# 4.0.1 INTRODUCTION

The primary function of the Terminal Buildings is to efficiently facilitate passenger flow. DOA strives to maintain continuity of style and quality through enforcement of these Tenant improvement standards.

The performance standards apply to all Tenant improvements within or adjacent to the terminals, including concourses and flight stations. Design guidelines incorporated herein apply to such factors as building materials, systems, appearance, durability of improvements, signs, energy use and uses of the building.

All Tenant improvements within the Terminals must coordinate with and be complementary to the design of the buildings in terms of materials, scale, style, colors, and type of decoration. Tenant improvements should be functional, simple in design and layout, and without elaborate decoration. The design of Tenant storefronts must be in keeping with the design of the Terminal in which the Tenant space is located.

# 4.1 EXTERIOR TERMINAL IMPROVEMENTS

### 4.1.1 ADDITIONTOTERMINALBUILDINGS

Additions to the terminal buildings that will increase the perimeter, floor area or building envelope, or appurtenant structures adjacent to the Terminal are prohibited except in extreme circumstances. Any such additions must match the finish materials of adjacent terminal construction.

# 4.1.2 ROOFTOP EQUIPMENT

Tenant equipment is not allowed on Terminal rooftops.

# 4.1.3 ROOFING MODIFICATIONS

No Tenant penetrations of the Terminals' roofing systems are allowed.

### 4.0 PERFORMANCE STANDARDS - TERMINAL BUILDING IMPROVEMENTS

# 4.1.4 EXTERIOR ENVELOPE

The building envelope includes all enclosing surfaces (roofs, walls, floors, fascias, sophist, windows, doors of all types, other openings) and applies to interior separations between conditioned and unconditioned spaces.

Tenant improvement projects requiring alterations or renovations to the exterior envelope of the Terminal Buildings are discouraged. Such alterations must match existing adjacent construction in color, materials, type of construction, and quality. Materials that resist damage and deterioration must be installed.

The Tenant shall provide thermal insulation and isolation in accordance with DOA's <u>Guidelines and Energy Conservation Parameters for Terminal Facilities</u> (Appendix E) and other applicable federal, state, and local energy codes and standards. Such insulation must be designed and installed to properly control heat gain and heat loss by convection, conduction, radiation, and transmission and to inhibit and prevent humidity migration, vapor pressure infiltration and exfiltration, condensation and moisture deposits that would cause safety hazards, corrosion, decay, peeling, cracking, delaminating and other moisture-related problems, Penetrations and joints in the thermal envelope shall be properly detailed to account for thermal and water vapor migration.

Any penetrations in the exterior envelope must be repaired, sealed and repainted as necessary. No exposed conduit or piping will be allowed on the exterior face of the Terminals, including areas not visible from public spaces.

Any new doors provided in the Terminal exterior will follow DOA standards for construction, and meet DOA requirements for security and keying (See Section 4.4.5). Wherever appropriate, exterior doors of conditioned spaces, and interior doors between conditioned and unconditioned spaces shall be equipped with automatic door closing devices.

### 4.1.5 EXTERIOR CEILINGS, SOFFITS

New exterior ceilings must be constructed to industry standards for painted cement plaster suspended ceilings. Acoustic ceiling tile is not permitted for installation where exposed to the exterior. Light fixtures (other than apron lighting) should be recessed into ceilings.

#### 4.1.6 **GLASS**

Laminated or tempered glass shall be installed in areas subject to blast or public access, except where fire separation requirements dictate wireglass or other construction. The use of plexiglas panels in lieu of glass is prohibited. Alterations to existing glass windows are not allowed without prior DOA approval.

#### 4.1.8 WINDOW FRAMES

Frames shall be aluminum, dark bronze anodized or automotive paint finish to match bronze

anodized finish, or shall match adjacent similar materials.

#### 4.2 AIRPORT PROVIDED INTERIOR FINISHES

#### INTRODUCTION 4.2.1

The Department of Aviation will provide no finishes, equipment, or services to or within leased premises other than those described herein. Deviations from this established standard may be negotiated in specific lease areas for specific Tenants but will, in those cases, be specified in the particular lease agreement/contract.

### 4.2.2 **DEMISING WALL**

Specific demising wall obligations are stipulated in the lease agreements. The exterior or public side of partitions fronting onto public spaces will be constructed to match the surrounding decor as to color, finish and quality levels.

#### 4.2.3 **CEILING**

Generally a finished ceiling and lighting is provided for public areas of Tenant leased premises. The Tenant may not change the ceiling or the layout or type of lighting fixture. The Tenant is not allowed to paint this ceiling, or hang objects or equipment from it.

In the non-public areas of Tenant leased premises, no ceiling will be provided by DOA. It is the responsibility of the Tenant to provide a ceiling based upon the performance criteria set forth in Section 4.4. In cases where a ceiling is in place from a previous lease, DOA may allow the Tenant to utilize the existing ceiling, if the ceiling is in acceptable condition.

### 4.2.4 FLOOR FINISH

Floor construction of unsealed concrete will be provided by DOA. It is the responsibility of the Tenant to provide appropriate floor material based upon the performance criteria set forth in the following section. DOA reserves the right to specify the type of finished flooring to be installed at the Tenant's expense in certain areas.

### **TENANT FINISHES - PUBLIC AREAS** 4.3

Certain areas of the Airport may be Tenant leased premises that are open to the public, such as, but not limited to, concourses, flight stations, and ticket counters. It is generally the Tenant's responsibility to provide finishes in these areas, based upon specific lease agreements.

The following are minimum standards for Tenant finishes in public areas:

### FLOOR MATERIALS 4.3.1

In areas of high public use floors shall be covered with highly durable flooring materials such as ceramic tile, marble, granite, terrazzo, or commercial grade carpeting. All finished floor surfaces must be installed level or properly sloped to drain, with a maximum surface variation of 1/4" in 10 feet. Under no circumstances may the existing concrete slab be chipped to accommodate flooring underbeds. Transitions between Tenant floor materials and DOA controlled finish floor materials will be the responsibility of the Tenant.

Transitions between finish floor elevations cannot vary by more than 1/8" vertically. Ramping of floor materials for transitions is discouraged.

### CAR P ETI N G 4.3. 1 (1)

Carpeting in public areas must meet or exceed the following minimum specifications.

- Carpet Construction- Loop Pile, Level or Textured; Woven or Tufted Backing. Cut (a) Pile and Loop Pile combinations will be considered on a case by case basis.
- (b) Pile Face Weight: 32 ounces minimum
- (c) Fiber Type: Advanced high performance branded nylon with integral static control, and integral soil hiding characteristics.
- (d) Flammability: Passes DOC-FFI-70 Pill Test.
- (e) Floor Radiant Panel Test-. NFPA-253, ASTME-648, Class 1.
- (f) Smoke Density- NBS Smoke Density, Chamber NFPA-25B-. 450 corrected, flaming mode only.
- (g) The colors and design of the carpet will have soil masking capabilities that help to conceal stains, gum spots, and small burns.
- (h) The Carpet and Rug Institute Standard - 1 01 shall serve as the minimum standard for carpet installation.
- (i) Carpet installed must be dimensionally stable and must not wrinkle, "dome" or mound, delaminate, have loose seams, or experience edge ravel.
- j) Carpet that is taped or shows any of the failures listed above, or is excessively dirty, will be removed and replaced by the Airport at the Tenant's expense.

# 4.3.1(2) TERRAZZO

- (a) Tenant is responsible for inspecting the existing floor slabs and adjacent construction thoroughly for suitability of substrate to receive terrazzo. Avoid using terrazzo where slab vibration and movement may cause the terrazzo to crack. Slab must be cleaned and prepared to comply with the National Terrazzo and Mosaic Association's specifications for type of terrazzo indicated.
- (b) Terrazzo may be a portland cement or polyester resin matrix.
- (c) Installation may be monolithic, banded, or sand cushioned terrazzo.
- (d) In public areas an integral border and vertical terrazzo base is recommended with a 3/8" minimum topping on underbed bonded to the wall.
- (e) Installation and composition of all Terrazzo must comply with the National Terrazzo and Mosaic Association, <u>Terrazzo Technical Data and Guide</u> Specifications, current edition.

# 4.3.1 (3) CERAMIC TILE

Ceramic Tile specified for use in public spaces must be installed according to the Tile Council of America - <u>Handbook for Ceramic Tile Installation</u> and ANSI A137.1 - <u>Recommended Standard Specifications for Ceramic Tile</u>. Tile should have a low moisture absorption rating and be slip resistant. Quarry tile is not recommended in public areas due to its higher moisture absorption rate, and tendency to soil.

# 4.3.1 (4) STONE FLOORING

Stone flooring must be specified and installed to the minimum requirements of the National Building

Granite Quarries Association <u>Specifications for Architectural Granite</u>, the Marble Institute of American <u>Marble Design Manual</u>, and/or the Tile Council of America <u>Handbook for Ceramic Tile Installation</u>.

- (a) Stone material must be of appropriate density and hardness for high traffic pedestrian areas. Stone flooring must meet the minimum recommended standards for compressive strength, modulus of rupture, and abrasion resistance for flooring materials set by the industry associations referenced above for these conditions.
- (b) Highly absorptive materials, such as unsealed limestone or natural fissured travertine are not allowed as flooring materials.
- (c) Stone materials must be slip resistant. Polished granite flooring is not allowed. Honed granite is acceptable, though flame-cut granite is preferred. Polished marble pavers are permitted. Stone floor materials should not be used in or near areas where spills are likely to occur and become a hazard to pedestrians.
- (d) Stone installation may be either thin-set or thick-set bed applications forming a flush floor plane with no two contiguous pavers out of flatness by more than 1/32 inch.
- (e) Stone tile thickness must be a minimum of 5/8" thick.
- (f) When recommended by the manufacturer, stone flooring should be sealed with two coats of a penetrating sealer.

# 4.3.2 WALL FINISHES

Tenant wall finishes (when permitted by terms of the lease agreement/contract) must be of Class I flame-spread construction as defined by the City of Houston Building Code. All wall finishes must be highly impact resistant, scratch and scrape resistant, easily removable for repair, or capable of being repaired in place. All wall finishes must be washable in place. The following finishes are permitted:

# 4.3.2.(I) PLASTIC LAMINATE FACED PANELS

Laminate shall be general purpose type with a normal 0.050 inch thickness applied to either 3/4 inch fire retardant plywood or industrial grade wood particle board meeting ANSI 1-M-3, with a minimum 45 pound density. Either panel backing shall have a fire rating of 25 maximum (ASTM-E84). Edges of the plastic panels must be protected in high traffic public areas, either through butt joints, or metal edge protectors. Installation of wall panels must meet requirements of the City of Houston Building Code. In certain areas, plastic laminate color(s) and installation details must conform to DOA standards and criteria.

# 4.3.2(2) ALUMINUM OR STEEL FACED PANELS

Panels may be painted, anodized or natural finish and must be identical to or coordinate with similar adjacent materials. Panel thickness must be appropriate to resist impact without denting. Panels should be removable for maintenance. Scratches and dents in the panels must be promptly repaired.

All metals shall conform to the National Association of Architectural Metal Manufacturers, Metal Finishes Manual.

# 4.3.2(3) GLASS PARTITIONS

Interior Glass partitions, glass doors and sidelights in all public areas or facing public areas shall be constructed of tempered glass of plate or float quality or laminated glass, 1/4 inch thickness minimum. Other requirements:

- (a) Frames must be of extruded aluminum alloy or stainless steel. Aluminum frame finish can be factory applied, painted or anodized to match adjacent finishes.
- (b) Butt glazing (frameless systems) are allowed with a minimum 1/2" thick glass.
- (c) Installation shall be in conformance with the Flat Glass Marketing Association Glaziag Manual and 16CFR1201 Safety Standard for Architectural Glazing Material by the Consumer Product Safety Commission.

# 4.3.2(4) PLASTER WALL SURFACES

All new exposed plaster wall surfaces facing public areas shall be 3/4 inch Portland Cement Plaster on metal lath with the three coat application process, meeting the requirements of ASTM C842-79 <u>Standard Specifications for Application of Interior Gypsum Plaster</u>. Gypsum wallboard partitions are not allowed where they face public areas, except in areas where contact with the public is minimal. Acceptable finishes for plaster wall surfaces are the following-

- (a) Vinyl Wallcovering: Type 11, minimum face weight 22 ounces. Wallcoverings will be washable. Wall coverings will be manufactured and installed to meet Federal Specification <u>CCJ-W-408 - Wall Covering Vinyl</u> Coated. Nicks, gouges and other minor imperfections of plaster surfaces should be filled, sanded smooth, and sealed prior to wall covering application. Paper-based wall coverings are not allowed.
- (b) Fabric Wall covering: Allowed only in areas where there is minimal contact with the general public. Fabric and backing panels must meet Class I flame spread requirements as a complete system.
- (c) Paint: Latex paint, two coat application minimum with semi-gloss, textured or smooth trawled finish. Oil-based and other paints with hazardous fumes or offensive odors while sifting, are not allowed in public areas.

# 4.3.2(5) STONE AND CERAMIC TILE WALL SURFACES

Stone and ceramic tile wall surfaces must be installed to be highly impact resistant. Stone veneer wall panels must be a minimum of 5/8 inches thick. Installation shall be as recommended by the industry associations listed in Section 4.3.1(3) and 4.3.1(4), above. Ceramic wall tile shall be set on gypsum plaster on metal lath, rather than wallboard.

# 4.3.3 MILLWORK, COUNTERS, AND KIOSKS

All new millwork should be constructed to American Woodworking Institute (AWI) <u>Quality Standard</u>, <u>Custom Grade Specifications</u>. Radiused corner details or metal edge protection are required for exposed veneer edges.

In the main ticketing lobbies, baggage areas and curbside, all Tenant counters, kiosks, and ticket dispensing machines are strictly controlled as to profile, finish, signage, and color. All new construction must match adjacent counter profiles and finish. The standard counter types are shown in illustrations 4A and 4B. DOA may in the future change its standards for counters.

Tenant modifications to the public side of existing kiosks or counters in public areas are strictly controlled.

Miscellaneous millwork items such as lecterns, displays, television consoles, and storage cabinets visible from public areas must match other Tenant millwork counters in style, finish and quality. Exposed plywood or particleboard is not allowed at any time.

Automated service devices (ASD) may be installed at the counters upon completion of DOA review and approval. Such devices include automated ticket dispensing machines, automobile rental ticket or key dispensers, ATM'S, and the like. Each Tenant may install one (1) ASD at each location. The location of a Tenant's ASD must not obstruct visibility to or from an adjacent Tenant. The finish must match the counter in/on which it is located. No graphics or signage is allowed on any surface of the ASD other than the front/user side. The front/user side of the ASD may include graphics or signage indicating the Tenant and may include the official logo in official colors. The maximum letter size is one inch (1") for Tenant name/logo. Instructions should be kept to a minimum and as simple as possible. Maximum letter size of instructions and other text is three-eighths inch (3/8"). Typestyle of text other than Tenant name/logo must be Helvetica Medium. ASD's must be silent. No audible instructions are permitted. ASD's must be serviceable from the agent or backside of the unit. All cables for power, communications, etc., must be concealed. ASD equipment should be installed within the existing counter shell profile however, in no case may such equipment be larger than 30" wide, 12" high (above counter top), and 24" deep, with front edge 12" back from the front plane of the counter (see illustrations 4A and 4B). Graphic displays must be of an instructional nature necessary for proper operation of the ASD. Advertising using the

video display screen of an ASD is not permitted. ASD's must not dispense large amounts of paper product which will require installation of waste receptacles adjacent. The Tenant will be held responsible for housekeeping in the area of the counter and ASD. ASD's out of service for longer than eight (8) hours must be removed or replaced.

### 4.3.4 **BACKWALLS**

See Section 7.3 for Airline Tenant back wall and signage requirements. See Section 7.4 for Auto Rental Agency backwall and signage requirements. Doors in back walls must be of identical finish material and color as the adjacent back wall and should be detailed to be as inconspicuous as possible.

### 4.3.5 PUBLIC SEATING AND FURNITURE

In certain waiting areas, the Tenant will provide public seating. Seating in holdroom areas will be "tandem" or sled-type seating with vinyl, or other impervious type upholstery, and will conform to industry standards for fire resistance and construction. Minimum aisle widths and clearances for exiting as specified by the City of Houston Building Code will be maintained. Review and approval of the seating layout by DOA is required.

### 4.3.6 ACCESSORIES/EQUIPMENT IN PUBLIC AREAS

- (1) Tenants will be allowed to provide various accessory items such as trash receptacles and planters. DOA recommends that these items be attached to the walls or floor wherever practical.
- (2) Storage cases such as cardboard boxes are not authorized in public lobbies or concourses. Garment boxes and the like for use by Tenant's customers or personnel must be stored out of public view at all times.
- (3)Tenant equipment such as wheel chairs must be stored out of public view
- (4) Vending machines where permitted must comply with terms and conditions of the concession agreement and with DOA design criteria for such installation.

4.0

- (5) Rope stanchions or tensile barriers may be used for queuing purposes at airline ticket counters or check-in podiums only. Stanchions will be 1-1/2" thick by 6 feet long, black, with rubbed bronze (US32D) metal supports. Frames for stanchion mounted signs will be 1 1 " high by 14" long. Recommended sign manufacturer-. Visiontron. In Leland IAB, all metal finishes will be stainless steel, no. 4 finish.
- (6)Artificial plants are not allowed in the public areas.
- (7) Television equipped chairs are permitted in accordance with specific lease agreements/ contracts only. Such chairs shall match the Airport's public seating furniture in design, quality, color and finish.

### 4.3.7 **VINDOWTREATMENTSPUBLICAREAS**

No window coverings are allowed on windows in public areas. No films may be applied to the glass. No signs or advertising may be applied to the windows or be displayed against them.

#### **PUBLIC TELEPHONES** 4.3.8

Public telephones and their enclosures are provided through a concession agreement with DOA which specifies their locations and equipment.

#### 4.4 TENANT FINISHES NON-PUBLIC AREAS

Tenant finishes not exposed to public view will be at the Tenant's option subject to DOA review and approval, and must conform to all applicable building codes and standards, with the following additional conditions:

### WINDOWCOVERINGS 4.4.1

DOA will specify the approved window covering for exterior windows. No other screens or films may be applied to the glass. No signs or advertising may be displayed from the windows.

# 4.4.2 DIFFUSERS

Supply and return air grilles will be adjustable-paftern, perforated face, aluminum with white factory finish. Frames of supply diffusers must be mitered and welded, fitted with controllers of adjustable paftern. Provide return air devices where sufficient return air cannot be drawn through return air type light fixtures.

### 4.4.3 DOORS AND FRAMES

Doors in demising partitions will be 1-3/4" hollow metal doors with silencers, and with the appropriate UL label for partition type. Doors must be a minimum 9-0" high wherever possible, or must match similar doors in the immediate vicinity. Frames will be painted or anodized aluminum. When doors face public areas they shall be painted to match other such doors in the public areas. Doors and frames in the interior of a Tenant space are at the Tenant's option, but DOA recommends standard profile extruded aluminum frames. Doors in back walls must conform to the requirements of 4.3.4.

Standards- ANSI AI 15.1 through AI 15.4 - <u>Door and Frame Preparation Standards</u>.

# 4.4.4 PARTITIONS

Interior Tenant partitions when not a fire-rated or demising partition, or a plumbing chase, may

terminate at the suspended ceiling.

Wall partitions terminating at a window wall must terminate at a window mullion and not on the glass.

Wiring and conduit for all equipment must be concealed in partitions.

Gypsum wall board systems shall be installed in accordance with recommendations of ASTM C754: <u>Installation of Steel Framing Members to Receive Screw Aftached Gypsum Wall Board</u>, <u>Backing Board</u> or <u>Water Resistant Backing Board</u>, and GA-216-Recommended Specifications for the Application and Finishing of Gypsum Board.

Tenants may not cut into existing plumbing chases and shafts. Before demolishing any existing partitions the Tenant must consult DOA Design Division for availability of drawings and records of existing conditions-

### 4.4.5 HARDWARE

The Tenant's contractor will install locks with construction cores as directed by the Airport. The Tenant's contractor will also supply the permanent cores. DOA will install the permanent cores and determine the keying plan,

(Standards- ANSI Al 56.1 through Al 56.8 - <u>Standards for Various Hardware</u> Items.)

Any electronically switched security lock system must be coordinated with the Airport security system. All door hardware is required to meet the requirements of the Americans with Disabilities Act (ADA) and current City of Houston Building Code.

# 4.0 PERFORMANCE STANDARDS - TERMINAL BUILDING IMPROVEMENTS

# 4.4.6 TOILET HARDWARE AND ACCESSORIES

Generally, DOA provides and maintains the public restrooms within each Terminal. Should a Tenant construct new private restroom facilities or substantially remodel existing ones, the Tenant must provide hardware and fixture types that match the Airport's quality.

# 4.4.7 CEILINGS

In Tenant non-public areas enclosed from public view, Tenants shall provide a 2' x 2' layin ceiling with a painted, standard width t-bar system. The ceiling tile shall be an acoustically efficient, noncombustible mineral wool tile with an NRC Range of .60 -.70, a

STC Range of 30-34 (continuous ceiling), flame spread classification 0-25 (ASTM E84). All plenum areas above the ceiling must be completely accessible. No Tenant equipment or conduit may be hung from the ceiling unless otherwise noted.

In order to comply with building code requirements for certain occupancies, non-standard ceiling types may be required. In such instances, it is the responsibility of the Tenant to provide and install the appropriate material and systems with prior DOA approval.

### 4.5 **STRUCTURE**

### 4.5.1 FLOOR LOADING

The Tenant must provide for DOA review any requirements for special loading above 75 pounds per square foot (such as areas of dense filing, heavy equipment, libraries, etc.). The structural capacity of the affected area must be verified by Tenant's structural engineer and coordinated with DOA during the review process.

### FLOOR/WALL PENETRATIONS 4.5.2

Penetrations in any floor or structural wall must be kept to the minimum and require prior approval by and coordination with DOA. Floor and wall penetrations must be located to eliminate the possibility of compromising the structural integrity of the floor or wall. The Tenant is required to x-ray the slab before making floor penetrations. All floor or wall openings must be properly fire-saved.

### 4.5.3 **SLAB ELEVATIONS**

Slight variations in existing slab elevations in the Tenant's leased premises should be verified by field measurements prior to construction. In no case, may a Tenant make elevation corrections by chipping the existing slab.

### ATTACHMENTS TO STRUCTURE 4.5.4

All elements of the Tenant's proposed improvements which are to be suspended from the structure above the Tenant's leased premises must be detailed, including method(s) of attachment and load calculations, in the Tenant's submittal for approval.

### MECHANICAL SYSTEMS 4.6

#### 4.6.1 SYSTEMS DESIGN CRITERIA

All new systems and modifications to existing systems for heating, ventilation, air conditioning (HVAC), and plumbing systems shall be designed in accordance with the minimum design criteria set forth in the Department of Aviation's Guidelines and Energy Conservation Parameters for Terminal Facilities. These systems shall conform to the appropriate provisions of the City of Houston Building Code. Appropriate vibration isolation must be provided for all components of the system.

#### 4.6.2 CENTRAL CHILLED AND HEATED WATER SYSTEM

Chilled and heated water for space conditioning will be provided from the Central Plant. Existing Central Plant capacity is limited. Design chilled water temperatures are 41 degrees F for supply and 56 degrees F for return. System components must be designed for variable flow, two-way valve control, 15 degree F temperature rise. Any new systems or modifications to existing systems may not have demands on the central systems more than 5% greater than that of the existing systems being modified or Tenants who desire connection to the central system utilities must replaced. demonstrate, through calculations to be reviewed and approved by DOA, that this demand limitation shall not be exceeded. If connection is to be made to the existing central systems, flow-measuring devices shall be installed by the Tenant for computing utility charges. Cost of connection shall be borne by the Tenant.

### 4.6.3 NEW CHILLED AND HEATING WATER SYSTEMS

When building modifications and/or additions exceed this stated capacity, new chilled and heating water equipment and distribution systems shall be provided and installed by Tenant as located and approved by DOA. Footprint condensing/compression units around the terminals is severely restricted. Direct expansion refrigeration for air conditioning systems that reject heat into the building interior space (including concealed, above ceiling spaces) shall not be permitted. Systems that reject heat of compression into the chilled water system are expressly prohibited. Direct expansion systems are limited to those systems that are ARI rated.

# 4.6.4 CONTROL SYSTEMS

Fresh air and exhaust air systems shall be provided by the Tenant. Temperature control systems shall be terminal-wide electronic energy management systems. Provide auxiliary starter contacts for equipment on/off status reporting. Pneumatic control systems shall be configured for EMS overlay. Compressed air for pneumatic control is limited to existing quantities in use in the space.

### 4.6.5 SANITARY AND DOMESTIC WATER SYSTEMS

Sanitary waste primary piping shall be installed and routed as directed by DOA. Domestic cold water (no guaranteed pressure) shall be available. Flow measuring devices shall be installed by the Tenant for computing utility charges. Cost of connection shall be borne by the Tenant. Grease interceptors shall be installed outside the building envelope unless approved inside by DOA. Domestic hot water (no guaranteed pressure) at 100 degrees F minimum temperature shall be available. All necessary fixtures and water heating above 100 degrees F shall be provided by the Tenant. Electric water heaters shall not be larger than 25 kw.

Installing parallel piping adjacent to existing mains shall not be permitted due to restrictions on available utility space.

### 4.6.6 SPRINKLER SYSTEMS

Automatic fire sprinkler systems, where required by code, shall be provided by the Tenant. Connections to existing fire water mains shall be as approved by DOA. Cost of connection shall be borne by the Tenant. Special extinguishing systems for food preparation areas shall be provided by the Tenant.

# 4.6.7 MISCELLANEOUS REQUIREMENTS

When improvements are planned in the existing terminal space, the design and system criteria for new construction shall apply. New ceiling grilles, side wall registers, and mechanical devices shall be uniform and consistent in appearance and performance with existing devices. All costs of modifications to existing systems shall be borne by the Tenant.

# 4.7 ELECTRICAL SYSTEMS

# 4.7.1 DISTRIBUTION

Electrical service to Tenant's leased premises is available from DOA's building power distribution system. Distribution panelboards are located in electrical rooms at various locations. It is the Tenant's responsibility to verify service capacity and availability. The Tenant shall bear all costs to obtain electrical service for its leased premises. Service characteristics are 480/277 volts, 3 phase, 4 wire. If the Tenant's electrical service requirements exceed the capacity of the existing distribution system, the Tenant shall be responsible for securing a dedicated outside circuit for his uses from Houston Lighting and Power.

# 4.7.2 SERVICE FEEDERS

Service feeders between DOA's switchgear and the Tenant's distribution equipment shall be installed at the Tenant's expense. Circuit breakers and switches in DOA's switchgear shall be provided by DOA. Kilowatt-hour meters, where required, shall be provided by the Tenant and maintained by the DOA.

### 4.7.3 TELEPHONE ROOMS

Telephone rooms and closets are located at various locations. Distribution of telephone service from the telephone room or closet to and within the Tenant's leased premises will be the Tenant's responsibility. Cables from the telephone room or closet to the Tenant's leased premises shall be run in conduit or cable tray. All cables not run in conduit shall

be laid in trays and shall be UL listed for use in environmental air plenums where applicable.

### 4.7.4 PLENUM CONDUIT AND CABLE TRAY

A cable tray distribution system for communication and data cables is required. All Tenants shall be required to use this system. All cables shall be marked every 50 feet or less with the owner's name, vendor, type of system served, and a phone number to be called for additional information. If the Tenant requires additional tray or an extension of the existing system, it will be the Tenant's responsibility to acquire, and install a tray system compatible with the existing system. Installation may not proceed prior to DOA review and approval.

Cable and conduit removed from service must be removed from the plenum promptly. Under no circumstances may conduit or cables be draped over the suspended ceiling. When a Tenant commences improvements to an existing lease area the Tenant shall examine the plenum areas and identify and remove any unused conduit and cable.

#### **EMERGENCY POWER** 4.7.5

Emergency power panelboards are located in electrical closets at various locations. Service

characteristics are 480/277 volts, 3 phase, 4 wire.

### 4.7,6 **PUBLIC ADDRESS SYSTEM**

Modifications to or extension of the public address system must be requested at the time of initial submittal of the Tenant Improvement Proposal. No modifications to the P/A system by the Tenant will be allowed.

### 4.7.7 TENANT LEASE AREA LIGHTING

The type of light fixtures for typical Tenant office space is strictly controlled by DOA. In general, lighting designs must conform to the parameters set forth in the Department of Aviation's Guidelines and Energy Conservation Parameters for Terminal Facilities.

In brief, the energy guidelines mandate an average maximum of two watts per square foot of lease area in most typical office situations. The guidelines allow for approximately one 2' x 4' fixture per seventy (70) square feet of space. All fixtures shall be U-L listed. The following are the approved light fixture standards:

# (1) 2'x 4' Fluorescent Fixture-

Fixtures shall be recessed, 2' x 4', 3" deep minimum, 12 cell parabolics with 3, 40 waft lamps. Ballast's shall be advanced Mark III located at one end of the housing accessible from below. The louver shall be of static-free anodized aluminum, with mitered corners and rigid louver structure. Louver assembly shall be hinged and latched from either side. Fixture should have a coefficient of utilization (CU) of .80 at a room cavity ratio (RCR) of 1 for reflectance's of 80-50-20. The fixture shall have air return capabilities. Each fixture must be secured to the structure above at all four corners.

# (2) Recessed Downlight Fixture-.

Recessed open reflector downlight using two (2) 13-waft PL fluorescent lamps. Reflector shall be clear specular alzak with low brightness finish. Aperture opening shall be 8" or less with white flange trim. Ballast's shall be high power factor rated for 13-watt PL fluorescent lamps. Ballast assembly shall be removable from below for ease of maintenance. Fixture shall have an efficiency rating of not less than 70%.

# (3) Recessed Wall Washer:

Recessed open reflector wall washer to match downlight. Fixture shall be for use with two (2) 13-waft PL fluorescent lamps.

The use of incandescent light fixtures in the Terminal Buildings is extremely limited, and subject to the approval of DOA. Other specialized light fixtures for specific Tenant functions (such as warming lights for cafeteria serveries) will be

considered on a case-by-case basis subject to the Tenant meeting the watts per square foot criteria of the specific application, as contained in the energy guidelines.

### 4.7.8 **EXTERIOR AREA LIGHTING**

When Tenant improvements include provisions for new apron lighting, the basic criteria for apron

lighting design shall be as follows.-

- (1) Lighting shall not interfere with the night vision of control tower personnel and pilots, according to accepted industry standards.
- (2) Uniformity of luminance pattern on apron pavement and aircraft shall be as high as technically and economically feasible.
- (3) Direct and reflected glare shall be minimized.
- (4) Luminaires shall be HID of white color luminescence (color corrected Mercury vapor).
- (5) Daytime appearance of the lighting system elements (towers and luminaires) shall be aesthetically compatible with existing Airport elements.
- (6) Ease and low cost of maintenance of the lighting system shall be maximized.
- (7) The lighting system shall facilitate ground traffic flow and provide for maximum use of peripheral vision.
- (8) The lighting system shall facilitate all aircraft servicing and minor maintenance functions.
- (9)The lighting system shall create a visual environment which is attractive to the public within the Terminals.

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- (10) The specified luminaires shall have no refractors as part of their optical system. This will further minimize direct glare and provide positive cut-offs for control tower personnel, pilots, and operators of apron vehicles.
- (11) The light sources must be of minimum feasible size in order to facilitate maximum beam control. Coated lamps should be excluded from considerationhowever, good color rendition characteristics of the light source are very important.
- (12) The governing safety factor shall be the ability of the lighting system to facilitate perception of obstacles in the path of an aircraft or an apron vehicle.
- (13) As a quantitative criterion, a minimum of 3 feet candles shall be provided on both horizontal and vertical surfaces (sides of aircraft) at 100 feet from the Terminal walls, and a minimum of 2 feet candles at 200 feet from the same reference plane.

The uniformity ratio between the average and minimum at any given distance from the Terminal shall not exceed 3 to 1.

All cables and equipment installed by the Tenant become property of the Airport in accordance with the terms and conditions of the Tenant's lease agreement/contract.

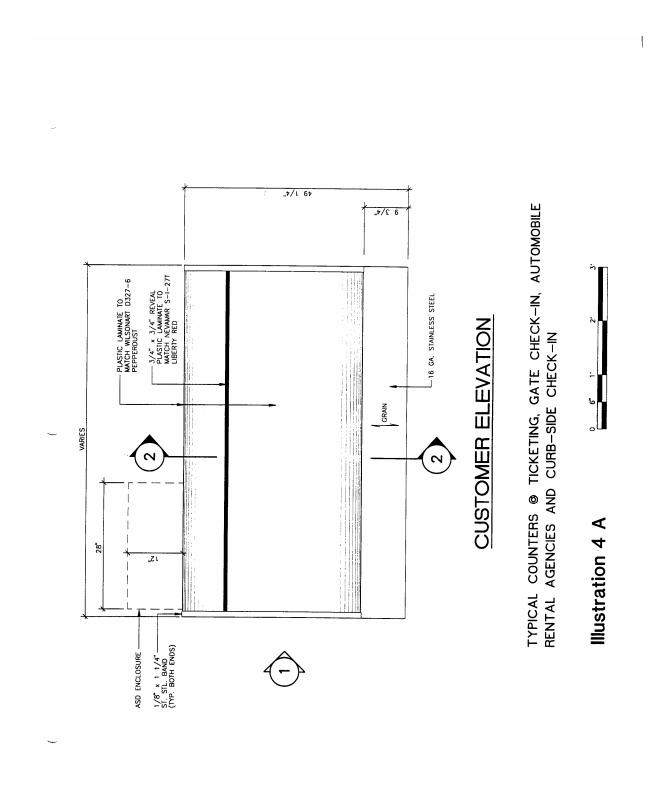
# 4.7.9 COMMUNICATION AND AUTOMATION

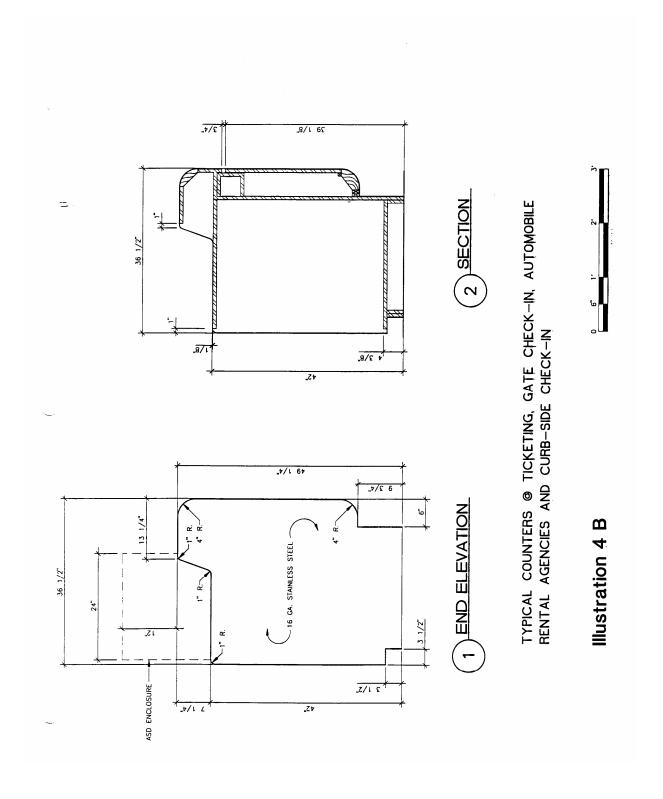
Any Tenant-installed telecommunication, video, information management, or similar systems should conform to DOA system requirements (Appendix D).

# 4.8 ADVERTISING AND SIGNAGE

DOA policies regarding advertising and signage are included in Section 7.0 <u>Signage and</u> Graphic Design and in individual Tenant lease agreements/contracts.

Any adjustments or modifications to floors and walls to support signage or structures are the responsibility of the Tenant. Any damage to floors, ceilings or walls because of such materials is the responsibility of the Tenant. Floors, ceilings and wall surfaces shall be repaired to match adjacent surfaces exactly.





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PERFORMANCE STANDARDS – TERMINAL BUILDING IMPROVEMENTS

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