



TECHNICAL MANUAL & ADOPTED FIRE CODE AMENDMENTS

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CIVIL CONSTRUCTION DRAWINGS RESIDENTIAL SUBDIVISIONS

This guide is intended as a resource for the civil construction plan submittal requirements for residential subdivisions.

Civil construction plans are reviewed to determine compliance with Fire Department requirements as they relate to site construction and layout, building size, fire lanes, fire department access, fire hydrants, and other issues as designated. These requirements can be found in the current International Fire Code, adopted and amended by the City of Terrell Code of Ordinances. In an effort to expedite the Fire Department's civil plan review process, please ensure the following list of items are incorporated into the proposed civil construction plans.

GENERAL COMMENTS

Plat in the civil construction drawing set matches the Plat approved by Engineering Department, City Council and/or the Planning and Zoning Commission.

FIRE DEPARTMENT ACCESS

1. Two points of emergency vehicle access shall be provided for any area with more than 30 dwelling units in **One- and Two-Family Residential Developments** and 100 dwelling units in **Multi-Family Developments**. The two points of access shall be separated by a minimum of one-half the diagonal of the area to be served (the property severed is the entire platted parcel of land). Each phase or pod of homes will be evaluated for compliance. In lieu of providing a second point of access, if all homes located within the residential subdivision are voluntarily provided with an approved NFPA 13D residential sprinkler system, consideration to only one access point will be given. A separate submittal and letter of intent shall be required. Contact the Fire Marshal's Office for guidance with this alternative method.
2. If fire lanes are provided, they must meet the criteria stipulated in the Fire Departments Fire Lane Guidelines and the City of Terrell TCSS.
3. A temporary fire lane, if provided as a second point of emergency vehicle access, shall meet the following criteria:
 - Clearly identified and marked as "FIRE DEPARTMENT EMERGENCY VEHICLE ACCESS ONLY".
 - Shall be provided with signage and striped in accordance with IFC Section 503.3.
 - Must be certified by a Professional Engineer to support an 85,000 lb. fire apparatus and/or meet the City of Terrell TCSS Manual for a fire lane.
 - Shall be constructed for all weather access
 - Construction and arrangement approved by the Fire Department prior to civil plan approval. A separate submittal and letter of intent shall be required.
 - Upon completion of the subdivision, a permanent second point of access must be provided. If curbs are to be provided, they shall be mountable curbs and designed per City standards

4. If fire lanes constitute a second point of access, construction details must be included. This is to include temporary emergency access easements. See *Fire Lane Guidelines* for additional information.
5. **All gated access points are required to be reviewed, approved, and permitted by the Fire Department under a separate instrument. See *Access Control Gates Guidelines* for information.**
6. **The maximum cul-de-sac length shall not exceed 600 feet in length as measured from the centerline of the intersection/street to the center point of the radius.**
7. All cul-de-sacs shall have a minimum right-of-way as provided in the City of Terrell TCSS.
8. Arrangement and location of any traffic calming devices installed in fire apparatus access roads shall be reviewed and approved by the Fire Department under separate instruments.
9. All residential streets shall meet the City of Terrell TCSS design standards.
 - a. Minimum clear vertical height clearance of 14 feet.
 - b. Provide an all-weather driving surface.
 - c. Support a minimum of 85,000 lbs.

FIRE HYDRANTS AND WATER MAINS

1. See *Fire Hydrant Guidelines* for additional information regarding location and spacing.
2. All proposed subdivisions shall have a water model completed for each phase of the project, showing that minimum water supply can be provided. Fire flow capacity must meet the following minimums.
 - Homes up to 3600 sq. ft. shall have a minimum of 1,000 gpm for 1 hour.
 - Homes over 3,600 sq. ft. see IFC Table B105.1(2).
3. Existing and proposed fire hydrants and valves shall be indicated on the plans. All fire hydrants shall be a minimum of three feet from any driveway or alley.
4. Fire hydrant type and construction detail shall meet the City of Terrell TCSS.
5. Fire hydrants shall not be located in the bulb of a cul-de-sac.
6. Spacing between fire hydrants shall not exceed a maximum of 500 feet. Spacing may be required to be reduced based upon the required fire flow and site conditions.
7. All homes shall be within 250 feet of a fire hydrant.
8. All homes located on a dead-end street or cul-de-sac shall be within 200 feet of a fire hydrant. Distances between hydrants shall be measured along the route the fire hose is laid by a fire apparatus vehicle, not as the "crow flies".

ADDITIONAL REQUIREMENTS

1. **Fire hydrants and fire lane access roadways shall be installed, accepted and maintained prior to vertical construction of any building or structure.**
2. **Third party fire flow verification must be completed, reviewed, and accepted by the Fire Marshal's Office prior to the start of any vertical construction.**

This guide does not replace, nor supersede, any codes and/or ordinances adopted by the City of Terrell, or determinations and position of the Fire Marshal.

CIVIL CONSTRUCTION DRAWINGS FOR COMMERCIAL PROJECTS

This guide is intended as a resource for the review of development-related plans for commercial and industrial developments.

Site Plans are reviewed to determine compliance with Fire Department requirements as they relate to site construction, layout, building size, fire lanes, fire department access, fire hydrants, and other issues as designated. These requirements can be found in the current International Fire Code, adopted and amended by City of Terrell Code of Ordinances. In an effort to expedite the Fire Department's civil plan review process, please ensure the following list of items are incorporated into the proposed civil construction plans.

GENERAL COMMENTS

Site Plans and Plats in the civil construction drawing set shall match the Site Plan and Plat approved by the Engineering Department, City Council and/or the Planning and Zoning Commission.

FIRE DEPARTMENT ACCESS

1. Fire lane construction shall be in accordance with the Fire Departments Fire Lane Guidelines and the City of Terrell TCSS Requirements. Construction detail information shall be indicated on the submittal drawings. Developments with buildings over 30 feet in height and/or in excess of 62,000 square feet shall be provided with two separate and approved fire apparatus access roads.
2. Approved, unobstructed fire department access (fire lanes) shall be provided such that all portions of the exterior of the building shall be within 150 feet, as the hose lays, of a fire lane and/or public street.
3. Additional fire lanes may be required based upon the layout of the site and size of the building(s) with regards to Fire Department access, mutual/cross access, and special hazards or as designated by the Fire Marshal.
4. Fire lanes must be shaded, or otherwise clearly marked on the plans.
5. Fire lanes must meet the following criteria:
 - a. **Fire lanes with a width of 24 feet; require a interior turning radius of 30 feet and exterior turning radius of 50 feet,** or
 - b. Fire lanes with a width of 26 feet; require a interior turning radius of 30 feet and exterior turning radius of 50 feet, or
 - c. Fire lanes with a width of 30 feet, require a interior turning radius of 30 feet and exterior turning radius of 50 feet.
 - d. Minimum clear vertical height clearance of 14 feet.
 - e. Provide an all-weather driving surface.
 - f. Support a minimum of 85,000 lbs.

g. Aerial Apparatus Access Roads. Buildings or portions of buildings exceeding 30 ft. in height above the lowest level of fire department vehicle access shall be provided with a 26 ft. wide fire lane. The fire lane shall be a minimum of 15 ft. to a maximum of 30 ft. from the building and shall be positioned parallel to one entire side of the building. IFC Section D105.

6. Emergency access easements shall be approved by the Fire Department under a separate instrument.
7. Dead end fire lanes more than 150 feet shall be provided with an approved turnaround complying with IFC Appendix D.
8. Size, type and location of turnarounds are required to be approved by the Fire Department.

FIRE HYDRANTS AND WATER MAINS

The following shall be notated on the plans.

1. Existing and proposed fire hydrants shall be indicated on the plans.
2. Location of valves.
3. Fire hydrant type and construction detail shall meet the City of Terrell TCSS.
4. Type and size of underground water mains serving the fire hydrants, and other utility services.
5. Size and location of the underground water line, servicing fire sprinkler systems.
6. Location and details of Backflow prevention.
7. The minimum number of fire hydrants required shall follow IFC Appendix C, Table C102.1
8. A minimum required fire flow of 1,500 gpm is required. (IFC Appendix B, Section B105)
9. Fire hydrants shall be so spaced such that all portions of the exterior of the building are within the following distances as the hose lays:
 - a. 400 feet for non-sprinklered properties.
 - b. 600 feet for sprinkler properties.
 - c. Spacing may be increased/decreased due to occupancy type, construction type and fire flow.
10. Spacing between fire hydrants shall not exceed a maximum of 500 feet. Spacing may be required to be reduced to 200 ft. based upon the required fire flow and site conditions.
11. Proposed location of the Fire Department Connection (FDC).
 - a. Wall Mount FDCs are required to be within 50ft of the approved fire lane.
 - b. Remote FDCs shall be located, as practical, near the corner of the building on the outside edge of the fire lane.

- c. Remote FDCs shall be protected by bollards.
- d. A minimum of a 10-foot-wide pathway shall be provided from the fire hydrant to the FDC. Parking, landscaping, screening and loading spaces are considered an obstruction.
- e. **A 5-foot-wide level unobstructed pathway shall be provided through all barriers. A continuous row of parking between the fire lane and the structure shall be considered a barrier.** Landscaping may be considered an obstruction based upon the type present and location.

BUILDING SIZE, HEIGHT AND LOCATION REQUIREMENTS

- 1. Building or facility size, in square feet, to be indicated on the site plan.
- 2. Building height to be indicated on the site plan.
- 3. Fire sprinklers required for all buildings exceeding 6,000 ft². Fire sprinklers are required for all R, I, H, and Self-Storage Type Occupancies regardless of size. Note that this is provided to the applicant as information only, and the fire code has additional requirements for sprinkler protection based on use and hazard.

VERTICAL CONSTRUCTION

Fire access roadways shall be installed and maintained **PRIOR TO VERTICAL CONTRUCTION** of any building or structure.

Third party fire flow verification must be completed, reviewed, and accepted by the Fire Marshal's Office prior to the start of any vertical construction.

FIRE LANE CONSTRUCTION REQUIREMENTS

This guide is intended to be a resource for when a building, structure, or facility, within the City of Terrell, is required to be provided with fire apparatus access roads or emergency access easements, commonly referred to as a "Fire Lane" for Fire Department Access.

DEFINITION OF FIRE ACCESS ROAD

Fire apparatus access roads are defined as a road that provides fire apparatus access from a fire station to a facility, building, subdivision or portion thereof. This is a general term inclusive of all other terms such as fire lanes, public streets, private streets and access roadways. Streets designed in accordance with the City of Terrell TCSS are Fire Apparatus Access Roads, in accordance with the IFC Section 502.1.

FIRE ACCESS ROADS REQUIRED

1. Fire lanes are required when any portion of a building, structure, or facility's first story exterior wall is located more than 150 ft. from a point of fire department access as measured by an approved route around the exterior of the building or structure.
2. The 150 ft. hose lay determination shall be measured from the location on the fire lane for which a fire apparatus shall be parked. Typically, this is measured from the center of the fire lane.
3. More than one fire lane or approved access road may be required when deemed necessary, due to potential for impairment of a single road by vehicle congestion, terrain, climatic conditions or other factors.
4. Non-aerial apparatus fire lanes may be required to be located within 30 ft. of a building if deemed to be reasonably necessary by the Fire Marshal to enable proper protection of the building.
5. Fire lanes may be required through parking areas, to service entrances of buildings, loading areas and trash collection areas, and other areas deemed necessary to be available to fire and emergency vehicles
6. Fire Lanes may be either continuous, such that they provide continuous and unobstructed access from at least 2 points of access from a qualifying street(s), or they may be single fire lanes which are dead-end with turnarounds where necessary.

FIRE APPARATUS ACCESS ROADS DURING CONSTRUCTION

Fire apparatus access roads when required shall be installed and made serviceable prior to vertical construction or storage of combustible materials onsite and shall remain serviceable during the time of construction.

SPECIFICATIONS

1. Fire lane width shall be measured from edge of paving to alternate pavement edge.
2. **Fire lanes with a width of 24 ft., 26ft., and 30 ft., require an interior turning radius of 30 feet and exterior turning radius of 50 feet.**

3. Aerial Apparatus Access Roads: Buildings or portions of buildings exceeding 30 ft. in height above the lowest level of fire department vehicle access shall be provided with a 26 ft. wide fire lane. The fire lane shall be a minimum of 15 ft. to a maximum of 30 ft. from the building and shall be positioned parallel to one entire long side of the building. Consult with the Fire Marshal's Office for additional guidance.
4. Minimum clear vertical height of 14 ft.
5. Provide an all-weather dust-free driving surface.
6. Support an 85,000 lb., fire apparatus.
7. A 5 ft. wide level unobstructed pathway shall be provided through all barriers. A continuous row of parking between the fire lane and the structure shall be considered a barrier. Landscaping may be considered an obstruction based upon the type present and location.

CONSTRUCTION SPECIFICATIONS

1. Fire lanes shall be constructed of concrete, in accordance with the City of Terrell TCSS, and capable of supporting the imposed loads of an 85,000 lb. fire apparatus.

MARKING

1. Striping – Fire apparatus access roads shall be continuously marked by painted lines of red traffic paint six inches (6") in width to show the boundaries of the lane. The words "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" shall appear in four inch (4") white letters at 25 feet intervals on the red border markings along both sides of the fire lanes. Where a curb is available, the striping shall be on the vertical face of the curb..
2. Signs – Signs shall read "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" and shall be 12" wide and 18" high. Signs shall be painted on a white background with letters and borders in red, using not less than 2" lettering. Signs shall be permanently affixed to a stationary post and the bottom of the sign shall be six feet, six inches (6'6") above finished grade. Signs shall be spaced not more than fifty feet (50') apart along both sides of the fire lane. Signs may be installed on permanent buildings or walls or as approved by the Fire Chief or his designee.
3. Public Roadways shall not be striped as fire lanes.

FIRE LANE TURNAROUNDS

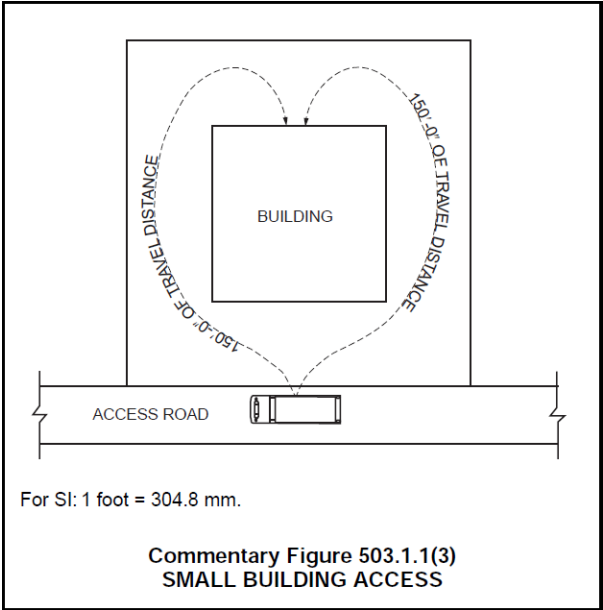
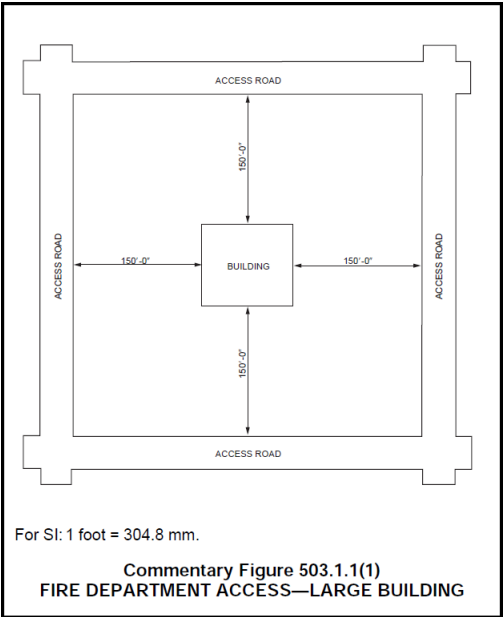
1. Dead-end fire lanes that exceed 150 ft. in length, shall be provided with an approved hammerhead, "Y", or circular turnaround. Parking, median islands, landscaping or other obstruction within the required turnarounds is prohibited.
2. Circular Turnaround: 50 ft. minimum radius (100 ft. diameter). Corner radius shall be per the fire lane width required.
3. Hammerhead: 60 ft. minimum legs along the "T" or "Y", as measured from centerline of the fire lane. Corner radius shall be per the fire lane width required.
4. Reference approved turnarounds in IFC, Figure D103.1.

PLAN REVIEW

1. The limits of the fire lane shall be shown on a Site Plan.
2. Plans for fire lanes must be submitted for review and approval prior to construction.
3. Fire lanes and mutual access easements shall be provided to serve all buildings through parking areas, to service entrances of buildings, loading areas and trash collection areas, and other areas deemed necessary to be available to fire and emergency vehicles. The Fire Marshal is authorized to designate additional requirements for fire lanes and/or require fire lanes where it is reasonably necessary to provide access for fire and rescue personnel, or as required by other provisions of the Fire Code.

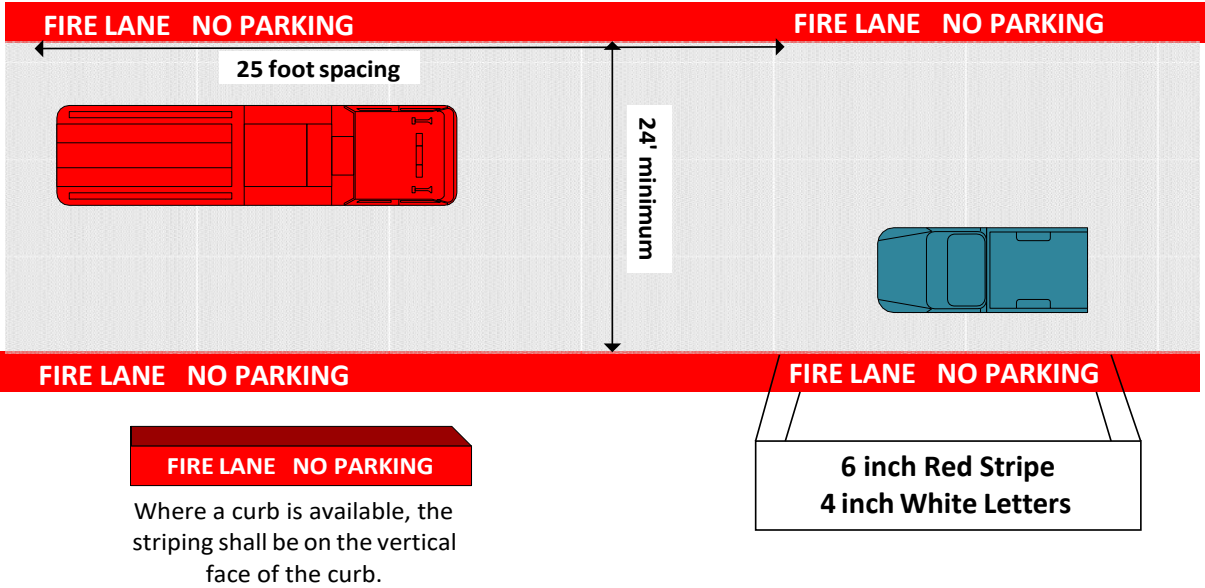
FIRE APPARATUS ACCESS ROADS DIAGRAMS

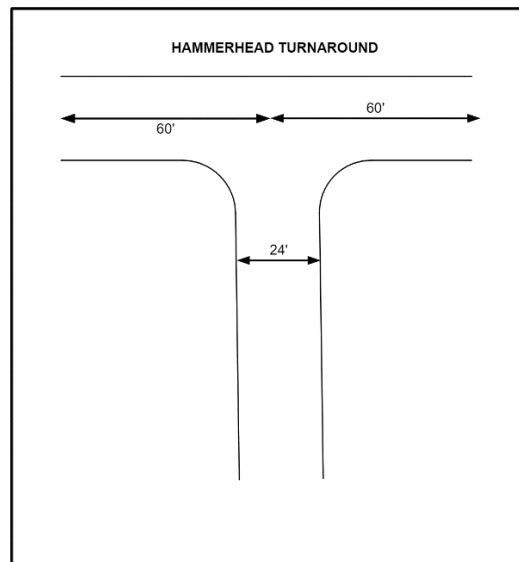
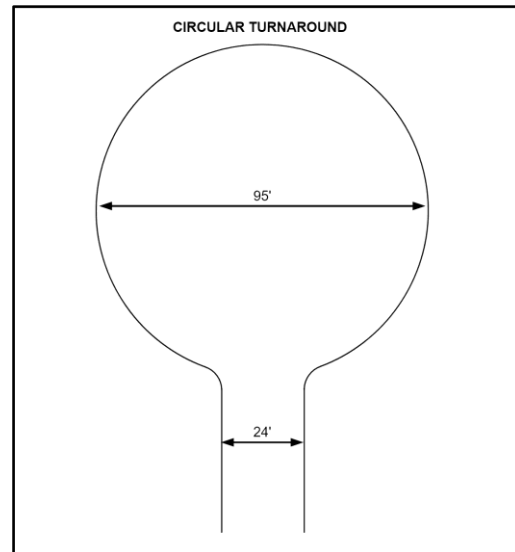
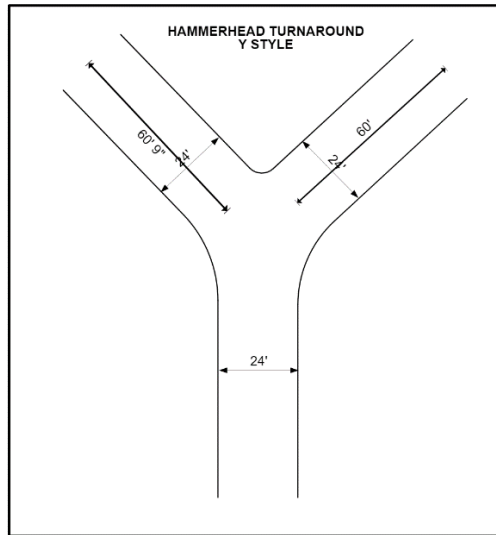
1. The following pages provide graphical guidance diagrams for the design of fire apparatus access roads.
2. Reference item 2.a above regarding hose lay measurement location.
3. All fire lane criteria for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to the current International Fire Code, adopted, and amended by City of Terrell.
4. This guide does not replace, nor supersede any codes and/or ordinances adopted by the City of Terrell, or determinations and positions of the Fire Marshal.



FIRE LANE REQUIREMENTS

This diagram is for example only and is not all inclusive. See IFC, Section 503 for complete requirements





Ref. IFC Figure D103.1

ACCESS CONTROL GATES INSTALLATION AND OPERATION

These guidelines are to be followed when a building, facility, residential subdivision, or apartment complex is provided with an entry and exit access control/security gate for vehicular traffic that crosses a fire lane, access drive(s) into a subdivision or other approved vehicular access drive.

SUBMITTAL REQUIREMENTS

1. The gate must be sized so as not to obstruct any portion of the drive or fire lane, in any manner, when the gate is fully opened.
2. Electric gate operators shall be UL 325 listed and comply with ASTM F 2200.
3. A secondary/emergency power source must be available and brought online automatically upon loss of primary power to the access gates.
4. Electrically controlled access gates must be operable with the Fire Department access key (Knox KS-3502 key switch with dust cover) while the gate is utilizing either primary or secondary power. The gate must stay open until the key switch is returned to normal operation.
5. All gates obstructing fire department access, whether in the open or closed position, must be equipped with a means to move the gate to a fully open position manually.
6. Any manual gate which is locked by any means must also be operable by a method approved by the Terrell Fire Marshal's Office for emergency access.

OPERATIONAL REQUIREMENTS

1. When a gate is activated by a Knox Key Switch, the gate must stay open until the key switch is returned to normal operation.
2. Gates shall clear the entire width of the drive or fire lane when open, not just the direction of vehicular travel.
3. To expedite the plan review and inspection processes, please refer to the information listed below.

PERMITTING REQUIREMENTS

1. Provide a written description of the operation of the access control/security gates in normal, emergency, and manual modes.
2. Site plan drawings of the installation location and layout, including primary and emergency power hookups.
3. Equipment location drawings of the actual configuration of the access gate(s).
4. A full equipment listing.
5. Manufacturer documentation for openers to include wiring schematic.
6. Drawings shall be submitted for review and approval, PRIOR to installation.
7. Drawings shall be provided by the installing company specific to the installation.
8. Drawings shall show plan view and other pertinent information.
9. Submittal package must identify and include all the above requirements to be accepted for review.

10. No gates or equipment shall be installed on the site until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued.

GENERAL SUBMITTAL REQUIREMENTS

1. Each submittal shall have a completed City of Terrell Commercial Building Application.
2. Plans approved by the Fire Marshal's Office give authorization for installation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
3. All permits shall be kept on the job site until final inspection.
4. All installations shall comply with the approved plans. Any deviation from the approved plans requires a resubmittal to the City of Terrell and/or the Terrell Fire Marshal's Office.

All access control criteria for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to the current International Fire Code, adopted, and amended by City of Terrell.

This guide does not replace, nor supersede any codes and/or ordinances adopted by the City of Terrell, or determinations and position Fire Marshal.

FIRE HYDRANTS LOCATION AND FIRE FLOW

This guide is intended as a resource for installation of fire hydrants to serve as fire protection water supply for commercial development and residential subdivisions.

All fire hydrants for the purposes of this guide and any other guidelines or requirements of the Fire Department shall conform to the current International Fire Code, adopted and amended by City of Terrell Code of Ordinances. NOTE. The City of Terrell TCSS has additional requirements for fire hydrant installation. These requirements pertain only to the Fire Department.

CONSTRUCTION DETAILS

Fire hydrants shall be of the type and design as specified in the City of Terrell TCSS.

GENERAL LOCATION NOTES

1. Fire hydrants shall be located adjacent to public streets and fire lanes/fire apparatus access roads.
2. A minimum required fire flow of 1,500 GPM is required. (IFC Appendix B, Section B105)
3. Fire hydrants shall be so spaced such that all portions of the exterior of the building are within the following distances as the hose lays:
 - a. 400 feet for non-sprinklered properties.
 - b. 600 feet for sprinkler properties.
4. Spacing between fire hydrants shall not exceed a maximum of 500 feet. Spacing may be required to be reduced to 200 ft. based upon the required fire flow, building size and construction, and site conditions.
5. Where streets are provided with median dividers which cannot be crossed by fire fighters pulling hose lines, fire hydrants shall be spaced every 500 feet on opposite sides of the street and be arranged on an alternating basis.
6. Roadways in which the traffic volume is heavy or of arterial of higher classification shall meet the spacing of 500 feet on each side, alternating.

RESIDENTIAL SUBDIVISIONS

1. All homes shall be within 250 feet of a fire hydrant.
2. All homes located on a dead-end street or cul-de-sac shall be within 200 feet of a fire hydrant.
3. Fire hydrants shall be located prior to the bulb of a cul-de-sac.

FIRE DEPARTMENT CONNECTION (FDC) & FIRE HYDRANT ACCESS

1. The Fire Department Connection (FDC) shall be located adjacent to and face an approved fire lane for remote FDCs and within 50 feet of the fire lane for wall mount FDCs.
2. The FDC shall be located within 100 feet of a fire hydrant.
3. A minimum of a 5-foot-wide unobstructed pathway shall be provided from the fire lane to the FDC. Parking/loading spaces and landscaping are considered an obstruction.
4. Shall be located to provide a minimum space of 3 ft. from the face of the FDC to any landscaping and provided a clear pathway to the fire lane. Parking/loading spaces, screening and landscaping are considered obstructions.
5. Shall be located, as practical, near the corner of the building on the outside edge of the fire lane.
6. Remote FDCs shall be protected by bollards.
7. Exposed piping on remote FDCs shall be painted red.

FIRE HYDRANT ACCESS & PROTECTION

1. A clear space of 3 ft. shall be maintained around the fire hydrant. Building elements, signs, shrubberies, trees, bushes, or other landscaping elements shall not be located within the 3 ft. clear space around the fire hydrants.
2. A 5-foot-wide unobstructed pathway shall be provided from the fire hydrant to the public street or fire lane. Parking/loading spaces and landscaping are considered an obstruction.
3. Where fire hydrants are subject to impact from a motor vehicle or industrial equipment, they shall be protected in accordance with IFC Section 312.

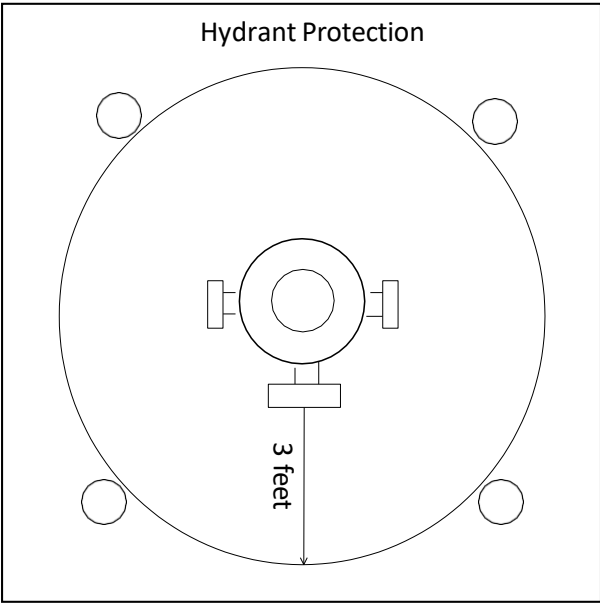
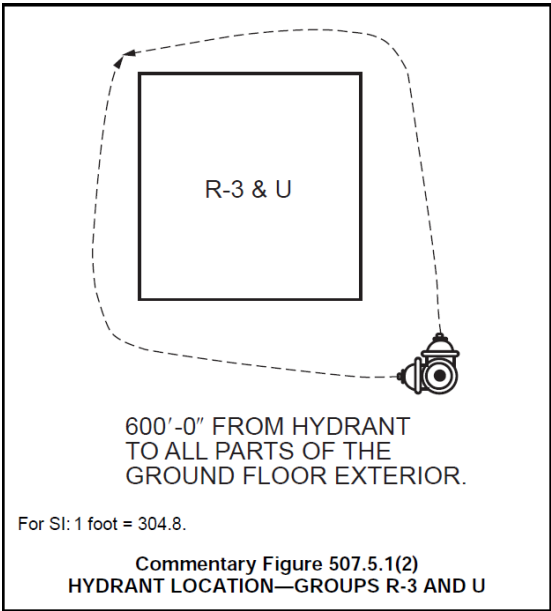
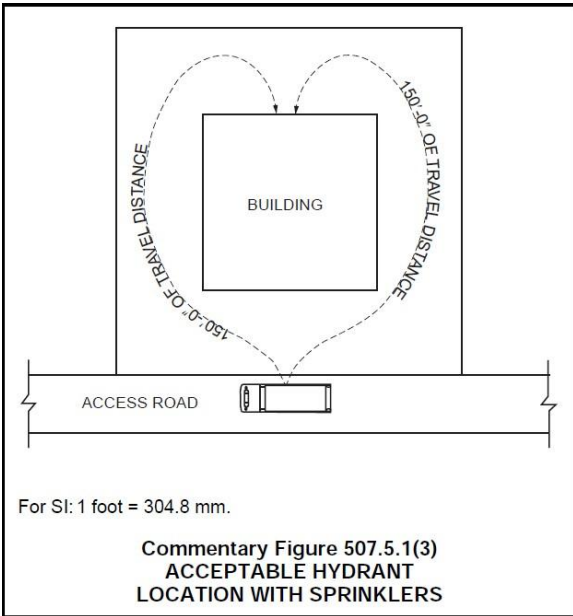
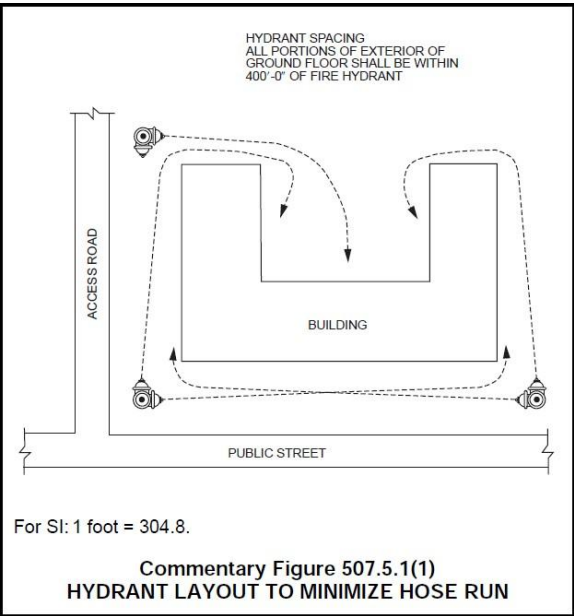
IFC SECTION 312

Bollards or guard posts, for fire hydrant protection only, shall comply with the following:

- a. Constructed of steel not less than 4 inches in diameter.
- b. Spaced 3 feet from the face of the fire hydrant.
- c. Set not less than 3 feet deep in a concrete footing of not less than 15 inches in diameter.
- d. Set with the top of the post not less than 3 feet above grade.

FIRE FLOW AND FIRE HYDRANTS

1. The total number of fire hydrants required will be based upon an evaluation of the projected fire flow required for the building(s).
2. Additional fire hydrants may also be required based upon the hazards present, size of the building(s) and/or access to the facility. This shall be determined by the fire code official.
3. The minimum fire flow required shall be 1,500 GPM.
4. **Third party fire flow verification must be completed, reviewed, and accepted by the Fire Marshal's Office prior to the start of any vertical construction.**



FIRE HYDRANT COLOR SCHEMES

TABLE 4-1
FIRE HYDRANT COLOR SCHEMES

10 Inch Pipe and Above	Blue	1,500 GPM +
8 Inch Pipe	Green	1,000 - 1,500 GPM
	Orange	500 - 1,000 GPM

10 Inch Pipe and Above	Blue	1,500 GPM +
6 Inch Pipe	Red	< 500 GPM

NEW BUILDING CONSTRUCTION

Building plans are reviewed to determine compliance with Fire Department requirements as they relate to building construction and layout, fire department access, protection in place, exiting and other issues as required or designated. These requirements can be found in the current International Fire Code (IFC), adopted, and amended by City of Terrell.

In an effort to expedite the Fire Department's plan review process, please ensure the following list of items are incorporated into the building construction plans. Please note that not all of the below requirements pertain to all submittals and the list is not all inclusive of all the fire code requirements. This listing provides the minimum amount of information required to be reflected on the building construction drawings for the Fire Department review.

GENERAL SUBMITTAL INFORMATION

1. Type of occupancy. (i.e., A – Assembly, B – Business, E – Educational, I – Institutional, M – Mercantile, S – Storage, etc.)
2. Document type of construction (Type 1, Type II, Type III, etc).
3. Indicate total square footage of the building and/or square footage of each separate occupancy in multiple tenant spaces.
4. Is the building to be provided with a fire sprinkler system, fire alarm system or other fire protection system?
 - a. An automatic system shall be installed throughout all buildings over 6,000 sq. ft.
 - b. An automatic sprinkler system shall be installed throughout all self-storage facilities.
 - c. An automatic system shall be installed throughout all A-2 occupancies with an occupant load over 99 persons and/or over 5,000 sq. ft., unless otherwise directed herein or in the current adopted IFC.
 - d. An automatic system shall be installed throughout all I, R and H occupancies regardless of size.
5. Document any trade-off's or exceptions taken in accordance with Chapter 5 of the current adopted IBC.
6. Document the operation(s) of the proposed business and use of all rooms.
7. Buildings of four stories or more shall provide a stairway to the roof in accordance with IFC Section 504.3.

8. Egress plan to indicate the required exits, path of travel, travel distance and any floor fixtures. This is to include the corridor rating, travel distance, and common path of travel.
9. Wall and ceiling finishes shall be in accordance with the current adopted IFC, Table 803.3, for all corridors, rooms, and enclosed spaces. The IFC contains amendments which may not be reflected in the IBC.
10. Occupancy separation walls shall be in accordance with the IBC.
11. Indicate any types of special hazards. (i.e. medical gases, dust operations, spraying operations, etc.)
12. Will any type of special protection system be required? (i.e. ventilation, smoke dampers, smoke control, kitchen hood, storage tank)
13. Flammable or combustible liquids tank storage.
14. A minimum of one 3A-40BC fire extinguisher per 3000 sq. ft., with a maximum travel distance of 75 ft.
15. Address must be legible from the street or fire lane in accordance with the IFC & IBC.
16. **Address must be provided at gas and electric meters and/or disconnecting means.**
17. Emergency lighting and exit signs shall be in accordance with IFC & IBC.
18. Knox Box entry system is required, with the box installed 6 feet above grade adjacent to front door and/or riser room.
19. Indicate any doors intended to be provided with a security or access control system.
20. Additional criteria as required by the Fire Marshal.

HAZARDOUS MATERIALS

21. A separate document with a complete listing of hazardous materials, if any, and storage and location information shall be provided.
22. Please see our Hazardous Materials Submittal Guidelines for additional information regarding required plans submittal requirements. All occupancies containing hazardous materials regulated by Chapter 50, or other sections of the Fire Code, shall be required to have a permit. The permit shall be valid for one year and will be required to be renewed annually.
23. Building construction and fire protection features shall comply with the applicable requirements of IFC Chapter 50.

HIGH-PILED STORAGE

1. High-piled storage is defined as the storage of combustible materials in closely packed piles of combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet in height.
2. Please see our High-Piled Storage Submittal Guidelines for additional information regarding required building features, fire protection and plan submittal requirements.
3. Building construction and fire protection features shall comply with the applicable requirements of IFC Chapter 32.
4. A rack storage plan is required prior to fire sprinkler plan approval.

FIRE PROTECTION & ACCESS SYSTEMS

The following items are listed to aid the applicant in what will be required to complete the project that is not included in the building plan review. This is intended as a partial list only and is not all-inclusive. If the modification/installation of a fire protection system shall be required, the Fire Department Building Plan Review shall indicate the type(s) of fire protection system required. Additional fire protection systems and or building construction components may be required as a result of the Fire Departments review of your building construction drawings.

1. A Texas Department of Insurance licensed fire alarm contractor must install the Fire Alarm System. Plans must be submitted to the Fire Department for review and approval.
2. A Texas Department of Insurance licensed fire sprinkler contractor must install the overhead Fire Sprinkler System. Plans must be submitted to the Fire Department for review and approval.
3. A Texas Department of Insurance licensed fire sprinkler contractor must install the underground Fire Sprinkler System. Plans must be submitted to the Fire Department for review and approval.
4. A Texas Department of Insurance licensed fire extinguisher contractor must install the Kitchen Hood/Paint Spray Booth extinguishing system. Plans must be submitted to the Fire Department for review and approval.
5. A Texas Commission of Environment Quality licensed underground storage tank contractor must install the underground storage tank system. Plans must be submitted to the Fire Department for review and approval.
6. All access-controlled egress doors shall meet the requirements of IFC Sections 1010.1.9.7 through 1010.1.9.10. "Access - Controlled Egress Doors". Access control doors are required to be reviewed, approved, and permitted by the Fire Department.
7. All smoke control and pressurization systems shall meet the requirements of IFC/IBC Chapters 909 and 910. Plans must be submitted to the Fire and Building Departments for review and approval under separate instrument.

Building plans are not reviewed, or approved, for fire protection system installation. This guide does not replace, nor supersede any codes and/or ordinances adopted by the City of Terrell, or determinations and position of the Fire Marshal.

BUILDING FINISH-OUT/ALTERATION STANDARD COMMENTS

These are not intended to be the only Fire Department comments but are provided as information only as most applicable to any construction project.

- The plans are reviewed for building construction and layout only.
- Submittals are not reviewed or approved for fire protection installation.

COMMON QUESTIONS AND FEATURES

- New or existing tenant separation wall/demising walls shall be a minimum of 1-hr fire rated construction to deck. This is subject to inspection and approval by the field inspector.
- Medical gases, if used, shall meet the requirements of IFC Section 5306.
- Indicate the current adopted edition of the International Fire Code as a referenced code.
- For all dry-cleaning facilities, indicate the type of dry-cleaning operation to take place at this location.
- Depending on the type of operation with regards to the use of solvents further comments may be warranted as dictated by the IFC.
- Is a Type 1 commercial cooking hood provided for grease laden vapors? If so, a commercial hood suppression system will be required.

FIRE PROTECTION SYSTEMS AND FEATURES

The following comments are related to fire protection systems and features. If your building is not provided with any of the following, then they would not apply, unless directed by other sections of the Fire Code.

- Provide a minimum of one 3A-40BC (5 lb. ABC) fire extinguisher per 3000 square ft. with a maximum travel distance of 75 ft.
- A Texas Department of Insurance licensed fire sprinkler contractor must install or modify the fire sprinkler system including the underground lead-in. Plans for the installation, must be submitted to the Fire Department for review, approval, and permit, PRIOR to installation, under separate instrument and cover.
- A Texas Department of Insurance licensed fire alarm contractor will be required to install or modify the fire alarm system. Plans must be submitted to the Fire Department for review, approval, and permit, PRIOR to installation, under separate instrument and cover.
- A Texas Department of Insurance licensed fire extinguishing contractor will be required to install or modify the commercial kitchen hood suppression system. Plans must be submitted to the Fire Department for review, approval, and permit, PRIOR to installation, under separate instrument and cover.

- All flammable and combustible storage tanks are required to be approved by the Fire Department. Plans must be submitted to the Fire Department for review, approval and permit PRIOR to any installation and/or construction of the tank or tank enclosure, under separate instrument and cover. Underground storage tank permit applications shall be submitted by a State of Texas licensed Underground Storage Tank Contractor. Above ground tank permit applications shall be submitted by a State of Texas licensed Above ground Storage Tank Contractor.
- Additional fire protection measures may be required based upon the potential high-piled storage (storage over 12 ft.) or any hazardous materials and or hazardous process within the building. If these are to be provided, they shall comply with IFC Chapter 23 & 27, respectively.

GENERAL COMMENTS

1. All fire lanes, striped per City of Terrell standards, and fire hydrants shall be completed and in working order prior to vertical construction.
2. Address must be legible from the street or fire lane and be of a contrasting color.
3. Address must be provided at gas and electric meters and/or disconnecting means.
4. Storage is not permitted within 18" of the ceiling for sprinklered buildings and 24" for non-sprinklered buildings.
5. Wall and ceiling finishes shall be a minimum of Class C per current adopted IFC Table 806.3.
6. Emergency lighting and exit lights shall be in accordance with the current adopted International Building Code.
7. All exit doors located in the means of egress that are capable of locking or latching shall be operable from the inside without the use of a key or any special knowledge or effort or provided with approved panic hardware.
8. Arrangement of interior walls and/or drop ceiling may interfere with the operation of the fire sprinkler system. Coordinate interior alterations with the Fire Department and provide plans for Fire Department approval.
9. All fire department permits shall be kept in a permit packet on the job site until final CO inspection.

This guide does not replace, nor supersede any codes and/or ordinances adopted by the City of Terrell or determinations and position of the Fire Marshal.

HAZARDOUS MATERIALS

This guideline is intended to provide the minimum requirements for documenting onsite Hazardous Materials for any building or use in which Hazardous Materials are to be used or stored. Additional requirements and/or information may be required based upon the individual project.

All applicable requirements of the International Fire Code Chapter 50, Hazardous Materials, shall be met. Additional fire protection requirements may be included based upon a review of the proposed storage arrangement, height or chemicals and/or chemicals to be used or stored (i.e., smoke exhaust, IR/UV detection, Standpipes, Fire Pump, Etc.)

Hazardous Materials form must be updated when significant modifications to the interior stocking arrangement or stock are made.

WHEN REQUIRED

A Hazardous Materials Inventory Statement is required when the quantity of hazardous materials to be used or stored exceeds those indicated in Table 105.6.8, 105.6.10 and 105.6.20.

HAZARDOUS MATERIALS INVENTORY STATEMENT

1. Site Plan. Provide a Site Plan showing the location of all buildings, structures, loading areas, parking lots, internal roads/fire lanes, storm sewer inlets and adjacent property uses. A Utility Plan shall also be provided to indicate the location of all fire hydrants, the fire department connection (FDC) and the location of the fire sprinkler riser and/or fire pump.
2. Building Floor Plan. Provide a scaled and dimensions floor plan for each building where hazardous materials are stored and/or used. Mark each hazardous material storage/use location with a name, letter, or number code of your choice. Access to each storage area, the location of emergency equipment, secondary containment areas, purpose of other areas in the facility, and location of aboveground and underground tanks (sumps, pumps, vaults, etc.) shall also be indicated.
3. Hazardous Materials Inventory. Provide a detailed listing of each individual chemical, total quantity, individual container size and number of containers, container type and NFPA 704 rating.

MSDS SHEETS

MSDS sheets shall be located on-site in an approved location. If allowed by the Fire Marshal, these documents can be maintained off-site if they are immediately available on-line by email, or other approved immediate on-demand method to the Incident Commander.

ACCESS CONTROLLED DOORS

INSTALLATION AND OPERATION

These guidelines are to be followed when a building or facility within the City of Terrell proposes to install an entry and/or exit access-controlled egress door for pedestrian traffic. This guideline includes the use of electric strikes, magnetic locks and/or any device(s) intending to impede or restrict egress from a building.

OPERATIONAL REQUIREMENTS

1. All access-controlled systems shall be UL 294 listed.
2. The use of a motion sensor, or equivalent, to detect and unlock the egress door shall be able to operate such that it can detect movement in both a tenable atmosphere and one obscured by smoke.
3. Push-To Exit buttons, or "mushroom buttons", shall be a minimum 2 ½ in. diameter and red in color.
4. Doors shall be equipped with hardware complying with Section 1010.1.9.8 controlling a manual switch under the bar that will unlock the door. The circuitry to the switch shall be fail-safe.
5. The manual unlocking device required by the Seguin Fire Department is a mechanical push bar/switch or other type of device that is integrated into the panic hardware/crash bar of the door and is mechanically operated. The use of a pressure bar, touch sense bar or electrically powered circuitry is not permitted.
6. Signage shall be provided in accordance with 1010.1.9.8, Item 3. Signage shall also be provided in Spanish.
7. Loss of power to that part of the access control system which locks the doors shall automatically unlock the doors. This is to include both the access and egress side of the door.
8. If a full building smoke detection system is not provided, approved smoke detectors shall be provided on both the access and egress sides of doors and in a location approved by the authority having jurisdiction of NFPA 72. Actuation of a smoke detector shall automatically unlock the door.
9. Activation of the building fire alarm system, if provided, shall automatically unlock the doors. The doors shall remain unlocked until the fire alarm system has been reset. Reset of the fire alarm system may reengage the access control system, including any maglocks or electric strikes.
10. Activation of the building automatic sprinkler system or fire detection system, if provided, shall automatically unlock the doors. The doors shall remain unlocked until the fire alarm system has been reset.
11. Entrance doors in buildings with a Group A, B, E or M occupancy shall not be secured from the egress side during periods that the building is open to the general public.
12. All doors and equipment shall be wired fail-safe.

13. When specifically requested, fail-secure doors may be permitted on a case-by-case basis and may be subject to additional requirements not listed therein.
14. Group E Occupancies Only: In Group E Occupancies where ingress is available by keys located in a Knox Box mounted at the main entrance to the building, the Fire Alarm must unlock the egress portion or capability of all doors while the ingress function may remain locked.
15. A "Master Key" access control card shall be required and shall be located within the Knox Box.

FIRE ALARM SYSTEMS

These submittal requirements are to be followed when a business, facility or organization proposes to install or modify a fire alarm system within the City of Terrell.

To expedite the plan review and inspection processes, please refer to the information listed below.

SUBMITTAL REQUIREMENTS

1. A "Wet" APS signature and stamp or signed and sealed by a registered Fire Protection Engineer (PE), is required on all plan drawings and calculations.
2. Plans shall be designed and will be reviewed based on the requirements in the currently adopted **International Fire Code including amendments and NFPA 72** and shall be indicated on the plan drawings as the code and standard or record.
3. Plans shall be clear, legible and in a common and appropriate scale.
4. Indicate all walls and rooms. Ceiling tiles shall not be shown unless needed for clarity.
5. Scope of Work.
6. Sequence of Operations.
7. Equipment List.
8. A digital pdf copy shall be submitted with a complete commercial building application & copy of State license. Plans shall contain sufficient detail to enable the plan reviewer to accomplish a complete review. The following information shall be provided on the plans;
 - North arrow.
 - Floor plan.
 - Project name.
 - Project address.
 - Device location.
 - Site map inset.
 - Type of device.
 - Provide a "point-to-point" wiring configuration.
 - Fire alarm control panel.
 - Annunciators.
 - Square footage.
 - Location of doors.
 - Intended use of each room.
 - Location of all air handling units.
 - Show location of all fire sprinkler risers, flow switches, tamper switches and fire pumps (if equipped).
 - Notification devices shall indicate candela rating.
 - Heat detectors shall indicate temperature rating.
 - Indicate the length of wiring between devices.

9. The notification device wiring shall be shown different than the initiating device wiring. When necessary, they shall be provided on different plan drawings.
10. Point ID/Addressable device list. Shall indicate how the devices will report to the CSM.
11. Specification booklet shall contain the following.
 - A minimum of one (1) set of data specifications sheets for all devices and equipment. This should be provided in PDF format.
 - Listing of the system design, operation and reset functions.
 - Battery discharge curves.
 - Wire specifications.
 - Type of primary power and secondary power (i.e., size and number of batteries to be provided).
12. Device mounting height diagrams.
13. Voltage drop calculations.
14. Battery calculations to include Standby and Alarm.
15. The notes shall clearly indicate that the initiating circuit wiring shall be Class A.
16. Identification of the type of conduit used, if any.
17. Identification of the gauge and type of wire used.
- 18) The use of each room is identified on the plans.
- 19) The title block shall contain the following;
 - a) Location of the installation.
 - b) Name and complete address of the business.
 - c) Name and complete address of the installing company.
 - d) Licensing information.
 - e) "Wet" signature of the APS.
 - f) Date.
 - g) Drawn by.
 - h) Authority Having Jurisdiction.
- 20) Provide a Riser diagram to include the following;
 - a) All devices as they are shown on the plans, as wired.
 - b) 120 VAC
 - c) Surge suppressor
 - d) Communications method to the CSM.
- 21) A legend shall be provided to include;
 - a) Total number and type of all devices shown on plans.
 - b) Symbol, device description, manufacturer, model number, and quantity for each device.
- 22) Device address numbers provided for addressable/analog intelligent systems.
- 23) Indicate source of primary and secondary power.

OPERATIONAL REQUIREMENTS

1. All fire alarm systems shall comply with our Fire Alarm Operational Guidelines.

PERMITTING REQUIREMENTS

1. Provide a written description of the operation of the fire alarm system in normal, emergency, and manual operation.
2. Plan drawings of the installation location and layout.
3. A full equipment listing.
4. Manufacturer documentation for all parts and materials used in the project.
5. Plan drawings shall be generated by the installing company and shall not be copied.
6. Drawings shall be submitted for review and approval, PRIOR to installation.
7. Drawings shall be generated by the installing company specific to the installation.
8. Drawings shall show plan view and other pertinent information.
9. The submittal package must include all above requirements and such requirements shall be identified in the submittal package.
10. No equipment shall be installed on the site until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued.
11. **The City of Terrell requires all alarm contractors to register and use The Compliance Engine as the records management system for tracking of installations, inspections, and maintenance.**

FIRE SERVICE WATER LINES

These guidelines are to be followed when a business, facility or organization proposes to install or modify an underground water supply for a water-based fire suppression system within the City of Seguin. This document shall assist in the preparation of a submittal for permit. These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.

PERFORMANCE AND INSTALLATION REQUIREMENTS

1. All underground lines shall begin at the point of connection to the underground circulating public/private water main. A valve shall be provided at the point of connection such that the fire sprinkler underground service line can be isolated from public/ private water distribution system.
2. All underground water lines shall be dedicated to fire protection. Domestic, irrigation or non-fire protection taps on the fire service underground water line are not permitted.
3. All underground lines shall terminate at the top of the spigot piece no more than 5 ft. inside the building.
4. All ductile iron, retaining rods, and other non-plastic components shall be externally coated for corrosion and poly-wrapped.
5. All underground piping shall be a minimum of Class 200 / DR14 200 PSI rated pipe or equivalent.
6. Installation street address must be provided for each separate underground line being permitted and installed. **Subdivision or development street corner will not be accepted.**
7. The designer and company of record the permit is issued shall be responsible for the installation and inspection.
8. Civil construction drawings approved by the City of Terrell Engineering Department shall not constitute approval of the underground line(s).
9. The Fire Department may approve alternate methods and material, as well as review minor scopes of work to determine required submittal and permitting.

To expedite the plan review and inspection processes, please refer to the information listed below.

STANDARD DETAILS

1. Detail drawings shall be provided on all drawing submittals and shall match field installed condition.
2. With the exception of the Embedment Detail, all details provided are for guidance only. Actual site conditions and NFPA 24 will determine the actual necessary details to be provided to indicate the construction of the underground pipe.
3. All standard details can be provided in PDF format for incorporation into your submittal drawings.

BACKFLOW PREVENTION

Backflow prevention devices shall be in accordance with the below when installed on the fire service underground water line in the riser room except on lengths of 75 feet or more which should be installed in an underground vault.

1. All fire sprinkler systems are required to be provided with an approved method of backflow prevention.
2. A reduced pressure zone (RPZ) backflow prevention device is required on antifreeze systems.
3. Assemblies shall be listed for fire protection use and, in the orientation installed.
4. Assemblies must be capable of being electronically or mechanically monitored.
5. Assemblies must be provided with a *metered* bypass.
6. In accordance with NFPA 13, Section 8.16.4.6.1, a method to perform a forward flow test at the system demand shall be provided downstream of the backflow prevention assembly. The following are examples of acceptable methods.
 - Install 2-½ in. standpipe outlets system side of the back-flow device. If the building is provided with standpipe outlets, these would be considered an acceptable method.
 - Provide a test header, similar to those on a fire pump. If the building is provided with a fire pump, the fire pump test header is considered an acceptable method.
 - A single 2-½ in. outlet is considered to flow 250 GPM.
7. All installations shall be inspected and tested. Testing documentation shall be provided upon request to the Building Inspections Department.
8. The City of Terrell Water Department shall be notified of all new installations.

FREESTANDING FDC SIGNAGE REQUIREMENTS

1. Fire protection signage shall be provided as outlined in the sign chapter of this document for all Fire Department Connections (FDC). Reference the signage guidelines for additional information regarding sign materials, size and locations.
2. Remote freestanding FDC's shall comply with the requirements noted in the FDC General Guidelines.

To expedite the plan review and inspection processes, please refer to the information listed below.

PERMITTING REQUIREMENTS

1. A "Wet" RME signature and stamp, as required by Article 5-43.2, Section 34.717, is required on all plan drawings.
2. Provide a one digital PDF copy.
3. Project name.
4. Project address.
5. Provide a written description of the work to be performed.
6. Fax submittals will not be accepted.
7. A scaled copy of the approved Site Plan that indicates the location of all fire hydrants and fire lanes servicing the building or site. The size and type of building shall be clearly indicated on the plan.
8. Size and location of all water supplies and/or water lines servicing the building or site.
9. Plans shall be clear and legible, and all sheets shall be in a common and appropriate scale.
10. Flow test data shall be noted on the plans.
11. Size and type of all installed piping identified on the plans.
12. Occupancy classification.
13. Construction type.
14. Location of all valves.
15. Location and size of all thrust blocks.
16. Thrust block details.
17. Detail of the spigot piece and/or and in-building riser turn.
18. Embedment detail. See Figure 1.
19. Embedment material shall be No. 4 crushed stone.
20. Depth of bury. Minimum is 48 inches/4 feet, from top of pipe to grade.
21. Pit/ vault/ valve arrangement (if provided with a pit/ vault).
22. Type of fittings/ joints, methods of connection and rod size.
23. Location of the Fire Department Connection (FDC).
24. Location and type of backflow prevention.

25. Provide information on the transition stability of different types of piping (eg. transition from PVC to ductile iron, retainer glands).
26. Provide notes to indicate the
 - Design standards.
 - Authority Having Jurisdiction.
 - A full equipment listing.
 - Manufacturer documentation for all parts and materials used in the project.
27. The title block shall contain the following;
 - Location of the installation.
 - Name and complete address of the business.
 - Name and complete address of the installing company.
 - Licensing information.
 - Date.
 - Drawn by.
 - Scale.
28. Drawings shall be submitted for review and approval, PRIOR to installation.
29. Drawings shall be generated by the installing company specific to the installation.
30. Drawings shall show plan view and other pertinent information.
31. The submittal package must include and identify all above requirements.
32. Installation of a fire service underground water lines shall not be performed until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued.

GENERAL SUBMITTAL REQUIREMENTS

1. Each submittal shall have a completed City of Terrell Commercial Building Application.
2. Plans approved by the Fire Marshal's Office give authorization for installation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
3. All fire department inspection forms and permits shall be kept on the job site until final inspection.
4. All installations shall comply with the approved plans. Any deviation from the approved plans requires a re- submittal to the Fire Marshal's Office.

All fire service underground water lines for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to the International Fire Code, as adopted and amended by City of Terrell.

This guide does not replace, nor supersede any codes and/ or ordinances adopted by the City of Terrell, or determination and position of the Fire Marshal.

AUTOMATIC FIRE SPRINKLER SYSTEMS

These guidelines are to be followed when a business, facility or organization installs an automatic fire sprinkler system within the City of Terrell. This document shall assist in the preparation of design documents for review and permit. **These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.**

PERFORMANCE AND INSTALLATION REQUIREMENTS

1. Unless specifically allowed by the current adopted International Fire Code or the current adopted International Building Code, residential sprinkler systems installed in accordance with NFPA 13D or NFPA 13R shall not be recognized for the purposes of exceptions or reductions, commonly referred to as "trade-offs", permitted by other requirements of this code. When an exception is taken for the use of a sprinkler system under Chapter 5 of the current adopted IBC to increase the building size, only an NFPA 13 sprinkler system shall be permitted.
2. Residential sprinkler systems installed in accordance with NFPA 13R, shall include sprinkler protection throughout the attic, patios, balconies and breezeways.
3. An automatic sprinkler system shall be installed throughout all buildings over 6,000 sq. ft.
4. An automatic sprinkler system shall be installed throughout all A-2 occupancies over 5,000 sq. ft., or for any area of an A-2 occupancy in which the occupant load exceeds 100 persons, and as required by the current adopted IFC.
5. When determining the requirement for sprinkler protection, the total area under any roof overhangs, canopies, projections, or other permanent vertical structures, beyond that of the building footprint, is included in the total area determination. EXAMPLE: A proposed building area is 5,800 sq. ft. Multiple canopies are indicated to cover the entrances. The total square footage of the canopies is 300 sq. ft. The total building area is calculated as: 5,800 sq. ft. + 300 sq. ft. = 6,100 sq. ft. Therefore, this building would require an automatic sprinkler system.
6. All I, H, R, & self-storage facility occupancies shall be protected throughout with an automatic sprinkler system, regardless of total square footage.
7. All Group R occupancies shall be provided with sprinkler protection on balconies, regardless of construction, with the exception of R-3 detached single family homes.
8. Automatic sprinkler systems shall be designed with a minimum 10 PSI safety factor.
9. Automatic Sprinkler System Room Access. Sprinkler system risers providing protection for buildings with multiple tenant spaces must be located in a ground floor room directly accessible from the exterior. The door must be labeled as the riser room. Buildings with single tenants may access the riser location from the interior of the building.
10. Riser Room Size. All fire sprinkler riser rooms shall be a minimum of 36 sq. ft., with no dimension less than 6 ft., and shall be large enough to accommodate maintenance and testing activities.

11. Sprinkler systems for all strip retail centers, multiple tenant buildings, speculative warehouses, or any other multiple tenant building, regardless of ceiling height, shall be designed to provide a minimum of Ordinary Hazard Group 2.
12. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems and standpipe systems, with the exception of fire department hose connections, shall be electrically supervised.
13. Approved, supervised, indicating control valves shall be provided at the point of connection to the riser on each floor in all high-rise buildings and all buildings more than one (1) story in height.
14. An approved, audible/ visual device shall be connected to every automatic sprinkler system.
15. An approved, weatherproof, audible/ visual device shall be provided on the exterior in the area of the Fire Department Connection (FDC).
16. The Fire Department Connection (FDC) and the nearest fire hydrant shall be located on the same side of the fire access road, if the hydrant is located on the property.
17. The FDC must be located along the side of the building adjacent to the fire lane, unless otherwise approved by the Fire Marshal's Office.
18. The FDC shall be clear and unobstructed with a minimum of a 3 ft. clearance around the FDC, no higher than 48 in. above grade, and a clear path.
19. Riser rooms shall be permanently heated, and such heating appliances shall be hard-wired to the building electrical distribution system. Heating devices shall not be provided with an on/ off switch.
20. All inspectors' test, ball-drips, and main-drains shall be piped directly to the outside of the building.
21. At least one inspection test connection (ITC) shall be installed for each system. It is allowed to install the ITC at the riser assembly; however, a remote location is preferable.
22. Dry-system air compressors shall be hard wired.
23. Pre-action system solenoids shall be wired for alarm activation upon AC current loss.
24. Where there are more than 30 *dwelling units* on a single public or private fire apparatus access road and all *dwelling units* are equipped throughout with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, access from two directions shall not be required

SELF-SERVICE STORAGE FACILITIES

1. An automatic sprinkler system shall be installed throughout all self-service storage facilities. A screen shall be installed of not less than one (1) inch or greater than six (6) inches in size. The screen and its supports shall be installed such that all elements are at least eighteen (18) inches below any sprinkler heads to restrict storage above that level.

STANDPIPE SYSTEMS

1. Buildings Exceeding 10,000 sq. ft. - In buildings exceeding 10,000 square feet in area per story and where any portion of the building's interior area is more than 200 feet (60960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access, Class I automatic wet or manual wet standpipes shall be provided..
2. Hose valves shall have a 2 ½-inch outlet cap with a 2 ½-inch to 1½-inch reducer with cap and chain.
3. A full flow test will be required for all standpipe systems at the approved designed flow and pressure in order to verify the hydraulic calculations.

SIGNAGE REQUIREMENTS

1. Fire protection signage shall be provided as outlined in IFC Section 511. Reference the signage guidelines for additional information regarding sign materials, size and locations.

PERMITTING REQUIREMENTS

To expedite the plan review and inspection processes, please refer to the information listed below

1. Provide a written description of the work to be performed.
2. A "Wet" RME signature and stamp is required on all plan drawings and calculations.
3. Plans shall be clear and legible, and all sheets shall be in a common and appropriate scale.
4. Provide a one digital PDF copy.
5. The following information shall be provided on the plans;
 - Floor plan.
 - Square footage.
 - Location of doors.
 - Intended use of each room is identified.
 - North arrow provided.
 - Location of the Remote Fire Department Connection (FDC).
6. Occupancy classification.
7. Scope of Work.
8. Site plan to include the all fire hydrants, fire lanes, fire department connections and the fire service lead- in.
9. Equipment List.
10. Hydraulic calculations for each design area.

11. A minimum of one (1) set of data specifications sheets for all equipment shall be provided in PDF format.
12. Specific materials in the specification booklet are to be identified by an arrow or highlighter.
13. A complete full-height cross section of the building.
14. Area of coverage of each sprinkler head.
15. Total area protected by each system.
16. Capacity of the dry system or antifreeze system.
17. Hydraulic node symbols and schedule.

COMMERCIAL COOKING HOOD FIRE SUPPRESSION SYSTEM

These guidelines are to be followed when a business, facility or organization proposes to perform cooking operations that will involve grease-laden vapors, within the City of Terrell.

This guideline identifies protection for cooking surfaces which include deep fat fryers, griddles, upright broilers, char broilers, range tops and grills, open face ovens, salamanders, cheese melters, woks, open face pizza ovens, and other similar equipment.

PERFORMANCE AND INSTALLATION REQUIREMENTS

1. The piping shall be rigidly supported to prevent excessive movement and shall be protected from mechanical or other damage.
2. All systems shall meet UL 300.
3. Both a manual and automatic means of activation shall be provided. A minimum of one manual activation pull station shall be provided in the path of egress and shall be located no more than 5 ft. above the floor.
4. The manual actuation device shall be located a minimum of 10 ft. and a maximum of 20 ft. from the kitchen exhaust system.
5. Where multiple manual actuators are installed for protection of separate extinguishing systems, they shall be clearly identified as to the hood being protected.
6. Distinctive audible and/ or visual alarms shall be provided to indicate system operation and activation. Specifically, an audible/ visual notification device shall be provided to indicate system operation, requiring personnel attention and system recharge.
7. The fire suppression system shall be interconnected to the building fire alarm system if equipped. Activation of the Kitchen Hood Fire Suppression System shall cause the fire alarm to activate throughout the building.
8. Activation of the fire suppression system shall automatically shut-off the fuel supply, ventilation controls if required, fans, and any other equipment necessary. Shut-off valves and switches shall be of the types that require a manual action to reset.
9. When a building fire alarm system is provided, activation of the fire suppression system shall transmit full addressable information in accordance with the Fire Alarm Operational Guidelines.
10. A "K" Class fire extinguisher shall be installed at an approved location, and within 30 feet of commercial food heat-processing equipment, as measured along an unobstructed path of travel.
11. Pre-engineered fire suppression systems shall be installed only by companies and individuals licensed by the State of Texas State Fire Marshal's Office.
12. To expedite the plan review and inspection processes, please refer to the information listed below.

PERMITTING REQUIREMENTS

1. A "Wet" FEL signature required for non-pre-engineered systems.
2. A minimum one digital (PDF) copy shall be submitted.
3. Plans shall contain sufficient detail to enable the plan reviewer to accomplish a complete review. The following information shall be provided on the plans:
 - a. Indicate scale or acceptable dimensions.
 - b. Include manufacturer's data sheets.
 - c. Include hood dimensions.
 - d. Include duct perimeter.
 - e. Include appliance dimensions.
 - f. Include piping schematic.
 - g. Indicate nozzle type, direction and number.
 - h. Indicate the location and temperature of the fusible links.
4. The plenum space within the hood and exhaust ducts shall be protected.
5. A minimum of one drawing shall be provided in 3D/ Isometric view of the hood, ductwork and protected appliances.
6. A floor plan shall be provided and shall indicate the location of the kitchen hood itself, electrical panel, manual pull station, K Class fire extinguisher and suppression system cabinet.
7. A digital copy of the manufacturer specifications shall be provided.
8. Equipment List.
9. Plans shall indicate the interconnection to the building fire alarm system;
10. Plans shall indicate the interconnection to the fuel supply shut-off and indicate the type of fuel supply.
11. The title block shall contain the following:
 - a. Location of the installation.
 - b. Name and complete address of the business.
 - c. Name and complete address of the installing company.
 - d. Licensing information.
 - e. "Wet" signature, if required.
12. Provide a copy of your State of Texas State Fire Marshal's Office license.
13. Drawings shall be generated by the installing company specific to the installation.
14. Drawings shall show plan view and other pertinent information.
15. Submittal package must identify and include all the above requirements to be accepted for review.
16. No hood suppression systems shall be installed on the site until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued.

GENERAL SUBMITTAL REQUIREMENTS

1. Each submittal shall have a completed City of Terrell Commercial Building Permit Application.
2. Plans approved by the Fire Marshal's Office give authorization for installation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
3. All fire department inspection forms and permits shall be kept on the job site until final inspection.
4. All installations shall comply with the approved plans. Any deviation from the approved plans, requires a resubmittal to the Fire Marshal's Office.
5. All commercial cooking operations for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to NFPA 17, NFPA 17A, and the current International Fire Code, adopted and amended by the City of Terrell.

This guide does not replace, nor supersede any codes and/ or ordinances adopted by the City of Seguin, or determination and position of the Fire Marshal.

EMERGENCY RESPONDER RADIO BDA COVERAGE SYSTEMS

OPERATIONAL REQUIREMENTS FOR INSTALLATION, MAINTENANCE, AND MONITORING

These guidelines are to be followed when a building, or facility, within the City of Terrell, does not meet the signal level requirement and is required to have an approved Two-Way Radio Communications Enhancement System. All Two-Way Radio Communications Enhancement Systems for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to current adopted versions of NFPA 72, NFPA 1221, International Fire Code, and FCC 47 CFR Part 90.219.

APPLICABILITY

All new and existing buildings shall have approved radio coverage for emergency responders within the building. This coverage is based upon the existing coverage levels of the Terrell Public Safety Communications System at the exterior of the building if the following minimum conditions fail to meet compliance of IFC, Section 510.4.1.1 and 510.4.1.2, NFPA 72 2013, Section 24.5.2.2.1 and 24.5.2.2.2 than an enhancement system is needed:

A minimum signal strength of -95dBm shall be provided in

1. Critical areas, such as fire command center(s), fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical shall be provided with 99 percent floor area radio coverage.
2. General areas shall be provided with 90 percent floor area radio coverage.

Contact the Fire Marshal's Office for technical information related to radio frequencies, radio system and antenna site locations.

TWO-WAY RADIO COMMUNICATIONS ENHANCEMENT SYSTEM PROJECT REQUIREMENTS

1. A permit is required before every project. In order to acquire a permit, a design package is required. Design package should include:
 - Submittal Document: This document must include the material list, data sheets of the materials, snapshots of the overall design plan and floor plans.
 - Overall design plan, Floor plans with the design, prediction propagation heat maps on PDF format with proper labeling for each component on a 24"x36" scale. Design plan will also include projected emission limits to reduce the interference potential that would cause adverse effects of increased noise floor at the donor site.

- Benchmark testing is required for each floor to make sure the amount of coverage is needed (whole floor, partial floor or none needed). The results of this test must include the make/model and calibration certificate of the measurement device used.
- 2. Plenum cable and connectors required for all interior horizontal and vertical runs.
- 3. Outdoor rated coax cable and connectors required for exterior runs.
- 4. Passive components and antennas must be easily purchasable/ replaceable. Examples of brands to be used: microlab, commscope, westell, clearlink, terrawave, galtronics, or equivalent.
- 5. All active components must be in a NEMA 4/NEMA 4X enclosure. This includes Repeater, Remote Units, and DAS Head End Units. Repeater and Active DAS equipment must be Cobham, ADRF, Comba, G-Wave, or equivalent.
- 6. Active components shall be located in an approved accessible conditioned space or room, such as an IT closet, lobby office space or similar.
- 7. There must be sufficient isolation between the donor and service antennas, the minimum isolation required is 15dB greater than the repeater gain.
- 8. Battery backup must be provided in a NEMA 4/NEMA 4X Enclosure and a calculated runtime of the 24-hour battery backup must be provided.
- 9. All interior vertical runs must be protected in a 2-hour Fire rated raceway or enclosure. If the interior vertical runs are in a stacked 2 hour rated room and sealed with proper fire caulking, that meets the requirement.

The Two-Way Radio Communications Enhancement System installation and components shall also comply with all applicable federal regulations including but not limited to, FCC 47 CFR Part 90.219.

Installations must be registered in the FCC signal booster database that can be accessed at <https://signalboosters.fcc.gov/signal-boosters/>.

ORGANIZATIONAL AND EQUIPMENT REQUIREMENTS

The minimum qualifications of the system designer and lead installation personnel shall include the following:

1. A valid FCC-issued General Radio Operators License.
2. Certification of in-building system training issued by a nationally recognized organization, school, or a certificate issued by the manufacturer of the equipment being installed.

In lieu of the above qualification requirements a demonstration of adequate skills, knowledge, and experience will need to be provided.

System design software with prediction tools are to be used in the design plan to give an accurate display of the overall design and RF propagation, e.g., IBwave, Ranplan. The design process shall include site surveys to collect pre and post installation data to validate predictions and ensure proper loss, gain, and power levels.

A calibrated spectrum analyzer will be used to validate pre and post installation signal levels in dBm. Validations and loss, gain, power levels will be included in the completed As-Built documentation.

A calibrated coax cable sweep test device will be used to capture accurate losses to validate design loss predictions and ensure proper installation of connectors. All measured cable losses will be included in the completed As-Built documentation.

ACCEPTANCE TEST REQUIREMENT

Each Floor must be divided into a minimum of 20 grids and one sample must be taken from the center of each grid. A calibrated spectrum analyzer will be used to ensure a signal level of -95dBm or greater is recorded in each grid. Critical areas will have 99 percent coverage and General areas will have 90 percent coverage. Critical areas must have their own grid in addition to 20 grids. (Elevator lobby, stair case, mechanical rooms). The test will be deemed failed if two or more adjacent grids do not meet the required signal level.

Additionally, Delivered Audio Quality (DAQ) testing will be performed with the same model/manufactures radio as used by the City of Terrell's Fire Department. A DAQ of 3.4, speech understandable with repetition only rarely required, will be required in the same critical and general test grid locations.

As-Built Design documents, cable sweep test documentation, and acceptance test results will be kept onsite for reference.

MONITORING AND MAINTENANCE

The Two-Way Radio Communications Enhancement System shall include automatic supervisory and trouble signals for malfunctions of the signal booster(s) and power supply(ies) that are annunciated by the fire alarm system and comply with the following:

1. System and signal booster supervisory signals shall include the following:
 - Antenna malfunction
 - Signal booster failure
2. Power supply/Battery backup signals shall include the following for each signal booster:
 - Loss of normal ac power
 - Failure of battery charger
 - Low-battery capacity indication

The Two-Way Radio Communications Enhancement System shall be inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following:

1. In-building coverage test.
2. Signal boosters shall be tested to verify that the output power is the same as it was upon initial installation and acceptance.
3. Backup batteries and power supplies shall be tested under load for a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.
4. Other active components shall be checked to verify operation within the manufacturer's specifications.
5. At the conclusion of the testing, a report, which shall verify compliance will be submitted to the Terrell Fire Marshal's Office.

UNDERGROUND STORAGE TANKS

These guidelines are to be followed when an underground storage tank is moved, installed, or otherwise added, within the City of Terrell..

UNDERGROUND STORAGE TANK (UST) REQUIREMENTS

1. The tank must be installed by a TCEQ licensed underground storage tank installer.
2. Approved flame arrestors and venting devices shall be installed in the vent lines IAW IFC Section 5704.2.7.3.2.
3. Emergency venting shall meet the requirements of NFPA 30 and IFC Chapter 57.
4. Secondary containment. An approved method of secondary containment shall be provided for underground tanks and piping systems.
5. The tank must display a UL Listed placard.
6. A leak detection system must be installed and provided with approved vapor and liquid detection, equipped with on-site audible and/ or visual warning devices with battery backup, as approved by IFC Section 5704.2.11.5 and NFPA 30.
7. A spill container having a capacity of not less than 5 gallons shall be provided at each fill connection.
8. An overfill prevention system shall be provided for each tank to prevent being filled in excess of 95% capacity. The system must meet the requirements of IFC, Section 5704.2.11.4.

During fill operation, the system shall:

- Provide an independent means of notifying the person filling that the fluid level has reached 90 percent of tank capacity by providing a tank level gauge marked at 90 percent of tank capacity, or other approved means.
 - Automatically shut off the flow of fuel to the tank when the quantity reaches 95 percent of tank capacity.
 - Reduce the flow rate to not more than 15 gallons per minute so that at the reduced flow rate, the tank will not overflow for 30 minutes, and automatically shut off flow into the tank so that none of the fittings on the top of the tank are exposed to product because of overfilling.
9. Leak Detection. Underground storage tank systems shall be provided with an approved method of leak detection from any component of the system that is designed and installed in accordance with NFPA 30 and as specified by IFC Section 5704.2.11.5.2.
 10. Observation Wells/ Dry Sumps. Approved sampling tubes of a minimum 6 inches in diameter shall be installed in the backfill material of each underground flammable or combustible liquid storage tank. The tubes shall extend from a point 12 inches below the average grade of the excavation to ground level and shall be provided with suitable surface access caps. Each tank site shall provide a sampling sump at the corners of the excavation with a minimum of 4 sumps.

11. The tank fill connection shall be provided with a means for making a direct connection to the tank's vehicle fuel delivery hose so that no fuel is exposed to the open air during the filling operation.
12. A permanent sign shall be placed at the fill point for the tank, documenting the filling procedure and tank calibration chart.
13. Antisiphon devices shall be installed in each pipe connected to the UST, where the piping extends below the level of the tank.
14. Emergency shut-offs shall be provided during filling and dispensing operations.
15. Relief valves, both emergency and normal, shall be provided and shall normally be in the closed position.
16. Pump dispensing devices shall be equipped with vapor-recovery connections.
17. Appropriate labeling and signs in accordance with IFC, Section 5704.2.3, must be provided;
18. A permanent sign stating, "Smoking or Open Flames Prohibited".
19. An approved emergency procedures sign in accordance with IFC 2304.3.5
20. A permanent sign indicating that when filling the tank, parking is prohibited in the fire lane.
21. A placard specifically identifying the material therein. The placard shall be NFPA 704.
22. Dispensing locations shall limit fuel delivery to 25 gallons and require a manual action to resume, in accordance with IFC 2304.3.7.
23. Any additional requirements of NFPA 30 and IFC Chapters 23 and 57 shall also be met.

PERMITTING REQUIREMENTS

To expedite the permitting and inspection processes, please refer to the information listed below.

1. Provide a written description of the operation and contents of all tanks and/ or systems.
2. Site plan drawings of the existing site location and conditions to include;
 - All buildings, structures, fire lanes and fire hydrants.
 - Location of tanks, vent lines, underground piping, leak detection, dry sumps and dispensing locations with regards to the above.
3. A full equipment listing of all tanks, piping, valves, pumps and equipment specific to the installation.
4. Manufacturer documentation for all parts and materials used in the project. This is to include all UL or NRTL listings and evaluations.
5. Plan drawings shall show the actual install layout, including all piping and pumps.
6. Drawings shall be submitted for review and approval, PRIOR to installation.
7. Drawings shall be generated by the installing company specific to the installation.
8. Drawings shall show plan view and other pertinent information.
9. Submittal package must identify and include all the above requirements to be accepted for review. No underground storage tank(s) or associated piping may be abandoned-in-place on the site until a UST Abandon-In-Place Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued.

GENERAL SUBMITTAL REQUIREMENTS

1. Each submittal shall have a completed City of Terrell Commercial Building Permit Application.
2. Plans approved by the Fire Marshal's Office give authorization for removal. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
3. All fire department inspection forms and permits shall be kept on the job site until final inspection.
4. All installations shall comply with the approved plans. Any deviation from the approved plans requires a re-submittal to the Fire Marshal's Office.

UNDERGROUND STORAGE TANK REMOVAL

Underground storage tank removal operations shall conform to the International Fire Code, as adopted and amended by City of Seguin, current edition adopted of NFPA 30, Flammable and Combustible Liquids Code.

REMOVAL REQUIREMENTS

1. The area of tank removal shall be barricaded a minimum of 50 ft. from the edge of the tank excavation, unless site is too small to allow this distance.
2. The On-Site Supervisor shall hold a valid minimum Type B License issued by the Texas Commission on Environmental Quality (TCEQ) for UST Removals.
3. All flammable and/ or combustible liquids shall be removed from the tanks and piping prior to removal from the ground.
4. All tanks piping, vents, fixtures, lines and other appurtenances shall be removed. Piping will not be permitted to be abandoned in place.
5. If the tanks are to be triple rinsed/ washed, all rinsate liquid shall be disposed of in an approved manner.
6. The tanks shall be purged to remove all flammable vapors prior to removal. The following are approved methods for vapor removal:
 - a. Use of a diffused air blower or eductor type air blower.
 - b. Vacuum truck operation.
7. Prior to tank removal from the ground, LEL measurements shall be taken using a hydrocarbon meter and shall be verified and approved by the field inspector. Tank removal will not be permitted until the atmosphere is less than 10% of the LEL.
8. All UST's removed from the ground must be transported from the City of Seguin on the same day that they are removed.
9. All tanks shall be marked and labeled, prior to transport.
10. The tanks shall be disposed of in accordance with federal and state regulations. Copies of the destination shipping papers and identification of each tank removed shall be provided to the field inspector at the time of the removal.
11. The contractor shall be responsible for the cleanup of any spills or soil contamination and abatement of the same per state and federal requirements. Copies of all documents for the final soil testing results, and the tank destination shall be provided to the Seguin Fire Marshal's Office when completed. The report shall be provided to the Fire Department within 30 days detailing the following:
 - a. Description of tank, piping and/ or fittings removed.
 - b. Description of the excavation.
 - c. Description of sampling methods.
 - d. Description of any remedial efforts necessary.
 - e. Full lab report of the soil samples and listing of any corrective/ remedial measures necessary based on the lab report.

GENERAL SITE REQUIREMENTS

1. This office does **not** review or approve site specific health and safety plans for adequacy, accuracy, or completeness. Compliance with all applicable worker health and safety regulations, including implementation of the site safety plan, is the responsibility of the owner and contractor.
2. Provide two (2) 20-BC portable fire extinguishers within 50 feet of the tank excavation site.
3. "NO SMOKING" signs shall be posted and readily visible.
4. The person, firm or corporation to whom the permit is issued is responsible for the removal and disposal of all product, tank residue, and tank in strict accordance with all applicable statutes, laws and regulations. You are responsible for any and all violations. Additional requirements may be added based on conditions which may arise at the removal site.

PERMITTING REQUIREMENTS

To expedite the permitting and inspection processes, please refer to the information listed below.

1. Provide a written description of the tank removal operations.
2. Site plan drawings of the existing site location and conditions, to include;
 - a. All buildings and structures.
 - b. Fire lanes and fire hydrants.
 - c. Location of tanks with regards to the above.
3. Drawings shall be submitted for review and approval, PRIOR to removal.
4. Drawings shall be generated by the owner and/or licensed TECQ UST company specific to the removal operation. Drawings shall show plan view and other pertinent information.
5. No underground storage tank(s) or associated piping may be removed or otherwise manipulated on the site until a UST Removal Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued for violation of Section 113.3 of the 2015 International Fire Code.

GENERAL SUBMITTAL REQUIREMENTS

1. Each submittal shall have a completed Seguin Fire Department Plan Review Permit Application.
2. Plans approved by the Fire Marshal's Office give authorization for removal. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
3. All fire department inspection forms and permits shall be kept in a permit packet on the job site until final inspection.

Any tank owner who intends to permanently remove their underground storage tank must give thirty (30) days prior notice to the Texas Commission on Environmental Quality (TCEQ). This must include the proposed procedures and a schedule for removing the tank(s).

ABOVEGROUND STORAGE TANKS FLAMMABLE LIQUIDS

These guidelines are to be followed when an aboveground storage tank is relocated, modified or otherwise installed within the City of Seguin. This guide is to apply only to the installation, storage and/or use of flammable liquids, as defined by the International Fire Code.

INSTALLATION REQUIREMENTS

1. The tank(s) shall be provided with secondary containment.
2. The tank(s) shall meet, or exceed UL 142, and the provisions of NFPA 30.
3. Tank(s) shall be constructed of steel. Poly-tanks shall not be permitted.
4. When the installation location may be subject to vehicular impact, bollards designed in accordance with IFC Section 312, or a UL 2085 tank may be required, based upon a review of the hazards and protection provided.
5. The tank must display the UL Listing placard.
6. Normal and emergency venting shall be provided. Emergency venting shall include the calculations to determine the minimum vent sizing in CFH.
7. A leak detection system must be installed, equipped with on-site audible and/or visual warning devices, as approved by IFC and NFPA 30.
8. A spill container having a capacity of not less than 5 gallons shall be provided at each fill connection.
9. An overfill prevention system shall be provided for each tank to prevent from being filled in excess of 95% capacity. The system must meet the requirements of IFC Section 5704.2.9.5
 - Provide an independent means of notifying the person filling that the fluid level has reached 90 percent of tank capacity by providing a tank level gauge marked at 90 percent of tank capacity, or other approved means.
 - Automatically shut off the flow of fuel to the tank when the quantity reaches 95 percent of tank capacity.
 - Reduce the flow rate to not more than 15 gallons per minute so that at the reduced flow rate, the tank will not overflow for 30 minutes, and automatically shut off flow into the tank so that none of the fittings on the top of the tank are exposed to product because of overfilling.
10. The tank fill connection shall be provided with a means for making a direct connection to the tank's vehicle fuel delivery hose so that no fuel is exposed to the open air during the filling operation.
11. Antisiphon devices shall be installed in each pipe connected to the AST, where the piping extends below the level of the tank.
12. Emergency shut-offs shall be provided during filling and dispensing operations.
13. Relief valves shall be provided.
14. Appropriate labeling and signs in accordance with IFC, Section 5404.2.3, must be provided.
 - "Smoking or Open Flames Prohibited".

- Emergency procedures.
 - NFPA 704 or equivalent placard specifically identifying the material therein.
15. All piping and piping systems shall be designed in accordance with NFPA 31 and the IFC.

PERMITTING/SUBMITTAL REQUIREMENTS

To expedite the plan review and inspection processes, please refer to the information listed below.

1. Submittal package shall indicate all of the above requirements.
2. Provide a written description and intent of the installation.
3. Drawings of the installation and conditions shall include the following;
 - Interior installations shall indicate all buildings, structures and walls.
 - Exterior installations shall indicate all buildings, structures, walls, fire lanes and fire hydrants.
4. Full equipment listing of all tanks, piping, valves, and other equipment.
5. Manufacturer documentation for all parts and materials used in the project.
6. Indicate the maximum working pressure of the tank(s) and piping.
7. Drawings shall be generated by the installing company specific to the installation. Drawings shall show plan view and other pertinent information.
8. Provide documentation of tank testing and ability to hold a vacuum. This is in addition to any testing required by the Fire Department.
9. Submittal package must identify and include all the above requirements to be accepted for review.
10. Installation or construction on site shall be prohibited until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued for violation of Section 113.3 of the current adopted International Fire Code.

GENERAL SUBMITTAL REQUIREMENTS

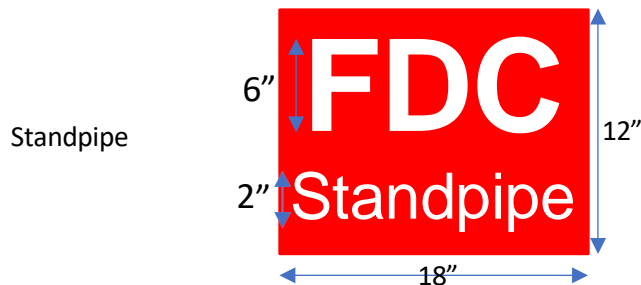
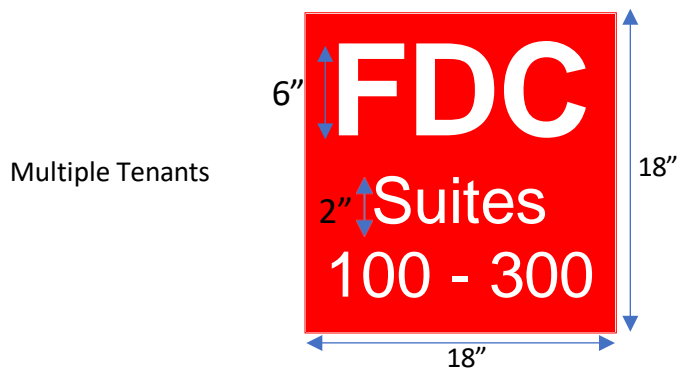
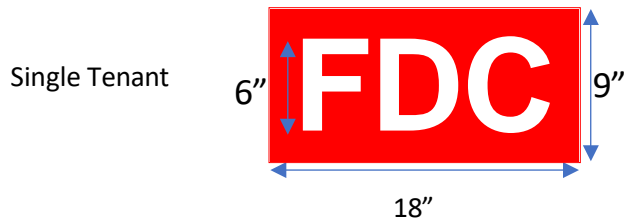
1. Each submittal shall have a completed Seguin Fire Department Plan Review Permit Application.
2. Plans approved by the Fire Marshal's Office give authorization for installation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
3. All installations shall comply with the approved plans. Any deviation from the approved plans requires a re- submittal to the Fire Marshal's Office.

All aboveground storage tank requirements for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to the 2018 International Fire Code, as adopted and amended by City of Seguin, and NFPA 30, Flammable and Combustible Liquids Code.

FIRE DEPARTMENT CONNECTION SIGNS

Fire Department Connection sign requirements

- FDC signs for a single tenant occupancy shall be a minimum of 9" x 18". Sign should show "FDC" in 6" tall white letters. Font should be Arial Bold or similar.
- FDC signs services multiple suites shall be a minimum of 18" x 18". Sign should have "FDC" in 6" tall white letters. Font should be Arial Bold or similar. Sign should also include the suites or apartments served by the FDC. Suites or apartments served should be 2" white Arial or similar font.
- FDC signs should be mounted at least 5 feet above sidewalk or ground.
- FDC connected to a standpipe system should be labeled separately.



AMENDMENTS TO IFC 2021

The following chapters and sections of the 2021 International Fire Code, the adopted Fire Code of the City of Terrell, have been amended to read as follows:

Chapter 3

307.1.1 Prohibited Open Burning – Open burning that is offensive or objectionable because of smoke emissions or when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited.

307.2 Permit Required – A permit shall be obtained from the fire code official in accordance with section 105.6 prior to kindling a fire for recognized silvicultural or range or wildlife management practices, prevention or control of disease or pests, or open burning. Application for such approval shall only be presented by permits issued to the owner of the land upon which the fire is to be kindled.

307.3 Extinguishment Authority – The fire code official is authorized to order the extinguishment by the permit holder, another person responsible, or the fire department of open burning that creates or adds to a hazardous or objectionable situation.

307.4 Location – The location for open burning shall not be less than 300 feet from any structure, and provisions shall be made to prevent the fire from spreading to within 300 feet of any structure.

307.4.1 Bonfires – A bonfire shall not be conducted within 50 feet, or greater distance as determined by the fire code official, of a structure or combustible material, unless the fire is contained in a barbecue pit. Conditions that could cause a fire to spread within the required setback of a structure shall be eliminated prior to ignition.

307.5 Attendance – Open burning, trench burns, bonfires, recreational fires, and use of portable outdoor fireplaces shall be constantly attended until(remainder unchanged)

Chapter 5

503.2.1 Dimensions – Fire apparatus access roads shall have an unobstructed width of not less than 24 feet, exclusive of shoulders, except for approved security gates in accordance with section 503.6, and an unobstructed vertical clearance of not less than 14 feet.

503.2.2 Authority – The fire code official shall have the authority to require an increase in the minimum access widths and vertical clearances where they are inadequate for fire or rescue operations or when necessary to meet the public safety objectives of the jurisdiction.

503.2.3 Surface – Fire apparatus access roads shall be designed and maintained to support imposed loads of 85,000 Lbs. for fire apparatus and shall be surfaced so as to provide all weather driving capabilities.

503.3 Marking – Striping, signs, or other markings when approved by the fire code official, shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Striping, signs, and other markings shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.

(1) **Striping** – Fire apparatus access roads shall be continuously marked by painted lines of red traffic paint six inches (6") in width to show the boundaries of the lane. The words "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" shall appear in four inch (4") white letters at 25 foot intervals on the red border markings along both sides of the fire lanes. Where a curb is available, the striping shall be on the vertical face of the curb.

(2) **Signs** – Signs shall read "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" and shall be 12" wide and 18" high. Signs shall be painted on a white background with letters and borders in red, using not less than 2" lettering. Signs shall be permanently affixed to a stationary post and the bottom of the sign shall be six feet, six inches (6'6") above finished grade. Signs shall be spaced not more than fifty feet (50') apart along both sides of the fire lane. Signs may be installed on permanent buildings or walls or as approved by the Fire Chief.

503.4 Obstruction of Fire Apparatus Access Roads - Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 503.2.1 and 503.2.2 and any area marked as a fire lane as described in Section 503.3 shall be maintained at all times.

507.5.4 Obstruction - Unobstructed access to fire hydrants shall be maintained at all times. Posts, fences, vehicles, growth, trash, storage and other materials or objects shall not be placed or kept near fire hydrants, fire department inlet connections or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately discernible. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

Chapter 9

901.6.1.1 Standpipe Testing - Building owners/managers must maintain and test standpipe systems as per NFPA 25 requirements. The following additional requirements shall be applied to the testing that is required every 5 years:

The piping between the Fire Department Connection (FDC) and the standpipe shall be backflushed or inspected by approved camera when foreign material is present or when caps are missing, and also hydrostatically tested for all FDC's on any type of standpipe system. Hydrostatic testing shall also be conducted in accordance with NFPA 25 requirements for the different types of standpipe systems.

For any manual (dry or wet) standpipe system not having an automatic water supply capable of flowing water through the standpipe, the tester shall connect hose from a fire hydrant or portable pumping system (as approved by the fire code official) to each FDC, and flow water through the standpipe system to the roof outlet to verify that each inlet connection functions properly. Confirm that there are no open hose valves prior to introducing water into a dry standpipe.

There is no required pressure criteria at the outlet. Verify that check valves function properly and that there are no closed control valves on the system. Any pressure relief, reducing, or control valves shall be tested in accordance with the requirements of NFPA 25. All hose valves shall be exercised.

If the FDC is not already provided with approved caps, the contractor shall install such caps for all FDC's as required by the fire code official. Upon successful completion of standpipe test, place a blue tag (as per Texas Administrative Code, Fire Sprinkler Rules for Inspection, Test and Maintenance Service (ITM) Tag) at the bottom of each standpipe riser in the building. The tag shall be check-marked as "Fifth Year" for Type of ITM, and the note on the back of the tag shall read "5 Year Standpipe Test" at a minimum. The procedures required by Texas Administrative Code Fire Sprinkler Rules with regard to Yellow Tags and Red Tags or any deficiencies noted during the testing, including the required notification of the local Authority Having Jurisdiction (fire code official) shall be followed.

Additionally, records of the testing shall be maintained by the owner and contractor, if applicable, as required by the State Rules mentioned above and NFPA 25.

Standpipe system tests where water will be flowed external to the building shall not be conducted during freezing conditions or during the day prior to expected night time freezing conditions.

Contact the fire code official for requests to remove existing fire hose from Class II and III standpipe systems where employees are not trained in the utilization of this firefighting equipment. All standpipe hose valves must remain in place and be provided with an approved cap and chain when approval is given to remove hose by the fire code official.

901.7 Systems Out of Service - Where a required fire protection system is out of service or in the event of an excessive number of activations, the fire department and the fire code official shall be notified immediately and, where required by the fire code official, the building shall either be evacuated or an approved fire watch shall be provided for all occupants left unprotected by the shut down until the fire protection system has been returned to service. ...

{Remaining text unchanged}

903.2.4.2 Group F-1 Distilled Spirits - An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits involving more than 120 gallons of distilled spirits (>16% alcohol) in the fire area at any one time.

903.2.9.3 Group S-1 Distilled Spirits or Wine - An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine involving more than 120 gallons of distilled spirits or wine (>16% alcohol) in the fire area at any one time.

902.2.9.4 & 903.2.9.5 Self-Service Storage Facility - An automatic sprinkler system shall be installed throughout all self-service storage facilities.

903.2.11.3 Buildings 35 Feet or More in Height - An automatic sprinkler system shall be installed throughout buildings that have one or more other than penthouses in compliance with Section 1511 of the International Building Code, located 35 feet (10 668 mm) or more above the lowest level of fire department vehicle access, measured to the finished floor.

903.2.11.7 High-Piled Combustible Storage – For any building with a clear height exceeding 12 feet, see chapter 32 to determine if those provision apply.

903.2.11.8 Spray Booths and Rooms - New and existing spray booths and spraying rooms shall be protected by an approved automatic fire-extinguishing system.

903.2.11.9 Buildings Over 6,000 sq. ft. - An automatic sprinkler system shall be installed throughout all buildings with a building area 6,000 sq. ft. or greater and in all existing buildings that are enlarged to be 6,000 sq. ft. or greater. For the purpose of this provision, fire walls shall not define separate buildings.

Exception: Open parking garages in compliance with Section 406.5 of the International Building Code where all of the following conditions apply:

- a. The structure is freestanding.
- b. The structure does not contain any mixed uses, accessory uses, storage rooms, electrical rooms, elevators or spaces used or occupied for anything other than motor vehicle parking.
- c. The structure does not exceed 3 stories.
- d. An approved fire apparatus access road is provided around the entire structure.

903.3.1.1.1 Exempt Locations - 903.3.1.1.1 Exempt Locations. When approved by the fire code official, automatic sprinklers shall not be required in the following rooms or areas where such ... {text unchanged}... because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the

nature of the contents, where approved by the fire code official.

3. Generator and transformer rooms, under the direct control of a public utility, separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.

4. {Delete}

5. Elevator machine rooms, and machinery spaces, and hoist-ways, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstances.

6. {Delete.}

903.3.1.2.2 Corridors and Balconies - Sprinkler protection shall be provided in all corridors and for all balconies. {Delete the rest of this section.}

903.3.1.4 – Freeze Protection - Freeze protection systems for automatic fire sprinkler systems shall be in accordance with the requirements of the applicable referenced NFPA standard and this section.

903.3.1.4.1 Attics - Only dry-pipe, pre-action, or listed antifreeze automatic fire sprinkler systems shall be allowed to protect attic spaces.

Exception: Wet-pipe fire sprinkler systems shall be allowed to protect non- ventilated attic spaces where:

1. The attic sprinklers are supplied by a separate floor control valve assembly to allow ease of draining the attic system without impairing sprinklers throughout the rest of the building, and
2. Adequate heat shall be provided for freeze protection as per the applicable referenced NFPA standard, and
3. The attic space is a part of the building's thermal, or heat, envelope, such that insulation is provided at the roof deck, rather than at the ceiling level.

903.3.1.4.2 Heat Trace/Insulation - Heat trace/insulation shall only be allowed where approved by the fire code official for small sections of large diameter water-filled pipe.

903.3.5 Water Supplies – {Second Paragraph Added} Water supply as required for such systems shall be provided in conformance with the supply requirements of the respective NFPA standards; however, every water-based fire protection system shall be designed with a 10 psi safety factor. Reference Section 507.4 for additional design requirements.

903.4 Sprinkler System Supervision and Alarms – {Second Paragraph After the Exceptions Adde} Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department

hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

903.4.2 Alarms – {Second Paragraph Added} The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75 candela strobe rating, installed as close as practicable to the fire department connection.

905.3.9 Buildings Exceeding 10,000 sq. ft. - In buildings exceeding 10,000 square feet in area per story and where any portion of the building's interior area is more than 200 feet (60960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access, Class I automatic wet or manual wet standpipes shall be provided.

Exceptions:

1. Automatic dry, semi-automatic dry, and manual dry standpipes are allowed as provided for in NFPA 14 where approved by the fire code official.
2. R-2 occupancies of four stories or less in height having no interior corridors.

905.9 Valve Supervision – {Second Paragraph Added} Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

906.1(1) Where Required –{Deleted 3, 3.1, 3.2, 3.3, 3.4,& 3.5}

907.1.4 Design Standards - Where a new fire alarm system is installed, the devices shall be addressable. Fire alarm systems utilizing more than 20 smoke detectors shall have analog initiating devices.

907.2.1 Group A - A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies having an occupant load of 300 or more persons, or where the occupant load is more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Section 707.3.10 of the International Building Code shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exception {no change}

Activation of fire alarm notification appliances shall:

1. Cause illumination of the means of egress with light of not less than 1 foot-candle (11 lux) at the walking surface level, and
2. Stop any conflicting or confusing sounds and visual distractions.

907.2.3 Group E - A manual fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E educational occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. An approved smoke detection system shall be installed in Group E day care occupancies. Unless separated by a minimum of 100' open space, all buildings, whether portable buildings or the main building, will be considered one building for alarm occupant load consideration and interconnection of alarm systems.

Exceptions:

1. {No change.}

1.1. Residential In-Home day care with not more than 12 children may use interconnected single station detectors in all habitable rooms. (For care of more than five children 2 1/2 or less years of age, see Section 907.2.6.)

{No change to remainder of exceptions.}

907.2.10 Group S - A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S public- and self-storage occupancies for interior corridors and interior common areas. Visible notification appliances are not required within storage units.

Exception: {No change.}

907.2.13 High Rise Buildings – {Exception #3 Changed} Open air portions of buildings with an occupancy in Group A-5 in accordance with Section 303.1 of the International Building Code; however, this exception does not apply to accessory uses including but not limited to sky boxes, restaurants, and similarly enclosed areas.

907.4.2.7 Type – {Added} Manual alarm initiating devices shall be an approved double action type.

907.6.1.1 Wiring Installation – {Added} All fire alarm systems shall be installed in such a manner that a failure of any single initiating device or single open in an initiating circuit conductor will not interfere with the normal operation of other such devices. All signaling line circuits (SLC) shall be installed in such a way that a single open will not interfere with the operation of any addressable devices (Class A). Outgoing and return SLC conductors shall be installed in accordance with NFPA 72 requirements for Class A circuits and shall have a minimum of four feet separation

horizontal and one foot vertical between supply and return circuit conductors. The initiating device circuit (IDC) from a signaling line circuit interface device may be wired Class B, provided the distance from the interface device to the initiating device is ten feet or less.

907.6.3 Initiating Device Identification – {Delete All Four Exceptions}

910.2 – {Exception #2 & #3 Changed}

2. Only manual smoke and heat removal shall be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers. Automatic smoke and heat removal is prohibited.

3. Only manual smoke and heat removal shall be required in areas of buildings equipped with control mode special application sprinklers with a response time index of $50(m^*S)^{1/2}$ or less that are listed to control a fire in stored commodities with 12 or fewer sprinklers. Automatic smoke and heat removal is prohibited.

910.2.3 Group H – {Added} Buildings and portions thereof used as a Group H occupancy as follows:

1. In occupancies classified as Group H-2 or H-3, any of which are more than 15,000 square feet (1394 m²) in single floor area.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3, and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high-hazard commodity classification.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

910.4.3.1 Makeup Air - Makeup air openings shall be provided within 6 feet (1829 mm) of the floor level. Operation of makeup air openings shall be automatic. The minimum gross area of makeup air inlets shall be 8 square feet per 1,000 cubic feet per minute (0.74 m² per 0.4719 m³/s) of smoke exhaust.

912.2.3 Hydrant Distance {Added} An approved fire hydrant shall be located within 100 feet of the fire department connection as the fire hose lays along an unobstructed path.

913.2.1 Protection of Fire Pump Rooms – {Added Second Paragraph} When located on the ground level at an exterior wall, the fire pump room shall be provided with an exterior fire department access door that is not less than 3 ft. in width and 6 ft. – 8 in. in height, regardless of any interior doors that are provided. A key box shall be provided at this door, as required by Section 506.1.

Exception: When it is necessary to locate the fire pump room on other levels or not at an exterior

wall, the corridor leading to the fire pump room access from the exterior of the building shall be provided with equivalent fire resistance as that required for the pump room, or as approved by the fire code official. Access keys shall be provided in the key box as required by Section 506.1.

Chapter 56

5601.1.3 Fireworks - The possession, manufacture, storage, sale, handling, and use of fireworks are prohibited.

Exceptions:

1. Only when approved for fireworks displays, the storage and handling of fireworks as allowed in Section 5604 and 5608.
2. The use of fireworks for approved fireworks displays as allowed in Section 5608.... {Delete remainder of text.}