008　コンピュータ棟概要

009　実習棟／機械系概要

010　実習棟／制御系概要

011　外構計画概要

012　設備計画概要

013　参考図

4—4—1　マスタープラン

1. プロジェクトサイトの敷地は将来にわたって、3エリアから構成される。プロジェクトエリア（239×170m）、リザーブAエリア（239×60m）、リザーブBエリア（35×215m）。[但し、リザーブA、Bエリアについては十分な合意は得られておらず、9／17において今回はAエリアについては考えないことが確認される。]
2. プロジェクトエリアは、ロータリー、管理･教育訓練サービスエリア、広場、教育訓練エリア、と緑地及びリザーブスペースで構成される。
3. リザーブA、Bエリアについては、その必要性が生じて、関係方面の合意がとれれば、プロジェクトエリアと整合性のある建物配置とする。
4. リザーブAエリアについては教育訓練スペースと体育館等が考えられ、リザーブBエリアには学生寮スペース及び駐車場が考えられる。
5. 各建物からは広場もしくは自嶺とのつながりをもたせる。
6. プロジェクトエリアには校内サービス道路を校内の外側に配し、人と車との動線を明確に分離する。また正門及び通用門を設ける。
7. CETIS 001校とは、交流を図るうえで境界線にはソフトな塀を設ける。他の道路境界線には管理上の塀を設けるが、地域にアピールするためにもとざされた塀とはしない。
8. 緑地、リザーブスペース、広場等は季節的に土ぼこりが多く、センター内の先端機器に支障をきたす恐れがあるので、その対策の一環として、植栽、芝生等の導入を図る。
9. プロジェクトエリアは土壌の軟弱な地盤でありかつ、水の問題が予想される土地のため、プロジェクトエリア内には十分な排水溝の対策を講じる。
10. 電力供給は可能な限り、東側図書館附近から導入し、図書館書庫部分に新たに電源室を併設することを検討する。
11. 電力供給はピットを設け、キャンパス内の歩道に幹線を通し、各建物へつなぎ、各Lab及び各フロアへ分岐していく。また、メンテが行いやすい方法とする。LAN回線も同様とする。
12. 高架水槽は、建物屋上に設けず高架水槽塔を設け、それをランドマークの役割を果た

せる。

また意匠上十分留意する。

13. 建物の実施計画及び建設にかかる詳細な事項についてはメキシコの風土、建築事情等について豊富な経験をもつDGETI、CAPFCE関係者の新規的な創造活動におうところが大である。原則的に日本側提案を尊重しながら。

14. 建物内部には可能な限り、通気を最大限考慮し、「風の道」を確保する。また、直射日光についても考慮する。

15. 今回のミッションで建築的与条件のでていない部分は、DGETI、CAPFCE側で提案を尊重しながら協議し、決定していく。

16. 建築全般の仕様について

-1. 外壁は石積み、石張りのテクスチャーをだす。実習棟Labは、腰壁は前述同様とする。石の種別は、メキシコ産のアイボリー色もしくはうすい赤みを帯びた色の石が考えられる。構造的にはコンクリート躯体に石を張る。ラーメン構造のフレーム内に石を積む。

-2. 内装材について

床　材：Pタイル、防塵塗装をほどこしたコンクリート床、タイル、じゅうたん、石張、フリーアクセスの床とする。

壁　材：コンクリート打放し、木製、スタッコ、タイル、石張り、石積、クロス張り、ガラス等とする。必要に応じて巾木、天井廻り縁を設ける。

天井材：直天井、システム天井、天窓（トップライト）、ドームとする。

照　明：グレアレスタイプ照明具、水銀灯、けい光灯、白熱灯を使用する。

17. 施設計画の基調

① ゆとりとくつろぎを考慮した全体計画とする。

② 日本・メキシコの技術協力のシンボルであること。
シンボルツリー、シンボルタワー、ランドマーク等の配慮をする。

③ メキシコエリート指導員が集う憧れの施設であること。
メキシコ技術教育のナショナルセンターとして機能すること。

④ 技術革新に対応したメカトロニクス訓練の殿堂であること。

⑤ 人、車の動線を考慮し、車寄・エントランスホール・玄関ロビー（教材展示場を含む）を適切に配置する。

⑥ 主要機材の搬入口、通路を考慮する。

⑦ 管理棟、実習棟、コンピュータ棟のLANを考慮する。

⑧ 各建物間のアクセス（特に雨天時）を考慮する。

⑨ 職員、訓練生の憩いの場を設ける（建物内外）。

⑩ 外構（植栽・造園・築山等）のデザインを考慮する。

⑪ 風土、環境を考慮した建物デザインとする（建物外観、窓、屋根等）。

⑫ 建築の色彩を考慮する。

18. デザインコンセプト

① ゆとりあるキャンパス計画を行う。

○ 建物の内外に小さなホール、日陰のできる空間、ベンチ等を配置し、「かたらいの場」を多く設ける。

○ 彫刻、オブジェ、壁画等を配し、心のゆたかさと感じあう場を設ける。

○ 雄大な Mt. POPOCATEPETL、イシタワトル山を大いなる借景とする。

○ ヴァナキュラーなものとコンテンポラリーなものの調和。

② メカトロニクスの殿堂、実学融合の技術教育のナショナルセンターにふさわしい施設計画を行う。

③ 将来の技術革新等の変化や施設拡充に対応できる施設計画とする。（注 ※－1）

④ 学生・教職員の出合いの場であり、技術教育を通してメキシコの工業振興の大いなる担い手集団であるという帰属意識を自然と培うような環境とする。

⑤ 明るく広がりのある空間構成とする。

○ ガラスを多く利用する。ガラスの透明感が演じる現代的な建築空間をつくりだし、明るく、広がりのある建築空間を形成する。室内気候について充分考慮しながら。

⑥ サーキュレーション（circulation）計画は地下埋設及び半地下埋設とし、中空架線は設けない。

○ 歩行動線上に幹線ピットを設け各建物に分岐していく。

⑦ サイン計画、外灯計画、外構計画の統一。

※－1：建築は竣工をもって完成するのではない。人々の生活とともに、建築も時間とともに成長していく。

このメキシコ職業技術教育活性化センターも時代とともに、発展していく施設であろう。国の礎となる人材を養成していく施設であるが故に。また、工業振興という大きな役割を果たすが故に。

このナショナルセンターとしての施設計画において将来の拡充という問題をどのように考えていくのかが重要な課題であると考えられる。

技術革新は日進月歩で変っていく。

機械系、制御系の2系であるが、その専門基礎領域及び、応用領域の拡大は今後

見込まれ、増築ということを考慮する必要が生じるであろう。

また、新たなメカトロニクスを支える系の誕生も考えられる。

ナショナルセンターとして、新たな機能を受け持つための施設も考えられる。

そのためには、将来拡充計画の中でリザーブスペースをキャンパス内に確保する必要がある。

リザーブスペースを確保しながら、広場をいかに形成していくか。学校と言えど、学生・教職員にとって「生活の場」であるといえる。賑ぎわい、出会い、語らい等の場の設定も重要である。

よって、今回の基本計画、基本設計において最も配慮した点は、広場を持ち将来の拡張に文脈がとぎれずに結びついていく計画を考える。

また、生活の場としてのあらゆる場を設定していく。

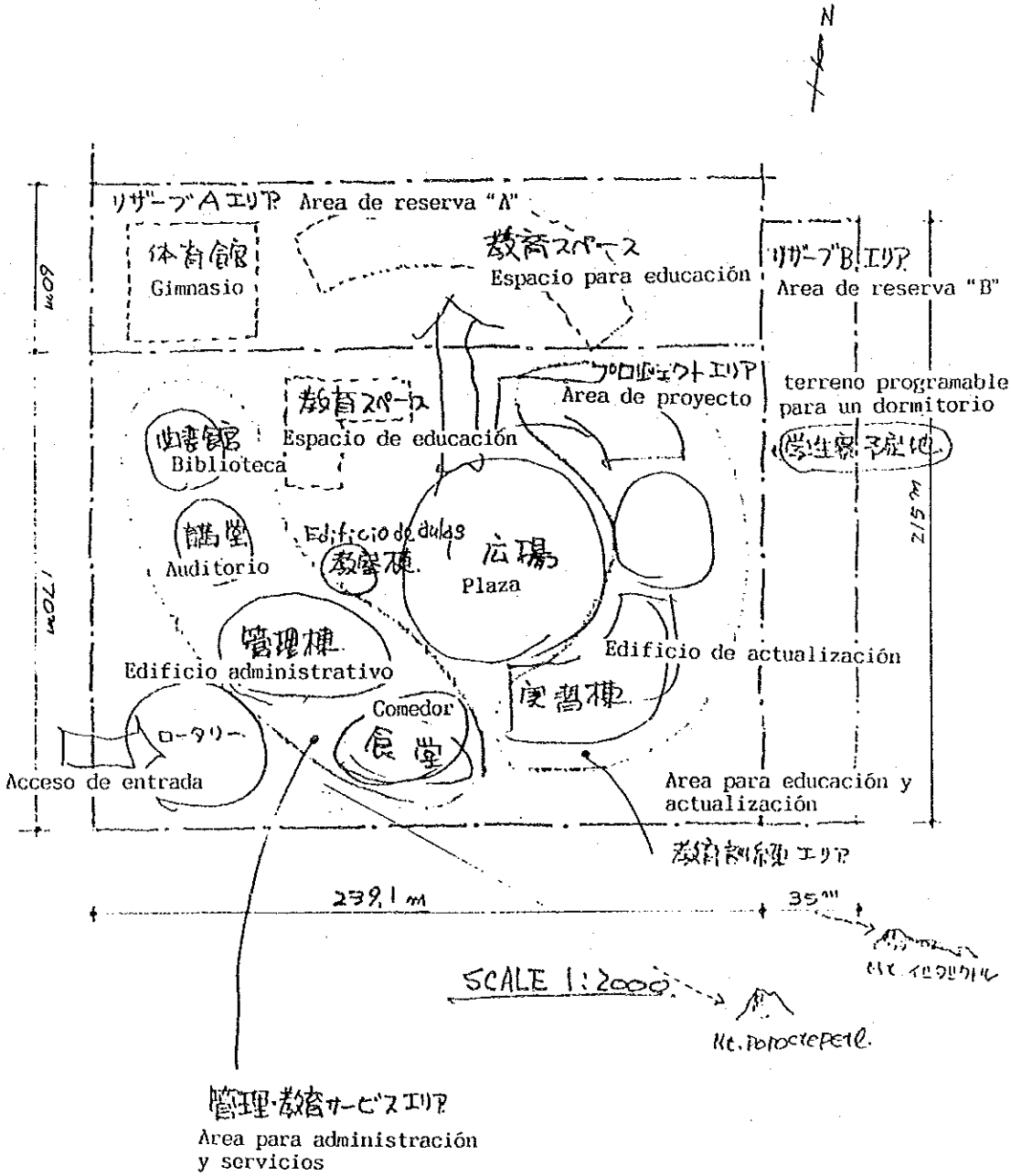
ナショナルセンターにふさわしい形態と空間構成、コンテンポラリーさとトラディショナルなものの融合を図る。

ESTUDIO DE C.A.D. EN MEXICO

001-B-1

CONCEPTO MAESTRO

Study of the CAD in Mexico
001 - B-1
Master PLan

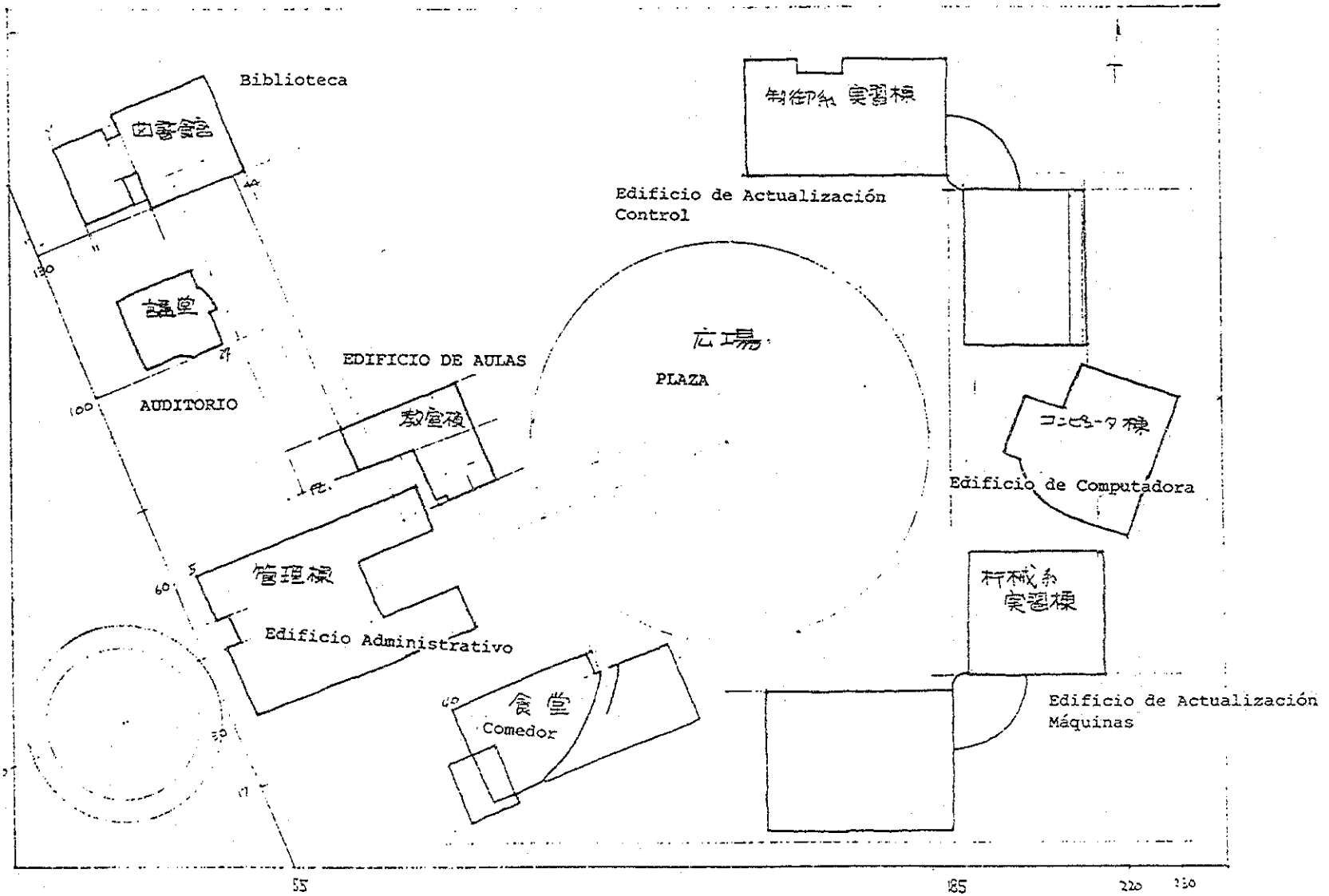


4－4－2　配置計画

1．レイアウトの変更。(提示のA案では食堂棟にバーベキュースペースが確保されていなかったため。)

2．建物の位置関係を明確にする。(002－B－1参照)

3．レイアウトは002－B－2に示す。

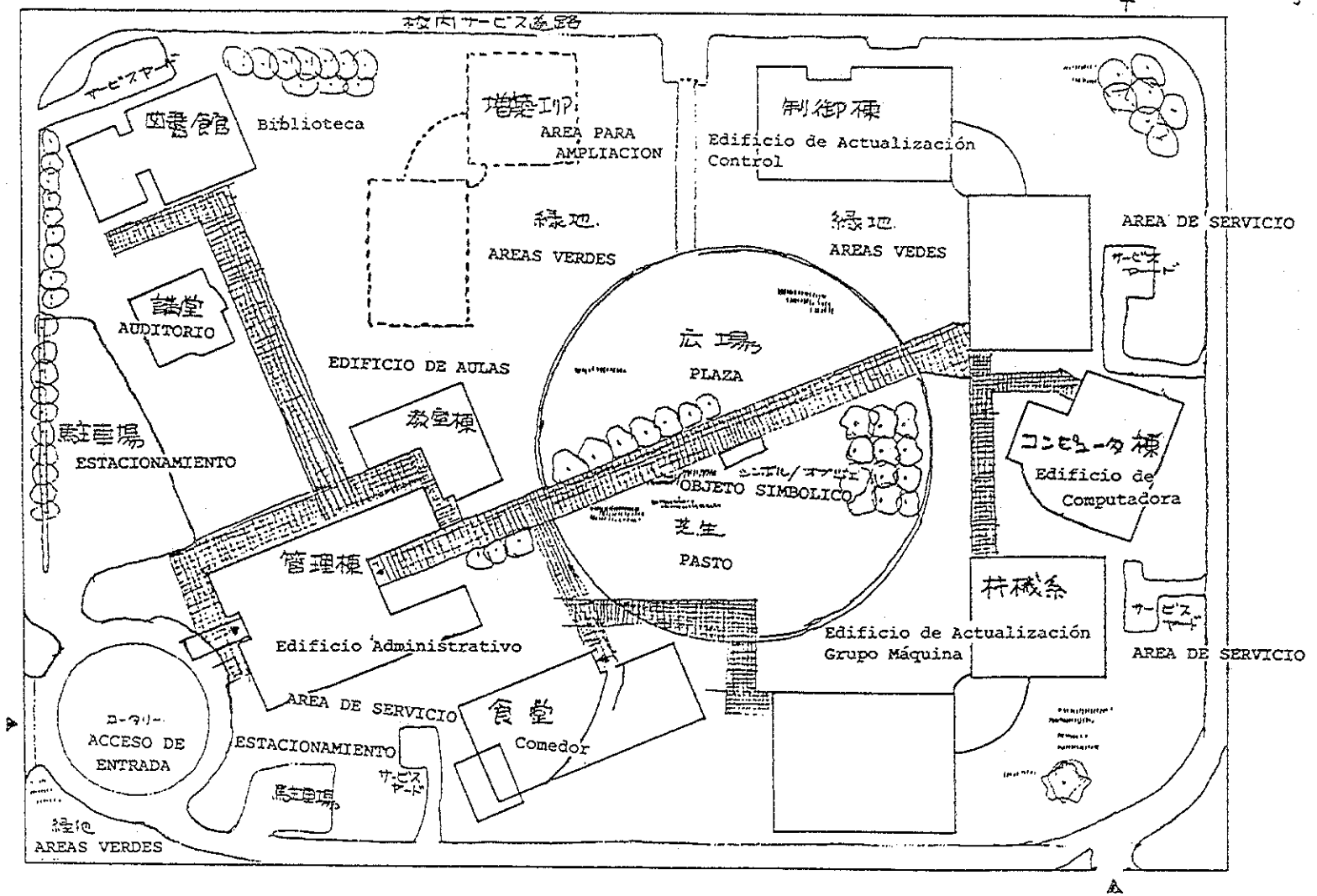


ESTUDIO DE G.A.D. EN MEXICO
002-B-1
CONCEPTO MAESTRO

Study of G.A.D. in Mexico
002 - 1B Site Planning
93.9.20

ESTUDIO DE C.A.D. EN MEXICO
002-B-2
PLANEACION DEL SITIO

Study of the CAD in Mexico
002-B-2
Site Planning



4－4－3　管理棟概要

1．　2つの建物の間に、ガラスの大屋根を架けて、アナトリウム（ドーム）を構成する。2階建ての建物とする。

2．　東側部分は事務部門とプロジェクトのマネジメント等の部門が占め、西側部分は教育訓練部分で構成される。

3．　基本的に各室は、室内側にもドアを設ける。

4．　カウンターパート室及び教材作成関係室には通路側に2つのドアを設ける。

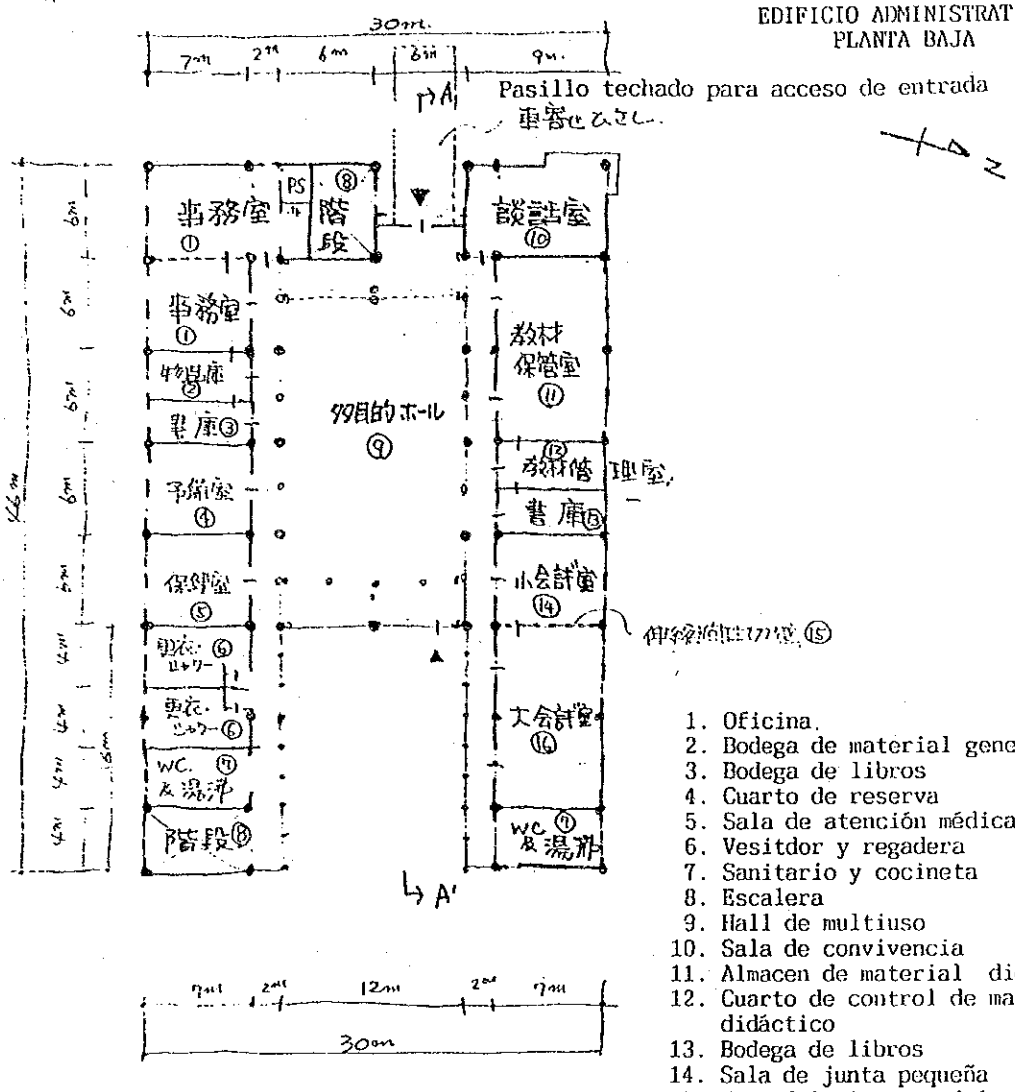
5．　2F東側管理部門及び3つの会議室の内装はグレードを上げる。床はじゅうたん仕上げとする。

Study of CAD in Mexico
003 - B-1
Administration building
1F Plan
93. 9. 20

EDIFICIO ADMINISTRATIVA
PLANO DE P.B.
(ESCALA 1/400)

Administration building 1F Plan 1:400

ESTUDIO DE C.A.D. EN MEXICO
003-B-1
EDIFICIO ADMINISTRATIVA
PLANTA BAJA



1. Oficina.
2. Bodega de material general
3. Bodega de libros
4. Cuarto de reserva
5. Sala de atención médica
6. Vesitdor y regadera
7. Sanitario y cocineta
8. Escalera
9. Hall de multiuso
10. Sala de convivencia
11. Almacen de material didáctico
12. Cuarto de control de material didáctico
13. Bodega de libros
14. Sala de junta pequeña
15. Muro del tipo acordeón
16. Sala de junta grande

ESTUDIO DE C.A.D. EN MEXICO

008-B-2

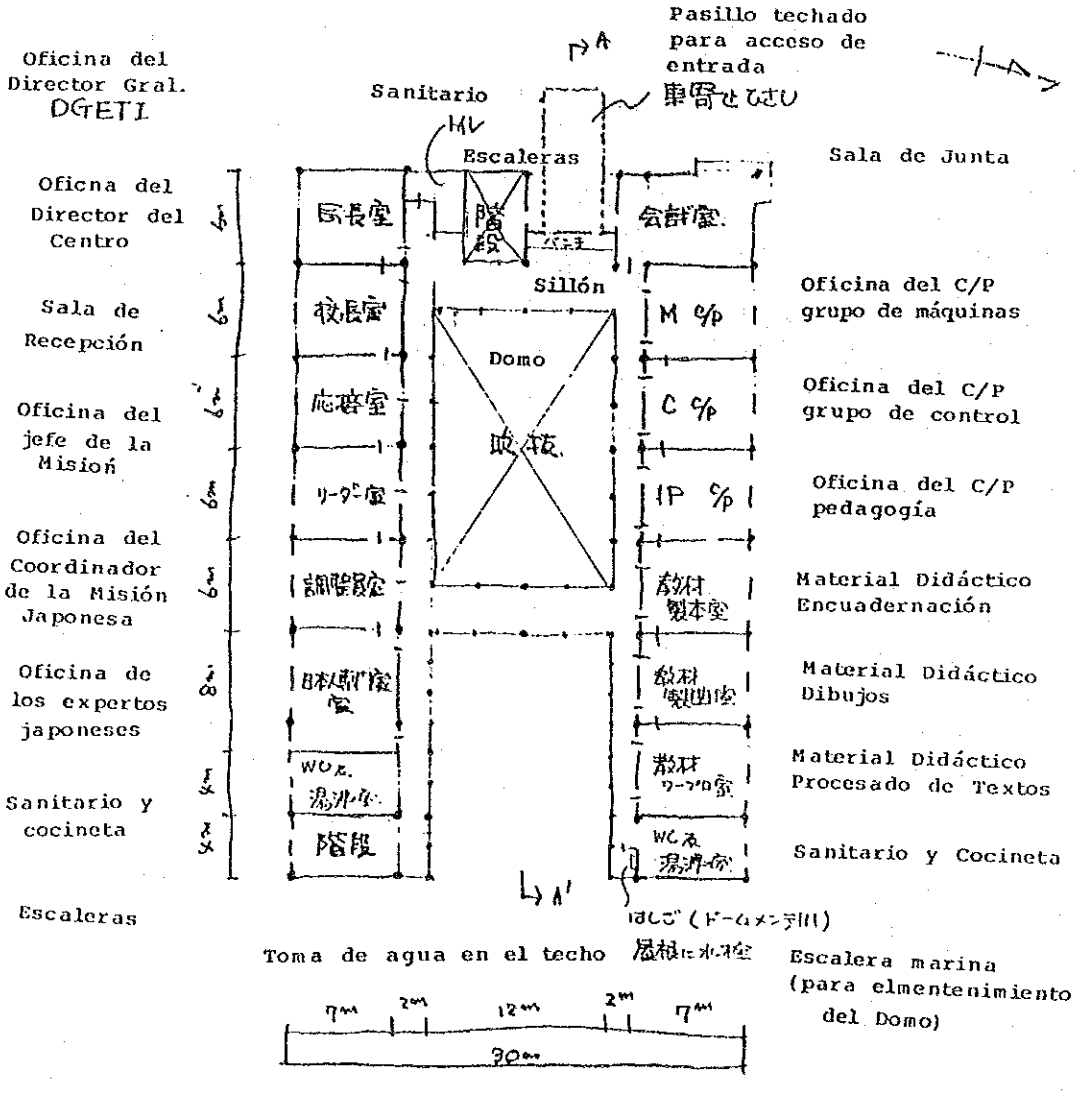
EDIFICIO ADMINISTRATIVO
SEGUNDO PISO

Study of CAD in Mexico
003-B-2.

Administration building
2F Plan

EDIFICIOADMINISTRATIVO SEGUNDO PISO
PLANTA (ESCALA 1/400)

Administration building 2F PLAN 1:400

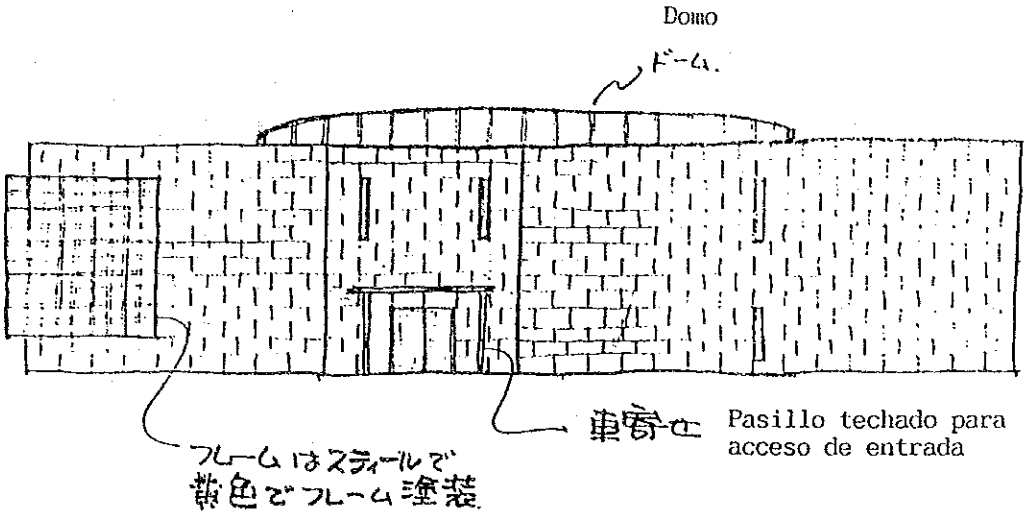


ESTUDIO DE C.A.D. EN MEXICO
003-B-3
EDIFICIO ADMINISTRATIVO

Study of CAD in Mexico
003 - B - 3
Administration building

ファサード（西側）立面（1:200）

FACHADA -LADO PONIENTE-
ALZADO (ESCALA 1/200)



南側立面（1:200）

FACHADA -LADO SUR-

ALZADO (ESCALA 1/200)

ESTUDIO DE C.A.D. EN MEXICO

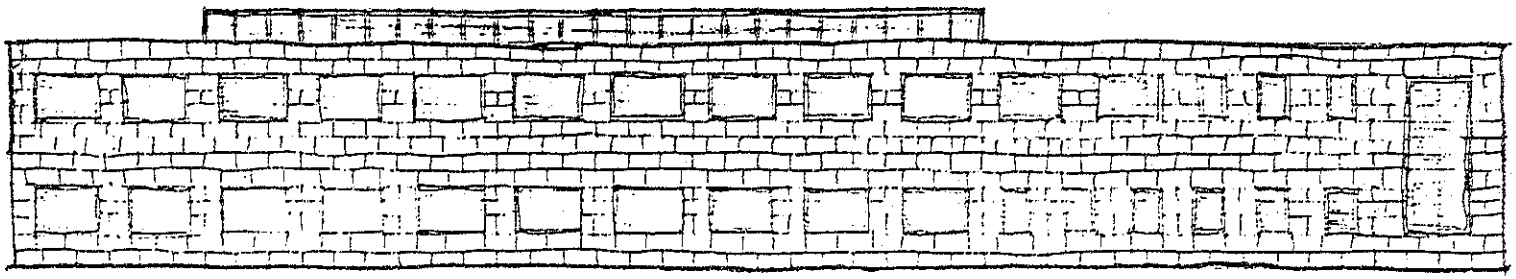
003-B-4

EDIFICIO ADMINISTRATIVO

Study of CAD in Mexico

003-B-4

Administration building



ESTUDIO DEL C.A.D. EN MEXICO

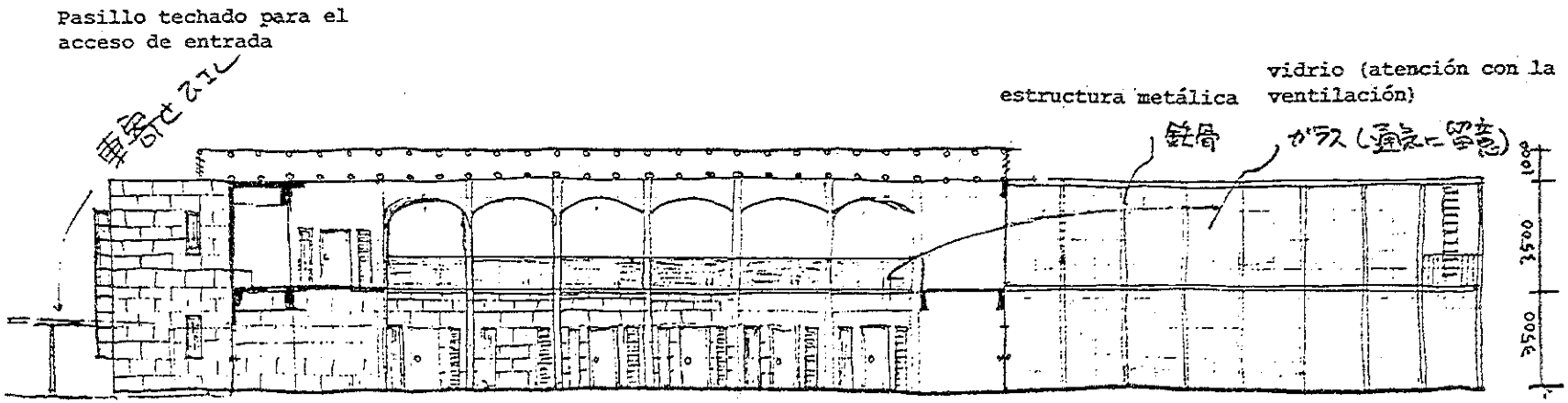
003-B-5

EDIFICIO ADMINISTRATIVO

Study of the CAD in Mexico
003-B-5
Administration building

A～A' 断面

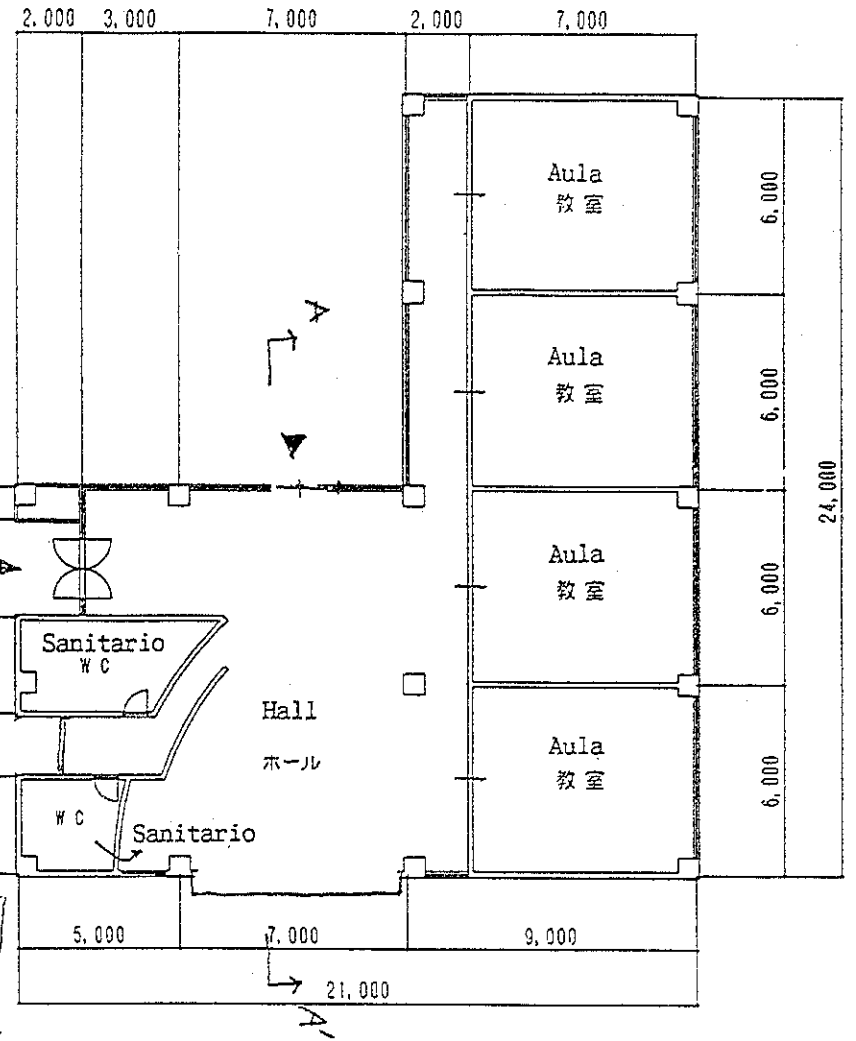
Sección A-A'



4－4－4　教室棟概要

1．短期コース用として計画する。

2．教室についてはLAN対応とする。



ESTUDIO DE C.A.D. EN MEXICO
004-B-1
EDIFICIO DE AULAS

Study of the CAD in Mexico
004-B-1
教室棟

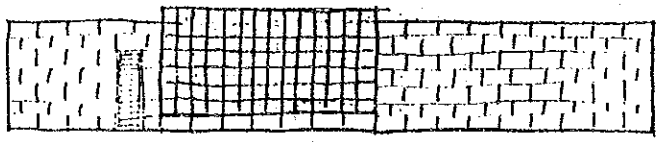
教室棟平面図　S=1/200

EDIFICIO DE AULAS
PLANTA (ESCALA 1/200)

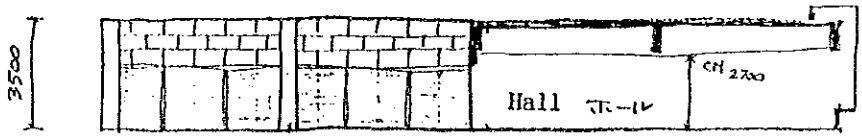
ESTUDIO DE C.A.D. EN MEXICO
004-B-2
EDIFICIO DE AULAS

Study of the CAD in Mexico
004 - B-2
教室棟

東側立面 (1:200)
ALZADO: LADO ORIENTE (1/200)



A~A' 断面 (1:200)
SECCION "A" - "A'" (1/200)

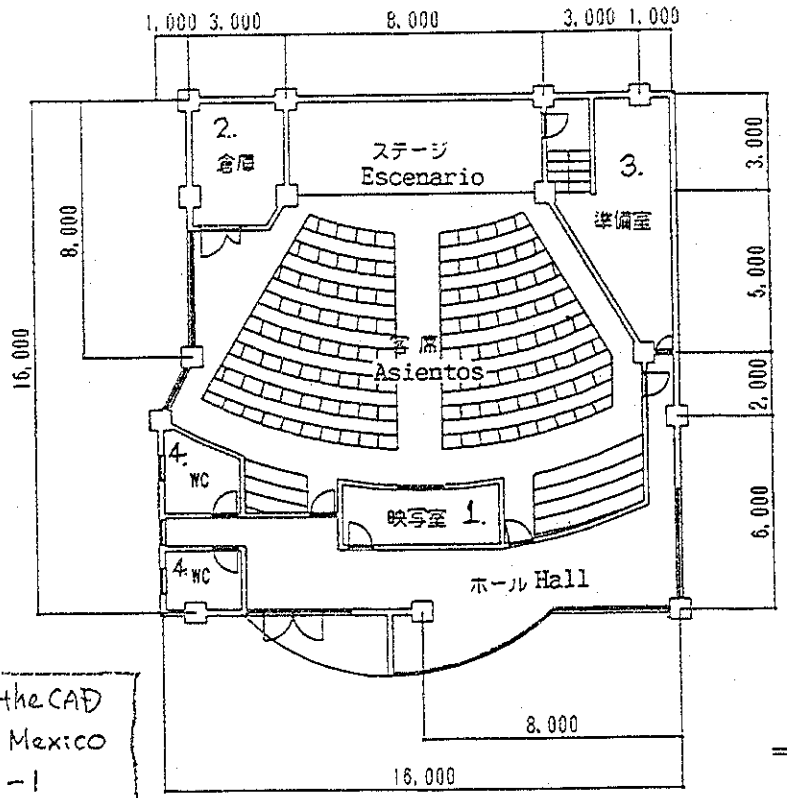


4－4－5　講堂概要

1．講演会、短期コース、通常の授業にも使用できる計画とする。

2．映写室も設置する。

3．席数については、DGETI 側でまだ、センターの運営方針が定まっていないので、結論が出しだい DGETI と CAPFCE との協議で原案を尊重しながら決定する。原案では120席が設けられている。



1. Cámara de proyeción
2. Almacen
3. Cuarto de preparación
4. Sanitario

ESTUDIO DE C.A.D. EN MEXICO
005-B-1
AUDITORIO

Study of the CAD in Mexico
005 - B - 1
講堂

about 120席

Capacidad aproximada: 120 asientos

講堂平面図　S=1/200　AUDITORIO
PLANTA (ESCALA 1/200)

4－4－6　図書館概要

1．オープンシステムとクローズシステムを併用したシステムを将来的に考える。

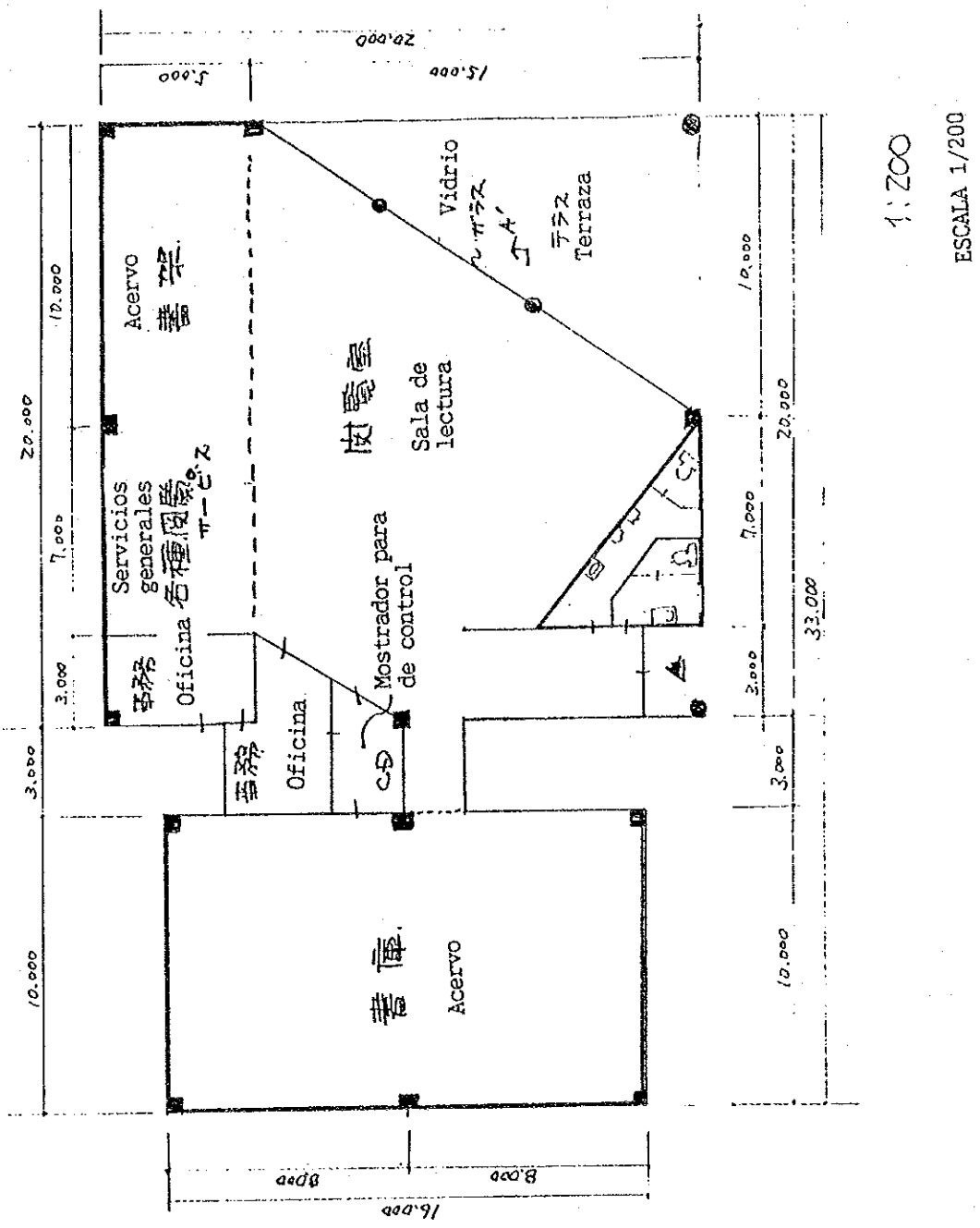
2．閲覧室部門と書庫部門の２つの建物で構成される。

3．図書館管理部門には、CD、事務室、書籍のメンテ室等の室を設ける。

4．閲覧室に余裕をもたす。

ESTUDIO DE C.A.D. EN MEXICO
006-B-1
BIBLIOTECA

Study of the CAB in Mexico
006-B-1
図書館



1:200

ESCALA 1/200

ESTUDIO DEL C.A.D. EN MEXICO

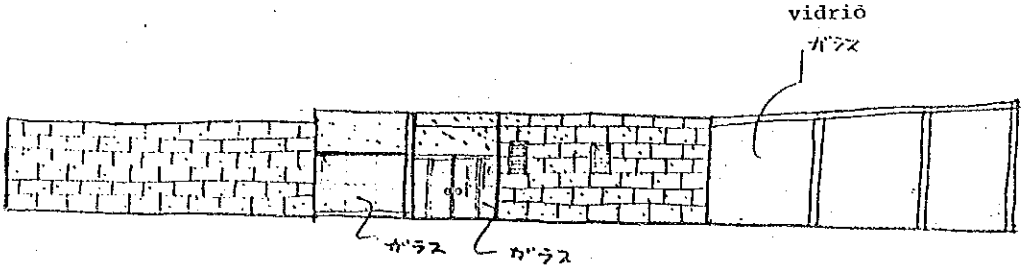
006-B-2

BIBLIOTECA

Study of the CAD in Mexico
006 - B - 2.
図書館

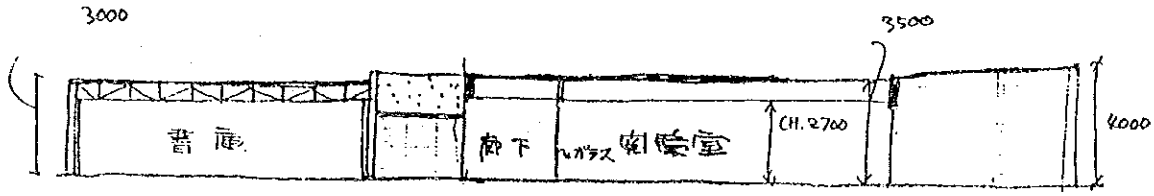
南立面 (1:200)

BOSQUEJO DE FACHADA (EL LADO SUR)
ESCALA 1/200



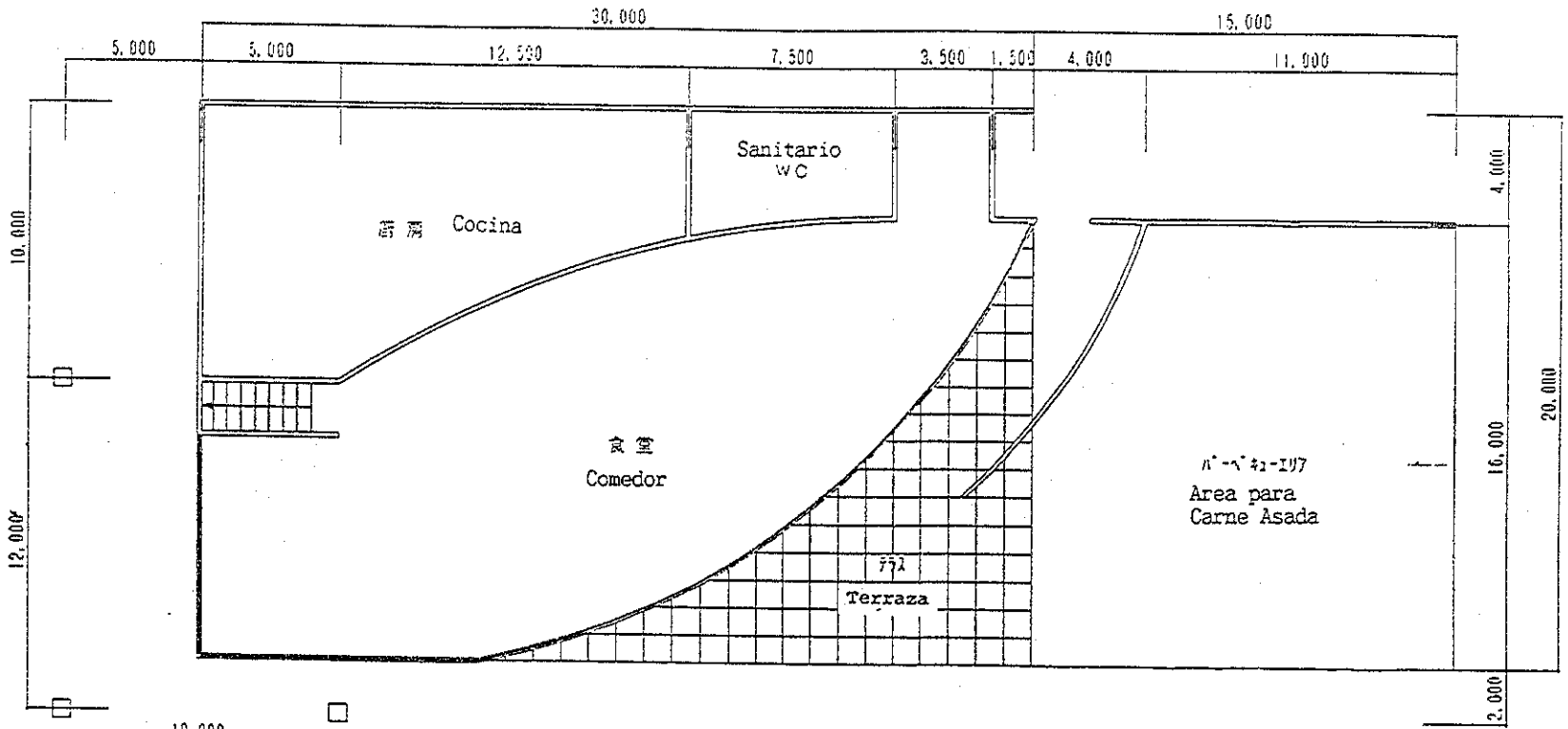
A～A'断面 (1:200)

Sección A-A' (Escala 1/200)



4－4－7　食堂概要

1. 人間にとって、一番くつろぎながら、語らいのできることのひとつが、食事である。そのための場としてキャンパス内で一番いい場所で、雄大な白嶺をながめながら、食事のできる場として設定する。
2. 中2階に「21世紀を語る場」を設ける。
3. バーベキューエリアを設け、学内外のパーティーを開催しながら、出会いの場を設定する。
4. 食堂の運営については学生寮同様にDGETIでの結論が出ていないので、厨房計画が進んでいない。結論が出しだい、DGETIとCAPFCEとの協議で決めていく。



PISO M2

M2F PLAN

Study of the CAD in Mexico
007-B-1
食堂

1 F PLAN

ESTUDIO DE C.A.D.EN MEXICO

007-B-1

C O M E D O R

COMEDOR

PLANTA (ESCALA 1/200)

食堂平面図 S=1:200

ESTUDIO DEL C.A.D. EN MEXICO

007-B-2

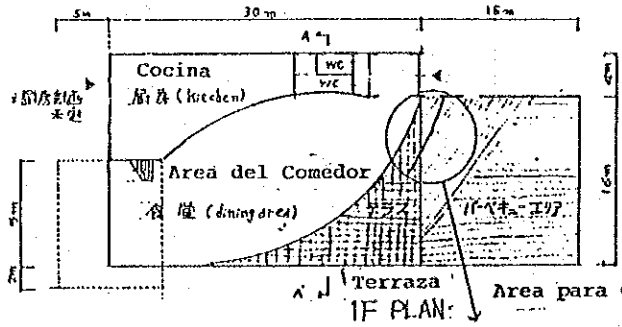
COMEDOR

Study of the CAD in Mexico

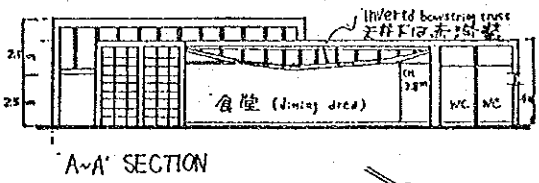
007- B-2

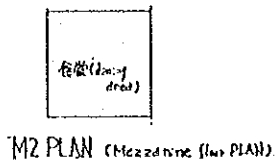
DINING

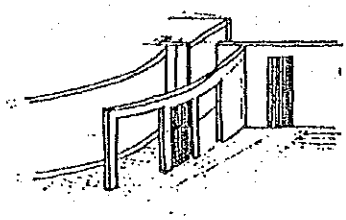
Los detalles de la cocina
no definidos

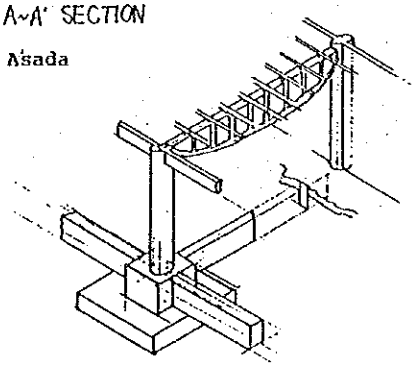


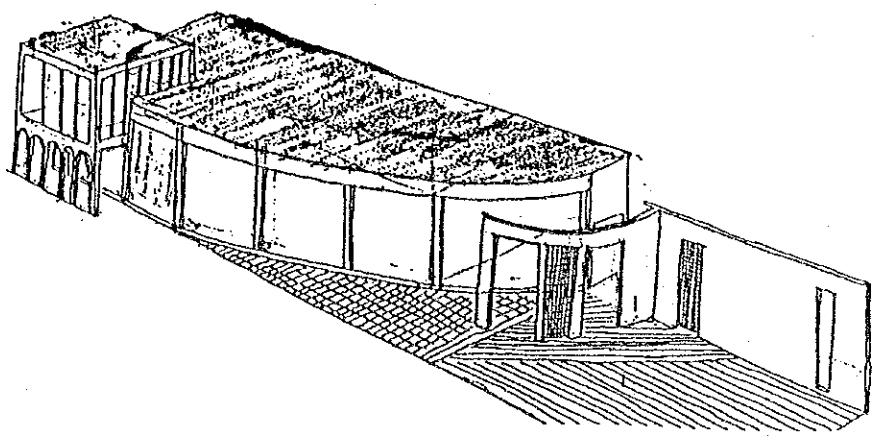
aplicación de la pintura roja
en el interior del techo









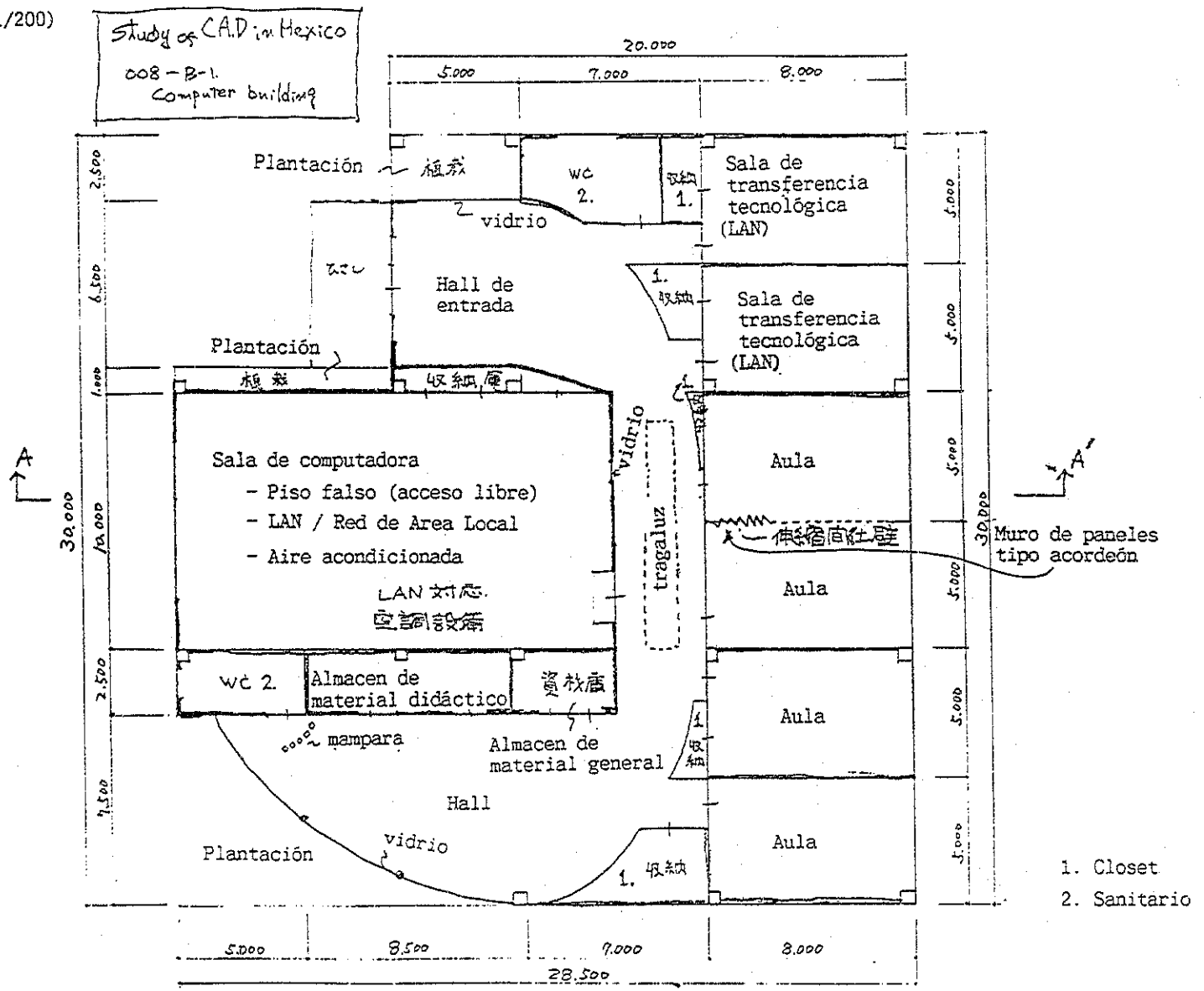


4－4－8　コンピュータ棟概要

1. コンピュータ棟はコンピュータ室、技術移転室2室、教室4室（うち2室は伸縮間仕切壁で区切られる）等で構成される。
2. コンピュータ室は床はフリーアクセスとする。
3. コンピュータ室、技術移転室の3室はLAN対応とする。
4. 廊下部分に一部天窓を設ける。
5. ホール部分はガラス壁とし、広場が見えるくつろぎの空間とする。
6. 廊下部分は巻貝のようなカーブをもたせ、壁面を有効利用する。
7. 廊下、ホール部分の通気に留意する。
8. 建物周辺部に低草木及びアクセントとして竹を植える。

EDIFICIO DE COMPUTADORA

PLANTA (ESCALA 1/200)



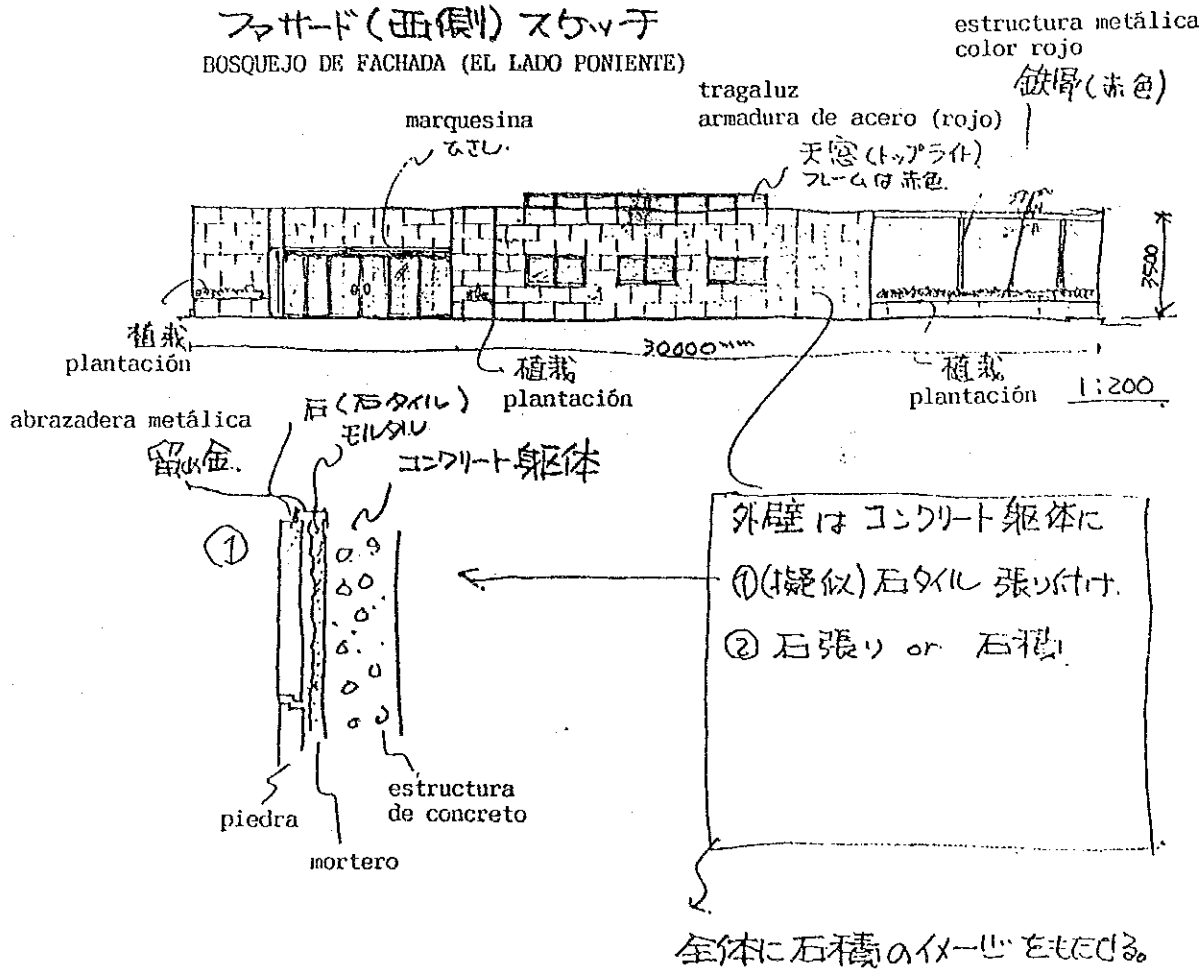
1. Closet
2. Sanitario

ESTUDIO DEL C.A.D. EN MEXICO

-008-B-2

EDIFICIO DE COMPUTADORA

Study of CAD in Mexico
008-B-2.
Computer building



El muro exterior es de la estructura de concreto con;

1. recubrimiento por el panel de la imitación de piedras,
2. recubrimiento por las piedras o apilamiento de las mismas.

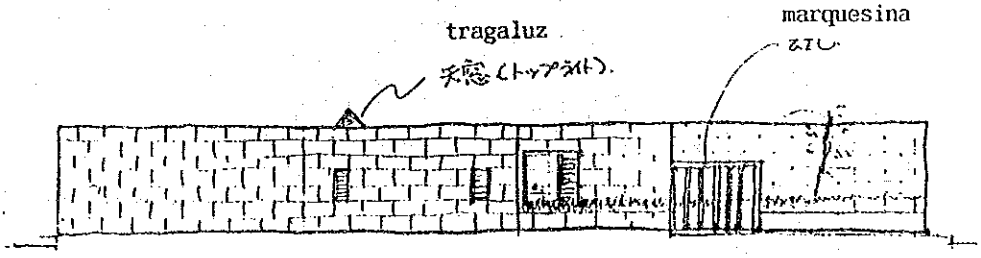
La apariencia del muro es de las piedras apiladas.

ESTUDIO DEL C.A.D. EN MEXICO
008-B-3
EDIFICIO DE COMPUTADORA

Study of CAD in Mexico
008-B-3
Computer building

北側 スケッチ

BOSQUEJO DEL LADO NORTE



ESTUDIO DEL C.A.D. EN MEXICO
008-B-4
EDIFICIO DE COMPUTADORA

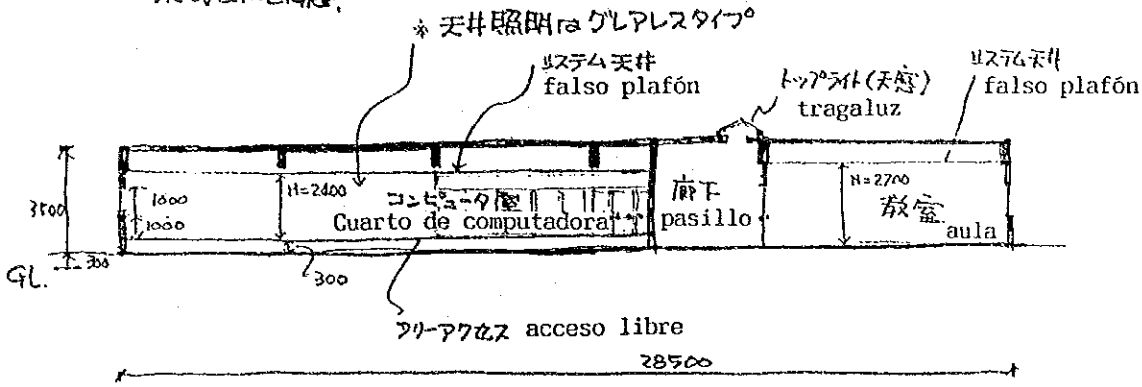
Study of CAD in Mexico
008-B-4.
Computer building

A～A' 断面 1:200

SECCION "A" - "A'" (ESCALA 1/200)

Considerar un pendiente para flujo
水勾配に配慮。

* Iluminación del plafón deberá ser del tipo no deslumbrante.

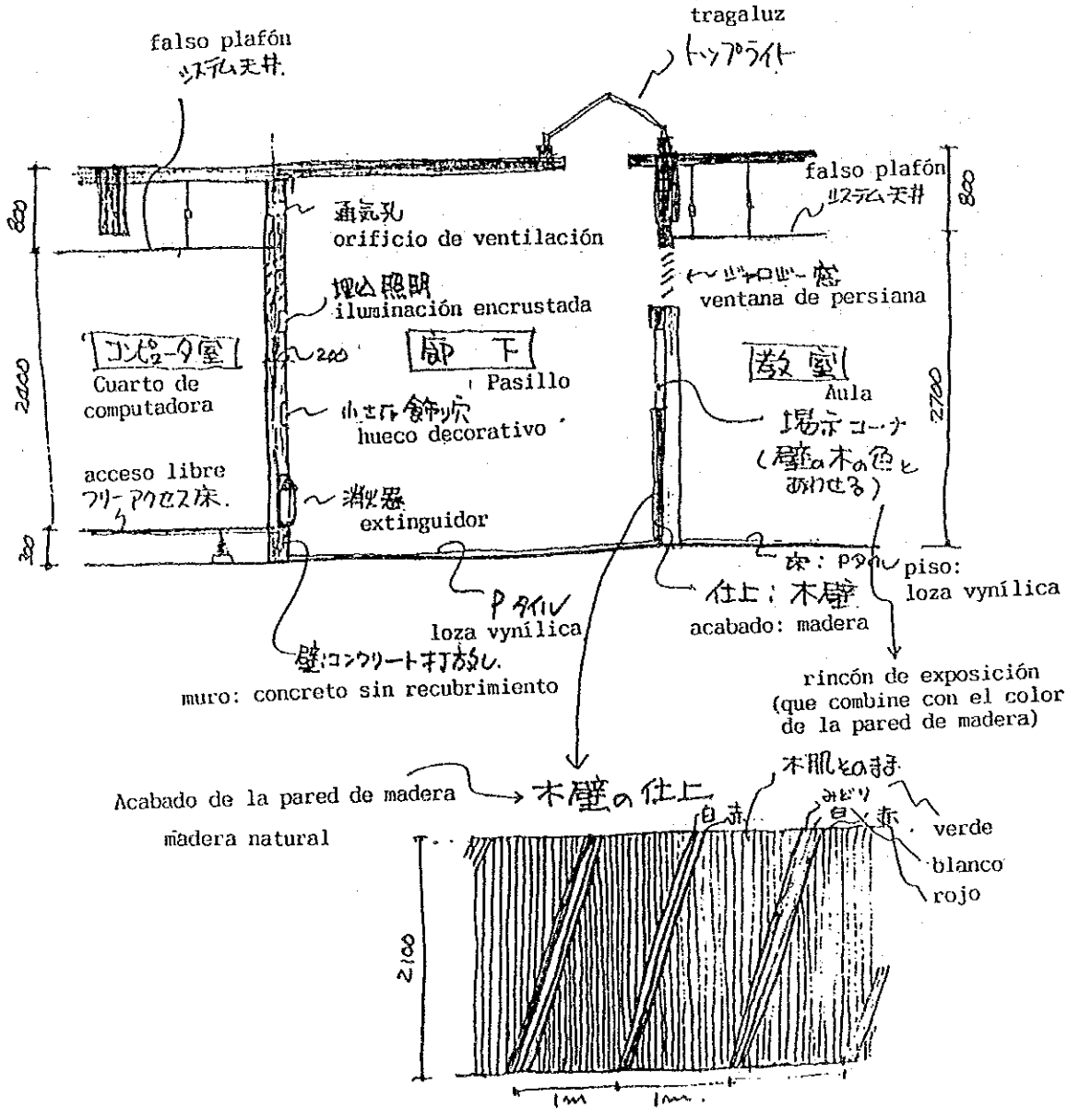


ESTUDIO DEL C.A.D. EN MEXICO
008-B-5
EDIFICIO DE COMPUTADORA

Study of CAD in Mexico
008 - B - 5
Computer building

廊下部分詳細 1:50

DETALLE DEL PASILLO (ESCALA 1/50)



4－4－9　実習棟（機械系）概要

1．外部回廊を有する2階建の教室、技術移転室等の教室棟、廊下及びホール、各実習Labから構成される。教室群の建物と実習Lab群の2つの建物から成り、その2つの建物の間に屋根を架け、廊下をつくり出し1つの建物としている。

2．字形のため構造的にはエキスパンジョンを設けることにより、3つの建築群を結び一体化した建物としている。

3．カリキュラム上の要求から各機能を近接させる必要性が生じ、完結性をもった大きな空間となっている。

4．見学コースとして2階廊下から実習Labが見おろせるようになっている。また、1階部分にも実習Lab側の壁にLabが見えるような開口部を設ける。

5．ホール部分には、作品展示及び学生等のくつろぎの場を設ける。

6．学生更衣室を教室棟に設ける。

7．技術移転室は将来的にはカウンターパートの準備室的機能を果たすため、計画段階からドアを2つ設ける。

8．大型機器搬入のため、当該のLabには大型のシャッターを設ける。

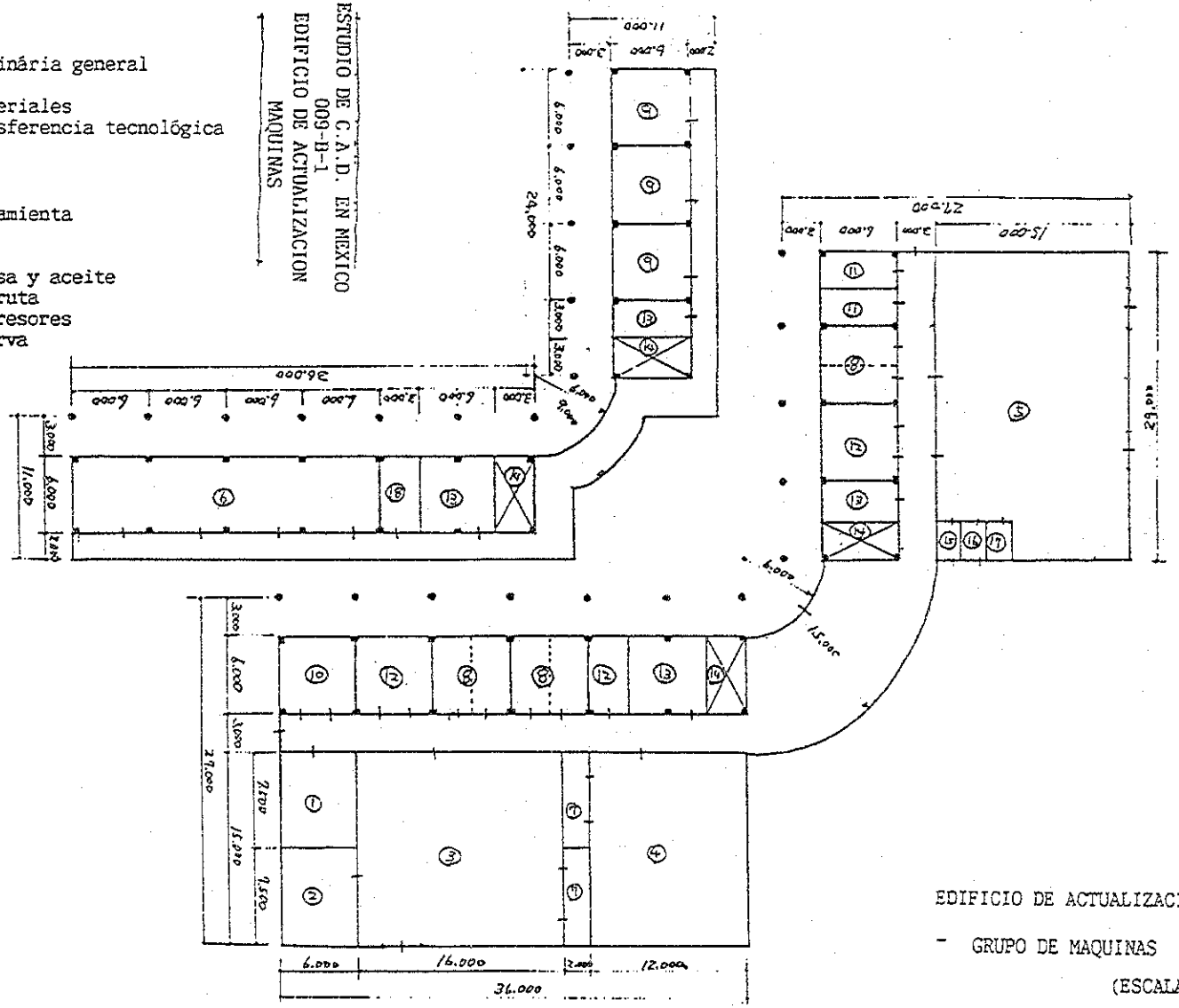
9．電力供給路は、外部からピットで導入され、建物内では、2階廊下の下側吊りラックを経由して、1階廊下内のピットから各Labに分電盤を通って、各機器に供給される。LAN回線も同様とする。

10．各Labともに防塵対策を施す。

11．EDM室はシールドルームとする。

12．CAD／CAM　Labはフリーアクセスとする。

1. Sala de medición
2. EDM
3. Taller de NC
4. CAD/CAM
5. Taller de maquinária general
6. Sala de dibujo
7. Almacen de materiales
8. Cuarto de transferencia tecnológica
9. Aula
10. Sala de junta
11. Vestidor
12. Cuarto de herramienta
13. Sanitario
14. Escalera
15. Almacen de grasa y aceite
16. Depósito de viruta
17. Cuarto de compresores
18. Cuarto de reserva



EDIFICIO DE ACTUALIZACION

- GRUPO DE MAQUINAS -

(ESCALA 1/400)

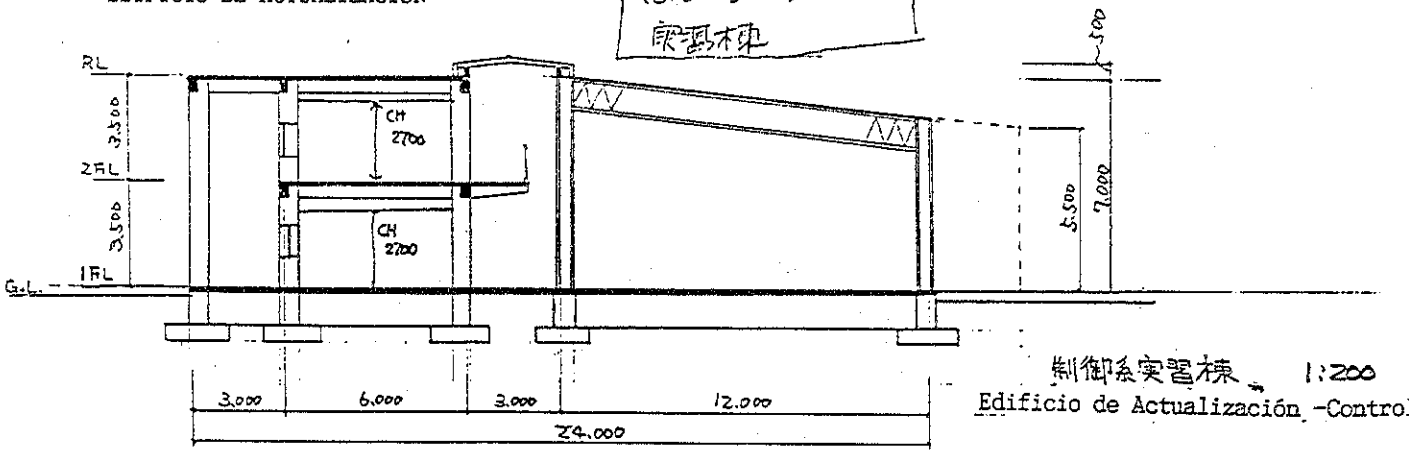
ESTUDIO DE C.A.D. EN MEXICO

009-B-2

(010-B-2)

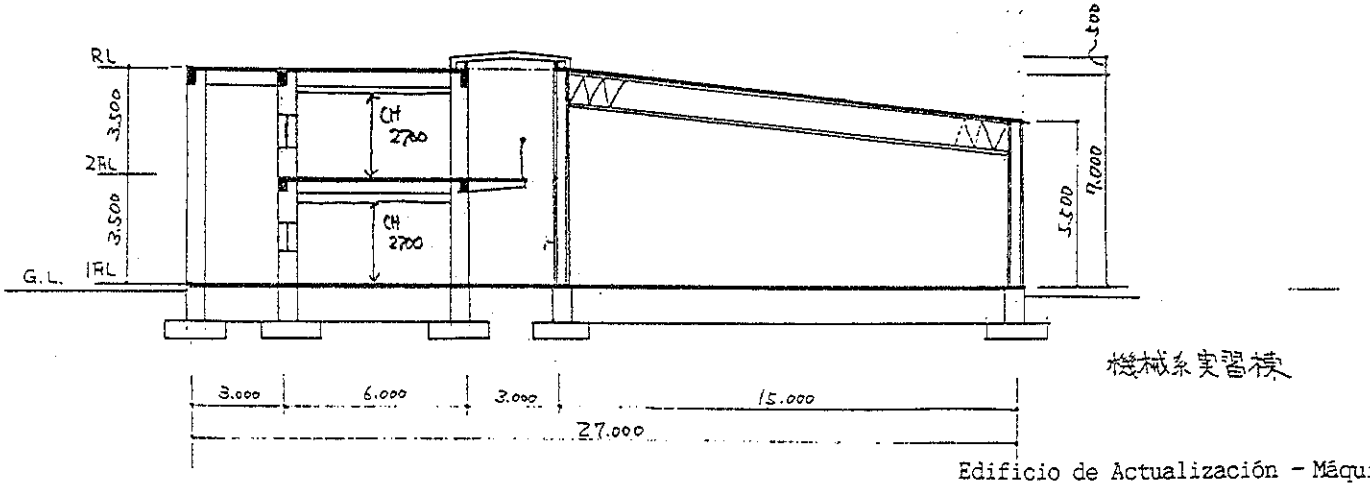
EDIFICIO DE ACTUALIZACION

Study of the CAD in Mexico
009-B-2
(010-B-2)
庶務棟



制御系実習棟 1:200

Edificio de Actualización -Control-



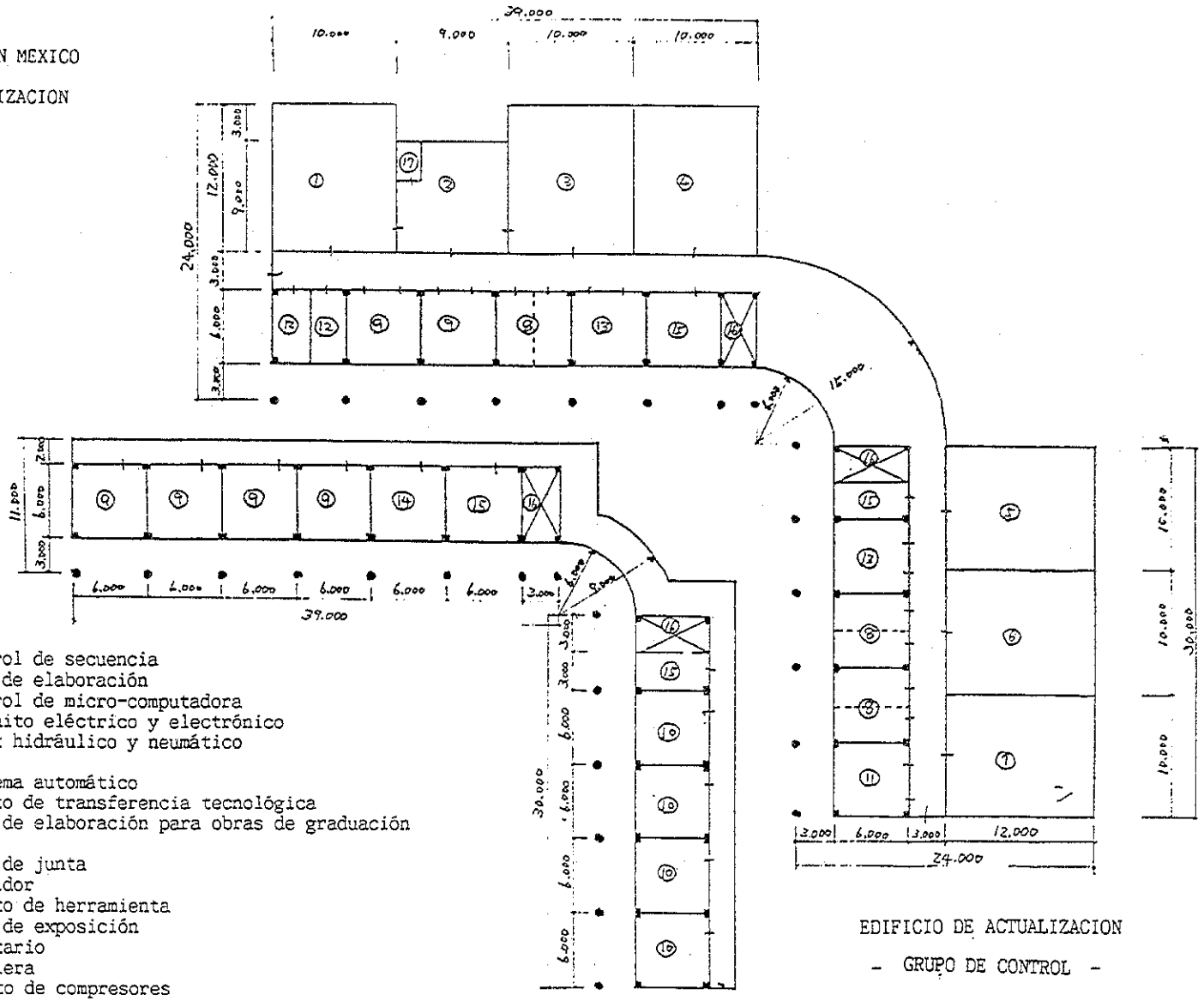
機械系実習棟

Edificio de Actualización - Máquinas -

4－4－10　実習棟（制御系）概要

1．　009－Aの機械系実習棟概要(1)～(10)と同様である。

ESTUDIO DE C.A.D. EN MEXICO
010-B-1
EDIFICIO DE ACTUALIZACION
-CONTROL-



1. Control de secuencia
2. Sala de elaboración
3. Control de micro-computadora
4. Circuito eléctrico y electrónico
5. Robot hidráulico y neumático
6. PLC
7. Sistema automático
8. Cuarto de transferencia tecnológica
9. Sala de elaboración para obras de graduación
10. Aula
11. Sala de junta
12. Vestidor
13. Cuarto de herramienta
14. Sala de exposición
15. Sanitario
16. Escalera
17. Cuarto de compresores

EDIFICIO DE ACTUALIZACION

- GRUPO DE CONTROL -

(ESCALA 1/400)

4－4－11　外構計画概要

1．プロジェクトサイト全体の地盤が軟弱であり、かつ、雨季には多量の雨が予想される地域であるため、排水には十分なキャンパス内外の計画が必要となる。プロジェクトサイトの地域名はトラワック、則ち雨の神である。

2．地盤についてはセナプレの意見を尊重し、CAPFCE独自の調査も加味しながら、その意見に基づいてDGETI及びCAPFCEで協議を行い、対処法をとるものとする。これは外構に限らず、建築全般においても同様とする。

3．プロジェクトサイト内に、幅員4ｍの校内サービス道路を設け、各建物の周辺には小規模な駐車スペースとサービスヤードを配し、人と車の動線を分離する。

4．キャンパス内には駐車場を複数設け、分散駐車を行う。

5．キャンパス内には中空架線は設けない。キャンパス内の歩道に幹線ピットを設けて電力、LAN回線、電話回線等を入れる。

6．外灯及び建物ブラケットについては、夜間の歩行動線及び管理、防犯上のことを考慮して配置する。

7．各Labには、高品質の機器が導入されるため建物内の防塵対策と同様にキャンパス内でも芝生、植栽、防砂的植栽を考慮する。また、景観的にも配慮できるものとする。

8．地盤沈下に対して建物及び歩道は、キャンパス内のGLよりも30～40cm高くすることを検討する。更にキャンパス敷地も周辺レベルに対して高くすることを検討する。

9．キャンパス内のサイン計画については、ロゴ、形状、色等を決めて統一性をとる。

10．正門、塀等については、サイン計画に連動するような現代的なデザインを行うものとする。

11．各建物をつなぐ渡り廊下については、全体の景観をそこなわないようにデザインを行う。実習棟については回廊を有しているが、少なくともこの地の雨季を考慮すれば、必要と考えられる。

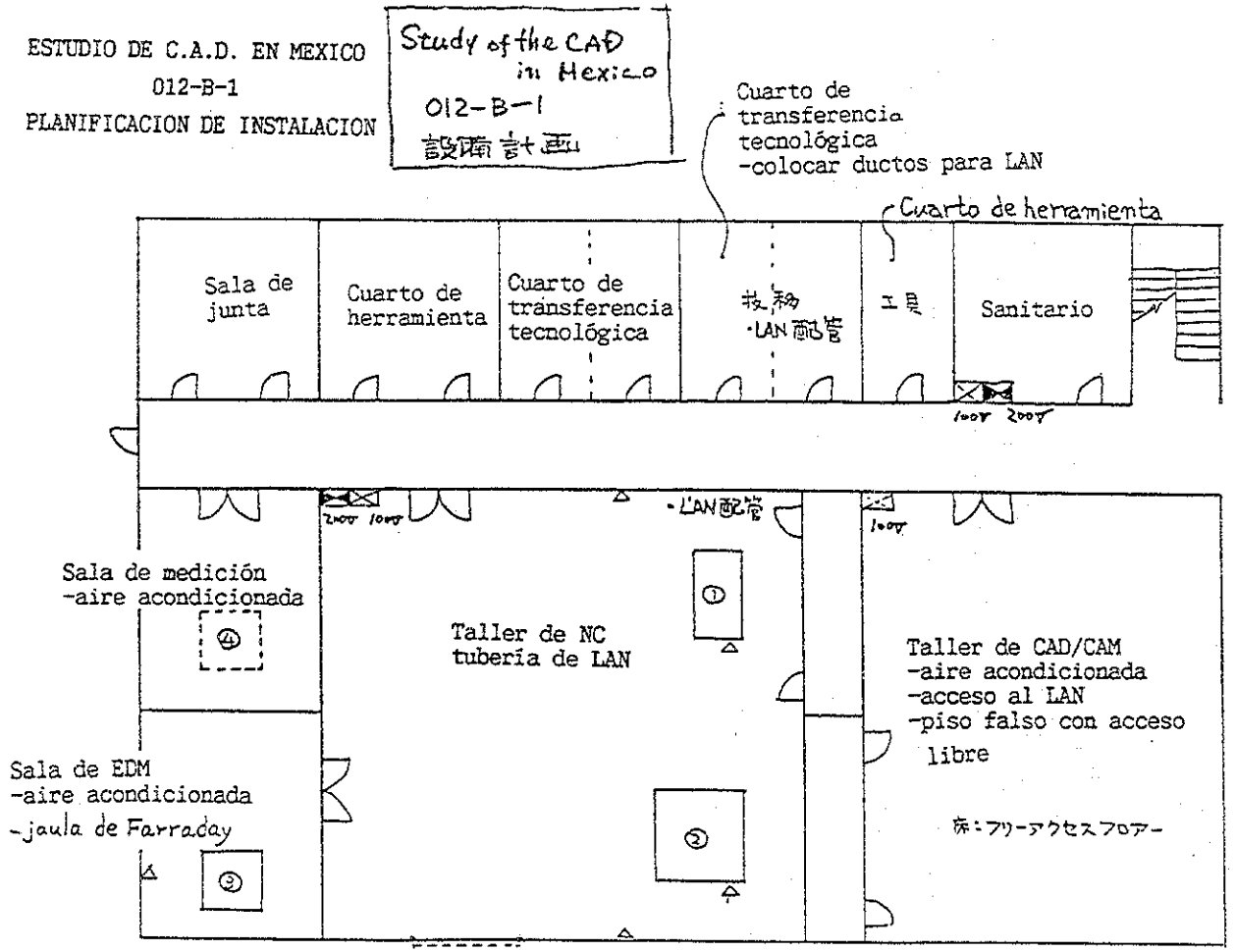
12．高架水槽をランドタワーとして考慮するが、必ずしも中心的な位置に配する必要はなく、また全体の景観に対してインパクトを与えるシンプルな形状とする。

4－4－12　設備計画

1. 建物内での電気配線の幹線は、ピットに設けるか、２階廊下の下を通し分電盤へ分岐する。
2. 重量機器への電気配線は、地盤を考慮して天井から配線する。
3. 100Ｖ電源は、壁コンセントを基本とし、機器を使用する部屋は将来の機器の増加に備えて標準より多く設置する。
4. 空調設備は、室外機を屋上に置き景観の妨げにならないよう配慮する。
5. LAN については、施設内を網羅できるように配管しておく。
6. モデム通信に必要な電話回線を管理棟の他、技術移転室、コンピュータ室等に設置する。
7. 各室において、必要な照度が得られるような照明方法を採用する。
8. 動力電源は、機器を使用する部屋に分電盤を設け、空調設備に対する動力電源も確保する。

ESTUDIO DE C.A.D. EN MEXICO
012-B-1
PLANIFICACION DE INSTALACION

Study of the CAD in Mexico
012-B-1
設備計画



▣ tablero de distribución 200V
▣ tablero de distribución 100V
△ tubería neumática

1) torno CNC (4.2t)
2) centro de maquinaria (6.0t)
3) cortadora de alambre (3.4t)
4) medidor tridimensional (1.5t)
*No está incluido en la esta esta de donación. Será necesario para el futuro.

TALLER DE MAQUINAS P.B.

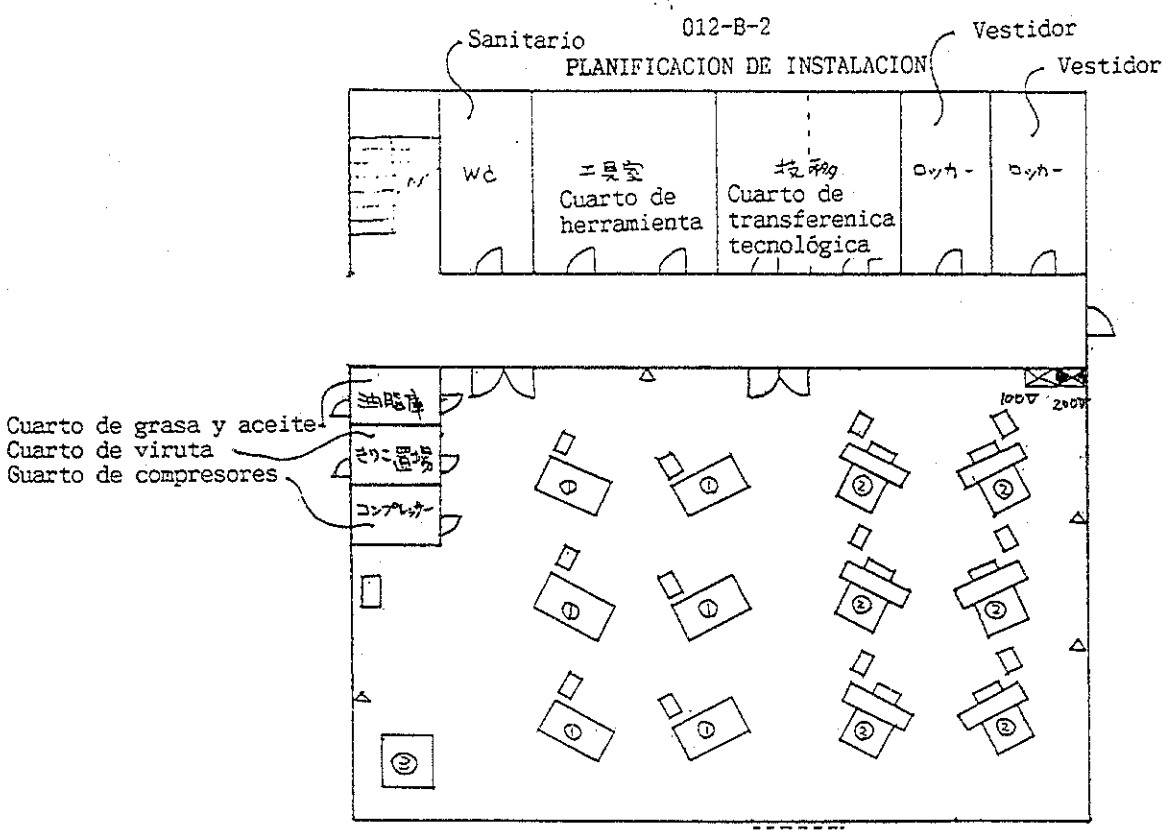
PLANO DE INSTALACION - 1 DE LA MAQUINARIA PESADA

Study of the CAD
012-B-2
設備計画

ESTUDIO DE C.A.D. EN MEXICO

012-B-2

PLANIFICACION DE INSTALACION



a) tablero de distribución 200V
b) tablero de distribución 100V
c) tubería neumática

1) torno ordinario (2.0t)
2) fresadora vertical (2.45t)
3) sierra de cinta (0.6t)

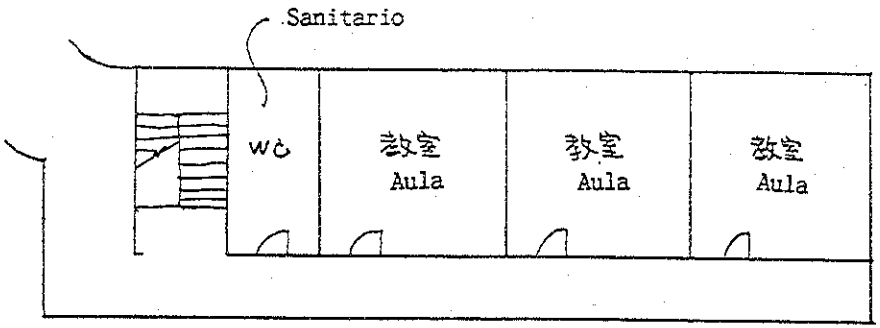
200V 分電盤　① 普通旋盤 (2.0t)
100V 分電盤　② 立てフライス盤 (2.45t)
エアー配管　③ 帯のこ盤 (0.6t)

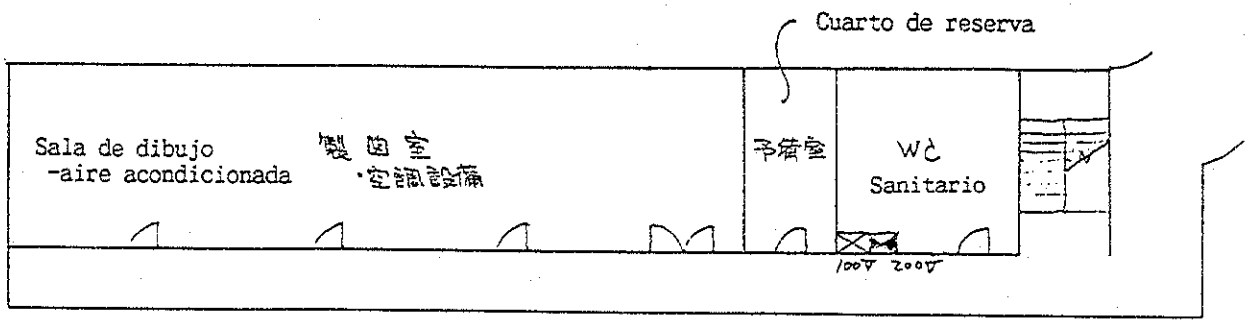
機械系実習場　1階　重量機器・設備図-2

TALLER DE MAQUINAS P.B. PLANO DE INSTALACION-2 DE LA MAQUINARIA PESADA

ESTUDIO DE C.A.D. EN MEXICO
012-B-3
PLANIFICACION DE INSTALACION

Study of the CAD in Mexico
012-B-3.
設備計画1





200V 分電盤
100V 分電盤
tablero de distribución 200V
tablero de distribución 100V

機械系実習場 2階 設備図

TALLER DE MAQUINAS 2DO. PISO
PLANO DE INSTALACION

ESTUDIO DE C.A.D. EN MEXICO

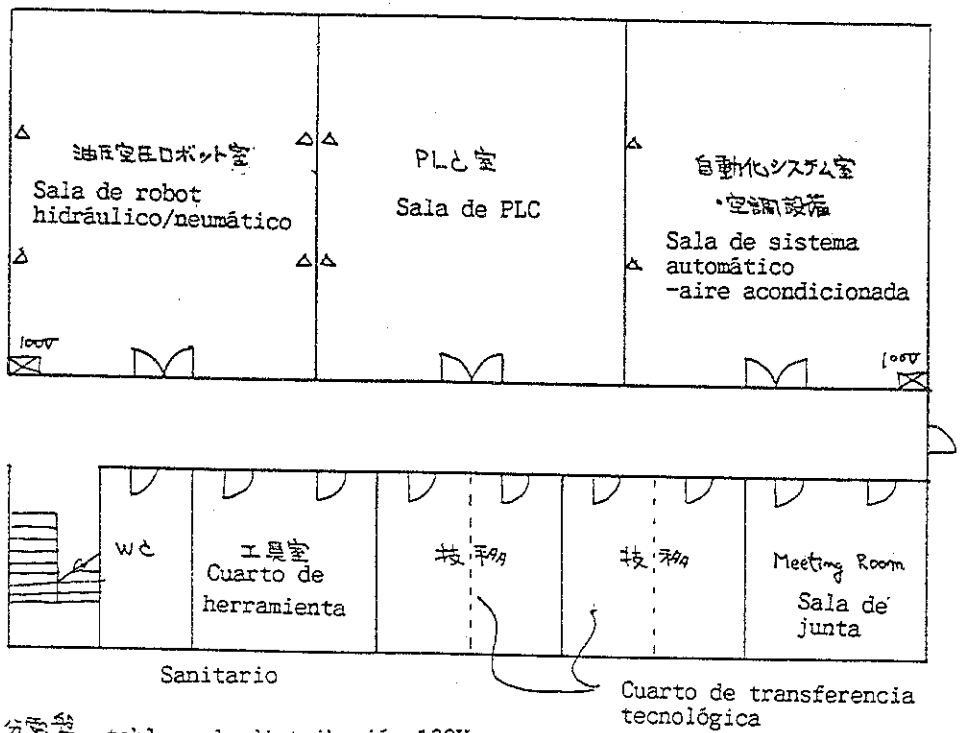
012-B-4

PLANIFICACION DE INSTALACION

Study of the CAD in Mexico

012-B-4

設備計画



100V 分電盤 tablero de distribución 100V

エアー配管 tubería neumática

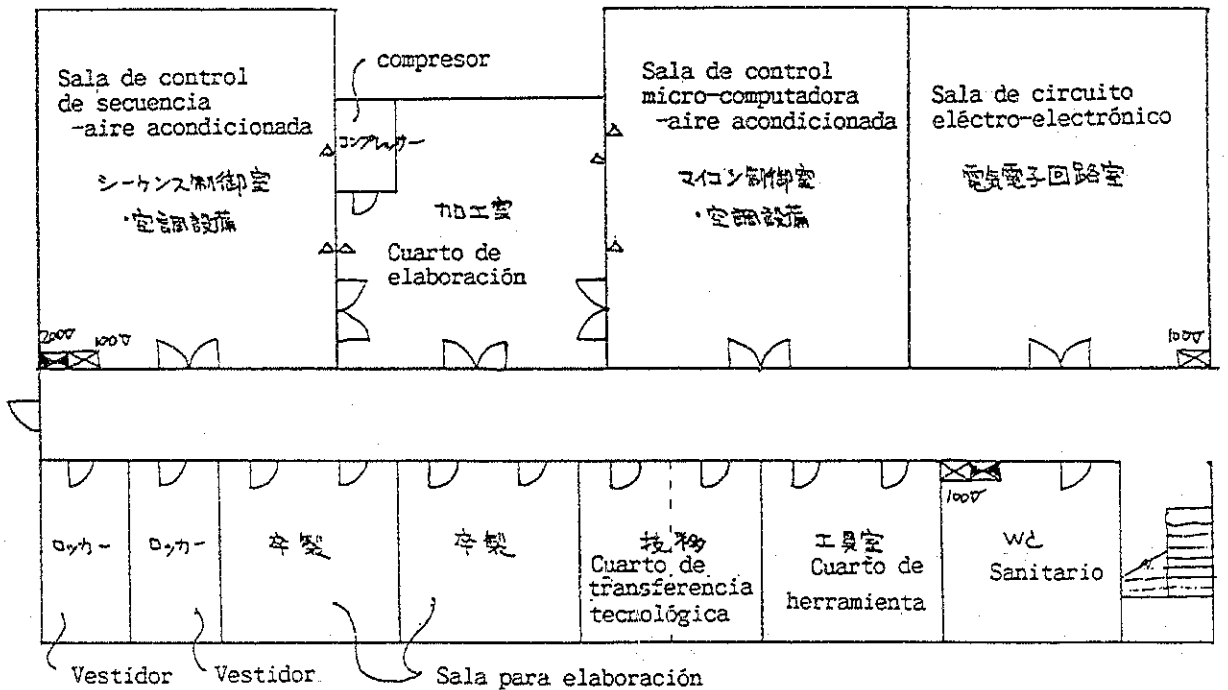
制御系実習場 1階 設備図-1

TALLER DEL CONTROL P.B.

PLANO DE INSTALACION-1

ESTUDIO DE C.A.D. EN MEXICO
012-B-5
PLANIFICACION DE INSTALACION

Study of the CAD in Mexico
012-B-5
設備計画



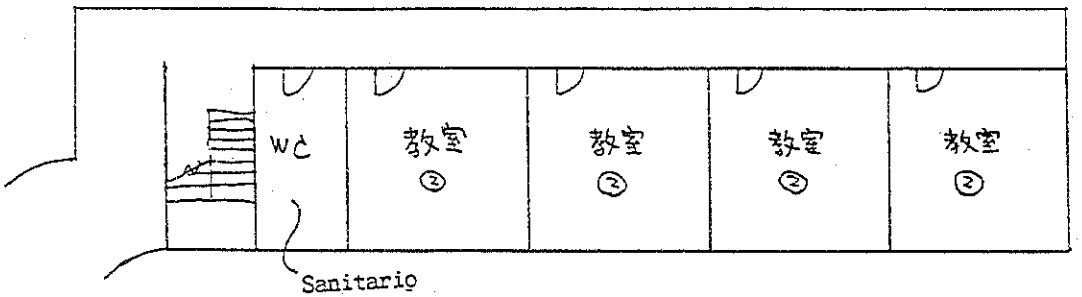
200V分電盤 tablero de distribución 200V
100V分電盤 tablero de distribución 100V
エアー配管 tubería neumática

制御系実習場 1階 設備図-2

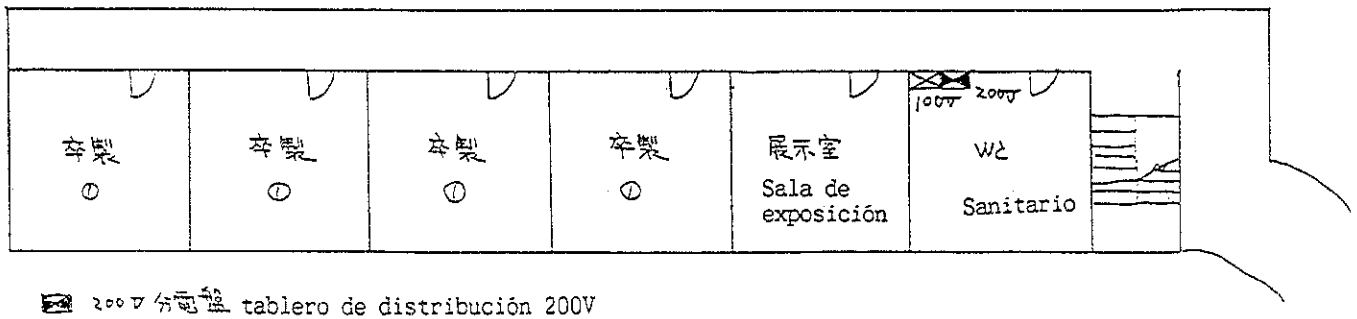
TALLER DEL CONTROL P.B.
PLANO DE INSTALACION-2

ESTUDIO DE C.A.D. EN MEXICO
012-B-6
PLANIFICACION DE INSTALACION

Study of the CAD in Mexico
012-B-6
設備計画



1. Sala para elaboración de obras de graduación
2. Aula



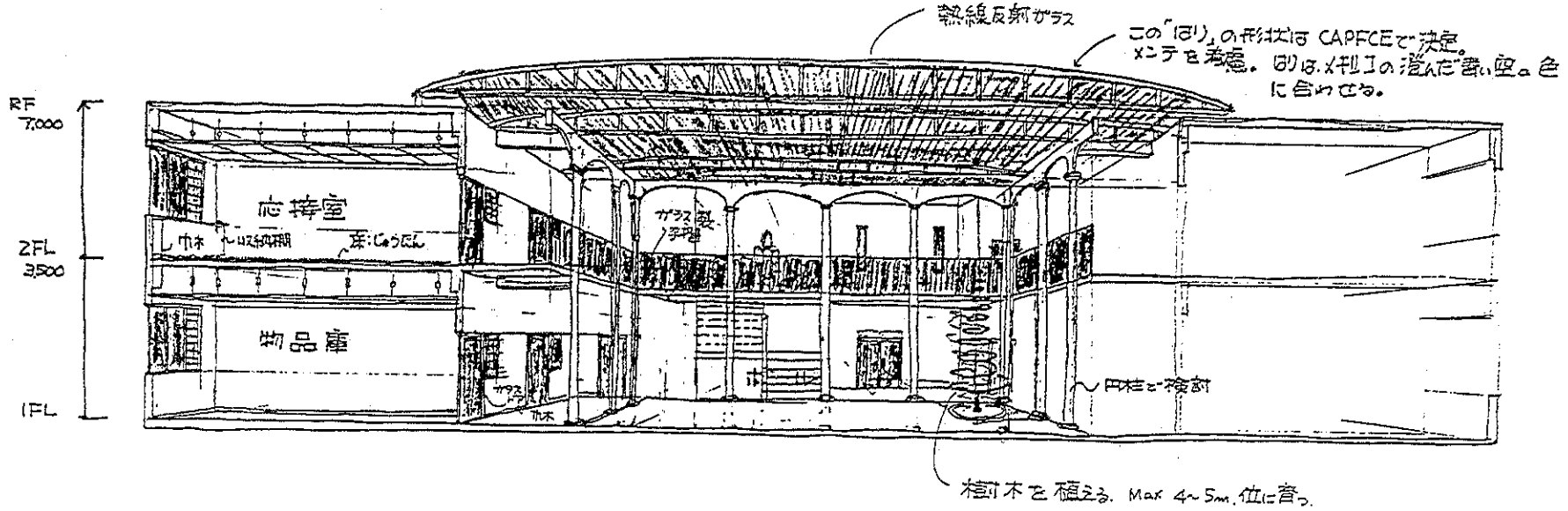
200V 分電盤 tablero de distribución 200V
100V 分電盤 tablero de distribución 100V

制御系実習場 2階 設備図

TALLER DEL CONTROL 2DO. PISO
PLANO DE INSTALACION

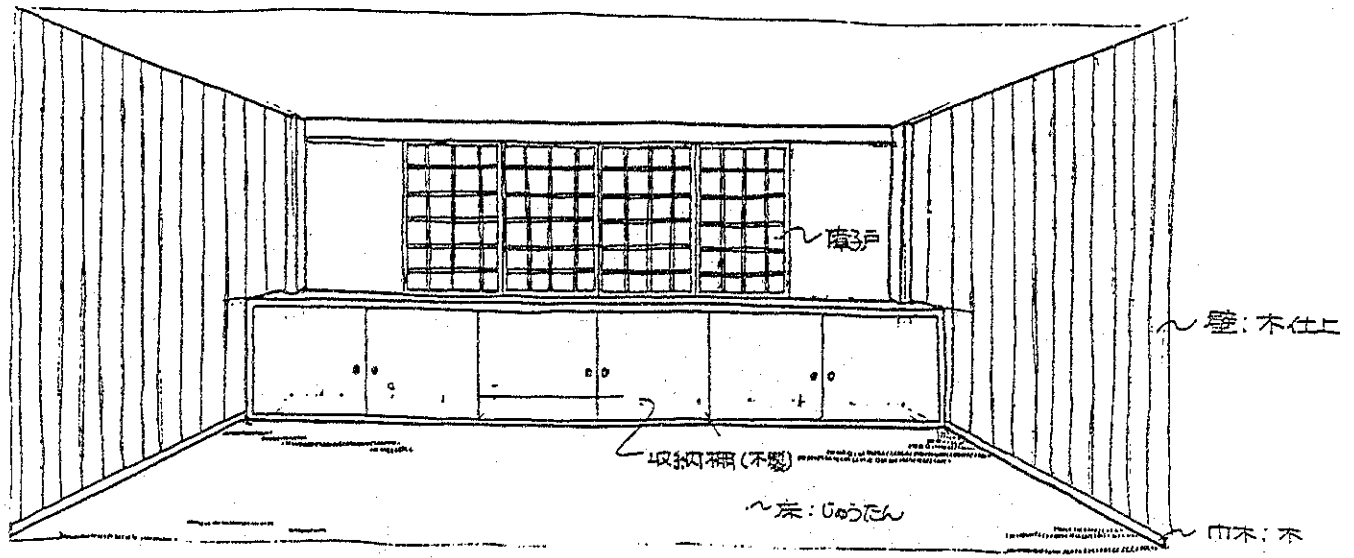
4－4－13　参考図

管理棟断面パース、管理棟2階部屋断面パース、実習棟断面パース、塀のイメージスケッチ。



管理棟断面パース

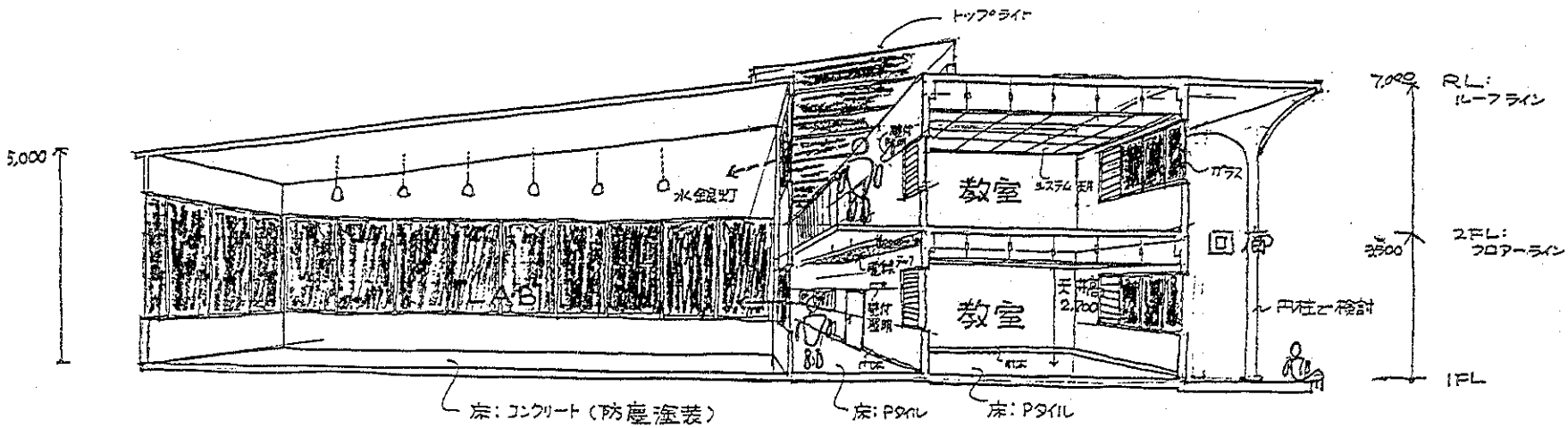
29. Sept. 1993



管理棟／局長室，校長室，応接室
リーダー室，調整員室，日本人専門家室

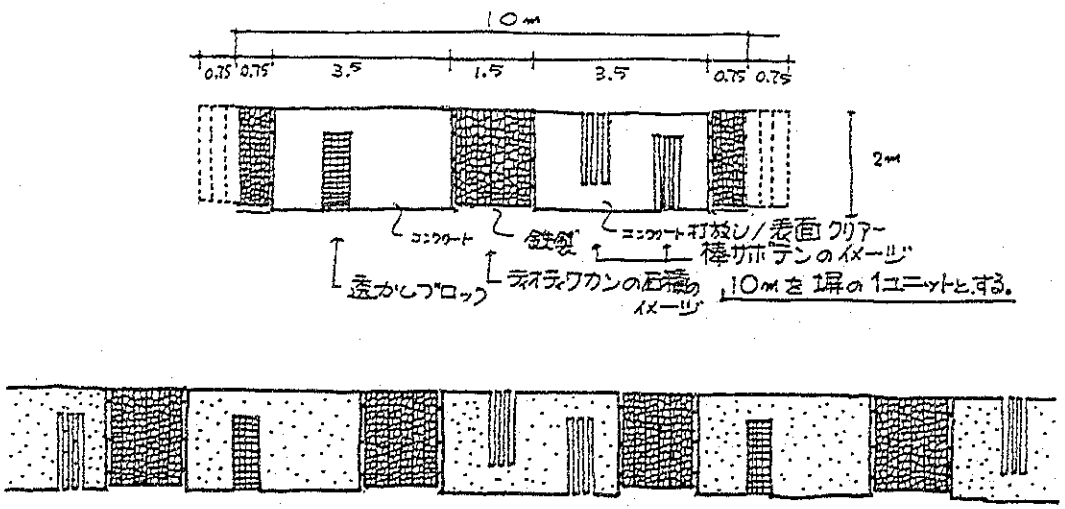
イメージ パース

29. Sept. 1993



実習棟 断面 パース

29. Sept. 1993



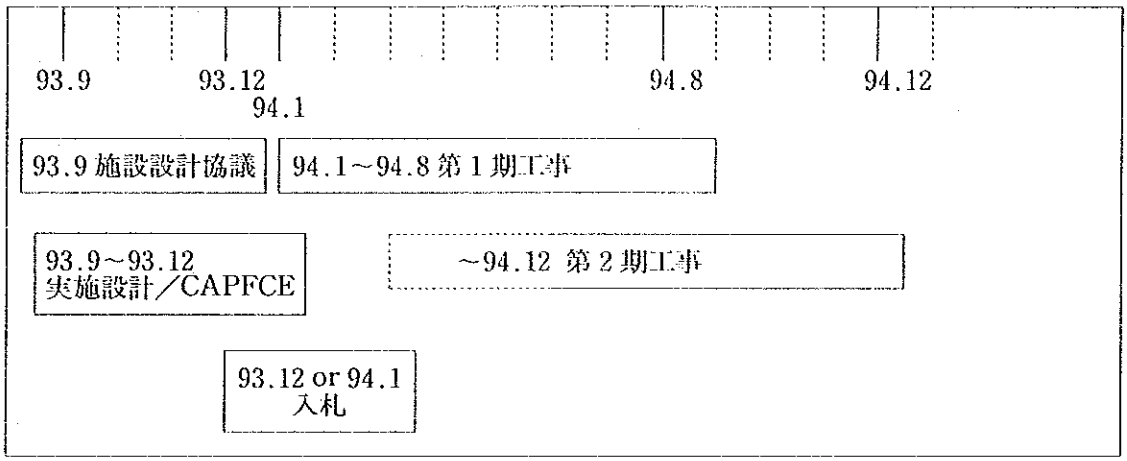
塀：立面 イメージ

29. Sept. 1993

4－5　まとめ

4－5－1　建設計画

DGETI、CAPFCE側の提示した建設計画である。1期工事は1994年8月、2期工事は1994年12月に完了予定である。



第1期工事／管理棟、実習棟2棟、コンピュータ棟

第2期工事／教室棟、講堂、食堂、外構等

4－5－2　セナプレレポート要約

CENAPREDによる地質工学的予備見解

地質工学アドバイザー　Manuel J. Mendoza

9／14(火)メキシコ地震防災センター(CENAPRED)において、室田達郎チームリーダーとManuel J. Mendoza地質工学アドバイザーに施設建設計画概要について説明し、プロジェクトサイトの地盤調査を依頼した。

その結果、地質工学アドバイザーManuel J. Mendoza氏の報告書によると、プロジェクトサイトは、メキシコシティ南東部のはずれに位置し、軟弱な湖の沈殿物からなる地質学的第III地帯に分類されている。

また、プロジェクトサイト隣のCETIS－1校及び3年前に建てられた近くのSEC－54校の調査、1991年12月に行われたCETIS－1校でのボーリング結果及びサイトから2.5km離れた地点での常時微動等のデータから総合的な見解をいただいた。

施設建設計画の各建物が1階～2階建てであり、極端に重い機械類が計画されていないことと、経済性を考慮して、基礎ばりを持つ連続フーチング基礎または箱型基礎の直接基礎が解

決策であると思われる。杭基礎については、地下水の汲み上げによる杭の相互作用も考えられ、必要性もないと思われる。

実習棟については、地盤に接しない床構造が賢明であり、箱型基礎の空洞部分の小部屋に固定荷重や水を入れることにより、不同沈下の修正に有効である。また、集中荷重や偏心荷重をできるだけ排除することが必要である。

厳密な基礎設計に関しては、各建物の位置でのボーリング調査が必要である。

地下水の状態や地盤の動きを知るために、各測定器をあらかじめ取り付けることにより継続的な監視ができ、不同沈下等の予知が可能となるであろう。

4－5－3　まとめ

所定の業務を概ね終えるも、外国の設計業務としては短時間であった。

建築は「生活を入れる器」であるため、その国の気候・風土、文化、建築様式、生活等をある程度理解し、そのプロジェクトの内容及び背景を知ったうえで計画をたてる必要がある。

このメキシコの例をとれば、設計に入る前に、設計を担当する者は事前に2週間程度の建築調査期間が必要であり、その後2～3カ月後に設計を主体とした業務期間が4週間程度必要と考えられる。

更に、関係者の「建築設計」という言葉の定義を明確にすることも大切である。

第1段階として「企画・計画」。

この段階はプロジェクトの性格を理解し、ラフな概念で組立てていく。言葉や数字で抽象的な範疇である。

第2段階として「基本計画又はマスタープラン」。

この段階も第1段階と重複する部分が多いが、イメージとしてのスケッチや図面、スタディモデルで表現がなされ、平面的なとらえかたでなく、立面的なとらえ方を含んだ中でまとめられていく。

第3段階として「基本設計」。建築的な図面等が表現される。

第4段階として「実施設計・本設計」。

詳しく見積り、工事に必要となる図面のレベルである。

今回のセンター規模になると、第1～2段階である程度、準備時間が必要になり、建築主側との打合せが大切である。その打合せの結果、第3段階での図面化に入ってくる。十分時間をかける必要がある。それは、供与機材や長期専門家派遣とは異なった文化交流や建築技術移転としての役割をもっていると考えられる。また、日本人専門家の2～3年にわたる職場であるため、少しでも働きやすい環境を創ることも大切である。もちろん、外国の文化、生活との整合性をとりながら。

メキシコ職業技術教育活性化センター施設計画は DGETI、CAPFCE の多大な理解と中野行政アドヴァイザー及びメキシコ JICA 事務所等のご支援の中でスムーズに設計協議が展開し、提案が合意された。

付属資料

ミニッツ（英文）

THE MINUTES OF UNDERSTANDINGS
BETWEEN THE JAPANESE STUDY TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE UNITED MEXICAN STATES ON THE TECHNICAL COOPERATION FOR THE ACTUALIZATION CENTER FOR TEACHERS OF THE GENERAL DIRECTORATE FOR THE INDUSTRIAL TECHNOLOGICAL EDUCATION PROJECT.

The Japanese Study Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Nobuo Matsubara, visited the United Mexican States from September 6th, 1993 to October 1st, 1993 for the purpose of establishing the common understanding of the Actualization Center for Teachers of the General Directorate for Industrial Technological Education Project (hereinafter referred to as "the Project").

During its stay, the Team has exchanged views and had a series of discussions with the Mexican authorities concerned in respect of the desirable measures to be taken by both Governments for smooth initiation of the Project.

As a result of discussions, the Team and the Mexican authorities concerned agreed to recommend to their respective Governments the matters referred to in the document as attached hereto.

Mexico City, September 29th 1993.

Nobuo Matsubara

MR. NOBUO MATSUBARA
Leader,
Study Team,
Japan International
Cooperation Agency,
JAPAN

MR. RAUL GONZALEZ APAOLAZA
General Director
for the Industrial Technological
Education,
Secretary of Public Education,
The United Mexican States.

THE ATTACHED DOCUMENT

I. Both the Team and the Mexican side exchanged views and a series of discussions to establish the common understanding of the Project, based upon the matters agreed before.
Both sides discussed and deliberated possible methods to implement the Project, and both sides understood as follows;

1. Both sides exchanged views and had a series of negotiations on the formulation of the master plan for successful implementation of the Project, and considering the conditions which were possible to be expected at that time, both sides made a master plan (hereinafter reffered to as "the Master Plan").

2. Japanese side prepared the idea of concepts and basic design of Actualization Center for Teachers of the General Directorate for Industrial Technological Education (hereinafter reffered to as "CAD-DGETI"), and exchanged views with the Mexican side.
The Mexican side agreed to make the detailed design based on the concepts and basic design, and would take necessary measures to construct the buildings and facilities for the Project being on the schedule.

3. Both sides discussed about desireble machinery and equipment necessary for effective and successful implementation of the Project would be shared by both sides for their provision in the spirits of technical cooperation, however, the main and specialized machinery and equipment would be provided by the Government of Japan.
Both sides cooperated to make a list of the machinery and equipment expected to be provided, on its process the Mexican side proposed that the Government of the United Mexican States would take necessary measures to provide some of the machinery and equipment at its own expense.
Both sides understood that the proposal for provision of the machinery and equipment by the Government of the United Mexican States would make more desirable and more benefitable technology transfer.

4. Both sides exchanged views on possible and desireble schedule of implementation and agreed that both sides would have drafted the tentative schedule of implementation until the signing of the Record of Discussions which would be agreed with the Japanese Implementation Survey Team and the Mexican authorities.

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5. PROJECT OUTLINE.

5-1 PROJECT TITLE.

The Actualization Center for Teachers of the General Directorate for Industrial Techonological Education Project.

5-2 DURATION OF COOPERATION.

The duration of the Project will be five(5) years commencing from the date to be agreed between Japanese Implementation Survey Team and the Mexican authorities concerned.

5-3 AIMS OF THE CAD-DGETI.

(1). Function of the CAD-DGET

1) Actualization of the teachers of schools of the General Directorate for the Industrial Technological Education (hereinafter reffered to as "DGETI").
2) Fruit of creative works in the CAD-DGETI is utilized at DGETI schools nation wide.

(2). Activities.

1) Actualization courses are provided for the teachers of DGETI schools.
2) Those who completed the courses return in major to model schools placed in each state, which DGETI provides with modernized equipment with priorities and actualizes industrial technological education there.
3) The CAD-DGETI posesses the capabilities to develop curricula, textbooks and teaching materials which upon necessity are disseminated or informed through DGETI to promote the actualization of the industrial techonological education in Mexico.

II THE MASTER PLAN.

Both sides exchanged views and concepts of the Project, and understood the Master Plan for implementing the Project was drafted as follows;

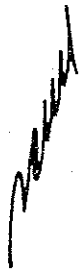
1. PURPOSE OF THE PROJECT.
   The purpose of the Project is to actualize the technical education in Mexico by introducing a mechatronics course in the CAD-DGETI for teachers to meet with the industrial demand, and to bring about a basis of industrial progress by industrialization in Mexico.

2. FRAME WORK OF TECHNICAL COOPERATION.

   2-1 The target of technology transfer.
   To enable the Mexican counterparts to administrate and execute the Mechatronics training course which consists of a machine and a control technics.

   2-2 The contents of technology transfer.
   The Japanese experts transfer the technical know-how to Mexican counterparts on the following items ;

   (1). Developing syllabi and curricula.
   (2). Developing teaching materials.
   (3). Operation and maintenance of equipment.
   (4). Applying teaching methods.
   (5). Class operation.
   (6). Class evaluation.
   (7). Preparation for classes.
   (8). Other necessary matters.



2-3 Summary of the training course.

(1) Establishing a mechatronics training course which machine group and control group are unified.

1) Common subjects.
Pedagogy and final project.
2) Specialized subjects.
a. Machine group.
b. Control group.

(2)Requirements.
The requirements of attendants for the training course are as follows ;

1) Having the teachers's status of DGETI of the Secretary of Public Education.

2) Possessing the degree of graduation from the engineering department of university, or having an equivalent ability recognized by the authority.

3) Having more than three(3) years of teaching experience at DGETI schools, however the maximum of one(1) year of these three (3) years of experince can be replaced by working experience in the relevant fields for more than two(2) years.

4) Having the technical ability of achieving the followings;

a. Machine group.

Lathe machine	- Inlaid-fit cutting, Screw thread cutting, Tapering.
Milling machine-	- Inlaid-fit cutting, Hexagon block cutting, Sloped block cutting.
Drawing	--The third angle projection drawing.

b. Control group.
Electricity/Electronics
--Right use of multi-meter and oscilloscope.
Control --Sequence control.
Micro computer -- Machine code (8 bits assembly language).

(3). Training targets of each group.
Traing targets of each group to be achieved at the graduation of attendants.

1) Machine group.

To be capable of comprehensive understanding in practicing machining and designing technologies over the designing and production works of mechatronics, integrated with control engineering.

2) Control group.

To be capable of comprehensive understanding in practicing electronics and control technologies over the designing and production works of mechatronics, integrated with mechanical engineering.

3) Pedagogy (Common to both groups).

To be capable of comprehensive understanding in instructing
students and developing teaching materials and curricula.

(4). Duration of the training and the number of attendants.
The duration is one(1) year (including school holidays approved by the authority),and the enrollment is given twice a year.

1)Machine group --- 12 attendants on each enrollment.

2)Control group --- 12 attendants on each enrollment.

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3) Pedagogy.

a. The attendants become who has a capability of understanding and executing of pedagogical teaching method, curriculum making, etc.

b. The attendants become who has a capability of making a teaching material and its administration.

c. The attendants become who has a capability of instructing a computer (software).
The details of subjects which mentioned above are given in Annex II.

3. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN.

Measures will be considered within the scope and limitations of theJapanese policy and regulations on technical cooperations and finance.

3-1 DISPATCHING OF JAPANESE EXPERTS.

(1). Long term experts

1) Chief advisor		-1
2) Coordinator		-1
3) Experts in the field of mechatronics		-5
Machine technology	(2)	
Control technology	(2)	
Pedagogy	(1)	

(2) Short term experts.

Short term experts will be dispatched in accordance with the necessity in academic and operation of the Project for the smooth implementation. The possible fields are as follows;

1) Machine group.
2) Control group.
3) Pedagogy.
4) Others.

3-2 Counterpart training in Japan.

The possible field of counterpart training in Japan are as follows, and Japanese government will receive three(3) or four(4) counterparts training per year by annual schedule to transfer the technology.

(1) Machine group.
(2) Control group.
(3) Pedagogy.
(4) Others.

3-3 Provision of machinery and equipment.

The main machinery and equipment required for achieving the target of technology transfer are as follows and it will be provided the Government of Japan

(1). Machine group.

1) Ordinary lathe.
2) Vertical milling machine.
3) CNC lathe.
4) Machining center.
5) Wire electrical discharging machine(WEDM).
6) CAD/CAM.
7) Others.

(2). Control group.

1) Oscilloscope.
2) Single board type micro-computer.
3) Hydraulic/Pneumatic machine.
4) Sequential equipment.
5) Objective load.
6) Electric/electronic measuring instruments.
7) Others.

(3). Common.

1) Personal computers and software.
2) Others.
The list is given in Annex III.

4. MESURES TAKEN BY THE GOVERNMENT OF THE UNITED MEXICAN STATES.

Measures will be considered within the scope and limitations of the Mexican policy and regulations through the DGETI.

4-1 Counterparts and administative personnels.

The Mexican authorities will take necessary measures to secure necessary services of Mexican counterparts and administartive personnels at its own expense.
Their responsibilities are as follows;

(1). Machine group (including head of the group) 7 counterparts.

Head.
M1 Safety and hygiene, Production control.
M2 General machine tool, Measurement.
M3 CNC machine tool.
M4 Machine drawing, Machinery design, Technical illustration.
M5 CAD/CAM.
M6 Final projects.

(2). Control group (including head of the group) 7 counterparts.

Head.
C1 Electrics, Relay sequence.
C2 Computer control, Robot.
C3 Electronics, Power electronics.
C4 Computer engineering, Information processing.
C5 Mechatronics, System design.
C6 Final projects.

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(3). Pedagogy group (including head of the field) 4 counterparts.

Head.
P1 Pedagogy training(Teaching method, Curricula developing,Class Administration).
P2 Computer (Word processor, Data base, Graphic processing).
P3 Teaching material development (For the CAD-DGETI).

(4). Administrative personnels.

Sufficient personnel is allocated to support the Project and to function of the CAD-DGETI.

(5). Division of duties and Job rotation.

The duties of each instructor shall be rotated among the respective technical group to grasp the flow of training in the group and to comprehend the specialized subjects.
Job rotation shall be executed in principle within the field of the respective technical group (Machine & Control) and between the pedagogy group and the technical group.

(6). Employment of counterparts and the standards of employment.

The requirements of counterparts for technology transfer are as follows:
1)Having the teacher's status of DGETI of the Secretary of Public Education.

2)Possessing the degree of postgraduation from the engineering department of university , or the degree of graduation and having an equivalent ability recognized by the authority.

3)Having more than five(5) years of teaching experience at DGETI schools in principle.

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4-2. Land, buildings and facilities of the Project.

To provide the land, building, facilities necessary to the Project.

(1)Location of the site.

Delegation Tlauhuac, Mexico D.F. Rough maps to the site is given in Annex IV.

(2)Buildings and facilities of the Project.

1) Concept of buildings and facillities.
CAD-DGETI has a concept of a.Total designing considering harmonized space and an atmosphere of confort.

b.Simbol of the technical cooperation between Mexico and Japan,

c.The place where teachers could be proud of, and

d.The highest place of Mechatronics training meeting with technological innovation

2) Total design.
Total design is given in Annex V.

4-3. Machinery and equipment.

The machinery, equipment and tools list purchased by the Mexican authorities is given in Annex VI.

4-4. Running cost.

All running expenses necessary for implementation of the Project.

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5. ADMINISTRATION OF THE PROJECT.

(1) The General Director of the DGETI, Secretary of Public Education,will assume overall responsibility for the implementation of the Project.

(2)The Director of CAD-DGETI will assume responsibility for technical and administrative matters in implementing the Project at the site.

(3) The Japanese Chief Advisor will provide necessary recommendation and advice to the General Director of the DGETI and the Director of CAD-DGETI so that can meet their responsibility as reffered above.

(4.) A Project Joint Committee will be established with the function and compositiion as reffered in next for the effective and successfull implementaion of the Project.

6. FUNCTIONS AND COMPOSITION OF THE COMMITTEE.

The Project Joint Committee will meet at least once a year and in accordance with the necessity for the implementation.

6-1 Functions.

(1)To discuss the annual work plan of the Project in line with the Tentative Schedule of Implementation under the policy of Record of Discussions.

(2)To review the overall progress of the Project and the achievement of the annual work plan.

(3)To exchange views on measure issues in connection with the Project.

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6-2 Composition.

(1)Chairperson.
General Director of the DGETI, Secretary of Public Education.

(2)Mexican side.

1) General Director of the DGETI.
2) Directors of the DGETI.
3) Director of the CAD-DGETI.
4) Heads of divisions in CAD-DGETI.

(3)Japanese side.

1) Chief Advisor.
2) Coordinator.
3) Experts.
4) Resident Representative, JICA Mexico Office.
5) Personnel concerned with JICA Headquarters, if necessary.

NOTE: Officials of the Embassy of Japan will be invited to the Joint Committee as observers.

7. PROJECT ORGANIZATION CHART.

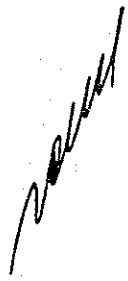
A Project organization chart is given in Annex VII.

III.OTHERS.

1. The Japanese side explained to the Mexican side that the implementation of the Project should be finally formalized by the Record of Discussions which would be agreed with the Japanese Implementation Survey Team and Mexican authorities.

2. Both sides agreed to consult with the authorities concerned on preparation for the implementation of the Project based on the Master plan before dispatching the Japanese Implementation Survey Team.

3. The Mexican side requested the Japanese side to dispatch a Japanese Expert who would advise on the construction of buildings and facilities of the Project during its construction. And Japanese side responded to inform the authorities concerned of that request.



MACHINE GROUP SUBJECTS

Subject	Hours	Subject	Hours
* **BASIC THEORY**		* **BASIC PRACTICE**	
Drawing	18	Machining	30
Measurement	18	Measuring	18
Production Engineering	18	Machine Drawing	18
Occupational Safety and Health	18	Occupational Safety and Health	18
***SPECIALIZED THEORY**		***SPECIALIZED PRACTICE**	
Machine Design and Drawing	18	Machine Design and Drawing	30
Technical Illustration	18	Technical Illustration	18
Numerical Control	18	Numerical Control Programming	132
Outline of CAD/CAM	18	Numerical Control Machining	72
		CAD	102
		CAM	180
		Occupational Safety and Health	18
		Assignment/Graduation Project	180

TOTAL	960

ANNEX I-2

CONTROL GROUP SUBJECTS

Subject	Hours	Subject	Hours
*** BASIC THEORY**		*** BASIC PRACTICE**	
Electrical Engineering	18	Electrical Engineering	18
Electronic Engineering	18	Electronic Engineering	36
Control Engineering	18	Basic Sequence Control	72
Computer Engineering	18	Computer Engineering	54
Production Engineering	18	Machining	18
Occupational Safety and Health	18	Occupational Safety and Health	18
***SPECIALIZED THEORY**		***SPECIALIZED PRACTICE**	
Control Equipment	36	Sequence Control	36
Power Electronics Engineering	18	Power Electronics	18
Computer Control	18	Computer Control	72
Mechatronics Engineering	36	Mechatronics	36
Robot Engineering	18	System Design	36
Automation System Design	36	Automation Systems	78
		Occupational Safety and Health	18
		Assignment/Graduation Project	180

Total	960

ANNEX I-3

COMMON GROUP SUBJECTS

Subject	Hours	Subject	Hours
*** BASIC THEORY**		*** BASIC PRACTICE**	
Pedagogy	24	Pedagogy	36
***SPECIALIZED THEORY**		***SPECIALIZED PRACTICE**	
Information Processing	18	Information Processing	42

Total	**120**

MACHINE GROUP SUBJECTS

Basic Theory

Subject	Description
Drawing (18)	Basic Drawing, drawing expressions, dimensional marks, tolerances and assembly, materials code.
Measurement (18)	Tolerance, length and angle measurement, profile measurement, finishing.
Production Engineering (18)	Processing control, job analysis, material management, quality control, equipment management.
Occupational Safety and Health (18)	Principles of occupational safety, safety management, hygienic control, health control, environment control.

Basic Practice

Subject	Description
Machining (30)	Measurement, hand finishing, drilling, milling and lathe cutting.
Measuring (18)	Tolerance, length and angle measurement, profile measurement, finishing.
Machine Drawing (18)	Basic drawing, machine elements drawing.
Occupational Safety and Health (18)	Principles of occupational safety, safety management, hygienic control, health control, environment control.

Specialized Theory

Subject	Description
Machine Design and Drawing (18)	Machine design and drawing process, basic design knowledge, design calculations, products design.
Technical Illustration (18)	Outline of technical illustration, basic isometric drawing, machine elements drawing.
Numerical Control (18)	Outline of numerical control, numerical control devices, position sensor, numerical control programming.
Outline of CAD / CAM (18)	Outline of CAD / CAM, numerical control data processing.

Specialized Practice

Subject	Description
Machine Design and Drawing (30)	Machine design and drawing process, design concept, design calculations, products design.
Technical Illustration (18)	Basic isometric drawing, machine elements drawing.
Numerical Control Programming (132)	Outline of numerical control, numerical control devices, position sensor, numerical control programming.
Numerical Control Machining (72)	Numerical control devices, numerical control lathe, machining center, wire electric discharge machining.
CAD (102)	Outline of CAD, basic operation of CAD, drawing processing, safety measures in monitor working.
CAM (180)	Outline of CAM, basic operation of CAM, efficient use of numerical control data, direct numerical control.
Occupational Safety and Health (18)	Principles of occupational safety, safety management, hygienic control, health control, environment control.
Assignment / Graduation Project (180)	Machine design and drawing, CAD / CAM, numerical control machining practices.

ANNEX II-4

CONTROL GROUP SUBJECTS

Basic Theory

Subject	Description
Electrical Engineering (18)	Direct current circuit, electrical resistance characteristics, magnetism and magnetic field, electric current and magnetic field, alternating current circuit.
Electronic Engineering (18)	Electron characteristics, electronic emission and motion, semiconductor characteristics, integrated circuit.
Control Engineering (18)	Control characteristics, transference function, feedback control, digital control.
Computer Engineering (18)	Introduction to computer system, commands, programming, computer application.
Production Engineering (18)	Outline of production engineering, processing control, job analysis, material management, quality control, equipment management.
Occupational Safety and Health (18)	Principles of occupational safety, safety management, hygienic control, health control, environment control.

Basic Practice

Subject	Description
Electrical Engineering (18)	Direct current circuit, alternating current circuit, transient effect, measurement instruments application, current measurement.
Electronic Engineering (36)	Semiconductor characteristics measurement, electronic devices characteristics measurement, sensors testing.
Basic Sequence Control (72)	Basic control circuit, non-contact sequence control, PLC, hydraulic and pneumatic sequence control circuit.
Computer Engineering (54)	Programming, several input / output controls, safety measures in monitor working.
Machining (18)	Measurement, hand finishing, drilling, safety devices and protectors.
Occupational Safety and Health (18)	Principles of occupational safety, safety management, hygienic control, health control, environment control.

Specialized Theory

Subject	Description
Control Equipment (36)	Electromagnetic circuit, rotating machines, types of motor, position control, speed control.
Power Electronics Engineering (18)	Power electronics devices, rectification circuit, phase control, converter, inverter, electric power conversion.
Computer Control (18)	Computer system, computer control, computer control system.
Mechatronics Engineering (36)	Outline of mechatronics, components of mechatronics, industrial robot, factory automation.
Robot Engineering (36)	Outline of robotics, classification and composition, mechanism and motion analysis, transmission control, robot application.
Automation System Design (36)	Outline of automation, elements of automation engineering, scheduling, line balance, computer integrated manufacturing.

Specialized Practice

Subject	Description
Sequence Control (36)	Basic control circuit, non-contact sequence control, PLC, hydraulic and pneumatic sequence control circuit.
Power Electronics (18)	Power electronics devices, phase control circuit, converter circuit, inverter circuit, alternating current rectifier circuit.
Computer Control (72)	Computer control practices, peripheral equipment, programming.
Mechatronics (36)	Electronic circuit, interfaces circuit, installation technics, control equipment, measurement control.
System Design (36)	Statistic methods, linear planning, theory of queue up.
Automation Systems. (78)	Robots control, transport system control, inspection system, system control management, system management and maintenance.
Occupational Safety and Health (18)	Principles of occupational safety, safety management, hygienic control, health control, environment control.
Assignment / Graduation Project (180)	Microcomputer control, PLC, interface.

ANNEX II-8

COMMON GROUP SUBJECTS

Basic Theory

Subject	Description
Pedagogy (24)	Pedagogy, teaching materials elaboration methods, training management.

Basic Practice

Subject	Description
Pedagogy (36)	Pedagogy, teaching materials elaboration methods, training management.

Specialized Theory

Subject	Description
Information Processing (18)	Operating system, Data base, word processor, CAD.

Specialized Practice

Subject	Description
Information Processing (42)	Operating system, Data base, word processor, CAD.

ANNEX III-1

MAIN EQUIPMENT

MACHINE GROUP

Lab	Subject (hours)	Main Equipment	Item	Q.
Drawing	Machine Drawing (18) TI(18) Design/Drawing (30)	Drawing Instrument	Drawing Board	15
			Instrument	15
		Tools	Scales/Template	15
Conventional Machine	Machining (30)	Conventional Machine	Lathe	6
			Milling	6
			Band Saw	1
			Grinder	1
		Tools	Tools	*
		Cutters	Cutters	*
	Measuring (18)	Measuring Instrument	µ-meter	100
			Vernier Calipers	30
NC	NC Programming (132) NC Machining (72)	CNC Lathe	CNC Lathe	1
		Machining Center	Machining Center	1
		WEDM	WEDM	1
		Tools	Tools	*
CAD/CAM	CAD(102)	Hardware	EWS (LAN)	15
			No-brake	15
			Hard Disk	15
			Printer/Plotter	2
	CAM(180)	Software	3d-CAD	15
			Editor DNC	1
			3d-CAM	15
			OS(UNIX)	15

Note: Mark * indicates tools, which will be purchased by the Government of The United Mexican States.

ANNEX III-2

CONTROL GROUP

Lab	Subject (hours)	Main Equipment	Item	Q
Electrical / Electronics	Electrical Engineering (18)	Electrical Measurement Instrument	Volt meter	6
			Amperemeter	6
			Wattmeter	12
	Electronics Engineering (36)	Electronic Measurement Instrument	Oscilloscope	12
			Digital multi meter	6
			Power supply	17
			DC Voltmeter	6
			DC Amperemeter	6
		Trainer	Pulse circuit Trainer	1
			Electronics circuit Trainer	1
		Tools	Tools	*
Sequence Control	Basic Sequence Control (72)	Relay	Timer/counter	10
			Relay	45
			Switch	15
			3 ϕ motor	2
		Parts	Terminal Block	*
			Terminal	*
	Sequence Control (36)	Sensor	Position	8
			Mark	2
			Pressure	2
			Temperature sensor	2
			Variation sensor	2
		Trainer	Logic circuit trainer	1
		Tools	Tools	*

Note: Mark * indicates tools, which will be purchased by the Government of The United Mexican States.

ANNEX III-3

Lab	Subject (hours)	Main Equipment	Item	Q
PLC	Sequence Control (36)	Programmable Logic Controller	Small size	15
			Medium Size	1
		Tools	Tools	*
Machining	Basic Sequence Control(72) Sequence Control (36) Computer Control (72) Project (180)	Machines	Shearing machine	1
			Drilling machine	2
			Grinding machine	1
			Tools	*
Hydraulic / Pneumatic	Basic Sequence Control (72) Sequence Control (36)	Trainer	Hydraulic Trainer	1
			Pneumatic Trainer	1
Robot	System Design (36)	Robot	Multi axis Robot	1
		Tools	Tools	*
Computer Control	Computer Engineering (54) Computer Control (72) Power Electronics (18)	Instruments	Logic Analyzer	6
			ICE	1
		8,16 bits Board Micro Computers	Microcomputer	22
			Power Supply	15
			I/O interface	15
		Loads	AC/DC motor	6
			Stepper motor	6
			Robots	3
		Parts	SSR/TH/PTr	*
		Tools	Tools	*

Note: Mark * indicates tools, which will be purchased by the Government of The United Mexican States.

Lab	Subject (hours)	Main Equipment	Item	Q
Automation Systems	Mechatronics (36)	PC	Personal Computer (386)	7
	Automation Systems (78)	Loads	FA model	1
			Automatic Control Load	1
			Conveyor belt	2
		Visual system	Visual System	1
		Tools	Tools	*

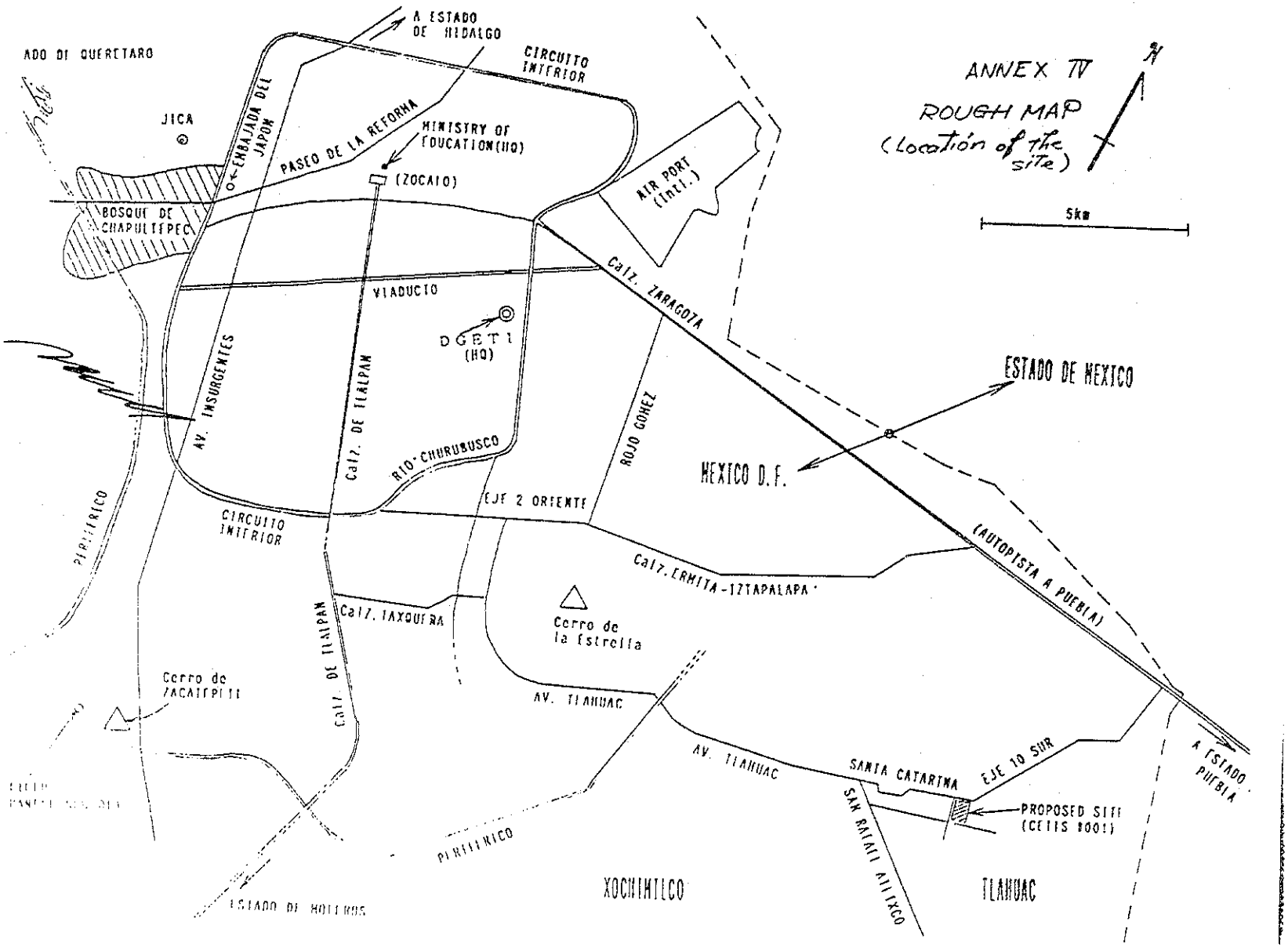
Note: Mark * indicates tools, which will be purchased by the Government of The United Mexican States.

COMMON GROUP

Lab	Subject (hours)	Main Equipment	Item	Q
Computer	Information Processing (42)	Hardware	Personal Computer (486)	15
			Hard disk	15
			Printer/Plotter	2
			Printer buffer	1
			OHP display	2
		Software	Editor	15
			MS-DOS	15
			Windows	15
			Data Base	15
			CAD	15
			Word Processor	15
			C Compiler	15
Teaching Material Production			Printing machine	1
			Binding machine	1
			Drawing Instrument	1
			Video deck	1
			(Personal Computer)	*

Lab	Subject (hours)	Main Equipment	Item	Q
Project	Project (180)		Personal Computer	6
			Board Micro Computer	6
			Power Supply	6
			Oscilloscope	6
			Tools	*

Note: Mark * indicates tools, which will be purchased by the Government of The United Mexican States.


ANNEX IV
ROUGH MAP
(Location of the site)
5km
A ESTADO DE HIDALGO
CIRCUITO INTERIOR
ADO DE QUERETARO
JICA
EMBAJADA DEL JAPON
PASEO DE LA REFORMA
MINISTRY OF EDUCATION(HQ)
(ZOCALO)
AIR PORT (Intl.)
BOSQUE DE CHAPULTEPEC
Calz. ZARAGOZA
VIADUCTO
DGETI (HQ)
AV. INSURGENTES
Calz. DE TLALPAN
RIO CHURUBUSCO
ROJO GOMEZ
ESTADO DE MEXICO
MEXICO D.F.
PERIFERICO
CIRCUITO INTERIOR
EJE 2 ORIENTE
(AUTOPISTA A PUEBLA)
Calz. ERMITA-IZTAPALAPA
Calz. TAXQUEÑA
Cerro de la Estrella
Cerro de ZACATEPETL
AV. TLAHUAC
SANTA CATARINA
EJE 10 SUR
A ESTADO PUEBLA
PROPOSED SITE (CETIS 100)
SAN RAFAEL ATLIXCO
XOCHIMILCO
TLAHUAC
ESTADO DE MORELOS

THE STUDY OF CAD-DGETI IN MEXICO

This study is about the material and drawings, which were elaborated formerly the discussion held with DGETI and CAPFCE after the presentation of the project to the General Director of the DGETI on the last September 15th.

The explanation papers have sequential numbers with an "A" at end and the drawings with a "B" at end.

001. Master concept

002. Rough drawing

003. Management building

004. Classrooms building

005. Auditorium

006. Library

007. Dinning room

008. Actualization building - Computer

009. Actualization building - Machine Group

010. Actualization building - Control Group

011. Exterior area planning

012. Facilities planning

THE STUDY OF CAD-DGETI IN MEXICO
001-A-1
MASTER CONCEPT.

1. The surface of the project's place will be formed in future by three areas. The project area (239 x 170 m), reserve area "A" (239 x 60 m) and the reserve area "B" (35 x 215 m).

Although the usage of reserve area "A" and "B" has not been reached to a sufficient agreement (Finally the area "A" will not integrate at the moment on 17th September 1993).

2. The project area consists of entrance access, management area, central square, actualization area, green zone, and reserve space.

3. In respect to reserve area "A" and "B", in case of necessity and in case that an agreement between the concerned personnel is reached, the buildings would be distributed in harmony with in the project area.

4. The reserve area "A" could occupy an actualization space and a gymnasium, the reserve area "B" could occupy a dormitory and parking place.

5. All the buildings will have a view or sight from the square or to the volcanoes.

6. The project area will be built in a circulating path around the center for internal service. The circulation lines for vehicles and peasants will be properly separated. Will be also constructed a main gate and a service gate.

7. A soft division will be constructed on the limit border of the center CETIS 001 and the CAD-DGETI to promote interchange in-between. On the limit border with avenues, walls will be constructed in order to control the security, yet would not be closed walls to be able to spread toward the adjacent town.

THE STUDY OF CAD-DGETI IN MEXICO
001-A-2
MASTER CONCEPT.

8. Sometime on the year there could be dust from the green zone, reserve spaces, central square, etc., and there is risk that dust can provoke miss faults in the apparatus and equipment of high technology installed in the CAD-DGETI. As a solution is planned to set plants and turf in this areas.

9. The project area is conformed of precarious soil, and will have latent water problem. An efficient drain channel will be provided inside the project area.

10. It will be intended to take the electric power supply from the east zone, near the library. The power substation room will be studied to integrate into the part of the library storage.

11. The distribution of electric power will be obtained trough a main underground duct under the sidewalk inside the project area, connected to every building, from which will distribute to each lab and/or workshop to every level. Also will be considered the maintenance easiness, as well as will be installed the LAN circuit (Local Area Network.)

12. Water containers will not be installed on building's roof top. Instead of, a tower container will be constructed, which will function also as a landmark of the CAD-DGETI. Hence, it will be taken more attention to its design. Besides, a fire water receptacle will be taken into consideration.

13. Details designing about the architectural and construction of buildings will be in charge of creativity and innovation of the DGETI and CAPFCE staff, whom have plenty enough information and experiences about architecture and regional characteristics of Mexico, also taking mainly in account the Japanese proposals.

14. It will be considered the maximum as possibly the internal ventilation of the buildings, preserving the air circulation. The daily lightness will be also taken in consideration.

15. In respect to the parts where the Team do not count with the architectural conditions, DGETI and CAPFCE will determine it through discussions and respecting the original proposals.

THE STUDY OF CAD-DGETI IN MEXICO
001-A-3
MASTER CONCEPT.

16. Specifications of the General Architecture

1. The external walls will be constructed using quarry stone or covered with the same. The labs and / or workshops walls of the actualization buildings will be covered with the same material, up to certain height (near one meter) from the floor. The kind of stones can be Mexican stone (quarry) in ivory color or soft reddish tone. The concrete structure will be covered with quarry or similar.

2. The material for interiors.

Floor material: Vinilic slabs, painted concrete slabs to avoid dust, tiles, carpet, stone covering, stone rubble work. False floor with free access in the computer lab and CAD / CAM lab.

Wall materials: Apparent concrete, wood, plaster, tiles, stone covering, stone rubble work, fabrics, glass, etc. In case of necessity will be installed socle an upper socle around the ceiling.

Materials for Ceiling: Normal ceiling, false soffit, skylight and domes.

Lighting: With diffusers and / or grid, mercury lamp and fluorescent lamp, incandescent lamp.

THE STUDY OF CAD-DGETI IN MEXICO
001-A-4
MASTER CONCEPT.

CONSTRUCTION CONCEPT

1. Total designing considering harmonized space and atmosphere of comfort .

2. Consider some memorial symbol of technical cooperation between Mexico and Japan, such as a tree, the tower, a monument, a "Land mark", etc.

3. It should be the highest place for teachers in Mexico, to be proud of a technical and industrial actualization center at national level.

4. It should be the highest place for the training meeting with the technological innovations in Mechatronics Engineering.

5. Appropriated lineal distribution from the entrance (Vestibule, porch, reception, including exhibition room), considering the lines of movement of people and vehicles.

6. Appropriated access and gates for the entrance of machines and large equipment.

7. Installation of a LAN (Local Area Network) system in the management building, workshops and computer room.

8. Consider appropriated sidewalks between the buildings for rain.

9. Creating resting places (relaxation place) for personnel and students inside the buildings and on exteriors.

10. Coordinating the design of exteriors (plants, garden, artificial miniature hill "Tsukiyama", Japanese garden).

11. Taking in account the environment conditions and weather in the area of Tlahuac (building appearance, windows, ceilings, etc.)

12. Considering the outside color of each building matching the environment and the zone weather.

THE STUDY OF CAD-DGETI IN MEXICO
001-A-5
MASTER CONCEPT.

DESIGN CONCEPT.

1. Planning a field with harmonized space.

Installing many meeting spaces as small halls inside and outside the buildings, with shadow, benches, etc.

Creating an space where people can communicate and hold a spiritual richness in common setting sculptures, artistic objects, wall paintings, etc.

Having scenery taking profit of the magnificent sight of the volcanoes Popocatepetl and Iztaccihuatl.

The project site has a harmony between traditional and contemporary in its atmosphere.

2. To design facilities as the national center of technological actualization, where gather the practical and academic aspects being a highest palace of the mechatronics.

3. To design facilities that will be able to meet a future extension of the Center, changes and technological innovations in the future. (Note 1)

4. It is a meeting place of the students and lecturers. Creating an environment that naturally encourages a conscience of identification as much in the students as in the lecturers with the feeling that they take promotion of industrial frontier through the technological actualization on thenselves.

5. To design a spatial structure with clarity and amplitude.

- To use glass in a large scale. To conform a wide and clear architectural space through modern architectural spaces created by the quality of transparencies of glass, taking in consideration the atmosphere.

- 6 -

6. The power transmission, and communication lines will be installed underground or semi - underground, and won't be permitted overhead cable.

- To install a main duct unden the pedestrian movement line to distribute or branch in to each building.

7. To standarize the planing, as the signaling, external lightening, and external area.

Note Nr. 1: The architecture do not finish with the end of the construction. The architecture grows with the course of times and with the life of human beings.

The CAD-DGETI should be also a center that will develop in accordance with the times , being a forming facility for human resources, a fundamental basement of the nation and by its grate function as industrial promoter.

We believe that a key designing for task in the plan of the facility as a National Center is to take the future extension under consideration of the future growth.

The technological innovation is ever-progressing. Currently, the Center secres enough space for two groups of machines and control; however it is envisaged the amplification of the specific basic and application field, therefore, as a consequence would be generated a need of considering the extension of construction.

Of equal way, other training courses are possibly planned that supports to the new mechatronics. Also it could be drafted about creating another facilities that is entrusted with some new functions as the National Center.

For the foregoing is essential to assure a reserve space within the area for the future planing extension. How would be formed a central square preserving reserve spaces?
The CAD-DGETI is not only the place of studying for students and teachers, but also an area that form part of their lives. It is important to create the spaces to get along together, encounter and happy meetings.

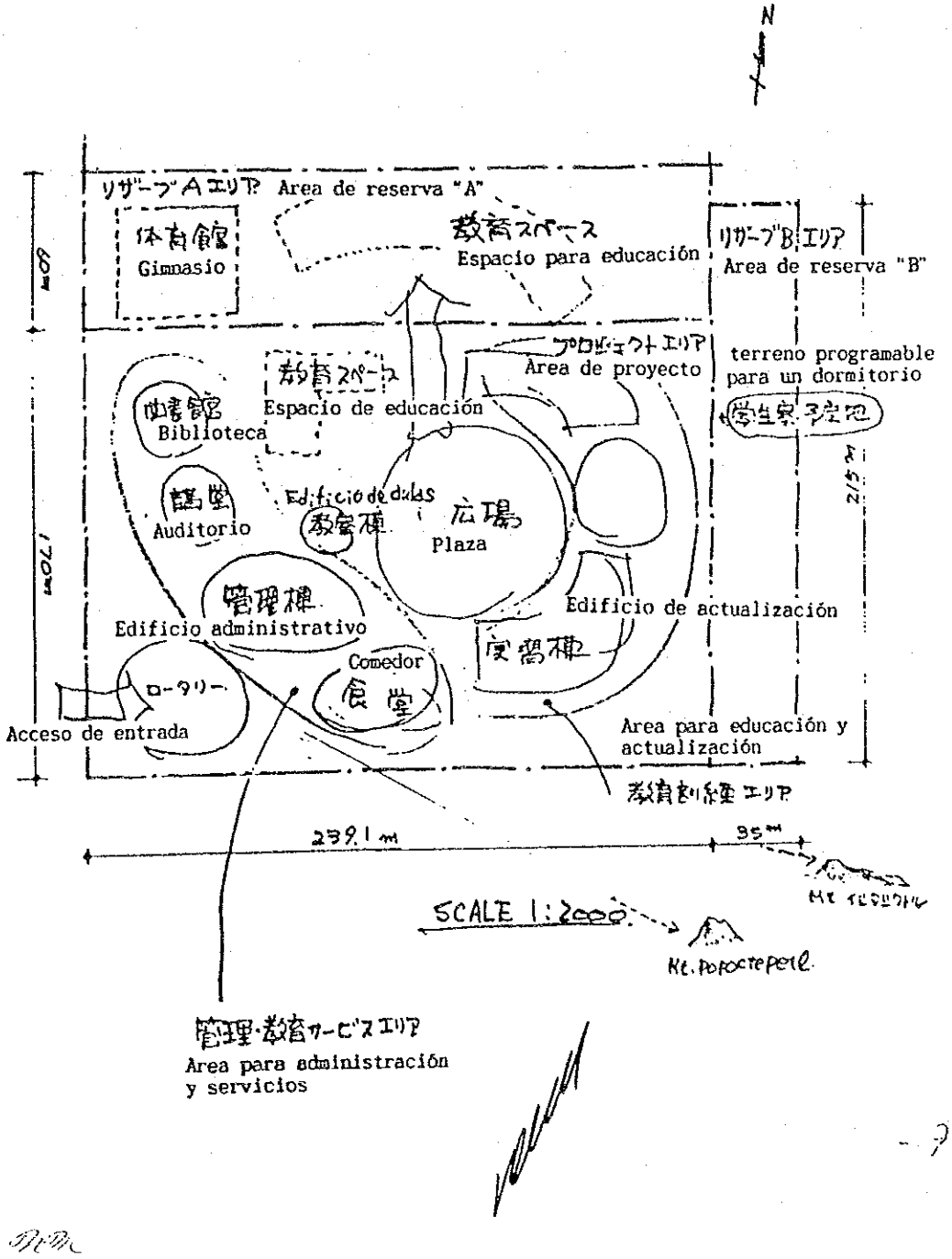
THE STUDY OF CAD-DGETI IN MEXICO
001-A-7
MASTER CONCEPT.

For the foregoing, the point to which greater attention was payed in basic planing and basic design is a plan that has a square and continues toward the future growth. There will be several places adapted for the daily life.

It is intended to accomplish a spatial structure and an appropriate figure as the National Center and a fusion of the contemporary and the traditional characteristics.

ESTUDIO DE C.A.D. EN MEXICO
001-B-1
CONCEPTO MAESTRO

Study of the CAD in Mexico
001 - B-1
Master Plan

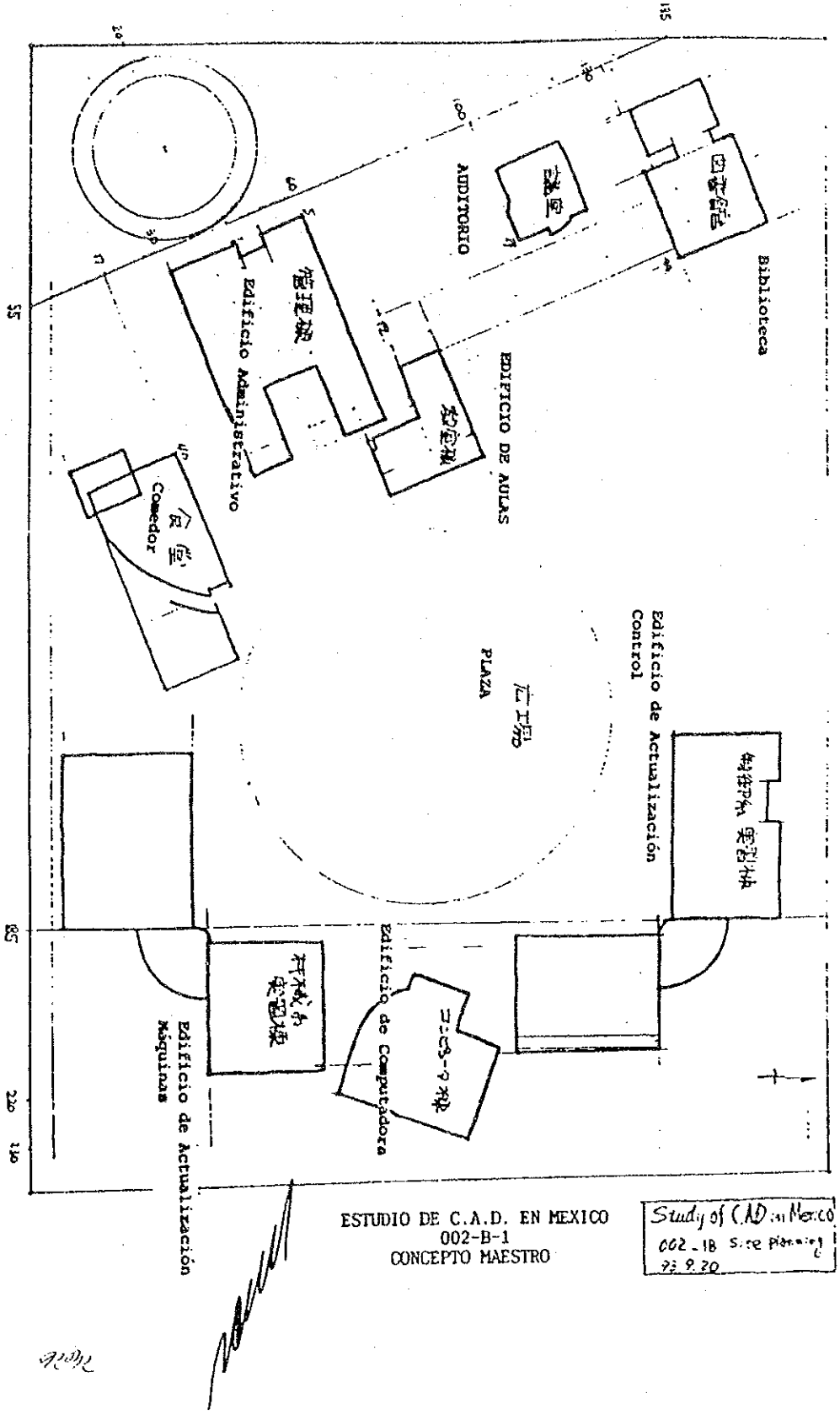


THE STUDY OF CAD-DGETI IN MEXICO
002-A-1
PLANNING OF THE PLACE.

1. Change of the lay out. (The plan "A" that was presented would not secured the barbecue area in the zone of the dining room).

2. The distribution of all buildings is clearly defined.

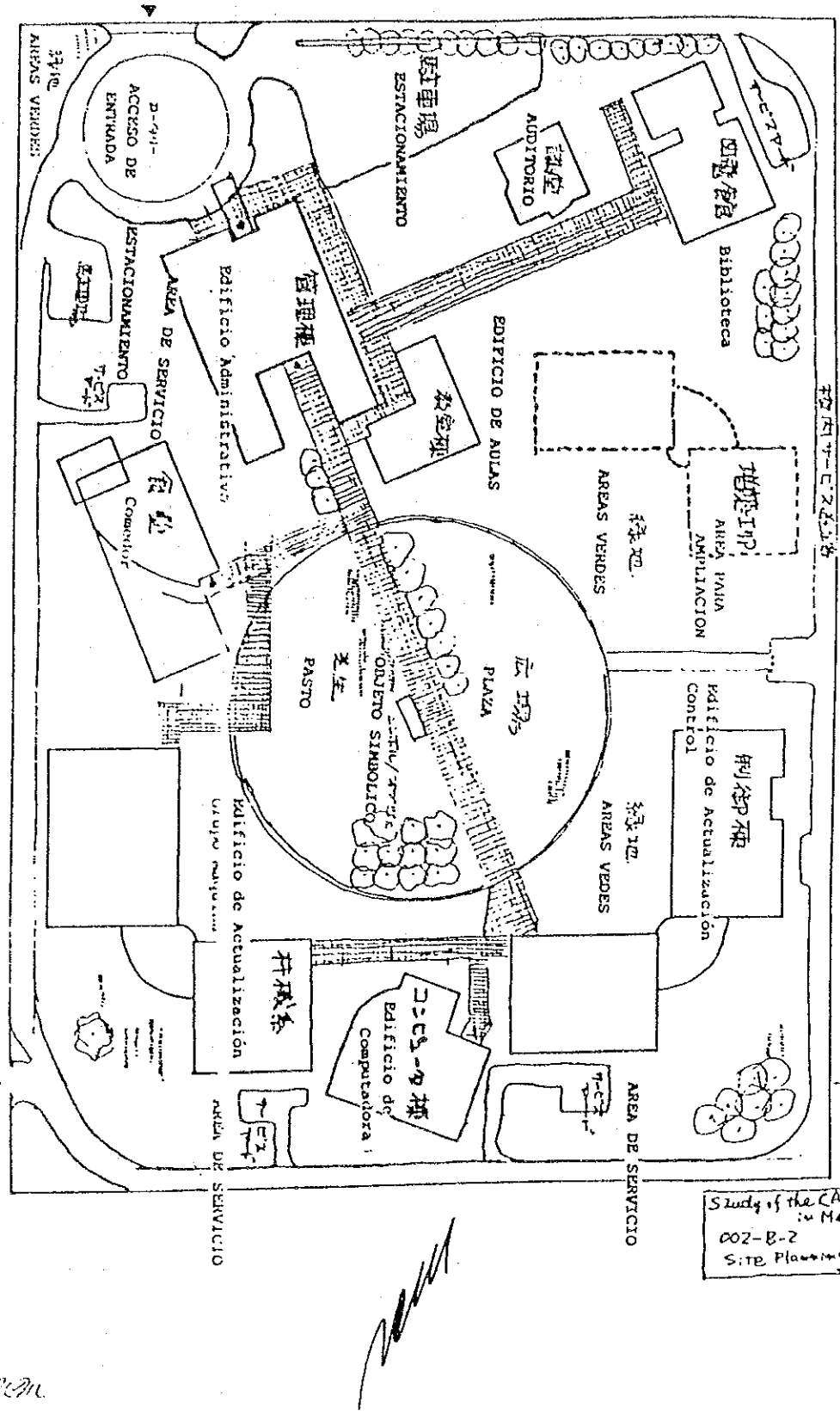
3. The lay out is shown in 002-B-2.



ESTUDIO DE C.A.D. EN MEXICO
002-B-1
CONCEPTO MAESTRO

Study of CAD in Mexico
002-1B Site Plan
93.9.20

—11—



ESTUDIO DE C.A.D. EN MEXICO
002-B-2
PLANEACION DEL SITIO

Study of the CAD in Mexico
002-B-2
Site Planning

-12-

THE STUDY OF CAD-DGETI IN MEXICO
003-A-1
PLANNING OF THE PLACE.

GENERALITIES OF THE ADMINISTRATIVE BUILDING

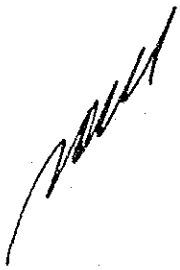
1. Among the two buildings and , put a large glass ceiling forming a dome. This will be a two floor building.

2. The east wing will be occupied by administrative offices, on the other hand the west wing will be occupied by areas of teachers actualization.

3. Basically every room will have an access door of intercommunication.

4. The rooms of C /P (counterparts) and the rooms of teaching material development, will have two doors with access to the corridor.

5. The finishing of interiors of administrative part and the three conference rooms will be of good apperance. Their floor will be covered by carpet.



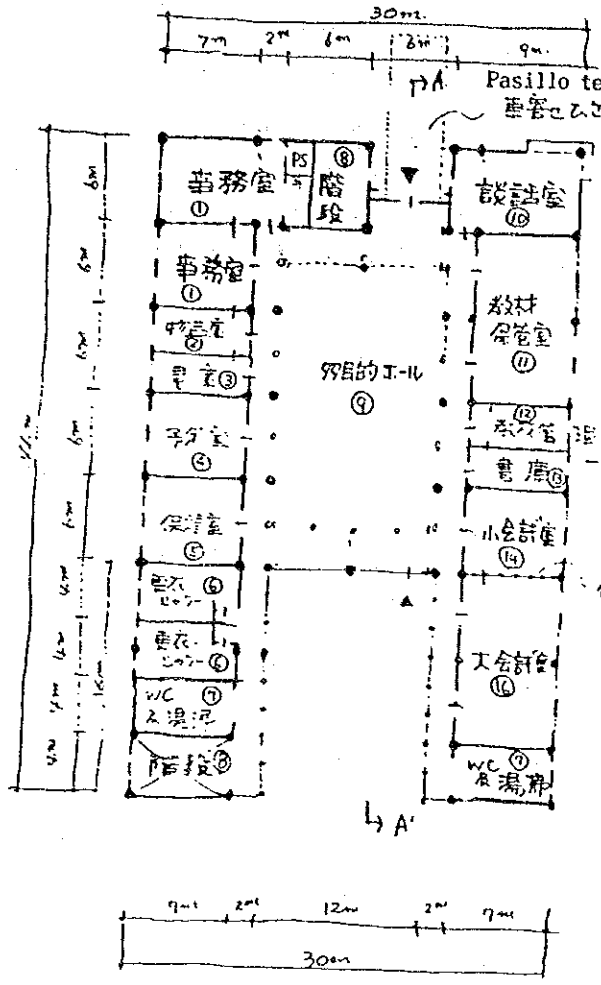
-13-

Study of CAD in Mexico
003 - B-1
Administration building
1F Plan
93.9.20

EDIFICIO ADMINISTRATIVA
PLANO DE P.B.
(ESCALA 1/400)

Administration building 1F Plan 1:400

ESTUDIO DE C.A.D. EN MEXICO
003-B-1
EDIFICIO ADMINISTRATIVA
PLANTA BAJA



1. Oficina
2. Bodega de material general
3. Bodega de libros
4. Cuarto de reserva
5. Sala de atención médica
6. Vesitdor y regadera
7. Sanitario y cocineta
8. Escalera
9. Hall de multiuso
10. Sala de convivencia
11. Almacen de material didáctico
12. Cuarto de control de material didáctico
13. Bodega de libros
14. Sala de junta pequeña
15. Muro del tipo acordeón
16. Sala de junta grande

ESTUDIO DE C.A.D. EN MEXICO

008-B-2

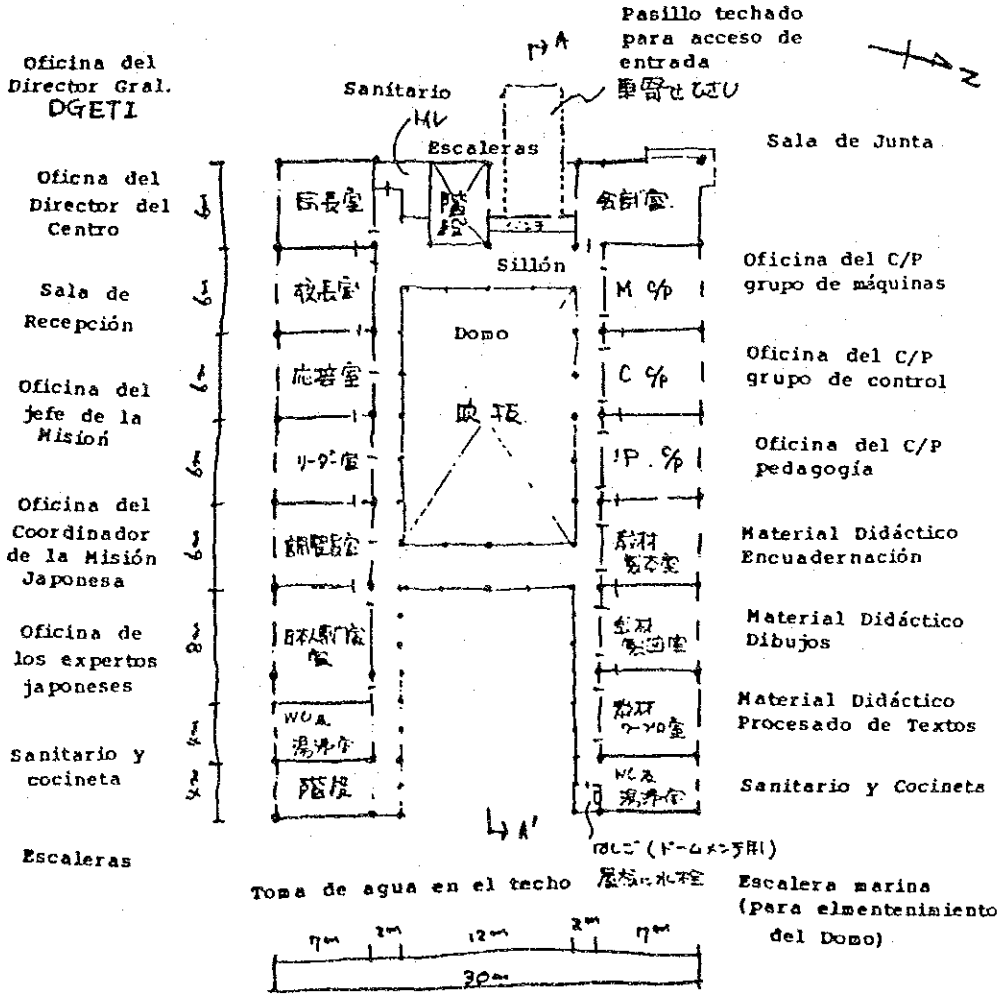
EDIFICIO ADMINISTRATIVO
SEGUNDO PISO

Study of CAD in Mexico
003 - B-2.

Administration building
2F Plan

EDIFICIOADMINISTRATIVO SEGUNDO PISO
PLANTA (ESCALA 1/400)

Administration building 2F PLAN 1:400

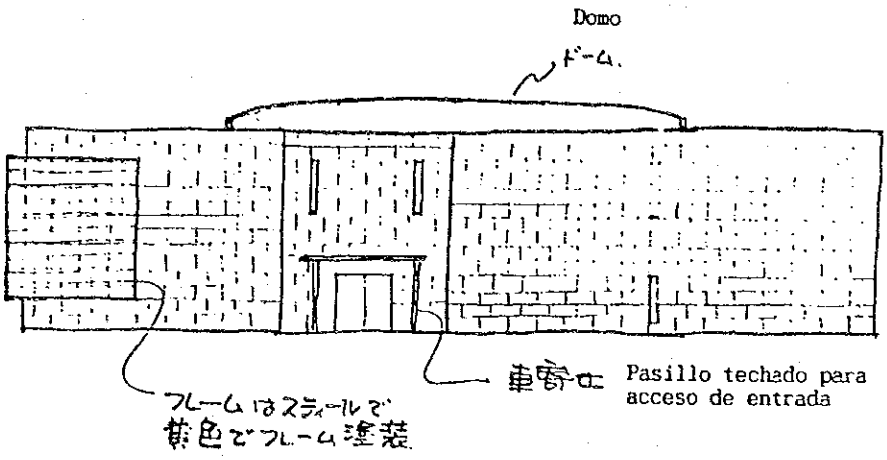


ESTUDIO DE C.A.D. EN MEXICO
003-B-3
EDIFICIO ADMINISTRATIVO

Study of CAD in Mexico
003 - B - 3
Administration building

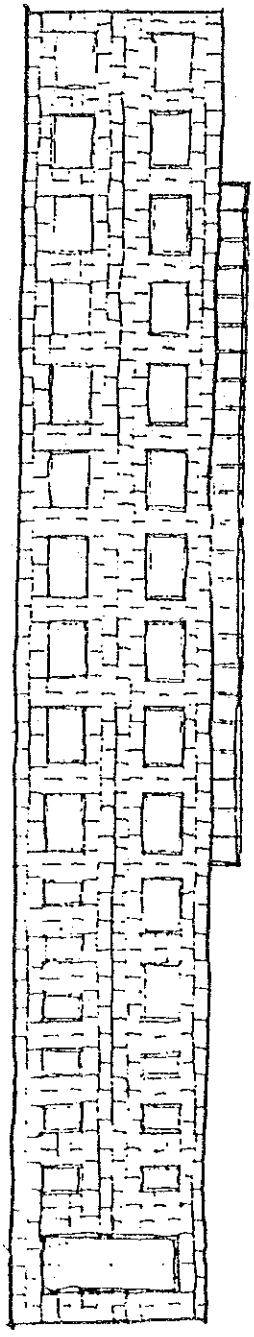
ファサード（西側）立面（1:200）

FACHADA -LADO PONIENTE-
ALZADO (ESCALA 1/200)



ESTUDIO DE C.A.D. EN MEXICO
003-B-4
EDIFICIO ADMINISTRATIVO

Study of CAD in Mexico
003-B-4
Administration building



立面図 (1:200)

FACHADA -LADO SUR-
ALZADO (ESCALA 1/200)

-10-

Study of the CAD in Mexico
003-B-5
Administration building

ESTUDIO DEL C.A.D. EN MEXICO

003-B-5

EDIFICIO ADMINISTRATIVO

A~A' 断面

Sección A-A'

-12-

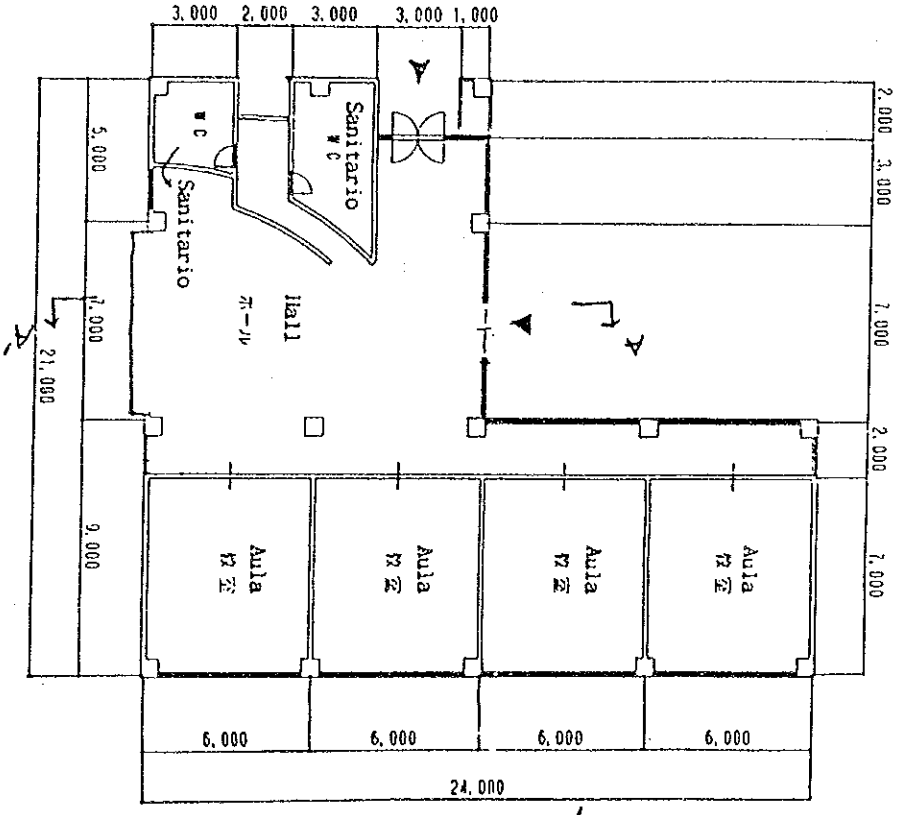
THE STUDY OF CAD-DGETI IN MEXICO
004-A-1
CLASS ROOM BUILDING.

GENERALITIES OF THE CLASSROOM BUILDING

1. Planing of the building for short term courses.
2. Two classrooms of four classrooms will have access to the LAN (Local Area Network).

ESTUDIO DE C.A.D. EN MEXICO
004-B-1
EDIFICIO DE AULAS

Study of the CAD in Mexico
004-B-1
教室棟



教室棟平面図 S=1/200

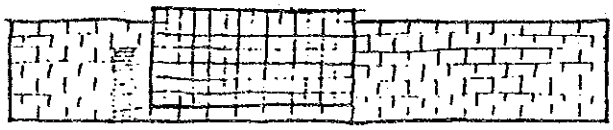
EDIFICIO DE AULAS
PLANTA (ESCALA 1/200)

- 70 -

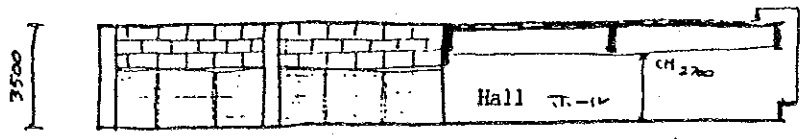
Study of the CAD in Mexico
004 - B-2
教室棟

ESTUDIO DE C.A.D. EN MEXICO
004-B-2
EDIFICIO DE AULAS

東側立面 (1:200)
ALZADO: LADO ORIENTE (1/200)



A~A' 断面 (1:200)
SECCION "A" - "A'" (1/200)



THE STUDY OF CAD-DGETI IN MEXICO
005-A-1
AUDITORIUM.

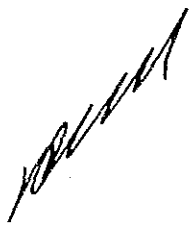
- GENERALITIES OF THE AUDITORIUM -

1. To design the auditorium for conferences, short term courses and normal classes.

2. It will be installed also a projection room.

3. In relation with the capacity, it has not been determined the policy of management of the center on the side of the DGETI. As soon as they reach to a conclusion, will be determined the capacity of the auditorium, trough an agreement among DGETI and CAPFCE observing the original proposal.

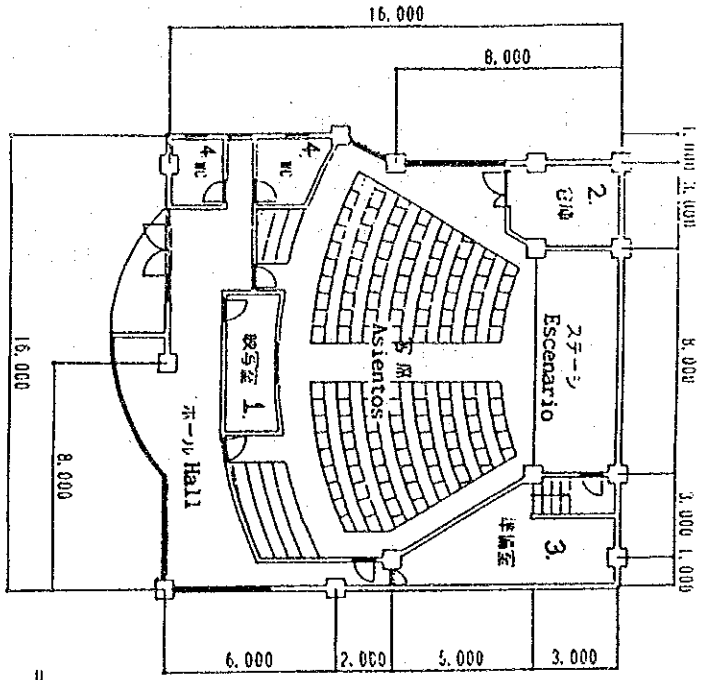
The original proposal envisages 120 seats.



- 22 -

ESTUDIO DE C.A.D. EN MEXICO
005-B-1
AUDITORIO

Study of the CAD in Mexico
005-B-1
講堂



講堂平面図 S=1/200 AUDITORIO PLANTA (ESCALA 1/200)

about 120席

Capacidad aproximada: 120 asientos

1. Cámara de proyección
2. Almacen
3. Cuarto de preparación
4. Sanitario

—23—

THE STUDY OF CAD-DGETI IN MEXICO
006-A-1
LIBRARY.

- GENERALITIES OF THE LIBRARY -

1. A library which could be used in both open system and closed system will be considerd in the future.

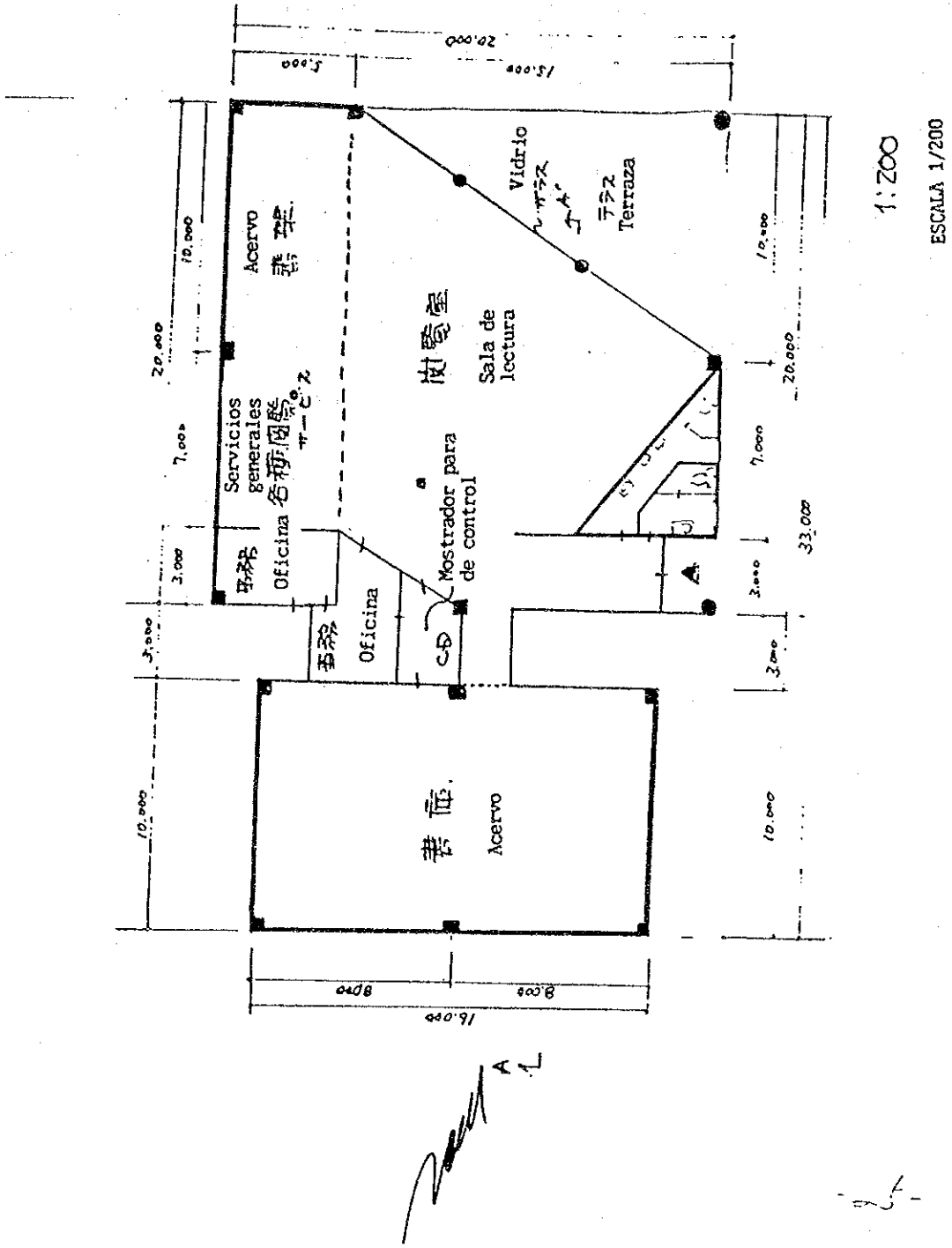
2. The library is formed by the reading area and the array.

3. In the managing area of the library will be installed showing control desks. offices, and room for maintenance of books, etc.

4. The area of reading will have sufficient space.

ESTUDIO DE C.A.D. EN MEXICO
006-B-1
BIBLIOTECA

Study of the CAD in Mexico
006-B-1



ESTUDIO DEL C.A.D. EN MEXICO

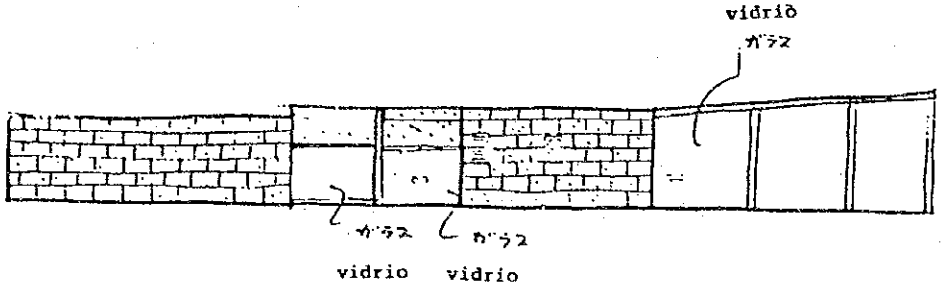
006-B-2

BIBLIOTECA

Study of the CAD in Mexico
006 - B - 2.
図書館

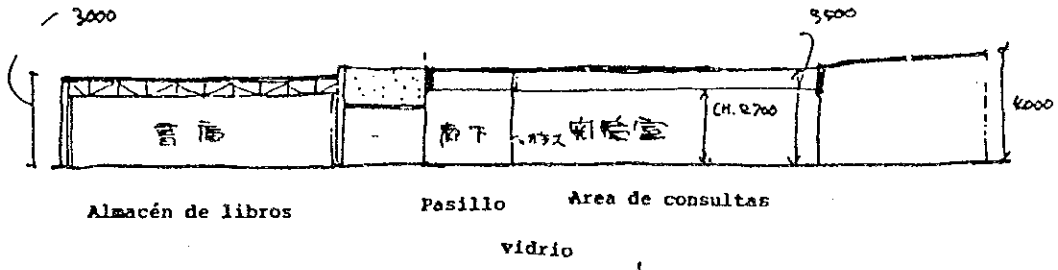
南立面 (1:200).

BOSQUEJO DE FACHADA (EL LADO SUR)
ESCALA 1/200



A～A'断面 (1:200)

Sección A-A' (Escala 1/200)



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THE STUDY OF CAD-DGETI IN MEXICO
007-A-1
DINING HOUSE.

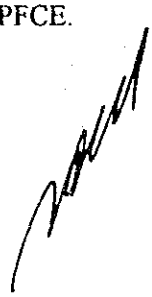
- GENERALITIES OF THE DINING HOUSE -

1. To take foods is one of the more relaxing activities of human beings to share. For that objective, the best location of the area would be selected with the sight of the magnificent white peaks of volcanoes.

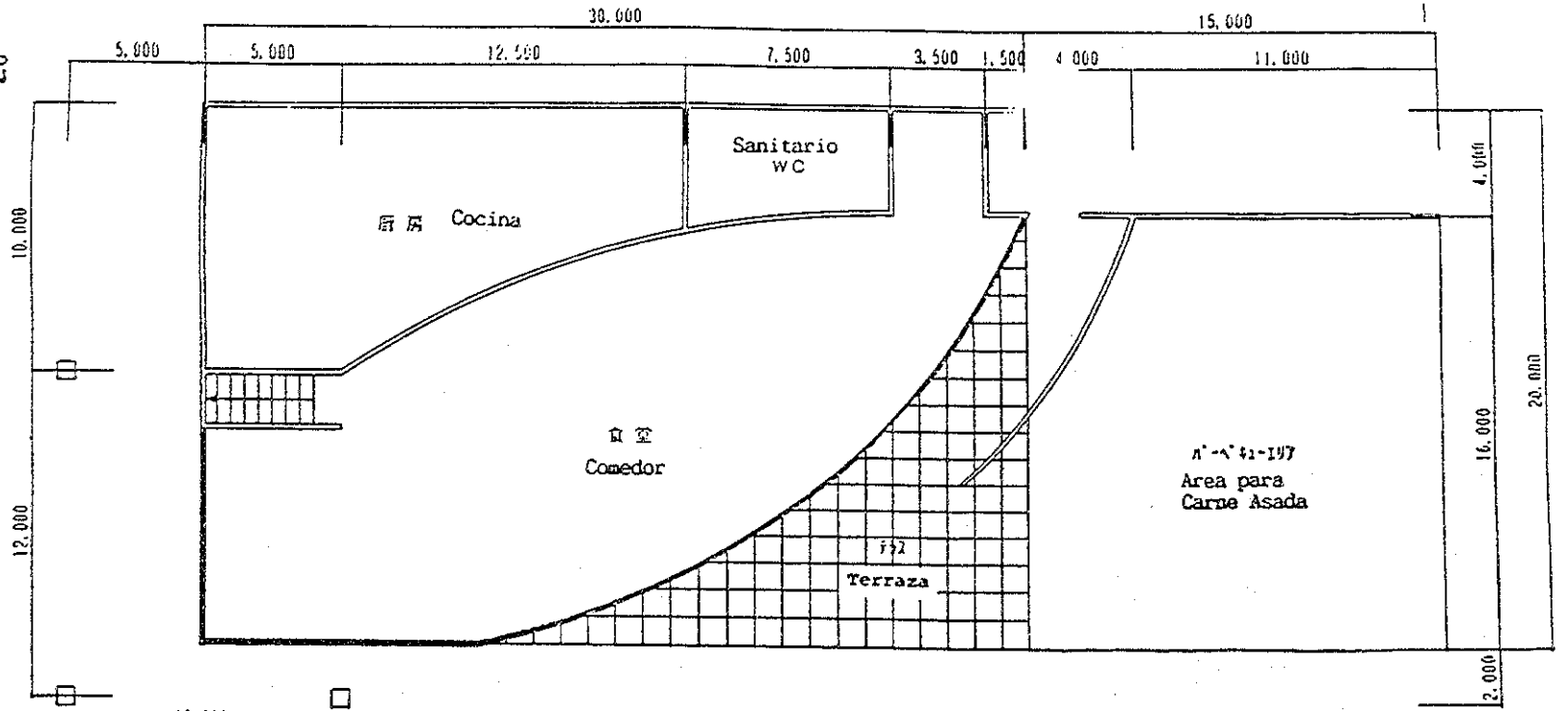
2. It will be provided a room named " the XXI Century Perspective" on the mezzanine.

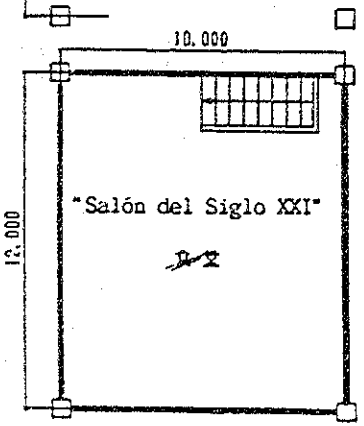
3. It will be provided a space for barbecue, having parties, both at outdoors and at indoors of the site where people will have opportunities to meet with.

4. As for the management of dining house and the domitory, DGETI has not yet made the actual management plan, so that the design of kitchen is not in progress. The design of it will be drafted with the agreement between DGETI and CAPFCE.



-27-





1 F PLAN

M2 F PLAN

PISO M2

Study of the CAD in Mexico
007-B-1
食堂

ESTUDIO DE C.A.D.EN MEXICO

007-B-1

COMEDOR

COMEDOR

PLANTA (ESCALA 1/200)

食堂平面図 S=1:200

ESTUDIO DEL C.A.D. EN MEXICO

007-B-2

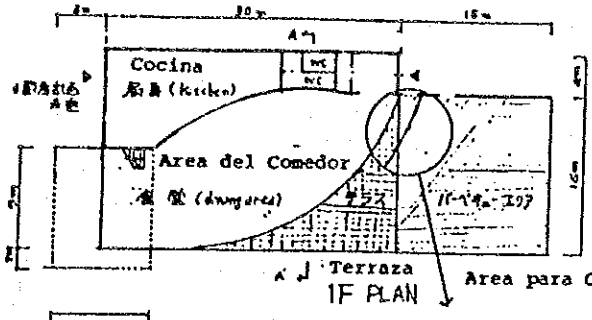
COMEDOR

Study of the CAD in Mexico

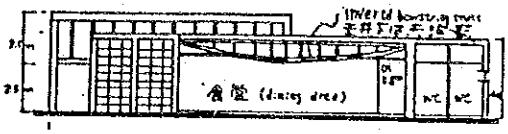
007-B-2

DINING

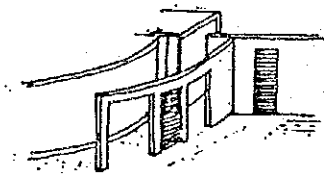
Los detalles de la cocina
no definidos

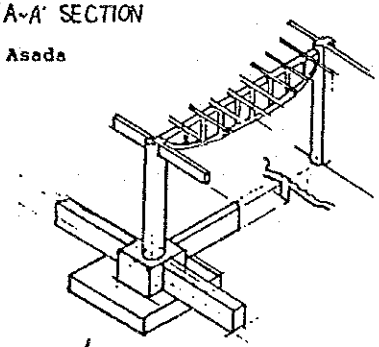


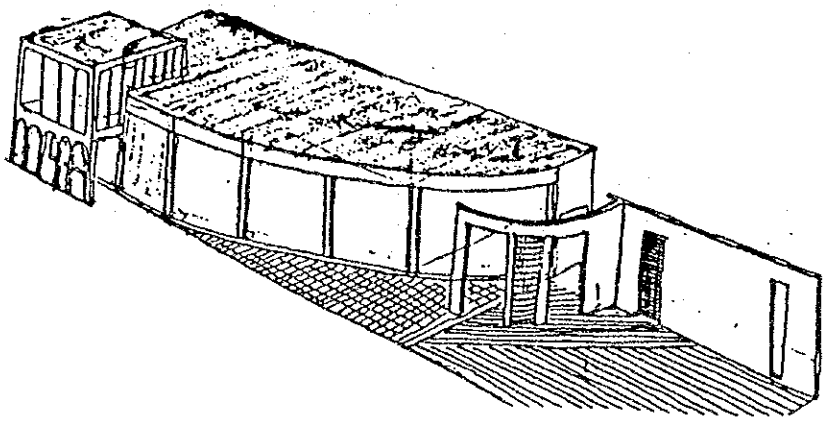
aplicación de la pintura roja
en el interior del techo



M2 PLAN







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THE STUDY OF CAD-DGETI IN MEXICO
008-A-1
COMPUTER BUILDING.

- GENERALITIES OF COMPUTER BUILDING -

1. The computer building will consist of a computer room, two rooms of technology transfer, four classrooms (from two of those will be divided by a wall of accordion type), etc.

2. The floor of the computer room will be false type with free access.

3. The computer room and the two rooms for technological transfer, in total the three rooms will have access to the LAN (Local Area Network).

4. It will be installed a skylight in some place of the corridor.

5. The wall of the hall will be of glass to permit the sight of the square to feel comfort.

6. The corridor area will have a curve in the form of a snail using efficiently the curve of the wall.

7. It will be given special attention for ventilation of the corridor and of the hall.

8. Around the building little trees and bamboo will be planted to give embossement.

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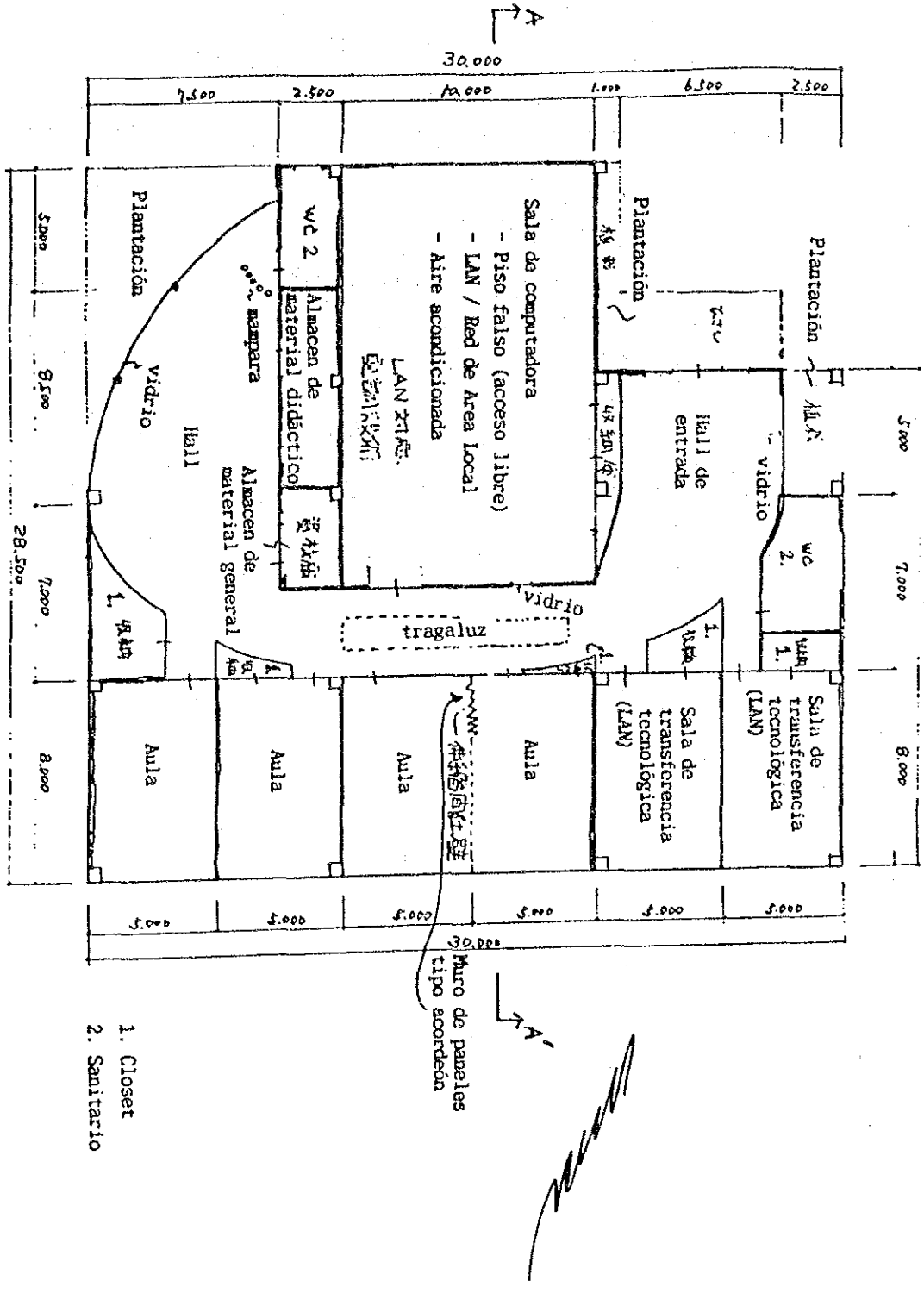
Study of CAD in Mexico
008 - B-1.
Computer building

PLANTA (ESCALA 1/200)



ESTUDIO DEL C.A.D. EN MEXICO

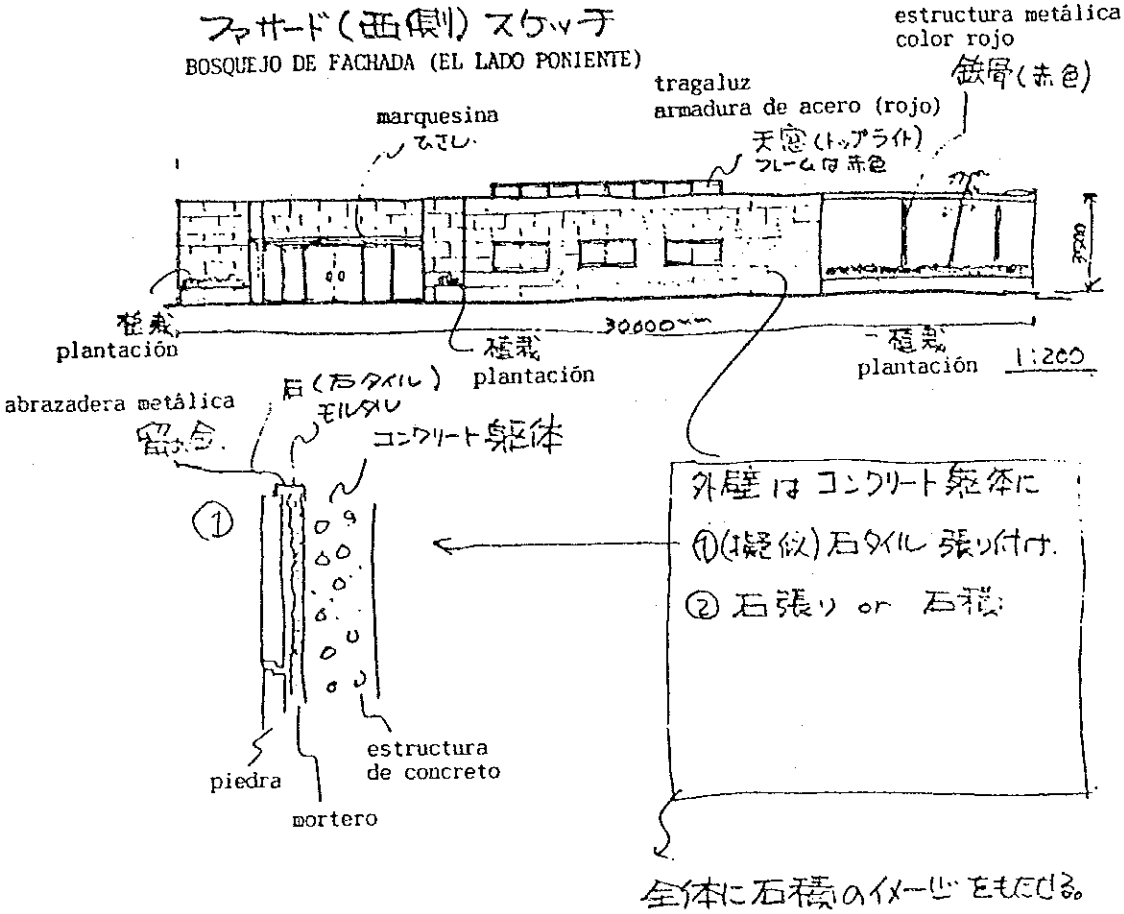
008-B-2

EDIFICIO DE COMPUTADORA

Study of CAD in Mexico
008-B-2.
Computer building

ファサード(西側)スケッチ

BOSQUEJO DE FACHADA (EL LADO PONIENTE)



El muro exterior es de la estructura de concreto con;

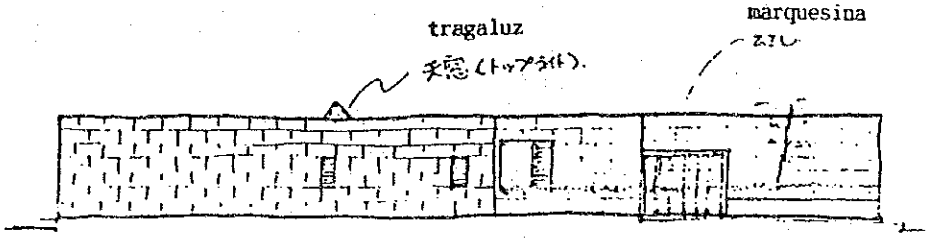
1. recubrimiento por el panel de la imitación de piedras,
2. recubrimiento por las piedras o apilamiento de las mismas.

La apariencia del muro es de las piedras apiladas.

ESTUDIO DEL C.A.D. EN MEXICO
008-B-3
EDIFICIO DE COMPUTADORA

Study of CAD in Mexico
008-B-3
Computer building

北側スケッチ
BOSQUEJO DEL LADO NORTE



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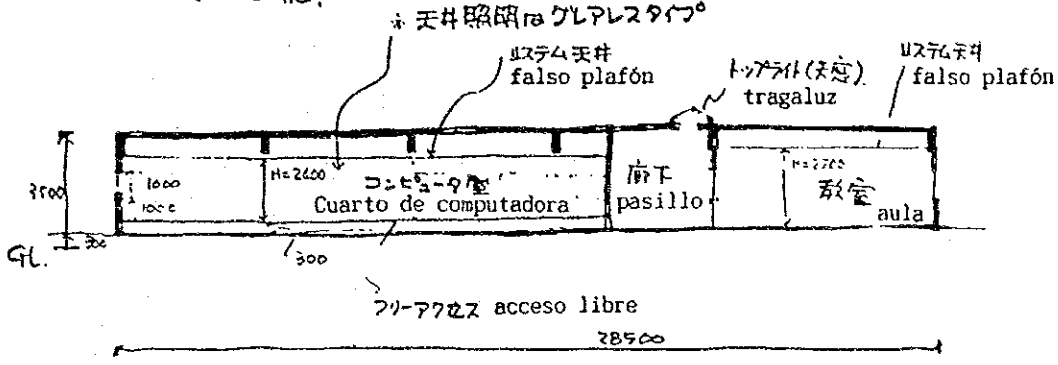
Study of CAP in Mexico
008-B-4.
Computer building

ESTUDIO DEL C.A.D. EN MEXICO
008-B-4
EDIFICIO DE COMPUTADORA

A～A' 断面 1:200

SECCION "A" - "A'" (ESCALA 1/200)

Considerar un pendiente para flujo 水勾配を考慮。
* Iluminación del plafón deberá ser del tipo no deslumbrante.

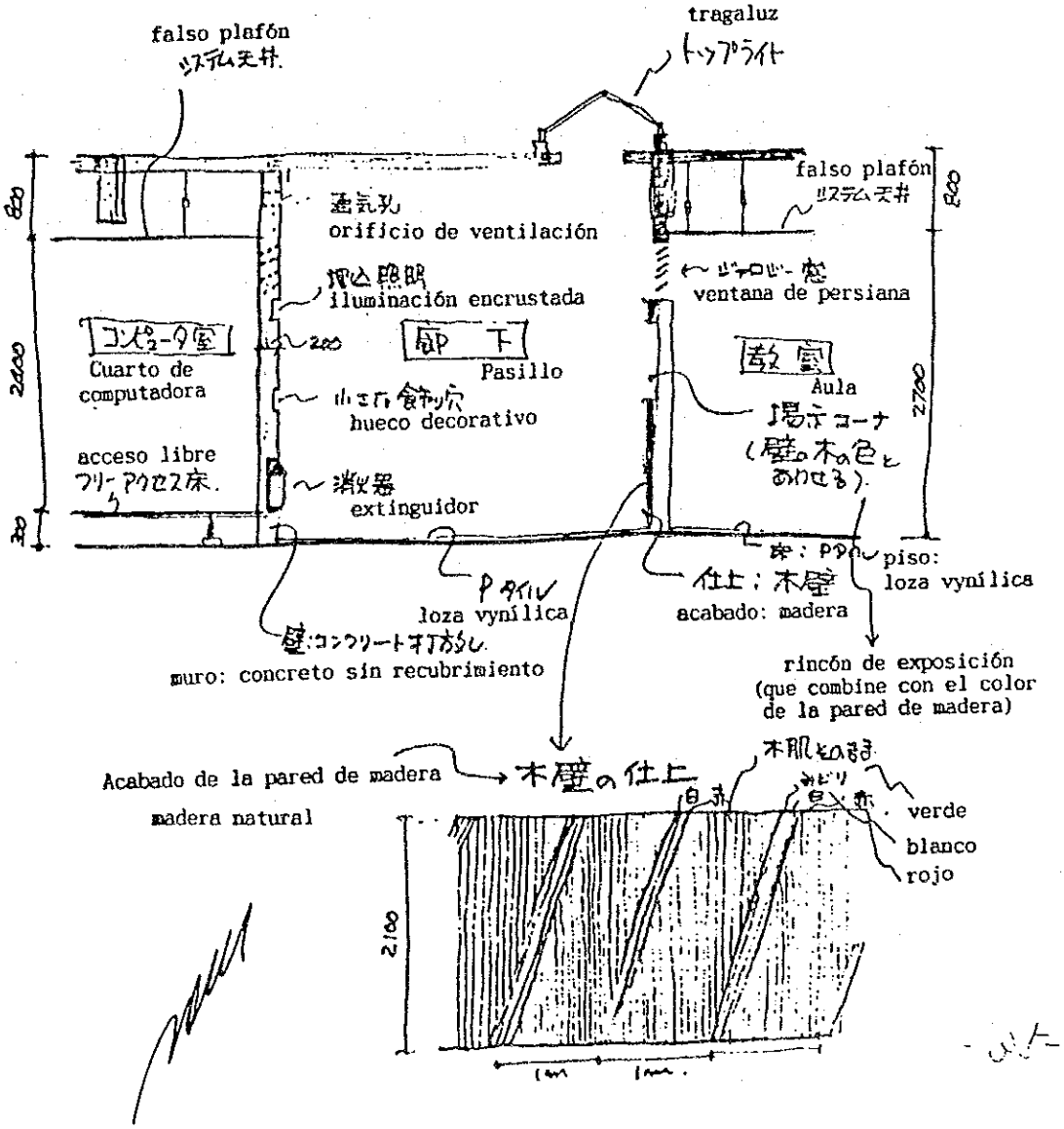


ESTUDIO DEL C.A.D. EN MEXICO
008-B-5
EDIFICIO DE COMPUTADORA

Study of CAD in Mexico
008-B-5
Computer building

廊下部分詳細 1:50

DETALLE DEL PASILLO (ESCALA 1/50)



THE STUDY OF CAD-DGETI IN MEXICO
009-A-1
ACTUALIZACIÓN BUILDING.
(MACHINE GROUP)

- GENERALITIES OF ACTUALIZATION BUILDING (MACHINE) -

1. It will be a set of two floors with external brokers, containing classrooms and rooms for technological transfer, corridors and halls, and workshops of each training course. Divided among the classroom building and that of workshops. It will be set a ceiling between both of them to create so an intermediate corridor to form a set.

2. Due to its form of the set will be put together expansion joints for the three structural units.

3. It is necessary to create a wide space of perfection for the approximation of the functions, something which is the requirement of the training target from the curricula.

4. From the corridor of the second floor can be have the sight to the work shops for visitors. Also in the ground floor, the work shop will have a window toward the corridor so tha is permitted to see the work shop.

5. In the area of the hall are installed spaces of exposition and of living together for those students.

6. In the cassrooms building are installed dessing rooms for the students.

7. The technological transfer rooms will have two doors from the fisrt stage of design with the purpose of the preparation rooms of class for the Mexican counterparts.

8. The large shutters will be installed for the purpose of bringing in large machines and equipment in the corresponding work shops.

9. The electric power cables will be taken in by means of underground duct. Once being within building, the cables will run by means of a duct hung below of the corridor of the second floor to ditribute to the checkerboard of distributon in each work shops to feed of energy to each equipment and schemes . This same system is applied for the circuit of LAN (Net of the local Area).

10. They are taken measures for antipolvos in each one of the shops.

11. The quarter of EDM will be cover by the cage faraday.

12. The work shop for CAD/CAM will have untruthful floor with free access.

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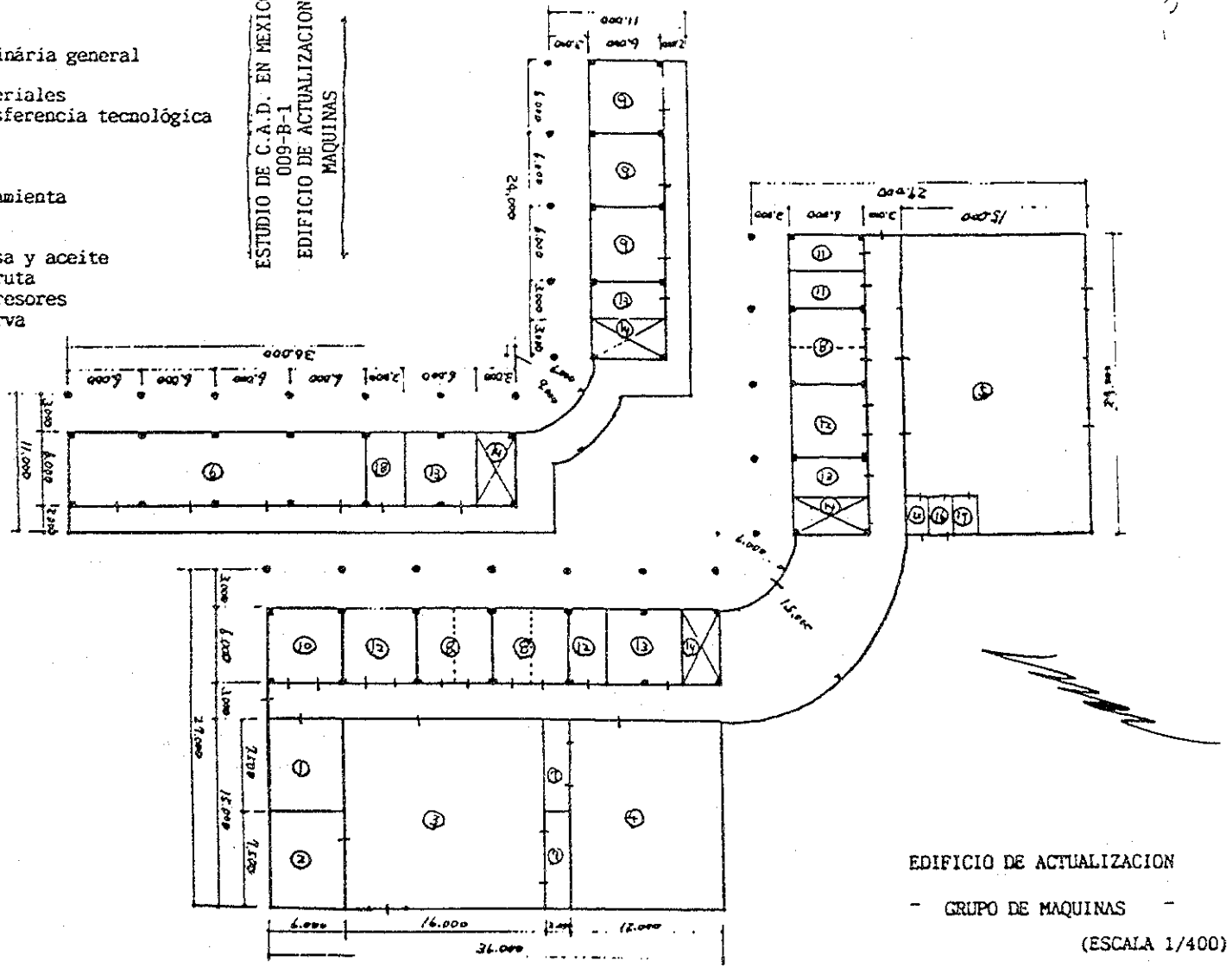
1. Sala de medición
2. EDM
3. Taller de NC
4. CAD/CAM
5. Taller de maquinária general
6. Sala de dibujo
7. Almacen de materiales
8. Cuarto de transferencia tecnológica
9. Aula
10. Sala de junta
11. Vestidor
12. Cuarto de herramienta
13. Sanitario
14. Escalera
15. Almacen de grasa y aceite
16. Depósito de viruta
17. Cuarto de compresores
18. Cuarto de reserva

ESTUDIO DE C.A.D. EN MEXICO
009-B-1
EDIFICIO DE ACTUALIZACION
MAQUINAS



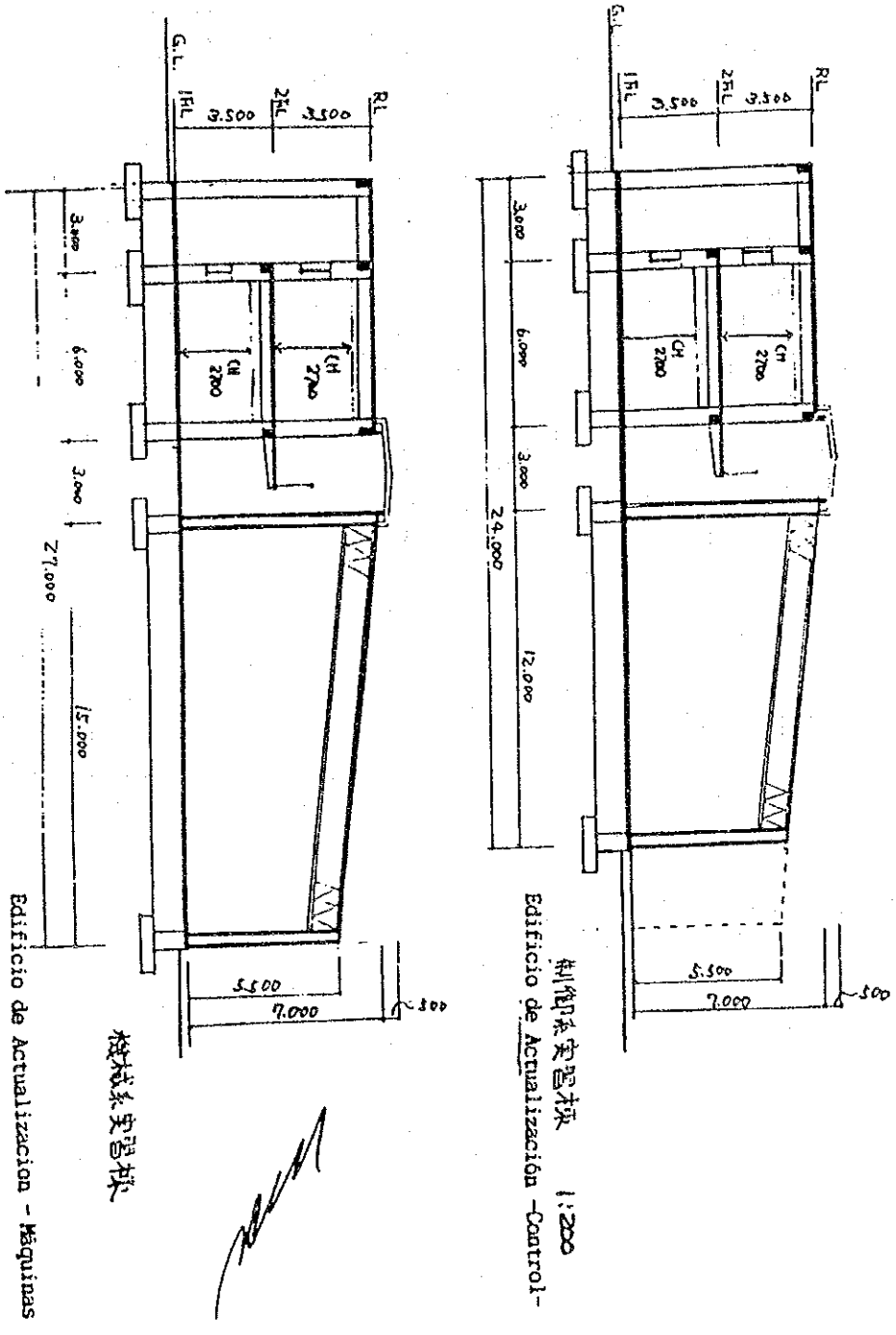
EDIFICIO DE ACTUALIZACION

- GRUPO DE MAQUINAS -

(ESCALA 1/400)

ESTUDIO DE C.A.D. EN MEXICO
009-B-2
(010-B-2)
EDIFICIO DE ACTUALIZACION

Study of the CAD in Mexico
009-B-2
(010-B-2)
実習棟



Edificio de Actualizacion - Máquinas -

機械系実習棟

制御系実習棟 1:200

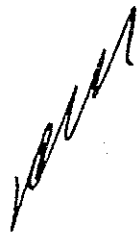
Edificio de Actualización -Control-

— 250 —

THE STUDY OF CAD-DGETI IN MEXICO
010-A-1
ACTUALIZATION BUILDING
(CONTROL)

- GENERALITIES OF THE UPDATE BUILDING (CONTROL) -

1. The area applied the same system as the one to the ten of the generality of the building of Actualitation (Schemes) of the leaf 009-TO.



- 10 -

ESTUDIO DE C.A.D. EN MEXICO
010-B-1
EDIFICIO DE ACTUALIZACION
-CONTROL-

1. Control de secuencia
2. Sala de elaboración
3. Control de micro-computadora
4. Circuito eléctrico y electrónico
5. Robot hidráulico y neumático
6. PLC
7. Sistema automático
8. Cuarto de transferencia tecnológica
9. Sala de elaboración para obras de graduación
10. Aula
11. Sala de junta
12. Vestidor
13. Cuarto de herramienta
14. Sala de exposición
15. Sanitario
16. Escalera
17. Cuarto de compresores

EDIFICIO DE ACTUALIZACION
- GRUPO DE CONTROL -
(ESCALA 1/400)

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THE STUDY OF CAD-DGETI IN MEXICO
011-A-1
PLANNING OF THE EXTERIOR AREA

- PLANNING GENERALITIES OF THE EXTERIOR AREA -

1. The soil of the project site is vulnerable and the area meets a large quantity of rainfalls during rainy season. Therefor drain system must be planned adequately both inside and outside of the area. The name of the project site " Tlahuac " means " god of the rain".

2. Appropriate measures for soil will be taken thoungh discussions among DGETI and CAPFCE according to the professinal opinions derived from a study executed on the part of CAPFCE ant the opinions of the CENAPRED. This idea is applied for the total building design and the exterior design.

3. In the site of the project, a circulation road (4 meters width) will be located outside the area. Each building has a small parking and service space, in this way yhe separate lines of vehicular and human movement will be considered.

4. There will be built several parkings within area for disconnect to the same.

5. The overhead power cables will not be installed within the area. There will be buil ducts under the pedestrian sidewalk to install electric cables, circuits of LAN and telephone cables etc.

6. It is taken in consideracion the safety, the control and the movement pedestrian during the night to put the post of ilumination exterior and the accesories of ilumination of the buikdings.

7. CAD-DGETI will install the high-quality and sensitive machinaries and equipment in each work shops. They are considered to take measures for preventig dust. The exterior of plantations and grass that they will be agrreable to the sight.

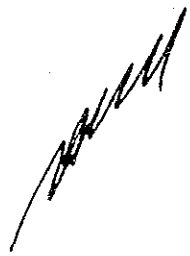
8. Against a possible falling of the soil, the study to increase of 30 to 40 cm the buildings and the sidewalks areas over the ground level will be elaborate. Also elevate all the surface area over the neighboring area will be studied.

9. In respect of the signal planning within the area, a homogeneity of the logotype, form and color, etc. will be standarized.

10. The main gate and the division walls will be designed with contemporary sence that has relation to the design of the signals.

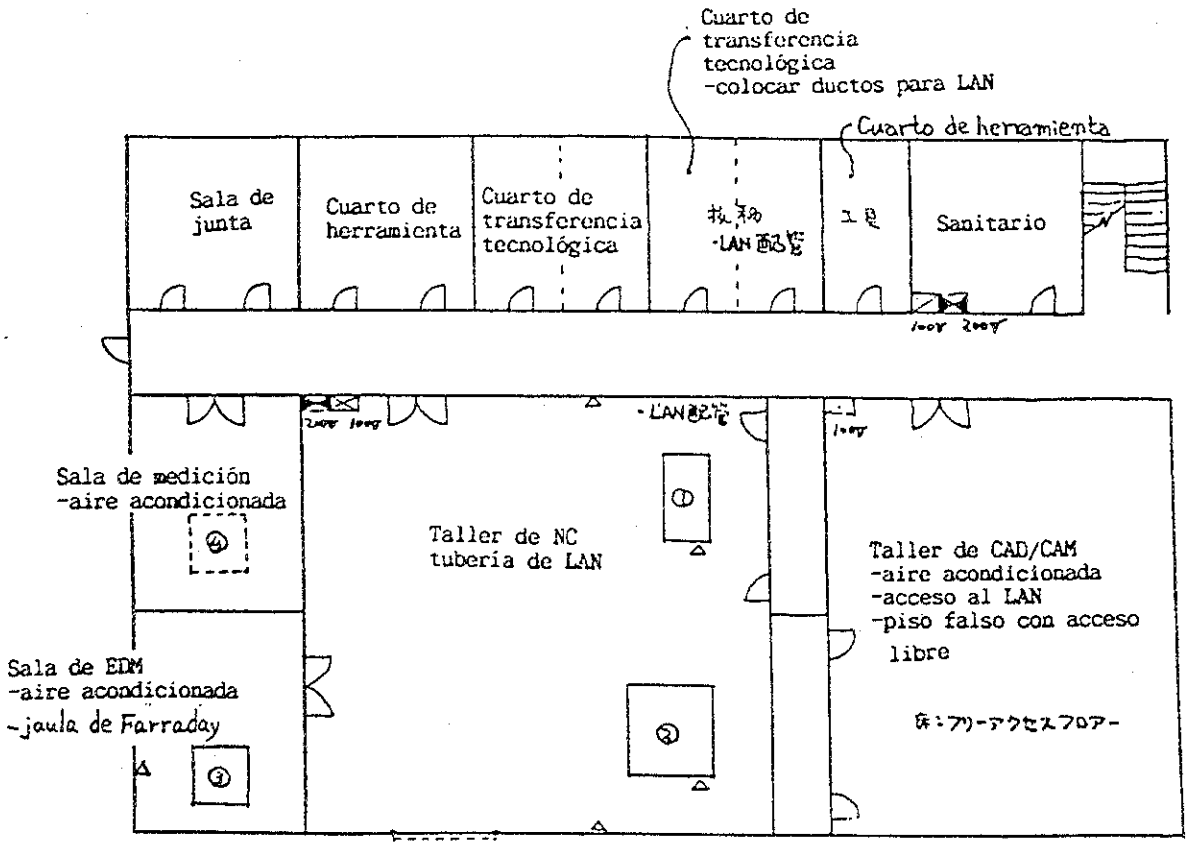
11. The corridors that join each building will be designed in such a way that it does not prejudice the total scenic view. The actualization building will be designed with external brokers and we believe it is indispensable to consider the rainy season of this zone.

12. The tower of the water tank is considered as a landmark of the area, however it is not necessary to build it in center of the area. The form of it should be simple but it gives an impact upon the total landscape of the Center.



Study of the CAD in Mexico
012-B-1
設備計画

ESTUDIO DE C.A.D. EN MEXICO
012-B-1
PLANIFICACION DE INSTALACION



▩ tablero de distribución 200V
▨ tablero de distribución 100V
△ tubería neumática

1) torno CNC (4.2t)
2) centro de maquinaria (6.0t)
3) cortadora de alambre (3.4t)
4) medidor tridimensional (1.5t)
*No está incluido en la esta esta de donación. Será necesario para el futuro.

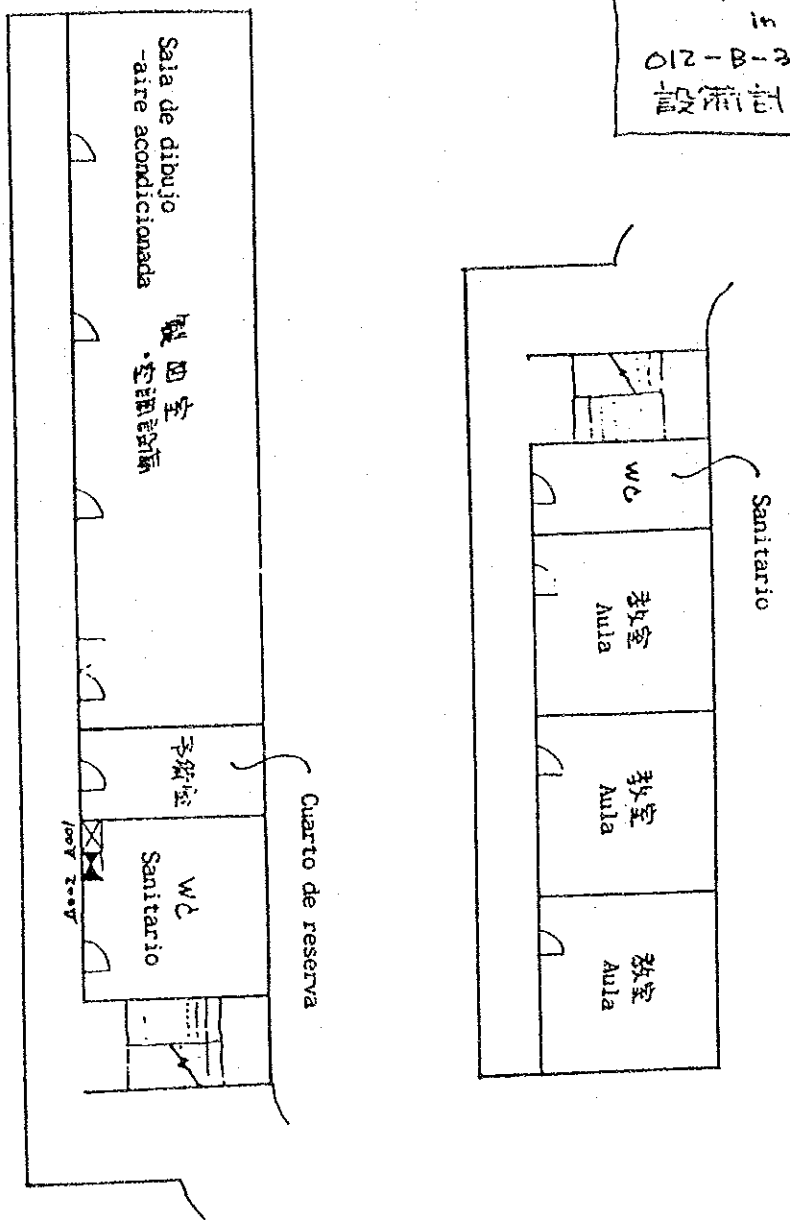
TALLER DE MAQUINAS P.B.

PLANO DE INSTALACION - 1 DE LA MAQUINARIA PESADA

012-B-3

PLANIFICACION DE INSTALACION

Study of the CAD in Mexico
012-B-3
設備計画



200V 分電盤
100V 分電盤
tablero de distribución 200V
tablero de distribución 100V

水槽給水管理棟 2階 設備図 TALLER DE MAQUINAS 2DO. PISO
PLANO DE INSTALACION

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別法

ESTUDIO DE C.A.D. EN MEXICO
012-B-5
PLANIFICACION DE INSTALACION

Study of the CAD in Mexico
012-B-5
設備計画

2000 動力分電盤 tablero de distribución 200V
1000 電灯分電盤 tablero de distribución 100V
△ エア配管 tubería neumática

制御系実習室 1階 設備図-2

TALLER DEL CONTROL P.B.
PLANO DE INSTALACION-2

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Equipment & Tools List which will be purchased by Mexican Side.

Machine Group.

Lab.	Classification	Item	Qty.
Conventional Machine Lab. and/or NC Lab.	Equipment	Conter Sawing Machine	1
		Surface Grainding Machine	1
		Universal Tool Grainding Machine	1
	Measurement Tools	Micrometer	140
		Guage	251
		Surface Plate	3
		Others	--
	Hand Tools	Screw Driver	54
		Wrench	81
		Others	--

Control Group.

Lab.	Classification	Item	Qty.
Sequence Control Lab. PLC Lab. Hydraulic/ Pneumatic Lab. Computer Control Lab. Automation System Lab. Project Lab. (6 Lab.s)	Hand Tools	Wire Stripper	42
		Screw Driver	420
		Wrench Set	12
		Pliers	168
		Cutter	84
		Reed Pincers	42
		Soldering Iron with Stand	140
		Others	--
	Hand Tools	Set File	3
		Screw Driver	12
		Others	--