

# Cherry Creek Shopping Center

## Denver, Colorado

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DENVER FIRE DEPARTMENT

**APPROVED ADMIN MOD**

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Reviewer: Antonio Caro, PE

Terms & Conditions of Approval:

1. The BDA/RES testing must occur at the time of fire alarm system upgrade per IFC Ch. 5.
2. Mall shall secure all required annual operational permits from the Fire Prevention Division per IFC 105.6.

## Fire Protection and Life Safety Analysis

April 2, 2021



Experts

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# Fire Protection and Life Safety Analysis

## Cherry Creek Shopping Center Denver, Colorado

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# Section I



## I. Introduction and Project Description

Cherry Creek Shopping Center is an existing covered mall building located in the City of Denver, Colorado, originally constructed in 1990. The building is located on the south side of First Avenue between St. Paul Street and Detroit Street.

The mall building was expanded, and a new anchor building was constructed in the late 1990's. Another anchor building was demolished and redeveloped in 2015.

Today the mall building is anchored by Nordstrom, Restoration Hardware, Neiman Marcus, and Macy's and includes almost 600,000 sf of gross leasable tenant area over two stories. The building is also connected to two open parking garages at the south perimeter, referred to as the West Parking Deck and the East Parking Deck. The West Parking Deck provides six levels of parking and the East Deck provides five levels of parking for the occupants of mall.

The Cherry Creek Shopping Center development also includes two other retail building components which are physically separated from the mall building; Cherry Creek West (CCW) and Cherry Creek East (CCE, formerly referred to as the "Safeway" building). This Analysis addresses the interface of Cherry Creek East due to its close proximity to the mall building. However, Cherry Creek West is not addressed in this Analysis as it was designed and constructed as a separate building from that of the mall building (separated by at least 60 feet of clear open space).

The purpose of this Fire Protection and Life Safety Analysis is to provide a comprehensive outline of the major fire protection and life safety features and systems applicable to Cherry Creek Shopping Center considering the buildings history and all previous City approvals.



## **Section II**





## II. Applicable Codes

Cherry Creek Shopping Center is located in Denver, Colorado where the following construction codes are currently adopted and enforced by the City and County of Denver as the 2019 Denver Building and Fire Code:

- 2018 International Building Code as amended
- 2018 International Existing Building Code as amended
- 2018 International Fire Code as amended.
- 2018 International Mechanical Code as amended
- 2018 International Plumbing Code as amended.
- On July 1, 2020, the 2020 edition of NFPA 70 National Electric Code (NEC) was adopted by the State of Colorado and is enforced by the City and County of Denver. The 2020 NEC is the minimum standard for electrical permits issued on or after July 1, 2020. Any project drawings logged in for review prior to July 1, 2020 will be reviewed under the 2017 NEC. Project drawings logged in on or after July 1, 2020 will be reviewed under the 2020 NEC.

Any item not specifically addressed in this Analysis will comply with the applicable codes, standards and ordinances currently adopted by the City and County of Denver.

All parenthetical references contained in this Analysis are from the 2018 *International Building Code* (IBC) unless otherwise indicated. The following Analysis does not include provisions from the Americans with Disabilities Act (ADA), ANSI A117.1 or Accessibility Code for Building Construction. It is the intent of the project to comply with all accessibility requirements. Designers have been cautioned that applicable accessibility standards may conflict with the building code provisions outlined herein. Finally, this Analysis should not be construed as a comprehensive review of structural, mechanical, electrical, plumbing, or elevator code provisions (other than those fire protection and life safety items noted herein). OSHA Standards, zoning regulations, health code regulations, and / or energy codes and standards are not been incorporated.



## **Section III**



### **III. Fire Protection Concepts**

Cherry Creek Shopping Center has been designed to incorporate a high level of fire protection and life safety concepts to protect its occupants. The following goals serve as the basis for this overall fire protection and life safety concept:

1. To automatically detect all fire conditions which are developing to a state that could threaten the building's occupants.
2. To inform the building occupants and the fire department of the condition so that emergency procedures may be initiated.
3. To provide for safe exiting of the building's occupants.
4. To contain and control the developing fire condition.

To achieve the goals listed above, the following package of fire protection and life safety features has been applied to the mall building.

- Type IIB unprotected noncombustible construction (Type II-N per the original UBC construction).
- 60 feet of permanent open space surrounding the development.
- Original 1990 Construction: 4-hour fire barrier separation, with approved openings between mall / anchor buildings and parking garages.
- Subsequent Construction Projects: 2-hour fire barrier separation, with approved openings between mall / anchor buildings and parking garages.
- 2-hour fire barriers between the mall building and Nordstrom, Neiman Marcus, and Macy's anchor buildings (anchor buildings of three stories or less).
- 3-hour fire wall between the mall building and the Restoration Hardware anchor building (anchor building exceeding three stories).
- Complete automatic sprinkler system throughout all non-parking garage buildings. The sprinkler system is over-designed and separately zoned for tenant and mall areas.
- 1-hour fire partitions between mall tenant spaces. No separation will be provided between tenant spaces and the mall.



- Mall building smoke control system.
- Fire department standpipe system with hose connections in select locations in the mall building.
- Electrical supervision and off-site monitoring of all fire protection systems.
- Fire alarm reporting system in the mall building.
- Modified public address system in the mall building for existing tenants. Emergency voice / alarm communication system connected to the new mall system to serve new tenants.
- Emergency fire department communication system.
- Separate fire alarm system within the anchor buildings.
- Smoke detection in select locations.
- Portable fire extinguishers in select locations.
- Emergency power for all required fire protection and life safety systems.
- Elevator emergency operations.
- Fire alarm control room.
- Means of egress systems in compliance with the code requirements for mall buildings.
- Means of egress in compliance with the code requirements for each anchor building which are separate and independent of the mall building.
- Unprotected openings between anchor buildings and the mall.
- Fire dampers are provided for the supply ducts that penetrate fire resistive smokestop tenant bulkhead partitions.
- Fire/smoke dampers are provided for ducts that penetrate tenant separation walls that serve as a separation between tenant smoke control zones.
- Procedures for construction of tenant spaces, vacant tenant spaces and spaces under construction.



- Existing exit passageway utility distribution is permitted in existing and relocated exit passageways. New utility distribution in existing exit passageways is not permitted. Utility distribution in new exit passageways is not permitted.
- Description of plumbing fixture distribution in the mall.

The following sections of this Analysis provide a conceptual outline of the operation and design features of these systems. Schematic plans graphically depicting many of these proposed fire protection and life safety features have been included as the Graphics Appendix to this Analysis.

### **A. Building Classification / Construction Type / Fire Resistance Ratings**

Cherry Creek Shopping Center was originally designed to comply with the Uniform Building Code (UBC) and Covered Mall Building requirements. The building was originally classified as Type II-N construction per the UBC; the IBC equivalent of Type IIB unprotected noncombustible construction. As such, the mall building, and connected buildings are permitted to be unlimited in area.

All tenants are separated from one another by full-height 1-hour fire partitions. Tenant demising partitions must receive 5/8" fire code gypsum wallboard with taped and spackled joints from the floor to the deck above (by the tenant). Openings must be provided above the ceiling for the return air / smoke control system, except for tenant demising partitions defining tenant smoke control zones. The tenant ceilings are not required to be a fire-resistance-rated assembly. Fire-resistance-rated separation between the mall and a tenant is not required and therefore has not been provided.

Exit passageways, exit stairways, and shafts are enclosed in 1-hour fire barriers with 60-minute opening protectives. The back-of-house elevators not associated with the mall concourse are enclosed in 1-hour fire barriers.

For exit passageways, the original Tenant Criteria Manual (dated November 11, 1989) stated the following:

- The Landlord will erect two (2) layers of 5/8" fire code gypsum wallboard on the exit passageway side at the Tenant's expense.
- The Landlord will erect 4" metal studs at 16" on center from the floor to the deck above at the Tenant's expense.
- The Tenant will erect one layer of 5/8" fire code gypsum wall board on the Tenant's side extending from the floor to the deck above.



All new exit passageway construction will comply with this existing arrangement. Since the assembly protects an exit component, the assembly must be completed (joints taped) on both sides and the 1-hour rating must be always maintained.

2-hour fire barriers separate the Nordstrom, Neiman Marcus, and Macy's anchor buildings from the mall building. The UBC permitted the main entrance openings between an anchor building and a Type II-N covered mall building to be unprotected provided that anchor buildings provide and maintain a smoke control system that prevents smoke from migrating to the covered mall building. The existing anchor building interface between the mall building and these anchor buildings must be maintained.

All supporting construction for 1-hour exit passageway fire barriers will be protected to the required 1-hour fire resistance rating. The supporting construction consists of the floor construction and structural frame (columns and beams) within the structural bay(s) containing the fire barrier(s). The supporting floor construction is not fire-resistance rated based on the construction classification of the building (Type IIB), nor is the floor construction or structural frame provided with a fire-resistance rating beyond the structural bays supporting the fire barrier(s). As such, the intent is not to limit fire and smoke spread between the floor levels and penetrations of the floor construction in these locations (outside of exit passageways) will be protected as required by IBC 714.5 for non-fire-resistance-rated floor assemblies, including duct penetrations per IBC 717.6.3.

A 3-hour fire wall separates the Restoration Hardware anchor building from the mall building since this anchor building exceeds three stories. The IBC permits openings between anchor buildings and the mall concourse to be unprotected. Further discussion regarding the opening between the anchor buildings and the covered mall building is addressed below in Item B of this Analysis.

## **B. Anchor Building Smoke Control / Unprotected Openings at Mall**

Cherry Creek Shopping Center was originally designed to comply with the Uniform Building Code. One of the requirements to allow for unrated construction (Type II-N construction) with an unlimited amount of unprotected openings between a mall and an anchor building, was to provide smoke control within anchor buildings to prevent smoke from mitigating to the covered mall building. Although older anchor buildings at Cherry Creek Shopping Center (Nordstrom, Neiman Marcus, and Macy's) provide smoke control within their building, this protection was not required at the time of the Restoration Hardware anchor building construction.

### Older Anchor Buildings (Nordstrom, Neiman Marcus, and Macy's)

All existing anchor building smoke control systems must be maintained.



### Newer Anchor Building (Restoration Hardware)

Sections 402.7.2 and 404.5 require smoke control for atriums connection 3-stories or more. Although there is a floor opening connecting all 4 stories within this anchor building, since the building complies with Section 712.1.3.1, smoke control is not provided within the Restoration Hardware anchor building. A noncombustible draft stop and automatic sprinkler water curtain has been provided around the floor opening of the open stair which connects all 4 levels of this anchor building.

Section 402.4.2.2.1 permits openings between anchor buildings of Type IIA construction (the construction classification of Restoration Hardware) and the mall to be unprotected without any special additional requirements. As such, the anchor building is physically separated from the mall concourse by an unrated solid membrane with a pair of doors. The City of Denver accepted this unprotected separation, without smoke control within the Restoration Hardware space, in the March 27, 2014 and April 10, 2014 meetings. However, as required by the City of Denver, a smoke detector has been provided within the Restoration Hardware space that is connected to the mall fire alarm system. If Restoration Hardware goes into alarm the mall will receive a supervisory signal and the smoke control zone within the mall concourse located directly adjacent to Restoration Hardware will go to 100% pressurization.

### **C. Exterior Fire Separation**

As a mall building, a clear perimeter of 60 feet must be provided around the entire site (including connected anchor buildings and parking structures). However, this minimum distance is reduced, as previously approved, between Cherry Creek Shopping Center East (CCK East, formerly the Safeway Building) and the adjacent anchor buildings (Neiman Marcus and Macy's).

- Minimum Distance between CCK East and Neiman Marcus = 53'-2"
- Minimum Distance between CCK East and Macy's = 51'-1"

Due to leasing demands and lack of available space, the above separations less than 60 feet must be maintained as previously approved. Due to this reduced space at CCK East, the anchor buildings and CCK East exterior walls are 2-hour fire resistance rated where the encroachment exists. These 2-hour masonry walls provide an aggregate rating of 4-hours. Additionally, the space between the anchors and CCK East is utilized as a fire access lane protected on each side with 2-hour fire resistance rated masonry construction.

It is important to note that the CCK East building could be compared to an anchor building to the mall building since CCK East is constructed of noncombustible materials, protected by automatic sprinklers, and exits independent of the mall (thereby providing the 60 foot open space around the far side of CCK East). This concept would therefore result in the need for a fire separation distance of only 20 feet to allow both buildings to have unrated exterior walls (based on Type IIB construction).



#### **D. Fire Department Vehicle Access**

A fire department vehicle access road is provided within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building.

#### **E. Automatic Fire Sprinkler System**

The mall building and connected anchors are protected by hydraulically designed, electrically supervised, and off-site monitored automatic fire sprinkler systems. Sprinkler protection is not to be provided within electrical rooms, switchgear rooms, or elevator machine rooms, as required by the City of Denver.

To provide for annunciation of sprinkler system activation, sprinkler control valves equipped with supervisory initiating devices and waterflow initiating devices for each fire sprinkler riser are installed. Activation of a waterflow switch notifies the fire department via the off-site monitoring station. Electrical supervision is provided for all system valves as well as for the alarm and supervisory circuitry itself. If a valve is shut, or a fault is detected in the system wiring, a supervisory or trouble signal is transmitted to the fire alarm control panel and to the off-site monitoring service.

The hydraulically designed and electrically supervised automatic sprinkler systems provide a proven level of performance in the areas of life safety, fire suppression, and structural protection. Sprinkler rooms with direct or nearly direct access from the exterior of the building are provided. Fire department connections (FDCs) are not interconnected, and all are located around the exterior of the building.

To increase the reliability of the proposed fire sprinkler systems at Cherry Creek Shopping Center, all sprinklers in tenant areas are supplied from systems separate from those serving the mall concourse and support areas. This independence allows the tenant zones to be shut down for routine tenant modifications without impacting the protection provided in the mall concourse. Further, this design easily accommodates the tenant egress construction which sometimes includes an alcove for the tenant second exit door.

Exit passageways, except for tenant alcoves, are supplied from the mall sprinkler zone. Tenant alcoves in exit passageways are supplied from the tenant sprinkler zone.

The sprinkler system design required by NFPA 13 for an Ordinary Hazard Group 2 classification (mercantile) is permitted to provide a minimum water density of 0.20 gpm per square foot over the hydraulically most remote 1,500 sf. However, the sprinkler system is designed to provide a minimum density of 0.17 gpm / SF over the hydraulically most remote 3,000 SF. This increase in the design area provides a significant design feature in terms of the fire suppression, limitation of smoke development, and protection of the facility's structural integrity.





To provide for annunciation of sprinkler system activation, waterflow switches are provided for each zone. Activation of the waterflow switch initiates the appropriate smoke control system sequence and notifies the fire department via an off-site station connection. Electrical supervision is provided for all system valves as well as for the alarm and supervisory circuitry itself.

If a valve is shut, or a fault is detected in the system wiring, an immediate supervisory or trouble signal is transmitted to the off-site station. Automatic sprinkler systems, especially those which have been hydraulically designed and are electrically supervised, have a documented history over the last 100 years of providing nearly 100 percent satisfactory performance in assuring rapid fire containment and suppression.

The fire department standpipe hose connections are supplied from the mall zone overhead sprinkler system.

Appendix A to this Analysis contains a sprinkler zone map.

All anchor buildings must continue to be served from a separate and independent system from the covered mall building.

## **F. Fire Department Connections**

In addition to automatic water supply, sprinkler risers are connected to fire department connections. This allows the Fire Department to supplement the systems with their pumping apparatus. The existing sprinkler / standpipe systems are not interconnected, as previously approved by the City of Denver. A strobe light and graphical plaque is provided at fire department connections which indicate the areas served by each individual fire department connection. These two identification features must be modified, as necessary, to accommodate new mall and tenant areas.

## **G. Standpipe System**

Class I standpipe hose connections are provided to assist the fire department with their interior operations. 2-1/2-inch hose connections are supplied from the overhead piping of the mall zone sprinkler system. Connections are provided within the mall at each entrance to an exit passageway, corridor, at mall entrances and near the anchor buildings. The supply piping can deliver 250 gallons per minute, with no minimum residual pressure requirement, at the most hydraulically remote outlet. Each hose connection is fitted with a 2-1/2-inch to 1-1/2-inch reducer cap and chain.

For tenants associated with the 2014 expansion, hose connections are also located such that one can be reached within 200 feet.



Hose and nozzle equipment is not provided at each outlet. The fire department standpipe hose connections provide valuable assistance to the fire department by locating readily accessible hose connections throughout the building.

## **H. Smoke Control System**

### Mall and Tenant Spaces

A mechanically operated smoke control system is provided to serve the mall and tenant spaces. The building smoke exhaust and air conditioning systems are incorporated together as one system. The building air conditioning system consists of multiple Variable Air Volume (VAV) rooftop units serving retail tenant areas and multiple Constant Volume (CV) rooftop units with gas fired heat serving all public mall areas. The air supply to each retail tenant area is through single-duct VAV terminal units with pneumatic controls.

Separate smoke exhaust systems are provided for the tenants and public mall areas. Ceiling plenums are utilized throughout the retail tenant areas for conveyance of return air to each rooftop unit and smoke exhaust to the outside except that the ceiling areas in restaurant tenant areas are utilized for conveyance of smoke exhaust only.

Unless approved in writing by the Landlord and following the Landlord Engineer's approval of a Tenant Engineer prepared analysis of the smoke control system within the tenant space, all Tenants approved to have open ceilings must have ducted returns to the Landlord's Smoke Control System. There are several variables to consider, including size of the space, location of the space with respect to smoke exhaust fans, and openings between the space and the mall. Possible requirements include ducts through the tenant space and/or grills in the demising partitions. The tenant smoke control in the space being renovated and throughout the associated tenant smoke control zone must always remain operational during renovations.

The smoke control system in the tenant spaces is designed to pressurize the mall in relation to the fire zone tenant spaces, limiting smoke migration into the mall while the tenant spaces are exhausted to the exterior.

The smoke control system in the mall is designed to purge the mall fire zones while limiting smoke migration into the tenant spaces or non-fire mall zones. The system is activated upon waterflow in the automatic sprinkler system, by smoke detectors located within each tenant space, at the mall ceiling or smoke detectors in the return air intake of HVAC units.

Although the current code does not require smoke control for malls with floor openings connecting only two stories, the existing smoke control system has been maintained. The mall common area and tenant spaces are separated into several separate smoke control zones – the mall into three (3) zones (Zones 15N, 15S, and 20) and the tenant spaces into nineteen (19) zones (Zones 1-14, 16-19, and Theater).



For separation of smoke control zones, the bulkhead between tenant spaces and the mall are constructed as a fire resistive smokestop partition consisting of two (2) layers of 5/8" fire code gypsum board extended to the structure above (constructed by the Landlord at Tenant's expense). Duct penetrations of the bulkhead are protected by fire dampers. The tenant demising partitions defining tenant smoke control zones are constructed as full height 1-hour fire partitions with no unprotected openings and any duct penetrations protected by fire/smoke dampers.

Tenant demising partitions within a tenant smoke control zone must receive 5/8" fire code gypsum wallboard with taped and spackled joints from the floor to the deck above (by the tenant). Openings must be provided above the ceiling for the return air / smoke evacuation system.

A schematic diagram of the smoke control system was attached to a letter from CCI to the City of Denver dated February 27, 1989. This schematic diagram indicates the following features:

- A smoke detector on the return side of HVAC units, at the opening to return air duct and smoke exhaust shafts, at return air grilles in tenant ceilings, on the tenant ceiling at the mall storefront and on the mall ceiling.
- Motorized dampers at smoke exhaust and return air shaft duct intakes on the Upper and Lower Levels. The as-built mechanical plans also indicate these dampers. A hand-written note on the schematic diagram states that the motorized dampers shall be listed smoke dampers (UL 555S Class II) having a minimum temperature rating of 250 degrees.
- Fire dampers at supply air, return air and smoke exhaust shaft penetrations of the floor. The as-built mechanical plans also indicate fire dampers for all duct penetrations of the floor.

The current codes do not require a fire damper (or a rated shaft) for a duct penetration of a nonfire-resistance-rated floor assembly where the duct is connecting only two stories (penetrating a single floor assembly). Only where a duct penetrates a fire-resistance-rated floor assembly and is not protected by a fire-resistance-rated shaft enclosure would a fire damper at the floor be required. The 1982 Denver Building Code also only requires a fire damper at the floor line for ducts penetrating floor assemblies when a fire-resistance rated enclosure (shaft) is not provided. However, only ducts that penetrate fire-resistive floor enclosures are required to be enclosed by rated shafts. Shafts are also indicated on the Upper Level, but they only extend to the underside of the ceiling. Since the fire dampers are not required by the original or current codes, fire dampers or fire-resistance-rated shafts will not be provided for duct penetrations of the floor. An updated schematic diagram of the smoke control system has been provided in Appendix A to this Analysis.

Appendix A to this Analysis also contains a smoke zone map for the mall as well as the Smoke Exhaust System Manual prepared by E&S Mechanical Services for the original design of the smoke control system for Cherry Creek Shopping Center.



In addition to the automatic sequencing outlined above, manual operation of the mall building smoke control system is possible from controls provided in the fire alarm control room. Controls are provided to manually start and stop the smoke control fans, as well as reassign the zones in pressurization or exhaust. This enables fire department personnel to control the system's operation from the fire control room.

The existing smoke control system of operations is as follows:

Fire in a Tenant Space:

The extent of tenant area smoke exhaust systems is defined by tenant sprinkler zones. In general, each tenant smoke control zone is sized according to the area each air supply system serves. For a condition identified as originating within a tenant space, the following sequence will occur:

- The system will be activated by smoke detection at the tenant storefront and tenant exit, HVAC smoke detection, automatic sprinkler waterflow, or manual controls located in the Fire Control Room.
- The tenant fire zone will sequence to 100% exhaust to the exterior at a rate of at least 10 air changes per hour on a volume calculated at 12'-0" above the finished floor.
- All supply air to the tenant fire zone will shut off.
- The adjacent mall zone will be supplied with 100% outside air with no return.
- Pressurization fans energize to provide 100% outside air for mall entrance vestibule pressurization at East and West Parking Decks.
- All non-fire zone tenant zones will remain in normal operation.

This sequence will pressurize the mall in relation to the fire zone tenant spaces, thus limiting smoke migration into the mall while the tenant spaces are exhausted to the exterior.

Fire in the Mall:

For a fire condition identified within the public mall area, the following sequence will occur:

- The system will be activated by smoke detectors located at the mall ceiling, HVAC smoke detection, waterflow of the mall's automatic sprinkler system, or manual controls located in the Fire Control Room.
- The mall fire zone will sequence to 100% exhaust to the exterior, providing at least 8 air changes per hour of exhaust for the entire volume of the mall fire zone.



- All Lower Level adjacent tenant zone HVAC supply will activate to provide 100% outside air.
- Pressurization fans energize to provide 100% outside air for mall entrance vestibule pressurization at East and West Parking Decks.
- All other tenant zones will remain in normal operation.
- All mall HVAC supply units will shut off.

This sequence will provide for purging of the mall fire zone while limiting smoke migration into the tenant spaces or non-fire mall zones.

### Two-Story Mall Tenant

The mall building includes a single two-story tenant space occupying approximately 12,270 sf of tenant gross leasable area on the Lower Level and approximately 24,910 sf on the Upper Level. The two levels of the tenant space are interconnected by an escalator floor opening within the store.

The Lower Level of the tenant space occupies a portion of Tenant Zone 14. The Upper Level of the tenant space occupies Tenant Zone 5. Graphical Smoke Zone Maps, also identifying the location of this two-story tenant, are included in Figure 4 and Figure 5 of the Graphics Appendix.

The tenant smoke control zones are based on the tenant sprinkler zones, which are permitted to be a maximum of 52,000 sf in area. This two-story tenant functions as described above in the Mall Building / Fire in a Tenant Space discussion. Each level of the tenant space maintains individual sequence of operation of the tenant smoke control zones, even with the escalator floor opening. Should the Lower Level be in smoke control mode, a positive airflow downward through the escalator floor opening from the Upper Level will reduce any potential for smoke migration to the Upper Level. Likewise, an Upper Level smoke control mode will create a positive airflow upward through the floor opening from the Lower Level.

The escalator floor opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13, as required by Section 712.1.3.1 (the vertical opening between stories may not exceed twice the horizontal protected area of the escalator).

### Project Facilities

For a fire condition identified within Project Facilities on the Upper Level, the following sequence will occur:

- The air supply unit serving the space will activate to provide 100% outside air.



- A single exhaust fan serving the space activates to provide 100% exhaust to the exterior at a rate of at least 10 air changes per hour.
- All other tenant and mall HVAC supply units remain in normal operation.
- All tenant and mall smoke exhaust fans remain off.

### **Entrance Vestibules**

The mall entrances vestibules at the East and West parking garages are conditioned by air supply systems that serve the tenant zone. In the event of a fire / smoke detection in the public mall, tenant area, or entrance vestibule, the conditioned air supply to the vestibule is de-energized. When this occurs, an independent supply air fan energizes and delivers to the vestibule 100% outside air to allow positive pressurization of the space.

### **Anchor Buildings**

Under the code which Cherry Creek Shopping Center was designed (UBC), unprotected openings between the mall and the anchor buildings were permitted where the anchor building was served by a smoke control system that prevented smoke from migrating to the mall building. Therefore, this protection has been maintained for all older anchor buildings (Nordstrom, Neiman Marcus, and Macy's).

The current code only requires a smoke control system for an atrium connecting 3-stories or more. Further discussion regarding smoke control and the Restoration Hardware anchor building is in Item C of this Analysis. A noncombustible draft stop and automatic sprinkler water curtain is provided around the open stair floor opening which connects all 4 levels of the anchor building, in compliance with Section 712.1.3.1.

## **I. Fire Alarm Reporting System**

To provide for additional reliability and rapid notification of the fire department, the automatic fire sprinkler system and smoke detection devices are electronically supervised by an off-site monitoring station. This facility immediately notifies the fire department of any alarm conditions as well as dispatch the appropriate authorities to investigate all trouble and supervisory signals. The fire alarm system is designed to annunciate the following signals:

- Alarm signal.
- Supervisory signal.
- Trouble signal.

The alarm signal is an indication that a fire or other emergency condition has been detected in the building. The supervisory signal is an indication that a required fire extinguishing system is not in full working order, such as a closed valve in the automatic sprinkler supply piping.



The trouble signal is an indication that a portion of the fire protection system is not functioning properly, such as a fault in a system's electrical wiring.

All fire signals are annunciated at graphic annunciator panels in the covered mall building's fire control room on the Lower Level. The panels monitor the operational status of all sprinkler waterflow switches and smoke detectors as well as supervisory status of all sprinkler control valves. Signals are also be transmitted to the mall security office. Smoke detectors located on the tenant side of each tenant space opening into the mall are also provided with remote annunciation by a strobe light located on the mall side.

A Fire Alarm Matrix identifying the sequence of operation is included as Appendix B to this Analysis.

## **J. Occupant Notification System**

A fire alarm upgrade project is proposed for the mall building. Outlined below is a description of the existing system as well the future system.

### Existing System

The existing fire alarm system is a Honeywell XLS1000 series addressable fire alarm control panel which performs the fire detection and life safety functions for the mall building. The main fire alarm control panel, smoke control functions, fire fighters telephone headset, printer, and fire alarm graphic user interface (CPU) are in the Fire Command Center located on the Lower Level near Truck Dock B.

The fire alarm system transmits alarm, supervisory, and trouble signals through a Digital Alarm Communicating Transmitter (DACT) to an off-site monitoring company. In turn, the alarm monitoring station dispatches the Denver Fire Department upon a fire alarm signal from Cherry Creek Shopping Center.

The current fire alarm system is comprised of System Sensor Field devices (modules / detectors) of varying age located throughout the building. Fire detection and alarm initiation in the mall building is accomplished through fire sprinkler system monitoring, spot type smoke detection, duct type smoke detection, and beam detection. Addressable smoke detectors are installed in the front and rear (if required) of tenant spaces, isolated back of house storage areas, elevator lobbies and machine rooms, and electrical rooms.

Addressable heat detectors are installed in elevator machine rooms. Addressable duct type smoke detectors are installed in HVAC units as required. Addressable beam detectors are installed in the mall concourse. The fire sprinkler waterflow and tamper switches are electronically monitored.



Occupant notification varies in different areas of the building. The mall common areas (concourse) are provided with an emergency voice evacuation message through the ceiling mounted background music speakers and no visual occupant notification. The mall back of house corridors / exit passageways are provided with an emergency voice evacuation message through wall mounted background music speakers and no visual occupant notification. The mall offices appear to have background music speakers and visual notification appliances in select areas.

Except for Zara and Kona Grill, tenant spaces throughout the building contain no occupant notification. Each tenant is provided with a dedicated visual notification appliance located on an adjacent neutral column within the mall common area. Each dedicated tenant visual notification appliance annunciates solely on an alarm within that specific tenant space. Each back of house storage space is provided with a dedicated visual notification appliance located in the back of house corridor / exit passageway above the door to the space. Each dedicated back of house storage visual notification appliance annunciates solely on an alarm within that specific storage space. Each back of house corridor / exit passageway is provided with a dedicated visual appliance located in the mall common area above the door to the back of house corridor / exit passageway.

Each dedicated back of house corridor / exit passageway visual notification appliance annunciates solely on an alarm within that specific back of house corridor / exit passageway, including any storage space that opens into that back of house corridor / exit passageway.

While the existing fire alarm system does provide multiple visual notification appliances throughout the mall common areas, these notification appliances are not utilized for general occupant notification. These appliances are designed to alert responders to an alarm within the associated tenant space, back of house corridor / exit passageway, or storage area in which the alarm was initiated.

The current Honeywell XLS1000 fire alarm control panel became obsolete in late 2017. While the manufacturer may provide support for the system for some period after discontinuing the model, parts and pieces will eventually become difficult to find. Furthermore, per the manufacturer, the existing Honeywell XLS1000 fire alarm system is unable to be upgraded to include integrated voice / alarm notification capabilities.

### Proposed System

The proposed system will include the following. Note, this concept was approved by the City of Denver Fire Department on November 1, 2019. A copy of this approval has been included as Appendix E to this Analysis.

- The existing Honeywell XLS1000 fire alarm control panel, located in the Fire Alarm Command Center, will be replaced with a new Honeywell XLS3000 fire alarm control panel





with integrated digital emergency voice / alarm communications message generation, hard-wired voice control, and firefighters' telephone.

- A new, secondary Honeywell XLS3000 fire alarm control panel (node) will be provided and installed in a select location in the other half the mall. The new fire alarm control panels will be networked together in a peer-to-peer fashion.
- The new fire alarm system will be capable of providing levels of intelligibility as required by NFPA 72 within new tenant spaces. The designing engineer must provide design-based criteria for Taubman to coordinate with future tenants.
- The designing engineer must review the existing and new message content with the owner and AHJ prior to fire alarm system commissioning.
- The existing graphics workstation will be replaced with a new graphic workstation which complies with Denver Fire Department requirements. The designing engineer must ensure a graphic workstation will be provided in compliance with UL 864 and all local amendments during the design phase of the project.
- The existing Fire Fighters Smoke Control Panel, located in the Fire Alarm Command Center, will be reused and connected to the new Honeywell XLS3000 fire alarm system.
- All existing initiation devices within the building will remain as currently configured, including those within all existing tenant spaces. The designing engineer must coordinate duct smoke detector signals with the owner and AHJ during the design phase of the project.
- The existing background music system, installed throughout the mall common areas and back of house corridors / exit passageways, will remain as currently configured. The current configuration has a 'pre-recorded' alarm message that takes priority over all background music and paging systems located within all mall common and back of house areas.
- An alarm message in new tenant spaces will take priority over all background music and paging systems located within the tenant space. The designing engineer must provide design-based criteria for tenant background music shunting and paging system override for Taubman to coordinate with future tenants.
- New visual (strobe) occupant notification appliances will be provided throughout all mall common and back of house areas. The visual notification appliances will activate throughout all mall common areas and all back of house corridors / exit passageways, on any alarm event. All visual notification appliances will be synchronized throughout the building, including synchronization between mall common areas and tenant spaces,



except for the dedicated visual notification appliances located on an adjacent neutral column to each tenant, in the back of house corridor / exit passageway above the door to the storage space, and above the door to the back of house corridors / exit passageway. The color of the dedicated visual notification appliances will be changed to not conflict with the visual occupant notification devices.

- The existing firefighters telephone system will remain as currently configured.
- New signaling line (addressable data loop) and speaker notification appliance circuit cabling will be installed. The new cabling will be routed within the back of house corridors / exit passageways and will serve as the backbone for the interface connections to new tenants.
- Audio amplifiers will be provided in sufficient quantities to power speaker circuits for all tenant spaces within the building. Designing engineer must ensure redundant amplifiers are provided in quantities as required by the owner and AHJ during the design phase of the project.
- Each tenant space, based on current and possible future lease lines, will be provided a tenant interface connection box (TIB). The TIB will consist of an electrical junction box with a terminal strip. The new signaling line and speaker notification circuits will be routed and connected to the terminal strips within each TIB, for future tenant connection. UL listed fire alarm modules will be provided as required for connection to the tenant portion of the fire alarm system which will be an extension of the base building fire alarm system. The designing engineer to provide detailed drawings and cutsheets for TIB locations during the design phase of the project.
- After system upgrade completion and commissioning, each new tenant will be required to provide a code compliant fire alarm system within their tenant space. The tenant provided fire alarm system will utilize the circuits provided in the TIB and must be an extension of the base building fire alarm system. New tenant spaces will be equipped as follows:
  - Spot type smoke detection at the front and rear entrances (as applicable) of the tenant space for smoke control activation.
  - Duct smoke detection and HVAC control as required.
  - A dedicated auxiliary power supply for code compliant visual notification appliances located throughout the tenant space.
  - Speaker notification appliances for code compliant audible notification throughout the space.
  - Smoke detection above the auxiliary power supply.



- Cabling within the tenant space tied back to the TIB.
- A dedicated visual notification appliance located on an adjacent neutral column within the mall common area.
- Existing tenant spaces would not be required to meet the new standard and would remain as follows:
  - Spot type smoke detection at the front and rear entrances (as applicable) of the tenant space for smoke control activation.
  - A dedicated visual notification appliance located on an adjacent neutral column within the mall common area.
- Upon transition to the new fire alarm system, the fire alarm system will operate as follows:
  - The background music system will annunciate the existing voice message throughout all mall common areas and all back of house corridors / exit passageways, on any alarm event, as currently configured.
  - The visual notification appliances will activate throughout all mall common areas and all back of house corridors / exit passageways, on any alarm event.
  - The smoke control system will continue to operate as currently configured.
  - A waterflow switch for a mall common area or back of house corridor / exit passageways, will continue to operate as currently configured.
  - A waterflow switch for a tenant zone, will continue to operate as currently configured. All visual and speaker notification appliances installed within new tenant spaces, will immediately activate throughout the sprinkler zone (tenant zone) of alarm origin. This does not include the dedicated visual notification appliances located on the neutral columns in the mall common areas.
  - Upon smoke detection within an existing tenant space (not connected to the TIB and not containing occupant notification), will continue to operate as currently configured:
    - Background music system would annunciate the voice message throughout the mall common areas and all back of house corridors / exit passageways.
    - The visual notification appliances will activate throughout all mall common areas and all back of house corridors / exit passageways.



- Dedicated visual notification appliance would activate for the tenant of alarm origin only. This visual notification appliances would not be synchronized with the common area visual notification appliances.
- Upon smoke detection within a new tenant space (connected to the TIB and containing occupant notification throughout), the following will occur:
  - The dedicated visual notification appliance located on an adjacent neutral column within the mall common area, would immediately activate for the tenant of alarm origin only. This visual notification appliance would not be synchronized with the common area visual notification appliances.
  - All tenant visual and speaker notification appliances within the fire sprinkler zone (tenant zone) of alarm origin would immediately activate.
  - Background music system would annunciate the voice message throughout the mall common areas and all back of house corridors / exit passageways.
  - The visual notification appliances will activate throughout all mall common areas and all back of house corridors / exit passageways.
- Existing strobes alerting responding fire crews of activated tenant space may require replacement with appliance that does not conflict with new strobes.
- Further research will conclude if existing duct smoke detectors can report as supervisory or if such are required alarm signal for smoke activation.

A matrix outlining the proposed fire alarm and occupant notification sequences is included as Appendix B to this Analysis.

## **K. Emergency Communication System**

The building is served by two-way emergency fire department communication system. This system consists of a supervised telephone communication system with phone jacks installed at the following locations:

- At each automatic sprinkler control valve room.
- Within the mall adjacent to each entry of an anchor building.
- Within the mall adjacent to the theater tenant space.

These phone jacks provide communication between the above referenced locations and the fire control room. Phone sets to be utilized at these locations are available from the fire control room.



## **L. Smoke Detection**

In addition to the automatic detection and alarm being provided by the waterflow switches in the automatic sprinkler systems, smoke detectors are provided in each of the following locations:

- Supply streams of air handling systems,
- Return of all air handling systems (these smoke detectors are also provided with remote annunciation at the ceiling level in the vicinity of the air handling unit),
- Within each tenant space at the interface with the public mall,
- At each rear exit from a tenant space,
- In the dining area of each Group A-2.1 restaurant tenant space, designed and installed in accordance with NFPA 72,
- Within the covered mall common area,
- Associated with elevator recall,
- Within electrical rooms / closets, switchgear rooms, elevator machine rooms, and
- At all fire alarm control equipment

The Fire Alarm Matrix included as Appendix B to this Analysis outlines all monitoring conditions in the mall building.

## **M. Portable Fire Extinguishers**

Portable fire extinguishers are provided throughout the mall building in accordance with NFPA 10. All new tenants will provide portable fire extinguishers within their space.

Portable fire extinguishers are located in the parking garages at each standpipe hose connection. These extinguishers are rated 4A-20B-C and located in break-glass cabinets such that visibility is reasonably achieved. Fire extinguisher are also located in security vehicles which monitor both parking garages.

## **N. Emergency and Standby Power Systems**

An emergency power system supplies power automatically to all required fire protection and life safety systems within the covered mall building, designed to comply with NFPA 70. The system picks up the following loads within 10 seconds after failure of normal power supply:

- Public address system,



- Fire alarm reporting system,
- Smoke control activation system and smoke control equipment (the system provides simultaneous power to the four largest tenant smoke control zones, plus the mall supply),
- All designated emergency lighting and exit signage.

Individual tenant spaces provide battery backup for egress lighting and exit signage within their space.

## **O. Fire Department Control Center**

The mall building is served by a fire department control center. The room is located on the Lower Level near Service Area B, as approved by the City of Denver. This dedicated area is accessible from the exterior via an exit passageway. Traffic lanes providing access to this area maintain a minimum inside turning radius of 23 feet and a minimum outside turning radius of 39 feet for fire department vehicle access as requested by the City of Denver Fire Department.

## **P. Means of Egress**

### General Mall Egress

The total GLA is used in determining the occupant load factor of a covered mall building. The larger the covered mall building is, the higher the occupant load factor calculation equates to, not to exceed 50 SF/Occupant. Based on the size of Cherry Creek Shopping Center, an occupant load factor of 50 SF/Occupant is used.

The means of egress systems for the covered mall building and expansion is designed in accordance with the covered mall building provisions and the general means of egress provisions outlined in the IBC. The exit capacity adequately accommodates the calculated occupant load. The exit capacity factors used per Section 1005.3.1 of the code requires a minimum egress width of 0.2 inches per occupant for horizontal egress components and a minimum egress width of 0.3 inches per occupant for vertical egress components; both factors assume a fully sprinkled building.

An aggregate concourse width of 20'-0" minimum is required provided from tenant storefront to tenant storefront in accordance with Section 402.8.1.1 and a clear width of 10'-0" minimum must be provided from tenant storefront to any obstructions in the concourse, such as benches, kiosks, RMUs, planters, ATMs, etc., in accordance with Section 402.8.1.1.

All exit passageways and corridors are a minimum of 66" in clear width.

Kiosk/RMUs within the mall concourse may not exceed 300 SF each, or 300 SF per grouping of several small units. Each grouping of Kiosk/RMUs must be separated from one another by a minimum of 20 feet from one another. Kiosk/RMUs must be constructed of noncombustible or fire



retardant treated wood. Each kiosk/RMU must be located a minimum of 10 feet from any adjacent tenant storefront. All kiosk construction must comply with Section 402.6.2 in the Code.

Two means of egress from tenant spaces must be provided if the tenant occupant load exceeds 49 occupants or when the travel distance from any location within a tenant space used by persons other than employees exceeds 75 feet. Each individual tenant space must be designed to include the minimum exit width to accommodate its own occupant load based on the appropriate occupant load factors for the use of that space. The occupant load for mercantile, assembly, and kitchen occupancies is 60 square feet/occupant, 15 square feet/occupant, and 200 square feet/occupant, respectively. Egress through mercantile tenant storage areas is permitted in accordance with IBC 1016.2(5) Exception 2, including that a demarcated, minimum 44-inch-wide aisle defined by full- or partial-height walls or similar construction that will maintain the required width and lead directly from the retail area to an exit without obstructions is provided.

Mall egress paths through exterior service areas are also identified by yellow striping. Signage is provided indicating "KEEP STRIPED AREA CLEAR". These signs are located in strategic areas throughout the exterior service areas to prevent possible storage of items being loaded or unloaded within the required path of exit travel. Guardrails are provided where the exit path runs parallel with a recessed ramp truck parking area with a change of elevation greater than 15 inches.

Section 402.8.5 limits travel distance within each individual tenant space to the mall concourse or to an exit within 200 feet. Travel distance measurements within the tenant space terminate once the occupant reaches the mall concourse or an exit component (exit passageway, exit stair, exit door). Travel distance in the mall concourse is limited to 200 feet.

Dead-end conditions in the mall concourse are not provided within the project.

All anchor buildings provide a separate and independent egress system from the covered mall building, as required.

As identified in the Graphics Appendix to this Analysis, adequate exit capacity is provided for the calculated occupant load.

#### Horizontal Mall Exits to West and East Parking Garages

As depicted in Figures 2 through 5 of the Graphics Appendix, mall means of egress includes several horizontal exits through 4-hour (original 1990 construction) / 2-hour fire (subsequent construction projects) resistance rated occupancy separations to the West and East Parking Garages (open parking garages).

Occupants utilizing horizontal exits to the West and East Parking Garages have the option of taking the open parking structure's exit stairways to grade, utilizing the vehicular access ramps to grade, or simply remaining on the open level of parking as a safe refuge area.



Only one horizontal exit to parking is permitted for each anchor building at each level.

### **Q. Open Parking Garages (East and West)**

Both open parking garages are designed as Type I protected noncombustible construction. Both open parking garages have openings on three (3) sides. Parking garages are separated from the mall and anchor buildings by 4-hour fire barriers (original 1990 construction) and 2-hour fire barriers (subsequent construction projects). Openings in these walls are designed as outlined in Item S below.

The West Garage provides openings consisting of 34.6% of the total building wall area which is 19.4% in excess of the minimum, at the time of construction, with openings occurring on three (3) sides (with a partially open fourth side). The East Garage provides openings consisting of 28.6% of the total building wall area which is 7.6% more than the minimum, at the time of construction, with openings occurring on three (3) sides (with a partially open fourth side).

Sprinkler protection is not provided throughout either building, as permitted for open parking structures. However, sprinkler protection is provided over the discharge path of Stair WD3 and the adjacent structural bay on either side of this path.

The parking garages are served by a dry standpipe system not connected to an automatic water supply. A Siamese connection is provided on the exterior of the building near a fire hydrant that enables arriving fire department personnel to pump into the standpipe system. The standpipes are provided with an air pressurized form of supervision that sends a signal to the supervisory service as well as the mall security office when pressure is lost in the system. Additionally, an exterior flashing red strobe is provided near the fire department Siamese connection that is activated in the mall security office upon receipt of a reported fire condition. Outlets are located adjacent to each of the exit stairs with a maximum travel distance of 200 feet.

Exit stairs serving the garage include wired glass. Where wired glass is used, parking is not permitted within 5 feet of the wired glass portion of the exit stairway enclosure. Bollards or barricades are provided to protect the glass. The 5 feet clearance is maintained by a standard height curb (+-7") around the stair enclosure creating an elevated pad for the stairway.

Constant security patrol of the open parking garages must be maintained. Patrol vehicles must be equipped with appropriate fire extinguisher equipment as directed by the Denver Fire Department. These patrols must circulate through the parking structures so as to cover all portions of the parking structures in every 30-minute period. A "Call for Assistance" voice communication system is also provided within both parking garages.

This supervised two-way voice communication system consists of a push button intercom located at each exit stairway, at each entry to the mall and each entry to an anchor building, on each level of both parking garages. Communication to and from each of these locations is to the mall security office. Each "Call for Assistance" intercoms are annunciated within the security office and, once





the button is activated, provides two-way communication without holding the button down until it is reset from the security office.

## **R. Main Entrances from Open Parking Structure**

As indicated on Figures 4 and 5 of the Graphics Appendix, the mall building anchor buildings are separated from the West Parking Garage by 4-hour (original 1990 construction) and 2-hour (subsequent construction projects) fire resistance rated occupancy walls, in accordance with Section 402.4.2.3.

As previously approved by the City of Denver, the following protection is provided for main entrance openings in this separation:

- Each vestibule is protected by automatic sprinkler systems.
- Doors and sidelights consist of ¼-inch wired glass.
- The wired glass doors and sidelights are protected by automatic sprinkler water curtains designed to wet the interior glass surfaces.
- A mechanical pressurization system is provided for the vestibules. This system is designed to prevent the infiltration of smoke into the vestibules. The system is activated by waterflow of the vestibule sprinklers or upon detection of smoke by vestibule smoke detectors or by smoke detectors located on the store side of the vestibule.
- Tenant doors may not open into the vestibule.

This design increases security in the West Parking Deck as customers and staff can view the parking area through the glass doors or sidelights.

## **S. Fire Damper Protection at Tenant Storefront Bulkheads**

Cherry Creek Shopping Center was originally designed to comply with prior editions of the Uniform Building Code (UBC). The UBC, up to and including the 1988 edition (Section 5603), required covered mall buildings to be compartmented into smoke control zones. Except for the actual store openings between the mall and tenant spaces, the smoke control zones must be separated from each other by construction having a fire resistance rating of not less than 1-hour.

Therefore, to comply with the UBC requirement (above) for 1-hour mall and tenant smoke control zone separation, the tenant bulkheads above the opening are designed as a fire resistive smokestop partition consisting of two (2) layers of 5/8" fire code gypsum board extended to the structure above (constructed by the Landor at Tenant's expense). Mall supply ducts that penetrate the bulkhead must provide a fire damper above the tenant storefront.



This concept was confirmed with the City of Denver in the March 27, 2014 and April 10, 2014 meetings.

## **T. Duct Penetrations of Tenant Demising Partitions**

Section 402.4.2.1 requires each tenant space to be separated from adjoining tenants by 1-hour fire partitions. Section 708.4 Exception 4 requires the fire partition construction to extend from the floor to the underside of the floor or roof deck above or to the underside of an unrated ceiling assembly. Finally, it is important to note that NFPA 90A does not require fire dampers to be placed at duct penetrations in a 1-hour fire partition.

Tenants that install a ceiling will have all duct systems distributed above the ceiling and therefore fire dampers will not be required in these systems (since penetration of the 1-hour fire partition does not occur). Recall that the fire partition may terminate at the underside of an unrated ceiling.

There may be instances where a tenant chooses not to install a ceiling for aesthetic purposes or when a duct penetrates the tenant fire partition below the ceiling. In these cases, it was agreed during the March 27, 2014 and April 10, 2014 meeting with the City of Denver, that these duct penetrations will require fire dampers.

However, more recently it has been clarified that the intent of IBC Section 717.5.4, Exception 2 is to permit the elimination of dampers from the duct penetrations of tenant separation walls, regardless if the tenant separation wall terminates at the underside of an unrated ceiling or if the tenant separation wall extends to the underside of the floor / roof assembly above (provided such wall is not required by provisions elsewhere in the code to extend to the underside of the floor or roof assembly above). As such, duct penetrations of tenant separation walls which do not serve as tenant smoke control zone separation and are not required elsewhere in the code to extend to the underside of the floor or roof assembly above will not be protected by fire or smoke dampers. An ICC Opinion Letter supporting this concept has been included in Appendix C.

Note that if duct penetrations occur in a tenant separation wall that serves as a separation between tenant smoke control zones, such duct penetrations must be protected with listed fire/smoke dampers.

Unless approved in writing by the Landlord and following the Landlord Engineer's approval of a Tenant Engineer prepared analysis of the smoke control system within the tenant space, all Tenants approved to have open ceilings must have ducted returns to the Landlord's Smoke Control System. There are several variables to consider, including size of the space, location of the space with respect to smoke exhaust fans, and openings between the space and the mall. Possible requirements include ducts through the tenant space and/or grills in the demising partitions. The tenant smoke control in the renovated space and throughout the tenant smoke control zone must always remain operational during renovations.



## **U. Construction of Tenant Spaces**

The covered mall building was originally designed and constructed by the landlord. As such, it is the landlord's responsibility to maintain the following:

- All construction/systems associated with the mall concourse, mall management office, back of house service rooms, public restrooms, community room exit passageways, exit stairs, and roof construction (not including any special tenant HVAC equipment or kitchen hood systems).
- Exterior walls.
- Exterior sidewalks and landscaping.
- Sewer and fire sprinkler main distribution piping.
- Electrical service feeds.
- Condenser water piping and make-up/exhaust air ductwork for the tenant areas.

The landlord's responsibility does not include any interior tenant design or construction documentation. The landlord will provide the tenant with information outlining the necessary code requirements that the tenant interior construction must adhere to. These requirements include, but are not limited to, tenant separation wall assembly fire rating, fire sprinkler system design criteria, fire alarm system requirements, HVAC system duct detector monitoring, allowable construction materials (noncombustible construction), and a list of the referenced applicable codes that the tenant designs must comply with. The landlord's documents do not include plans that indicate the mechanical, electrical, and plumbing systems or tenant build-out that are designed and constructed by the tenants.

It will be the tenant's responsibility to design and construct the following:

1. Tenant separation walls.
2. All interior tenant partitions, ceilings, and fixtures.
3. Extension of HVAC systems and/or installation of special HVAC systems.
4. Extension of the sewer lines if need.
5. Sprinkler systems.
6. Kitchen hood systems (if applicable).
7. Electrical systems (including emergency lighting and fire alarm systems if required).



Once a tenant has completed its permitting, construction, and inspection processes, the tenant will request a temporary certificate of occupancy (TCO) for the purpose of stocking. If all TCO inspection disciplines are completed and successfully approved, a TCO would be granted for the purpose of stocking. A final certificate of occupancy (CO) will be granted to a tenant space once all inspections are completed and successfully approved.

This concept was confirmed with the City of Denver in the March 27, 2014 and April 10, 2014 meetings.

## **V. Vacant Tenants and Tenant Spaces Under Construction**

It can be expected that some tenant spaces may be vacant or under construction at any given time. Any demising walls, interior partitions, finishes, etc. installed within these vacant spaces would require demolition and renovation to comply with the custom interior design of their tenants.

The following concepts are proposed for vacant tenants and tenants under construction:

- A Light Hazard sprinkler system will be installed in accordance with NFPA 13 for a Low Hazard occupancy. Note that if a tenant is under construction and working on the fire sprinkler system (such as sprinkler head relocation) the sprinkler system within that tenant space will not be operational.
- Storage of combustible materials will not be permitted within the unoccupied tenant space.
- The unoccupied tenant space's entrance from the mall concourse will be secured with an unrated, noncombustible partition.
- The 1-hour fire barriers forming the exit passageway will be completed to provide a 1-hour fire resistance rating. Finish drywall taping will occur on both sides of the fire barriers – tenant side (vacant or occupied) and exit passageway side.
- The tenant demising walls will be completed on the occupied side but will not be installed on the unoccupied side (exposed studs).
- The unoccupied tenant spaces will be locked with key access by mall management and security only.
- Minimal lighting will be provided within the unoccupied tenant space.
- Exit signage will not be provided due to the single entrance/exit to the unoccupied space.
- Prior to the tenant space being open to the public, an ordinary hazard sprinkler system will be installed in all Mercantile occupancies (Assembly occupancies are permitted to have light hazard sprinkler systems).



This concept was confirmed with the City of Denver in the March 27, 2014 and April 10, 2014 meetings.

## **W. Distribution of Utilities in Exit Passageways**

Some existing passageways include utility distribution. The City of Denver has agreed to permit existing utility distribution in exit passageways to remain as currently designed. This allowance includes the relocation of utilities in existing relocated exit passageways.

New utility distribution in existing exit passageways (i.e., any new penetration of an existing exit passageway wall, floor or ceiling) or in the walls, floor or ceiling of new exit passageways is not permitted except as outlined below (Section 1024.6):

- Equipment and ductwork necessary for independent pressurization,
- Sprinkler piping,
- Standpipes,
- Electrical raceway for fire department communication,
- Electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches.

All exit passageway penetrations must be protected in accordance with Section 714.

## **X. Typical Electrical Rooms**

Typical electrical rooms are constructed as mezzanines and are accessible from the intermediate stair landings. In each case, the typical electrical room does not front directly onto the intermediate stair landing but is accessible from the intermediate stair landing by a vestibule. The vestibules separating the electrical rooms from the intermediate stair landing serve as an air lock or buffer zone between the electrical room and the stairs.

## **Y. Elevator Shaft Enclosures**

### Mall Entry Foyer from Parking Garages

The foyer side of the elevator shaft located in the mall entry foyer contains wired glass panels and doors that are additionally protected with an automatic sprinkler water curtain spaced six feet on center. The ¼-inch wired glass slots and wired glass door is also used on the parking garage side of the elevator shaft.



## Mall Elevators

Elevators serving the mall are enclosed in glass.

### **Z. Elevator Equipment Room, Electrical Room, and Storage Room Locking**

In accordance with a CCI Memorandum dated March 11, 1988 and marked Approved on February 1, 1988, elevator equipment rooms, electrical closets, and storage rooms are permitted to open into exit passageways and are provided with fire-rated doors that are normally closed and locked. Storage rooms are also provided with smoke detection within the room and a fire alarm strobe device is installed outside the entry door from the exit passageway. These features will be maintained for any new storage rooms opening onto exit passageways. A copy of the March 11, 1988 memorandum is included as Appendix D to this Analysis.

### **AA. Theatre Use and Construction Classification**

The second level of the covered mall building contains 8 movie theatres, each with an occupant load of less than 300. Since each of these theatres individually comply with the original UBC design B-3 assembly use classification (occupant load less than 300) and are separated from each other by 2-hour fire resistive rated partitions and separated from the tenant spaces below by a 1-hour floor/ceiling assembly, the use of this area has been classified as several B-3 uses (per the UBC).

Exiting for the theatres includes 50 percent of the occupant load through the main exit from each theatre and 50 percent of the occupant load through the remote exits. All of the theatre main exits enter the common 1-hour rated exit access corridor which provides exiting to the mall or directly to the exterior via enclosed exit passageways, enclosed exit stairs or horizontal exit to the open parking garage. The remote individual theatre exits directly enter an exit passageway to the rear of the theatre space which leads directly to the exterior or to the horizontal exit to the open parking garage.

Mall buildings are anticipated to contain accessory uses and as indicated in Section 6602A of the mall amendments to the City of Denver Code applicable to the original building construction, accessory assembly uses must not exceed 3 times the basic area permitted by Table 5-C which represents 27,600 square feet. Since the proposed individual movie theatres are less than this permitted area, it would appear that the proposed Type IV-N construction is in compliance with the code.

### **BB. Covered Mall Building Modernization and Maintenance Projects**

Modernization and maintenance projects at Cherry Creek Shopping Center will occur at certain times. Appendix G to this Analysis outlines the Landlord's approach to those projects currently identified by the Denver Fire Department.



## **Section IV**



## **IV. Administrative Modification Request**

There are often areas where functional or design conditions mandate that methods be investigated to provide an equivalent level of protection to that intended by the Code as a modification to the Code's direct requirements. This need is recognized by the provisions contained in Denver Building Code Section 104.9 and 106, which specifically allows the Authority Having Jurisdiction to approve alternate approaches which have been demonstrated as an equivalent to the Code's base requirements.

The purpose of this section is to outline a single Administrative Modification Request regarding plumbing fixture distribution.

### **A. Plumbing Fixtures**

#### **Introduction**

An existing plumbing fixture approval (last revised June 1990) is in place addressing plumbing fixture distribution for the building. This approval included a single landlord-controlled toilet facility at each story of the mall building and assigned tenant plumbing fixture requirements based on individual tenant gross leasable area. The existing approval does not include any criteria based on travel distance to a toilet facility.

The existing approval includes the following tenant plumbing fixture requirements:

- Restaurant Tenants:

Toilet facilities to be provided for public / employee use based on the individual tenant occupant load regardless of gross leasable area. Tenant occupant load to be calculated considering 15 sf per person for dining areas and 200 sf per person for kitchen areas.

- Retail Tenants – 0 sf to 960 sf:

Public toilet facilities not required. Employee toilet facilities to be provided at Landlord option.

- Retail Tenants – 961 sf to 2,400 sf:

One water closet and one lavatory to be provided in a single unisex toilet facility.

- Retail Tenants – 2,401 sf to 6,400 sf:

One water closet and one lavatory in each of the two toilet facilities (men and women), plus one drinking fountain.





- Retail Tenants – 6,401 sf to 9,200 sf:

A minimum of one water closet, one urinal, one lavatory in the men's toilet facility and a minimum of two water closets and one lavatory in the women's toilet facility, plus one drinking fountain and one service sink.

- Retail Tenants – 9,201 sf to 11,500 sf:

No criteria included in the existing approval.

- Retail Tenants – exceeding 11,500 sf:

Fixtures to be provided based on individual tenant occupant load and the requirements of the plumbing code.

### **Request for Alternate Method**

It is requested that the City of Denver permit the following revised plumbing fixture distribution concept:

### **Centrally Located Landlord Toilet Facilities**

A single centrally located landlord toilet facility will continue to be provided at each story (near Macy's at the Lower Level and near the Mall Management Office at the Upper Level). These centrally located toilet facilities, when considering the family toilet facilities, provide the required number of water closets and lavatories required by the *International Plumbing Code* (IPC) for considering the occupant load of the entire mall building.

### **Restaurant Tenants (regardless of size)**

All restaurant tenants, regardless their location in the mall building, will provide toilet facilities (employee and public / customer), drinking fountains and service sinks within their tenant space based on the individual tenant occupant load and the requirements of the IPC.

An approved decal will be attached to the tenant storefront near the entrance indicating that public toilet facilities are provided within the space (see Appendix F for approved decal). The decal will be located not less than 40-inches above the finished floor.

Tenants with GLA 1,000 sf or less (regardless of location in the covered mall building):

- Toilet facilities will not be provided for public / customer use.
- Drinking fountains will not be provided.



- Service sinks will not be provided. Revised 2021-04-09

Tenants with GLA greater than 1,000 sf (storefront within 300 feet to central toilet facility):

- A single unisex toilet facility will be provided for employee use only.
- Drinking fountains will not be provided.
- One (1) service sink will be provided per the IPC where the occupant load exceeds 15 occupants (Table 2902.1, Note e).

Tenants with GLA greater than 1,000 sf but not more than 2,000 sf (storefront more than 300 feet to central toilet facility):

- A single unisex toilet facility will be provided for public / employee use.
- Drinking fountains will not be provided.
- One (1) service sink will be provided per the IPC where the occupant load exceeds 15 occupants (Table 2902.1, Note e).
- An approved decal will be attached to the tenant storefront near the entrance indicating that public toilet facilities are provided within the space (see Appendix F for approved decal). The decal will be located not less than 40-inches above the finished floor.

Tenants with GLA greater than 2,000 sf (storefront more than 300 feet to central plumbing facility):

- Public / employee facilities toilet facilities will be provided per the IPC based on the individual tenant occupant load.
- Drinking fountains will be provided per the IPC based on the individual tenant occupant load.
- One (1) service sink will be provided per the IPC where the occupant load exceeds 15 occupants (Table 2902.1, Note e).
- An approved decal will be attached to the tenant storefront near the entrance indicating that public toilet facilities are provided within the space (see Appendix F for approved decal). The decal will be located not less than 40-inches above the finished floor.

### **Justification**

*International Plumbing Code* (IPC) Section 403.3 permits employee toilet facilities to either be separate or combined with employee and public toilet facilities. It is the Design Team's preference



to provide centralized facilities available for public / customers and employees in a single location on the Upper Level and Lower Level of the mall.

IPC Section 403.3.4 requires that the path of travel to the required toilet facilities in a covered mall building not exceed a distance of 300 feet measured from the main entrance of any store or tenant space where employee toilet facilities are provided. Where employee toilet facilities are not provided within the individual store, the maximum 300-foot travel distance must be measured from the employee's work area of the store or tenant space.

Due to the location of the centrally located toilet facilities in the building, the 300' maximum travel distance to central toilet facilities cannot be met from all tenant spaces. As such, public toilet facilities are proposed in certain tenant spaces as outlined above.

A single centralized toilet facility, in lieu of providing numerous smaller "satellite" toilet facilities, has proven successful in covered mall buildings throughout the country from both a customer and management perspective. If provided, the "satellite" toilet facilities would be tucked away in the rear of remote corridors, where customers may feel uncomfortable and unsafe, and would be required solely to meet travel distance requirements. However, the centrally located toilet facilities provide well-lit and well-travelled facilities which are frequented by mall maintenance personnel and monitored by mall security cameras.

### **Summary**

A single central toilet facility provided on the Lower Level and Upper Level available to all public / customers and employees alleviates the concerns of providing several satellite toilet facilities. Further, the travel distance requirements of the IPC will be met based on the inclusion of public toilet facilities in select tenant spaces, as outlined above. The plumbing fixture calculations for the mall, the location of centrally located toilet facilities, the location of common drinking fountains and toilet facilities within tenant spaces, based on the outline presented above, have been included in Appendix F to this Analysis.



# Section V



## V. Summary

The highest level of fire protection and life safety has been considered in the design of Cherry Creek Shopping Center. The proposed concepts are based on the requirements of the City of Denver adopted building and fire codes. The following fire protection and life safety features are provided in the development:

- Type IIB unprotected noncombustible construction (Type II-N per the original UBC construction).
- 60 feet of permanent open space surrounding the development.
- Original 1990 Construction: 4-hour fire barrier separation, with approved openings between mall / anchor buildings and parking garages.
- Subsequent Construction Projects: 2-hour fire barrier separation, with approved openings between mall / anchor buildings and parking garages.
- 2-hour fire barriers between the mall building and Nordstrom, Neiman Marcus, and Macy's anchor buildings (anchor buildings of three stories or less).
- 3-hour fire wall between the mall building and the Restoration Hardware anchor building (anchor building exceeding three stories).
- Complete automatic sprinkler system throughout all non-parking garage buildings. The sprinkler system is over-designed and separately zoned for tenant and mall areas.
- 1-hour fire partitions between mall tenant spaces. No separation will be provided between tenant spaces and the mall.
- Mall building smoke control system.
- Fire department standpipe system with hose connections in select locations in the mall building.
- Electrical supervision and off-site monitoring of all fire protection systems.
- Fire alarm reporting system in the mall building.
- Modified public address system in the mall building for existing tenants. Emergency voice / alarm communication system connected to the new mall system to serve new tenants.
- Emergency fire department communication system.



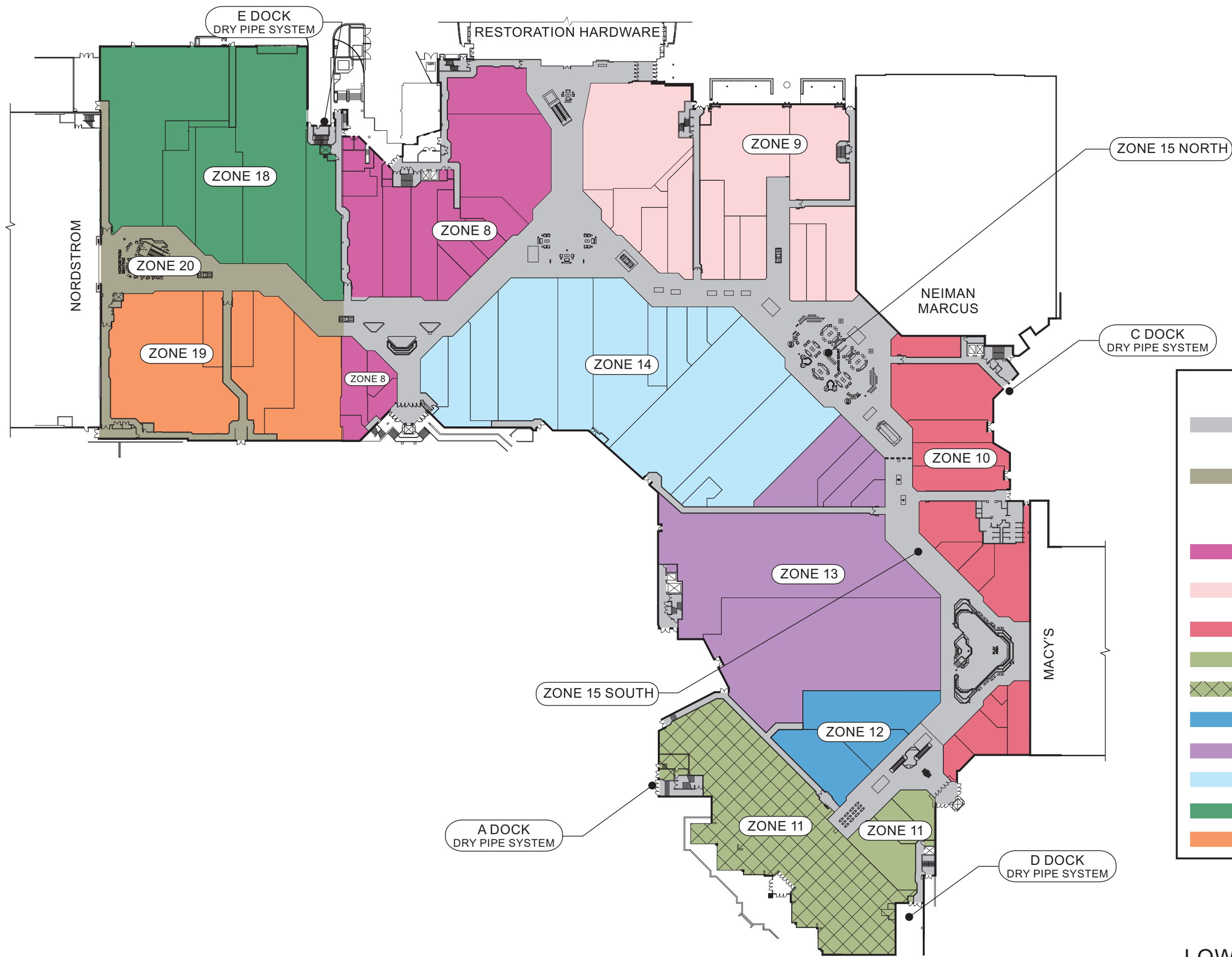
- Separate fire alarm system within the anchor buildings.
- Smoke detection in select locations.
- Portable fire extinguishers in select locations.
- Emergency power for all required fire protection and life safety systems.
- Elevator emergency operations.
- Fire alarm control room.
- Means of egress systems in compliance with the code requirements for mall buildings.
- Means of egress in compliance with the code requirements for each anchor building which are separate and independent of the mall building.
- Unprotected openings between anchor buildings and the mall.
- Fire dampers are provided for the supply ducts that penetrate fire resistive smokestop tenant bulkhead partitions.
- Fire/smoke dampers are provided for ducts that penetrate tenant separation walls that serve as a separation between tenant smoke control zones.
- Procedures for construction of tenant spaces, vacant tenant spaces and spaces under construction.
- Existing exit passageway utility distribution is permitted in existing and relocated exit passageways. New utility distribution in existing exit passageways is not permitted. Utility distribution in new exit passageways is not permitted.
- Description of plumbing fixture distribution in the mall.

A single Administrative Modification Request was presented related to plumbing fixture distribution for the City's consideration.

It is the professional opinion of Code Consultants, Inc. and Design Team that the concepts outlined in this Analysis provide Cherry Creek Shopping Center with a level of safety equal, if not superior, to that intended by the City of Denver adopted building and fire codes.



# Appendix A



**GRAPHIC KEY**

MALL ZONES	
	ZONE 15 (NORTH/SOUTH) (INCLUDING EXPANSION TENANTS)
	ZONE 20
TENANT ZONES	
	ZONE 8 (INCLUDING EXPANSION TENANTS)
	ZONE 9 (INCLUDING EXPANSION TENANTS)
	ZONE 10
	ZONE 11
	ZONE 11 (PROPOSED)
	ZONE 12
	ZONE 13
	ZONE 14
	ZONE 18
	ZONE 19



**LOWER LEVEL  
SPRINKLER / SMOKE ZONE MAP**

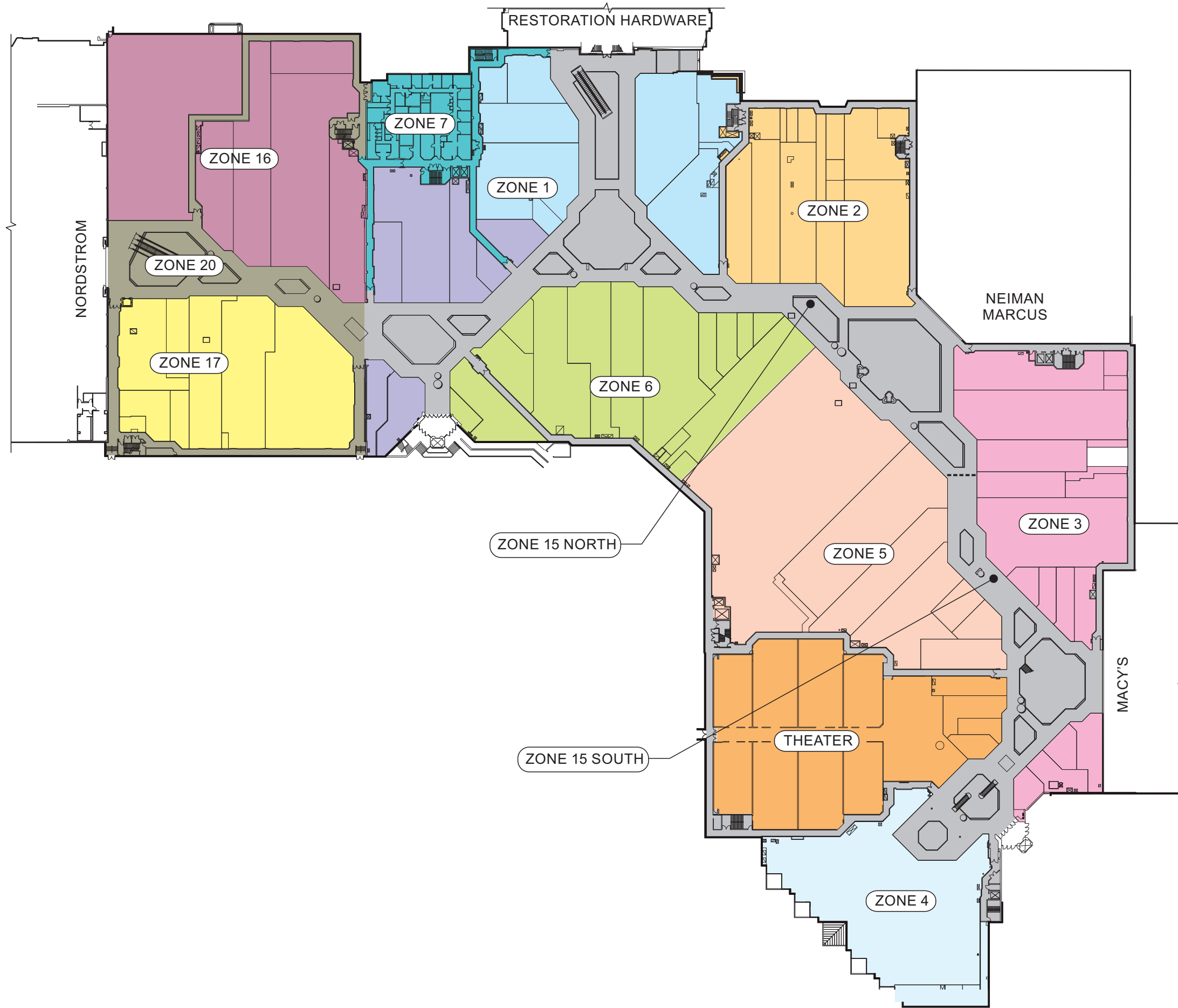
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**CHERRY CREEK SHOPPING CENTER**  
DENVER, COLORADO













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APPENDIX  
**A1**  
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**GRAPHIC KEY**

MALL ZONES	
	ZONE 15 (NORTH/SOUTH) (INCLUDING EXPANSION TENANTS)
	ZONE 20
TENANT ZONES	
	ZONE 1 (INCLUDING EXPANSION TENANTS)
	ZONE 2 (INCLUDING EXPANSION TENANTS)
	ZONE 3
	ZONE 4
	ZONE 5
	ZONE 6
	ZONE 7
	ZONE 16
	ZONE 17
	ZONE THEATER



**UPPER LEVEL  
SPRINKLER / SMOKE ZONE MAP**



2043 WOODLAND PARKWAY, SUITE 300  
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LOCATION OF THE PROTECTED  
FEATURES REPRESENTED.  
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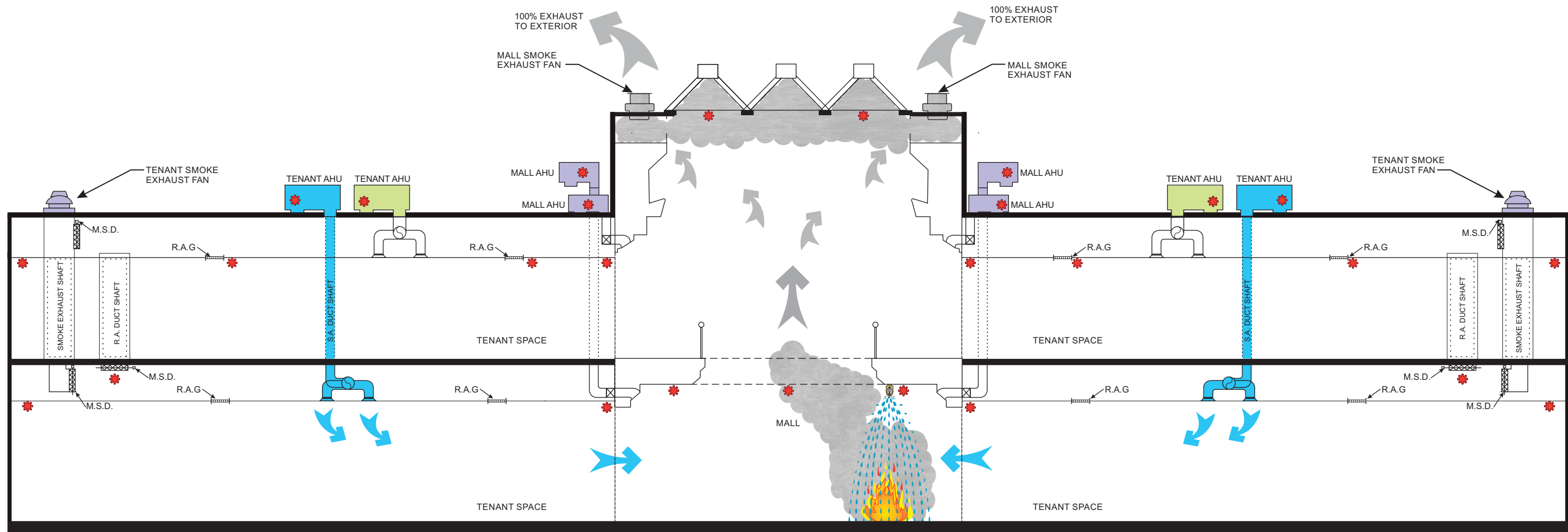
**CHERRY CREEK SHOPPING CENTER**  
DENVER, COLORADO

DATE: 4-2-21

APPENDIX

**A2**

190766.00.000



## SMOKE CONTROL SCHEMATIC

### FIRE IN MALL

SYSTEM ACTIVATED BY MALL ZONE AUTOMATIC SPRINKLER WATERFLOW SWITCH, MALL SMOKE DETECTOR OR MANUALLY FROM FIRE CONTROL ROOM.

ALL EXHAUST FANS SERVING MALL FIRE ZONE PROVIDE APPROXIMATELY 8 AIR CHANGES PER HOUR OF EXHAUST DIRECTLY TO EXTERIOR.








ALL HVAC SYSTEMS SERVING MALL SHUT-OFF.

ALL LOWER LEVEL TENANT HVAC UNITS PROVIDE 100% OUTSIDE AIR.

ALL REMAINING TENANT HVAC UNITS REMAIN IN NORMAL OPERATION.

EAST AND WEST PARKING GARAGE VESTIBULE PRESSURIZATION FANS PROVIDE 100% OUTSIDE AIR SUPPLY FOR VESTIBULE PRESSURIZATION.

### GRAPHIC KEY

	FAN OFF
	FAN NORMAL
	RETURN AIR GRILLE
	MOTORIZED SMOKE DAMPER (UL 555S/CLASS II/265°)
	SMOKE DETECTOR
	EXHAUST TO EXTERIOR
	OUTSIDE AIR SUPPLY



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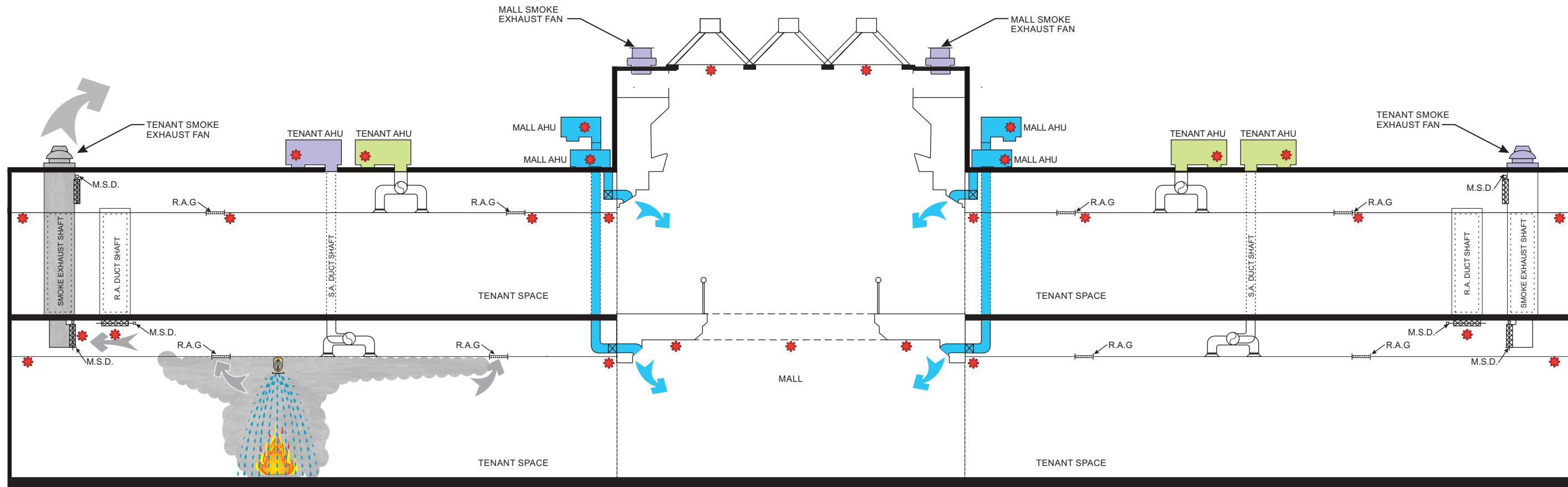
**CHERRY CREEK SHOPPING CENTER**  
DENVER, COLORADO

DATE: 4-2-21

APPENDIX

**A3**

190766.00.000



## SMOKE CONTROL SCHEMATIC

### FIRE IN TENANT SPACE

SYSTEM ACTIVATED BY TENANT ZONE AUTOMATIC SPRINKLER WATERFLOW SWITCH, RETURN AIR SMOKE DETECTOR, TENANT STOREFRONT SMOKE DETECTOR, TENANT REAR EXIT SMOKE DETECTOR OR MANUALLY FROM FIRE CONTROL ROOM.

ALL EXHAUST FANS SERVING TENANT FIRE ZONE PROVIDE APPROXIMATELY 10 AIR CHANGES PER HOUR OF EXHAUST DIRECTLY TO EXTERIOR, ON A VOLUME CALCULATED AT 12'-0" ABOVE THE FINISHED FLOOR.








ALL HVAC SYSTEMS SERVING TENANT FIRE ZONE SHUT OFF.

ALL SUPPLY FANS SERVING ADJACENT MALL ZONE PROVIDE 100% OUTSIDE AIR SUPPLY.

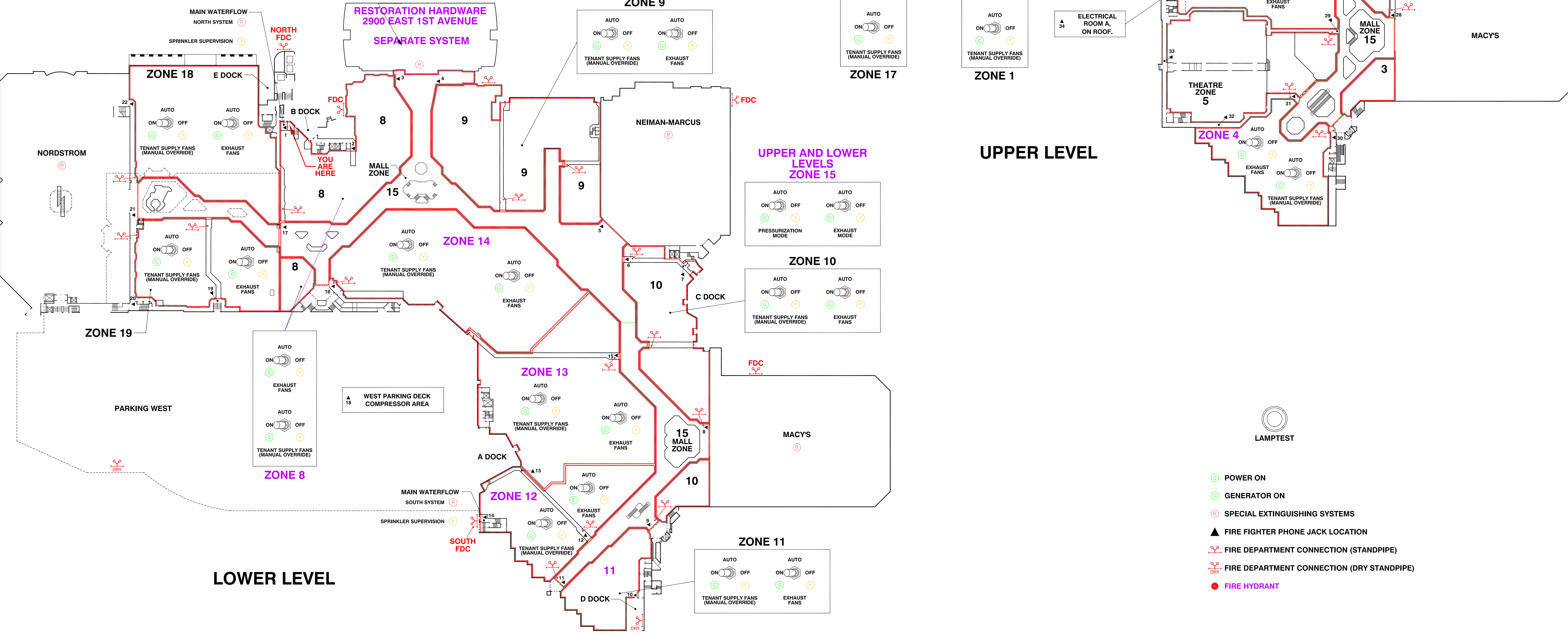
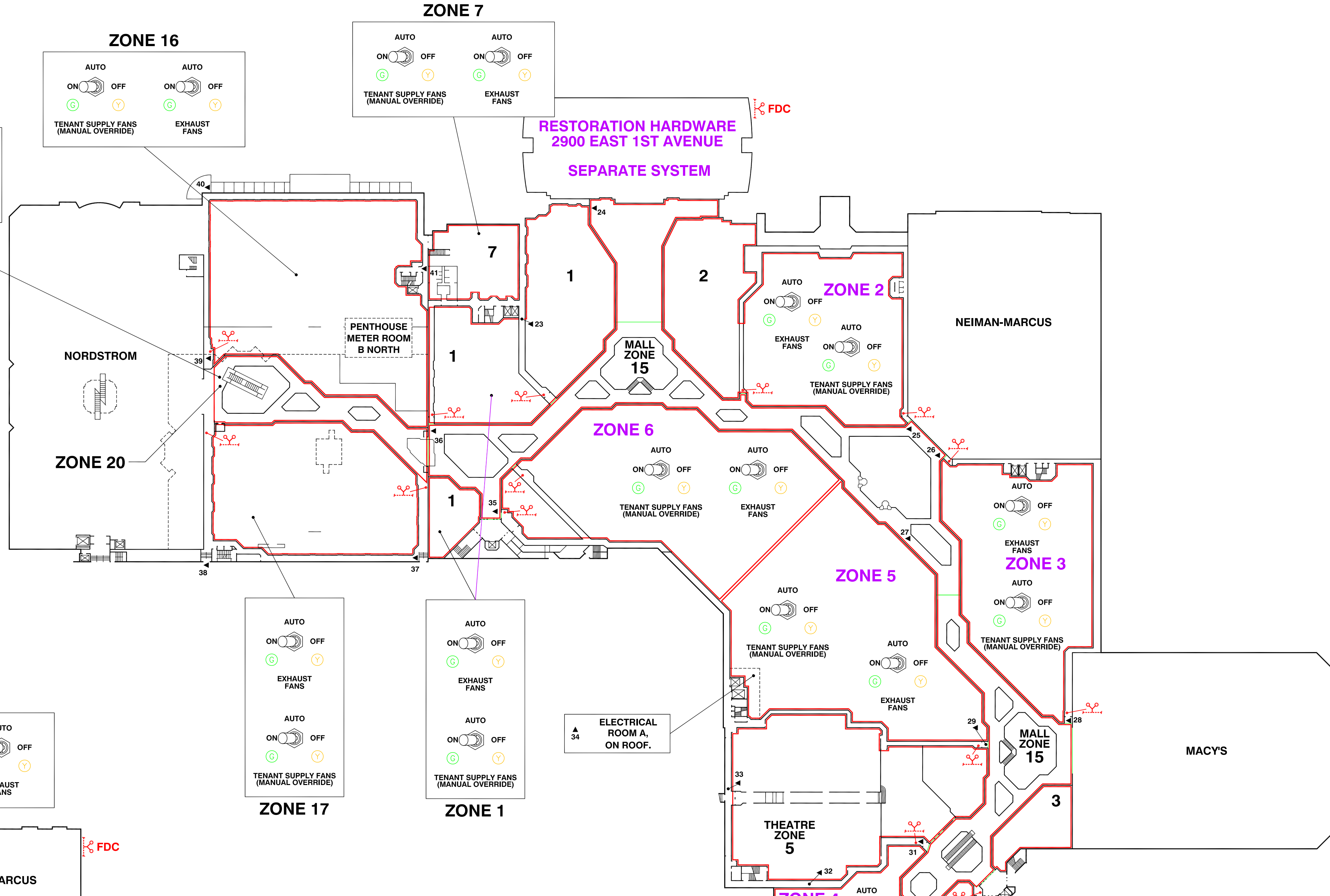
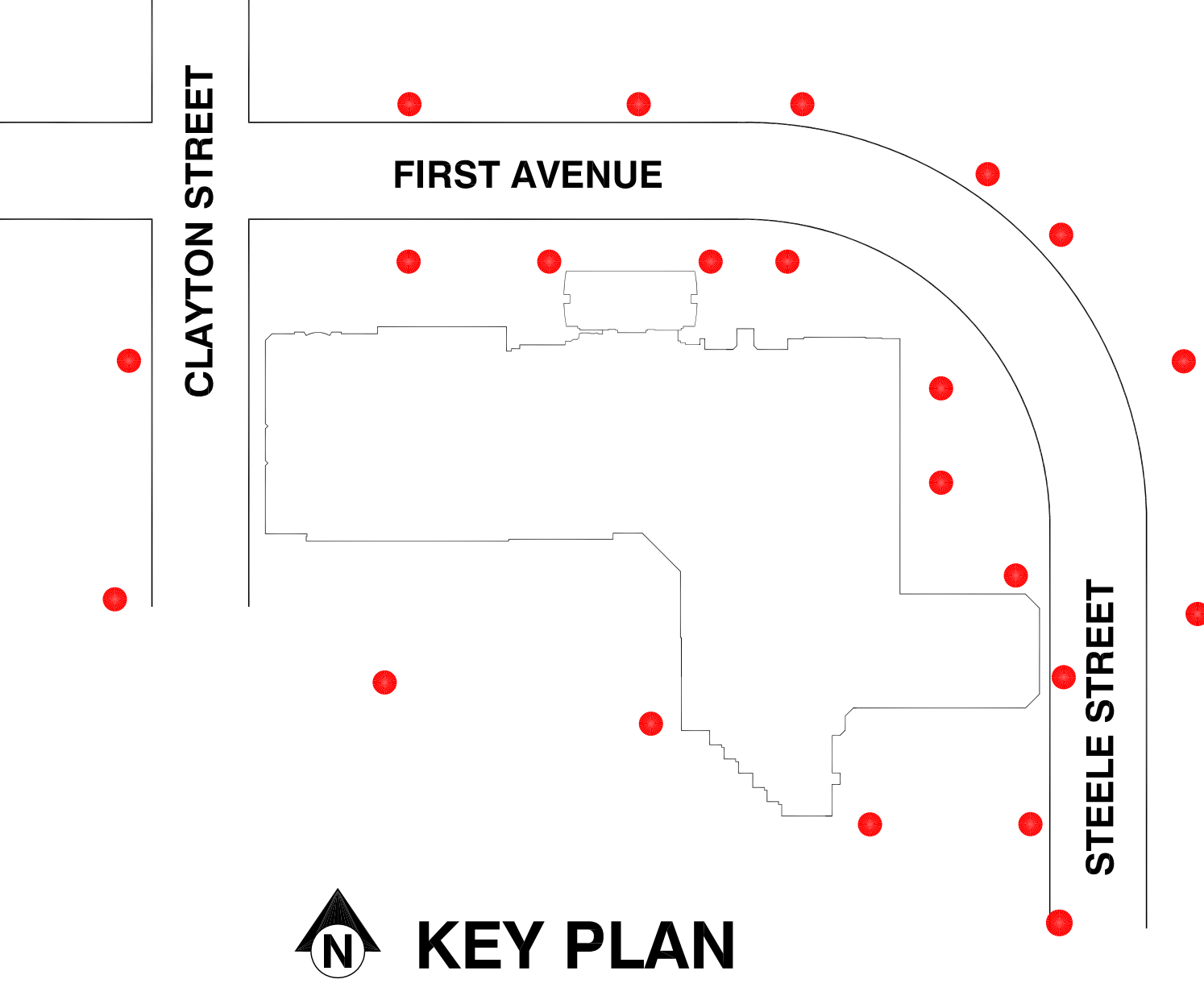
ALL NON-FIRE TENANT ZONES REMAIN IN NORMAL OPERATION.

EAST AND WEST PARKING GARAGE VESTIBULE PRESSURIZATION FANS PROVIDE 100% OUTSIDE AIR SUPPLY FOR VESTIBULE PRESSURIZATION.

### GRAPHIC KEY

	FAN OFF
	FAN NORMAL
	RETURN AIR GRILLE
	MOTORIZED SMOKE DAMPER (UL 555S/CLASS II/265°)
	SMOKE DETECTOR
	EXHAUST TO EXTERIOR
	OUTSIDE AIR SUPPLY

# CHERRY CREEK SHOPPING CENTER 3000 EAST 1ST AVENUE SMOKE CONTROL PANEL



- POWER ON
- GENERATOR ON
- SPECIAL EXTINGUISHING SYSTEMS
- ▲ FIRE FIGHTER PHONE JACK LOCATION
- FIRE DEPARTMENT CONNECTION (STANDPIPE)
- FIRE DEPARTMENT CONNECTION (DRY STANDPIPE)
- FIRE HYDRANT

## CHERRY CREEK SHOPPING CENTER EXISTING-MODIFIED GRAPHIC ANNUNCIATOR AND SMOKE CONTROL PANEL

REV D		BY	Honeywell ExpertISE
REV C		BY	345 Inverness Drive South, Englewood, CO 80112
REV B	AS-BUILT	BY	CHERRY CREEK SHOPPING CENTER NORTH PAD REDEVELOPMENT
REV A	11/20/15	BY	Revised F&ASmoke Control Graphics Ref.Dwg.s DATE: 10-24-14 SHEET: 11
APPROVED BY:			DRAWING NUMBER: USB-007494-011

CHERRY CREEK MALL  
DENVER, COLORADO

SMOKE EXHAUST SYSTEM MANUAL

PREPARED BY:

E & S MECHANICAL SERVICES  
4326 MOUNTAIN ROAD  
PASADENA, MARYLAND 21122

TELEPHONE (301)360-2280

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D	PLANS	

SMOKE EXHAUST SYSTEM  
NARRATIVE

I. SYSTEM DESCRIPTION

The design of the Smoke Exhaust System at the Cherry Creek Mall will be as described in the City and County of Denver Building Code - 1982 Edition, the Uniform Building Code (Covered Mall Criteria) - 1985 Edition and the Code Interpretations prepared by Code Consultants, Inc., dated May 27, 1988 as follows:

A. General

The Building Smoke Exhaust and Air Conditioning Systems are incorporated together as one system. The Building Air Conditioning Systems consist of multiple Variable Air Volume (V.A.V.) Rooftop Units serving Retail Tenant Areas and multiple Constant Volume (C.V.) Rooftop Units with gas fired heat serving all Public Mall Areas. The air supply to each Retail Tenant Area will be through single-duct V.A.V. Terminal Units with pneumatic controls.

Ceiling plenums will be utilized throughout the Retail Tenant Areas for conveyance of return air to each Rooftop Unit and smoke exhaust to the outside.

Restaurant Tenant Areas are conditioned by a central Condenser Water System. Each Tenant provides a water source Air Conditioning Unit with electric heat and ducted supply and return. Ceiling plenums are utilized in these areas for conveyance of smoke exhaust only.

Separate Smoke Exhaust Systems are provided for the Tenant and Public Mall Areas.

Smoke detection and system activation will be as follows:

1. Lower Level Tenant Areas
  - a. Smoke detectors at Mall Interface located below ceiling.
  - b. Area-type smoke detectors provided in plenum at return air shafts.
  - c. Water flow from Automatic Sprinkler System.
  - d. Manual controls in the Fire Command Room.

2. Upper Level Tenant Areas
  - a. Smoke detectors provided at Mall Interface located below ceiling.
  - b. Smoke detectors located below ceiling at air return grilles.
  - c. Water flow from Automatic Sprinkler System.
  - d. Manual controls in the Fire Command Room.
3. Public Mall
  - a. Ceiling smoke detectors and linear beam detectors located in the Mall.
  - b. Water flow from Automatic Sprinkler System.
  - c. Manual controls located in the Fire Command Room.

B. Tenant Areas (Zones 1 thru 6 and 8 thru 14)

The extent of the Retail/Restaurant Tenant Area Smoke Exhaust Systems are defined by the Tenant Sprinkler Zones. In general, each Tenant Smoke Control Zone is sized according to the area each Air Supply System serves. Each zone is provided with smoke exhaust utilizing roof-mounted exhaust fans, ducted intakes with motorized dampers and the building return-air plenums. The smoke exhaust from each zone will have a capacity of at least ten (10) air changes per hour on a volume calculated at 12'-0" above finished floor.

Smoke detection and system activation is provided as described in A-1 and A-2 above. Upon activation of the System in any Tenant Zone the following shall occur:

1. The Air Supply Unit(s) serving the zone will de-energize. All Tenant high temperature smoke exhaust fans serving the zone will energize and the motorized exhaust dampers at affected areas will open.
2. The Air Supply Units serving the Public Mall Areas will energize to deliver 100% outside air.
3. Vestibule pressurization fans will energize to deliver 100% outside air for Vestibule pressurization.
4. The remaining Air Supply Units serving the Tenant Zones will remain in normal operation.



5. All motorized exhaust dampers in unaffected zones will remain closed.

C. Public Mall Areas (Zone 15 North/15 South)

The Public Mall Area is conditioned by multiple constant volume packaged Rooftop Units with gas-fired heating sections.

Smoke exhaust is provided by exhaust fans located over the Tenant roof/high roof Monitor Areas. A minimum overall capacity of eight (8) air changes per hour will be provided. The air change rate is calculated using the entire volume of the Mall.

Smoke detection and system activation is provided as described in A-3 above. Upon activation of the system anywhere within the Common Mall Zone the following shall occur.

1. All Common Area high temperature smoke exhaust fans are energized to exhaust smoke.
2. All Public Mall Air Supply Units are de-energized.
3. All Lower Level Tenant Air Supply Units are energized to deliver 100% outside air.
4. Vestibule pressurization fans will energize to deliver 100% outside air for Vestibule pressurization.
5. All remaining Tenant Air Supply Units are de-energized.

D. Project Facilities (Zone 7)

The project facilities is conditioned by a roof mounted Variable Air Volume Packaged Unit.

Smoke exhaust for this area is provided by a single exhaust fan located on the roof. A minimum overall exhaust capacity of ten (10) air changes per hour will be provided.

Smoke detection and system activation is provided by smoke detectors located in the return to the Air Supply Unit, Sprinkler System water flow and/or manually. Upon activation of the system, the following shall occur:

1. The Air Supply Unit serving the space shall energize to 100% outside air.

2. The high temperature smoke exhaust fan serving the space shall energize to exhaust smoke.
3. All other Tenant/Mall Air Supply Units shall remain in normal operation.
4. All other Tenant/Mall smoke exhaust fans are to be de-energized.

E. Entrance Vestibules

The Mall Entrance Vestibules at the East and West Parking Decks are conditioned by the Air Supply Systems that serve the Tenant Zones.

In the event of fire/smoke detection in the Public Mall, Tenant Area or Entrance Vestibule the conditioned air supply to the Vestibule will be de-energized. When this occurs, an independent supply air fan shall energize and deliver to the Vestibule 100% outside air to allow positive pressurization of this space to occur.

II. SEQUENCE OF OPERATION

A. Tenant Zone #1

Location: Upper Level - Building A/Building F  
Function: AHU-1T, 2T, 21T and 22T shall be de-energized. S.E.F.-T1, T2 and T22 shall energize to exhaust smoke. M.O.D. 1, 2 and 21 shall open. M.O.D. 22, 23, 24, 53, 54 and 55 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

B. Tenant Zone #2

Location: Upper Level - Building B  
Function: AHU-3T, 4T, 5T and 6T shall be de-energized. S.E.F.-T3, T4 and T5 shall energize to exhaust smoke. M.O.D.-3, 4 and 5 shall open and M.O.D.-25 thru 30 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

C. Tenant Zone #3

Location: Upper Level - Building C/Building D  
Function: AHU-7T, 8T, 9T, 10T and 11T shall be de-energized. S.E.F.-T6, T7, T8 and T9 shall energize to exhaust smoke. M.O.D.-6, 7, 8 and 9 shall open and M.O.D.-31, 32, 33, 34, and 35 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

D. Tenant Zone #4

Location: Upper Level - Building D (Restaurant)  
Function: All Restaurant Tenant Air Supply Units and make-up air fans in this Zone shall be de-energized. S.E.F.-T10, T11 and T12 shall energize to exhaust smoke. M.O.D.-10, 11 and 12 shall open and M.O.D.-36, 37 and 38 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

E. Tenant Zone #5

Location: Upper Level - Building E  
Function: AHU-12T thru 20T shall be de-energized. S.E.F.-T14, T15, T16 and T17 shall energize to exhaust smoke. M.O.D.-13, 14, 15 and 16 shall open and M.O.D.-40 thru 45 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

F. Tenant Zone #6

Location: Upper Level - Building F  
Function: AHU-12T thru 20T shall be de-energized. S.E.F.-T18, T19, T20 and T21 shall energize to exhaust smoke. M.O.D.-17, 18, 19 and 20 shall open and M.O.D.-46 thru 52 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

G. Project Facilities Zone #7

Location: Project Facilities

Function: AHU-1PF shall energize to 100% outside air. All V.A.V. Boxes will open for 100% supply to space. M.O.D.-55 shall close. EF-6PF and EF-7PF will energize to exhaust smoke. All other Air Handling Units will continue to operate in the normal mode of operation.

H. Tenant Zone #8

Location: Lower Level - Building A/Building F

Function: AHU-1T, 2T, 21T and 22T shall be de-energized. S.E.F.-T1, T2 and T22 shall energize to exhaust smoke. M.O.D.-22, 24, and 53 shall open and M.O.D.-1, 2, 21, 23 and 54 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

I. Tenant Zone #9

Location: Lower Level - Building B

Function: AHU-3T thru 6T shall be de-energized. S.E.F.-T3, T4, and T5 shall energize to exhaust smoke. M.O.D.-26, 28, 29, 56 and 57 shall open and M.O.D.-3, 4, 5, 25, 27 and 30 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

J. Tenant Zone #10

Location: Lower Level - Building C/Building D

Function: AHU-7T, 8T, 9T, 10T and 11T shall be de-energized. S.E.F.-T6, T8 and T9 shall energize to exhaust smoke. M.O.D.-31, 32 and 34 shall open and M.O.D.-6, 8, 9, 33 and 35 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

K. Tenant Zone #11

Location: Lower Level - Building D (Restaurant)  
Function: All Restaurant Tenant Air Supply and Make-up Air Systems in this Zone shall be de-energized. S.E.F-T10 and T11 shall energize to exhaust smoke. M.O.D.-36 and 37 shall open and M.O.D.-10 and 11 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

L. Tenant Zone #12

Location: Lower Level - Building E (Restaurant)  
Function: All Restaurant Tenant Air Supply and Make-up Air Systems in this Zone shall be de-energized. S.E.F-T12 and T13 shall energize to exhaust smoke. M.O.D.-38 and 39 shall open and M.O.D.-12 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

M. Tenant Zone #13

Location: Lower Level - Building F  
Function: AHU-12T thru 20T shall be de-energized. S.E.F-T14, T15, T16 and T17 shall energize to exhaust smoke. M.O.D.-40, 41, 43 and 45 shall open and M.O.D.-13, 14, 15, 16, 42 and 44 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

N. Tenant Zone #14

Location: Lower Level - Building F  
Function: AHU-12T thru 20T shall be de-energized. S.E.F-T18, T19, T20 and T21 shall energize to exhaust smoke. M.O.D.-47, 49, 50 and 52 shall open and M.O.D.-17, 18, 19, 20, 46, 48 and 51 shall close. AHU-1M thru 17M shall energize to deliver 100% outside air. PF-1, 2, 3, and 4 shall energize to pressurize Entrance Vestibules. All remaining Tenant Air Handling Units to remain in normal operation.

0. Public Mall Zone #15 North/15 South

Location: Upper and Lower Level Public Mall

Function: AHU-1M thru 17M shall be de-energized. S.E.F-M-1 thru M-19 shall energize to exhaust smoke. PF-1, 2, 3 & 4 shall energize to pressurize Entrance Vestibules. All conditioned air supply to the Vestibules will go to zero. AHU-1T, 4T, 5T, 7T, 8T, 11T, 13T, 15T, 16T, 18T, 20T, and 22T shall be de-energized and all other Tenant Air Handling Units shall energize to deliver 100% outside air.

SMOKE EXHAUST SYSTEM - MATRIX

<u>SMOKE EXH. ZONE</u>	<u>AHU'S &amp; FANS PURGE MODE</u>	<u>AHU'S TURNED OFF</u>	<u>AHU'S IN NORMAL OPERATION</u>	<u>S.E.F.'S TURNED ON</u>	<u>M.O.D.'S OPEN</u>	<u>M.O.D.'S CLOSED</u>
1	1M thru 17M PF-1,2,3,4	1T,2T,21T,22T	All Remaining Tenant AHU's	T1,T2,T22	1,2,21	22,23,24, 53,54,55
2	1M thru 17M PF-1,2,3,4	3T thru 6T	All Remaining Tenant AHU's	T3,T4,T5	3,4,5	25,26,27, 28,29,30
3	1M thru 17M PF-1,2,3,4	7T thru 11T	All Remaining Tenant AHU's	T6 thru T9	6 thru 9	31,32,33, 34,35
4	1M thru 17M PF-1,2,3,4	All Restaurant supply/make-up air equipment	All Remaining Tenant AHU's	T10,T11,T12	10,11,12	36,37,38
5	1M thru 17M PF-1,2,3,4	12T thru 20T	All Remaining Tenant AHU's	T14 thru T17	13 thru 16	40,41,42, 43,44,45
6	1M thru 17M PF-1,2,3,4	12T thru 20T	All Remaining Tenant AHU's	T18 thru T21	17 thru 20	46,47,48, 49,50,51,52
7	1PF	---	All AHU's	6PF,7PF	---	55
8	1M thru 17M PF-1,2,3,4	1T,2T,21T,22T	All Remaining Tenant AHU's	T1,T2,T22	22,24,53	1,2,21,23, 54
9	1M thru 17M PF-1,2,3,4	3T thru 6T	All Remaining Tenant AHU's	T3,T4,T5	26,28,29,56,57	3,4,5,25, 27,30
10	1M thru 17M PF-1,2,3,4	7T thru 11T	All Remaining Tenant AHU's	T6,T8,T9	31,32,34	6,8,9,33,35
11	1M thru 17M PF-1,2,3,4	All Restaurant supply/make-up air equipment	All Remaining Tenant AHU's	T10,T11	36,37	10,11
12	1M thru 17M PF-1,2,3,4	All Restaurant supply/make-up air equipment	All Remaining Tenant AHU's	T12,T13	38,39	12
13	1M thru 17M PF-1,2,3,4	12T thru 20T	All Remaining Tenant AHU's	T14 thru T17	40,41,43,45	13,14,15, 16,42,44

1  
1

SMOKE EXHAUST SYSTEM - MATRIX

<u>SMOKE EXH. ZONE</u>	<u>AHU'S &amp; FANS PURGE MODE</u>	<u>AHU'S TURNED OFF</u>	<u>AHU'S IN NORMAL OPERATION</u>	<u>S.E.F.'S TURNED ON</u>	<u>M.O.D.'S OPEN</u>	<u>M.O.D.'S CLOSED</u>
14	1M thru 17M PF-1,2,3,4	12T thru 20T	All Remaining Tenant AHU's	T18 thru T21	47,49,50,52	17,18,19, 20,46,48,51
15 (N & S)	2T,3T,6T,9T, 10T,12T,14T, 17T,19T,21T, & PF-1,2,3,4	1M thru 17M, 1T,4T,5T,7T,8T, 11T,13T,15T,16T, 18T,20T,22T	---	M1 thru M19	---	---



# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 1

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-1T, 2T, 21T, 22T	Off			
4	AHU-3T thru 20T	Normal Operation			
5	SEF-T1, T2, T22	On			
6	MOD-1, 2, 21	Open			
7	MOD-22, 23, 24, 53, 54, 55	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 2

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-3T thru 6T	Off			
4	AHU-1T, 2T, 7T thru 22T	Normal Operation			
5	SEF-T3, T4, T5	On			
6	MOD-3, 4, 5	Open			
7	MOD-25 thru 30	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 3

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-7T thru 11T	Off			
4	AHU-1T thru 6T, 12T thru 22T	Normal Operation			
5	SEF-T6 thru T9	On			
6	MOD-6 thru 9	Open			
7	MOD-31 thru 35	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 4

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	All Restaurant supply & make-up air equip.	Off			
4	AHU-1T thru 22T	Normal Operation			
5	SEF-T10,T11,T12	On			
6	MOD-10,11,12	Open			
7	MOD-36,37,38	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 5

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-12T thru 20T	Off			
4	AHU-1T thru 11T, 21T,22T	Normal Operation			
5	SEF-T14 thru T17	On			
6	MOD-13 thru 16	Open			
7	MOD-40 thru 45	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 6

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-12T thru 20T	Off			
4	AHU-1T thru 11T 21T, 22T	Normal Operation			
5	SEF-T18 thru T21	On			
6	MOD-17 thru 20	Open			
7	MOD-46 thru 52	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 7

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1PF	Purge (100% O.A.)			
2	AHU-1T thru 22T	Normal Operation			
3	SEF-6PF, 7PF	On			
4	MOD-55	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 8

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-1T, 2T, 21T, 22T	Off			
4	AHU-3T thru 20T	Normal Operation			
5	SEF-T1, T2, T22	On			
6	MOD-22, 24, 53	Open			
7	MOD-1, 2, 21, 23, 54	Closed			



# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 9

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-3T thru 6T	Off			
4	AHU-1T, 2T, 7T thru 22T	Normal Operation			
5	SEF-T3, T4, T5	On			
6	MOD-26, 28, 29, 56, 57	Open			
7	MOD-3, 4, 5, 25, 27, 30	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 10

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-7T thru 11T	Off			
4	AHU-1T thru 6T, 12T thru 22T	Normal Operation			
5	SEF-T6, T8, T9	On			
6	MOD-31, 32, 34	Open			
7	MOD-6, 8, 9, 33, 35	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 11

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	All Restaurant supply/make-up equipment	Off			
4	AHU-1T thru 22T	Normal Operation			
5	SEF-T10,T11	On			
6	MOD-36,37	Open			
7	MOD-10,11	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 12

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	All Restaurant supply/make-up air equipment	Off			
4	AHU-1T thru 22T	Normal Operation			
5	SEF-T12, T13	On			
6	MOD-38, 39	Open			
7	MOD-12	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 13

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-12T thru 20T	Off			
4	AHU-1T thru 11T,21T, 22T	Normal Operation			
5	SEF-T14 thru T17	On			
6	MOD-40,41,43,45	Open			
7	MOD-13,14,15,16, 42,44	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 14

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-1M thru 17M	Purge (100% O.A.)			
2	PF- 1 thru 4	On			
3	AHU-12T thru 20T	Off			
4	AHU-1T thru 11T, 21T,22T	Normal Operation			
5	SEF-T18 thru T21	On			
6	MOD-47,49,50,52	Open			
7	MOD-17 thru 20, 46,48,51	Closed			

# SMOKE EXHAUST SYSTEM INSPECTION SHEETS

ZONE NO. 15

DATE: \_\_\_\_\_

NO.	EQUIPMENT	ACTION REQUIRED	ACTION OBSERVED	REMARKS	APPROVED BY:
1	AHU-2T, 3T, 6T, 9T, 10T, 12T, 14T, 17T, 19T, 21T	Purge (100% O.A.)			
2	PF-1 thru 4	On			
3	AHU-1M thru 17M	Off			
4	AHU-1T, 4T, 5T, 7T, 8T, 11T, 13T, 15T, 16T, 18T, 20T, 22T	Off			
5	SEF-M1 thru M19	On			

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

LORD & TAYLOR

ZONE #7

ZONE #1

ZONE #2

ZONE #1

ZONE #2

ZONE #2

SAKS FIFTH AVENUE

ZONE #2

THEATERS N.I.C.

ZONE #4

ZONE #3

ZONE #5

NEIMAN MARCUS

ZONE #3

ZONE #5

ZONE #2

MAY D&F

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LEGEND

△ PENOTES M.O.D

KEY

F FINISHED SPACE

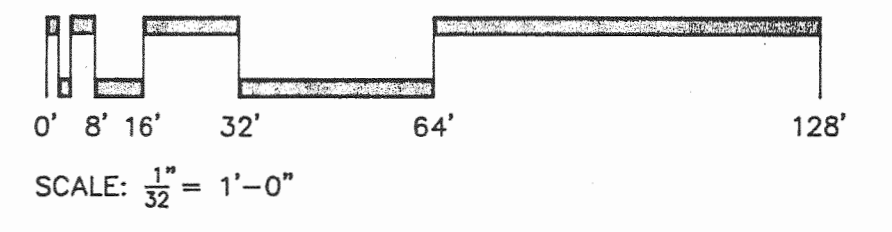
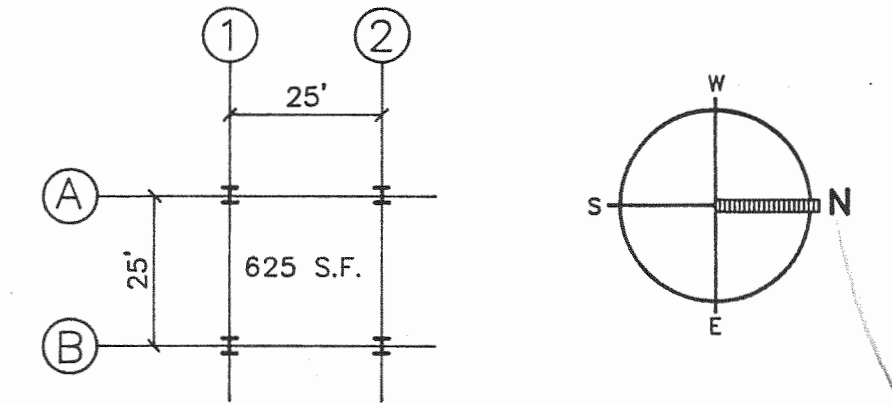
□ PORTION OF A FINISHED SPACE

\* TENANT SPACE SERVED BY CENTRAL SUPPLY WATER SYSTEM. TENANT SHALL PROVIDE HVAC EQUIPMENT. (ALL OTHER TENANT SPACES TO RECEIVE CENTRAL AIR CONDITIONING SUPPLY SYSTEM.)

FIRE EXTINGUISHER NEUTRAL PIER

R PUBLIC REST ROOMS

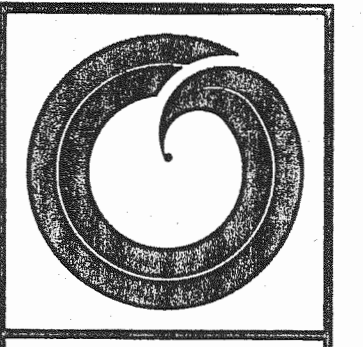
TYPICAL BAY



DIMENSIONS, CONFIGURATION AND/OR TENANTS IDENTITIES SHOWN MAY NOT REFLECT ACTUAL CONDITIONS. ACTUAL CONDITIONS MUST BE VERIFIED ON THE PREMISES. NO REPRESENTATIONS OR WARRANTIES ARE EXPRESSED OR IMPLIED BY THIS DRAWING.

Revision:  
The Taubman Company, Inc.  
200 E. LONG LAKE ROAD  
BLOOMFIELD HILLS, MI 48303-0200  
Drawn by:

CHERRY CREEK A REGIONAL RETAIL DEVELOPMENT - DENVER, COLORADO

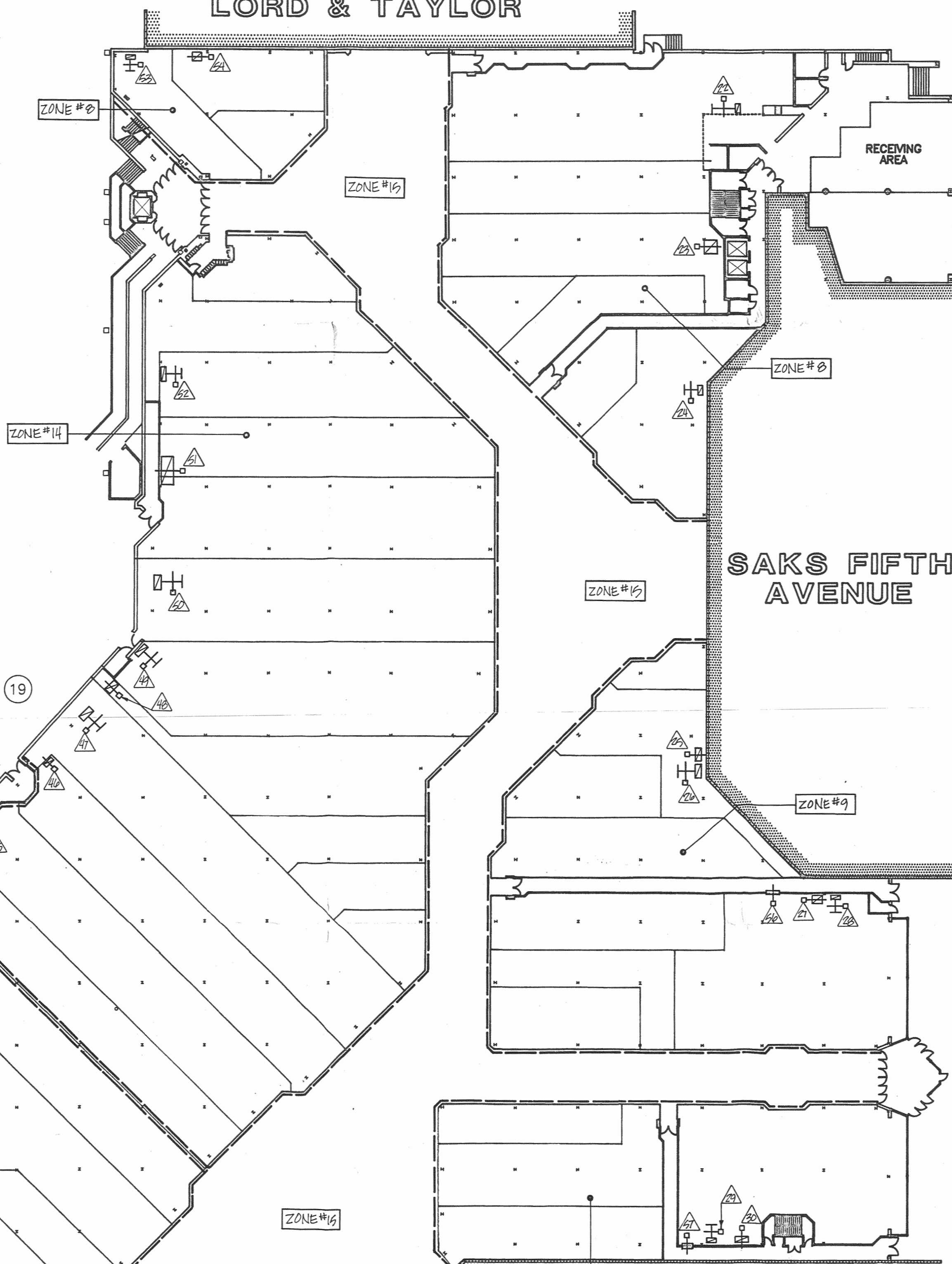


SMOKE EXHAUST SYSTEM  
UPPER LEVEL



20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

LORD & TAYLOR



CC BB AA Z Y X W V U T S R Q P N M L K J H G F E D C B A A'

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Q P N M L K J H G F E D C B A A'

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

MAY D&F

NEIMAN MARCUS

SAKS FIFTH AVENUE

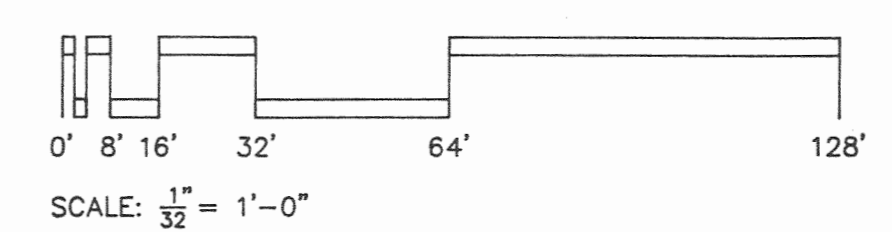
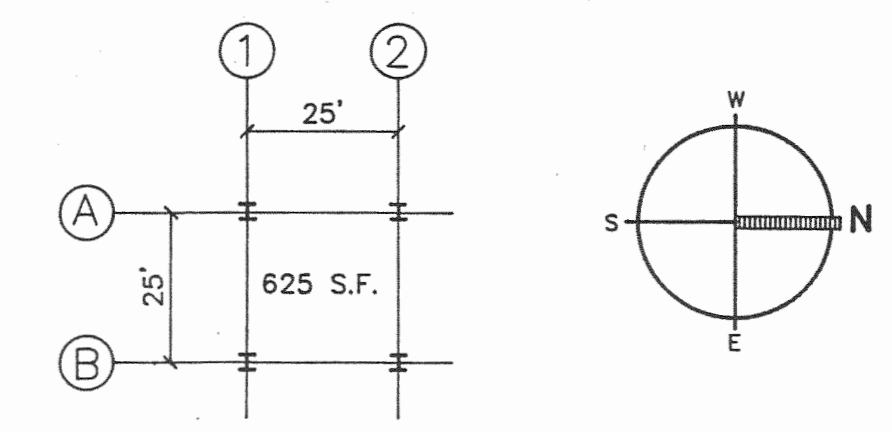
LEGEND

△ PENOTES MOD

KEY

- ▭ "FINISHED SPACE"
- ▭ PORTION OF A "FINISHED SPACE"
- \* TENANT SPACE SERVED BY CENTRAL SUPPLY WATER SYSTEM. TENANT SHALL PROVIDE HYDRA EQUIPMENT. (ALL OTHER TENANT SPACES TO RECEIVE CENTRAL AIR CONDITIONING SUPPLY SYSTEM.)
- ⊕ FIRE EXTINGUISHER NEUTRAL PIER
- Ⓡ PUBLIC REST ROOMS

TYPICAL BAY

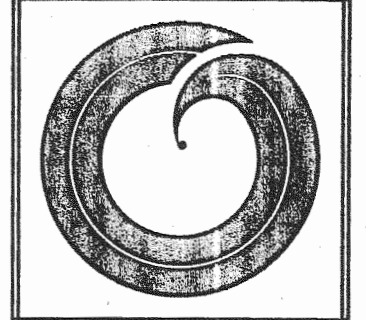


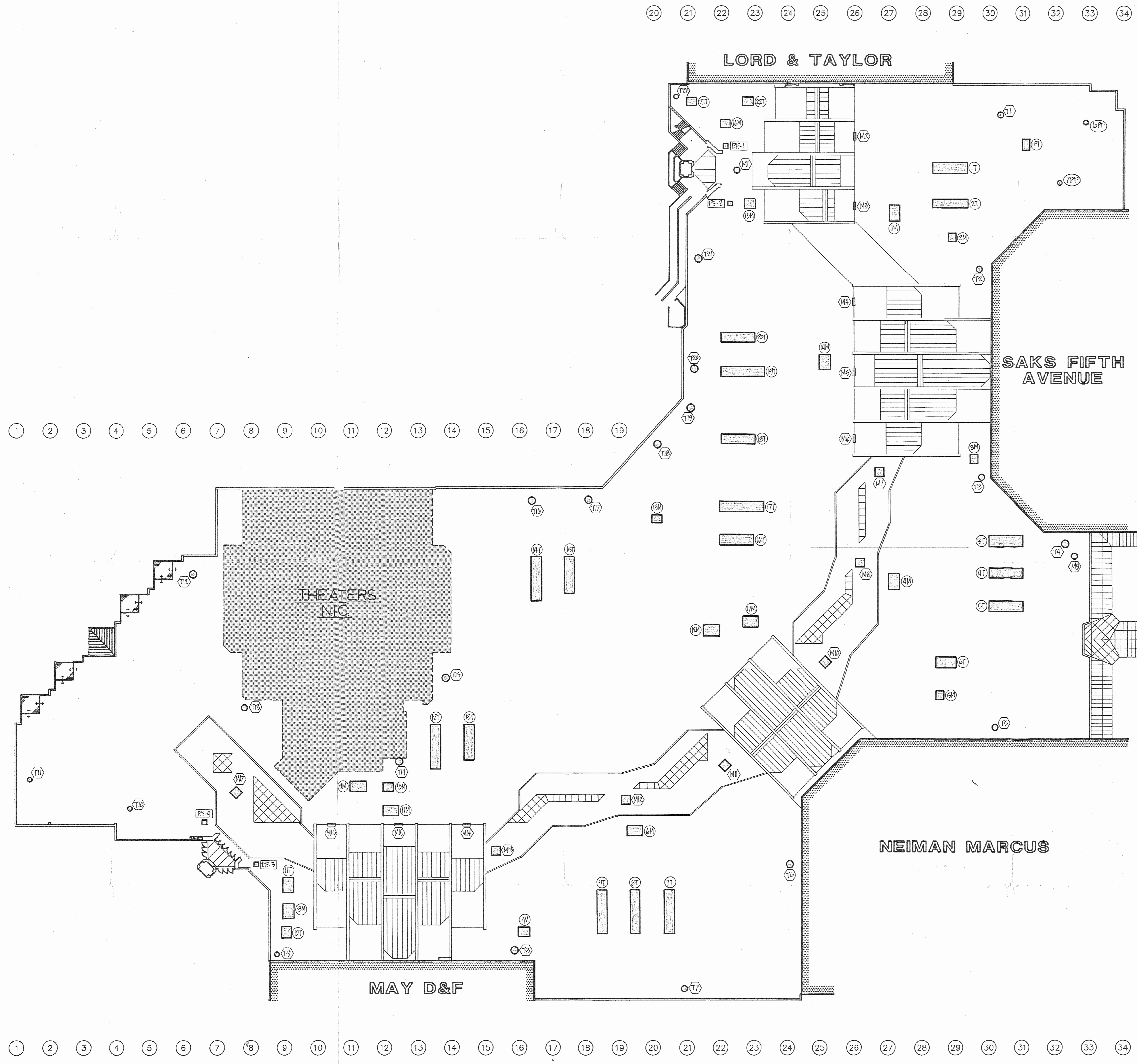
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CHERRY CREEK A REGIONAL RETAIL DEVELOPMENT - DENVER, COLORADO

SMOKE EXHAUST SYSTEM LOWER LEVEL

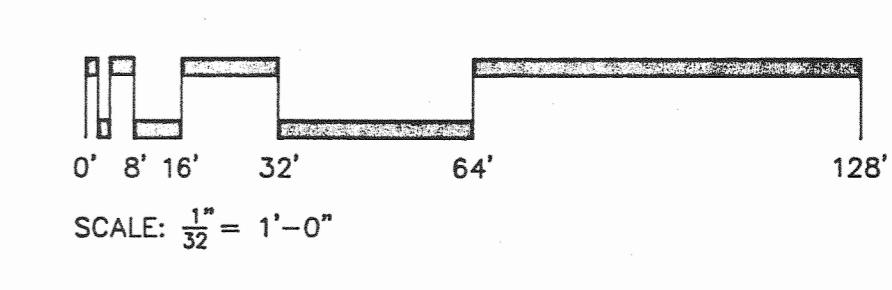
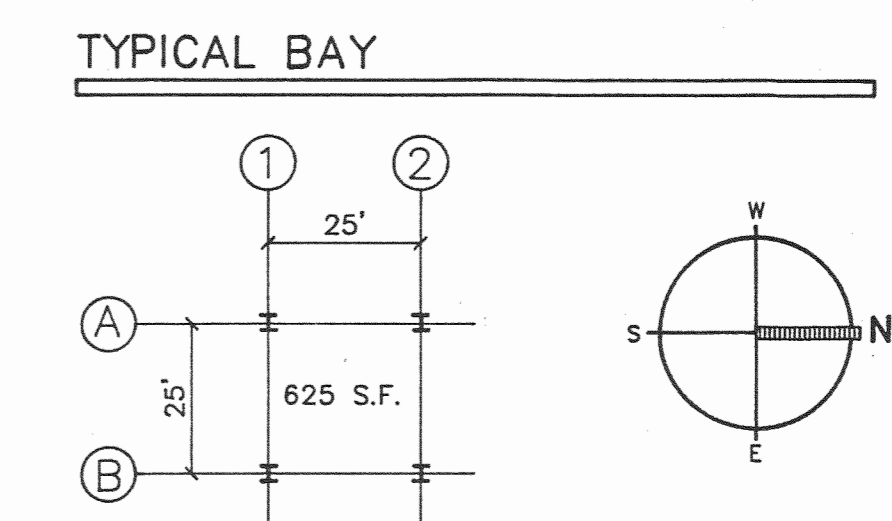
Revision  
 Drawn by  
**The Taubman Company, Inc.**  
 200 E. LONG LAKE ROAD  
 BLOOMFIELD HILLS, MI 48303-0200





- LEGEND**
- DENOTES A.H.I.I. (MALL/TENANT/PROJECT FACILITIES)
  - ⬡ DENOTES S.E.F. (MALL/TENANT)
  - DENOTES P.F. (MALL)
  - DENOTES E.F. (PROJECT FACILITIES)

- KEY**
- ⬡ FINISHED SPACE
  - PORTION OF A FINISHED SPACE
  - \* TENANT SPACE SERVED BY CENTRAL SUPPLY WATER SYSTEM. TENANT SHALL PROVIDE HVAC EQUIPMENT. (ALL OTHER TENANT SPACES TO RECEIVE CENTRAL AIR CONDITIONING SUPPLY SYSTEM.)
  - FIRE EXTINGUISHER NEUTRAL PIER
  - Ⓜ PUBLIC REST ROOMS

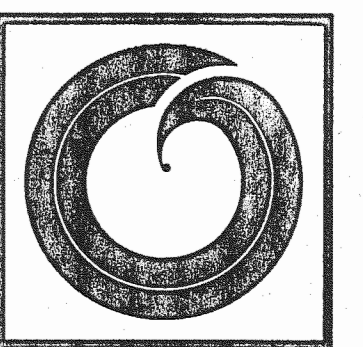


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NO REPRESENTATIONS OR WARRANTIES ARE EXPRESSED OR IMPLIED BY THIS DRAWING.

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**The Taubman Company, Inc.**  
 200 E. LONG LAKE ROAD  
 BLOOMFIELD HILLS, MI 48303-0200  
 Drawn by

**CHERRY CREEK** A REGIONAL RETAIL DEVELOPMENT - DENVER, COLORADO

SMOKE EXHAUST SYSTEM  
 ROOF PLAN





# Appendix B



# FIRE ALARM MATRIX

CHERRY CREEK SHOPPING CENTER  
DENVER, COLORADO

PROJECT NO. 190766.00.000

	ANNUNCIATES ALARM SIGNAL AT FIRE ANNUNCIATOR PANEL	ANNUNCIATES SUPERVISORY SIGNAL AT MONITORING SERVICE	ACTIVATES AUDIBLE/VISUAL FIRE ALARM DEVICES IN EXISTING TENANTS	ACTIVATES AUTOMATIC VOICE EVACUATION MESSAGE AND VISUAL ALARM DEVICES THROUGHOUT MALL COMMON AREAS, BACK-OF-HOUSE CORRIDORS/EXT PASSAGEWAYS AND NEW TENANT SPACES	ALL SMOKE EXHAUST FANS SERVING MALL FIRE ZONE PROVIDE 100% EXHAUST TO EXTERIOR	ALL MALL HVAC SUPPLY FANS SERVING MALL FIRE ZONE PROVIDE 100% EXHAUST TO EXTERIOR	ALL LOWER LEVEL TENANT HVAC SUPPLY FANS SHUT OFF	ALL REMAINING TENANT HVAC UNITS PROVIDE VESTIBULE PRESSURIZATION FANS PROVIDE 100% EXHAUST TO EXTERIOR	ALL TENANT SMOKE EXHAUST FANS SERVING 100% SUPPLY	ALL MALL HVAC UNITS SERVING TENANT FIRE ZONE PROVIDE 100% EXHAUST TO EXTERIOR	ALL REMAINING TENANT HVAC UNITS REMAIN IN NORMAL OPERATION	THE HVAC UNITS SERVING PROJECT FACILITIES PROVIDES 100% OUTSIDE AIR	THE SMOKE EXHAUST FAN SERVING PROJECT FACILITIES PROVIDE 100% EXHAUST TO EXTERIOR	ALL OTHER MALL & TENANT HVAC UNITS REMAIN IN NORMAL OPERATION	ADJACENT MALL & TENANT HVAC UNITS REMAIN IN OUTSIDE AIR SUPPLY	RECALLS AFFECTED ELEVATOR TO DESIGNATED OR ALTERNATE RECALL LEVEL	DISCONNECTS MAIN LINE POWER SUPPLY TO DESIGNATED OR CONTROL ROOM	ALLOWS LIVE VOICE ANNOUNCEMENT TO AFFECTED CONTROL ROOM	ALLOWS 2-WAY COMMUNICATION BETWEEN FIRE SELECTED ROOM AND SELECTED AREA	ACTIVATES/DEACTIVATES SMOKE EXHAUST FANS IN MALL OR TENANT ZONE	
<b>AUTOMATIC SPRINKLER SYSTEMS</b>																					
-WATERFLOW SWITCH																					
-MALL ZONE	●		●		●	●	●	●	●	●											
-TENANT ZONE	●		●		●					●	●	●	●	●							
-PROJECT FACILITIES	●		●		●								●	●	●						
-TAMPER SWITCH		●	●																		
<b>SMOKE DETECTORS</b>																					
-MALL CEILING	●		●		●	●	●	●	●	●											
-MALL HVAC DUCT	●		●		●	●	●	●	●	●											
-TENANT STOREFRONT	●		●	●	●					●	●	●	●	●							
-TENANT REAR DOOR	●		●	●	●					●	●	●	●	●							
-TENANT HVAC DUCT	●		●		●					●	●	●	●	●							
-PROJECT FACILITIES HVAC DUCT	●		●		●								●	●	●						
-ELEVATOR LOBBIES AND MACHINE ROOMS	●		●		●											●					
-REMOTE MALL ELECTRICAL/SWITCHGEAR ROOM/CLOSETS	●		●		●																
-REMOTE MALL STORAGE ROOMS	●		●		●																
-PARKING GARAGE ENTRANCE VESTIBULES	●		●		●	●	●	●	●	●											
-FIRE ALARM CONTROL EQUIPMENT	●		●		●																
-RESTORATION HARDWARE		●												●	●						
<b>HEAT DETECTORS</b>																					
-ELEVATOR MACHINE ROOMS	●		●		●												●				
<b>FIRE DEPARTMENT MANUAL CONTROLS</b>																					
-P.A. SYSTEM MICROPHONE																		●			
-2-WAY COMMUNICATION SYSTEM																			●		
-TENANT SMOKE EXHAUST FANS																				●	
-TENANT HVAC SUPPLY FANS																					●
-MALL SMOKE EXHAUST FANS																				●	
-MALL HVAC SUPPLY FANS																					●
ALARM CONDITION ON ANCHOR BUILDING FIRE ALARM SYSTEM		●																			



# Appendix C

## Erin Crowley

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**From:** Erin Crowley  
**Sent:** Tuesday, August 11, 2015 1:39 PM  
**To:** Chris Reeves  
**Subject:** 2009 IBC Section 709.4 & 716.5.4

Hi Chris,

Thank you so much for taking my phone call today to discuss tenant fire partitions in malls and protection of duct penetrations of such walls.

My question is as follows:

In order to apply 2009 IBC Section 716.5.4 Exception 2, must the tenant partition terminate at an unrated ceiling as permitted by 2009 IBC Section 709.4 Exception 4? Or, is the damper permitted to be eliminated regardless if the tenant partition wall terminates at the underside of an unrated ceiling or if the tenant partition terminates at the underside of the roof or floor/ceiling assembly above (assuming that the wall is not required to be fire resistance rated for other reasons by the Code)?

Thank you so much for your help on this, as always it is much appreciated.

Erin Crowley  
Senior Project Consultant

**CODE CONSULTANTS, INC.**  
**St. Louis • New York • Los Angeles**

2043 Woodland Parkway, Suite 300, St. Louis, MO 63146-4235  
phone: 314.991.2633 [codeconsultants.com](http://codeconsultants.com)

**CCI Video - Services & Benefits** (2.5 min)



**International Code Council**  
Central Regional Office  
4051 Flossmoor Road  
Country Club Hills, IL 60478  
tel: 888.icc.safe (422.7233)  
fax: 708.799.4981  
www.iccsafe.org

August 13, 2015

Ms. Erin Crowley  
Code Consultants, Inc.  
2043 Woodland Parkway  
Suite 300  
St. Louis, MO 63146

**RE: Sections 709.4 and 716.5.4 of the 2009 International Building Code**

Dear Ms. Crowley:

This letter is in response to your e-mail correspondence regarding tenant fire partitions in a covered mall building.

As indicated in Section 402.7.2, tenant spaces in a covered mall are to be separated from each other by 1-hour fire partitions which comply with Section 709. The intent of the fire partitions was to mainly limit the amount of smoke spread between tenants. Exception #4 of Section 709.4, with regards to continuity, acknowledged that extending the tenant separations to the floor or roof deck above is not always practical or possible due to the operation of the heating, ventilating and air-conditioning (HVAC) system.

With that being said, Exception #2 of Section 716.5.4 is intended to coordinate with Exception #4 of Section 709.4 to address standard construction designs for covered mall buildings with respect to openness of ceiling spaces. As noted earlier, tenant separation walls in covered mall buildings are required to be rated but are allowed to terminate at essentially unrated ceilings and unrated storefronts. As such, a true separation with respect to fire-resistance rated continuity is not required. Exception #2 of Section 716.5.4 recognizes this paradox by not requiring a fire damper for duct and air transfer openings in such fire partitions.

Exception #2 of Section 716.5.4 goes on to stipulate that the exception is applicable to such tenant partitions which are not required by provisions elsewhere in the code to extend to the underside of the floor or roof deck above. This does not mean, in my opinion, that if the tenant partitions are extended to the floor or roof deck above "voluntarily" that a fire damper would therefore be required for all duct and air transfer openings. The intent is to still require fire dampers in tenant separation walls which were also "required" for whatever reason (mixed uses, shaft wall, horizontal exit, etc.) to be extended to the floor or roof deck above under the assumption that a higher degree of continuity was required to maintain the desired fire-resistance.



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August 13, 2015

Page 2

Code opinions issued by ICC staff are based on ICC published codes and do not include local, state or federal codes, policies or amendments. This opinion is based on the information which you have provided. We have made no independent effort to verify the accuracy of this information nor have we conducted a review beyond the scope of your question. This opinion does not imply approval of an equivalency, specific product, specific design or specific installation and cannot be published in any form implying such approval by the International Code Council. As this opinion is only advisory, the final decision is the responsibility of the designated authority charged with the administration and enforcement of this code.

Sincerely,

A handwritten signature in blue ink that reads "Christopher R. Reeves". The signature is fluid and cursive.

Christopher R. Reeves, P.E.  
Manager, Plan Review Services

CRR/rt





# Appendix D

NEW APPROVED DRAFT

# Code Consultants Incorporated

BUILDING DEPT.

RECEIVED  
MAR 14 1988

TO: Bill Baldaccini  
Denver Building Department

DATE: 03/11/88

CITY & COUNTY OF DENVER

CC: See Below

FROM: Greg Silliman  
*bul*

PROJECT: CHERRY CREEK MALL  
Job #1435-0

As a follow-up to our meeting of January 19, 1988, the enclosed information is being provided for your review as you have requested. This information will concern the previously discussed unresolved issues which were in need of additional research or documentation.

### A. PARKING DECK ISSUES

- 1. Interior stair (stair WD3) and its discharge into the first level of the west parking deck.

*Still being reviewed*

This issue is still being discussed and evaluated with the design team and will be resubmitted to the City of Denver at a later date.

- 2. Enclosure of elevator shaft and door construction containing wired glass panels between the mall entry foyer and the parking deck.

APPROVED 5/14/88  
*Pat J. Bemer*  
BUILDING INSPECTION DIVISION  
DEPARTMENT OF PUBLIC WORKS  
CITY & COUNTY OF DENVER

As previously discussed and approved by the City of Denver, the foyer side of the elevator shaft will contain wired glass panels and doors that are additionally protected with an automatic sprinkler water curtain spaced six feet on center. However, it is also being proposed to utilize 1/4-inch wired glass window slots and wired glass doors on the parking garage side of this elevator shaft (see detail CR38H-8). The rationale for this concept would be consistent with the previously approved concept of using wired glass panels for the required exit stairs of the parking garage.

Additionally, this elevator hoistway is actually situated within a floor opening being used for the ramp and stair access between the mall and parking deck as illustrated by the enclosed model Photo #9. It would not appear to provide a useful function if the 2-hr. rated elevator hoistway were located with a floor opening.

MAY 16 1988

CCI  
Bill Baldaccini  
Denver Building Department  
March 11, 1988  
Page 2

3. Beam penetration of the 4-hour separation wall at the foyer between the mall and the parking deck.

This issue will be code complying in that the beams will not penetrate the 4-hour separation wall, and will be indicated on the permit set of drawings.

✓ B. COVERED MALL BUILDING ISSUES

1. Glass elevator cab and doors within the mall.

*approved  
2/1/88*  
As requested, we have enclosed detail CC293 A, B and C which shows the construction of the glass elevators. These details were taken from the plans of another project and are not meant to be part of the plans for the Cherry Creek mall project. However, the actual construction and configuration of the elevator would be very similar.

2. Locked elevator equipment room doors, electrical and storage room doors opening into exit passageways.

*approved  
2/1/88*  
Although this concept was tentatively approved by the City of Denver, it was requested that details of this condition be provided for your review. The attached plan CR4, as well as details A3.16 and A3.17 show locations of elevator equipment rooms, electrical closets and storage rooms which are accessible from the exit passageway in the vicinity of the exit stairs. It should again be emphasized that these spaces are not open to the public and will be provided with fire-rated doors that are normally closed and locked.

These items summarize the discussions at the January 19, 1988 meeting concerning the above-referenced project. If you have any questions or comments, please feel free to contact us at your convenience.

py

Enclosures

c Chief Paul Spurgeon, Denver Fire Department  
Mike Moukalian, The Taubman Company  
Bill Hiotaky, The Taubman Company  
John Hinkley, Hobbs and Black  
Tom Brown, Brown/McDaniel, Inc.



# Appendix E

Admin mod number (staff only): \_\_\_\_\_

Please fill out the form below and attach as the cover sheet to your admin mod request.

Project address: 3000 E 1ST AVE, DENVER, CO 80206

Log number: 2019-ADMINMOD-0000043       This project has not been logged in yet.

Plan reviewer name (if known): \_\_\_\_\_

Fire Prevention Bureau (FPB) reviewer name (if known): Antonio Caro

Applicant name: Mike Mueller      Phone: 720-314-2290

Applicant email: MMueller@taubman.com

**Building Owner Information and Signature\***

Nicholas LeMasters      General Manager for Taubman Cherry Creek Shopping Center, LLC      NLeMasters@taubman.com

Name	Job title (if signing on behalf of a legal entity)	Email
<u>LeMasters, Nick</u>	<u>Digitally signed by LeMasters, Nick Date: 2019.07.30 13:47:41 -06'00'</u>	<u>July 30, 2019</u>
Signature		Date

**Tenant Information and Signature\***

N/A

Name	Job title (if signing on behalf of a legal entity)	Email
Signature		Date

**Registered Design Professional\***

JAKE HEMKE      JAKEH@CODECONSULTANTS.COM      314.991.2633

Individual name	Email	Phone
<u>CODE CONSULTANTS INC.</u>		
Firm name		

\*The admin mod request must be signed by the following parties:

- The building owner or an individual who is authorized to enter into legal agreements on behalf of the legal owner if the owner is an entity (a corporation, LLC, etc.)
- The tenant if a tenant will occupy the space in question or an individual authorized to enter into legal agreements on behalf of the tenant if the tenant is an entity (a corporation, LLC, etc.)
- The registered design professional of record who accepts professional responsibility for the content of the admin mod request. Please see electronic signature instructions on page 1.

## OVERVIEW

The Cherry Creek Shopping Center is a two-story building containing over 160 retail tenants and is anchored by Macy's, Neiman Marcus, Nordstrom, and Restoration Hardware.

The existing fire alarm system serving the Cherry Creek Shopping Center is a Honeywell XLS1000 series addressable fire alarm control panel and performs the fire detection and life safety functions for the Cherry Creek Shopping Center. The main fire alarm control panel, smoke control functions, firefighters telephone headset, printer, and fire alarm graphic user interface (CPU) are in the Fire Command Center located on the first level near Truck Dock B. The fire alarm system transmits alarm, supervisory, and trouble signals through a Digital Alarm Communicating Transmitter (DACT) to a central station alarm monitoring company. In turn the alarm monitoring station dispatches the Denver Fire Department upon a fire alarm signal from Cherry Creek Shopping Center.

In accordance with Section 402.7.4 of the 2016 Denver Building and Fire Code (DBC), an emergency voice/alarm communication system in accordance with Section 907.5.2.2 is required to be provided in covered mall buildings having a total floor area greater than 50,000 square feet. However, this requirement is for new construction. To upgrade the existing fire alarm and occupant notification system to a level closer to that required for a new covered mall building, the modifications described in this letter are proposed.

## EXISTING INITIATION

The current fire alarm system is comprised of System Sensor field devices (modules / detectors) of varying age located throughout the building. Fire detection and alarm initiation in the shopping center is accomplished through fire sprinkler system monitoring, spot type smoke detection, duct type smoke detection, and beam detection. Addressable smoke detectors are installed in the front and rear (if required) of tenant spaces, isolated back of house storage areas, elevator lobbies and machine rooms, and electrical rooms. Addressable heat detectors are installed in elevator machine rooms. Addressable duct type smoke detectors are installed in HVAC units as required. Addressable beam detectors are installed in the mall concourse. The fire sprinkler waterflow and tamper switches are electronically monitored.

## EXISTING OCCUPANT NOTIFICATION

Occupant notification varies in different areas of the building. The mall common areas (concourse) are provided with an emergency voice evacuation message through the ceiling mounted background music speakers and no visual occupant notification. The mall back of house corridors are provided with an emergency voice evacuation message through wall mounted background music speakers and no visual occupant notification. The mall office areas appear to have background music speakers and visual notification appliances in select areas.

Except for Zara and Kona Grill, tenant spaces throughout the building contain no occupant notification. Each tenant is provided a dedicated visual notification appliance located on an adjacent neutral column, within the mall common area. Each dedicated tenant visual notification appliance annunciates solely on an alarm within that specific tenant space. Each back of house storage space is provided with a dedicated visual notification appliance located in the back of house corridor above the door to the space. Each dedicated back of house storage visual notification appliance annunciates solely on an alarm within that specific storage space. Each back of house corridor is provided a dedicated visual appliance located in the mall common area above the door to the back of house corridor. Each dedicated back of house corridor visual notification appliance annunciates solely on an alarm within that specific back of house corridor, including any storage space that opens into that back of house corridor. While the existing fire alarm system does provide multiple visual notification appliances throughout the mall common areas, these notification appliances are not utilized for general occupant notification. These appliances are designed to alert responders to an alarm within the associated tenant space, back of house corridor, or storage area in which the alarm was initiated.

## **EXISTING SYSTEM DEFICIENCIES**

Per discussions with the Denver Fire Department on October 17, 2018, the lack of occupant notification within tenant spaces has become an area of concern and Denver Fire Department is now requiring the mall to address this deficiency as new tenants come into the building. Per the discussion, each new tenant space with a permit application submitted after date of commissioning of upgraded fire alarm system, would require a code compliant occupant notification system installed throughout. Post-commissioning, with each new tenant build out tenant would provide speaker and visual notification appliances, for occupant notification, throughout their tenant space as required by code.

The current Honeywell XLS1000 fire alarm control panel became obsolete in late 2017. While the manufacturer may provide support for the system for some period after discontinuing the model, parts and pieces will eventually become hard to find. Furthermore, per the manufacturer, the existing Honeywell XLS1000 fire alarm system is unable to be upgraded to include the integrated voice alarm notification capabilities that would be necessary to meet the new tenant occupant notification requirement.

## **PROPOSED COURSE OF ACTION FOR FIRE ALARM SYSTEM REPLACEMENT:**

- The existing Honeywell XLS1000 fire alarm control panel, located in the Fire Alarm Command Center, will be replaced with a new Honeywell XLS3000 fire alarm control panel with integrated digital emergency voice alarm communications message generation, hard-wired voice control, and firefighters' telephone.
- A new, secondary Honeywell XLS3000 fire alarm control panel (node) will be provided and installed in a select location in the other half of the mall. The new fire alarm control panels will be networked together in a peer to peer fashion.
- The new fire alarm system will be capable of providing levels of intelligibility as required by NFPA 72 within the new tenant spaces. The designing engineer shall provide design-based criteria for Taubman to coordinate with future tenants.
- The designing engineer shall review the existing and new message content with the owner and AHJ prior to fire alarm system commissioning.
- The existing graphics workstation will be replaced with a new graphic workstation which complies with DFD requirements. The designing engineer shall ensure a graphic workstation shall be provided in compliance with UL 864 and all local amendments during the design phase of the project.
- The existing Firefighters Smoke Control Panel, located in the Fire Alarm Command Center, will be reused and connected to the new Honeywell XLS3000 fire alarm system.
- All existing initiating devices within the building will remain as currently configured, including those within all existing tenant spaces. The designing engineer shall coordinate duct smoke detector signals with the owner and AHJ during the design phase of the project.
- The existing background music system, installed throughout the mall common areas and back of house corridors, will remain as currently configured. The current configuration has a 'pre-recorded' alarm message that takes priority over all background music and paging systems located within all mall common and back of house areas
- An alarm message in new tenant spaces shall take priority over all background music and paging systems located within the tenant space. The designing engineer shall provide design-based

criteria for tenant background music shunting and paging system override for Taubman to coordinate with future tenants.

- New visual (strobe) occupant notification appliances will be provided throughout all mall common and back of house areas. The visual notification appliances will activate throughout all mall common areas and all back of house corridors, on any alarm event. All visual notification appliances will be synchronized throughout the building, including synchronization between mall common areas and tenant spaces, except for the dedicated visual notification appliances located on an adjacent neutral column to each tenant, in the back of house corridor above the door to the storage space, or above the door to the back of house corridors; these dedicated visual notification appliances will not be synchronized with the any other visual notification appliances.
- The existing firefighters' telephone system will remain as currently configured.
- New signaling line (addressable data loop) and speaker notification appliance circuit cabling will be installed. The new cabling will be routed within the back of house corridors and will serve as the backbone for the interface connections to new tenants.
- Audio amplifiers will be provided in sufficient quantities to power speaker circuits for all tenant spaces within the building. Designing engineer shall ensure redundant amplifiers are provided in quantities as required by the owner and AHJ during the design phase of the project.
- Each tenant space, based on current and possible future lease lines, will be provided a tenant interface connection box (TIB). The TIB will consist of an electrical junction box with a terminal strip. The new signaling line and speaker notification circuits will be routed and connected to the terminal strips within each TIB, for future tenant connection. UL listed fire alarm modules will be provided as required for connection to the tenant portion of the fire alarm system which will be an extension of the base building fire alarm system. The designing engineer to provide detailed drawings and cutsheets for TIB locations during the design phase of the project.
- After system upgrade completion and commissioning, each new tenant will be required to provide a code compliant fire alarm system within their tenant space. The tenant provided fire alarm system will utilize the circuits provided in the TIB and shall be an extension of the base building fire alarm system. New tenant spaces would be equipped as follows:
  - Spot type smoke detection at the front and rear entrances (as applicable) of the tenant space for smoke control activation.
  - Duct smoke detection and HVAC control as required.
  - A dedicated auxiliary power supply for code compliant visual notification appliances located throughout the tenant space.
  - Speaker notification appliances for code compliant audible notification throughout the space.
  - Smoke detection above the auxiliary power supply.
  - Cabling within the tenant space tied back to the TIB.
  - A dedicated visual notification appliance located on an adjacent neutral column within the mall common area.
- Existing tenant spaces would not be required to meet the new standard and would remain as follows:
  - Spot type smoke detection at the front and rear entrances (as applicable) of the tenant space for smoke control activation.
  - A dedicated visual notification appliance located on an adjacent neutral column within the mall common area.



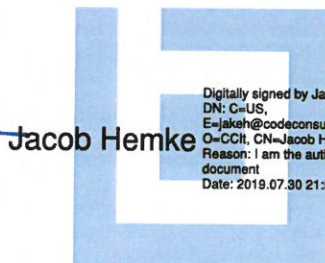


- Upon transition to the new fire alarm system, the fire alarm system will operate as follows:
  - The background music system will annunciate the existing voice message throughout all mall common areas and all back of house corridors, on any alarm event, as currently configured.
  - The visual notification appliances will activate throughout all mall common areas and all back of house corridors, on any alarm event.
  - The smoke control system will continue to operate as currently configured.
  - A waterflow switch for a mall common area or back of house corridor, will continue to operate as currently configured.
  - A waterflow switch for a tenant zone, will continue to operate as currently configured. All visual and speaker notification appliances installed within new tenant spaces, will immediately activate throughout the sprinkler zone (tenant zone) of alarm origin. This does not include the dedicated visual notification appliances located on the neutral columns in the mall common areas.
  - Upon smoke detection within an existing tenant space (not connected to the TIB and not containing occupant notification), will continue to operate as currently configured:
    - Background Music System would annunciate the voice message throughout the mall common areas and all back of house corridors.
    - The visual notification appliances will activate throughout all mall common areas and all back of house corridors.
    - Dedicated visual notification appliance would activate for the tenant of alarm origin only. This visual notification appliance would not be synchronized with the common area visual notification appliances.
  - Upon smoke detection within a new tenant space (connected to the TIB and containing occupant notification throughout), the following would occur:
    - The dedicated visual notification appliance located on an adjacent neutral column within the mall common area, would immediately activate for the tenant of alarm origin only. This visual notification appliance would not be synchronized with the common area visual notification appliances.
    - All tenant visual and speaker notification appliances within the fire sprinkler zone (tenant zone) of alarm origin would immediately activate.
    - Background music system would annunciate the voice message throughout the mall common areas and all back of house corridors.
    - The visual notification appliances will activate throughout all mall common areas and all back of house corridors.

Please consider the above upgrades to the existing Cherry Creek Shopping Center fire alarm system and occupant notification layout to bring the system to a level closer to that required for a new covered mall building.

Sincerely,

Jacob P. Hemke, PE  
Principal/CCI



Digitally signed by Jacob Hemke  
DN: C=US,  
E=jakeh@codeconsultants.com,  
O=CCI, CN=Jacob Hemke  
Reason: I am the author of this document  
Date: 2019.07.30 21:59:33-05'00'

LeMasters,  
Nick

Nicholas LeMasters  
General Manager/Taubman

Digitally signed by  
LeMasters, Nick  
Date: 2019.07.30  
13:48:22 -06'00'

CRO:meb

V:\2018\1811\181159\07\Reports\181159.07.000 CCK Mall FA Admin Mod Request Rev 1 2019-07-26.docx

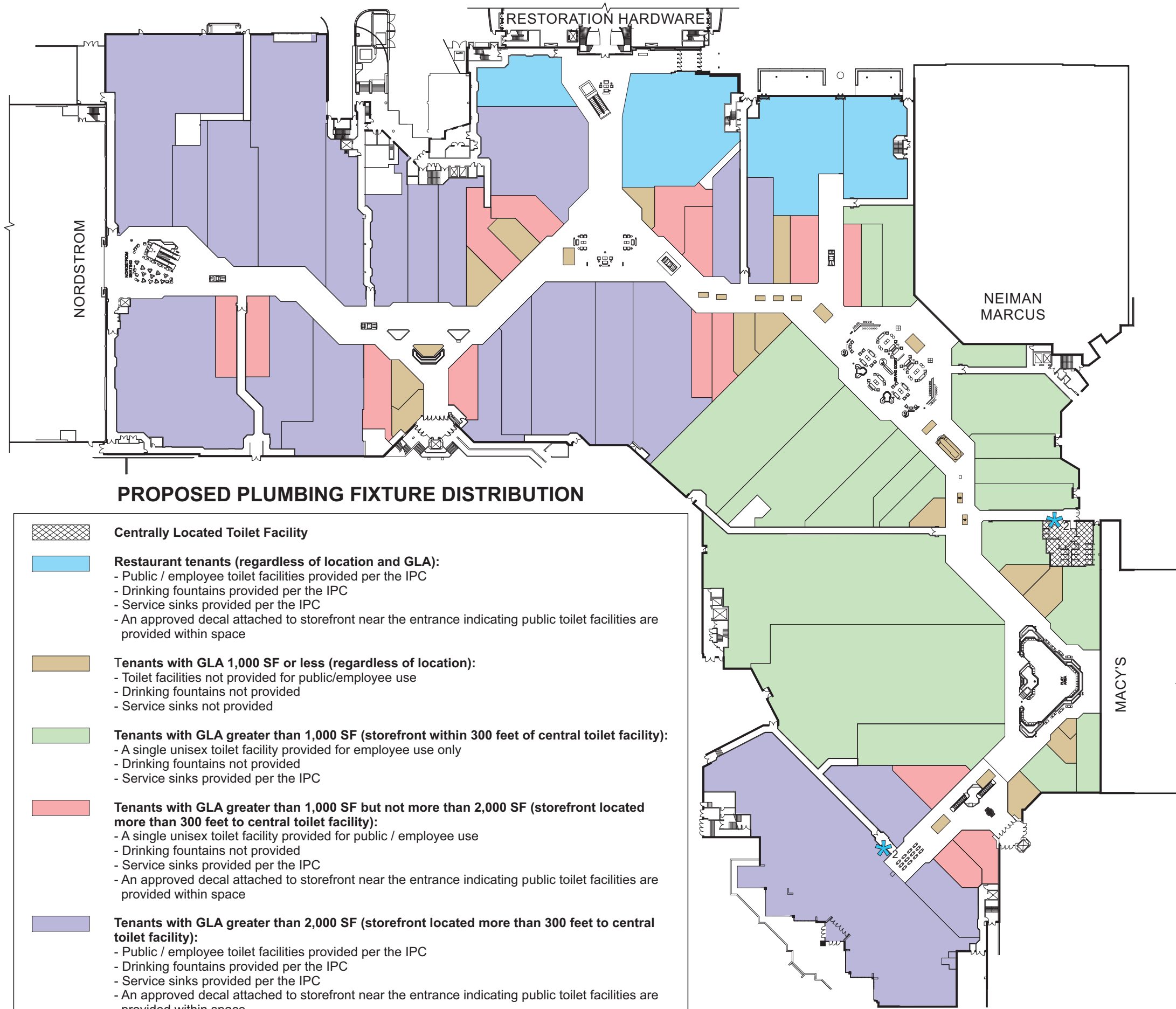
**Terms & Conditions of Approval:**

1. Existing strobes alerting responding fire crews of activated tenant space may need replacement with appliance that does not conflict with new strobes.
2. Further research will conclude if existing duct smoke detectors can report as supervisory or if such are required alarm signal for smoke control activation.



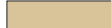







# Appendix F



**PROPOSED PLUMBING FIXTURE DISTRIBUTION**

-  **Centrally Located Toilet Facility**
-  **Restaurant tenants (regardless of location and GLA):**
  - Public / employee toilet facilities provided per the IPC
  - Drinking fountains provided per the IPC
  - Service sinks provided per the IPC
  - An approved decal attached to storefront near the entrance indicating public toilet facilities are provided within space
-  **Tenants with GLA 1,000 SF or less (regardless of location):**
  - Toilet facilities not provided for public/employee use
  - Drinking fountains not provided
  - Service sinks not provided
-  **Tenants with GLA greater than 1,000 SF (storefront within 300 feet of central toilet facility):**
  - A single unisex toilet facility provided for employee use only
  - Drinking fountains not provided
  - Service sinks provided per the IPC
-  **Tenants with GLA greater than 1,000 SF but not more than 2,000 SF (storefront located more than 300 feet to central toilet facility):**
  - A single unisex toilet facility provided for public / employee use
  - Drinking fountains not provided
  - Service sinks provided per the IPC
  - An approved decal attached to storefront near the entrance indicating public toilet facilities are provided within space
-  **Tenants with GLA greater than 2,000 SF (storefront located more than 300 feet to central toilet facility):**
  - Public / employee toilet facilities provided per the IPC
  - Drinking fountains provided per the IPC
  - Service sinks provided per the IPC
  - An approved decal attached to storefront near the entrance indicating public toilet facilities are provided within space

 **Drinking Fountain Location and Quantity**



**LOWER LEVEL  
PROPOSED PLUMBING FIXTURES**



2043 WOODLAND PARKWAY, SUITE 300  
ST. LOUIS, MISSOURI 63146-4235  
314-991-2633  
www.cciengineers.com

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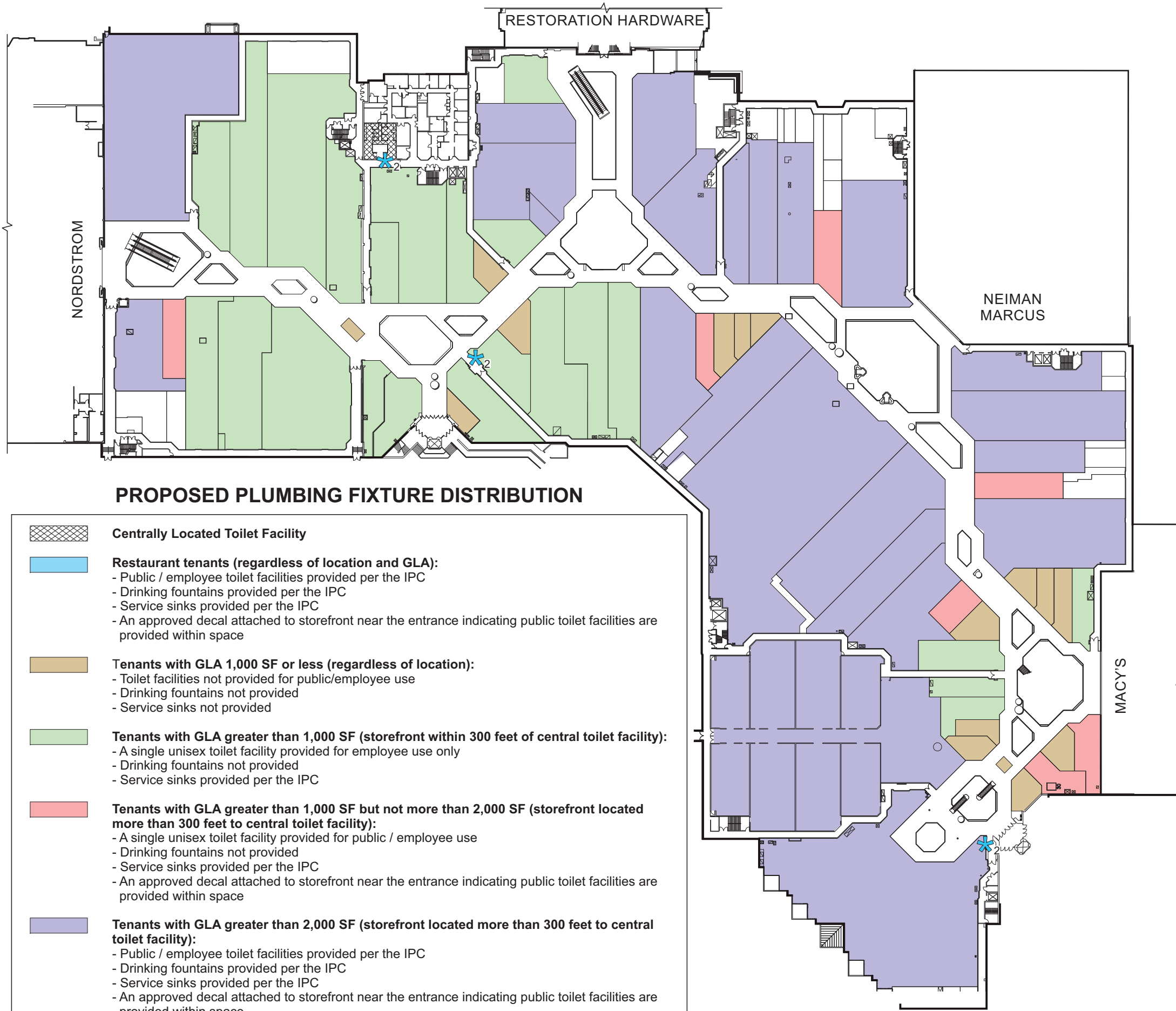
**CHERRY CREEK SHOPPING CENTER**  
DENVER, COLORADO

DATE: 4-6-21








APPENDIX

**F1**

190766.00.000



**PROPOSED PLUMBING FIXTURE DISTRIBUTION**

-  **Centrally Located Toilet Facility**
-  **Restaurant tenants (regardless of location and GLA):**
  - Public / employee toilet facilities provided per the IPC
  - Drinking fountains provided per the IPC
  - Service sinks provided per the IPC
  - An approved decal attached to storefront near the entrance indicating public toilet facilities are provided within space
-  **Tenants with GLA 1,000 SF or less (regardless of location):**
  - Toilet facilities not provided for public/employee use
  - Drinking fountains not provided
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  - A single unisex toilet facility provided for employee use only
  - Drinking fountains not provided
  - Service sinks provided per the IPC
-  **Tenants with GLA greater than 1,000 SF but not more than 2,000 SF (storefront located more than 300 feet to central toilet facility):**
  - A single unisex toilet facility provided for public / employee use
  - Drinking fountains not provided
  - Service sinks provided per the IPC
  - An approved decal attached to storefront near the entrance indicating public toilet facilities are provided within space
-  **Tenants with GLA greater than 2,000 SF (storefront located more than 300 feet to central toilet facility):**
  - Public / employee toilet facilities provided per the IPC
  - Drinking fountains provided per the IPC
  - Service sinks provided per the IPC
  - An approved decal attached to storefront near the entrance indicating public toilet facilities are provided within space
-  **Drinking Fountain Location and Quantity**



**UPPER LEVEL  
PROPOSED PLUMBING FIXTURES**



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19076600\_03.cdr

**CHERRY CREEK SHOPPING CENTER**  
DENVER, COLORADO

DATE: 4-6-21

APPENDIX

**F2**

190766.00.000

# Public Plumbing Fixture Calculations

## Gross Floor / Lease Area & Occupant Load

Note the GLA listed includes all leasable space including all food tenants and the AMC Theater; exclusions include Nordstrom, Restoration Hardware, Neiman Marcus, and Macy's. Per 2018 IBC Section 402.8.2.

Level 1            Retail            292,633 SF @ 50 SF/Occupant\* = 5,853 Occupants  
                       Mech/Storage 6,004 SF @ 300 SF/Occupant =        21 Occupants

Level 2            Retail            300,322 SF @ 50 SF/Occupant\* = 6,007 Occupants

**Total = 11,881 Occupants**

## Occupant Load Factor Determination (\*) Per 2018 IBC Section 402.8.2

OLF = GLA \* .00007 + 25 (Not to Exceed 50 SF / Occupant)

OLF = (592,955 SF) \* .00007 + 25

OLF = 50 SF / Occupant Retail

## Plumbing Fixture Requirements

Total Occupant Calculations    *Per 2018 IBC 2902.1.1 (IPC 403.1)*

11,881 / 2 = 5,941 Women & 5,941 Men

**[P] TABLE 2902.1**

**MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES (See Sections 2902.1.1 and 2902.2)**

No.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 419.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
			Male	Female	Male	Female			
6	Mercantile	Retail stores, service stations, shops, salesrooms, markets, and shopping centers	1 per 500		1 per 750		----	1 per 1,000	1 service sink <sup>e</sup>

<sup>e</sup>. For business and mercantile classifications with an occupant load of 15 or fewer, a service sink shall not be required.

*2018 IPC 424.2 Urinals shall not be substituted for more than 50% of the required water closets.*

## Required Fixtures (Public) per IBC 2902.1 (IPC 403.1)

	Water Closets / Urinals 1 per 500	Lavatories 1 per 750	Drinking Fountains 1 per 1,000
Men (5,941)	12	8	6
Women (5,941)	12	8	6
<b>Total</b>	<b>24</b>	<b>16</b>	<b>12</b>

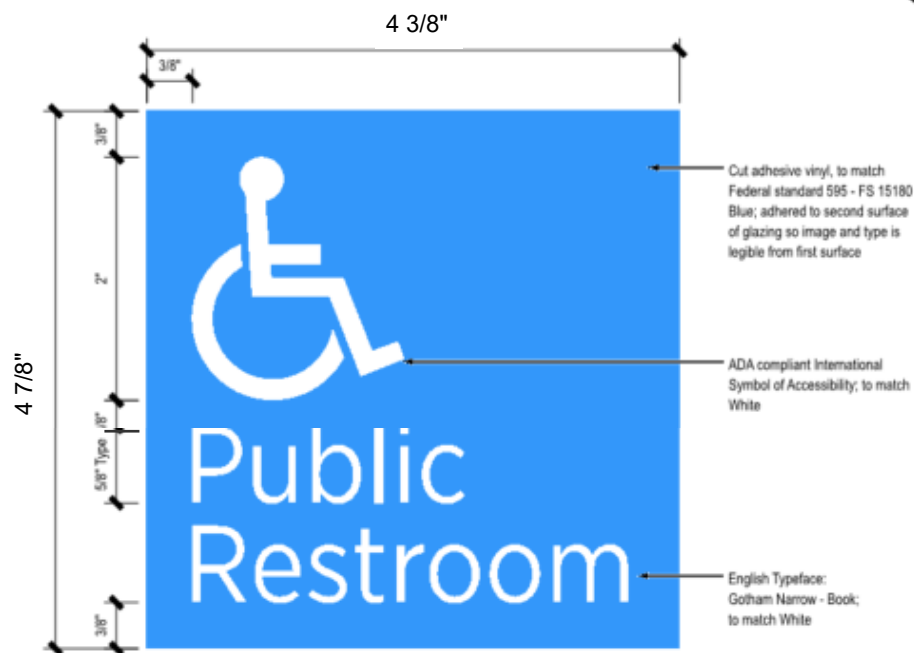
**Provided Fixtures (Public) – Existing** per Field Survey Count in 2018

	<b>Water Closets</b>	<b>Urinals</b>	<b>Lavatories</b>	<b>Drinking Fountains</b>
Men	5	5	7	
Women	11	0	11	
Family	4	0	3	
<b>Total</b>	<b>25</b>		<b>20</b>	<b>10</b>

*Note that mall employee fixtures are provided separate and in addition to the counts noted above. 2 toilets, 4 lavatories/sinks and 1 drinking fountain. These fixtures are not directly accessible to the public and therefore have not been included in the above.*

# CHERRY CREEK SHOPPING CENTER - 03/11/2020

CONCEPT SKETCH OF DECAL TO BE PROVIDED ON STOREFRONTS OF ALL TENANTS THAT ARE REQUIRED TO PROVIDE PUBLIC TOILET ROOMS



1 Public Restroom Decal

NOTE:  
TENANTS WHICH PROVIDE PUBLIC FACILITIES WITHIN THEIR SPACE WILL INCLUDE THE ABOVE DECAL IN THEIR STOREFRONT NEAR THE ENTRANCE.



# Appendix G



# CHERRY CREEK SHOPPING CENTER

3000 EAST FIRST AVENUE • MANAGEMENT OFFICE • DENVER, CO 80206 • OFFICE: 303.388.2522 • FAX: 303.388.8203 • SHOPCHERRYCREEK.COM

## Cherry Creek Shopping Center Modernization and Maintenance Projects February 5, 2021

1. The shopping center will hire a Denver Fire Department approved contractor to create a signal strength coverage grid to determine if an Emergency Responder Radio Enhancement System is required and will upgrade existing or install new equipment is needed to meet code.
2. The shopping center is undertaking a project to replace the fire alarm system that serves the mall building, its two expansions and the tenant spaces within. System design will be per approved Denver Fire Department Administrative Modification # 2019-AM-0000043 and is expected to be completed within the 2021 calendar year. As of this writing the shopping center is engaged with CCI and Honeywell. System design drawings will be submitted for DFD review and permitting. The system will be installed and inspected per code and the Administrative Modification. Tenants building out spaces after the new fire alarm system has been fully installed and inspected will be subject to the conditions of the Administrative Modification.
3. Should the shopping center choose to contract for elevator modernizations this work will be done per all applicable codes and as such will require review and approval from the Denver Fire Department the work will be done per all applicable codes. Any elevator modernization will specifically include a flashing firefighter hat light to alert responding crews of impending elevator cab issues.
4. If any future renovation projects include unsprinklered mall electrical rooms, switchgear rooms and elevator machine rooms (with some exceptions as provided by current codes), fire sprinkler coverage will be extended into those specific affected rooms as a part of the renovation work in accordance with the Denver Fire Code (DFCA 903.3.10).
5. Under permit # 2018-FIRE-0004138A, the shopping center has a new outdoor-rated, UL142 double-wall secondary containment 400-gallon pad-mounted diesel tank located on the dock at Service Area A on the south side of the mall building. This tank will supply the mall-owned emergency generator which serves the main mall building and the 2015 mall expansion in addition to a second smaller generator that serves and is owned and maintained by the movie theater tenant. This 400-gallon tank has been sized to support a total run time at full load on both generators for the duration required by code. Actual calculated fuel run-time calculation based on size of tank and usage of each generator at full load is 9.13 hours between tank fills. The new 400 gallon above ground storage tank (AST) replaces an original 560-gallon underground storage tank (UST) installed under the sidewalk adjacent to the same service area in 1990 when the mall was built. The old UST will be rendered inert and abandoned in place due to concerns that its removal could jeopardize adjacent high-power electric lines and the structural integrity of footings for the mall building and the west parking deck. Closure and rendering the UST inert will be done under the guidance of an environmental engineer and per applicable codes and regulations in coordination with both state and local authorities.

# CHERRY CREEK

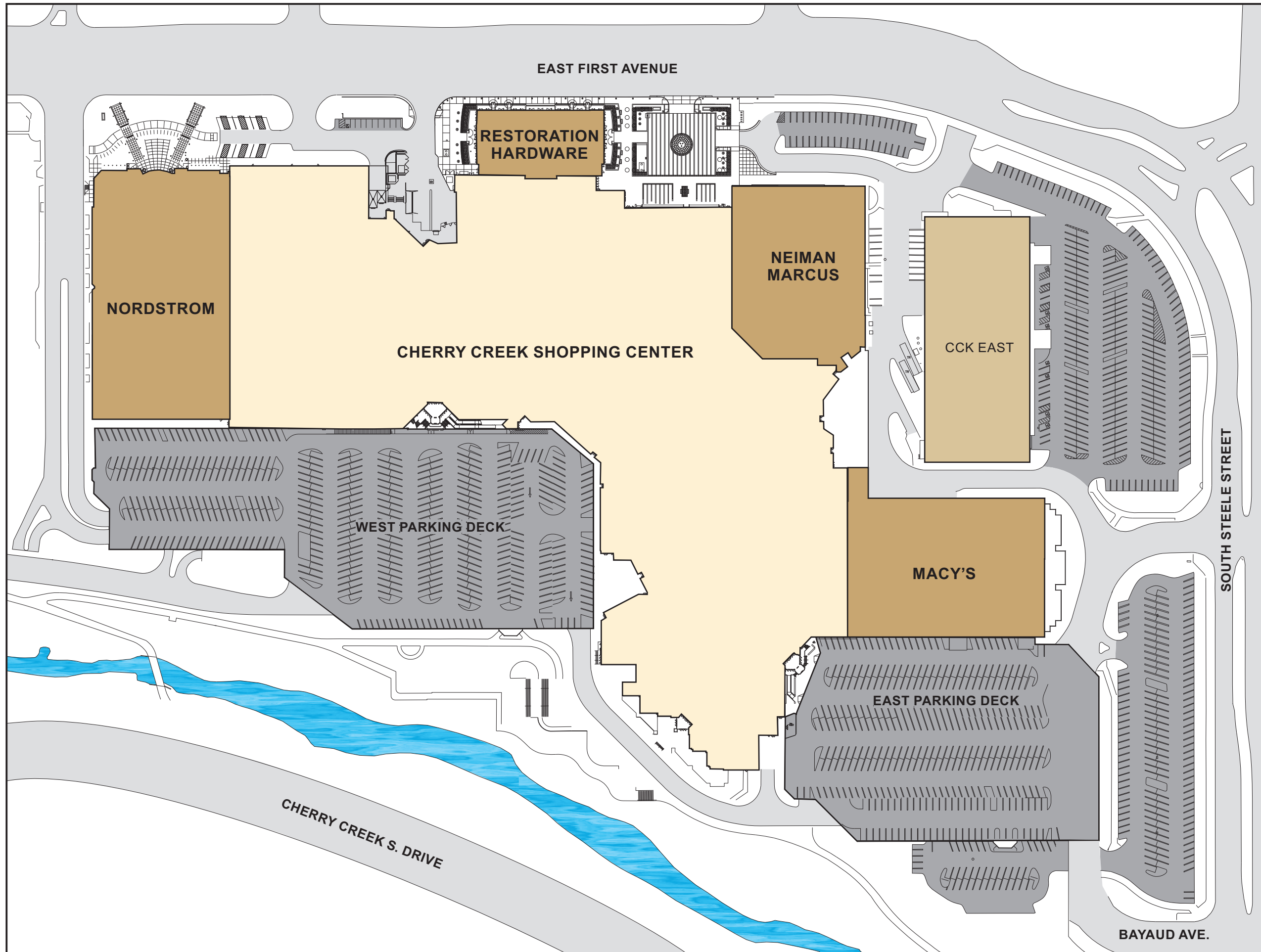
## SHOPPING CENTER

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6. The shopping center will institute a requirement for all tenants with kitchen hoods and Ansul fire protection systems to submit documentation regarding fire code required inspection, testing and maintenance. Shopping center management will maintain documentation submitted for a period of one year plus current.
7. The shopping center will install a Knox Box in the on-site Fire Department Control Center with a key to the barricade doors for barricaded vacant spaces and barricaded tenant construction sites within the mall building.



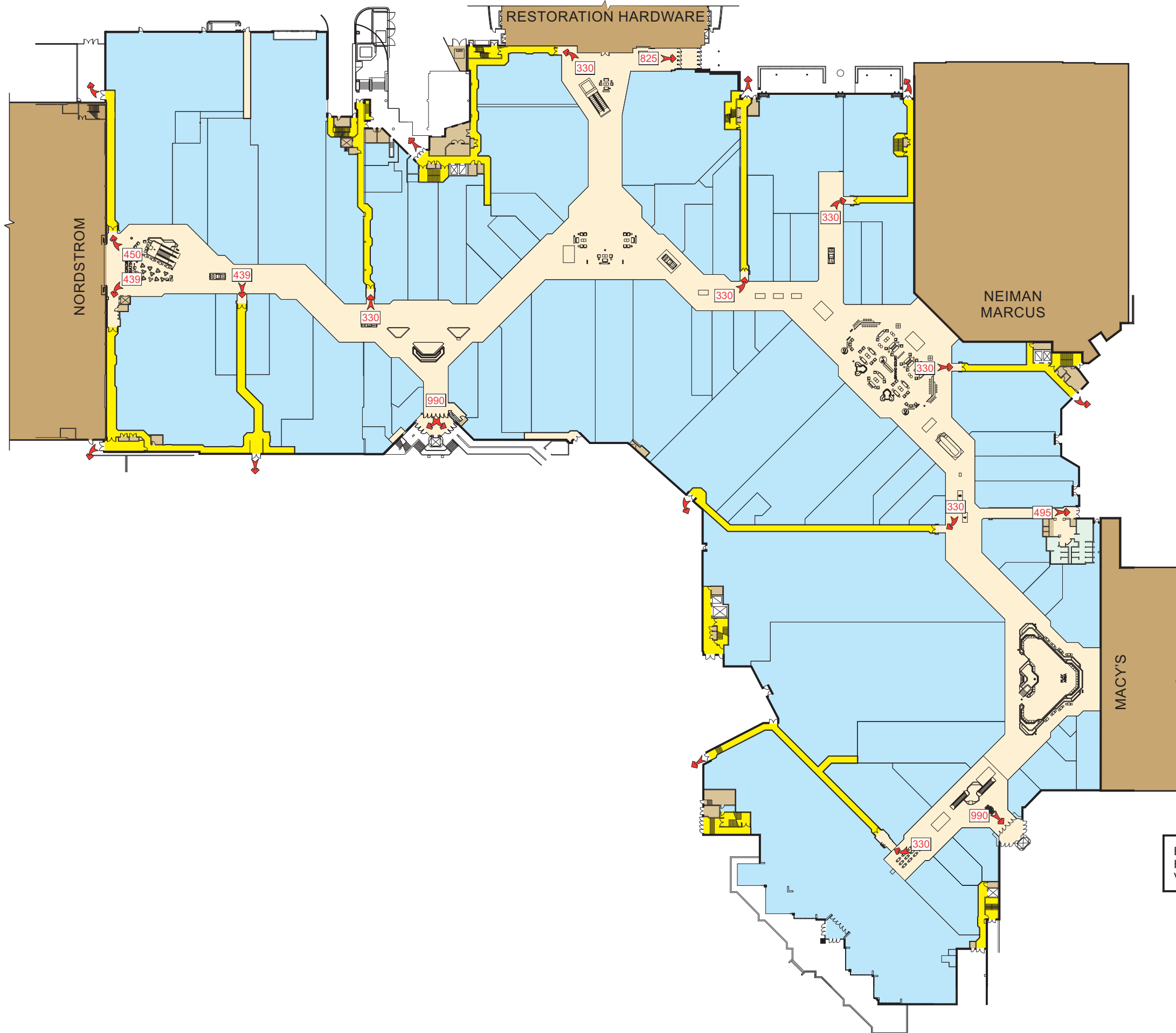
# Graphics



**CHERRY CREEK SHOPPING CENTER**  
 DENVER, COLORADO

DATE: 4-2-21

FIGURE NO.  
**1**  
 190766.00.000



OCCUPANT LOAD FACTOR:  
 $OLF = GLA \times .00007 + 25$   
 $OLF = (592,955 SF) \times .00007 + 25$   
 $OLF = 50 SF / OCCUPANT$

EXIT CAPACITY FACTORS:  
 HORIZONTAL EGRESS COMPONENTS = 0.2 INCHES / OCCUPANT  
 VERTICAL EGRESS COMPONENTS = 0.3 INCHES / OCCUPANT

**LOWER LEVEL - EGRESS SUMMARY**

<b>OCCUPANT LOAD</b>		<b>= 5,874</b>
GLA	= 292,633 / 50	= 5,853
STORAGE	= 6,004 / 300	= 21
<b>TOTAL</b>		<b>= 5,874</b>
<b>EXIT CAPACITY</b>		<b>= 6,938</b>



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 IT SHOULD NOT BE CONSIDERED  
 A DEFINITIVE PLAN FOR THE EXACT  
 LOCATION OF THE PROTECTION  
 FEATURES REPRESENTED.  
 19076600\_02.cdr

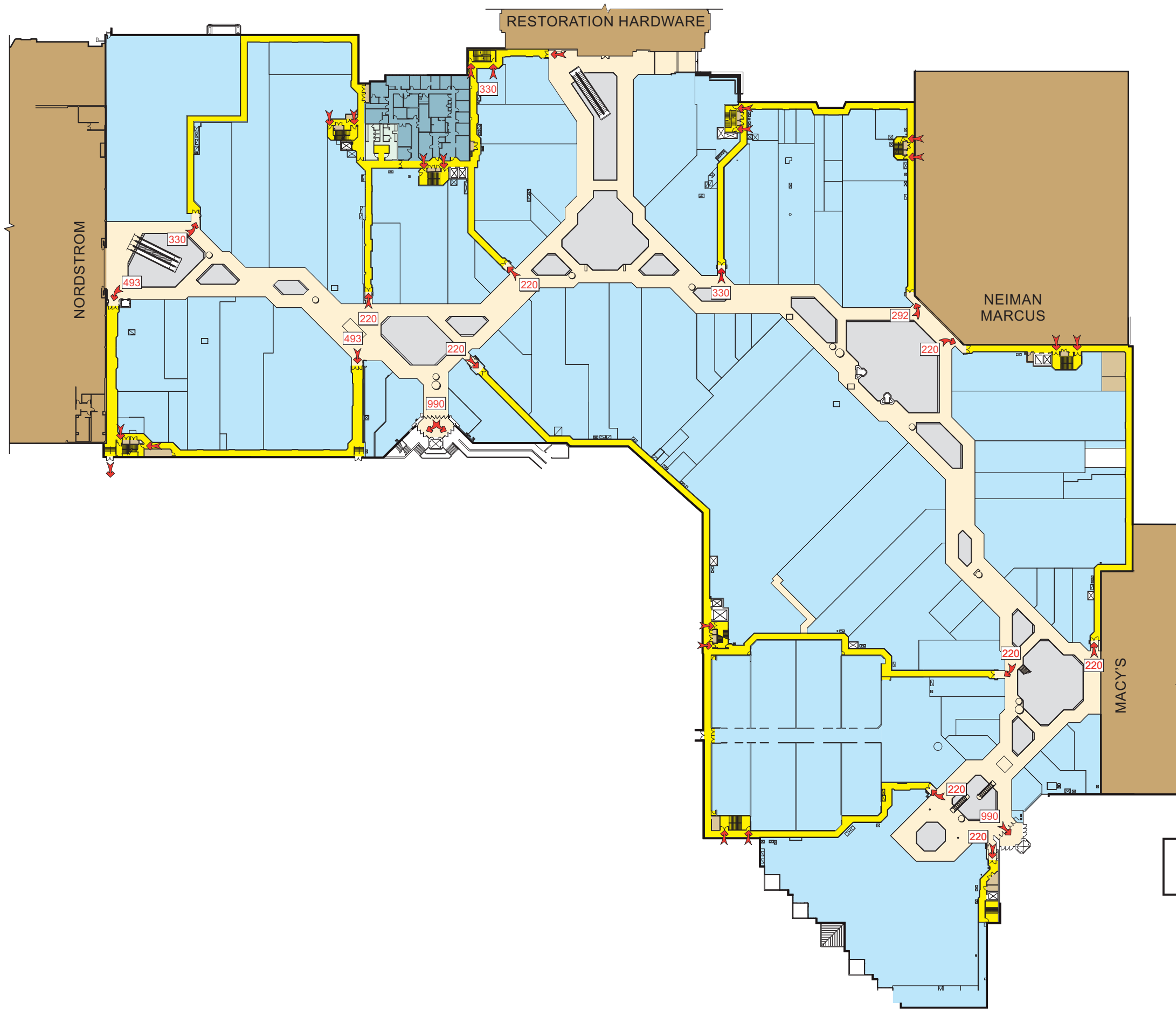
**CHERRY CREEK SHOPPING CENTER**  
 DENVER, COLORADO

DATE: 4-2-21

FIGURE NO.

**2**

190766.00.000



OCCUPANT LOAD FACTOR:  
 OLF = GLA \* .00007 + 25  
 OLF = (592,955 SF) + .00007 + 25  
 OLF = 50 SF / OCCUPANT

EXIT CAPACITY FACTORS:  
 HORIZONTAL EGRESS COMPONENTS = 0.2 INCHES/ OCCUPANT  
 VERTICAL EGRESS COMPONENTS = 0.3 INCHES/ OCCUPANT

UPPER LEVEL - EGRESS SUMMARY

AS ↑	OCCUPANT LOAD	= 6,007
	GLA = 300,322/50 = 6,007	
	<b>EXIT CAPACITY</b>	<b>= 6,008</b>



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 DENVER, COLORADO

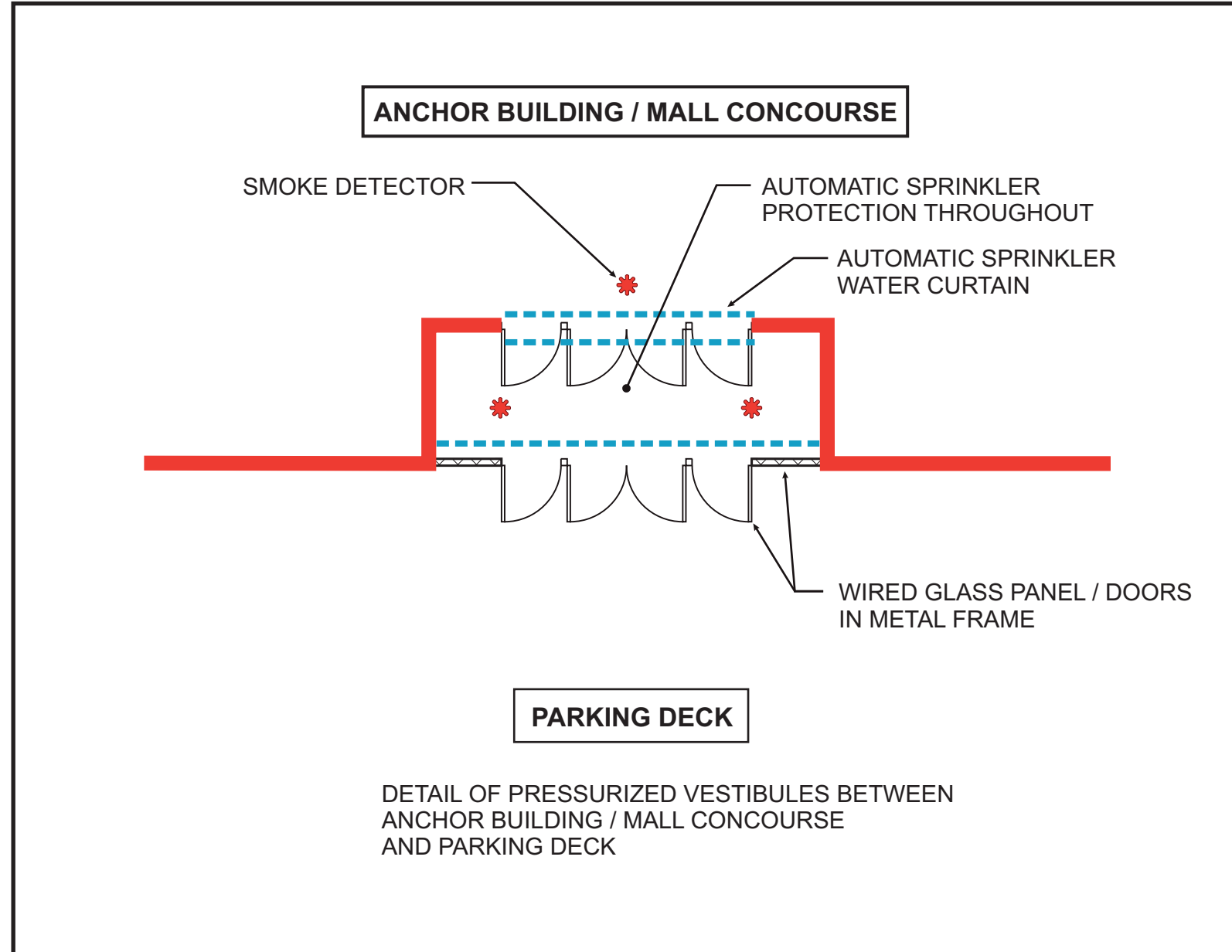
DATE: 4-2-21

FIGURE NO.

**3**

190766.00.000

# ORIGINAL CONSTRUCTION 1990



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**CHERRY CREEK SHOPPING CENTER**  
DENVER, COLORADO

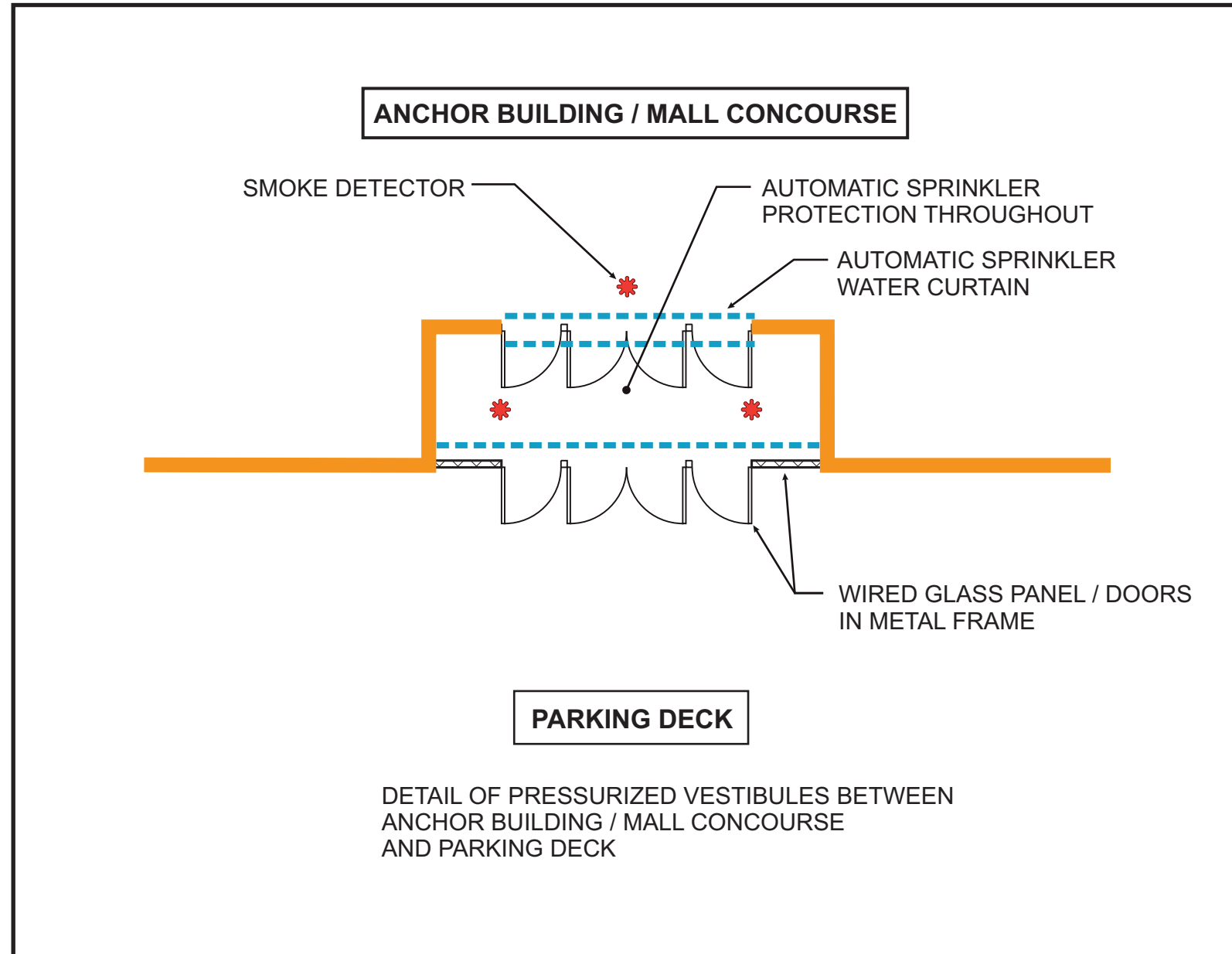
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FIGURE NO.

**4**


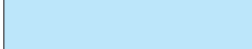



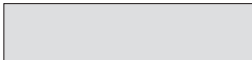

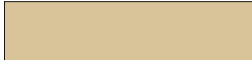








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# SUBSEQUENT CONSTRUCTION (AFTER 1990)





# GRAPHIC KEY

	4-HOUR FIRE BARRIER		INLINE TENANT
	2-HOUR FIRE BARRIER		ANCHOR BUILDING
	WATER CURTAIN		OPEN TO BELOW
	AUTOMATIC SPRINKLER PROTECTION THROUGHOUT		STORAGE / ELECTRICAL / MECHANICAL
	EXIT FLOW		PUBLIC RESTROOM
	EXIT CAPACITY		MALL OFFICE
	EXIT PASSAGEWAY / EXIT STAIR		PARKING/GARAGE
	MALL CONCOURSE / EXIT ACCESS CORRIDOR		ROOF



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