High frequency generator	1 set	Frequency:250Hz
	* Pneumatic chipper	2 sets	Chipping speed: approx. 4200bpm
	* Pneumatic chipping hammer	2 sets	Chipping speed: approx. 1900bpm
	* Gas cutting device	1 set	LPG and oxigen
	* Electric welder	1 set	300A, 200V, 13.0kw
<b>Heat treatment</b>			
	* Batch type heat treatment furnace	1 set	0.8m×1.5m×0.5m, Max. temp:550 °C
	* Batch type heat treatment furnace	1 set	1m×1m×2m, Max. temp:1100 °C
<b>Pattern making</b>			
	* Vertical band saw	1 set	Work table: 1250 L×1000w
	* Planer	1 set	Work table: 2440 L×440W
	* Thicknesser	1 set	Max. capa: 600W×300t
	* Circular saw bench	1 set	Work table: 740 ×900
	* Disk and belt sander	1 set	620W×200W
	* Spindle sander	1 set	Length of bed: 2550L
	* Vernier height gauge	1 set	Measuring height: 600mm
	* Cast iron surface plate	1 set	1000×750 ×190mm

Process	Name	Qty	Specifications
Evaporated pattern making			
	* Plastic foaming machine	1 set	with hopper
	* Spare foaming machine	1 set	with absorber
	* Boiler	1 set	
	* Vibrating table	1 set	
Die casting process			
	* Die casting machine	1 set	Electric type, 20 ton,
	* Melting furnace	1 set	Crucible type, 20 kg, oil burner
	* Die	1 set	
	* Oil tank	1 set	20 l
Precision casting process			
	* Wax pattern making machine	1 set	
	* Slurry mixer	1 set	Tank capa. : $\phi 400 \times 500H$
	* Fluid sand bed	1 set	with blower
	* Lost wax dryer	1 set	
	* Furnace	1 set	
	* Blaster	1 set	compressed air type
	* High frequency induction furnace	1 set	20 kw, 3000 Hz, 15 kg
	* Air conditioner	1 set	
Others	* Crane	2 sets	Max. capa. : 3 tons
	* Fork lift truck	1 set	Max. capa. : 2 tons
	* Air compressor	2 sets	Discharged vol. : $3.7m^3 /min.$
	* Flasks for $CO_2$ molding process	10 sets	
	* Flasks for green sand molding process	11 sets	
	* Production tools	1 lot	
Test and Inspection			
	1) Mold sand test		
	* Universal sand strength tester	1 set	Compression, Tensile and Shear.
	* Permeability tester	1 set	0 to 10,000 mm
	* Sand rammer	1 set	50 D $\times$ 50 M
	* Infrared moisture tester	1 set	0 to 100% wet base.

Process	Name	Qty	Specifications
	* Ro-tap sieve shaker	1 set	13 kinds of sieve meshes.
	* Electronic balance	1 set	330 g to 10 mg
	* Compactability tester for green sand	1 set	Pressing by compressed air
	* Sand mixer	1 set	15 kg/batch
	* Sand testing washer	1 set	35 w single phase motor
2)	Mechanical properties test		
	* Universal testing machine	1 set	Capacity: 30 ton
	* Charpy impact testing machine	1 set	Capacity: 30 kgf-m
	* Brinell hardness tester	1 set	Test load: Max. 3000 kg
	* Rockwell hardness tester	1 set	Test load: Max. 150 kg
3)	Macro- and microstructure test		
	* Metallurgical microscope	1 set	50× to 1000×
	* Specimen cutting machine	1 set	Wheel: 255D×1.2t×31.75d
	* Rotary polishing machine	1 set	Disk: 8" dia×2 pcs
4)	Chemical composition analysis		
	* Vacuum emission spectrometer	1 set	Nos. of elements: approx. 20
	* Specimen grinding machine	1 set	Grinding stone: 255D×174d×84t
	* Carbon and sulfur analyzer	1 set	C: 0 to 5 wt%, S: 0 to 1 wt%
	* Electronic analytical balance	1 set	210 g to 0.1 mg
	* Constant temp. electric drying oven	1 set	Temp. 40 to 250°C, 450 × 450 × 450
	* Muffle furnace	1 set	Max. temp. : 1200°C, 120 × 220 × 100
5)	* Non-destructive inspection		
	* Ultrasonic flaw detector	1 set	
	* Magnetic flaw detector	1 set	
6)	Dimensional and visual inspection		
	* 3D coordinate measuring machine	1 set	X: 700, Y: 600, Z: 600
	* Surface plate	1 set	1.0 m × 0.75m × 0.19m
	* Miscellaneous measuring instruments	1 lot	
7)	Test pieces machining		
	* Lathe	1 set	Center distance: 500 mm
	* Shaping machine	1 set	Stroke: approx. 750mm
	* Cutting grinder	1 set	Wheel: 405D × 3.0t × 25.4d
	* Power hacksaw	1 set	Power: 1.125 kw
	* Bench drilling machine	1 set	Drill dia. : 3 to 13 mm

Figure 8.2 ORGANIZATION CHART OF FOUNDRY CENTER

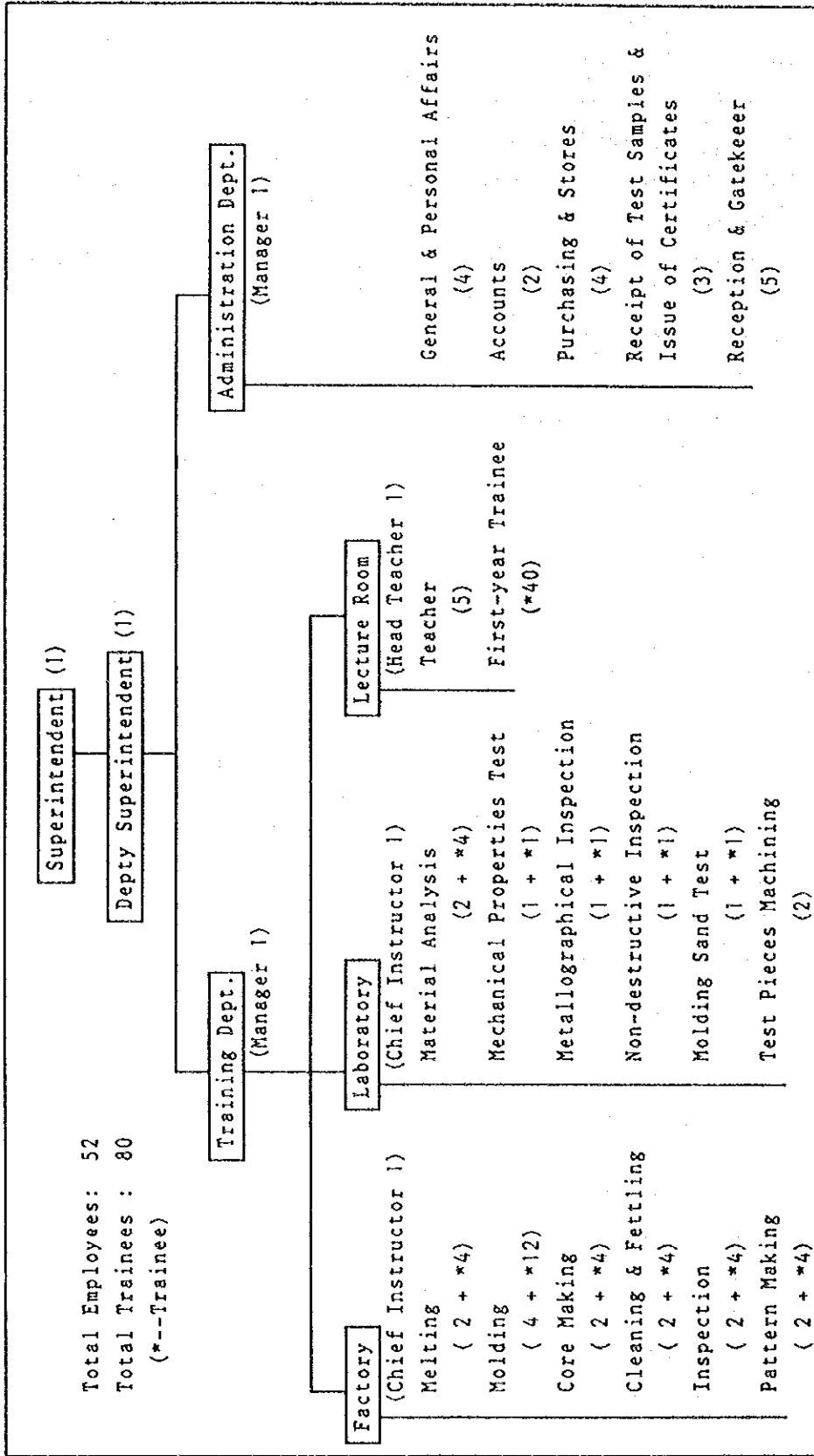




Figure 8.3 WORK FLOW CHART OF FOUNDRY CENTER

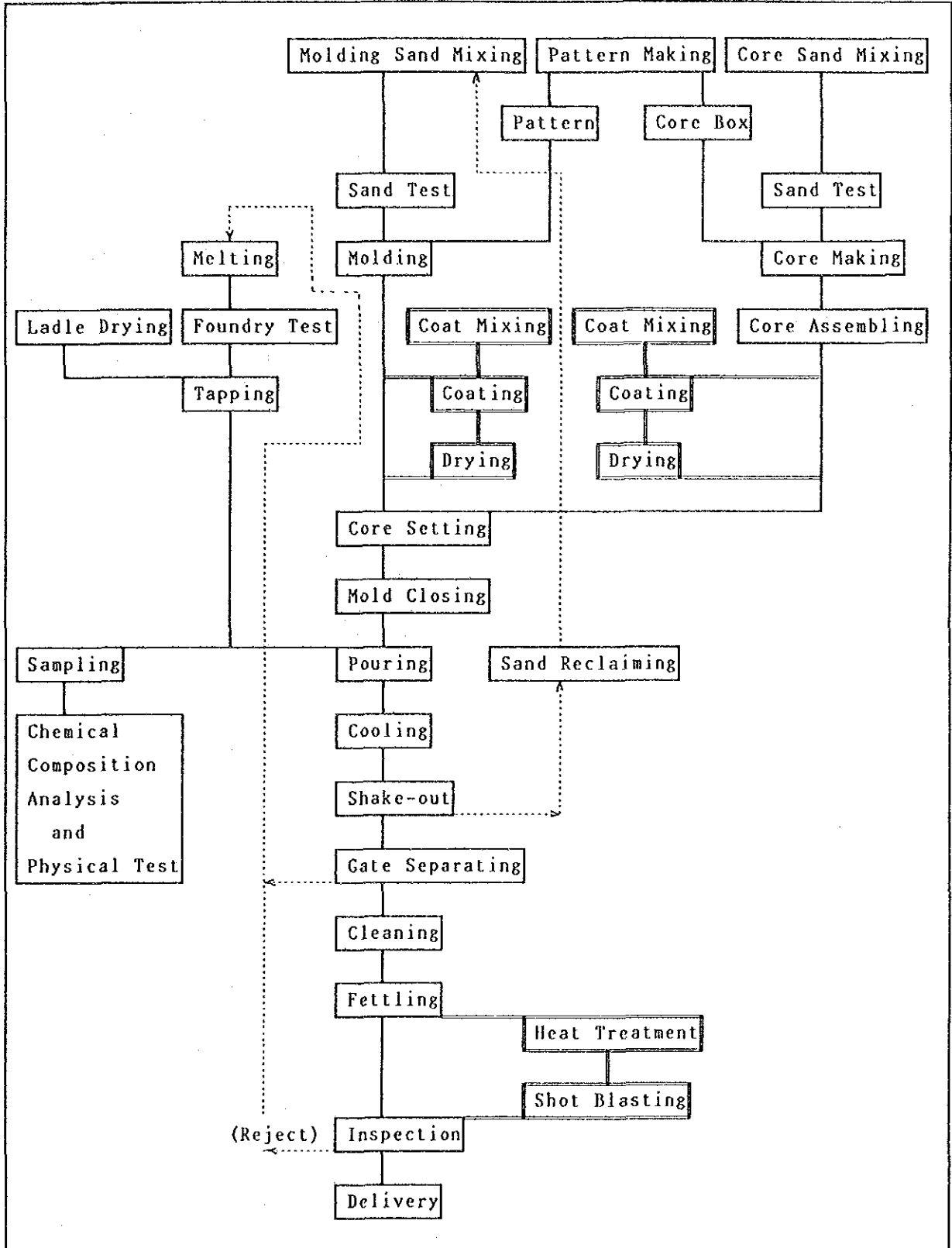


Table 8.4 ESTIMATED PROJECT COST OF FOUNDRY CENTER

Unit: US\$ 1,000			
Item	Foreign	Local	Total
<b>(1). Plant direct cost</b>			
1) Equipment, materials(FOB)	3,186.6	212.9	3,399.5
2) Spare parts (FOB)	91.0	3.2	94.2
3) Ocean freight and insurance	360.3	-	360.3
4) Port charges and inland transportation	-	85.6	85.6
5) Building construction	-	860.6	860.6
6) Installation of machinery Adjustment & trial run	-	11.1	11.1
7) Accommodation & facilities(2%)	-	70.0	70.0
8) Engineering & supervising	865.7	0.8	866.5
9) Over head expense(5%)	273.0	14.4	287.4
Sub total	4,776.6	1,258.6	6,035.2
10) Land acquisition and preparation	-	504.4	504.4
Pavement/Fence/Turf	-	70.3	70.3
Sub total	-	574.7	574.7
<b>(2) Tax &amp; duty</b>			
1) Import tax (CIF x10%)	-	363.8	363.8
2) LAY 75 (CIF X 18%)	-	654.8	654.8
3) IVA(CIF+Import tax+LAY 75)x10%	-	465.7	465.7
Sub total	-	1,484.3	1,484.3
<b>(3) Contingency &amp; others(20%)</b>	955.3	548.6	1,503.9
<b>Grand total</b>	5,731.9	3,866.2	9,598.1

Figure 8.4 MASTER SCHEDULE OF CONSTRUCTION  
(FOUNDRY CENTER)

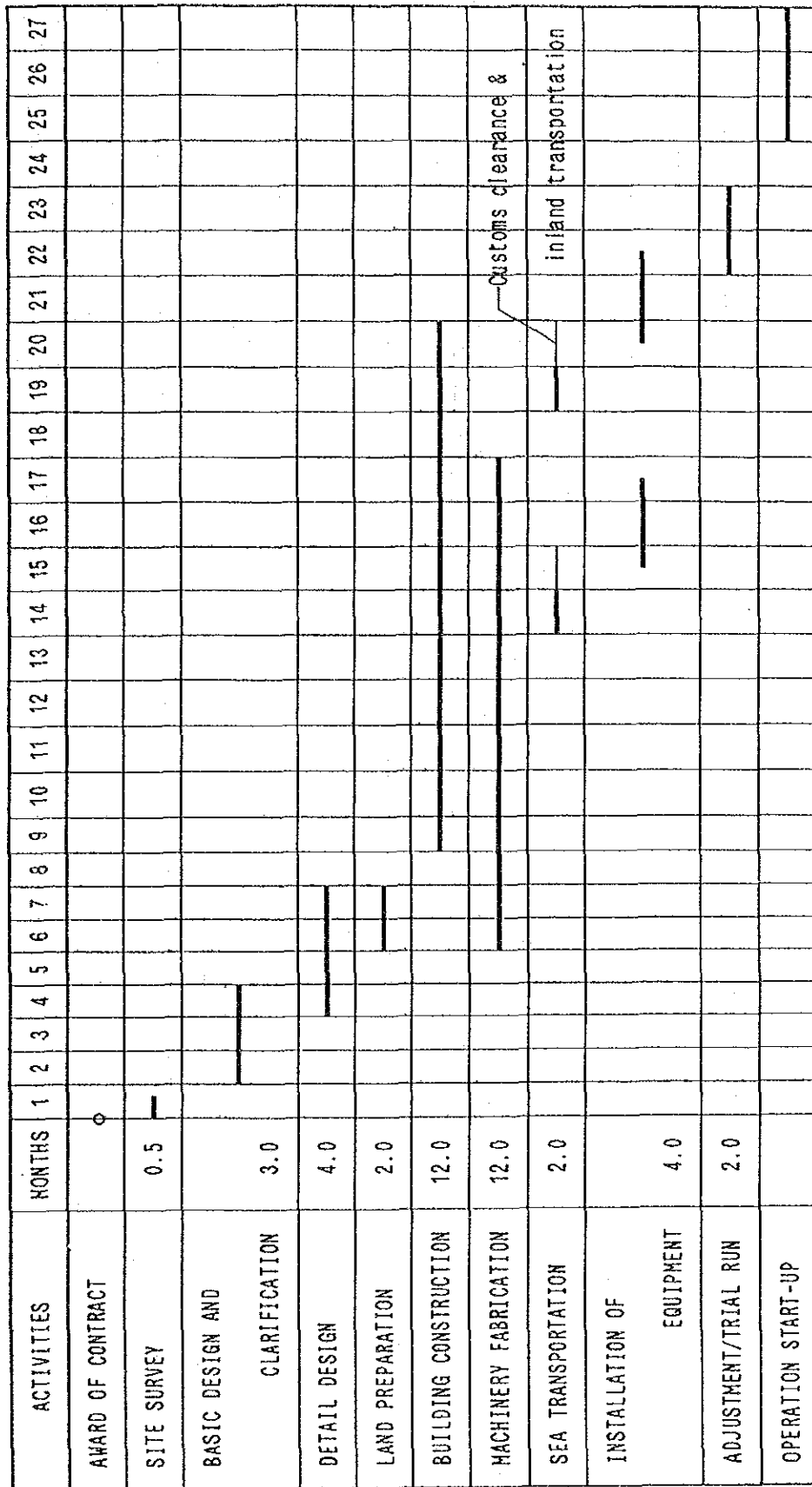


Figure 8.5 LAYOUT OF ELECTROPLATING CENTER

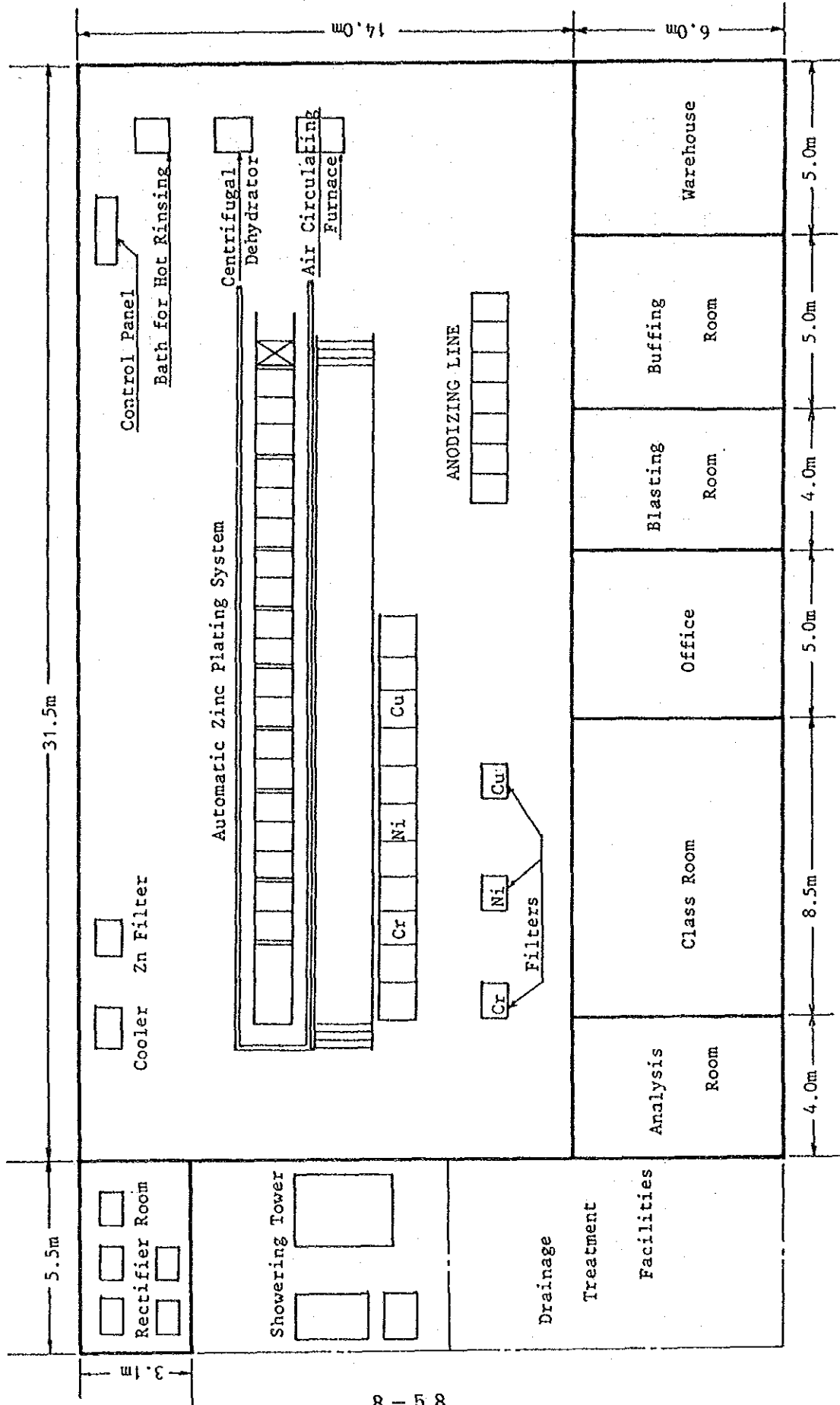


Table 8.5 EQUIPMENT &amp; MACHINERY LIST OF PLATING SHOP

1/2

Name	Qty	Specifications
Bath for Trichlene Cleaning	1	1,050 × 350 × 900, SUS <sup>3)</sup>
Do. for Alkali Degreasing	1	800 × 1,000 × 1,500H SS <sup>2)</sup> +Rubber Lining
Do. for Rinsing	9	Do.
Do. for Acid Emulsion	1	Do.
Do. for Electrolytic Degreasing	1	Do.
Do. for Neutralising	1	Do.
Do. for Zinc Plating	1	2,000 × 1,000 × 1,500H SS+Rubber Lining
Do. for Recovery	2	800 × 1,000 × 1,500H SS+PVC
Do. for Nitrating	1	Do.
Do. for Chromate	1	Do.
Do. for Uni-chromate	1	Do.
Do. for Black-chromate	1	Do.
Do. for Etching	1	300 × 450 × 600H SUS+Rock wool
Do. for Anodizing	1	300 × 450 × 600H SS+Rubber lining
Do. for Dyeing	2	300 × 450 × 600H SUS
Do. for Sealing	1	Do.
Do. for Acid Activation	1	1,000 × 1,000 × 1,500H SS+Rubber lining
Do. for Rinsing	7	Do.
Do. for Copper Plating	1	1,000 × 1,000 × 1,500H SS+PVC
Do. for Nickel Plating	1	Do.
Do. for Chromium Plating	1	Do.
Hopper	1	SS+SUS
Table and Steel Frame	1 system	2,000 × 22,000 × 1,500H
Carrier	2	2,250 × 1,500 × 2,750 Go-back 0.75 kw Up-down 0.75 kw
Platform for Worker	1	900 × 20,000 × 850H SS
Driving Device of Barrel Rotation	2	1.5 kw
Barrel	5	φ400 × 650L, PVC
Hanger	5	Cu
Basket	5	φ400 × 200H, SUS

Notes: 1) Dimensions in mm, 2) SS means carbon steel, 3) SUS means stainless steel.

Name	Qty	Specifications
Filter for Zinc Plating	1	14,000l/Hr
Do. for Copper Plating	1	Do.
Do. for Nickel Plating	1	Do.
Do. for Chromium Plating	1	Do.
Do. for Anodizing Line	1	800l/Hr
Rectifier for Electrolytic Degreasing	1	12V×1,000A
Do. for Zinc Plating	1	12V×2,000A
Do. for Copper Plating	1	12V×1,000A
Do. for Nickel Plating	1	Do.
Do. for Chromium Plating	1	Do.
Do. for Anodizing line	1	25V×50A, Thyristor type
Cooler for Zinc Plating	1	16,000kcal/Hr×8.6 kw
Bath for Hot Rinsing	1	600×600 ×800H, SUS
Centrifugal Dehydrator	1	Heater 5 kw, Motor 2.2 kw
Air Circulating Furnace	1	Heater 9 kw, Fan 0.4 kw
Heater for Alkali Degreasing	4	3 kw, immersion type
Do. for Acid Emulsion	3	Do.
Do. for Zinc Plating	4	Do.
Do. for Electrolytic Degreasing	4	Do.
Do. for Copper Plating	4	Do.
Do. for Nickel Plating	4	Do.
Do. for Chromium Plating	4	Do.
Do. Hot Rinsing	3	Do.
Showering Tower for Acid and Alkali	1	Fan 7.5 kw, Pump 3.7 kw
Do. for Zinc Plating	1	Fan 7.5 kw, Pump 1.5 kw
Do. for Chromium Plating	1	Do.
Control Panel	1	1,800×450 ×2,000H, 150 kVA
Facilities for Laboratory	1 unit	
Waste Water Treatment System	1 unit	
Sandblaster	1	Box type, 1,000×1,000 ×1,000
Buffing Lathe	5	Regular type
Utilities	1 system	
Others	1 set	

Figure 8.6 WORK FLOW CHART

(1) ZINC PLATING AND CHROMATE TREATMENT

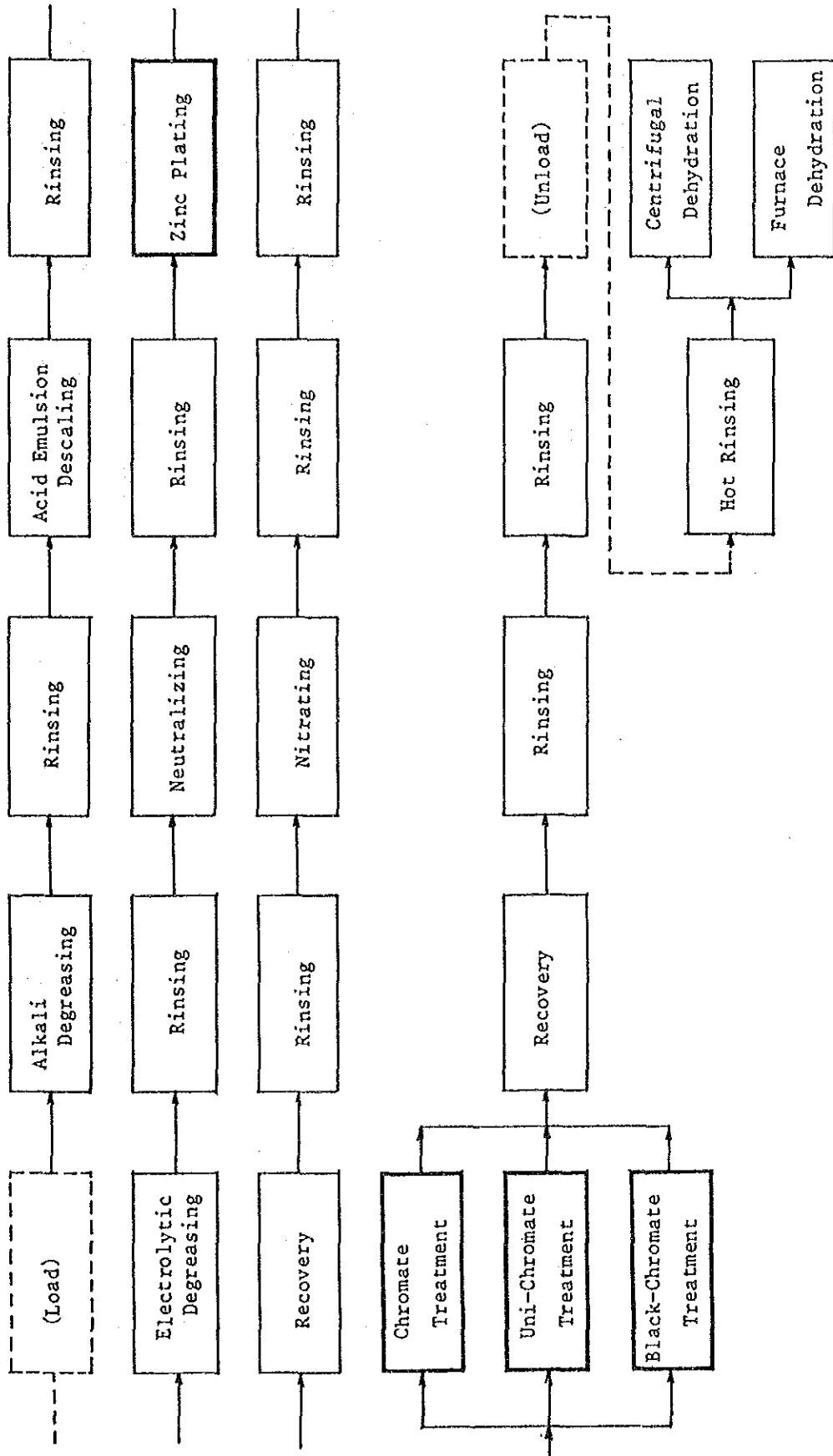


Figure 8.6 WORK FLOW CHART

(2) CU - NI - CR ELECTROPLATING

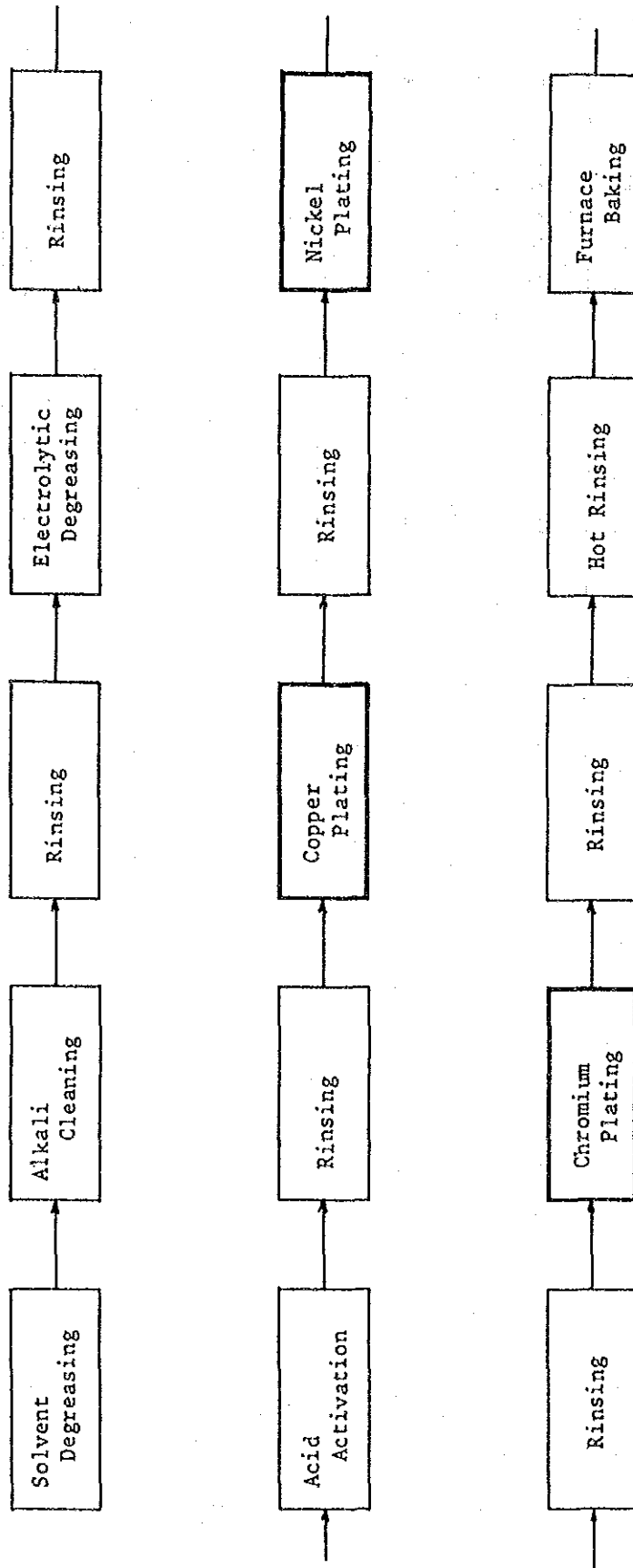




Figure 8.7 ORGANIZATION CHART OF ELECTROPLATING CENTER

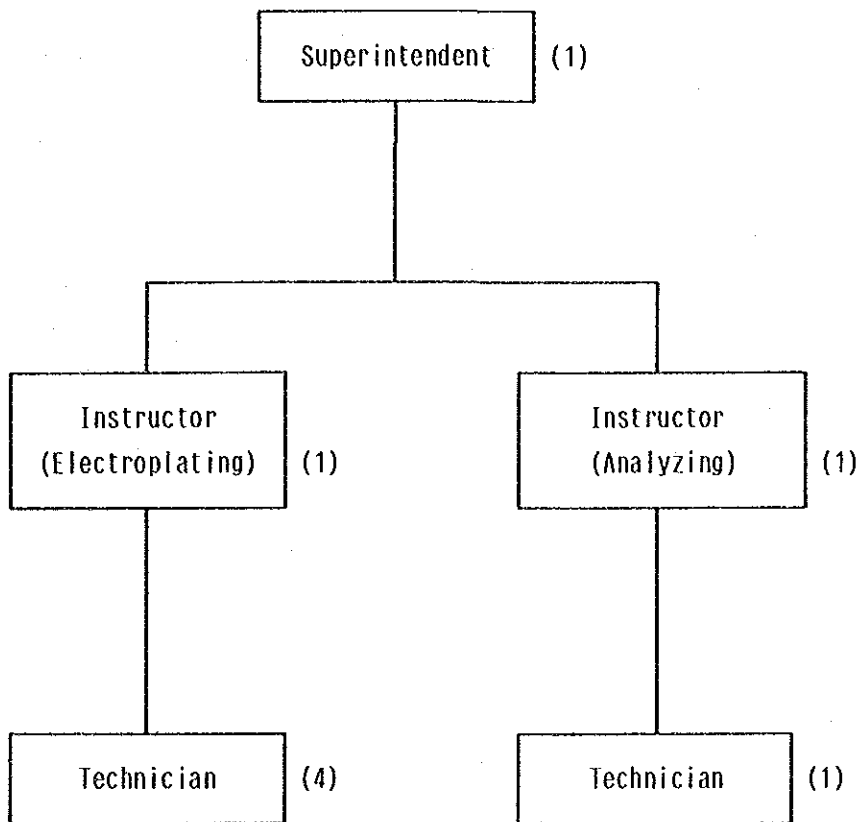


Table 8.6 ESTIMATED PROJECT COST OF ELECTROPLATING CENTER

( Unit: US\$ 1,000 )			
Item	Foreign	Local	Total
<b>(1). Plant direct cost</b>			
1) Equipment, materials(FOB)	939.0	229.0	1,168.0
2) Spare parts (FOB)	31.7	12.9	44.6
3) Ocean freight and insurance	55.4	-	55.4
4) Port charges and inland transportation	-	23.4	23.4
5) Building construction	-	136.3	136.3
6) Installation of machinery	-	5.6	5.6
Adjustment & trial run			
7) Accommodation & facilities(2.6%)	-	30.3	30.3
8) Engineering & supervising	266.1	0.6	266.7
9) Over head expense(10%)	164.3	8.6	172.9
Sub total	1,456.5	446.7	1,903.2
10) Land acquisition and preparation	-	206.5	206.5
Pavement/fence/Turf	-	45.8	45.8
Sub total	-	251.3	251.3
<b>(2) Tax &amp; duty</b>			
1) Import tax (CIF x10%)	-	102.6	102.6
2) LAY 75 (CIF X 18%)	-	184.7	184.7
3) IVA(CIF+Import tax+LAY 75)x10%	-	131.4	131.4
Sub total	-	418.7	418.7
<b>(3) Contingency &amp; others(20%)</b>	291.3	173.1	464.4
<b>Grand total</b>	1,747.8	1,289.8	3,037.6

Figure 8.8 MASTER SCHEDULE OF CONSTRUCTION  
(ELECTROPLATING CENTER)

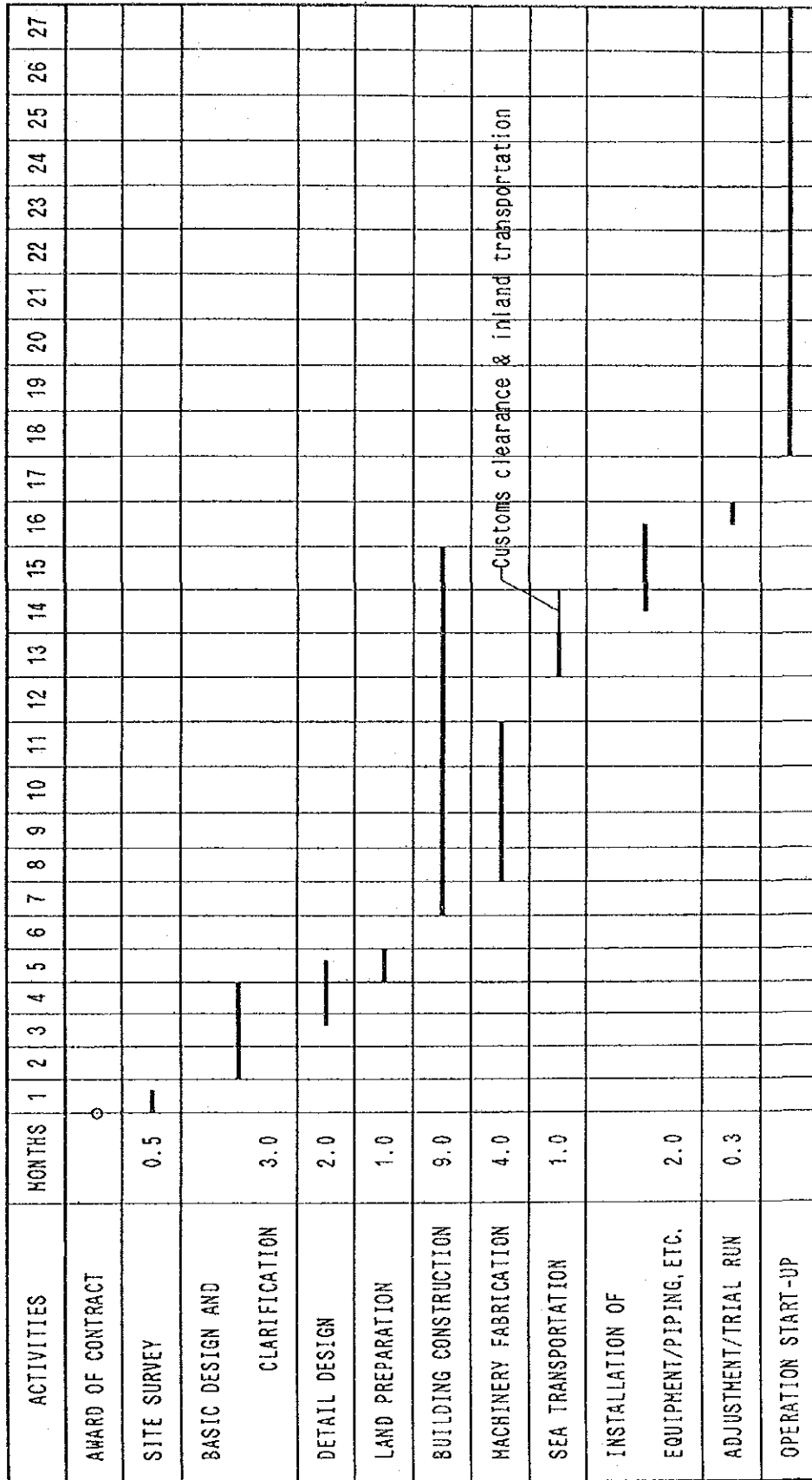


Table 8.7 DESIGN BASIS OF INDUSTRIAL PARK  
FOR METALWORKING INDUSTRY

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(1) Land area  
10 ha. = 100,000m<sup>2</sup>

(2) Number of factories to be located  
20 factories

(3) Common Service Facilities (CSF)

- 1) Administration office
- 2) Machine shop with calibration room
- 3) Heat treatment shop
- 4) Laboratory

(4) Use of land

for 20 factories	: 69,000m <sup>2</sup>
for CSF	: 6,000m <sup>2</sup>
for infrastructure (road etc.)	: 25,000m <sup>2</sup>

(5) Buildings

20 factories :	36m × 15m = 540m <sup>2</sup> /factory
	540m <sup>2</sup> /factory × 20 factories = 10,800m <sup>2</sup>
CSF	
- Administration office	= 12m × 18m = 216m <sup>2</sup>
- Machine shop with calibration room	= 12m × 48m = 576m <sup>2</sup>
- Heat treatment shop	= 12m × 36m = 432m <sup>2</sup>
- Laboratory	= 6m × 18m = 108m <sup>2</sup>

(6) Utilities & manpower

	Electricity (kWh/H)	Water (m <sup>3</sup> /day)	Manpower (persons)
20 factories	1,440	80	520
CSF	685	25	127
Total	2,125	105	647

(7) Equipment and materials cost

20 factories :	US\$ 15.4 million
CSF :	US\$ 4.5 million

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Figure 8.9 LAYOUT OF INDUSTRIAL PARK FOR METALWORKING INDUSTRY

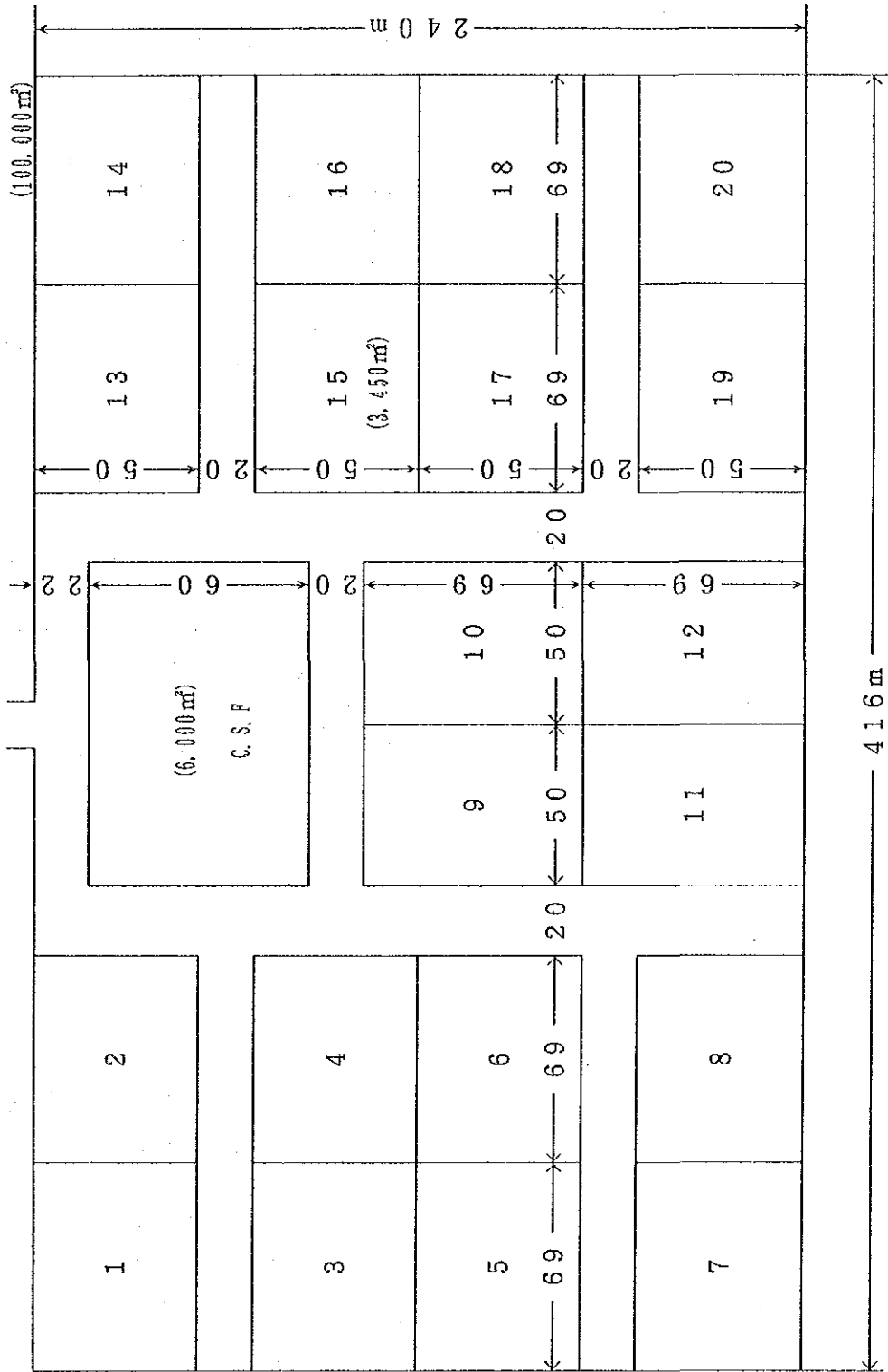


Table 8.8 ESTIMATED PROJECT COST OF INDUSTRIAL PARK  
FOR METALWORKING INDUSTRY

(Unit: US\$1000)

Item	Foreign	Local	Total
(1) Plant direct cost			
1) Equipment, materials (FOB)	18,646.3	1,253.7	19,900.0
(20 factories)	(14,281.3)	(1,118.7)	(15,400.0)
(CSP)	(4,365.0)	(135.0)	(4,500.0)
2) Spare parts	932.3	62.7	995.0
3) Ocean freight & insurance	1,696.8	—	1,696.8
4) Port charges and inland transportation	—	484.8	484.8
5) Building construction	—	2,353.6	2,353.6
(20 factories)	( — )	(2,095.2)	(2,095.2)
(CSP)	( — )	(258.4)	(258.4)
6) Installation of machinery, adjustment & trial run	—	79.6	79.6
7) Accommodation & facilities	—	484.8	484.8
8) Engineering & supervising	2,580.0	645.0	3,225.0
9) Overhead expenses (5%)	1,192.8	268.2	1,461.0
Sub-total	25,048.2	5,632.4	30,680.6
10) Land acquisition & preparation	—	9,006.2	9,006.2
pavement/Fence/Turf	—	1,968.7	1,968.7
Sub-total	—	10,974.9	10,974.9
(2) Tax & duty			
1) Import tax (CIF×10%)	—	2,127.5	2,127.5
2) Lay 75 (CIF×18%)	—	3,830.0	3,830.0
3) IVA (CIF+Import tax+Lay75)×10%	—	2,723.3	2,723.3
Sub-total	—	8,680.8	8,680.8
(3) Contingency & others (20%)	5,009.6	1,431.3	6,440.9
Grand total	30,057.8	26,719.4	56,777.2

Figure 8.10 MASTER SCHEDULE OF CONSTRUCTION  
(INDUSTRIAL PARK FOR METALWORKING INDUSTRY)

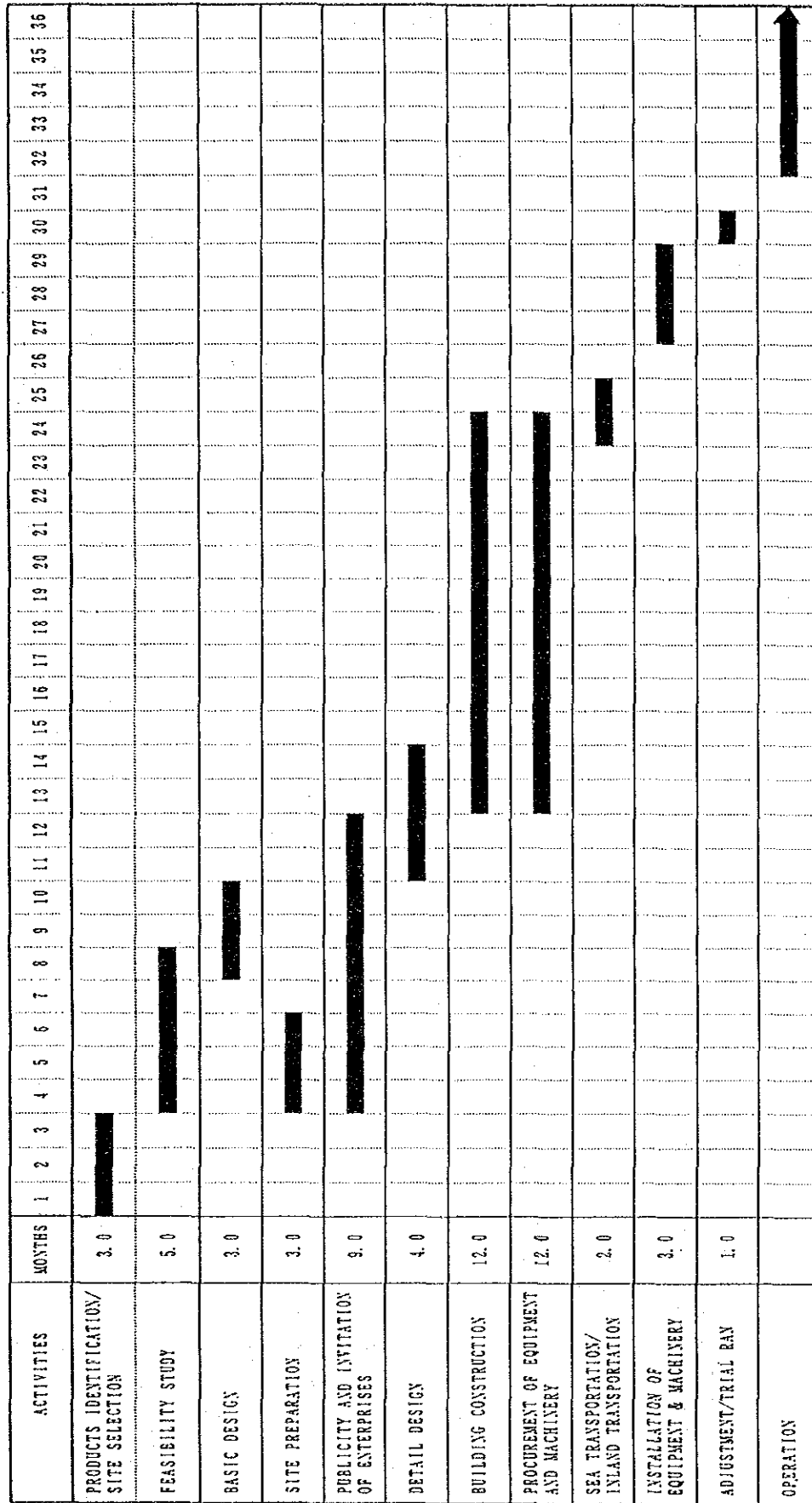
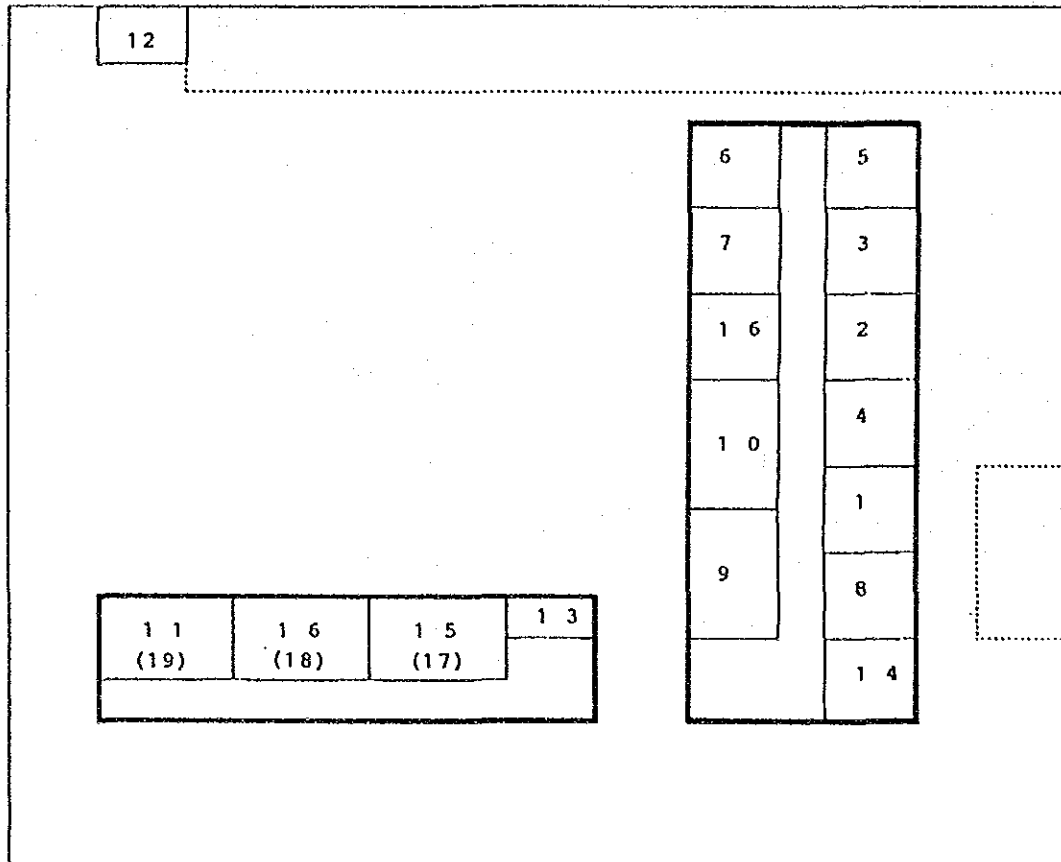


Figure 8.11 LAYOUT FOR METALWORKING INDUSTRY PROMOTION CENTER



- |                                       |                     |
|---------------------------------------|---------------------|
| 1. Mechanical Properties Testing Room | 17. Conference Room |
| 2. Metallographical Inspection Room   | 18. Conference Room |
| 3. Instrumental Analysis Room         | 19. Designing Room  |
| 4. Chemical Analysis Room             |                     |
| 5. Non-Destructive Inspection Room    |                     |
| 6. Precise Measurement Room           |                     |
| 7. Molding Sand Testing Room          |                     |
| 8. Test Pieces Machining Room         |                     |
| 9. Test & Inspection Dept. Office     |                     |
| 10. Technical Adviser Office          |                     |
| 11. Library                           |                     |
| 12. Guard House                       |                     |
| 13. Reception                         |                     |
| 14. Test Samples Receiving Room       |                     |
| 15. Administration Dept. Office       |                     |
| 16. Conference Room                   |                     |

Land Area : 70 m × 60 m  
 Main Office Building : 33 m × 9 m × 2  
 (Two-story)  
 Work Shop : 42 m × 15 m



Table 8.9 EQUIPMENT LIST FOR METALWORKING INDUSTRY PROMOTION CENTER

(1/3)

Purpose	Name of Equipment	Specification	Quantity
1) Test and Inspection Facilities			
(1) Mechanical Properties Test	1) Universal Testing Machine	Capacity : Max. 50 tons	1 set
	2) Charpy Impact Testing Machine	Capacity : 30kg f. m	1 set
	3) Brinell Hardness Tester	Test Load : Max. 3000kg	1 set
	4) Rockwell Hardness Tester	Test Load : Max. 150kg	1 set
	5) Shore Hardness Tester	Type D	1 set
	6) Micro Vickers Hardness Tester	Test Load : Max. 2000g	1 set
(2) Macro- and Microstructure Tests	1) Metallurgical Microscope	50 x ~1500 x	1 set
	2) Hot Type Sample Mounting Press	Heater : 100V, 300W	1 set
	3) Specimen Cutting Machine	Cutting Wheel : 235D x 1.2t x 3L.75d	1 set
	4) Rotary Polishing Machine	Disk : 8" dia. x 2 pcs	1 set
	5) Hot Type Dryer	Heater : 100V, 400W	1 set
(3) Chemical Composition Analysis	1) Vacuum Emission Spectrometer	Wavelength Range : 175~ 415 na	1 set
	2) Specimen Grinding Equipment	Grinding Stone : 250D x 174d x 84t	1 set
	3) Atomic Absorption Spectrophotometer with Hollow Cathode Lamps	Wave Length Range : 190 ~ 700 na	1 set
	4) Spectrophotometer	Wave Length Range : 190 ~ 700 na	1 set
	5) Carbon and Sulfur Analyser	Analytical Range : c: 0-5 wt%, s: 0-1 wt%	1 set
	6) Electronic Balance	330g~0.01g	1 set
	7) Electronic Analytical Balance	210g~0.1 mg	1 set
	8) Distilled Water Production Device	Capacity : 1.8 l/h	1 set
	9) Constant Temperature Electric Drying Oven	Temp. : 40~ 250°C, 450 x 450 x 450	1 set
	10) Muffle Furnace	Max Temp. : 1200°C, 120 x 220 x 100	1 set
	11) Hot Plate	Max Temp. : 400°C, 300 x 300 x 197	1 set
	12) Miscellaneous Glasswares		1 set

Purpose	Name of Equipment	Specification	Quantity
(4) Non-Destructive Inspection	1) Ultrasonic Flaw Detector		1 set
	2) Magnetic Flaw Detector		1 set
	3) X-ray Inspection Apparatus	25~150 kV, 12/3 mA	1 set
	4) X-ray Internal Stress Measuring Equipment	30 kV 10 mA	1 set
(5) Precise Measurement	1) 3D-Coordinate Measuring Device	X : 700, Y : 600, Z : 600	1 set
	2) Profile Projector	Projection : 300 mm dia.	1 set
	3) Surface Roughness Tester		1 set
	4) Roundness Tester		1 set
	5) Surface Plate	1.5m x 1.0m x 0.2m	1 set
	6) Miscellaneous Measuring Instruments		1 set
(6) Test Pieces Machining	1) Lathe	Center Distance : 500 mm	2 sets
	2) Shaping Machine	Stroke : 762 mm	1 set
	3) Cutting Grinder	Cutting Wheel : 405D x 3.0t x 25.4d	1 set
	4) Power Hacksaw	Power : 1.5 kW	1 set
	5) Bench Drilling Machine	Drill Dia : 3~13D	1 set
(7) Molding Sand Tests	1) Universal Sand Strength Tester	Compression, Tensile, Shear Strength	1 set
	2) Permeability Tester	0~10,000mm	1 set
	3) Sand Runner	50p x 50H	1 set
	4) Infrared Moisture Tester	0~100% wet base	1 set
	5) Fineness Testing Sieve & Sieve Shaker	Approx. 143 cycle/min	1 set
	6) Electronic Balance	330g - 10mg / 60g - 1mg	1 set
	7) Compactability Tester	Pressing by compressed air : 10 kg/cm <sup>2</sup>	1 set
	8) Sand Mixer	15kg/batch	1 set
	9) Sand Testing Washer	35W Single Phase Motor	1 set

Purpose	Name of Equipment	Specification	Quantity
2) Other Facilities			
(1) Design Training	1) Drawing Stand 2) Personal Computer 3) Plotter		10 sets 1 set 1 set
(2) Seminar	1) Overhead Projector 2) Slide Projector 3) Microphone and Loud-speaker		1 set 1 set 1 set
(3) Library	1) Personal Computer 2) Copying Machine		1 set 1 set

Figure 8.12 ORGANIZATION CHART OF METALWORKING INDUSTRY  
PROMOTION CENTER

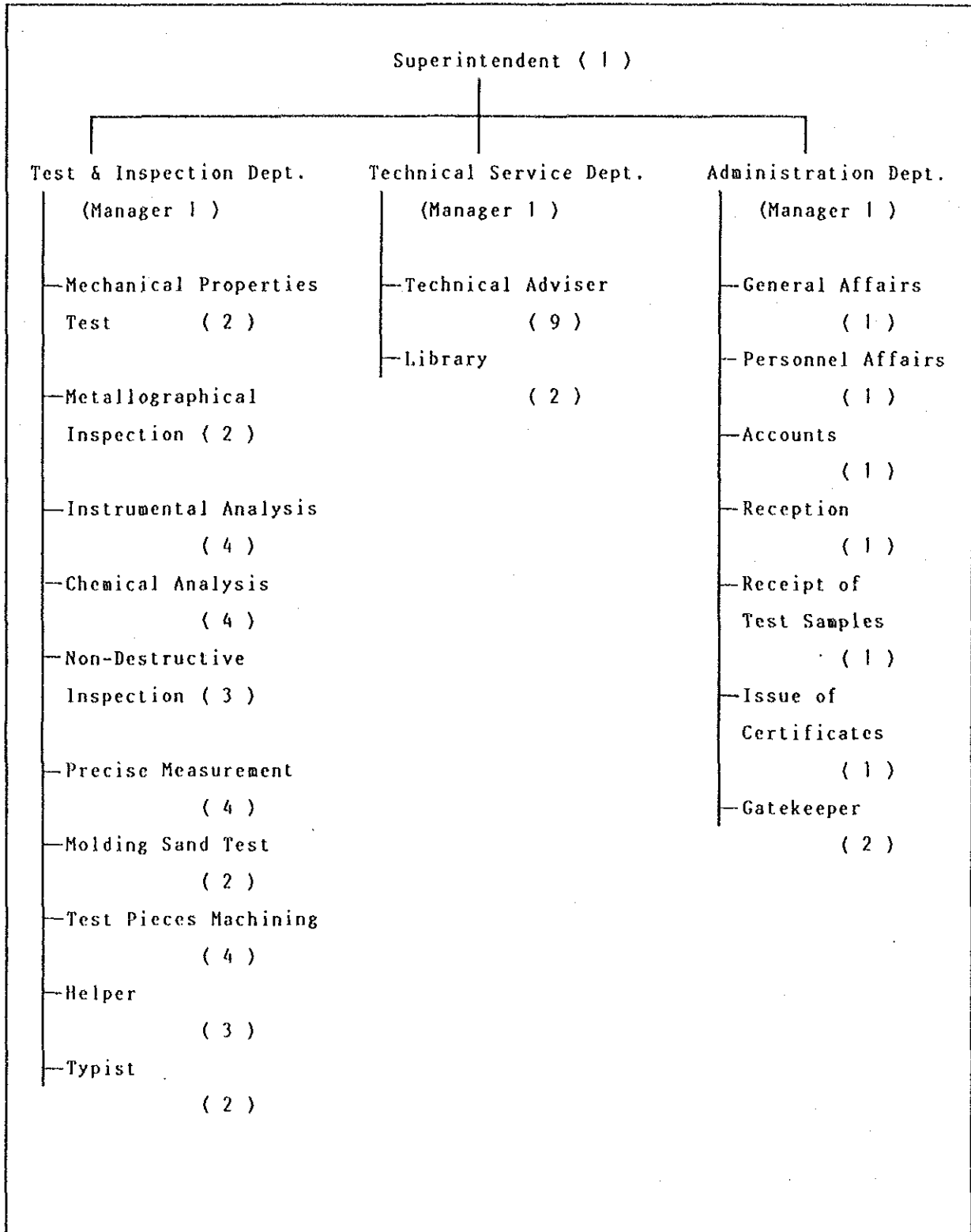
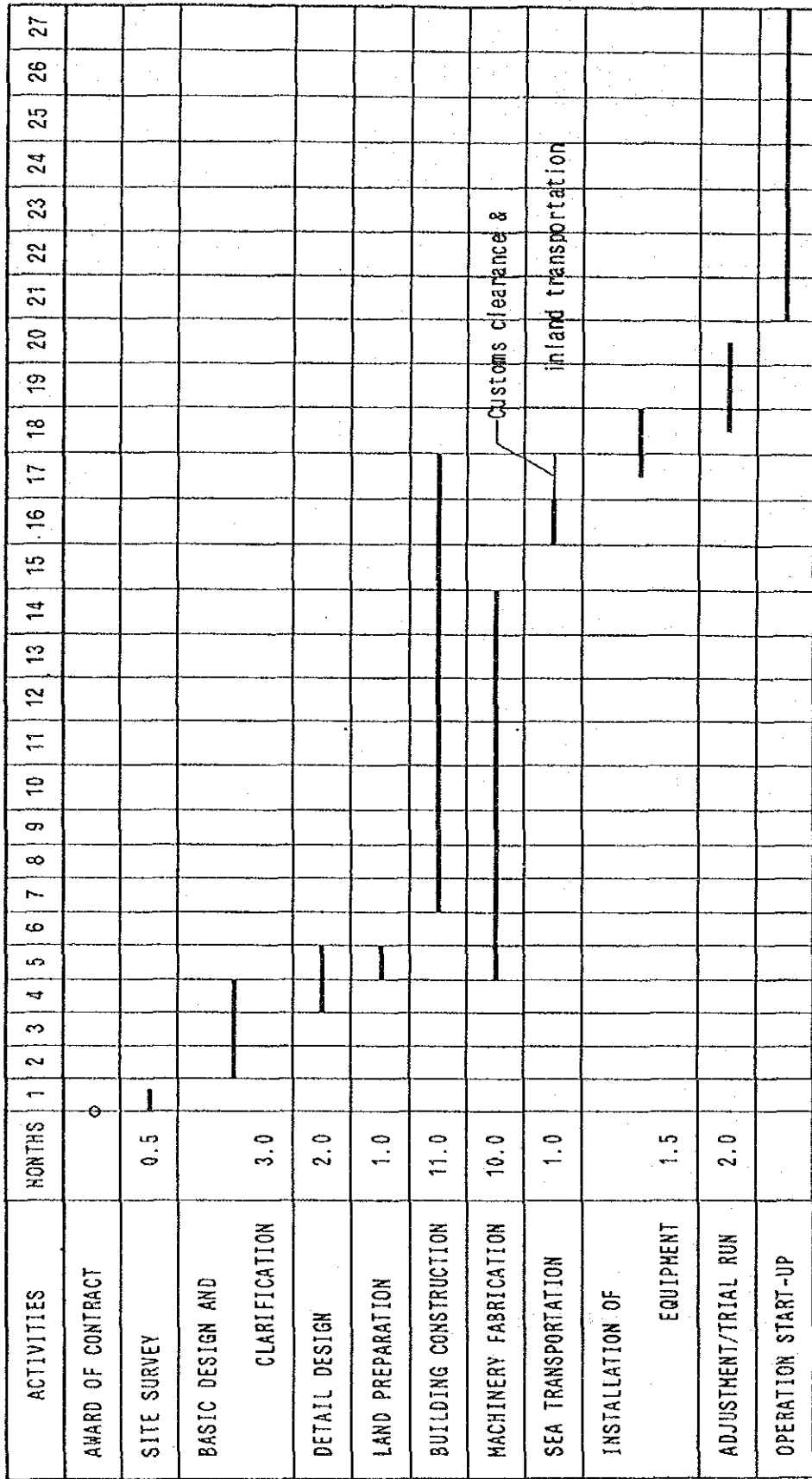


Table 8.10 ESTIMATED PROJECT COST OF METALWORKING INDUSTRY  
PROMOTION CENTER

Unit: US\$ 1,000

Item	Foreign	Local	Total
<b>(1) Plant direct cost</b>			
1) Equipment, materials(FOB)	1,138.1	16.1	1,154.2
2) Spare parts (FOB)	54.2	-	54.2
3) Ocean freight and insurance	464.1	-	464.1
4) Port charges and inland transportation	-	43.9	43.9
5) Building construction	-	260.4	260.4
6) Installation of machinery Adjustment & trial run	-	3.0	3.0
7) Accommodation & facilities(3.2%)	-	38.7	38.7
8) Engineering & supervising	444.2	0.7	444.9
9) Over head expense(10%)	234.2	12.3	246.5
Sub total	2,334.8	375.1	2,709.9
10) Land acquisition and preparation	-	412.9	412.9
Pavement/Fence/Turf	-	76.9	76.9
Sub total	-	489.8	489.8
<b>(2) Tax &amp; duty</b>			
1) Import tax (CIF x10%)	-	248.5	248.5
2) LAY 75 (CIF X 18%)	-	298.2	298.2
3) IVA(CIF+Import tax+LAY 75)x10%	-	220.3	220.3
Sub total	-	767.0	767.0
<b>(3) Contingency &amp; others(20%)</b>	467.1	228.4	695.5
<b>Grand total</b>	<b>2,801.9</b>	<b>1,860.3</b>	<b>4,662.2</b>

Figure 8.13 MASTER SCHEDULE OF CONSTRUCTION  
(METALWORKING INDUSTRY PROMOTION CENTER)

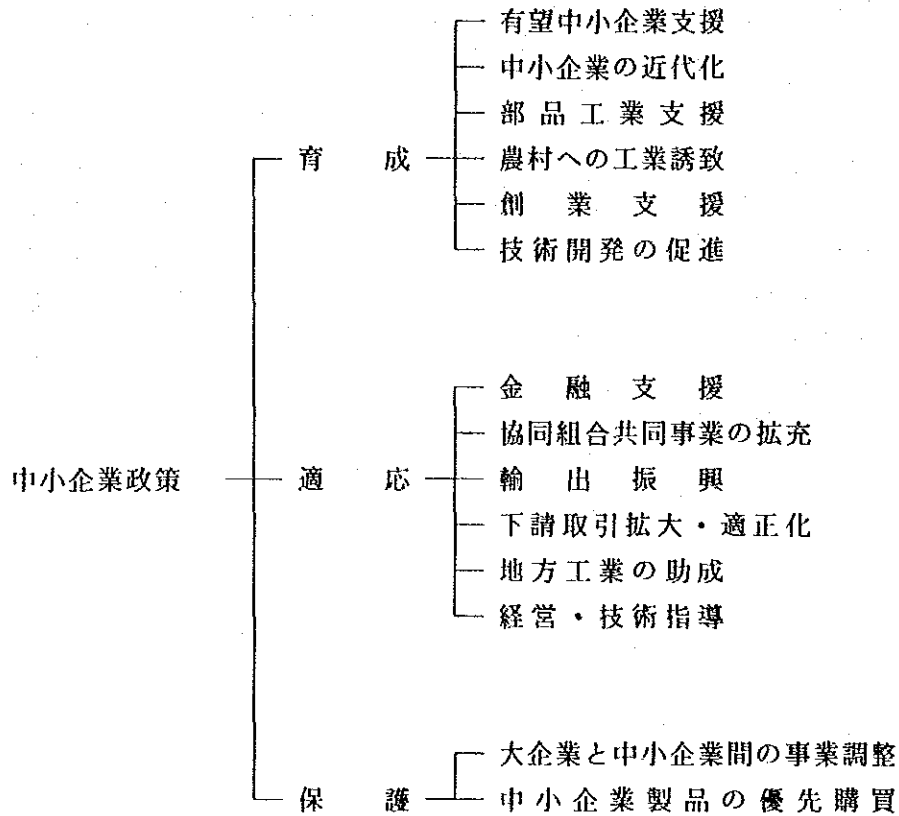


## APPENDIX 諸外国での中小企業助成策の例

中小・零細企業の振興に関する法体系が最も整備されていると思われる日本やアジア NIEsの法体系を基にして、一般的な仕組みに編成したものと参考として以下に示した。

コロンビアにおいては、「中小企業」と「零細企業」は多くの場合、別個のものとして扱われる。零細企業はインフォーマル・セクターとして位置付けられて、特別の助成策が必要だと考えられているからである。しかし多くの国では、中小企業と零細企業は一つの枠組の中で扱われ、これを総称して「中小企業」と呼ぶ。本項APPENDIXに限って、「中小企業」とあるのは零細企業を含むものである。すなわち、零細企業にとっても以降に述べるような法体系が適用される。零細企業に対しては、この助成策の枠組の中で特段の配慮が成されていることになっているわけである。

## 中小企業政策の体系



それぞれの政策を実施するために、次のような法律が整備されている。

- ・ 中小企業基本法
- ・ 中小企業振興法
- ・ 中小企業事業調整法
- ・ 中小企業系列化促進法
- ・ 中小企業製品購買促進法
- ・ 中小企業創業支援法
- ・ 中小企業共同組合法
- ・ 中小企業銀行法
- ・ 信用保証基金法



## 1) 金融対策

「中小企業銀行法」によって中小企業銀行を設立する。この特殊銀行は一般金融機関による貸出が難しい設備資金、技術開発資金、零細企業資金を貸出す。

また、「信用保証基金法」に基づき、信用保証基金を設立し、担保不足、信用不足の中小企業向金融のリスク負担をする。

上記の銀行と基金は、同族会社が多く、増資が困難な中小企業に対する投資も行うものとする。

## 2) 経営・技術指導

「中小企業振興法」に基づき、中小企業振興公団を設立し、委託指導機関を通じて、現場指導（経営指導・技術指導・総合指導）、研修、及び情報提供を行う。

## 3) 協同化

「中小企業協同組合法」によって、既存の同業者団体等を中小企業協同組合に改編し、共同事業を行うための協同組合を設立する。共同事業は協同購買と協同販売のほか、各種の協同事業を行う。

## 4) 下請取引の拡大と適正化

「中小企業系列化促進法」に基づいて、下請取引の拡大と適正化を推進する。下請取引の拡大のためには、親企業が下請企業に発注すべき部品あるいは加工の範囲を定め、親企業はその品目を内製してはいけないこととする。

取引の適正化については、長期下請契約の勧告、納品代金の支払条件の適正化の勧告を行う。そのほか、親企業の下請企業への支援拡大、親企業の保証による下請企業の信用貸付を行うような誘導をする。

5) 中小企業と大企業間の事業分野の調整

「中小企業事業調整法」によって、中小企業固有業種を定め、これら業種、又は中小企業が集中している中小企業性業種への大企業の進出を中止、又は規制する。

6) 中小企業製品の優先購買

「中小企業製品購買促進法」により、規模が大きくかつ安定した官公需を優先的に中小企業へ開放する。政府が指定した随意契約対象品目に対しては、できる限り中小企業協同組合と随意契約により購買するようにする。

7) 有望中小企業の支援

有望中小企業を金融機関、中小企業振興公団、政府研究機関などが発掘し、資金支援、企業指導、技術開発支援などの諸施策を総合的に実施する。

8) 中小企業の近代化

「中小企業振興法」の規定により、産業構造の高度化あるいは国際競争力の強化などのため、優先育成業種に当たる企業を指定し、これに資金支援、企業指導を行う。

9) 部品工業の支援

部品の輸入代替を達成するための国産化推進政策である。国産開発対象品目を選定し、その品目を生産する企業を各種技術向上資金、産業技術向上資金によって支援する。この他優遇税制を適用し、公共試験所研究機関の設備を最少の費用で活用できるような支援をする。

10) 中小企業創業の支援

「中小企業創業支援法」を制定し、有能で企業家精神が旺盛な企業者に対し、創業のための手続きを簡素化し、創業を誘導する金融、税制措置を導入する。

Part III ANNEXES

P a r t    I I I    A N N E X E S

A N N E X - I	S T U D Y   T E A M   M E M B E R   L I S T	.....	A - I - 1
A N N E X - I I	P A R T I C I P A N T S   T O   T H E   P L E N A R Y   S E S S I O N   F O R	.....	A - I I - 1
	T H E   P R E S E N T A T I O N   O F   D R A F T   F I N A L   R E P O R T		
A N N E X - I I I	I N S T I T U T I O N S   V I S I T E D   B Y   J I C A   T E A M	.....	A - I I I - 1
A N N E X - I V	E N T E R P R I S E S   V I S I T E D   B Y   J I C A   T E A M	.....	A - I V - 1
A N N E X - V	Q U E S T I O N N A I R E	.....	A - V - 1

A N N E X — I

S T U D Y T E A M M E M B E R L I S T

## STUDY TEAM MEMBER LIST

1. Yoshiyasu MIKAMI : Team Leader  
(Techno-economist, UNICO)
2. Yukio ISEMOTO : Technical Group Leader - for the first  
half (Mechanical Engineer, IHI)
3. Toshihiko SETO : Technical Group Leader - for the second  
half (Mechanical Engineer, IHI)
4. Shozo INAKAZU : Industrial Development  
(Industrial Engineer, UNICO)
5. Yoshihiro MURAKI : Development Policy - for the first half  
(Marketing Expert, IHI)
6. Yasushi JOGO : Development Policy - for the second half  
(Mechanical Engineer, IHI)
7. Yoshiyuki TOKUTAKA : Industrial Management  
(Mechanical Engineer, IHI)
8. Mikio SOMA : Financial system - for the first half  
(Economist, UNICO)
9. Yasunaga TAKACHIHO : Financial System - for the second half  
(Economist, MITSUI RESEARCH INSTITUTE)
10. Hirofumi YAMAUCHI : Development Policy  
(Project Engineer, UNICO)
11. Tadahiro WASHIZU : Metalworking  
(Chemical Engineer, IHI)
12. Nobutake MORI : Metalworking  
(Mechanical Engineer, IHI)
13. Makoto NAGATOMO : Metalworking  
(Mechanical Engineer, UNICO)
14. Nobushige FUKASE : Metalworking  
(Mechanical Engineer, KUBOTA)

ANNEX — II

PARTICIPANTS TO THE PLENARY SESSION  
FOR THE PRESENTATION OF  
DRAFT FINAL REPORT

PARTICIPATIONS TO THE PLENARY SESSION  
FOR THE PRESENTATION OF THE DRAFT FINAL REPORT

<u>Name</u>	<u>Position</u>	<u>Organization</u>
Patricia Henao	Técnica	DNP
Raul Restrepo	Jefe Div. Técnica	FEDEMETAL
Ma. Cristina Bernal	Directora Ejecut. Prog. Desarr. Emp.	F. COMPARTIR
Alvaro Garavito	Consultor	Prog. B. Capital
Margarita Londoño	Promoción Inv. Ext.	DNP
Bernardo Gutiérrez	Técnico	IFI
Armando Pulgarín	Asist. Dtor. Ejec.	CINSET (ACOPI)
Mauricio Molina R.	Director Des. Empr.	CAMARA CIO. BOGOTA
Ernesto Ramírez P.	Subgerente	COPIME
Raul Antonio Páez	Asistente Técnico	FEDEMETAL
Hector Caicedo	Asistente Técnico	FEDEMETAL
William Delgado R.	Tecnico	DNP-CTI
Miguel B. Matiz	Director Ejecutivo	FOMENTAR
Jairo L. Chávez	Jefe Div. PPPU	SENA
Ana Ma. Iregui	Estudios Espec.	BANCO REPUBLICA
Mauricio Perfetti	Jefe D. Recursos H.	DNP
Luis H. Gutiérrez	Jefe División	DNP
Gladys Turriago	Subgte. Económico	ANDI
Elsa M. Uribe	Investigadora	U. JAVERIANA
Ma. Dolores Pérez	Investigadora	U. JAVERIANA
Sergio Torres	Investigadora	U. JAVERIANA



**A N N E X — III**

**INSTITUTIONS VISITED BY JICA TEAM**



## INSTITUTIONS VISITED BY JICA TEAM

### General Information and Others

1. Departamento Administrativo Nacional de Estadísticas (DANE) Avenida Eldorado CAN
2. Japan External Trade Organization (JETRO) Carrera 16A #78-65
3. Universidad Javeriana Carrera 7 #40-62

### Promotion Policy

1. Departamento Nacional de Planeación (DNP) Calle 26 #13-19
2. Ministerio de Desarrollo Económico Calle 26 #13-19
3. Instituto Colombiano de Comercio Exterior (INCOMEX) Calle 28 #13A-15
4. Superintendencia de Industria y Comercio Carrera 37 #52-95
5. Superintendencia de Sociedades Centro Administrativo Nacional
6. Fondo de Promoción de Exportaciones (PROEXPO) Calle 28 #13A-15
7. Programa Bienes de Capital (PBC) Carrera 7 #32-33
8. Bolsa de Subcontratación de Bogotá Carrera 40 #22C-67
9. Servicio de Desarrollo y Consultoría para el Sector Cooperativo y de Microempresas (SEDECOM) Calle 71 #11-90

### Financing System

1. Banco de la República Calle 16 #6-66
2. Asociación Bancaria de Colombia Carrera 7 #17-01
3. Instituto de Fomento Industrial (IFI) Calle 16 #6-66
4. Fondo de Desarrollo Empresarial Calle 35 #4-19
5. Fondo Financiero Industrial (FFI) (Banco de la República) Calle 16 #6-66
6. Fondo Financiero Agropecuario (FFA) (Banco de la República) Calle 16 #6-66
7. Fondo de Inversiones Privadas (FIP) (Banco de la República) Calle 16 #6-66
8. Fondo Nacional de Garantías (FNG) Carrera 7 #24-89
9. Leasing Bolívar S.A. (LEASING) Carrera 10 #16-39

- |     |  |                    |
|-----|--|--------------------|
| 10. | Caja Social de Ahorros   | Calle 59 #10-60    |
| 11. | Fundacion Fondo de Garantias para el Desarrollo de la Economia Social y Solidaria (FOMENTAR) | Calle 71 #11-90    |
| 12. | Union Cooperativa Nacional de Ahorro y Credito (UCONAL)                                      | Calle 19 #13A-12   |
| 13. | Coopdesarrollo   | Carrera 7 #32-53   |
| 14. | Fundacion Social Coopdesarrollo (FUNDESARROLLO)  | Carrera 7a. #34-22 |
| 15. | Banco Interamericano de Desarrollo (BID)   | Avenida 40A #13-09 |
| 16. | Banco Mundial  | Carrera 10 #86-21  |
| 17. | Corporacion Financiera Popular S.A. (CFP)  | Calle 28 #13A-15   |
| 18. | Banco de Bogota  | Calle 36 #7-47     |
| 19. | Corporacion Fondo de Apoyo de Empresas Asociativas (CORFAS)                                  | Calle 59 #6-36     |
| 20. | The Export-Import Bank of Japan (EXIM BANK)  | Carrera 9 #74-08   |

Foundation, Association, Cooperation

- |    |  |                         |
|----|--|-------------------------|
| 1. | Federacion Colombiana de Industrias Metalurgicas (FEDEMETAL) |                         |
|    | Bogota :   | Calle 35 #4-81          |
|    | Cali :   | Avenida 6 Norte #38-114 |
|    | Medellin :   | Carrera 43A #1A Sur-69  |
| 2. | Asociacion Colombiana Popular de Industriales (ACOPI)        |                         |
|    | Bogota :   | Carrera 23 #41-94       |
|    | Cali :   | Calle 20M #4-16         |
|    | Medellin :   | Calle 52 #47-28         |
| 3. | Cooperativa de Industriales Metalurgicos Ltda. (COPIME)      | Diagonal 7a #37A-05     |
| 4. | Corporacion Fondo de Apoyo de Empresas Asociativas (CORFAS)  | Calle 59 #6-36          |
| 5. | Fundacion Shell para el Apoyo de la Microempresa             | Calle 25 #12-15, Bta.   |
| 6. | Fundacion Nueva Colombia Industrial (FNCI)                   | Carrera 8 #80-29        |
| 7. | Asociacion de Importadores de maquinaria de Construccion     |                         |
| 8. | Asociacion de Agricola                                       |                         |

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|-----|---|--|
| 9.  | Fundacion Promotora de Servicios Microempresariales (PROMIC)                            | Carrera 40 #22C-67                             |
| 10. | Fundacion Sarmiento Palau, Cali   | Calle 11 #6-24                                 |
| 11. | Fundaempresa, Cali  | Avenida 1a, Norte 3N-77                        |
| 12. | Fundacion Carvajal, Cali  | Avenida 2N #2-22                               |
| 13. | Confederacion Nacional de Microempresarios de Colombia (CONAMIC), Bogota                | Carrera 6 #8-94                                |
| 14. | Camara de Comercio  |  |
|     | Bogota :  | Carrera 9A #16-21                              |
|     | Cali :  | Calle 8a #3-14                                 |
|     | Palmira :   | Calle 28 #30-15                                |
|     | Medellin :  | Avenida Oriental #52-82                        |
|     | Barranquilla :  | Calle 40 #44-39                                |
| 15. | Asociacion Nacional de Industriales (ANDI)  | Carrera 13 #26-45                              |
| 16. | Compartir   | Avenida Caracas #33-32                         |
| 17. | Comercializadora Promic   | Carrera 40 #22C-67                             |
| 18. | Microempresas de Antioquia  | Calle 57A #48-31                               |
| 19. | Fundacion para el Desarrollo Intergral del Valle (FDI), Cali                            | Calle 8a #3-14                                 |
| 20. | Fundacion para el Desarrollo Integral de Palmira (FUDIPAL)                              | Calle 28 #30-15                                |
| 21. | INACERO, Bogota   | Carrera 7 #32-33                               |
| 22. | Asociacion de Industriales y Comerciantes de la Zona Franca de Barranquilla (Aincozona) | Edificio Administracion<br>Zona Franca Piso 10 |
| 23. | Zona Franca Industrial y Comercial  | Palmaseca                                      |

Technical Assistance (Incl. Laboratories and Research Centers)

- |    |   |                          |
|----|---|--------------------------|
| 1. | Servicio Nacional de Aprendizaje (SENA) |                          |
|    | Bogota:                                 |                          |
|    | Centro Nacional de Fundicion            | Carrera 30, calle 18 Sur |
|    | Direccion General                       | Calle 57 #8-69           |
|    | Centro Nacional de                      |                          |
|    | Tecnicos de Industria                   | Carrera 31 #14-20        |
|    | Centro Nacional Colombo-Italiano        | Carrera 31 #14-20        |
|    | Cali:                                   |                          |
|    | Centro Desarrollo Tecnologico (ASTIN)   | Calle 52 #2BIS-15        |
|    | SENA Regional Valle de Cauca            | Calle 52 #2BIS-15        |

- Medellin:  
SENA Regional Antioquia Diagonal 104 #69-120
- Bucaramanga:  
SENA Regional Santander Carrera 19 #36-20
2. Instituto Colombiano de Normas Tecnicas Carrera 37 #52-95
  3. Superintendencia de Industria y Comercio  
Centro de Control de Calidad y Metrologia Carrera 37 #52-95
  4. Centro Don Bosco Av.Eldorado,  
Carrera 66-A
  5. Universidad de Valle Ciudad Universitaria  
Melendez, Cali
  6. Universidad Nacional de Colombia  
Instituto de Ensayos e Investigaciones (IEI),  
Bogota Ciudad universitaria
  7. Universidad Nacional de Colombia  
Facultad de Minas Medellin
  8. Universidad de los Andes Bogota, D.E. Apdo.  
Aereo 4212
  9. Instituto Colombiano de Hidrologia  
Meteorologia y Adecuacion de Tierras (HIMAT) Carrera 5 #15-80, Bta.
  10. Instituto de Investigaciones Teenologicas  
(IIT) Avenida 30 #52A-77, Bta.
  11. Empresa de Energia Electrica de Bogota (EEEEB) Avenida El Dorado, #55-51

Trading Company, etc.

1. Compania Colombiana Automotriz (CCA) Calle 13 #38-54
2. Industria colombiana de Electronicos y  
Electrodomesticos S.A. (INCELT) Carrera 69B #19-66
3. Sumitomo Corporation Colombia, Ltda. Carrera 8A #99-51
4. Hitachi Construction Machinery Co., Ltda  
(HIMASA Ltda.) Calle 17A #25-44
5. Oki Electric Industry Co., Ltd. Carrera 11 #71-40
6. Matsushita Electric Industrial Co., Ltda. Carrera 11 #86-32

A N N E X — I V

ENTERPRISES VISITED BY JICA TEAM





ENTERPRISES VISITED BY JICA TEAM

LARGE ENTERPRISES

<u>Name of Enterprise</u>	<u>Address</u>
<u>BOGOTA</u>	
1. Metalibec S.A.	Carrera 68B #18-30
2. CIA. Colombiana de Inversiones Agricolas	KM. 4 Autopista Sur
3. Ave Colombia S.A.	Carrera 5 #80 - 39
4. I. Klein	Calle 22 #125-59
5. Aplicaciones Electronicas Apel	Av. Caracas #37-20
6. Industria Colombo Andina S.A.	Calle 20 #99-15
7. Distral S.A.	Carrera 9 #74-62
8. Talleres Ciro	Aeropuerto el Dorado Entrada 1 Int. 8
9. Metal Bogota S.A.	Calle 7A #38-75
10. Industrial Kapitol	Avenida 68 #5-21
11. Siemens	Carrera 65 #11-82
12. Compania Colombiana Automotriz (CCA)	Calle 13 #38-54
13. Electro Manufacturas S.A.	Calle 10 #37-51
14. Industria Colombiana de Electronicos y Electrodomesticos S.A. (INCELT)	Carrera 69B #19-66
15. Paz del Rio	Belencito 2306
<u>CALI</u>	
16. Carvajal S.A.	Calle 29 Norte #6A-40

MEDELLIN

- |     |                                      |                      |
|-----|--------------------------------------|----------------------|
| 17. | Siderurgica de Medellin S.A.(Simesa) | Carrera 48 #17-226   |
| 18. | Empresas Publicas del Medellin       | Calle 30 #65-135     |
| 19. | Sofasa                               | Calle 44-Sur #48-440 |

BUCARAMANGA

- |     |                                   |                                 |
|-----|-----------------------------------|---------------------------------|
| 20. | Forjados de los Andes             | Carretera Cafe-Palenque<br>Km 3 |
| 21. | Industria de Ejes y Transmisiones | Zona industrial Giron           |

BARRANQUILLA

- |     |   |                              |
|-----|---|------------------------------|
| 22. | Union Industrial y<br>Astilleros Barranquilla(Unial S.A.) | Via 40 #74-240               |
| 23. | Acerias de Colombiana S.A.(Acesco)                        |                              |
| 24. | Distral S.A.  | Zona Franca                  |
| 25. | Super-Brix  | Autopista Aeropuerto<br>Km 9 |

## SMALL AND MEDIUM ENTERPRISES

<u>Name of Enterprise</u>	<u>Address</u>
<u>BOGOTA</u>	
1. Eduardo Ospina y CIA. S.A.	Av. Dorado #100-57
2. Hidroagricolas Ltda.	Carrera 26 #12 B-68
3. Fatecolcar	Carrera 97 #23-64
4. Arias Giraldo Electricas	Carrera 66 #5-21
5. Ingenieria de Refrigeracion	Carrera 15 #48-55
6. Maquipan Ltda.	Calle 9 #37-71
7. Industrias de Envases Maq. y Procedimientos	Carrera 6 #11-62 Sur
8. Hunter Douglas Col.	Calle 21 #68 C-20
9. Metalicas J. B.	Calle 22 #128-25 INT. 27
10. CIA. Constructora de Maquinaria Hurtado	Calle 26 #24-48
11. Fundeq	Calle 16 #38-42
12. Industrias Westell	Calle 12 #44-60/70
13. Franco Hermanos y CIA.	Carrera 35 #13-97
14. Fundiciones Paez Ltda.	Calle 8A #34-25/27
15. Intall Ltda.	Carrera 44 #19-84
16. Muebles Metalicos Famet	Calle 2 #8-68
17. Arnese y Gomas	Calle 9 #34A-20
18. Industria Metalmeccanica Evelga	Calle 27 Sur #28A-48
19. Electrodo Publikan	Calle 7 #33-23
20. Fabrica Nacional de Manijas	Calle 21 #68C-75
21. Colombo Argentina de Cromados	Carrera 42 #10-16
22. Industria Electrica Ltda.	Carrera 47 #26-22 Sur
23. Vibradores de Colombia	Calle 11 #31-41
24. CIA. Andina de Muebles Metalicos	Calle 24 A #26-02
25. Fabrica de Muebles Metalicos Pereira	Calle 7 #32A-32

26.	Famacol	Carrera 78 #57-79
27.	Batolcol	Carrera 22 #6-88
28.	Induya	Carrera 28 #10-89
29.	CIA. Industrial Electronica	Carrera 68 #18-91
30.	Industria Nacional de Troquelados Ltda.	Calle 15 #33-58/62
31.	Pardo Pombo Pachon	Calle 23 #68A-33
32.	Colser Ltda.	Carrera 68 B #14-60
33.	Industrias Metalicas Coronado Ltda.	Carrera 23 #12B-47
34.	Carrocerrias Non Plus Ultra	Carrera 31 #6-36
35.	Industrias TYF	Transversal 42 #20-25
36.	Refrigeracion Supermordico	Calle 70 #16-42
37.	Electrosca	Carrera 23 #12-71
38.	Inoxidables de Colombia	Avenida 68 No. 38-83 Sur
39.	Mycon de Colombia	Transv. 93 #61-02 Int. 37
40.	Agrifin de Colombia S.A.	Carrera 44 #18-68
41.	Industrias Buffalo Ltda.	Carrera 44 #13-77
42.	B & V Estructuras Metalicas	Carrera 58 #14-66
43.	Transmision de Potencia Ltda.	Carrera 68 B #10-98
44.	Roberto Pineda M Y CIA. Ltda.	Carrera 35 #14-39
45.	Alutec Ltda.	Calle 5B #22-66
46.	Troqueles y Troquelados	Calle 12 #68B-38
47.	Equipos de Seguridad Segurit	Calle 17 #68C-14/30
48.	Manufacturas NASA	Calle 11 #35-37
49.	Fabrica de Tornillos y Remaches Gutember to	Carrera 68 #12A-13
50.	Salka S.A.	Avenida 68 #5-21
51.	Colel Ltda.	Carrera 68 #20-25
52.	Industrias Jegam	Carrera 110 #23-09
53.	Agrotec	Calle 11 #24-12
54.	Industria Colombia Filtros "ICOFIL"	Calle 9 #37-58

- |  |                        |
|--|------------------------|
| 55. Barnes de Colombia                   | Calle 15 #41-17        |
| 56. Bombas Pleuzel y Halberg             | Carrera 34 A #48-33    |
| 57. Borta Ltda.                          | Calle 22 N #103A-01    |
| 58. Carini y Asociados Ltda.             | Calle 65 #94-26        |
| 59. Compresores Puskas de Colombia Ltda. | Calle 16 #39A-50       |
| 60. Hydraquip Colombiana                 | Carrera 68 #17-12      |
| 61. Nike Colombiana                      | Carrera 68 #19-45      |
| 62. Lister Petter Diesel                 | Calle 13 #59-61        |
| 63. Fadaltec S.A.                        | Carrera 68B #18-65     |
| 64. Indu Har Cast                        | Diagonal 7 #36-39      |
| 65. Industria Amecba                     | Calle 8A #36-54        |
| 66. Almacenes Edual                      | Avenida Caracas #15-85 |
| 67. Autopernos                           | Calle 7 #15A-32        |

CALI

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|--|--|
| 68. Rengifo Belline & CIA. Ltda.         | Carrera 38 #12A-160                      |
| 69. Industria Colombiana de Basculas     | Carrera 73 #3C-12                        |
| 70. Imetra (Arango Gomez & CIA. Ltda.)   | Call 39 #8-60                            |
| 71. Metalmecanica Lucena Ltda.           | Calle 25 #4-94                           |
| 72. CECAM (Corporacion Civica Daniel G.) | Carrera 39 D #39-40                      |
| 73. Montessa (Bicicletas)                | Calle 5A #76-33                          |
| 74. Construcciones Tissot & CIA. S.A.    | Apartado Aereo #2083                     |
| 75. Colpozos S.A.                        | Calle 70 N #2N-58                        |
| 76. Construcciones Industriales Ltda.    | Carrera 7 N #23-72<br>Urbanizacion Acopi |
| 77. Valvuleria Universal ltda.           | Carrera 7 #23-72                         |
| 78. Agulamp Ltda.                        | Carrera 17 B #18-30                      |
| 79. Industrias Ret                       | Carrera 1 A #32-15                       |
| 80. Fablamp                              | Carrera 8 A #36-35                       |
| 81. Royal Alpha                          | Calle 15 #32-598<br>Urbanizacion Acopi   |

MEDELLIN

- |     |                   |                         |
|-----|-------------------|-------------------------|
| 82. | Metalicas America | Calle 60 #52-21         |
| 83. | Incolmotos        | Carrera 48 #25A-Sur-109 |

BUCARAMANGA

- |     |                                    |                        |
|-----|------------------------------------|------------------------|
| 84. | Metalurgica de Colombia            | Carrera 16 #23-42      |
| 85. | Fundiciones Industriales Villabona | Carrera 3 #45-29       |
| 86. | Procein                            | Zona Parque Industrial |

BARRANQUILLA

- |     |                                       |                                     |
|-----|---------------------------------------|-------------------------------------|
| 87. | Aluminio Reynolds Santo Domingo S.A.  | Calle 79 #40-362                    |
| 88. | Parque Industrial Malambo S.A.(Pimsa) | KM 3 Carretera Malambo-Sabanagrande |
| 89. | Industrias el Barco Ltda.             | Calle 34 #27-90                     |

## MICRO ENTERPRISES

<u>Name of Enterprise</u>	<u>Address</u>
<u>BOGOTA</u>	
1. Industrias Metalicas Jaime G.	Calle 70 #33-06
2. Talleres Jose de la C.	Carrera 18 #19-81
3. Metalelectricos Garzon Y Cia.	Carrera 23 #77-15
4. Industrias Bernal Rey	Carrera 100 #49-69
5. Talleres Rios y Sanabria	Calle 22 #114-10
6. Prende Facil	Carrera 29A #22A-19
7. Industrias Metalicas Inorsa	Avenida 12 Sur #18-15
8. Industrias Limar	Calle 36 Sur #69-21
9. Industrias Metalicas Carpeg	Carrera 58 #14-30
10. Metalicas Betancourt	Calle 169 #43A-39
11. Fame Ltda.	Carrera 52 #16-39
12. Termoplasticos Galeano	Diagonal 9 D #47-41
13. Edgar Metalmechanica	Calle 63 D #32-26
14. Talleres Ruiz	Carrera 50 B #8-62
15. Bocoles y Persianas	Calle 22 #18-72
16. Mecanica Industrial Javier Cardenas	Calle 12A #21-13
17. Indurrieles	Carrera 8 #20-63 Sur
18. Indulneas	Carrera 26 #22C-47
19. Asmetales Ltda.	Calle 133 #36-20
20. Colvisagras	Diagonal 49 Sur #49-25
21. CIA. Metalmechanica y Equipos	Calle 46 Sur #25-33
22. Ferroelectricos Alfa	Carrera 19A #56A-69
23. Metalicas Torres	Calle 54 #29-48 Sur
24. Distriacoples y CIA.	Transversal 49 #5B-03
25. Intergrifos	Carrera 64 #7-33
26. Tecnomechanicos Industrial	Calle 29 Sur #14A-37

27.	Fabtromol	Calle 12 A No. 20-31
28.	Alambres y Disenos	Calles 74 #51-12
29.	Carrocerias Pacifico	Avenida 6 No. 21-27
30.	Taller Rueda	Calle 70A #35-37/39
31.	Granel Ltda.	Carrera 40 A #128C-46
32.	Troqueles y Moldes Franco	Carrera 54 #36-30 Sur
33.	Industria Metalicas Bravo	Calle 64 A #115-69
34.	Fernando Vargas y CIA. Ltda.	Carrera 99 A #131-65
35.	Belt Colombia	Calle 82 #16A-21
36.	Industria Sanver	Carrera 13 #1-03
37.	Ardila Leon Ltda.	Carrera 91 #68A-50
38.	Indostrias Metalicas Nova	Carrera 46 #74-25
39.	Coprana Ltda.	Carrera 53 #16-71
40.	Tabera G.	Carrera 76 Bis No. 68-86
41.	Industrias Metalicas Rivera	Avenida 81 #45-57
42.	Fundiciones de Occidente	Calle 25 #123A-12
43.	Soldaduras Especiales	Carrera 35 #79-30
44.	Induacoples	Carrera 37 #14-24
45.	Metalicas Amaya	Calle 68A #91-17
46.	Dimacop	Carrera 54 #13-45
47.	Fordent	Calle 46 #8-19
48.	El Progreso de Ruby	Carrera 50 #75B-17
49.	Metalicas Calderon	Carrera 67A #10-91
50.	Acoples y Mangueras Ltda.	Carrera 56 #14-59
51.	Serviacoples Ltda.	Carrera 53 #14-60
52.	Industrias Metalicas Erson	Calle 14 #55-48
53.	Sidelan S.A.	Avenida 78 Sur #58-79
54.	Industrias Sigha Ltda.	Carrera 27 #12B-28
55.	Jose del Carmen Arias	Carrera 19 A #12-52



CALI

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|-----|--|-------------------|
| 56. | Cergas (Cerrajería y Gas)                | Calle 24 #8A-65   |
| 57. | Taller Técnico                           | Calle 38 #23-02   |
| 58. | Induneval (Industrial Metalicas de Pal.) | Calle 21 #30-40   |
| 59. | Palmirana de Resortes                    | Carrera 36 #35-38 |

MEDELLIN

- |     |                      |                  |
|-----|----------------------|------------------|
| 60. | Quitasones Ltda.     | Calle 73 #49A-51 |
| 61. | Taller Ormegu        | Calle 79 #51B-33 |
| 62. | Corticol             | Calle 40 #26C-52 |
| 63. | Envases de Antioquia | Calle 43 #82-97  |
| 64. | Empresa de Fundición | Calle 34 #52-39  |

BUCARAMANGA

- |     |                                  |                   |
|-----|----------------------------------|-------------------|
| 65. | Delta Fundiciones                | Calle 33 #15-47   |
| 66. | Parque Industrial de Bucaramanga | Carrera 31 #35-12 |

A N N E X - V

Q U E S T I O N N A I R E

L a r g e   E n t e r p r i s e s

QUESTIONNAIRE  
FOR LARGE - ENTERPRISES

GE-000 General

GE-001 Name of enterprise : \_\_\_\_\_  
\_\_\_\_\_

GE-002 Address of office : \_\_\_\_\_  
\_\_\_\_\_

GE-003 Address of factory :  
(1) \_\_\_\_\_  
\_\_\_\_\_  
(2) \_\_\_\_\_  
\_\_\_\_\_

GE-004 Established in : 19 \_\_\_\_ (year)

GE-005 Number of fixed employees \_\_\_\_\_

GE-006 Number of temporary employees \_\_\_\_\_

GE-007 Total : \_\_\_\_\_

GE-008 Total annual sales (1988)  
Pesos \_\_\_\_\_ Millions

GE-009 Composition of capital (paid in equity)

Government	_____	%
Private	_____	%
Foreign	_____	%

GE-010 Background of establishment of enterprises :

1. Government \_\_\_\_\_
2. Private enterprise \_\_\_\_\_
3. Foreign enterprise \_\_\_\_\_
4. Joint-venture (Colombian with foreign enterprise) \_\_\_\_\_

GE-100 Products

GE 101 Products

No.	Code *	Kinds of Products Name	Unit **	Quantity /month
-----	-----------	---------------------------	------------	--------------------

\* Please select corresponding code No. from the list of next page

\*\* 1 Tonnage      2 Number of units      3 Specify : \_\_\_\_\_

Table of "Category of Products"

Code	Category of Products
3811	Manufacture of cutlery, hand tools and general hardware
3812	Manufacture of furniture and fixtures primarily of metal
3813	Manufacture of structural metal products
3819	Manufacture of fabricated metal products except machinery and equipment
3821	Construction of engines and turbines
3822	Construction of agricultural machinery and equipment
3823	Construction of metal and wood working machinery
3824	Construction of special industrial machinery and equipment except metal and wood working machinery
3825	Construction of office, computing and accounting machinery
3829	Construction of machinery and equipment except electrical
3831	Construction of electrical industrial machinery and apparatus
3832	Construction of radio, television and communication equipment and apparatus
3833	Construction of electrical appliances and housewares
3839	Construction of electrical apparatus and supplies
3841	Construction of ship building and repairing
3842	Construction of railroad equipment
3843	Manufacture of motor vehicles
3844	Manufacture of motorcycles and bicycles
3845	Manufacture of aircraft
3849	Construction of transport equipment
3851	Manufacture of professional and scientific, and measuring and controlling equipment
3852	Manufacture of photographic and optical goods
3853	Manufacture of watches and clocks
GE-102	Utilization ratio of the factory capacity -----%

GE-200 Components

GE-201 Where does your enterprise obtain the components?  
Please fill as detailed as possible the following table.

---

Main components	Supplied by			Quantity (1988)	Annual quantity (1988) (Millions) of pesos
	(1)	(2)	(3)		

---

- 
- \* (1) Imported \_\_\_\_\_  
(2) Manufactured in your factory \_\_\_\_\_  
(3) Manufactured in other factories in Colombia \_\_\_\_\_

GE-300 Condition of Sub-contract

GE-301 Is your enterprise offering sub-contracting to other enterprises?

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_ (Pass to number 305)

GE-302 If your answer to GE-301 is "Yes", how did you find sub-contractors?

1. Offer from the third party \_\_\_\_\_
  2. Advice from the third party \_\_\_\_\_
  3. Personal relations \_\_\_\_\_
  4. Bidding \_\_\_\_\_
  - 5 Others, specify: \_\_\_\_\_
- 

GE-303 Outline of sub-contracting enterprises being used  
(use one sheet for each company)

If your enterprise is using sub-contractors mainly in the field of metalworking industry, give their outlines on the attached No.G-1

GE-304 What is your plan on the sub-contracting?

1. Increase the volume of the sub-contract \_\_\_\_\_
2. Increase the number of the sub-contractors \_\_\_\_\_
3. Maintain the present level \_\_\_\_\_
4. Reduce the volume of the sub-contract \_\_\_\_\_
5. Reduce the number of the sub-contractors \_\_\_\_\_
6. Suspend the sub-contract \_\_\_\_\_

GE-305 If your answer to GE-301 is "No", the reason is  
(Indicate various items, if needed)

1. Quantity of sub-contractor's products is not satisfactory \_\_\_\_\_
  2. Quantity you require is beyond the production capacity of sub-contractor \_\_\_\_\_
  3. Sub-contractor's delivery is not punctual \_\_\_\_\_
  4. Their cost is high \_\_\_\_\_
  - 5 Others, specify: \_\_\_\_\_
-



GE-306 If your answer to GE-301 is "No", do you intend to offer sub-contracting  
1. Yes \_\_\_\_\_  
2. No \_\_\_\_\_

GE-400 Increase of components manufactured in Colombia.

GE-401 What do you think of the progress of nationalization of the government?  
1. On schedule \_\_\_\_\_  
2. Delayed \_\_\_\_\_

GE-402 How does your enterprise cooperate with the substitution of import?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GE-403 What problems or influence does your enterprise have by import restriction?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GE-404 Please list up items currently imported but being planned or considered desirable to be procured from Colombian manufacturers.

---

NO.	Name of components *	Manufacturing Process	Years **
-----	-------------------------	--------------------------	-------------

---

- \* 1. Casting
- 2. Forging
- 3. Platework/welding
- 4. Plating
- 5. Machining
- 6. Machinery assembly
- 7. Press work
- 8. Others

\*\* Year within which you expect the components can be supplied from Colombian manufacturers.

GE-500 Future Plan

GE-501 How many percentage you expect the demand of your products will increase?

In 3 years \_\_\_\_\_ %

In 5 years \_\_\_\_\_ %

GE-502 Do you have any expansion plan of your factory capacity in the near future? If so, please explain :

1. Name of products \_\_\_\_\_  
\_\_\_\_\_

2. Increase of sales amount for Colombian market \_\_\_\_\_ %

For external market (export) \_\_\_\_\_ %

3. Required investment : \$ \_\_\_\_\_ Millions(19\_\_\_\_)

GE-503 In what fields do you think you can help to develop sub-contracting or other linkage type industries?

(Indicate various items, if needed)

1. Training \_\_\_\_\_

2. Avisory \_\_\_\_\_

3. Inspection \_\_\_\_\_

4. Unable to help \_\_\_\_\_

GE-504 What kind of assistance do you expect from government?

1. Technology \_\_\_\_\_

2. Management \_\_\_\_\_

3. Finance \_\_\_\_\_

4. Market \_\_\_\_\_

5. Nothing to require \_\_\_\_\_

6. Others, specify \_\_\_\_\_  
\_\_\_\_\_

GE-505

If government gives loans with low interests rates with technical assistance about market and management for industries which procure raw materials from several sectors, do you think this would be favorable to subcontract with large enterprises and so look for raw materials for your enterprise?

1. Favorable \_\_\_\_\_
2. Non favorable \_\_\_\_\_
3. It depends on the conditions \_\_\_\_\_

Thanks for your cooperation

OUTLINE OF SUBCONTRACTING ENTERPRISES

GE-601 Name of enterprise \_\_\_\_\_  
 \_\_\_\_\_

GE-602 Address : Office \_\_\_\_\_  
 Factory \_\_\_\_\_

GE-603 Number of employees : Total \_\_\_\_\_  
 Engineers \_\_\_\_\_

GE-604 Amount of capital : \$ \_\_\_\_\_ Millions

GE-605

Component or Service being supplied	Quantity	Unit	Total value (Pesos/Month)
--	----------	------	------------------------------

GE-606 Procurement  
 1. Punctual procurement \_\_\_\_\_  
 2. Constant procurement \_\_\_\_\_

GE-607 Payment  
 1. Cash \_\_\_\_\_  
 2. Credit \_\_\_\_\_

GE-608 Do you supply raw materials to subcontractor?  
 1. Yes \_\_\_\_\_ 2. No \_\_\_\_\_

GE-609 Are you rendering assistance to sub-contractors?  
 1. Yes \_\_\_\_\_ 2. No \_\_\_\_\_

GE-610 If you answered "Yes", what kind of assistance does your enterprise provide?

- |                 |                          |       |
|-----------------|--------------------------|-------|
| (1) Financial : | 1. Capital participation | _____ |
|                 | 2. Loan                  | _____ |
| (2) Technical : | 3. Training              | _____ |
|                 | 4. Advisory              | _____ |
|                 | 5. Inspection            | _____ |
|                 | 6. Management            | _____ |

GE-611 Major problems and obstacles for large enterprises as user:

- |                                 |                   |       |
|---------------------------------|-------------------|-------|
| (1) Quality :                   | 1. Good           | _____ |
|                                 | 2. Normal         | _____ |
|                                 | 3. Bad            | _____ |
| (2) Quantity :                  | 4. Enough         | _____ |
|                                 | 5. Normal         | _____ |
|                                 | 6. Not enough     | _____ |
| (3) Delivery                    | 7. Punctual       | _____ |
|                                 | 8. Sometimes late | _____ |
|                                 | 9. Always late    | _____ |
| (4) Technical level<br>of staff | 10. High          | _____ |
|                                 | 11. Middle        | _____ |
|                                 | 12. Low           | _____ |
| (5) Management                  | 13. Good          | _____ |
|                                 | 14. Normal        | _____ |
|                                 | 15. Bad           | _____ |
| (6) Entrepreneurship            | 16. Good          | _____ |
|                                 | 17. Normal        | _____ |
|                                 | 18. Bad           | _____ |

GE-612

If you have problems or obstacles about GE-611, what kind of assistance do you think is effective for improving these aspects?

Please pick up the itmes from the following (1-5) and describe them by the order of priority.

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

1. Technical advice \_\_\_\_\_
  2. Managerial advice \_\_\_\_\_
  3. Finance \_\_\_\_\_
  4. Tax system \_\_\_\_\_
  5. Welfare \_\_\_\_\_
  6. Others, specify \_\_\_\_\_
- \_\_\_\_\_

**S m a l l   a n d   M e d i u m   E n t e r p r i s e s**



QUESTIONNAIRE  
FOR SMALL AND MEDIUM ENTERPRISES

EPM-000 General

EPM-001 Name of enterprise : \_\_\_\_\_  
\_\_\_\_\_

EPM-002 Address of office : \_\_\_\_\_  
\_\_\_\_\_

EPM-003 Address of factory :  
(1) \_\_\_\_\_  
\_\_\_\_\_  
(2) \_\_\_\_\_  
\_\_\_\_\_

EPM-004 Established in : 19 \_\_\_\_ (year)

EPM-005 Area of factory :

1 Land (1)	_____	M2
(2)	_____	M2
2 Building(1)	_____	M2
(2)	_____	M2
3 Office (total floor area):		
(1)	_____	M2
(2)	_____	M2

EPM-006 Your office building is:

1 Owned by you	_____
2 Rent	_____

EPM-007 Your land:

1 Owned by you	_____
2 Rent	_____

EPM-008 Participation of paid up capital

- Individual enterprise: \_\_\_\_\_ %
- Family enterprise: \_\_\_\_\_ %
- Subsidiary compay: \_\_\_\_\_ %
- Society: \_\_\_\_\_ %
- Others: \_\_\_\_\_ %

EPM-009 Education of entrepreneur

- Highest level reached

- 1 Incomplete primary \_\_\_\_\_
- 2 Complete primary \_\_\_\_\_
- 3 Technical high school \_\_\_\_\_
- 4 Classic high school \_\_\_\_\_
- 5 University and above \_\_\_\_\_
- No formal level \_\_\_\_\_
- 6 Technical training of SENA \_\_\_\_\_
- Others \_\_\_\_\_
- 7 Illiterate \_\_\_\_\_
- 8 Self-taught \_\_\_\_\_
- 9 Others, specify: \_\_\_\_\_

EPM-010 Previous job of entrepreneur

- 1 Government employee \_\_\_\_\_
- 2 Industrial or commercial government enterprise \_\_\_\_\_
- 3 Mixed enterprise employee \_\_\_\_\_
- 4 Foreign company \_\_\_\_\_
- 5 Micro, small or medium private enterprise \_\_\_\_\_
- 6 Large private enterprise \_\_\_\_\_
- 7 Private trader \_\_\_\_\_
- 8 Technical training institution \_\_\_\_\_
- 9 University \_\_\_\_\_
- 10 Others, specify: \_\_\_\_\_

EPM-011 - 018 Number of employees

		No.	
EPM-011	Family	EPM-014	Administration
EPM-012	Permanent	EPM-015	Technical team
EPM-013	Temporary	EPM-016	Qualified workers (Operarios)
		EPM-017	Unqualified workers
EPM-018	Total	EPM-018	Total

EPM-019 Average age of workers (operarios)

1	Less than 13 years	_____
2	13 - 16 years	_____
3	17 - 20 years	_____
4	21 - 30 years	_____
5	31 - 40 years	_____
6	More than 40 years	_____

EPM-020 Average monthly wage of workers (operarios)

1	Less than \$32.560	_____
2	\$32.561 - \$65.120	_____
3	\$65.121 - \$97.683	_____
4	\$97.684 - \$130.244	_____
5	\$130.245 - \$162.805	_____
6	More than \$162.806	_____

EPM-021 Average stay period of workers (operarios)

1	Less than one years	_____
2	1 - 2 year	_____
3	3 - 5 year	_____
4	6 - 10 year	_____
5	More than 10 years	_____

- EPM-022 Amount of working capital: Total \$ \_\_\_\_\_ Millions
- EPM-023 Paid up capital: Total \$ \_\_\_\_\_ Millions
- EPM-024 Total annual sales (1988) Total \$ \_\_\_\_\_ Millions/year
- EPM-025 Profit before tax (1988) \$ \_\_\_\_\_ Millions/year
- EPM-026 Total cost of raw material (1988) \$ \_\_\_\_\_ Thousands/month
- EPM-027 Total cost of electricity (1988) \$ \_\_\_\_\_ Thousands/month
- EPM-028 Is your enterprise a member of the following organizations?
- 1 ANDI \_\_\_\_\_
  - 2 ACOPI \_\_\_\_\_
  - 3 FEDEMETAL \_\_\_\_\_
  - 4 Other associations, specify \_\_\_\_\_
  - 5 Foundations for micro-entrepreneurs \_\_\_\_\_
  - 6 Micro entrepreneur association \_\_\_\_\_
  - 7 Others, specify: \_\_\_\_\_

EPM-100 Products

No.	Code *	Kinds of Products	Name	Principal process **	Client ***							Quantity /month	
					1	2	3	4	5	6	7		Unit ****

\* Please select corresponding code No. from the list of next page

\*\* Select from the following items by number

- 1 Casting
- 2 Forging
- 3 Platework/welding
- 4 Plating
- 5 Machining
- 6 Machinery assembly
- 7 Press work
- 8 Others, specify: \_\_\_\_\_

\*\*\* 1 Government 2 Large enterprise (employees: more than 200) 3 Micro, small and medium manufacturer

4 Trader/middleman 5 Retailer 6 Direct to end user 7 Export

\*\*\*\* 1 Tonnage 2 Number of units 3 Specify: \_\_\_\_\_

Table of "Category of Products"

Code	Category of Products
3811	Manufacture of cutlery, hand tools and general hardware
3812	Manufacture of furniture and fixtures primarily of metal
3813	Manufacture of structural metal products
3819	Manufacture of fabricated metal products except machinery and equipment
3821	Construction of engines and turbines
3822	Construction of agricultural machinery and equipment
3823	Construction of metal and wood working machinery
3824	Construction of special industrial machinery and equipment except metal and wood working machinery
3825	Construction of office, computing and accounting machinery
3829	Construction of machinery and equipment except electrical
3831	Construction of electrical industrial machinery and apparatus
3832	Construction of radio, television and communication equipment and apparatus
3833	Construction of electrical appliances and housewares
3839	Construction of electrical apparatus and supplies
3841	Construction of ship building and repairing
3842	Construction of railroad equipment
3843	Manufacture of motor vehicles
3844	Manufacture of motorcycles and bicycles
3845	Manufacture of aircraft
3849	Construction of transport equipment
3851	Manufacture of professional and scientific, and measuring and controlling equipment
3852	Manufacture of photographic and optical goods
3853	Manufacture of watches and clocks

EPM-200 Raw material and facility

EPM-201 Components and raw material your factory uses

Fill as detailed as possible

No.	Name of Components and Raw Material	Unit *	Quantity/year		Country of Origin, in case of Import **
			Import	Colombian	

\*1 Tonnage  
\*\*1 U.S.A.  
4 Brasil

2	Number of units	3	Specify
2	E.E.C	3	Japan
5	Others, specify	5	





EPM-300 Condition of Sub-contract

EPM-301 Ratio of dependence on sub-contract work: \_\_\_\_\_ % of total sales.

EPM-302 Quality requirement from contractors:

- 1 Easy to satisfy (not severe) \_\_\_\_\_
- 2 Acceptable \_\_\_\_\_
- 3 Not acceptable (too severe) \_\_\_\_\_

EPM-303 Quantity of order from contractors considering manufacturing capacity:

- 1 Very little            2 Adequate    3 Very much

EPM-304 Delivery requested by contractors:

- 1 Not strict \_\_\_\_\_
- 2 Acceptable \_\_\_\_\_
- 3 Too strict \_\_\_\_\_

EPM-305 If you found difficulties in satisfying the requirement of contractors on (EPM-302 to 303), please specify the reason for the following :

- 1 Insufficient labor force \_\_\_\_\_
  - 2 Insufficient production capacity \_\_\_\_\_
  - 3 Inadequate manufacturing planning \_\_\_\_\_
  - 4 Technical difficulties \_\_\_\_\_
  - 5 Others, specify: \_\_\_\_\_
- \_\_\_\_\_

EPM-306 Payment condition of contractors:

- 1 Cash \_\_\_\_\_
  - 2 Credit \_\_\_\_\_
  - 3 Others, specify: \_\_\_\_\_
- \_\_\_\_\_

EPM-307 Payment from contractors:

- 1 Always delay \_\_\_\_\_
- 2 Sometimes delay \_\_\_\_\_
- 3 Without delay \_\_\_\_\_

EPM-308 Do you have financial support from contractors?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-309 If your answer to EPM-308 is "Yes", content of financial support consists of:

- 1 Capital participation \_\_\_\_\_
- 2 Credit \_\_\_\_\_
- 3 Others, specify: \_\_\_\_\_

EPM-310 Do you have technical support from contractors?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-311 If your answer to EPM-310 is "Yes", existing technical support consists in:

- 1 Training \_\_\_\_\_
  - 2 Advisory \_\_\_\_\_
  - 3 Inspection \_\_\_\_\_
  - 4 Management \_\_\_\_\_
  - 5 Others, specify: \_\_\_\_\_
- \_\_\_\_\_

EPM-312 Order from contractors

- 1 Frequently \_\_\_\_\_
  - 2 Sporadically \_\_\_\_\_
  - 3 Others, specify: \_\_\_\_\_
- \_\_\_\_\_

EPM-313 Are components or raw materials supplied by contractors?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-314 Are manufacturing drawings supplied by contractors?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-315 Are you interested in sub-contracting business?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-316 In case you answered "Yes" to EPM-315, but you have not subcontract business now, specify which the reason is.

(Indicate various items, if needed)

- 1 You have not contract with large enterprises \_\_\_\_\_
- 2 Capacity of equipment is not sufficient \_\_\_\_\_
- 3 Lack of fund for investment and for corresponding to contractor's requirement \_\_\_\_\_
- 4 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-317 If your answer to EPM-315 is "Yes", the reason is:

(Indicate various items, if needed)

- 1 Stabilization of business by long terms contract \_\_\_\_\_
- 2 Sales increase \_\_\_\_\_
- 3 Diversification of products \_\_\_\_\_
- 4 Technical assistance \_\_\_\_\_
- 5 Financial assistance \_\_\_\_\_
- 6 Supply of materials from clients \_\_\_\_\_
- 7 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-318 If your answer to EPM-315 is "No", the reason is:

(Indicate various items, if needed)

- 1 Can you keep independence (avoid interference) from other enterprises: \_\_\_\_\_
- 2 Satisfied with the present business situation (Business restructuring is not necessary) \_\_\_\_\_
- 3 Dedicated to produce only small products for Colombian markets \_\_\_\_\_
- 4 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-319 If you are interested in the business of subcontract, what do you expect from enterprises/clients for improving relation with your enterprise?

- 1 Loan \_\_\_\_\_
- 2 Financial support \_\_\_\_\_
- 3 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-320 What assistance do you expect from government in order to increase the purchase order from larger enterprises/clients?

- 1 Loan \_\_\_\_\_
- 2 Other financial support, specify: \_\_\_\_\_  
\_\_\_\_\_
- 3 Technical assistance \_\_\_\_\_
- 4 Management consulting \_\_\_\_\_
- 5 Marketing support \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-400 In case where you wish to use other enterprises as a sub-contractors

EPM-401 What is the reason for offering this contract? (Please select the reasons in the order of importance)

rank (1) \_\_\_\_\_ rank (2) \_\_\_\_\_ rank (3) \_\_\_\_\_

Reasons :

- 1 Order amount is beyond your capacity
- 2 Labor shortage
- 3 Specialized process/equipment is required
- 4 To correspond to sporadic increase of order amount
- 5 For cost reduction
- 6 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-402 Ratio of dependence on sub-contractor to total production cost:

- 1 Less than 10% \_\_\_\_\_
- 2 11 - 30% \_\_\_\_\_
- 3 31 - 50% \_\_\_\_\_
- 4 51 - 70% \_\_\_\_\_
- 5 More than 70% \_\_\_\_\_

EPM-403 Type of sub-contract:

- 1 Processing service of production of parts and components \_\_\_\_\_
- 2 Manufacturing of parts and components \_\_\_\_\_
- 3 Assembling \_\_\_\_\_
- 4 Technical design \_\_\_\_\_
- 5 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-500 On Production Aspect

EPM-501 Is your production capacity enough?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-502 If your answer to EPM-501 is "No", how much do you need to invest for expansion of capacity?

\$ \_\_\_\_\_ million

EPM-503 Are raw materials easily obtained?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-504 If your answer to EPM-503 is "No", the reason is:

- 1 Production area of raw materials is far from your factory. \_\_\_\_\_
- 2 It is difficult to purchase imported raw materials in the domestic market \_\_\_\_\_
- 3 Demand of raw materials is bigger than supply in the domestic market. \_\_\_\_\_
- 4 Materials produced in Colombia is not satisfactory in quality. \_\_\_\_\_
- 5 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-505 From where do you get raw materials?

- 1 General market \_\_\_\_\_
- 2 Supply from clients \_\_\_\_\_
- 3 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

**EPM-506** What is your system of quality control?

- 1 None \_\_\_\_\_
- 2 To check when trouble occurs \_\_\_\_\_
- 3 First product inspection \_\_\_\_\_
- 4 Simple check list including sampling \_\_\_\_\_
- 5 Control charts \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_

---

**EPM-507** What is your average defects ratio of the products?

- 1 More than 20% \_\_\_\_\_
- 2 11 - 20% \_\_\_\_\_
- 3 6 - 10% \_\_\_\_\_
- 4 Less than 5% \_\_\_\_\_

**EPM-508** How do you schedule your production?

- 1 No schedule \_\_\_\_\_
- 2 Rough scheduling by experience \_\_\_\_\_
- 3 Man-hour distribution \_\_\_\_\_
- 4 Man-hour taking into account the utilization rate of facilities \_\_\_\_\_
- 5 Others, specify: \_\_\_\_\_

---

EPM-600 Technical Aspect

EPM-601 How is the technical level of your workers?  
1 High \_\_\_\_\_  
2 Middle \_\_\_\_\_  
3 Low \_\_\_\_\_

EPM-602 What kind of technical assistance do you expect from public organization?  
1 Advisory \_\_\_\_\_  
2 Training \_\_\_\_\_  
3 Inspection \_\_\_\_\_  
4 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-603 By whom are the products designed?  
1 Yourself \_\_\_\_\_  
2 The Contractor/Buyer \_\_\_\_\_  
3 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-604 What kind of industrial standards do you use?  
1 None \_\_\_\_\_  
2 Customer's standards \_\_\_\_\_  
3 Your factory's own standards \_\_\_\_\_  
4 Colombia's national standards \_\_\_\_\_  
5 International standards \_\_\_\_\_  
6 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-605 How many employees can understand the technical drawings?  
1 None \_\_\_\_\_  
2 One person \_\_\_\_\_  
3 2 - 4 persons \_\_\_\_\_  
4 5 - 10 persons \_\_\_\_\_  
5 More than 10 persons \_\_\_\_\_



EPM-700 Problems in Managerial Aspect

EPM-701 What are your main competitors?

- 1 Large enterprises \_\_\_\_\_
- 2 Medium enterprises \_\_\_\_\_
- 3 Small enterprises \_\_\_\_\_
- 4 Micro enterprises \_\_\_\_\_
- 5 Importers \_\_\_\_\_
- 6 None \_\_\_\_\_

(Note) Micro enterprise (less than 10 employees)  
Small (11 to 49 employees)  
Medium (50 to 199 employees)  
Large (more than 200 employees)

EPM-702 How do you calculate the cost of your products?

- 1 Rough calculation by past experience \_\_\_\_\_
  - 2 Based on the record (cost data) \_\_\_\_\_
  - 3 Standardized calculation methods \_\_\_\_\_
  - 4 Other calculation methods, specify: \_\_\_\_\_
- 

EPM-703 How many days are delayed in carrying out the orders of production that you have now in hand?

- 1 None \_\_\_\_\_
- 2 Up to 7 days \_\_\_\_\_
- 3 8 - 15 days \_\_\_\_\_
- 4 16 -30 days \_\_\_\_\_
- 5 1 - 5 months \_\_\_\_\_
- 6 More than 5 months \_\_\_\_\_

EPM-704 How much stock of raw materials is kept for production?

- 1 Up to 7 days \_\_\_\_\_
- 2 8 - 30 days \_\_\_\_\_
- 3 1 - 3 months \_\_\_\_\_
- 4 3 - 6 months \_\_\_\_\_
- 5 More than 6 months \_\_\_\_\_

EPM-705 Do the goods in process and the final products are accumulated in your factory?

- 1 None \_\_\_\_\_
- 2 Sometimes \_\_\_\_\_
- 3 Often \_\_\_\_\_
- 4 Always \_\_\_\_\_

EPM-706 If EPM-705 is 3 or 4, the reason is:

- 1 In order to correspond to the fluctuating demand of products \_\_\_\_\_
  - 2 For immediate delivery to clients \_\_\_\_\_
  - 3 Production schedule has not been made correctly \_\_\_\_\_
  - 4 Others, specify: \_\_\_\_\_
-

EPM-800 Financial System

(Short-term loan)

EPM-801 By which financial service among the followings have your company been procuring short-term fund?

- 1 Commercial banks \_\_\_\_\_
  - 2 Promotion rediscount lines from central bank \_\_\_\_\_  
(Banco de la Republica) (\*1)
  - 3 Extra-bank-marketing \_\_\_\_\_
  - 4 Non-institutional financial sector \_\_\_\_\_
  - 5 Others, specify: \_\_\_\_\_
- 

EPM-802 In case you put a check on "No.1 and No.2 Promotion rediscount lines from central bank" at Question 801, please describe name of financial service and agency.

- 1 Financial service: \_\_\_\_\_
- 2 Financial agency: \_\_\_\_\_

Your answers to the following item 803 to 808 are referred to the attached sheet.

EPM-803 From which financial agencies have you obtained or are you obtaining short-term credit (loans)?

EPM-804 Indicate how to use short-term fund procured from outside by selecting figures among 5 items in the below. (\*2)

EPM-805 Interest rate

EPM-806 Amount of loan

EPM-807 Repayment period

EPM-808 Credit is secured (with mortgage) or not.

(\*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.

- (\*2)
1. Facility investment
  2. Working capital
  3. Loan repayment
  4. Research and Development
  5. Others

EPM-803	EPM-804	EPM-805	EPM-806	EPM-807	EPM-808
Indicate kinds of Financial Agencies from which you have ever obtained or are presently obtaining short-term loan. (*4)	Indicate how to use fund by selecting figure among 5 items in below (*2) (Figure)	Interest Rate (%/Month)	Amount of Loan (Millions of Pesos)	Repayment Period (Months)	Secured Credit or not: Indicate below 1 or 2 1. Secured Credit 2. Unsecured Credit
1. Bank					
2. Financial corporation					
3. Municipal or department promoting institutions					
4. Promotion rediscount lines from central bank (Banco de la Republica)					
5. Credits from suppliers					
6. Advances from the customers					
7. External lines					
8. Foundations					
9. Extra bank marketing					
10. Credits given by relatives or friends					
11. Others, Specify:					
(*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.					
(*2) 1. Facility investment 2. Working Capital 3. Loan Repayment 4. Research and Development 5. Others					
(*3) Middle-men are defined as intermediary on business transaction between enterprises, and they also have function as Lender of the fund necessary for purchasing manufactured parts.					
(*4) Plural items may be marked, if needed.					

### Long-term Borrowings

EPM-809 By which financial services among the following six has your company been procuring long-term fund?

(Various items can be indicated, if needed)

- 1 Commercial banks \_\_\_\_\_
- 2 Promotion rediscount lines from central bank \_\_\_\_\_  
(Banco de la Republica)
- 3 Financial corporation \_\_\_\_\_
- 4 Issue of bonds or stocks \_\_\_\_\_
- 5 External lines \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_

EPM-810 In case you put a check on "No.2 Institutional Financial Service" at Question 809, please describe name of financial service and agency.

- 1 Financial service : \_\_\_\_\_
- 2 Financial agency : \_\_\_\_\_

Your answers to the following items 811 to 816 are referred to the attached sheet.

EPM-811 From which financial agencies have you received or are you receiving long-term credit (loans)?

EPM-812 Indicate how to use long-term fund procured from outside by selecting figures among 5 items in the below. (\*2)

EPM-813 Interest rate

EPM-814 Amount of Loans \_\_\_\_\_

EPM-815 Repayment Period \_\_\_\_\_

EPM-811	EPM-812	EPM-813	EPM-814	EPM-815	EPM-816
Indicate kinds of Financial Agencies from which you have ever obtained or are presently obtaining long-term loan. (*3)	Indicate how to use fund by selecting figure among 5 items in below (*2) (Figure)	Interest Rate (%/Year)	Amount of Loan (Millions of Pesos)	Repayment Period (Years)	Secured Credit or not: Indicate below 1 or 2 1. Secured Credit 2. Unsecured Credit
1. Bank					
2. Financial corporation					
3. Municipal or state promoting institutions					
4. Promotion rediscount lines from central bank (Banco de la Republica)					
5. Credits from suppliers					
6. Advances from the customers					
7. External lines					
8. Foundations					
9. Extra bank marketing					
10. Credits given by relatives or friends					
11. Others, Specify:					
(*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.					
(*2) 1. Facility investment    2. Working Capital    3. Loan Repayment    4. Research and Development    5. Others					
(*3) Plural items may be marked, if needed.					

- EPM-816 Credit is secured (with mortgage) or not.
- (\*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.
- (\*2) 1. Facility Investment  
2. Working Capital  
3. Loan Repayment  
4. Research and Development  
5. Others

- EPM-817 If you have experience in using services of financial agency, please indicate the reason with which you used or use it.
- 1 Loan procedure is simple.  
Whenever required, it is possible to obtain loan.
- 2 It is possible to borrow with unsecured loan condition.
- 3 There exists no upper limit to amount of loan.
- 4 In compliance with requirement from agency, your company has also made financial transaction with them.
- 5 Others \_\_\_\_\_

- EPM-818 What are the most urgent problems of finance of your company?  
(Indicate various items, if needed)
- 1 There exist difficulties for more loans from financial agencies, because your company's properties to be offered as mortgage or guarantee are very small.
- 2 Because of lack of experience, detailed plan of long-term investment facilities can not be well formulated, and therefore, funds flow planning of your enterprise can not be specified over the long-term period.
- 3 Loan conditions of financial agencies (Interest rate, period, mortgage conditions) are little advantageous for borrowers.



- 4 As information on special financial services given by public and private agencies are not much spread in small industries, your company is likely to procure funds by use of general loan service from the branch offices of city banks or similar agencies.
- 5 Banks have no positive attitude to give loan on credit to small companies, excluding big corporations.
- 6 Even if small industries like your company would apply necessary fund to financial agencies, they will not lend 100% of the required fund.
- 7 Even with self-financing of your enterprise, for example by retaining earnings, by capital increase, by issuing of corporate bond, it is practically almost impossible that a way to compensate shortage of necessary fund can be found.
- 8 Procedures of getting credits from financial agencies are very complicated and also needs long period.
- 9 Others, specify : \_\_\_\_\_  
\_\_\_\_\_

Following questions item 819 to 822 are relationed with your experience in and impression on various kinds of special financial service systems.

Please fill following blanks of each item 819 to 822 with an alternative selected among 1 to 5 of following descriptions.

- 1 I have used the special system, and also hope to use it in the future.
- 2 I have used the special system, but not hope to use it in the future.
- 3 I have never used the special system, but hope to use it in the future.
- 4 I have never used the special system, and also not hope to use it in the future.
- 5 I did not know the existence of this special system.

- EPM-819 Institutional Financial Service
- EPM-820 Investment Financed by bond or other system
- EPM-821 Credit system guaranteed by financial agencies or Government

- EPM-822 Lease-type Investment (\*)  
(\* ) To introduce industrial modern facilities into your company by means of Leasing.
- EPM-823 Suppose that financial service systems for micro, small and medium enterprises are newly established, what is reasonable conditions of interest rate of short-term loan?  
\_\_\_\_\_ %/month
- EPM-824 The same question as 823, but reasonable interest rate of long-term loan?  
\_\_\_\_\_ %/month

EPM-900 Future Plan

EPM-901 Prospect of demand increase of your products

- 1 Very good \_\_\_\_\_
- 2 Good \_\_\_\_\_
- 3 Normal \_\_\_\_\_
- 4 Not good \_\_\_\_\_

EPM-902 If you marked alternatives 1 or 2 for the previous answer, how much of demand-increase is expected for your products?

- (1) In 3 years \_\_\_\_\_ % each year
- (2) In 5 years \_\_\_\_\_ % each year

EPM-903 Do you have a specific plan to expand your production?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-904 If your answer to EPM-903 is "Yes", amount of total investment:

\$ \_\_\_\_\_ Million

EPM-905 Portion of self financing in accordance with the answer EPM-904:

\$ \_\_\_\_\_ Million

EPM-906 Portion corresponding to loan in EPM-904: \$ \_\_\_\_\_ Million

EPM-907 If you answer to EPM-903 is "Yes", when will it be implemented?

- 1 Less than 1 year \_\_\_\_\_
- 2 1 - 3 years \_\_\_\_\_
- 3 3 - 5 years \_\_\_\_\_
- 4 More than 5 years \_\_\_\_\_



EPM-912 Where do you obtain the information about new merchandise or technology from?

- 1 Newspaper \_\_\_\_\_
- 2 General magazine \_\_\_\_\_
- 3 Co-operation/foundation, etc \_\_\_\_\_
- 4 Specialized technical magazine \_\_\_\_\_
- 5 Exhibition in fair \_\_\_\_\_
- 6 TV and radio \_\_\_\_\_
- 7 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-913 What is your outlook for competition of your products?

- 1 Long term changes \_\_\_\_\_
- 2 Short term changes \_\_\_\_\_
- 3 No change \_\_\_\_\_

EPM-914 What assistance do you expect from government?

- 1 Loan \_\_\_\_\_
- 2 Other financial support, specify: \_\_\_\_\_  
\_\_\_\_\_
- 3 Technical assistance \_\_\_\_\_
- 4 Management consulting \_\_\_\_\_
- 5 Marketing support \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

EPM-915 Are you interested in Industrial Estate which has incentives and infrastructure necessary for establishment of factory?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

EPM-916 If the government provides you with low-interest loan together with technical assistance, marketing and managerial assistance for industries which acquire raw material coming from various sectors, do you think this will be favorable for sub-contracting with large enterprises and then look for raw material for your enterprise?

1 Favorable

2 Not favorable

3 It depends on the condition : \_\_\_\_\_

\_\_\_\_\_

Thank you for your cooperation.

Micro Enterprises

QUESTIONNAIRE  
FOR MICRO - ENTERPRISES

ME-000 General

ME-001 Name of enterprise : \_\_\_\_\_  
\_\_\_\_\_

ME-002 Address of office : \_\_\_\_\_  
\_\_\_\_\_

ME-003 Address of factory :  
(1) \_\_\_\_\_  
\_\_\_\_\_  
(2) \_\_\_\_\_  
\_\_\_\_\_

ME-004 Established in : 19 \_\_\_\_\_ (year)

ME-005 Area of factory :

1 Land (1)	_____	M2
(2)	_____	M2
2 Building (1)	_____	M2
(2)	_____	M2
3 Office (total floor area):	(1) _____	M2
	(2) _____	M2

ME-006 Your office building is:

1 Owned by you	_____
2 Rent	_____

ME-007 Your land:

1 Owned by you	_____
2 Rent	_____



ME-008 Participation of paid up capital

- Individual enterprise: \_\_\_\_\_ %
- Family enterprise: \_\_\_\_\_ %
- Subsidiary company: \_\_\_\_\_ %
- Society: \_\_\_\_\_ %
- Others: \_\_\_\_\_ %

ME-009 Entrepreneur education

- Highest level reached

- 1 Incomplete primary \_\_\_\_\_
- 2 Complete primary \_\_\_\_\_
- 3 Technical high school \_\_\_\_\_
- 4 Classic high school \_\_\_\_\_
- 5 University and above  
Non formal level \_\_\_\_\_
- 6 Technical Training of SENA  
Others \_\_\_\_\_
- 7 Illiterate \_\_\_\_\_
- 8 Self-taught \_\_\_\_\_
- 9 Others, specify: \_\_\_\_\_

---

ME-010 Previous job of entrepreneur

- 1 Government employee \_\_\_\_\_
- 2 Industrial or commercial government enterprise \_\_\_\_\_
- 3 Mixed enterprise employee \_\_\_\_\_
- 4 Foreign venture company \_\_\_\_\_
- 5 Micro, small or medium private enterprise \_\_\_\_\_
- 6 Large private enterprise \_\_\_\_\_
- 7 Private trader \_\_\_\_\_
- 8 Technical training institution \_\_\_\_\_
- 9 University \_\_\_\_\_
- 10 Others, specify: \_\_\_\_\_

---

ME-011 - 018 Number of employees

		No.		
ME-011	Family		ME-014	Administration
ME-012	Permanent		ME-015	Technical team
ME-013	Temporary		ME-016	Qualified workers (Operarios)
			ME-017	Unqualified workers
ME-018	Total		ME-018	Total

ME-019 - 021 Working hour per day

ME-019 Family \_\_\_\_\_ Hours  
 ME-020 Permanent \_\_\_\_\_ Hours  
 ME-021 Temporary \_\_\_\_\_ Hours

ME-022 Working hours per week \_\_\_\_\_

ME-023 How many no working weeks are there in a year? \_\_\_\_\_

ME-024 Workers average age \_\_\_\_\_

1. Less than 13 years \_\_\_\_\_
2. 13 - 16 years \_\_\_\_\_
3. 17 - 20 years \_\_\_\_\_
4. 21 - 30 years \_\_\_\_\_
5. 31 - 40 years \_\_\_\_\_
6. More than 40 years \_\_\_\_\_

ME-025 Average monthly wage of workers (Operarios)

1. less than \$32.560 \_\_\_\_\_
2. \$32.561 - \$65.120 \_\_\_\_\_
3. \$65.121 - \$97.683 \_\_\_\_\_
4. \$97.684 - \$130.244 \_\_\_\_\_
5. \$130.245 - \$162.805 \_\_\_\_\_
6. More than \$162.806 \_\_\_\_\_

ME-026 Average stay period of workers (Operarios)

1. Less than a year \_\_\_\_\_
2. 1-2 years \_\_\_\_\_
3. 3-5 years \_\_\_\_\_
4. 6-10 years \_\_\_\_\_
5. More than 10 years \_\_\_\_\_

ME-027 Amount of working capital : Total \$ \_\_\_\_\_ Millions

ME-028 Amount of paid up capital Total \$ \_\_\_\_\_ Millions

ME-029 Total annual sales (1988) \$ \_\_\_\_\_ Millions/year

ME-030 Profit before tax (1988) \$ \_\_\_\_\_ Millions/year

ME-031 Monthly cost of raw material (1988) \$ \_\_\_\_\_ Thousands/month

ME-032 Monthly cost of electricity (1988) \$ \_\_\_\_\_ Thousands/month

ME-033 Is your enterprise a member of the following organizations?

- 1 ANDI \_\_\_\_\_
- 2 ACOPI \_\_\_\_\_
- 3 FEDEMETAL \_\_\_\_\_
- 4 Other associations, specify \_\_\_\_\_
- 5 Foundations for micro-entrepreneurs \_\_\_\_\_
- 6 Micro entrepreneur association \_\_\_\_\_
- 7 Others, specify: \_\_\_\_\_

ME-100 Products

No.	Code *	Kinds of Products	Name	Principal process **	Client ***							Quantity /month	
					1	2	3	4	5	6	7		Unit ****

\* Please select corresponding code No. from the list of next page

\*\* Select from the following items by number

- 1 Casting
- 2 Forging
- 3 Plating
- 4 Plating
- 5 Machining
- 6 Machinery assembly
- 7 Press work
- 8 Others, specify: \_\_\_\_\_

\*\*\* 1 Government 2 Large enterprise (employees: more than 200) 3 Micro, small and medium manufacturer

4 Trader/middleman 5 Retailer 6 Direct to end user 7 Export

\*\*\*\* 1 Tonnage 2 Number of units 3 Specify: \_\_\_\_\_

Table of "Category of Products"

Code	Category of Products
3811	Manufacture of cutlery, hand tools and general hardware
3812	Manufacture of furniture and fixtures primarily of metal
3813	Manufacture of structural metal products
3819	Manufacture of fabricated metal products except machinery and equipment
3821	Construction of engines and turbines
3822	Construction of agricultural machinery and equipment
3823	Construction of metal and wood working machinery
3824	Construction of special industrial machinery and equipment except metal and wood working machinery
3825	Construction of office, computing and accounting machinery
3829	Construction of machinery and equipment except electrical
3831	Construction of electrical industrial machinery and apparatus
3832	Construction of radio, television and communication equipment and apparatus
3833	Construction of electrical appliances and housewares
3839	Construction of electrical apparatus and supplies
3841	Construction of ship building and repairing
3842	Construction of railroad equipment
3843	Manufacture of motor vehicles
3844	Manufacture of motorcycles and bicycles
3845	Manufacture of aircraft
3849	Construction of transport equipment
3851	Manufacture of professional and scientific, and measuring and controlling equipment
3852	Manufacture of photographic and optical goods
3853	Manufacture of watches and clocks





ME-300 Condition of Sub-contract

ME-301 Ratio of dependence on sub-contract work: \_\_\_\_\_ % of total sales.

ME-302 Quality requirement from contractors:

- 1 Easy to satisfy (not severe) \_\_\_\_\_
- 2 Acceptable \_\_\_\_\_
- 3 Not acceptable (too severe) \_\_\_\_\_

ME-303 Quantity of order from contractors considering manufacturing capacity:

- 1 Very little \_\_\_\_\_
- 2 Adequate \_\_\_\_\_
- 3 Very much \_\_\_\_\_

ME-304 Delivery requested by contractors:

- 1 Not strict \_\_\_\_\_
- 2 Acceptable \_\_\_\_\_
- 3 Too strict \_\_\_\_\_

ME-305 If you found difficulties in satisfying the requirement of contractor (ME-302 and 303), please specify the reason for the following :

- 1 Insufficient labor force \_\_\_\_\_
- 2 Insufficient production capacity \_\_\_\_\_
- 3 Inadequate manufacturing planning \_\_\_\_\_
- 4 Technical difficulties \_\_\_\_\_
- 5 Others, specify: \_\_\_\_\_

ME-306 Payment condition of contractors:

- 1 Cash \_\_\_\_\_
- 2 Credit \_\_\_\_\_
- 3 Others, specify: \_\_\_\_\_

ME-307 Payment from contractors:

- 1 Always delay \_\_\_\_\_
- 2 Sometimes delay \_\_\_\_\_
- 3 Without delay \_\_\_\_\_



ME-308 Do you have financial support from contractors?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-309 If your answer to ME-308 is "Yes", content of financial support consists of:  
1 Capital participation \_\_\_\_\_  
2 Credit \_\_\_\_\_  
3 Others, specify: \_\_\_\_\_

ME-310 Do you have technical support from contractors?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-311 If your answer to ME-310 is "Yes", existing technical support consists in:  
1 Training \_\_\_\_\_  
2 Advisory \_\_\_\_\_  
3 Inspection \_\_\_\_\_  
4 Management \_\_\_\_\_  
5 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-312 Order from contractors  
1 Stable \_\_\_\_\_  
2 Spot order \_\_\_\_\_  
3 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-313 Are components or raw materials supplied by contractors?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-314 Are manufacturing drawings supplied by contractors?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-315 Are you interested in sub-contracting business?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-316 In case you answered "Yes" to ME-315, but you have not subcontract business now, why don't you have subcontract business in this moment?  
(Indicate various items, if needed)  
1 You have no channel with large enterprises  
2 Capacity of equipment is not sufficient  
3 Lack of fund for investment to correspond to contractor's requirement  
4 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-317 If your answer to ME-315 is "Yes", the reason is:  
(Indicate various items, if needed)  
1 Stabilization of business by long terms contract  
2 Sales increase \_\_\_\_\_  
3 Diversification of products \_\_\_\_\_  
4 Technical assistance \_\_\_\_\_  
5 Financial assistance \_\_\_\_\_  
6 Supply of materials from clients \_\_\_\_\_  
7 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

(Plural items may be marked as the reason, if needed)

ME-318 If your answer to ME-315 is "No", the reason is:  
(Indicate various items, if needed)  
1 Can keep independence (avoid interference) from other enterprises: \_\_\_\_\_  
2 Satisfied with the present business situation (Business restructuring is not necessary) \_\_\_\_\_  
3 Dedicated to produce only small products for Colombian markets \_\_\_\_\_  
4 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-319

If you are interested in the business of sub-contractor, what do you expect from enterprises/clients for improving relation with your enterprise?

- 1 Technical support \_\_\_\_\_
- 2 Financial support \_\_\_\_\_
- 3 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-320

What assistance do you expect from government in order to increase the purchase order from larger enterprises/clients?

- 1 Loan \_\_\_\_\_
- 2 Other financial support, specify: \_\_\_\_\_  
\_\_\_\_\_
- 3 Technical assistance \_\_\_\_\_
- 4 Management consulting \_\_\_\_\_
- 5 Marketing support \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-400 Production Aspect

ME-401 Is your production capacity enough?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-402 If your answer to ME-401 is "No", how much do you need to invest for expansion of capacity? \$ \_\_\_\_\_ Millions

ME-403 Do you obtain easily raw material?  
1 Yes \_\_\_\_\_  
2 No \_\_\_\_\_

ME-404 If 403 is "No", the reason is  
(Plural items may be marked, if needed)  
1. Production area of raw materials is far from your factory \_\_\_\_\_  
2. It is difficult to purchase imported raw materials in the domestic market \_\_\_\_\_  
3. Demand of raw materials is bigger than supply in the domestic market \_\_\_\_\_  
4. Materials produced in Colombia are not satisfactory in quality \_\_\_\_\_  
5 Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-405 From where do you get raw materials?  
1. General market \_\_\_\_\_  
2. Supply from clients \_\_\_\_\_  
3. Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-406 What is your system of quality control?  
1. None \_\_\_\_\_  
2. Check when trouble occurs \_\_\_\_\_  
3. First product inspection \_\_\_\_\_  
4. Simple check list including sampling \_\_\_\_\_  
5. Control charts \_\_\_\_\_  
6. Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-407

What is your average defect ratio of the products?

1. More than 20%
2. 11 - 20%
3. 5 - 10%
5. Less than 5%

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ME-408

Do you schedule your production?

1. No schedule
2. Rough scheduling by experience
3. Man-hour distribution
4. Man-hour together with utilization rate of facilities
- 5 Others, specify: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

ME-500 Technical Aspect

ME-501 How is the technical level of your workers?  
1. High \_\_\_\_\_  
2. Middle \_\_\_\_\_  
3. Low \_\_\_\_\_

ME-502 What kind of technical assistance do you expect from public organizations?  
1. Advisory \_\_\_\_\_  
2. Training \_\_\_\_\_  
3. Inspection \_\_\_\_\_  
4. Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-503 Who designs the products?  
1. Yourself \_\_\_\_\_  
2. The contractor/buyer \_\_\_\_\_  
3. Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-504 What kind of industrial standards do you use?  
1. None \_\_\_\_\_  
2. Customer's standards \_\_\_\_\_  
3. Your factory's own standards \_\_\_\_\_  
4. Colombia's standards \_\_\_\_\_  
5. International standards \_\_\_\_\_  
6. Others, specify: \_\_\_\_\_  
\_\_\_\_\_

ME-505 How many employees can understand the technical drawings?  
1. None \_\_\_\_\_  
2. One person \_\_\_\_\_  
3. 2 - 4 persons \_\_\_\_\_  
4. 5 - 10 persons \_\_\_\_\_  
5. More than 10 persons \_\_\_\_\_

**ME-600 Administrative Aspect**

ME-601 What are your main competitors?

- 1 Large enterprises \_\_\_\_\_
- 2 Medium enterprises \_\_\_\_\_
- 3 Small enterprises \_\_\_\_\_
- 4 Micro enterprises \_\_\_\_\_
- 5 Importers \_\_\_\_\_
- 6 None \_\_\_\_\_

(Note): Micro (less than 10 employees)  
Small (11 to 49 employees)  
Medium (50 to 199 employees)  
Large (more than 200 employees)

ME-602 How do you calculate the cost of your products?

- 1 Rough calculation by past experience \_\_\_\_\_
  - 2 Based on the record (cost data) \_\_\_\_\_
  - 3 Standardized calculation methods \_\_\_\_\_
  - 4 Other calculation methods, specify: \_\_\_\_\_
- 

ME-603 How much orders of production do you have now in hand?

- 1 None \_\_\_\_\_
- 2 Up to 7 days \_\_\_\_\_
- 3 8 - 15 days \_\_\_\_\_
- 4 16 -30 days \_\_\_\_\_
- 5 1 - 5 months \_\_\_\_\_
- 6 More than 5 months \_\_\_\_\_

ME-604 How much stock of raw materials is kept for production?

- 1 Up to 7 days \_\_\_\_\_
- 2 8 - 30 days \_\_\_\_\_
- 3 1 - 3 months \_\_\_\_\_
- 4 3 - 6 months \_\_\_\_\_
- 5 More than 6 months \_\_\_\_\_

ME-605 Are the goods in process and the final products accumulated in your factory?

- 1 None \_\_\_\_\_
- 2 Sometimes \_\_\_\_\_
- 3 Often \_\_\_\_\_
- 4 Always \_\_\_\_\_

ME-606 If ME-605 is 3 or 4, the reason is:

- 1 In order to correspond to the fluctuating demand of products \_\_\_\_\_
  - 2 For immediate delivery to clients \_\_\_\_\_
  - 3 Production schedule has not been made correctly \_\_\_\_\_
  - 4 Others, specify: \_\_\_\_\_
-



ME-700 Financial System

(Short-term loan)

ME-701 By which financial service among the following has your company been procuring short-term fund?

(Indicate various items, if needed)

- 1 Commercial banks \_\_\_\_\_
  - 2 Promotion rediscount lines from central bank \_\_\_\_\_  
(Banco de la Republica)
  - 3 Extra-bank-marketing \_\_\_\_\_
  - 4 Non-institutional financial sector \_\_\_\_\_
  - 5 Others, specify: \_\_\_\_\_
- 

ME-702 In case you put a check on No.1 and No.2 at Question 701, please describe name of financial service and agency.

- 1 Financial service: \_\_\_\_\_
- 2 Financial agency: \_\_\_\_\_

Your answers to the following items 803 to 808 are referred to the attached sheet.

ME-703 From which financial agencies have you ever obtained or are you obtaining short-term credit (loans)?

ME-704 Indicate how to use short-term fund procured from outside by selecting figures among 5 items in the below. (\*2)

ME-705 Interest rate

ME-706 Amount of borrowings

ME-707 Repayment period

ME-708 Credit is secured (with mortgage) or not.

(\*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.

- (\*2)
1. Facility investment
  2. Working capital
  3. Loan repayment
  4. Research and Development
  5. Others

ME-703	ME-704	ME-705	ME-706	ME-707	ME-708
Indicate kinds of Financial Agencies from which you have ever obtained or are presently obtaining short-term loan. (*4)	Indicate how to use fund by selecting figure among 5 items in below (*2) (Figure)	Interest Rate (%/Month)	Amount of Loan (Millions of Pesos)	Repayment Period (Months)	Secured Credit or not: Indicate below 1 or 2 1. Secured Credit 2. Unsecured Credit
1. Bank					
2. Financial corporation					
3. Municipal or state promoting institutions					
4. Promotion rediscount lines from central bank					
5. Credits from suppliers					
6. Advances from the customers					
7. External lines					
8. Foundations					
9. Extra bank marketing					
10. Credits given by relatives or friends					
11. Others, Specify:					
(*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.					
(*2) 1. Facility investment    2. Working Capital    3. Loan Repayment    4. Research and Development    5. Others					
(*3) Middle-men are defined as intermediary on business transaction between enterprises, and they also have function as lender of the fund necessary for purchasing manufacturing parts.					
(*4) Plural items may be marked, if needed.					

**Long-term Borrowings**

ME-709 By which financial services among the following six has your company been procuring long-term fund?

(Various items can be indicated, if needed)

- 1 Commercial banks \_\_\_\_\_
- 2 Promotion rediscount lines from central bank \_\_\_\_\_  
(Banco de la Republica)
- 3 Financial corporation \_\_\_\_\_
- 4 Issue of bonds or stocks \_\_\_\_\_
- 5 External lines \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_

ME-710 In case you put a check on No.2 Institutional Financial Service at Question 709, please describe name of financial service and agency.

- 1 Financial service \_\_\_\_\_
- 2 Financial agency \_\_\_\_\_

Your answers to the following items 711 to 716 are referred to the attached sheet.

ME-711 From which financial agencies have you received or are you receiving long-term credit (loans)?

ME-712 Indicate how to use long-term fund procured from outside by selecting figures among 5 items in the below. (\*2)

ME-713 Interest rate

ME-714 Amount of Loans \_\_\_\_\_

ME-715 Repayment Period \_\_\_\_\_

ME-711	ME-712	ME-713	ME-714	ME-715	ME-716
Indicate kinds of Financial Agencies from which you have ever obtained or are presently obtaining long-term loan. (*3)	Indicate how to use fund by selecting figure among 5 items in below (*2) (Figure)	Interest Rate (%/Year)	Amount of Loan (Millions of Pesos)	Repayment Period (Years)	Secured Credit or not: Indicate below 1 or 2 1. Secured Credit 2. Unsecured Credit
1. Bank					
2. Financial corporation					
3. Municipal or state promoting institutions					
4. Promotion rediscount lines from central bank (Banco de la Republica)					
5. Credits from suppliers					
6. Advances from the customers					
7. External lines					
8. Foundations					
9. Extra bank marketing					
10. Credits given by relatives or friends					
11. Others, Specify:					

(\*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.

(\*2) 1. Facility investment    2. Working Capital    3. Loan Repayment    4. Research and Development    5. Others

(\*3) Plural items may be marked, if needed.

ME-716

Credit is secured (with mortgage) or not.

(\*1) Institutional Financial Service is defined as special credit service prepared for the purpose of promoting micro, small and medium enterprises.

- (\*2)
1. Facility Investment
  2. Working Capital
  3. Loan Repayment
  4. Research and Development
  5. Others

ME-717 If you have experience in using services of financial agency, please indicate the reason with which you used or use it.

- 1 Loan procedure is simple.  
Whenever required, it is possible to obtain loan
- 2 It is possible to borrow with unsecured loan condition.
- 3 There exists no upper limit to amount of loan.
- 4 In compliance with requirement from agency, your company has also made financial transaction with them.
- 5 Others \_\_\_\_\_

ME-718 What are urgent problems on finance of your company?  
(Indicate various items, if needed)

- 1 There exist difficulties for more loans from financial agencies because your company's properties to be offered as mortgage or guarantee are very small.
- 2 Because of lack of experience, detailed plan of long-term investment facilities can not be well formulated, and therefore, funds flow planning of enterprise can not be specified over the long-term period.
- 3 Loan conditions of financial agencies (Interest rate, period, mortgage conditions) are little advantageous for borrowers.
- 4 As information on special financial services given by public and private agencies are not much spread in small industries, your company is likely to procure funds by use of general loan service from the branch offices of city banks or similar agencies.
- 5 Banks have no positive attitude to give loan on credit to small type companies, excluding big corporations.
- 6 Even if small industries like your company would apply necessary fund to financial agencies, they will not lend 100% of fund projected.
- 7 Even with self-financing of your enterprise, for example, by retaining earnings, by capital increase, by issuing of corporate bond, it is practically almost impossible that a way to compensate shortage of necessary fund can be found.

8 Procedures of getting credits from financial agencies are very complicated and also needs long period.

9 Others, specify : \_\_\_\_\_  
\_\_\_\_\_

Following questions item 719 to 722 are relationed with your experience in and impression on several kinds of special financial service systems.

Please fill following blanks of each item 719 to 722 with an alternative selected among 1 to 5 of following descriptions.

- 1 I have used the special system, and also hope to use it in the future.
- 2 I have used the special system, but not hope to use it in the future.
- 3 I have never used the special system, but hope to use it in the future.
- 4 I have never used the special system, and also not hope to use it in the future.
- 5 I did not know the existence of this special system.

ME-719 Institutional Financial Service

ME-720 Investment financed by bond or other system

ME-721 Credit system guaranteed by financial agencies or Government

ME-722 Lease-type Investment (\*)

(\*) To introduce industrial modern facilities into your company by means of Leasing.

ME-723 Suppose that financial service systems for micro, small and medium enterprises are newly established, what is reasonable conditions of interest rate of short-term loan?

\_\_\_\_\_ %/month

ME-724 The same question as 723, but reasonable interest rate of long-term loan?

\_\_\_\_\_ %/month



ME-800 Future Plan

ME-801 Prospect of demand increase of your products

1 Very good	_____
2 Good	_____
3 Normal	_____
4 Not good	_____

ME-802 If your answer to ME-801 is 1 or 2, how much of demand-increase is expected for your products?

(1) In 3 years \_\_\_\_\_ % each year

(2) In 5 years \_\_\_\_\_ % each year

ME-803 Do you have a specific plan to expand your production?

1 Yes	_____
2 No	_____

ME-804 If your answer to ME-803 is "Yes", amount of total investment:

\$ \_\_\_\_\_ Million

ME-805 Portion of self financing in ME-804: \$ \_\_\_\_\_ Million

ME-806 Portion of loan in ME-804: \$ \_\_\_\_\_ Million

ME-807 If you answer to ME-806 is "Yes", when will it be implemented?

1 Less than 1 year	_____
2 1 - 3 years	_____
3 3 - 5 years	_____
4 More than 5 years	_____



ME-812 Where do you obtain the information about new merchandise or technology from?

- 1 Newspaper \_\_\_\_\_
- 2 General magazine \_\_\_\_\_
- 3 Co-operation/foundation, etc \_\_\_\_\_
- 4 Special or technical magazine \_\_\_\_\_
- 5 Exhibition in fair \_\_\_\_\_
- 6 TV and radio \_\_\_\_\_
- 7 Others, specify: \_\_\_\_\_

ME-813 What is your outlook for competition of your products?

- 1 Long term changes \_\_\_\_\_
- 2 Short term changes \_\_\_\_\_
- 3 No change \_\_\_\_\_

ME-814 What assistance do you expect from government?

- 1 Loan \_\_\_\_\_
- 2 Other financial support, specify: \_\_\_\_\_
- 3 Technical assistance \_\_\_\_\_
- 4 Management consulting \_\_\_\_\_
- 5 Marketing support \_\_\_\_\_
- 6 Others, specify: \_\_\_\_\_

ME-815 Are you interested in Industrial Estate which has incentives and infrastructure necessary for establishment of factory?

- 1 Yes \_\_\_\_\_
- 2 No \_\_\_\_\_

ME-816

If the government provides you with low-interest loan together with technical assistance, marketing and managerial assistance for industries which acquire raw material coming from various sectors, do you think this will be favorable for sub-contracting with large enterprises then look for raw material for your enterprise?

1 Favorable \_\_\_\_\_

2 Not favorable \_\_\_\_\_

3 It depends on the condition : \_\_\_\_\_  
\_\_\_\_\_

Thank you for your cooperation.



1954