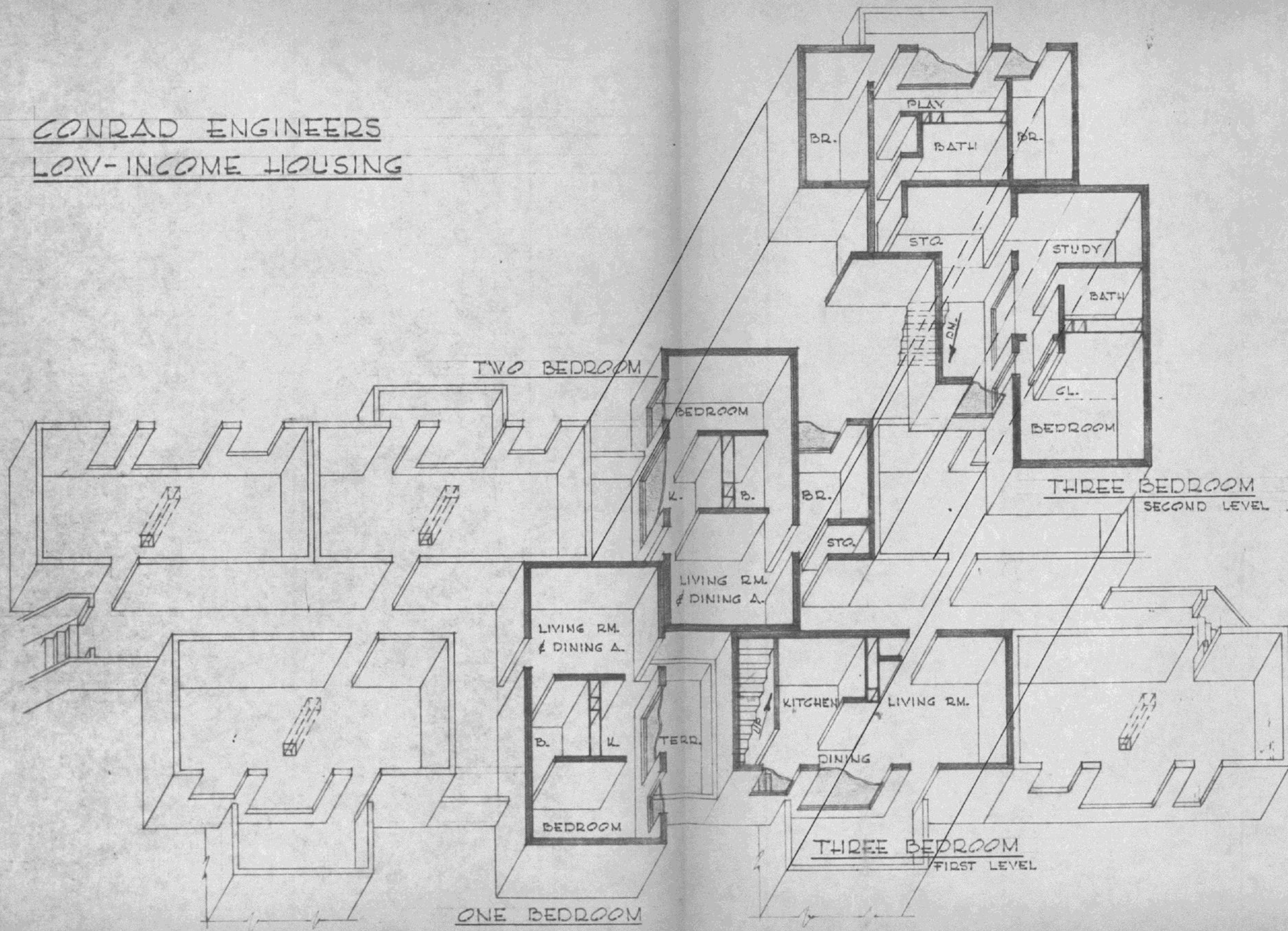


CONRAD ENGINEERS
LOW-INCOME HOUSING



ANALYSIS OF PLANS

FHA STANDARDS

ONE BEDROOM

SPACE	FHA HUD PG-1		CONRAD	
	LEAST D.	AREA	LEAST D.	AREA
LIVING-DA.	11'-0"	180	9'-6"	103
KITCHEN	3'-0" CL.	60	3'-0"	31
BEDROOM	7'-0"	110	6'-6"	64
TOILET			5'-0"	31
STORAGE		102 FT ²		67 FT ²
K. COUNT.	8'-6"		6'-3"	
PLAY				

TWO BEDROOM

SPACE	FHA HUD PG-1		CONRAD	
	LEAST D.	AREA	LEAST D.	AREA
LIVING-DA.	11'-0"	180	9'-6"	103
KITCHEN	3'-0" CL.	60	3'-0"	31
BEDROOM	7'-0"	110	6'-6"	64
BEDROOM	7'-0"	70	5'-6"	40
TOILET			5'-0"	31
STORAGE		152 FT ²		82 FT ²
K. COUNT.	8'-6"		6'-3"	

THREE BEDROOM

SPACE	FHA HUD PG-1		CONRAD	
	LEAST D.	AREA	LEAST D.	AREA
LIVING	11'-0"	150	10'-0"	112
DINING	8'-0"	90	5'-3"	39
KITCHEN	3'-0" CL.	70	3'-0"	66
OR K-DA	6'-0"	110		105
M. BEDROOM	7'-0"	110	9'-0"	103
BEDROOM	7'-0"	70	5'-6"	56
BEDROOM	7'-0"	70	5'-6"	56
TOILET			5'-0"	33
PLAY RM.			5'-0"	55
STORAGE		202 FT ²		409 FT ²
K. COUNT.	8'-6"		8'-9"	

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CONRAD ENGINEERS
Description of Scheme

The disciplines imposed upon the design and grouping of off-site preassembled residential units follow:

1. All plumbing and utilities will consist of one stack for both kitchen and bathroom. This stack will be vertical and will serve all units which occur in a vertical line. This is accomplished through the use of a 12" x 12" chase containing all vertical utilities with the utilities set diagonally across the chase so they can feed in all four directions. The chase is located in the center of the box.
2. All interior public corridors will be composed of the roofs of the units below instead of a separate unit. On the second floor, it can be seen how the corridor is actually the roofs of the units below.
3. All terraces will be the roofs of the units below.
4. The design will consist of units which are transportable and will lend themselves to various types of materials observing the structural limitations of each.
5. Each unit will be exactly repetitive in terms of exterior walls, windows and doors. Such a unit will have to meet all the requirements of various size apartments without having to sacrifice space efficiency.
6. The use of built-in furniture will be explored in terms of creating space which, although smaller than normal room sizes, will actually be more efficient because of space saving. In the solution, a basic 12' x 24' unit is used. Through built-in furniture, one of these units (288 square feet) is able to meet the demands of a one bedroom apartment. To demonstrate the flexibility of this unit, the design is not limited to built-ins. Some of the units utilize standard furniture and using the basic box, apartment sizes range from one bedroom to a unit consisting of three bedrooms, a study, playroom, kitchen, living room and dining area plus three

terraces. It has the further flexibility of being able to utilize one of the terraces as a fourth bedroom. Because of the utilization of floor area created by the roof of the unit below, this large unit has only 864 square feet of building area.

7. All units will have an outdoor facility.
8. The creation of garden apartments and duplexes will be inter-mixed to create a variety of space.

Although various types of built-in units and bathrooms are shown in this presentation, it should not be analyzed in these terms. It is shown in this manner to demonstrate the flexibility of the unit. The actual design will select the units which best meet all of the various conditions.

This design was created solely for the Reston area. Different areas will require different solutions in terms of density. However, it is felt that a unit like this could be used in a variety of applications.

CRITIQUE OF CONRAD ENGINEERS SCHEME
Environmental Design Team

1. While this scheme uses a very intriguing concept of stacked, prefabricated modules combined into various numbers, amounts and locations to provide various combinations of living patterns, the overall effect from an exterior standpoint would be one of a false scale not reflected in the model or in the renderings. The projecting elements and other modules of space are relatively small compared with the scale of a human being. The resulting effect of the entire structure would be that it would appear to be about three-quarters of real life scale.
2. An identity or something special about one's individual unit is missing unless handled through variations in color schemes, textures and the like.
3. The overall complexity of the roofscape would suggest that a very difficult problem of water control and migration into cracks from the joinery of the modules would be most incompatible with the Virginia climate and expensive to maintain.
4. The forms generated in this solution are atypical of the image or concept of desirable housing held by this group and this departure, coupled with the probable departure in expression of the materials (precast concrete effect), would be generally unacceptable for initial occupancy by this income group. It may be possible to satisfy their housing image by departing from convention in either form or materials, but not both. The big problem that results from this particular proposed solution is that it looks like low income housing.
5. Some of the outdoor spaces at the upper levels appear to be forced into the design solution. These small receding openings could be better used as enclosed spaces for the occupants.
6. The ratio of exterior wall surfaces to the amount of occupancy space appears to be quite high.
7. The slant at the top of stairwells is a visually disturbing element in relation to the other forms.
8. The concept of individual modules, the smallest of which satisfies the minimum single housing unit needs with additional

modules being added for larger family space requirements is a valid planning approach, but in this case generates very difficult functional plan solutions. As a result, the spaces are "cut up," tiny in size, without a feeling of openness and do not provide visual relief for sustained activities. The resulting psychological effect on occupants of this type of housing would be that they would simply want to "get out."

9. The social patterns reflected in the plan on Page 2 are fully consistent with the type of living pattern used by this income group. The primary problem is simply inadequate space to perform the needed living functions.

10. Visual openness to the exterior in the living/dining area is inadequate.

11. Ventilation would be an extreme problem in this unit.

12. This design solution does not take advantage of the openness of the site for this cluster grouping.

13. With regard to the one bedroom unit, built-in furniture is not acceptable to this income group. The folding bed is one example of unworkable furniture.

14. The combination of sleeping and living is not good for transitional housing but is, however, acceptable by this group upon initial occupancy.

15. The choice of interior finishes and colors for spaces this size would be a critical design decision.

16. The small room sizes would not be acceptable under FHA MPS requirements.

17. A kitchen work area with the back to the window would result in the individual working in his own shadow during daylight periods unless adequate supplementary lighting is provided. This would be of less concern in the units having an adequate overhang above when utilizing natural lighting.

18. It would be extremely difficult for someone sleeping in the living room to get into the bathroom in the middle of the night without waking others.

19. Prolonged study at the desk unit would result in visual disabilities.

20. Storage would be inadequate.

21. On the two bedroom units, the two door bathroom simply does not work for this type of family living pattern.

22. Flexibility of orientation for the two bedroom units is questionable.

23. On the two bedroom units, the addition of a small bedroom cubicle as a second bedroom appears to be far below minimum and the expense of providing the equipment to make it function could be better spent on additional space.

24. The bedroom level of the three bedroom units contains an extreme amount of waste circulation space with its corridor network and would be confusing and frustrating to the occupants.

25. The organization of desk or study areas indicated in the bedroom would result in visual disabilities to these occupants. They need considerably more visual relief distance than is shown in front of the desk surface.

26. The extremely small subdivided spaces, while providing identifiable personal space, do violate the more basic requirements of visual openness and apparent space.

27. The principal amount of storage in the three bedroom units is provided on the upper floor. This is excessive to the needs of the total house and more should be included on the lower level.

28. Window orientation for light and ventilation is very poor. More flexibility in location of the openings should be provided to satisfy these needed functions.

29. The location of the very minimal playroom in relation to the rest of the family is unfunctional and totally unrealistic.

30. The terrace or the use of that space for a fourth bedroom is equally unrealistic.

31. Sliding doors on bath units are not acceptable for this type of housing from functional and sound transmission points of view.

One is inclined to wonder about the justification for interior vertical circulation in units as sparsely supplied with space as in the three bedroom units and whether this vertical

circulation space would not be better used in another manner permitting the entire family unit to be located on one level.

This proposed solution appears to reflect a domination of attempt to achieve a form image in the current idiom of Habitat '67 at the expense of sacrificing family living patterns and basic human functions associated with the elements contained in each unit. It would appear that unless this technological construction method can be given far more study as far as planning and design are concerned, it would be well to "forget it" as a proposed Reston low income housing proposal.