

T-18 Rev. 6/01

STATE OF CONNECTICUT
DEPARTMENT OF ECONOMIC
AND COMMUNITY DEVELOPMENT
REQUIREMENTS OF STANDARDS
FOR
DESIGN AND CONSTRUCTION
OF
MULTI-FAMILY HOUSING

DESIGN REQUIREMENTS REVISIONS

The following design requirements stipulated in the Requirements and Standards for Design and Construction of Multi-Family Housing, Form T-18 dated 10/89, have been revised effective June 2001.

1. Walks shall be a minimum of 3-0" wide.
2. Size of plantings: required minimum caliper for trees is deleted.
3. Sodding requirement is deleted.
4. Maximum unit sizes are revised to 0-BR - 560 square feet; 1-BR - 690 square feet; 2-BR - 950 square feet; 3-BR - 1150 Square feet; 4-BR - 1325 square feet gross building area.
5. Kitchen Cabinet Soffits requirement is deleted.
6. PVC bathtub/shower surround wall system requirement is deleted.
7. Metal truss anchors requirement is deleted.
8. Bi-fold door bottom track requirement is deleted.
9. Clad wood window requirement is deleted. Windows must meet Energy Efficiency Standards.
10. Door requirement for three (3) butts is deleted.
11. Door security viewer requirement is deleted.
12. Counter top requirement for marine plywood substrate is reduced to exterior plywood substrate.
13. Air Conditioner Sleeve requirement is deleted.
14. Window blinds requirement is deleted.
15. 15" high tub requirement is deleted.
16. Exterior non-freeze water faucet on back of units' requirement is deleted.
17. Exterior ducted requirement for range hoods is deleted.

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Introductory Statement

The requirements and standards are intended to provide a sound technical basis for the planning and design of housing under the numerous programs of the Department of Economic and Community Development (DECD). They describe those characteristics, which will provide present and continued utility, durability, desirability, economy of maintenance and a safe and healthful living environment. The standards and requirements contained herein define the level of quality acceptable to DECD.

Concept

User satisfaction in housing - and as a corollary, pride of "ownership" - is strongly tied to several simple and overlapping principles. The first is a clear demarcation of responsibility - what is personal, what is shared and by whom, and what is public. In short, "turf."

The second principle is a clear definition of what is "front stage" and what is "backstage," in terms of both physical location and personal activity.

A good design, in contrast to a design that requires management to control the project, allows residents to personalize, care for, and improve their home, yard, and neighborhood.

Responsibility

The Developer and Architect are responsible for meeting DECD standards in the design and construction of affordable multi-family housing. The Architect is solely responsible for code compliance. DECD architectural review staff is not responsible for identifying noncompliance of code requirements.

I. Site Development

A. **General**

1. Site all buildings with a minimum protective slope (6" drop in 10'-0") to keep storm water away from foundations.
2. Walks shall be 4'-0" wide typically and 6'-0" wide at the head of parking spaces. Public walks should be a minimum of 8'-0" from windows of dwelling units.
3. Minimum pitch for drives and parking areas shall be one and one-half percent (1 ½) for positive drainage.
4. All drives and parking areas should be bounded by 6" high bituminous concrete curbs.
5. Provide an adequate number of trash enclosures with paved surfaces.
6. Provide fences, hedges, or other barriers to separate the site from all serious hazards such as railroads, precipitous drops, ponds, streams, etc.
7. Barriers preventing visual surveillance of exterior building walls, doorways, and play areas should be avoided.
8. Buildings shall be solar-oriented where practical.

B. **Landscaping**

1. Provide an adequate separation between buildings and trees.
2. Shrubberies for defining space shall not act as a barrier restricting sight.
3. Size of plantings.
 - a. 3-3½" caliper ash, honey locust, maple, or oak.

4. Provide sodding at the fronts of buildings and approximately 20'-0" from foundations at the sides and rear of buildings.

II. Principles of Building Design

A. General

1. All building must comply with, but not exceed the requirements of applicable codes except where necessary to comply with specific Department of Economic and Community design requirements and standards.
2. All common spaces, which will be used by residents, must be designed for handicapped accessibility if the facility contains dwelling units designed for handicapped occupancy.

B. Non-Residential Space

1. Management Space

- a. Provide 100 square feet plus 2 square feet per dwelling unit for office space.

(1) Optional in Mutual Limited Equity Cooperative projects.

2. Maintenance Space

- a. Provide 100 square feet plus 4 square feet per dwelling unit for the storage of maintenance supplies and equipment.

(1) Optional in Mutual and Limited Equity Cooperative projects.

3. Facilities for Trash and Garbage Disposal

- a. Provide for the temporary sanitary storage of trash and garbage and for its subsequent disposal or removal.

b. Design and construction of trash chutes shall be in accordance with NFPA Standard No. 82.

4. Community Space

a. Optional in Mutual and Limited Equity Cooperative projects for tenant meetings.

C. Dwelling Unit

1. Maximum sizes of dwelling units and the maximum number of bathrooms.

TABLE 1

MAXIMUM DWELLING UNITS AND BATHROOMS

(Bedroom)	0	1	2	3	4
(Square Feet of Gross Interior Finished Area)	525	650	950	1250	1375
(Number of Baths)	1	1	1½	2	2

Note

(1) For projects involving five (5) or more bedrooms, the maximum unit size may be increased by up to 125 square feet for each additional bedroom, i.e. 5BR - 1500 sq. ft.; 6BR - 1625 sq. ft., etc.

(2) In new construction, provide a minimum of two (2) exterior facades per dwelling unit to insure a maximum of cross ventilation and positive air circulation through windows for all one and two-story buildings.

2. General Handicapped Requirements for Projects of 10 units or more.

- a. Ten percent (10%) of the total number of dwelling units shall be designed and equipped for handicapped occupancy.
- b. Handicapped dwelling units should be provided in proportion to the bedroom unit mix.
- c. Handicapped dwelling units should be dispersed throughout the project.
- d. Handicapped dwelling units shall provide two (2) remote means of egress to the exterior at grade level.
- e. All rooms in handicapped dwelling units shall be designed in compliance with the requirements of the ANSI Standard A117.1-1986.
- f. There shall be a 6'-0" wide by 5'-0" deep concrete platform flush with the finish floor elevation at each handicapped dwelling unit entrance door or handicapped accessible common building entrance. Provide footings and foundation walls connected to the building foundation.

3. Living Area

- a. Space shall be provided in the living area to accommodate the following furniture with comfortable use and circulation space:

(1) 0-Bedroom:

1 couch	- 3'-0" x 6'-10"
1 lounge chair	- 2'-6" x 3'-0"
1 desk	- 1'-8" x 3'-6"
1 desk chair	- 1'-6" x 1'-6"
1 television set	- 1'-4" x 2'- 8"
1 table	- 1'-6" x 2'-6"

(2) 1-Bedroom, 2-Bedroom, 3-Bedroom:

Add 1 lounge chair	- 2'-6" x 3'-0"
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(3) 4-Bedroom and larger:

Add 2 lounge chairs - 2'-6" x 3'-0"

4. Dining Area

a. Each dwelling unit shall contain space for dining. This area may be combined with the living area or kitchen.

b. Space for accommodating the following size table and chairs with proper circulation space in the dining area should be provided for the intended number of occupants as shown:

(0-bedroom or 1-bedroom) 2 persons	- 2'-6" x 2'-6"
(2-bedrooms) 4 persons	- 2'-6" x 3'-2"
(3-bedrooms) 6 persons (round)	- 3'-4" x 4'-0"
(4 or more bedrooms) 8 persons	- 3'-4" x 6'-0" or 4'-0" x 4'-0"
Dining chairs	- 1'-6" x 1'-6"

5. Bedrooms

a. Each bedroom shall accommodate at least the following furniture with comfortable use and circulation space:

(1) 0-Bedroom:

1 twin bed	- 3'-3" x 6'-10"
1 dresser	- 1'-6" x 3'-6"
1 chair	- 1'-6" x 1'-6"

(2) Primary Bedroom: (recommended in each dwelling unit except 0-bedroom)

2 twin beds	- 3'-3" x 6'-10"
1 dresser	- 1'-6" x 4'-4"
1 chair	- 1'-6" x 1'-6"
1 crib	- 2'-6" x 4'-6" (may be located in another room in addition to the required furnishings)

(3) Secondary Bedrooms:

2 twin beds - 3'-3" x 6'-10"
 1 dresser - 1'-6" x 3'-6"
 1 Chair - 1'-6" x 1'-6"

6. Table 2 shall be used throughout for all rooms of living units.

TABLE 2

MINIMUM ROOM SIZES

a. Minimum Room Sizes for Separate Rooms (Square Feet of Gross Finished Area)

Minimum Area (Sq. Ft.) (6)

Name of Space (1)	LU w/ 0-BR	LU w/ 1-BR	LU w/ 2-BR	LU w/ 3-BR	LU w/ 4-BR	Least Dimension
K	NA	65	70	80	85	6'-0"
LR	NA	160	160	170	180	11'-0"
DR	NA	100	100	110	120	8'-4"
BR (primary) (2)	NA	120	120	120	120	9'-4"
BR (secondary)	NA	NA	90	90	90	9'-0"
Bath (Primary w/tub)	38	38	38	38	38	5'-0"
Bath (Secondary w/Shwr)	38	38	38	38	38	5'-0"
Toilet	25	25	25	25	25	3'-0"
Bath (H.C. Primary w/tub)	55	55	55	55	55	5'-6"

b. Minimum Room Sizes for Combined Spaces (Square Feet of Gross Finished Areas).

Minimum Area (Sq. Ft.) (6)

Name of Space (1)	LU w/ 0-BR	LU w/ 1-BR	LU w/ 2-BR	LU w/ 3-BR	LU w/ 4-BR
LR-DA	NA	210	210	230	250
LR-DA-SL	250	NA	NA	NA	NA
LR-DA-K (4)	NA	270	270	300	330
LR-SL	210	NA	NA	NA	NA
K-DA (5)	100	120	120	140	160

Notes

(1) Abbreviations:

LU = Living Unit	K = Kitchen
LR = Living Room	NA= Not Applicable
DR = Dining Room	BR = Bedroom
DA = Dining Area	SL = Sleeping Area
0-BR = LU with no separate Bedroom	

- (2) Primary bedrooms should have at least one wall space of at least 10 ft. uninterrupted by openings less than 44 in. above the floor.
- (3) For two adjacent spaces to be considered a combined room, the horizontal opening between spaces should be at least 8'-0", except that between kitchen and dining functions, the opening may be reduced to 6'-0". Spaces not providing this degree of openness should meet minimum room sizes recommended for separate rooms.
- (4) A combined LR-DA-K should have a clear opening between the kitchen and dining area of at least 4'-0".
- (5) These recommended minima apply when the only eating space is in the kitchen.
- (6) The floor area of an alcove, or recess off a room, having a least dimension less than recommended for the room, should be included only if it is not more than ten percent (10%) of the

minimum room size recommended and is useful for the placement of furniture.

7. Kitchen

- a. Kitchen fixtures and countertops shall be provided in accordance with Table 3. Required countertops shall be approximately 24" deep and 36" high. Clearance between all opposing base cabinets, counter tops, appliances or walls, should be 40" minimum.
- b. Countertops may be combined when they are located between two fixtures -stove, refrigerator, and sink. Such a countertop should have a minimum frontage equal to that of the larger of the countertops being combined. This combined counter may also be the mixing counter when its minimum length is equal to that required for the mixing counter. Countertop frontages may continue around corners.

TABLE 3

COUNTERTOPS AND FIXTURES

Work Center	Number of Bedrooms				
	0	1	2	3	4
	<u>Minimum Frontages in Lineal In.</u>				
Sink	24	24	24	32	32
Countertop, each side	15	18	21	24	30
Range or Cooktop Space (1) (2) (5)	22	22	24	30	30
Countertop, one side (3)	15	18	21	24	30
Refrigerator Space (4)	30	30	36	36	36
Countertop, one side (3)	15	15	15	15	18
Mixing Countertop	21	30	36	36	42

Notes

- (1) The range shall be located to provide 12" minimum clearance between the edge of the cooktop and the nearest vertical surface.

- (2) A range burner shall not be located under a window nor within 12 in. of a window. Where a cabinet is provided above a range, 30 in. clearance shall be provided to the bottom of an unprotected cabinet, or 24 in. to the bottom of a protected cabinet.
- (3) Provided at least 6 in. from the edge of the sink to an adjacent corner cabinet, at least 9 in. from the edge of a range to an adjacent corner cabinet and 15 in. from the side of a refrigerator to an adjacent corner cabinet.
- (4) Refrigerator space should be 33" when refrigerator door opens within its own width.
- (5) When a range is not provided, a 30" wide space shall be provided.

c. Kitchen storage shelf area shall be provided in accordance with Table 4. At least one-third of the required area shall be located in base or wall cabinets. At least sixty percent (60%) of the required area shall be enclosed by cabinet doors.

TABLE 4

STORAGE AREA

SQ FT	<u>Number of Bedrooms</u>				
	0	1	2	3	4
Minimum Shelf Area	24	30	38	44	50
Minimum Drawer Area	4	6	8	10	12

Notes

- (1) Wall cabinets over refrigerators shall not be counted as required shell area.

- (2) Shelf area above 74 in. shall not be counted as required area.
- (3) Inside corner cabinets shall be counted as 50 percent of the shelf area, except where revolving shelves are used, the actual shelf area may be counted.
- (4) Drawer area in excess of the required area may be counted as shelf area if drawers are at least 6 in. in depth.
 - d. Enclosed the space between the ceiling and the tops of the wall cabinets and range hood.

8. Bathroom

- a. Each dwelling unit shall have one (1) bathroom containing a bathtub with showerhead and a minimum outside width of 30 in., a lavatory, and a water closet. In other bathrooms, showers may be substituted for bathtubs. Bathrooms shall provide for comfortable access to, and use of, each fixture. Bathrooms shall be convenient to the bedrooms.
- b. Bathrooms shall be provided with the following accessories:
 - (1) Soap dish at tub and/or shower.
 - (2) Shower curtain rod at tub and/or shower.
 - (3) Soap dish at lavatory (soap dishes may be integral with the fixture).
 - (4) Toilet paper holder at water closet.
 - (5) Mirror and medicine cabinet.
 - (6) Two (2) towel bars; one (1) in toilet room. (1/2 bath).
 - (7) Double robe hook.
- c. Each toilet room shall be provided with items 3, 4, 5, 6, and 7 above.
- d. Stall showers shall have a minimum area of 1024 sq. in. and a least dimension of 30 in.

- e. Provide a PVC bathtub/shower surround wall system. Use DECD Specifications.
- f. Provide a medicine cabinet over lavatories in non-handicapped dwelling units. In bathrooms designed for handicapped occupancy, provide a mirror above the lavatory and locate the medicine cabinet on another wall.
- g. Bathroom and toilet room accessories shall be surface mounted type.
- h. Tub or shower bottom surfaces shall be slip-resistant.
- i. The door shall swing out of the room in bathrooms designed for handicapped occupancy.

9. Laundry

- a. Provide an enclosed space in each dwelling unit for a clothes washing machine equipped with power supply, water, and waste piping and space for a dryer equipped with power supply and exhaust ventilation to the exterior.
 - (1) Space may be provided in the basement.

10. Closets and General Storage

a. Bedroom Closets

- (1) Each bedroom should have accessible clear hanging space equipped with rod and shelf of 14 square feet or greater.

b. Coat Closet

- (1) Provide at least a 2'-0" x 3'-0" (clear floor area) coat closet convenient to the entrance.

c. Linen storage closet shall provide the following:

- (1) Minimum shelf area: 10 sq. ft. for 2 bedrooms or less; 15 sq. ft. for 3 or more bedrooms.
- (2) Spacing of shelving: not less than 12 in. o.c.
- (3) Shelving over 74" above floor shall not be counted as required area.
- (4) Linen closet should not be located in the bathroom.

d. General Storage

- (1) Usable general storage space shall be provided for the storage of items and equipment essential to the use of the occupants. This storage shall be in addition to required closets and kitchen storage. The total amount of general storage space for each dwelling unit shall conform to Table 5.
- (2) The space may be provided in the basement.

TABLE 5

GENERAL STORAGE REQUIREMENTS

	Square Feet of Storage Column 1
0 BR	35
1 BR	40
2 BR	45
3 BR	55
4 BR or more	65 plus 5 for each additional bedroom.

e. Water Heater Closet (if required)

- (1) Space shall be at least 2'-0" wide x 2'-0" deep.

(2) May be located in the basement.

f. Boiler Closet (if required)

(1) May be located in the basement.

D. Doors and Openings

1. All single leaf swinging doors, except closet doors, shall be 3'-0" wide.

E. Halls and Corridors

1. Clear width shall be:

Public corridor	5'-0"*
Exterior access corridor	5'-0"
Hall within dwelling unit	3'-0"

(*Pair of doors in corridors shall be 6'-0" wide)

F. Circulation

1. Each bedroom should have access to a bathroom without an intervening bedroom, kitchen, or principal living or dining area. Bedrooms should not afford the only access to a required bathroom, except in one-bedroom units. Neither a bedroom nor a bathroom should afford the only access to a habitable room.
2. Provide access to bedrooms from dwelling unit entrances without passing through living areas, wherever possible.

G. Stairways

H. Elevators

I. Acoustics

TABLE 7

RECOMMENDED SOUND TRANSMISSION LIMITATIONS

<u>Location of Partition</u>	<u>STC</u>	
Dwelling unit to dwelling unit, corridor or public space	50	
Dwelling unit to public space and service areas	50	
<u>Location of Floor-Ceiling</u>	<u>STC</u>	<u>IIC</u>
Floor-ceiling separating dwelling units from other dwelling units, public space, or service areas	45	45
Floor-ceiling separating dwelling units from public space and service areas, including corridor floors over dwelling units.	50	50

J. Fire Protection

1. When structures fall into Apartment House Habitational Class and are non-combustible construction Types 3 and 4, then the maximum number of living units between 8" masonry fire separating walls should be ten (10).

III. Materials and Construction Requirements

A. Site

1. All materials and construction methods used for drives, parking areas, walk, etc., shall be as per current Form of Connecticut State Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction.

2. One (1) compaction test per ground floor dwelling unit and non-residential area shall be provided.
3. A concrete pad for trash dumpsters shall be provided.
4. Soil treatment by a licensed applicator under slabs on grade and around foundation walls shall be provided.
5. Downspouts occurring at the fronts of buildings where there are entry walks and other paved areas shall be connected to the storm drainage system. Concrete splash blocks at all other downspout locations shall be provided.

B. Concrete

1. Use 2500 lb. concrete for footings, foundation walls, and slabs not exposed to weather.
2. Use 3000 lb. air-entrained concrete for all concrete exposed to weather.
3. Specify three (3) cylinders for each test, and one (1) test for each day's pour or 50 cubic yards, whichever is less, for footings, foundations, and slabs.

C. Masonry

D. Metals

E. Carpentry

1. General Framing
 - a. All lumber used for structural joists, rafters, and columns shall be of entirely one of the fir, spruce, or hemlock series which shall be not less than No. 2 grade and shall have a minimum modulus of elasticity (E) of 1,400,000 PSI and a single member fiber stress in bending (fb) of 1100 PSI.
 - b. Light framing lumber used for studs in walls and partitions shall not be less than stud or standard

grade or better and shall have a compressive stress parallel to grain (fc) of not less than 400 PSI.

- c. Recommend use 2x6 studs spaced at 24" on center for exterior walls.
- d. Moisture content at delivery shall not exceed nineteen percent (19%).

2. Truss Framing

- a. All lumber used for trusses shall be of entirely one of the fir, spruce, hemlock, or K.D. Southern Pine species, which shall not be less than No. 2 grade and shall have a minimum modulus of elasticity (E) of 1,400,000 PSI and a single member fiber stress in bending (fb) of 1100 PSI.
- b. Trusses should be spaced at 24" on center and be designed to allow for ceiling insulation and attic ventilation. Maintain a 12" workpoint between the top of the plate and the bottom of the truss top chord in a plane with the exterior wall sheathing. Provide attic ventilation in the amount of 1.5 sq. in. of free air per square foot of horizontal attic space, with fifty percent (50%) provided at the ridge and fifty percent (50%) equally distributed at the soffits. Use DECD Workpoint Diagram Specifications.
- c. A Registered Connecticut Professional Engineer must stamp truss shop drawings.
- d. Trusses shall be stored clear of the ground, on solid blocking located at panel points and covered from the elements. Once the covering is damaged or removed, the trusses should be installed, sheathed, and protected to maintain stress-graded moisture content as per specifications.
- e. Use metal truss anchors to tie trusses to the plate.
- f. Moisture content at delivery shall not exceed nineteen percent (19%) except for southern pine trusses.

3. Sheathing

- a. Wall sheathing shall be ½" thick Oriented Strand Board, APA rated, 24/0, Exposure I, NER-108.
- b. Roof sheathing shall be ½" thick plywood, APA rated, 32/16, Exposure I, PS 1-74, C-D interior with exterior glue, NRB-108.

F. Thermal and Moisture Protection

1. Vapor Protection

- a. Provide a 6 mil polyethylene vapor barrier under slabs on grade.
- b. Provide a 4 mil polyethylene vapor barrier at exterior frame walls and ceiling assemblies, which are open to exterior air.

2. Building Insulation

- a. Insulation shall meet the following requirements:

Exterior walls	- R-19 fiberglass
Ceilings	- R-38 fiberglass batts
Under slab insulation	- R-10 extruded polystyrene
Slab edge	- R-5 extruded polystyrene

3. Flashing

- a. Valleys shall be 90 lb. mineral surfaced roll roofing.
- b. Eave flashing shall be one (1) layer of 50 lb. smooth surface roll roofing over single underlayment or one (1) layer of 90 lb. mineral surface roll roofing.
- c. Underlayment shall be 15 lb asphalt saturated felt.
- d. Provide metal drip edges at eaves and rakes.

4. Gutters and Downspouts

- a. Provide gutters and rain leaders on all buildings.
- b. Provide continuous fascia apron and bar hangers for gutters.
- c. Spikes and ferrule fastenings are not acceptable.

5. Entrance Canopies

G. Doors, Windows, and Glazing

1. Doors

- a. All exterior doors shall be 1- $\frac{3}{4}$ " thick, steel clad, insulated, with integral weather-stripping and threshold.
- b. All exterior doors of dwelling units shall be provided with aluminum combination storm and screen doors. Use DECE Aluminum Combination Door Specification.
- c. Interior dwelling unit entrance doors shall be 1- $\frac{3}{4}$, thick, steel clad insulated doors or solid core wood doors.
- d. Undercut bathroom doors to facilitate air circulation.
- e. When bi-fold type doors are used, they shall be provided with top and bottom tracts.
- f. In areas where additional security is necessary, exterior doors shall be 18 gauge steel, hinges shall have non-removable pins, door frames shall be 16 gauge steel, and deadbolts with 1" throws shall be provided. Interior dwelling unit entrance doors shall be 20 gauge steel with 18 gauge steel frames.
- g. The use of sliding and/or pocketed type doors is not recommended.

2. Windows

- a. Exterior insulated windows with clad wood frames and sash are required to minimize condensation problems and heat loss. Use DECD Window Specifications.
- b. Maintain stock sizes throughout.
- c. Screens shall be provided for all operable window openings.
- d. Slider type windows are not acceptable.
- e. Metal windows are not acceptable.
- f. All windows shall be insulated and glazed with Low-E (low emissivity) glass.
- g. All window sill heights shall be not less than 2'-6" above finish floor.
- h. Where existing window sill heights are less than 2'-6" above the finish floor, a security device shall be provided across the window opening.
- i. In areas where additional security is necessary, positive claws should be provided on locking devices for all double and single hung windows. Provide additional security to all windows and openings adjacent to porches and fire escapes. Eliminate windows in basements except for required ventilation.

3. Hardware

- a. All finish hardware shall be scheduled in the specifications. Hardware shall meet Federal Specification #160 where possible.
- b. All doors shall be hung on three (3) butts.
- c. Provide single motion operation for egress. No dead bolts unless required by the town/city.

- d. The locks on the doors of each dwelling unit shall be master keyed.
- e. Front and rear doors of each dwelling units shall be keyed alike.

H. Finish Materials

1. Exterior Wall Finishes

- a. Maintenance free, such as masonry or other hard, durable finish.
- b. Solid vinyl siding. Use DECD Vinyl Siding Specification.
- c. Exterior trim should be aluminum clad. Provide slotted nailing holes to allow for expansion and contraction.

2. Roof Coverings

- a. Roof shingles shall be U.L. Class "A" fiberglass, minimum weight 235 lbs./square with a 25 year warranty.
- b. Provide a starter course.
- c. All flat roofs shall provide a minimum $\frac{1}{4}$ " pitch per ft. Where existing roofing on flat roofs is to be replaced, a minimum $\frac{1}{4}$ " pitch shall be provided.
- d. Membrane roofing with be permitted over one (1) layer of existing roofing where the existing roofing is to remain.

3. Interior Wall and Ceiling Finishes

a. Dry Wall Construction

- (1) Use $\frac{1}{2}$ " recessed or tapered edge Gypsum Board, nail to stud framing. Also block for nailing of all edges and ends of Gypsum Board. Use Perf-A-

Tape or equal, for joint treatment at recessed edges. All horizontal and vertical exterior corners shall be protected with an appropriate metal corner bead. Use metal edge trim where wallboard abuts another material in finished areas. Use only factory-edged Gypsum Board where wallboard abuts tub edge. Block all edges and ends of ceiling boards.

(2) Water-resistant gypsum boards shall be used in bathrooms and other wet areas.

4. Flooring

a. 1/8" thick vinyl composition tile or .085" sheet vinyl.

b. Provide 1/8" thick vinyl wall base in above areas where resilient flooring is used.

c. Carpet

(1) 24 oz. per square yard in dwelling units.

(2) 28 oz. per square yard in public areas.

5. Painting

a. Generally, all exterior and interior surfaces shall receive a prime coat and one (1) finish coats.

b. Exceptions to the above number of coats are as follows:

(1) Factory primed exterior and interior metal shall receive two (2) finish coats.

(2) Interior trim with semi-gloss finish shall have a prime coat and two (2) finish coats.

(3) Bathrooms, toilet rooms, laundries, central kitchens, dwelling unit kitchen cabinet walls (including returns), shall have a prime coat and two (2) coats with semi-gloss finish. Ceilings of these rooms shall be finished in the same manner.

(4) Interior trim with transparent finish shall have stain and two (2) coats of polyurethane sealer.

c. All exterior non-clad wood trim shall be back prime painted.

I. Specialties

1. Corner guards

a. Provide corner guards at exterior corners of partitions in handicapped dwelling units, laundries, office, corridors, and other common rooms or areas accessible to handicapped persons.

2. Protective Edge

a. Provide a protective edge along the bottom of the sink front apron in handicapped dwelling units.

3. Project Plaque

a. Provide a project plaque. Use DECD Project Plaque Specification.

4. Project Sign

a. Provide a project sign. Use DECD Project Sign Specification.

5. Closet Shelving

a. All shelving shall be ventilated, vinyl coated steel rod shelving.

6. Security Viewer

- a. Provide a one-way, wide-angle viewer (peepsight) in each dwelling unit front and back door.

J. Equipment

1. Kitchen and Vanity Cabinets
 - a. Use DECD Cabinet Specifications.
2. Countertops
 - a. Use ¾" marine plywood with high pressure plastic laminate.
3. Appliances
 - a. Ranges*
 - b. Refrigerators*
 - c. Dishwashers are not permitted.

*See Table 3 for appliance spaces.
4. Sleeves for Air Conditioners
 - a. Provide a metal air conditioning sleeve with end caps and filled with insulation for each dwelling unit and office space.

K. Furnishings

1. Vertical or horizontal blinds are required for all window openings. Color shall be off-white.

L. Plumbing

1. Use 15" high tubs. Provide toilet seat covers for all water closets except those in common areas.
2. If plumbing must be located in exterior walls, it should occur in a double (chase) wall on the interior side of the typical insulated exterior wall.
3. Insulation shall be furnished for all hot and cold water piping. Insulation shall pass through pipe sleeves and

wood framing. Minimum 1" thick in attic and other unheated areas. Use molded fittings with taped joints.

4. Keep water piping out from under concrete slabs on grade except for the water service entrances into buildings.
5. Provide stops at each plumbing fixture, dwelling unit, and building.
6. Provide a non-scalding type valve for tub/shower installations.
7. Domestic hot water may be supplied by an individual water heater in each dwelling unit. The size of the water heater shall be sufficient to provide hot water for the maximum occupancy of the dwelling unit.
8. Hose connections for fire hydrants shall be specified to comply with the requirements of the local fire department as to size, threads, etc.
9. Provide an exterior non-freeze water faucet at the front and back of each grade level dwelling unit with its own entrances. Include vacuum breakers.
10. Provide a combined mixing single lever control type faucet at each sink and lavatory.
11. The use of sewage ejectors is not recommended.
12. Plumbing for fixtures and heating shall be kept out of fire rated walls where possible.
13. All plumbing fixtures shall be white in color.

M. Heating

1. The heating system shall be designed to maintain 70 degrees F. temperature when the outside temperature is 0 degrees F.
2. When electric heating is used, provide medium density electric baseboard (250 watts per linear foot).

3. When electric heating is installed in bathrooms, the heaters and control switches shall be located as far as practical from plumbing fixtures and at least 2'-6" from the bathing fixtures.
4. Provide a heating zone for each floor level in each individual dwelling unit.

N. Ventilation

1. Provide a range hood in the kitchen ducted to the exterior.
 - a. Ductwork should be metal.
2. Provide an exhaust fan in each bathroom and toilet room.
 - a. Ductwork should be metal.

O. Electrical

1. Wiring will not be permitted under concrete slabs on grade.
2. All branch wiring shall be copper.
3. Provide adequate site lighting for vehicular and pedestrian traffic controlled by photocell, including lighting of exterior building walls and parking areas. The recommended lighting level for walks, drives, and parking is 2.0 footcandles.
4. In areas where additional security is necessary, additional security lighting should be provided. The recommended lighting level for security problem areas is 5.0 footcandles.
5. Provide two (2) telephone outlets in each dwelling unit and one (1) in the office.
6. All switches shall be located within easy reach. Use one (1) switch for light and fan in bathrooms and toilet rooms.

7. Provisions shall be made for the reception of cable television service. Provide an outlet in the living area of each dwelling unit.
8. All dwelling units shall preferably be individually-metered for space heating and domestic hot water, subject to the recommendations of a Life Cycle Cost Analysis.
9. In general, locate duplex wall receptacles 24 inches above the finish floor. Provide draft insulators for switches and receptacles located in exterior walls.
10. One (1) receptacle in each bedroom or sleeping area and in each living area shall be operated by a wall switch.
11. Provide emergency call-for-aid switches in bathrooms and bedrooms of handicapped dwelling units. Cords on the switches shall extend down to the top of the wall base. Switches shall be located within easy reach from bathing fixtures and beds. Use DECD Call-For-Aid/Early Warning System Specifications.
12. Provide a separate 20-amp circuit for the air conditioners.
13. Provide AC/DC smoke detection in each dwelling unit. These detectors are to be activated during the incipient stage of a fire. Suitable smoke and/or heat detectors shall be provided in the laundries, maintenance rooms, storage rooms, electrical rooms, mechanical rooms, janitor's closets, etc., and wherever else required by code. Locations of detectors shall be approved by the local fire marshal. Use DECD Call-For-Aid/Early Warning System Specifications.
14. A visual and audible fire alarm system is required in handicapped dwelling units. Use DECD Call-For-Aid/Early Warning System specifications.
15. Provide cords for all ranges and connect all ranges and refrigerators.

16. Provide one (1) spare space for a 20-amp circuit in each dwelling unit panel.
17. Provide a lighting fixture above the kitchen sink.
18. Secure all electrical wiring to rafters or the webs of trusses in lieu of to ceiling joists or bottom cords of trusses to allow clear space for the installation of attic insulation.
19. Provide an intercom system between the main building entrance and each dwelling unit. Where additional security is required, do not provide a door release mechanism in the dwelling units for the building entrance.

IV. Manufactured Housing and Rehabilitated Housing

A. General

1. In the development of projects involving either manufactured housing systems or the rehabilitation of existing structures, every effort must be made to meet the new construction standards noted in Sections I, II, and III. No waivers will be granted for the following:
 - a. Life Cycle Cost Analysis
 - b. Handicapped Requirements
2. The term "Manufactured Housing Systems" excludes mobile homes.
3. Existing structures proposed for rehabilitation projects shall be tested for toxic materials such as asbestos, lead based paint, etc.