

ORDINANCE

BILL No. 1

ORDINANCE NO. 6

AN ORDINANCE ADOPTING THE SUBTERRANEAN SPACE BUILDING / FIRE CODE

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF DIRECTORS OF SOUTHERN PLATTE FIRE PROTECTION DISTRICT AS FOLLOWS:

These regulations shall apply to subterranean spaces developed by the extraction of subsurface located material from underground spaces. Except for related mine entrances or portals, ventilation shafts and surface utility easements, it is not the purpose of this Ordinance to provide direct regulation of surface uses that are separately regulated by the applicable above ground building and zoning codes. The further purposes of these regulations are:

- A. To ensure that subterranean space uses are appropriate and reasonably safe (restricted storage / use of hazardous materials and substances);
- B. To provide efficient streamlined regulations for the circumstances of mixed subterranean space uses, including the need for planning flexibility with regard to potential future tenant occupancies;
- C. To protect the health, life safety, public welfare and property both for those persons who use the subterranean spaces and of those who use the surface above and adjacent to them;
- D. To provide a reasonable degree of safety for emergency response personnel.

5.12 BUILDING AND FIRE CODES

- A. Building Code: The provisions of this Section are in addition to the Uniform Building Code adopted and amended by the Fire District.
- B. Fire Code: The provisions of this Section are in addition to the Uniform Fire Code as adopted and amended by the Fire District.
- C. Mechanical Code: The provisions of this Section are in addition to the Uniform Mechanical Code as adopted and amended by the Fire District.
- D. Plumbing Code: The provisions of this Section are in addition to the Uniform Plumbing Code as adopted and amended by the Fire District.

5.13 PERMIT AND OCCUPANCY REQUIREMENTS

- A. Application for Permit and/or Certificate: The subterranean space shall be classified as Group US Occupancies. The subterranean space and all interior building shall make application for a building permit and/or certificate of occupancy as required for a surface occupancy. Approval shall be subject to compliance with all applicable sections of the Section. Areas outside tenant space that are accessory to the use of a particular building including such areas as parking, loading docks, trash containers, public ways and streets are determined to be under control of the owner of the subterranean space for the purpose of this Code.
- (1) Subterranean Master Evacuation Plan: A Master Evacuation Plan is required to be submitted to the Fire District for review and approval. The plan shall define public ways, streets and paths intended to provide evacuation routes to the exterior. The plan shall indicate reflectors requires by Part 5.27 of this Section. The Subterranean Master Evacuation Plan shall be updated and resubmitted for approval when public ways, streets and other evacuation routes are altered.
 - (2) Subterranean Master Ventilation Plan: A Master Ventilation Plan is required to be submitted to the Fire District for review and approval. The plan shall describe in Part 5.23 of the Section. The plan shall show the location and size (in cfm) of all exhaust fans, ventilation fans and controls. The Subterranean Master Plan shall be updated and resubmitted for approval when major systems are altered.
- B. Geo-Technical Engineering Studies: Notes that these studies shall only be Required for the subterranean space occupancy. A registered engineer with competence in the field, and selected by the owner, shall prepare a report reviewing the structural integrity of the subterranean space. The owner shall select the engineer with approval from the Fire District, provided that adequate information is submitted concerning:
- (1) The engineer's previous experience with mine stability investigation.
 - (2) The engineer's geological engineering, geo-technical engineering, rock or mining engineering expertise; and
 - (3) Client contact listing of similar projects. Once selected, the engineer shall submit the following information in the form of a geo-technical report to the Fire District.
- C. Surveys:
- (1) Surface Survey: The owner of the subterranean space shall provide a boundary survey of the surface of the proposed subterranean space at a

scale of 1 inch = 100 feet (unless otherwise approved), tied to the existing section corners, with USGS Sea Level Datum contours at two foot intervals.

- (2) Subterranean Survey: The owner of the subterranean space shall provide a mine survey tying surface coordinated grid to subterranean space using section corners. This survey shall show locations, size, pattern and spacing of pillars, an existing and proposed portal entrance with a horizontal accuracy of plus or minus one (1) foot. This survey shall also illustrate those areas of other mines directly adjacent (within 100 yards) to the subject tract as well as those portions of other mines being utilized for ventilation or access purposes to the subject subterranean development. Floor and ceiling spot elevations shall be made throughout the subterranean space as is necessary for drainage purposes.
- (3) Geological Information: The data requested below may be optioned through interpolation of the preliminary plan data if the engineer believes the information is sufficient. (Note: The following information is required to be provided for the subject tract and for those portions of the adjacent mines being utilized for ventilation or access purposes.)
 - a. Borings: A sufficient number of borings as needed for licensed registered engineer to determine geological profile and evaluate structural integrity of the roof beam.
 - b. Profile Section Cuts: Vertical profile of the rock and overburden from the roof of the mine area to ground surface, labeling and the depth of each successive geological layer. Show the elevation of the ground surface, mine floor and roof of each profile location. These vertical profiles shall be provided with a minimum of one longitudinal and one transverse section to give a clear picture of the entire area proposed for development. The vertical profile locations shall be shown on a plan of the total area and labeled for reference. On the same map, location and reference distance to outcrop shall be shown.
 - c. Roof Beam Thickness: Provide an isolate map illustrating roof beam thickness.
 - d. Floor Material: In short narration format indicate floor material and composition thickness.
- (4) Geo-Technical Evaluation:
 - a. Structural Calculation: Submittal of all necessary structural calculations including, determination of original compressive stress loading of the rock layer prior to the mining operation, the projected loading to the support columns; and a complete analysis of the loading patterns and

support capability of the pillars, roof beam and floor of the mined area with the ultimate above-ground / below-ground development proposed.

- b. Subterranean Structural Inspection: An overall visual inspection of the subterranean space is required prior to development. An inspection report shall be prepared and submitted to the Fire District. This report shall indicate major structural flaws and include a statement concerning the overall safety of the subterranean space.

Prior to construction in those areas where a building is proposed, and in all common spaces, a detailed room by room inspection of the subterranean space proposed before occupancy shall be undertaken. This inspection shall indicate such items as: the surface condition of the roof beam, pillars and floor with detail description of any observed cracking, sloughing, chipping or other deterioration. Show and describe any evidence of water infiltration.

- c. Recommended Structural Modification: Submitted of all proposed structural modifications, including any needed blasting for final room/corridor trim work or loading dock creation.
5. Engineer's Certification of Structural Adequacy: The following certification shall be provided by the owners geo-technical engineer.

I have personally observed the subterranean space described as: _____, I have supervised and reviewed the computations of data and supportive information. Required on-site room-by-room inspections were completed. I have also completed the calculations, analyzed recommendations and conclusions as set forth in the Geo-Technical Engineering Studies of this Section. As a professional engineer, I hereby certify, to the best of my professional judgment, that there is no visible evidence of structural integrity have been completed and/or the area is suitable for occupancy subject to completion of the remedial corrective measures as recommended in the attached survey report in the areas outlined in the attached survey for final occupancy.

Name: _____ Registration No.: _____

Signature: _____ Date: _____

D. Annual Certification and Review:

- 1. Smoke Management: The owners of the subterranean space shall

provide the Fire District with an annual exhaust fan test showing results of air flow and clearing rates and conformance with the approved Subterranean Master Ventilation Plan. This exercise shall include operation of all fans, dampers, controls and testing of required smoke detectors in the air handling system.

2. Geo-Technical Engineering Inspection: A visual inspection of all portions of the subterranean development having final occupation approvals shall be undertaken during the year by a person with competence in the field. This inspection shall indicate such items as: the surface condition of the roof beam, pillars and floor with detailed description of any observed cracking, sloughing, chipping or other deterioration. Any water infiltration propels shall be described in detail. Additional inspections techniques, common to the industry shall be performed as needed. The consulting engineer shall review all inspection date, field verify potential propels areas, make recommendations, if needed and complete the following certification annually.

I have personally observed the subterranean space described as: _____ . I have personally supervised and reviewed the monitoring data and supportive information. I have completed on-site inspections of the occupied areas where deemed necessary; and I have completed the analysis, recommendations and conclusion as set forth in the "Geo-Technical Engineering Studies" of this Section. I certify that I am currently a professional Engineer.

Name: _____ Registration No. _____

Signature: _____ Date: _____

3. Air quality: A certified industrial hygienist or registered engineer shall annually certify that the air quality in the occupied areas of the subterranean development complies with the standards set forth for carbon monoxide in the article. The annual report, including required air quality readings (taken in those areas most likely to have high carbon monoxide readings) shall be submitted to the Fire District for review.

The owner shall take carbon monoxide readings at a frequency of every two months or more frequently as determined by the Fire District. These readings shall be recorded and available for review by the Fire District.

4. Emergency Evacuation Drill: The owner shall conduct an annual evacuation drill in conjunction with the Fire District and may modify the Subterranean Master Plan as needed.

5. Fire Sprinkler Maintenance: The owner shall maintain the sprinkler system in conformance with the International Fire Code as amended.
- E. Light, Ventilation and Sanitation: All portions of Group US Occupancies customarily used by human beings shall be provided with artificial light, air and sanitary facilities as required in the article for the individual occupancy of the developed areas in accordance with surface Building Codes. Toilet facilities shall be located either in the developed occupancies or conveniently nearby in the subterranean space.
- F. Emergency Response System: At intervals of approximately 600 feet along all roadways shall be an emergency response station that shall include two standpipe 2.5 inch fire department connections, One 2.5" to 1.5" adapter with 250 feet of 1¾ inch fire hose, one 75 psi medium range fog nozzle with shutoff, one pickhead axe, spanner wrench set and rechargeable flashlight. A complex map showing evacuation routes, and a manual pull station which shall be accessible to the public and shall be connected to the subterranean space fire alarm system. These stations shall be illuminated with emergency lighting systems. The stations will be numbered consistent with the address and column grid system in the subterranean space.
- G. Fire Protection Systems: Fire protection systems shall be provided as required by this article and the Building Code, as amended. Such systems shall be continuously maintained in reliable operation condition at all times, and such periodic inspection and test shall be made as are necessary to ensure proper maintenance. When an automatic sprinkler system is out of service for more than 12 hours within a 24-hour period, the building shall be evacuated.
- H. Special Hazards:
1. No hazardous occupancies as defined in the Building Code as Group H Occupancies will be allowed in any subterranean space.
 2. No hazardous materials, liquids or chemicals shall be stored in Group US Occupancies except as permitted in Table NO. 3-E of the Building Code for a Single one-hour fire resistive control room.
 3. All tenants occupying any space and the owner of the common spaces shall be required to adhere to the Fire District Hazardous Materials Permit process in accordance with the Fire District Permit Section.
 4. No liquefied petroleum gas or natural gas shall be piped, stored, utilized or transported within any portion of an underground space.
 5. No explosives or any type or class, or fireworks of any type or class shall be manufactured, stored, utilized or transported into any underground space.

The exception to this provision is in areas where active mining operations are underway and a Blasting Permit has been issued by the Fire District. No explosives shall be stored for mining operations except for those that are present for immediate utilization. Any magazines or other storage facilities shall be on the exterior of the underground space and shall be in accordance with and Explosive Storage Permit issued by the Fire Department.

6. There shall be no utilization of the common spaces outside of any building except for vehicle parking and trash dumpsites. Vehicle parking shall be limited to a maximum of 72 hours in length for any one vehicle.

I. Emergency and Exit Signs:

1. All street and roadways within the subterranean space shall be identified for emergency purposes and readily visible signs. Lettering shall not be less than four inches high and not less than ½ inch wide stroke and shall be of luminescent finish. These signs shall not be higher than four feet above the road surface.
2. All street names and building addresses shall be approved by the Fire District.
3. Each pillar on each side of a street or roadway shall be identified by name, letter or number, and below each street sign shall be a large directional arrow with the word "EXIT" in letters not less than six inches high or less than ¾ inch wide stroke. All signs and letters shall be of a reflective or luminescent paint. The exit arrow shall point in the direction of the nearest exit or portal.
4. All street identification and exit routing shall be shown on color-coded maps of the subterranean space, shall be posted in all building, shall be posted at the subterranean space entrances and exits and shall be given to the police and fire departments having jurisdiction in the subterranean space, The maps shall be brought up-to-date annually or as required to be current.
5. All emergency evacuation routes shall be marked with roadway-mounted reflectors placed approximately twenty (20) feet apart and as approved by the Fire District or by another evacuation route-marking system as approved by the Fire District.
6. All common spaces and roadways shall be open at all times without security fences and/or gates provided. Portal or other perimeter exits from the subterranean space may be secured from unauthorized entry, however, any such portal or perimeter exit shall provide for emergency exiting. The undeveloped area of the subterranean space shall be secured from non-authorized entry. The Fire Department shall have reasonable authority to require security fences or other security measures to isolate specific conditions or equipment deemed hazardous by the Fire District.

J. Fire Control Room:

1. Required: A Group US Occupancy shall contain a fire control room immediately adjacent to an entrance portal of the subterranean space. The Fire District shall have access to the fire control room via a Knox Box System. The room shall contain an annunciation panel that has an electrically operated visual signaling device for each remote alarm initiating (automatic) device, such as fire detectors, water flow switches and for each manual alarm initiating device, such as a manual pull station or manually operated switch.
2. Site Plan: At or near the annunciation panel shall be a current large site plan indicating in reasonable detail the entire subterranean space, identifying by letter, name and/or number each pillar, building or tenant space. The location of each manual or automatic detection device and exhaust fan shall be identified with coded letter and/or number to match the visual signal on the annunciation panel. The site plan shall be clear and concise so that the person in charge of firemen can immediately locate an emergency.
3. Fire Alarm: Any one of the remote or automatic alarm indication devices shall activate an alarm through audible and visual notification appliances. These shall be capable of being operated from the fire control room on a building-by-building basis and/or as a general alarm throughout the entire subterranean space as specified for the voice communication system, as well as transmitting an alarm automatically to the local fire department.
4. Ventilation Controls: Manual controls (on-off switches) shall be provided for exhaust fans and any other moving air in the common spaces.

Exhaust fans moving air to or from the surface are required to have individual on/off switches. Fans in common spaces used for general circulation may be grouped together for control by the Fire District on one or more manual control switches.

5. Radio: A radio system shall be installed in the Fire Control Room with the specific frequencies as required by the Fire District. This radio system shall be capable of communication with the communications repeaters that shall be located throughout the underground space and shall be able to communicate with the Fire District's Communications Center.
- K.. Subterranean Communication Repeaters: The owner shall provide a constant and unobstructed communication network for the Fire District via repeaters or other such devices throughout the developed areas of the subterranean space. The system shall be designed to provide communications from the developed spaces to the Fire Control Room. The Fire District shall be able to communicate from the Fire Control Room to the Fire District's Communications Center. The system shall have an emergency backup power source capable of

operation this system for a minimum of four hours. Multiple frequencies are required if security, maintenance or other personnel use the same system. The design of the radio system is required to be approved by the Fire District.

- L. Streets: Streets shall be provided with hard surfaces designed and maintained to support the imposed loads and shall be provided with a surface so as to provide weather driving capabilities.

5.14 DEFINITIONS:

For the purpose of this Article, certain terms are defined as follows:

Area, Net Usable - Area of the subterranean space not including pillars and exterior building wall

Area, Gross – Area of building including pillars but excluding exterior walls.

Building – In an enclosed tenant space separated from public ways, roadway and other tenants.

Building Code – Refers to the Fire District Building Code; the International Building Code published by the International Conference of Building Officials as adopted and amended by the Fire District.

Common Spaces - All subterranean spaces open and not separated as public ways, streets or exits for the general public.

Emergency Response Station – An Emergency Response Station shall be included at intervals of approximately 600 feet along all roadways. The Emergency Response Station shall include a minimum of one 2.5 inch fire department connection, One 2.5” to 1.5” adapter with 150 feet of 1¾ fire hose, one 75 psi medium range fog nozzle with shutoff, one pickhead axe, spanner wrench set and rechargeable flashlight. A complex map showing evacuation routes and a manual pull station that shall be accessible to the public and shall be connected to the subterranean space fire alarm systems. The stations will be numbered consistent with the address and column grid system in the subterranean space.

Evacuation – The term evacuation in this code is used to describe the means of egress within the common space of the subterranean space to the exterior.

Exiting – The term exiting in this code is used to describe means of egress within tenant buildings to the exterior of the tenant building (which is the common space of the subterranean space).

Exterior Building Walls – Walls separating interior tenant spaces from common spaces including public ways and streets.

Owner – The developer, landlord and/or the party or entity responsible for all common spaces in referred to by this title throughout the Code.

Portal – A large opening created by mining operations that provide access to the underground space. These openings are usually large enough for the passage of vehicles.

Public Way - Is any parcel of land (space) unobstructed by development not less than sixteen (16) feet in width with a clear height not less than seven (7) feet dedicated to the passage of the public.

Street – Is a type of public way used at a vehicle roadway within the subterranean space, not less than twenty-six (26) feet in width providing a clear height of thirteen feet six inches (13'6") that has been dedicated for public use.

Subterranean Master Evacuation Plan – A written plan illustrating evacuation routes, exits, portals and buildings within the subterranean space.

Subterranean Master Ventilation Plan – A written plan illustrating the location and size (in cfm) of all exhaust fans, ventilation fans and controls.

Subterranean (Space Structure) – Is a cavern resulting from the extrication of subsurface-located material from underground areas in such a manner that the surface area of the property is not disturbed except in the vicinity of the entrance and exhaust discharges.

Tenant – Any person, company or entity occupying any of the building within the underground space shall be identified in the Code by this title.

5.15 APPLICATION:

A. General:

1. Group US Occupancy shall be: a surface space constructed out of a horizontal layer(s) of solid limestone and shall be by an approved excavation method of mining, development for use as manufacturing, office, warehousing and storage only. No other occupancies are permitted except for accessory uses as approved by the Fire District.
2. Because the structure of the subterranean space if formed of solid limestone or solid limestone and shale, it should be considered Type I construction as defined in the *Building Code* as amended. All exit facilities such as passage ways or enclosed stairs within the common subterranean space shall be consistent with Type I construction.

3. Each individual building within the subterranean space shall be classified and developed as Type I construction as modified herein.

5.16 FIRE RESISTANCE RATING OF STRUCTURAL ELEMENTS

- A. All construction on or within the subterranean space shall be Type I Construction defined in Table No. 6 of the Building Code with the following Modifications:

1. *Mezzanine Floors* – 0 Hour Fire Resistance including supporting columns.
2. *Exterior Building Walls* – Exterior walls of building within subterranean space shall be of at least two (2) hour fire resistive construction.
 - a. *Openings* – All openings in exterior building walls shall conform to the requirements of the *Building Code* and shall be protected by a fire assembly having at least a 1½ hour fire protection rating.

Exception: Glazed opening not 25% of the length of the exterior wall of the tenant or building space near entrances may utilize tempered or laminated glass protected with sprinklers spaces approximately at six (6) feet apart designed to wet the entire surface of the glass on both sides. Glazing shall be held in gasketed frames to allow expansion before the sprinkler activates. Curtains or other fixtures shall not obstruct the discharge of water.

3. *Interior Walls and Permanent Partitions*: All interior walls and permanent partitions shall be of non-combustible materials. Except where used as backing, fire retardant-treated wood shall not be allowed within these assemblies.

4. *Tenant Separation Walls*:

- a. Tenant separation walls shall be of at least two (2) hour fire resistive Construction. Except where used as backing, fire retardant treated wood shall not be allowed within these assemblies.
- b. Openings: All openings between tenant spaces are required to be Provided with 1½ hour automatic self-closing fire doors.

Exception: Non-combustible penetrations for conduit and pipes if protected with approved fire stops.

5. *Area Separation Walls* – Area separation walls used to subdivide spaces as required by this Article shall be separated by two (2) hour fire resistive, non-combustible walls. Openings shall be 1½ hour fire resistive and be

limited to 25% of the length of the wall.

5.17 FIRE RESISTIVE OCCUPANCY AND USE REQUIREMENTS

- A. Fuel Fires Equipment is prohibited except as allowed by a Hazardous Materials permit.
- B. Building and tenant space storing hazardous materials shall be limited to a single one (1) hour fire resistive control area for materials list in Table No. 3-D and 3-E as allowed by the Fire District.

5.18 ALLOWABLE FLOOR AREAS – ONE STORY AREAS

- A. No building of any occupancy classification shall be permitted to have unlimited area. The maximum net usable area for each building including mezzanines shall be limited to 360,000 square feet of gross area.
- B. Combination of spaces that are greater than 360,000 gross square feet due to the area separation walls shall be provided with exterior access and standpipes as required by the Fire District.

5.19 INTERIOR BUILDING EXITING

- A. Except as specifically modified herein, every building or portion thereof shall be Provided with exits as required by Chapter 10 of the Building Code.
- B. Exiting Through Adjoining Areas
 - 1. Exits from a room may open into a single adjoining room or area if such Adjoining room or area provides a direct means of egress to an exit corridor, exit stairway, public way, street, horizontal exit or exit passageway.
 - 2. Foyers, lobbies and reception rooms shall not be construed as adjoining rooms when provided obvious and unobstructed means to an exit.

5.20 SUBTERRANEAN EVACUATION FACILITIES

- A. Evacuation Facilities – Common spaces including streets and roadways throughout the subterranean space shall be considered to be horizontal, continuous and unobstructed means of egress to an exterior door, portal, horizontal exit, enclosed exit passageway or enclosed stairway.

Any street less than twenty (2) feet in width shall be designated for one-way traffic only.

- B. Occupancy Load Determination – The occupant load used to determine the required exit capacity load of all the interior building space considered

simultaneously occupied.

C. Number of Evacuation Routes

1. Every subterranean space shall have not less than two (2) vehicle entrances or portals.
2. Every subterranean space having an occupancy load of 500 to 999 persons shall have not less than three (3) separate evacuation routes.
3. Every subterranean space having an occupancy load over 1,000 persons shall have not less than four (4) separate evacuation routes.

D. Width of Evacuation Routes: The total width of evacuation routes in feet shall not be less than the total occupancy load divided by 60 people per foot. Such width shall be divided approximately equally among the separate evacuation routes or portals provided.

E. Arrangements of Evacuation Routes: Evacuation routes shall be arranged a reasonable distance apart so that if one route becomes blocked, other route or routes will be available. The minimum distance between the vertical portals shall be a minimum of $\frac{1}{4}$ of the maximum diagonal of the subterranean space but not to exceed 300 feet measured along the subterranean interior perimeter.

F. Travel Distance: The maximum distance from the discharge point of a tenant space or building to an exterior door, portal, horizontal exit, enclosed exit passageway or enclosed stair shall be limited to 2,640 feet.

G. Entrance Prohibition: Upon the sounding of a general fire alarm, red flashing lights shall activate at each portal. These lights shall be located adjacent to a sign that indicated "Do Not Enter When Light is Flashing - Fire in the Subterranean Space". The sign shall be subject to approval by the Fire District.

5.21 FIRE PROTECTION SYSTEMS

A. General: Fire Protection systems shall be provided as set forth in Chapter 9 of the *Building Code*, except when modified in this Article.

B. Sprinkler System Requirements: All occupied areas of the subterranean space including all streets, public way, parking lots, loading docks and other developed areas, shall be protected by an automatic fire sprinkler system.

C. Wet Standpipes: A 2.5 inch wet standpipe connection shall be installed inside each building, at each exterior door and at any door of any interior exit corridor. Each building standpipe shall be located approximately every 300 feet and have 150 feet of 1 $\frac{3}{4}$ " fire hose with a 75 gpm nozzle.

- D. Sprinkler and standpipe systems shall have a flow alarm system that meets the requirements for 5.13-1-3.
- E. Standby Power: Standby power shall be provided for emergency exit illumination, fire alarms, fire pumps, exit roadway lighting at standpipes and Control and lighting systems in the fire control room.
- F. Emergency Response Vehicle: The owner shall provide a one-time payment for an emergency response vehicle that will be owned by the Fire District. The emergency response vehicle shall be a heavy-duty electric-powered vehicle that will operate for a minimum of two (2) hours continuous operation. Vehicle will be secured indoors at/or near the Fire Control Room. It shall need to carry the following minimum requirements.
 - 1. 3 personnel with airpacks
 - 2. 200' of 1.75" fire hose
 - 3. 50 lbs. of hand tools and tool boxes
 - 4. 20,000 cfm positive pressure ventilation fan
 - 5. 3 auxiliary system lights

5.22 FIRE HYDRANTS

- A. Standpipes in roadways will be considered as a fire hydrant with supplied with a minimum of a 6" water line and having a dual 2.5 NST fire department connection and valving. A minimum of one standpipe connection shall be located within 150' of each parking area and/or loading dock. All standpipes and valving shall be painted Day-Glo Yellow and illuminated with approved lighting systems.
- B. Hydrant requirements: All fire hydrants installed on the exterior of the Subterranean space will be in accordance with the Fire District and Missouri American Water Company requirements.
- C. Fire department connection to standpipe system shall be within 25' of a fire hydrant.

5.23 BUILDING MECHANICAL SYSTEMS

- A. General: When heating, cooling or ventilation systems are provided in building and tenant space of Group US Occupancies such system shall be installed in accordance with the Mechanical Code.

- B. Air Quality: The quality of the air in Group US Occupancies shall be certified annually as established in Part 5.13-A-2 of this Article. Ventilation within building and tenant space shall be designed to limit the concentration of harmful gases gauged by carbon monoxide levels as follows:
 - 35 PPM over one (1) hour period
 - 9 PPM over an eight (8) hour period

5.24 SUBTERRANEAN SPACE VENTILATION

- A. General: The quality of air in Group US Occupancies shall be certified annually as established in Part 5.13-A.2 of the Article.
- B. Air Quality: Ventilation within the subterranean space to be designed to limit the concentration of harmful gases by carbon monoxide levels to be limited to an average of 50 PPM in the street or public ways over any one (1) hour period.

5.25 PLUMBING SYSTEM

Plumbing systems installed in Group US Occupancies, including developed Areas therein shall comply with the applicable requirements of the *Building Code*, except as modified by this Article.

- A. Vent Termination: Each vent pipe or stack serving a plumbing system in a building in a subterranean space shall terminate vertically through the wall of such building to a street or yard. When terminated through a wall, the vent terminal shall be as high above the floor as possible and shall be at least 25 feet from any door, window or ventilation intake opening in the building wall. The open end of such vent terminal shall be covered with a protective screen.
- B. Subterranean Sewer Structure Trap:
 - 1. Whenever a building sewer serving a subterranean space conveys sanitary sewage to a public sewer, a trap shall be installed on the main sewer line outside the subterranean space. The purpose of the trap is to prevent odors or gas and/or pests from entering the subterranean space plumbing system from the public sewer. It is not to be used as a ventilating duct for the public sewer.
 - 2. A fresh-air inlet shall be connected on the upstream side of this trap so as not to interfere with the cleanouts therein. The upper end of the fresh-air inlet shall terminate in a protected area at least twenty (20) feet from a portal or other opening in the subterranean space. The upper end of the inlet shall be turned down and shall be provided with a substantial protective screen cover. The air inlet shall be sized properly and shall remain open in order to maintain fixture trap seals in the plumbing system.

5.26 ELECTRICAL SYSTEMS

Electrical systems installed in Group US Occupancies, including developed areas therein, shall comply with the applicable requirements of the *Building Code*, except as modified by this Article.

5.27 UNDEVELOPED AREAS

Undeveloped areas in Group US Occupancies that are not protected by an automatic fire extinguishing system shall not be used for any purpose, including vehicle parking, truck and trailer parking or material storage.

Exception: Non-sprinkled undeveloped space may be used for mining operations and storage of loose rock and sand.

5.28 REFLECTORS

- A. A system of roadway-mounted reflectors shall be utilized for exiting and to indicate the location of fire department hose connection locations.
- B. Green reflectors shall show a path indicating the direction of travel of the closest roadway exit or portal.
- C. Yellow reflectors shall indicate the direction for a secondary egress point, whether from an exit or portal.
- D. Red reflectors shall indicate the travel direction toward a dead end where no egress from the subterranean space can be accomplished.
- E. The reflectors shall be placed in accordance with the approval of the Fire District but shall be placed approximately twenty (20) feet apart unless another exiting system is proposed by the owner and approved by the Fire District.

5.29 PENALTY

Any person convicted of a violation of any of the provisions of, or failing to comply with any of the mandatory requirements of this Article shall be subject to the enforcement guidelines of this Ordinance.

5.30 EXISTING SUBTERRANEAN SPACES

All Group US Occupancies and subterranean spaces in existence prior to the adoption of this Ordinance shall comply with all sections of the Article except as modified by the Fire District.

5.31 This Ordinance shall take effect and be in full force from and after the date of its third reading, passage and approval.

READ THREE TIME AND ADOPTED THIS 25 DAY OF FEBRUARY, 2004.

Board Member

Board Member

Approved by the Chairman of the Board of Directors of the Southern Platte Fire Protection District this 25 day of February, 2004.

Chairman

ATTEST:

Secretary