

1. Introduction

1.1. Purpose and Scope

The information contained in this guide book is intended to assist developers, designers, planners and builders to determine the minimum requirements for fire protection related subjects during the design phase. This guide shall apply to all new construction, building sites, subdivision development, annexation, and rezoning within the Kiowa Fire Protection District boundaries.

It should be noted that the information contained in this document is specific to the Kiowa Fire Protection District and is not intended to address the requirements of any other jurisdiction or Authority Having Jurisdiction (A.H.J.) (i.e. County Building Inspectors, Planning Department, or other Fire Departments).

This Guide Book is designed to assist you in preparing submittal packages for the Kiowa Fire Department's review. This guide in no way should be considered as a grant for a noncompliance with a local codes, ordinances, or standards, nor is it in any way a written approval for your project.

1.2. Document Maintenance

This is a living document and is subject to change. This document is kept up-to-date through the review of proposed changes submitted by code enforcing officials, District Board members, Firefighters and other interested parties.

Proposed changes are carefully considered by the District's Fire Chief and submitted to the KFPD Board of Directors for adoption.

The contents of this work are subject to change both through the Code adoption cycles by the KFPD and the Elbert County Commissioners that enacts the code into law and empowers the Fire Protection District for enforcement. Town of Kiowa ordinances and governing authority are also considered in the review process.

1.3. Appeals Process

IFC 2006 Section 108 will be the process by which the Board of Appeals will be modeled. An application for appeal shall be based on a claim that the intent of this code or the rules legally adopted hereunder have been incorrectly interpreted, the provisions of the code do not apply, or an equivalent method of protection or safety is proposed. The board shall have no authority to waive code requirements.

Kiowa Fire Protection District Information

The Kiowa Fire Protection District is responsible for fire protection, fire prevention, and emergency rescue and medical services to citizens in 324 square miles in north central Elbert County, within the State of Colorado. Kiowa Fire Protection District also serves the Town of Kiowa.

The District is staffed by a combination of career staff and volunteer firefighters.

There are currently two operational fire stations in the district and future stations are planned in key areas of the district to improve or maintain response times and subsequently the insurance rates for areas as they are developed within the Fire District.

The Insurance Services Office (ISO) has rated the Fire District as Class 6 within 5 travel miles of Station 21 which is in the Town of Kiowa. The Fire Department has been able to achieve this low rating for the Fire District with fire hydrants in the town of Kiowa and has every intention to maintain or upgrade this rating with the addition of a new Town of Kiowa water system. The outlying areas are rated 9 and 10 respectively.

Contacts and Correspondence

Kiowa's main phone number is 303-621-2233. Station 21 is manned Monday through Sunday during the day time hours. Please leave a message – the staff is often called out for emergencies.

Dian Bowers, Fire Chief

Kurt Hulce, Asst. Chief

Wendy Courdin, EMS Coordinator

Send submittals and correspondence to:

Kiowa Fire Department
Planning and Development
P.O. Box 321
Kiowa, CO 80117

1.3. District Objectives

1.3.1. Standards;

Elbert County and the Kiowa Fire Protection District's Board of Directors have adopted the International Fire Code 2006, standards and amendments to be enforced with in its jurisdiction. Additionally other national safety codes (National Electrical Safety Code, National Electrical Code for example) may also be used when reviewing submittals.

Prior to this adoption, Elbert County had adopted the 1997 Uniform Fire Code Kiowa Fire Protection District has used the 1997 Uniform Fire Code as a basis for its reviews and inspections.

Common safety requirements may be instituted, such as road signage and address markers sizing and colors.

Kiowa Fire Department has large fire apparatus operating in the district. During our review of any proposals we will consider this.

1.3.2. Safety

The Kiowa Fire Protection District's number one concern is for the health, safety and well being of the District's residents and visitors as well as District firefighter safety. Through excellence in training and operations, we maintain high standards for personnel, both career and volunteer.

1.3.3. Services

Kiowa Fire Protection District's Board of Directors and personnel strive to maintain a valuable service level for the residents of the fire district. We operate two Advanced Life Support ambulances to provide state of the art quality EMS to our District residents.

With the current level of development and the additional stresses caused by the number of new developments, the Kiowa Fire Protection District Board of Directors hired BBC Research & Consulting (BBC) in September of 2003 to calculate impact fees for the Fire District. District impact fees were adopted by Board Resolution on November 5, 2003.

Impact fees are defined as one time assessments used to recover the capital costs imposed on local governmental agencies by new growth. They are governed by principles established in both State of Colorado and Federal law. Colorado's Senate Bill 15, which was passed in 2001, specifically gives Colorado governmental agencies the authority to levy Land Development charges or impact fees.

BBC has used two methods for determining the impact fees KFPD can use to determine its fee structure. Both methods are industry standard and are defensible methods.

1.3.4. Roadway Interconnects;

The Kiowa Fire Protection District is currently is in an area of development where past development was sparse and little heed was paid to the interconnection of subdivision roadways and other major road interconnects for faster responses by emergency personnel and equipment.

The fire district's referral and evaluation will look at ingress and egress designs in the proposed plans. Interconnection, fluid movement of vehicles and emergency response will all be factors in our review.

Fire access easements will only be considered if and when there is public resentment of a road interconnect and only when the fire easements will be maintained as an all weather easement. All weather easement means the easement will be cleared of all snow and or debris, allowing for emergency vehicle passage.

Whenever possible, the district would like to see improved interconnections of roadways within the district. Additional interconnects are needed to lessen response times in the district.

In addition, during our review of proposed developments we will look at the designs for the health and safety of our residents, sidewalks, bike paths, non-connector roads and interconnection with adjoining developments for residents' ingress and egress.

In conjunction with Elbert County government and the Town of Kiowa's Board of Trustee's we will prioritize the health and safety of our citizens regarding access.

1.4. Commercial Development

The District encourages commercial development within its jurisdiction. This development provides not only local services and employment to our residents, monies generated by commercial property taxes help maintain a higher level of service by the District.

District personnel will work with developers to pre-plan developments, providing insight to Fire Code issues and requirements, ingress and egress for emergency vehicles.

Commercial development must meet the Fire Code requirements, including fire flow, sprinkler systems and hydrant location placement.

Commercial development will be inspected on a regular basis by the Kiowa Fire Protection District for fire and safety practices.

2. Codes and Standards

2.1. Introduction

As a special district Kiowa Fire Protection District is organized under Title 32, Article 1, of the Colorado Revised Statutes.

The District is empowered by this statute to enforce the Fire Code, as amended and adopted by resolution of the Elbert County Commissioners, Town of Kiowa Board of Trustees, and the Kiowa Fire District Board of Directors.

2.2. City and County Codes

2.2.1. Elbert County

Elbert County Commissioners have adopted by resolution in 2007, the 2006 Edition of the International Fire Code, amendments and standards. Local Fire departments within the County borders enforce the provisions of the International Fire Code (IFC) within their respective fire district boundaries.

Prior to this Elbert County Commissioners have adopted by ordinance, the 1997 Edition of the Uniform Fire Code and standards. Local Fire departments within the Counties borders enforce the provisions of the Uniform Fire Code (UFC) within their respective fire district boundaries.

2.2.2. Driveways;

Elbert County has adopted a Driveway Standard for the County. This Standard is based upon IFC requirements. The County Inspectors will inspect driveways to meet this County standard. All new driveways within the Kiowa Fire Protection District should meet this standard.

2.2.3. Roadways

Elbert County Roadway Design and Construction Manual mandates the basis for road requirements, design and construction in the County. KFPD also requires per the Fire Code Article 9, and subsequence subsection requirements for fire apparatus travel.

2.2.4 Town of Kiowa

Town of Kiowa has adopted ordinances that govern the driveways and roadways within the town limits.

2.3. Referenced Standards and Codes

The following standards publications shall be used, but not limited to the following in the district:

Site Plans and subdivision review:

Normative:

2006 International Fire Code

2006 International Building Code

Note: the IFC and IBC contain a list of references

Town of Kiowa ordinances (*when projects lie within town limits*)

1997 Uniform Fire Code

1997 Uniform Building Code

Informational:

Fire Alarm Systems:

NFPA 72, National Fire Alarm Code

NFPA 70, National Electric Code

NFPA 170, Standard for fire Safety Symbols

Sprinkler Systems:

NFPA 13, Standard for the Installation of Sprinkler Systems

NFPA 13D, Standard for the Installation of Sprinkler Systems in One and Two Family Dwellings.

NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential occupancies up to and Including Four Stories in Height.

National Electric Safety Code;

Health and safety issues, road clearances

National Electric Code;

Health and safety issues, road clearances

Other special fire prevention systems shall be designed and installed, using nationally recognized standards.

3. Plan Development Review Information

3.1. Introduction

The locale served by the Kiowa Fire Department is being developed. Elbert County is one of the fastest population growth counties in the state. New development is changing the fire district from rural fire protection to a more developed suburban district. This change from rural to suburban in certain areas is also changing the types of dwelling units from rural ranch-type homes to large multi-story dwellings with larger combustible loads.

As of the writing of this version of the document there is minimal commercial development located within the fire district. There will be interspersed commercial development in several areas in the fire district to provide specialized convenience services to the residents of the district. Currently, residential housing will be the major developmental use in the fire district.

Kiowa Fire Department is striving for position as a proactive fire department, using a long-range master plan for the fire prevention and protection of the district. Kiowa Fire Department provides timely reviews and inspections of the developments and construction sites in the district.

3.2. Plan and Review Required Information

3.2.1. Development Plans

These are normally received through the appropriate town or county via the planning department.

The following is required:

- Contact list with name, address, telephone number of architect, contractors, and owner.
- Plat drawings, Size “C” or “D” drawings (Please include section lines).
- Land use designations (open space, residential, commercial).
- Number of dwellings or building sites.
- Type of anticipated construction.
- Anticipated construction or project phases.
- Details on engineered road design (R.O.W., flowline width, and cross section).
- Engineered water supply system maps showing water storage elements, hydrant locations and main sizes accompanied by appropriate fire flow calculations.

- Impact assessments
- All metropolitan districts formed or incorporated for the development.
- Final County approved address maps (8 1/2 x 11, for our map books).
- Upon completion of an approved addressing plan; the Fire Department requests (5) 24 x 36 sized drawings of the Fire District from the County Mapper showing the location of the road(s) and lot lines. These maps will be posted at the Fire Station used for District Planning.

3.2.2. Commercial Site Plans

Site plans submitted for approval must include the following:

- Name, address, telephone number of architect, contractor, and owner
- Topography information
- Access roadways
- Property setbacks
- Building footprint with location on property
- All existing and proposed hydrants within 1000 feet of building
- Parking facilities
- Details on size, height, construction type, use, and anticipated fire protection features
- Review fee

3.2.3. Commercial Construction Plans

Construction plans submitted for approval must include the following:

- Name, address, telephone number of architect, contractor, and owner
- Two full sets of construction drawings for review
- Details on size, height, construction type, use, and anticipated fire protection features
- Review fee

3.2.4. Fire Protection Plans

Plans for specific fire protection and/or life safety systems should be completed as necessary for the installation of the system.

Professional Engineer (PE) or National Institute Certified Engineering Technician (NICET) stamps with signature required on submitted plans.

All equipment used must be listed for the particular use specified.

Specifications of all equipment must accompany drawings.

4. District Impact

The KFPD identifies through its long-range plan fire station locations and fire and health apparatus that will best serve the needs of businesses and citizens within the District. These station locations and apparatus needs are determined by an analysis of population densities, types of risk and travel time due to distance from stations. KFPD requires developers to pay impact fees to the Fire District to maintain the existing level of services prior to development and call volume increases caused by the additional population and infrastructure of the development by building stations or purchase apparatus for the Fire District. To maintain the ability of the KFPD to provide a high level of service to the district these needs must be addressed. The actual cost of building and equipping a fire station is a burden created by all of the developments the station and District are designed to serve. Such developments must demonstrate adequate fire protection to receive development approvals.

Due to the number of developments being established in the KFPD, The Kiowa Fire Protection District Board of Directors hired BBC Research & Consulting (BBC) in September of 2003 to assess the situation and devise a methodology to calculate impact fees for the Fire District.

Impact fees are defined as one time assessments used to recover the capital costs imposed on local governmental agencies by new growth. They are governed by principles established in both State of Colorado and Federal law. Colorado's Senate Bill 15, which was passed in 2001, specifically gives Colorado governmental agencies the authority to levy Land Development charges" or impact fees.

BBC has used two methods for determining the impact fees KFPD can use to determine it fee structure. Both methods are industry standard and are defensible methods.

KFPD Board of Directors adopted the use of these fees November 5, 2003.. KFPD, in the adoption of this Resolution, understands that as additional developments affect the Fire District and its ability to maintain their standard of service, the impacts of these developments will be evaluated no less than annually and may be adjusted without notice. The Board of Directors continues to monitor the situation and reviews the impact fees on a yearly basis.

As per the KFPD Resolution the following apply;

4.1. Impact Fee payment

All impact fees imposed shall be paid by the developer or property owner, or have a payment agreement signed and in place with KFPD at time of submission to the Elbert County Planning Department or Town of Kiowa, for approval of a final plat, rezone or annexation for any portion of or the entirety of the proposal. Until fees are paid or agreed to, a final approval letter may be withheld from the County or Town of Kiowa.

KFPD, in its sole discretion, may enter into an agreement for alternate payment arrangements and the appropriate security to ensure payment in full of all impact fee obligations.

4.2. Impact Fees

Kiowa Fire Protection District's 2003 adopted impact fees are as follows;

Cost by unit of development:

Residential (per dwelling unit) lot(s) \$1902.00

Non-residential (per building square foot) \$ 1.19

Fire Flow fees (do not apply in Town of Kiowa)

Developers may choose one of three options:

1. Development of a 30,000 gallon cistern per district requirements
2. Residential sprinklers in each dwelling unit
3. Cash in lieu of \$1,040 per lot

5. Driveway, Access Driveways and Roads

5.1. Scope:

This standard defines the minimum requirements for the fire department's access to single-family dwelling units within Elbert County in order to facilitate an immediate response from fire and EMS agencies.

5.2. Premises Identification:

Approved numbers or addresses will be provided by Elbert County;
Markers for all new and existing dwellings must be in such a position as to be plainly visible and legible from the street or road fronting the property;
Although not required the use of red fiberglass post or metal sign with white reflective numbering is recommended.

5.3. Driveway Design Specifications

The Elbert County Driveway specifications adopted by the Elbert County Commissioners are supported by the Kiowa Fire Protection District.

5.3.1. Dimensions:

The Fire District follows the Elbert County Driveway specifications adopted by the Elbert County Commissioners and the IFC 2006, section 502 specifications;

5.3.2. Vertical Clearance:

Due to the height of the KFPD apparatus, the Fire District follows the IFC for minimum height requirements over driveways (13 feet 6 inches).

5.3.3. Obstruction(s)

The required width of a fire access road shall not be obstructed in any manner, including parking of vehicles.

Minimum required widths and clearances established shall be maintained at all times.

5.3.4. Gates:

Must open “in” toward the property; or what would be considered away from the main roadway servicing the property.

5.3.5. Cattle grate(s):

Must be capable of handling the imposed weight (67,000 pounds.) of fire apparatus traveling over the grate.

Shall be designed and constructed to meet the provisions of the Uniform Fire Code, National Fire Protection Association (NFPA) and the Elbert County Roadway Design and Construction Manual.

5.4. Road Design Specifications

5.4.1. FIRE APPARATUS ACCESS ROAD.

Is defined as a road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane and access roadway.

In addition to the Fire Code, adopted by Elbert County, KFPD requires all roads to meet or exceed, the adopted Elbert County Elbert County Roadway Design and Construction Manual. Roadways within the Town of Kiowa are governed by local ordinance.

503.2 Specifications. Fire apparatus access roads shall be installed and arranged in accordance with Sections 503.2.1 through 503.2.7.

5.4.2. Dimensions and Clearance:

The Fire District follows the IFC 2006, section 503 specifications;

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm).

503.2.2 Authority. The fire code official shall have the authority to require an increase in the minimum access width.

5.4.3. Terminations:

All road terminations **MUST** terminate either in a cul-de-sac with a minimum of 60 foot turning radius or at an approved intersection as required in the Elbert County Road and Bridge Manual.

5.4.4. PRIVATE ROADS

Provide access to more than two dwellings or one or more commercial buildings shall be constructed to meet the roadway standards approved by the Kiowa Fire Protection District.

KFPD may accept private roads that do not meet the roadway standard provided that alternative methods and materials are incorporated into the subdivision that address the fire and life safety of the citizens.

5.4.5. Obstruction(s)

The required width of a fire access road shall not be obstructed in any manner, including parking of vehicles.

Minimum required widths and clearances established shall be maintained at all times.

Cattle grate(s):

Cattle grates must be capable of handling the imposed weight (67,000 lbs.) of fire apparatus traveling over the grate.

Shall be designed and constructed to meet the provisions of the Fire Code, National Fire Protection Association (NFPA) and the Elbert County Roadway Design and Construction Manual.

Secured gates(s):

Secured gates and barricades. When required, gates and barricades shall be secured in an approved manner. Roads, trails and other accessways that have been closed and obstructed in the manner prescribed by Section 503.5 shall not be trespassed on or used unless authorized by the owner and the fire code official.

KFPD recommends the Knox Box method of securing fire department access.

5.4.6. Security gates(s):

Security gates. The installation of security gates across a fire apparatus access road shall be approved by the fire chief. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times.

5.4.7. Terminations:

All road terminations **MUST** terminate either in a cul-de-sac with a minimum of 60 foot turning radius or at an approved intersection as required in the Elbert County Road and Bridge Manual.

6. Key boxes – Controlled entry

Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the fire code official is authorized to require a key box to be installed in an approved location.

The key (Knox) box shall be of an approved type and shall contain keys to gain necessary access as required by the Fire Marshall.

Locks. An approved lock (Knox) shall be installed on gates or similar barriers when required by the Fire Marshall.

7. Water Supply Systems;

The Kiowa Fire Protection District has long been considered a rural area. Because of this, the fire department, has used and continues to use cisterns as water storage and a water shuttle for fire protection within the district outside of the Town of Kiowa. As the number of homes increase, the water needs to maintain the high level of protection residents have come to know will require new larger subdivisions to build and maintain public or “municipal” water systems. Smaller and grandfathered subdivisions will need to continue to be protected using cisterns until there is a water district established and water mains provided to all areas of the Fire District. This will be years, if ever, in the future.

Kiowa Fire Department has used cisterns for water storage in the past. The district, through the planning process, has tried to provide the best possible locations to provide fire protection to the district.

The fire department will continue to strive to maintain this high level of protection providing savings to it residents in lowered insurance costs.

KFPD provides alternatives to developers for the purposes of water for fire flow.

7.1. Water Supply Systems

7.1.1. One- and two-family dwellings.

The minimum fire-flow requirements for one- and two-family dwellings having a fire-flow calculation area which does not exceed 3,600 square feet (344.5 m²) shall be 1,000 gallons per minute (3785.4 L/min). Fire-flow and flow duration for dwellings having a fire-flow calculation area in excess of 3,600 square feet (344.5m²) shall not be less than that specified in table located in IFC Appendix B, section 105.1.

Exception for One- and two-family dwellings: A reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system.

7.1.2. Buildings other than one- and two-family dwellings.

The minimum fire-flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in IFC Appendix B, section 105.1.

Exception for Buildings other than one- and two-family dwellings: A reduction in required fire-flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with IFC Section 903.3.1.1 or 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in IFC Appendix B, section 105.1.

7.1.3. Developments:

Developments are strongly encouraged to connect to existing adjunct public water systems.

Automatic sprinkler systems are considered optimal fire protection and apply water to suppress structure fire prior to arrival of the firefighters and equipment. Installed sprinkler systems will reduce the amount of water necessary to provide protection to the development.

The KFPD does not need to review automatic sprinkler drawings for residential development and specifications for approval per the Fire Code.

KFPD may require the installation of a public water supply system, complete with fire hydrants and water storage that meets all the requirements of the Fire Code. KFPD will review all plans and inspect the system. This system must meet all Fire Code Standards.

7.1.4. Utility Drawings

In addition, the developer must provide a utility drawing of the proposed water system for the development, which meets the fire code for water supply.

7.2. Cistern Systems

Kiowa Fire Protection District continues to use this type of water supply system within its protection district for areas not serviced by public water systems. Larger subdivisions and commercial properties are required to provide Public or Municipal type systems.

7.2.1. Cistern Design

All Cistern designs, including but limited to capacity, approach, fills, outflows, and apparatus placements **MUST** be approved by the KFPD Fire Marshal office prior to the start of construction.

7.2.2. Cistern Capacity

Developments that elect an on-site water storage must be designed for maximum fire flow and suitable for and dedicated to firefighting, the size of which shall be determined by the fire code official, based upon a review of the construction plans with a capacity of not less than 30,000 gallons of water.

The minimal cistern size of 30,000 gallons is the minimal cistern size acknowledged by the ISO as containing enough water to maintain a fire flow for two hours per their requirements.

Due to potential fire load, occupancy, and use Cistern capacity requirements will be established and may be increased per the Fire Marshal's discretion.

7.2.3. Cistern System Outflow:

Cisterns MUST have either an overhead fill system capable of handling an out flow from a 1,000 GPM fire pump or a Fire Hydrant that meets the specifications in section 9.4 Fire Hydrant Specifications to enable fire apparatus the ability to connect using National standard threaded hoses.

7.2.4. Cistern Pumps:

Cisterns MUST have at a minimum fire rated pumps capable of producing no less than 1,000 GPM flow.

7.2.5. Cistern refill

Cisterns must be connected to a well complete with pump able to refill the cistern with in a 24 hour period after use.

7.3. Public or Municipal Type Systems

Municipal water systems shall be *engineered* according to currently adopted code.

The Kiowa fire department will work with the developer to meet these standards.

7.3.1. Water Main Size – Residential:

Water main size for minor distributors supplying residential areas shall be no smaller than eight inches and they shall be of a grid design whenever possible.

Pipe shall be sized appropriately for long runs and dead end situations avoided so that required fire flow is not compromised.

7.3.2. Water Main Size – Commercial:

Shall be no smaller than 12 inch minimum mains on principal streets and long runs that are not gridded and no smaller than 8 inches for tributary loops and commercial areas, using a grid design, and must meet Fire Code fire flow at all hydrant locations.

7.3.3. Pumps:

That provide full or partial system pressure shall have redundancy so that the failure of one pump does not cause reduction of flow or adequate pressure. Electrical service to pumps shall be underground and reliable and connected so that failure of any portion of the electrical service shall not cause a reduction in system capacity.

7.3.4. Fire Flow:

Is the amount of water with the required rate of flow to confine and extinguish a major fire at a given property. The determination of the fire flow depends on the size, construction, occupancy, and exposure to other buildings in the area. The minimum fire flow for one and two family dwellings shall be 1500 gpm. This may be reduced fifty percent for sprinklered buildings.

Buildings other than one-and two-family dwellings shall have a calculated fire flow in accordance with the intent of IFC Appendix B, section 105.1. (Flow may be reduced up to seventy-five percent on sprinklered buildings.) The fire area in this table is defined as the total area in square feet for all floor levels within the structure. Type I and II FR construction shall include only the three largest successive floor areas.

7.4. Fire Hydrant Specifications

KFPD uses the same standard as the adjacent Elizabeth Fire Protection District and Rattlesnake Fire Protection District.. KFPD requires a “Mueller Centurion”, or equivalent hydrant, right hand open. By maintaining consistency between fire districts during mutual aid events, firefighters will be familiar with the hydrants and will have no problem operating them.



Figure 1 Example Hydrant

7.4.1. Hydrants:

Hydrants in the KFPD shall be of an approved dry barrel type having two 2½ inch outlets and one 5 ¼ inch Steamer outlet. All outlet threads shall be configured NATIONAL STANDARD THREADS (NST). Private hydrants shall be situated on access roadways within eight feet of flow line. They are to be configured the same as municipal hydrants and plans for their installation must be submitted for review and subject to approval..

1. No Taps are allowed between the valve and the hydrant.
2. Outlet threads shall be National Standard Thread.
3. All Hydrants Shall be AWWA C-502-94 Standard Open “Left”.
4. All Hydrants Shall be installed as approved on the project plans.
5. All Hydrants must be installed and test approved for fire flow, prior to any construction. Unless otherwise approved by the Fire Chief or designate.
6. All changes or deviations from the approved plans must be approved by the Fire Chief or designate.

7.4.2. Hydrant Spacing:

Shall be of hydrants in one and two family residential areas shall be no more than 500 feet measured along flow line of roadway.

Spacing in commercial, multifamily, public buildings, etc. shall be no more than 300 feet or as required by the Chief per Fire Code. When any portion of a building protected is more than 150 feet from a hydrant on a public street, there shall be, when required by the Chief, on site mains and hydrants capable of delivering the required fire flow.

Each hydrant will be given credit for its actual tested flow up to 1500 gpm maximum.

7.4.3. Hydrant Placement:

Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets.

T- Intersections:

Hydrants **MUST** not be placed directly in the path of the intersecting roadway at a “T” intersection. This is to limit the potential for damage to hydrants from vehicular traffic accidents. Should a vehicle pass through the intersection this reduces the possibility of damaging a hydrant.

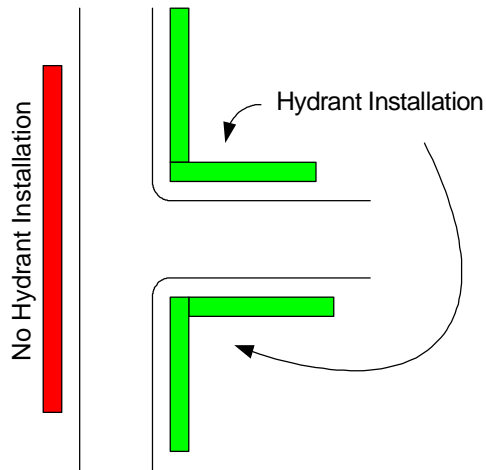
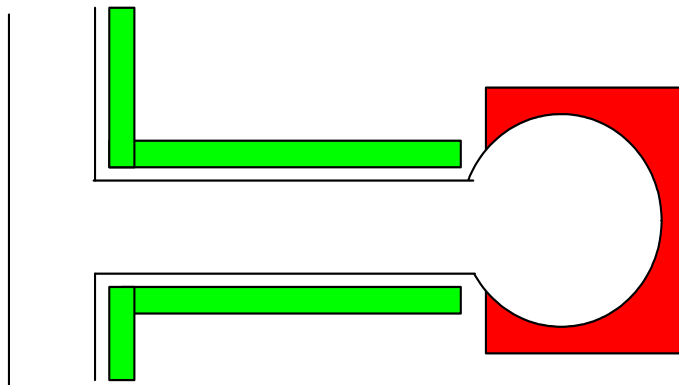


Figure 2 Hydrant Placement T Intersection

Hydrants may be located on the corners of the intersecting roadway.

Cul-de-sacs:

Hydrants should not be installed within the cul-de-sac radius. Fire apparatus can not easily get close enough to the hydrant while turning in the radius. Hydrants should be installed along the roadway prior to the turning radius.



Hydrant Installation

Figure 3 Hydrant Placement Cul-de-sac

Roadside/right-of-way placement:

Hydrants should be placed along the roadway no less than 5 feet from the edge of the pavement, or back of curb and gutter.

Hydrants **MUST** not exceed fifteen feet from the edge of the pavement.

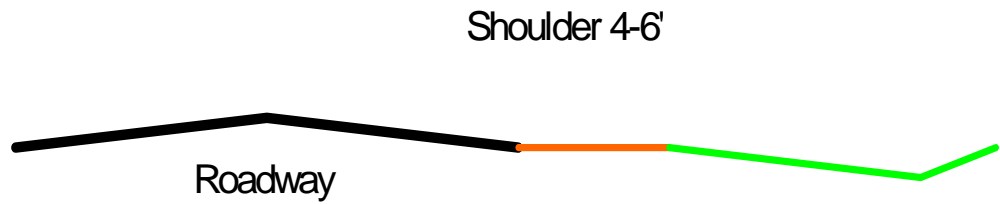


Figure 4 Hydrant Location -cross section view

Hydrants **MUST** not be installed in the bottom of the barrow ditch and should be easily seen from the roadway.

Due to location issues, should the preceding installation parameters not be possible, prior approval from the Fire Chief or his assigns for hydrant location in an abnormal placement is necessary.

8. Safety

8.1.1. Building Construction

8.1.2. Fire Flow

No building construction can start until the water utility fire flow is enabled and tested.

When fire apparatus access roads or a water supply for fire protection is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when approved by the Fire Marshall alternative methods of protection are provided.

8.1.3. Driveway access

Prior to any combustibles (lumber, construction materials) being stored on the premises. A driveway must be installed with an all weather surface, meeting the requirements of the Elbert County Driveway Standards. This Standard is based upon Fire Code requirements. The County or Town of Kiowa Inspectors will inspect driveways to meet their standards. The Kiowa Fire Protection District may also inspect driveways in the district to maintain this standard, allowing for the ingress and egress of emergency vehicles in the district per the Fire Code.

8.1.4. Temporary Structures

Prior to construction, with the permission of the chief, a temporary structure may be moved on site for construction offices per Fire Code.

9. Special Systems and events

Kiowa fire department endorses the use of special systems that provide for additional fire safety and prevention.

9.1. Place of assembly.

9.1.1. For the purposes of this section, a place of assembly shall include a circus, carnival, tent show, theater, skating rink, dance hall or other place of assembly in or under which persons gather for any purpose.

9.2. Tents and membrane structures

9.2.1. Size

Tents and membrane structures having an area in excess of 200 square feet (19 m²) and canopies in excess of 400 square feet (37 m²) shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the Fire Marshall.

9.2.2. Location.

Tents, canopies or membrane structures shall not be located within 20 feet (6096 mm) of lot lines, buildings, other tents, canopies or membrane structures, parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy wires shall be considered as part of the temporary membrane structure, tent or canopy.

9.2.3. Fire break.

An unobstructed fire break passageway or fire road not less than 12 feet (3658 mm) wide and free from guy ropes or other obstructions shall be maintained on all sides of all tents, canopies and membrane structures unless otherwise approved by the fire code official.

9.2.3.1. Anchorage required.

Tents, canopies or membrane structures and their appurtenances shall be adequately roped, braced and anchored to withstand the elements of weather to prevent collapse. Documentation of structural stability shall be furnished to the fire code official on request.

10. Inspections

10.1. Fire Code Inspection Policy

Occupancies and premises shall be inspected by fire district personnel as established by CRS Article 32-1-1002. Inspections shall be conducted according to the district procedures. The purpose of fire code inspections is to establish a reasonable level of safety to the citizens of the district and provide information for the pre-fire plan.

10.2. Inspection Fee

Any fees associated with the inspection process must be paid prior to any inspection.

10.3. Inspection Procedures:

10.3.1.1. Equipment

The inspector shall wear a suitable uniform and will always have proper identification. Proper protective clothing shall be worn as needed. The inspector shall carry a working flashlight, pen, proper inspection forms, and equipment to perform tests (flow, alarm, sprinkler, etc..) as needed.

10.3.1.2. Entering the Premises

Prior to entry, the inspector shall have checked the inspection history to determine any special requests of the premises, past problems, possible occupancy changes etc. The inspector shall identify himself and ask to be introduced to the person responsible for the premises. The inspector shall ask permission to perform a fire inspection. If permission is refused (not simply a rescheduling matter), the inspector shall not argue or threaten the individual, but will leave the premises and promptly notify the Fire Prevention Bureau or Fire Marshal. The inspector shall request that a responsible representative accompany him on the inspection. The inspector shall check for the existence and validity of any fire department permits and document them on the inspection form.

10.3.1.3. Conducting the Inspection

The inspector shall, at all times, conduct himself in a courteous and professional manner and shall do nothing to disgrace or demean the Department or his position of public trust and confidence. The inspector shall inspect every room, attic, closet, etc.; and all concealed spaces that are physically possible to inspect. Fire protection and notification systems shall be inspected and tested to ensure that they are fully operational. New construction, alterations and changes of occupancy shall be noted and documented and inspected for compliance.

10.3.1.4. Concluding the Inspection

The inspector shall review violations and notes as made on the inspection form with the responsible party from the premises. The inspector shall schedule a re-inspection date in writing on the inspection form and shall make the responsible party aware that compliance regarding the violation of the Fire Code is required within a reasonable time frame prior to re-inspection. The inspector shall ensure that violations which are immediate threats to life and/or property are remedied immediately. If the inspector has trouble gaining compliance, he shall notify the Fire Chief or a superior officer.

10.4. Documentation

The inspector shall always follow the appropriate editions of the Fire Code and the Building Code as well as referenced standards when performing inspections.

The inspector shall follow the "INSPECTION PROCESS" included as part of this SOP. The inspector shall make every effort to ensure that the inspection record of each premise is reliably updated and returned to the bureau following the normal process.

10.5. Inspection Process

Inspections shall be assigned and completed on an annual basis. The process shall follow the following flow chart.

10.6. Permits and Reviews

Permits and Review Fees are required for the following operations within the Kiowa Fire Protection District. (See Appendix B for Fee schedule)

- Burning Permits
- Tents, Temporary
- Sprinkler System Installation and Maintenance
- Fire Alarm System and installation and Maintenance
- Commercial Kitchen hood System Installation

Appendix A: Abbreviations / Definitions

IFC	International Fire Code, 2006 ed.
IBC	International Building Code, 2006 ed.
NFC	National Fire Code
NFPA	National Fire Protection Agency
NEC	National Electrical Code
NESC	National Electrical Safety Code
NICET	National Institute for Certification Engineering Technologies
KFD	Kiowa Fire Department
KFPD	Kiowa Fire Protection District
UBC	Universal Building Code
UFC	Universal Fire Code, 1997 edition

Term	Definition
CANOPY	A structure, enclosure or shelter constructed of fabric or pliable materials supported by any manner, except by air or the contents it protects, and is open without sidewalls or drops on 75 percent or more of the perimeter.
FIRE APPARATUS ACCESS ROAD	A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane and access roadway.
FIRE CODE	Adopted version of the International Fire Code, 2006 ed.
FIRE DEPARTMENT MASTER KEY	A limited issue key of special or controlled design to be carried by fire department officials in command which will open key boxes on specified properties.

KEY BOX	A secure device with a lock operable only by a fire department master key, and containing building entry keys and other keys that may be required for access in an emergency.
FIRE-FLOW	The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.
FIRE-FLOW CALCULATION AREA	The floor area, in square feet (m ²), used to determine the required fire flow.
TENT	A structure, enclosure or shelter constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.

Appendix B: 2007 Planning / Inspection Fee Schedule

KFPD reserves the right to amend these fees at any time for any use or structure which may be unique or falls outside of the defined categories, the Fire Protection District reserves the right to set a reasonable inspection fee for such use or structure, on a case by case basis.

Description	Fee
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Fire District Impact Fee	
Cost by unit of development;	
Initial Fire flow fee	\$1,040.00
Residential (per additional dwelling unit)	\$1902.00
Non-residential (per square foot)	\$1.19

Review and Inspections	
New Building Construction and existing building renovation/ expansion plan review and inspection fee.	
Single Tenant Commercial	\$250.00
Multiple Tenant Commercial	\$350.00
Government	\$100.00
Private Buildings Apartments and Town Homes	\$350.00 + hrs over 5
Private homes and barns	\$100.00

Tenant Finish/Remodel Plan Review and Inspection Fee.	
Site plan and inspection	\$75.00
Per man hour.	\$55.00

Subdivision Plan Review and Inspection Fees	
0-25 lots	\$270.00
25 or more lots	\$270.00 plus \$5.00 per lot
Rezone review	\$55.00 per parcel

Concept Plan Review	\$ 55.00
Special Use Review (SUR)	\$ 55.00
Commercial Site Plan Review	\$250.00
Over 3 acres	\$350.00+ hours over 5

Fire protection System plan Review and Inspection Fee.	
Subject to review by a Fire Protection Engineer as decided by District	
Sprinkler system (NFPA 13, 13R)	Case by case basis
Fire Alarm System	Case by case basis (NFPA 70, 72, 170)
Commercial Kitchen Hood Systems	Case by case basis
Carnival and Fairs	\$100.00
Tents, Canopies and temporary structures	\$50.00

PERMIT FEES	
Open Burning Permit (inspection & short term burn)	\$25.00
Flammable Liquids	\$50.00
Hazardous Material Commercial	\$100.00
Hazardous Material Agricultural	\$50.00

APPARATUS, MANPOWER AND ADMINISTRATIVE CHARGES	
Apparatus per hour	
Engine/Pumper	\$250.00
Water Tender	\$200.00
Medical unit	\$100.00
Brush Truck	\$100.00
Command and support	\$75.00

Personnel per Hr. / per person	
Fire personnel	\$35.00
Medical	\$45.00

SCHEDULE OF FEES FOR THE DISTRICT EFFECTIVE JANUARY 2007

BUILDING PLAN REVIEW;

Commercial/Public Buildings	Single Tenant	\$250.00
	Multiple Tenant	\$350.00 + hrs over 5
	Government	\$100.00 + hrs over 5
Private Buildings	Apartments/Town Homes	\$350.00 + hrs over 5
	Private Homes/Barns	\$100.00
Note: per man hour	\$55.00	

SITE PLAN REVIEW:

Commercial/Public Center	Less than 1 acre	\$250.00
	1 acre to 3 acres	\$350.00
	Over 3 acres	\$350.00 + hrs over 5
	Impact Fee	\$1.19 per square foot

Note: Schools, government buildings and churches ie: *institutional* are exempt from impact fees. Review fees still apply.

Residential Subdivisions	2 to 4 lots	\$150.00
	5 to 20 lots	\$350.00
	21 or over lots	\$350.00 + hrs over 5
	Impact Fee	\$1902.00 per lot

FIRE FLOW FEE: Developer may choose one of three options.

Development 30,000 gallon cistern **or** residential sprinklers in each house **or** cash in lieu \$1,040 per lot.

SITE INSPECTIONS:

Residential \$75.00	Public Assembly (non profit)	\$50.00
Commercial: \$150.00		

PERMIT TO STORE ANY AMOUNT OF HAZARDOUS MATERIALS LISTED BY DOT:

Commercial Facility: \$100.00	Agricultural Facility: \$50.00
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BURN PERMITS:

Single use on dates permitted \$25.00

Other fees as determined by the District Board of Directors

Adopted by motion of the Board of Directors

Kiowa Fire Protection District

Date adopted: March 12, 2008

Keith Westfall, Chairman

Geri Scheidt, Administrative Secretary