

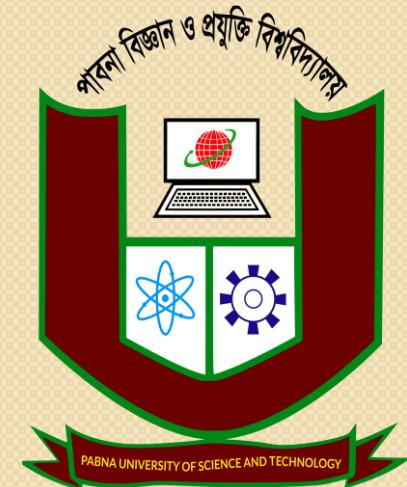
Site Planning

Subdivision Planning and Neighbourhood Design

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SUBDIVISION PLAN

- Subdivision refers to the act of dividing large areas of raw land into areas that are easier to develop and subsequently sell as well as to complete area itself.
- It's a rational fragmentation of land holdings.
- In other words, subdivision plan is a pattern for slicing up of raw and unplanned land areas are fragmented into plots.
- So their size, shape and orientation become regular and appropriate for building sites and they may become equipped with road, utilities and other public facilities like (residential, commercial etc.)
- Conversion of a land parcel from its natural or previous state to:
 - Legal entity, where lot ownership can be transferred
 - Profit venture, where development costs can be recouped through lot sales
 - Urban place, where neighborhood roots can be developed

TYPES OR PATTERN OF SUBDIVISION PLAN

There can be various types of patterns of sub-divisions that are found in the process of professional practice. These are as following:

- Gridiron Pattern
- Modified grid
- Curvilinear pattern
- Rectilinear pattern
- Cul-de-sac pattern
- Loop street pattern
- Cluster pattern
- Radial pattern
- Combination pattern

GRID IRON PATTERN

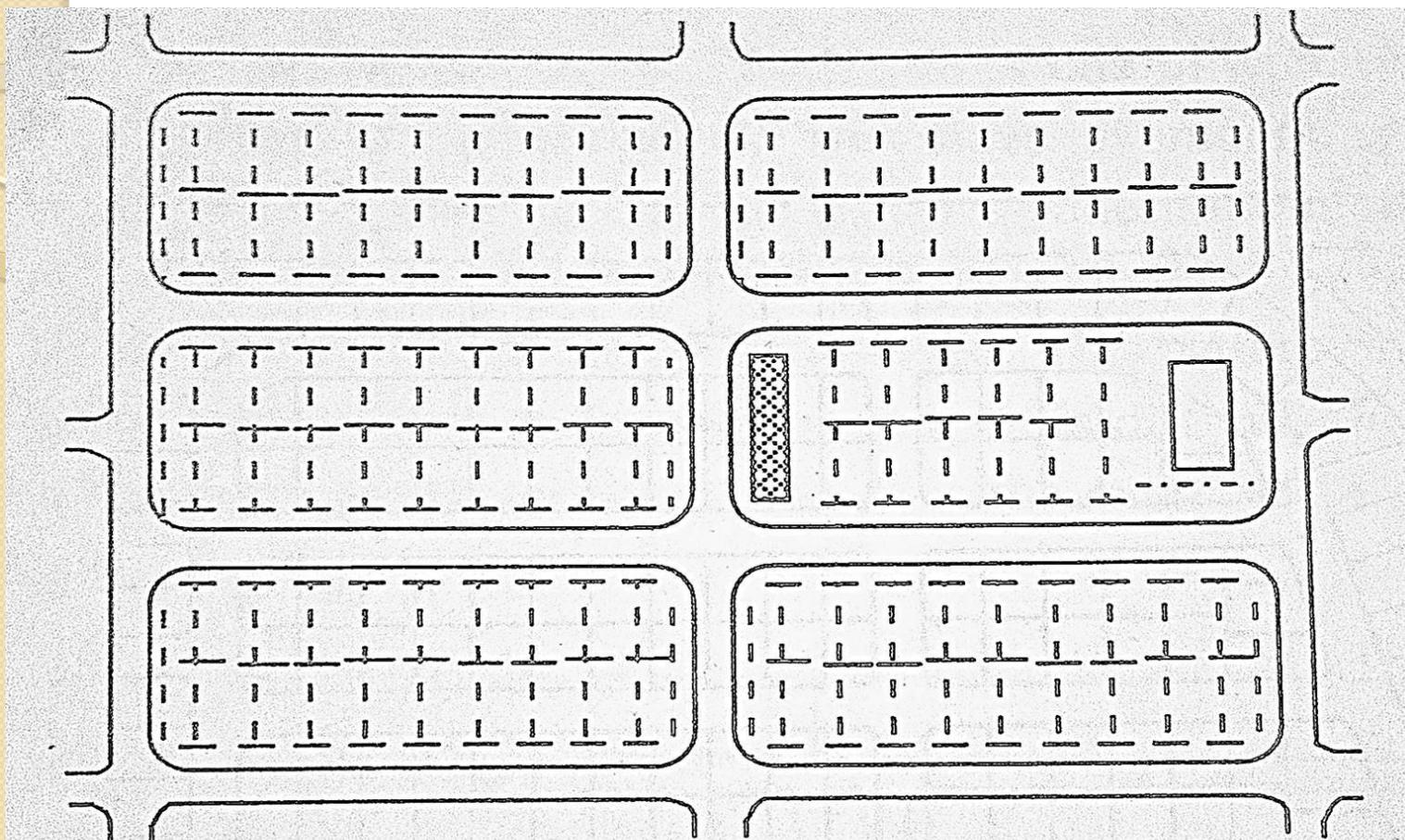


Fig.—2 : STANDARD GRID SYSTEM

- No separation of pedestrian and vehicular traffic
- All roads used for all traffic purposes
- All lot sizes standard

GRID IRON PATTERN

- This is the most common and traditional pattern. The pattern is the product of street pattern crossing each other in the four directions.
- This is also termed as Chequer (Checker) board pattern. This pattern is very advantageous for drawings on the board as well as in laying out in the field.
- It provides very easy means for laying out the various facility-lines such as: sewer, water, gas, electricity, telephone etc.
- The difficulty with it is that it increases the length of road-per-plot than any other pattern. It also creates more undesirable traffic junctions. On hilly sites this pattern is not suitable at all.

MODIFIED GRID

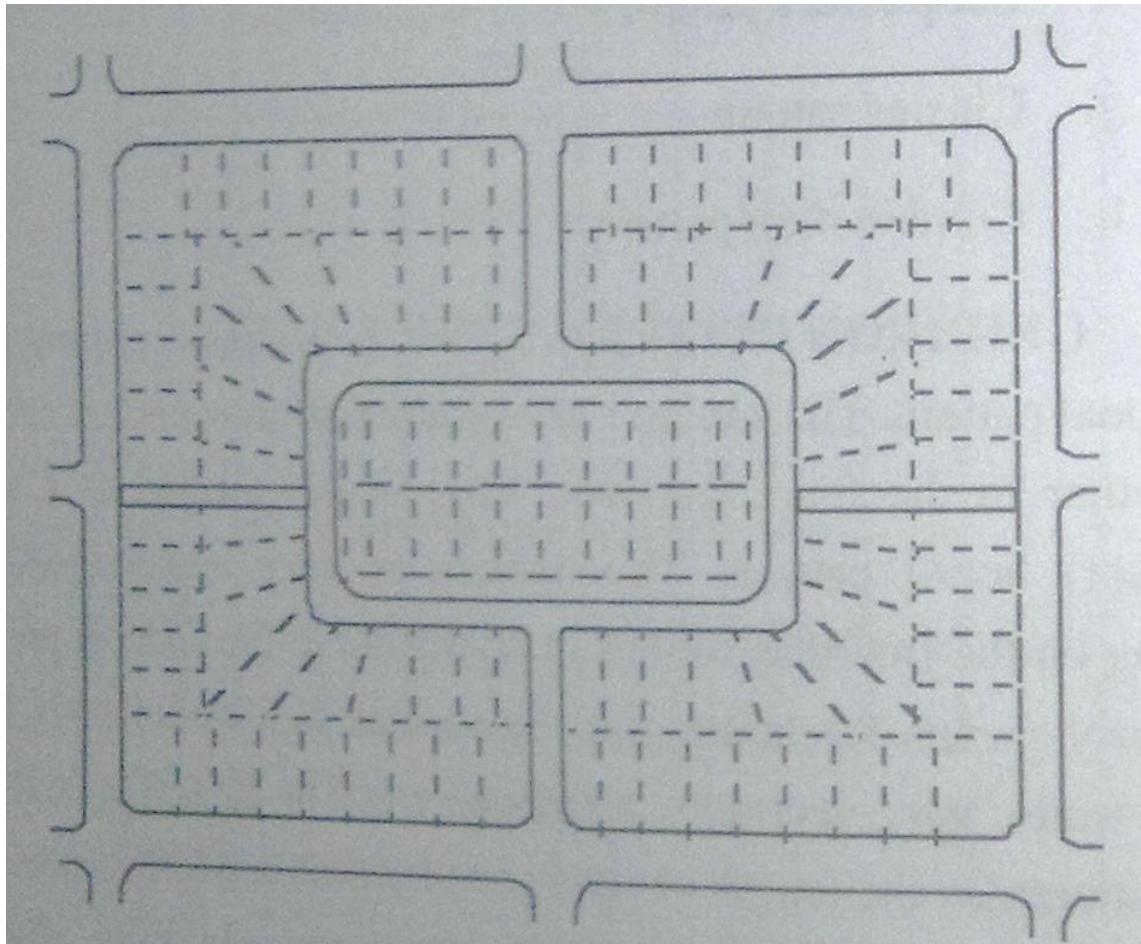


Fig.—3 : MODIFIED GRID PATTERN

- Some separation of pedestrian and vehicles by provision of foot paths
- Channelling of traffic — less road

MODIFIED GRID

- This is the pattern produced after the modification of a grid pattern.
- This is the quite good and convenient for many purpose. This eliminates the difficult and undesirable components of grid patterns and makes the design pleasing and acceptable.
- It produces the advantages elements of other design.
- The problem of grouping is much less critical as there are no long unrestricted views. If the center section of the loop is retained as a green area, the grouping of surrounding houses should be governed by the fact that the park is the main focal feature.
- Every house should be sided to take advantage of the pleasant open space. The plot planting and house layout should stress the visual enclosure of the green.

MODIFIED GRID

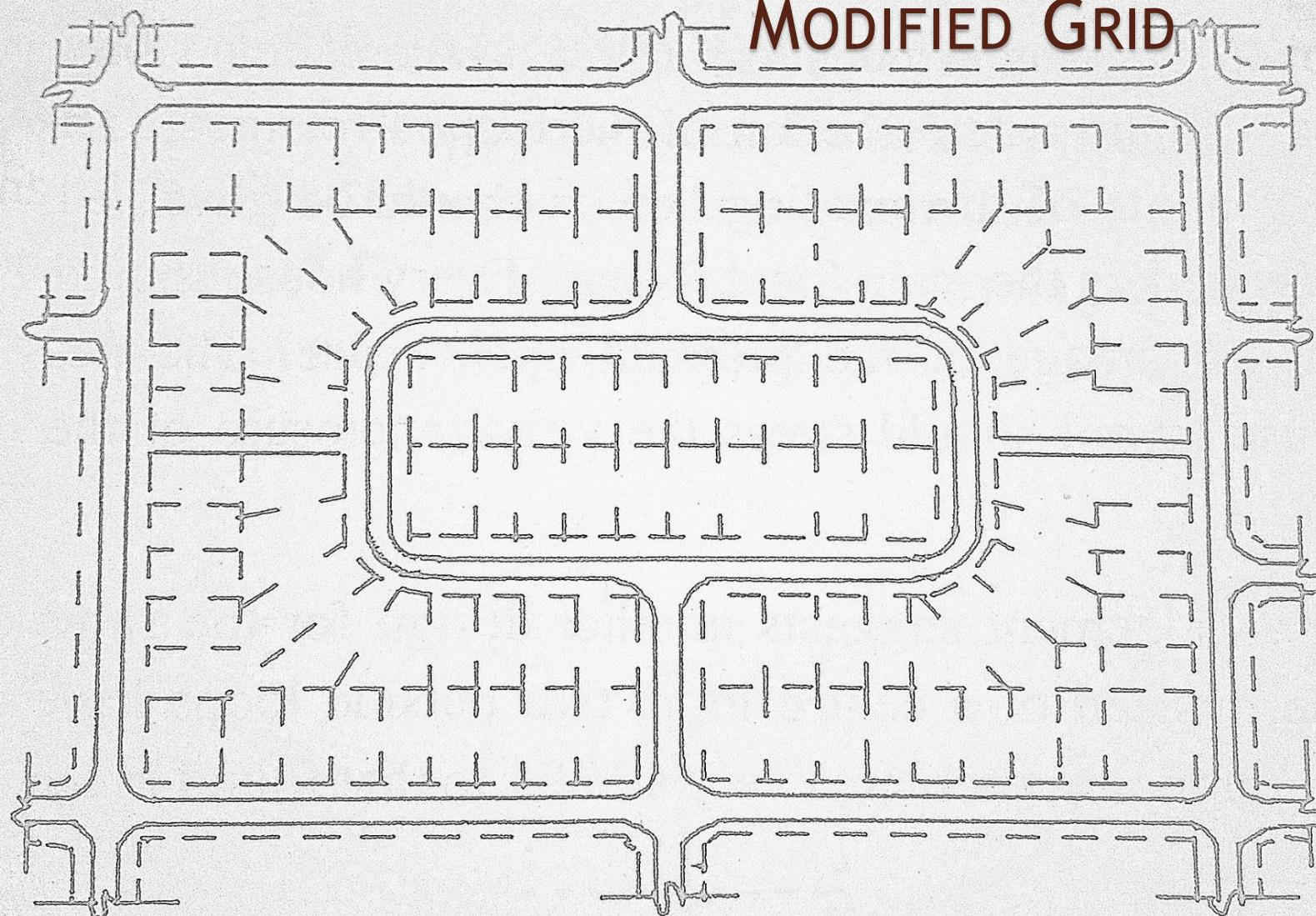


Fig. — 4 : MODIFIED GRID-1

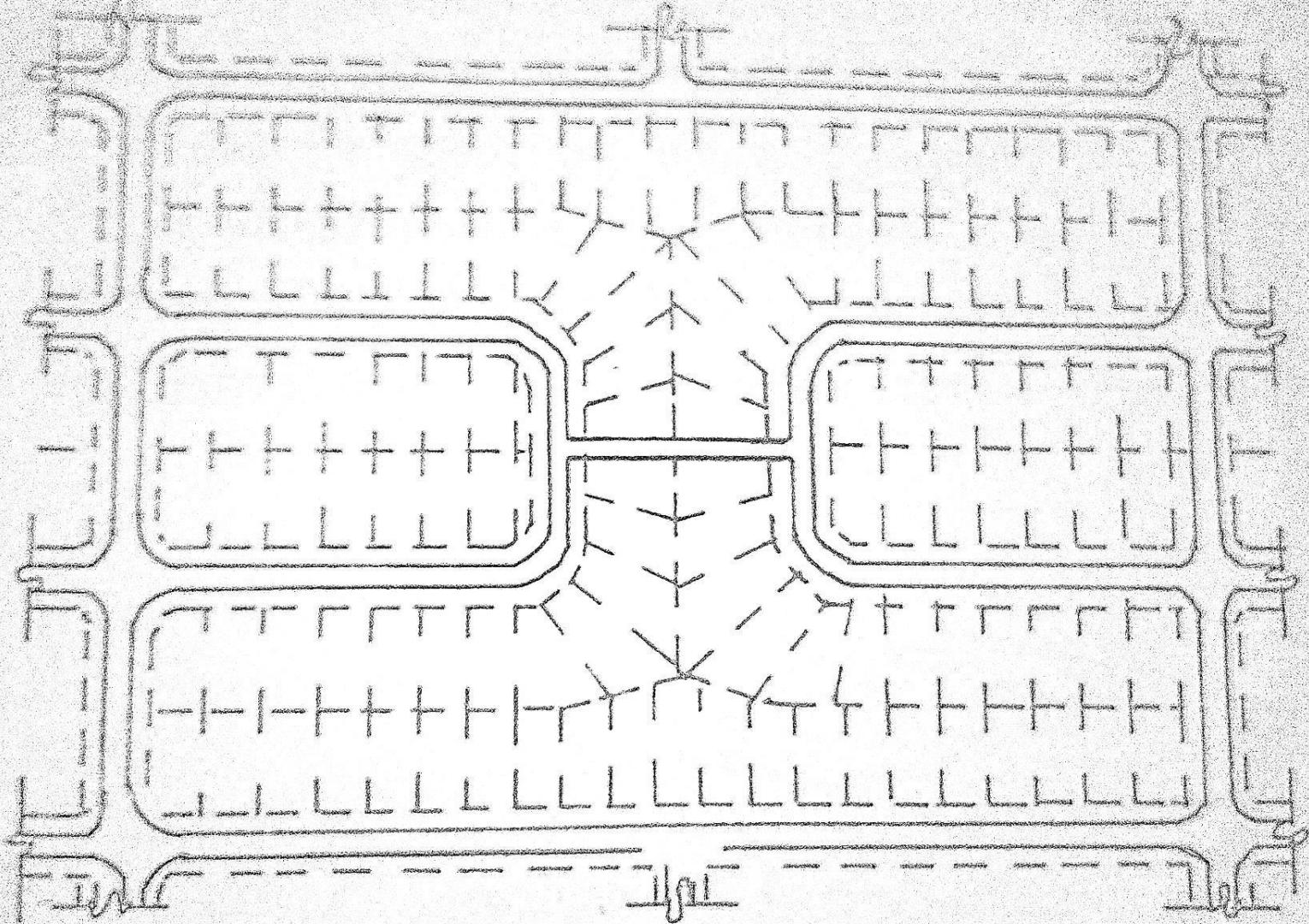


Fig. — 5 : MODIFIED GRID-2

CURVILINEAR PATTERN



Fig.— 7 : CURVILINEAR PATTERN: Looks slightly clumsy. It creates the least amount of road per plot and maximum number of plot for the same size of land. Does not permit reckless driven. Most economical in respect of land utilisation.

CURVILINEAR PATTERN

- It is one in which all the roads are more or less curved. This have a **smooth flowing** tendency in the movement of traffic.
- In this pattern **the monotony** of grid is broken. **Adjustment with topography** is convenient.
- Total length of roads can greatly be affected.
- This pattern offers us difficulty in layout on undulated ground. It is difficult in laying down the community services.

RECTILINEAR PATTERN

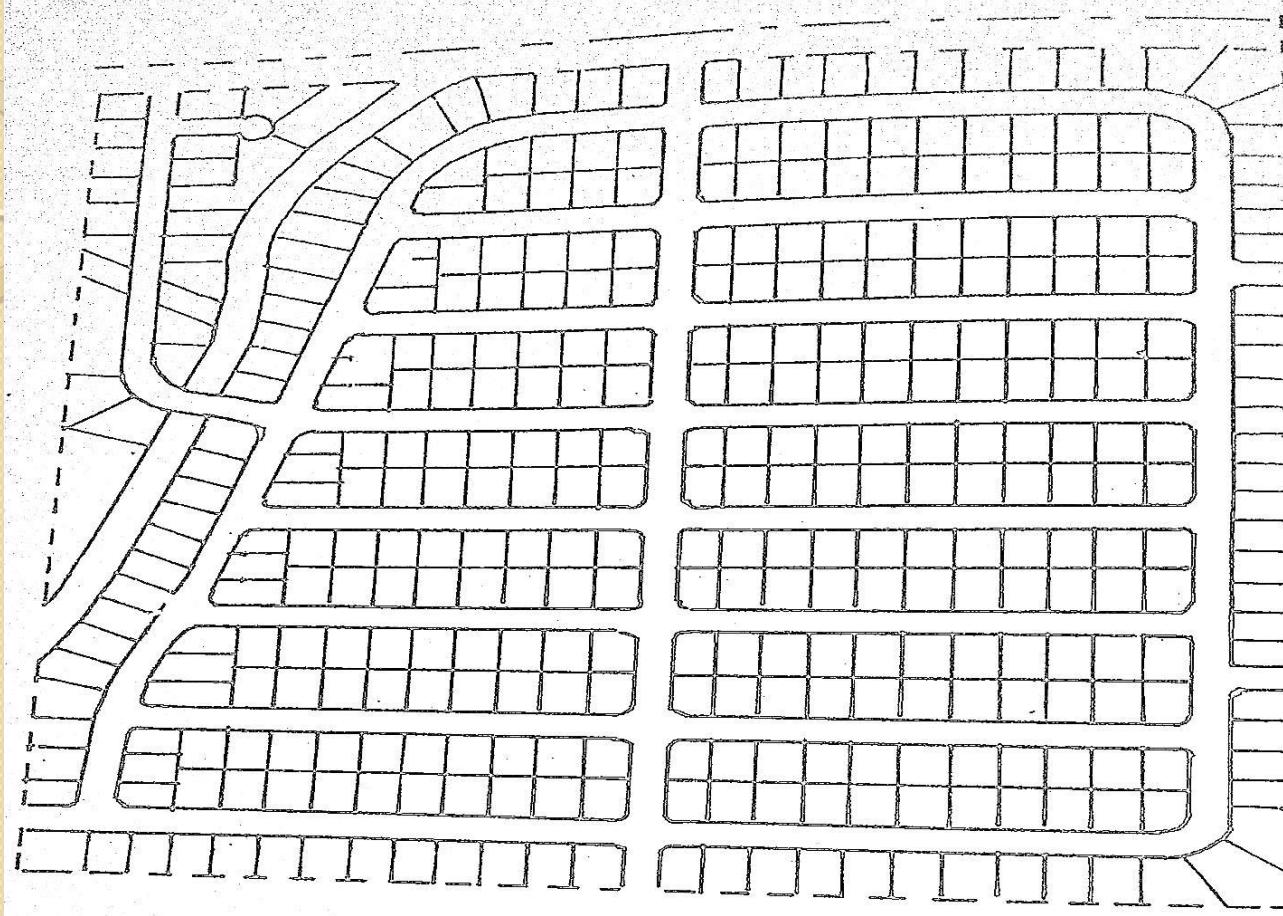


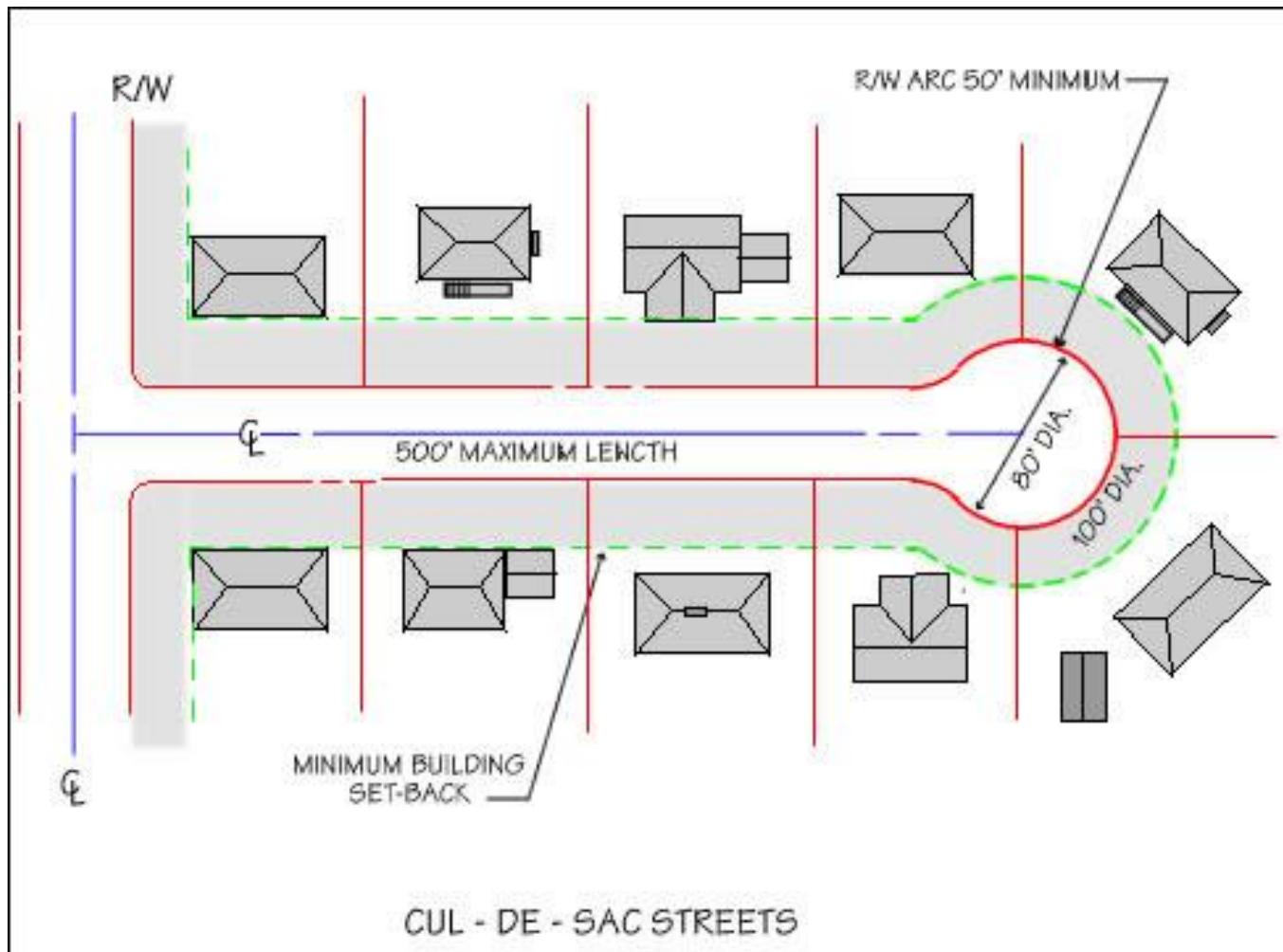
Fig. — 6 : RECTILINEAR PATTERN :

- Devoid of too many traffic junctions.
- Pleasing to look at.
- Easy for driving inside.
- Less road per-plot comparatively.

RECTILINEAR PATTERN

- It is one which is composed mostly of straight roads, but slightly different from the pure grid pattern.
- In this pattern roads are slightly curved at the end to give flowing tendency to the composition. Or the roads do not open straight to another road.
- In this type of design road lengths are comparatively smaller. Traffic hazards are minimum.
- It provides a break in the monotony of a formal grid system.

CUL-DE-SAC PATTERN



CUL-DE-SAC PATTERN

- It has originated from a French phrase, of which cul means bottom, de means of, and sac means sack. Then the exact English translation of the phrase is bottom of a sack. By the adjusted English meaning of the phrase it is a street at the end or a blind alley.
- Generally cul-de-sacs end up in a turning circle which resembles some-what the shape of the bottom of a sack. Probably this is the reason why the meaning of the phrase is so adopted.
- This type of dead-end streets provide **wonderful architectural composition as one of the best street types to use in single dwelling development**. This not only provides privacy to each family but also restricts haphazard movement of traffic. This minimizes the traffic hazards.

CUL-DE-SAC PATTERN

- The disadvantage of cul-de-sac is that when it is over **500ft in length** it **looses** its identity and becomes equivalent to straight streets.
- This also creates difficulty for postmen and other service people to locate any addressee.
- There are disadvantages for laying service lines like water, power, sewer, etc. But difficulties are minimized when the length of these cul-de-sacs are restricted to the accommodation of 20 single family houses or 500 ft. in length.

CUL-DE-SAC PATTERN



LOOP-STREET PATTERN

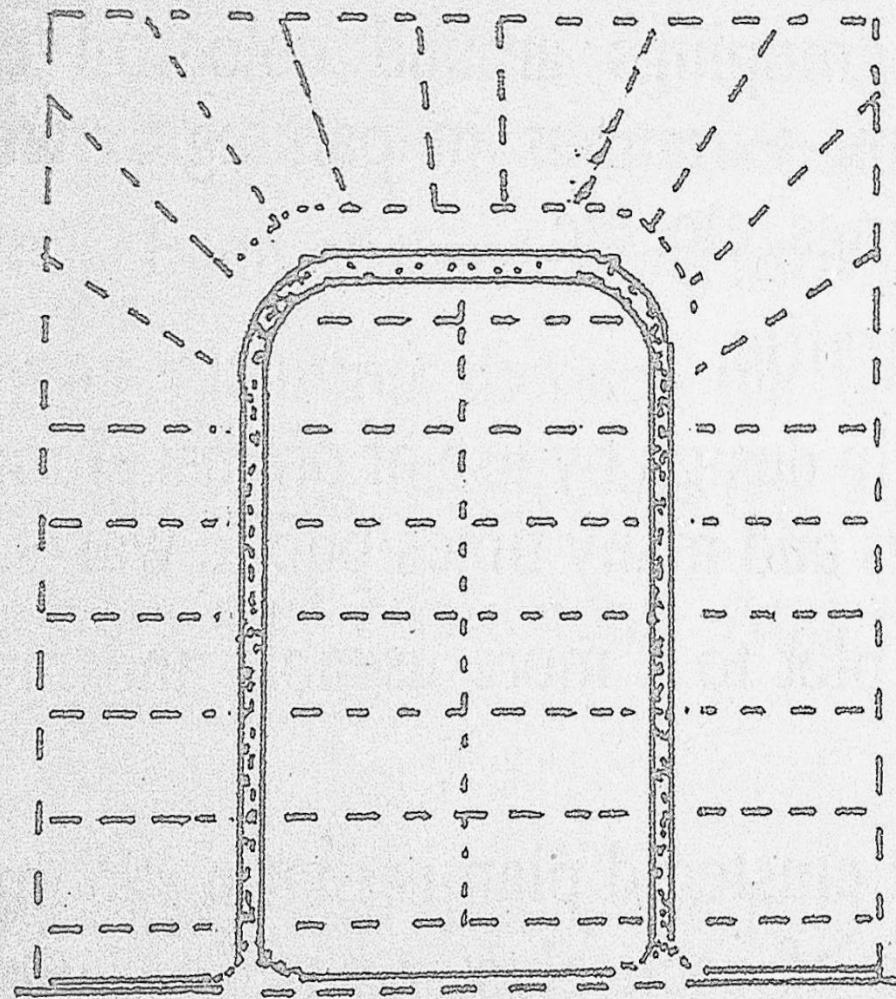


Fig.—10-a : LOOP

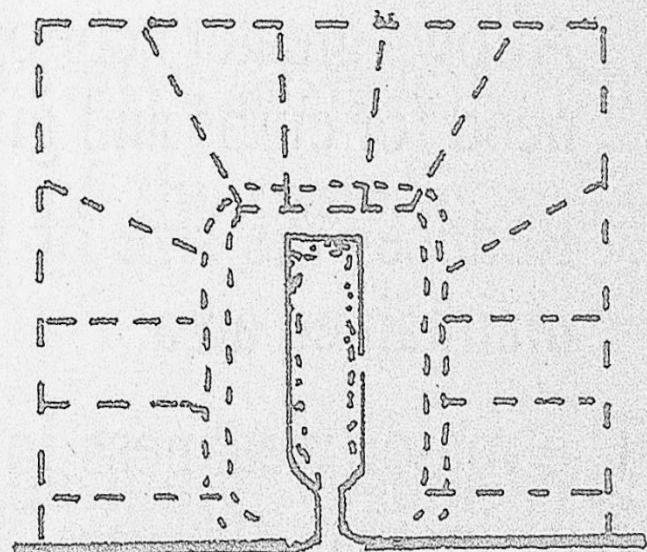


Fig.—10-b :

LOOP-STREET PATTERN

- It takes shape when an offshoot takes off from a main road and then comes back to meet after traversing certain distance.
- This breaks the monotony of straight roads and also creates a sense of identification for the residents.
- By proper designing a central open space for community living can be created.
- This is also equally desirable as cul-de-sacs or other elements of design which makes the composition more attractive.

LOOP-STREET PATTERN

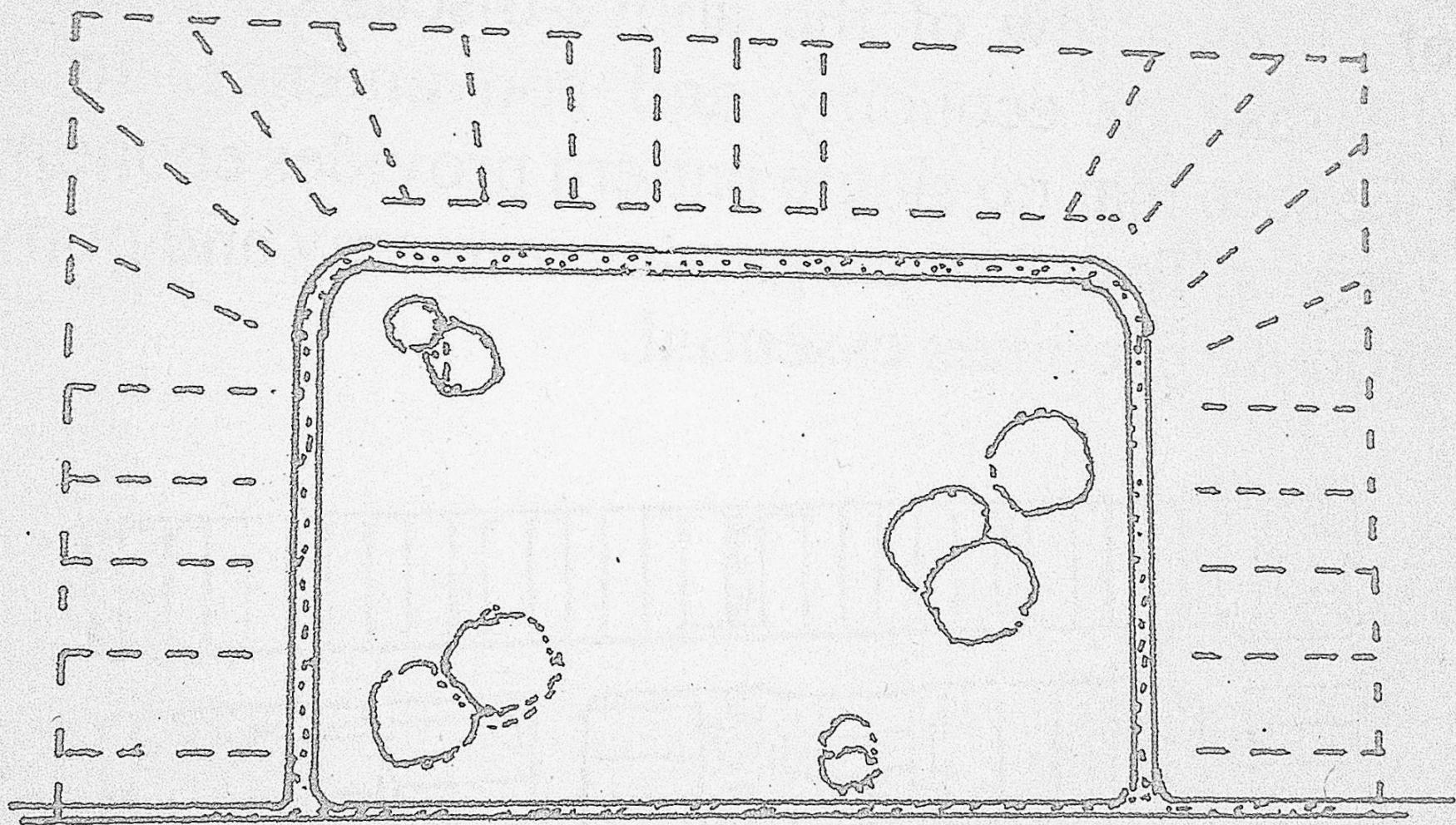


Fig. — 10-c : LOOP WITH GREEN

CLUSTER PATTERN

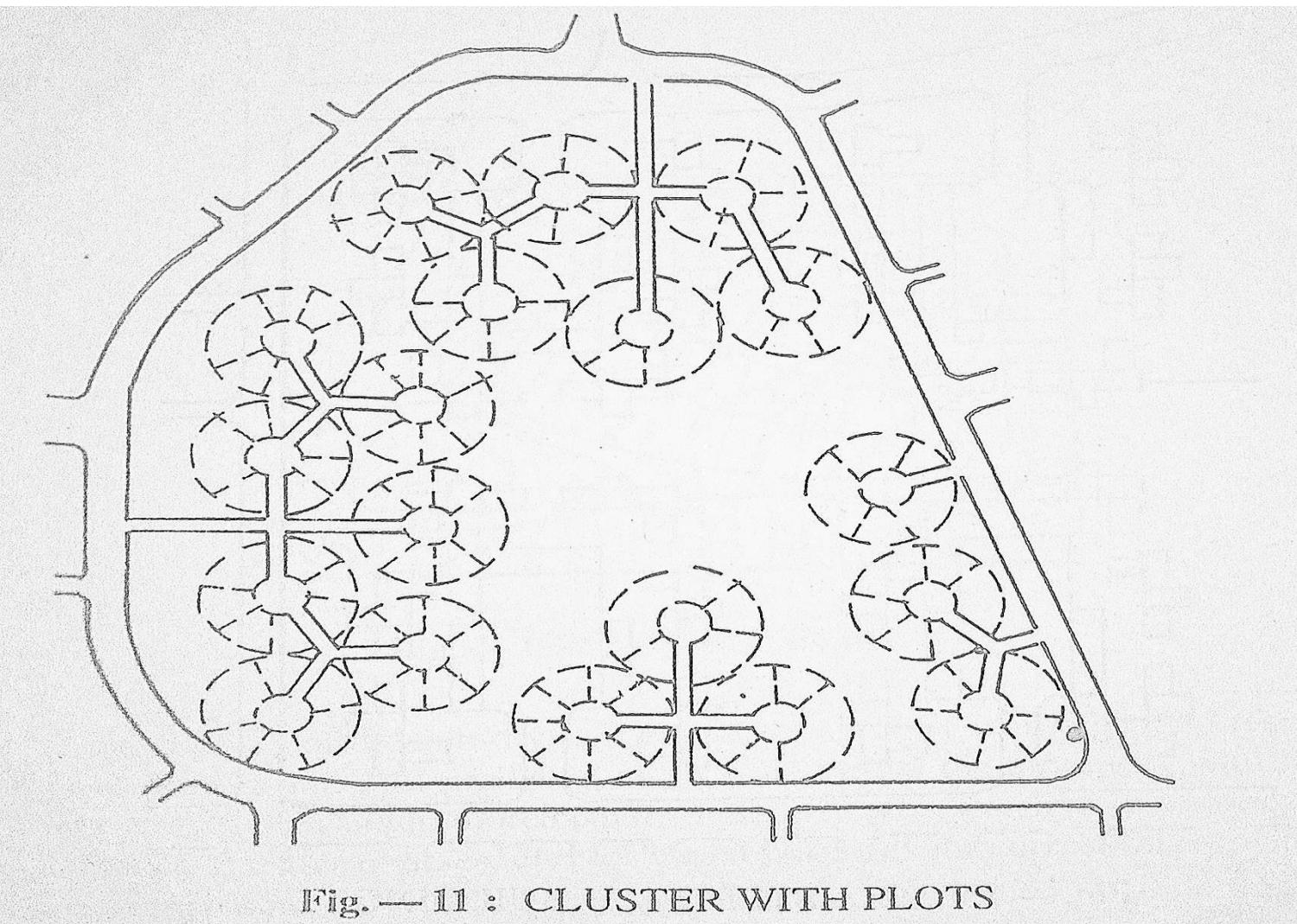


Fig. — 11 : CLUSTER WITH PLOTS

CLUSTER PATTERN

- It is a pattern of residential development wherein house sites are grouped some-what close together around access courts, with the remainder of the tract left in its natural state.
- This method of community design largely patterned after the well known Radburn Plan (New Jersey, USA).
- This is gaining increasing interest as an innovation and new concept in land subdivision planning.
- In favor of cluster plan various arguments have so far been put forward by planners and builders. These supporting arguments have been summarized below:
 - Offers **opportunities for preserving rapidly disappearing open land.**

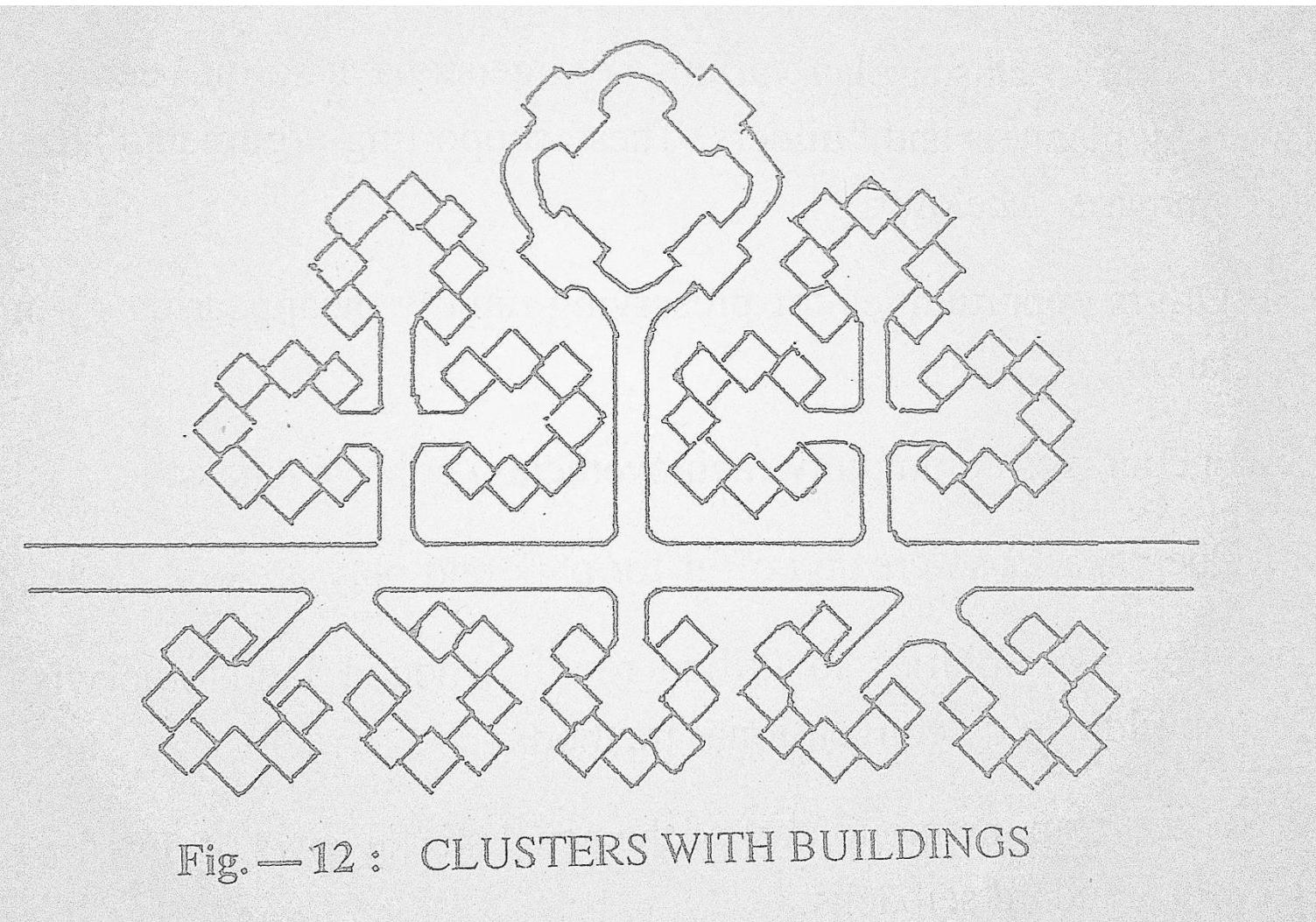
CLUSTER PATTERN

- This is the most common and traditional pattern. The pattern is the product of street pattern crossing each other in the four directions.
- Encourage community (achievements) cohesiveness.
- Open space so-created offer for park and play area.
- Offers possibilities to utilize rough wooded land otherwise un-building by conventional methods.
- Relief from the monotony of the usual sterile rows of dwelling with standard setbacks.
- Economical practical method of providing access and service.
- Amenities of intimate groupings around colorful courts of interesting paving texture, variations in parking arrangements, sculptural features, planting, etc.
- Freedom from thorough traffic.
- Allows greater economy in design by use of drains; eliminates the need for curbs and gutters and many times public walks.

CLUSTER PATTERN

- Reduce the size of the plot to amore useable and more easily maintained area.
- The major weakness in the clustered plan is that it requires skilled and imaginative planners. **Size of each cluster has limitations in the number of families** that can be placed together.
- The other disadvantages is that the open space left out sometimes become unmanageable specially where there is no well-formulated regulations.

CLUSTER PATTERN



CLUSTER PATTERN

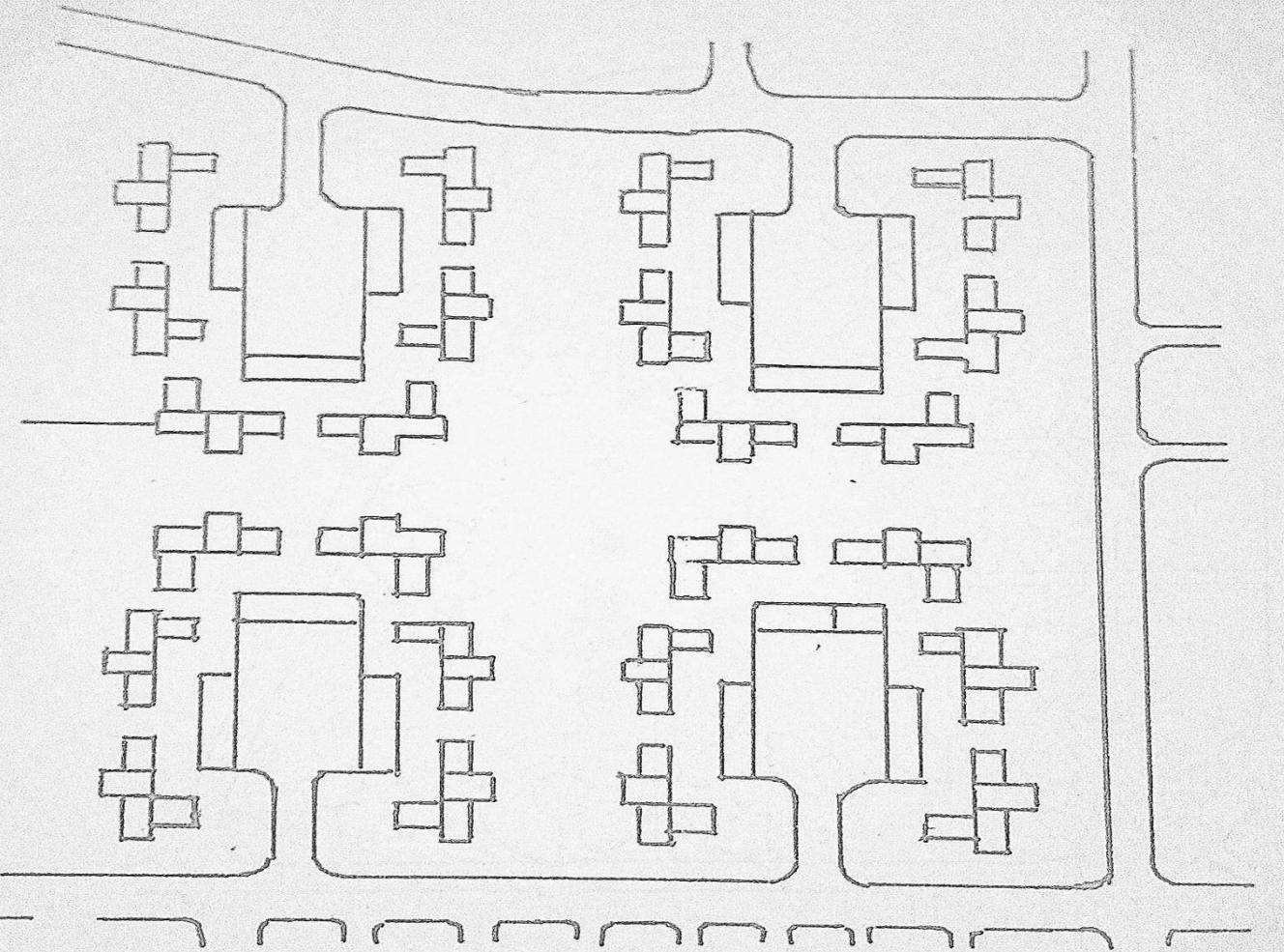
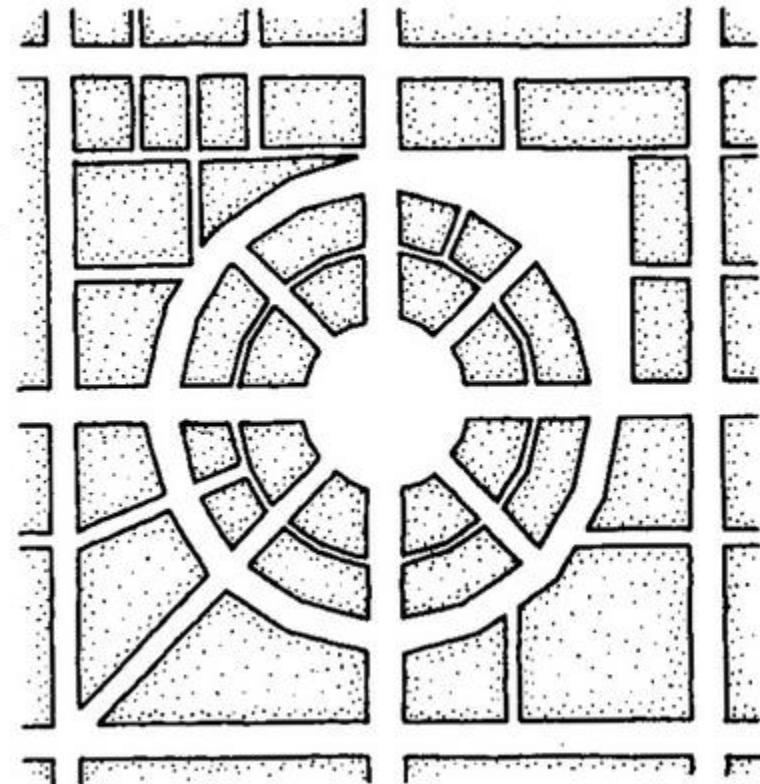


Fig. — 13 : CLUSTER WITH BUILDINGS

RADIAL PATTERN

A radial pattern is formed by streets that extend outward from a defined center and reach the outer edge of the city, together with concentrically arranged roads that connect the radial streets to the lots. This pattern traces back to ancient times and continues even to this day.





COMBINATION PATTERN



Fig. — 14 : COMBINATION PATTERN

COMBINATION PATTERN

- It is nothing but suitable combination of all or a few of the above discussed patterns, used together for the sake of economy and convenience.
- It is seen that no single pattern provides economical and good looking designs.
- To achieve a greater economy and convenience a kind of compromise becomes essential.

CRITICAL EXAMPLES

- Each of the design shows how the different factors of subdivision planning dictates the designer in the process of preparation of the plans. Each case has comparative designs which clarify the doubts and confusion and each of the cases is self-explanatory.
- These examples will not only help in designing better new subdivision but will help in redesigning the old areas also.

CRITICAL EXAMPLES

- Adjustment of the subdivision to the topography of the ground results in better street and plot grades, a more economical development with less grading and pleasanter, more beautiful place in which to live. Use of rough ground vines, water courses, etc. for parks purposes enhances values within the subdivision.

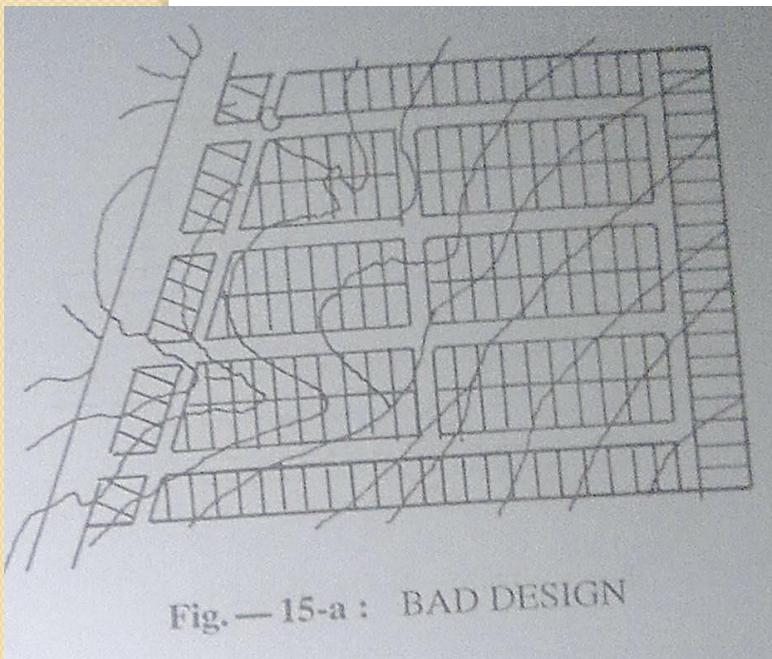


Fig.— 15-a : BAD DESIGN

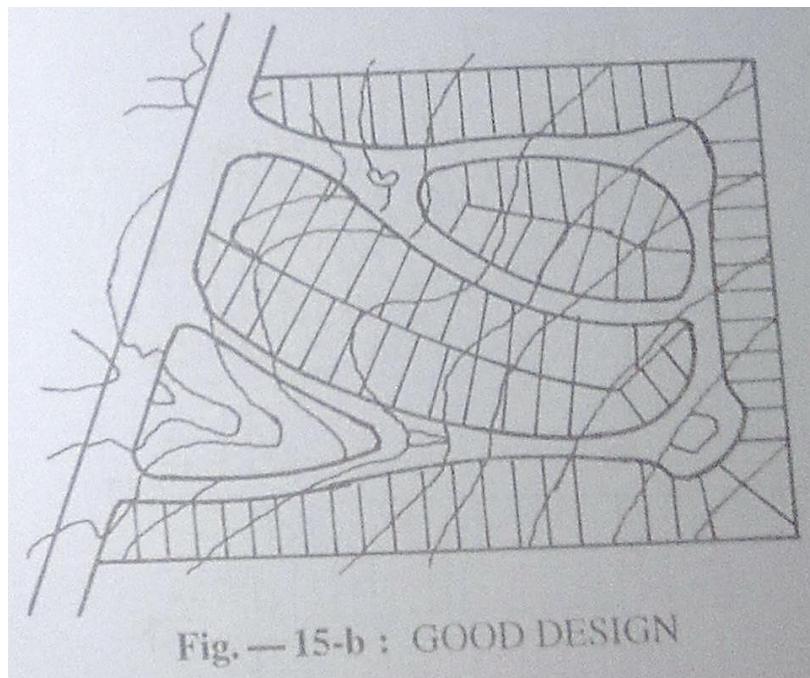


Fig.— 15-b : GOOD DESIGN

CRITICAL EXAMPLES

- Plot should be arranged to obtain maximum frontage on open spaces, parks and natural views.

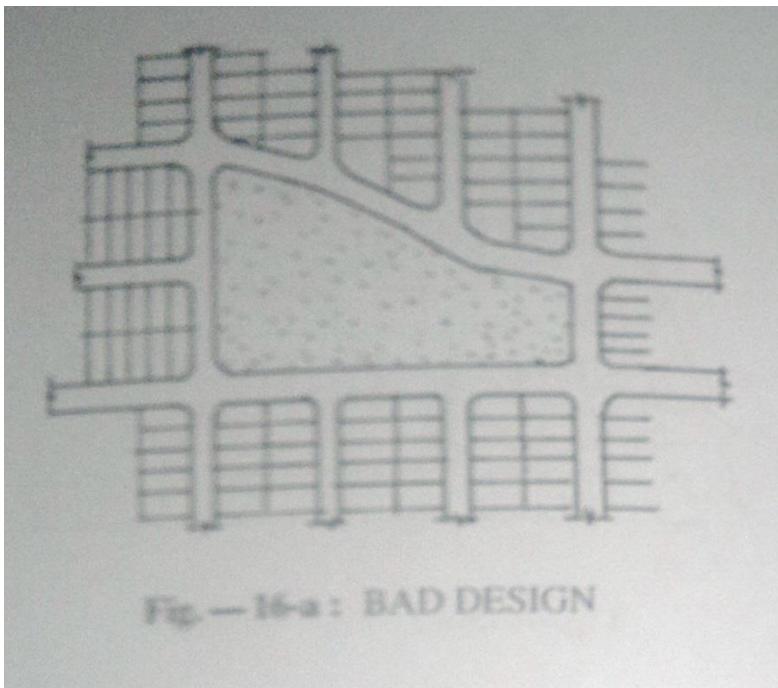


Fig. - 16-a : BAD DESIGN

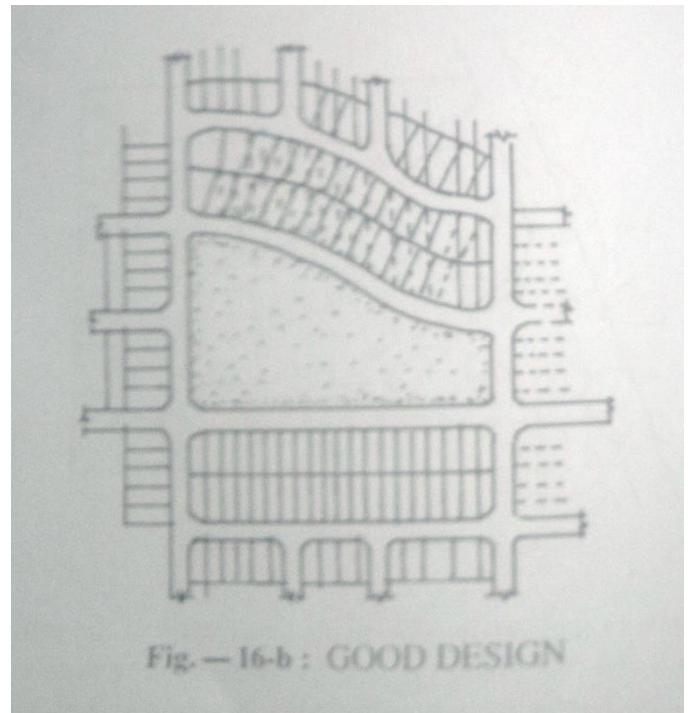


Fig. - 16-b : GOOD DESIGN

CRITICAL EXAMPLES

- Modern homes with attached garages require wide plots, great depth in residential plots is wasteful and the extra land in the rear of the plat is useless. Plots 50 to 60 feet in width should not greatly exceed 130 feet in depth. Larger plots should have a similar proportion.

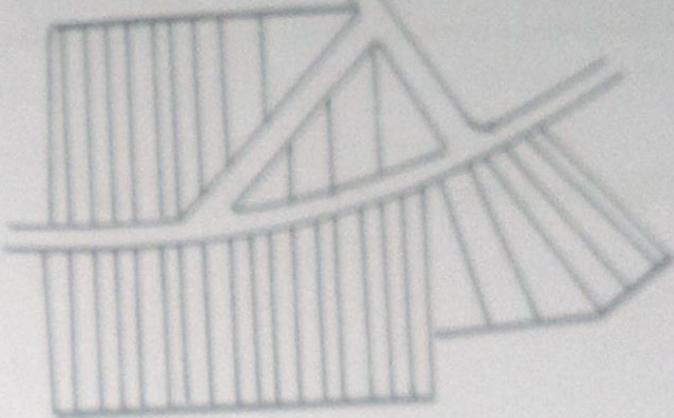


Fig. — 17-a : BAD DESIGN

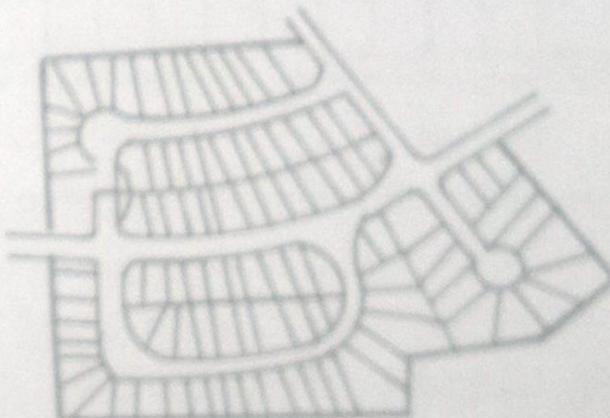
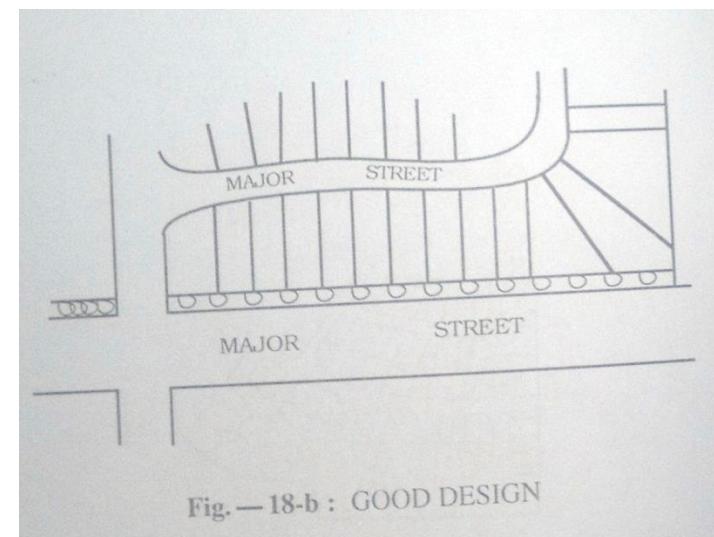
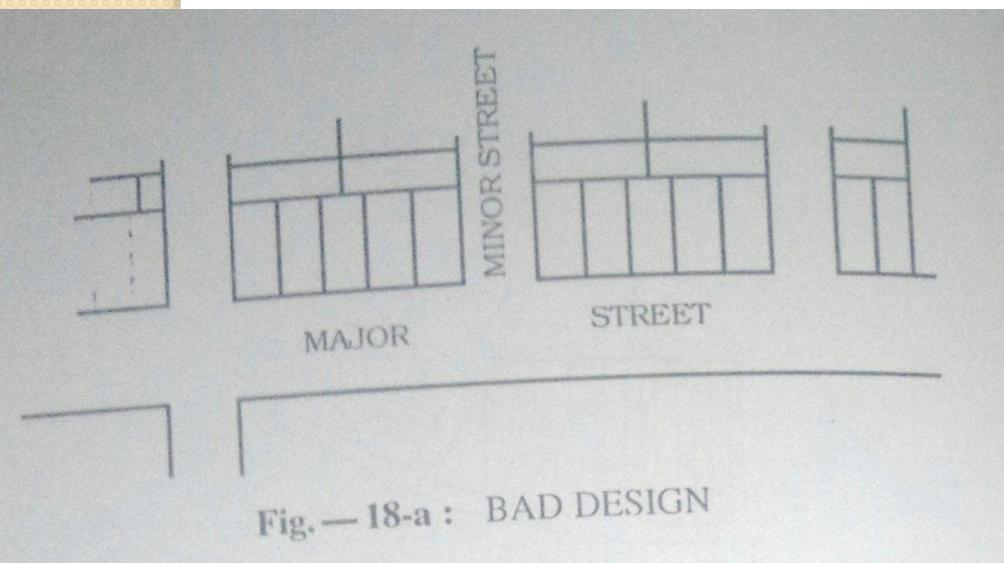


Fig. — 17-b : GOOD DESIGN

CRITICAL EXAMPLES

- Intersection of minor streets with major streets should always be held to the minimum as numerous intersections cause delay and hazard. Less than 5% of highway frontage is needed for commerce. Fronting of plots on minor streets and provision of planting screens will protect homes from traffic noise and dusts.



CRITICAL EXAMPLES

- Minor streets should not enter major streets at right angles to minimize traffic hazard. Plots with double frontage are uneconomical, undesirable and should be avoided.

Fig.—19-a: BAD DESIGN

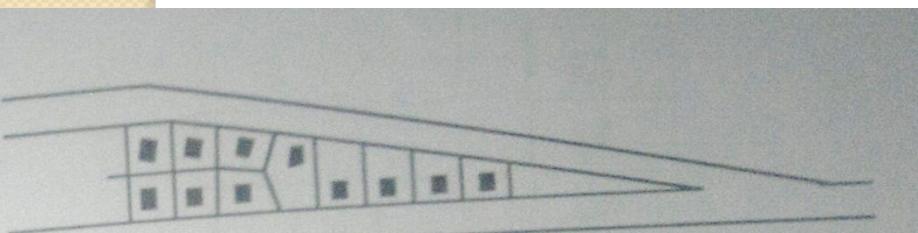
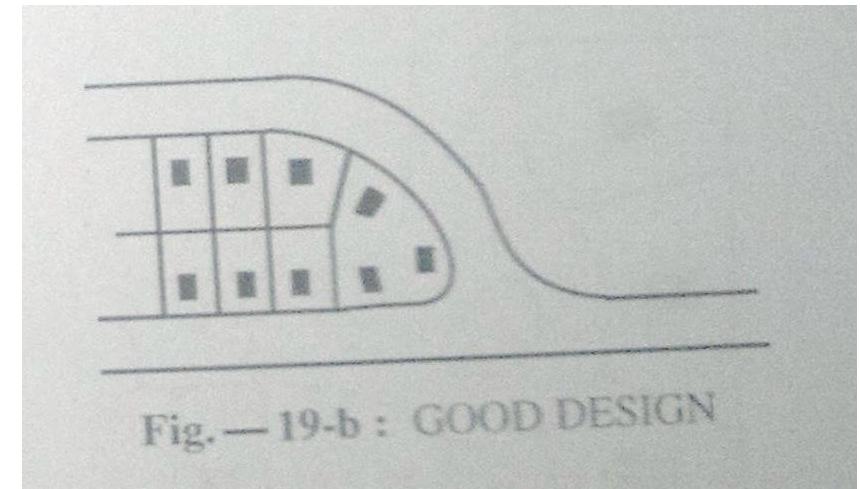


Fig.—19-b : GOOD DESIGN



CRITICAL EXAMPLES

- Dead end streets should be avoided. A minimum area should be in street and the plots should be arranged so as to produce attractive groups of houses.

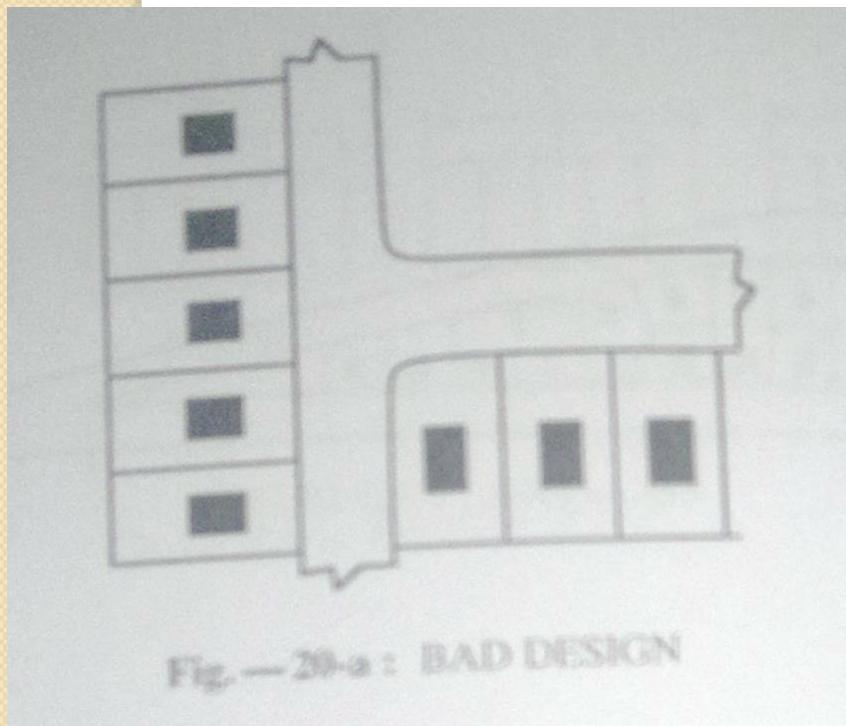


Fig. — 20-a : BAD DESIGN

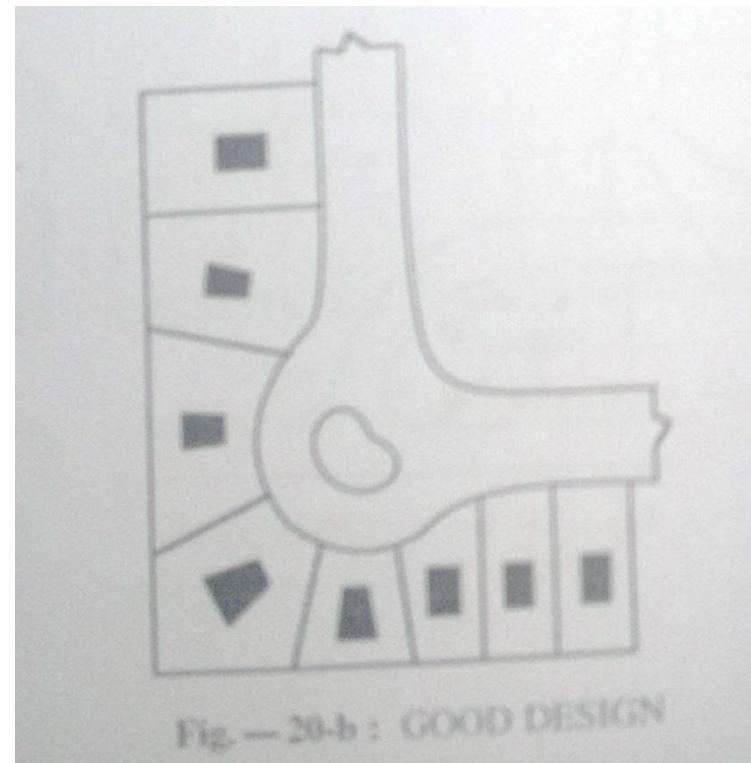
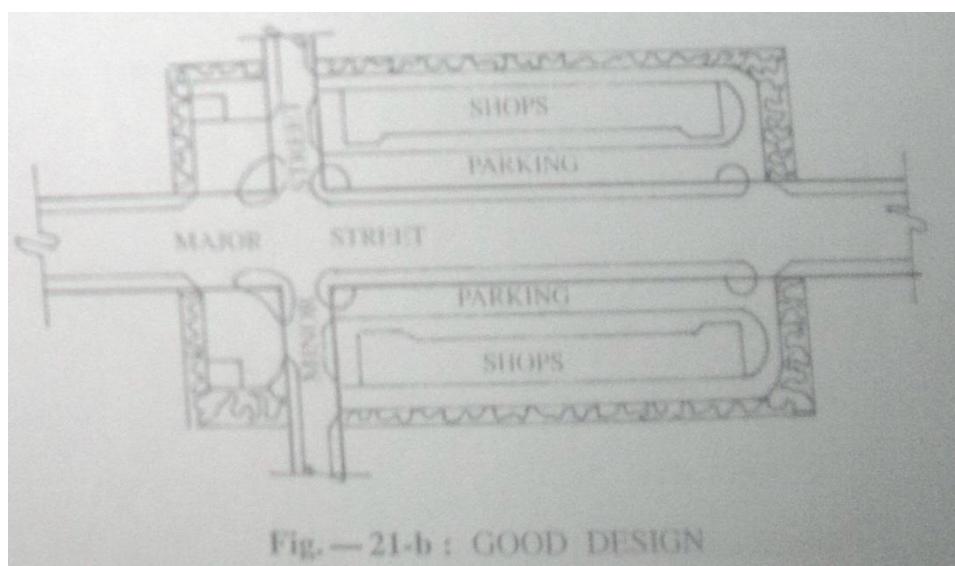
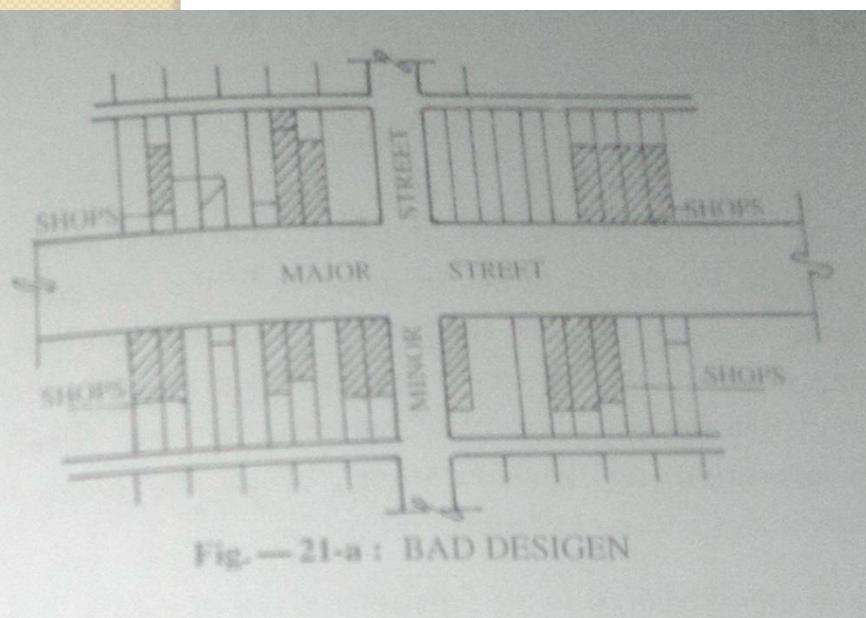


Fig. — 20-b : GOOD DESIGN

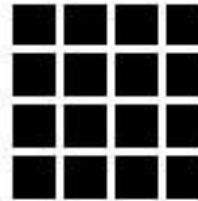
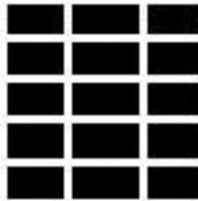
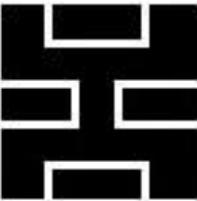
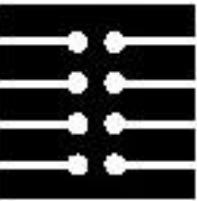
CRITICAL EXAMPLES

- Commercial areas, in residential districts, should not be developed in an unrelated and haphazard manner, but should be concentrated in a group be provided with adequate off-street parking and service areas.



COMPARISON OF AREAS USED FOR STREETS, AMONG FIVE TYPICAL PATTERNS

Figure I: Comparison of area used for streets, among five typical patterns

					
	Square grid (Miletus, Houston, Portland, etc.)	Oblong grid (most cities with a grid)	Oblong grid 2 (some cities or in certain areas)	Loops (Subdivisions - 1950 to now)	Cul-de-sac (Radburn - 1932 to now)
Percentage of area for streets	36.0%	35.0%	31.4%	27.4%	23.7%
Percentage of buildable area	64.0%	65.0%	68.6%	72.6%	76.3%

WHAT WE LEARNT

- Understanding of the pattern and type of subdivision and neighborhood design and the critical issues to be addressed while planning subdivision.