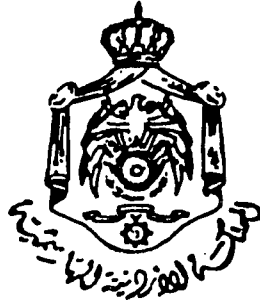


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ARCHITECTURAL DESIGN REVIEW
OF THE
HEI NAZAL SCHOOL PROTOTYPE

 **FLUOR TECHNOLOGY, INC.**
Contract No. 844014
U.S. Agency for International Development
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Work Order No. 2



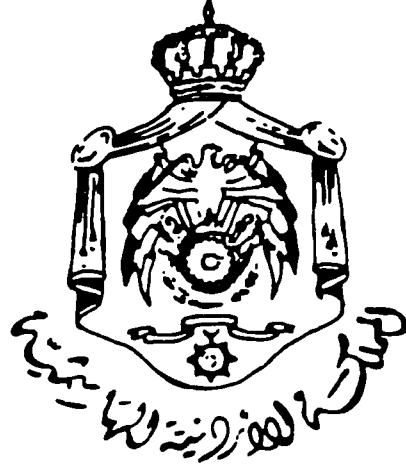
MINISTRY OF EDUCATION
HASHEMITE KINGDOM OF JORDAN
IN COOPERATION WITH USA AGENCY FOR
INTERNATIONAL DEVELOPMENT
AMMAN - JULY 1986

ARCHITECTURAL
DESIGN REVIEW OF THE
HEI - NAZAL SCHOOL PROTOTYPE

REPORT PREPARED BY



FLUOR
ARCHITECTS
ENGINEERS
PLANNERS



دراسة التصميم المعماري لنموذج مدارس
حرف نال

إعداد



مهندسون معماريون
مهندسون انشائيون
مهندسون تخطيط

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ACKNOWLEDGEMENTS:

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WITH THE CLOSE COOPERATION AND THEIR PROFESSIONAL
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PROJECT BACKGROUND AND EVALUATION

THE DESIGN OF THE SCHOOL PROTOTYPE BUILDING WAS CONCEIVED A FEW YEARS AGO BY THE UNITED NATIONS PLANNING AND DEVELOPMENT OFFICE AND IS CURRENTLY WIDELY USED AS A TYPICAL SCHOOL MODEL THROUGHOUT THE KINGDOM SERVING GRADES ONE TO NINE (1-9, BOYS AND GIRLS).

THE DESIGN IS VERY STRAIGHTFORWARD AND SIMPLE, ADAPTABLE TO VARIOUS GEOGRAPHIC AND CLIMATIC CONDITIONS EXISTING IN THE COUNTRY AND APPEARS TO BE VERY FUNCTIONAL.

SIZE OF THE CLASSROOMS, FLEXIBILITY, EXITING, CIRCULATION (BOTH HORIZONTAL AND VERTICAL) ARE ADEQUATE TO HANDLE A LARGE GROUP OF STUDENTS AT THE SAME TIME.

BUILDING MATERIALS SELECTED FOR THE CONSTRUCTION OF THE SCHOOL ARE AVAILABLE THROUGHOUT THE COUNTRY AND WILL NOT REQUIRE ANY SPECIAL EQUIPMENT OR HIGHLY SKILLED SPECIALISTS TO CONSTRUCT.

GENERAL DESCRIPTION:

THREE LEVELS SCHOOL STRUCTURE:

GROUND FLOOR CONSISTING OF SCHOOL ADMINISTRATION OFFICES, PRINCIPAL OFFICE, LIBRARY, CANTEEN (ACCESSIBLE FROM THE OUTSIDE), SCIENCE LABORATORY (BOTH BOYS AND GIRLS SCHOOL), HOME ECONOMICS LABORATORY (GIRLS SCHOOL ONLY) AND FOUR TYPICAL CLASSROOMS.

SECOND AND THIRD LEVEL ARE THE SAME EACH HAVING 12 (TWELVE) TYPICAL CLASSROOMS AND FOUR SMALL OFFICES FOR THE TEACHERS. EACH FLOOR HAS A 3.5M WIDE CORRIDOR WHICH IS ADEQUATELY LIT BY CEILING MOUNTED LIGHTS AND CONTINUOUS ROW OF HIGH WINDOWS PROVIDING NATURAL INDIRECT LIGHTING FROM THE CLASSROOMS. TWO STAIRS LOCATED ON EACH SIDE OF THE BUILDING SERVE AS A PEDESTRIAN VERTICAL CIRCULATION AND ALTHOUGH THEY LACK THE SAFETY FEATURES SUCH AS HANDRAILS AND ABRASIVE NOSING AT THE TREADS, APPEAR TO BE ADEQUATE TO HANDLE LARGE GROUPS OF STUDENTS.

THE CONSTRUCTION IS POURED IN PLACE REINFORCED CONCRETE AND CONCRETE BLOCK FOR NON-BEARING PARTITIONS SUCH AS WALLS BETWEEN THE CLASSROOMS. EXTERIOR FINISHES - EXPOSED CONCRETE (PAINTED) AND STONE VENEER FOR ACCENT WALLS. INTERIOR FINISH - TWO COATS OF PLASTER AND PAINT.

LIGHTING:

*CLASSROOM: CEILING MOUNTED SUSPENDED FLUORESCENT LIGHTING. (TWO EXPOSED FLUORESCENT LIGHT TUBES PER FIXTURE) SPACED APPROXIMATELY 3M O/C BOTH DIRECTIONS. ADDITIONAL LIGHT OVER BLACKBOARD.

*CORRIDOR: CEILING MOUNTED INCANDESCENT LIGHT FIXTURES APPROXIMATELY 5M O/C.

PLUMBING:

*WATER: COLD WATER SUPPLY GROUND FLOOR ONLY FOR THE USE IN THE SCIENCE LAB. AND HOME ECONOMICS LAB. IN ADDITION EACH FLOOR HAS TWO ELECTRICAL WATER COOLERS LOCATED AT THE CORRIDOR AT EACH END OF THE BUILDING. WATER SUPPLY TANK IS LOCATED ON THE ROOF WHICH IS ACCESSIBLE BY THE ROOF HATCH LOCATED ABOVE THE STAIRWELL.

HEATING, VENTILATING, AIR CONDITIONING:

THE BUILDING HAS NO MECHANICAL HEATING AND AIR CONDITIONING, AND IS VENTILATED BY NATURAL MEANS. (50% OPENABLE ALUMINUM SLIDING WINDOWS)

GAS:

TWO LARGE BOTTLES AT THE GROUND LEVEL (ACCESSIBLE FROM THE OUTSIDE).

RESTROOMS:

THERE ARE TWO SMALL TOILET COMPARTMENTS (ONE EASTERN, ONE WESTERN) LOCATED IN THE ADMINISTRATION AREA ON THE GROUND FLOOR AND SERVING ONLY THE TEACHING STAFF. RESTROOM FACILITIES FOR THE STUDENTS ARE LOCATED IN THE SEPARATE STRUCTURE OUTSIDE THE MAIN BUILDING.

DESIGN RECOMMENDATIONS:

TYP. CLASSROOM:

PROVIDE TACK BOARDS (DISPLAY BOARDS) ON SIDE AND BACK WALL FOR THE PURPOSE OF DISPLAYING STUDENTS WORK OR TEACHING AIDS. BY USING THE SOUND ABSORBING MATERIALS (SUCH AS CORK OR FABRIC COVERED SOFT BOARD) THIS WILL ALSO IMPROVE THE ACOUSTICS OF THE CLASSROOMS.

THE PROPOSED COAT HOOK BOARD SHOULD BE MOVED FROM THE BACK WALL OF THE CLASSROOM TO THE CORRIDOR. IF BUDGET ALLOWS, THE INDIVIDUAL LOCKERS FOR THE STUDENTS COULD BE INSTALLED IN THE CORRIDOR.

SCIENCE LAB:

DESIGN TO HOLD BASIC EXPERIMENTS IN THE FIELD OF CHEMISTRY, PHYSICS, BIOLOGY, ETC. TWO LAYOUT ALTERNATIVES ARE PROPOSED: NO. 1 AND NO. 2. (SEE DRAWING)

ALTERNATE NO. 1

ALTERNATE NO. 1 IS BASICALLY THE EXISTING LAB. LAYOUT WITH THE SINKS MOVED AWAY FROM THE CENTER AISLE. THIS WILL IMPROVE THE SIGHTLINES AND CIRCULATION BETWEEN TEACHER'S TABLE AND STUDENT'S.

EACH TABLE IS DESIGNED TO ACCOMMODATE 2-3 STUDENTS AND IS EQUIPPED WITH SINK (COLD WATER ONLY), ELEC. OUTLET AND DOUBLE 90° GROUND KEY COCK FOR GAS.

AS AN OPTIONAL EQUIPMENT, A BURETTE ROD WITH THE CROSSBAR COULD BE PROVIDED AT EACH TABLE. EACH STUDENT TABLE SHOULD BE DESIGNED AS A FREESTANDING PIECE OF FURNITURE AND ATTACHED ONLY TO THE UTILITY MODULE WALL FOR RIGIDITY WITH SCREWS. THIS WILL OFFER MORE FLEXIBILITY IN ROOM ARRANGEMENT AND ITS USAGE.

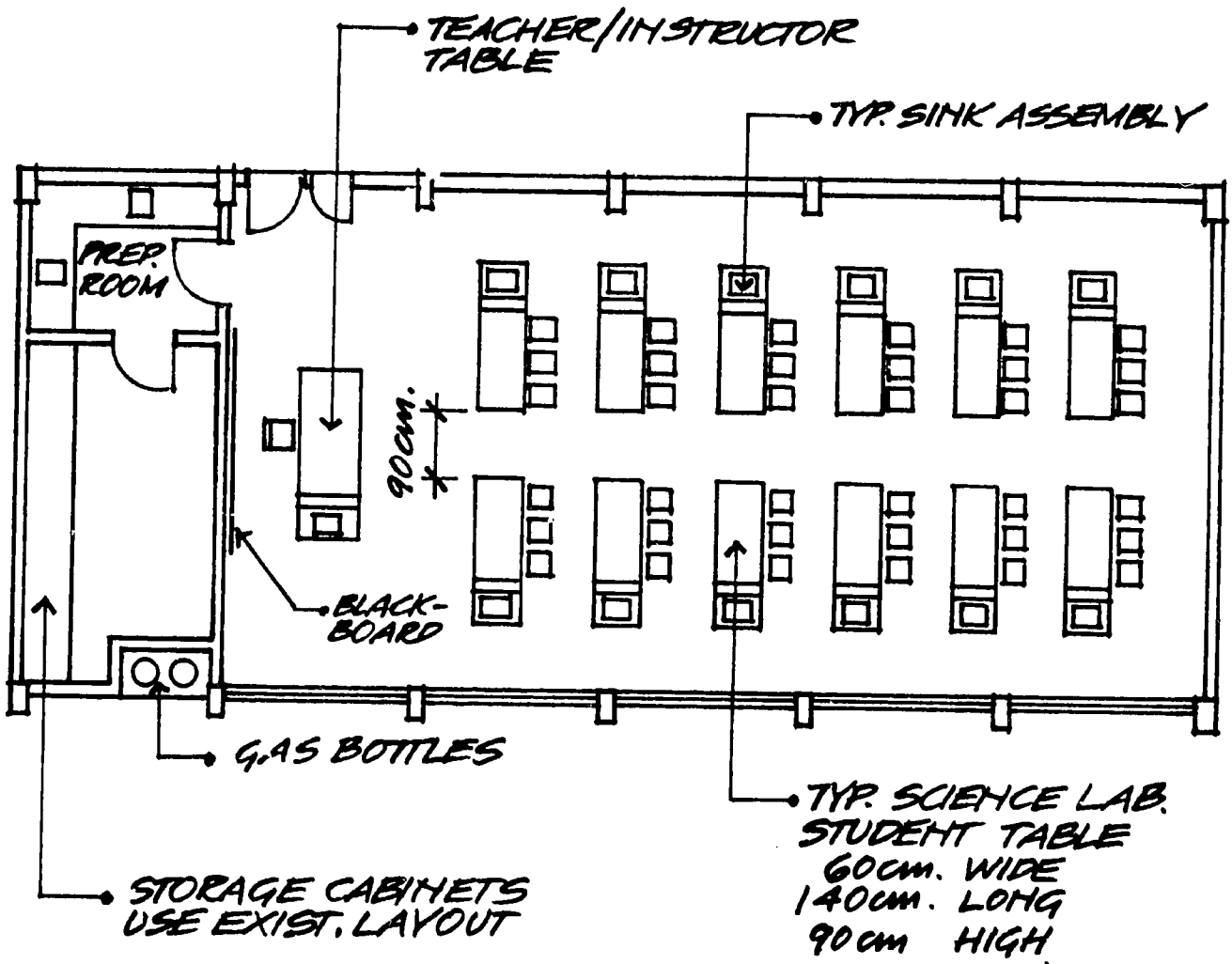
ALTERNATE NO. 2

THIS LAB ROOM ARRANGEMENT WILL REDUCE THE NUMBER OF TABLES AND SINKS AND AT THE SAME TIME ALLOW A LARGER GROUP OF STUDENTS TO WORK ON THE SAME EXPERIMENT AT THE SAME TIME.

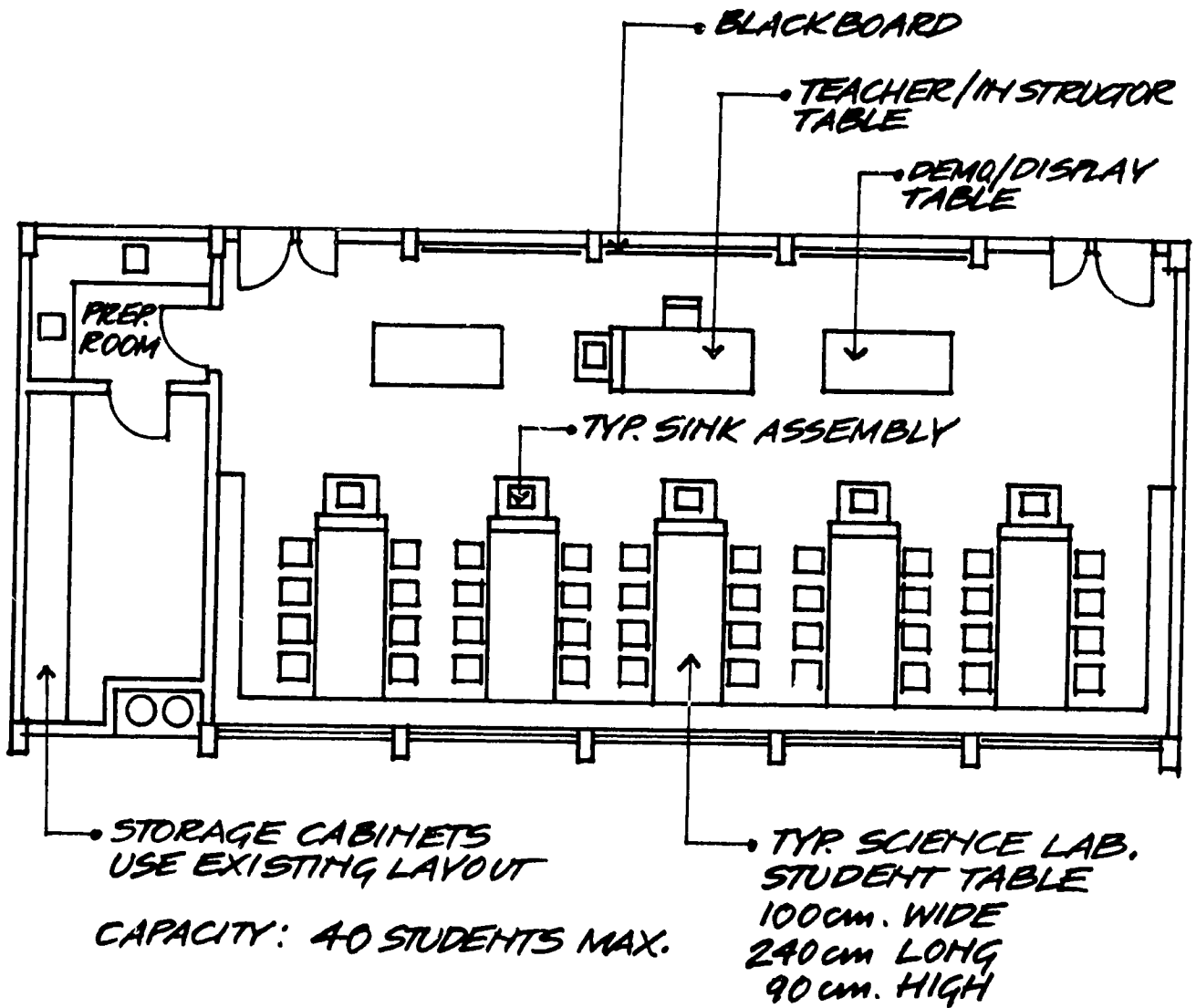
THE AREA FOR TEACHER/INSTRUCTOR TABLE(S) WILL INCREASE IN SIZE, TOGETHER WITH IMPROVED SIGHT-LINES AND SHORTER VIEWING DISTANCE BETWEEN TEACHER AND STUDENTS. THE DRAWBACK OF THIS ALTERNATE IS THAT SOME OF THE STUDENTS WILL BE SITTING WITH THEIR BACK TO THE MAIN TEACHER TABLE WHEN TAKING NOTES. IN THIS ALTERNATE TEACHER/INSTRUCTOR TABLE IS IMPOSING ENOUGH SO THAT CLASS ATTENTION WILL BE NATURALLY CENTERED ON IT WHILE THE LECTURE OR DEMONSTRATION IS IN PROGRESS. THE SIZE OF IT ALSO WILL ALLOW A GOOD VIEW FOR ALL STUDENTS DURING A "GATHER AROUND" CLOSE UP DEMONSTRATION OR EXPERIMENT.

GENERAL NOTE

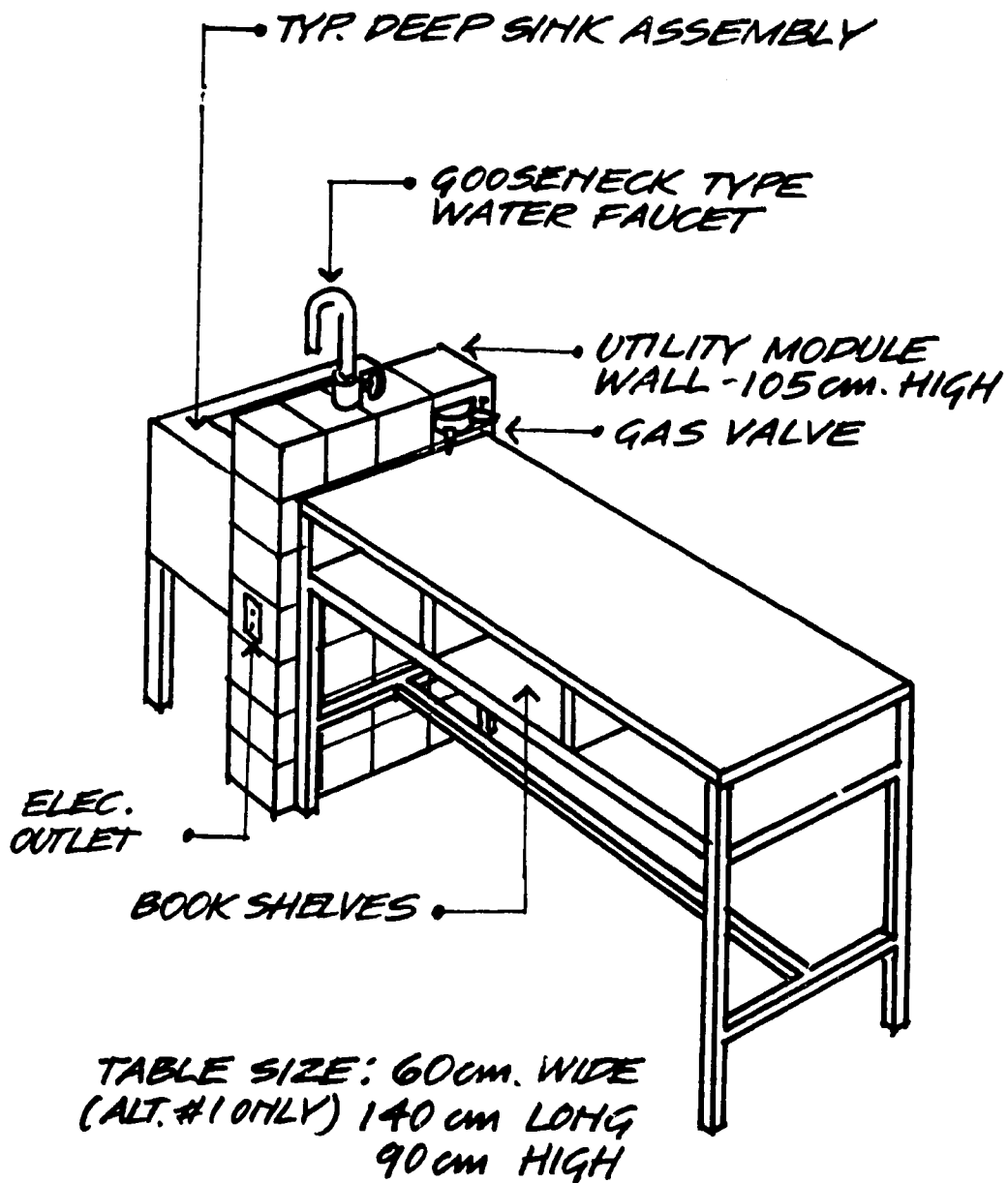
BOTH ALTERNATES: PROVIDE ADEQUATE MECHANICAL VENTILATION (ELEC. FANS) ABOVE THE WINDOWS.



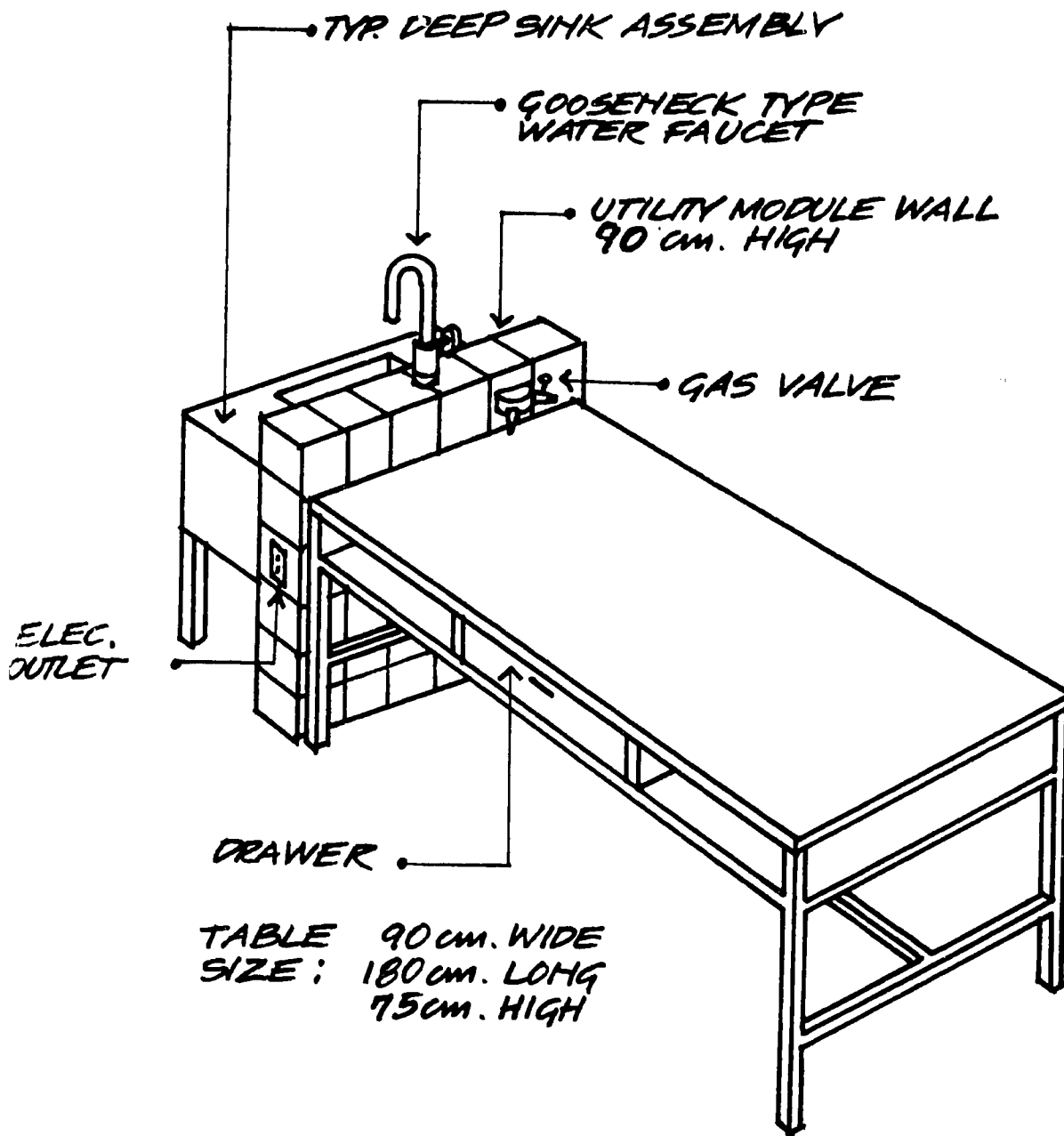
SCIENCE LABORATORY - ALTERNATE #1



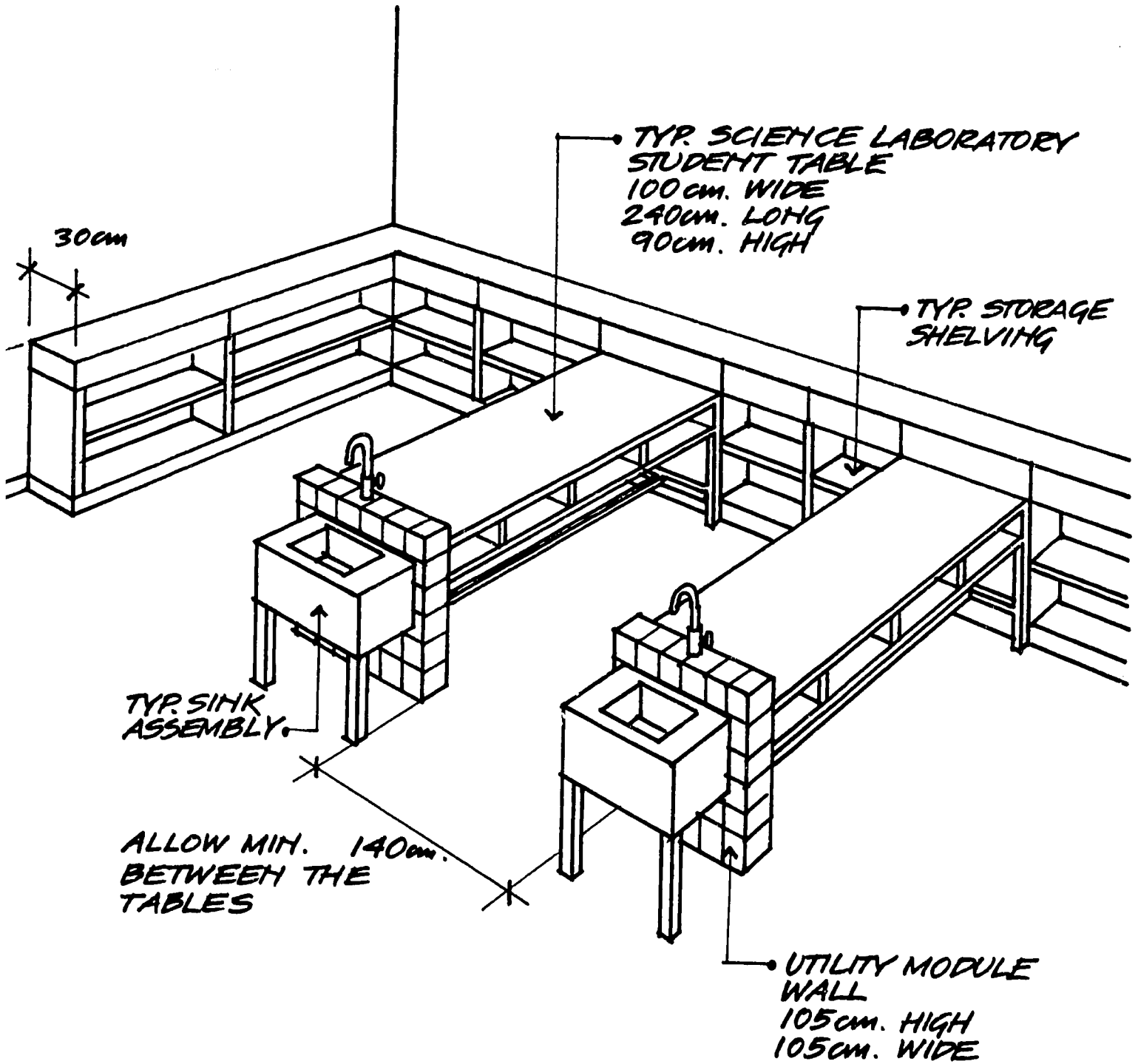
SCIENCE LABORATORY - ALTERNATE #2



TYPICAL SCIENCE LABORATORY TABLE



TYPICAL SCIENCE LABORATORY TEACHER/INSTRUCTOR TABLE



SCIENCE LABORATORY - ALTERNATE #2

HOME ECONOMICS LAB.

THIS PARTICULAR LABORATORY IS DESIGNED TO TEACH THE STUDENTS THE BASIC CULINARY ART, SEWING, DRESS DESIGN, PERSONAL GROOMING, ETC., EITHER IN SMALL GROUPS OR TO ACCOMMODATE A LARGE CLASS UP TO 35-40 STUDENTS.

ALTERNATE NO. 1

THIS LAB. ARRANGEMENT IS DESIGNED TO OFFER A MAXIMUM SPACE UTILIZATION WHETHER FOR TEACHING COOKING, SEWING, ARTS OR ANY RELATED HOME CRAFTS.

ONE SIDE OF THE LAB. (WINDOW SIDE) IS DEVOTED ENTIRELY TO THE ART OF COOKING WITH THE CENTRAL PART SERVING AS A FOOD PREPARATION CENTER WHILE THE SMALL KITCHEN COMPARTMENTS ON EITHER SIDE ARE FOR COOKING.

THE REMAINING HALF OF THE ROOM CAN SERVE AT THE SAME TIME AS AN INSTRUCTION AREA FOR SEWING, TYPING, ART CLASSES OR ANY RELATED CRAFTS.

ALL FURNISHING IN THIS AREA SHOULD BE A "FREE-STANDING" TYPE (NO BUILT-INS) TO OFFER MORE FLEXIBILITY IN THE ROOM ARRANGEMENT IF IT IS SO DESIRED BY THE INDIVIDUAL TEACHER.

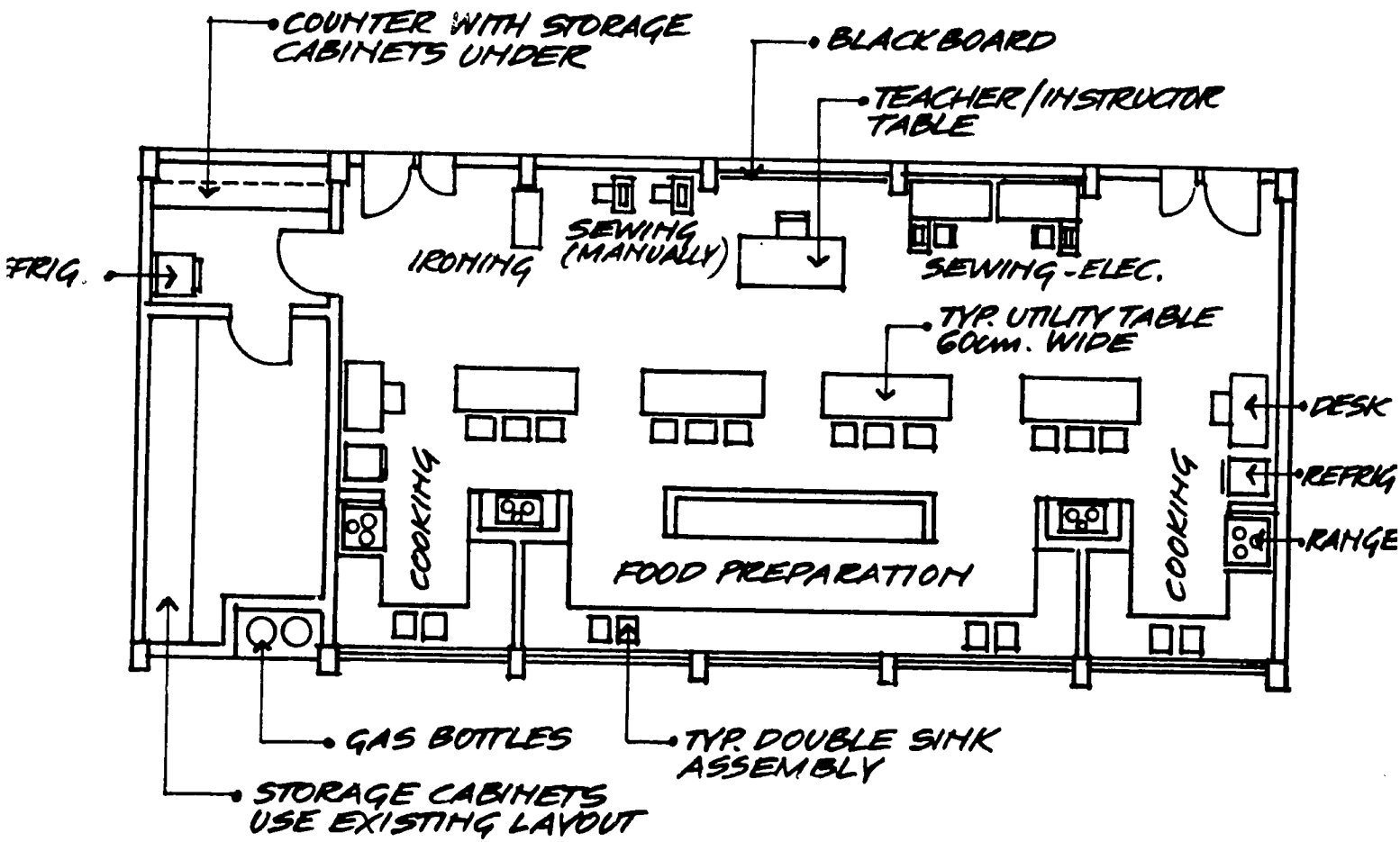
THIS LABORATORY DUE TO ITS FUNCTION WILL BE GENERATING A LARGE AMOUNT OF STEAM, VAPORS AND COOKING ODORS, THEREFORE, THE MECHANICAL VENTILATION SHOULD BE MORE THAN ADEQUATE. THIS COULD BE ACHIEVED BY INTRODUCING INDIVIDUAL EXHAUST HOODS OVER EACH COOKING RANGE (COST FACTOR VERY HIGH) OR BY INSTALLING ADEQUATE NUMBER OF ELEC. VENTILATOR FANS OVER THE WINDOWS.

ALTERNATE NO. 2

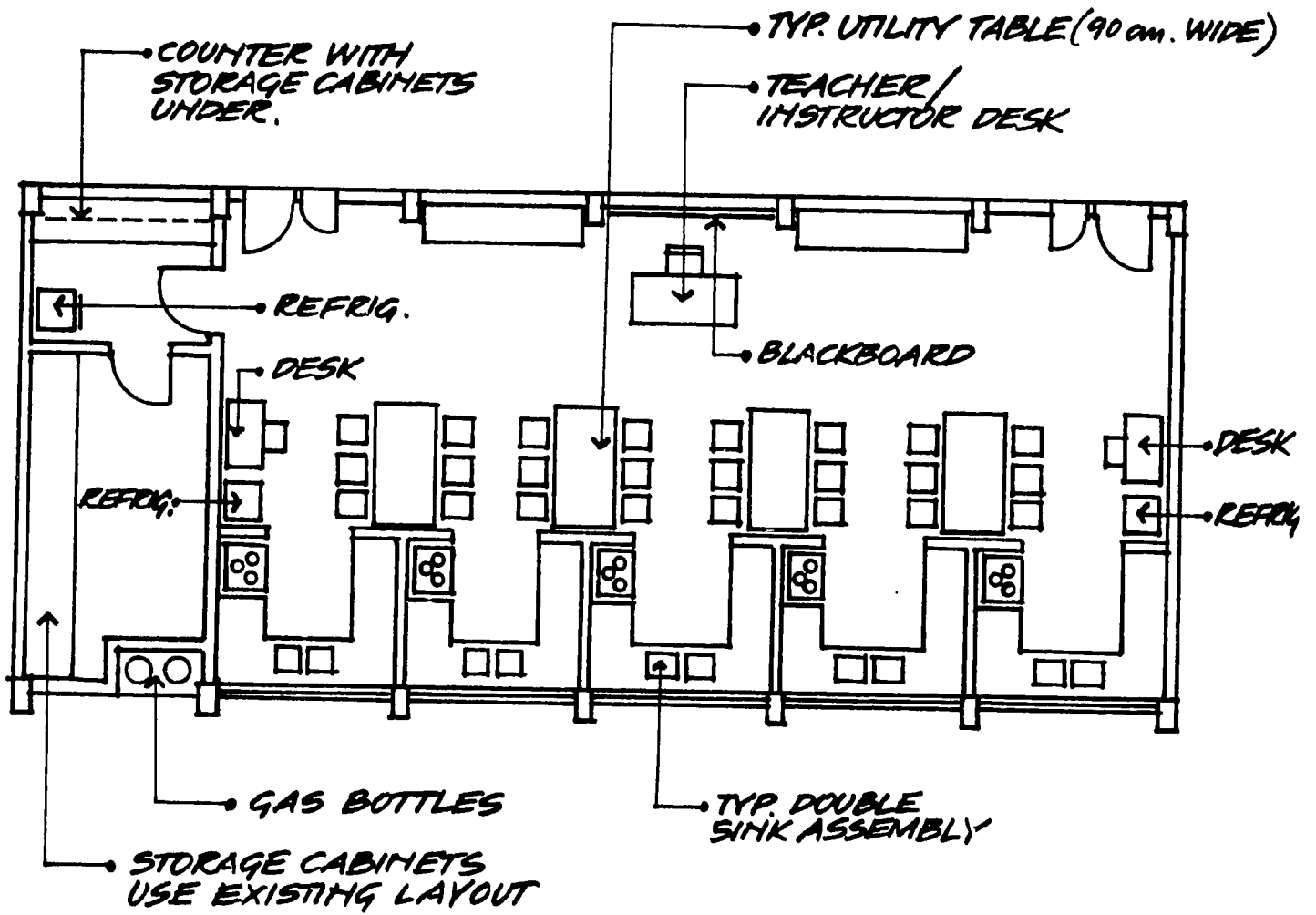
THIS LABORATORY LAYOUT IS DESIGNED TO ACCOMMODATE THE SAME NUMBER OF STUDENTS AS ALTERNATE NO. 1, ALTHOUGH NOT AS FLEXIBLE IN FUNCTION AND ARRANGEMENTS, IT WILL OFFER THE SAME AMENITIES FOR A SMALLER GROUP OF STUDENTS IN EACH KITCHEN UNIT. A NUMBER OF LARGE UTILITY TABLES CAN SERVE AS A PREPARATION STATION FOR EACH KITCHEN UNIT OR FOR TEACHING AND INSTRUCTION OF VARIOUS CRAFTS.

SAFETY NOTE:

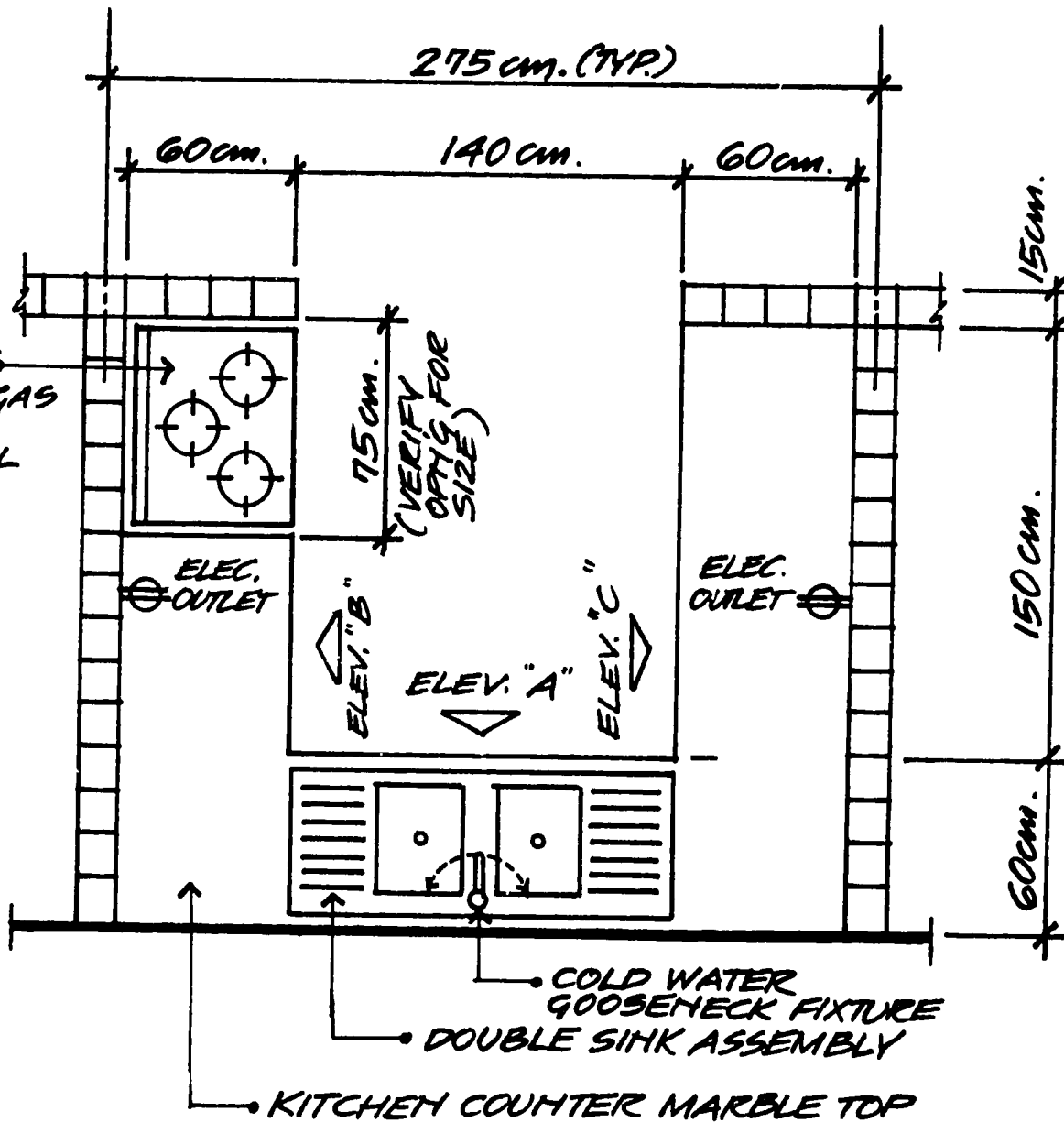
PROVIDE WALL MOUNTED MANUALLY OPERATED FIRE
EXTINGUISHER NEXT TO THE EXIT DOOR.



HOME ECONOMICS LABORATORY - ALTERNATE #1



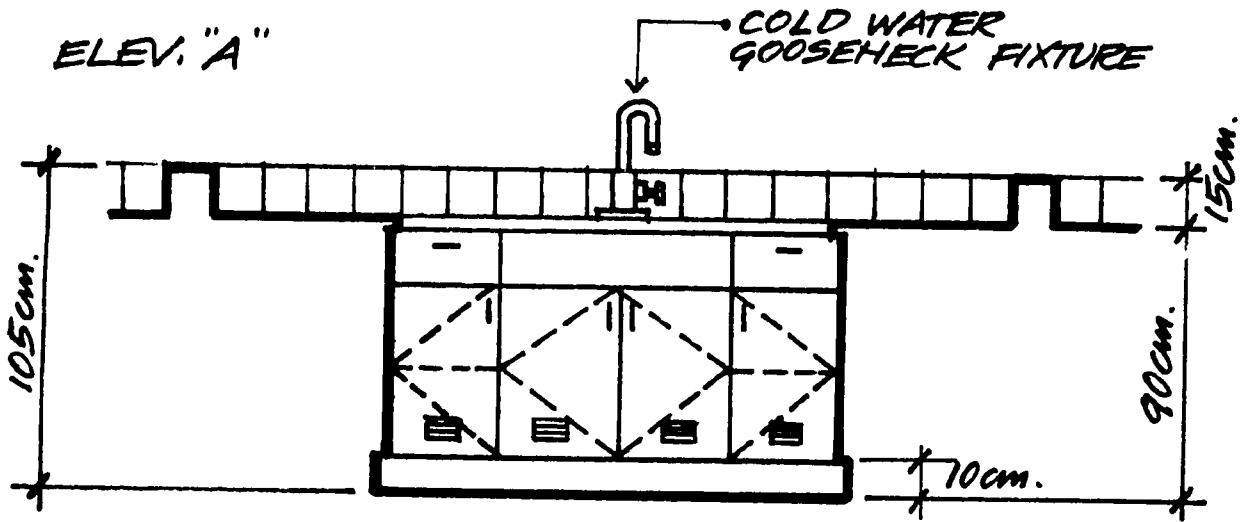
HOME ECONOMICS LABORATORY - ALTERNATE #2



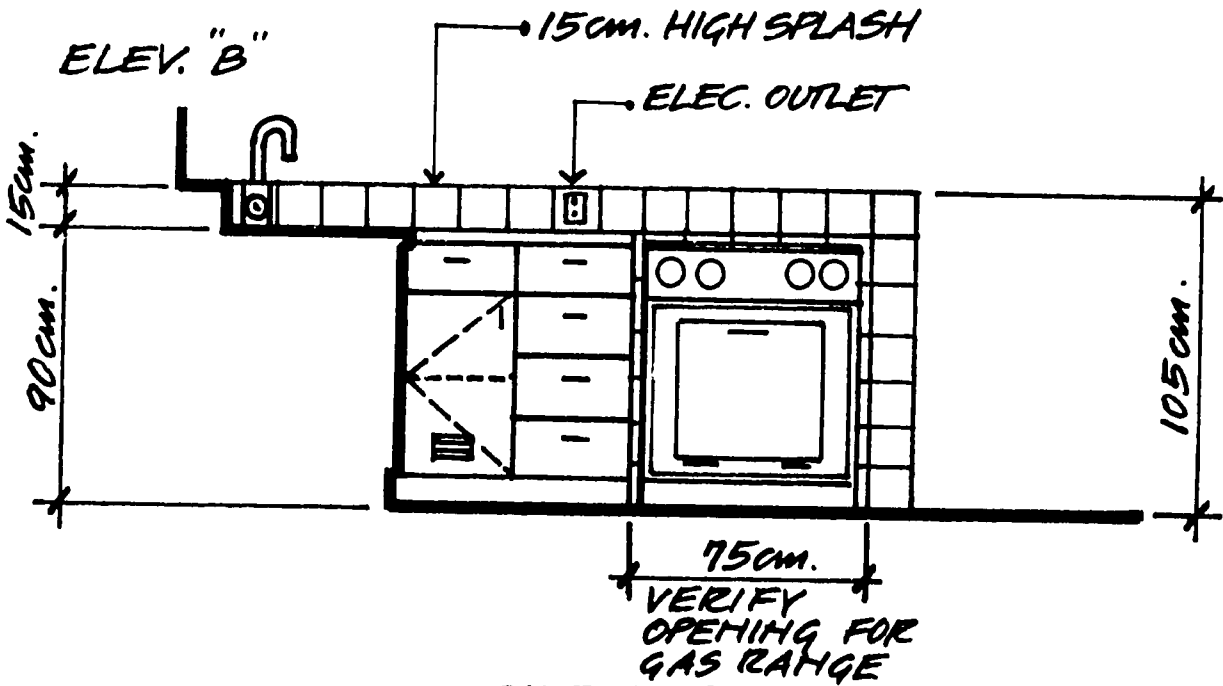
NOTE:
 PROVIDE VENTILATION
 SLOTS IN EACH KITCHEN
 CABINET DOOR.

HOME ECONOMICS LABORATORY
 TYPICAL KITCHEN LAYOUT - ALTERNATE #2

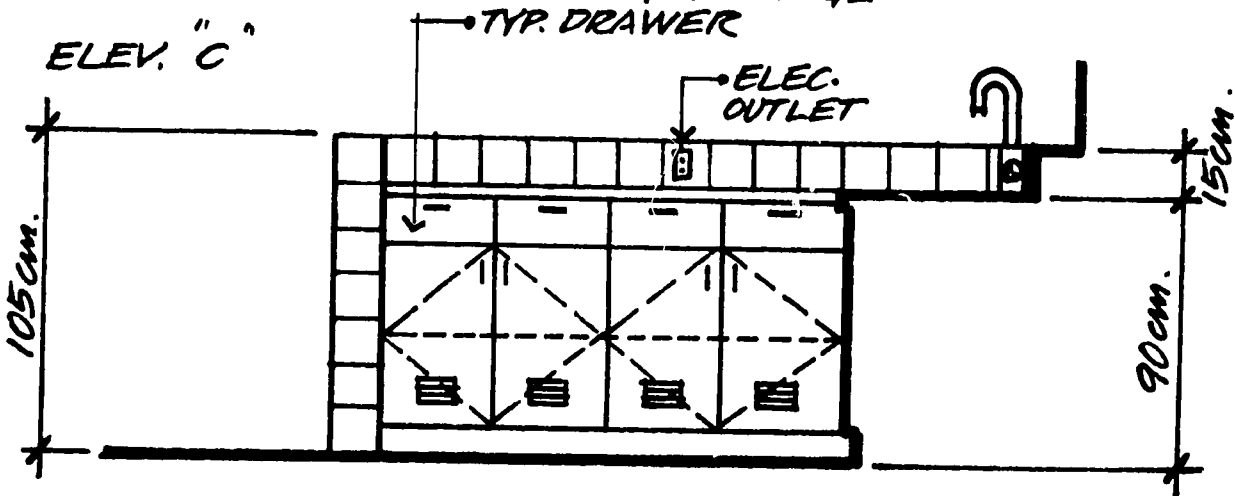
ELEV. "A"



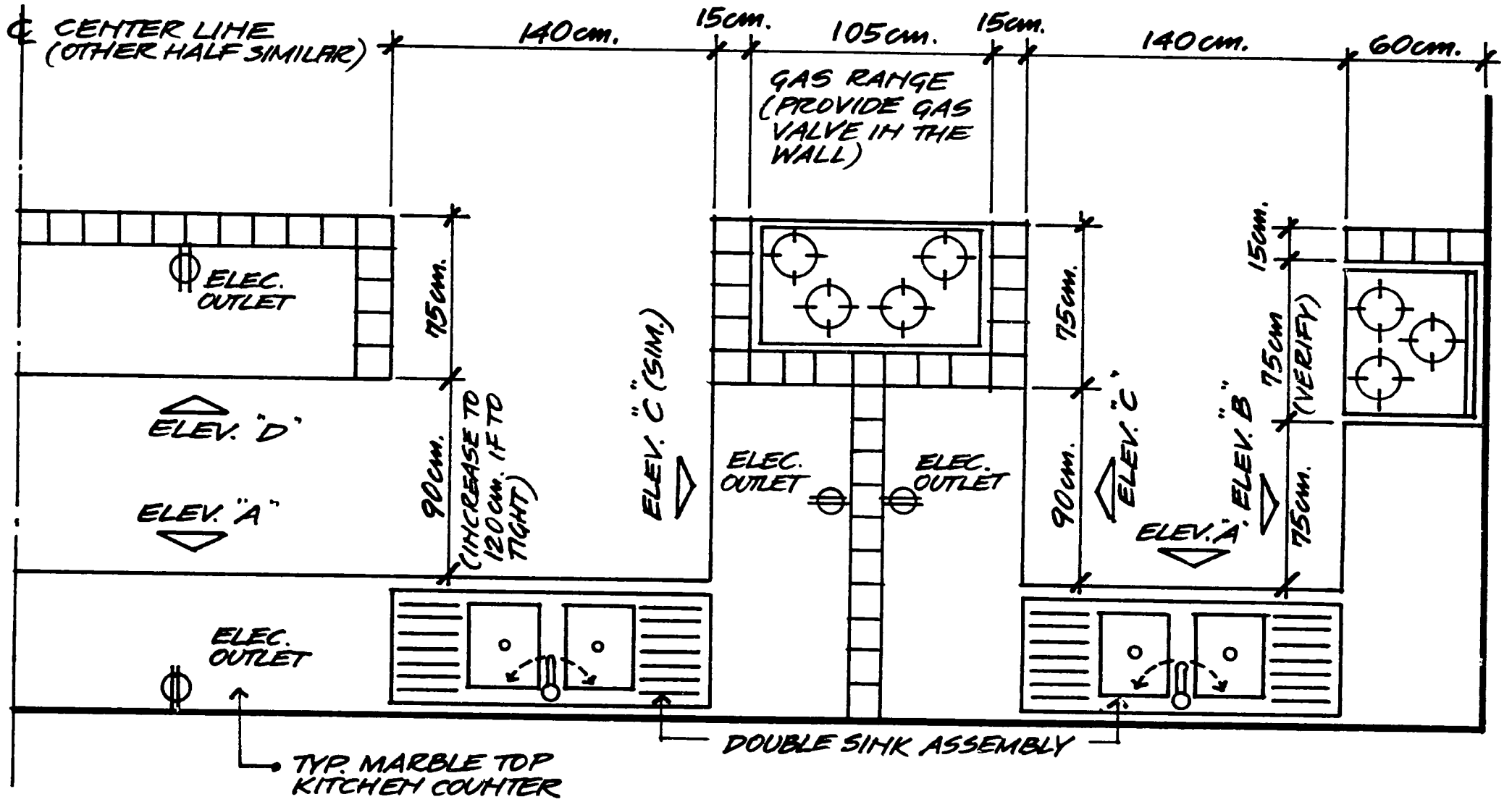
ELEV. "B"

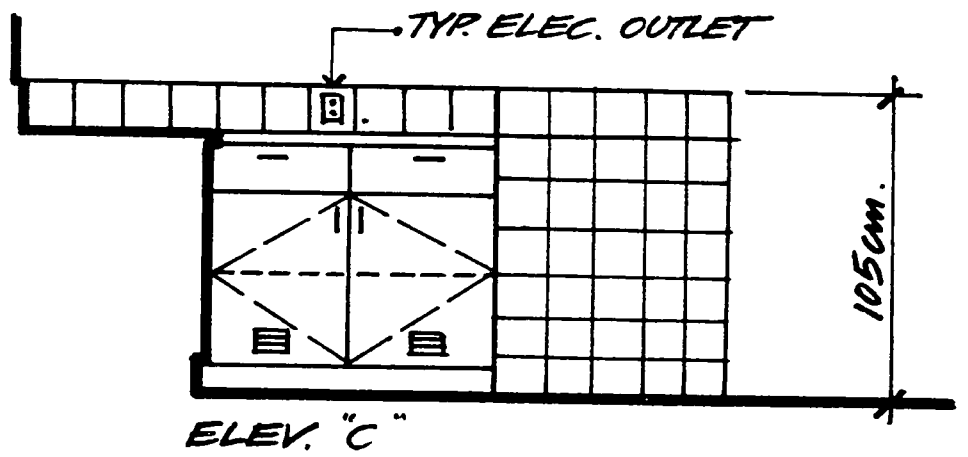
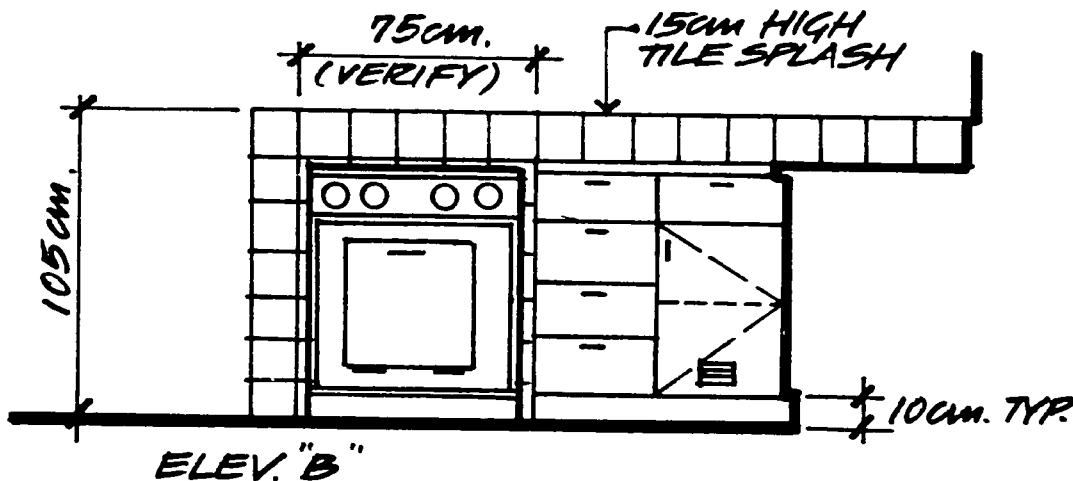
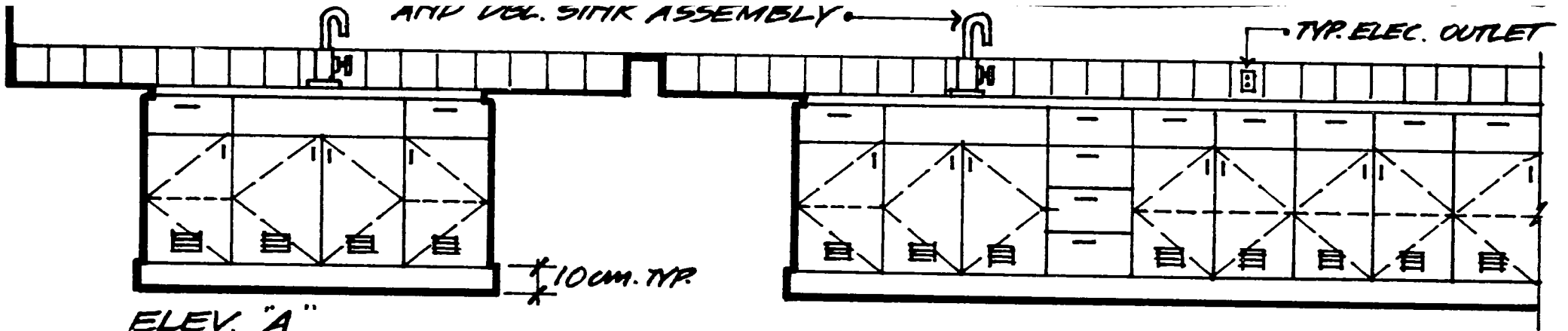


ELEV. "C"



HOME ECONOMICS LABORATORY ELEVATIONS - ALTERNATE #2

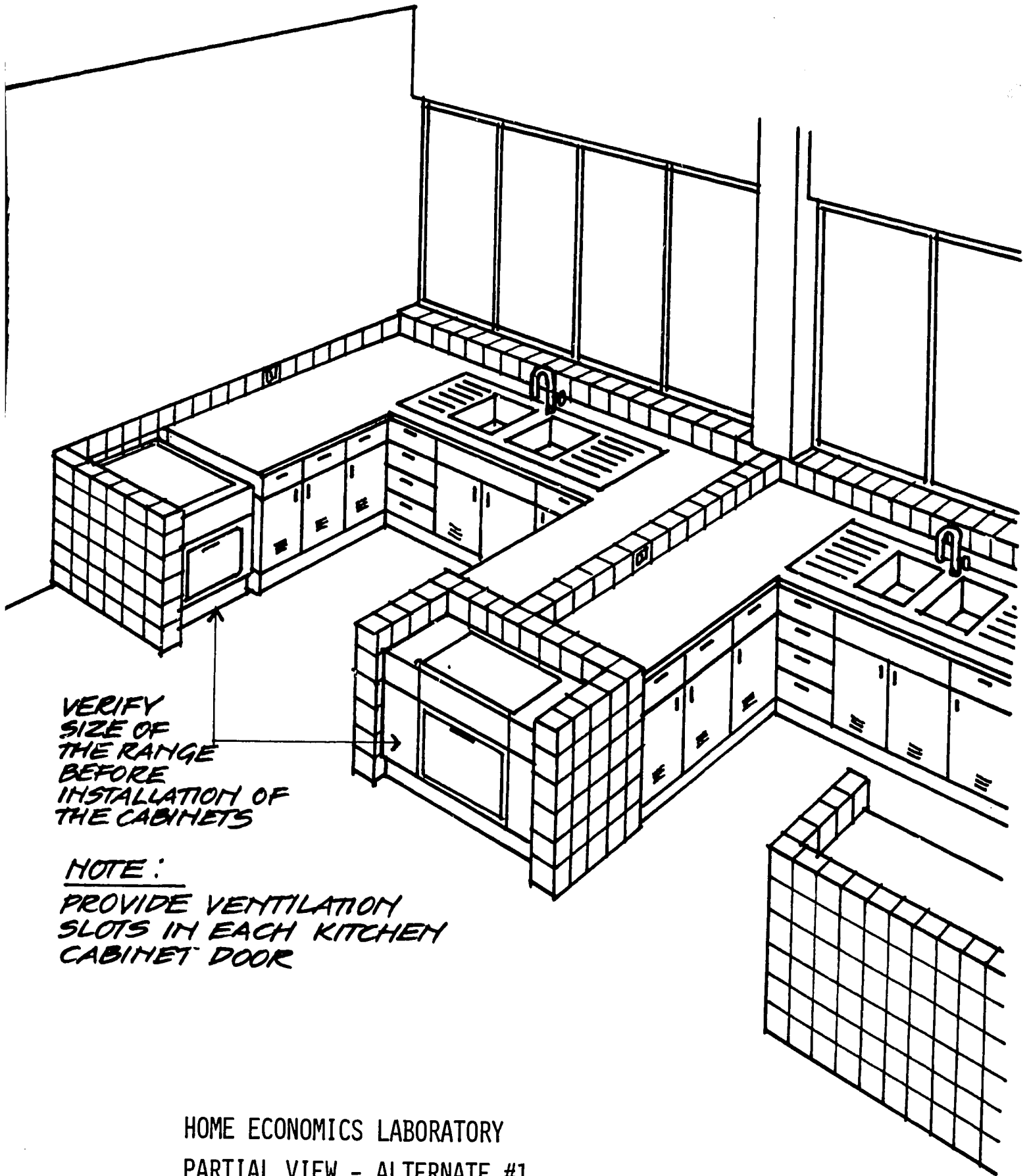




NOTE:
 PROVIDE VENTILATION
 SLOTS IN EACH KITCHEN
 CABINET DOOR

CENTER
 LINE (OTHER
 HALF SIM.)

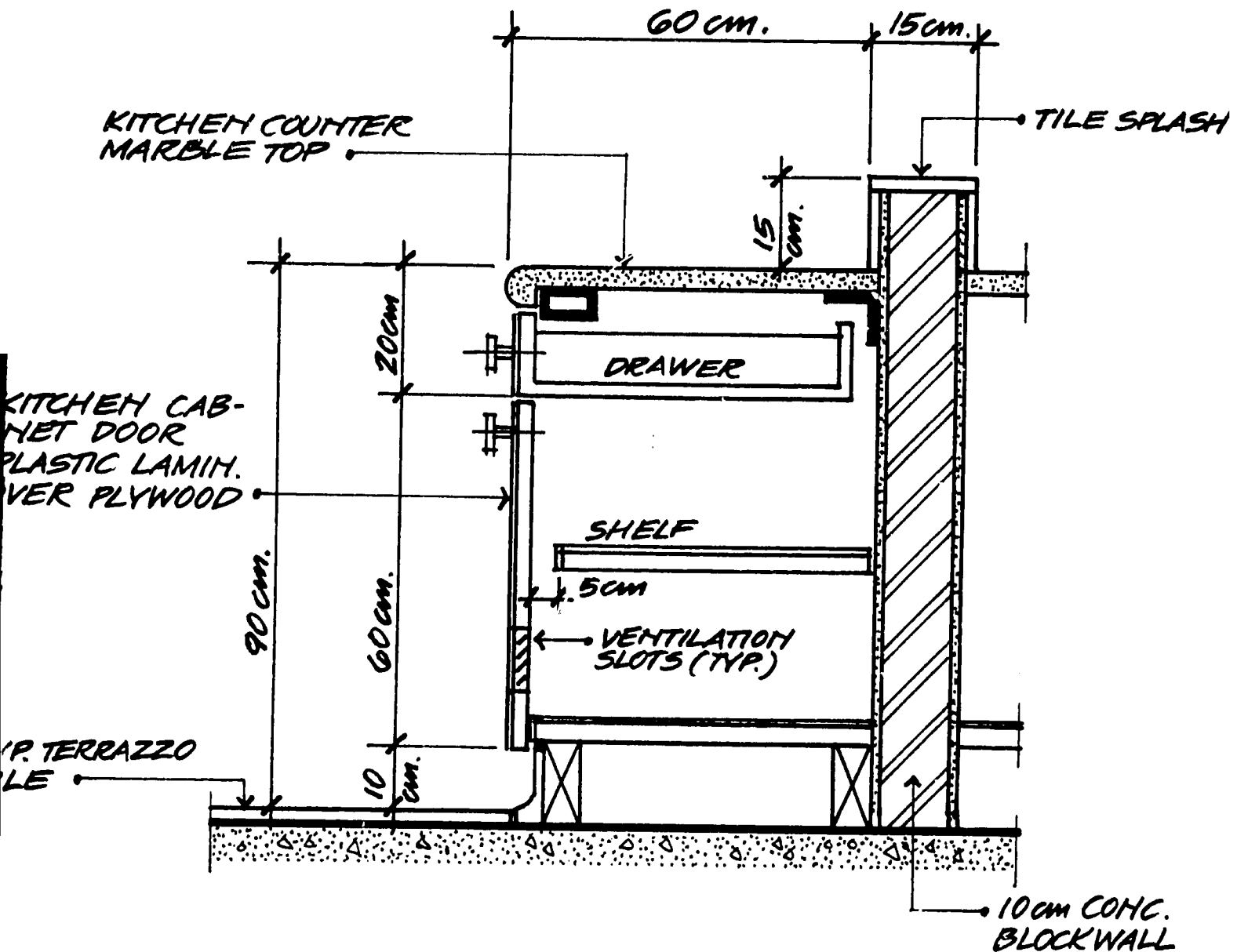
HOME ECONOMICS LABORATORY ELEVATIONS -
 ALTERNATE #1



VERIFY
SIZE OF
THE RANGE
BEFORE
INSTALLATION OF
THE CABINETS

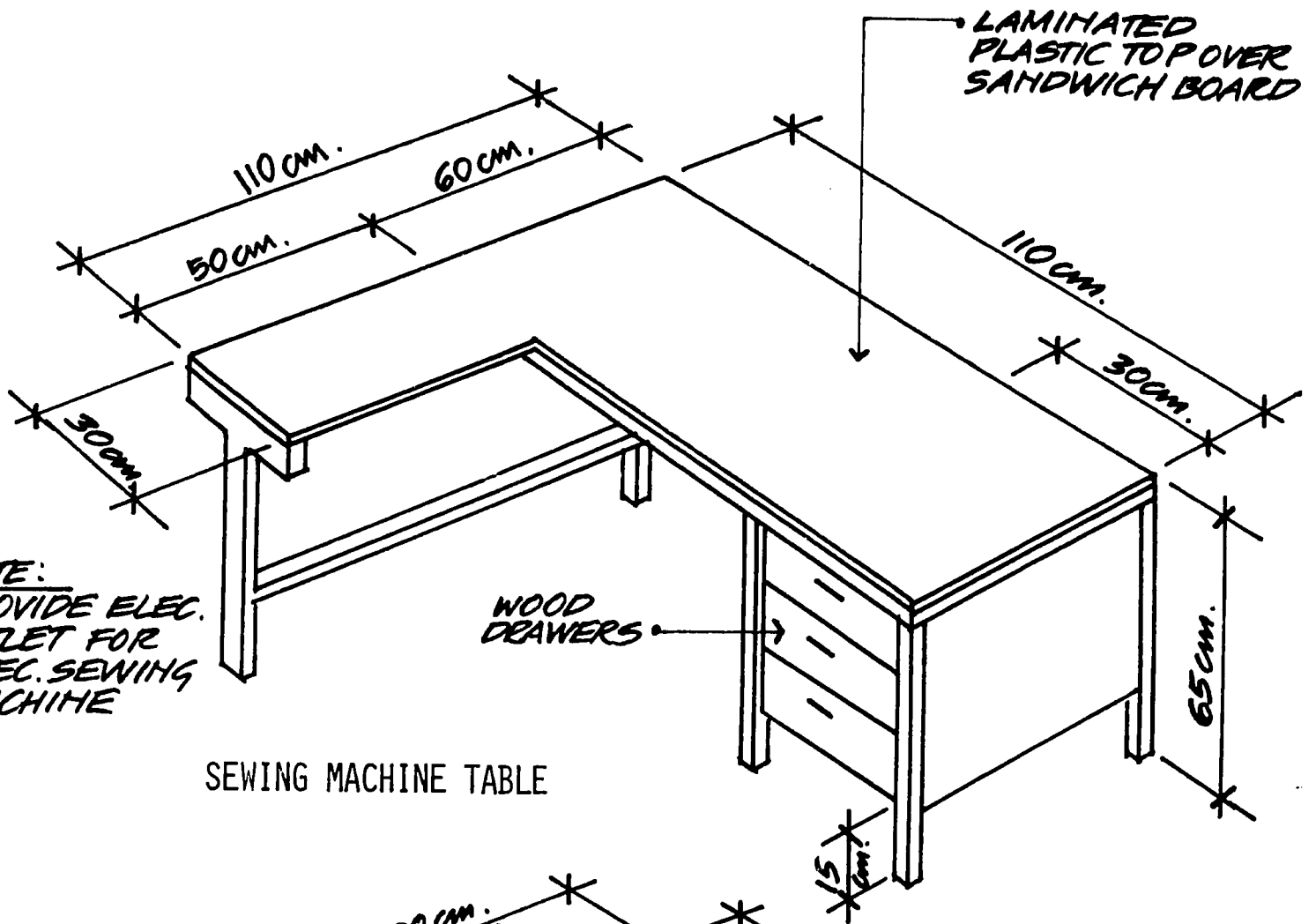
NOTE:
PROVIDE VENTILATION
SLOTS IN EACH KITCHEN
CABINET DOOR

HOME ECONOMICS LABORATORY
PARTIAL VIEW - ALTERNATE #1

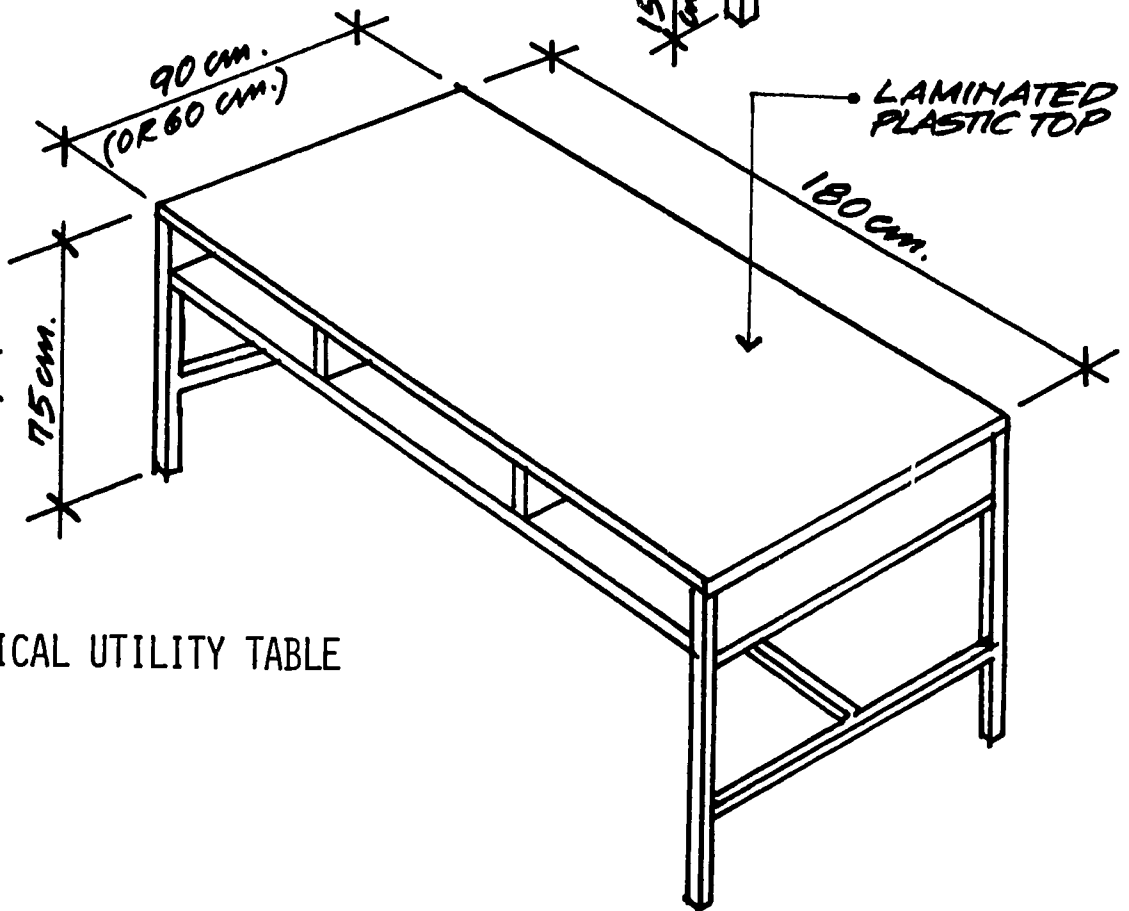


NOTE:
 THE DIMENSIONS AND SELECTION
 OF FINISH MATERIALS ARE FOR
 GUIDANCE ONLY.

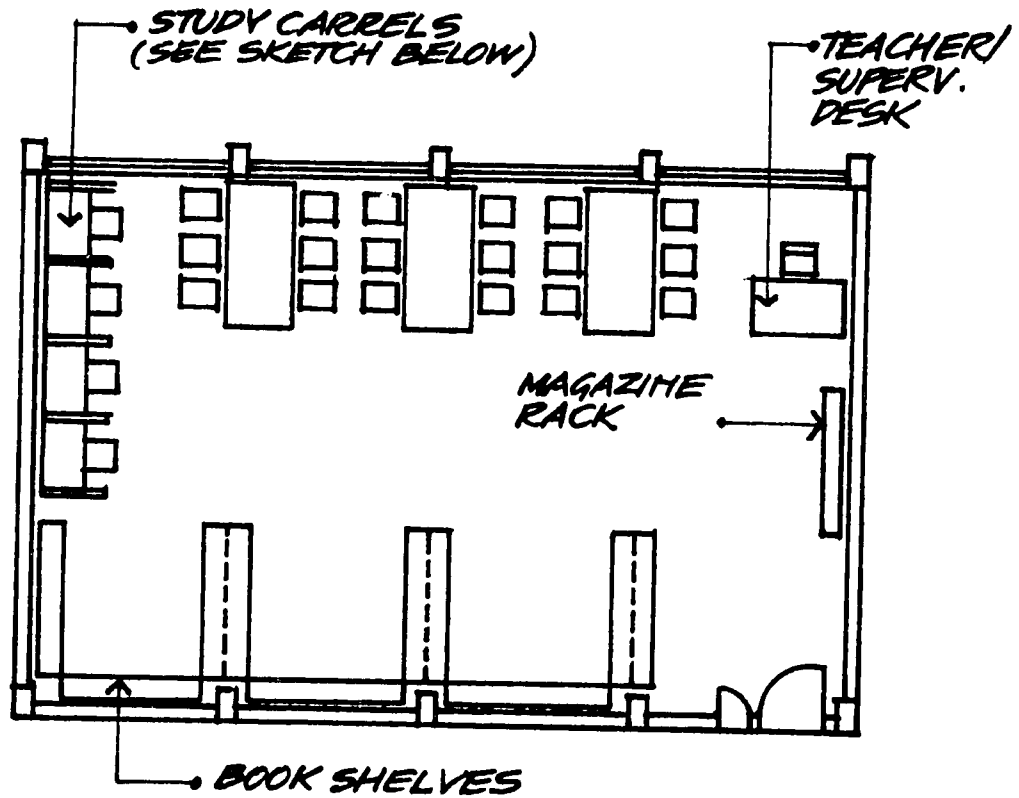
TYPICAL KITCHEN COUNTER DETAIL/SECTION



SEWING MACHINE TABLE

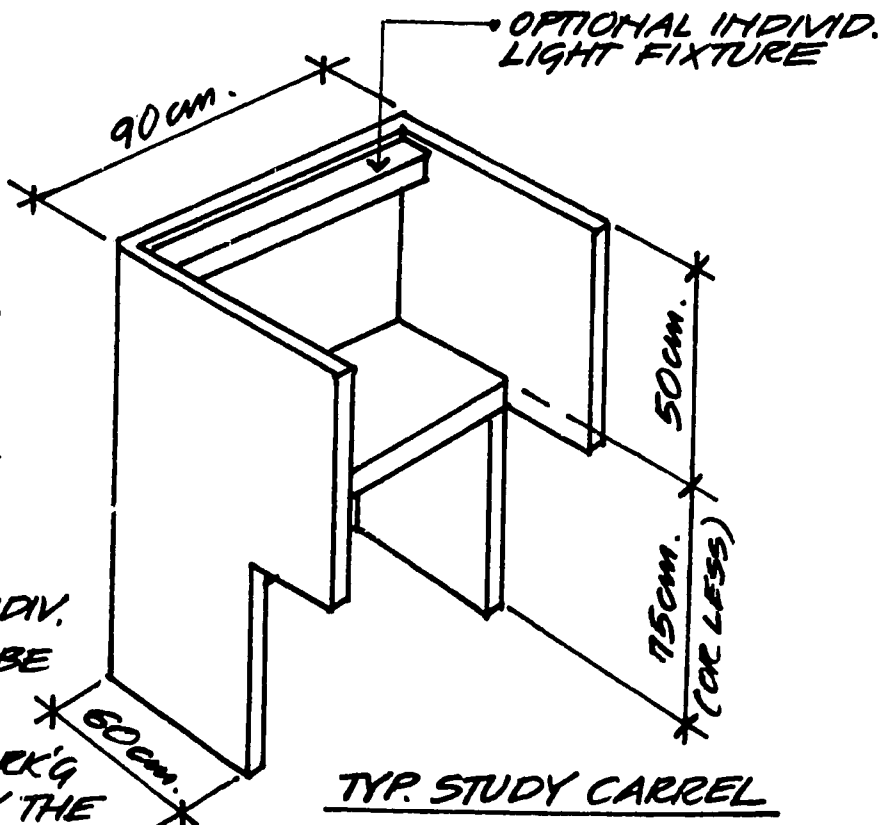


TYPICAL UTILITY TABLE



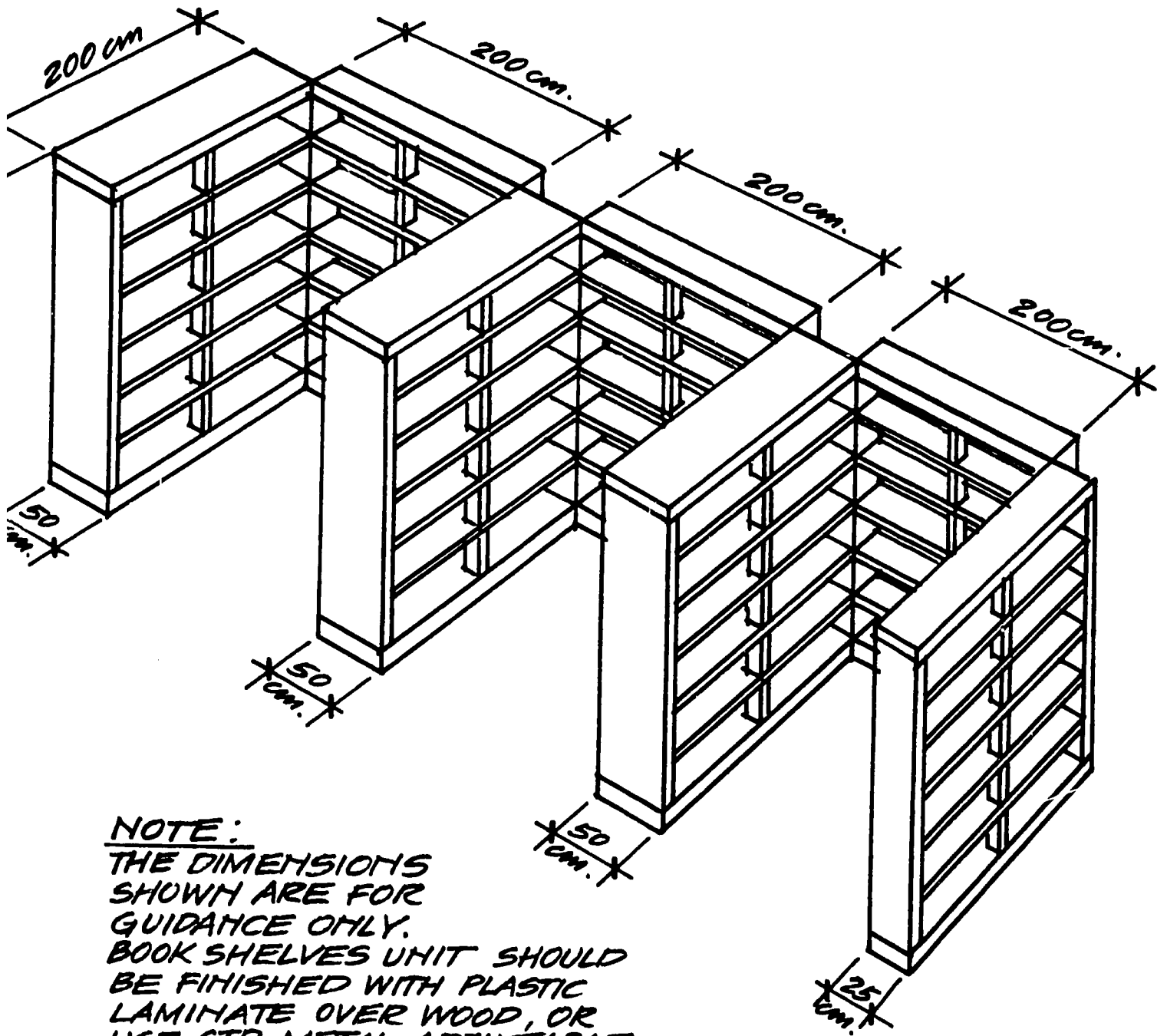
NOTE:

DIMENSIONS FOR STUDY CARREL INDICATED HERE SHOULD GIVE STUDENTS ENOUGH ENCLOSURE NOT TO BE DISTURBED BY OTHER ACTIVITIES. THE PRINCIPAL LIGHT SOURCE SHOULD BE FROM THE CEILING. A SUPPLEMENTARY INDIV. LIGHT WILL USUALLY BE NEEDED TO REDUCE SHADOWS ON THE WORK'G SURFACE CAUSED BY THE SIDE PNL'S AND BOOKSHELVES.



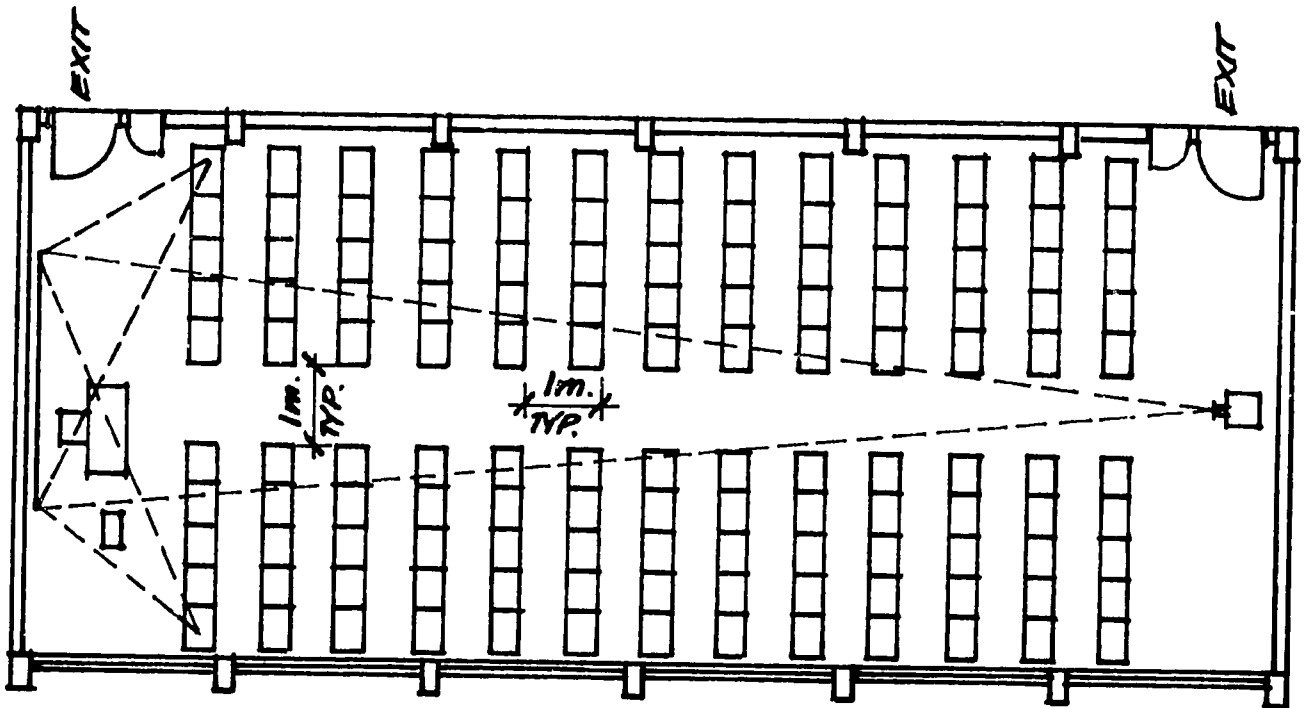
TYP. STUDY CARREL

TYPICAL SCHOOL LIBRARY FLOOR PLAN



NOTE:
THE DIMENSIONS SHOWN ARE FOR GUIDANCE ONLY. BOOK SHELVES UNIT SHOULD BE FINISHED WITH PLASTIC LAMINATE OVER WOOD, OR USE STD. METAL ADJUSTABLE SHELVING IF AVAILABLE.

TYPICAL SCHOOL LIBRARY BOOK SHELVING

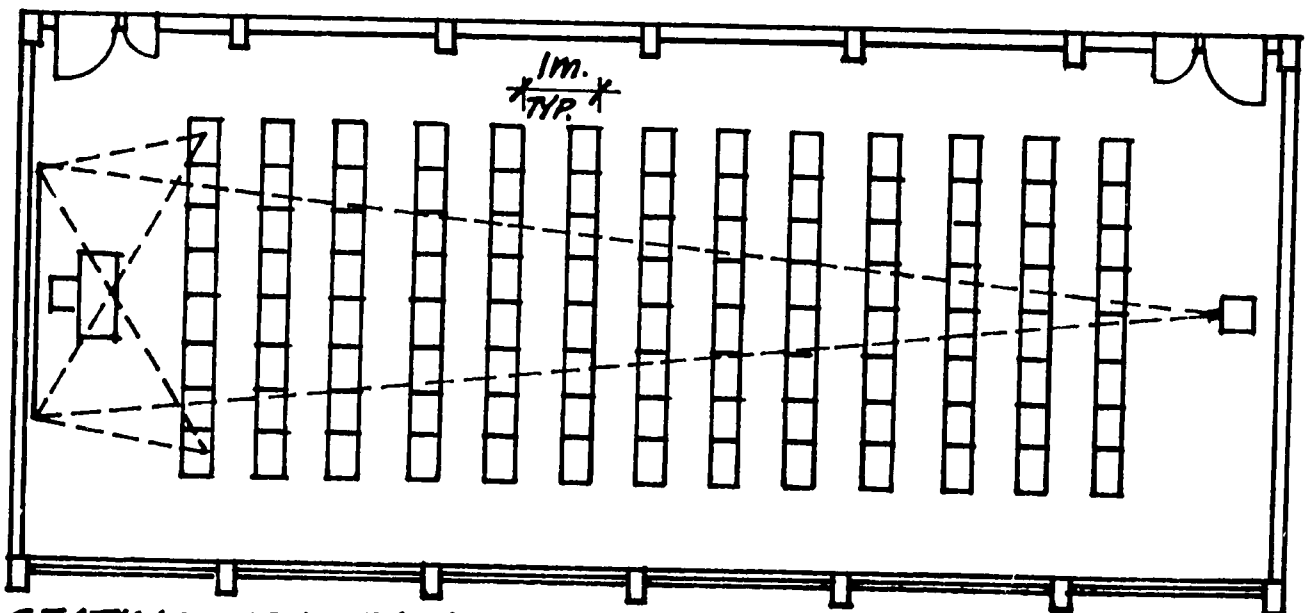


SEATING CAPACITY - 130 SEATS

NOTE:

SEATS SPACED c 55cm. O.K.
 ROWS SPACED c 100cm. BACK TO BACK
 (TYP. BOTH ALTERNATES)

ALTERNATE #1



SEATING CAPACITY - 104 SEATS

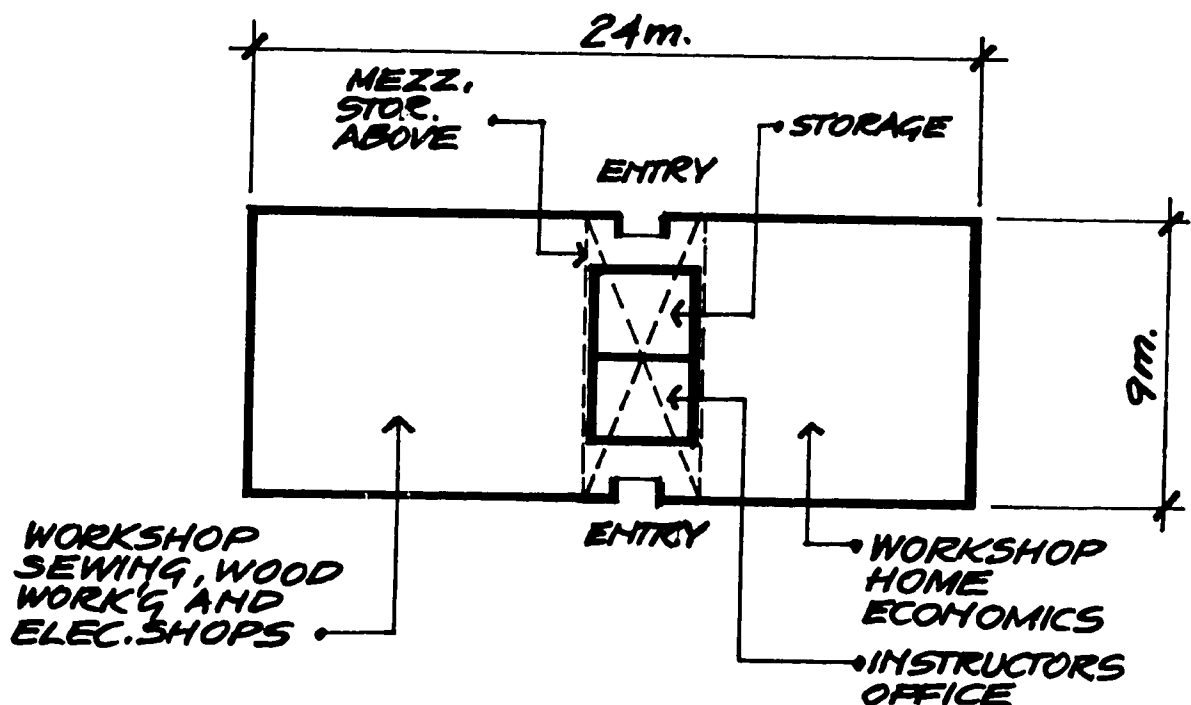
ALTERNATE #2

TWO CLASSROOM CONVERSION INTO AUDITORIUM

THE VOCATIONAL LAB. BUILDING:

THE VOCATIONAL LAB. BUILDING IS PRESENTLY DESIGNED BY THE YARMOUK UNIVERSITY CONSULTING OFFICE AS A SEPARATE STRUCTURE. THE PROPOSED BUILDING IS ONE STORY (5.85M) HIGH, 9M WIDE AND 24M LONG. APPROXIMATELY 220M².

THE REVIEWED ARCHITECTURAL DRAWINGS (ALTHOUGH NOT A COMPLETE SET) WERE DONE ON "CAD" (COMPUTER AIDED DESIGN) AND ARE OF VERY GOOD PROFESSIONAL QUALITY AND CLOSELY FOLLOW THE ARCHITECTURAL DESIGN STANDARDS REQUIRED FOR THIS TYPE OF FACILITY.



DESIGN RECOMMENDATION:

THE PROPOSED VOCATIONAL SHOPS ARE TO BE VENTILATED BY A ROW OF PERIMETER SLIDING WINDOWS WHICH ARE PLACED 3M HIGH OFF THE FINISHED FLOOR. THIS ARRANGEMENT WOULD CREATE SOME DIFFICULTIES TO OPERATE THEM MANUALLY. WE ARE PROPOSING TO CHANGE THE WINDOWS FROM SLIDING TYPE TO EITHER LOUVERED OR PIVOTED TYPE (WITH EXTENSION ROD AND CRANK) WHICH CAN BE MANUALLY OPERATED WITH EASE FROM THE FLOOR LEVEL. IN ADDITION, A NUMBER OF ELECTRIC FANS SHOULD BE PLACED DIRECTLY OVER THE WORKSHOP AREAS WHICH GENERATE FUMES, ODOR OR DUST.

SAFETY NOTES:

*PROVIDE WALL MOUNTED MANUALLY OPERATED FIRE EXTINGUISHER IN EACH VOCATIONAL LAB.

*PROVIDE CENTRALLY LOCATED EYE AND FACE WASH TO PROTECT STUDENTS AGAINST HAZARDS OF FLAMMABLE AND CORROSIVE CHEMICALS USED IN THE SHOPS. (OPTIONAL - WALL MOUNTED DELUGE SHOWER AND DRAIN).

SAFETY RECOMMENDATIONS:

- *STAIR SHOULD HAVE METAL OR WOOD HANDRAIL ON EACH SIDE OF THE RUN.
- *PROVIDE ABRASIVE NOSING AT EACH STAIR RISER.
- *EXISTING FLOOR SURFACE AT THE CORRIDORS (MARBLE TILE) IS TOO SLIPPERY WHEN WET. PROVIDE NON-SLIP SURFACE FINISH.
- *ALL ELECTRICAL OUTLETS IN THE LABORATORIES AND CLASSROOMS SHOULD BE WATERPROOF.
- *PROVIDE SMALL VISION GLASS PANELS AT EACH CLASSROOM AND LABORATORY DOOR.