CHAPTER 10. PRODUCTS AND MATERIALS

PERFORMANCE OBJECTIVES

10-1. GENERAL. Construction, materials, finish and products used in project buildings and sites shall be consistent with the MPS, be appropriate for their intended use and be of the kind and quality to assure the following:

a. Rigidity, strength and stability for intended use;

b. Prevention of damage from water, moisture, decay or infestation;

c. Fire resistance and compliance with relevant fire codes;

d. Relative ease of maintenance; and

e. Resistance to abuse and misuse.

CHAPTER l0. PRODUCTS AND MATERIALS.

SECTION I: MANDATORY STANDARDS

10-2. RESERVED.

10-3. VEGETATION. Existing trees, plants and ground cover shall be healthy, stable, and provide their intended functions. Trees shall not be disruptive of building systems or designed site activities, or create hiding areas for potential vandals. Trees and shrubbery shall not obstruct views from windows to the street or building entrance areas, thus preventing surveillance for tenant safety. Planted areas that are abused by inadequately designed circulation or play areas shall be protected by railings or fencing.

a. Trees and Other Plantings. Trees, shrubbery and other plantings shall be provided to replaced dead plant materials, control erosion, mitigate summer heat and winter winds or create a more attractive environment in accordance with local standards for similar housing in the area. Vegetation can add color, texture and visual pleasure to an otherwise sparse building site.

b. Placement of Plantings. Trees and plants shall be planted no closer to the foundation of light building structures than the anticipated height of the particular plant if there are problems with shrinking/swelling of subsoils. This will minimize uneven drying of subsoil and possible displacement of structure. This concern applies to building foundations that are 8 feet or less below grade.

c. Lawns. Lawns or seeded slopes adjacent to buildings should have at least a 2 percent grade (1 percent minimum for paved surfaces). Earth banks shall have a maximum slope of 1.3 if power mowers are used.

d. Maintenance. The PHA shall provide evidence that the trees and other plantings, where provided, will be adequately maintained.

l0-4. PAVING. Paved surfaces shall be protected at the edges by curbs, gutters or other suitable means to prvent raveling and to provide for drainage and water run-off. Paved surfaces shall have surface or underground drainage systems to insure

stable soil conditions and safe use. Paved surfaces shall be free of missing portions and major cracks, holes, tripping hazards, spalling, dips or bulges. Paving shall be free of deterioration from moisture, decay or weathering.

Note: Major dips may be an indication of a problem with subsurface systems and should be investigated.

10-5. FENCING AND RAILING. Fencing and railing shall perform their intended function in an efficient manner. Fencing shall not create hiding places for potential criminals. Fencing and railings shall be stable with securely anchored members.

*10-6. FINISHES.

a. Paint. Paint to be applied on the interior and exterior of buildings shall not have a lead content greater than the amount permitted by 24 CFR Part 35. HUD regulations 24 CFR 968.9 require that all surfaces tested and found to have a lead content higher than permitted are to be treated as prescribed in the regulation to eliminate the hazards of lead-based paint poisoning. See 968.9(e) (3). Paint used on building exteriors shall be of a durable weather-resistant type to prevent excessive failure and defects. Painted surfaces shall be free of chalking, fading and/or blistering.

b. Millwork. Millwork, including windows, doors, trim, closets, etc., shall be sanded, primed and finish painted to prevent splintering or water infiltration. Millwork used on painted building exteriors shall be finished to prevent moisture penetration. Millwork shall be in safe and sound condition, stable and anchored as required. Millwork shall be free of splintering, water penetration, material deterioration, or the presence of termites.

c. Interior Areas Subject to Moisture and Water. In areas subject to water or moisture (e.g., kitchens, bathrooms

and laundries), wall, floor and ceiling finishes shall be resistant to water, moisture, and damage from grease, detergent and normal household chemicals.

d. Wall and Ceiling Finishes. Before finishing, it shall be determined that walls and ceilings are stable, anchored as required and free of moisture penetration. Walls and ceilings shall be free of holes, cracks, missing portions and material deterioration. Panels shall not sag, buckle or delaminate. All tile shall be secured and silicone caulked.

(1) Public Areas. Wall and ceiling finishes used in public and highly trafficked areas shall be of the kind and quality to provide durability and reasonable resistance to abuse and graffiti. When brittle or otherwise easily vandalized wall finishes are repeatedly abused, they shall be replaced with a vandal-resistant finish material up to 7 ft. above the floor. New or replacement finishes shall be hard-wearing, resistant to vandalism and graffiti and relatively easy to maintain. Plastic laminates, glazed tile epoxy coating or other equivalent should be considered because of their expected life, chemical resistance and easy maintenance.

(2) Bathrooms. Wall finishes at bathtubs and showers shall be water-impervious. Showers and bathtubs with showers shall have ceramic tile, porcelain steel panel or reinforced fiber glass panel finish on adjacent walls up to 6 ft. above the finished floor. Bathtubs without showers shall have a minimum of 4 rows of ceramic tile around the top of the bathtub. The finished product shall meet the standard in paragraph 5-4c. Gypsum board used as backing for wainscot in showers or tub enclosures shall be water-resistant. Insulating foil-backed wall board shall not be used.

(3) Elderly Projects. Abrasive wall products shall not be used in elderly projects.

e. Floor Finishes. Before finishing, it shall be determined that they provide safe support for all intended loads and are reasonably free of vibration or deflection. When exposed to water, all floors shall drain to maintain safe conditions at all times. Carpet shall only be provided in projects or dwelling units occupied by the elderly or the

disabled. Floors shall be in safe and sound condition, stable and anchored as required. Floors shall be free of holes, major cracks, missing portions, splintering, rust or material deterioration. Nails shall not be exposed and finishes shall be resistant to normal wear and moisture as required. Concrete floors in heavily trafficked areas shall not be painted due to the requirement for repeated painting. When not continuously maintained, the worn paint becomes unsightly.

(1) Areas Subject to Moisture and Water. In spaces subject to water and moisture (i.e., kitchens, bathrooms and laundries), floors shall be made of non-absorptive waterproof materials such as ceramic or vinyl.

(2) Habitable Rooms. Finished floors in habitable rooms shall be wood flooring, resilient tile, sheet materials or carpeting over suitable underlayment (where permitted). Carpet shall not be used in kitchens or bathrooms in any type of project. Bare concrete may only be used in regions where its use is customary, such as in hot climates.

(3) Public Stairs. Soft materials such as bluestone, slate or marble shall not be used on stair treads. The soft consistency developed hazardous cup-like wear spots with age.

l0-7. DOORS. Buildings and rooms requiring closure shall have doors that are safe to operate by children, adults, the elderly and the disabled (as required). Doors shall prevent forcible entry into buildings, public spaces and dwelling units through reinforced rigid door construction, lock block, frames and hardware that resist abuse from shock, vibration or normal use. Doors leading to the building exteriors shall prevent the entrance of the elements and shall be moisture-resistant. Doors shall be operable, in sound condition and free of holes, cracks or material deterioration. Doors shall be securely anchored to frames and free of major sagging. Operating and security hardware shall be present and operating as designed. Glazing shall

be free of cracks or holes. Exterior doors shall be retro-fitted with energy conservation devices that are cost-effective, such as:

- o Weatherstripping;
- o Caulking;
- o Storm doors;
- o Vestibules; or
- o Other.

a. Door Finishes. These shall be in sound condition, free of significant splintering, rust or chipping paint. Finishes of doors leading to laundries, kitchens, bathrooms and the exterior shall be resistant to moisture. Weatherstripping on exterior doors shall be in sound condition and air infiltration shall be minimal. Existing thresholds shall be in safe and sound condition.

b. Air Filtration. New and replacement exterior doors shall be designed to limit air leakage into or out of the building. New doors shall have air infiltration rates not to exceed 0.5 cfm per sq. ft. of door area for sliding doors or 1.25 cfm per sq. ft. of door area for swinging doors.

NOTE: Compliance with these criteria should be determined by ASTM E 283-73 Standard Method of Testing for rate of air infiltration at pressure differential equivalent to the impact of a 25 mph wind.

c. Door Frames. Door frames and their supporting walls shall be of adequate strength, stability and rigidity to hold the door securely in place. When a door is in the closed position, there shall be a maximum clearance between frame and door of 1/4 inches at top and bottom and 1/2 inch on the side. Jambs shall be of the construction quality to withstand forcible entry. When existing door frames are to be used with new doors, they shall be inspected for sufficient rigidity and strength to support heavier or operationally different doors.

d. Door Hinges. Hinges shall be resistant to abuse by dismantling, removal or spreading. All out-swinging hinges shall have non-removable pins. Doors with systems that prevent removal of a door while it is in its locked position (i.e., jimmy-proof pins) do not require non-removable pins.

e. Door Closers. All non-dwelling unit entrance doors shall be provided with a door closing device capable of closing the door regardless of the degree to which it is left open. The closing speed coupled with the door weight shall not make doors difficult to operate by children, adults, the elderly or the disabled or cause hand and finger injury by its use.

f. Glazing. Safety glazing shall be used in all sliding doors, unframed doors, glazed panels beside entrance doors, storm doors, garage doors and other glazed door panels.

g. Public Entrance and Existing Doors in Multiple

Dwelling Buildings. Public entrance doors shall have the strength and rigidity equivalent to a 1-3/4 inches solid core door. Exit doors, except for dwelling unit doors, shall swing in the direction of exit travel.

(1) Door Locks. Exterior doorways leading to garage areas, public hallways, terraces, balconies or other areas affording easy access to the premises, shall be protected by a door, which, if not a sliding door, shall be equipped with a dead lock. The lock shall use either an interlocking vertical bolt and striker or a minimum 1 inch throw dead bolt. Locks shall not require the use of a key for operation frcm the inside. For further requirements, see paragraph 4-3. For sliding glass doors, see subparagraph i(2). No new sliding glass doors may be installed, only replacement.

(2) Reserved.

h. Public Interior Doors. Public interior doors requiring locking systems shall have the strength and rigidity equivalent to a 1-3/4 inches thick solid core flush wood door. Doors not containing locks need not comply. Locking systems shall be provided according to need.

i. Dwelling Unit Entrance Doors. Dwelling unit entrance doors shall have the strength and rigidity equivalent to the following:

- o 1-3/4 inches thick solid core wood door;
- o hollow steel flush door (factory primed); or
- o solid core wood door with laminated steel sheathing on both sides (factory primed).

(1) Door locks. Exterior doors shall be equipped with a lock that is keyed from the outside and that is in good operating condition.

NOTE: Where new locks are to be provided, spring bolts shall not be used because they do not contain a deadlocking latch; slide bolts shall not be used because they normally can be activated only on the inside; and key-in-knob locks shall not be used because they can be easily vandalized.

(2) Sliding Glass Door locks. Sliding glass doors used for entry shall be locked at the top or bottom meeting rails.

j. Dwelling Unit Interior Doors.

(1) Bedrooms. In dwelling units larger than efficiency apartments, each bedroom shall be provided with a door. In multi-bedroom dwelling units, the primary bedroom shall be provided with a privacy lock that can be opened from the outside in an emergency.

(2) Bathrooms. Bathrooms shall be provided with a door with a privacy lock that can be opened from the outside in an emergency.

(3) Closets. Closets shall be provided with doors in sound condition, with all required hardware and that are convenient to operate.

(a) New and replacement doors and hardware should be durable and study. Connectors and tracks should be consistent with door weight and operation. Lightweight bi-fold doors shall not be used for replacement because of their lack of durability under intense use.

(b) Single door closets shall be hinged, 1-3/8 inches hollow core doors with heavy duty latch set and set and permanent pinned hinged hardware. New

and replacement door closets should have sliding hollow core doors no more than 80 inches high with steel floor tracks, nonremovable sliding hardware and a nylon guide on the floor.

k. Screen/Storm Doors. Exterior dwelling unit entrance doors shall be provided with screen/storm doors in climate areas where provision is customary. Screen/storm doors shall have self-closing devices. Replacement and new aluminum screen/ storm doors shall have stiles measuring a minumum of 1-1/4 inches by 3-1/2 inches.

l0-8. ELEVATORS. Elevators shall be provided in residential buildings of 5 stories or more. Elevator equipment and installation shall insure safe, dependable and easily operated vertical transportation and shall be of the kind and quality to sustain continued use. Tne entire elevator installation, including shaft, machinery and cab, shall conform to all revelant codes. To assure safe operating conditions, control panels, operation buttons and indicators shall be operable and functioning as designed. All required security measures shall be present. Elevators shall be self-leveling and shall, within its zone, be entirely automatic and independent of the operating device. Elevators shall correct for over-travel, undertravel and rope stretch. The car shall be maintained

approximately level with the landing irrespective of load. New and replacement elevators shall conform to the safety code for Elevators and Escalators, ANSI A 17.1-1981.

a. Fire Safety. Elevator shafts shall be enclosed or prctected to prevent the spread of smoke or fire. Elevators with existing fire alarm systems shall have a recall system that returns elevators to the first floor in case of fire.

b. Elevator Cabs. New and replacement elevator cabs shall be provided with the following elements:

(1) Anchored handrail on a minimum of one wall. New handrails shall be made of stainless steel and shall be mounted 32 inches above the floor. Aluminum shall not be used;

(2) Permanent and vandal-resistant lighting system. Fixtures with shatterproof plastic bulb cover or fixtures of equivalent durability shall be used as required;

(3) The minimum system of operation shall be full selective automatic operation. Each landing (except terminal landings) shall be equipped with both up and down call buttons;

(4) Mushroom-type buttons in elevator cabs and lobbies shall be used instead of flush buttons because they are more resistant to misuse;

(5) Plastic laminate doors recessed in a stainless steel framing material on both sides. Painted wood or bronze doors shall not be used;

(6) Sliding cab doors which are less subject to abuse than swing doors which jam and short circuit easily when misused; and

(7) Protection pad hooks in a minimum of one elevator per building.

c. Machinery. Motors and other machinery shall be designed and mounted so as to avoid transmitting vibration to the structure. Machinery room temperatures shall be maintained no less than 40F and more than 110F at all times, including winter and summer. Elevator shafts shall contain lighting for maintenance, inspection and cleaning. Shaft walls shall be as smooth as possible to prevent accumulation of lint and grease. Adjoining elevator pits shall be separated by chain-link fencing or other systems to prevent accidents.

SECTION 2: PROJECT SPECIFIC

10-2B. REHABILITATI0N, ALTERATION AND REPAIR. Deteriorated architectural features should be repaired rather than replaced, wherever possible. In the event replacement is necessary, the new material should match the material being replaced in composition, design, color, texture and other visual qualities.

l0-3B. VEGETATI0N.

a. Replacement Plants. When replacement or new trees or plantings are provided, the following should be considered:

(1) Species that thrive in the area or have proven that they will thrive in similar climates without the need for unusual amounts of fertilizers, pesticides, water or care.

(2) Trees and shrubbery should be planted where roots will not become a hazard to plumbing lines, interfere with maintenance of gas lines or other underground utilities, and where watering will not soften soil near the building foundation. Trees should be located a minimum of 15 ft. away from any building foundaltion or l0 ft. away from walkways.

(3) Trees, shrubs, and plantings should be set back a minimum of 6 ft. from curbs where automobiles are to be parked;

(4) Mowing strips may be used against buildings, under fences, etc. to eliminate hand trimming of lawns;

(5) Metal edging or grass barriers may be used around trees to reduce damage from mowers. A minimum of l2 inches of unplanted area may be provided where hand mowers are to be used and 24 inches where rider-type mowers are to be used; and

(6) Where project streets are not city-owned, street trees may be provided to assure that sidewalks are shaded. Trees should be at least 3-1/2-4 inches caliper, if planted as indicated by the nursery furnishing the plants. Tree guards should be furnished as required.

b. Reserved.

c. Reserved.

l0-4B. RESERVED.

l0-5B. RESERVED.

l0-6B. FINISHES.

a. Paint. Repair painting should be of proper type and should match existing surfaces as closely as possible. Newly painted areas should extend to natural points such as corners, foundation walls or changes in materials so as not to create unattractive painted surfaces.

(1) When paint is used on building exteriors, the following should be considered:

(a) Local conditions such as excessively hot/dry climates or salt-air locations should influence the selection of exterior painting materials; and

(b) Paint used for exterior application should either be inherently mold-resistant or include a suitable fungicide as part of its formulation.

(2) In selecting paint for walls and ceilings, the following should be considered:

(a) Public spaces and heavily trafficked areas should be painted with water-based epoxy paint for increased durability, maintenance and greater reflectance of light;

(b) Areas exposed to moisture or water should be painted with oil-based enamel paint or equivalent. Flat paints should not be used; and

(c) In non-mechanical or custodial areas where concrete block is used, surfaces may be painted with epoxy resin, latex based or high gloss finish. These paints provide a more attractive, sanitary and more easily maintained wall surface.

b. Reserved.

c. Reserved.

d. Reserved.

e. Floor Finishes.

(1) Where carpeting is provided in elderly projects, management offices or community spaces, the following should be considered when replacement becomes necessary:

(a) Where wheelchairs or cart traffic (delivery and maintenance) are anticipated, carpeting with a dense, low-pile structure should be used;

(b) When using carpeting in public areas, cut pile over 3/8 inches shall not be used;

(c) Carpets should have maximum static resistance and shall comply with relevant fire codes;

(d) Carpets with mixed colors (especially four-color tweeds) provide for greater ease of maintenance. Light and dark colors show dirt more readily; and

(e) If carpet is used in management offices or community spaces, large ball casters should be used for movable chairs, furniture and equipment.

(2) When maintenance of public entrances and hallways is difficult due to excessive amounts of dirt infiltration, the following may be considered:

(a) Provide a permanent, vandal-resistant entrance mat at building entrances. Mat depth should be a minimum of 3 ft., preferably 4 ft. in width. Aluminum or stainless steel grates are preferable.

(b) Provide a catch pan with grate immediately in front of the entrance door to reduce intake of dirt; or

c) Provide a highly textured surface, such as rough granite or concrete in vestibule or lobby entrances, to catch dirt from shoes before entering buildings.

(3) When sealants are required, the following should be considered:

(a) In bathrooms, exterior edge of sub-flooring and finishes floor (where floor abuts vertical surfaces) may be sealed against water penetration;

(b) Sealer may be applied to more absorbent grout to prevent moisture and soil penetration;

(c) Mastic may be used for water resistance;

(d) Synthetic plastics or sealed Portland cement grout may be used as recommended for moisture-impervious floor surfaces; or

(e) Tan or gray grout may be used in lieu of white on tile floors to minimize appearance of dirt.

(4) When leakage and overflow have been major problems leading to penetration of flooring subsystems, floor material should be replaced with waterproof materials and subsystems.

10-7B. DOORS.

a. Reserved.

b. Reserved.

c. Door Frames.

(1) Door frames used in areas subject to abuse should be as follows:

(a) Solid wood frame with a minimum thickness of 2 inches;

(b) Solid wood frame with an l8-guage steel sheet covering; or

(c) l6-guage hollow steel frame reinforced at the hinges and filled with a crush-resistant material filling the frame.

(2) In locations where security is a problem, the following may be considered:

(a) Provide a metal angle along the opening between the closed door and frame at the location of the locking system to prevent insertion of tools. The angle iron should be a minimum of 24 inches long, mounted at the strike;

(b) Provide in-swinging doors with rabbetted jambs where the door stop is an integral part of the jamb or is securely set into a deep groove. Stops should not be surface-

attached to the jamb;

(c) Use tamper-resistant connectors;

(d) For metal frames installed in masonry walls, fill space between the jamb and the wall with masonry; and

(e) Provide wood spacers in the space between a wood frame and the stud where hingers are attached to prevent spreading of the frame to prevent break-ins.

d. Door Hinges.

(1) Removable hinge pins may be converted into nonremovable hinges by the insertion of machine screws (non-removable) into each pin center. An alternate method is to hammer both ends of the hinge so that the metal of both operable pieces are forced together, preventing easy removal.

(2) Commercial or heavy-duty hinges should be used in lieu of residential hinges in public and dwelling unit locations where there is intense or abusive use.

e. Reserved.

f. Glazing. Polycarbonate, acrylic, plastic, laminated glass or tempered glass may be used in locations requiring increased resistance to abuse. Provision of these materials shall be in compliance with all relevant codes.

g. Public Entrance and Exit Doors in Multiple Dwelling Buildings.

(1) Door Locks. If additional security is required, intercom systems may be considered. Additionally, new key systems should be analyzed prior to installation. Registered key systems, though generally more secure, are costly and difficult to reproduce. Master key systems are subject to potential misuse, which may outweigh the benefit of ease of maintenance.

(2) Fire Exits. In locations where vandalism and un1awful entry have been a problem, fire exit and fire stair doors may have interior panic hardware with no exterior hardware. Panic hardware shall consist of a vertical bolt and a crash bar with automatic closing, and where required, a alarm.

NOTE: This system will only be successful with full tenant cooperation (tenants tend to leave these doors unlocked when the secondary entrance is more convenient than entry through the main building entry). When a secondary door is the only direct access from a parking lot or heavily trafficked path, consider the installation of a similar security system employed at the main entrance. This alternative may provide greater security than limited tenant entrance altogether.

(a) Panic Hardware. When adding panic hardware to secondary exit doors, vertical-bolt latches should be at the top and bottom of the door for increased security.

(b) Vandalism. In multi-family projects where vandalism is a problem, exit doors leading to fire stairwells on each landing may be provided with a self-locking dead-latch to allow free egress while prohibiting entry.

The stair-side surface of the door should be free of hardware to prevent access to one floor from another via the stairwell. Hardware should limit access to the roof or ground floor exits via the stairwell provided relevant code requirements are not violated.

(3) Garage Doors. In areas where vandalism is a problem, doors leading into buildings from garages may have self-locking deadlatches that permit free egress but require a key for entry into the building.

h. Reserved.

i. Dwelling Unit Entrance Doors.

(1) Door Locks. Where security is a problem, key-in-knob and spring bolts may be replaced with a mortise lock with deadbolt having a minimum 1 inch throw or a combination of a heavy duty latch set and rim lock with interlocking vertical bolt and striker. These locks shall be constructed of case-hardened steel, brass, zinc alloy or bronze. The deadbolt shall be operated from the inside by a device no requiring a key. Lock cylinders shall be flush to the door and pick-resistant. If the cylinder protrudes from the door, a bevelled ring cylinder guard or a spinner ring shall be provided, as required. New dwelling unit doors may have mortise locks with 1 inch throw as provided for security. Additionally, the following may be considered.

(a) In locations where lock-tampering has been a problem, a flat metal escutcheon plate may be mounted to the face of a outswinging door.

NOTE: This plate extends beyond the door edge and fits flush with the jamb of the closed door, protecting the lock from abuse. Plates located on the outside of the door should be attached with tamper-resistant connectors such as round-headed carriage bolts or one-way screws.

(b) Door strikes may be secured with longer than normal screws which make breaking the strike out of the frame more difficult.

(2) Peepholes. Where required as part of a security program or mandated by relevant codes, dwelling unit entrance doors may have a peephole that shall be 1/4 inches in diameter (preventing insertion of a criminal tool), double glazing for safety, and a wider-angle lense for maximum visibility. Peepholes shall be located approximately 57 inches above the floor.

j. Reserved.

k. Screen/Storm Doors. When screen or glazed panels are continually abused, units with a guard that prevents a panel from being pushed in should be considered.

l. Kickplates. In locations where door bases are continually abused, kickplates that are the width of the door and a minimum of 18 inches high may be provided.

m. Vision Panels. In areas where visibility into spaces is needed for increased security, public doors may have vision panels made of a vandal-resistant transparent material. Vision panels shall be of a size and location on the door to allow full visibility beyond the door for security. Public entrance, laundry, community room, stair doors and other doors routinely used by tenant, may have vision panels as needed.

10-8B. ELEVATORS

a. Fire Safety. Service openings in elevators may be provided with closing devices which will close all service doors upon activation of smoke detectors. These openings should be located inside and outside the shaft enclosure if acceptable to the unit of government having jurisdiction.

b. Elevator Cabs. If crime or abuse is problem, the following may be considered:

(1) In existing cabs:

(a) The elevator control system may be altered to an "updischarge, down-collect" system in which the elevator will only stop at the floor indicated by the passenger at the ground floor.

Passengers on upper floors may enter the cab only on the down (collect) trip.

NOTE: Although this system creates a longer waiting time, it does assure riders that they will reach their destination without someone else getting on at an intermediate floor. This method is not fool-proof, yet it is an inexpensive measure for an increased means of security.

(b) Wide-angle vandal-resistant surveillance mirror may be mounted at an upper back corner of the cab to allow total visibility into cab; and

(c) Television or auditory monitoring systems may be provided in elevators where other security techniques have been unsuccessful. The system and its components shall be protected against abuse.

(2) In new elevator cabs:

(a) Television or auditory monitoring systems in situations where other security techniques have not been successful. The system and its components should be protected against abuse;

(b) The escape hatch in the ceiling of the elevator cab may be secured from the outside, to be opened only by trained personnel when evacuation is necessary;

(c) A position indicator may be provided in the car of tenant elevators serving 3 or more floors which will indicate by audible and visible signals the floor at which the car is stopped or is passing. Frequently abused indicator lights may be protected by a heavy-duty plastic shield or other

equivalent system. Indicator lights tend to reduce user impatience which may result in less wear and tear on the buttons. However, in some cases where the indicator lights are repeatedly abused, it may be necessary to totally eliminate them;

(d) Correction buttons to "erase" floors which were selected by mistake or abuse may be provided. Under these conditions, the use of correction buttons will eliminate large amount of stops and starts that affect maintenance and operating costs; and

(e) Handrails, wall panels, doors and their frames, control panels and floors should be stainless steel. In locations where abuse is not a serious problem, plastic laminate or materials with similar mantenance characteristics may be used on cab walls.

c. Reserved.

d. Other Vandal Resistant Materials

(1) Metal floor indicator and call buttons.

(2) Painted wood or bronze elevator doors may be provided with stainless steel or plastic laminate kick-plates on both sides as required.

(3) Transparent vision panels or hatch doors that are continually vandalized may be replaced with a vandal-resistant material.